VISIT ARCTIC EUROPE

Digital tourism -

An analysis of digital trends in tourism

and customer digital mobile behaviour

for the Visit Arctic Europe project

The future belongs to those who prepare for it today. The Future starts now!

Hans Gelter

May 2017

Interreg
Nord
Europeiska regionala utvecklingsfonden   EUROPEISKA UNIONEN

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Foreword

Travellers arriving in Northern Scandinavia are interested in experiencing wilderness-type nature and indigenous culture. Hence, the borders between the three countries are not important for international travellers. After years of preparation, tourism actors from the region began a common project to enhance international tourism. Visit Arctic Europe (VAE) project is conducted by the Finnish Lapland Tourist Board, the Northern Norway Tourist Board and the Swedish Lapland Visitor Board and is financed by Interreg Nord for the years 2015–2017. Both the public sector and 90 tourism companies are involved in the project.

The aim of the project is to develop Northern Scandinavia into a cross-border, high-quality tourist area that is an internationally competitive and well-known destination. The project focuses on tourism marketing, joint product development, and improvement in accessibility. To ensure the efficiency of the project in line with the established objectives, stakeholders need analyses and updated information on the following four R&D missions: relevant indicators and measurement tools for the success of the VAE project, analysis of future travel trends, digital trends in tourism and customer digital and mobile behaviour, and obstacles to cross-border cooperation in the area where VAE is represented.

In this third report, commissioned by the project, researcher from the Luleå university of technology, explore present and predicted future digital travel trends and customer digital mobile behaviour, that can be of relevance for the Visit Arctic Europe tourism industry. As digital information technologies have had a profound impact on tourism industry, and will in the future even more shape the industry and the behaviour and experiences of the traveller, staying update with digital travel trends becomes increasingly important for companies and destinations. However, predicting the future of digital technology development and its influence on people's behaviours, becomes at the same time increasingly more difficult as the speed of technological evolution increases. We can only be humble when in looking into the future, and the horizon of the future comes quickly closer and closer.

With this report, we hope to inspire participants in the VAE-project for an interest and curiosity of the digital evolution and its impact on our lifestyle and traveling, as it becomes increasingly important to cope with its quick development to stay on a competitive edge in the global tourism arena.

Rauno Posio   Hans Gelter
Project Leader   Associate Professor
VAE project   Luleå University of technology

Tero Rahikainen
Project Manager VAE

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Introduction

Information technology has played a fundamental role in in the development and growth of the tourism industry. As soon as computer systems become available, they were used in early mass tourism in the 60ies and 70ies to support the function of large operators in transportation and hotel sectors. In the 1070s **central reservation systems** (CRSs) and in 1980s **global distribution systems** (GDSs) such as *Sabre*, *Amadeus*, *Galileo*, *Worldspan* and others were developed, first by airlines and then by hotel companies, to give access to travel agencies to schedules and prising information and to request reservations for clients[1,2]. These were followed by the introduction if Internet in the late 1990s, which since 2000 has had a tremendous transformative effect on communication technology and the travel industry.

Today the travel and tourism industry is one of the most significant users of **Internet technology**, and Internet has become one of the most important communication tools for travellers as well as for travel and tourism enterprises[3]. The internet has influenced travel behaviour and tourism industry in a variety of ways and resulted in fundamental changes in industry structures and travel behaviour, and we are just standing on the doorway for a new era of digital travel. For instance, online reservation and payment options are used by more and more travel suppliers and consumers, and have resulted in tourism as being one of the most important e-commerce category. With **e-commerce**, consumers were offered more choices and obtained easy access to information about the various products. **E-tickets** are a direct result of e-commerce and have tremendously simplified travel[2], similar trends have now resulted in the new **e-tourism** and **e-tourist**. Convergence in Information and communication technology effectively integrates the entire range of hardware, software, groupware, netware, and humanware and blurs the boundaries between equipment and software, and in the future between technology and humans. Wireless and mobile networks are extensively used for communications, networking of equipment, and interoperability between both organisations and functions. Digital information systems have evolved from simply interrelated components working together to collect, process, store and disseminate information to now support decision-making, coordination, control, analysis and visualisation in an organisation, to dynamic, interoperable mechanisms of collecting, processing and disseminating intelligence within organisations and in their environment.

The business logistics of production and distribution of travel and tourism products can be viewed as an umbrella industry with complex distribution chains, consisting of interrelated businesses of transportation companies, accommodation facilities, attractions, catering enterprises, tour operators, travel agencies and providers of recreation and leisure facilities. Everyone in this system are using **information and communication technology** (ICT) to different extend in their product development and production, business administration, marketing and market communication, sales and reservation and internal and external communication. In the same way, the tourist and traveller with the help of wireless networks and mobile technologies, in an increasing extent uses information technology and digital systems in their everyday life, work, leisure and travel, as well as in their consumption of goods, services and experiences[4]. This makes an analysis of digital trends within tourism and customer behaviour a very complex endeavour and almost impossible to span all aspects. The ongoing **digital revolution** of virtual worlds and **virtual reality** (VR), **augmented reality** (AR), simulations and the merging of the real and virtual world into complex interactions between history, present, future and the non-existent, and its future impact in

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[1] Sheldon 1997, Werthner & Klein 1999
[2] Buhalis & Law 2008
[3] Gretzel & Fesenmaier 2012
[4] Jensen 2013

tourism and tourist behaviour, opens even more complex solutions and scenarios of digital applications and trends within tourism. It is thus with a humble mind and awareness that a limited report of this sort cannot even closely cover all applications, trends and solutions within this quickly diversifying and evolving field. This report therefore, can only provide an introductory analysis of trends that are applicable to the challenges of micro, and medium sized business within Arctic Europe, and major identified trends in digital behaviours of their visiting guests. The advent of the Internet and the development of information and communication technologies thus have revolutionized the economy of the information society and have led to the emergence of a new economy - the **digital economy**. In the **digital age,** it is obvious that each business, individually, and each state must adapt to the digital revolution, to integrate new information technologies and communication in order to survive and develop in this new economy. In the era of Internet and digitalization, tourists are at a click away from their preferred holyday – and both businesses and the industry have to keep up with this **digital transformation**.

Methodology

In this report, a selection of published scientific studies and white papers on **digital trends in tourism** and **customer's digital mobile behaviour** is analysed and summarised based on relevance for the Visit Arctic Europe (VAE) project. During the research process, it become clear that a report based purely on scientific paper would not accurately cover the most recent digital trends due to the fast development of the digital technology evolution, and the inherent time lag in the research process of compiling and publishing scientific data. I therefore decided to also include white papers from the tourism and digital industry, to cover the latest industry findings, as white papers have a quicker publishing time span then scientific papers. Digital trends in tourism and customer digital mobile behaviour are tightly tied with **general tourism trends**. General tourism trends will, however, only be explored to a limited degree in this report, because of the different research assignments given by the VAE project, where a separate report focusing on future travel trends in tourism will be published by Mission 2 of the VAE-project.

The **aim of the present mission of the VAE project** is to assist with the development and marketing of cross-border tourism packages by stimulating future digital development of tourism in Arctic Europe. The **aim of the report** is therefore to summarize accessed published digital trends in tourism studies in the form of scientifically published studies and white papers on customer digital mobile behaviour, digital trends in tourism and new technology within digital tourism and digital tourist aids. Data will also be collected through analysis of some recent business workshops and conferences on digital development within tourism.

Scientific papers were mainly obtained by search with **Google Scholar**, a search engine for scientific papers published on Internet. The different search phrases used in *Google Scholar* and their results are listed in *Table 1*. The search period for published scientific papers on *Google Scholar* was limited to 5 years back from the current search period up to February 2017, although older relevant papers were included found by the "*stepping-stone*" method in both the *Google Scholar* research, as well from readings. On a *Google Scholar* search, not all hits are relevant, as the search engine presents all results on any word in the search words. Bases on limited time resources, the scanning of the search engines results was limited to the 120 first hits, and the results are presented in *table 1*. Not all scientific papers on the Internet are free to download. By the conditions of the assignment by the VAE project, only papers with free access were downloaded for further analysis. However, also the heading and the summary of a paper may give valuable information about its topics and results, and most scientific papers on the Internet are

presented with a summary. Therefore, a second analysis of relevant paper found on *Google Scholar* that could not be downloaded, was conducted based on the title and summary. Analysed papers are presented in *Appendix 1*. A total of 1160 titles were scanned from *Google Scholar*, resulting in 149 scientific papers with bearing on the theme. Of these 106 were analysed for their title and summary only, and 43 were downloaded for analysis. An additional 66 full papers were obtained by the stepping-stone method, giving a total of 215 analysed scientific papers (*Appendix 1*). In addition, 162 white papers and 112 industry websites were analysed in accordance to the theme, also presented in *Appendix 1.*

Table 1. Results of Google scholar[a] search[b] for digital tourism trends and customer mobile behaviour

Search words	Search period	Search hits	No. scanned	Analysed by summary[c]	Analysed full paper	Totally analysed
digital trends tourism	-2013	23 900	120	15	6	21
digital tourism trends	- 2013	21 300	120	4	6	10
"digital tourism trends"	-2013	0	0	0	0	0
"digital trends in tourism"	-2013	1	0	0	0	0
"digital trends"	-2013	1780	120	1	1	2
"tourism trends"	-2016	666	120	3	1	4
Tourism trends	-2016	47 700	120	0	0	0
"customer digital mobile behaviour"	- 2013	0	0	0	0	0
customer digital mobile behaviour	-2016	22 700	120	4	5	9
customer digital mobile behaviour	-2013	16 400	120	16	4	20
tourism customer digital mobile behaviour	-2013	16 600	200	63	20	83
Other papers obtained					66	66
Total			**1160**	**106**	**109**	**215**

a *Google* Scholar searches scientific papers available on internet
b Search with brackets "…" searches the exact word order, search without brackets searches on any of the words in the search option
c Papers found in *Google* Scholar that could not be downloaded without charge, but provided a summary of the paper

The **analysis** of the collected scientific and white papers is conducted as a summary of identified relevant papers, without any new theoretical contribution to the concepts of digital trend in tourism and customer mobile behaviour. Neither will different digital applications and technology for tourism and customer mobile behaviour be compared and valued as the mission is not aiming to evaluate and rank different digital applications and technologies. Most digital applications mentioned in the analysis will be presented in *appendix 2*. Nor will the analysis contain any practical recommendations for VAE stakeholders in using digital techniques and applications in tourism, or an analysis of the effects of digital trends specified to the VAE themes and region.

To facilitate the understanding of the summary of the analysed papers, the relevant content was structured under the two given main headings:
1 Digital trends in tourism
2 Customer digital mobile behaviour
These two given themes were further sub-structured. The first theme was analysed from the tourism industry point of view, and the second theme from the tourism consumer point of view. The first theme of **digital trends in tourism** was sub-divided into four sub-themes of:

- General trends in tourism and digital tourism
- Digital trends in tourism business management
- Digital trends in travel distribution
- Digital trends in tourism marketing

The given theme **customer digital mobile behaviour** was sub-divided according to the customers experience process of travelling into three themes:

1. Pre-consumption digital behaviour
2. During-consumption digital behaviour
3. Post-consumption digital behaviour

As the digital information technology within tourism brings tourism industry and tourism consumers closer in information exchange and business interactions, there is a blurring to which category a certain digital platform or application can be account for, so there will be some overlap in the analysis of digital trends in tourism and customer digital mobile behaviour. Some digital applications or digital solutions will therefore show up under several of the chosen themes.

About trend analysis

Before we start the journey into the future, we must first frame the concept of **trend analysis**. Here we get valuable insight by the trend and foresight analysis company Kairos Future[5]. Can we ever know anything by the future? No, we can only guess. Most people who claim to know how the future developments will turn out will be wrong. We live today in a world of increasing uncertainty and disruptive change in both the private societal and the business sector. These uncertainties are, however, of strategic importance for us as individuals, for business and organisations and for government and nations. We need to understand what is happening and what that means for us and our business now and in the future. Understanding the presence and current trends can be done by **statistics** and **business intelligence** performed by trend businesses and organisations such as World Travel Organisation. For the future, we can make wild guesses, make informed guesses or in a humble way explore possible futures by exploring possible scenarios and explore their consequences to increase our preparedness to meet new challenges. **Scenario planning** is not a method, but rather about creating a curious approach in how to relate to changes and uncertainties of the future with the aim to create order in a complex and transformative world, and consequently to facilitate strategic thinking. In contrast to forecast, scenario-based planning does not extrapolate current trends. Its purpose is to constructively challenge the assumptions inherent in the prevailing mental maps to uncover blind spots. It introduces elements of uncertainty that confront the "*business-as-usual*" bias. Scenarios are not forecasts or predictions, but rather alternate representations of plausible futures. It has been used in many sectors, but rarely been applied within tourism.

Kairos Future[6] has developed the **TAIDA process** for **Scenario planning**, inspired by how the human brain function. The brain is basically a scenario generating organ based on previous experiences and the sensory experiences it receives. It constantly scans the environment through the senses, tries to make sense of what it perceives based on earlier experiences, identifies alternative future development, alternative goals and actions, and decides what to do, and makes sure that necessary steps are taken. In a business concept this could be transferred as *Tracking*, *Analysing*, *Imaging*, *Deciding* and *Acting* (*TAIDA*), to quickly observe, orient, decide and act. We cannot gather facts about the future, only about historical trends, which we for certain variables might interpolate into the future as a forecast. Scenario planning creates a stronger tool to meet the future then forecasting[6].

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[5] Kairos Future 2015: Understanding the Future with Scenarios
[6] Kairos Future 2009: TAIDA Framework for thinking of the Future

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Traditional trend analysis and forecasting in tourism is about predict or estimate future events or trends using indicators of tourism demands (arrivals, transports, accommodation occupancy, etc.) or tourist behaviour (where they go, how long they stay, how much they spent, how markets and market segments change over time etc.). Traditional tourism forecasting is essential to efficient tourism planning, operation and promotion, and such tourism forecasts are abundant, with most international and national tourism organizations providing extensive analysis on domestic, inbound and outbound tourism trend, and market analysis. Such **quantitative forecasts** and trend analysis are less suitable on digital trends, as the digital evolution may take major technological steps not foreseen by previous trends. Instead **qualitative forecasting** such as expert panels or compiling resent research and development results may be more appropriate, as casual models and time-series approaches cannot capture unpredicted events and the nuanced impact on tourist decision making. **Tourism future** is a relatively new and evolving area of tourism research, and researchers[7] have suggested four forms of tourism futures knowledge: prediction, prognosis, science fiction and utopia. Keeping trace of recent research and business innovations may, however, better indicate future trends, as well as closely monitoring the businesses of interest and the behaviours and interests of its customers. This report is a humble attempt to collect some information about future digital trends by recent scientific and industry publications. A research survey as this present analysis, can be considered as a **qualitative trend analysis** consisting of TAI in the *TAIDA model*, letting DA, decisions and actions to the reader of this report.

"*The best way to predict the future is to invent it*" (Alan Kay, Xerox PARC)

Digital trends in tourism

Tourism trends

The 13th December 2012 was a historical and remarkable day in tourism, as UNWTO estimated that on this day, 1 billion international arrivals per year was reached. Over half of them, 535 million international arrivals were within Europe. The increase in international travel is estimated to be 3,8% for 2010-2020 and 2,9% between 2020-2030, reaching 1,8 billion international arrivals in 2030 and 2 billion in 2050. For arrivals in Europe these estimates are 2,7% and 1,8% increase, respectively. The slowing down on the increase is predicted be due to more mature markets and increased tickets prizes due to environmental costs of traveling. According to the UNWTO, there are three main reasons to travel; 1) Leisure, recreation and holidays (54%), 2) Visiting friends and relatives (30%), and 3) Business and professional travel (16%). Research predicts that by 2020, digital travel outlays will top $817 billion globally, particularly given that worldwide travel has risen 13.8% in 2016 to reach $564.87 billion.

There are two main factors affecting global increase in traveling. The first is that the world population is increasing. Hans Rosling coined in 2012 the **PIN-code of the world**, which for 2012 was **1114** (1 billion people in the Americas, 1 billion in Europe, 1 billion in Africa, 4 billion in Asia), and that this code will change to **1125** in 2050. Todays 7 billion people will in 2050 be 9 billion. At the same time a brutal urbanisation is in process, where in 2009 about 50% of the world population lived in cities, and this is predicted to increase to 60% in 2030 and 70% in 2050. In 2050 will the 600 biggest cities hold 25% of the world population. This population growth and urbanisation will affect world travel in many ways, but most of the increase in international arrivals will be related to inbound and outbound traveling from these

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[7] Yeoman & McMathon-Beatties 2016

600 megacities. The Nordic countries will not be involved in this travel growth related to the global urbanisation[8], even if urbanisation to some extend occurs also in the Nordic countries.

When estimating trends in international traveling and digital tourism, one must take in account that tourism is no exception to the challenges of persisting social, technological, economic, environmental and political (**STEEP**) changes and disruptive events of our time[9]. Our contemporary era of rapid technological, economic, social and political change, globalization and tumultuous events such as 9/11 terrorist attacks and following terrorism, the emergence of smartphones and social media, financial crisis, Arab Spring movement, environmental disasters as tsunamis, etc. all influence the tourist behaviours and tourism industry. Seldom have so many disruptions converged in so many areas at one single point in time like in the present time. We have good reasons to believe that shifts in many areas – geopolitics, the climate, the global economy, trade, contemporary culture and values and beliefs – can lead to radical changes that will entail strategic challenges for the tourism industry. New markets emerge, and previous prosperous markets and destinations decline by political or social events creating turbulent times in the tourism business. This implies that tourism planning for "business as usual" is a dangerous strategy for any tourism organization, and that the strategic challenge for companies and organizations is to gain a deeper understanding of the radical changes that are affecting organizations and markets, and recasting the conditions for markets and business.

Tourism megatrends have been suggested by many researchers such as the six large-scale exogenous trends[10] for the global tourism sector over the next 30 years: (1) The social, economic and environmental consequences of gradual warming and of extreme weather events associated with climate change; (2) The effects of higher fuel costs and social concerns on mass long-haul travel; (3) The role of new technologies, including social media, in marketing, managing, experiencing and monitoring tourism; (4) Economic growth and social change in the highly populous and newly wealthy BRICS nations, especially India and China; (5) The consequences of armed conflict and geopolitical negotiation for tourism, and the use of tourism as a tool for geopolitical interests; (6) The increasing linkages, and also conflicts, between tourism and conservation in many countries. Others[11] have identified major challenges that the tourism industry will face, these suggested to be resulting from new tourist profiles, a growing middle-class, political tensions and terrorism, technological evolution and the decline in customers' loyalty.

There are several recent trend reports in tourism trying to forecast what the future of tourism will be, and the scope of this report is not to analyse and summarise them, (which is done in VAE Mission 2), I will here only list some recent identified tourism trends with bearings on trends in digital tourism.
1. **Global customer,** informed and well-travelled, and thus easy blasé, expecting the extra ordinary, requesting personalized experiences, ethical and egoistic tourists.
2. "Dive into the **digital world**" and "**Your friend in tour pocket**" – Internet and mobile phone, now part of everyday life and a natural travel companion, connectivity is a lifestyle.
3. "**Virtual worlds** without borders" - Combining the authentic in In-Real-Life (IRL) experiences with digital experiences, 3D, 4D and 5D experiences, Augmented reality. Digitalization as an argumentation of the experience.
4. **New customers** with new values, self-determination**,** self-actualisation, networking, contacts, the Millennials, the Gen Zs, the *Homo Zapiens*, the *Homo ludens*.

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[8] TRIP Turistnäringens Trendanalys: 2013
[9] Scott & Gössling 2015
[10] Buckley et al. 2015
[11] Costa et al. 2016

5. **Togetherness** – To do things together (friends, partner, family) to share, like, belonging, storytelling, sympathy, social networking.
6. **Edutainment** and **gamification**, knowledge in a fun and easy way.
7. **Internet-smorgasbord** – everything should be easily accessible, easily to book, available on all platforms, booked at home, choices, add-on´s and extras should be only one click away.
8. "**La Dolce Vita trend**" with high service quality and accessibility, comfort and convenience (such as "*glamping*" – glamour camping).
9. "Make it beautiful" – **Designification,** design hotel, storytelling, cosy atmosphere.
10. "**Transparency trend**" – customers are expecting true transparency and openness, with several digital dialog channels to providers.
11. "From producer generated to **user generated** experiences and content." E-Word-of Mouth marketing, Social media, *YouTube* content, user-driven marketing, and video "hacks".
12. "**Homo maximus**" Everything here and now trough digital technology for time optimising, problem reducing, "que management", accessibility, fun and personal development.
13. Rapid development of **disruptive technologies** – big data, cloud technology, Internet of Things, automatization, robotization
14. **Experience production** – innovative experience design, create something out of the ordinary.
15. **Sharing economy** – cheep, personalised experiences, sharing and reusing.
16. **New travel pattern: -** from 2016 to 2017 we will see[12] increase in**;** short (weekend) trips (48%), DYI (Do-it-Yourself) trips (38%), Off-beat experiences (36%), Solo-trips (33%), off-season trips (12%) and Homestay (14%).

Most of these trends will be addressed in the subsequent chapters.

The Experience Economy Trend

A megatrend in business in general, and in tourism especially, is the paradigm shift from the post-modern service economy into the transmodern **experience economy**. In 1999 Pine and Gilmore launched the paradigm shifting book "*The Experience Economy*"[13] introducing the new economical offerings based on experiences and transformations. They introduced a model of progression of economical values driven by changes in society and economy from an agricultural society focused on extracting commodities to the industrial society focused on producing goods, to the post-modern society based on delivering services, to the present "experience society" where the offering is stating or producing experiences (*figure 1*). They also predicted that the new value offerings will be transformative experiences, and Kairos Future[14] added a sixth layer of stimulating community and affinity in the new era of individualism where new trend is the old values and needs of family bounding and social belonging, that will direct the new consumption patterns.

Stepping up this "economic offering ladder" (*figure 1*), according to the model, increases the pricing as new values are added into the offerings. Experiences thus add not only new economical values to services and goods, but as an economic offering per se also offer new consumption motivations. Experiences differ from services as being personal while services are customized, and goods standardized. In the same manner goods are characterised by tangible features, services intangible benefits and experiences memorable sensations. According to Pine and Gilmore, consumers are labelled as user for goods, clients for services and guests for experiences. The fifth economic value of transformations is rarely discussed and has not yet obtained a conceptual meaning within the tourism context. Pine and Gilmore propose this

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[12] Amadeus 2017: Online Travel 2020, Evolve, Expand or Expire
[13] Pine II, B. J. and Gilmore, J. H. 1999. The Experience Economy – work is theatre & every business a stage. Boston: Harvard Business School Press.
[14] Kairos Future 2011: Framtidens upplevelser

to be the business of active and explicit changing customer's through a defined transformation toward some specific aim or purpose where the transformation elicits that intended effect. Transformation is not staging personal experience but to guide a personal change, a transformation offered individually. Applied in the tourism context such transformational offering with the explicit goals of sustainability would be what Luyckx Ghisi called "**Transmodern tourism**"[15]. Contemporary post post-modern value shifts towards sustainability, globalism, self-actualisation, interconnectedness and ethnical, racial, cultural and sexual equality has been labelled **Transmodernity**[16], even if the conservative backslash for this new Millennia-values has lately globally been very strong.
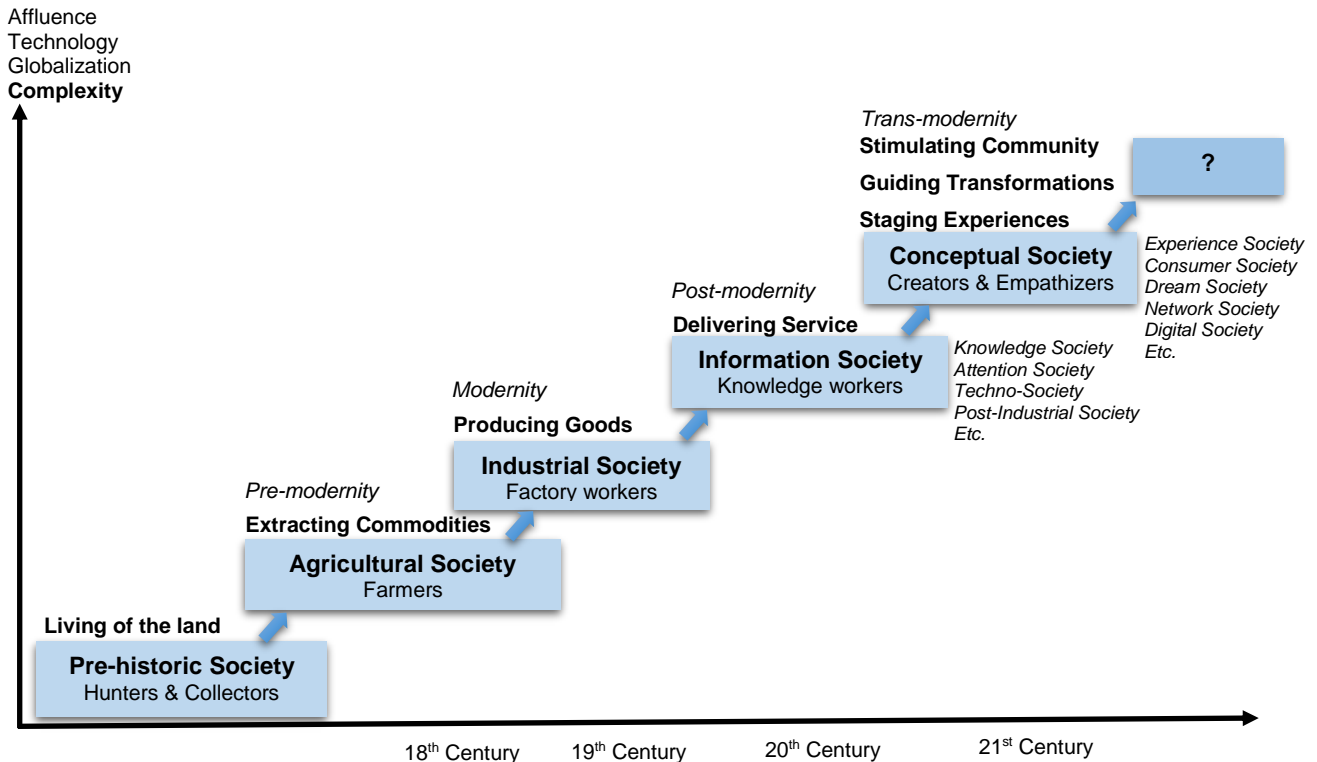

Figure 1. A simplified stage model of progression of society and economical offerings. (modified after Pine & Gilmore 1999, Florida 2002, Luyckx Ghisi, 2006, Pink 2007, and others.)

The understanding of the experience economy as a progression from offering tourist service to staging tourist experiences was for a period ignored by the tourism industry and tourism research, but has lately become more accepted as a business strategy, while the concept of offering transformative experiences or transmodern tourism still is met with scepticism. However, customer values and behaviour drive the industry, and as meaningful and transformative experiences are the focus of the new traveller, not only striving for gazing at attractions (*Tourist Gaze* - been there, seen it, done it) and taking selfies (*Selfie Gaze* – experienced it, and lately *Groupie Gaze*) but the tourist rather want to learn, develop and self-actualize (become it), the tourism industry sooner or later must embrace the concept of transmodern tourism. This means that **experience production** should develop from 1.0 of Pine and Gilmores staging experiences and passive experience consumption, to the second generation of experiences 2.0 of **co-creation** of experiences (often called **customer-centred production**), to the third-generation experiences 3.0 of **self-direction**, where the provider only provides the stage and tools for the active self-experience production of the customer (*figure 2*). We see the same progression in the evolution of computer games, the Internet, media etc. What the fourth-generation experiences would be is still open, but one qualified

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[15] Gelter 2010
[16] Rodriguez Magda 2001, 2007, Luyckx Ghisi 1999, 2006

guess would be neurologically integrated Artificial Intelligence based Virtual Reality experiences (see below).
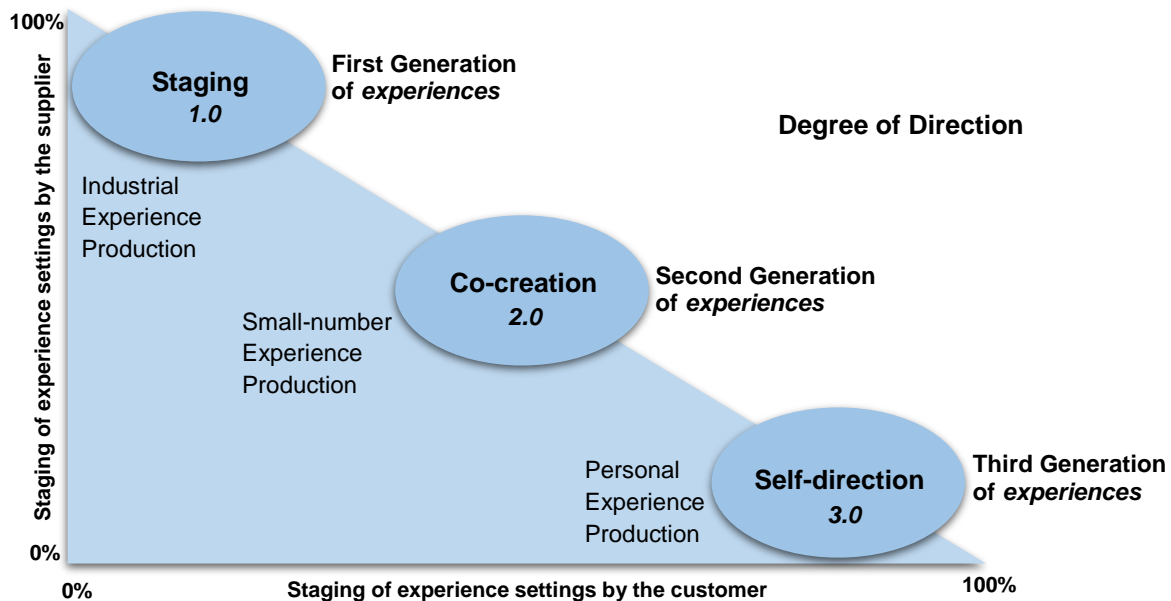

Figure 2. Different generations of experience production as actor-customer relationships in the creation of meaningful experiences. (modified after Boswijk et al 2012, p 11)

This paradigm shift in tourism offerings from service to experiences is also paralleled with a paradigm shift in the digital world towards the experience of digital applications, where the focus has shifted from "**Quality of Service**" *QoS* of digital devices (efficiency and performance such as memory capacity, speed, etc.) to "**Quality of Experience**" *QoE*, that puts focus on the "**user experience**" and user satisfaction with the experience. "**Experience Design**" of information technology has become the driving factor in design of smartphones, wearables etc. Technologies have moved from being helpful and useful only, to being fashionable, fascinating products that are desired and contribute to personal image and status.

Digital applications within tourism, may it be for business operation or traveller and leisure use, no longer focus on a narrow *QoS*, but have become differentiated by *QoE* where aspects such as identity creation, cultural meaning, personal branding, enjoy and lascivious easiness of using the product guide the choice of use. This also guides choices of companies when choosing platform applications for their booking systems, accounting and information handling systems etc. to easily overcome learning threshold of new applications, as well being the background for the success among users of certain social media such as *Facebook* and *Instagram*. Concepts such as interaction design, user-centred design, human-centred design, and user-experience-design have become buzzwords in human-computer interactions, and aligns with the general "**experience turn**" away from the focus of the product/service to the focus of the experience it delivers, within other business areas. Usability and *QoS* consists, according to the Kano model[17], of basic unconscious "**must be" quality** (basic needs, hygiene factors), which is taken for granted and only noticed when absent, while for basic satisfaction, a consciously **expected performance quality** (performance needs) must be delivered, consisting of the conscious choices made when buying the product. But to create a high satisfaction and great experience, again **unconscious excitement quality** (delighters, excitement needs) must be delivered, unexpected qualities that are the experience

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[17] Kano et al 1984

innovations that differentiate the offering from other, the **WOW factor** the consumer was not aware of. This is a new perspective shift and a "pleasure-based" approach that focuses on the consumer's feelings, motivations, values and so on.

This experience based trend goes hand in hand with the "disappearing computer" trend, where ICT and media devices more and more disappears as manifest objects, and become integrated and present everywhere, and integrated in most aspects of our lives. This trend is called the shift from an "**information society**" to an "**Experience society**" (*figure 1*). Thus, the Experience Economy of Pine and Gilmore not only affects tourism in the shift from delivering tourist service to tourist experiences, but the paradigm of the Experience Economy also affect how and what digital solutions tourism businesses use and provide for their customers.

New technology trends in digital tourism

e-tourism

Digital technology has in the literature many different names, such as **IT- Information Technology**, **ICT – Information and Communication Technology**, **DT - Digital technology**, and **DICT - Digital Information and Communication Technology**, and its application in tourism as DT – **digital tourism**, **e-Tourism** - **electronic tourism** and **e-tourist** – electronic tourist. IT is usually defined as a term given to digital computer and communication technologies used for the acquisition, processing analysis, storage, retrieval, dissemination and application of information. In this paper, I will use the term DT - **Digital Technology** for the general technology and applications within digital information and communication technology, and the term e-tourism and e-tourist for its application within tourism. The word **Internet** is usually meant to cover all information, applications and activities that is available on the *Internet*. By **Smartphones** I here include all new wearable devises such as mobile phones, smartwatches, smart-clothing's etc. that can communicate with the *Internet*.

E-tourism has stimulated the global and local competitiveness of tourism and travel industry, and E-business models are now critical for any major tourism organization. **E-business** requires a change from mass production to mass customization and from pure selling to relationship-building, thus developing a **customer-centric management**. E-tourism represents the digitalization of all the processes in the tourism and travel industry that enable managers to maximize their organisations efficiency and effectiveness. E-tourism includes all e-business functions: e-commerce, e-management, e-marketing, e-finance, e-accounting, e-HRM, e-procurement, e-strategy and e-planning. The entire value chain, all business processes and the strategic relationships of tourism organizations are continuously transformed by e-tourism. The present and future development and trends in e-tourism are strongly correlated with the development of the DT, consisting of an ever-speeding evolution of both hardware and software technology. With 60% of leisure and 41% of business travellers making their travel arrangements via the internet, the tourism industry has completely transformed itself into a e-business and stands at an exciting tipping point where data driven customer insight, the evolving mobile consumer, social media, APIs, VR technology and machine learning and much more are the drivers behind this change into the digital world.

Hardware trends

Since the first introduction of mainframe computers in the 1960s and personal computers with *Apple 1* in 1976 and *IBM PC* in 1981, the evolution of **hardware** has strongly accelerated and diversified. The first *laptops* that came in 1989 (*Machintosh Portable*) have now developed in fast and light computers, where

laptop computers get ever thinner and now also can be rolled up[18]. The first cell phones appeared in 1983 and have now evolved into today's powerful **smartphones** with the present (2017) top models *iPhone 7* with 2 smart 12-megapixel cameras and *Samsung Galaxy 7*, that also can be equipped with a headset *Gear VR* for virtual reality through the smartphone. Smartphones have brought forward the merge of several separate technical devises into one, such as voice recorder, digital camera, and digital video camera, video player, MP3 player, gaming devices, eBook, and web and mail functions and well as office functions of the PC laptop. New models are released yearly introducing increased performance and new technical functions, becoming sophisticated personal devices equipped with GPS, gyro, accelerometer, Bluetooth and Wi-Fi for connection with other devices and the Internet, and lately becoming equipped with laser keyboards, becoming bendable (*Samsung Galaxy X*, *Lenovo C Plus*) and soon transparent[19]. In 2010 Apple introduced the first iPad starting the **tablet PC** evolution, that now is slowing down as larger smartphones are increasingly substituting tablets, and laptop computers getting thinner and lighter approaching the wearability of a tablet PC. New screen concept in the form of transparent, bendable or even projected scenes will in a near future probably substitute both laptop and tablet PCs. As a complement or substitute to smartphones, new **wearables** are developed in the form of **smart watches** (2012) or **smart bracelets** (*Jawbone* 2011), and such new gadgets, devices and design solutions are becoming increasingly embedded in our daily lives, capable of making life more comfortable and smart.

In the beginning, smart watches and smart bracelets were complements to smartphones for exercise and navigation equipped with gyro, step-counter, compass, pulse-counter, GPS, barometer, altimeter, accelerometer, light sensor, WiFi, etc. and connected to smartphone Apps such as weather apps, maps etc. Recently they are now more and more becoming substitutes to smartphones with same apps and social media functions as smartphones. *Google*s released in 2013 **smart glasses** (*Google Glass Explorer*), which now are transformed into wearable computers with high resolution displays, HD camera, optical touchpad, GPS, WiFi, Bluetooth, and own CPU computer (*Recon-Jet smart Glasses*[20]). Smart glasses add information alongside or to what the wearer sees. This is achieved through either an optical head-mounted display or glasses with HUD (head-up Display) presenting data without the user look away from their usual viewpoint, or trough augmented reality overlay with the capability of reflecting projected digital images as well as allowing the user to see through the projection, or even see better with it. Smart glasses can like ordinary computers collect data from the Internet or smart sensors, be controlled by voice commands or gesture recognition and even eye tracking, and some also feature lifelogging (bloggers who capture their entire life) and activity tracking. Next development step are **Bionic contact lenses,** that have the form of a conventional contact lens with added bionics technology, in the form of augmented reality with functional electronic circuits and infrared lights to create a virtual display[21]. There are also video-recording contact lenses under development by *Sony*, who has taken a patent on the technology[22], and in the future, most functions of smart glasses and wearables will become integrated in **smart lenses** powered by smart phones or smart watches.

These wearable devices are predicted to have a huge impact on future tourism trough the capacity of **Augmented Reality** (AR). In AR digital information is overlaid over a real-life experience. In a similar way, devices for **Virtual reality** (VR) became commercially available in 2016 with several affordable headsets such as *HTV Vive*, *Playstation VR* and *Microsoft Holonens*. Lately also the smartphone VR headset from

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[18] http://www.myrolltop.com
[19] https://liliputing.com/2013/02/polytron-is-working-on-a-transparent-smartphone.html
[20] http://www.reconinstruments.com/products/jet/
[21] http://spectrum.ieee.org/biomedical/bionics/augmented-reality-in-a-contact-lens/0
[22] https://www.cnet.com/news/sony-patents-contact-lens-that-records-what-you-see/

Samsung *Galaxy 7 Gear VR* was released, and many brands will follow, such as *Oculus Rift VR*.[23] Virtual reality technology simulate reality or creates virtual worlds with the help of headsets, that transports the viewer to new places or times. Soon *6DoF VR* headsets, smartphone VR (*Daydream, Gear*), *Cardboard, Tango*, 360 cameras and VR videos, and apps like *YouVisit*, will revolutionize **virtual tourism** as an alternative to In-Real Life tourism. These VR headsets will take you surfing in Hawaii, look inside a first-class cabin, let you fly over cities in 3D, create virtual concierges or even explore Las Vegas or Grand Canyon on a comfy couch. In heritage tourism AR and VR have great potential – just observe the heritage, a monument, architecture or a sculpture and immediately receive useful additional information to interpret the artefacts better[24]. AR improves your experiences on spot while VR let you sit on the couch and explore the world. Tourism marketing is just starting to discover this opportunity. One future application that will flourish is to linking history and heritage, to capture historical events on a cultural heritage. For Example, at the heritage site Old Uppsala (Uppsala högar), AR brings you back to the Vendel period (550-790 AD) while moving around the area (*figure 3*)[25], while VR is used in *Church Village of Gammelstad* (Old Luleå World Heritage site), to transport the visitor to experience year 1500 AD of the area[26]. In Uppsala, you use a tablet or smartphone application to experience the history of the site, while for the Old Luleå experience you need *HTC Vive VR-googles* and can join the experience at home. Other Virtual reality examples are *Expedia*s 360-showcase of the *Flame Railway* in Norway[27] and *Malmöhus Castle[28]*.

Figure 3. Argumented Reality application at Old Uppsala showing how the landscape and village looked like in the Vendel period 550-790 AD. (Picture by Hans Gelter)

These examples illustrate that AR and VR have the potential to become natural applications within **eTourism** to enhance the tourist experience of most tourist sites. Still both AR and VR are expensive applications to produce, but as the AR wearables and VR headsets get more affordable and widespread,

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[23] https://www.oculus.com/
[24] Guerra et al. 2015
[25] http://www.raa.se/upplev-kulturarvet/gamla-uppsala-museum/ny-app-visar-gamla-uppsalas-storhetstid/
[26] http://www.anno1500.se
[27] http://www.expedia.no/vc/c/virtuelle-flam/en
[28] https://malmohus-slott.expedia.se/index.php?locale=en

these technology's business opportunities are starting to provide a more immediate return on investment. *Qantas* was one of the first airline carriers to introduce VR when it introduced its *Samsung Gear VR* headsets in March 2016, and *Shangri-La Hotels* was the first international hospitality brand to roll out *Samsung Gear VR* headsets for each of its 17 global sales offices and 94 individual hotel sales teams. As an interesting counter-market campaign to the fact that VR-glasses were assigned as Christmas-gift-of-the-year in 2016 in Sweden, the Swedish Nature Conservation Association (SNF) launched **Natura Reality**[29] (NR), as a climate-smart 360-experience in **Real Life**, by using a pair of ski-googles in the forest.

The latest *Oculus Rift VR* combines motion sensors with smartphone technology, and performs the design of the images on the retina, representing the predecessor of the coming virtual reality devices. With such devices, the tourist in the future will be able to travel the world in their home, be able to test 3D holiday scenarios, and practically transposing themselves to every resort hotel. In the near future, VR-technology will increase their complexity by adding motion and proximity sensors (allowing multiple users to go the same maze without bumping one another), haptic technologies for sense of touch (allows users to feel the surfaces and textures of objects that they see on the screen), and transforms sounds in textures and surfaces that can be felt - for example, to feel the warmth of the sun on your hand. These haptic technologies will allow the users to walk around the hotel when booking a vacation, to see how the food is cooked, feel the sand under the feet etc. These technologies will provide a powerful tool for building confidence between the tourist and the brand, and companies and destinations should start thinking how these new emerging technologies can be utilized in their marketing.

Other new technological progress with bearings on tourism are for example **3D printers,** which are a kind of industrial robot, controlled by a computer, which instead of printing characters on a sheet, carves and shapes with laser in a substance, often a kind of polymer, to create a finished tangible product. The user shapes the desired object in a computer software and then in minutes or hours, the object will emerge from the printer. Marketing people immediately have used this opportunity to give visitors the opportunity to create personalized souvenirs. **Action cameras** have become very popular by both travellers for documenting their experiences, and by providers for marketing and for customer's relations by filming their customers in action. On the market, there are a variety of brands, but the leading brand is GoPro with its *GoPro Hero4* and *Hero5* that takes both high relation film and picture, time laps etc. However, soon smart glasses with built in cameras or **EyeTap technology**[30], will substitute action cameras. An *EyeTap* is a device that is worn in front of the eye that acts as a camera to record the scene available to the eye as well as a display to superimpose computer-generated imagery on the original scene available to the eye. This structure allows the user's eye to operate both as a monitor and a camera, as the *EyeTap* intakes the world around it and at the same time augments the image the user sees, allowing it to overlay computer-generated data on top of the normal world the user would perceive, thus function as both an AR-device and a camera.

Another technology that recently have become available are **360-cameras,** a camera with two 180-degrees lenses, that merges the images to a 360 image. Earlier you had to take many pictures with your camera or smartphone, and use software to merge the pictures into 180 or 360 pictures. As 360-cameras take the surround-picture or even a 360-video in an instant, and the pictures with a few clicks can be downloaded to *Facebook* or YouTube, this technology will be common in promoting facilities such as

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[29] http://www.naturskyddsforeningen.se/nr
[30] http://www.eyetap.org/research/eyetap.html

hotels, hotel rooms, cabins, restaurants and other environments. The 360-picture lets the viewer by himself turn around 360 degrees in the picture. These cameras will also be useful in creating VR-representations of tourism facilities. Popular brands are *Richo ThetaS* and *Samsung Gear 360* among an increasing number of brands. The technology has not yet been widely adapted yet by travellers and tourism businesses, but the technology is provided to travellers by *Google Street View* in *Google Earth*, and is produced by professional 360-technology (with several high-resolution cameras).

At visitor's centres and amusement parks the new **4D movie technology**[31] is becoming increasingly popular. Such 4D cinemas incorporate physical motion and the seat you are sitting on may vibrate or move using seat effect simulation. Sometimes more sophisticated cinemas are marked as 5D, 6D, 7D etc. cinemas, to emphasize the variety or uniqueness of their theatre effects. They may include other sensory stimuli and effects such as strobe lights, smoke, lightning, air bubbles, air jets for wind, water sprays for rain and water spray, smell and leg and back ticklers. Such cinemas are expensive to install and are often custom-build theatres at special venues. A simpler version occurs in *Ajtte Sami Museum* in Jokkmokk, which has a 180-degree 2D display synchronized with a moving flor to simulate a flight over the Sapmi mountains, while the *Visitor Centre at Terni*, Italy, has a full 4D with water spray, wind and seat motion to introduce the visitor in the adventures of the national park.

One final hardware evolution to mention that will have profound impact on travel and tourism is **robotization.** Most people regard robots belonging to Science Fiction and automatization belonging to utilization of national resources such as in mining, or taking over labour in assembly lines in the manufacturing industry. Lately robotization in the form of self-driven cars has become a hype, and self-driving tractors such as the *Cases IH Concept*[32] and self-driving trucks[33] are already a reality, soon strongly influencing agriculture and the transport sector. Self-driving aviation[34] is under development while self-driving taxis hit the streets of Singapore in August 2016 as *nuTonomy* made a public test using modified *Mitsubishi iMiev* and *Renault Zoe* vehicles[35]. The future in automatization within transport sector and travel is just taking its first trial steps but will in many ways have bearing on future jobs in transport- and travel sector. Another tourism sector that will be strongly influenced by intelligent robots and androids such as *EveR*[36] is the tourism service sector. *Hitachi* has developed the *EMIEW*3 robot that are under test at Tokyo's Haneda Airport to perform a range of functions that help the travellers around the airport and assist in passenger information[37]. Beside answering questions both in the Japanese and English language, they also move around acting as a guide to passengers. Besides these "classic" appearing robots, we start to see robots take up jobs as receptionists, interpreters, hotel staff, economists and salesmen. They look ever more human-like in appearance, intelligence and behaviour, and half of all service jobs are predicted to succumb to automatization within two decades[38]. This may seem dystrophic, but already today a large share of the modern service economy is run almost entirely by computers. Automatic flight check-in, *Google* searches or ticket recommendations are examples of automated services, in a non-robotic shape. New technologies automate physical tasks (robotics), intellectual tasks (cognitive computing), and

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[31] http://entertainment.time.com/2012/07/10/smell-your-movie-are-4d-films-coming-to-theater-near-you/
[32] http://www.digitaltrends.com/cool-tech/self-driving-tractors/
[33] https://www.trucks.com/2017/02/13/self-driving-trucks-us-europe/
[34] https://www.washingtonpost.com/news/innovations/wp/2015/10/06/how-artificial-intelligence-could-lead-to-self-healing-airplanes/?utm_term=.114665062bf4
[35] http://fortune.com/2016/08/25/self-driving-taxi-singapore/
[36] https://en.wikipedia.org/wiki/EveR
[37] tNooz 2016: Robots deployed at Japanese airport for passenger services
[38] Kairos Future 2015: Automation – the Holy Grail of the 21st Century?

customer service tasks. The current wave of automation is fundamentally based upon the rapid development in computing. Long known as **Moore's Law**, computing power increases exponentially, making computers twice as fast every or every other year. This means they may become up to 32 times more powerful in five years. The first roboticised hotels are already open in Japan (*Henn-na Hotel*[39]), where the receptionists have perfect service faces[40]. Multiply by 32 to see what they may be capable of in 2020. We already see automating hotel services with self-service check-in and reservations such as *YOTEL*[41], robot helpers, and automatized **property management system** (PMS) that provide hotels with the tools to quickly process core functions include reservation and room management, customer information, setting room rates according to revenue analysis, accounts receivable and compiling reports[42]. The foremost **cognitive computer** in the world today is *Ipsoft's Amelia*[43], marked as "*Your first Digital Employee*", that after two months of learning from her human colleagues, can handle over 60% of support tickets on her own. What about after six months or years of training? It will not be long before most support staff are replaced by Amelia's successors!

Moore's Law with its prediction of exponential grow of computing capacity can only be applied on present silicon based computer chips technology, and the law must be adjusted when **quantum computers**[44] will enter the market and we go from computer technology 2.0 to 3.0. This ever-increasing speed of technological progress makes it impossible to predict what the future will bring in five to ten years, and when trying to predict beyond 2030 we enter Science Fiction. What is clear is that know-how of this technological progress and its possibilities, but also its threats, must be increased within the tourism industry. Kairos Future concluded that a strategy to meet this development is missing in most businesses due to a lack of knowledge[26] about the technological evolution.

Software trends

The **software** or *application programs* develop in symbiosis the computer capacity and hardware evolution, and operation systems such as *Windows* or *Mac OS* have developed tremendously from their first appearance. Soon AI - **Artificial Intelligence**[45], will be integrated parts of any software applications. Beside the increased usability and capacity of traditional applications such as *Office* and other everyday applications, the evolution of the Internet from Web 1.0 to present web 3.0 and future web 4.0 show an amazing technological development. The **Internet**, or the *World Wide Web*, is the global system of interconnected computer networks that use the *Internet protocol suite* (TCP/IP) to link devices worldwide. It has its origin in the precursor network, the *ARPANET*, initially served as a backbone for interconnection of regional academic and military networks in the 1980s. Different network, tracing back in early 70s and late 60s with different communications protocols were in 1982 standardized in the *Internet Protocol Suite* (TCP/IP) by *ARPANET* and the *Computer Science Network* (CSNET). The *Internet* rapidly expanded in Europe and Asia in the late 1980s and early 1990s, and the first web-browser appeared in 1990 together with the *HyperText Transfer Protocol* (HTTP) and *HyperText Markup Language* (HTML). by 1995 the *Internet* was fully commercialized when the last restrictions on use of the *Internet* to carry commercial traffic was relieved, and since then the *Internet* has tremendously impacted culture and commerce. In 1994 *Netscape* released its first web browser, and was soon followed by several browser software such as

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[39] http://www.h-n-h.jp/en/concept/
[40] http://www.ibtimes.co.uk/hotel-staffed-by-humanoid-robots-set-open-japan-this-summer-1487151
[41] http://londonhotelsinsight.com/2011/01/17/automatic-hotel-check-in-the-way-of-the-future/
[42] http://www.hotelmanagement-network.com/features/feature103426/
[43] http://www.ipsoft.com/amelia/; http://www.ipsoft.com/2016/10/06/ipsofts-cognitive-agent-amelia-takes-on-pioneering-role-in-banking-with-seb/
[44] http://www.nature.com/news/quantum-computers-ready-to-leap-out-of-the-lab-in-2017-1.21239
[45] http://www.aaai.org/Library/library.php

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Yahoo! Search (1995), *Microsoft's Internet Explorer* (1995), *Opera* (1995), *Mozilla Firefox* (2002), *Apple's Safari* (2003), and *Google Chrome* (2008), and lately *Microsoft Edge* (2015). In 2016 about 47% of the world population of 7,3 billion were using the *Internet*, with 81% users in the developed world. In 2017 there are 269 billion emails posted every day on the *Internet*[46], and there is one website per every 3 *Internet* users worldwide. Common methods of *Internet* access by users include dial-up with a computer **modem** via telephone circuits, broadband over coaxial cable, fibre optics or copper wires, WiFi, satellite and cellular telephone technology (3G, 4G). **WiFi** provides wireless access to the *Internet* via local computer networks. **Hotspots** providing such access include WiFi cafes, hotels, airports, shopping-malls, where users need to bring their own wireless devices such as a laptop or mobile phones. These services may be free to all, free to customers only, or fee-based.

In 2015 the average **internet use** in the global population was 45% with 2,5 billion of the people aged over 15 being connected to the *Internet* (*table 2*), with North America (78%) having the highest rate of people with *internet* access, followed by Europe (75%).

Table 2. Internet access per region in percent and online population over the ages of 15 in 2015. Data from Ecommerce Europe 2016.

Region	Internet access	Online Population over 15
World Total	45%	2,520.4 million
North America	78%	297.9 million
Europe	75%	518.8 million
Latin America	56%	220.8 million
Asian-Pacific	39%	1,223.3 million
MENA	38%	147.9 million
Others	21%	114.8 million

On the level of countries, the Nordic countries are world leading in *Internet* use (*table 3*) with Norway (97%) leading the use of *Internet* among the population over the age of 15, followed by Finland with 93% and Sweden with 92%. These figures will soon rise close to 100% when the older non-digital generations give away for the new digital generations born in the digital age.

Table 3, Internet access per country in percent and online population over the ages of 15 in 2015. Data from Ecommerce Europe 2016.

Country	Internet access	Online Population over 15
Norway	97%	4,2 million
Finland	93%	4,6 million
Sweden	92%	7,4 million
Finland	93%	4,6 million
United Kingdom	93%	49.8 million
Japan	91%	103.3 million
Germany	89%	62.9 million
USA	88%	229.6 million
Canada	88%	26.6 million

Wireless is a term used widely to describe telecommunications in which electromagnetic waves (as opposed to wire) carry a signal to telephones; home-remote control and monitor systems. The development of mobile telephony over the *Global System for Mobile Communication* (*GSM*) and the

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[46] The Radicati Group 2017: Email Statistics Report, 2017-2021

Wireless Application Protocol (WAP) allowed the communication of voice and data over mobile phones. *General Packet Radio Service* (GPRS) and *Universal Mobile Telecommunications System* (*UMTS*) as well as *I-Mode* in Japan gradually introduced the third generation **(3G) mobile phones** and services with transmission capacity of 2 megabits per second (MBps), empowering the communication of multimedia information on interactive mobile devices. From the first generation (1G) mobile communication system, the analogue *NMT* (*Nordic Mobile Telephony*) introduced in 1981, a new generation has appeared every 10 years. The second digital generation (2G), *GMS* introduced in 1991 and 3G in 2002 was replaced in 2008 and in 2012 fully standardized by the fourth generation (4G) enabling mobile web access, IP telephony, gaming services, high-definition mobile TV, video conferencing and 3D television, with a capacity up to 100 MBps, and potentially 1 gigabits per second. The next generation G5, expected to be in operation in 2020, and now under development, is designed to support up to 35 gigabits per second and the ability to connect to massive numbers of wireless sensors (*Internet of Things*) simultaneously. In 2016 *Huawei* launched its **CloudRAN** architecture[47], a cloud based solution that will support diverse technologies such as 3G, 4G, and 5G and let them coexist with radio and WiFi to meet the connectivity requirements of the future of multiple connectivity between people and things.

The proliferation of different mobile devices, such as **Personal Digital Assistants** (PDAs) and **3G/4G mobile smartphones** with *Global Position Systems* (GPSs) enable travellers to retrieve travel-related information without any time and geographic constraints. **Mobile routers** – are getting popular among transport providers, for WiFi-access in busses, taxi cars and boats, airplanes, etc. enabling the traveller to be connected to the *Internet* during transportation.

In addition to mobile networks, **Wireless Local Area Networks** (WLANs) allow users to connect devices to the *Internet* through a *wireless-radio connection* (**WiFi**), while **Bluetooth** connects PDAs, cell phones, computer mice, and other peripherals over short distances. WLANs have limited area coverage and have a range of about 100m away from stationary hot-spots. *WiFi* is now extensively used in hotels, airports, and cafes allowing people to connect to the *Internet*. The next technological evolution emerging, first designed to constitute the 4G, is **WiMAX[48]**, released in 2008 and defined as *Worldwide Interoperability for Microwave Access*. *WiMAX* promotes conformance and interoperability of the *IEEE 802.16* standard and provides wireless data with 30- to 40 megabits per second, while in 2011 providing up to 1 Gigabits per second over a long distance up to 50 km. The technique is therefore called "*Long-range WiFi*", being able to provide *Internet* broadband wireless access to whole cities, entire destinations and remote areas. It will support users to have *Internet* access while at the destination without having to pay expensive data-roaming charges. *WiMAX* is also predicted to have its largest impact in developed countries or rural, remote locations characterized by low population density in which an adequate wired infrastructure will not develop.

Internet trends

The first use of the web in the 1990s, **web 1.0,** was about information search mainly in databases, webpages and on discussion Forums, and simple communication through e-mail. During the web 1.0-era people were limited to the passive viewing of static content of websites, text was often unlinked, and interaction with webpages was limited. During this phase the focus was primarily on building the web, making it accessible, and commercializing it. Key areas of interest centred on protocols such as *HTTP*, open standard mark-up languages such as *HTML* and *XML*, *Internet* access through the first web browsers,

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[47] http://www.huawei.com/en/news/2016/4/CloudRAN
[48] http://wimaxforum.org/Page/About

web development platforms and tools, web-centric software languages such as Java and *Javascript*, the creation of websites, the commercialization of the web and web business models, and the growth of key portals on the web. Advertising was primary trough banners, and tourist companies basically copied their brochures digitally on their webpages as read-only information. The *Internet* is presently undergoing a dramatic transformation (*figure 4*).

By the millennium the **web 2.0** emerged as an interactive and social web facilitating collaboration between people, with websites that emphasize user-generated content and usability (ease of use, even by non-experts). The web could start to work with other products, systems and devices besides the traditional computer, such as tablets, smartphones and wearables. It became collaborative allowing social layers and collaborative projects such as *Wikipedia*, social networking sites and virtual communities with user-generated content like *Facebook*, blogs and micro-blogs like *Twitter,* podcasts, video sharing such as on *YouTube*, dedicated web applications, **Apps** for devices and much more. *Mobile application software* or **mobile apps** are application software designed to run on mobile devices such as smartphones and tablet computers. They may be pre-installed on devices or downloaded for free or bought from distribution platforms called app stores such as the *Apple App Store*, *Google Play* (2008), *Windows Phone Store*, and *BlackBerry App World*.
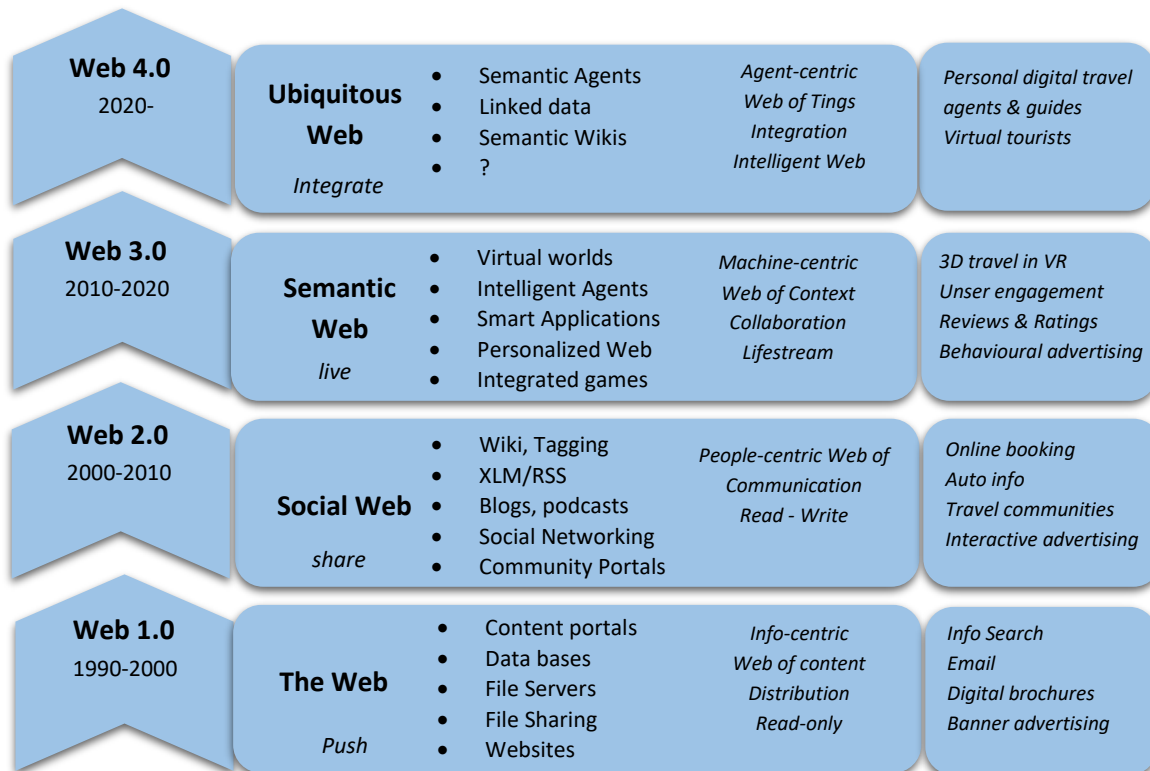
Web 4.0 2020-	Ubiquitous Web *Integrate*	• Semantic Agents • Linked data • Semantic Wikis • ?	*Agent-centric Web of Tings Integration Intelligent Web*	*Personal digital travel agents & guides Virtual tourists*
Web 3.0 2010-2020	Semantic Web *live*	• Virtual worlds • Intelligent Agents • Smart Applications • Personalized Web • Integrated games	*Machine-centric Web of Context Collaboration Lifestream*	*3D travel in VR Unser engagement Reviews & Ratings Behavioural advertising*
Web 2.0 2000-2010	Social Web *share*	• Wiki, Tagging • XLM/RSS • Blogs, podcasts • Social Networking • Community Portals	*People-centric Web of Communication Read - Write*	*Online booking Auto info Travel communities Interactive advertising*
Web 1.0 1990-2000	The Web *Push*	• Content portals • Data bases • File Servers • File Sharing • Websites	*Info-centric Web of content Distribution Read-only*	*Info Search Email Digital brochures Banner advertising*

Figure 4. The evolution of the Internet (compiled from diverse sources)

Apps started to appear in 2008 and became very popular by 2010, where some suggested that the new **smartphones** should be nicknamed "app phones" to distinguish them from earlier less-sophisticated smartphones. **Mobile apps** were originally offered for general productivity and information retrieval, including email, calendar, contacts, stock market and weather information. Public demand and the availability of developer tools drove, however, a rapid expansion into other categories ranging from games, business, governmental customer relations, healthcare, leisure, banking to destination and visitor guides. Researchers found that usage of mobile apps strongly correlates with user context and depends

on user's location and time of the day[49]. In September 2016 *Googly Play* had 2,4 million different apps available, surpassing 50 billion downloads in July 2013, while *Apple Store* on its launch had 500 apps and today has two million apps and have up to 2017 130 billion downloads. Developing Apps for destinations, attractions and tourism enterprises has become popular recently, but the success with apps has been moderate and sporadic for the vast majority of travel enterprises. With the huge number of different available apps, and with 100 million apps downloaded for social networks such as *Uber* and 900 million for *FaceBook messenger* (which is the most popular app followed by *YouTube*, *Instagram* and *Skype*), building your own app for establishing a communication platform with customers instead of using established platforms, need some serious consideration, as the development cost still are substantial. Today, with two million apps in *Apple Store,* it is very difficult to generate an app-success, and about 83 % of all apps on *Apple Store* will never or only rarely be downloaded. Creating an incredibly useful app for loyal and high-level customers, and turn the app into a must-have tool to service, upsell and engage customers pre, during and post trip, could, however, still be a rewarding strategy if successful.

In web 2.0, texts became **multidimensional metatexts** by allowing "click" on words to access additional content on the website or link to external websites. Also, content, such as pictures, videos or comments, could be "**tagged**" by keywords or terms assigned to a piece of information, allowing it to be found by browsing or searching, and has been incorporated into many database systems, desktop applications and operating systems. Tags are generally chosen informally and personally by the item's creator or by its viewer, although they may also be chosen from a controlled vocabulary. Webpages today must be **responsive**, which means they can adapt to different platforms such as tablets, smartphones and wearables, and the latest trend is to move from ordinary webpages (*http://*) to **encrypted webpages** (*htpps://*), which means that the code is send encrypted between the website and the web-reader. According to *Google*, only half of the worlds webpages have encrypted pages in 2017. Already in 2015 *Google* warned that encrypted pages will be ranked higher on web searches, and *Google Chrome* now warns if logins are made for credit payment on unsecure un-encrypted webpages. The general recommendation is that all webpages should be encrypted. This is done by a **SSL-certificate** (*Secure Sockets Layer*), which is an electronic document that conforms your business identity and allows the web-reader to establish a secure encrypted connection to the visitor's web-reader. In addition to being responsible and encrypted, webpages today must be **search optimized** to be higher ranked on web searches.

Google has become one of the major actors on the *Internet* offering a variety of *Internet*-related services to both providers and users on the *Internet*[50]. *Google* was founded in 1996 as a search engine *Google Search*, and soon offered services designed for work and productivity such as *Google Docs, Sheets, Slides*, and time management (*Google Calendar*), email (*Gmail*) cloud storage *(Google Drive)*, social networking (*Google+*), instant messaging and video chat (*Google Allo/Duo/Hangouts*), language translation (*Google Translate*), mapping and turn-by-turn navigation (*Google Maps, Google Earth*), video sharing (*YouTube*), notetaking (*Google Keep*), and photo organizing and editing (*Google Photos*). The company leads the development of the *Android* mobile operating system, the *Google Chrome* web browser, and a light weight operating system (*Chrome OS)*. Lately *Google* also have developed hardware such as *Nexus* device, *Google Pixel* smartphone, *Daydream View* virtual reality headset and *Google Glasses* AR device. On their agenda is to develop hardware for *Google Home* voice assistant Smart homes, and *Google Wifi* to simplify and extend coverage of home WiFi. In 2011 *Google Wallet* was released as a mobile peer-to-peer

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[49] Böhmer et al. 2011

[50] https://www.google.com/intl/sv/about/products/

application for wireless payments at no costs. *Google Wallet*[51] can be used through the *Google Wallet* app and *Gmail*.

Google wants to become an important player in the tourism industry. In 2005 *Google* launched **Google Earth**[52] that has now become a virtual globe and geographical information system. It maps the earth by the superimposition of images obtained from satellite imagery, aerial photography and *geographic information system* (GIS) onto a **3D globe,** available as a free version and a *Google Earth Pro* for commercial use. *Google Earth* displays satellite images of varying resolution of the Earth's surface with an imagery resolution range from 15 meters to 15 centimetres. Most areas in *Google Earth* are only shown in 2D aerial imagery, but for an increasing number of parts of the surface, 3D images of terrain and buildings are available. *Google* has now several ads-on such as community-layer *Wikipedia-World*, a geo-located tagging and photo-sharing layer *Panoramio* that, however was closed in November 2016 to be substituted by tagging photos and *MapSight*[53] launched in November 2016. *Google Maps* also provide a *Flight Simulator*, a sky mode *Google Sky,* introduced 2007 to view stars and celestial bodies. In 2008 *Google* introduced **Google Street View**[54] into *Google Earth* that provides 360° panoramic street-level views and allows users to view parts of selected cities and their surrounding metropolitan areas at ground level. *Google Street View* displays panoramas of stitched images. Most photography is done by car, but some is done by trekker, tricycle, walking, boat, snowmobile, and underwater apparatus. In 2010 became indoor views available and *Google* invites users to contribute panoramas of their own using gadgets on *Android* smartphones. Businesses such as shops, cafés, hotels and other premises can pay a photographer to take panoramic images of the interior of their premises which are then included in *Street View*. In 2015 *Google Cardboard* was released which is a low-cost virtual reality platform with a head mount cardboard viewer for smartphones that can be built by the user, together with an application for the smartphone. Through March 2017 over 10 million *Cardboard* viewers have been shipped and over 160 million *Cardboard* app download made. In 2012 *Google Street view* covered[55] 3000 cities in 39 countries and coverages increases by the day. In 2005 *Google earth* introduced *Google Ocean* allows users to zoom below the surface of the ocean and view the 3D world beneath the waves. *Google Earth* already opens for the **virtual tourist** to travel the world and space in 3D without leaving the sofa, and what the future will bring into virtual tourism is impossible to predict. Today *Google Earth* is an important travel companion together with the navigation function of *Google Maps*.

In 2005 *Google* releases **Google Analytics**[56] as a free web analytic service that tracks and reports website traffic, from 2011 with real-time analytics. *Google Analytics'* approach is to show high-level, dashboard-type data for the casual user, and more in-depth data further into the report set. *Google Analytics* analysis can identify poorly performing pages with techniques such as funnel visualization, where visitors came from, how long they stayed on the webpage, what search worlds they used to find the webpage and their geographical position. It also provides more advanced features, including custom visitor segmentation, thus has become an important analytic tool for tourism marketing trough webpages. Integrated with **Google AdWords**[57], an online advertising service where advertisers pay to display brief advertising to web users, Analytics now can review online campaigns by tracking landing page quality and

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[51] https://www.google.com/wallet/
[52] https://www.google.com/earth/
[53] https://mapsights.com/
[54] https://www.google.com/streetview/
[55] https://www.google.com/streetview/
[56] https://www.google.com/analytics/
[57] https://adwords.google.com/home/#?modal_active=none

conversions. *Google Analytics e-commerce* reporting can track sales activity and performance. The e-commerce reports show a site's transactions, revenue, and many other commerce-related metrics. *Google Analytics* also include **Google Website Optimizer,** a free website optimization tool that helps online marketers and webmasters increase visitor conversion rates and overall visitor satisfaction by continually testing different combinations of website content. It allows webmasters to test alternative versions of an entire page, called A/B testing — or test multiple combinations of page elements such as headings, images, or body, known as Multivariate testing. **Search optimization** of a website is important to get high *Google* search ratings. Basic design should be easy to read, easy to navigate, easy to find, unchangeable layout on subpages, and fast to download according to *Google*. In addition, there are many technical tricks to improve the search rating. Using specific **Usability analytics** is an often overlooked but powerful way to take customer webpage engagement to the next level**.** For example, research[58] show that **Content visualization** has changed the way consumers behave when viewing online content. Users are more engaged and can better process information when visual content is presented rather than text alone, and colour visualisation in the willingness to read increased by 80 percent and lead to increased customer conversions. Due to today's easy access to a virtually endless number of websites, consumers are conditioned to abandon online transactions if they struggle on a website or a mobile application. More than 67 percent of online shoppers will abandon a site after experiencing bad online issues and the abandonment rate jumps to 97 percent for mobile users. Thus, improved usability of websites become ever more critical as competition to provide an exceptional digital experience increases. Today, brands cannot simply invest in developing an attractive website or application; they must also put analytics in place to create a functional website or application that help their customers to easily navigate through a site and complete their intended goals at the same time provide a great user experience. *Usability analytics* is an advanced analysis tool that is used to show how customers navigate through a website or mobile application and which areas of the site engage them the most. It encompasses visual design and layout, ease of use of a digital site and overall brand experience. A site with good usability will enhance a customer's experience by delivering content effectively, whether that content is an ad, a product description or an order form. The benefits of good usability are more purchase orders or subscriptions, reduced customer service costs, increased attention to ads and more positive interactions with the brand.

With **Google Trends[59]** one can analyse what the world is searching for on *Google* and visualize it on trend graphs and maps. How do people search for your brand? When do searches spike? What about your competitors? The *Google Trends* tool uses real-time search data to help you gauge consumer search behaviours over time. *Google* offers a similar function with their **Consumer Barometer with Google[60]**, a tool that help to understand how people use the *Internet* across the world. It provides data analysis with a *Graph Builder* to create own custom analysis to compare digital trended data over time to see how *Internet* and device usage across the worlds has developed, explore how *Internet* is used by different audience segments (Digital moms, Millennials, Brand Advocates and How-To Video Users), or analyse how people are connected to *Internet* over different screens in different countries. The *Online & Multiscreen World* helps marketers and planners understand when, how and why people use the *Internet*. Table 4 shows recent trend data retrieved from the *Google Consumer Barometer* for the Nordic countries and some important tourism markets for the VAE-region. The data in table 4 shows that People are more connected than ever, with increased access across many devices, especially smartphones, and that the *Internet* is an important resource for many people. While varying, *Internet* usage rates are high across

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[58] http://neomam.com/interactive/13reasons
[59] https://trends.google.com/trends/
[60] https://www.consumerbarometer.com/en/

many countries, and many people who access the *Internet* do so at least daily. Smartphones play an important role in bringing people online. In many cases, smartphones are used at least as often as computers for accessing the *Internet.* People use smartphones for a wide range of daily life activities, such as managing shopping and to-do lists. The *Internet* plays a key role in the consumer journey for many product categories, therefore an integrated marketing strategy is critical for marketers and planners.

Table 4. Trend data retrieved February 2017 from Google Consumer Barometer Curate Insight.

Data for 2016	Norway	Sweden	Finland	UK	Germany	US	China
Percentage of people who access the internet	93	94	90	83	82	81	77
Percentage of people who access the internet daily	86	87	77	73	68	70	65
Percentage of people who use a smartphone	83	85	73	74	68	72	79
Percentage of people who use a computer	90	90	86	73	76	75	65
Percentage of people who use a tablet	51	50	43	53	36	42	17
Percentage of people who use only one screen – a computer, smartphone or tablet	11	10	17	13	18	19	21
Percentage of people who uses three screens – computer, smartphone and tablet	43	44	35	41	29	34	15
Percentage of people who access the internet at least as often via smartphone as computer	68	73	60	65	55	65	79
Average number of connected devices per person	3,5	3,4	3,1	3,4	2,8	3,5	2,1

Another important application for the tourism industry is **Google Alert**[61], which is a content change detection and notification service that sends emails to the user when it finds new results—such as web pages, newspaper articles, blogs, or scientific research—that match the user's search term(s), such as personal name, company name, activity or other content. With *Google Alert* a tourism enterprise can monitor the *Internet* for any activity in connection to the search words and what is said about the company. Of similar importance for tourism businesses is to manage the business information with the help of **Google My Business**,[62] to gain control of what information will show up on *Google Search* and *Google Maps* when searching for the company, as 97% of customers according to *Google*, searches companies on the *Internet*. *Google My Business* provides a company dashboard to control the business information, upload pictures, see when people are talking about the business on *Internet* and respond on them, track ratings over time, learn about customers and how they interact with the business, how the find the business, where they come from and so on. The benefits are that people will find the business easier, get the correct information, can be introduced by virtual 360-tour by *Google Street View* or your own pictures, and the business location is exposed on *Google maps*.

Google took in September 2016 a big step into the travel business with its launch of **Google Trips**[63] application for mobile devices[64]. The free app for both *Android* and *Apple* devices aims to be a

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[61] https://www.google.com/alerts
[62] https://www.google.com/business/
[63] https://get.google.com/trips/

personalized **smart destination guide** and is arguably the most significant launch in the travel space for *Google* since it created the *Flights* and *Hotel Finder* products a few years back. *Google Trip*s pulls reservation details for flights and hotels out of a user's *Gmail* account to build lists of suggested itineraries. Once the user is at their destination, the app then suggests relevant attractions based on the time of day, weather, the user's location, ratings by other *Google* users, and the users past mobile device behaviour and previous search history, all without the need for a web connection. It also recommends places to eat and drink, what a traveller needs to know about a destination and how to get around. *Google* trip thus may undermine countless travel planning applications in the marketplace by its ability to mine and withdraw travel data from the user's mail-inbox and bring in travel-related content that is already in the *Google* algorithm. Another step *Google* took to become a central hub for the travel industry was the launch of **Book on Google** that offer a hotel-booking function, enabling travellers book hotels right *on Google Search*, *Google Maps* and *Google+*. *Google* handles the credit card transactions, and the hotels handle everything after that, including customer service. *Google* initially entered the travel industry as a powerful advertising platform and supplemented this platform by acquiring *ITA Software*, and turning it into **Google Flights**[65], and then building **Google Hotel Ads**[66], a metasearch platform that showcase the hotel on *Google* and *Google Maps* across all devices. The ad is paid by clicks. *Book on Google* is an option that OTA and hotels have at their disposal in their *Google Hotel Ads* campaigns. You can choose to activate it or not. Now with *Sabre'*s North America launch of hotel bookings right in *Google Search*, *Google Maps* and *Google+*, *Google* is taking a more central role as a travel booking site, competing with *TripAdvisor* who has its own product *Instant Booking*. The goal with *Book on Google* is to improve the user experience, especially on mobile devices, where the jump to the *Online Travel Agent* (OTA) or hotel website results in losing clients due to bad adaptation or slow response times. With *Book on Google* they achieve an increase in conversion, therefore getting to a win-win situation for both client and hotel. The big win is for *Google* by gaining access to millions of new data points that it previously didn't have, such as client behaviour during the booking, most popular room types, most popular payment methods, additional requests made by the client during the booking or frequent travellers and their destinations. *Google*, as a natural leader of **big data**, could use this data and increase its already immense knowledge of its users.

Recently *Internet* has transformed into **web 3.0**, however, researchers and others do not fully agree on the definition and content of web 3.0 as is still is under development. The phrase web 3.0 was coined by John Markoff of the New York Times in 2006, and refers to a third generation of Internet-based services that collectively comprise what might be called '**the intelligent web**' —to be more connected, open, and intelligent, with semantic web technologies, distributed databases, natural language searching and processing, data-mining, machine learning, machine reasoning, autonomous agent, recommendation agents, and artificial intelligence technologies — which emphasize machine-facilitated understanding of information in order to provide a more productive and intuitive user experience. Often the "**Semantic web**" is used as a synonym for web 3.0 to describe the movement away from the centralization of services like search, social media and chat applications that are dependent on a single organization to function. The *Semantic web* provides a common framework that allows data to be shared and reused across application, enterprises, and community boundaries. In the *Semantic web* all information is categorized and stored in such a way that a computer can understand it as well as a human. The concept of semantic web can be illustrated by the example where a user enters a search engine "I want a holiday

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[64] tNooz 2016: Google is deadly serious about Trips app, monetisation issue aside
[65] https://www.google.ca/flights/
[66] https://www.google.com/ads/hotels/#?modal_active=none

to ski, with the best advanced slopes, slope designed for children, luxury 5-star hotel with pool and spa where I will stay with my family, including transport ", the result will display all sites where these words are together. Through a semantic web engine, the user will find the tourist package that meets their requirements. Such semantic system understands exactly the meaning of the information from the *Internet* and interprets them. The semantic web has emerged from the need to find specific information quickly in a myriad of information on the *Internet*. The semantic web enables that the data, located anywhere on the web, is accessible and understood by both humans and computers. This is possible by adding some extensions called **metadata** to existing documents that allow data to be automatically processed by machines, about the same way that they are processed by man. This is transforming the web into a database by using technologies like RDF (*Resource Description Framework*), OWL (*Web Ontology Language*), and API (*Application Program Interface*). These semantic systems allow communication with search engines into a language like the human one. Some also call web 3.0 the **3D web** where 3D web browsers let you go into inter-spatial places where you can go into rooms, in to convention centres, in to showrooms or other tourist attractions.

Other names for web 3 are**; Artificially Intelligent web 3.0.** which advanced that artificial intelligence will be the next big breakthrough on the web. **World Wide Virtual web 3.0**, indicated the increasing presence of virtual world on the web, especially in the travel industry. **Ever-Present web 3.0** indicate the increasing popularity of mobile *Internet* devices and the merger of entertainment systems and the web. The merging of computers and mobile devices as a source for music, movies, and more, puts the *Internet* at the centre of both our work and our play. This will make the *Internet* always present in our lives - at work, at home, on the road, out to dinner, the *Internet* will be with us wherever we go.

Smart technology trends

What **web 4** will bring is still wild speculations. But it will fully integrate intelligent systems with in our everyday life. **Smart** – or **Intelligent systems** are next-generation information systems that promise to supply tourism consumers and service providers with more relevant information, greater decision-support, greater mobility, and, ultimately, more enjoyable tourism experiences. They currently encompass a wide range of technologies relevant for tourism contexts such as recommender systems, context-aware systems, autonomous agents searching and mining web resources, and ambient intelligence. There are two components of intelligence that are usually emphasized when distinguishing intelligent systems from those which are not[67]: (1) the ability to sense the environment; and, (2) the ability to learn from actions to maximize success in achieving particular objectives. Thus, intelligent systems are in communication with their environment and continuously evaluate the responses they receive from this environment with to their actions to determine the favourability of these actions. They perceive, reason, learn and act. Intelligent systems can provide great value if they help in collecting and pre-processing information according to personal and efficiency gains and value creation[13].

Early approaches to intelligent systems in tourism mostly focused on expert systems providing support for tourism industry professionals. Nowadays, intelligent systems in tourism are typically envisioned as fully **autonomous travel counsellors** or concierges that have the ability to determine user preferences and anticipate user needs while having a large and at the same time specialized knowledge repository at their fingertips and continuously evaluate their suggestions based on feedback received from their user. Intelligent systems in tourism are also developed to provide functions traditionally offered by tour

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[67] Gretzel 2011

operators and travel guides, such as travel planning/scheduling tasks, navigation and interpretation. The **context-aware mobile system**[68] *YourTour*[69] is an application that uses sophisticated algorithms to dynamically assemble tour packages. The mobile application for *Urban Spoon*[70] is a context-aware system that also integrates consumer reviews into its restaurant recommendations and makes the interaction process fun by allowing the user to shake the phone instead of pressing a button to initiate the recommendation process. There is a high potential of the intelligent system in in tourism product development contexts, in tourism demand forecasting, and in areas of process automation.

There is an ongoing discussion for the possibility of the **web 4.0** in the form of "**the ultra-intelligent electronic agent**", consisting of an artificial intelligence device. In web 3.0 the tourist could compare prices, and facilitate the work of planning and booking, while in web 4.0 the tourist will have a personalized travel friend in the form of a **e-Agent**. This will be a "digital friend of travel", permanently accompany the tourist, and permanently connected to the Internet. It will handle all matters related to travel. This e-friend will customize all the tourist travel experiences, will plan the route and will act as a guide, informing the tourist only about the items that it knows he is interested in about a certain destination. Tourism brands are suggested to have the opportunity to rent consumers personalized e-agents as an integrated part of the tourism package. In this way, customers are permanently interconnected with the travel agencies, and have the opportunity to make changes in real time and find solutions to any problem. The e-agent will gather detailed and personalized experiences from the data published by users on various social networks, will perform a scan of online searches and using predictive algorithms will offer personalized suggestions adapted to the user needs, intimate, personal and surprising itineraries. Using facial recognition, this e-Agent will recognize you when you get in front of it when all your devices are having a little camera. Your agent can take different forms, such as personalized avatars with given personalities, and can have the face, the voice and personality of the favourite actor or actress and will appear as a 3D hologram or in a virtual environment, at verbal command. The e-Agent is suggested to be designed as a screen-less smartphone or wearable, being integrated into a jewellery, a watch, or goggles. You will be able to talk to it like you talk to a friend to obtain information or communicate with the web 4.0.

The new technologies embodied in various small devices worn by the users will be able to carry out translations in real time. The new generation of smart wearables will have the capacity to present 3D holographic images. Virtual becomes reality, a simple verbal command will trigger the entry into action of the "digital friend." The artificial intelligence system will connect online to Websites like "try before you buy" offered by the biggest tourism agencies and will present to the user a choice of examples of virtual reality, which will allow the tourist to see the sights, to hear and even to feel the landscape. The anticipation and excitement system will be started from a 3D, which will offer a multi-sensorial ride. That does not mean that the user will abandon the actual holiday, but rather it will awaken a stronger desire for him to live the real experience.

Three-dimensional technologies will find widespread applications, and everyone will have a 3-D printer at home. The company *Musion* has developed a **3-D holographic projection system**. *Cisco Systems* used the system to "beam" a couple of its executives onstage to deliver a speech in 2009[71], opening for the

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[68] Martin, Alzua & Lamsfus 2011

[69] http://www.yourtour.com

[70] http://www.urbanspoon.com

[71] https://newsroom.cisco.com/feature-content?articleId=5910450

technology of **holographic telepresence**[72] where a holographic camera at home or at your office beams you to a conference room or a virtual conference. This technology will revolutionize the business meeting industry making IRL travel superfluous. Three-dimensional holographic video conferencing will first be used at large expositions and conferences, and would later when prices decline, trickle down to enterprises. Over time, it might even be used at home where you oversee friend could virtually walk into your living room and talk to you.

The scientific progress that appear as Science Fiction does not end here, as the line between human and device will blur and even disappear in a near future. Implant chip such as by *BrainGate* [73] for restoring the life of disabled human's trough spinal cord injuries, and *Cyberkinetics*, which hopes to provide severely disabled people with the ability to control a computer with their thoughts are already in use in medicine. **Brain-Computer Interfaces** (BCI)[74] or **brain-machine interfaces** (BMI) aim to wire up the brain with external devices to improve vision, movement etc., with pure medical aims today, but will open new experiences in the future for direct connecting to VR and AR and digital friends of the web 4.0. With a similar goal, *Tesla* and *SpaceX* CEO Elon Musk has founded a new company called *Neuralink Corp*[75], with the aim of pursuing the "**neural lace**" **technology**, which consists of implanting tiny brain electrodes that could one day upload and download our thoughts. This technology has been talked about for some time and lately been under development progress with recent breakthrough in research. A "*neural lace*" consists of a mesh that grows with your brain, it's essentially a wireless brain-computer interface. Now a new kind of flexible circuit has made this science fiction type of future a reality. Implanted via injection, a grid of wires only a few millimetres across can be incorporated with living neurons and listen in to their activity, offering a way for electronics to interface with the brain[76]. This would be a digital layer located above the cortex and built right into the brain. This would intertwine computers with the human brain in a brain-computer interface that truly would meld human and machine, allowing AI layers to interact with the brain making smartphones and other wearables unnecessary in the future. Also, *Facebook* and the *Defense Advanced Research Projects Agency* are pursuing similar research and development.

According to *Hitachi Data Systems'* chief operating officer, Jack Domme, **RFID** (*radio frequency identification*)[77] tags, now common in manufacturing and other industries, will become so widespread that they create an invisible, living network capable of powering unheard-of levels of interaction between man and machine. "RFID will be in every piece of paper that we have and every device we have out there," he said. "This whole room will become interactive. Your paper, your devices will start talking to one another." RFID will bring together **Internet of Things**[78] in a wireless environment with the Intelligent web 4.0. environment, with potential to move into the travel and tourism industry to unfold today unthinkable innovations for both suppliers and travellers.

Figure 5 is an attempt by *TrendOne* to summarize the present development and the future of the web in the areas of entertainment, communication and business, where we at present are moving from the **Web of Context** (web 3.0) into the **Web of Things** (Web 4.0). The future such as the **Web of Thoughts,** remains

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[72] http://www.hologramusa.com/products-services/telepresence/

[73] http://www.braingate.com/

[74] http://www.braingate.org/about-braingate/

[75] https://www.wsj.com/articles/elon-musk-launches-neuralink-to-connect-brains-with-computers-1490642652

[76] http://www.nature.com/nnano/journal/v10/n7/full/nnano.2015.115.html

[77] http://www.rfidjournal.com/

[78] http://internetofthingsagenda.techtarget.com/definition/RFID-radio-frequency-identification

highly speculative and very like Science Fiction, but constitute informed scenarios of the future based on today's research and technological development.
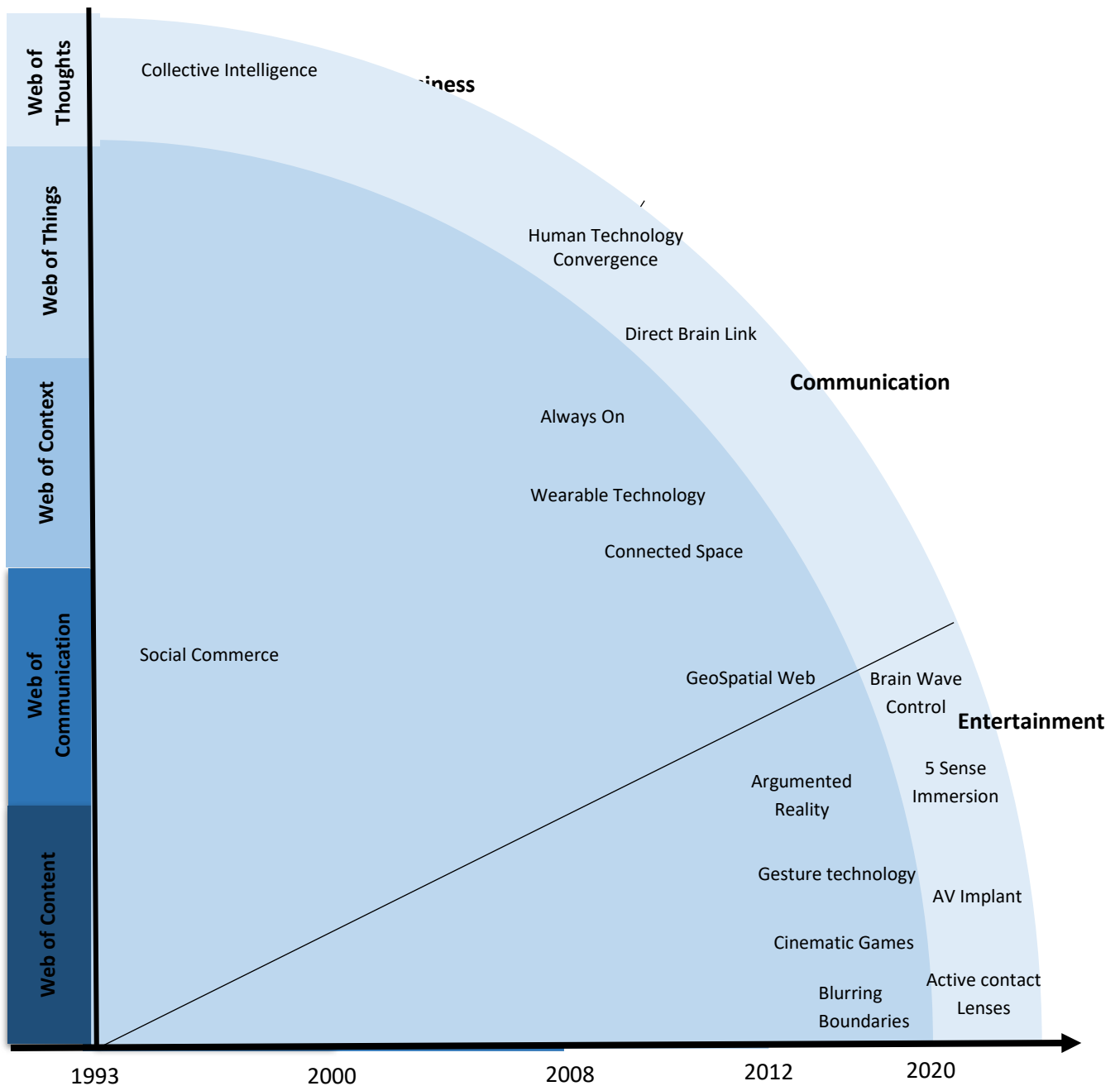

Figure 5. The envisioned Web Expansion. (modified after TrendONE 2008 by Nils Müller[79])

Webpage trends

Web design for web 2.0 and web 3.0 based on both functionality and usability is becoming of critical importance for the travel industry. Travellers expect websites to be informative, interactive, and attractive. Web service quality has been classified[80] into six dimensions, namely: ease of use, usefulness, information content, security, responsiveness, and personalization. A successful website should therefore

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[79] http://www.TrendONE.de
[80] Kim and Lee 2004

take customers' interest and participation into consideration, to capture information about their preference, and to subsequently use the information to provide personalized communications and services. The **mobile web** is constantly evolving, and *Google* is always experimenting with new ways to speed up content delivery and performance across all devices. Publishers around the world use the mobile web to reach these readers, but the experience can often leave a lot to be desired. Every time a webpage takes too long to load, they lose a reader. About 53% of visitors will abandon a site if it does not load **in 3 seconds[81]**. One of the most important factors in the mobile Internet experience is **speed**. This means that companies are potentially experiencing massive losses in traffic and revenue if their sites do not meet the needs of customers. *Google*[65] recently released data on up-loading time of mobile sites, which on average take 22 seconds to load on a mobile phone. These data were collected from 900 000 mobile webpages from 126 countries. For 70% of the pages analysed, uploading picture or graphics took almost 7 seconds and 10 seconds for the whole page to be uploaded. When loading time increased from 1 second to 5 seconds the frequency of abandoning the site increased with 90%, and from 1s to 10s with 123% leaving the page. *Google* claims that there is a 58% drop off when pages take 10 or more seconds to load. *Google*'s solution to this problem has been the launch in 2015 of AMP, or **Accelerated Mobile Pages**. AMP is a stripped-down version of the mobile web which runs on a reinvented version of the language used to create web pages: HTML. Using AMP, however can improve load time by as much as 15 to 85%. The release in October 2015 relies on *AMP HTML*, a new open framework built entirely out of existing web technologies, which allows websites to build light-weight webpages. Page speed is one of the many ranking factors for *Google*, hence your site's visibility is at risk if it's too slow. **Responsive web design** and carefully-crafted sites with performance in mind are part of the solution. **Accelerated Mobile Pages** (AMP) are shown in 70% of *Google* News search results for mobile users. AMP-pages have become to dominate in *Google* News globally. According to *Google*, AMP-pages give four times faster loading times on mobiles, thus shortening the loading time and data use. The AMP-format transform all pictures to a size adapted for mobile use, and *Google* has introduced a **special icon** (*figure 6*) for AMP-pages. Adopting AMP is relatively easy, with free plugins available for *WordPress* and other major content management systems.

Figure 6. The Google special icon for AMP-pages

In October 2016 *Google* announced that they will create separate indexes for mobile and desktop results, and will treat mobile as the primary index, thus *Google* becoming a "**mobile-first" search engine** as an adaption to the rapidly changing mobile ecosystem. This step is taken as mobile search activity now outstrips desktop search according to *Google*[82]. This will open for a special **Search Optimization** (SEO) for mobile channels, and calls for a robust mobile strategy to understand what the mobile visitor wants from your website, and how that will differ from Desktop search optimization. This will be especially tricky with travel consumers, as *Google* reports that people use different devices during different stages of the purchase decision. Some businesses find that users will browse travel inspiration and trip planning content from a mobile, but usually return to complete a transaction from their desktop, while others might see a much higher balance of bookings and transactions completed from mobile. Thus, knowing

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[81] Jajja 2017: Mobilsajterna så slöa att besökarna sticker
[82] tNooz 2016: What Google's new, separate mobile search index implies for travel

your customer and understanding their search preferences is key to finding the right search optimization strategy. Thus, having a mobile or responsive site is no longer optional. Site owners now also need to be thinking about whether their mobile site is properly structured for mobile SEO. For instance, many mobile sites hide content, navigation and internal links that are otherwise visible on the full desktop version. As *Google* crawls the mobile version of a site, anything that isn't visible could end up being removed from the mobile index. *Google* now in their search ranking also penalize **intrusive interstitials** that interfere with the user experience, that is, annoying popups that interfere or distract you from the content you're trying to reach, so we will probably see a dismissing use of popups in the future.

Cloud computing trends

A major megatrend that started in 2015 is business digital transformation[83] into **cloud computing and cloud services[84]**. In 2016 cloud business became strongly established by cloud delivery companies such as *Amazon Web Services*, *Microsoft Azure* and *Google Cloud Platform*. The cloud market increases now with 22% per year. During 2017 Cloud 2.0 will be established where most of companies will have moved from "experimentation" with the cloud into full scale use, predicting that in 2018 over 60% of all business data will be cloud based. This disruptive digital transformation consists of transferring local daily data handling and computing to a distributed computing architecture in the cloud, providing computing resources and server-free applications located in the cloud as externally provided computing services, where organizations buy whatever resource they need (as a service) from an external cloud service provider. This lower or eliminates the cost of ownership for hardware (servers and storage media), software and software updates such as for office and accounting applications, booking and customer management among others, and reduces the need for IT support staff, and allows a payment based on what you actually use. Cloud computing also brings access to external modern and next generation technologies, services and capacity that would be impossible to host internally. Cloud computing thus changes how IT supports the business and provides increased capabilities at lower costs to a degree that was previously unobtainable. Companies from even the most traditional and change-resistant sectors are now understanding that Cloud technology strategies cut cost and risk, and are now transferring their entire infrastructure and data ecosystems into the cloud.

By providing cheap storage options of data, cloud-service providers try to offer **data lakes** in the cloud of all the data enterprises can extract from their activities, including customers and their behaviour collected through different connected devices, and offering a platform for data integration, transformation and extraction, making data into assets and a natural resource for companies. A **data lake[85]** is like a man-made reservoir. First you dam the end (build a cluster), then you let it fill up with water (data). Once you establish the lake, you start using the water (data) for various purposes like generating electricity, drinking, and recreating (predictive analytics, ML, cyber security, etc.). This also opens for **data warehouses** where data becomes a commodity to trade. There are several cloud types such as **Private cloud** with cloud infrastructure operated solely for a single organisation internally or by a third party. **Public cloud** infrastructure is available for the public or for a large industrial/sectoral group and its owner is the firm that provides this service. **Community cloud** infrastructure is ensured jointly by several organisations and it supports a community with common concerns (e.g. common mission, policy, security requirements, etc.). It could be managed internally or by a third-party, either hosted internally or

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[83] Kairos Future 2014: The Future of Business transformation
[84] Tableau 2017: Top 10 Trends for 2016 Cloud
[85] Tableau 2017: Top Ten Big Data Trends for 2017

externally. it can be a single private data centre or a network of (associated or community) data centres. **Hybrid cloud** infrastructure is a composition of two or more clouds (private, community or public) that remain distinct entities but are bound together by a standard or own technology that enables transfer of data among clouds, representing cloud 2.0 level. There are several **Cloud Service Provision models** such as **Cloud Software as a Service** (SaaS) where the customer run the service provider's application in a cloud infrastructure, such as browser-based mail service. The customer has no access or supervision of the underlying cloud infrastructure that includes the network, the servers, operating systems, storages or the capacities of the applications. The customer controls only some restricted personalisation possibilities. The **Cloud Platform as a Service** (PaaS) offers the customer to install applications developed by them self or purchased from third parties in a cloud infrastructure whose programming language and development tools are supported by the service provider. The customer does not manage or supervise the underlying cloud infrastructure that includes the network, the servers, operating systems, storages but can supervise the application installed by itself and sometimes the configuration of the running environment. Ultimately, a highly automated and flexible PaaS will allow companies to identify and adopt new opportunities - quickly. With **Cloud Infrastructure as a Service** (IaaS) all computing, storage and network capacities and all other resources are available for the customer, which enable the customer to install and run any software, including the operating systems, too. The customer does not manage or supervise the underlying cloud infrastructure but can supervise the operating systems, storages, applications installed and sometimes the network tools (such as firewalls). Thus, BaU, **Business as Usual**, missing this business digital transformation will be costly in the future of missing opportunities and high costs of local digital infrastructure.

Big data trends

For a long time, companies threw away data because they had too much to process or had limited storage capacity. But now collecting and transforming data from various sources into common **data lakes** has created the latest megatrend and hype, **Big data**[86]. All industries are affected by the emergence of big data, but travel industry has seen the most dramatic transformation in this respect[87]. Companies that quickly embrace this digital transformation will more likely succeed in the future. This disruptive transformation is an effect of the exponentially rise of data and information over the last 10 years combined with the increased scale of computing power and storage capability together with the introduction of artificial intelligence in data handling. The plethora of connected tech by the **Internet of Things** (IoT) that has entered our lives over the past couple of years is now starting to generate a wealth of useful consumer data for travel companies. *IoT* and connected wearables can now collect data on your everyday life, from what you watch on TV to the websites you visit, what you like on *Facebook* and even how often you boil your smart kettle. Every purchase we make with our cards, every search we type into *Google*, every movement we make when our mobile phone is in our pocket, every "like" is stored. *Big Data* means that everything we do, both on and offline, leaves digital traces, **digital footprints**. Whatever we do on blogs and tweets, upload and watch photos and videos, comments and do status updates, post likes and emoji´s, create a Big Bang in the digital information universe. The Internet is said to already contain roughly 20 million time the information of all books published throughout modern history, and it keeps doubling every 18 months. In this vast new body of information, some see only noise and distraction, but is a golden treasure for marketing.

[86] Heerschap et al 2014, Pan & Yang 2016, Miaha et al. 2016, Haiyan & Liu 2017, and others
[87] Amadeus Travel Intelligence 2016: Defining the future of travel through intelligence

In the beginning of this digital information revolution, it was not entirely clear what use this data could have. Travel companies now can use this information to provide more targeted customer service and marketing. Sensors placed on vehicles, planes and trains could overlaid with public data such as weather, traffic conditions, local infrastructure etc. and give real-time updates on performance, condition and location giving the traveller information on where to refuel, best routs and connecting transportations. Now with new cloud services, companies can process lots of data, but the data isn't generally organized in a way that can be found. Metadata catalogues can help users discover and understand relevant data worth analysing using self-service tools. ´Companies like *Alation* and *Waterline* which use machine learning to automate the work of finding data now can help companies handle big data. They catalogue files using tags, uncover relationships between data assets, and even provide query suggestions. This leads to a potentially new and lucrative area for travel professionals – **predictive analytics**. Thus, we are not only being able to predict where, when and how a customer is likely to travel but also being able to serve customers marketing messages or prompts at a time when they are likely to buy. For example, using geotagged photos uploaded by tourists to the photo-sharing social media site, *Flickr*, big data analysis can assist destination management organisations to analyse and predict tourist behavioural patterns at specific destinations.

Such connecting of separate data sets will be a growing trend for the travel industry in 2017 and forward. Today much data is still difficult to access hidden in servers of travel companies, but with the transformation into cloud computing, departmental walls break down as data starts to be held in central reserves, **data lakes,** that can be shared across businesses. Many companies will have to rebuild their data infrastructure from the ground up, and tidying up and storing big data securely will be a top priority for many travel companies. This will solve the issue of knowing exactly where your data is stored, how it is stored and who has access to it – and it will also allow you to access different data sources whenever you need to solve a specific business problem. Previous purchase and marketing data, for example, can be used to attribute sales to specific marketing channels effectively. Data on previous holidays, current holiday trends and time of year can be used to give personalized holiday recommendations. Chat transcripts, reviews and customer satisfaction surveys can be analysed to determine traveller sentiment and how your customer-facing staff are performing. This new information utilisation creates disruption across many industries, and especially in the tourism industry. *Amazon* has been accused for disruption of the retail sector by bringing online shopping to the masses, but mainly by the second generation of insights in terms of understanding the customer experience, making shopper's lives easier. We have seen this replicated across the music industry, with the advent of *iTunes*, *Spotify* and *Deezer*, all of which use information to personalise, tailor and target content effectively. In all these cases, information and insight has resulted in a move from a linear, transactional model to a multi-faceted, personalised and holistic relationship between brand and consumer. The disruptive impact of this type of actionable insight is making waves across all parts of the travel industry. In 2013, Amadeus commissioned a report, *Big Data Crossroads* to examine what the advent of big data and predictive analytics meant for the travel industry. The report identified the potential benefits and challenges for travel providers, and outlined several recommendations for travel companies seeking to maximise the big data opportunity. Three years later, the landscape is already very different. Travel companies now face new and diverse challenges such as the disruptive sharing economy. As consumers become used to an 'Amazon Recommendations' experience from other industries such as video and movie streaming by *Netflix,* their expectations of the travel experience increase, creating an ever-greater need for travel companies to employ sophisticated personalisation techniques and intelligent merchandising. There is an expectation amongst consumers to

go beyond simply booking travel at the lowest price and a growing demand for personalisation and content enrichment. The deepening of The Experience Economy stepping up from experience offerings to transformative experiences, means that people are looking for travel brands to enrich and even change their lives.

According to *Amadeus Travel Intelligence*[88], the future travel industry isn't just about moving people from A to B, unveiling new destinations, or organising trips. Instead it is about a thoroughly progressive, completely **360-degree view** of the traveller and everything that goes into creating special, unique, memorable experiences. The information and data to enable such personalised experiences needs to be gathered and deployed throughout the customer experience known as the "**consumer decision journey**" from the moment they are inspired to travel, to the time they return home from their trip. At every moment in the traveller's journey, from the time they make an air booking or search for a train timetable online, to their hotel check in, their actions create data, a digital footprint, that can be used for data mining to understand his/her needs, desires and demands and understand the e-marketing and selling processes in a better way.

Such data, picked up from hundreds of points across the travel ecosystem, together with external data such as weather, geographical, social, media consumption and purchases, presents a valuable opportunity for travel companies to provide better-individualised services to the traveller and improve his or her experience. When companies can integrate and act upon both their own data and that of third parties, they will be equipped to develop breakthrough products, services and models, thus being in a position to unlock the benefits of analytics and automation. **Travel Intelligence** such as *Amadeus Travel Intelligence,* refers to next-generation business intelligence solutions and services, designed primarily for the travel industry. Such solutions transform raw travel data into meaningful information to facilitate strategic, tactical and operational decisions. the challenge of making sense of data has grown exponentially; new technologies and the abundance of digital data offer exciting opportunities for those who want to take either an incremental or radical approach to Travel Intelligence. One pioneer of this approach within the travel industry is the travel search site *KAYAK*, which makes extensive use of randomised testing in its website decisions—known as "A/B testing". As early as 2013, between 30% and 50% of users were participating in some type of test every day, creating valuable data for the company. The combination of big data and machine learning will allow travel providers to create completely new products and services through travel intelligence. For example, if a traveller is watching a film on a plane, by touching the screen they could instantly discover the location where the film was shot be presented with additional information such as weather forecasts, and the opportunity to book travel to that destination. Another example could be at the travel planning where colleagues within a company are included on an email chain about a particular project, and someone suggests a face-to-face meeting. An application built on top of the email programme could combine data about each individual's availability with location, calendar schedules, travel duration, and price, to suggest the best possible venue for the meeting.

For airlines seeking to optimise what they are doing, to do it better, faster and cheaper, technology can support initiatives that will create tangible business benefit. *Qantas*, for example, has embraced big data, analytics and automation to transform its operational approach to disruption, with enormous success. In order to help airlines to overcome disruption, where more than 600 million passengers worldwide were

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[88] Amadeus Travel Intelligence 2016: Defining the future of travel through intelligence

affected in 2014, *Amadeus Travel Intelligence* developed *Schedule Recovery*, a recommendation engine that helps airlines react quickly and efficiently to minimise the disruption to their operations caused by events such as bad weather or air traffic control congestion. *Amadeus Schedule Recovery* uses data analytics to help the airline swiftly identify the most critical issues, and helps airlines make rapid choices such as whether to delay or cancel flights, swap aircraft, or reassign landing slots. Big data and Travel Intelligence offer airlines the opportunity to customise each traveller's experience so that it reflects the needs, preferences and expectations of that traveller.

By achieving a more complete picture of the traveller, companies will not only be able to improve the traveller experience and secure greater loyalty, but they will also reap the financial benefits of improved customer centricity. Tailored offers to the customer and a better service experience should increase propensity to purchase - which will, in turn, translate into revenues. *Avianca Brasil* is using *Amadeus Performance Insight* to achieve greater insight into the vast data it possesses. *Performance Insight* is *Amadeus*' next generation Business Intelligence suite, offering airlines a fast, cost-effective and complete platform that gives them access into critical data insights to further monitor their business performance and make more informed decisions. Its cloud-based open architecture means that it can integrate multiple data feeds, and it is scalable and flexible to the needs of airlines, with no limit on the amount of data it can handle. The car-sharing giant *Uber* has in 2016 acquired the artificial intelligence company *Geometric Intelligence*[89] to improve its data analysis in an *Uber AI Labs* to work with Uber´s plans on self-driving vehicles and process the reams of data that the company captures about both customers and network of drivers. An example of use of Big data in tourism is when Kairos Future[90] used more than half a million guest reviews of some 300 hotels from online booking and rating platforms, and get indications of how hotels should allocate their resources to achieve the biggest possible improvement in customer satisfaction, and ended up with six keys to such success. Thus, in a big data, machine-learning world, almost anything is possible – if not today, then certainly tomorrow, constrained only by good data governance mechanisms.

One important source for *Big Data* is **electronic commerce,** or **e-commerce,** shopping on the *Internet*, which includes travel and tourism service shopping**.** Globally in 2015, 2,52 billion people (45% of the population over the ages of 15) used the *Internet* of which 1,436 Billion (26%) were **e-shoppers**, spending on average $1,582 per shopper. The global B2C (business-to-consumer) e-commerce turnover was in 2016 $2671 billion, with a growth rate of 17,5%. Global e-commerce sales are divided in 62% for goods and 38% for services, with the largest share in Asia-Pacific with 47% (+28% growth), followed by North America 28% (13% growth), and Europe 22% (13% Growth). *Table 5* gives the e-shopping in the Nordic countries with Sweden as the fastest growing e-commerce, while Norwegian spend the most on e-commerce.

In 2013 more than 1 billion buyers spent about USD 1.2 trillion in the B2C e-commerce sector. 90.1% of commercial transactions were realised in three regions: North-America, Western Europe and Asia-Pacific[91]. At the beginning of 2013, in Europe there were 550 thousand websites engaged in e-commerce, and the annual growth rate was around 15-20% [92]. Global e-sales continuously increased, and predicted a two-digit global growth rate in this sector. According to the current trends, the main engines that drive

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[89] tNooz 2016: Uber buys machine learning startup Geometric Intelligence
[90] Kairos Future 2015: How to Climb in Hotel Rankings – Big Data as a Management Tool to Improve Guest Ratings
[91] eMarketer: 2013, http://www.emarketer.com/articles/
[92] Ecommerce Europe 2016: Global-B2C-Ecommerce-Report-2016-Light-version

this continuously high growth potential are the following: dynamic increase in the number of smartphone users, intensive growth of the *e-commerce* on the emerging markets, continuous innovations in payment and delivery methods, existing *e-commerce* companies enter new markets, and brands not yet available online are starting digitising. In *e-commerce* the latest trend is again tailoring to individuals as it might have significant impact on the website-loyalty. Personalised online **User Experience** (UE) is a factor of critical importance from the aspect of the present and future corporate profitability.

Table 5. Basic information about e-commerce in the Nordic countries. Data from Ecommerce-europe.eu[93]

County	Population	% uses the Internet	Shop online	Average spend per year online shopping, €	E-commerce grows per year in 2015	E-commerce sales 2015, €
Finland	4,6 million	93%	3,3 million	2,170	9,6%	7,2 billion
Sweden	9,6 million	92%	5,8 million	1,668	12%	9,7 billion
Norway	5,1 million	97%	3,2 million	2,467	1,7%	7,9 billion

Research[94] shows that **smart tourism** with high effective personalised information services based on the tourists needs and the tourist's digital footprint compiled from big data, will result from the merging of tourism management, tourism services and tourism marketing, changing the strategies and decision-making of tourism businesses and organisations. One such attempt towards *smart tourism* is the knowledge infrastructure implemented at the Swedish mountain tourist destination Åre[95]. The business intelligence application *Destination Management Information System Åre* (*DMIS-Åre*), generates knowledge creation and knowledge applications using indicators that measure destination performance as well as customer behaviour and experience. This generate new knowledge about customer-based destination processes focused on pre- and post-travel phases, like web-navigation, booking and feedback. The aim is to gain real-time knowledge on tourists' on-site behaviour at the tourist destination.

Customer digital segmentation trends

In the 1980 the field of **Psychometrics**, sometimes also called **psychographics**, was developed, that focuses on measuring psychological traits, such as personality. Teams of psychologists developed a model that sought to assess human beings based on five personality traits, known as the "*Big Five*." These are: *Openness* (how open you are to new experiences), *Conscientiousness* (how much of a perfectionist you are), *Extroversion* (how sociable you are), *Agreeableness* (how considerate and cooperative you are) and *Neuroticism* (how easily upset you are). These dimensions are known as the acronym *OCEAN*, and has become the standard technique of psychometrics. The founder Kosinski and his team could now ascribe Big Five values based purely on how many profile pictures a person has on *Facebook*, or how many contacts they have (a good indicator of extraversion) and the motion sensor on our phone could reveal how quickly we move and how far we travel. Our smartphone, Kosinski concluded, is a vast psychological questionnaire that we are constantly filling out, both consciously and unconsciously. Psychometrics can also be used in reverse: not only can psychological profiles be created from your data, but your data can also be used the other way around to search for specific profiles, which led to the invention of a people search engine, the *Cambridge Analytica*. The company offers **microtargeting** by measuring people's personality from their digital footprints, based on the OCEAN model. This has primary been used by political marketing, such as the last US president election, where previously campaigns have been

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[93] https://www.ecommerce-europe.eu/research/figures-per-country/
[94] Liu & Wei 2015, Song & Liu 2017
[95] Fuchs, Höpken & Lexhagen 2014

organized based on demographic concepts such as all women should receive the same message because of their gender. *Cambridge Analytica's* marketing is based on a combination of three elements: behavioural science using the *OCEAN Model*, *Big Data* analysis of *Digital footprints*, and ad targeting. **Ad targeting** is personalized advertising, aligned as accurately as possible to the personality of an individual consumer. *Cambridge Analytica's* claims now having profiled the personality of every adult in the United States of America—220 million people. This Psychometrics approach opens for tremendous power of personal travel service and travel marketing, making the traditional market segmentation by region, by age group or by travel purpose, outdated, which are too simple to reflect the reality of how travel is purchased[96]. Other segmentations (table 6) are "*The Modern Humanist*" of the *Finnish Travel board*, the "*global traveller*" by *Visit Sweden*, or more recently *driving segments* for travel by *Visit Sweden*.

Table 6. Demographic segmentation by the Nordic travel organisations Visit Finland (2012, 2014) Visit Sweden (2016) and the Winter Experience Northern Norway project (2016)

Organisation	Main target group:	Demographic groups:			
Finnish Lapland And Visit Finland	**Modern Humanist**	Active Family Travellers	Ordinary Modern Humanists	Safe Adventurers	Fugitives of Everyday Life	Cultural Individualist Travellers
Swedish Lapland Visitors Board, Visit Sweden	**Global Travellers**	Active Families	DINK´s; Double Income, No Kids	WHOP´s: Wealthy, Healthy Older People		
Swedish Lapland Visitors Board, Visit Sweden	**Driving segments**		Active Nature lover	Everyday Escapist and enjoyer of life	Curious explorer	Party- and adrenaline seeker
Northern Norway		Comfort Plus	No Stress	Safety-Planner	Activity Chaser	Socializer
Ipsos TripAdvisor	Researchers	Social travellers	Value seekers	Luxury travellers	Independent travellers	Habitual travellers
Amadeus	Ethical Travellers	Obligation Meeters	Simplicity searchers	Cultural Purists	Reward Hunters	Social Capital Seekers

Another example of such demographic segmentation is *TripAdvisor´s TripBarometer* which commissioned *Ipsos* to identify different traveller profiles and came up with six categories[97]:

• **Value seekers** are often travelling with children and like beach holidays. This segment wants to make the most of holidays and carries out research via smartphone.

• **Luxury travellers**, are spend big, like beach holidays and city breaks.

• **Social travellers** often go away with others. The income for this segment is medium to high and they are said to be influenced by word of mouth and recommendations. They, too, like beach holidays.

• **Independent travellers** like to travel alone and are looking for adventure. The segment relies heavily on online research and is seeking culture.

• **Researchers** devote a lot of time to researching where to go, where to stay and what to do in a destination. They are often high earners and prepared to part with a bit more money for something special.

• **Habitual travellers** return to the same place again and again and want things easy. This segment is said to be mostly male, low earners who go away by themselves.

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96 Amadeus, Frost & Sullivan 2015: Traveller Tribes 2030: Building a more rewarding journey
97 tNooz 2016: TripAdvisor delves into traveller types and booking trends

In a similar way *Amadeus* in an analysis of travellers to understand the future traveller tribes 2030 for airlines, found six travel tribes[98]:

- **Simplicity Searchers** value ease and transparency in their travel planning above all else, and are willing to outsource their decision-making to trusted parties to avoid having to go through extensive research themselves.
- **Reward Hunters** focus on self-indulgent travel that will often mix a focus on luxury with self-improvement and personal health. The seeking of 'reward' for hard work in other areas of their life is what motivates them. They are looking for luxury experiences that are several notches above the everyday.
- **Social Capital Seekers** understand that to be well-travelled is an enviable personal quality, and their choices are shaped by their desire to take maximal social reward from their travel. They will exploit the potential of digital media to enrich and inform their experiences and structure their adventures with the fact of their being watched by online audiences ever in mind.
- **Cultural Purists** use their travel as an opportunity to immerse themselves in an unfamiliar culture, looking to break themselves entirely from their home lives and engage sincerely with a different way of living.
- **Ethical Travellers** allow their conscience to be their guide when organising and undertaking their travel. They may make concessions to environmental concerns, let their political ideals shape their choices or have a heightened awareness of the ways in which their tourism spend contributes to economies and markets.
- **Obligation Meeters** have their travel choices restricted by the need to meet some bounded objective. In addition to business travel commitments, these obligations can include personal obligations such as religious festivals, weddings, and family gatherings. Business travellers are the most significant micro-group of many falling within this camp. Although they will arrange or improvise other activity around their primary purpose, their core needs and behaviours mainly are shaped by their need to be in a certain place, at a certain time, without fail.

Demographic segmentations have been popular within tourism to understand customer choices and behaviour, and have recently become of critical importance in tourism marketing to reach desired customers through the right digital channels[99]. Understanding the new **digital travellers** is of critical importance both for hardware and software suppliers as well as the travel and tourism experience suppliers. The ever-increasing pace of societal transformation has, according to a theory dating back tom 1952 by Mannheim[100] and elaborated by Strauss and Howe[101], generated characteristic "**generations**" consisting of cohorts spanning a period of 15-20 years, which share some common experiences of the world unique for the time, resulting in the "generation" sharing some common characteristic in value, lifestyle and consumption behaviour (*summarized in figure 7*). These characteristics of a generation have attracted the attention *Human Resource Managers* when employing staff, and even more among marketers to understand how best reach their marketing communication to each generation. The **generation theory** shows that in today's complex world, several such generation cohorts coexist together with specific needs, desires and behaviour. These include the post-war **Baby Boomers** (Boom Generation born 1942-1953) which generated the counterculture of the 1960s, the **Generation Jones** (born 1954 - 1965), and **Generation X** (born 1965 to 1980), with the transitional **MTV Generation** (1975 to 1986) embracing the new digital technology, to the **Generation Y** (1980 to mid-1990s, by some 1982–2002)

[98] Amadeus, Frost & Sullivan 2015: Traveller Tribes 2030: Building a more rewarding journey
[99] Leask, Barron & Ensor 2014
[100] Mannheim, K. 1952. Essays on the sociology of knowledge. New York, NY: Oxford University Press
[101] Strauss & Howe 1992

born around the dotcom boom and being dependent on digital technology such as mobiles and computers. This first digital generation is followed by the recently born **Generation Z** (modern children born 1997 to present, by some 2003-), which is the first generation completely born in the digital world. The term **e-Generation** sometimes include both Generation Y and Z.

The time span of each generation, and its characteristics as well as the generation theory per se has been criticised and questioned, but the concepts of Generation X, Y and Z are, however, extensively used in digital tourist behaviour and marketing research and business. Many attributes have (more or less scientifically) been associated to each generation, of which some are:

Baby Boom Generation – born after the WW2, many participated in the 60s-hippie revolution. They are today healthier and richer than previous generations, want to feel young and experience, (WHOP´s by *Visit Sweden*). Have rational pragmatic values, where work is duty and to be a good member of society. Appreciate consensus and cooperation.
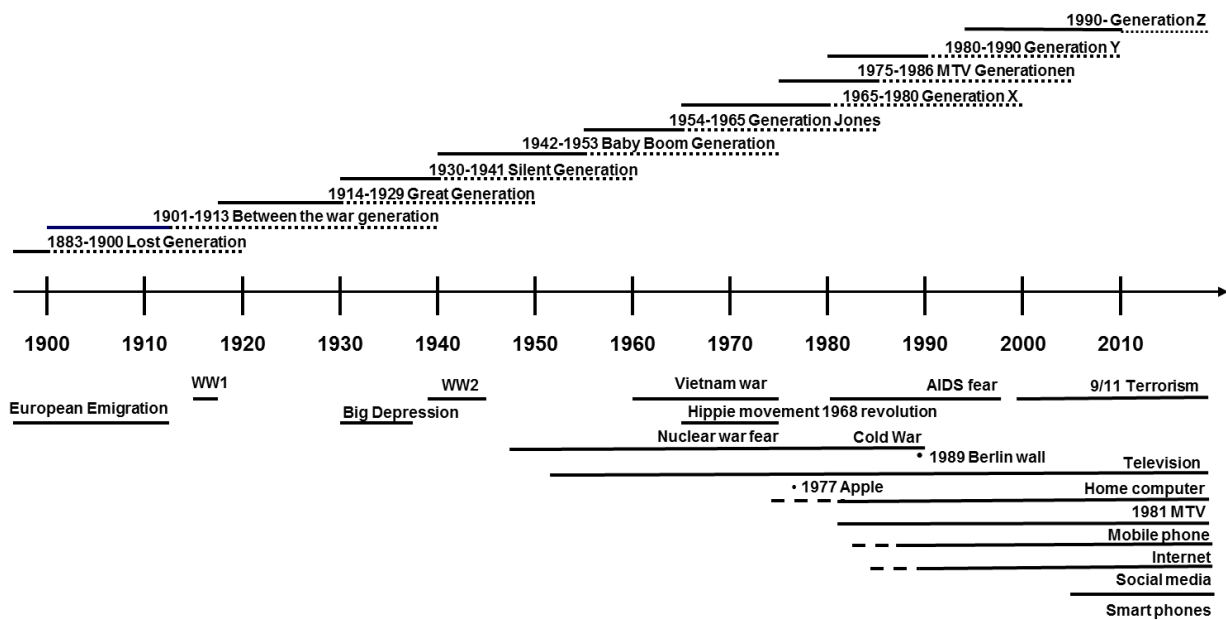

Figure 7. The Generation Theory of Strauss and Howe. Dotted lines indicate period of growing up and forming values, behaviours and lifestyles. (Own interpretation).

Generation Jones – grow up during the 60s and became adult in the 70s and 80s. The label Jones comes from a desire of a stable Jones live. They grow up with great hope and optimism during the 60s but met the pessimistic reality in the 70s, and are therefore less optimistic, critical to governments and have a more cynical world view. Sometimes called the *Forgotten Generation* by growing up between two radically different views on individuality and work.

Generation X: Children of the Silent Generation and Baby Boom Generation, and grow up during the 80s and 90s pop-culture and during the end of the cold war. Experienced the introduction of the first home computers, video games and Internet and are associated with MTV, the dot.com boom, Hip Hop, Grunge and AIDS. They value self-actualization, value work and leisure, but as separate activities, and are loyal to employers.

Generation Y: The Net-generation grown up with Internet and fast digital development. They are efficient and fast with help of the new technology, are more educated then previous generations, and thus more oriented to achievements, teamwork, attention and technology. They focus in individuality but are

networking in social network communities, thus called the *Me-We generation*. Appear egoistic and self-confident and goal oriented, take responsibility but are demanding, and move easy between work that must be meaningful. They are also called *Generation W*, Why, not being afraid to questioning.

Generation Z: also called *Generation C* (Click, Content, Connected, Computer, Community, Creating, Celebrities etc.) and have many nicknames such as *DigiKids*, *Digital Natives*, *Generation Now*, *Instant Generation*, *@generation*, *Internet Generation*, *Cyber Generation*, *New Silent Generation* and *Homo Zappiens*. Girls are more goal-oriented then boys, they are professional consumers, individualistic, value personal freedom and own decisions, post-materialistic values, and take materialistic wealth for granted. Goals are self-actualization, experiences. Time, not money is limiting. It is socially unacceptable not to be connected and available, and they have large number of digital friends, and are in no hurry to become grown-ups. They are also called the *Business-kids* as many have become rich and famous as bloggers or YouTubers (Influencers). They are also by some identified as the **Millennials,** and by others the Millennials are regarded as predecessors to GenZ. In 2016 GenZ range in ages of 6 to 20 and constitute more than one-sixth of the World population.

The new digital travellers

The term new digital travellers is coined for the digital generation, the Millennials, *the Homo Zappiens*. The Millennials, or GenZ, are associated with the number 8, the number of seconds that GenZ take to process information, consider what it means and then move onto the next thing that catches their eye. Within that **8-second window**, travel brands' best bets for reaching this generation of travellers lies in using images rather than words[102]. In fact, Gen Zs' brains are suggested function fundamentally different than those of older generations. They have learned to process information much faster, but they have trouble retaining that data. They value social media, but not the kind their older siblings, parents and even grandparents share infatuation with. GenZs love incognito apps like *Snapchat* and *Whisper* much more than *Facebook* and *Twitter*, but *Instagram*'s popularity with this group remains high. The number of GenZs using *Facebook* is on a steady decline while *Instagram* is increasing, indicating that marketing and communication with GenZ should primarily be trough *Instagram*, *Snapchat* and similar channels. GenZs watch twice as many videos on mobiles as other generations, 70% of GenZs watch at least two hours of *YouTube* per day, and receive over 3000 text messages a month[103].

The **Homo Zappiens**[104], zapping between platforms and channels, process large amounts of information through a multitude of technologies and media. Research[104] has shown that a 21-year-old leaving collage have watched 20 000 hours of television, played 10 000 hours of computer games and read books for 5000 hours, and an urban kid absorbs about 8000 brand images a day. Thus, multitasking and high speed is key, where they easy can switch focus and attention and zap through different digital channels. They live in an era of pictures and icons, thus developing iconic competes, and are able to process discontinuous information and create meaningful knowledge from audio-visual and textual information not seen in previous generations. While previous generations process information in a linear matter, reading a book from first to last page, *Homo Zappies* prefer to read only keyword, and process information in a non-linear thinking, reading and learning. They look for conceptual structures first, getting the big picture, the overview, and learn by searching and by playing. The don´t need complete information and redesign their own content. Former generations have viewed technology something to

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[102] Skift magazine: Megatrends Defining Travel in 2016, Defining the Future of travel, From Millennials to Gen Z
[103] Upfron Analytícs 2015: http://upfrontanalytics.com/
[104] Veen & Vrakking 2006

master, for *Homo Zappies* technology is there to serve them, technology is a friend. Most start playing games on the Internet from the age of three. *Homo Zappies* live in a network world – gaming is a social activity, as computer games such as *World of Warcraft* requires that you link up with peers. *Homo Zappies* think in structures of concepts and the interaction between them.

The gamification industry has stratified[105] the new generation of gamers into **user types** based on motivation and ways to have fun according to "*4 Keys 2 Fun*"[106], a *XEODesign* developed practical model based on why people play games. *Gamified UK* identified four personality types, the **Socialiser**, the **Achiever**, the **Philanthropist** and the **Free Spirit** based on the degree of structured- unstructured gaming and the user – system control in the gaming. The four motivations of Relatedness, Mastery, Purpose and Autonomy and characters of Fun as *People fun* (friendship), *Hard Fun* (Challenge), *Serious Fun* (Meaning) and *Easy fun* (Novelty), determine the gamer characteristics (*figure 8*).

Structured

Communicate, Cooperate, Compete
Socialiser
Relatedness, People Fun

Goals, Obstacles, Strategy
Achiver
Mastery, Hard Fun

User ——————————————— **System**

Repetition, Rythm, Collection
Philanthropist
Purpose, Serious Fun

Exploration, Fantasy, Creativity
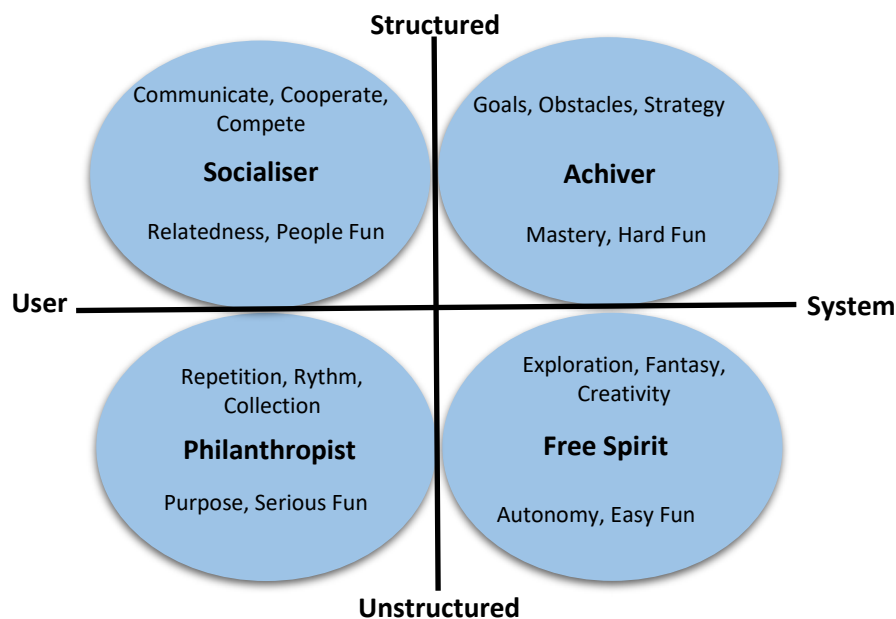**Free Spirit**
Autonomy, Easy Fun

Unstructured

Figure 8. Gamification user types based on motivation, and characteristics of fun, gaming structure and gaming control. (Modified after Gamified UK Gamification Consultancy)

In 2016 an additional type, **Disruptor** was added, which are motivated by change, they want to disrupt the system. The above four player types were divided into 12 subtypes of user types, indicating the complicity of stratifying people into "types". In the same way the Generation-theory or any characterization of people are over-simplifications, as people today are much more flexible and adaptive in their behaviour and values depending on the context.

There has been a recent trend of interest in the young generations for three reasons. First young people's values and attitudes are important for employment, as students, as consumers and as citizens. Secondly, it is the youth that set trends in society, what they do today, older generations do tomorrow. Thirdly, young people´s values provide a glimpse of the future, as values developed in the formative youth tend to stick into adulthood. We thus must understand these **e-generations** of **GenY** and **GenZ** as they are the new **e-travellers** with the biggest purchasing power for travelling. When travelling, they expect total

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[105] http://www.gamified.co.uk/2013/06/05/gamification-user-types-and-the-4-keys-2-fun/
[106] http://www.xeodesign.com/research/

digital presence and being connected to the *Internet*, putting digital demands on the travel industry. They are the major consumers of social media and expect communication with service provider's trough the new channels of social media and digital services. Free *WiFi* on hotels and facilities is taken for granted. And they want to have fun, preferably trough **gamification** of their experiences. Thus, a new trend in travel and tourism industry will be to adapt services and experiences according to these new *e-travellers* and their expectations, demands and values. There is still limited research on e-generations travelling[107]. To meet the e-travellers, the tourism industry must move away from traditional values of tourism developed for the *Baby Boomers* and *Generation Jones* in the era of tourism services, and stepping up the ladder of the experience economy offerings. The industry must embrace the new values of *Generation Y* and *Generation Z* in the era of **transformative experiences**. The next tourism hype after experience production might thus be **transformative tourism** trough transformative experiences.

Kairos Future[108] has followed the values, aspirations and attitudes of young people, **Millennials,** from 17 countries by interviews and digital mining of millions of blogs, microblogs and forums to extract trends among the youth. They witnessed in the 1980s a steady trend of increased individualism, post-materialism and striving for self-expression. However, in the late 2000s they saw the trend changing towards the youngest generations no longer being the ones with the most extreme values; the extremists were still the now 30-year olds, born around 1980.They found that 16-29-year olds seem to agree on one point: in order to have a future they need a common goal. And today that goal is not to be seen anywhere, resulting in a discontent among the young around the world. Youth were convinced that most people in their generation will be worse off than their parents, and that society has become too individualistic, blaming the political system. At the same time, they have given up om politics and have very little interest to join the system in order to change it. Instead their dreams and aspirations are focused on the family and long lasting or lifelong relationships. They dream of nice home and a good job. They no longer strive to make money or save the world, but to become good parents and partners. This is interpreted as a reaction to the post-modern values by the Baby-boomers and later generations boosting the western individualism and freedom. Young people rather than deconstruct traditional modern values, rather want to reconstruct older collective values. The 50-is are back, but in a version 2.0. They see jobs as a source of self-pride and personal satisfaction. They believe in education, and they're interested in health, wellness, personal development and hard work; not in salary, status, free time or power. They are in charge of themselves, and they take the role seriously. They are also addicted to social media. They use it for news, they use it for politics. They have massive online friend groups, to whom they post daily, and they do so through their smartphones, backed up by laptops and tablets. And they frequently shop online. The new family-oriented values of the 80s and 90s may favour family-friendly holiday forms such as camping and downhill skiing, but they also are favourable for charter holidays. They have sometimes been referred to as the **spoiled generation** because they have grown up with a high material standard of living. The Millennials also imply a desire for order. This means that they have high demands on predictability (and delivery reliability), while not lowering their expectations of powerful experiences and cosy atmospheres. The demands are more focused on control and transparency. The Millennials individuals are also discerning and very familiar with new technologies. They are experienced travellers and have a strong sense of their own personalities, who do not mind acting in a group, thus called the *MeWe* generation, but shy away from standard solutions. This place high demands of flexibility and responsiveness on the experience providers of the future.

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[107] Bizirgianni & Dionysopoulou 2013
[108] Kairos Future 2013: Global Youth 2013

Kairos future recommend, bases on their study, that to fully understand tomorrow's adults, we need to question everything we know about young people. Today's youth do not value and desire what 40 or 50-year-olds, and maybe not even what 30-year-olds, once did. The recommendation is to use big data **neothnography** and let the new technology identify what is going on among the youth. They are in an increasingly unpredictable manner "zapping" between different identities and roles depending on the situation. Sometimes they are business traveller, sometimes on parental leave, sometimes with a group of friends in search of action, sometimes in need of child-safe environments, sometimes interested in culture, sometimes in need of connectivity for a moment of work. They have at the same time become increasingly deaf to information and advertising. Selectivity in what they choose to listen to has become a survival strategy in an era when they are bombarded daily by thousands of messages. During first-quarter of 2015, millennials or generation Y became the largest generation in the U.S. labour force. This influx of a younger generation means that one in three American workers are now individuals born after the year 1980 (or adults ranging in age 18–34 in 2015) and thus ''digital natives. 'Nearly two-thirds of Americans are now smartphone owners, and for many these devices are a key entry point to the online world. The 2015 survey also found that smartphone ownership was especially high among younger Americans, with 85% of those aged 18–29 and 78% of college graduates stating that they owned a smartphone[109]. increasing ownership of smartphones plus a growing ease in the use of game design tools, digital games are becoming more pervasive in the daily lives of most individuals. Although **video games** have been around since the 1970s and have steadily increased in popularity, the influx of smartphones and mobile devices in the last five years has taken the reach and usage of technology-based games to a new level. *Newzoo*, a video game research firm, estimated that sales for the total worldwide gaming market to be $91.95 billion and mobile game revenues would surpass console games globally in 2015[110]. The ability to play a game anywhere has allowed it to become a natural and accepted part of people's lives. Gaming has become the natural introduction and learning way of GenZ to the digital technology and Internet.

Gamification trends in tourism

Playfulness is a mindset whereby people approach everyday activities with an attitude of *paidia* (playing) as something not serious, with neither a clear goal nor real-world consequences. *Paidia* is the primary power of improvisation, expressiveness, spontaneity, and joy that is often present in children's free-form play. **Playful experiences** are realized when people take a playful approach to activities or how they look at the world. The music playing *piano keyboard stairs* at the Odenplan metro station in Stockholm 2009 is a good example of using playfulness in an attempt to motivate people to take the stairs instead of the escalator[111]. Other examples of using fun to change people behaviour are given by *Thefuntheory.com*[112]. Such "**playification**" is the use of play elements in non-play contexts, and games without scoring can be called **play.** On the opposite end of a play continuum to *paidia* lies *ludus* (gaming) which consists of formal play, bound by rules and arbitrary obstacles, that defines winners and losers and commonly manifests itself in board games and computer games. The "**ludification** of culture" means that video and computer games have become a cultural medium and source of formative experiences and learning for the digital natives on a par with literature, movies, or television in earlier generations. The science of **Ludology** escribes, among other things, the properties that are characteristic of computer games.

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[109] Smith 2015
[110] Gaudiosi 2015
[111] http://www.thefuntheory.com/piano-staircase
[112] http://www.thefuntheory.com/

The term **Gamification** was first used 2008 in a blog post by Brett Terill[113] discussing the gamification of the web, but became widespread in 2010[94] on the first workshop on gamification. Gamification has recently become a hype also in tourism, as a new a new technology that incorporates elements of game play in nongame situations to engage customers in engaging experiences. Gamification was first simply defined as the *use of game design elements in non-game contexts*[114] based on a systemic understanding of the elements or mechanisms of the gaming system. The addition of game mechanisms would according to this approach transform services into games. Such systemic perspective to gamification conflicts with how we understand **gameful experiences**, and systemic gamification often attempts to direct user or consumer decision-making toward choices that are desirable to a third party. The definition has therefore lately been elaborated[115] to emphases the experiential nature of games and gamification and the perspective of service marketing, as *a process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation*. Playfulness is an important but often neglected design quality for all kinds of products. Features that make games and play engaging can also make other kinds of products more enjoyable, elicit more meaningful experiences, learning and motivation from them, and ultimately increase the quality of the overall user experience and, respectively, the market value of a product.

A frequently used model for gamification is to equate an activity in the non-game context by using **game-design elements** and scoring elements of computer games for **external rewards,** using points for reaching specified point thresholds, levels, achievements, leaderboards, and (intrinsic) rewards and apply them to new context. The concept has been around for some time through loyalty systems like frequent flyer miles. Gamification programs can increase the use of a service and change behaviour, as users work toward meeting these goals to reach external rewards. *JetSet*, is a simulation that makes going through security lines at airports feel rewarding and productive. The trend now is that more companies are deciding to take the leap and include aspects of playfulness and gamification (or gamefulness) as part of their business strategies. However, even if the goal is using gaming for engaging experiences, when, in reality, often gamification typically uses only the least interesting part of a game - the scoring system, resulting in a "**pointsification**" of gamification systems that add nothing more than a scoring system to a non-game activity. In a similar way, badges have been regarded as the blueprint of gamification to such a degree, that gamification has been even referred to as "**badgification**", being the primary game mechanism in popular gamified applications such as ***Foursquare Swarm***[116]. On a systemic level, a badge consists of a signifying element (the visual and textual cues of the badge), rewards (the earned badge), and the fulfilment conditions that determine how the badge can be earned. Most **loyalty programs** fall into this are, as they aim to offer economic benefits redeemable by points, from the continuous use of services, thus they invoke extrinsic motivations. Extinctic motivation, has been demonstrated to be detrimental to **intrinsic motivations**, autonomy and creativity., i.e. the playfulness of *paidia*.

However, wisely used, gamification can increase the efficiency of customer loyalty programs beyond traditional *pointsification* to a next level **loyalty 3.0** by tree leverages (*figure 9*). Silicon Valley start-up *Bunchball*[117], a pioneer in gamification, focusing not only on traditional customer loyalty, but also the loyalty of employees and partners. *Bunchball* combines behavioural economics using big data and social media with gamification to inspire loyalty that lasts from everyone involved in the success of a business.

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[113] http://www.bretterrill.com/search/label/gameification
[114] Deterding et al. 2011
[115] Huotari & Hamari 2012
[116] https://www.swarmapp.com/
[117] Paharia 2013

| Motivation | ➕ | Big Data | ➕ | Gamification | 🟰 | Loyalty 3.0 |

Figur 9. Three leverages of loyalty according to Buchball (modified after Paharia 2013)

To increase playfulness and **intrinsic motivation**, lately a new game design feature has grown in popularity by the ease of online connectivity through mobile games, which is **player-generated content**, sometimes called "**Gaming 2.0**[118], equivalent to generation 2 of experience production (figure 2). This concept has been at the centre of tabletop roleplaying games for decades, and early text-based *Multi-User Dungeons* (MUDs) allowed players to generate content within the game that others could then interact with. Games such as *Half Life* have opened themselves up to modification, so that players can create new worlds for others to explore; some of these modifications, such as the *Counter-Strike* modification for *Half Life*, were as popular as the original game. *Second Life* was centred around player-generated content in a massively multiplayer virtual world. the game designers created not only a game, but developed a system to allow others to create and modify the games. **Gaming 3.0**, will in a similar way as Generation 3 experience production, allow gaming users to set their own goals and play area, in an attempt to make the gaming more meaningful and engaging. The underlying idea is that the designers develop a system where users can create their own tools to track different aspects of the non-game activity, to create their own levelling systems and achievements, to develop their own game-based methods of engaging with the activity and to be able to share that content with other users. The concept of putting the user at the centre of the gamification project is so critical that it is key in the definition of **meaningful gamification**, defined as the integration of user-centred game design elements into non-game contexts[116]. The opposite of **meaningful gamification** would be **meaningless gamification**, based on organization-centred design through points and levels of external rewards, asking: "*How does this benefit the organization?"* instead of "*how does this gamification benefits the user*?". An example of meaningful gamification is the **Alternate Reality Games (**ARGs), where game elements are used to tell a story that is based upon a non-game setting. The emphasize is on an engaging story and interesting activities instead of relying upon a point system and leaderboards. Many ARGs have community-based aspects so that participants can find meaning through group engagement as well as their personal interest. Meaningful gaming also involves **user generated content (UGC)** where today business tries to motivate customers to generate content.

Underlying the concept of gamification is **motivation**. People can be driven to do something because of internal or external motivation. But focus on external motivation trough external rewards decreases internal motivation. If an organization starts using gamification based upon external rewards and then decides to stop the rewards program, that organization will be worse off than when it started as users will be less likely to return to the behaviour without the external reward[117]. Internal motivation can be linked **hedonic usage patterns** to convert utilitarian services into more hedonically oriented. This is achieved by perceived enjoyment, flow, immediate feedback, clear goals and social comparison[119].

Research found[120] different motivations to play tourism games (*figure 10*), where the basic motivation was **curiosity**, which can be used to led curios tourist explore tourism products and destinations. Curiosity can be stimulated by exploring a destination virtually before arrival, but also use AR games to add information and fun to their real-life experience during their travel experience. These identified motivations might co-exist at the same time, as gaming motivation can be multidimensional. Socialization in tourism gaming seems important, while the in traditional gaming so popular fantasy, gaming challenge

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[118] Nicholson 2012
[119] Hamari 2013
[120] Xu et al. 2015

and achievements seems less important I tourism gamification. Rather the intellectual motivations of a tourist to learn, explore, and discover new things, were highlighted in the findings, reflecting a seeking-dimension of tourists' motivations. The socialization motivation reflects the possible encounter between players and fellow players or tourists as well as with local residents. This can lead to the co-creation of tourism experiences with local residents and also among tourists themselves.

Figure 10. Motivation to play Tourism Games found by Xu et al. 2015

Gamification, as a new topic within the travel and tourism industry, is a future major trend to elicit motivation and behaviour change, to influence consumer engagement, customer loyalty, brand awareness, and user experience in tourism areas. It is, however, not always the provider of the core service that also provides the gamification process. There has been identified **four possible gamification providers**, which are 1) The core service provider, 2) A third party service provider 3) The customer him/herself 4) Another customer. The enhanced service is provided either by one of these four parties or by a combination of them. **Game-based marketing** offers a potentially new type of marketing opportunity in tourism. Games are about pleasure, and pleasure is the new marketing element, an extremely powerful dimension of marketing. Games therefore can provide a new and powerful way of interaction and engagement in a fun and rewarding way.

Gamification has been used in advertising in three ways[121]; as **In-game advertising** (IGA) is the inclusion of products or brands within a digital game, as **Advergames**, are specifically designed games with an advertising purpose and created to promote and make an emotional connection between the gamer and the brand, product, service, or idea. The main aims of *advergames* are to deliver a powerful message for the advertised brand and to achieve higher traffic on brand websites, usually free of charge. The third way is **advertising in social network games** with the placement of brands or products in digital games that are played via major social networks such as *Facebook*. Social network games are also mostly casual games, and they are playable on mobile devices too. Due to the prevalence of social network sites, the number of users of social network games is often high. For instance, "*FarmVille 2*" on *Facebook*—a digital game in which players grow and harvest crops and raise animals on a 3-D farm—had in 2012 regularly over 60 million monthly users. Although gamification is characterised as the **next marketing generation,** empirical studies providing evidence of the gamification impact on consumer behaviour and marketing are still mainly lacking[122].

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[121] Terlutter & Capella 2013
[122] Sigala 2015

Besides the applications of gamification in marketing, it has been used in **Human Resource** (HR) management, mainly to facilitate a playful and motivated environment during HR activities like training, recruiting, monitoring and stimulating productivity. Some of these elements are player profiles, competition between individuals or teams, feedback, levels and missions, ranks and badges. In gamification of **recruiting,** the hiring process has been complimented with games in job analysis, recruiting and selection in order to market the job openings to the potential employees in a funnier and more engaging way. One of the first companies to use gamification in the tourism industry was *Marriott International Inc* (Bethesda, MD, USA). Their online game My *Marriott Hotel*, was launched in June 2011[123]. The game was developed as a *Facebook* app in English, Spanish, French, Arabic and Mandarin to address the rapid expansion outside the US and to reach out for new recruiting targets, such as the Millennials. Users from 120 countries were simultaneously caught in the game executing tasks and 30% of the users clicked on the "try it for real" button that redirected them to the Marriott's career website. Gamification has also been used in stimulating and **monitoring productivity** to increase competition and performance. *Costa Cruise* with the help of *Hydra-New Media*, used gamification to inform travel agents, retailers and sales staff about travel, ships, destinations and special offers, etc. The classical e-learning was considered boring by employees, because of the inherent lack of interaction, feedback, competition and rewards. They developed three games ("*Exploring the world with Costa*"; "*Dream destination*"; "*Aboard our new cruise ship*") each aimed at different levels of learning. In a similar way, the Swedish company *XPectum* has previously for *Destination Åre*, and recently for *Destination Swedish Lapland* developed a digital learning process bases on gamification to tourism companies and their staff to learn about the destination and get an introduction to hostmanship[124].

The potential of gamification within the tourism industry is significant both for providers and for customer relations and marketing and enhancing tourist experiences. **The gamification of tourism**[125] can contribute to a more rewarding interactions and higher level of satisfaction by creating positive experiences of fun, excitement, arousal, pleasure, sense of achievement, and providing tourists with both entertainment and information, as well as increase brand awareness and loyalty to the destination[126]. For example, many destinations use the **gamified location-based marketing application** of *Foursquare,* for providing customers an interactive and enjoyable way to find and check-in in tourism attractions and firms to get special prices, share their location and place experiences and/or invite others to join them. An interesting application would be in **sustainable tourism** (or *transmodern tourism*) to let tourists adopt a more **sustainable behaviour and consumption** if provided with fun a way to measure their progress in sustainable transportation, sustainable consumption, environmental impact and ecological footprint, compete with previous achievements or other tourists and share their progress. *Hotel Prinz Luitpold* (Bavaria, Germany) uses gamification to engage their guests in a charitable act[127]. They have developed a game mechanism through which they reward their loyal clients. If a guest stays for at least 21 nights, the king will ennoble him. To qualify for this honour, the guest must make a good deed in the king's name. Guests become the feeling of being part of a higher mission, being important, which increased their connection with the hotel. Some clients took care of sick people, others donated to mountain rescue or raised support for kindergarten projects in Africa.

Research[126] has pinpointed **ten pioneering applications** for pre, during and after travelling, aiming to create innovative products and services that increase brand awareness:

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[123] Marriott 2011: My Marriott Hotel Opens Its Doors on Facebook.
[124] http://www.swedishlaplandvisitorsboard.com/blog/2017/01/31/digital-vardskapsutbildning-i-swedish-lapland/
[125] Xu et al. 2016
[126] Xu, Buhalis & Weber 2017.
[127] Weber 2014

1. Location-based augmented reality games
2. Gamified travel tours for urban and rural environments
3. Gaming in theme parks
4. Gamified Immersive Experiences in Cultural Heritage
5. Gamification and transmedia storytelling
6. Gamified restaurant experience
7. Gamification in hospitality
8. Gamified flying experience
9. Experiencing virtual cultural heritage
10. Gamified virtual travel experience.

Before traveling, **Destinations and Destination Marketing/Management organisations** DMOs, can use gamification (**play before you are there**) innovatively in the co-creation of pre-experience of the destination, to help travellers to learn, discover and explore a destination and its suppliers, and use social gaming for influencing the travellers' perceptions and images of destinations based on the meaning-making communication processes with previous visitors, locals and suppliers. Such destination interaction on a deeper level can be done by using the affordances of social media such as *Facebook* to connect with 'game leaders' and opinion influencers to influence the perceptions and the behaviours of users/travellers. It is evident that gaming can create a new industry paradigm in destination marketing by engaging tourists in dynamic, personalized, and contextualized experiences. This new marketing method may provide a great opportunity for small tourism destinations and businesses as well as lesser known destinations as it is an innovative and relatively inexpensive way of marketing. DMOs *Tourism Ireland* and *Tourism Australia* were among the first to implemented gamification in 2011 to promote Ireland and Australia as holiday destinations[128]. *Tourism Ireland* adopted a gamification solution *Ireland Town* on *Facebook* which allowed tourists to create their own city and pub and to make virtual visits of the island. The solution has generated a significant increase in Ireland's visibility on social networks and an increasing number of visitors interested in this tourism destination. *Tourism Australia*, through the campaign "*Best Jobs in the World*", launched a gamification solution to attract young people around the world to a dream job in a working holiday in Australia[129]. The results were overwhelming—more than 330,000 persons from 196 countries applied for the six jobs they offered, while the number of persons actively seeking information about working in Australia reached 430,000 people in 2013. It is important for DMOs to integrate integrating social networks with fairly simple and intuitive social games or apps. A well-known gamified application is a Hungarian application, an urban treasure hunt game for different destinations and cities—*Sighter*. The app allows the users to capture and send images of urban locations to everyone using mobile devices. *I Spy Denton*, a digital scavenger hunt application that promotes the city of Denton (TX, USA), rewards the users involved in the transmission of images and creates an important community on social networks with the final purpose of promoting the destination. The *New Mexico Tourism Department* has launched an application, *Catch the Kid*, where tourists seek different locations where Billy the Kid could be hidden. Besides attracting tourists to the destination, the application has an important economic impact, the rewards granted to users stimulating local entrepreneurship[130]. Another recent example is *Innovation Norway* which offers two games, named *Holmenkollen Ski Jump* and *Trysil Twin Tip*, on the official travel guide. Many airlines including KLM, British Airways, and Virgin Atlantic have also developed games to engage consumers in branding and marketing exercises.

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[128] MSCeventtopurism 2013: The Gamification of Tourism: How DMO Can Transform Players into Clients?
[129] Tourism Australia Website: http://www.tourism.australia.com/news/Media-Releases-2013-9487.aspx
[130] Gamification: 2014 How Destinations Are Jumping on Board:

During the trip, **Location-based mobile games** (*play while you are there*) can be used to kill time in the transit area. They can also add more fun to the journey and enhance tourist onsite engagement and experiences. Particularly **location-based games** and *Augmented Reality* (AR) games such as at Old Uppsala as previously mentioned, or the under development "*Uppsala Cathedral*" by *Disirproductions*[131], can encourage tourist players to interact with the surrounding physical environment, to learn more facts about the spot, to tailor their visit to their interests, and to enrich a more dynamic and real experience. Gaming may give tourist players a real, personalized, fun and fantasy experience by making them feel that they are actually in the game themselves, rather than being a separate, exterior entity. Games can also help tourists to develop an emotional attachment through immersion in the destination. Highlight the opportunity of socializing with both other tourist players and local resident players. Already available in cities like London, Stockholm and Berlin, these applications combine the tourist interest in discovering the destination (destination's history, events, people and social life) with its competitive spirit and joy of playing. Unfortunately, most of the existing tourism destination games are based on the game principles of the classic treasure hunt. For example, *REXplorer* aims to persuade on-site tourists to explore and enjoy the history of the UNESCO world heritage city of Regensburg, Germany. The City Game has been developed to encourage tourists to enter a knowledge competition tour by solving tasks at different locations. *EpicMix*[132] used gamification in a popular mobile app for skiers, being available at 10 US ski resorts. The app captures the ski and snowboard experience of skiers based on *Radio Frequency Identification* (RFID) tags included in ski passes. Users can connect with other skiers and people using social media, compete and earn virtual pins. This location-based application offers photo sharing, customized guides, ski and snowboard School experience capture, useful information on ski slopes, weather conditions, etc. *Starbucks* has begun implementing **quick response (QR) codes** as part of its mobile gamification strategy for new product promotions. By scanning a product's QR code, consumers are directed to the company's mobile website where they can find information on its products, newsletters, coupons, customer service and other similar benefits. A *Facebook* link is used to create a social platform for consumers to interact and comment on likes and dislikes. From the company's perspective, accessibility via QR code ensures an analytic database (e.g., time of day, gender, location, etc.), such Big data can then be incorporated in future marketing campaigns and product presentations. Even the hospitality industry can gain from gamification. For example, *Pizza Hut* introduced interactive touchscreen tables allowing customers to customize their pizza before ordering. Clients can post orders and choose a payment method. The interactive table can be used to play games while customers are waiting for their pizza[133]. More and more restaurants are offering digital pre- or on-spot ordering and even composing own menus on smartphones or tablets, where involving gamification can make this more interesting and fun.

A popular third generation self-directed experiences in gamification is **geocaching**[134], the in real life treasure hunt with the help of a GPS device or smart phone with GPS. The treasure is basically a box with pen and notebook, and your found caches are registered on the official websites. The activity is non-commercial, but business driven geocaching as an activity or event are common, but such caches, or promoting caches are not allowed to be registered on the *geocaching.com*. The activity started in the US in 2000 after the US-based a **Global Positioning System** (GPS) system ended its signal scrambling and improved its accuracy to a few meters. *Geocaching.com* has millions of caches in over 200 countries. Only around the authors township Piteå there are 1897 geocaches. A similar gaming idea has the Augmented Reality game *Nitendo* **Pokémon Go**[135] that's was released in 2016, but where the outdoor hunt is for

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[131] http://www.disirproductions.se/
[132] https://www.epicmix.com/
[133] Sayeed & Faheem 2014: Game on: Restaurants Winning with Gamification
[134] https://www.geocaching.com/play
[135] http://www.pokemon.com/us/pokemon-video-games/pokemon-go/

digital creatures that can show up anywhere. The smartphone vibrated when a Pokémon is near you, after locating the creature with your phone, you take aim on the smartphone touch screen and throw a *Poké Ball* to catch it. By putting the camera on, the *Pokémone* becomes live in *Augmented Reality*, and one can even take pictures with the creature on location. You can train your Pokémon in *pokégyms*, and there are *PokéStops* located at interesting places, making the Digikids who have overwhelmingly embraced this game, to discover new interesting places, including finding their way to nature. However, the danger of having kids running around in nature with no outdoor skills, and the risk for injuries, and potential walking into restricted areas, has let some Park services in the US to introduce **ParKémon**[136], a **pokéminification** of attractions by using guided *Pokémon* programs, events and guidelines how to behave in the park during the *Pokémon* hunt, and even promote parks with their number of *Pokémons*, *Pokéstops* and *PokéGyms* in the park. Texas State Parke offers a free "*Pokémon GO: A Trainers Guide to State Parks*" an app with trail maps marked with *Pokéstops* and *Gyms*, calendar for *Pokémon* events in the parks, tips for finding rear *Pokémon* species and hot spots, visual lists of *Pokémons* caught in the park, hashtags to score all creatures caught in the park and more. They also suggest that "*When you don´t have a cell signal, take a moment to enjoy the natural beauty of your park*!" This pokéminification will also revolutionise travel industry as the game has proven itself capable of affecting real-world places by creating in-game reasons for being somewhere. People who own stores or sites in the real world can, for example, pay Nintendo approximately $1.19 per hour for "**lures**," which encourage the spawning of valuable in-game creatures in a real-world location. These lures create foot traffic and potential purchases in the real world. An ingenious man in Portland, Oregon, invented "**Pokémon Safari**"[137], offering players for a charge of $25 for an hour, to be driven around to capture *Pokémons* without having to worry about the hassle of driving. *Pokemon Go* is the strongest example yet of AR's ability to affect real world behaviour, and it is surely just the beginning for this promising technology. With over 100,000 virtual reality headsets shipped in 2016 and kids spending the majority of their waking hours using handheld devices and playing in virtual worlds, increasingly more time will be spent connecting in a world not limited by physical distances.

TripAdvisor, the world's largest travel portal, is one of the best-known examples of gamification in the tourism industry. The company offers the ***funware*** gamification platform on its website, which allows tourists to express their reviews on different destinations, hotels, restaurants, etc., gaining various rewards. This stimulates the interaction among tourists, creating a *TripAdvisor* community, promoting travellers' choice destinations, attracting tourists on website, increasing the time spent on the website, and developing tourists' loyalty. However, the *funware* heavily focuses on the use of 'points' (e.g. badges, levels, awards) for generating extrinsic motivation and triggering the users' engagement. To increase the effectiveness of its *funware*, *TripAdvisor* uses *Facebook* for developing a more sophisticated gamification application that enables the users to personalise the game and interact with website users, compare scorecard with *Facebook* friends, and immerse in virtual travel words by reading the travel experiences of their *Facebook* friends. Research[138] confirms that such *social funwares* using user-centred mechanisms generate better gaming outcome then externally imposed game mechanics such as *TripAdvisors* points. Research[139] , after reviewing 15 mobile *advertgames*, reports that game apps are not always successful in the travel industry. Some failed to engage travellers, and many lack playfulness and fun, and most lacked information about the destination and country. This research suggests that tourists have information needs which differ from other players, as tourists usually have a **limited time** at their disposal and are not familiar with the location. Therefore, when playing games, tasks need to be less ambiguous and less challenging, but more fun.

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[136] http://tpwd.texas.gov/state-parks/park-information/gaming, http://www.stonemountainpark.com/Activities/Recreation-Golf/Pokemon-Go
[137] http://gizmodo.com/entrepreneurs-are-offering-uber-style-rides-for-pokemon-1783453321
[138] Sigala 2015
[139] Celtek 2010

After the trip (*play when you are home again*), games are mainly used to recall the journey and show off to other people. They can also support players to further engage with the destination and expand elements in depth. Rewards in the form of free holidays, meals, and entry to attractions can provide the motivation and the challenge to continue the player involvement and stimulate repeat visits. After-trip gaming could also contribute to tourism marketing by engaging gamers and making them **ambassadors** for the tourism organization and destination. As tourists have already been to the destination, the mixed feeling of reality and fantasy when recalling the trip can enhance tourists' satisfaction, keep the destination in their memory, and encourage them to recommend it to other people.

Social network trends

The history of social media is traced back to and co-evolved with the evolution of the *Internet*. Social media started with precursors such as *Bulletin Boards* (1978), *Usenet* (1979), and *Internet Relay Chat, IRC* (1988) before the launch of *Internet* (1989), followed by the first webpage in 1991 and first blog (1994). *GeoCites* launched 1995 personal home-page services and in 1996 *ICQ*, a free Instant Messaging software was launched. *Microsoft Hotmail* started in 1997 and *AOL Instant messenger* (1997) followed by the launch of *Google* (1998*), Livejournal* (1999), *Blogger* (1999), and *Napster* peer-to-peer file sharing. The 21st century started with the launch of *Wikipedia* (2001), *Frienster* (2002), *last.fm* (2002), *LinkedIn* (2003), *Photobucket* (2003), *Myspace.com* (2003) and the blogging platform *WordPress* (2003), communication channel *Skype* (2003) and *Facebook* for Harvard students (2004). Podcasting started in 2004, *Flickr* Image hosting (2004), *Digg* – social bookmarking (2004), *Facebook* for high school students (2005), *YouTube* (2005), *Twitter* (2006), *Slideshare* for presentation sharing (2006), *Justin.tv* (2006), *tumblr* (2007). *Ustream* (2007), launch of the *iPhone* (2008), *Posterous* (2009), *Goggle buzz* (2010), *Pinterest* (2010), *Instagram* (2010), *Google+* (2011) to mention only a few. The Social media landscape has now exploded with hundreds of platforms for different interests, and is beautiful summarised in the "**Social media Prisma**"[140] of *ethority Social Media Intelligence*[141], (*figure11*)[142].
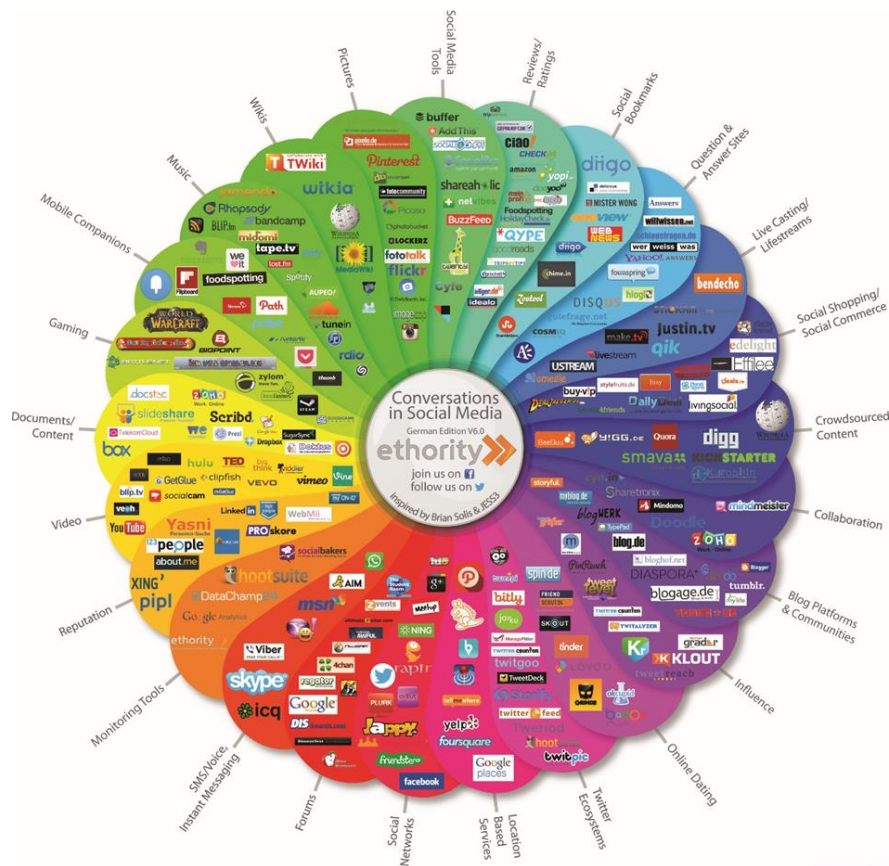
Social media, being one of the global "megatrends" in digital development, has significantly impacted the tourism system and affected the traveller's decision process. It offers a large scale online participation, emphasized transformation of consumer to more active roles, which are called **prosumers**, one who is both producer and consumer, thus defining the web 2.0 concept as well as co-produced experiences (Gen 2.0 experiences). Over a third of the total global population has some form of **social media** account, with somewhere between two and three billion people being active social media users. There are several different types of social media for posting texts, pictures and videos (*Facebook*, *Couchsurfing*), microblogging services (*Twitter)*, business platforms (*LinkedIn*), content-sharing sites (*YouTube*, *Flickr*), visual social medias (*Pinterest*), wikis (*Wikipedia*), location based sites (*foursquare*), and review sites (*TripAdvisor*), and some social media platforms are presented in Appendix 2. Posts on a social media can be commented, liked as in *Facebook*, and shared on one's own "**feed**". Lately ads have increasingly penetrated social platforms such as *Facebook* and *Instagram*, as well as increasingly news-feeds, diluting personal social interactions and making them less personalized, thus, driving some to find new platforms, or more intimate platforms such as **snapchat**. For example, *Instagram* has increased the number of advertisers from 200 000 to a million in just one year, and in 2016 Instagram opened to create business profiles that can be associated to advertising, and already 8 million accounts have changed to business

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[140] http://www.hotel-newsroom.de/socialmedia/soziale-netzwerke-deutschland/
[141] http://ethority.de/social-media-prisma/
[142] http://www.hotel-newsroom.de/images/social-media-prisma-deutschland_m.jpg

accounts. Buying outreach of posts on *Facebook* now also generate a sponsored post on *Instagram*, and *Facebook* business account can be linked to *Instagram* accounts.

Figure 11. Social Media Prisma that summarises the social media in 2016 (with permission by ethority Social Media Intelligence, http://ethority.de/social-media-prisma/)

A recent trend is that users are posting fewer posts on *Facebook*, as sharing content has decreased with 5,5% between 2014 and 2015, and personal stories and reflections has decreased with 21%, and many people under 30 have left *Facebook*[143]. One reason to decreased sharing is that users have so many friends on *Facebook* that it no longer feels as a place to share Intime personal stories. The increased number of ads and news feed has changed the character of *Facebook* as a social arena. To meet this trend, *Facebook* has changed its algorithm so that personal posts are higher ranked. However, Americans still spend an average of 40 minutes on *Facebook* every day[144], which is twice the amount of time we spend reading (19 min per day, young people only 8 minutes)[145], and nearly half of adult Americans get their news via *Facebook*[146]. Other trends in social media are the trend of younger people avoiding platforms where elderly people are such as *Facebook* and *Twitter*, and preferring instant messaging such as *Snapchat* and more pictographic media such as *Instagram*. Some predict the end of the *Facebook* era, while others think *Facebook* will keep on dominating the arena by adjusting and expanding its services. *Facebook* has experimented with their algorithm, and lately adjusted it so the feeds are preferring post that are similar what you have liked or shared before, creating a narrower interest bubble, the feeds showing more of what you are watching.

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[143] Jajja2016: Facebook more unpersonal
[144] http://www.businessinsider.com/how-much-time-people-spend-on-facebook-per-day-2015-7?r=US&IR=T&IR=T
[145] http://time.com/2909743/americans-reading/
[146] http://www.niemanlab.org/2016/05/pew-report-44-percent-of-u-s-adults-get-news-on-facebook/

Social Media have a great extent been associated with *Facebook*, founded 2004 by Mark Zuckerberg and three co-founders from a Harvard dorm room to let students interact and rate each other on campus. In 2005 more than 800 colleges were added and in 2006 everyone could join, and news feeds was introduced. In 2008 *Facebook* ads was introduced where markers can target audience based on user´s social activity. The like button was introduced in late 2008. *Facebook* has continued to grow to a current point of 1.79 billion monthly active users, thus being the largest social media platform. One of the few regions *Facebook* has not been able to penetrate is China, but here there is an even more pervasive social media system in *WeChat*, Chinas largest messaging platform, that at the end of 2016 had 768 million daily logged in users, 50% of whom used *WeChat* for more than 90 minutes a day[147]. *WeChat* has launched a new initiative called "*Mini Programs*", a service that allows third parties – including OTAS, airlines and hotels – to build "light" apps which operate entirely within the *WeChat* platform and do not need to be installed. It allows travel business to have an enhanced presence on one of the largest Social media platforms.

Social medias incredible daily presence in people's lives and widespread use makes it one of the most powerful marketing tools possible. In the UK for example, the weekly reach of social media stretches to nearly two thirds of the adult population. As social media are used for and is influential on traveller´s purchase decisions higher up the decision process, they are one of the most useful marketing tools in tourism marketing. *Facebook,* knowing this, is now on a perpetual quest to capture traveller's attention and personal preferences, by formalizing the process of gathering advice from traveller friends with the release of its new recommendations feature, travel buyers will be able to ask their friends (as they do already) about where to go, stay, eat and what to do when planning a trip. *Facebook* automatically detects the question and will prompt users to label it as a request, creating an eye-catching post which alerts friends that advice is being sought. And as the recommendations pour in from friends, *Facebook* automatically identifies the recommended hotel, destination or attraction and plots them on a map so users can see what is on offer. Individuals can click on each of the business previews listed, sending them directly through to the brand's *Facebook* page where there should be a click to buy, book, call or reserve button. This incredibly intuitive interface saves users a huge amount of time, as they can quickly review trusted recommendations all in one place, with the ability to buy in just a few clicks. And what is good for buyers is equally beneficial for travel brands. Any destination, attraction, venue, restaurant or business looking to grow can now rely on the genuine experiences and advocacy of customers to drive **direct bookings** from *Facebook*.

WhatsApp is one of the most popular individual channels. The platform hit the 1 billion users mark in January 2016. *WhatsApp* and *Messenger* combined now see 3 times more daily messages than traditional SMS. The former has a combined 60 billion messages sent daily, versus 20 billion for SMS. Hotels are starting to embrace these trends, realizing that messaging is increasingly how people prefer to communicate. And hotels are also capitalizing on our growing inclination to use messaging not just socially, but with businesses as well. the medium is rapidly evolving from facilitating only social conversations to now also facilitating business to consumer conversations.

A new trend from 2016 is that **messaging** is exploding as an engagement channel at hotels[148]. Hotel brands big and small have made headlines for their adoption of various messaging channels, as well as for

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[147] http://blog.wechat.com/2016/12/29/the-2016-wechat-data-report/
[148] tNooz 2016: Hotels face a crucial moment for social messaging and chat tools

the development of their own messaging systems within existing apps or apps for the purpose of just messaging. Consumers have taken quickly to messaging platforms like *Facebook Messenger*, *WeChat*, *Snapchat*, *WhatsApp*, *Viber* and others, on top of their existing SMS abilities. *Hyatt* has also been using Asian messaging app *WeChat* to connect with the Chinese market. *Shangri-La* hotels uses *WeChat* for **content marketing** campaigns. *Starwood* has experimented with *WhatsApp*, as well as with *Blackberry Messenger*. With their *Lucy app*, *Virgin hotels* lets guests not only message hotel staff, but also communicate with other guests, too. Even the online travel agencies have gotten into the messaging game, with *Priceline* launching *Pulse* and *Expedia* debuting *Conversations*, both messaging tools that let hotels talk with guests who have booked through these online agencies. Meanwhile *Kayak* has taken the approach of launching a **chatbot** on the *Facebook Messenger* Platform. Research shows social messaging is the fastest-growing online behaviour within social media during the past five years. *WhatsApp*, *WeChat* and *Facebook Messenger* all individually have more monthly active users globally than *Instagram*, *Snapchat* and *Pinterest* combined. **Social messaging** will account for 2.5 billion global users by 2018, versus a projected 2 billion general social media users[222].

Messaging is a particularly sticky engagement channel. About 90% of all text messages are read within 3 minutes of their delivery – and over 99% of all text messages are read by the recipient[149]. The real-time, immediate and personal nature of messaging is part of what makes it such a compelling engagement channel. It's conversational, much like traditional interaction between guests and staff. It's also threaded and tied to an identity, which means context is retained. Staff can scroll through previous exchanges with a guest to recall preferences and previous requests. And, unlike phone calls and in-person communication, conversations in the form of messages between the guest and a hotel represent data that can, for the first time, be analysed individually and in aggregate. Messaging can help hotels improve guest satisfaction, by giving hotel the opportunity to take advantage of every request, suggestion, concern or compliment from guests. Instead of having to make calls to the front desk, hotels can use messaging as a means to proactively communicate with their guests, instead of simply reacting. The new generation of guests is more comfortable with texting vs. calling. The mobile device represents convenience and a sense of connectedness to the hotel at all times, even before arrival. Messaging can help hotels improve revenue by actively engaging more guests throughout their journey and by driving more revenue through mobile marketing, loyalty programs and up-sell and cross-sell opportunities. One of the biggest benefits hotels have seen from adopting messaging is an improvement in their *TripAdvisor* reviews. By letting hotels privately resolve issues before they reach social media or review sites and by digitally prompting guests to leave positive reviews, hotels have seen immediate improvements in their online scores. Hotels that have adopted messaging have found guests are increasingly willing to complain to the hotel directly, instead of airing their grievances on *TripAdvisor* after the trip. Having messaging gives hotels the opportunity to respond to complaints that would otherwise have gone unnoticed.

Messaging has entered the travel mainstream in 2016, primarily driven by text based bots, although voice based interfaces are starting to make their presence. **Bots** are virtual customer service agents that operate mostly on social networks, especially *Facebook*. 2016 was the year when **chatbots** emerged as a new interface for consumer interaction[150]. Advances in artificial intelligence technologies – such as neural networking and natural language processing – have allowed brands such as *Facebook*, *Google*, *Apple* and *Amazon* to offer conversational products, letting consumers order products or map their journeys through speech or messaging. Machine learning will allow chatbots to become more and more

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[149] SinglePoint 2010: Conversational Advertising
[150] tNooz 2017: What now for chatbots in travel?

sophisticated while customer expectations will rapidly evolve in tandem. On-demand 24-hour information and service will become commonplace. When online travel agents democratised travel 20 years ago, they gave the power of flexibility and choice to the consumer. But chatbots represent the next seismic shift that will evolve not only the travel booking process but also the customer service experience for decades to come. In 2016 *Expedia* launched a *Facebook chatbot*[151], a new *Expedia* skill for *Amazon Alexa*[152] and an *Expedia Skype chatbot* [153], the first bot experience on *Skype* to connect a traveller to a call with an agent within the platform. Customers can easily search for and make a hotel booking, or manage selected elements of travel bookings, including hotel or flight confirmations or flight cancellations. There's a vibrant and growing ecosystem of start-ups developing chatbots for all stages of the travel funnel. New companies such as *Mezi*[154], *KimKim*[155], and *Pana*[156] have sprung up to help facilitate the booking process for flights, hotels and entertainment: once the customer has provided the initial information and search terms, it becomes much easier for chatbot technology to help by automating key steps in the booking process. There are already more than 11,000 chatbots on *Facebook Messenger*[157]. Bots mostly improve internal communication or help execute on some basic customer service requests through *FB Messenger* and *WhatsApp*. In the coming years, we can expect wider adoption of bots in the industry to improve both guest communication and staff communication, both of which can improve the guest experience tremendously.

Megatrends in digital technology and society

To wrap up this first section of "**Digital trends in tourism**", we will listen to three outstanding trend analytic company's. Their analysis to a great extend confirm the analysis of this chapter, and of cause also overlap with it and themselves, strengthening the conclusions of the future. We start with *Interactive Intelligence*[158] who predict **Five Technical trends** that will redefine customer's experiences:

1. **Multimodality** - The speed and usefulness of information sharing is growing exponentially. We consume and share information using multiple modalities - words, images, sound and video. It's instant, intuitive and helpful. We swiftly search, watch, listen, read, type and talk – all at the same time. The multimodal mindset is about speed, choice and "cool factor", Make sure customer-to-agent communication includes multiple modalities with the ability to move from one to another smoothly within the same interaction.

2. **IoT, Internet of Things** - "Things" are devices at home, on your wrist, in the car, everywhere that generate automated and live customer interactions. IoT are predicted to change the world, for long time spoken about, but now starts to take off due to many new smart sensors that have reach the market, making it possible to apply sensors to machines and things. Together with new platforms for applications to connect sensors with functions and the general use of clouds has opens new possibilities. *Windows 10* will during 2017 introduces *IoT Core* to handle connected "things", thus making the IoT-technology broadly available[159].

3. Traditional industries such as mining, manufacturing, healthcare, transport- and logistics have quickly adapted this new technology, while tourism industry is still on its toes to embraced IoT. Smart clothing with sensors, self-driving cars, are just the beginning. Ecosystems of computers, smartphones, transport vehicles, wearables, smart clothing, smart shelfs etc. will revolutionize retail,

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[151] http://www.topbots.com/project/expedia-facebook-bot-guide/
[152] https://viewfinder.expedia.com/features/alexa-ask-expedia-get-trip-details/
[153] http://www.windowscentral.com/skype-introduces-new-bots-expedia-ups-and-more
[154] https://mezi.com/
[155] https://www.kimkim.com/
[156] https://pana.com/
[157] https://venturebeat.com/2016/06/30/facebook-messenger-now-has-11000-chatbots-for-you-to-try/
[158] Interactive Intelligence 2017: 5 Tech Trends Redefining the customer Experience
[159] Computer Sweden 2017: Så drar du nytta av sakernas Internet

create "**Smart homes**" and "**Smart cities**", - infrastructure oriented applications with the aim of improving the quality of life of citizens. **Smart Destinations** transforms IoT infrastructure of Smart Cities into service design for visitors[160]. Sensor network, smartphones with location and context applications enable the creation of intelligent systems in tourism that can supply tourism consumers and service providers with more relevant up-to-date information, decisions-support and more enjoyable tourism experiences, using recommender systems, context-aware systems, autonomous agents searching and mining web resources and Ambient Intelligence. This complexity stems, among other factors, from the mobility of tourists and the increased risk and uncertainty experienced in unfamiliar environments, information contained in distributed sources, the idiosyncratic quality of tourism decision-making, the multi-faceted nature of tourism experiences, and the interdependency of sub-decisions. Thus, **intelligent systems** can provide great value if they help in collecting and pre-processing information according to personal and situational needs of the user. Thus, a definition for *Smart Destinations* has been proposed[14] as "A destination is a Smart Destination when the investments in human social capital and traditional transport and modern ICT communication infrastructure meet the social, cultural, economic, leisure and personal needs of visitors." In tourism transport companies and others are developing IoT-technology to improve the traveling experience, security, maintenance and revenue. Another IoT-application is with drones that are used by real estate, rescues operations, monitoring of places etc. IoT also drive business transformations into the digital world, and by IoT collecting Big Data for business intelligence and strategic decisions. IoT-data analysis will be a new market, also within tourism. The number of "Things" is predicted to grow exponentially – by 2020 there will be over 25 billion "things" connected to the Internet, with over 250 000 IoT-applications. This opens new business opportunities for innovation in every business area.

4. **Data Science** - Effective use of **data analytics** will determine who survives in this new era of digital enlightenment. Winners will operationalize key insights derived from big data and math to deliver customer service that is far more proactive, timely and cognitive. You must use science to your advantage to deliver highly differentiated and personalized customer experiences. Partner with cloud providers that are experts in this area and have modern, data-centric architectures. Store endless amounts of detailed operational and behavioural information. Use machine learning to detect patterns and trends that can be used to deliver the next great customer experience.

5. **Bots** - bot is software that performs an automated task over the *Internet*. They have traditionally addressed more repetitive, mundane work. However, breakthroughs in artificial intelligence and machine learning are transforming bots into brilliant digital tools. Automating business processes with bots is expected to become a large opportunity for almost every enterprise. Overall, analysts expect the impact to reach more than $9 trillion and affect 230 million knowledge workers.

6. **Microservices** - Most older cloud applications are monolithic under the covers, offering limited innovation, scale and reliability. A failure in one area can have a devastating impact in other areas, resulting in service outages for many or even all customers ("If one fails, they all fall"). Modern microservices cloud architecture, where applications are divided into hundreds of independent microservices, introduces innovation, resilience, elastic and simplicity. A failure in one microservice has no impact on the other, providing unsurpassed reliability where "if one fails, another one is waiting right behind". Microservices are independently scaled to dynamically adjust to any area needing more resources. Cloud providers that build applications on this architecture innovate rapidly by continuously adding new individual microservices. As your business changes exponentially, so do your applications – they take you where business is going.

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[160] Lamsfus & Alzua-Sorzabel 2013

Kairos Future in several reports "*Whats on ….*"[161], Predict **10 global trends** each year. Their analysis concludes that there are times in history when societies experience extraordinary and **disruptive change** of a magnitude and quality that will forever reshape the foundations of society. Such periods in history are revolutionary in the very profound meaning of the word, and we are in the beginning of such a disruptive period. *Kairos Future* dubbed 2016 as the year of the perfect storm, starting this disruptive period and name 2017 as the year of the cultural clash, presenting 10 cultural conflicts because of this disruptive force. Some of the global trends that are relevant for this papers context are presented here:

- **The Robotic Revolution**: They're already here, not yet like R2-D2 and C-3PO, at least not in every office or home. But they are here in the format of drones and self-driving cars.
- **Automation Revolution**: Automation is not only about physical robots, although the mechanics are crucial. It's first and foremost about the algorithms behind them. And algorithms are getting better fast. They already write articles in newspapers and magazines, they make weather forecasts and bet on stocks. The world's most advanced cognitive computer is called *Amelia* and was recently released by *Ipsoft*, *Amelia* learns like a human. After 2 months in customer service she can solve 60 percent of all cases alone and without assistance, just by listening to how human colleagues solve them. Imaging what she can do after years of learning.
- **Personalized Revolution**: Internet search is getting intelligently personalized. By the algorithms developed by *Google* and *Facebook* we don´t need to search any more, but get wat we want trough automatic authentication based on the digital fingerprints we leave, which also allow us to move seamlessly between sites and platforms without ever logging in.
- **Availability revolution**: We have every library advisable instantly at our fingertips. We also have access to university programs, informative talks and journals from all parts of the world. Thanks to the availability and instantaneous revolution, we can be smarter and more educated than any generation before us ever could dream of. Thanks to *Amazon*, *Alibaba*, *Ebay*, *Spotify*, *Youtube* and all the global online players we also have access to all possible products, music and experiences produced in the world. By *Pricerunner* and other product search engines we always can find the cheapest prices on our purchases.
- **Connectedness Revolution**: Hundred thousand billion sensors are predicted in 2030, monitors are going to connect "everything" giving immense opportunities. We will be able to measure and control anything we like, be it environmental conditions, traffic flows, autonomous cars, energy consumption, blood pressure or glucose levels. When we wake up, we will be advised what to take for breakfast or whether we should work out before or after, depending of our values and general condition that specific morning. And our homes will be able to control themselves, adjusting light, heating and air quality after each specific person's desires. Such intelligence-connected sensors overseeing every step we take sounds like Science Fiction, but this Internet of Things is already a reality in many areas.
- **Low Cost Revolution**: Globalization and automatization gave us cheap labour and almost costless gadgets. Technology once very expensive such as computers or TV-sets are now available for nothing. During recent years, the digital and sharing economy has taken low cost to a new level, and digital products (apps, music, films, information etc.) can be multiplied and distributed at no cost at all. Powerful automation increases productivity and replaces white-collar workers with algorithms, and gives corporate clients more for less.
- **Disruption**: Faced with a world in chaos, nations, companies and individuals will be engaging in introspection, re-evaluation, searching for new solutions and salvation. Nothing is what it used to be; answers that are simple and straightforward no more exist. Terrorist groups proclaim new nations and declare war on the entire world. The world's most successful taxi company does not own its cars,

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[161] Kairos Future 2014: What's on 2015 – Heaven or Hell?; Kairos Future 2016: A perfect storm A summary of the presentation on upcoming trends "What's on 2016"; Kairos Future 2016: Year of the Culture Clash A summary of the "What's on 2017" trend lecture

the biggest hotel chains do not own any rooms, the largest telecom operators do not own any telephone networks and the biggest software companies only produce a fraction of all software they sell. Virtual currencies like Bitcoin, that used to be mocked, are now looked upon as the rescuers of the world by financial firms.

- **New Futures**: The interest in future has been coming and going, but not since the 1960s have a greater number of optimistic and spectacular visions for the future been ready for realization. The Dutch project *Mars One* is maybe the most spectacular, with the ambition to create a colony on Mars in 2027. Hundreds of thousands of people have applied to participate in this colonization based on a single no-return ticket to Mars. *Tesla's* and *SpaceX's* Elon Musk has the same ambition, but puts the date of realization 10 years further away in the future. **Space tourism**[162] through private enterprises such as *Virgin Galactic, SpaceX*, *Blue Origin*, *XCOR Areospace* and others are planning to send space tourist on sub-orbital trips, and *SpaceX* even on lunar free return trajectory. These enterprises have launched a race of establishing spaceports, where **Spaceport Sweden** is competing with US, UK, Germany and others. Musk is also testing the *Hyperloop*, a magnetically driven train with a maximum speed of 1200 km per hour. A journey between Los Angeles and San Francisco will take just 30 minutes, at a cost which is only a fraction of a plane ticket. These trains can depart at 30 minutes' intervals, with up to 24 passengers on each train.

- **New ownerships**: New ownerships in the form of sharing, of taxis, housing, cars and ideas in the **Sharing Economy**. And borrow everything that can be borrowed to maximize comfort and flexibility and to minimize hassle and costs. For both companies and employees. Saving is the new trend after decades of wasting. With a sharing-based economy and new ideals, new behaviours will also arise. The question is also what happens when cars become autonomous, have a virtual cash register that accepts *Bitcoins*, tank electricity automatically when needed and drive to the auto mechanic for service themselves. And when all tools have a personal identity and can come to you, or at least see to it themselves that they are delivered to you, what will happen to ownership then?

- **New Values and Beliefs**: Yesterday's dream was about freedom, experiences and short engagements. But today new ideals and dreams are emerging among the young: they value security more than freedom, truth more than opinions, the little world over of the big one. Yesterday's youth considered the manager position as one of many possibilities, and as an exciting challenge. Today's youth see it as a life-long engagement where they want to be productive, develop and improve an organization, employees and themselves. And they want to be paid well for their work. Just as the crises of the 1930s and the 1940s created new ideals, we now see a trend shift when **Generation Pragma** takes over.

- **Work: Hope or Fear?** We see the emergence of two radically different perspectives on the future of work. Many enthusiasts of blazing technological progress long for a future where everything is automated, and people don't work, while others look upon the same future fearing their own obsolescence. The next futuristic dream in line to come true is that of the "human-free company". *Google's* system *AlphaGo* beat world champion Lee Se-Dol in March 2016, but it wasn't just a matter of processing power, *AlphaGo* made moves we would recognize as creative. It teased its opponent and in the second game exploited an unexpected opportunity in a move unlike what any human player has ever done. *AlphaGo* created something new by playing, learning and exploring, indicating that Artificial intelligence is not far away anymore.

- **Star Trek economy?** Markets and competition are subject to clashing visions. Online winner takes all and second place is seldom worth much, and fourth or fifth nearly nothing. One search engine is enough for everyone, and so is one or a few communications platforms and one travel-app. The only way to survive is to claw your way to the status of global empire before someone else does – or get

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[162] Kemp 2007

bought out while trying. The philosophical alternative way, the "**post-scarcity**" era, is the idea that in the future, thanks to technology and automation, everything will exist in abundance: data, information, energy, computing power and intelligence. Marginal costs will approach zero, both in the digital and the physical world. We then need no money or nor businesses. Nobody needs to make anything. We can all share, print and synthesize what we need in the **Star Trek economy**. Time will be spent on luxury and experiences, In Real Life but mainly in virtual life, and "*Matrix*" will lure around the corner.

Another trend researching company is the German company *TrendOne, which* identified several tends for 2017 and beyond[163]:

1. **Conversational Commerce** - Digital conversations are the new form of customer interaction. Messengers, as central platforms, are becoming an ecosystem for retailers, brands and service providers. Whether by text, video or automated as a chat bot, natural language signalizes proximity and comfort. Smart-home systems like *Amazon Echo* and *Google Home* have completely done away with graphic user interfaces. "Voice First" is becoming the key component of service architecture for all providers.

2. **Deliver Readiness** - Immediate deliverability is becoming a guiding principle in product development. Instant and Now are the key words of delivery services and logistics companies. Goods and services have to be "deliver ready" in future and be available to customers anytime and anywhere. Products and services are developed based on the principle of deliverability.

3. **Mixed Reality** - Holographic images herald an age without screens. Limiting the user experience to screens is a thing of the past. Mixed reality enables the realistic presentation of interactive 3D projections in the direct surroundings. Headsets like the *Microsoft HoloLens[164]* blend digital and physical display levels. People use eye-tracking, gestures and voice to navigate their way through mixed reality. Holographic projectors like the *Holovect[165]* have succeeded in fully combining reality and virtuality. Where the possibility of touching holograms was once just in the realm of science fiction, it is now slowly entering our present lives.

4. **Blockchain Business** - What the internet has done for communication, the blockchain will do for transactions. The blockchain has the disruptive potential to turn decade-long domination by industry mechanisms and business models on its head. The blockchain is more than just a secure, digital infrastructure for making transactions. The blockchain serves as a technically implemented form of trust between people so that there is no longer any need for trustworthy third parties. It can be used wherever security, fairness, distribution, accounting, verification and tracking are required. To begin with, the revolution is taking place in the background, in the back-end. End customers will first come into contact with the blockchain via **smart contracts**[166] (programmable money) or **decentralized application**, "*dapps*"[167].

5. **Retail Robots** - A new wave of automation is turning robots into cooperation partners. Around the world, the retail business is testing the use of robots in its stores. Self-driving shopping carts like "*WiiGo*" and "*Dash*" follow customers independently through the shops. These concepts are backed up by the vision of automated retail.

6. **4D Printing** - Materials are becoming machines. 3D is turning into 4D. This is made possible by programmable materials that can independently transform or further develop after being manufactured. Materials are capable of assuming tasks. When built into furniture, they ensure

[163] http://www.trendone.com/en/trend-universe/trends-2017.html
[164] http://www.microsoft.com/microsoft-hololens/en-us
[165] https://www.kickstarter.com/projects/2029950924/holovect-holographic-vector-display/description
[166] https://www.americanbanker.com/opinion/smart-contracts-are-the-future-of-blockchain
[167] http://www.coindesk.com/7-cool-decentralized-apps-built-ethereum/

autonomous assembly. They are no longer just materials but are becoming machines. Programmable materials can not only be printed or industrially produced, but also grown. Bacteria in the fabric of sportswear react, for example, to humidity and then ensure ideal training conditions. Adaptive, multimodal, self-healing and biodegradable – 4D printing heralds the future of materials and it won't have much in common with today's engineering.

7. **Space Colonization** - Humanity is heading towards becoming an interplanetary species. Is the privatization of space leading to an era in which humanity maintains a system of rocket bases in space and colonizes other planets? *SpaceX*, *Boeing* and *NASA* are working feverishly on this vision. They all plan to send the first manned mission to Mars in 2026. A new space area is approaching that will also include **space tourism**.

8. **Quantum Clouds** - Superfast computing power through quantum computing-as-a-service. The company *D-Wave Systems* is the first provider of commercial **quantum computing**. The quantum computer it developed performs at 512 Qbits. The company's first customers include *NASA* and *Google*. According to its calculations, the quantum computer is around 100 million times faster than a conventional computer. The quantum computer can therefore considerably accelerate database searches, simulate complex systems and crack today's encryption technologies. In future, it will be possible to book and acquire its computing power from the cloud. Quantum clouds could well become the platforms of the future and they will be provided by companies like *Amazon* or *IBM* and trigger the era of hypercomputation.

TrendOne also identified **16 Mega tends**[168], that describe structural changes in society that influence all aspects of society and influence our lives over sustained periods of time. These are:

1. **Aging Society** - Medical innovations help to keep people agile and active into old age.
2. **Attention Economy** – The battle for attention is won by whoever adapts their message to the respective locations, devices, situations and moods, emphasis is being placed on emotionalisation and added value to win the rare asset of attention. So-called tailored touchpoints help to increase the possibility and quality of contacts between brands and customers.
3. **Autonomous systems** - use a machine-based form of self-organisation to carry out human work. everyday life too is becoming increasingly influenced and shaped by intelligent machines. Computers and sensors embedded in everyday appliances form the technological basis of new mobility concepts. Autonomous assistance systems are not only changing mobility but also society at large by creating more time for people and thereby boosting the quality of life.
4. **Connected World** - The increasing levels of connection has led to a new social dynamic that combines individual contributions with community-based actions and experiences. Consumer has given way to the prosumer, who is now involved in many stages of the value chain – from generating ideas for new products, to helping to decide on the range and to the marketing process. Social Software, the basis of social networks, is entering both private and business relations. Sharing, openness and transparency are today's dominating guiding principles. The Connected World mega-trend therefore heralds the entry into the era of the digitally supported empowerment of consumers and citizens.
5. **Continental Shift** - Forecasts show that Western industrial nations will become less important to the world economy in future and will be replaced by what used to be known as emerging economies and developing countries. The belief in progress in the Western world is steadily ceding to pessimism about the future and criticism of technology, while a new, young and educated elite and globally competitive companies in Asia and Africa ensure a new self-confidence.
6. **Data era** - Every day sees the emergence of 2.5 exabytes of new data, and the overall figure doubles every 40 months. Today, more data races through the *Internet* every second than was saved in total

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[168] http://www.trendone.com/en/trend-universe/trends-2017.html

just 20 years ago. We are walking data makers – social media activities, and self-tracking via the smartphone have brought about a growth in databases. Valuable information can be extracted from the multitude of data. With the help of big data techniques, companies are starting to comb their way through their customer data in search of hidden patterns.

7. **Distrust Society** - the basis of trust in central institutions is breaking up, as today, information spreads quickly and widely. The wide range of sources that people use for information and the invisible network of interests behind them have made people more sceptical. There is a growing desire to remove oneself entirely from political and economic interests. As a counter trend to the information society, the **Distrust Society** will raise the concept of credibility to the key aspect of public communication and interaction between individuals and institutions over the coming years.

8. **Healthstyle** - Health is no longer merely the absence of illness, but is a lifestyle in its own right. Working on the body, mind and soul with the aim of achieving greater vitality has become a philosophy of its own. The feeling of well-being has become a results-oriented project in which people can recharge their batteries to attain even more achievements. Inner health is also maintained by slowing down and developing a more spiritual view of the world. Thanks to digitalisation, Healthstyle has become an omnipresent companion to our daily lives. Health assistants are moving into our homes and devices. This enables independent monitoring of our own vital signs, as well as health consultations from any location and easier management of our health data. Taking preventive measures regarding our health opens new fields in both analogue and digital product and service markets.

9. **Individualisation** - Globalisation, digital connection and the growth of prosperity have multiplied the options for self-development over the last couple of decades. Solidarity and collective movements such as the workers' movement are no longer fashionable; everyone fights for themselves alone. People increasingly find themselves in competition with others through self-fulfilment and self-optimisation. When searching for more individuality and originality, everyone wants to distinguish themselves from others somehow. People create their own brand identity to stand out from the crowd. To become unique, we often must individualise totally normal products and services. From self-designed clothes, to media consumption, to a chosen lifestyle and leisure such as traveling. Companies have spotted this and are meeting the needs, either customised or needs-based, individualisation is becoming personalisation as customers want to be independent and flexible, as well as individual.

10. **Outernet** - The Outernet is the technical infrastructure of tomorrow. It originated when the *Internet* jumped out of desktop PCs onto the streets so that all the possibilities of the digital world – linking, search, personalisation, interaction – could merge with the real world. The Outernet has led to digital things becoming as important as the oxygen we breathe – we now take it for granted as it has seamlessly integrated itself into many aspects of our lives, business processes and the objects around us. the Outernet adds three important dimensions: place, time and the world of things. People are now entering a new relationship with objects and information. Product can carry around and display the history of its own origins and becomes *phygital*. The next stage will be objects linking up with each other and forming a **Web of Things**. They develop their own sense of awareness of themselves and of their surroundings, and can directly react to what's happening around them. The tangible world becomes more sensitive and can react to people's current needs. Its potential to revolutionize our lives is enormous.

11. **Seamless Commerce** - Discover it on *Instagram*, find out more in the app, test it in the shop, order it online, have it sent to the pick-up station and use the website's live chat for questions – that is not an unusual Customer Journey today. The digital revolution has turned the world of retail upside down. The borders between e-commerce and m-commerce are becoming increasingly blurred, where the aim of Omnichannel is Seamless Commerce, a seamless Customer Experience across all channels.

Traditional media like print, radio and TV are enhanced by new platforms and channels, and traditional real-life experiences such as tourism and outdoor activities are becoming enhanced through new digital platforms and channels as an omnipresent connecting link.

12. **Shy Tech** - High Tech has become Shy Tech, which works quietly in the background. Complicated devices with switches, cables and buttons are being replaced by intuitive interaction interfaces integrating itself in everyday objects. Surfaces are becoming user interfaces that enter our surroundings. This is made possible mainly due to the continuous miniaturization of technical components, wireless transmission possibilities and flexible electronics. Intuitive operability, such as voice, gesture and thought control, also contributes to a more natural interaction with technology. The Shy Tech solutions lead to the disappearance of any barriers when switching between different media formats or features. Instead, content can be consumed seamlessly on a variety of devices and products adapt to specific usage situations. The next step will see the emergence of intelligent environments in which devices and sensors are connected to each other where technology acquiring the art of empathy and learning to meet our needs and preferences. Digital agents remember things on our behalf and help to organise our daily lives and travel experiences.

13. **Skill Society** - Knowledge is one of the most important resources of the 21st century and plays an important role in productivity and growth in the post-industrial age. Smartphones and tablet computers now enable us to access information everywhere and always enabling everyone to instantly find and use expert knowledge. The focus here will be on transferring knowledge in experience through practical applications. Companies must constantly work with innovations through the new methods of collaborative working and joint ventures. Knowledge gained through experience will grow in relevance as we are currently in a transition phase between the knowledge society and the skill society.

14. **Sustainability** - Sustainability was an influential topic of the past few decades and it remains so today. The economy, the food production chain and the entire consumption process are all tested for sustainability. The economy is becoming the **reconomy** or **circular economy**: the reuse of used objects that were previously seen as waste will partly help to solve the problem of waste disposal. People are now trying to contribute to a more sustainable world through ethically correct consumption including ethical tourism. This involves purchasing products from the local region. To make it as easy as possible for consumers to buy ecologically sound goods, **ECOnvenience** products are showing that it's possible to combine ethical consumption and convenience. Thanks to a growing awareness of the consequences of our lifestyles, sustainability for companies and individuals now means accepting responsibility for future generations.

15. **Transhumanism** – The latest findings from human biology and technological advances make it possible trough DNA modification and neurological modification to modify and create the human nature. Previously a key-stone in Science Fiction, now wearables like smartwatches and electronic display devices are an indication of most people's willingness to accept the close proximity of technology. With these new possibilities, the natural limitations of the human body no longer seem absolute. From artificial limbs to electronics fitted in or on the body and right through to the insertion of partly autonomous small robots and manipulated microorganisms in the bloodstream – none of the procedures that go on inside the human organism now seem out of bounds. Even the creation of completely new life no longer appears distant due to the latest findings in the field of genetics. The unforeseeable long-term consequences and the unclear ethical and legal situation are faced with possibilities like effective treatments for previously incurable illnesses and an overall higher quality of life through new improvements in bioengineering, human enhancement, wearable tech, brain-computer interfaces.

16. **Urbanisation** - Half of the world's population already lives in cities today. According to estimates, this figure will rise to 75% by 2050. Concepts for ecological cities will minimize the impact of

environmental damage caused by urban centres as well as increase people's quality of life. The city residents themselves will reshape their own urban surroundings by blurring the distinctions between the city and countryside – be it through Urban Gardening or by integrating country practices into their urban lives. The smart connection of a city's residents produces synergy effects – the Collaborative City creates a completely new level of mutual support.

Digital trends in tourism business management

"Going digital is no longer an option – it´s a must!"
    Lisbeth Bahl-Poulsen, DG Growth, EU-commission

The development of the *Internet* in the late 1990s, have dramatically transformed operational and strategic practices in the tourism industry. The past 20 years have had an emphasis on technology *per se*, and since the year 2000 we have been witnessing the truly transformational effect of the communications technologies and how customers interact with tourism businesses (C2B, B2C) as well as business to business (B2B) interactions. The *Internet* revolutionised distribution channels, facilitating price transparency and competition, while enhancing production efficiency. The *Internet* also allowed monitoring of competitors and allowed offering of tailored and differentiated products, as well as enabling dynamically packaging individualised products by combining different travel products (i.e. accommodation, transportation, activities). However, marketing and distribution are still the most affected business functions from the technological revolution, as will be seen in the subsequent chapters. Now the business practises *per se* are changing in a radical paradigm shift. Not only ICTs empower consumers to identify, customise and purchase tourism products, but they also support the globalisation of the industry by providing effective tools for suppliers to develop, manage, and distribute their offerings worldwide. Increasingly ICTs are now used to reengineer all business functions and processes towards supporting the organisation on its entirety working process, redesigning processes and eliminating repetitive tasks, thereby reduced labour costs and increased efficiency.

In a survey[169] of over 2000 Australian tourism operators in 2013 to identify gaps and trends of digital uptake and transformation, it was found that across the different tourism industry sectors, 83% were present on the *Internet* with a website. The reasons for not having a website was explained as no need (56%), too small business to warrant a website (42%), not having enough time (34%), to costly (31%) and lack of technical expertise (28%). While traditional features have been widely adopted on the websites, such as product information (95%), photo gallery (86%), web-based inquiry form (74%) and maps (70%), more advanced website features such as user generated content and online videos were only used by a third or less of operators. Only a minority took advantage of linking to social media, to other businesses and to destination marketing organisations. About 40% had non-responsive webpages, thus webpages not optimised for mobile viewing, and only less than half took advantage of search engine optimisation. About 20% of tourism operator websites were updated only once a year or less. Almost all took boking for their products or services through their website, where 90% took email booking request, and only half provided consumers to check availability and price of products through their website. Only about half of the providers offered instant confirmation booking on their website, and of these about 70% offered online payment as well. Social media was used by about 50% of the providers and about 30% had their own app for mobile phones. Although this survey was made some years ago, and the digitalization has progressed since then, the study indicates that even well-developed destination such as Australia,

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[169] Mistilis & Gretzel 2013

recently had a significant journey of digital adaptation to go. Unfortunately, no similar studies of Nordic tourism suppliers have been published to monitor the present state of digitalisation in the Nordic tourism industry.

In a study Microsoft[170] tried to determine how customers perceive companies that are behind when it comes to digital technology. The aim was to study consumers' perceptions of small businesses and whether technology matters to them. The striking take-away was that more than 90 per cent of consumers said they would stop doing business with a company because of its out-dated technology. Thus, using digital technology is a matter of life and dead on the market. Companies that are not up to date with modern communications technology, for instance, are simply hard to do business with, and will lose both customers and collaborative companions. In a survey by *Kairos Future*[171] of 500 Nordic top executives from different industries, one third said they were late adopters of new technology, and in public administration as many as 56 per cent said they were late followers, or sceptics. Microsoft's survey is an illustration of how important technology is for brands today. The more demanding customers become, the more they expect companies to be on their digital toes. They reject outdated companies not only because they feel antiquated, but also because they are hard to do business with. Thus, not investing in technology and technology driven transformation is not an option. Not even if your business model isn't based on digital technology, such as in nature-based tourism.

Business transformation has recently become a buzzword, but according to research and business Intelligence trend analysts, such as *Kairos Future*[172], it is a paradigm shift that influences all industries, including the tourism industry. Traditionally, business transformation has simply meant rationalization and cost cutting. But today technology is far more than an aid in rationalization, but rather revolutionize business praxis. Thus, business transformation now usually means digital technology driven disruptive changes of working processes, lower costs and increased efficiency, new business models or even new services enabled by new technology[143]. By new technology is understood all the digital evolution mentioned in the previous sections, such as Big Data, Cloud Computing, Mobility, Social Media, Internet of Things, 3D Printing, 3D displays and holographics, Augmented reality, Nature user interfaces, Artificial Intelligence and Expert Systems, Mobile payments etc. All technology driven transformations share one characteristic: They are irreversible. As soon as a new technology has been introduced and accepted there is no way back. Trying to fight technology driven transformation is fruitless. The only option is to embrace technology and use it as a catalyst or enabler or be lagging behind your competitors.

Business digital transformation is not only all about being on the *Internet*. As important, especially for micro- and small business, is to use smarter digital document flows[173], e-accounting, mobile payments, and cloud storage. Companies that embrace digital transformation are 26% more profitable[143], but most organisations, even big companies, are just beginning their transformation journey. In general, only 8% of companies have reached full transformation, 65% are in the process of transformation, and 14% are **digital resisters** (*figure 12)*. There are no data on how this looks in the tourism industry specifically, but one guess would be that the number of digital resister is higher among micro and small companies, while big travel and hotel companies, by fierce competition, probably have higher numbers of Digital transformers and Digital Disruptors.

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[170] http://smallbusiness.foxbusiness.com/technology-web/2013/11/11/survey-customers-will-leave-over-outdated-tech/
[171] Kairos Future 2014: The Future of Business Transformation
[172] Kairos Future 2014: The Future of Business Transformation
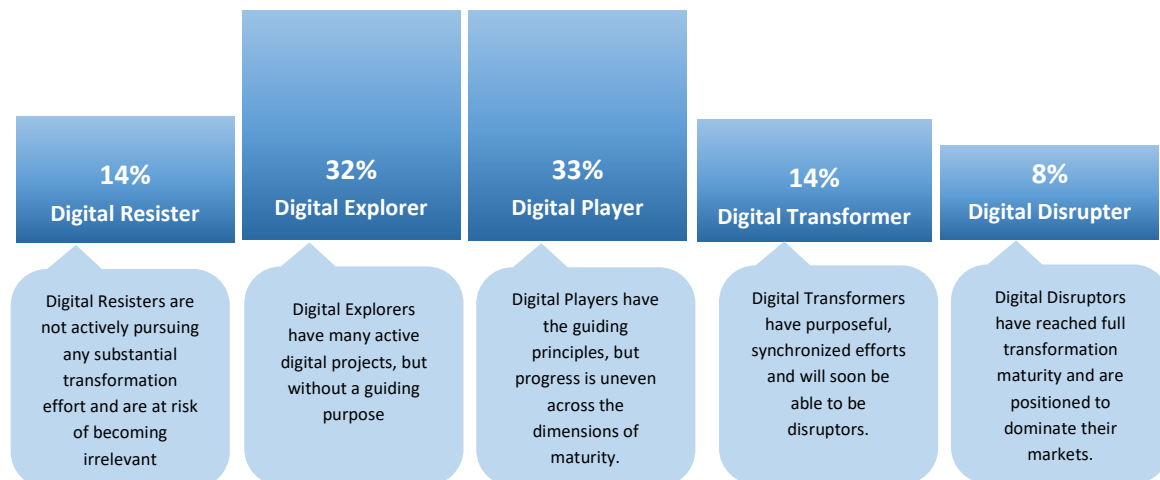[173] ICD 2016: Business transformation through smarter document workflows

14% Digital Resister	32% Digital Explorer	33% Digital Player	14% Digital Transformer	8% Digital Disrupter
Digital Resisters are not actively pursuing any substantial transformation effort and are at risk of becoming irrelevant	Digital Explorers have many active digital projects, but without a guiding purpose	Digital Players have the guiding principles, but progress is uneven across the dimensions of maturity.	Digital Transformers have purposeful, synchronized efforts and will soon be able to be disruptors.	Digital Disruptors have reached full transformation maturity and are positioned to dominate their markets.

Figure 12. Distribution of the transformative journey types (modified after IDC 2016 Business transformation through smarter document workflows)

Cloud-based data storing and applications that are platform independent, use of mobile devices, intelligent data analysis and increased social communication give new opportunities for company working processes such as document and information handling. **First generation document handling** is simply replacing paper-based workflow with digital alternatives, while the second generation is the interactive sharing of digital documents internally in the business and externally with third party. The **third-generation document workflow** used 3D platform technologies, integrated structured and unstructured content, different media and are built on a foundation of cloud, mobile, social and Big data technologies. About 80% of business document processing still rely on paper documents[143], thus it still remaining important for businesses of all sizes and industries, but searching for and accessing paper documents is enormously time consuming, expensive, error prone, risky, and frustrating. Digital document work flow increases security and compliance risk, reduces costs (up to 30%) and increases revenue (up to 36%), increases employee productivity, and improve customer experiences and satisfaction, and thus brand value. Such digital document workflows may include **Human Resource efficiency** by reduced menial administrative tasks such as document scanning and printing, as well as for example **Contract lifecycle management** by reducing risks of missing signatures, missing dates, missed contracts. Another area where digitalisation makes everyday life easier for tourism suppliers, especially in the rental business, such as snowmobile, canoe, ski rental, is digital **Resource Management Systems RMS**. Kayak centres with equipment booking systems, such as the newly introduced *BokaKanot.se*[174] by the *Swedish Canoe Association*, makes manual paper handling of bookings, rental contracts and payments superfluous. RMS systems have been around for a long time on other businesses such as Car and construction equipment rental, but has to a large extent been missing for small specialised rental businesses in tourism.

In **nature-based tourism**, there has been developed a rich flora of resources to identify and interpretate natural species and phenomena that help both guides and experience providers as well as customers in their discovery of the natural world. These digital resources range from covering celestial phenomenon such as space weather and real-time northern light forecasting, Augmented Reality star gazing aids and

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[174] http://www.bokakanot.se

celestial identification, geology and mineral identification apps, to weather forecast, species identification apps and trail-finding and nature or outdoor activity hot spots finding. The trend in national parks, visitor's centres, museums, nature- and hiking trails etc. are the development of automatic digital information systems before, during and after the experience. For example, national parks in Quebec, Canada have developed the app **Park Path Explorer**[175] with digital tools that substitute traditional exhibition artefacts and interpretations at visitor's centre. The *Park Path Explorer* is a new tool that allows visitors to personalize their visit to the national park while learning about the riches of these protected areas. Interactive discovery panels at the visitor centre and interpretative Apps on the trails guide the visitors. The free *Park Path Explorer* application presents the paths with discovery points and details about each one on your device. Maps, diagrams and photographs accompany a short text. AR will quickly invade the resources of National Parks, Visitor centres and larger attractions. AR will also be combined with gamification to attract the interest of the younger digital *Homo ludens* generations.

For most smaller and micro companies in the tourism business, the digital journey thus just has taken its first steps, lagging behind the big travel and hotel cooperation's that have initiated their digital transformation. Customers, especially the young generation Y and Z, are increasingly demanding a connected, engaging, seeking joyful and immediate experience, and enterprises are scrambling to meet this challenge which requires digital capabilities unimaginable a few years ago, and still are regarded as Science Fiction by many from the elderly generations. Not only need companies provide real-time, on-demand, all online, around-the clock information and social interactions with customers, the digital transformation also includes developing cloud computing, Internet of Things, AI etc. to customise theses service experiences. Many larger companies form partnership with transformation facilitators to overcome these challenges, while small and micro companies with restricted financial resources and digital knowledge must wait-out new technology to sipper down to low-cost applications. *Huawei* predicts video, mobile and cloud being the strongest drivers of transformation, estimating the video market globally will grow to $100 billion, while the enterprise cloud market will hit $1 trillion and the IoT connections over $10 trillion[176].

Digital trends in travel distribution

Information and Communication Technologies (ICTs) have radically been transforming tourism globally and nowadays open new distribution chains. The establishment of the **Computer Reservation Systems (CRSs)** in the 1970s and **Global Distribution Systems (GDSs)** in the late 1980s started the digital travel distribution, which in the late 1990 was dramatically impacted by the *Internet* technology, as it shortens the value chain between the consumer and the primary supplier. This clearly empowers smaller suppliers, who previously has limited access to customers without the help of intermediaries (*figure 13*).

Traditionally, the travel distribution role has been performed by **outbound travel agencies** (OTAs**), tour operators** (TOs) and **inbound travel agents** (ITAs). They were supported by computer reservation systems and global distribution systems (*Sabre*, *Amadeus*, *Galileo*, *Worldspan etc.*) and in the beginning teletext and videotext systems. As the *Internet* and eCommerce developed in the 1990s, the **on-line travel distribution** developed, both in-house and by outsourcing to third party external online agents. *Internet* has subsequently, allowed more people to access high quality information quickly and with minimum inconvenience, allowing to purchase travel products on-line on a 24h/365 days basis at their convenience,

[175] https://www.sepaq.com/pq/parc-parcours.dot
[176] http://partners.wsj.com/huawei/transforming-enterprises/

rather than during the office hours of traditional tourism providers. **Search engines** in general play a fundamental role in creating traffic to travel websites. Search has become increasingly important in travel and tourism, and about two-third (64%) of online travellers use search engines for travel planning[177]. Search engines, through their indexing, matching, and ranking technologies, control what information is available to consumers and how it is presented. To be represented by search engines, tourism suppliers must engage in sophisticated search engine optimization.

Figure 13. Simplified traditional travel and tourism industry value chain (adapted after Werthner & Klein 1999)

The **online travel product** category is the Internet's largest commercial area (48.9%), generating worldwide revenue more than 446 billion U.S. dollars in 2014, and sales of online travel worldwide grew 10% between 2011 and 2014[178]. Traditional distribution on the internet is trough supplier's websites, which are carrying a **booking engine**. There are plenty of booking engines on the market, from low-end products with good prices to high-end booking services with great service. The aim with a booking engine is to facilitate selling, the moment of trough then a customer turns from interested in the product to paying for the product, which is called the selling closure. Website have traditionally been used to get people interested in the product, offering other channels such as mail or even telephone for closing the sale. Using a booking engine makes this process easier, more efficient and thus resulting in more sales. Any confusion or distraction will be a road-block on the way to sale, thus the fewer clicks, the more sale. An example of an efficient booking engine, developed on Iceland and now being recommended by *Swedish Lapland Visitors Board* is *Bokun[179]*, that in addition offers a B2B distribution and sale function. Recently *Bokun* united with *Trekksoft*, the other large European software provider for suppliers of tours and activities, to create the biggest marketplace in Europe. Their united customer base will feed a marketplace with more than 30 000 bookable products of over 2000 providers, who will be able to resell one another´s products via the new marketplace.

 Travel distribution has also seen the emergence of new intermediates for bookings, such as third-party distributors websites, known as **online travel agencies** (OTA) such as *Priceline*, *Expedia* and *TripAdvisor*.

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[177] Gretzel & Fesenmaier 2012

[178] Agag & El-Masry 2017

[179] http://bokun.io/

These intermediates provide greater exposure and handle transactions, but also hold a tight management approach and control over inventories. In 2014 about 76% of online bookings are via OATs[180]. However, as customers start to take matter in their own hands by booking directly through a supplier´s website and creating their own packages, they will no longer require the services of OTA. Thus, OTAs must re-evaluate their offerings to provide a cost-effective service and add value if they are to survive in the future. In a similar way, the role of the long-standing providers of the **Global Distribution System** (GDS) is changing. An increasing number of airlines and other suppliers are now offering direct access to their webpage via API and reservation technologies, there is less demand for the GDS offerings from tour operators.

In 2009 it was discovered, that hotels gained reservation benefits on their own websites in addition to direct sales by marketing their properties across many third-party websites such as OTAs, which was called the "**billboard-effect**". It involves a boost in reservations through the hotel's own distribution channels (off-line and on-line including its website), due to the hotel's being listed on the OTA website. Research[181] found that direct reservations increased up to 26 percent through the billboard-effect. Simplified, one third of the visitors on OTA sites will go and check the hotel website for more information, see larger photos or to compare rate. One third will go and search for the hotel on social media sites to find out what others are saying about the hotel, and then either go back to the OTA or search for the hotel webpage. Finally, one-third of the guests on the hotel webpage will go to OTAs to find out if rates or sales conditions are better or if booking process is easier, or because they are used to dealing with OTAs[182]. Thus, the billboard effect appears to create a win-win condition for hoteliers and the distribution platforms. This billboard-effect seems, however, to dismiss as more bookings are made by mobiles. Mobile app users will not search on web browsers as desktop users are, thus are more prone to book within an app[183], and such apps are mostly metasearch apps such as *TripAdvisor* or *Kayak*. This mobile revolution seems to favour the intermediaries over suppliers. Large hotel providers, however, have opted out of this form of distribution and only allow booking from their own website. Action sites provide another platform for distribution, offering consumers access to discount prices and allow suppliers to shed leftover inventory. The latest players in the distribution chain, are **meta-mediaries** such as *Sidestep* and *Kayak*. They form strategic alliances with suppliers and intermediate and provide consumers with opportunities to simultaneously search the database of their partners. The partner site then handles the transaction. **Metamediates** are empowered by increasingly sophisticated search technology and artificial intelligence. The airline metasearch **Momondo** introduced in 2014 *Trip Finder*, making it easy and fun to seek trips, by typing number of travellers and departure date, and key words such as nature, culture, family, warm, cheapest etc., *Momondo* suggests among 5000 travel tips and 22 cities what destinations to go presented with pictures, prices, weather etc. The data responds to the user's mood at the time, making them feel empowered and in control[184].

Dynamic packaging is another technology-based development disrupting established relationships among tourism service providers. Through direct access to inventory databases and sematic web technologies, dynamic packaging involves the assembly of various travel products and service components into one package at the moment of request[185]. Dynamic packaging requires instant access to information, interaction with the consumer and adaptability. Dynamic packaging applications change the notion of collaboration in tourism as the consumer rather than the providers now drives bundling. They challenge

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[180] WIHP 2014: Finding The Balance Between OTAs And Direct Bookings
[181] Andersson 2009
[182] WIHP 2011: Hotel Distribution and the Billboard effect
[183] Momondo Group 2015: Does the Expedia billboard effect still exist for hotels?
[184] tNooz 2017: Personalisation in travel search: inspiration, the Momondo way
[185] Cardoso & Lange 2007

traditional tour operators, and require sophisticated knowledge of constrains and synergies among tourist products, and an interoperability between systems.

A trend in interoperability are so-called **web services**, which allow applications to freely access contents and services and integrate them into their structures. They are used in dynamic packaging but also for **instant customer relationship management systems**, and allow supplier sites to import and integrate contents from review sites such as *TripAdvisor.com*. Now *TripAdvisor* now also offer **Instant Booking** for hotels and activities by becoming partner with *Expedia*[186] and about 70 partners including other online travel agencies (for example, *Booking.com*, *GetARoom* and others), and some of the major hotel chains such as *Hilton* (with 13 brands in 104 countries), *Marriott*, *Accor*, *Best Western* and *Wyndham Worldwide*. *TripAdvisor* at the beginning of 2017 had on average 390 million monthly unique visitors across 49 sites worldwide, having 1.1 billion visitors during 2016, representing 11% share of the travel industry top 100 sites in the US[187]. About 4% of 6.6 billion total page views is estimated to go to *TipAdvisors* mobile website. Desktop visitors stay on the *Trip Advisor* website on average six minutes compared to two minutes and 34 seconds on its mobile website. This is significant less than for *Expedia* with 13 minutes and 5 seconds and *Airbnb* with 10 minutes and 29 seconds. For *TripAdvisor* on average 9,7 pages are viewed per visit, while on its mobile website just 2.8 pages are visited. Most web traffic goes to hotel pages (40,6%) followed by things-to-do (28,6%)[153].

There, is currently a lot of turbulence in the on-line booking business. Besides traditional business marriages, and buying of competitors and new start-up, as new actors such *TripAdvisor* as well as *Google Travel*[188] and *Facebook for Travel* enable direct booking and start competing with traditional booking services such as *booking.com*, and others (see appendix 2). The new trends are traffic monetization with online marketing, as well as OTAs and metasearch companies are converging[189]. There first was a shift from transaction-based to advertising based revenues, and now the wider **metasearch ecosystem** is changing in several ways. From being online referral operators, OTAs are becoming super online advertising businesses, resulting from the fact that the average traveller searches nearly 50 times online, makes 38 site visits, reads a dozen reviews, researches for 15 weeks, and does not have a particular destination in mind when he or she starts looking[157]. OATs advertising is not seen as such but rather as a core functionality of the site which inspires deeper engagement and more click-through the sites (6,3% compared with 0,8% for traditional display ads). This convergence of the two models is giving rise to a **Mega Online Travel Retailer**. They may buy their marketing channels, giving them the opportunity to build a brand, while metasearch companies get a closer relationship with the customer through OTAs.

On-line guides such as *VirtualTourist* by T*ripAdvisor's*, which closed in 2017, are affected by this tumult and fierce competition. *Virtual tourist* with some 1.3 million members that shared 3.7 million photos and 1.8 million travel tips for over 70 000 locations around the world boosting nine million unique users a month, quickly lost ground to social networks such as *Facebook for Travel*[190], that catered not only travel but every aspect of everyday life. *TripAdvisor*, instead focuses on *Smarter Travel Media*[191] that took over the rich destination content of *Virtual Traveller*, and offers expert tips, travel news, travel gear and other services beside destination information and bookings.

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[186] tNooz 2016: TripAdvisor gets Instant Booking nod from Expedia

[187] tNooz 2017: TripAdvisor secures a tenth of all online travel traffic

[188] https://get.google.com/trips/

[189] Amadeus 2017: Online Travel 2020, Evolve, Expand or Expire

[190] https://www.facebook.com/business/a/travel-industry

[191] https://www.smartertravel.com/

According to Lee McCabe[192], *Facebooks* head of travel and education strategy, todays travel distribution has a lot of friction in supplier-consumer communication. For example, when booking an airline ticket or a hotel room, the guest gets several text messages and a few e-mails with booking information, maybe download the company's app, and visit and interact with the website as well. McCabe thinks people want to have all the communication in one place. To be able to respond on messages, look at specific offers, download their tickets all in a central spot. On mobile phones, people spent most time in apps, not browsing the Internet. In the US, 86 percent of time on mobile is spent in apps. Those same users access only about 27 of their apps each month, so at best only a very small number of them will be travel apps. Mobile users thus might have one metasearch engine, or an OTA, and maybe one app for a hotel or an airline they're loyal to. Therefore, to develop your own distribution app, and become, and remain, one of the 27 apps people use regularly is a major challenge. According to McCabe, people want three things; First they want to connect with the company direct through their mobiles. Secondly, they want context, meaning they want a personalized experience. Finally, they want convenience, the most important element. On mobiles people expect things to be easy and only a few clicks away, resulting in **multipurpose apps** needing many clicks will have trouble. That's why *Facebook* spun off *Messenger* and *Groups* as separate apps. McCabe´s advice is "*think of people first*". Companies that can keep pace with consumer expectations will have a better chance of being successful. This would be one of the reasons for the popularity of *TripAdvisor*'s *Instant Booking*, *Book on Google* and *Facebook for Travel*, and probably mark a new distribution trend, where travel booking can be done within the communication channels mobile users mostly uses.

TripAdvisor, and its tour and activity brand *Viator*[193] are now providing **attractions content tool** to hotels and travel companies. The technology enables the travel partners to offer local tours and experiences to customers via online and mobile channels with *Viator*'s providing the booking element. The attractions content comes via an API which can be integrated into a hotel's website, mobile app and email, enabling customers to discover things to do locally at destinations. First to implement this engine was *Radisson Blue*[194] in their "*One Touch*" app, that provide hotel guests with reviews, ratings and photos for thousands of attractions listed on *TripAdvisor* as well as the ability to book many of them via *Viator*'s solution. This is according to their strategy of providing "seamless experiences" for their guests via its app, also including contact with the front desk, mobile check-in and ordering room service through the app. Such integration of local attractions on hotel websites and apps is presently a strong trend as *TripAdvisor*´s research show that 67% of travellers use mobile devices to look for things to do while in a destination. This trend is also seen on *TripAdvisor*´s redesigned site where "**Things To Do**" has become a more prominent position on the webpage.

A **disruptive innovation** in informal tourism accommodation was the emergence of ***Airbnb,*** a company whose website permits ordinary people to peer-to-peer rent residences as tourist accommodation[195]. It originated in 2007 when three air mattresses on the floor of a San Francisco apartment were offered as "*AirBed & Breakfast*" on a website to conference delegates looking to avoid the city´s high hotel prices. Discovering they had a business idea, the roommates turned the website into a service for other people to simply advertise their spaces as shared accommodation for tourists. The website was then in 2009 launched as *Airbnb.com*. *Airbnb* has since then grown extremely rapidly, doubling transaction volumes every year since 2014, obtaining a 1% market share, which can be compared to the most expensed hotel

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[192] http://www.mckinsey.com/industries/travel-transport-and-logistics/our-insights/facebook-and-the-future-of-travel
[193] https://www.viator.com/
[194] https://www.radissonblu.com/en
[195] Guttentag 2015

chain *Hampton Inn* with 8,82% of the total[196]. Their novel business model is built around modern *Internet* technology, and focuses on cost-savings, household amenities, and the potential for more authentic local experiences. Despite *Airbnb's* growing popularity, many *Airbnb* rentals have been illegal due to short-term rental regulations. However, *Airbnb* has significantly disrupted the traditional accommodation sector. During 2016 the average stay is 4.51 night for *Airbnb*, compared to traditional hotels average of 2.58 nights. Driving this still-rapid increase in usage of *Airbnb* is a combination of high traveller awareness (75% of consumers) and even higher user satisfaction rates (93%). Fear that traditional hotel booking sites and OATs would lose the competition against *Airbnb* is widely debated, and met by OATs building out their own capability to handle alternative accommodation such as rentals, homestays, cottages etc., thus could make them strong competitors to *Airbnb* in the future[197].

Airbnb aspires to create a world where everyone can belong anywhere. That means visiting cities not as travellers, but as locals. Lately *Airbnb*[198] has launched **Airbnb Trip** with over 500 trips in 12 cities, not so much to become a new booking engine or online travel agency, but rather to transform and disrupt the business area by changing how we travel.

Tours and activities suppliers are usually "*low tech, small budget, offline and fragmented*" with many still struggling to get online, never mind become mobile compatible, while travellers who have booked their flight on their mobile expect to be able to book their tours in their same way, says *Viator´*s Seienberg[199]. With over 80% of tours and activities booked on the destination with mobiles, the days of email confirmation or "*no booking within 48 hours*" are on the way out. Thus, from 2017 most suppliers must be offering **instant booking**. The challenge is for both activity suppliers as well as attractions, like many airlines already have, is to leave tickets to history, as there is no point to ask someone who just booked on a mobile phone some minutes or hours ahead, for their printed tickets. This will be especially a challenge for ticket sale enterprises such as *Ticketmaster.*

The traditional **Tour Operator** provides a physical experience, with colourful, well-designed glossy brochures and friendly, helpful, well-informed consultants who eventually get to know their clients quite well. Human contact is key and everything is taken care of. There is no need for the customer to go online and try to get flights that align with the availability of the accommodation, as it all comes in one package. Now consumers are often faced with a myriad of holiday offers from many channels, and holiday shoppers are increasingly well-informed, with easy access to enormous amounts of travel information, and many are looking for ready-made packages online. Tour Operators are thus fast evolving digitally to capitalise on their key assets and expertise. They need to be seen on the street, inspire on their website, be flexible in their offers, active in social media, sharp on ads, mobile and, most importantly, they must remain relevant to their customers through personalisation and flexibility. They therefore must upgrade their technology and ways of working. At the same time, OTAs are adopting **dynamic packaging** technology that allow them to create packages and are therefore offering the same service to customers online or are giving customers the ability to create their own. The trend is therefore a convergence between Tour Operators and OTAs, giving rise to new growth avenues in the area of complex trip handling and servicing. They are becoming **Digital Tour Operators**, providing a mix of digital and human interaction, combined with convenience and speed. People are, however, in the 21st century expecting cool surroundings such as in design hotels, lively atmospheres and human hostmanship, at the same time expect **user-generated content** and high-quality experiences. This puts some high demands on the future *Digital Tour Operators*, expected to have both latest design store attended by engaging trained agents, as well as having both digital "travel mates" using the latest technology and access on real-time to travel

[196] tNooz 2017: Airbnb – never mind the volumes, look at the growth
[197] tNooz 2016: Airbnb demand increasingly hitting hotels, not online travel agencies
[198] tNooz 2016: How Airbnb reckons it can change the traveller experience
[199] tNooz 2016: Singing from the same songsheet? Airbnb Trips versus the current chart-toppers

agents while travelling[200]. This new type of *Travel Mate* will also be able to cross-sell at the destination, making suggestions about where to go or what to see, enabling customers to be put into direct contact with potential providers of a service at the destination. *Digital Tour Operators* are selling the travel experience and handling complex itineraries, and we see the emergence of new generations of travel stores to enable travel agents by combining physical, digital and human aspects.

It is estimated to be 6.1 billion smartphone users in 2020, and most will be closely attached to it, processing emails and SMS, weather and news-scanning, texting, interacting on social media, shopping or enjoying other **micro-moments**. How these smartphones will look like in 2020 is an open question, remembering the fast development of wearable technology in watches, armbands and glasses, and even lenses. Today, many **Online Travel Retailers** make their offer available on several distribution channels, including mobile with responsive web design or apps, although apps are still generally used as a complementary channel rather than the only means of distribution. This can change in the future. Addictive apps will most likely be accompanying the traveller throughout the whole journey, and OATs and airlines are already adapting to this changing behaviour of travellers where the mobile is a way of life, and developing new travel life cycles strategies. These include – **mobile-first design** of communication channels, developing capacity to follow the **new travel life cycle** throughout their journey from identifying and booking, trough on site, home and beyond. They focus on **customer loyalty** as mobile users will only install a limited number of apps per activity (social media, news, travel). Leaving the use of browsers, which are easy to move from one website to another, mobile app users are likely to stick to the same apps and thus be more loyal to the provider. Use of the **new marketing channels** – presently OATs wildly use the leading IT companies such as *Google* and *Facebook* for advertising campaigns on desktop web applications, but for mobile app use, alternative ways must be developed. Thus, **Mobile Travel Retailers** will disrupt the travel market with new ways of stay with the traveller before, during and after a trip using new technology facilitating user-generated end-to-end experience.

Such technology transformation towards a *Mobile Travel Retailer* also includes investment in **chat - channels** with new features, such as natural language recognition and translation, artificial intelligence, travel specific design etc. In addition, new **Open Payment platforms** with alternative methods for payment form to the traditional credit card payments, such as **ePayments and mobile payments** like *virtual cards[201]*, *PayPal[202]*, *Apple Pay[203]*, *Android Pay[204]*, *Google Wallets[205]*, *WeChat wallet[206]*, *Ali pay[207]* to mention a few. The new mobile bases ***Swish* payment[208]** introduces by Swedish banks, where you pay by typing the phone number of the receiver, already has facilitate travel transaction experience on site, making even fairly new inventions such as the smartphone based credit card payment by ***iZettle[209]*** obsolete. Such seamless travel transaction experience on-site and on webpages and apps are changing the landscape for booking and payment processes, and are no longer options but a real necessity to reduce abandoned bookings.

A revolutionary new technology, that in the future will transform financial transactions, and strongly influence tourism industry is the **Blockchain technology**[210]. It allows digital information to be distributed but not copied, creating the backbone of a new type of *Internet*, an incorruptible digital ledger of

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[200] Amadeus 2017: Online Travel 2020, Evolve, Expand or Expire
[201] https://www.virtualcardsapp.com/
[202] https://www.paypal.com/
[203] http://www.apple.com/apple-pay/
[204] https://www.android.com/pay/
[205] https://www.google.com/wallet/
[206] https://wechat.co.za/wallet/
[207] https://intl.alipay.com/
[208] https://www.getswish.se/
[209] https://www.izettle.com/
[210] https://blockgeeks.com/guides/what-is-blockchain-technology/

economic transactions that can be programmed to record not just financial transactions but virtually everything of value. Originally devised for the digital currency, **Bitcoin**, the tech community is now finding other potential uses for the technology. Picture a spreadsheet that is duplicated thousands of times across a network of computers. Then imagine that this network is designed to regularly update this spreadsheet. The blockchain database isn't stored in any single location, meaning the records it keeps are truly public and easily verifiable. No centralized version of this information exists for a hacker to corrupt. Hosted by millions of computers simultaneously, its data is accessible to anyone on the internet. By storing data across its network, the blockchain eliminates the risks that come with data being held centrally. A blockchain database is managed autonomously, and can be considered as hyper-political and global governance tools, capable of managing social interactions on a large scale and dismissing traditional central authorities. For example, the *Bitcoin blockchain* is hosted by millions of machines. one can deploy a piece of computer code onto a blockchain and, because that database is immutable, that code will be stored and executed there forever. Because blockchain databases are distributed among millions of computers, the reliability of those networks is theoretically, 100%. Blockchain will create unique opportunities for travel companies to track their customer's preferences, build more personalized and meaningful interactions, and extract more value from loyalty programs. 2016 was the year in which blockchain theory achieved general acceptance, but big players linger around waiting to see who would take the first step with this new technology.

The *Dubai Points* program is a project led by New York-based startup *Loyyal[211],* which has focused its efforts on using blockchain to improve the value of and potentially the security of global loyalty and rewards programs. *Loyyal* removes existing barriers from loyalty relationships enabling more sophisticated custom **incentification**. Beyond individually branded, rewards can now be multi-branded, such as an "Airline/Bank" co-branded reward or even an "Airline/Retailer/Consumer" multi-branded reward. Loyalty incentification can now flow up the relationship network from consumer to merchant as easily as it does down, sideways, or any other way. *Loyyal* has recently become official partner of A*iSpot[212]*, a Norwegian tech company, to create a new loyalty and rewards platform in Scandinavia, with applications for Scandinavian local governments, retail, and destinations to boost sales and loyalty. Clients Simply connect to – and publish to their customers through a shared mobile platform utilizing beacons, QR, club, mobile Wallet and a range of ready-made services. *Aispot Mobile Wallet* enable to earn loyalty score from spending – across brands and cities. Each user can connect all loyalty programs and memberships in one app.

According to a report by *LSE Consulting*[213], travel distribution faces a range of potentially huge disruptions over the next 10 years that will significantly impact industry players and their business models. They identified five disruptive factors for the travel distribution industry:
1. **Consumer expectations** will grow to be the major disruptive factor demanding more choices, frictionless purchasing, inspirational shopping and personalised services.
2. **Mobile devices** already today are a disruptive factor and will in the future have a major disruptive role, demanding 24-hour services during the whole travel cycle, where micro-moments in search and booking will influence the travel distribution system.

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[211] http://loyyal.com/
[212] http://aispot.no
[213] LSE Consulting 2016: Travel distribution, The end of the world as we know it?

3. **Big data and AI** will allow real-time analysis of consumer preferences and responses to consumer's request based on consumer's previous choices and digital footprints. Virtual assistances and travel guides will change consumer behaviour and shift power to those players who control the technology.

4. **Regulations** on the national and international level determine the rules governing the competition in the industry. A major disruptive factor over the next decade will be the extent to which regulators intervene to limit the power of larger players such as mega meta-online travel agencies (OTAs) and travel management companies (TMCs), and the rising gatekeepers such as *Google* and *Facebook*.

5. **Travel risks**, such as terrorist attacks and natural disasters affect significantly consumer behaviour at all stages of the travel with impact on travel distribution. Demand may increase for low-risk destinations, safer times of the year or hotels with higher safety ratings. Regulations could be strengthened for **advanced passenger information** (API).

Based on these disruptive factors, LSE Consulting identified four areas of the travel distribution where the greatest changes are likely:

1. **Complexity and innovation in air travel distribution**: The airline industry has faced increased competition from the rise of low cost carriers, which is pushing the trend for greater differentiation and the rise of the retail model among full service carriers. Airlines with strong brand recognition, will grow their direct sales, while low budget carrier will develop their indirect distribution through intermediates. Also, partnerships with IT companies, global distribution systems (GDSs) and other aggregators will be needed to drive innovation and manage increasingly complex content.

2. **The revolution of shared economy models in the hotel and car hire sectors:** The hospitality and personal transport industries are being impacted by sharing economy platforms, such as *Airbnb* and *Uber*, and by the success of online travel agencies using commission-based and advertising models. Hotels and car hire will need to continue adapting to the sharing economy by meeting higher consumer expectations of service and by incorporating business content into new sharing economy platforms. The larger branded hotel chains are likely to continue consolidating to keep up with the growing power of OTAs to negotiate commissions.

3. **Innovation and hybridisation in online travel retail:** Travel agencies are facing growth in **direct distribution** from airlines and hotels, changing consumer expectations in retail and the rise of sharing economy business models. Travel retailers will need to embrace consumer expectations and new technologies to enhance the travel experience. This experience may include more tailored travel packages or a greater flexibility to purchase additional services during the trip. Consolidation and hybridisation of travel agencies and metasearch companies will continue. The rise of **giant metasearch-OTA companies** will provide greater negotiating power with the airline sector. The growing global brand recognition of mega meta-OTAs may also act as a counter-weight to the larger airlines with aspirations of circumventing indirect distribution channels.

4. **The rise of gatekeepers in traffic acquisition:** Gatekeepers – tech giants such as *Google*, *Facebook*, *Microsoft*, *Amazon* and *Apple*, control the acquisition of billions of consumers, interfacing with millions of people every day. They have already begun to disrupt travel distribution through their advertising models. The development of **virtual assistants** will enhance the customer experience by reducing search times and personalising purchases. At the same time, the search control of gatekeepers will grow, consolidating their traffic acquisition power, giving them greater access to consumer data and enabling more precise consumer targeting. **Travel booking** is likely to be integrated increasingly into social media and messaging, with advertising and referrals tailored to social network discussions and searching. The rise of **virtual reality** will lead to more inspiration marketing and traffic acquisition. The new technologies will place even greater power in the hands of the gatekeepers.

These challenges in travel distribution of the powers of changed consumer behaviour (**consumer revolution**) and the emerging technologies, has let the industry to continue to focus on differentiation through bilateral partnerships and contractual relationships in narrow areas of the value chain. To meet these challenges, it is recommended[214] to consider key areas to focus on future collaboration:

- **Responding to consumer expectations**. The travel distribution industry will need to respond with broad collaborations for aggregating, processing and harnessing the big data involved.
- **Responding to the rise of gatekeepers**. As the power of gatekeepers to acquire billions of consumers continues to grow, industry players will need to consider how to collaborate with them as their power grows.
- **Harnessing technology**. The travel distribution industry is rapidly becoming a technology industry, and business models will need a more strategic approach that recognises the value creation of different technologies across the industry.
- **Integrating travel distribution**. To avoid consumer confusion and lost opportunities, industry collaborations need to go beyond bilateral partnerships, new distribution business models will need to encompass more shared innovation, and cross-industry alliances to grasp the opportunities fully.
- **Adapting to sharing economy platforms.** Sharing economy platforms will continue to create new markets and erode the market share of industry players who intermediate for suppliers such as small, independent hotels.
- **Preparing for the rise of giant meta-OTA hybrids.** The size and power of online travel agents with metasearch capabilities and global brands are likely to continue growing. Their influence will penetrate deeper into the distribution chain, with the ability to negotiate better content and conditions, whilst still receiving commissions.
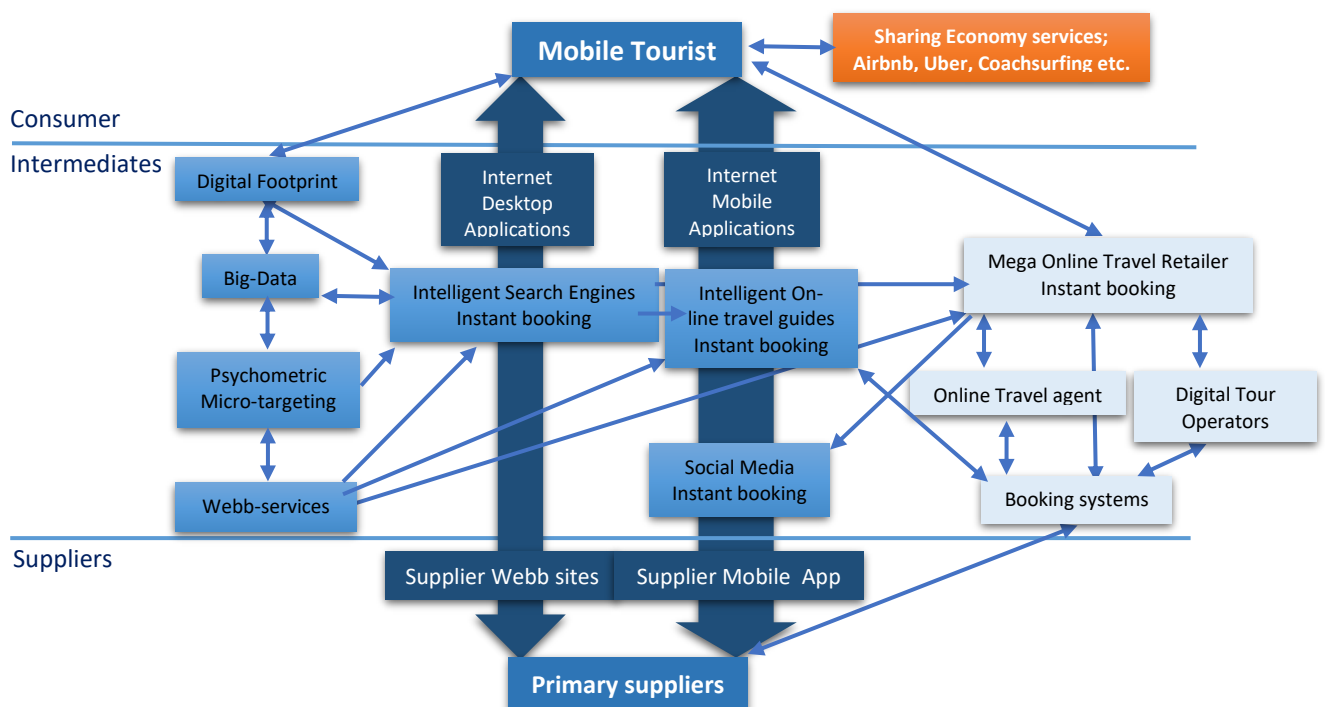

Figure 14. Simplified interpretation of future digital value chains in travel and tourism.

Figure 14 tries to summarise the developing ecosystem of the travel and tourism value chain. Blue indicate the main stream of booking trough the two main direct channels of Internet web search engines and Internet Mobile applications, while light blue indicates the digital transformed traditional value chains

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[214] LSE Consulting 2016: Travel distribution, The end of the world as we know it?

and orange the new disruptive sharing economy services. The main channels are being instant booking in search engines, social media and personal intelligent travel agent apps based in psychometric micro-targeting based on Big Data from traveller's digital footprints. **Voice search** is being tipped to have as big an impact on the travel industry as the mobile had. Machine learning, artificial intelligence and chatbots are part of the voice phenomenon and these channels will be widely demanded by consumers.

Digital trends in tourism marketing

ITC has drastically changed the marketing environment of the tourism industry. What we see today is a paradigm shift from **push-marketing**, where like a megaphone, companies try to reach as many as possible by buying ads, and attract attention to webpages, all under fierce competition, towards **pull-marketing**. Here information is delivered only to those who ask for it on a personal level, by creating interesting material to those interested, and by talking and interacting to people, and being in such customer relations by deserving it on the customer's terms.

 Website marketing and **search engine marketing** have until present time become essential components of contemporary tourism marketing. Until recently, even smaller travel businesses could expect to do okay on the "free" traffic generously supplied by *Google*. With a few meta tags, basic content and a ton of links and up the rankings the webpage went. For better or worse those days are largely over. A few years ago, an Internet query such as "Lapland Vacations" would yield a mixed result of independent operators and specialist companies. Now, you will among the top-10 results get a monoculture of aggregators and top-tier OTAs, such as *TripAdviso*r, *Expedia*, *Orbitz*, *Travelocity*, *travelwizard*, and *traveldragon*, occasionally punctuated by some larger operators, such as *finland-holiday.com*, and any suppliers will appear far down on the listing, bypasses even by blogs and social media such as *YouTube*, *pictigar, etc*. Thus, suppliers having only a webpage today will not reach far on the Internet. New search algorithms that prioritize aggregators and OTAs, forces smaller suppliers in their marketing to use paid web-ads such as *Google Adword* or *Facebook ads*, paying per klick to their webpages. But as the competition increases in such paid traffic ad-channels, providers face ever increasing cost per click. Marketing on social media is the fastest growing sector in digital marketing. In B2C marketing *Instagram* was the most used channel to buy social ads (53% used among 500 marketers), followed by *Facebook sponsored posts* (49%) and *Facebook Ads* (43%)[215]. In B2B marketing, *LinkedIn* ads (63%) was the most popular followed by sponsored Tweets (54%), but search engine ads were still the most common used channels in digital advertising. Swedish e-commerce companies regard *Facebook* more important than *Google* as the most important marketing channel[216]. In 2016 Swedish e-commerce used *Facebook* (93%), search optimization (73%), Newsletter (66%), Ads in social media (60%), *Instagram* (56%), search word advertising (53%), traditional paper ads (35%), Banners (34%), Blogs (32%), Sponsoring (28%), catalogues (22%), PR 21% and *YouTube* (21%)[196]. At the same time, only 6% of consumers regard social media as the best advertising channel for e-commerce. They prefer business webpages (81%), *Google* (76%) and price-comparison sites (63%).

There is plenty of research on the time and length of travel purchase decisions in leisure travel, that show that the process from an initial spark of inspiration down to actually booking a trip can take months, years or even decades. On each step in the process people are drowning in third party sources of information, reviews, distractions and competing offers, with the risk they put their attention to a competing destination. In addition, customer retention is usually low in tourism. Most go traveling only a few times a

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[215] http://searchengineland.com/2016-state-search-report-paid-search-dominates-social-ads-catching-272099/
[216] http://pages.postnord.com/rs/184-XFT-949/images/e-barometern-arsrapport-2016.pdf

year, with just one or two international trips, making travellers coming back to the same place with the same travel company during several years very rare, thus loyal customers are hard to find. To attract attention, **content marketing**, to build audiences by using interesting content has become a recent trend. The aim is to keep the prospect traveller interested during this extended "decision journey". It is recommended to use paid digital ads early in the customer journey when they are less purchase-ready and the competition is less intense. Later in the purchase face, it is recommended to build marketing relations trough previously email, now trough social media, to provide as much value as possible at the same time not forcing people towards booking. They'll book when they're ready, not because you've filled their inbox and *Facebook* feed with promotions. Thus, promotion is recommended to be at most only 20% in your market communication, the rest of interesting content. Thus, developing efficient **Customer Relations Systems** (CRMs) with personalised communication has become essential in a market strategy.

But according to a recent report by *Aldobe*[217], customers today have broken free from *Customer Relation Management* and clickstream-tracking systems used to keep tabs on them of their webpage use. Now they are unpredictably swerving from device to device and channel to channel, and escaped from the sales funnel that once guided them firmly from awareness to purchase. These newly **empowered consumers** are guiding their own journeys, navigating uncharted paths. *Aldobe´s*, solution to this is to meet them where they are and break through the marketing noise with relevant and meaningful **real-time experiences**. Traditional CRM used to try to deliver great customer experience by brand consistency—the same logo, the same stylistic treatment. But now it is all about the continuous experience with a brand and a consistent level of service across all the different channels, whether you're online or off-line. Nowadays marketers have the ability to know their customers better than ever before and react to their behaviour by presenting tailored, individualised content at the very moment it's most relevant—even if the customer switches channels or devices. Although the customer journey isn't taking place along the same traditional paths, you can find your customers along the new paths instantly. When done well, **real-time marketing** transforms brands into authentic and trustworthy guides along the customer journey, forging deeper relationships and more impactful conversations. But this is a tough task because individual customers can be hard to track as they flip platforms. The moments of opportunity can happen fast, so you need to be ready to address them in real time. It requires a flexible, adaptive approach to content creation and campaign design, not to mention a strong commitment to data-driven customer analysis and strategy.

The tools to achieve this utopic vision of the future of marketing, however, already exists and are rapidly improving the ability to track users across devices and channels and to respond instantly and contextually when customers signal that they've reached a milestone in their journey. As marketer's don´t have the time and staff to focus on this, companies can use real-time analytic tools such as *Aldobe Target* to automate the number crunching and analysis. Investments in **real-time analytics** are on the rise and will play a crucial role in the future of marketing. Adding **predictive analytics**, which uses the past behaviour of similar customers to forecast your customer's future actions, marketers can identify opportunities and anticipate what the consumer is likely to do next. For real-time marketing to be successful, marketers must first learn all they can about their empowered customers: what they're like, what they want and where they are. Such **'first-party data'** are probably already gathered, such as customer purchase records, campaign responses and website traffic, and highly valuable in the context of real-time interaction

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[217] Aldobe 2016: Get Real. Making the most of your customer´s journey in real time.

management, as such data are the only data with real-time access. If you know everything a prospective customer ever looked at on your website, know where and when each visit occurred, and can see the natural progression of the site visits as the customer move from evaluation to consideration, then you know a lot about that customer's purchase journey. Even better if you know what they ultimately purchased, and when, and what they bought (or didn't buy) at the same time. Then there's **second-party data**, essentially first-party data collected by a partner company a company in a different industry that markets to a similar consumer—that can be useful to better understand your customers' broader interests. Social media listening tools provide yet another means of tracking customer preferences by analysing the reviews and comments they post publicly across the internet. Aggregated, anonymised third-party data further help the marketer with audience targeting by offering groups of highly specific segments.

Old-style marketing attribution was all about last-click attribution, knowing whether the customer hit 'buy'. Now it is possible to stitch together all the stuff that moves the customer down the path to final purchase, and to see what their path was from awareness to consideration to purchase. By this, the marketer knows the most effective channels and campaigns to lead another individual down the path to purchase. However, the challenge of piecing together different actions by the same customer is substantial. There's no simple way to associate the smartphone user with the tablet user or the laptop user, so analytics tools create separate profiles based on the activity of each device. Now techniques by *Aldobe* collect separate profiles and records, and the system retroactively pieces together the entirety of the customer journey. Software tools are even becoming sophisticated enough to connect devices without user authentication. The system gathers enough anonymous but similar data that it can predict that multiple devices belong to the same user. This level of insight isn't just nice to have; it's an essential component of **next-generation marketing**. Companies without an integrated view of their customers will inevitably fail to shift from campaign based marketing to **contextual marketing.** One does not need personally identifiable information, that laws may forbid to collect, because often what the marketer is looking for are trends and predictive variables. **Traditional outbound campaigns** are based on the marketer's sense of timing. They deliver the same series of messages to the same audience at the same time, but the defining campaigns in the era of the **real-time customer journey** will be triggered by a customer action or indication, rather than initiated by the marketer. To be able to perform this utopic real-time marketing, one need to combining real-time analytics solutions (such as *Adobe Analytics)*, the advanced personalisation capabilities (such as *Adobe Target)* and a cross-channel delivery (such as *Adobe Campaign)*.

In a similar way to suppliers, **Destination marketing organizations** (DMO´s) are highly affected by the ITC technology as their "product" is destination-related information and such information is increasingly provided by other websites, e.g. those of travel agencies, portals, publishers, consumer communities and suppliers. **Destination management systems**[218] have been developed to integrate content at the destination-level and to provide a common distribution platform for all providers at the destination. However, for smaller destinations and DMOs, organisational structures and limited resources prohibit them for successfully adjust to technological development and integration of new technologies and implementing new marketing approaches. Some new emerging technologies, (such booking platforms like *BOKUN*) provide opportunities for collaboration within the destination and among destinations in a

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[218] Brown 2004

region, while other marketing technologies such as AR and VR still are too expensive for many DMO´s. However, technologies alone cannot overcome barriers to collaboration and DMOs must become much more engaged in partnership building[219], especially with technology suppliers, in order to be able to realize the new opportunities promised by web-based marketing.

Costly branding strategies employed by tourism marketers can, however, easily be undermined by consumer reviews and blogs. These contents are perceived as more credible than market-based information and are extremely search engine friendly, thus reaching greater rates of exposure in search engines and have more impact on consumers[220]. It is a fundamental principle of consumer behaviour that consumers can exert powerful influences upon each other. Research[221] has shown that interpersonal influence and **word-of-mouth** (*WOM*), and when digitally, **electronic word-of-mouth** (*eWOM*), are ranked the most important information source when a consumer is making a purchase decision, especially in the tourism industry, whose intangible products are difficult to evaluate prior to their consumption. *eWOM* allows consumers to share information and opinions that direct buyers towards and away from specific products, brands, and service. *eWOM* has used several types of electronic media such as early on the more unstructured emails, chatrooms, instant messaging and blogs, and later social media such as *Facebook*, *MySpace* and *Friendster*. Nowadays *eWOM* are actively collected in a structured way in distribution channels such as OTAs and digital travel operators, as well as by metamediates and actively used as a marketing aid. Thus, social networking has resulted in a "*Word of Mouth goes World of Mouth*" where we have shifted from a world where the information and news was held by a few and distributed to millions, to a world where the information is held by millions and distributed to a few. A good example of consumers sharing their hospitality and tourism opinions is the website *tripAdvisor*—described by the company as ''*the largest site for unbiased travel reviews (which) gives you the real story about hotels, attractions, and restaurants around the world*''. *eWOM* has thus change the structure of travel information and travel marketing, the accessibility of travel information, and subsequently travellers' knowledge and perception of various travel products. Such **user-generated contents** provide tourism marketers with invaluable information about their consumers, but to efficiently capture such information, big data and intelligent data analysing technologies must be applied, still out of reach for many smaller suppliers and smaller DMOs. Many have also to learn how to quickly respond and comment on travel reviews and develop strategies for such **market communication**. It is important to understand that social media are not a marketing tool but rather public relations, and should not be used to market products but to get in guests and potential guests and communicate with them[222]. Social media is not about pushing out a message, but rather about connecting to people and interact with them, a two-way communication about giving and taking. Thus, the RoI on social media is stretched across a longer time span than a regular marketing campaign. It is measurement more in brand awareness then in bookings, in people sharing and searching information about the brand, in word-of-mouth virality. With social media, you're not going to control demographics and target potential users as in traditional marketing. **Virality** means you will get ambassadors everywhere people find the information interesting. For the hotel business people are usually interested in the best or the cheapest[222] and not interested on what's in between, which means that the USP (**Unique Selling Points**) must be cleverly adapted to that fact, such as best hotel in town. What people want to share on social media are **experiences**, not best deals, to remain previous guests what great time they had and put potential guest into guests by explaining what

[219] Wang & Fesenmaier 2006
[220] Yoo & Gretzel 2008
[221] Litvin, Goldsmith & Pan 2008
[222] WHIP 2011: When Social Media for Hotels works

experiences they will have. The latter is done with the help of previous guests by letting them share their experiences. This is done by getting your previous guest to talk, tell their stories, show their photos, videos and experiences.

Marketing communication via **mobile phone** constitutes a promising approach to suppliers and DMOs because it enables to reach appropriate audiences at the right time and place. There has however, been a resistance among users for mobile marketing[223]. Consumers perceive their mobile device to be for personal communication, and prefer to be able to exercise control over their interaction with organisations. Researach[192] indicate, however, that acceptance can be enhanced by **permission marketing**, trust-building, creating a sense of being in control, and useful and entertaining website content. **Pull technology** seem to hold particular promise for mobile marketing communications. Example of pull technology are **QR codes**, which are two-dimensional bar codes, that can be scanned by mobile phones to provide access to websites, information and applications. The application of QR codes placed on buildings, facilities, tourist attractions and information material, was one of the first efforts to obtain easy and quick access to appropriate tourist information. Despite their potential, their use in tourism marketing has been limited. Ease of use, utility and incentives are drivers to continued use of QR codes, whilst lack of knowledge about how-to scan or of the benefits of QR codes may hinder adoption.

Context-based marketing uses ICTs tools such as **location-based technology** that recognise and enable to respond on the physical environment (context) of their users. Connecting the different concepts of context-based marketing, social media and personalisation, with mobile devices, result in **social context mobile (SoCoMo) marketing**[224]. *SoCoMo* marketing introduces a new paradigm for travel and tourism. It enables tourism providers and destinations to revolutionise their offering by obtain and share real-time, contextual information for various decision-making processes associated with the consumption of experiences, and to co-create products and services in real-time dynamically with their consumers. Such **location-based social network** (LSN) **marketing** using contextual information is increasingly relevant in tourism marketing, as in the near future big data collected by a wide range of sensors in a **smart destination** provide real-time information that can be used to influence the tourist experience. An example is *Foursquare*, that encourage the consumption of places (e.g., dining at local restaurants, shopping at local stores, visiting local salons) by broadcasting relevant social and expert recommendations and offering special rewards for certain accomplishments and/or task fulfilment.

In traditional marketing theory, the production is considered to be carried out by the company and value is considered to be created during the production process by the company and to be embedded in the resulting product. The product then "carries" the value in it and the value is transferred from company to the customer with the transaction. In service, however, this **value-in-exchange approach** becomes meaningless, as there is no physical product to which the value could be attached. In service marketing the customer always is a **co-producer** of the service, i.e. participating in the production process as the value is generated only once the customer uses the service or the good. In this **value-in-use** model company's role in the value creation is to support the customers' processes by offering resources into them. Resources can refer e.g. to personnel, machinery, service setting, or to available information sources. Furthermore, in the experience economy, the value is considered to be experienced. Traditionally, tourism marketing has worked with marketing trough general brochures to the masses by

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[223] Watson, McCarthy & Rowley 2013
[224] Buhalis & Foetst 2015

using different types of psychographic segmentation (motives and interests). Now, and in the future, **smart marketing** is heading towards a more sophisticated, in-depth segmentation. In order to successfully capture people's attention, it has become increasingly important to have a deep understanding of their needs and desires, and to deliver **added value** even in such things that they are not aware of themselves.

A trend in tourism promoting is to use different picture-based social media applications such as *Instagram*, *Pinterest, Snapbucke*t, *Twitter*, T*umblr* and others, which can be regarded as a form of **express marketing**[225]. Here pictures and videos are used as content carriers in the form of **visual storytelling**, to share content across different platforms to engage uses from *YouTube*, 360-degree feeds and *Facebook Live*. **Infographics**[226] - the use of visualized information, has increased 400% in literature since 1990, and 9900% on the internet since 2007. The reason for the popularity of infographics is said that the brain is visually wired as almost 50% of the brain is involved in visual processes and 70% of all sensory receptors are in the eyes. The brain can get sense of a visual scene in less than 1/10 of a second, and it take us 150ms for a symbol to be processes and additional 100ms to attach meaning to it[206]. Infographic can help break through the information overload of modern people as we consume 34 gigabytes (equivalent to 100 500 words) outside of work on an average day, and on average only read 28% of words per visit on a webpage. Infographic counter information overload because colour visuals increase the willingness to read by 80%, and while comprehension rate for labels with text only was measured to 70%, the rate of understanding increased to 95% for labels with text and pictures. People following directions with text and illustrations do 323% better than people following directions with text only. Adding pictures make people more incline to believe what they are reading, and easier to persuade. In addition, *Homo Zappiens* and the digital kids are raised in an infographic world.

Video is the strongest trend in social media, the film capacity of smartphones, and cheap editing and productions on desktop and smartphones, has made video production everyone's option. For travel marketing, **online video** is a powerful way to convey excitement about a destination, product, service or brand and create awareness and engagement of a product or destination. From previously buying expensive 30 second advertisings on television, today spreading 8 seconds marketing videos on *YouTube*, *Facebook*, *Instagram* and *Snapshat* is free, and will be the main channel to reach the millennium travellers. As more and more people around the world share their travel experiences on *YouTube* and **vlogs** (video blogs) that feature personal travel experiences, such travel videos have become natural information sources to seek inspiration for the next adventure. From 2012 to 2013, uploads of travel-related videos grew by 190%, and growth in travel video uploads overall outpace those of other major categories on *YouTube*. According to *Google*[227], two out of three U.S. consumers watch online travel videos when they're thinking about taking a trip and 67% when choosing activities within a destination, 63% when deciding on accommodation within a destination. Every month, more than one billion people visit **YouTube** to watch more than six billion hours of video, making *YouTube* an ideal place for marketing with views of travel-related content up 118% year over year. In Sweden, *YouTube* is dominating online-TV with every third Swede watching *YouTube* every day (compare with 4% for *Netflix* and 3% for *SVT Play*), and 71% among the youth 15-22[228].

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[225] Hanan & Putit 2013
[226] http://neomam.com/interactive/13reasons/
[227] tNooz 2015: How video influences travel decisions
[228] Jajja 2016: YouTube dominerar ungas medievanor

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Travellers are increasingly using mobile devices to consume **travel-related videos** anytime and anywhere. In 2013, mobile devices accounted for roughly 30% of all travel video views, with mobile viewing up 97% on smartphones and 205% on tablets. While a large percentage of *Google.com* travel searches are brand specific and based on purchase-intent activity, searches on *YouTube* generally occur earlier in the travel-planning process. While travel watchers on *YouTube* are interested in community-generated content, the majority of travel-related views (67%) in general are for brand or professionally released videos, which are up 394% from year to year. Travelers want to do more than just passively watch videos on *YouTube*, they want to connect with creators and brands, and travel vlogs receive four times more social engagement (likes, comments, shares, favourites and subscriptions) than other types of travel content on YouTube. A research study[229] of "**The selfie Paradox"** shows that selfies are an important part of social media, and the basis for many social media stars. According to *Google*, 93 billion selfies are taken every day and among aged 18-24 every third picture is a selfie. But according to the research, many associate selfies to narcissism and non-authenticity, but see their own selfie as self-ironic and not seriously, thus not associate their own selfies as narcissism. At the same time other´s selfies were seen as serious and thus negatively narcissistic.

World Travel Market Global Trends Report[230] for 2016 reveals that websites and mobile applications are no longer enough and agents must join up their physical and digital presence. Agents are at least four years behind if they think they're meeting a traveller's requirements with a website and app. The study talks about the "**physital**" **economy**[230]. The *physital*" approach goes beyond the now-expected online presence or mobile app, blending of the physical with the digital, using the latest technologies. Vide films have up to today been the most immersive storytelling medium. But even with the best, highest-resolution TVs, you're still just passively watching. You're not there and you are not acting or interacting. The promise of **virtual reality, VR,** is its **"presence"**—the feeling that you're really somewhere else, as well as its interactivity. Using the VR, the tourists can stroll in the most extraordinary places on earth. It's the closest thing to teleportation, enabling deeper engagement than has ever been possible with a place. It will also become a time machine, as we today are recording all interesting things happening, that can be experienced in VR in the future. Mobile apps for VR are appearing across many platforms such as *Google Play*, *Google Maps*, *YouTube* and others making the technology available to everyone.

The revolutionary **360-degree video** means viewers can see the video from every angle just by swiping or moving the phone or tablet around—no headset required. Uploads of 360-degree videos continue to grow and have doubled lately. Virtual reality takes the 360-degree video experience a step further by adding depth. When viewed with a VR headset, 360-images become three-dimensional, which adds to the feeling of **immersiveness**. On top of that, spatial audio lets people listen to audio from all directions, just as in the real world. This makes VR and 360-degree video an incredibly powerful tool to create presence. When a viewer feels like they are there, they have a greater sense of the situation. Visual storytelling become more impactful. The promise of **immersive storytelling** with 360 videos has led brands to experiment with the format, even though at present times the new technology not always is chosen as the preferred watching format in experiments[231]. But the technology is still in its early stages, and by many regarded as Science Fiction, but now quickly becomes a true reality and mainstream. Even as, we have seen, a simple piece of cardboard, can turn our smartphones into virtual reality headsets, and

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[229] Diefenvach & Christoforakos 2017
[230] World travel Market 2016: World Travel Market Global Trends Report 2016
[231] Google 2016: Is 360 Video worth it?

Google has shipped millions of *Google Cardboard* viewers to help bring the VR experience to everyone. There is no shortage of content to watch. Every single video on YouTube can be viewed in VR, making it the world's largest library of VR content. VR technology has the potential to change our daily lives from how we communicate to how we spend our leisure time, and now is the time for tourism marketing to embrace the technology.

Virtual reality has entered the travel and tourism industry using the concept to encourage customers to try before they buy. VR can be used to show the layout of cruise ships, resort facilities at different seasons throughout the year as well as landmarks and attractions in a destination. Until now, the industry has mostly focused on allowing users to experience a 360-degree view of a product or destination. *Thomas Cook* was one of the first companies to embrace virtual reality in its concept stores where consumers can experience their holiday resort through a *Samsung* headset. The company has also targeted customers at home, by mailing *Google Cardboard VR* sets that they can use with their own smartphone and a downloadable app. Rival *TUI* has also launched its digital concept stores, with interactive maps and tablet tables as well as virtual reality goggles for destination and hotel views. Despite these and many other examples of virtual reality applications, the travel sector have yet to convince travellers and the industry of its overall usefulness. Many are yet to be persuaded that 360-degree walk-throughs of a hotel or aircraft, using virtual reality device, can genuinely enhance a traveller's expectations of what they are buying. As the potential of 360-degree video and VR is immense, it will, however, require a shift in thinking. VR lets viewers be active participants; they can look wherever they want and the story is everywhere. So, rather than telling a story frame by frame, filmmakers need to build entire worlds. So far, the **360 video ads** have a lower retention rate than standard ads, but at the same time a higher click-through rate, means that the 360 ads drivee engagement via interactions, such as views, shares and subscriptions, even if people do not watch 30 seconds or more.

A study[232] covered 39 different countries and based on nearly 24,000 online interviews of how Generation Z, people aged between 16 and 19, respond to advertising, shows that Gen Z despite being "born with a mobile phone in their hand" are quite responsive to traditional advertising. They are generally more open to outdoor and TV ads than to digital ads, even though they spend more time online. This reaction is due to the fact that many Gen Z in the survey felt "overwhelmed" by how much advertising they see, particularly online. They express real positivity when they are given control to play or not play an ad, and if they are likely to receive rewards for viewing the content and are less forgiving when an invasive ad format does not offer user controls, such as non-skippable pre-rolls and pop-ups. Another way to win the attention of Gen Z is for digital and traditional campaigns to feature either music or celebrities. But the key driver is that Gen Z likes ads to be interactive or to offer some sort of reward for engagement in a gamification.

To summarize distribution channels, *Snapshot*[233] has compiled a popular and thorough overview of hotel distribution and technology[234] (*figure 15*).

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[232] http://www.millwardbrown.com/adreaction/genxyz/global/home
[233] https://www.snapshot.travel/
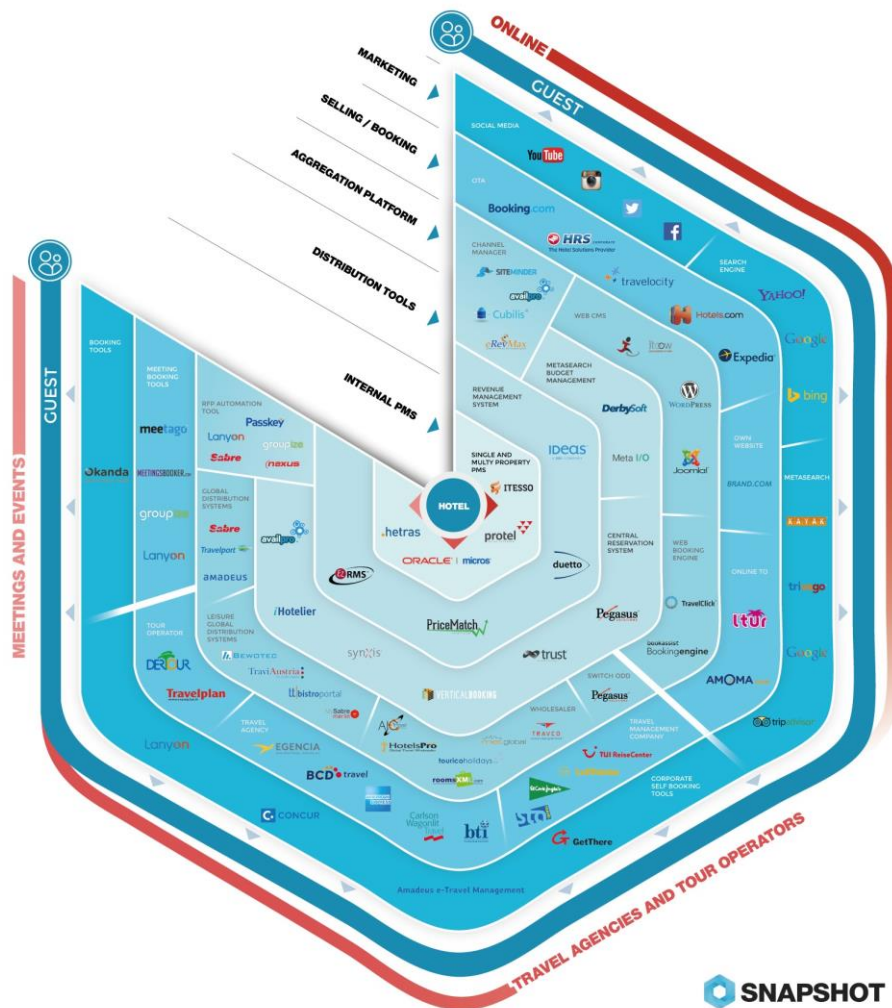[234] tNooz 2016: hotel distribution getting more complicated?

Figure 15. A summary of distribution channels compiled by Snapshot (Image via ShutterStock[235])

Customer digital mobile behaviour

In understanding contemporary and future tourism, tourist behaviour and tourist use of digital technology, we must connect the tourism evolution with the evolution of digital platforms and communication channels as described earlier in this report. Before the advent of the *Internet*, tourism was mainly mass tourism associated with packages tours, undifferentiated products, and organized by international tourism operators and solved by traditional travel agencies. In this **tourism 0.0**, travel agency staff had string influence on the tourist decision process and information access. With the development of a digital information society, a more flexible and more customer-centric model developed, moving to the so-called **Tourism 1.0,** co-evolving with the development of the *web 1.0* with its electronic documents, allowing tourist to search and read about tourism offerings. Following the evolution of *web 2.0* came **Tourism 2.0,** defined by the business revolution of the tourism industry driven by the new platform of the social web. By the introduction of *web 3.0* and user -generated content, **tourism 3.0** has evolved where *digital Word-of-Mouth* has become the major information source for travel decisions. Tourism 3.0 is also characterised by the development of the **Mobile ecosystem** – that has enabled the **mobility** of the digital information system that characterises the current mobile e-tourist of today. In March 2015 **Peak-Desktop** was reached in the US, where more users use the mobile then

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235 https://www.shutterstock.com/sv/image-photo/man-booking-hotel-reservation-on-digital-223155751

desktop and laptop to connect to Internet. More than 85% of the world population live within range of data-capable network. Mobility thus is one of the most important current trends, and a disruptive paradigm shift in tourist behaviour that radically distinguish tourism 3.0 from earlier tourism. It also, as we have seen in previous section, radically has changed the tourism business and its distribution and marketing processes. We now have **mobile-only companies** such as *Uber*, *Hailo* and *HotelTonight*; **mobile-only communication** platforms such as *Whatsapp* and *Snapchat*, a constant flow of new **mobile-only technologies** – the *Apple Watch*, *Samsung Gear*, **mobile payments** (*Apple Pay*, *Android Pay*), as well as virtual reality, augmented reality, bots, artificial intelligence – all of which are shaping new "**mobile only**" ways for the tourism industry to interact with the end-traveller. The three **Cs of mobile** – connection, convenience and context, and the mobile in the centre of how we communicate and interact, puts high demands on the digital travel strategies with demanding, hyper-mobile customers and an ever-changing mobile ecosystem to deliver sophisticated mobile experiences.

This mobility is changing the way consumers interact with the tourism industry. As a channel, mobiles offer unique capabilities that open up opportunities for the travel industry. Unlike a fixed PC, mobile devices include camera, audio, video, location sensor, finger print scanner server and intelligent agent access. Travelers are using mobile to be spontaneous, the mobile allows travellers to be spontaneous both in planning their trip and once they arrive. Mobile is becoming the booking device of choice in emerging markets. Mobile devices have different roles in different parts of the travel life cycle. In North America and Europe, mobile tends to be used for background research and last-minute deals. Relatively few consumers still use it for booking, though airlines have set up online check-in on a mobile app. In contrast, mobile is rapidly becoming the primary means of booking in emerging markets such as China and India. In these countries, mobile is often the only access people have to the *Internet*. As a result, travel agents are moving to mobile booking, while *TripAdvisor*, traditionally a metasearch company, has expanded its services into travel agent territory with **instant booking** trough mobile devices.

Despite this paradigm shift towards mobile use of digital information, the **traditional travellers journey** has not changed fundamentally because of the new technology. It basically consists of, as all types of consumption, of a pre-consumption phase, consumption phase and post-consumption phase (*Figure 16*), that in the traveller's context transform into the **pre-travelling phase** (pre-experience), the **travelling phase** (the experience phase) and **post-travelling phase** (post-experience phase). Traditionally tourism marketers have focused on the pre-consumption phase while suppliers have focused on the consumption phase, and the post-consumption phase has been left to the traveller with their souvenirs and photos. This pattern has also changed by the current digital transformation, where each phase is equally important for both the traveller and the travel and tourism business. In contrast to many consumer goods and services, the consumption of tourism experiences involves often extensive pre- and post-consumption stages, in addition to the actual travel trip[236]. These stages of the tourism consumption process are typically information-intensive, and *Internet* technologies have come to play a significant role in supporting consumers throughout this multistage process. One main driving force behind escapism is the **pull-factor**, a desire to get away from an everyday life perceived as being routine, thus the understanding of pre-travelling phase and the actions taken, the **travellers traveling to purchase**, sometimes called the **purchase channel** or **funnel**, is important to understand, and will be explored in the

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[236] Jeng & Fesenmaier 2002

next section. But as we will see, on-trip behaviour is through the new technology blurring with the post-travel behaviours, making the travellers behaviour more complex to understand.
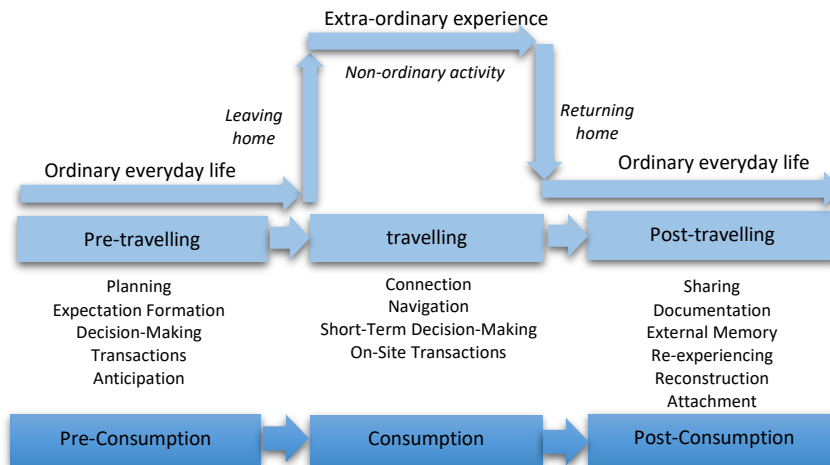

Figure 16. The fundamental phases of consumption and travelling and experiencing (based on Jafari trampoline metaphor of traveling).

Swedish Lapland Visitor Board has extended these phases into four phases of **Dream phase, Planning/Booking phase**, **On tour phase** and **Home again phase** (*figure 17*), that are of importance to understand for the tourism industry.

Figure 17. Swedish Lapland V.B ASSL-model of the traveller's travel-phases.

In a similar way, *Google* has divided the travellers purchase travel into five phases of **Inspiration**, **Search**, **Comparison**, **Book**, and **Share**, where in each phase the digital landscape has drastically changed (*figure 18*) and will continue to change in the future.
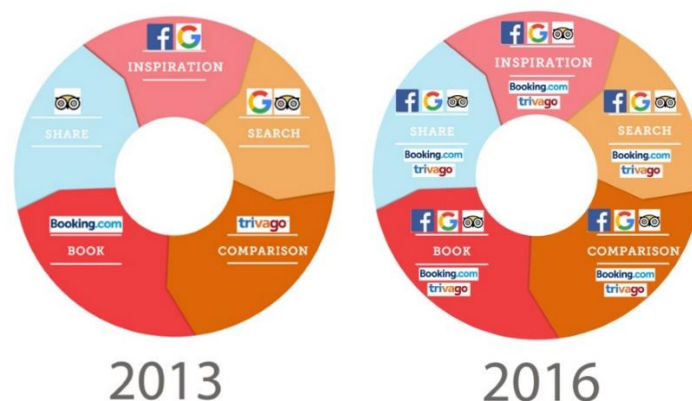

Figure 18. Illustrate how participants in the service cycle have changed in only three years by the introduction of booking services on Google, Facebook, and TripAdvisor. (Picture retrieved from tnooz[237])

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[237] tNooz 2016: Book on Google – answers to hoteliers' questions

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To understand the changing landscape of consumer behaviour and the role of the *Internet* in making travel-related decision, *Google* intended to map the **Traveller's road to decisions**[238] by asking *Ipsos Media CT* to conduct a travel-tracking study of US travellers. The study conclusions are:

- **Inspiration phase** - Travelers rely on social/video/photo sites and search engines for trip inspiration. 65% of Leisure and 69% of Business travellers turn to the web before deciding where or how to travel.
- Friends/family and colleagues (56% offline, 32% online) and online sources (56%) are critical to travel inspiration, while magazines and newspaper (30%) and information brochures (22%) and books (18%) are less important. Least important were Travel agents (10%).
- Social Networks, video or photo sites (83%) with *YouTube* (42%) and Search engines (61%) were top online sources, with travel review sites (42%) and destination specific sites (31%) less important for inspiration.
- Online videos are influential in early stages when thinking about a trip (65%), when thinking about what type of trip (48%) and when choosing a destination (61%).
- **Research phase**: The **path to purchase** is still complex and digital is the key factor, and traveller search activity is intensifying. The *Internet* is the top source for both leisure (74%) and business travel (77%) planning, while information brochures (23% and 26% respectively) and travel agents (13% and 30% respectively) are less important.
- Search engines are among the most popular online **planning sources** for travellers, particularly among leisure travellers (60%, 55% business travellers)
- One in three leisure travellers and one in two business travellers select an OTA for its superior site tools and options.
- Many leisure travellers go into planning undecided on a brand, and many leisure travellers are also unclear about the differences among brands.
- Loyalty influence declining for business travellers, who are normally among the most loyal. 2 in 3 business travellers (67%) are open to trying new loyalty programs if they provide a new, different, or unique experience
- **Multi-screen activities** - Travellers extend their activities from desktops and tablets to smartphones across all stages; Smartphones (67% Leisure, 78% Business) are used throughout the travel process
- Leisure travellers research and book across devices, regardless of category
- **Cross-device movements** - Early actions on mobile influence booking decisions: Smartphones are often used for travel inspiration in "snacking moments" before planning; 77% Usage of smartphone for travel inspiration in spare moments, such as when waiting, commuting, etc. by affluent travellers
- Nearly half of those who use their smartphone for leisure travel inspiration ultimately book through some other method Online (87%), Phone call (29%)
- **Mobile sites vs. apps** - Travelers still rely heavily on both, and encountering a poor site experience results in a negative impact on a brand and the bottom line
- More leisure travellers book via mobile websites (45% website, 40% app), while business travellers mostly book via apps (55% website, 63% app)
- 78% of leisure travellers have downloaded/used a travel related smartphone app, and one in five leisure travellers downloaded a travel-related smartphone app due to a poor mobile site experience
- 83% of leisure travellers have encountered a travel site that was not mobile optimized or friendly, only 23% of those who have encountered a mobile site that wasn't optimized actually pushed through
- A poor mobile experience forces travellers to move elsewhere and has a negative impact on brand.
- **Mobile in-destination** - The smartphone is the go-to device for local information when traveling
- Travelers (28% Leisure, 57% Business) often call airlines and hotels for information from the road

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[238] Think with Google 2014: The 2014 Traveler´s Road to Decision

- To decide on activities once at their destinations, leisure travellers rely on a mix of sources (walking around 37%, Website/app if the destination 36%, Brochures 35%, staff 27%, other people on trip 25%, tour guides 12%, Online 51%
- To decide on activities once at their destinations, leisure travellers rely on smartphones (56%) the most (computer from home/work 49%, Tablets 35%, computer at accommodation 29%)
- Leisure travellers overwhelmingly rely on search engines (84%) via smartphones to find local information (app 40%, typing a site in browser 25%)
- **Videos are the next Frontier** - Travelers engage heavily with online video and watch more than just travel content
- Travelers are engaged on *YouTube*, with three in five leisure and two in three business travellers visiting to pursue passion points, 74% Leisure (80% business) watched video related to an interest or hobby, 68% Leisure (72% Business) to be entertained
- 35% Leisure travellers and 56% Business travellers engaged in travel-related video activities within the past six months
- Online videos are viewed throughout the travel journey, particularly before decisions are made, 66% when thinking about a trip, 52% when thinking about what trip to take, 65% when choosing a destination, 63% when looking for ideas of activities at a destination, 54% when deciding on accommodation at a particular destination, 47% when deciding which website to book on
- **Family travel** - Children's preferences influence decision making. A majority (64%) of families take at least two trips together per year, and 45% of leisure travellers plan to travel more frequently with their family in the coming year.
- Many are undecided when they begin planning family trips, from a young age (8 years mean age) then influencing decisions, children play an influential role in family travel destination decisions (87% of times when planning a family trip)
- Online sources (58%) play a critical role in family travel planning (children 41%, family, friends colleagues off line 40%, online 21%; brochures 20%, Travel agents 11%, newspaper 6%)

Main conclusions from the *Google* study are:
- Digital is the primary source of travel inspiration
- At the onset of planning, travellers increasingly turn to search first
- The research phase is a clear branding opportunity for marketers: A majority of leisure and business bookers consider multiple brands when researching (regardless of category).
- Mobile is critical at all stages and influences booking decisions
- TV viewing habits continue to fragment, and video is key for inspiration and planning
- Family trip planners are up for grabs: Half of travellers are not set on a destination at the onset of planning

Kairos Future[239] has listed a **consumer analysis for 2016**, and noticed that based on the chaotic times following the crisis of 2008, consumers have for a while had a strong desire for anchoring in past times and past traditions, a longing for history. But since 2013 consumers have embraced the future and a positive mindset in creating a new future based on the digital technology. *Kairos Future* themed the trends of 2016 as the year of "**defining space**". The firs space is "**My space**" where the consumer wants to know "who I am" and will be in the future. The second space is "**Our space**" knowing who is with me and who is against me outside of the "We". The third space is "**Outer space**" to know the context in society.

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[239] Kairos Future 2015: Consumer Trend Hotlist 2016. Theme of the year 2016: My Space, Our Space, Outer Space

My space trends:

1. **Urban Survivalism** – the US survivalist concept is slowly being adopted in Europe as an interest in survivalism as a concept and artefact to associate oneself with among urban trend setters. Gardening, foraging, parachord bracelets are associated with this movement and are symbols for taking control and for being prepared in a fast-moving ever-changing world.

2. **Public cocooning** – the old trend of cocooning at home is now replaced by an emerging trend of cocooning in the public sphere. The smartphone, like the earphones are the ultimate tools for cocooning in public and get an excuse not to interact with others. Consumers are immerging in the digital world and disconnecting from the physical surrounding space, creating new opportunities for brands and the media landscape.

3. **Brain Management** – The focus of managing and optimising machines of the 20th century has now in the 21st century switched towards control and management of the body – a body and brain management. Creativity, concentration, and sleep are more and more understood and tried to manage using mindfulness, yoga, fitness coaching, personal transformations etc.

4. **Life Hack** – an online-movement with a drive to solve everyday issues and challenges without the big innovations of companies, combining sustainability, creativity and the maker revolution. It is a move away from company staged problem solving (generation 1 experiences) to self-directed behaviour (generation 3 experiences), thus challenging traditional brands to re-think value creation in the life of customers.

Our space trends:

5. **Social Disruption** – started some 50 years ago and now the last taboos are disappearing and seeing and defining gender roles and sexuality in a whole new way, young generations viewing encounters with potential partners through digital filters.

6. **Shut Up, Shout Out** - Consumers are using an increasing number of tools and strategies to tell brands (and other people) to shut up and shutting them out for the future. If you make a bad advertisement you are not welcome anymore in the new world of *Instagram*, *Truecaller*, ad blockers etc. To survive in the emerging media landscape, the brand needs to think about what content is interesting to whom.

7. **Virtual and Reality** – We are now seeing a technological revolution that truly can transport you from one context to another, or even showing the digital on top of the physical. The upcoming year will be as much about the next social media platform, as it will be about how brands and social media will be able to enhance and create value driven content for the users with Virtual Reality or holograms. The brands that recognize the full potential of bringing brand experience, products and services into this new digital way of consuming will experience more possibilities than any technology before it.

8. **Gen Pragma** – The generation born after 1984 are often referred to as **Generation Order** due to their preference for structure and principles. Now preferences for pragmatism are prevailing, not sticking to outdated principles, but rather built society from bottom-up as established institutions don´t make it any more.

Outer Space trends:

9. **Neo Nations** – Previously the nation was the most dominant institution in society, while lately supernational institutions such as UN, IMF, EU etc. have been growing in importance. Now the nation is challenged by technology and technology companies that will define society and identity.

10. **Space to Earth** – the next consumer landscape will be inspired from the world outside of the earth, with solutions and inspiration popping up in food as well as other cultures.

11. **Blockchain Capitalism** – while few people knew what the blockchain is, businesses will increasingly have an idea of its potential. Even if it is in its infancy, but the promise of open architecture, security, lowering of transaction costs, and increased trust will radically transform business models in the near future.

In the Experience society, travelling has become inherently **emotional** as experiences are emotionally driven. Travellers can feel a plethora of emotions ahead of a trip such as excitement, dread, comfort, while the on-trip experience can be very emotional and the post-trip a mixture of feelings such as sadness, longing, happiness and proud. Understanding this **emotional journey**[240] of the traveller is important as emotions guide decision making. Research has shown that people are less patient when they are in a negative frame of mind, and fear can dissuade travellers from a destination. Positive emotions are the first step to build awareness of a destination or a brand, and appealing to emotions will make brands more memorable and build loyalty. Emotions such as joy, excitement, annoyance or discontentment play a key role in determining future loyalty and social media word-of-mouth. During the decision-making process there are triggers that guide the decisions, which are important to identify. Mapping the unique emotions attached to each stage of the process on the decision funnel allow the brand to insight into the traveller emotional journey and can act properly on them. Tools to map the key emotion are for example **Plutchik's Wheel of Emotions**[243], (*figure 19)* but need close research on the traveller's decisions process.
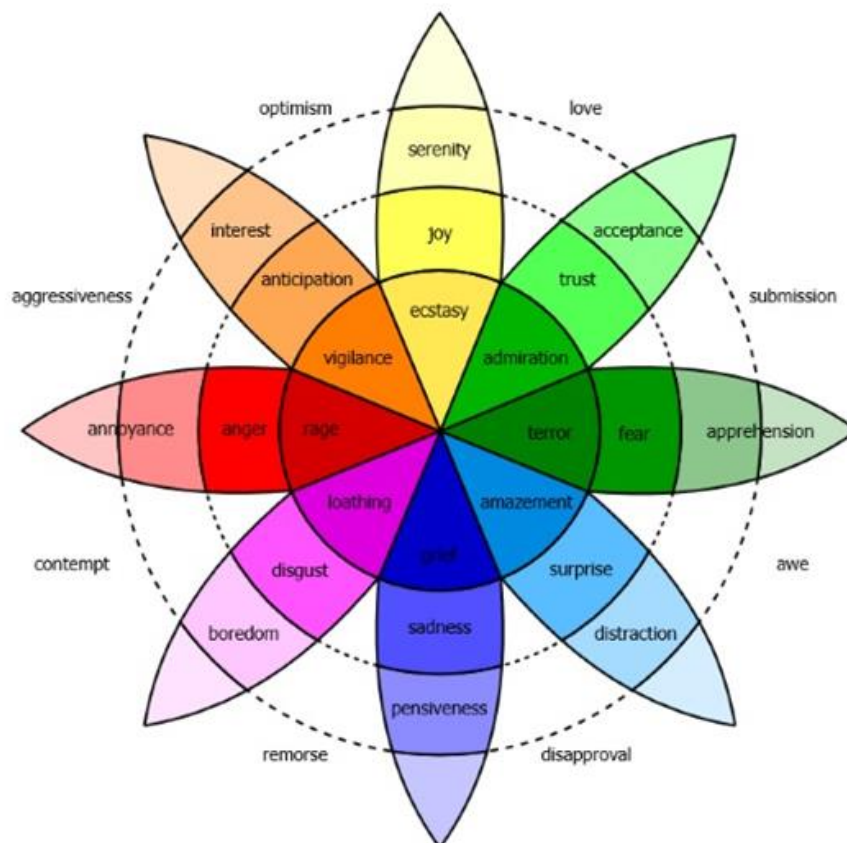

Figure 19, Plutchik's Wheel of Emotions used to map and understand people emotions in different situations such as travel decisions and travel experiences. (Image from Wavebreak Media/BigStock[241])

Figure 20 gives an example of such emotional mapping of the traveller's journey. Understanding the emotional state in each phase will help establishing a better conversation with the traveller in each stage and is of critical importance for the new developing digital travel guides and intelligent travel agents. The emotional tipping point for positive decision and conversion is largely connected with "positive stress"

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[240] tNooz 2017: But how do you feel? The role of emotion in travel purchasing decisions
[241] https://www.bigstockphoto.com

and an effective way to stimulate conversion is to providing reward mechanisms such as in **gamification**. The travellers funnel procedure feels less taxing to the traveller when a conversion is equated with an achievement, even small things as bonuses or discounts.
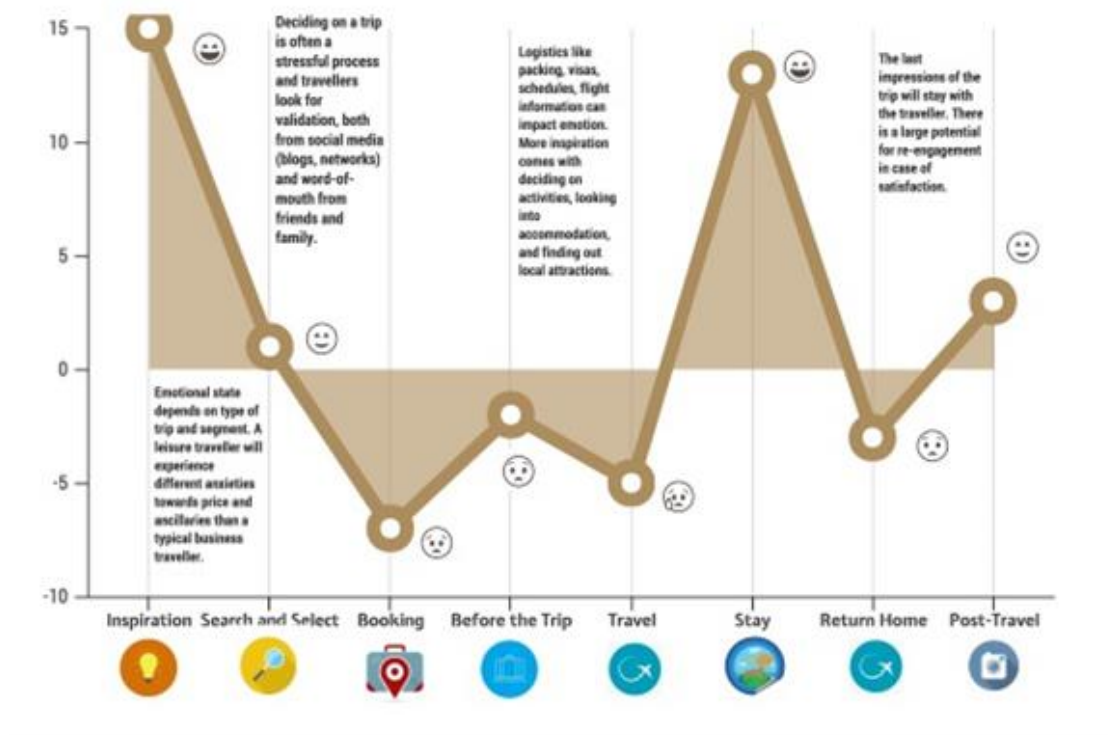

Figure 20. The travellers emotional travelling (Image from Wavebreak Media/BigStoc[242]).

Pre-consumption digital behaviour

The variables involved in where a consumer might go to purchase their travel product is a bewildering decision tree of options. In the matrix of choices, they can choose to use a laptop, smartphone, tablet, or travel agent, they can choose from 196 countries, a destination within these and then a mode of transport. Choosing this mode of transport is a further set of routes on the decision tree, depending principally on price and convenience, including items such as airport location, time of transport, connections and price. Consumers then consider their accommodation, and this adds another layer of complication into the decision-making matrix. the accommodation decision process involved far more than price, with imagery a critical component[243]. Just by means of an example, a simple flight from London Heathrow to Boston, Massachusetts along with accommodation, returns results through popular metasearch sites of between 700 and 2,700 flight choices, and 200 to 300 hotels. Thus, the travel market is a world of overabundance for travellers, who have millions of different possible routes to their final itinerary, with an exponential increase in decisions each time they start part of the process without a clear idea of what they want. The positive effects of choice can quickly tail off. This can result in consumers using short hand reasoning, leading to bad choices being made, or to dissatisfaction with their choices post-purchase, Overall, the basic rule is the more cognitive power a consumer needs to exert to come to a decision, the less likely they are to purchase immediately. The complexity and high price of purchasing a

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[242] https://www.bigstockphoto.com
[243] Eye for Travel 2017: Understanding the Travel Consumer's Path to Purchase

travel product naturally means that consumers spend considerable amounts of time in the **pre-consumption phase**, considering their purchase and comparing the product between many sets of sites, thus the channel to purchase is in the travel industry extremely long. Therefore, the online travel market has learned how to aggregate content and present it to consumers in a manner that makes their lives easier.

Internet technologies are increasingly used in the **pre-consumption phase** to obtain information necessary for planning trips, formulate correct expectations, and evaluate, compare, and select alternatives, as well as communicate with the providers of tourism products and services to prepare or execute transactions. With people spending more and more time on their mobiles, the **path to purchase** for consumers has changed dramatically in just a few short years. *Facebook*[244] identified **five phases of the path to purchase for travellers**: Dream, Plan, Book, Experience and Reflect (*figure 21*), very similar to the phase of Inspiration-Search-Comparison-Book-Share identified by *Googles*[245] described above.

Figure 21, Facebooks five phases of the path to purchase for travelers.

The **Traveller's Path to Destination Selection**[246] begins long before the bags are packed. It starts when a traveller selects where to go from the abundance of destination choices across the globe. Travel is a highly emotive purchase, and no two buyers will have the same desires or destinations in mind. The challenge for travel brands is making one website work well for a dozen or more different types of customer. It's strange then that many travel sites treat all visitors exactly the same. Visitors to a travel site may be a solo businesswoman, a couple or a family, for example, and in each different "traveller cohort" they display different behaviours, especially pertinent in different countries. There have been, as we have seen, many attempts by different actors to segment customers by their behaviours in the different phases of the travel. For example, *TripAdvisor*, as part of their ongoing *TripBarometer*, commissioned *Ipsos* to identify **booking patterns** and identified four scenarios[247] (*figure 22*):

- **Flight bookers** book their flight first before planning the rest of the trip
- **hotel bookers** start their planning by researching and booking their accommodation
- **Balanced bookers** research both elements before booking either
- **mavericks** move straight to the booking phase. The behaviour of the mavericks is somewhat explained in the fact that 52% of them are business travellers

In a similar way the airline technology specialist *SITA*[248] identified four personas which make up the US air travelling public[249]:

1. **Careful Planner** (58%) – like the security of printed documents, yet happy to use technology throughout the journey. Use web and agents. Feel secure.

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[244] https://m.facebook.com/FacebookMarketingUK/
[245] tNooz 2016: Book on Google – answers to hoteliers' questions /
[246] tNooz 2017: Free whitepaper: The Traveler's Path to Destination Selection
[247] tNooz 2016: TripAdvisor delves into traveller types and booking trends
[248] http://www.sita.aero/
[249] tNooz 2015: Airport personas emerge in the quest to improve the experience

2. **Independent and hyper-connected** (18%) – like to be in control and value efficiency. Mobile and tablet app users, seek real-time information.
3. **Pampered** (13%) – those who can afford luxury and use loyalty schemes and lounges services, use web, agents, but investigate new mobile services. Need comfort.
4. **Openminded adventurers (**12%) – seeking experiences and happy to try new things. Mobile and tablet app users. Want Discovery.
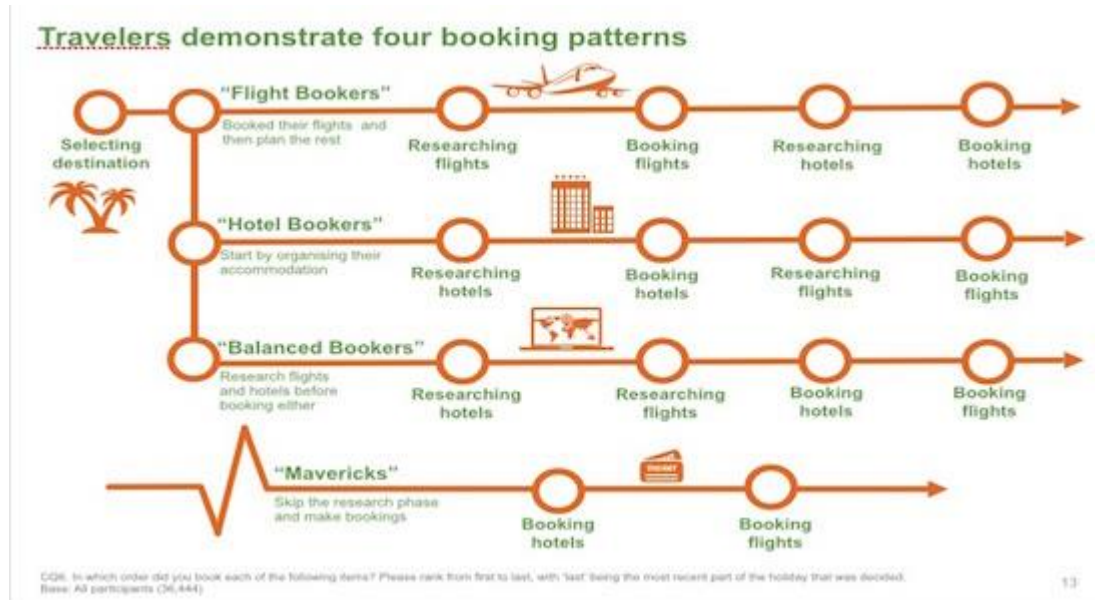

Figure 22. Booking patterns identified by TripAdvisor (picture from Tnooze[250])

Online travel shoppers take many sidesteps, turns and detours as they navigate their way to deciding on a destination[251]. A new study[252] on the Traveller's Path to Purchase from *Expedia Media Solutions* and *comScore* reveals trends in how American, British and Canadian travellers choose destinations and make purchases. Travellers frequently begin the planning and research process with more than one destination in mind. Travellers consider wide-ranging destinations when planning a trip, from nearby cities to far off international destinations, while their research on destinations spans the entire globe. They were around three to four times more likely to report using a search engine in the inspiration phase, at the start of their journey, compared to the period immediately before booking. American travellers are two times more likely to travel domestically, while British and Canadian travellers are two times more likely book international destinations. There are many factors that can influence where travellers book a trip, from recommendations, social media images, travel information sites, and much more. In all three regions studied, *online travel agencies* (OTAs) and recommendations from friends and families are the leading resources for selecting a destination.

*Jumpsh*ot and *EyeforTravel* collected more than a quarter of a million individual travel purchases from five countries in mid-2016 to understand the latter elements of the customer journey and **path to purchase**[253]**.** Nine out of 10 **travel purchasers** used a **search engine** before a purchase and being the most influential in the initial phase of the journey. Germany had lower rate of search engine usage, and were

[250] tNooz 2016: TripAdvisor delves into traveller types and booking trends
[251] tNooz 2017: Free whitepaper: The Traveler's Path to Destination Selection
[252] Expedia Media Solution 2016: Destination selection during the traveler's path to purchase
[253] Eye for Travel 2017: Understanding the Travel Consumer's Path to Purchase

also less likely to visit review sites, social media or competitor direct booking routes. This suggests that German travellers have a more direct route to purchase when they are in the phase closest to booking, with a more strongly formed idea of what they will be purchasing and the channels they will use to do so. **Search engines** remains by far the most popular area of the *Internet* to visit in the very latter stages of travel buying. No doubt this is why the largest travel brands spend so much to try and gain visibility on search engines.

While smartphones play a key role in travel decision-making for many consumers, **millennials** are leading the way in mobile shopping and buying. *Google*[254] has looked at recent research to understand the behaviour of these travellers, and the role that mobile will play in marketing to millennials in the future. Millennials **shop on the Go** and are more likely to shop for flight and hotels on a smartphone. 41% on millennial travellers say they use smartphones to shop for flights while only 25% of people over 35 years old said the same. 27% of millennial travellers say they used smartphones to shop hotels while only 19% of people over 35 years said the same. Millennials have more trust in flight and hotel information found om Smartphones.

Figure 23. Example of analysis by Google Analytics of German and US customers travel behaviour towards purchase. Channels to the left tend to play an early and assisting role in the typical sale, while channels to the right more likely are the last interactions before a purchase (pictures from Googles analytic tool).

Google provide a tool[255] to explore the ***Customer Journey to Online Purchase*** through their *Google Analytics*, by choosing an industry, business size and region, displays the interaction moments and what

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[254] Google 2016: Millennial Travelers: Mobile Shopping and Booking Behavior
[255] https://www.thinkwithgoogle.com/tools/customer-journey-to-online-purchase.html#!/the-us/travel/large/generic-paid-search

tools the customer uses for the moment. *Figure 23* illustrate thus too with example from the Garman and US markets showing major differences in their purchase travel.

Micro-moments in travel

Traveller's in the decision funnel face several decisions in the process to plan a trip by themselves. Increasingly people are turning to their smartphones for immediate answers to their travel questions, to get itinerary ideas, compare flight fares, or reserve experiences. New mobile behaviours have created a new consumer journey consisting of what *Google* call **micro-moments**[256], a decision points when a well-positioned brand can influence a consumer. With travel, micro-moments happen throughout the consumer journey. They start when people begin dreaming of a trip. And they happen across planning, booking, and even during the actual traveling. When these moments happen, people reach for a device nearest to use, which increasingly is a smartphone. Mobiles share of travel visits has lately grown by 48% and conversion rates have grown 88% on mobile travel sites[257].

Google[254] analysed billions of searches to see travellers' digital journey and booking data from 350 million anonymized traveller profiles, and came up with several hot spots or micro-moments:

- **I-want-to-get-away, Dreaming moments**: These are the moments when people start thinking about the next vacation. In the US, 37% of travellers think about vacation planning once a month, and 17% at least once a week. They want information about what´s possible and what other people have done – at their fingertips. They are turning to *Google* with questions where to go, and what to do on a destination. They also check *YouTube* for ideas and inspiration. *Google* estimated that at any given time 106 million of *YouTube* monthly unique visitors are travellers. Among watchers of travel-related videos, 67% watched when thinking about taking a trip and 37% watched when deciding which website to book on.
- **Time-to-make-a-plan, Organizing momen**ts: This is the moment the traveller narrows down exactly where to go and when. At this moment, they are still open to try new airlines and hotels. Only 14% of leisure travellers always book with the first airline they were thinking of when starting their research, and only 10% for hotels. At this stage travellers are figuring out all the logistics, how long it takes to get from one place to the next, how much it costs, the best travel times etc. Travelers don't merely turn to the web to get ideas or inspiration for a trip; they're also relying on it to get their trip right. *YouTube* is playing a large role as more travellers go there for "**travel hacks**"—from ingenious luggage-packing techniques to tips for staying healthy on the flight over. Travel hack videos offer tips and advice for every stage of planning—from booking to packing, and grew 115% year to year on Y*ouTube*, with over half coming from mobile devices. Travel hacks were up 16 times in four years.
- **Let´s-book-it, Booking moment:** This is the most important moment, when people put their money behind their decisions. Many do their final booking on other devices then the mobile phone, but people increasingly want to do their bookings on the go. It is therefore important to remove every unnecessary step from the purchasing process and making the mobile checkout process as easy as possible.
- **Can´t-wait-to-go moment:** Just because vacation is booked doesn't mean the research is all done. Now the traveller can start to think about all the things they can do and see while there. This moments occur when travellers start to look forward to their trip. To providing useful information in these particular micro-moments is a way to build your brand, drive word of mouth, and increase loyalty among travellers.

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[256] Think with Google 2016: Travel Trends 2016: Data Reveals Hot Spots and New Consumer Insights
[257] Google 2015: Travel Trends: 4 Mobile Moments Changing the Consumer Journey

- **Can´t-wait-to-explore, Experiencing moments:** Travelers are ready to live the trip they've been dreaming about—and share it with others. 85% of leisure travellers decide on activities only after having arrived at the destination. Nearly nine out of 10 travellers expect their travel provider to share relevant information while they are on their trip. However, smartphones are changing travel industry trends by enabling people to be more spontaneous when they arrive at their destination. Upon arrival at a hotel, the traveller is turning to the mobile to overcome the unfamiliarity with the surroundings. Mobile queries on *Google* from hotel properties has grown 49%, searching by the phrase "**near me**", looking for place to stay, and eat or drink. As the traveller has become familiar with the destination, they immediately begin start to decide what they want to do. The Leisure travellers also shift to anticipation mode searching how the weather is, what attractions to find, and use smartphone, that allow travellers to be **spontaneous** once they arrive. 85% of leisure travellers decide on activities only after having arrived at the destination, and 50% of international travellers use smartphones to look for things to do once they arrived.

These micro-moments have also been applied to retail and other businesses coining moments such as "I-want-to-know moments", "I-want-to-do moments", "moment-of-truth", "I-want-to-go-to-your-store moments", "I-want-to-buy moments", "Is-it-worth moments", "Sow-me-how moments", "time-for-a-new-one moments", "Didn´t-plan-for-this moments", "Ready-for-change moments", "New-day-new-me moments", "I-wana-talk-to-humans moments" etc., all based on mobile use to solve daily issues.

Google carefully looked into the micro-moments in a purchase journey in real life and followed one person over two months during the holiday season of 2014, where the person "Amy" was planning a trip to Disney World. In her planning of the trip, Amy had 419 digital micro-moments in the two months, and made 34 searches, watched 5 videos and made 380 web page visits, of which 87% of the moments happened on the mobile[258] (*figure 24*). In a Similar way, *Google* followed a 30-year-old "Liam"[259], who over a period of 4 month had over 7 000 digital travel touchpoints, with 534 *Google* searches and 1400 images viewed, (*Google streets view*, Maps, pictures etc.). with 49% OTA visits, 20% Map visits, 12% Meta search travel sites, 3% transportation visits, 2% airline visits, 2% accommodation visits and 2% social sites visited.
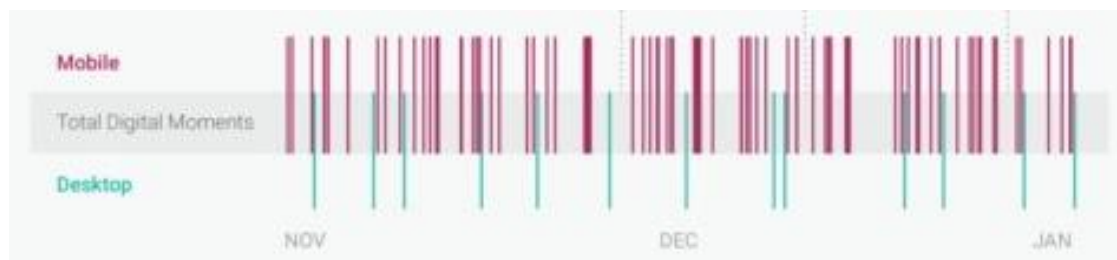

Figure 24. In real-life Micro-moments of "Amy" using mobile or desktop when planning for a trip to Disney World. (Picture from Google[260])

During consumption digital behaviour

Internet technologies are used **during the actual trip** mainly for travellers to stay connected and to obtain *en route* information if the need arises. On-spot they search information about prices, hotels, sights, activities, alternatives, weather conditions, local traditions, food, drinks and others recommendation

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[258] Luth Research ZQ Intelligence™ 2014: Cross Platform Digital Behavior Measurement
[259] tNooz 2016: Looking at Liam's travel micro-moments
[260] Google 2015: Travel Trends: 4 Mobile Moments Changing the Consumer Journey

about the destination. The previous spread of Internet cafés at tourist destinations has today been substituted by a growing number of accommodation establishments, restaurants, airports, public places and even whole cities or other points of interests, that offers high-speed *Internet* connections through *WiFi*. Such *Internet* infrastructure was earlier offered as extras and a USP by hotels, but are today expected as basic infrastructure for tourism. *En route Internet* access means **anywhere-and-anytime availability** of tourism-related information for consumers. Therefore, many of the trip planning and information gathering tasks of travellers have shifted from pre-consumption to during consumption, resulting in travel as a much more **spontaneous** activity then before. Modern mobile technology, with real time, location-based services empowered by geographical information systems (GIS) and global positioning system (GPS) technology identify the traveller's location in space and generate personalized assistance in form of location-specific and time-sensitive information, and mediate the tourist experiences in completely new ways. Such mediatization alters perceptions of place, distance, sociality, authenticity, and other pre-understandings that frame tourism, and blurs the notion of home and travel[261].

Travelers have more **do-it-yourself resources** at their disposal than ever. They book trips from their iPads, *Google* local attractions from their phones, and can take to *TripAdvisor* for on-the-go suggestions. The **radical self-reliance of modern travellers** has caused a ripple in the travel industry, spawning a litany of apps, products and services to enable travellers to call their own shots. The rise of **worldwide mobile connectivity** and social media has magnified the difference between an agent and trusted advisor for the traveller. Travellers can easily text or call their advisor to fix a problem mid-trip. They can even *Snapchat*, *WhatsApp* and *Facebook message* many of them as they become more integrated in the daily lives of their customers.

Constant access to communication technology changes the travel experience itself in that notion of home and away become blurred, and research[262] found that the easy and frequent contact with friends and family members was associated with a feeling of being simultaneously at "home", with continued participation in pre-existing social networks, while also being "away". **Memories** of a trip that is not over yet can be instantly shared through the technology and messages from home or work can easily interrupt experiences at the destination. Friends and family at home can follow every move of the traveller if updated are posted on line, and in-spot travel blogs have become increasingly popular, even if Social media in the form of *Instagram* and *Facebook* or even *Snapchap* and others increasingly are substituting traditional blogs. Digital cameras, either with built-in WiFi and social media apps, or in the form of integrated in mobile phones allow for almost unlimited picture taking and instantaneous review and posting of what has been experienced. Thus, the **tourist experience** on the destination, also has transformed from the traditional gaze, the process through which a tourist objectifies and interprets the place that he or she visit, towards a more mediated experience trough modern digital technology, and where the experience immediately is transformed to personalised, and thus subjective, stories to share through pictures, videos and posts on social media on the spot. On-site mobile technology also changes the experience at **historical sites**, attractions and museums and allows travellers to be more actively engaged with contents that could ever be personalized to fit their needs. Especially mixed reality technology can greatly enhance education, experiences and social interactions in public spaces.

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261 White & White 2007
262 White & White 2007

More than 1/3 of the mobile-aided searches by travellers are of local interest; tourists want to find out what can be done within a radius of 5 to 50 km of their current position during the next some hour or some days. As the travellers, daily program is formed more and more spontaneously by the use of mobile technology, providers such as accommodations, attractions and activity providers must be present together with their location information on the internet, such as on *Google Business*, and local destination channels with location-based searches and marketing, such as *Foursquare*, *Google Maps*, etc. Even the *Facebook*'s own search engine, the *Graph Search* needs accurate geographical data in order that its entire marketing potential could be exploited.

Post-consumption digital behaviour

In tourism, the **post-consumption stage** involves treasuring souvenirs, remembering special moments, reliving an experience trough photographs or films, sharing travel stories, and often developing sense of attachment to a specific destination. Digital information technology and *Internet* play an increasing significant role in these post-trip activities, allowing instant sharing, documenting, storing and reliving the tourist's experiences. Tourism experiences are an integral part of the identity of individuals and thus require sharing. Blogs, video and photo sharing sites, personal web sites and other consumer-generated content sites takes place with an audience that has a very tailored interest in the topic. **Blogs** offer high levels of interactivity and immediacy in broadcasting a story that were not conceivable in the past, and have the advantage of closely resemble traditional travel journals, which used to be kept by many travellers. **Stories** play an important role in the recollection of travel experiences, usually comprised of many different impressions and emotions. Travellers reconstruct what happened during a trip so that it sounds good as a story to tell others. They include or omit details or stress certain aspects depending on the listener, and a story might change each time it is told, and as the story changes, so does also the memory of the experience. Technology makes this storytelling easy as pictures can be manipulated, content assembled and integrated with others, sound and narration can be added. The process can also be social in that others in **virtual communities** can post additional material or comments. Such virtual travel communities on different social media platforms allow obtaining travel information, maintaining connections, finding travel companions, or telling interesting travel experiences or stories. Virtual travel communities also offer opportunities to fulfil hedonic, psychological, and social needs. Sense of belonging, fun, and self-identification are other benefits. Virtual communities provide the traveller with support during the post-consumption phase and prolong the travel experience beyond the actual trip. Often used as a digital substitute for traditional photo albums, the digital images uploaded onto community web pages and social media help recall aspects of trips and assist consumers in constructing memories of vacations.

New tourism consumers are very independent in making consumption decisions, but at the same time like to share stories about their travel experiences. The line between *en route* activities and post-consumption behaviours will become even more blurred in that post-consumption will increasingly happen while still on the trip. The possibility to stay on line during the trip and instant postings and live streaming on social media and blogs has today reduced the post-trip phase of sharing experiences trough texts, pictures and videos, but consists rather of contributing to advice and tips to other travellers. This is also a part of a hedonic trend and personal branding to instantly *en route* share your experiences, and post-trip become an "expert" for your friends and other interested. Interestingly, research[263] has shown that sharing

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[263] Kim & Fesenmaier 2017

positive experiences post trip increases travellers' positive affect while decreasing negative affect and therefore leads toward more positive overall evaluations of their traveller experiences. Further, they found that sharing unsatisfactory travel experiences through social media helps to reduce negative perceptions of the trip, which, in turn, enhances post-trip evaluations.

Storytelling is therefore an important means of creating and maintaining communities, and *Internet* technologies greatly facilitate this form of communication among travellers. Travellers in this networked world are expected to increasingly take advantage of or contribute to consumer-generated content – sharing their experiences or advice with others across the Internet´s global community. This will greatly empower consumers and will force travel product suppliers to strive for excellence. It will also challenge grand narratives constructed by the media, destinations and travel companies. It gives consumers an opportunity to construct knowledge about a destination or product offering from a great number of diverse sources. This trend will also change host-guest interactions, as the new consumes increasingly seek contact with the locals through these new forms of networked communities.

Conclusions

Implications for tourism

The digital revolution is not behind us; it lies ahead of us. As web 3.0 gets more empowered and slowly transform into web 4.0, and digital technologies such as Internet of Things, Predictive Big Data Analysis, the Automation of Knowledge Work, Autonomous Vehicles, mixed reality, virtual reality travel and increased mobility in wearables, we will see a drastic transformation of the tourism industry. This puts strong forces on any tourism business and organisation to keep up with the digital development to stay in tract in the ever-increasing competition within the industry. The tourism industry must also adapt to the paradigm shift from having been a service provider and staging experiences (tourism 1.0) to be fully immerged in the experience economy with its experience production, user co-production or even user-generated production and user-generated content, as well as the demands of gamification and designification of the experiences. Mixed Reality experiences with varying degree of Augmented and Virtual Reality or their mixture, will probably be important tools to enter tourism 3.0 in the conceptual society, where ShyTech, Artificial Intelligence, automatization and robotization will guide the traveller through its micro-moment decisions in the pre- during and after travel phases. To deal and adapt to these new digital technologies and service opportunities will be one of the greatest challenges the tourism industry has faced, and set hard pressure on small and micro companies, as well as on DMO´s to obtain the knowledge and resources for this digital business transformation.

Currently, the industry is trying to deal with the disruptive rise of mobile, which has created an omnichannel environment. In this environment, the barriers to entry are lower but the costs of getting noticed are spiralling high. This has created a crowded ecosystem, with consumers preferring to largely entrust their expensive and cherished holidays to a handful of powerful online players, who can give them reliable and good quality experiences. It is difficult to say exactly where digital travel shoppers will be in next five to ten years, but it seems likely that we can expect the digital side of the industry to remain largely with a handful of major players, with potentially an even smaller number holding more market share. The most likely change is to who these players are and how they are primarily accessed.

> "*Consumers have never been more informed because that information*
> *lies in the phone in their pocket, in their purse, or on their body*"
> (Annie Zipfel, senior vice president of marketing at REI)

VISIT ARCTIC EUROPE

Summary Conclusions

1. Digital information technologies have had, and will have increasing profound impacts on the tourism industry.
2. Travel will continue to be one of the most popular online interests to consumers.
3. Access to the *Internet* and the mobile communication devices will increase the number of electronic connections between customers and the tourism industry.
4. These new technologies will increase the environment for creating relationships, allowing customers to access information more efficiently, conducting transactions more easily, and more closely interact electronically with businesses and suppliers.
5. The growing up of the digital generations changing the demographic profile and behaviours of *Internet* users, will result in *Internet* will be considered the primary source for travel information and travel experiences support.
6. *Purchase processes will move into the mobile devices and made over the Internet.*
7. Conversation between travellers of sharing experiences will grow through network technologies.
8. Experience- and emotion-oriented communication will grow in importance as emotionally intelligent interfaces are developed, incorporating emotional-psychological need context to provide supportive interactions.
9. User generated media such as blogging, podcasting, live-streaming, pictures sharing, and social networking are expected to play an even more important role in supporting travel planning activities as well as in the construction of memories and extended experiences in the post-consumption phase of travel. It will be an increased need to integrate such applications on tourism and travel websites and apps.
10. Social networking and virtual world will continue to merge, offering engaging opportunities for communication, sharing and online experiences.
11. There will be an increased demand of systems that support lifestyle during trips, and will require the same level of technology use on the road as they do at home. Wireless, wearable, global, integrated and smart system solutions.
12. New technologies are being developed in an increasing speed, that will have a significant impact on tourism. These will disrupt existing value chains in tourism, and lead to the emergence of new players in the tourism industry, and significantly influence consumer experiences.

This report has provided some insight into studies of digital trends in tourism and customer digital mobile behaviour. The results of this report are dependent of the trend studies included in the analysis and on the knowledge of the researcher (*Appendix 3*) about Arctic Europe as a tourism destination, tourism industry and digital trends. The travel trends reflect the general changes in the world and how these changes impact on consumer behaviour in tourism. Tourism enterprises can apply the results of this report when considering their digital strategy and planning for their digital future. In conclusion, I encourage tourist enterprises to think and learn about, and embrace the digital future, because it is there the traveller will be found and empowered.

The future belongs to those who prepare for it today. The Future starts now!

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Appendix 1 Literature

Scientific full papers analysed

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Appendix 2 digital applications for tourism

Example of Gamification in Tourism

- **Sighter (**http://sightergame.com/**)**
  Team Building combined with Sightseeing Game. leads through the
  most beautiful sights. Tablet and GPS based scavenger hunt.
  Tailor-made routes to fit your needs Group size: 20 to 1000 (completed events up to 320.
  Each team gets an iPad with the award-winning app which combines sightseeing with scavenger hunt
  and hot and cold game.

- **Strayboots** (www.strayboots.com)
  mobile scavenger hunts and team building activities. With a specialized
  team of planners, innovators, and explorers, they curate experiences for groups. They are the leading
  provider of mobile experiences worldwide. With seven years, over 1,000 events, and more than
  300,000 happy customers. They use Mobile interface with Client Dashboard with 30-35 point-based
  text & photo challenges, Chat, Live Leader board, Interactive map, team planning tool. And real-time
  event monitoring, scoreboard.

- **WhaiWhai** (www.whaiwhai.com/en)
  Any city can become the setting for an adventure where
  the customer is the hero. The customer can discover original tales and solve enigmas while exploring
  the city in a game scenario. The guides are collections of jumbled short stories that become readable
  one at a time as the customer solve enigmas and send answers via text message. Each city has a
  unique character. That's why each guidebook tells a different tale, through a collection of short
  stories about its most fascinating places.

- **Shadow Cities** (www.gamezebo.com/2011/05/31/shadow-cities-walkthrough-cheats-strategy-guide/)
  Shadow Cities is a location based multiplayer game for iPhone. Become a Mage and take over your
  streets and neighbourhoods with your team. Explore and conquer your city and other cities all over
  the world. Cast the spells and make magic by drawing runes on the screen. Choose your side, level up
  and battle against others with your team. In Shadow Cities, the player takes the role of a modern
  mage and joins one of the two global teams, learning magic and seeing surroundings with new eyes.
  Together with other players, the mage hunts shadow spirits and uses spells and strategy to battle
  over the control of the player's city and the cities all over the world. The player sees the main screen
  after logging into Shadow Cities. This is where the action takes place. To play Shadow Cities, you'll
  need to download the game from the App Store

- **Geocaching** (www.geochaching.com)
  A global treasure-hunt community searching for millions of geocaches around the world with
  members in 200 countries. By using Global positioning GPS coordinates in GPS-devises or
  smartphones small treasure boxes are hunted and registries on the website. Events and many
  variations exists.

- **Turf-Outdoor Addiction** (www.turfgame.com)
  Outdoor real-time gaming developed in Sweden, that is played
  by a free app. Tuft stands for a geographical area. Through the mobile phone GPS the game involves
  to find an "own" a zone in the city or in the countryside. One can score points by owing different
  zones, with different scoring points. You can own a zone you are in for 30 seconds, and you score
  points as long as you are in the zone. The game is performed as events, "rounds" at certain dates and
  times collectively around all Sweden. Local Turf-events can be created. In Sweden, there are about
  20 000 zones and 100 000 players. The game owner creates zones, but you can apply for new zones;
  "*We will focus on making really great zones from now on, and if you know of spectacular places that*

doesn't have a zone, please go to the forum and write about them there! We will also keep focusing on bringing Turf to smaller places and we will also look in to bringing more zones out in the wilderness (forests, mountains etc) – something we know many turfers have missed".

- **Foursquare** (https://foursquare.com/about)
  Foursquare is a technology company that uses location intelligence to build meaningful consumer experiences and business solutions. For consumers, we believe the world is full of amazing experiences. We make two apps to help guide you to them: Foursquare City Guide and Foursquare Swarm. The Foursquare City Guide app helps you discover new places, with recommendations from a community you trust. Find a better experience, anywhere in the world. Checking in on **Foursquare Swarm** (www.swarmapp.com) makes a game of life: score every day with real-world perks and bragging rights, like being crowned the Mayor. Stay connected to your inner explorer, be truly aware of life's journey, and have more fun along the way. Live your life more checked in. Want to meet up with friends? Just open Swarm to see who's hanging out nearby. Quickly message your friends to make plans and meet up. Every check-in will earn you coins. You'll get more coins when you check in with friends, become the Mayor, extend streaks…and more! Finish near the top of your leaderboard to earn sweet prizes. Earn coins everywhere you go! Compete against your friends on the weekly leaderboard. Claim Mayorship of your favourite spots. Explore new places and unlock stickers. Collect them all!

- **MaptoSnow** (www.maptosnow.com)
  Is a gamified winter sport app to Document your activities, collect badges on the slopes, join scavenger hunts and contests, win coupons, and be rewarded with great prizes! The tracker provides information on your achievements, for example your top and average speeds, the distances you covered, altitude differences of your slopes or even the time you spent at the resort. Everything works via GPS - no internet connection required! Go for scavenger hunts and collect badges for your activities! The badges are virtual medals for your efforts, like a certain distance or duration of your mountain day. But there are also hidden badges at certain locations which are to be discovered in scavenger hunts. Find them all and win fantastic prizes. Compete with other users and show them what you can do! Your activities and times count in the contests. For your efforts, you earn badges and points. The more points you have, the higher your position in the ranking and the bigger your chances to win attractive prizes! The live feed shows you what is happening right now at *MAPtoSNOW* and who is leading at the contest. You can create a campaign by using interaction marketing, gamification, location-based marketing and couponing. Whether you be a brand, a destination, or a local store, start your campaign with *MAPtoSNOW*!

- **Stockholm Sounds** (https://itunes.apple.com/se/app/stockholm-sounds/id692744018?mt=8)
  Stockholm Sounds is an iPhone app that introduces Stockholm to visitors that takes the visitor to 40 unknown music and sound places. The experience varies with the time of day and at each spot there is a story, quiz and a gaming session. The app uses GPS mapping functions, off-line functionality and a gaming engine that creates chains of events and experiences, based on the users preferences. The service is free, do not need data-roaming of WiFi.

- **Pocemon Go** (www.pokemongo.com)
  Augmented Reality game launched in July 2016, that got 50 million downloads in 19 days, and has 20 million daily users, 500 million downloads and stimulated to 150 billion steps since launching.

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Booking systems:

Here only a few of all the hundreds of booking systems and OTAs available, and are shortly presented in an unsorted way, to illustrate the wide diversity of web and mobile applications within the travel and tourism industry.

- **TripAdvisor** (www.tripadvisor.com)
  World's biggest travel site, over 385 million recessions, 350 million unique visitors each month covering 6.5 million lodgings, restaurants and attractions, and 2.7 million listed activities in 48 countries. App downloaded 30 million times. TripAdvisor's corporate mission is to "Help travellers around the world plan and have the perfect trip". Thus, its business model and website design are built around enabling and motivating the travellers' interactions (e.g. forums, messaging) and the sharing of travel reviews.
  TA have their own eco certification **Greenleader** for hotel and B&B. You can edit your own business information by the site www.tripadvisor.se/Owner. TripAdvisor own 24 other brands: www.airfarewatchdog.com, www.bookingbuddy.com, www.cruisecritic.com, www.everytrail.com, www.familyvacationcritic.com, www.flipkey.com, www.thefork.com (including www.lafourchette.com, www.eltenedor.com, www.iens.nl, www.besttables.com and www.dimmi.com.au), www.gateguru.com, www.holidaylettings.co.uk, www.holidaywatchdog.com, www.housetrip.com, www.independenttraveler.com, www.jetsetter.com, www.niumba.com, www.onetime.com, www.oyster.com, www.seatguru.com, www.smartertravel.com, www.tingo.com, www.travelpod.com, www.tripbod.com, www.vacationhomerentals.com, www.viator.com, and www.virtualtourist.com.

- **Viator** (www.viator.com)
  World leading Online Travel Agency for activities, owned by TripAdvisor, with 8 million visitors each month. Linked with TripAdvisor for easy and quick booking decisions. take 15-20% provision.

- **SmarterTravel** (www.smartertravel.com)
  Offers Travel deals on flights, vacations, hotels and cars, Latest travel news, Travel Gear, Travel Destinations, Travel Videos, Expert tips.

- **Booking.com** (www.booking.com)
  The world's #1 accommodation site, 42 languages, 173+ offices worldwide, 83,000+ global destinations, 950,000+ room nights booked every day, App downloaded 32 million times. No booking fees, best price always guaranteed. Also, provides *Booking.com for Travel Agents* to give travel agencies the possibility to search and book accommodation on behave of travellers.

- **Hotels.com** (www.hotels.com)(hoteller.com)
  OTA for hundred thousand hotels in 60 countries, with hotel reviews. Part of *Expedia* brand (together with *Trivago, CarRentals.com* and *Orbitz Worldwide*)

- **Expedia** (www.expedia.com)
  One of the largest online travel agent and booking engine for flights, hotel, car rental, cruise, trips and things to do. It offers last-minute bookings and trips.

- **Trivago** (www.trivago.com)
  OTA with over 200 booking pages for 1,3 million hotels in 190 countries. The site is visited by 1.4 billion visitors each year .

- **Kayak** (https://kayak.com)
  OTA Meta-search engine for flights, hotels, car rental, trips around the world. Kayak is available on 40 international sites in 20 languages, handling 1,5 billion requests. The free mobile app is downloaded 40 million times.

- **OpenTable** (www.opentable.com)

A website for restaurant reservations around the world with more then 40 000 restaurants that fill seats and manage reservations with *OpenTable*, 850 000 restaurants reviews each month, and over 21 million dinners each month.

- **Priceline** (www.priceline.com)
  App and web booking site for Hotels, Cars, Flight, Cruises and Packages.
- **Orbitz** (www.orbiz.com)
  OTA for booking of Hotels, flights, packages, cars, vacation rentals, cruises, activities and trip planning.
- **Momodo** (www.momondo.com)
- Metasearch engine and OTA for flights, hotels, car rental, package trips, trip planning and inspiration.
- **Airbnb** (www.airbnb.com)
  Website that permit ordinary people to rent out their residences as tourist accommodation in 65 000 cities, with 3 000 000 accommodations in 191 countries, and recently also offering experiences.
- **Uber** (http://uber.com/)
  Uber is a transportation network company headquartered in San Francisco, California, operating in 576 cities worldwide. It develops, markets and operates the *Uber* car transportation and food delivery mobile apps. *Uber* drivers use their own cars 576 cities across the world with one billion rides until 2015, with 40 million riders each month in 2016. In 2017 *Uber* has 80 million users and operating in 77 countries. App downloaded 116 million times.
  Didi Chuxing (www.xiaojukeji.com/en/index.html)
  Formely Didi Kuaidi, a major ride-sharing company that provides transportation services for close to 400 million users across 400 cities in China.
- **BlaBlaCar** (www.blablacar.in)
  A community in India that connects car owners and co-travellers to share city-to-city journeys through the largest carpooling service in the world. *BlaBlaCar* transports more than four million people every single month, has 30 million members in 22 countries.
- **Coachsurfing.com** (www.couchsurfing.com/)
  Search platform to stay with locals for free and meet travellers to share authentic Travel Experiences. Every year it supports 400 000 hosts, 4 million surfers and 100 000 events.
- **Facebook for Travelers** (www.facebook.com/business/a/travel-industry)
  Offers demographic marketing for specific behaviours, passion or lifestyle, by storytelling, and being part of users every stage of their exploration.
- **Rezdy** (www.rezdy.com)
  Online Booking software for Tour Operators since 2011, having users from 83 countries, over 2200 suppliers, 3100 agents, more then 37 000 products, and 1,2 billion bookings per year. Handles channels for suppliers, booking system. Instead of updating several channels and keep track of all your bookings on different webpages, you can compile them through *Rezdy*. Real-time availability, prize, description, Images, etc. It can collect information from OATs: *Expedia*, *Viator*, *Redbaloon*, *ToursHuri, CityDiscovery*, etc. No provision, only monthly cost 129$/month and 0,75$ per booking.
  Bokun (http://bokun.io/)
- Tourism Booking and Reselling Platform from Iceland, that started in Reykjavik 2012. A community-based software solution that enables the cross-selling of travel products to enhance revenue for those connected to the platform. Offers Booking solutions, Marketplace, Online Payment, Channel Management, Price Management, Packing and Add-ons. No commission or booking fees, unlimited bookings, unlimited contracts, 100$/month. Both supplies and sellers can develop background cooperation businesses.
- **Trekksoft** (www.trekksoft.com)

Online booking software and website builder for tour operators and activity providers. Online Booking system worldwide in 130 countries with POS and Ticket solutions, marketing and Sales support. Users can connect to each other and sell-resell each other. Including trips, tours, rental, transport, accommodation, inventory, etc. Access to a large number of channels such as *Viator*, *TripAdvisor*, *GetYourGuide*, *Expedia* and many more, Basic79$/M, Professional 199$/M.

- **BookNanook** (http://booknanook.com)
- Norwegian booking site for activities for tourists and locals. Including resource management system for rental of kayak, bikes etc. Companies are free to list on the website. For experiences to book, a small commission I taken when a booking occurs.
- **Ticketmaster** (www.ticketmaster.com)
  Formyl *Ticnet*, has since its start in 1988, has 2004 been fused with the global *Ticketmaster* and since 2009 a part of *Live Nation Entertainment*. In 2016 21 markets were covered under one common brand with the aim of selling tickets for events. Ticket master is the 5th largest ecommerce in the world. The Nordic *ticketmaster* has more than 20 000 events per year, 24 million visitors, and 1,3 million unique visitors per month
- **TellUs Guest Marker** (www.tellus.no/, www.newmind.co.uk)
  TellUs Guest Maker is a Norwegian destination management system since 1994, and used by *VisitNorway*. It is now owed by *New Minds TellUs* that offer several e-tourism solutions such as tourism website design and development, Destination Management systems, Customer Relationship Management, Online Booking, Content Distribution, Tourism Apps, and Search Engine Marketing.
- **CityBreak** (http://nordictravel.se/content/information-om-citybreak/)
  CityBreak is an ecommerce platform created by *Visit Technology Group*, as an internet based booking, information, packaging, and distribution system for the tourism business, such as for DMO´s, DMCs, tour operators, hotel groups and facilities around the world. Launched in 2000, and most used booking system in Sweden.
- **GetyourGuide** (www.getyourguide.com)
  World leading booking system for guides and activities. Partner to TUI and Thomas Cook.
- **AnyGuide** (http://join.anyguide.com/)
- Simple software to manage your business, Scheduling, Online payment, Invoices, Customer support. Companies in 112 countries, online booking that accepts payments and deposits from any currency, we'll send out automatic reminder emails to reduce no-shows - saving you time and money. See your daily activity, send messages, reschedule and cancel easily from your computer or mobile phone. Your payments are transferred directly to your bank, *PayPal, Payoneer* or *Western Union* account.
- **GuideAdviser** (www.guideadvisor.com)
  The fastest growing online directory and marketing partner for Guides that lists guides from more than 2000 destinations with 10 000 guide pages and 12 000 Trip Pages. Aim to connect travellers with guides before booking, and serves both travellers and guides in a completely new way. It started out as a booking engine, but has developed to a marketplace with focus on the guides, that travellers can get to know before they go. A new way for "word of mouth" advertising for guides. Guides create Guide Profiles that include photos and/or videos of themselves in action, bios, licenses and certifications, reviews by past customers, company information, etc. No commission, no booking fees, 4,99$/month (for Basic).
- **Urban Adventures** (www.urbanadventures.com)
  Urban Adventures is about a new style of travel experience for those who want to get off the beaten path and connect with a destination. The experience can be as short as a couple of hours, or as long as a whole day, but in every case our *Urban Adventures* tours take travellers to interesting places to meet locals, and to see what makes a place tick. Operating in 94 countries, 154 cities with 1097 local

guides, and 737 unique itineraries and group sizes up to at most 12 persons, to go backstreet experiences, eat locally, local market visits.

- **iTraveller** (www.itraveller.com)
  A automated platform and marketplace to discover, plan and book holidays packages from 350 000 Trips. It aims to remove intermediaries by directly connect the destination suppliers with the end users, and removing all the intermediaries resulting the best possible prices. The idea is to inculcate the culture of online discovery and planning for holidays translating to a strong marketplace of travellers and native wholesale suppliers from various travel destinations across the world.

- **Vidados** (www.vidados.com)
  Offers world best activity holidays, 1000´s of extraordinary activity holidays around the world that can´t be foud elsewhere! Seller Portal, Bloggpost, Newsletter Marketplace. Primary 85 £/year, Plus 125£/ear, commission rate 17%, cover transaction fees (3-4%).

- **Tomahawk RESBOOK** (www.resbook.com)
  Easy-to-use, cloud based reservation management system designed specifically for boutique accommodation providers and property managers across the world. It will help simplify, streamline and increase bookings online. 600+ accommodation properties. Integration with *Xero*, *MailChimp*, *Wherewolf*, and *DPS Payment Gateway* for seamless connectivity, Housekeeping and cleaning schedules, A CRM system with customisable contact types and permissions, The ability to send guests quotes with multiple options to book instantly, Responsive booking calendar for your website, Extensive reporting functionality 29$/M

- **ResOnline** (www.resonline.com)
  Resonline provides a total solution for lodging online distribution, and manage rooms & rates with ease. Online Distribution, Booking Form, Connectivity. 66$ 2,2% commission

- **Bokakanot.se** (www.bokakanot.se)
- Swedish canoeing Association booking system for authorized canoe centres. Booking and payment for equipment, tours and events.

- **BikesBooking** (https://bikesbooking.com/)
  online reservation service for scooters, motorcycles and bicycles worldwide, with two-wheeled vehicles in 37 countries from more than 942 local rental companies available for reservations ahead of a trip. Allows travellers to compare prices on scooter and bike rental and make an online reservation with the usual best price guarantees and instant confirmation.

- **Hoteltonight** (www.hoteltonight.com)
  Hoteltonight collects last-minute-hotel offerings letting the traveller do last-minute deals and book wherever, whenever the traveller needs a last-minute room for the less planned travelling.

- **Allarum.se** (www.allarum.se)
  Meeting place for tourist seeking somewhere to stay overnight and room providers. Largest site in Sweden for budged lodging.

- **Turistmål.se** (http://turistmal.se/)
- Website for tourist destinations and activities in Sweden. Lodging, cottages, attractions, adventures and experiences. Cost 129 SEK/month.

- **Amazon Marketplace** (www.amazon.com)
  Since 2000, Amazon has opened its online business to independent retailers through Amazon Marketplace. The retailers are often small and medium sized companies who sell their products alongside Amazon's own products. These third-party vendors gain access to Amazon's customer base as well as its ready-made distribution system and pay Amazon a commission for this service. For third parties, retailing through Amazon is a complement to their direct sales: the distribution costs may be higher and the direct competition stiffer but the greater marketing and sales reach makes it

worthwhile. For Amazon, opening its platform to third parties has significantly created new value, accounting for around 40% of Amazon.com sales.

Travelbird (https://travelbird.se)
Online Travel Agency located in 12 countries founded in Sweden, recommending trips around the world.

- Other OTA and search engines on the market are; *Hotwire, HomeAway, Agoda, FlipKey, Ebookers, HolidayLettings, HRS, LastMinute.com, Laterrom, Only-Apartment, Travelocity, Travelpublic*.

Networks

- **3BaysOver** (www.3baysover.com) – the B2B -Networking Platform for Tourism Professionals. A global online community of tourism professionals. 3BaysOver is the brand-new networking & news platform built exclusively for tourism industry insiders. 3BaysOver's mission is to make it easy for tourism and hospitality professionals around the world to connect and collaborate in a productive way online. As a tour guide, 3BaysOver lets you showcase your unique expertise, promote your destination or activity, grow your industry network, and establish promising new channels to market. Being part of the network is like attending a tourism trade fair - but online, year-round, and without all the cost and hassle. If you run a guiding business, then once you've signed up you can easily create a beautiful company page for the business. There are no signup fees or membership fees to be part of 3BaysOver. Lausanne, Switzerland.

Social Media

- **Blog**
Word from web-log, is a short personal website, with links to others´ sites, offering video, pictures, audio, podcast and personal articles, together with providing a forum for comments, like a personal diary.

- **Hashtag**
Use the "fence-symbol" # in front of a word, used to structure different contexts and make them searchable. You can use hashtags on *Twitter*, *Instagram* and *Facebook*. Using the right hashtag is the key to success on *Instagram* and *Twitter*. With the service *Hashtagify*[264] you can find related hashtags and their popularity, and track the hashtags you care about on Instagram. Have one for your brand that guests can use. Limit the number of hashtags you use.

- **Google+**
Social platform launched in 2011 as an alternative to Facebook, have 1 billion embedded accounts and 359 million monthly users

- **Facebook**
Facebook launched in 2004, is the largest social media with, 18,4 % of world population on *Facebook* Easy dialog with customers and potential customer. Its aim is to connect to friends and keep updated trough post with texts, pictures, videos and links, and for many a blog with daily updates. It has lately become a quick way for news media and companies to spread information, news and offerings. It offers also public, closed and secret groups for working groups, interest groups and companies. *Facbook Insight* gives the user of Facebook pages an analytic tool to analysis visits, likes and comments and follow Facebook advertises and trends on the media. Usual private user has 130-140 friends, and hashtags can be used for cross-platform postings. Companies can use company pages

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[264] https://hashtagify.me

and content-marketing (80/20-rule content/adds) for local markets and people on spot local awareness ads.

- **Facebook messenger**
Messenger function previously within Facebook, but now freestanding, with 900 million users and 60 billion messengers sent daily.
- **YouTube**
Launched in 2005. Second biggest platform that started 2005, where you upload and watch videos and music without protected copyrights. Has 1 billion users every month, looking at 6 billion videos each month and 100 hours of video uploaded per minute. 80% of all watch time is trough mobile phone. Make informative or funny movies, tutorials, always have a message. Has a text-function for translations of video texts.
- **Snapshat**
Instant messaging app launched in 2011. With 150 million daily users[265]. Users normally 18-24 (70%) and only 23% over 35 years, and only 8% of Internet users are over 35 years old, But the number of elderly users has tripled during 2017[266] . Has now passed *twitter* in number of users. Users can generate *Geofilter* that show where you are and what messages you want in your app from the area
- **WhatsApp**
Messaging app for both desktop and mobile with 1 billion users in January 2016 in 180 countries. Allows voice and video face-to-face conversations avoiding phone billing, as well as using the camera to send pictures and videos. Allows for group chat up to 256 persons simultaneously. You can also send documents, presentations, PDFs etc. up to 100 MB size
- **Twitter**
Launched in 2006. A microblog for only 160 characters. You can post tweets, follow others, and categorise followers in friends, family, business etc. In 2014 there were 136 million daily users and 500 million tweets sent per day. *Twitter* was previously the second most popular social media after *Facebook*, has now been passed by *Snapshat*, *Instagram*, *Facebook Mes*senger and *WhatsApp.* In mars 2017 the news was released that twitter intent to charge businesses and superusers of the platform for a premium version with the *TweetDeck* tool with extra functions such as notifications, trends, and analytic functions[267].
- **LinkedIn**
Business network to keep in contact with old and new colleagues and friends, find business opportunities and jobs, groups for many interests, and used for intelligent marketing. Gives you network statistics. 332 million registered users in 2014
- **Wikipedia**
User generated and crowd managed encyclopaedia launched in 2001 and has now 2,25 million pages in many languages. Wiki from Hawaiian word for quick. A wiki is a website that is filled with content by its users. As 90% of consumer trust comments from family and friends and others and only 15% trust business information, Wikis have become very popular.
- **Flickr**
Launched in 2004, Image hosting platform and database for photos to ad stories and others to comment. Consist of 5 billion photos, 4000 uploads per minute. Uses "Creative Commons" methods of protecting intellectual property right.

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[265] http://www.tubefilter.com/2016/06/02/snapchat-topples-twitter-in-daily-users/
[266] http://www.reuters.com/article/us-snapchat-users-idUSKBN15N2DG?feedType=RSS&feedName=technologyNews
[267] http://www.thedrum.com/news/2017/03/24/twitter-ponders-paid-membership-tier-power-users

- **Instagram**
  Launched 2010, acquired by Facebook in 2012 (for 1 billion dollar). Picture sharing media linked to Facebook. App in your smartphone, where you can share your pictures, and follow others postings. Your guests can link to your company by hashtags or upload pictures on your account. Had in 2014 over 200 million active users, 60 million photos posted per day and 1.6 billion likes daily.

- **Printerest**
  Launched in 2010. Social network of digital billboard to collect pictures that interest you on boards with different themes. You can like and follow others billboards and pictures, and copy from, others boards to your own. Since start one of the fastest growing platforms. In 2014 it had 70 million users.

- **WeChat**
  Chinas largest messaging platform with 846 million monthly active users. a cross-platform instant messaging service app (and so much more) which has successfully created a payment platform and connects suppliers to sell a range of products and services

- **Travelstoke**
  mobile social network app for travellers to become local wherever you go. You can find travel friends around the world, get recommendations for new places, share favourite spots, meet up with other travellers on arrival.

- **Tumblr**
  A blog platform where users can on their dashboard post texts, pictures, movies, links, chats, sounds etc. and reblog others postings, and comment others blogs. Launched in 2007 and has 209,3 million blogs, more then 94,9 billion posts in total in 2014.

- **MySpace**
  A social network community created in 2003 offering interactive, user-submitted network of friends with personal profiles, blogs, groups, photos, music and videos. It has 50,5 million monthly visitors and nearly 1 billion users. Most popular among young adults and teenagers, and has been used mainly for entertainment and music, but lately loosing interest.

Analytical tools

- **Socialmention**
  Real time search for what is said about you on social media. It scans yours seek word and shows discussions, posts and activities related to the word. You can see statistics and probabilities of how your brand are discussed in media and the tonality.

- **Google Analytics**
  Analyses your website. Free analytic tool to measure and improve your webpage. Keep track of your web-ads campaigns and compares the power on search engines, campaigns and media. Measure how social media affects your goals, overview of number of visitors, their activities and how they found the webpage.

- **Facebook Insight**
  Gives knowledge about visitors on tour *Facebook* pages. Presents graphics over popularity of content, who is sharing and gives times and days for best update performance. You can see which users have discussed your page, how many likes.

- **Google Adword**
  Search advertising. Link search worlds to your ad, and when someone is searching with that word, your ad app0ears. Google advises which search words to use and calculate search word traffic and advertising costs. You can choose what area you want to have your ads, and pay only per click.

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Augmented Reality

- **LocalScope** (https://cynapse.com/localscope/)
  Location browser for the iPhone to discover and find places, people and information using geo-tagged data aggregated from multiple local search engines, social networks, media sharing services and other apps. Enables searching for anything and view results simultaneously from all sources intuitively with real-time direction pointers and distance meters. The results can be outlaid on the map or trough **augmented reality** view to sport the results in the real world.

- **Wikitude Augmented Reality** (www.wikitude.com)
  Wikitude's all-in-one a*ugmented reality SDK* apps combines 3D tracking technology (SLAM-based), top-notch image recognition and tracking and geo-location. Enterprises, agencies and independent developers benefit from *Wikitude's tools* to develop AR apps for Android, iOS, Smartphone, Tablet, Smart Glasses. *Unity, Cordova/PhoneGap, Titanium, Xamarin*. *Wikitude 8* empowers businesses to directly create their own augmented reality campaigns, within a matter of minutes. In combination with *Wikitude Studio*, augmented reality projects and campaigns can quickly and easily be created and provide engaging interactive content.

- **Acrossair** (http://download.cnet.com/acrossair-Augmented-Reality-Browser/3000-18495_4-75031632.html)
  Free Augmented Reality Browser for iPhone. *Acrossair* is an augmented reality browser application that functions as a navigator to get you to the nearest location of your choice. It is also packed full of additional information on points of interest near and around you. You can access photographs from *Flickr* and *Panaromia* through *Acrossair*! Choose your own search range to find places near you; Access *Google*, *Yelp* or *Qype* directly; Set your car location and store your own locations; Share locations with friends via email.

- **Blippar** (https://blippar.com/en/solutions/blippar-for-enterprise/)
  Create Augmented Reality Free with the Blippbuilder Tool By *Blippar*. *Blippar* harnesses augmented reality, computer vision and artificial intelligence to create the "internet on things". They offer Augmented Reality Advertising, integration of computer vision and augmented reality technology into wearables, scanners and any other device with a camera lens.

Other travel and tourism applications

Here some interesting applications for both providers and customers are shortly presented. It is in no way a full compilation of travel and tourism applications, but just a unsorted list that illustrated the wide diversity of web and mobile applications within the travel and tourism industry.

- **OnSpot Story** (www.onspotstory.com/en/index)
  OnSpotStory passes on information about culture, historical locations and other sights worth seeing to visitors via their mobile phones. It can be used on both Androids and iPhones and as Web-app. Their services are designed mainly for organizations who want to offer high quality guide material for guided tours in museums, self-guided tourism, community information, history, culture and art. It uses text, images, audio and video for each location, locations and notification using maps and GPS-positioning or Beacons-positioning, offline app function and a system for managing one owns content.

- **Ramblr** (www.ramblr.com/web/main)
  Blogg-site for hikers around the world. Make a story of your trip and share your experiences. Offers also a Track Editor to plan and create a trip. *Ramblr* is a service to record and share your outdoor activities such as hiking, biking, skiing, kayaking, road trip, travel, or any type of trip. By creating a trip with *Ramblr* you will be able to share your story with more than a track or a photo. *Ramblr* tells your story the way it was meant to be told. *Ramblr* lets you see your route on a map with geotagged photos, video, notes along with descriptions, stats and more. The *Ramblr* app (available for iPhone / Android) can record any of your outdoor activities and after uploading them to Ramblr.com you can

share your trips with *Facebook, Twitter, Pinteres*t, shareable links, and HTML. You can also create trips with a GPS file (gpx, kml) or our track editor tool on *Ramblr*.

- **AllTrails** (www.alltrails.com)
- *AllTrails* merged with *EveryTrail*, which makes this GPS-enabled publishing platform the most comprehensive resource for outdoor enthusiasts to discover, plan, and record their activities. With a combined community of over 4 million registered hikers, trail runners, and mountain bikers sharing their experiences, this user-generated trail data, geotagged photos, waypoints, reviews, and t50 000+ trail maps, makes it the largest crowdsourced platform dedicated to helping people safely explore and enjoy the outdoors. You can download trails offline, and create customer maps to download, print or share.
- **MapMyHike GPS Hiking** (www.mapmyhike.com)
  MapMyHike is a fitness tracking application that enables you to use the built-in GPS of your mobile device to track all of your fitness activities. Record your workout details, including duration, distance, pace, speed, elevation, calories burned, and route traveled on an interactive map. You can even effortlessly save and upload your workout data to *MapMyHike* where you can view your route workout data, and comprehensive workout history. The app let you see the exact path you travelled on the map, both on your device and on the *MapMyHike* site, or you can use one of 70 million routs, and share your hiking with your friends on Facebook. With *MyFitnessPal*, the world's leading nutrition service, to offer you better tools for keeping track of your nutrition, you can keep track of what you eat alongside your workouts to get a complete picture of your health.
- **Wikiloc** (https://sv.wikiloc.com/)
  Wiciloc Trails of the world are apps for Android and iPhone and the web with live tracking and free offline maps for your outdoor activities. There are 2 555 817 members exploring and sharing 5 868 810 outdoor trails and 9 650 293 photos. Trails can be uploaded to *Google Earth*, Businesses can be promoted on the maps and organizations can promote trails on the apps.
- **Bikemap** (www.bikemap.net)
  Bikemap is the world's largest platform of bike routes for free. With 800 000 registered users, and 3.2 million routs in more than 80 countries worldwide, we are the fastest growing community of cyclists. Including useful information, such as bike route length and interactive elevation profile. Every day, there are added more than 2,000 routes via the *Bikemap* cycling route planner! *Bikemap* is an easy and fun way to discover, plan and share your cycle routes with your friends and a tremendous community of cycling enthusiasts. Bikemap assists you with navigating, showing your current position and points of interest (e.g. landmarks, repair shops, standpipes) on an interactive map – all in real-time.
- **MaptoSport** (http://maptosports.com/)
  The apps *MaptoHike*, and *MaptoBike* closed down mars 2017, and has ben substituted by *MaptoSport* that offers Performance tracking on the slopes, bike and hike tour, participation in contests and battles with yourself or others.
- **MapMaker Interactive** (http://mapmaker.nationalgeographic.org/)
  National Geographic MapMaker Interactive let you customize and print your own maps worldwide on compoter and tablets. You can explore country facts and flags, see coordinates of any place on earth, and add custom text, photos and videos to tell your story on *MapMaker*.
- **Instabridge** (https://instabridge.com/en/)
  To avoid expensive mobile phone roaming when traveling, the Swedish *Instabridge* provide free WiFi everywhere and give you more than a million up-to-date WiFi passwords and spots on your phone. By being the world's largest WiFi sharing community, I*nstabridge* knows which WiFis work and automatically keeps you off those that don't. No setup required, the app connects you once, and then let you surf for free on others WiFi. *Instabridge* is powered by users who add and update WiFi, thus being a world changing community that make the world a little more connected.

- **WordLens** (https://wordlens.en.softonic.com/iphone#app-softonic-review)
  WordLens is a quick, on the fly real-time translator for iPhone and Android mobile phones that by using its camera reads and translates texts in pictures allowing you to translate menus, signs etc. in foreign languages. The app is for free, but language packages must be purchased within the app.
- **Companyon** (https://angel.co/companyon-1)
  Aims to help solo travellers connect and network with like-minded travellers thus making their time more productive and to make their journeys interesting and meaningful. App features include the ability to browse lists to see who is travelling on the same routes as well as in-app chat to connect with people. It also enables travellers to check-in for flights.
- **Prava** (http://pravaapp.com/)
  App that aims to improve the way travellers connect by giving them the platform to plan and share trips and experiences between a group of friends. *Prava* app provides one neat place for friends to discover trip ideas, discuss them, develop the itinerary, split costs and share photos and blogs – keeping all these to themselves within the group. After the trip, they also have the option of publishing the photos and blogs as one group to the entire *Prava* community – which becomes the trip idea for another traveller.
- **PlanChat** (www.planchat.us)
  A messaging platform which aims to help users to discover, discuss and plan trips or outings as a group. The mobile app aims to solve the pain of trip planning via group messaging that brings everything to a conversation thread.
- **Spot** (https://spot.com/)
  Aims to help users find, save and share cool places both in and around where they live as well as across the globe. It describes itself as *Instagram/Pinterest* meets *Yelp/TripAdvisor.* The app uses recommendations from friends and a growing number of expert reviews (currently more than 600,000) to help consumers find great places.
- **TrustYou** (www.trustyou.com)
  A guest feedback platform, from booking hotel until after check out, *TrustYou*'s guest feedback platform improves the guest experience along the entire guest journey. It allows trough pre-travel influence on search and bookings trough meta reviews, create positive on-site experiences by real-time messaging, and post-trip feedback survey solutions by seamless guest surveys in Google.
- **Tipi** (www.tipi.travel)
  Tipi lets travellers to streamline their hostel check-in on their mobile and hostels communicate more effectively with their guests. The app aims to help travellers by removing long check-in queues when they arrive after long-haul flights. It will also act as a guest interaction tool for hostels and travellers to communicate.
- **MyStay** (https://mystay-app.com/)
  A Relationship platform for hotels and guests. *MyStay* is a mobile app for hotels for more effective communication with guests. It aims to work like a virtual reception, helping guests during the stay as well as before and after. Features include fast check-in, the ability to order hotel services or transport by one click, offline navigation to the hotel, digital door key, destination information and online chat with reception. It also enables guests to make a complaint immediately if something isn't working which means immediate feedback.
- **Tripwire** (www.ontripwire.com)
  Tripwire is a social travel app which aims to connect travellers with destinations by opening a feed of local information, helping them to meet fellow travellers and enabling them to make bookings.
- **LocalBini** (https://localbini.com/)

Aims to help travellers find experiences by connecting them with locals. Travellers can book experiences in advance or on-the-go. Users book an experience with a *BiniGuide* via the app with all experiences offered privately.

- **TIXIK** (www.tixik.com)
  A price comparison service for hotels offering perfect price/services ratio, guaranteed lowest prices and secure reservations. More than 600,000 hotels worldwide in more than 63,000 destinations.
  Basetool (www.basetool.se)
  A Swedish administration tool and communication platform developed for the tourism business. Allows a business to publish its products and events on multi channels.

- **TuriTop** (www.turitop.com)
  Easy on line payment on your web and Facebook, Integrated with PayPal and banks, payment with credit/debit cards, No commission, Basic 25 Euro for every 200 bookings, 49 Euro for every 2000 bookings.

- **Sverieferie.se** (www.sverigeferie.se)
  Norwegian holiday planer for northern Sweden holidays. Information, tips and inspiration from shopping to experiences, attractions and activities.

- **GlampingHub** (www.glampinghub.com)
  positions itself as an international resource for glamorous camping – which is loosely defined as rustic-yet-luxurious accommodation that connects guests to a comfortable out-of-doors experience. 5,000 accommodation providers in over 100 countries, all positioned on the high-end of the outdoor accommodation scale.

- **Access Nature** (www.accessnatureapp.com)
  Access Nature is a newly launched app for Android and Apple IOS with the aim to facilitate "Friluftsliv" – outdoor activities. The idea is that outdoor people share their nature places by uploading favourite outdoor places. An addition to book guided tours are planned, uploading can be done on sport with an "add-spot" function, or you can search on spot for different activities and places. A satellite map guide you in the terrain. Comments and photos can be added to the selected or uploaded spot.

- **Utinaturen.fi** (www.utinaturen.fi)
  Multi-language guide to outdoor places, activities, outdoor associations and outdoor life in Finland.

- **Utflyktskarta.fi** (www.retkikartta.fi)
  Excursion map to find Metsähallitus (Forststyrelsen) recreational, hunting and fishing areas in Finland.

- **Naturkartan** (https://naturkartan.se/)
  A Swedish outdoor guide to nature places in Sweden, mainly to national parks and nature reserves.

- **Skyddad natur** (http://skyddadnatur.naturvardsverket.se/)
  Map function to protected nature in Sweden by the Swedish Environmental Protection Agency

- **iNaturalist** (www.inaturalist.org)
  Social community for naturalists that contribute with observations, share experiences and discuss nature and crowdsource identification of observations. Shared information is contributing to scientific database (Citizen scientists).

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Appendix 3 About the Author

The author of this report has lived for over 20 years in Swedish Lapland, and has worked as a university researcher and educator in tourism for 15 years focusing on experiential and polar ecotourism. The author is CEO of a nature based tourism enterprise, has work as a tour leader and guide on three continents, and has been leading or been assigned as consultant in several local and international tourism and destination development projects. The author holds a function as a chairman of a DMO in Swedish Lapland. The author has thus an extensive knowledge about the VAE area and its tourism resources. The author has had a major interest in the technological and digital development since the appearance of the firs computers in the 1980ies, having been head of computers and digital information technology at a department in Uppsala University, and has been teaching in computing and digital development for the teaches education and experience production at Luleå university of technology. The approaches presented in the report are written from the perspective of both the authors role as tourism researcher, educator and developer, as well as a tourism business operator.