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Tourbit

Fostering digitalisation of
European tourism SMEs

YEAR RELEASE OF TOP TECHNOLOGIES

MAY 2022

PRESENTED BY

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"BOOSTING THE UPTAKE OF DIGITALISATION, INNOVATION AND NEW TECHNOLOGIES IN TOURISM THROUGH TRANSNATIONAL COOPERATION AND CAPACITY BUILDING".

GRO/SME/20/C/07 (COS-TOURINN-2020-3-04)

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1. EXECUTIVE SUMMARY

This deliverable, D1.1a Year release of top technologies, is provided by the TOURBIT project that aims to support tourism SMEs in the uptake of digitalisation and innovation by fostering their skills, knowledge and network. The deliverable is increasing digital awareness by introducing state-of-the-art technologies and trends in SME tourism. The deliverable has been provided by doing literature studies of ongoing trends and used technologies as well as gathering information and experiences from TOURBIT partners and their stakeholders relating to the adoption and usage of recent innovative and commercial ready digital solutions.

Tourism 4.0 will integrate all the stakeholders, e.g., tourists, residents, local communities, tourist suppliers, tourist service providers and government, within a collaborative innovation process around the smart ecosystem. This deliverable introduces a model of the smart tourism ecosystem that illustrates the complexity of the problems due to the diversity of interests of the different stakeholders and the dynamic and non-linear nature of the interactions between the different components of the digital systems and applications. In the tourism domain, ongoing digital transformation has affected companies in traditional tourism so that they have been adopting and using various digital solutions relating to the needs and demands of their own business. At the beginning of their digitalisation path, the adopted solutions have been single-use solutions without interfaces between each other. These kinds of solutions have focused on providing added value for individual actors or companies itself, not, e.g., on supporting networking or data sharing among systems. After increased skills and experiences, as well as further developed infrastructures, demands and needs will be or have focused on larger and multi-factored solutions and platforms as well as more complicated and interconnected, smart technologies involved solutions. Nowadays digital solutions in the tourism domain typically utilise emerging technologies and so SMEs have connected, for example, via platforms to be a part of a larger system. This way, the first steps towards smart tourism ecosystems have been taken. In fact, adoption and usage of smart technologies have enabled their transition towards Tourism 4.0.

The truth is that SMEs in the tourism domain have utilised digital solutions in various ways but typically on a basic level. That's why, selected emerging technologies have been mapped along three stages according to the level of digitalisation of the SMEs: 1) Getting ready, 2) Growing digital, and 3) Leaping ahead. This deliverable is focused on the first stage even if it also introduces other stages. This deliverable is the first of three Year Releases produced by the TOURBIT project, published in May 2022. The following ones will be published in March 2023 and in March 2024; they will be focused on according to their order to the second and the third stages of digitalisation.

2. CONTEXT

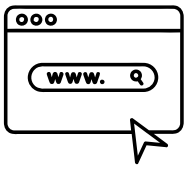
The TOURBIT project is aimed to boost the uptake of digitalization and innovation of tourism SMEs through transnational cooperation and capacity building. This deliverable is focused on Special Objective 1 (SO1) of TOURBIT project: “Create and spread knowledge on new, innovative technologies and solutions in the area of digital and smart tourism, helping tourism SMEs realise the benefits derived from digitalization and innovation through a knowledge open-sharing platform.”.

Industry Challenges, General considerations

In this deliverable the tourism sector is understood in its broadest sense covering various tourism activities, from Accommodation, Transportation (air, rail or maritime), Online travel agencies (OTA), Tour operators, Restaurants, activities or resorts, Destination Management as well as Travel technology or digital tourism.

This deliverable is the first launch of a year release on the top, market tested and commercially ready for adoption technologies, especially useful for low to medium digitalized SMEs. This deliverable is mapping the top technologies with market-tested and commercially ready tools and innovative solutions that are reported or experienced to be useful to tourism SMEs.

This mapping integrates the following activities of the TOURBIT project Work Package.



Literature study, reports and case examples are utilized to achieve a holistic view of current practices and solutions mapped to opportunities the tourism SME domain.

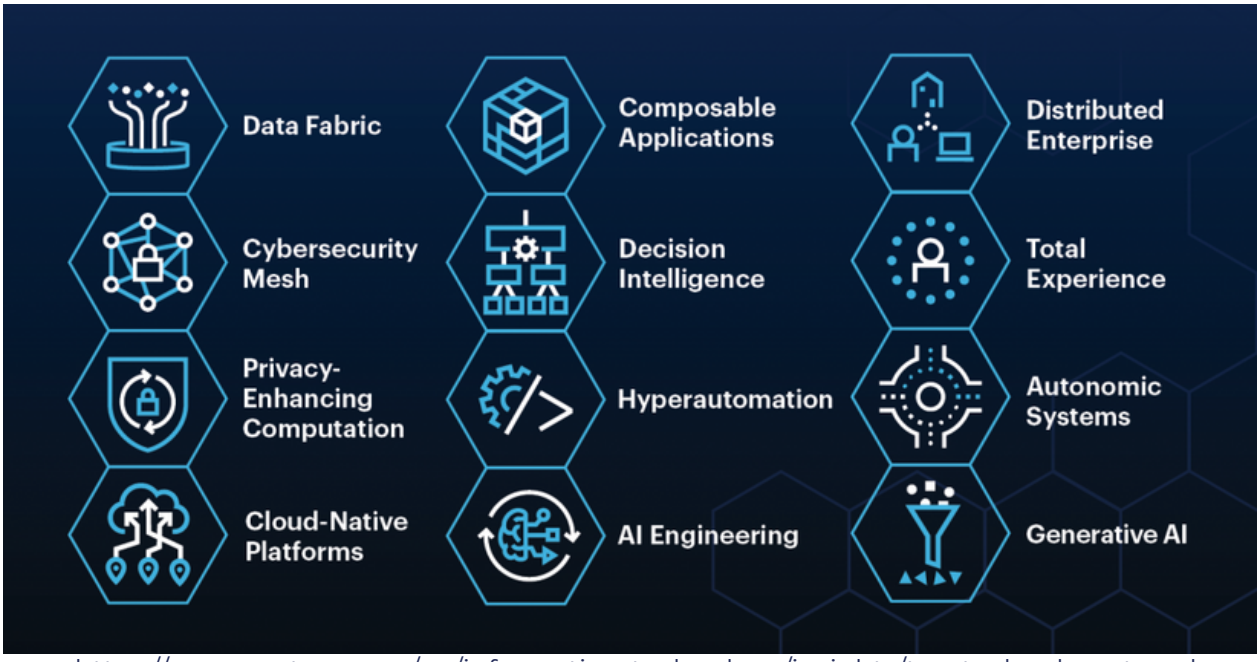
Online questionnaire is utilized to gather experiences and ideas of potential solutions from TORBIT partners.

Interviews are utilized to gather experiences and thoughts of sector specialists as well as to ensure focusing on top technologies and innovative solutions in the tourism SME domain.

More detailed information of technologies is introduced in section 3 Stages of Digitalisation. This first report, Year 2022 Top technologies in SME tourism, will focus on the Stage 1 technologies from the viewpoint: "How to getting ready with digitalization".
The deliverable is organized as follows. The introduction section contains an overview of latest megatrends and forecasting activities in the tourism sector. In addition, the latest technologies, especially top technologies suitable for the tourism sector are introduced.

3. SITUATION OVERVIEW

Every year, Gartner (https://www.gartner.com/en) introduces technology trends that are identified as critical to business. October 2021 the list comprises 12 strategic trends that will enable to deliver growth, digitalization, and efficiency, as follows (Gartner 2021):



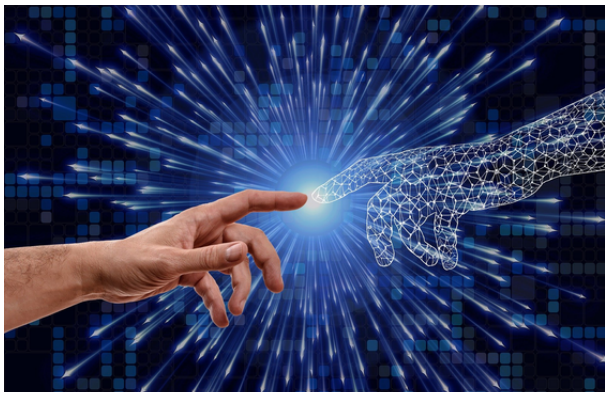
https://www.gartner.com/en/information-technology/insights/top-technology-trends

Many of the technology trends identified by Gardner cover several technology approaches or applications. These trends are focused on providing support for strategy thinking and envisioning future roadmaps. Thus, utilization of these technology trends is being waited for concrete examples and commercial ready solutions. In everyday life, especially in the SME tourism sector, these trends are good to recognize even if their utilization still awaits cheap innovations, use cases, and concrete examples. However, trends indicate direction, even if in the long run the global variable intervenes, changing direction a little or more.

Technology trends can also be identified just from a tourism business viewpoint.

Shoocal (https://www.shoocal.com/) introduced Top 9 most emerging Tourism technology trends in 2022, as follows (Shoocal 2/2022):

1) Travel APIs;
2) Augmented Reality (AR) / Virtual Reality (VR);
3) Internet of Things (IoT);
4) Ultra High Speed Wifi;
5) Voice searchers and Voice control;
6) Big Data;
7) Cyber Security Practices;
8) Robot technology;
9) Contactless Payment Options.



As the Shoocal is focused on empowering restaurants through data-driven decision making the proposed technology trends are concerning data and its utilization as well as latest known and used technology solutions for an enhanced customer experience. Thus, these trends provide a good set of potential trends and solutions to be adopted by SMEs in the tourism sector.

The tourism business has been in crisis during the COVID-19 pandemic and so it has had a profound effect on the global tourism industry. Various travel restrictions, lockdowns, segregation, and closure restrictions have led to a decrease in foreign tourists by 2020 compared to 2019, for example. In addition to the pandemic, the tourism industry has dramatically changed the way people travel and experience affected by digitalization. Digitization trends have affected the travel booking process, payment, the accumulation of experiences during the trip, and the exploitation of augmented reality, etc. According to the statistics of Shoocal 3/2022:

148.3 million people make online reservations for their hotels, tours, activities, and accommodations.

More than 85% love to book digitally because of personalized experience

95% of customers read reviews before booking

The COVID-19 pandemic influenced so that tourists' interests in their homeland have woken up and is expected to continue in the coming years. Tourists have desired spaciousness around: urban city tourism has partially lost its interest, while there are increasingly growing interests on beaches, countryside/small towns, and national parks. Even if the pandemic changed the world a lot, people have always wanted to travel and find new destinations. Therefore, it is natural and even expected that mass tourism will also recover. For example, Asia will continue to be the travel powerhouse, but Asian outbound travelers will become less globally focused than earlier. They will take several shorter trips annually rather than one or two long-haul journeys. (Skift 2021)

However, Asians will prefer local destinations and countries closer to home, due to their low-cost carriers. In addition, their governments are continuing to encourage domestic travelers with vouchers. The global trend at all levels of travelling is that sustainable issues are found to be increasingly more important. Tourists emphasize their travel safety, sustainable, and profound experiences. (Skift 2021)

The one momentous change during the pandemic has been that there have been implemented or considered to install a variety of contactless tech services (Skift 2021.) Figure 1 illustrates this change.

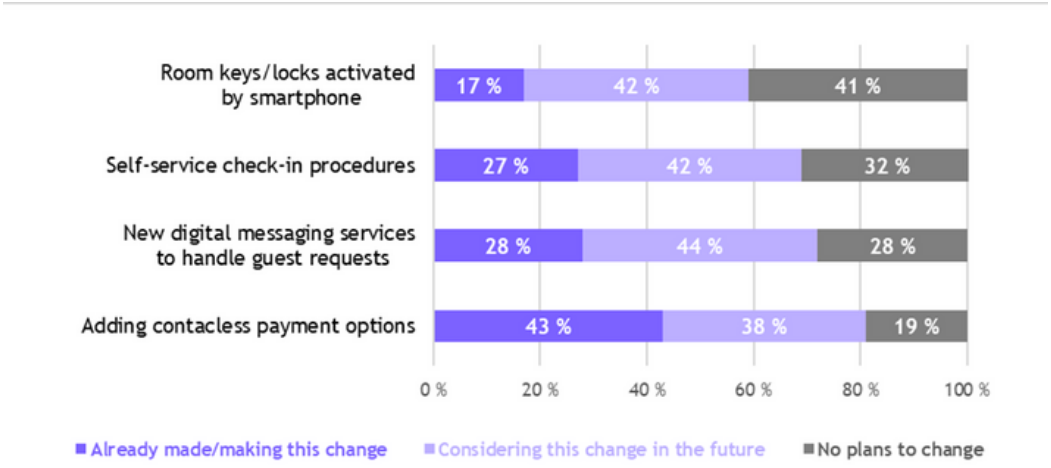


Figure 1. Adoption of contactless technologies in hotels (Skift 2021)

Digital technology in the tourism business creates new opportunities for growth and development. Thus, companies want to adopt innovative technologies that help, for example, develop their hospitality or improve the customer experience. Thus, it is important for the travel business to adapt to digital transformation and start taking advantage of innovative and modern technologies.

Exploitation often requires experimentation and experimentation requires money. Therefore, SMEs in particular need examples and a clear path on how to move forward with their digitalization path. 'Skift Megatrends – looking ahead to 2025' (Skift 2021) collected and discussed major travel trends from their impacts of various viewpoints, such as, the COVID-19 pandemic and its effects on continents and countries, people, and their mindsets as well as travelers' changed demands and habits as a resulted digital transformation or based on their age (incl. millennials and generation Z), history or culture.

The megatrends will promote certain technology approaches or applications in the tourism sector, such as (Skift 2021):

- Domestic travelling will increase. Travelers will stay longer and search for novel and unique experiences;
- Health and safety precautions will continue;
- Recognition of sustainable issues and environmental impact from both the travel industry and travelers will increase and demand activities. E.g., cities must rethink mobility tackling pollution and climate issues;
- The hospitality industry needs to rethink their communal and public spaces: more blurred boundaries between work and play, or blended social time, family time, and business time;
- Digital services will integrate several services from food delivery to retail platforms, and hybrid ways of working with leisure;
- Contactless features (and technologies) will be utilized more, e.g., mobile check-in and checkouts, mobile boarding passes, digital room keys, and contactless payment options like mobile wallet or virtual payment cards;
- The use of mobile applications will continuously increase and that will also increase the utilization of Online Travel Agencies (OTA) and Travel APIs. Travelers can connect via Travel APIs to the destination properties that are listed on those connectivity APIs. Superapps (incl. shopping online, ordering takeaways, mobile payments) will integrate social media and cryptocurrencies;
- Data and digitalization build a base for further utilization of emerging technologies. Companies will computerize their processes to cope with reduced staffing. This means adoption of robotic process automation (~robots not visible), artificial intelligence and machine learning. Especially jobs involved in collecting and processing data will take a hit from automation. Automation will increase productivity and economic growth.

Digital infrastructure as well as digital skills must be built first there can be adopt modern and emerging technologies or services potential in tourism sector. Even if today companies have internet access, they do not necessarily use technology in their processes or interactions with clients. Especially tourism SMES may lack the basic digital infrastructure needed to implement more digital business processes or consider developing digital tourism services. Tourism actors need also both basic and advanced digital skills, e.g., for using and integrating digital tools in work processes or developing and implementing effective and better-quality services to meet the changing demand and expectations of the customers. Furthermore, tourism actors need skills to understand more deeply the elements of sustainability in the tourism sector, e.g., for utilizing new business potential with increasingly environmentally conscious customers (**European Commission 2022**).

With regard to individual and discrete technology solutions, it is good to consider not only the added value of the solutions for individual actors, but also how the solutions can support networking and the tourism ecosystem as a whole. In addition, different solutions need to be considered from several perspectives; technology can produce better and richer experiences, but also valuable information for companies (e.g., Koo, Park & Lee 2017).

Although technology solutions generally provide important infrastructure to support tourism ecosystems, an heterogeneous set of human actors in the ecosystem is an integral part of the tourism ecosystem. A smart tourism ecosystem requires dynamically networked stakeholders to exchange tourism-related information through technology platforms. The smart tourism ecosystem includes an active network of companies, not only tourism companies, but also content provider companies as well as technology companies. Thus, the smart tourism ecosystems promote the use of technologies and in this way create new business models, opportunities for interaction and even completely new types of tourism businesses.

Smartness refers, among other things, to the ability of a destination to leverage the latest technology and large amounts of data to support stakeholder collaboration, decision-making, and better tourism experiences (e.g., Fenemia-Serra & Ivars-Baidal 2018). Nowadays, SMEs are often a part of a larger whole like regional travel development organizations that are facilitating digital transformation in the region. Sedarati et. al. (2021) introduced three main characteristics of a smart tourism ecosystem: instrumented, interconnected and intelligent. Instrumented means the ability to capture real-time data through, e.g., multiple sensors or other data-acquisition systems. Interconnectness can be seen as a bridge between the physical and virtual world, in which instrumentation enables different sectors to communicate much more efficiently.

Finally, the interconnected data and information coupled with machine learning and complex data analyses enable intelligent decision making (Sedarati et. al. 2021). Thus, ongoing digital transformation in the tourism sector is enabling traditional tourism to transfer to a smart tourism ecosystem as illustrated in Figure 2.

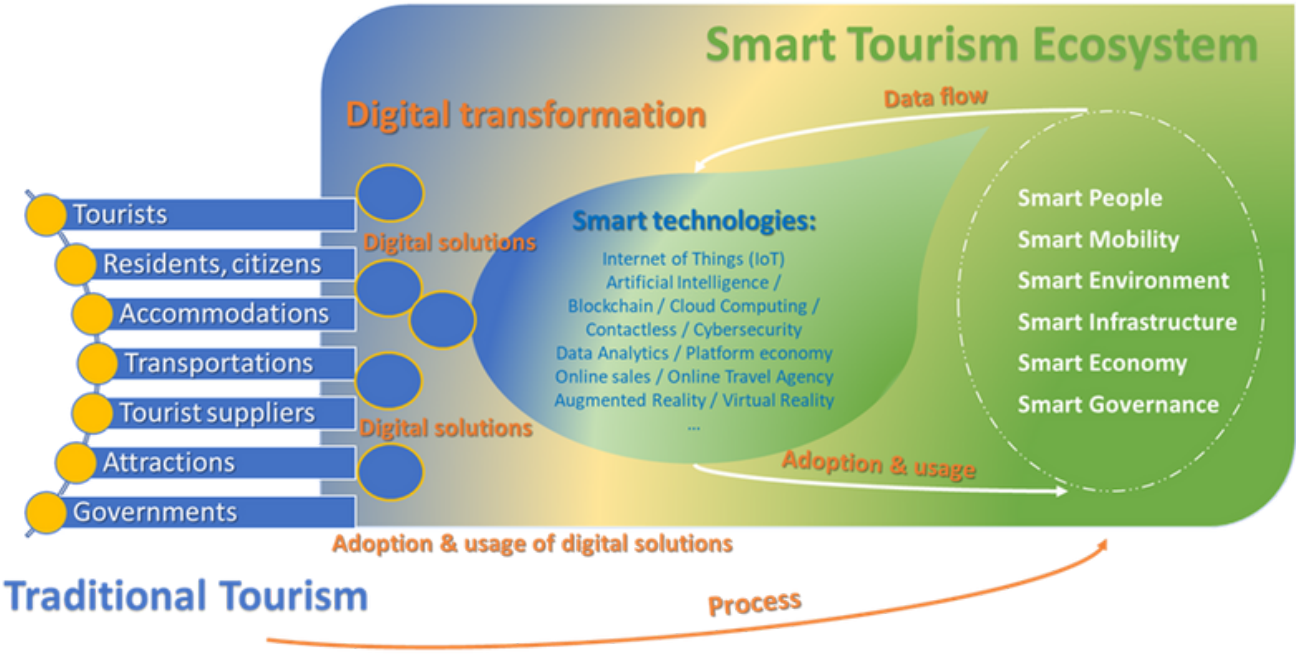


Figure 2. Towards Tourism 4.0 (Adopted from Sedarati et. al. 2021)

As introduced before in the 'Transition Pathway for Tourism' report (European Commission 2022) there are many obstacles and challenges, especially with SME tourism in their path Towards Tourism 4.0. The same was also summarized by the Regional Coordination and Development Commission of Algarve, Portugal based on two half-days online events with 65 stakeholders as follows: "Lack of adequate skills, inadequate infrastructure (communication and transport), weak links (between tourism services and other economic activities and ineffective data collection and analysis were some of the bottlenecks discussed." (Santos et. al. 2021).

In addition to digitalisation and emerging technologies, the tourism industry is affected by many current trends, phenomenons and economic cycles. The Covid-19 pandemic affected the tourism industry very dramatically, firstly because of the lock-downs. On the other hand, the pandemic accelerated the digital transformation in every industrial sector, including the tourism industry. For example, in the tourism industry, various solutions supporting contactless have been widely adopted such as digital check-in/checkout, using QR codes, contact-free payments, digital keys, automation, individual takeaway meals, etc. At the same time, interest has aroused in local tourist destinations and in domestic tourism in general. In addition, nature values, ecological, responsible and sustainable approaches are the trends that the tourism industry must take into account in its supply and solutions in the future. (Trend book #6 2021)

Carlisle et al. (2021) introduced their research (1,404 questionnaire respondents and 264 interviewees) focused on managers and executives in five sectors (accommodation establishments, tour operators and travel agents, food and beverage, visitor attractions and destination management organizations) in 8 European countries (UK, Italy, Ireland, Spain, Hungary, Germany, the Netherlands and Bulgaria) that the most important future digital skills were reported to include online marketing and communication skills, social media skills, MS Office skills, operating systems use skills and skills to monitor online reviews. In addition, the largest gaps between the current and the future skill levels were identified for AI and robotics skills and AR and VR skills. Thus, while concerning the Tourism 4.0. approach from the viewpoint of SME tourism, the truth is that many companies are still in a very early phase on their digitalisation path. Of course, there are also pioneers who create examples and practices for harnessing technologies. That is why it is important to take into consideration a large scale of potential applications and emerging technologies while fostering SME companies in their digitalisation journey in the tourism sector.

In the TOURBIT project the following technological approaches and application areas were identified that contribute to improving the tourism sector while responding to the opportunities in the European Tourism SMEs:

4. STAGES OF DIGITALIZATION

In this section more detailed information on the top technologies, especially suitable for the SME tourism sector, is introduced. Based on various latest reports, news as well as literature studies, the following technological approaches or application areas were identified that contribute to improving the tourism sector while responding to the opportunities in the European Tourism SMEs: Artificial Intelligence (AI), Augmented Reality (AR), Virtual Reality (VR), Blockchain, Cloud Computing, Contactless, Cybersecurity, Data analytics, Internet of Things (IoT), Online sales, Online Travel Agency (OTA) and Platform economy.

As can be seen from the previous list, both certain technologies as well as application areas are included. In fact, there were difficulties drawing the border between a particular technology or its application areas. In addition, while considering application areas it was recognized that multiple technologies can be applied in a single solution. However, the list was built for covering digital trends, services, and solutions, especially while mapping their challenges and needs of SMEs in European Tourism.

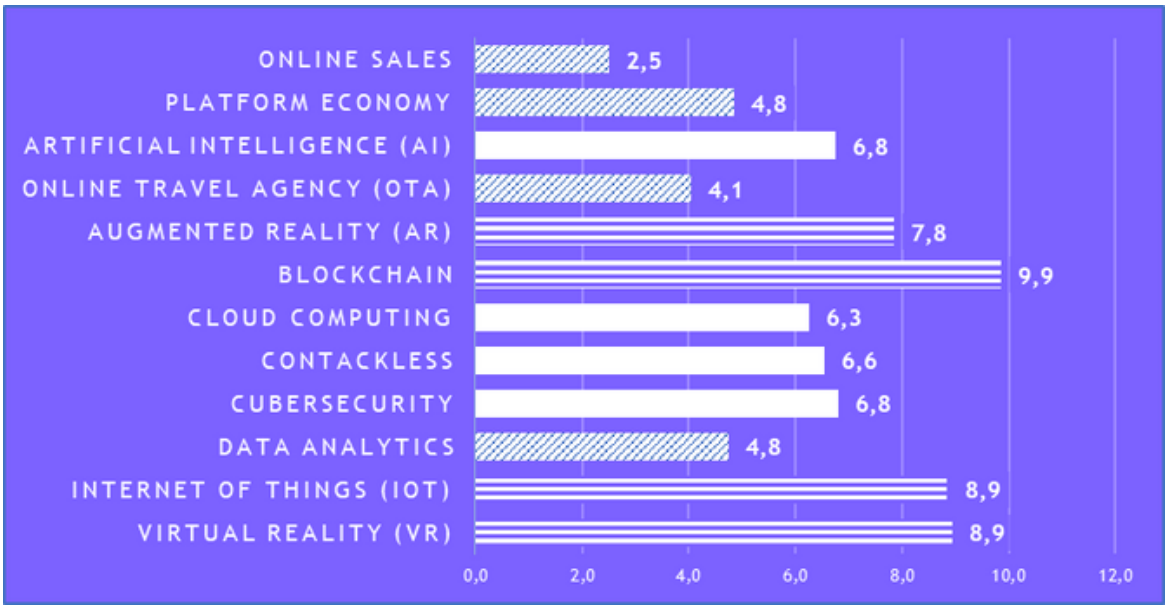


Figure 3. Prioritised technology areas based on interviews of sector specialists in the tourism sector.

In the TOURBIT project, the Webropol-questionnaire was performed. The questionnaire was aimed to gather TOURBIT partners' experiences, information as well as ideas and examples of innovative solutions relating to each technology area introduced before. Based on the questionnaire results, an interview structure and questions were planned, and all informed commercial ready innovative solutions were searched for more details. The actual interviews were performed by partners with their nominated tourism SME sector specialists and experts during March and April 2022.

In the TOURBIT project 22 sector specialists were interviewed in total. Before the interview sessions, the interviewees were asked to consider each technology approach from the viewpoint of SME tourism' current business and competitiveness. After that, they were asked to give their opinions by prioritizing technologies (from 1 to 12) according to the importance for tourism SME business nowadays.

Based on interviews with tourism sector specialists the technologies were mapped to various stages according to the level of digitalization of the SMEs, as follows:

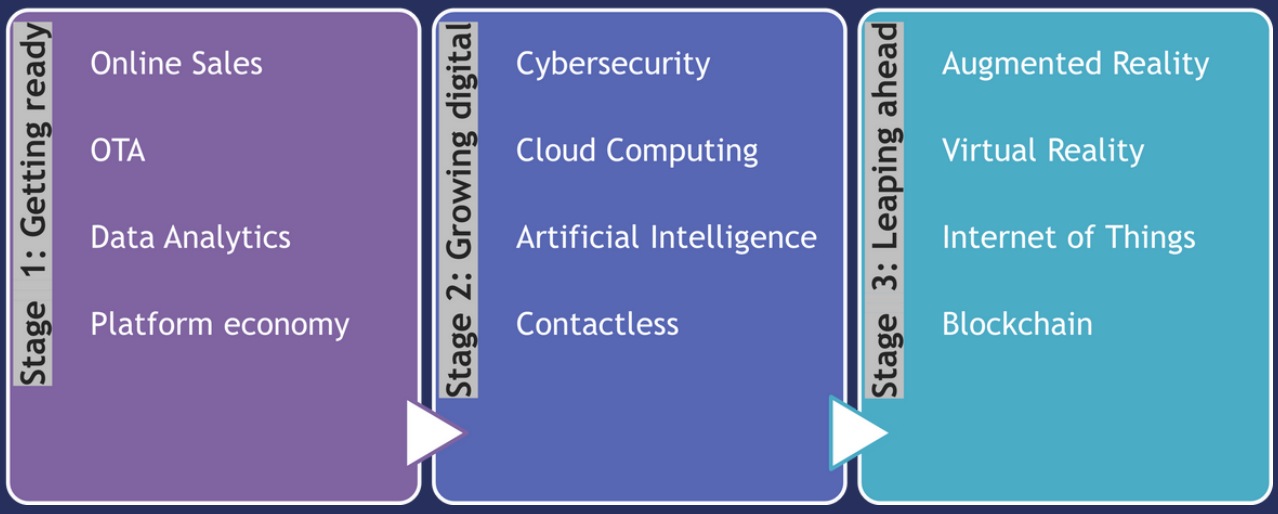


Figure 4. Stages of digitalisation paths according to the level of digitalization of the SMEs

This first, Year 2022 Top technologies in SME tourism, will focus on the Stage 1 technologies from viewpoint - How to get ready with digitalization. On the publication for 2023 other themes might be addressed, depending on the developments of current year.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

The Tourism industry in the European Union mostly consists of SMEs. In order for the industry to level up and innovate there is a need to raise awareness among SMEs of the importance of digital transformation, as they are essential to Europe's competitiveness and prosperity, industrial ecosystems, economic and technological sovereignty, and resilience to external shocks. SMEs, same as other businesses, have to adjust and adapt in a changing and competitive world and the challenges they´re facing are variable within country diversity and include both internal and external sides.

INDUSTRY CHALLENGES

The interviewers identified the following industrial challenges:

::Financial resources

"The main barrier to implementing these online sales platforms is cost.What is the point of developing an online platform when I can use other channels, even if I have to pay a commission?"

:: Resources and Awareness

"Many SMEs are aware that it is essential to have a website and, more generally, a sales interface. However, this must be effective and coupled with e-marketing and e-communication skills. There are therefore two aspects to transfer to tourism SMEs: a technical aspect and a communication aspect. In the first case, in order to have the shortest conversion tunnel, i.e. the number of clicks to reach the payment must be as short as possible. And in the second case, to have this communication talent to make this online platform attractive in order to make them want it. It seems really vital, it's about reinforcing something that already exists."

:: Knowledge and understanding benefits provided by digitalisation

"They do not know the tools, and startups do not know how to address the territory's SMEs, acculturation with startups pending, especially small SMEs of the territory, consultants manage to reach tourist offices but not small SMEs, VSEs"

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

TECHNOLOGICAL RESPONSE

ONLINE SALES

Online sales or internet sales means the advertisement, promotion, and sale of products to individual consumers via web portal or utilizing platforms. Customers can give feedback by rating their experiences.

Online sales are important as they increase visibility, expand the market. If there is a need and a desire to grow, to create a profit, a company needs to invest. However, online sales should not be thought of as just a marketing place for an individual company. Online sales at the regional level, for example, increase their effectiveness and visibility more strongly.

Today, not all SMEs yet take advantage of e-commerce or online sales opportunities. Some of them are a small group of so-called lifestyle entrepreneurs who do not even want to expand to online sales, or even an electronic booking calendar. They do not want to grow. But the rest of SMEs are willing to grow and get the most of their business. These companies shall be supported in their digital path. Recently, the situation has improved a lot, partly driven by the COVID-19 pandemic. Many SMEs are already well utilizing so-called basic solutions of online sales. In addition, there is well provided basic training and guidance on the topics.

The main challenges of utilizing online sales in SME tourism now is how to understand or be aware of what opportunities online sales allow. Thus, many are happy with the current situation, and they may not be motivated to grow their business. On the other hand, there is a top group of entrepreneurs who see development as an opportunity not a challenge. Furthermore, the leap to online sales requires rethinking everything, and SMEs tend to have limited resources (both time and money).

Every SME that wants to get involved in e-commerce or online sales should be supported. There are many commercial ready solutions available as well as marketing agencies that can produce low-cost turnkey customized solutions for SMEs if needed.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

So, for example, some simple “Beginner’s guide” would be beneficial: What kind of tools or solutions are needed? From where and how can they be bought? What I can sell: Are my products or services packaged in a format for online sales? In the future, the importance of online sales from the viewpoint of a tourism SME will increase. There are still companies that will start e-commerce but there are also a top group of companies that will continue their digitalization path to the next level.

Common industry challenges relating to utilisation of Online Sales are the following:

There is awareness in SMEs, that a sales interface like a website is essential. However, it is important, that it is effective and combined with e-marketing and e-communication skills. There is a lack of expertise and resources. It´s not fully understood yet, that the products have to be online and how to take the necessary digital steps forward. It also needs to be emphasised, that there need to be partners, meaning a network. The tourism SME can be e.g. part of a regional organization.

A challenge can be also the integration of different solutions that allow the SME to provide a consistent costumer experience. There might be the need to adopt new business models. In the traditional and conservative tourism sector there is no mentality and little propensity to learn and apply new technologies. Some tourism SME have been around for 20 years, managed by the owner, doing mainly grassroot management. SMEs are often managed the traditional way without propensity to introduce innovation.

Some webpages are poor and SMEs lack knowledge for maintenance and improvement. So besides the missing technological skills, there is also creativity needed to create value and content and have a narrative and design that matches the physical product. Furthermore skills and talent is needed to create a short conversion tunnel (the number of clicks to reach the payment must be as short as possible) and to have the communication to make the platform attractive to the customer. There is the problem that the SME management doesn´t know the tools and digital start ups and consultants don´t know the tourism territory. Consultants also often reach the tourist offices, but not small SMEs.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

Another challenge is the need for more technological solutions for smaller tourism businesses. Big travel agencies have their own software to bring together several services and products, but small tourism SMEs need a more integral experience (integrating a hotel room with internal or external activities). There is good knowledge of brand building required and familiarity with the online landscape. Sophisticated tools do exist, which manage rooms, revenue, dynamic pricing, distribution and customer experience. The next problem is, that tourism service providers do not know how to analyse results, they do not use data and are not proficient in data analytics.

These challenges result in the main barrier for implementing this technology, which is cost. Small tourism businesses do not see advantage of selling directly e.g. their rooms, when it is profitable to be on booking.com. Also not all tourism SMEs want to grow. Some of them are satisfied where they are, e.g. being a subcontractor to an existing large company. They might be immediately stopped by the digital barrier, the price and training of managers. There is also a problem with the transparency of pricing of the online solutions: The pricing can be hidden and can be based on value, monthly subscription fees, transaction or commission. The published prices are often not the final prices. There is hesitation on commission-based tools as they take away net revenue. This is a psychological barrier.

Examples of online sales:

BÓKUN booke TravelCompute

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

TECNOLOGICAL RESPONSE

ONLINE TRAVEL AGENCY (OTA)

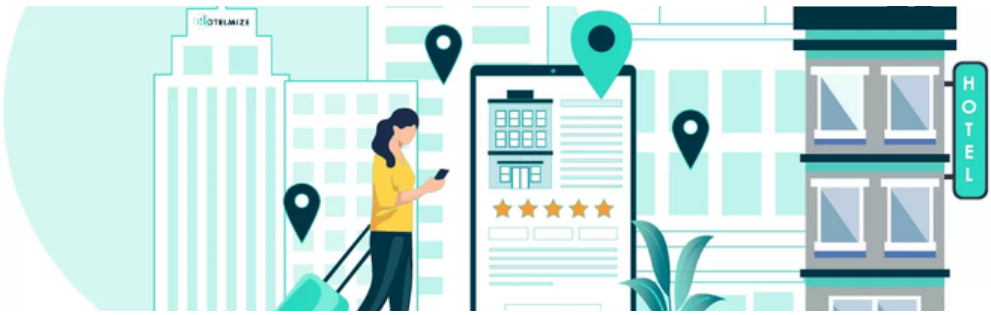
Online Travel Agency (OTA) has become increasingly important within the hotel industry because they provide a convenient way for customers to compare hotels and to book them over the internet, from the comfort of their own home, or on the go. Online travel agency (OTA) is important as it provides a global sales channel that makes it possible to outsource marketing. In fact, OTA is already widely used in tourism SMEs. However, there are also SMEs that are just considering introducing OTA or expanding their website to OTA marketing.

OTA as a business model is easy to implement, although use can also become a bit expensive. The main challenge of utilizing OTA is the lack of up-to-date information and uncertainty about what various agreements are committed to. For example, there was a claim in the past that you have not been allowed to sell elsewhere at a lower price. The first step is the most critical (as typically be). However, all instructions and support services are well available in the company's native language to make it easier to start an SME with OTA.

For maximizing the amount of SMEs to adopt OTA services, the support has to be well directed according to the needs. Thus, SMEs should be divided into groups according to the amount of technology used (so-called digital stairs), e.g.:

1) who do not use and do not want to use technologies;
2) who do not use but would like to use;
3) who use and are satisfied with the current situation, etc.

This would make it easier to produce the necessary information and support each group appropriately. In the future, the importance of Online Travel Agency (OTA) from the viewpoint of SME tourism will be quite the same as today.



4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

Common industrial challenges relating to utilization of Online Travel Agency are the following:

The first challenges are technical and generational: there is not yet broadband internet available everywhere and the older people have no/ not much digital competencies. There is distrust of the cyberworld.

The cost factor is another challenge. OTAs have high commissions. When being on OTAs, companies neglect their own marketing. On the other hand the balance has to be seen between commissions and marketing: sellers are frustrated by the amount of commissions but not always weighing it against the amount of marketing done by the OTAs.

It would be good to train SMEs to take advantage of the OTAs. It is almost a profession in itself to manage the platforms. The platforms are changing and evolving constantly, so it is important to be up to date. The optimization of the platforms is complex, there are tools to manage different channels through one tool.

Another challenge is that the data remains with the OTAs. If a business has 70-80% of the business on a platform, it doesn´t bring a good negotiation position. The commissions reduce the profit derived from the reservation and often it´s not allowed to set lower prices on the own website. So there is regulation through public authorities/EU needed.

Examples of OTAs:

eDreams, Hotels.com, agoda, priceline.com, ORBITZ, Late Rooms .com, HRS Deals

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

TECNOLOGICAL RESPONSE

DATA ANALYTICS

Data Analytics require a digitally-focused data strategy. A smart data strategy lets tourism SMEs deliver personalized customer experiences, optimize customer service, and engage customers seamlessly across different channels and touchpoints in their buying journey. Data and analytics play an invaluable role in streamlining business operations and in innovation. Analytics uses data and math to answer business questions, discover relationships, predict unknown outcomes and future, and automate decisions, for example.
In fact, when a company moves to online sales, data analytics also comes along in some way. However, it is still far from data analytics in business management. In order to be able to manage a company, it is necessary to measure impacts, effectiveness, and cause-and-effect relationships.

At present, the potential offered by data analytics is very little utilized. In practice, SMEs in the tourism sector are still a long way from having the so-called logical dashboard. There is data and information, but the company is not yet managed based on them. The main challenge of utilizing data analytics is lack of know-how.

Data is scattered across different sources, various applications and formats. There are no good tools or platforms to provide for professional business usage in tourism SMEs. Even if various solutions can be found, for example, with knowledge management platforms, they should be developed to be more suitable and easy to use for SMEs in the tourism sector.

In the near future, the importance of data analytics from the viewpoint of SME tourism will increase a lot.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

Common industry challenges relating to utilisation of Data Analytics:

There is not enough trained talent and personnel with specialization in tourism and a global vision. An IT expert will not have the same knowledge of the tourism sector as a professional in this field and vice versa. It would therefore be wise to create collaborations between these fields of expertise. There is data, but not qualified people to do something with it. Also a growing awareness of the benefits for an individual company is needed. The people responsible for the tourism SMEs have to become aware of the importance of having data and knowing the correct use of it in order to make decisions.

More training is needed and raising awareness of available technology solutions. The low budget of a SME might also be a challenge as small entrepreneurs usually are not hiring an analyst. The second challenge is that there is data, but what is needed is Big Data, and SMEs might not have access to it. There is also a lack of understanding what to do with all the data the systems of the tourism SMEs are already collecting. The third challenge is that people are afraid of the technologies and are easily overwhelmed by them.

Examples of data analytics:

World Benchmarking Alliance

clock PMS+

BisLenz

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

TECNOLOGICAL RESPONSE

PLATFORM ECONOMY

Platform economy can be utilized for selling products and services as well as for sharing services, products, tools, rooms, apartments etc. The platform refers to a digital marketplace that enables e-commerce, where the seller and the buyer meet ("digital matchmakers"). The platform economy can be seen as a SaaS (Software as a Service) solution, the cost of which is determined in terms of revenue (transactions, percentage, etc.).

There are many different ready-made platforms on the market that can be utilized without big investments. The platform economy provides global visibility and markets for products and services.

Today, the platform economy is not largely used or utilized by SMEs in the tourism sector. Few companies utilize 1-2 platforms but there are no skills for building and managing the wholeness. Currently, in tourism SMEs all opportunities for the platform economy are not known. For example, there is already some know-how and experience in online sales, but not yet in the platform economy. The challenge and obstacle to wider utilization is the lack of knowledge and expertise. There is no understanding of the logic of earning in the platform economy, nor the rationale for why the platform economy is important. Thus, all new opportunities created by the platform economy are not clear and therefore SMEs have no incentive to develop in this direction. On the other hand, it would be good to have the skills and competencies to create your own platforms.

The platform economy requires a new kind of business model, which is always a strategic decision of the company. This means that there are needed management training with strategic thinking. In the future, the importance of the platform economy from the viewpoint of SME tourism will increase a lot. In fact, more companies will be more familiar with online sales, and after that their interests and business models will focus more on towards the platform economy.

4.1 STAGE 1 GETTING READY: THE JOURNEY STARTS NOW

Common industry challenges relating to utilisation of Platform Economy are the following:

The complexity of a platform can be a challenge. This applies especially to the elderly. Instructions might be in English only and not in the local language. There is a lack of knowledge regarding the benefits and implementation, a lack of understanding how it can be used. Commissions are high, sometimes the customer support is not good.

There is a barrier in tourism businesses. They do not see opportunities and potential business models and do not have the skills to go for them. The size of the company plays a role. Employees might have several roles in the company and are lacking technology know-how. So the main challenges are a lack of digital skills and financial resources. There is the need to adopt new business models. This is not easy for smaller businesses. They need to get trained and they need to be up to date as the platforms are evolving constantly. Key is to be familiar with the online environment and to manage different channels. Sales platform optimization is complex, but there are tools for it. There needs to be someone in the company in charge of managing the information posted on the platform, like replying to customer questions.

Some tourism sectors are better organized around platforms than others, e.g. hotels. On the other hand restaurants still work much more directly with the customer. A company has to choose which is the best platform depending on its tourism sector and the offered products and services. The commissions can reduce SMEs profits and the terms and conditions imposed are not always fair.

Examples of platform economy:

airbnb

BlaBlaCar

cozy cozy

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

This stage is characterized by a digital expansion throughout the value chain where the Internet becomes a key source of information for travelers, which results in service providers focusing more on distributing customized products.

With the emergence of COVID the world had to adjust and make efforts to contain the spread of the virus. Removing friction and improving the customer experience was one of the main concerns, and the contactless payments have been one of the biggest examples of this. When contactless payments are accepted, customers save time on sorting through cash or entering their PIN, it also enables them the need to carry a wallet.

INDUSTRY CHALLENGES

The interviewers identified the following industrial challenges:

::Financial resources

"Technology needs to become more affordable, currently it presents additional cost for providers".

:: Knowledge

"The clear identification of the business processes and the value chain of the SME tourism industry in order to adopt the corresponding security measures in each of its components; The excessive growth of risks and the complexity of their understanding."

:: Security and Privacy

"Teaching all employees that most cyber-attacks happen because of employees using simple passwords or making them available to other people. Learning about cyber-security best practices and implementing effective firewalls. Making sure that all software is updated to the latest version"

:: Resistance to change

"Everyone thinks it is expensive and they are a little afraid that it will not be repaid - tourism service providers don't think and calculate how the costs of investing in this technology will return in the long run. Also this technology changes a lot in daily business, fear that it will replace people"

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

TECNOLOGICAL RESPONSE

ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is the ability to leverage the problem-solving and decision-making capabilities of human beings and it can personalize experiences and streamline services based on customer data. Throughout the travel industry, there are numerous applications of AI systems today, for instance there are examples in airports with as facial recognition systems and security scanning devices.

For hotels, one of the most exciting uses of AI is for providing online customer service through chatbots and voice assistants. AI has an enormous potential of application in data processing and data analysis, drawing conclusions about customers, business practices and pricing strategies. To support the Customer Journey, online virtual agents or chatbots are replacing human collaborators. The answers to frequently asked questions (FAQs) around topics, like shipping, or provide personalized advice, cross-selling products or suggesting sizes for users are implemented across websites and social media, changing the consumers behavior.

For hotels, by helping to increase direct bookings and decreasing the amount of bookings that are halted halfway through by offering helpful and personalized support, as well as more opportunities to up-sell and cross-sell, by using information gathered in order to push relevant additional options, such as breakfast or spa services. Also has to work as recommendation engines by using past consumption behavior data, AI algorithms may help to discover data trends that can be used to develop more effective loyalty marketing strategies.

AI applications within the Tourism sector are not just limited to customer service, as one of the most effective uses is collecting and interpreting data to draw conclusions about customers, business practices, and pricing strategies. It allows classification of large amounts of data accurately and quickly, which when compared to human manual work would take much longer and potentially contain more errors.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

Common industry challenges relating to utilisation of Artificial Intelligence are the following:

There is a lack of trained and prepared professionals with a vision of the positive use of this technology. Additionally, there is a lack of financial resources. There is not enough technical knowledge and a lack of perception of the numerous benefits of using AI.

First, you need data and a good data infrastructure. So the power of data needs to be understood. Right now there is no culture, which values data and the management of it. There is also a lack of knowledge about the ROI of AI. Robotization kills jobs, but in the future there will be room for AI and the real human. At the moment there is a high cost in internalizing AI solutions skills and to invest in AI solutions.

Examples of artificial intelligence:

Altostratus Part of Telefónica Tech
cognizant
QUICKTEXT

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

TECNOLOGICAL RESPONSE

CYBERSECURITY

The tourism business is increasingly at risk from cyber-attacks and more vulnerable to data breaches of other kinds. For instance, Travel Agencies, which hold inadequate security measures while managing an amount of personal data such as credit cards, customer information, loyalty cards, passport numbers, etc. Thus, cybersecurity is a lifeline in the digital world. Many companies would go bankrupt if their data were lost or leaked into the wrong hands. Despite its critical role, cybersecurity has been taken into consideration at a very minimal level in the tourism SMEs. For example, staff are generally not trained at all in security matters.

The main challenge is incomprehensibility: it is thought that it does not apply to us because we are such small actors etc. One does not think or not want to think what the risk of total data loss really is. Therefore, in practice, really big risks are being taken in this matter every day.

One obstacle for adopting cybersecurity in SMEs is a human feature of a person: a human being may not want to think “bad things”. In practice, there is not enough knowledge or competence to handle cybersecurity issues. And then, on the other hand, it is easier just to close your eyes and not develop needed competences.

For maximizing the amount of SMES that will adopt cybersecurity practices it is important to build interest in cybersecurity via a positive approach, not intimidation. It is generally thought that cybersecurity is a big and difficult area to take over, but in reality, even with very small and simple things, a lot can already be achieved. And as understanding increases, managers want to develop things in a planned and goal-oriented way with their skilled staff. In the future, the importance of cybersecurity from the viewpoint of SME tourism will increase.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

Common industry challenges relating to utilisation of Cybersecurity are the following:

The challenge is that people do not even know what to be aware of. They might think it is not their business and the consequences are not understood. It is difficult to convince SMEs that they are also at risk in the event of attacks and that the level of exposure is transversal to all companies. The obstacle is to teach all employees that most cyberattacks happen because of employees using too simple passwords or making them available to other people. Therefore it is important to learn about cybersecurity best practices, implement effective firewalls and update software to the latest version. The tourism professionals have to be trained and prepared in cybersecurity. Business processes and the value chain have to be identified and corresponding security measures have to be applied on each component. SMEs have to be given simple tools to secure data.

Examples of artificial intelligence:

F-Secure

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

TECNOLOGICAL RESPONSE

CLOUD COMPUTING

Cloud Computing refers to the on-demand delivery of information technology resources over the Internet with pay-as-you-go pricing, allowing companies to access technology services, raw computing power, storage, and databases on an as-needed basis. This definition hinges on the process of other companies providing key business software applications and management of these applications via a single point of access: the Internet. This means processing, management, and application development occurs outside of an organization's walls. Three solutions are available for business: SaaS (Software as a Service), PaaS (Platform as a Service); and IaaS (Infrastructure as a Service).

By adopting a cloud-based model, companies will be able to implement pivotal changes. As the travel industry is dealing with large amounts of personal data, cloud computing is an efficient way of storing and evaluating information. The use of Cloud solutions offers scalability, remote access to services and reduces operational costs, related to infrastructure, software and IT operations. There is also the possibility for applications to be built on similar platforms, meaning that it is easier for services and resources to be utilized and re-used across various applications.

As dealing with large amounts of personal data, the travel industry is also a hotbed for cyberattacks, in which precautions need to be taken into account.

Common industry challenges relating to utilisation of Cloud Computing are the following:

Tourism business owners are of a certain age: they are not native digitals. For them it's difficult to understand the importance and the way of use for digital solutions. So the challenge is to find a person within the company with the right skills to manage the technology and get the most out of it. There needs to be more knowledge on the technologies available and how it can be used in tourism. Training has to be offered specially for the needs of SMEs and micro companies in tourism. The benefit of the cloud is not yet understood. For tourism businesses it might seem that it is useful only for not losing data, but the link to data analytics and its benefits is not yet seen.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

Also the tourism business might not trust that it is safe to store data in the cloud. It makes them more vulnerable to cyberattacks. Trained and prepared professionals are needed.
The third challenge is the interconnection between different cloud solutions and the big amount of solutions available.

Examples of cloud computing:

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

TECNOLOGICAL RESPONSE

CONTACTLESS

The emergence of COVID-19 pandemic in 2020 forced the industries to adopt contactless solutions as a way to keep customers and staff safe, and the tourism sector was no exception. Contactless technology is not something new but it has turned out to become more of a necessity than a luxury. During 2021 onwards, guest adoption and improved guest satisfaction scores have shown the need to engage with guests on their own terms and devices.

For businesses, in order to implement a seamless or contactless experience at a hotel for instance, it's necessary to review touch points of the customer journey from end-to-end, starting before they visit the hotel till they check out. Hotels will be able to provide their guests a more seamless experience throughout their entire journey, enabling quick check-in/outs as well as an overall smooth and stress-free journey.

There are several processes within daily interactions that can be leveraged, such as in communication and intelligent devices, while improving the customer experience. From contactless bookings, contactless payments, contactless check-ins, digital kiosks which offer a contactless way to reduce crowding around the lobby, voice commands in hotel rooms leveraging guest experience, QR codes that enable contactless payment and other interactions, automated chatbots offering guests a contactless method to communicate and help hoteliers by answering commonly asked questions, or even accepting contactless feedback.

4.2 STAGE 2 GROWING DIGITAL: BUSINESS AS USUAL IS NOT AN OPTION

Common industry challenges relating to utilisation of Contactless are the following:

Tourism businesses are often managed in a traditional way and there is little propensity to adopt new technologies. There is the need for better knowledge about the technology, in order for tourism businesses to see the gain it would bring them. So specific training on this technology is needed. Right now tourism businesses do not see how the technology will bring ROI (return on investment). There is the belief that it is expensive. Also tourism businesses see contactless as something “nice to have ", but not as essential.

There is also the challenge of people being afraid of sharing too much data about themselves and overseas customers might have difficult internet contracts, so a stable internet connection might not be available all the time. There is the generation problem, sharing information online has an issue with trust. However, getting access to information online is not an added value anymore, but a preference. Important is a good interface: QR-codes opening a PDF is not enough anymore.

In the company someone is needed, who knows about the technology and can make the necessary decisions. So training is needed. There is also the fear that it might replace people.

Examples of contactless:

criton builds your app

Duve.

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

The adoption of digital technologies opens up new opportunities for growth and development of new products and services, improving customer experience, which in the end will get more income for many businesses and tourism services providers. It will also allow us to generate extraordinary user experiences, based on added value information.
On the other hand it also puts these same businesses under big pressure because they have to react faster than they used to, and everything is more transparent so it´s easier to criticize or to get bad reviews for instance.

INDUSTRY CHALLENGES

:: Migration, Integration and Interoperability

"The real challenge is the interconnection between all the cloud applications and the big number of applications possible."

:: Financial resources

"Tourism service providers are worried about cost (the tech. is too expensive)"

:: Qualified human resources

"Difficulty for tourism to recruit qualified labor in the tourism area and also lack of qualified human resources in IT areas, for eg.in IT, due to market fluctuations and low salaries in tourism there aren't enough qualified people giving assistance to provide day-to-day operational support."

:: Need of Infrastructure

"This tech requires the development of 5G and therefore the necessary infrastructure."

:: More use cases

"Get to popularize the concept, show use cases, a little too much in the concept, complex to understand at the moment, move from concept to experimentation"

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

TECNOLOGICAL RESPONSE

BLOCKCHAIN

Blockchain technology offers the industry stability and remarkably high rank security, and it has the ability to modify the way transactions are made and information is both stored and accessed.

The process involves storing information on blocks, where each block is connected to its preceding and succeeding block forming a chain. It consists of a decentralized database system in which the information is distributed all across the network, instead of being controlled or stored at a central location, making it highly impossible to tamper with the information or hack the system. Every chunk of information gets stored with a time-stamp making it easy to trace back the transactions and every block of information is encrypted with a secure direct payment and eliminating third parties in the equation.

For the hospitality industry, Blockchain offers enormous potential in reducing third-party involvement, increasing security, improving the speed and ease of transactions, and allowing important information to be accessed anytime, anywhere. The benefits of using blockchain technology is that all data is decentralized and traceable, and can never go offline, or be removed through a cyber-attack, this is particularly important when dealing with payments and financial transactions.

The most important uses are in relation to identification services, reducing check-in times, and to payments. Typical example of blockchain technology in the hotel, tourism and travel industry is related to payments: its applications can range from a global ledger function, making payments easier and more secure, to allowing travel agencies to accept payments using crypto currencies.

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

Common industry challenges relating to utilisation of Blockchain are the following:

At the moment Blockchain is complex to understand. It is a distributed computing system, a new computational architecture that the tourism industry is exploiting for the moment. It still has to be figured out how to fit blockchain and travel distribution. The travel industry is not ready and often late compared to other industries. Everybody is talking about the metaverse, but only a few understand it. The concept has to be popularized and use cases need to be shown. It needs to be moved from concept to experimentation.

Examples of blockchain:

catve.com

The Rentals Token

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

TECNOLOGICAL RESPONSE

INTERNET OF THINGS (IOT)

It involves adding internet connectivity to everyday's devices and appliances, allowing them to communicate with one another. It can turn devices or gadgets into 'smart' objects, with the capability of sending and receiving data and communicating with each other, which will improve not only data collection and increased levels of automation, but also potentially improves the fulfillment and creation of sustainable solutions. It allows multiple devices to be monitored from a centralized location like a tablet or even a phone.

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

The interoperability of sensors, data, and automation produces real time insights and information for marketing and managing tourism, for improving visitor experiences, increasing operational and resource efficiencies (for instance, internet-enabled devices and sensors for smart energy saving).

Most common use case relates to hotel smart rooms, by using a combination of IoT and AI. For example it contributes to a more sustainable business as it reduces the room's electricity bill, making it more comfortable, smarter and friendlier for the customer.
It can allow guests to control air conditioning systems and ventilation from one location, or the hotel can regulate the room's temperature and cut off air conditioning once the customer opens and leaves a window open. It can also allow control television or other devices.
Hotels can also use IoT technology to send the electronic key to the guest's phone prior to their arrival or before check-in time, which may allow guests to completely bypass the check-in desk and go straight to their room.
Another possibility by using bluetooth or beacons is to send messages and update information for customers about menus in the restaurant, gym services, transport connections or even nearby attractions.

Common industry challenges relating to utilisation of IoT are the following:

Tourism service providers worry about costs of IoT, have the wrong mindset and do not understand yet, what to do with data. There is also a lack of digitally educated staff in the tourism sector. Tourism is also very traditional and not yet digital. Older generations are not open to innovation. There is a lack of understanding that digitalisation and sustainability go hand in hand. For example, one interviewee described "*Companies are overwhelmingly micro and their adoption depends on grassroots management. The management that exists is based on the founder who has been around for many years and who manages it in a traditional way. In the larger groups there is a greater propensity to adopt the technology and in the more recent groups. The overwhelming majority is represented by SMEs in the market that are over 20 years old and that have no incentive/propensity to introduce innovation.*"

Examples of internet of things (IoT):

acentic ASSA ABLOY MANAGING THE INTELLIGENCE
anna SMART MIRROR Tabhotel tourism 4.0 ENRICHED TOURISM EXPERIENCE

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

TECNOLOGICAL RESPONSE

AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR)

In recent times, augmented reality (AR) has been emerging in the tourism sector mostly as a marketing tool, enabling businesses to enhance the real-world environment in real-time, which changes the way customers perceive the environment they are in. The possibilities for augmented reality are vast and it has the ability to alter the tourists perception providing unique tourism experiences and opportunities for interaction in their physical surroundings.

Augmented reality can be used to anticipate the amount of information guests tend to ask for, both before they arrive and once they are there, which is readily available all times, and thereby improves the customers' experience. At a destination, Apps can be used to recognize objects offering on-screen information about routes, museums, galleries, parks, and other sights as a tourist strolls through a new place.

For the hospitality sector it allows interactive hotel rooms, hotel environments to gamification and beacons, just to mention some examples of how AR can be used in the tourism sector.

Virtual Reality (VR) is another major tourism trend that increased during COVID and even in the post pandemic, once it has the ability to enhance products and help customers to understand exactly what to expect during their stay or visit.
Adding a layer of VR tours and 360 videos can be a tool to attract additional sales, mostly because these can be viewed in a standard web browser on a computer, mobile or tablet, making it widely accessible, or taken to the next level when experienced with a dedicated VR headset.

4.3 STAGE 3 LEAPING AHEAD: NEW PRODUCTS, NEW SERVICES, ENHANCED EXPERIENCES

Common industry challenges relating to utilisation of AR/VR are the following:

It is a fairly new technology, which will be developed much during the next months and years. There is the need for devices to be improved to make the technology easily applicable. At the moment glasses and the creation of content are expensive. We need training and knowledge about what the technology can do to improve the user experience. More specific training to the different sub sectors of tourism are needed. An obstacle is the negative impacts it will have on employment.

Examples of Augmented Reality:

X-PLORA
Atlas Obscura
hp Hidden Place
INOD Solutions
The Magnificent Seven

Examples of Virtual Reality:

thinglink.
Randonautica™
SKYBOY OVERLAP REALITY
WHAIWHAI

In the annex 2, above mentioned examples as well as several others are introduced in more detail and mapped according to suitable technology areas.

5. CONCLUSION

This deliverable, D1.1a Year release of top technologies, summarised state-of-the-art of year 2022 top technologies and trends based on literature studies and interviews as well as inputs gathered from the TOURBIT partners, and in this way the deliverable is increasing digital awareness among tourism SMEs. The deliverable also introduced a model of the smart tourism ecosystem that illustrated how adoption and usage of digital solutions and smart technologies will enable SMEs' transition towards Tourism 4.0.

SMEs in the tourism domain have utilised digital solutions in various ways but to a limited extent. Thus, in this deliverable, the selected emerging technologies were mapped to three stages according to the level of digitalisation of the SMEs in the tourism domain: 1) Getting ready, 2) Growing digital, and 3) Leaping ahead. This deliverable, published in May 2022, is the first of three Year Releases and it focuses on the first stage (Getting ready) even if it also introduces other stages. In addition, there are 155 various digital innovative and commercial ready solutions introduced in total. The following Year Releases will be published in March 2023 and in March 2024; they will focus on the second and the third stages of digitalisation respectively.

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