DIGITAL STRATEGIC ROADMAP

FOR TOURISM IN THE MALTESE ISLANDS 2030

Malta Tourism Authority

GOVERNMENT OF MALTA
MINISTRY FOR TOURISM
AND CONSUMER PROTECTION

CONTENTS

FOREWORD

Hon. Clayton Bartolo

MINISTER FOR TOURISM
AND CONSUMER PROTECTION

What was once known as a barren rock in the middle of the Mediterranean, today is not only one of Europe's best performers in economic growth, but is now climbing up the ladder to become a digital bastion on the international stage.

For we have the power to reap the full benefit and opportunity in a world that is getting digital everyday.

These challenging times, have been a textbook example of Malta's dynamism and commitment in fostering new digital economic niches and the tourism industry is no exception in this regard.

Our sureness of touch, steadfastness and the ability to bridge alliances together in these difficult times, are those likely to see us continue steer Malta as a "go-to-country" in the digital world.

Being effective on quality as individuals and organizations is no longer optional in today's world. Actually, it's the price of entry in an ever changing playing field. Surviving, thriving, innovating, excelling and leading in this new reality will require us to build on and reach beyond effectiveness. Quality is not about adding one more component to the industry and forgetting traditional roots it is about seeing and harnessing the power of a second dimension of our diversified vision in this age of acceleration. Through this we have quality products, services, sustainability, social and environmental awareness, visitor satisfaction, host-population support, improved economic returns and a more attractive employer for motivated professionals. All this is meant to revitalize the tourism industry so as to future-proof it in a way which ensures that it continues to contribute to Malta's socio-economic development as an advanced European economy.

In 2022 and beyond, Malta plans to rebuild and sustain its tourism industry and we'll aim to deliver the best experiences for visitors to encourage repeat visitation by highlighting key themes, such as gastronomy and diving. Our ultimate goal is to make Malta a hub of tourism excellence in the Mediterranean. The road to achieve this vision is an ambitious one but together we can make it happen.

CALL TO ACTION

Advancing the digital transformation of the Tourism Industry is key to elevate the tourism product, enhance the tourist experience whilst visiting the Maltese Islands, and to help organisations operating within the industry to become more efficient and cost effective. We acknowledge that our existing and prospective customers planning their journey to the Maltese Islands are demanding more access to reliable data, seamless digital services, and further use of technologies that render value for both their time and money. In this context and guided by the National Tourism Strategy 2021-2030, for the first time we are presenting a holistic plan of implementation till 2030 with concrete actions, that set the basis for digital investment across the Tourism Industry.

This document reflects the vision, ambition, and actions that we need to implement to further increase the quality of our Tourism product with a foresight towards the demands of the future.

The plan of actions set through this document do not pertain solely to the Ministry for Tourism and Consumer Protection, the Malta Tourism Authority, or any other single entity alone. We view this document and its implementation within the framework of co-ownership set through strong, cross collaboration that we need to establish, develop, or further build with all our local, European, and international stakeholders from the public, private, and non-profit organisations. Furthermore, we are approaching the implementation of this document with a level of flexibility knowing that we may need to adjust or adapt in response to the fast-changing dynamics of the business environment, technologies, and demands of our customers. This document lays the foundations for investment and work on the digital transformation of the Tourism industry towards 2030.

We invite you to step forward and join us throughout this exciting journey to shape the digital future of the Tourism Industry across the Maltese Islands and beyond.

Mr. Ronald Mizzi
PERMANENT SECRETARY
Ministry for Tourism and Consumer Protection

Dr. Gavin Gulia
CHAIRMAN
Malta Tourism Authority

Mr. Euchar Sultana
CHIEF INFORMATION OFFICER
Ministry for Tourism and Consumer Protection

Mr. Johann Buttigieg
CHIEF EXECUTIVE OFFICER
Malta Tourism Authority

BACKGROUND & GOALS

In December 2021 the Ministry for Tourism and Consumer Protection together with the Malta Tourism Authority launched the Malta Tourism Strategy 2021-2030. This policy document sets out three strategic priorities for implementation in an overlapping manner:

- The need to **RECOVER** from the effects of the pandemic and consider the changed logistics and demands of travel, the threats to viability of tourism suppliers and the changes in people's attitude to travel

- The need to **RETHINK** the role, scale, and nature of tourism in Malta; understand the behavioural changes in travel patterns following the Covid19 pandemic; and consequently, adapt to the new demands and place the traveller at the centre of their travel experience

- The need to **REVITALISE** Maltese tourism; elevate it to a higher socio-economic level based on stronger environmental, ethical and economic principles; and ultimately make it more responsive to innovative change, global threats and competition

Digitalisation[1] has a vital role to play in addressing these socio-economic phenomena and it is a critical tool to enable the recovery, rethinking, and revitalisation needed to strengthen Malta's positioning as a Tourist destination. In doing so, one must recognise that:

- The pandemic has forced many offline businesses to change many of their processes and business models to online mode. This has triggered an unprecedented process of learning, experimentation and innovation, a phenomenon that has increased competition among destinations, as well as among tourism and hospitality operators themselves.

- Travellers are many and diverse, increasingly tech-savvy, with each cohort having diverse expectations from both the destination they travel to, and the digital dimension that revolves around that experience; such a factor of complexity is leading to a higher demand for personalised, transformative, and immersive travel experiences with the potential to meet and exceed the expectations of the traveller and encourage them into becoming positive "contributors" for their peers upon their return home.

[1] *Refer to the Glossary for a definition of digitalisation.*

In fulfilment of the Malta Tourism Strategy's (MTS) mandate, more specifically Strategy 18, it is established that the Ministry for Tourism and Consumer Protection together with the Malta Tourism Authority, will need to work together alongside other key stakeholders to;

"Strategically develop a Digitalisation roadmap, incorporating various sectors contributing to the local Tourism product, by empowering all Public, Private and Non-Profit organisations with a stake in the industry, to invest and ensure that efficiency and market presence are maximised through the use of the latest available technologies".

The aim of the Digital Strategic Roadmap will set the course for meeting the goals of one of the 13 Strategic Challenges of the Malta Tourism Strategy 2021-2030: specifically, the one titled *"Fostering cross collaboration across various digital tourism initiatives through the consolidation and better use of data"* (page 42). The goals are:

- Consolidate and use quality data to improve access to digital information and valuable knowledge that will advance the local product
- Invest in new Technologies to enhance the Tourist experience through the offer of more customer centric services
- Nurture digital cross collaboration initiatives across the Public, Private and Non-Profit organisations to strengthen the Tourism Sector and provide a holistic experience to visitors
- Facilitate the smart use of emerging technologies such as Artificial Intelligence, Super Computing, 5G Network and Augmented / Virtual Realities amongst others, to increase the value of digital tourism products
- Incentivise innovation to attain a competitive advantage over slower reacting competing destinations
- Facilitate the industry to invest in upskilling its staff to address today's demands and technologies

Furthermore, the roadmap will also contribute and complement other Tourism strategies in addressing the following other Strategic Challenges in the National Tourism Strategy:

- Integrating quality at all levels of the value chain
- Increasing per capita spend
- Reviving sector profitability
- Managing demand as a result of accommodation sector expansion
- Enhancing the Visitor Experience

To achieve these goals, the Digital Strategic Roadmap looks towards setting the right environment to enable investment and strengthen among all stakeholders a mindset of:

COLLABORATION

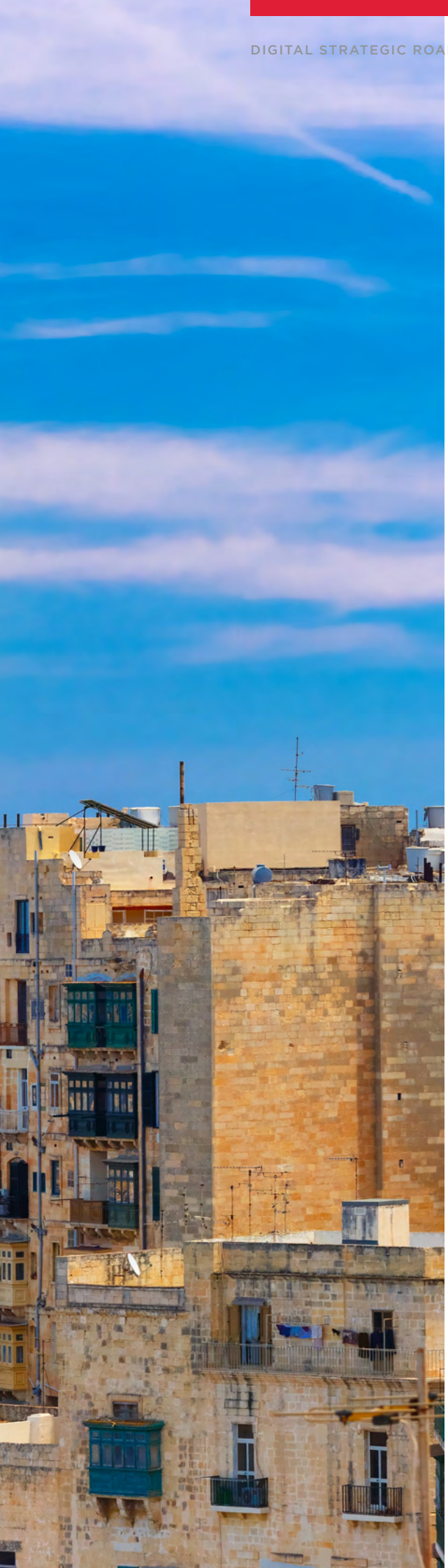
towards enhancing the overall tourism product – all stakeholders must, in their interest, work together to contribute to the implementation of the digital roadmap for collective benefits

A SENSE OF URGENCY

in enabling those actions agreed to, including the plans for their effective and efficient execution

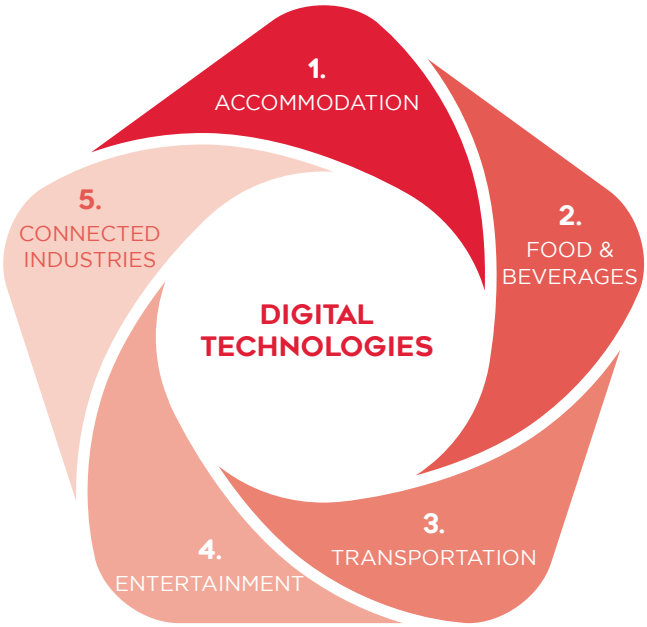
READINESS TO CHANGE DIRECTION RAPIDLY

as market trends and environmental conditions exert their impacts – in other words, flexibility is of utmost cruciality to maintain Malta's competitive advantage and to seize the opportunities as they mature



ANALYSIS OF THE DIGITAL PERSPECTIVE

The stakeholders contributing to the Tourism Industry are the key players with the capability and capacity to face the digitalisation challenges and opportunities aimed at positioning Malta as a prime Tourist destination. For the purpose of this roadmap the stakeholders have been categorised as follows:



- HOTELS
- SHARED ACCOMMODATION
- HOSTELS
- CAMPING
- TIME-SHARE ACCOMMODATION
- BED & BREAKFAST
- CRUISES
- FARMHOUSE ACCOMMODATION AND AGRI-TOURISM
- HOST FAMILIES

- RESTAURANTS
- CATERING
- BARS & CAFES
- NIGHTCLUBS

- AIRLINE INDUSTRY
- CAR RENTAL
- WATER TRANSPORT
- COACH SERVICES
- TOURIST TRAINS
- SMALL ELECTRIC CARS
- ELECTRIC SCOOTERS
- ELECTRIC SEGWAYS

- CASINO
- TOURIST INFORMATION
- SHOPPING
- TOURISTS GUIDES & TOURS

- FINANCIAL SERVICES
- TRAVEL AGENTS
- TOUR OPERATORS
- ONLINE TRAVEL AGENCIES
- TOURISM ORGANISATION
- EDUCATIONAL

Figure 1: The Sectors within Tourism

A SWOT analysis of the digital perspective in tourism provides a high-level overview of the factors that may influence the implementation of the Digital Strategic Roadmap 2030. Conducting the SWOT also helped in the formulation of matching actions proposed in this roadmap, to either address Weaknesses or Threats, or exploit Strengths and Opportunities.

STRENGTHS

- Malta's AI strategy
- High ICT literacy
- Policy of openness to tech businesses
- Digitilisation of businesses above EU average
- Good quality of ICT specialists
- Excellent bandwidth connectivity
- Number of ICT specialists employed by tourism organisation higher than EU average
- Higher use of AI among Maltese tourism organisations
- Higher use of chatbots by Tourism organisations

WEAKNESSES

- Insufficient supply of ICT specialists
- SMEs lack capacity (time, skill, trained staff, knowledge)
- SMEs in tourism lack finance to improve digitalisation
- Old business models and pardigms, e.g. admission tickets, transport tickets, etc.
- Lack of awareness of customer experience
- Slow and fragmented decision making
- Passive approaches in digital upskilling training
- Malta performs poorly in open data

OPPORTUNITIES

- EU legislation pushing for open data and PSI re-use
- Medical tourism
- Digital nomads
- Transformative tourism (volunteering, gourmet, wellness)
- Sustainable tourism (green)
- Bleisure travel (business & leisure)
- Experience tourism (connecting with culture and nature)
- AI and DLT regulation for TravelTech
- Covid pushing many offline processes online
- Under-resourced accommodation & catering need automation
- Travel tech industry events and higher investment in start-ups
- Emerging technology - opportunity for personalisation
- AI to gain better insights on customer behaviour (e-marketing)

THREATS

- Covid Pandemic
- Lack of cutting edge training in tertiary education and professional training
- Fragmentation of tourism sector
- Retention of ICT specialists is difficult
- Fear of technology induced change innovation
- Infrastructure: low bandwidth in certain rural areas

Figure 2: SWOT Analysis on tourism digitalisation potential in Malta

The data analysed as part of the research comprised various reports, surveys, academic papers and articles (refer to Annex 2), as well as NSO and Eurostat statistics about specific NACE code subcategories of relevance to tourism.

The data analysed for the tourism operators is far from complete in its granularity, mainly due to constraints in the availability of data for certain tourism subsectors such as, for example, English language schools, tourist guides and tour operators. Nevertheless, it gave a good indication of the status of digital readiness of tourism operators for the digitalisation challenges, above and beyond sector-wide studies. Specifically, it sought to answer questions about ICT specialists employed, ICT functions performed in-house, and emerging technologies used by the tourism subcategories analysed, namely accommodation and transportation.

To gain insights about the level of preparedness of the local ICT industry to service tourism operators, much of the analysis was based on a recent ICT Skills Demand and Supply Monitor 2021 carried out by the e-Skills Foundation.

Ultimately, the analysis was intended to focus on two aspects:

- The demand side, i.e. the preparedness of tourism operators to digitalise and perhaps even harness cutting edge technologies to stay competitive and continue meeting an increasing demand for personalisation and quality by travellers

- The supply side, i.e. the preparedness of the ICT industry to meet the demands of tourism operators in enabling this digital revolution

A general outlook of Malta's state of digitalisation

By and large, Malta enjoys a comfortable position in Digital Economy & Social Index (DESI) 2021. It is placed 6th among 27 EU Member States and performs above the EU average in all the five dimensions of the index: Connectivity, Human Capital, Use of Internet Services, Integration of Digital Technology and Digital Public Services. It boasts excellent broadband connectivity – which of course bodes very well for the innovations proposed in this roadmap – and achieves a good score on human capital derived from the high share of ICT specialists graduating from university and vocational college. Though more needs to be done to close the gender gap in the digital sector and meet the increasing demand for ICT specialists. Internet use has been consistently on the increase and in line with the EU average.

Malta scores very high on the sale side of e-commerce. Its businesses rank first on the use of big data, and the overall level of business digitisation is relatively high. The country also has an excellent supply of digital public services.

The country's progress on open data policies is far behind with respect to other EU Member States, a factor which, if not properly and urgently addressed, may constitute a showstopper for the commercial re-use of public data, including and especially in the tourism sector, which until 2019 (the year prior to the pandemic) contributed nearly 30% of value add to national GDP.[2]

In the last two decades Malta has emphasised the role of digital policies as key to shaping its competitiveness, which it has done well and consistently. In 2019 it launched: (i) a national strategy on Artificial Intelligence (AI); (ii) a comprehensive 'National eSkills Strategy'; and in 2021 (iii) 'Achieving a Service of Excellence', a 5-year strategy for attaining high quality, accountability and sustainability of the public administration, in which digital transformation and digital readiness are key tenets. More recently, a National Data Portal was launched which, once fully populated, will enable access to and re-use of government data in a number of fields.

From a demand side perspective, working citizens, especially knowledge workers, can largely be considered digitally literate, and therefore capable of taking on new tech challenges.

From the supply side, the ICT industry does its job to meet the demands by all industries by:

Contributing nearly **8%** value add to national GDP[3]

Employing more than **3.5%** of the country's workforce

Though mismatches continue to exist between demand and supply of ICT skills – a phenomenon that is reflected across all of the EU and likely to persist for years.

Different insights emerge when the above state of preparedness is looked at through the lens of the tourism industry with respect to the challenges it faces to digitally transform. Transforming the tourism industry to meet the new demands of today's travellers and the dictates of competition, needs more than just access to technology and competences. It requires a workforce that

[2] *European Commission (2021).*
[3] *Eurostat (2021).*

is skilled enough to harness and adopt technology intelligently and creatively on both the demand and supply side of the tourism industry.

Figure 3 below, based on an Aalborg University study on digitalisation in tourism by Dredge et al (2018) perhaps best signifies the journey from weak digitalisation to strong digitalisation. Malta is at a point which is closer to strong digitalisation than weak.

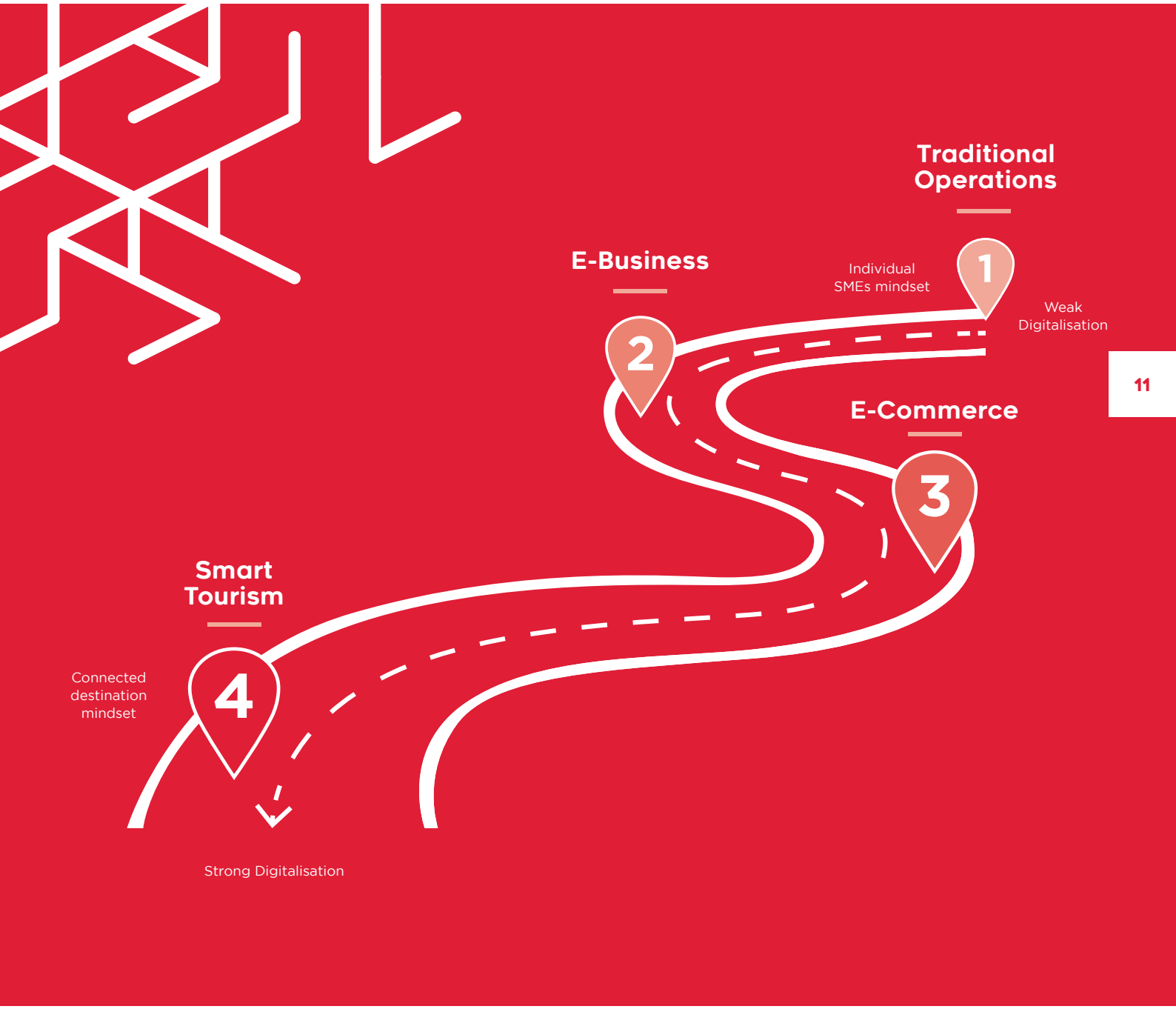


Figure 3: SME Journey Towards Digitalisation

However, the leap to make it towards adopting a "connected destination mindset" needed to achieve Smart Tourism, requires targeted actions and investments, a number of which are actually proposed for consultation with the stakeholders in this document.

The demand side: preparedness of tourism operators to digitalise

Of prime interest to the tourism stakeholders, the ICT Skills Demand and Supply Monitor 2021 reveals that there is a clear shift in travel booking patterns toward mobile and tablet booking devices. The strong growth of the mobile platform and responsive web design are expected to play an important role in the business strategies of travel and tourism businesses throughout the region.

Secondly, the study mentions that enterprises must be more creative and adopt flexible job roles to maximise skill utilisation. In this respect cross-functional training is likely to generate far greater benefits and therefore complements the traditional training needed to upskill and reskill employees.

The following statistics perhaps provide a snapshot of the degree of readiness of some operators with respect to take-up of digital, as well as some emerging technologies. These emerged after analysing Eurostat data about accommodation and food service activities (NACE codes 55-56) taxi operations (NACE codes 49.3.2) and inland water transport (NACE codes 50.3 and 50.3.0):

20% of transportation enterprises in Malta employ ICT specialists and/or have ICT functions in-house; eight points higher than the EU average of 12%; but significantly lower than Cyprus at 39% which is potentially a competing destination

32% of accommodation enterprises employing 10 or more persons, employ ICT specialists and/or have ICT functions in-house; a good 20 points higher than the EU average of 12%

12% of accommodation enterprises use big data internally using machine learning compared to an EU average of 4%

7% of transportation enterprises use chatbots or virtual agents to reply to customers, compared to the EU average of 4%

20% of Maltese accommodation enterprises reported they use AI systems compared to 15% across the EU which is promising[4]

[4] *Eurostat (2021).*

A deeper analysis of the adoption of digital technology by other subsectors of the tourism industry would be needed. However, these findings suggest that large hotel groups, and in very recent years, new tech savvy transportation organisations, are able to draw on financial and technical resources to live up to the challenges of deploying technology creatively within their business. This aspect is corroborated by other reports, such as the one already mentioned by Aalborg University.

By contrast, anecdotal information about micro enterprises[5] – incidentally 95% of Malta's SME fabric – also reflected in the same Aalborg University study seems to suggest a level of preparedness which requires far more targeted support and financial assistance.

The supply side: preparedness of the ICT industry

Despite its strong education system, Malta like other European countries, faces a number of challenges in taking to the market a sufficient number of ICT professional that can meet industry demands.

The eSkills Foundation provides a detailed account of the state of readiness and competence levels of the ICT industry with respect to market demands. Aptly, it provides several recommendations to address this shortfall. This roadmap takes the cue from some of these recommendations by formulating actions that are complementary in nature. Some examples include the need for international exposure, talent visas and the need to contextualise training in a work environment.

[5] *Micro enterprises are undertakings with a headcount of under ten.*

The monitor largely confirms the perceived rise in interest by ICT companies in Machine Learning and AI – technologies underlying many of the recommended actions in this roadmap. However, it also states that adoption of these technologies is constrained by the knowledge and skills of the staff complement of these companies – a factor that could severely hinder any businesses operating in Malta from gaining a competitive advantage.

To address this gap the eSkills Foundation report recommends, for example, that a wider offering of training and certifications on Machine Learning and Artificial Intelligence should be made available to support their adoption.

Furthermore, despite that current ICT companies forecast the adoption of Artificial Intelligence, Machine Learning, Blockchain, Big Data and the Internet of Things within the next three years, the likelihood of their integration within their service portfolio is low mainly because of a lack of specialised personnel, competent enough to onboard these technologies.

The study, moreover, highlights that the availability of Big Data and Analytics training is an essential requirement for a wider deployment of Artificial Intelligence, since data-driven models are crucial to enable the exploitation of this emerging technology to solve real word problems and create new business models[6].

Indeed, some of the actions proposed in this roadmap are intended to enable and support the ICT industry in addressing this apparent shortfall in talent and competence in these technologies.

[6] *eSkills Malta Foundation (2021).*

Challenges and opportunities of digitalisation in tourism

A 2017 European Commission study about the level of digitalisation of SMEs within the tourism sector, covering 158 public administrations and private associations across Europe, revealed the following key insights:

- **71%** of respondents believed training was key for the adoption of new digital technologies
- **62%** of the operators felt they lacked insufficient technical knowledge to make informed choices
- **Obstacles** preventing operators from improving digitalisation included lack of finance (69%), high training costs (67.5%) and assumptions that current technology is sufficient (66%)[7]

The report about the challenges and opportunities of digitalisation in tourism carried out by Aalborg University, Denmark, later analysed the findings from the above-mentioned study, and concluded that digitalisation and e-business practices can:

- Diversify and customise products
- Open marketing channels
- Leverage feedback mechanisms to increase market presence
- Increase operational efficiencies
- Open up the innovation capacity of SMEs
- Reduce the cost of transactions and enable SMEs to extend into the global marketplace
- Increase the demand for higher connectivity
- Stimulate new business models
- Develop new products

To address the above the same report recommends exploiting the following opportunities:

- Initiatives to support with planning and decision making on new technologies
- Establish tourism networks and business ecosystem capacity to enable operators to choose and implement technologies
- Incentivise network capacity building and mentoring programmes to increase connectivity between tourism, tech companies and extend ecosystems into other sectors (e.g. the arts and cultural sector)
- Develop collaborative network relations between tourism organisations and public entities, but also involving tech companies through consortia or special mentoring programmes
- Policies should be designed to target network capacity building in and alongside technological advances (indeed some actions have been included to enable the re-use of data, enhance analysis capacities and harness emerging technologies)

Change the paradigm of training, from "passive" education approaches to hands-on, learning-by-doing, interactive sessions that discuss the different stages of digitalisation, technologies that can be leveraged, prototyping, learning launches and so on[8].

In this context, this document presents over 40 recommended actions which in various ways address the above challenges and opportunities, organised according to six main thematic areas over three inter-related levels as illustrated in Figure 4.

[7] *European Commission (2017).*
[8] *Dredge et al (2018).*

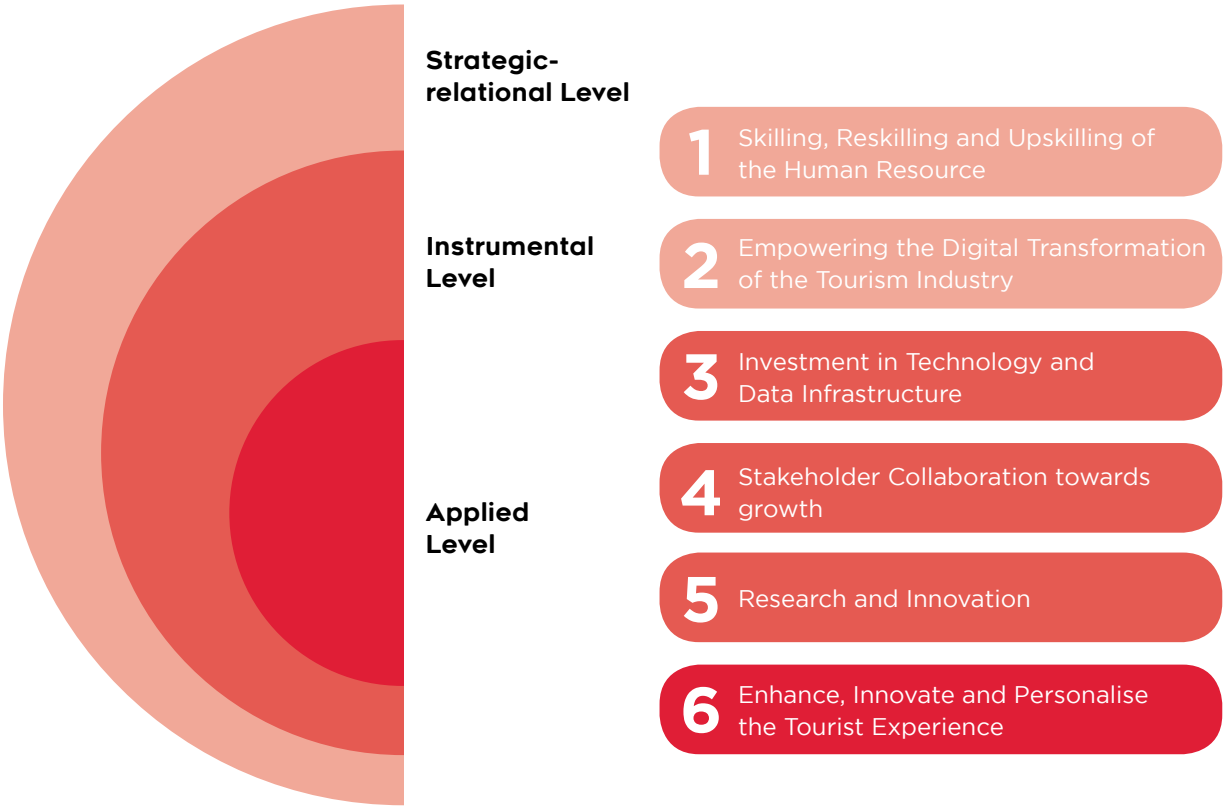


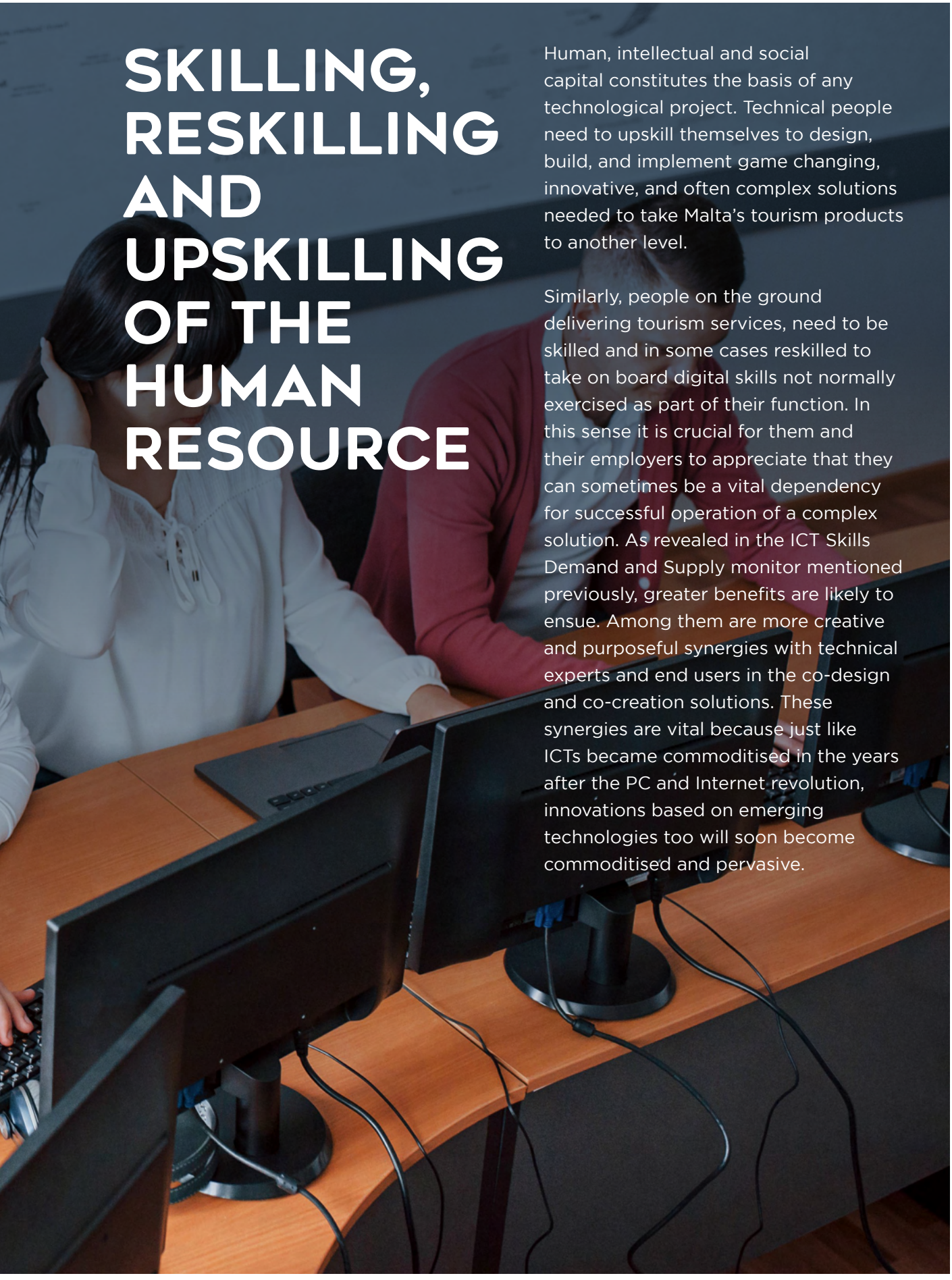
Figure 4: The six thematic areas for this Roadmap[9]

[9] *Baidal et al (2017).*

- The **strategic-relational level**, the foundation of which is governance, comprising public-private cooperation to guarantee the sustainability of the destination, and a focus on re-equipping the human resource base to undertake the transformation of the industry.

- The **instrumental level**, based on the need to lay down an enabling technology and data infrastructure, ensure stakeholder collaborations and establish a research and innovation function; this is the level that favours sufficient openness and transformative changes.

- The **applied level**, which enables the development of smart, adaptive and personalised solutions that exploit the Recover-Rethink-Revitalise priorities of the main strategy; in other words, developing the concept of CX – or Customer Experience – in our tourism products to leave a lasting perception of quality (Recover), developing products that personalise the Malta experience (Rethink), and rolling out innovations that represent a mindset shift in the way tourism products are conceived (Revitalise).



SKILLING, RESKILLING AND UPSKILLING OF THE HUMAN RESOURCE

Human, intellectual and social capital constitutes the basis of any technological project. Technical people need to upskill themselves to design, build, and implement game changing, innovative, and often complex solutions needed to take Malta's tourism products to another level.

Similarly, people on the ground delivering tourism services, need to be skilled and in some cases reskilled to take on board digital skills not normally exercised as part of their function. In this sense it is crucial for them and their employers to appreciate that they can sometimes be a vital dependency for successful operation of a complex solution. As revealed in the ICT Skills Demand and Supply monitor mentioned previously, greater benefits are likely to ensue. Among them are more creative and purposeful synergies with technical experts and end users in the co-design and co-creation solutions. These synergies are vital because just like ICTs became commoditised in the years after the PC and Internet revolution, innovations based on emerging technologies too will soon become commoditised and pervasive.

The role of technology, web marketing and real time data, in particular, has never been felt so urgently before, as in the tourism industry. Travellers can now gain instant access to so much information on the latest offer, best places to visit, and best prices. Through AI-driven web marketing, context-awareness can be taken to higher levels of sophistications such as alerting travellers about the need for advance pre-ordering to access heritage sites, museums, and other places of interest that are subject to ad hoc space or logistical limitations. Examples are the Hal-Saflieni Hypogeum, the Tarxien Temples, or the Catacombs in Rabat.

It is therefore crucial that actors such as the Institute for Tourism Studies, Institute for Tourism, Travel and Culture within the University of Malta, MCAST, the E-Skills Foundation Malta, the Industry stakeholders themselves, and other academic and vocational training institutions synergise together to produce employee training programmes designed to skill, reskill and upskill the human resource base servicing tourism with digital readiness as the ultimate aim. Heritage and cultural agencies such as Heritage Malta, the Arts Council Malta, and the Cultural Directorate, amongst others, have an important role to play as strategic pioneers of digitalisation.

Key actions recommended to skill, upskill and reskill the human resource base are:

1. Create new or build on existing financial incentives for SMEs servicing the tourism industry to participate in courses such as web design and use of online marketing platforms, vector graphics editors, data science, artificial intelligence, web marketing and other skills; provide paid internships and apprentice opportunities; as well as other "hands-on" cross-functional courses that train personnel to co-create and co-design digital solutions.

2. Design and provide specialised training courses combining student internships in the development of innovative tech solutions that harness cutting edge technologies such as artificial intelligence, augmented reality, virtual reality, big data and Internet of Things, amongst others.

3. Incentivise the design and roll out of "hands-on" courses and practical traineeships in replacement of the classic "passive" ones for improved take-up and operation of technology-based services. These should cover three or more lines of competence: business, marketing and technical, using phased approaches covering for example, market research, idea and problem validation, co-creation, prototyping, data analytics, cybersecurity and many others. Where necessary engage with academic, vocational colleges and training institutions to consider the redesign of vocational tourism and hospitality courses to ensure they embed the notion of "digital by default".

4. Exploit existent premium and free online platforms to support broader upskilling of competences likely to make a difference in improving organisational readiness and receptiveness to innovation. These could cover, for example, website design, software development, e-marketing and social media, innovative or co-creative design approaches to product development such as design thinking or human centred design, digital transformation, business process re-engineering and others. Entities such as Heritage Malta have already embarked on this mindset shift.

5. Provide financial assistance to SMEs and their staff that service the tourism industry to participate in real-life or virtual delegations that offer opportunities for witnessing and experiencing digital transformation projects in other destinations.

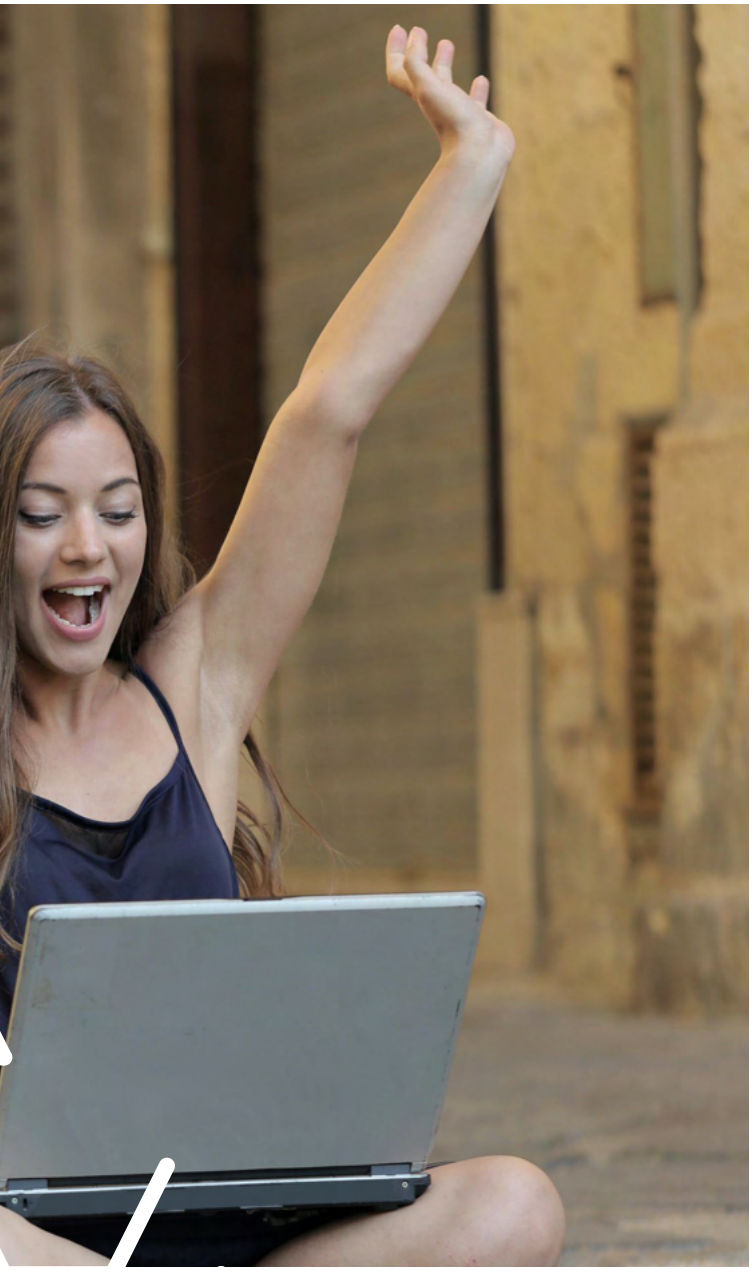
EMPOWERING THE DIGITAL TRANSFORMATION OF THE TOURISM INDUSTRY

The tourism sector is no stranger to disruption. It has always been an early adopter of new technologies particularly online airline and hotel bookings amongst others. As digital and emerging technologies have become more pervasive and disruptive, the competition among industry players has become more aggressive. More so now in a post-pandemic scenario as offline processes shift rapidly to online. New Travel Tech products are emerging to create erstwhile unheard-of business models that will challenge countries that do not embrace the change fast enough. This digital transformation must be facilitated by enabling and empowering the industry stakeholders to invest in projects in a climate of collaboration.

Government's role is to facilitate this digital transformation through incentives, supporting policies and seamless collaboration. Hence, the following are the actions recommended to empower industry stakeholders to invest in digital transformation:

6. Design and develop financial incentives such as tax credits, soft loans and grants, where possible maximising the use of EU funding, that stimulate the take-up of digital tech consultancy and mentoring, and the deployment of innovative smart technology-based solutions.

7. Equip existing or create new service desks to assist with the coordination of targeted mentoring and consulting services to SMEs operating in the tourism sector.



These services should provide information and guidance on how to better exploit the various financial incentives available or seek support on how to improve quality of service and meet sustainable development goals.

8. Carry out a sectoral review or audit to measure digital readiness and identify opportunities for digital transformation. This would also aim at stimulating tourism operators from the transport, accommodation, food and beverage sectors to offer better quality, more secure and more personalised services, particularly when adopting complex technology integrations and frameworks involving AI, IOT, AR, VR or other technologies.

9. Design or recommend data and digital infrastructure policies of particular interest to the tourism industry. Among them best practices on use of 5G , and the identification and publication on the government Open Data Portal of open data sets and their interfaces deemed vital for the development of new business opportunities and innovative tourism products.

10. Host and organise Travel Tech conferences focused on showcasing pioneering technologies applied to hospitality, travel and tourism to spark ideas, attract top professionals, global companies and startups, and synergise collaborations. They will be organised as seamless digital events and may be combined with other innovation connected events such as startup pitches, accelerator programmes and hackathons.

INVESTMENT IN TECHNOLOGY AND DATA INFRASTRUCTURE

Many of the innovations contemplated by this roadmap are unlikely to take place without a data and technology infrastructure that is sufficiently open, robust and flexible. A number of foundation actions have been identified to create an infrastructure that will enable tourism products to be deployed seamlessly.

11. Publish machine-readable open datasets and APIs with re-use potential in the tourism industry. Such data, generated over the years, carry a high value for the development of products and services that provide information to both visitors and operators in real time. Datasets, including records of interest to the tourism industry, and ultimately the national economy, maintained by public administration or by organisations under a Public Service Obligation, include heritage sites, museums, beaches, parks, trekking paths, roads and many other places of interest. Heritage Malta is already active on this front and has implemented various APIs across the industry.

12. Launch and fund initiatives that raise awareness about the commercial worth of geospatial and satellite data, particularly if combined with emerging technologies such as AI, AR and VR; provide hands-on training on the transformation of raw satellite data into information provided to products, and fund at least one pilot project of value to the tourism product.

13. Use, on an ongoing basis, qualitative feedback and metrics from inbound tourists and customer personas already identified, to build a Tourism Related Knowledge Base of socio and psycho-demographics covering, for example, preferences, itineraries, expectations, culture, lifestyle, interests, behaviour, values, etc. Such non personalised data are a vital component for utilisation by third party solution providers that wish to offer personalised services through apps, chatbots, airport digital channels, museums and booking systems, that take into account context, time, location or proximity, in combination with AI, big data and other technologies. The Knowledge Database can be combined with other data to study, select and adapt over time pre-set traveller paths and itineraries to match with various customer personas through the use of emerging technologies such as AI.

14. Make better use of Wi-Fi and 5G technologies in locations where user and device density is high, particularly where bandwidth intensive applications are planned to be deployed. These could be heritage sites, monuments or other crowded areas, especially those planned to feature immersive experiences using augmented or virtual reality, or other personalised services that rely on massive data downloads.

15. Create incentives and support to Tourism industry operators to take up innovative forms of payment such as contactless payments and embedded banking in an integrated manner across supporting industries such as heritage, culture, entertainment, and transport, amongst others.

16. Encourage Airlines to enable secure, high-speed in-flight connectivity to passengers travelling from and to Malta.

17. Tourism is the main driver of digital transformation of heritage sites and other places of interest such as nature parks, beaches and historical landmarks. Government entities responsible for managing these sites will be encouraged to continue advancing this transformation by deploying sensors, QR codes and GIS technologies for better management, protection, and preservation of these sites, as well as better dissemination of knowledge to tourists.

18. Public and private stakeholders shall collaborate to exploit multi-modal means of transport through integrated ticketing and payment. Big data, mobile apps and the IoT now provide the means to integrate all aspects of tourism travel into a single, user-friendly service called Mobility-as-a-Service. This should cover itinerary planning, booking, ticketing, contactless payment and getting updates covering multi-modal transport combining bus, vehicle rental, lift and ferry services.

STAKEHOLDER COLLABORATION TOWARDS GROWTH

The tourism sector was always characterised by a healthy collaboration among its operators. However, the technical challenges now facing the industry – notably the need to ramp up the pace of digitalisation and innovation – require a new underlying layer of collaboration among stakeholders: the need to focus and co-ordinate efforts on technology implementation.

Furthermore, the nature of the tourism industry is such that neither a government entity, nor a private tourism operator – no matter how large – can develop a successful tourism destination on their own. All stakeholders must work together to further enable collaboration towards developing a more enhanced tourist experience. It should be the means through which stakeholders can enable one another to access and make the best of the necessary technology and data resources needed to achieve their objectives.

The following six actions are a recommended foundation to build on for enabling and promoting stakeholder collaboration.

19. Set up a Roadmap Governance Framework to monitor and publish progress of the various actions in this roadmap and in this way uphold the notion that the Digital Strategic Roadmap is co-owned by all stakeholders who understand the implications of each action and especially the responsibility of cross-dependencies.

20. Set up a Tourism Tech Working Forum to provide advisory support for tourism digital policy making; promote the concept of an enabling infrastructure in all stakeholders' interest; and facilitate the seamless rollout of innovative technologies. It will enable this by sharing knowledge, coordinating initiatives - e.g. by supporting the set up of an Events Bureau - and supporting cross-organisational collaborations, including between tourism industry stakeholders, tertiary education institutions and tech solution providers. Crucially, the forum must also serve as an enabler to advance the implementation of the various technology and data infrastructure projects needed to enable the transformative changes and innovations.

21. Develop new technology-enabled niche markets such as Travel Tech startups, digital nomads, bleisure travel, transformative travel, sustainable tourism, health tourism, faith tourism, and wellness travel. Gozo is being singled out as an ideal location to pilot and eventually specialise in a number of such niches, digital nomads and sustainable tourism are prime candidates.

22. Apply the concept of mystery shoppers and established market research metrics to measure the quality of service which, in line with this roadmap, will become increasingly digitalised. Criteria assessed must also cover user-experience and environmental sustainability of those services that have technology at their core.

23. Map Tourist Experiences to understand how any prospective traveller would use Malta branded websites such as Visit Malta, Visit Gozo, Heritage Malta, The Malta Experience, Mediterranean Conference Centre and others. This initiative is needed to ensure that the online customer journey continually reflects the brand, expectations and quality of service advertised.

24. Promote and market Malta as the ideal and natural testbed to validate and test Travel Tech innovations developed by multinational technology companies or startups that service the tourism industry. These would include, for example, accommodation platform providers, take-out food delivery services or payment services, amongst others. Such an initiative builds on Malta's strengths as a microcosm that represents the complexities of a larger economy. It is vital that the promotion aspect must be backed by the right policies covering legal certainty on emerging technologies, the interpretation of capital gains tax and visas for startup founders and talented individuals, amongst others.

RESEARCH AND INNOVATION

Tourism has been a key pillar of economic activity in Malta peaking nearly 30% of GDP just prior to the pandemic. Despite having been identified as an area of smart specialisation in Malta's 2014-2020 Research & Innovation Strategy, the sector never did become R&D intensive. Now, however, new factors have come into play: the pandemic has accelerated the process of digitalisation of offline industries, including tourism; destinations compete more aggressively for a more selective traveller market; while the rate of technological development and innovation continues to rise exponentially. This has brought to the fore the need for focused attention and investment in innovating the country's tourism sector to maintain the country's attractiveness and competitive edge.

Notably, the ICT industry in Malta has the second highest share of value add contributed to national GDP in the EU, while ICT R&D represents half of all intramural expenditures on R&D performed within Maltese business enterprise. In addition to that, Future Digital Technology has been identified as one of the five areas of smart specialisation in Malta's Smart Specialisation Strategy 2021-2027, a pre-requisite for the exploitation of EU funding. These three factors alone indicate that concentrating investment in R&D to strengthen and transform the tourism industry is an opportunity not to be missed.

In this context, it is vital that R&D and ICT thematic areas promoted under different EU Financing Programmes are exploited to the fullest, alongside the use of national funds.

Seven actions are recommended to concentrate resources and investments on exploiting R&I.

25. Create a purpose-built service design living lab[10] focusing on the application of emerging technologies on tourism and hospitality and their linkage to environmental sustainability, heritage, art and culture. The living lab will be a place where routine activities of everyday life in these sectors can be observed, recorded for later analysis and then experimentally adjust by changing some input variables as emerging technologies are applied to specific scenarios such as a hotel setting or a heritage site. For the optimisation of resources and investment the living lab should be envisaged as a joint collaboration involving vocational and academic institutions, private stakeholders from the tourism industry and government institutions. Implementing a living lab would be instrumental in reasserting Malta's potential to become a testbed for Travel Tech innovations as already highlighted in action 24.

26. Establish "Malta travel open datasets" to complement the government Open Data Portal, consolidate one-off projects and initiatives, and give continuity to this vital component for innovation. Many of the innovations proposed in this roadmap are highly dependent on the availability of data and advanced business intelligence tools. And demand for them by online communities for better travel planning, marketing, and new services, are increasing. The MTA will champion this initiative establishing Malta more concretely in the official portal of European data, open.data.eu

27. Organise an annual Travel Tech Hackathon. Hackathons are a catchment area for new ideas and the testing of new concepts. Besides stimulating creativity and problem-solving mindsets, they contribute on many other fronts: they stimulate innovation, create positive communities, hone developer competences, associate corporate branding, lead to new IP and improved company valuations, attract talent, and develop the positive externalities that the Malta destination needs to convey greater value.

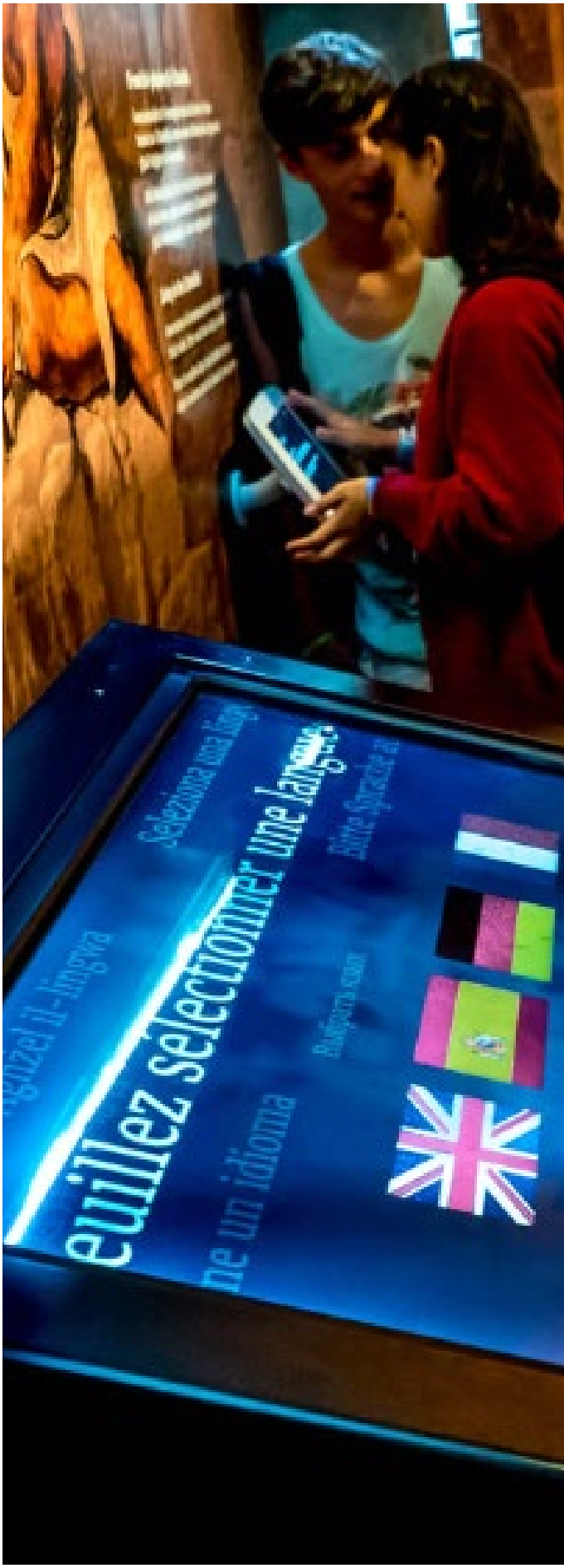
28. Acknowledge and showcase excellence and talent in the application of emerging technologies to innovations through an annual Malta Tourism Tech Prize contest. The innovations selected must be those that directly or indirectly contribute to maintaining the attractiveness and competitive edge of Malta as a tourist destination. The award criteria therefore should not be limited to quality, cost, and innovativeness in delivery of tourism and hospitality services. They should also focus on the vital, but often unconsidered, positive externalities that convey much greater value to the destination. Notably, the supporting infrastructures and services such as art and culture, national heritage, sustainable tourism, sustainable management of the environment, eco-farming and eco-marine farming.

[10] *Refer to the Glossary for a definition of a living lab.*

29. Allocate a specially designed fund dedicated exclusively to tourism operators that wish to test new products and services experimentally developed by SMEs and startups to improve the efficiency, financial sustainability, and competitiveness of their business.

30. Establish and actively support collaborations between educational institutions, public entities, and the private sector to converge student curricula with the need for further R&D and Innovation in the area of tourism services. This is needed particularly in situations which require customised approaches rather than the procurement of off-the-shelf innovations.

31. Perform a yearly barometer study to measure the level of digitalisation and innovation in the sector.



ENHANCE, INNOVATE AND PERSONALISE THE TOURIST EXPERIENCE

As we emerge into another new era, thriving will very much depend on how well the Maltese travel, tourism, and hospitality sector can adapt to the new normal. Though in the immediate post-pandemic scenario much emphasis will be placed on prioritising processes and procedures that guarantee safe travel, a deeper understanding of behavioural traits of guests, their sentiments, and CX will become key differentiators for travellers. In this respect personalisation will become crucial on two fronts:

- Firstly, to offset the changes in travel behaviour brought about by the pandemic. For example, higher expectations with respect to digitalisation, punctuality, mobility, quality of service, value for money and environmental sustainability.

- Secondly, to compete more aggressively with other destinations through quality achieved by further enhancing the Tourist experience, and the speed with which personalised services are rolled out.

Local stakeholders therefore need to actively invest in new technology and channels of communication to ensure that they are able to meet and provide a seamless digital experience for their customers from pre to post visit. The following are the actions being proposed under this thematic area:

32. Assess, enhance, and consolidate existing online products to adapt them to the new normal, and to the impacts it has brought about to travel behaviour and legacy business models. Challenging questions need to be raised about the continued existence of the singularity of certain services, and instead consider consolidated approaches involving multiple stakeholders. The latter will commit to actions and a timeline, using the Roadmap Governance Framework and Tourism Tech Working Fora as reference points to share knowledge about progress, issues and solutions.

33. Pilot Malta's first trend-setting community event that harnesses the digital seamless experience concept covering the majority of the instances e.g. ticketing, congestion and access management, pre-ordering of food and drinks, delivery and other context-based personalisations. Such a pilot event will set the standard for all subsequent community events which may be musical, cultural, or business in nature.

34. Deploy AI-powered digital signage[11] to customise content on the basis of time, location, visitor profile and facial recognition at key catering, commercial, cultural and heritage venues, as well as on key tourist paths. The content can be anything from self-service portals and digital kiosks to tourist information offices and museums.

35. Study and select – on the basis of evolving customer personas – tourist paths and heritage trails as candidates for the creation of immersive experiences through context-based matchmaking criteria such as special interest, time, location, proximity and other attributes. Such paths would be optimised and adapted to match the customer personas by algorithms through Artificial Intelligence.

36. Integrate with, or extend to, third party stakeholders' centralised system that manages ticketing, congestion levels, visitor flow and queueing times in sites conditioned by space limitations such as the Hypogeum, St John's Co-Cathedral, the megalithic temples and the Rabat catacombs. The end objective must be a seamless planning and ticketing experience to the traveller.

37. Further enhance the use of the Tourist Information Offices and Digital Kiosks with multiple methods of interaction such as voice, visual or tactile, to overcome language barriers and help travellers feel more connected during their stay in Malta. The kiosks are an alternative to paper-based leaflets and maps, providing travellers with real-time and context-aware information about tourist attractions, transportation, trips and tours, WiFi hotspots and other services.

38. Deploy contactless hotel check-ins to keep distance and surface contact to a minimum, giving travellers greater flexibility. Other more innovative methods comprise Recognition Technology which uses

[11] *Refer to the Glossary for a definition of digital signage.*

retina scanning and finger-print scanning to unlock hotel rooms, or even facial biometrics to authorise payments or automatically checking out of a hotel without going to reception. These solutions improve the customer experience by eliminating the need to hold onto a key card or use a physical key, both of which could be lost or stolen.

39. Enhance the overall hospitality booking experience through voice recognition on smartphone, or by pointing a smartphone at a hotel or restaurant building and receiving personalised information such as reviews, menus, prices, availability and special services.

40. Deploy and incentivise cutting-edge technology-based services to further enhance guests' experience throughout their hotel stay by:

- pointing their smartphones at AR-compatible wall maps that allow them to experience within the confines of their hotel room a visually immersive experience of the places they need to visit
- controlling in-room devices such as AC, temperature, water and beds
- pre-ordering sessions with massage therapists, hairdressers, as well as in-room services and restaurant meals through voice control
- deploying cleaning robots in common areas such as corridors, restaurants and pool areas

41. Deploy robotised services for the taking of orders, food and drink delivery, automated cleaning via maid bots and the payment of bills in restaurants. The purpose of such an action is not to replace staff but to back-fill vacancies in services where the demand for personnel is high and unmet.

42. Launch a technology driven "cleaning up the islands" campaign that besides actually addressing the problem of litter and illegally dumped material, also beautifies the islands and produces a wowing effect on guests. These should comprise the use of:
(a) drones in combination with satellite data to speed up turn-around times through littering, detection, and clean-up in rural and coastal areas
(b) DLT based tokens to reward citizens for reporting illegal dumping and waste.

43. Further explore the idea of carbon offsetting tourist destination enabled through digital technologies.

CONCLUSION

Many of the actions recommended in this Digital Strategic Roadmap may be perceived as futuristic. However, technologists, policy-makers, and tourism operators with a good grasp of today's traveller behavioural trends and demands, and the transformative power of technology, will appreciate its sense of urgency. They will therefore also appreciate the need for a vision that is holistic, ambitious, and especially owned and understood by all stakeholders in equal measure.

It is particularly crucial because in the aftermath of the pandemic, many businesses and governments have become bolder in harnessing or experimenting with new technologies. To a point where the race to return to the new normal has acquired an uncanny climate of competitive vigour. At this juncture, tourism destinations that are faster and more adventurous in transforming and reinventing themselves are bound to be more successful in winning this race.

This version of the roadmap already incorporates feedback received from various key stakeholders consulted in time for early implementation in 2022. However, as already hinted in the first introductory section, in consideration of the uncertain and disruptive times being faced, this roadmap factors in the need to constantly review all actions and, if necessary, change direction and recalibrate. For this reason, yearly reviews of the Digital Strategic Roadmap, or of any of its ensuing Action Plans, are being planned.

Anyone wishing to submit further feedback and suggestions is welcome to do so by sending an email to: **digitaltourism@gov.mt**

ANNEX1 - Glossary

This section provides a brief overview of the main technology and industry-specific terms used in this Roadmap.

Technology terms

Artificial Intelligence (AI) - AI refers to programmed algorithms that automatically parse and apply knowledge. From security to sales applications within businesses of all sizes, AI is the largest force in emerging technology today.

Augmented Reality/Virtual Reality (AR/VR) - AR/VR, also known as mixed reality technologies, are transforming the way we engage with machines, data and each other. Organisations are using mixed reality, AI and sensor technologies to enhance execution flexibility, operational efficiency and individual productivity.

Biometrics - Biometrics will play an important role in improving security by allowing people and devices to authenticate and move seamlessly through our high-tech world.

Blockchain – Blockchain, or Digital Ledger Technology (DLT), is solving the growing need to secure and manage transactions across the internet, as it provides a flexible alternative to centrally managed record keeping. DLTs have proven valuable in managing data and supply chain challenges.

Digitalisation - the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business[12].

Digital signage is a type of electronic signage. Digital displays use technologies such as LCD, LED, projection and e-paper to display digital images, video, web pages, weather data, restaurant menus, or text. They can be found in many public spaces such as transportation systems, museums, stadiums, shops, hotels, restaurants and so on to inform, provide wayfinding or advertise. They are generally centrally managed and can provide customised text, animations or video messages[13].

Digital technologies comprise all "known" electronic devices, methods, systems and resources deployed that generate, store or process data for practical ends. Examples include enterprise systems, multimedia and smartphones and the communication infrastructure and systems supporting them.

Emerging technology represents all those devices, methods, systems and so on that are still undergoing development and are expected to become available within the next five to ten years. Emerging technologies are typically disruptive as they can change known business models, create opportunities for new ones, and especially solve particularly challenging

[12] *https://www.gartner.com/en/information-technology/glossary/digitalization*
[13] *https://g-digital.si/wp/pdf_files/Digital_Signage.pdf*

problems in many fields. Examples are Artificial Intelligence (AI), improvements likely to be brought about by 5G, the Internet of Things (IoT), Serverless Computing, Biometrics, Augmented Reality/Virtual Reality (AR/VR), Blockchain, Robotics, Natural Language Processing and Quantum Computing[14].

Internet of Things (IoT) - IoT brings together information from a series of connected devices that allow for the creation of analytics of systems. These platforms, devices and datasets have the potential to provide insights, efficiencies and new business opportunities.

Natural Language Processing - Natural language processing (NLP) is a field of AI that enables computers to analyze and understand human language. Speech-to-text converts human language to a programming language, and text-to-speech converts a computer operation to audible response.

Quantum Computing - Quantum computing is the engine that will drive our ability to process and analyze big data and will be the key to leveraging machine learning and the power of AI.

Robotics - Robotics are shifting from industrial use to service delivery and have the potential to create change impacting our homes and businesses physically and virtually.

Serverless Computing - Serverless computing, or function as a service (FaaS), enables organizations to build applications that scale in real time, responding to demand that may change instantaneously by orders of magnitude. FaaS offers a consumption-based platform, allowing developers to quickly and cost effectively deploy applications.

5G - 5G's improvements - low latency, intelligent power consumption, high device density and network slicing—make it a breakthrough and an opportunity for the channel. 5G will make augmented reality, smart cities and connected cars truly possible.

Industry-specific terms

Transformative tourism is a type of tourism where tourists participate in travel that offers a high level of immersion with the host culture through backpacking, volunteer, educational/study abroad, ecological/nature based and cultural/creative programs. Their key foundation is the engagement in activities designed for personal and spiritual development – through particular forms of primarily spiritual/religious travel; wellness/health tourism; and/or immersion in nature through rural tourism and extreme sports[15].

Immersive travel is generally about experiencing a destination through being there like a local. It is typically about discovering a destination by engaging in various activities such as eating, visiting places, learning about local craft, etc. It is another form of transformative tourism. Technologies such as AR/VR actually allow travellers to immerse themselves in the experience of the destination, and therefore get a foretaste of it prior to going there. Bleisure travel, is a portmanteau work composed of the words "business" and "leisure", i.e. a combination of business travel and leisure travel into one trip.

[14] *https://connect.comptia.org/content/infographic/2020-emerging-technology-top-10-list*
[15] *Tomlejenovic (2015).*

Other terms

Customer Experience, or CX, represents a customer's holistic perception of their experience of a particular business or brand. CX covers all interactions a customer has with the business, from visiting the website to talking to customer service and actually receiving the product/service they purchased. The concept of CX, applied to tourism, implies that everything a traveller does during a trip affects their perception and decision to repeat their experience, influence their peers about both their good and bad experiences received.

Living Lab, or ***Living Laboratory***, is a multi-stakeholder ecosystem where users get an opportunity to test or even co-create new approaches and solutions proposed by researchers and innovators in a real-life setting; living labs generally adopt cross-organisational collaborative approaches, also known as open innovation[16] [17].

Travel Tech is short for Travel Technology, i.e. the application of Information Technology or Information and Communications Technology in the travel, tourism and hospitality industry.

[16] *European Commission (2009).*
[17] *Cigir (2018).*

ANNEX 2 – References

List of citations:

Baidal, J.I., Bernabeu, M.C., Lopez, J.M. & Ivars, A.P., (2017) Towards an ICT Roadmap for Smart Tourism Destinations Based on Prospective Analysis. *eReview of Tourism Research* - January 2017

Cigir, K. (2018) Creating a Living Lab Model for Tourism and Hospitality Businesses to Stimulate CSR and Sustainable Innovatations. *WIT Transactions on Ecology and the Environment, Vol 217* [Online] Available at: https://www.witpress.com/elibrary/wit-transactions-on-ecology-and-the-environment/217/36972 [Last Accessed: 23/06/2021]

CompTIA (2020) 2020 Emerging Technology Top 10 List. *CompTIA Emerging Technology Community* [Online] Available at: https://connect.comptia.org/content/infographic/2020-emerging-technology-top-10-list [Last Accessed: 23/06/2021]

Eurostat (2021) Percentage of the ICT sector in GDP [Online] Available at: https://appsso.eurostat.ec.europa.eu/ [Last Accessed: 23/06/2021]

Dredge, D., Phi, G., Mahadevan, R., Meehan, E. & Popescu (2018) Digitalisation in Tourism: In-depth analysis of challenges and opportunities. Low Value procedure GRO-SME-17-C-091-A for Executive Agency for Small and Medium-sized Enterprises (EASME) Virtual Tourism Observatory. Aalborg University, Copenhagen [Online] Available at: https://clustercollaboration.eu/sites/default/files/news_attachment/report_tourism_digitalisation_2018.pdf [Last Accessed 24/05/2021]

European Commission (2009) Information Society and Media, Unit F4 New Infrastructure Paradigms and Experimental Facilities. Living Labs for user-driven open innovation. An overview of the Living Labs methodology, activities and achievements.

European Commission (2021) Digital Economy and Society Index (DESI) 2021 - Malta. European Commission [Online] Available at: https://digital-strategy.ec.europa.eu/en/policies/desi-malta [Last Accessed 14/02/2022]

European Commission (2017) Management and Content Provision for ICT and Tourism Business Support Portal - Final report [Online] Available at: https://clustercollaboration.eu/sites/default/files/news_attachment/report_tourism_digitalisation_2018.pdf [Last Accessed 24/05/2021]

eSkills Malta Foundation (2021) ICT Skills Demand and Supply Monitor 2021: Prepared by EY.

Malta Tourism Authority & Ministry for Tourism and Consumer Protection (2021) Recover Rethink Revitalise – Malta Tourism Strategy 2021-2030.

Tomljenovic, R. (2015) *Transformative tourism: WORKING DEFINITION AND TYPOLOGY OF TRANSFORMATIVE TRAVEL.* Croatian Science Foundation.

Other studies, reports and strategies consulted:

City of Helsinki (2018) *Roadmap for Tourism – City of Helsinki 2018-2021.* Helsinki City Executive Office, Economic Development.

London and Partners (2017) *A Tourism Vision for London*.

Mas, M., Fernández De Guevara, J., Robledo, J.C., Cardona, M., Righi, R., Samoili, S., Vazquez-Prada Baillet M, López Cobo, M. (Editor) and De Prato, G. (Editor), The 2020 PREDICT Key Facts Report. An Analysis of ICT R&D in the EU and Beyond, EUR 30305 EN, Publications Office of the European Union, Luxembourg, 2020.

Saito, H. & Ruhanen (2017) Power in tourism stakeholder collaborations: *Power types and power holders. Journal of Hospitality and Tourism Management, 31* (2017) 189-196. http://dx.doi.org/10.1016/j.jhtm.2017.01.001

DIGITAL STRATEGIC ROADMAP

FOR TOURISM IN THE MALTESE ISLANDS 2030

Malta Tourism Authority

GOVERNMENT OF MALTA
MINISTRY FOR TOURISM
AND CONSUMER PROTECTION