TOURISM 4.0– ADDRESSING THE CHALLENGES OF THE MODERN TOURISM

By Dr. Urska Starc Peceny

1. WHAT IS TOURISM 4.0

Tourism industry has always been adapting to the social and technological developments. In the era of digitalization, it needs to adapt again. With more than 1.3 billion persons[1] travelling yearly around the world and increasingly higher numbers to come, an implementation of even a small change in this sector can have a huge impact on the whole society. The uniqueness of connectedness of the tourism sector and its potential impact has also been recognized by UNWTO (UN World Tourism Organisation), which has even started a dedicated promotion with the idea of Tourism becoming the driver for realization of the UN Sustainable Development Goals. Tourism 4.0 is an initiative which following the same goals by forming a new paradigm.

The term originates from the modern paradigm in industry, known as Industry 4.0, and aims to improve the added value to tourism through innovation, knowledge, technology and creativity. Such development of tourism in Slovenia is not surprising. After paving the way in systematic development of innovation in tourism on a national level, awarded in 2009 by UNWTO, Slovenia took the lead also in the field of systematic development of sustainable tourism, crowned by National Geographic in 2017[2] as the most sustainable destination worldwide. With the Tourism 4.0, Slovenia is again at the forehead of this trend. The research team at a Slovenian company Arctur with more of 25 years of history of pioneering in the digitalisation and currently the only private-owned supercomputer center in Central and Eastern Europe, has joined forces with major research institutions in the country from the field of tourism and technology to power the largest research project about tourism in the history of Slovenia. There are 3 crucial questions:

• How to use state of the art technology in order to bring tourism stakeholders to collaborate?
• How to create ecosystems in which tourism becomes the driver of the positive impact and sustainability?
• How to merge hi-tech with tourism?

The true essence of this paradigm shift is not only to use technology to unlock the innovation potential in the tourism sector but to affect every field around it by creating an ecosystem in which physical and digital space, infrastructure, people and technology behind it merge into one seamless experience of many personalized outputs. The knowledge, expectations and experiences of tourists, defined as Tourism 4.0, will be utilized to build the new services and products to rise up the satisfaction with the experiences of all stakeholders in the tourism ecosystem. This will be done with the help of the key enabling technologies from the Industry 4.0, such as the IoT, Big Data, Blockchain, AI, VR and AR. These technologies will be used to develop tools that will help to manage flows of movement and ease the negative impact of tourism on the local community along with reducing the negative effect on climate change

The three main challenges of the paradigm shift that we are tackling are the management of tourist flows, personalized experience and boosting of positive tourism impact. We are addressing them with a different type of technological solutions. In this article, I am highlighting with my team some of the possible applications of Tourism 4.0 in the field of health and medical tourism by focusing on personalized and enriched tourism experience in health/medical destinations, along with issues bound to privacy and data security as well as management of tourist flow and sustainable behaviour of tourists.

2. Merging Hi-tech with Tourism - Is it Really all about Data?

Let's have a look at what smart tourism is about. The term describes the application of ICT across all travel-related activities and experiences. Only an advanced ICT infrastructure enables a more dynamic, less rigid and fast interaction within organizations and between organizations at the tourist destination, not to mention increases communication and collaboration. In this regard, smartphones and mobile devices are swiftly changing the face of technology used for destination marketing and more importantly, the new technology enables smaller but "smarter" destinations to compete on equal footage with larger
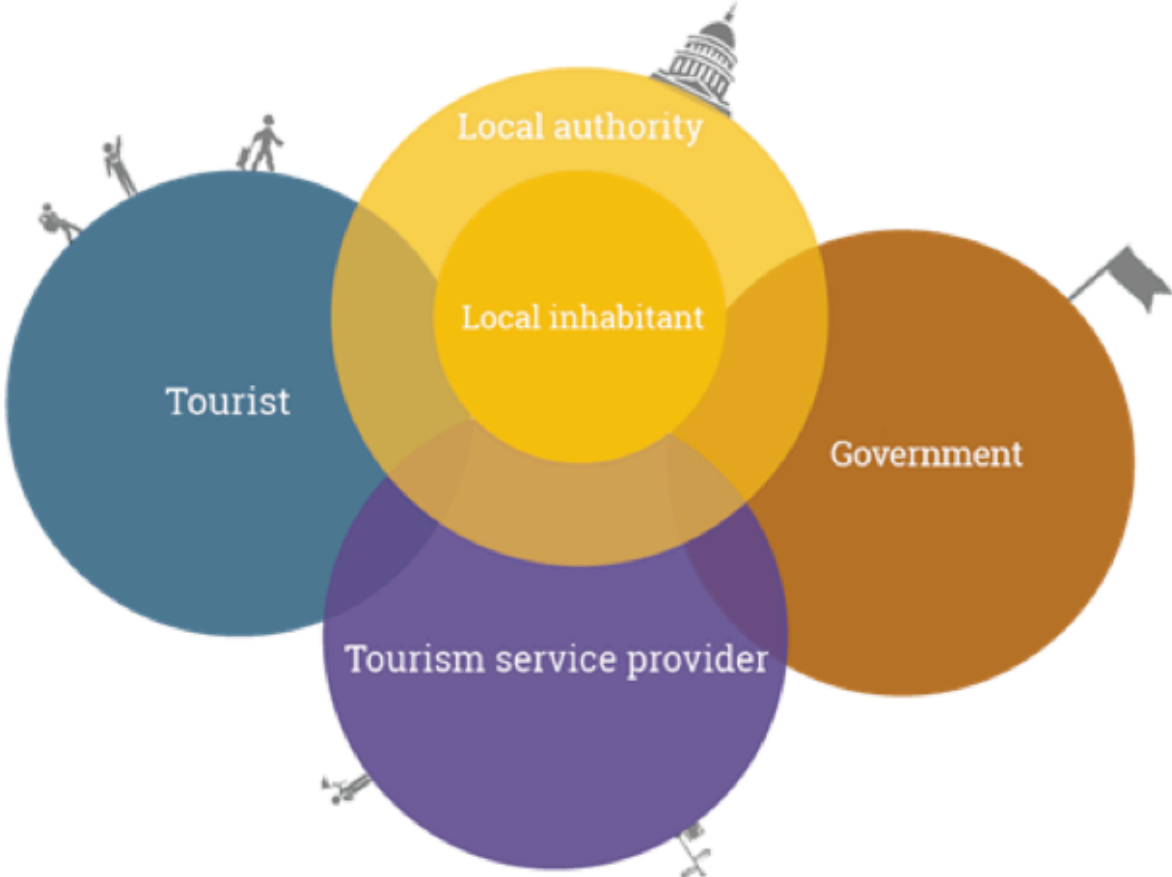
and more known ones. Thus the tourism industry is gradually but undeniably transforming into an innovation-driven economy by enriching tourism experiences with the use of technology and data. It is, however, vital to understanding that data are not the key to the future of tourism, but collaboration is vital. There are many organizations that collect various data but do not create any value out of them. The data are valuable only if an analysis turned it into useful information that can be helpful for strategic decisions. Moreover, the data are truly beneficial when combined with the data of other stakeholders in the tourism ecosystem, which can provide unexpected insights and enable us to see and understand the big picture. The same is true for knowledge and expertise sharing. For this reason, Tourism 4.0 Partnership established to enable collaboration of any stakeholder in the world to participate in research or development of tourism of the future. This partnerships brings together a consortium of highly relevant industrial organizations, top research organizations in tourism and the leading research organizations in ICT that is continuously open to new interested stakeholders [3]. In addition, at the Partnership website an online form is available for anyone to share their own ideas or solutions in the field of smart tourism and find a chance to connect with potential partners. This way, Tourism 4.0 is fostering collaboration in the field of smart tourism and accelerating the paradigm shift as well as digital transformation by enabling smaller organizations access to knowledge and expertise that are normally out of their reach.

This paradigm shift has already started in Slovenia. In this process a collaborative ecosystem is being created, which treasures the history and knowledge of tourist business and at the same time transfers it into the digital world. The result will be a new format of dynamic collaboration system among all tourism stakeholders sprouting a new generation of tourist applications and services that are built on real tourist needs and wishes as well as harmonized with the Tourism 4.0 principles. By establishing a collaborative ecosystem build around the local inhabitants and local authority, we will co-create an enriched tourism experience involving the local community, tourists, service providers and government in both, the physical and the digital world. This way we can shift from tourist centred focus to tourism centred around the local community, which priorities the perseverance of local quality of life, environment and the prosperity of the local economy.

Thus, with the dynamic collaboration system, we aim to achieve many of the sustainable developments goals with high dedication. At the practical level, this format of collaboration will be developed on a theoretical model named Collaboration Impact Model (CIM) that encompasses a system of motivation and reward for positive behaviour. For its implementation, certain tools need to be developed to help with collection, understanding and integration of data. This includes data such as weather prediction, traffic density, number of tourists in a defined area, energy consumption in tourism, etc. In an interactive way, through gamification, the goal is to reduce the negative behaviour and at the same time encourage and promote positive behaviour to inspire more re-

sponsibility among individuals. The CIM model will use the data to help tourists with suggestions for interesting activities. When using this model, the tourists will receive real-time information and recommendations based on their profile, which will help them decide what places to visit or what activities to partake in by avoiding overcrowded hours. The most important tool for boosting and rewarding the positive impact accomplished through collaboration are digital tokens called Collaboration Impact Tokens. This currency will be developed on the basis of the blockchain technology and awarded to stakeholders as incentives for performing certain actions that are beneficial to the local community and environment.

Safety is another added value of Tourism 4.0 CIM provided by a tool in the form of Digital Passport, through which tourists can receive appropriate recommendations based on their interests and travelling patterns with an ability to privately and safely manage their preferences, enter personal information and decide with whom they want to share them. This technology enables a shared set of the computing system to verify transactions between different parties. Consequently, these transactions are recorded using cryptography, al-

lowing to share information that is verifiable by the public yet guarantees the anonymity of the users, while at the same time ensures trust in the security of the data. In a few minutes, everyone can build their own profile, which is safely saved in the smartphone. Later the users can decide which system they trust enough to send an avatar with their own preferences. The tourism service providers have the ability to communicate with the avatar and each user decides whether to remain linked or cut the connection. Next time, the same user can search for a family holiday and sends the same system a request for the best-enriched tourism experience with a new avatar. Simple, isn't it? Blockchain technology offers a good solution for tourists allowing them to have online identities with full control over what they share in addition to being protected from fraudulent activities.

3. The Visions for Health and Medical Tourism

New technologies offer us a variety of new possibilities. What if we together envision how the Tourism 4.0 and above-mentioned solutions could benefit the health and medical Tourism sector? Tourists look for best personalized experiences. With the help of AI, they will be able to choose

the best for their needs, taking into account various factors like price, distance, access, technology etc. For example, if a medical tourist is planning to visit a destination for a medical service and if he/she put emphasis on preference for historical and cultural heritage, the Tourism 4.0 suggestions will show offers that include both.

We see a big potential in using Digital Passport, especially in medical tourism, as it would allow medical tourist to more easily choose and use healthcare services from various providers from different countries. For many years, health insurance companies over the world have been experimenting with cross-border and international medical coverage. Medical expenses can be reimbursed entirely or partially by the insurance provider. This expectation of both sides of the health insurance business is taking a rapid turn as technology advances. Digitalization has certainly eased many issues in the customer care service, for instance, payment models and information transparency, which helps patients not only to determine where and how they receive healthcare but also to trust the service providers[4].

The Digital Passport solution enables us to go one step further, because it allows medical tourists to easily find the appropriate treatment, simply and more securely transfers their personal data. It is also possible to continue to collect data about the patient's post-treatment basic medical state (heart rate, activity level, gait speed, etc.) and share data with physician or hospitals for better follow-up after discharge. Moreover, the personalized and safety features of Digital Passport enable the insurance companies to evaluate the treatment period thus reducing possibilities for issues with unexpected costs to arise.

Another aspect of Tourism 4.0 concepts is that they allow novel uses of technology for the purpose of enhancing and sharing the tourist's experience. Health destinations could enrich their services even further by using above mentioned AR, VR and IoT technologies in connection with the data from tourist's Digital Passport. Additionally, medical tourists can directly communicate with the healthcare provider through smartphones, giving reviews and points for improvements.

4. The Butterfly Effect

Tourism 4.0 is not only a business concept but a shift in mindset. It follows the idea that every small positive impact contributes to the big positive change in the world, just the same as the butterfly effect. With the concepts and solutions of Tourism 4.0, it is possible to raise awareness of travelers to have wonderful experiences and simultaneously care about the environment and community at the destination. Technologies are in every individual's life. We rather need to find ways to learn how we, human beings, can better collaborate. How we can melt the silo mentality into something new, which could help us become smart and use technologies to create sustainable business and preserve a beautiful planet for seven generations ahead

All graphic materials copyright Arctur & Tourism 4.0 Partnership, 2019

1- The number of annual international tourists travels has more than doubled in the last 20 years reaching 1,323 million in 2017 according to World Tourism Organization (UNWTO Tourism Highlights: 2018 Edition).

2-https://www.nationalgeographic.com/travel/destinations/europe/slovenia/worlds-most-sustainable-eco-green-country/

3- Joining the Tourism 4.0 Partnership is simple via an online form (https://www.tourism4-0.org/en/join-us/) and has no preconditions or restrictions.

4- See https://www.medicaltourismmag.com/insurers-changing-game-medical-tourism/

Resume:

Urška Starc-Peceny, PhD has gained an international education in Slovenia, Italy and Austria. Her Phd thesis in Business Communication with specialization in the New Media and Technologies entitled "Netlife" has paved the way in 2001 in research of collaboration design in the reality in which AI and big data play an increasing role. From Europe to Middle East, she has gained 20+ years of experience as entrepreneur by co-founding more companies and disruptive initiatives.

#collaboration #design #SmartEcosystems. As Chief Innovation Officer at Arctur Ltd., she currently leads the Tourism 4.0 department. Living between Slovenia and Vienna, Austria, where she hacks the collaboration formats as lead of the NASA Space Apps Challenge in Austria, she is also a university lecturer in smart-related topics and proud mother of three children.

DESTINATION
HEALTH