

CUSTOMISING TOURISM EXPERIENCES WITH USE OF ADVANCED TECHNOLOGIES, EXAMPLE OF COLLABORATION IMPACT TOKEN AND DIGITAL ONLINE TOURIST IDENTITY

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Abstract Nowadays, data on tourist profiles are created by large platforms that exchange and trade the collected data with each other without sharing it with service providers (hotels, restaurants, etc.). Providers are thus increasingly becoming mere "executors" and cannot devote themselves to the guest as they once did. Using the example of Collaboration Impact Token and Digital Online Tourist Identity, the article suggests the development of a system with use of key enabling technologies from Industry 4.0 that will offer guests a personalised service, reward them for positive behavior if they are contributing to the positive effects of tourism and redirect them on less burdened areas with the aim to offer a significantly better tourist experience and the development of more balanced sustainable development.

Keywords:

innovative incentives, tourism 4.0, digitalising collaboration, sustainability, Industry 4.0

1 The potential of blockchain technologies and use of tokens in tourism development

Tourist destinations and local environments have faced many challenges during the tourist boom as well as now in the Covid time, both positive and negative. Comprehensive management of tourist destinations must promote sustainable and responsible behaviour of tourists and providers as well as take responsibility for reducing the negative effects of tourism and ensuring balanced development of each and every area of the destination.

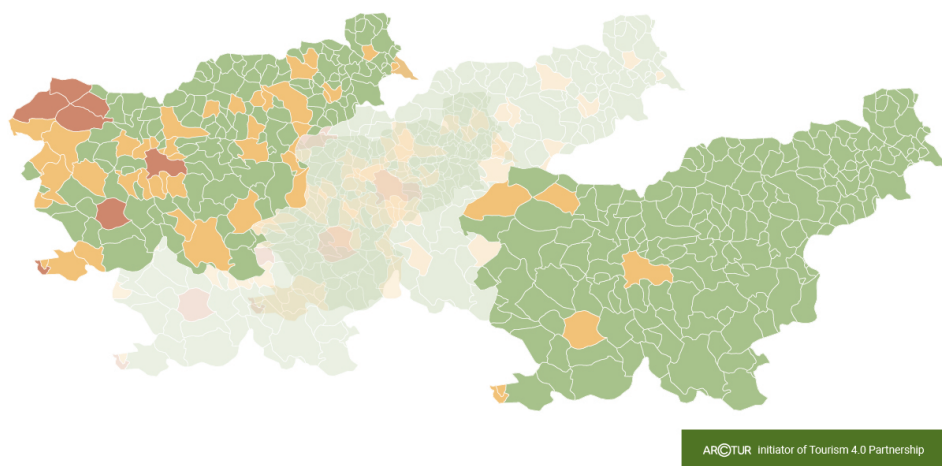


Figure 1: Identification of overcrowded zones

(Source: Arctur)

Some tourist destinations are highly developed and due to advanced promotion (marketing, media, film production, etc.) they can even attract too many tourists (i.e. overtourism), while others despite similar potential do not reach a satisfying number of tourists. In order to achieve a balanced and sustainable development, tourist destinations need to manage their tourist flows.

This includes diverting tourists from overcrowded destinations to the ones off the beaten path. In the case of the latter, it is essential to provide tourists with attractive experiences there. Moreover, a need is growing for a tool enabling the rewarding of tourists for sustainable behaviour as well as their decision to choose the destination

off the beaten path instead the overcrowded one. One of the solutions is Collaboration Impact Token - CIT is a crypto voucher based on blockchain technology which changes value in time and place with the aim to award positive behaviour and support the redirection of tourist flows (Peceny et al., 2019). The concept has been developed within the TRL 3-6 Tourism 4.0 – Enriched tourist experience project (OP20.03536).

Before analysing further this specific tool, we want to highlight some aspects relevant for further development in this field. Starting with the right focus of discussion, where some suggest to analyse tokens rather unspecific terms “cryptocurrencies” or “blockchain” (Treiblmaier, 2021), while others suggest the opposite (Önder et al., 2020), because they perceive blockchain as a foundational technology rather than a disruptive one, since potentially new economic and social systems can be based on blockchain (Iansiti et al., 2017). Therefore, understanding blockchain is essential, but to focus not on the technology itself but on how it can be used for the benefit of consumers and suppliers, while at the same time creating new tourism products or systems. In this context the aspect of security, which is becoming crucial as in tourism bulk of digital payments through applications supported by heterogeneous payment gateways open the doors for the attackers to perform malicious activities. Decentralized mechanism such as blockchain enables trust and reputation management among various stakeholders: banks, travel agencies, airports, railways, cruises, hotels, restaurants, and local taxis (Bodkhe et al., 2019). We can see the first users who implement the new approach by the development of so-called smart cities, to mention one we can take Dubai which has implemented smart city and smart tourism platforms to engage various stakeholders (Khan et al., 2017). There are in literature already some analysis of use of blockchain in tourism (Ozdemir et al, 2020) discussing various aspects, also regulations (Thees et al., 2020) and its implementation in the form of vouchers to build a secure e-voucher system in order to solve various shortcomings of paper vouchers (Ching-Sheng et al., 2020).

2 Tourism 4.0 Ecosystem

To better understand further analysis here a short introduction. The quest of the Tourism 4.0 initiative is to unlock the innovation potential by enabling collaboration between all stakeholders of the smart tourism ecosystem to co-create enriched experiences with the help of the key enabling technologies from Industry 4.0. Instead

of the tourist, Tourism 4.0 ecosystem puts local inhabitants and their quality of life in the centre and all other stakeholders around them. Within this frame, a system with innovative tokens, secure digital IDs and other disruptive tools, in which at least part of the data and profit is shared with the local communities.

The Collaboration Platform connects the T4.0 Core APIs with the technology pillars T4.0 DOTI, CIT, FLOWS and TIM into a comprehensive business innovation ecosystem Tourism 4.0. Key enabling technologies from Industry 4.0 (blockchain, big data, artificial intelligence, internet of things, ...) support transparent and secure data exchange between technology pillars and applications to co-create a new sustainable model of collaborative tourism.

3 Collaboration Impact Token

Examples of CIT implementation at different levels:

1. The state government can motivate regions, destinations and tourist providers committed to become more sustainable. The primary issue of CIT tokens can be issued either upon entry into the country or as a supplement to the entrance fee for a tourist attraction (e.g. a national park). Mandatory purchase of CIT upon entering the busiest destinations of the season reduces the pressure and at the same time encourages tourists to use the obtained tokens in a less popular destination for attractions that have a positive tourism impact (e.g. museums, parks, theatres). In addition, recipients of CITs could redeem tokens, for example for the payment of contributions or taxes. What is more, state governments deciding to grant vouchers to support the recovery of tourism after the pandemic could use CITs and in turn gain an overview of tourist activities from the data collected as well as use them for managing tourist flows.
2. The tourist community (destination, city, region) can use CIT to redirect tourist flows to less visited micro-locations (even outside its own territory). In this case, the primary emission and the value of tokens can be done in several ways.
3. CIT values at the third, lowest level is set by tourism providers and local communities wishing to promote sustainable tourist behaviour (e.g. bicycle use, lower resource consumption, recycling) and the consumption of tourism experiences with a greater positive tourism impact. Here, too, the key is cooperation

between stakeholders, who take advantage of the token portability and thus encourage the development of other stakeholders in tourism and the strengthening of the destination.

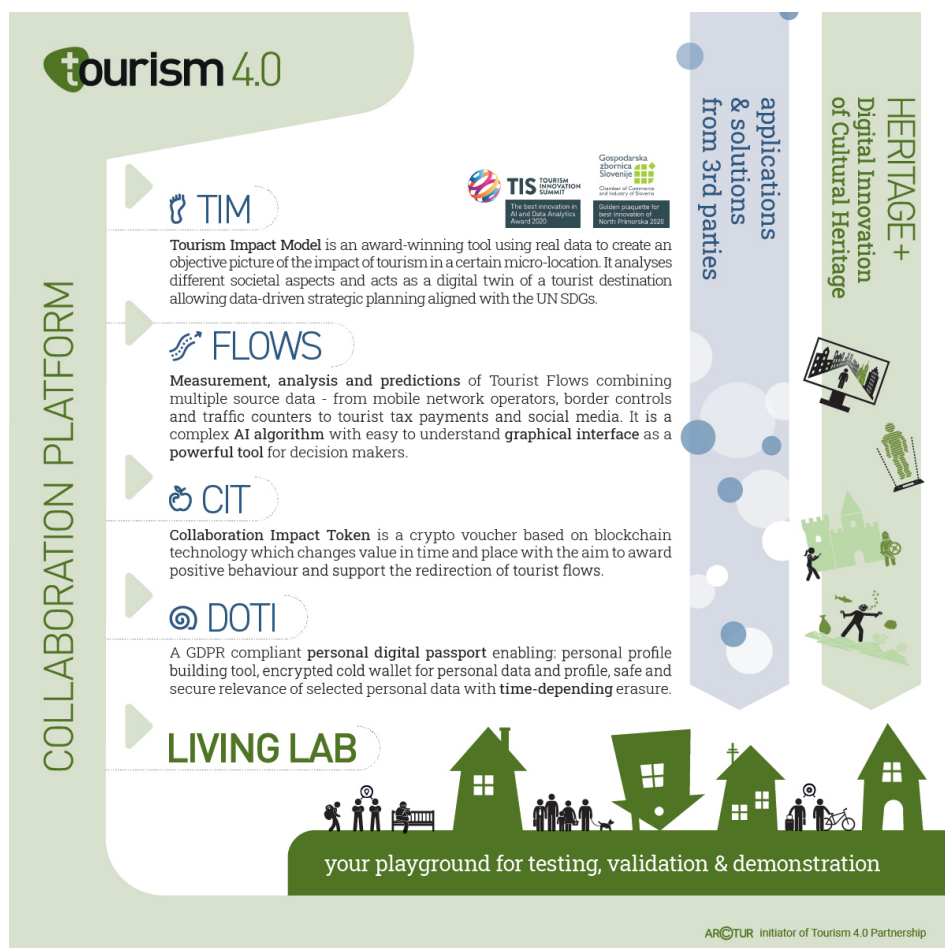


Figure 2: Tourism 4.0 Ecosystem
(Source: Arctur)

Additionally, the big potential of CIT could be maintained within Corona recovery action such as in Slovenia, where tourism represents approximately 10% of GDP, the Government, consulting with experts and scientists, introduced staycation vouchers. Each resident received a voucher worth €200, while children up to 18

years old received one worth €50. Through this scheme, the Government was subsidising residents to go on vacation with €350 million. (Knežević et al., 2020)

CIT is based on a private blockchain network and cannot be traded. It would be interesting to have the possibility to analyse the effect of simple staycation vouchers and advanced ones in the form of CIT changing their value in time and space and thus redirect the tourist to the less crowded locations or other time of the year to spend their holiday.

4 Digital Online Tourist Identity

The obtained CIT tokens are stored by the user in the DOTI digital personal wallet, while part of the anonymised data related to transactions and the use of CIT is stored and processed in T4.0 Core (Tourism 4.0, 2021).

DOTI is a personal digital passport that allows the individual (tourist) to maintain the ownership and full control of own data. Moreover, the DOTI mobile application is a secure space for storage of personal data and preferences and a tool for completely anonymous communication with tourist providers.

Modern tourists are looking for personally tailored offers and experiences without sharing their personal information. The use of global applications simplifies the search among multiple offers as they combine information and offers in one place, but in exchange for the use of this service, tourists need to share some personal information and thus give up a part of their privacy. With the help of databases, artificial intelligence, machine learning, global corporations process (personal) data, trade them and consolidate their position in the market. On the other hand, with the use of intermediary platforms, the tourism providers lose the direct contact with their customers and thus the possibility to learn more about their needs and wishes.

Examples of DOTI in use:

1. Anonymous search for customised offers, communication with tourist providers, reservations through different avatars representing different customer needs in different situations (traveling for business, with family, friends ...).
2. Secure personal data exchange with tourist providers (e.g. registration to loyalty programs, tourist tax registration). Each time, the data owner determines which

data can be shared, with whom, for what purpose and for how long. Hence, at any time access to the data can be revoked (i.e. smart contract). All in accordance with GDPR.

3. Secure storage of personal data and also of Collaboration Impact Tokens (CIT) in the built-in cold wallet.

DOTI acts as an intermediary between the tourist and the tourist provider. Therefore, the provider (legal entity) must also create its own DOTI identity. With the help of DOTI, the provider ensures a secure transfer of (personal) data to its information system in accordance with GDPR.

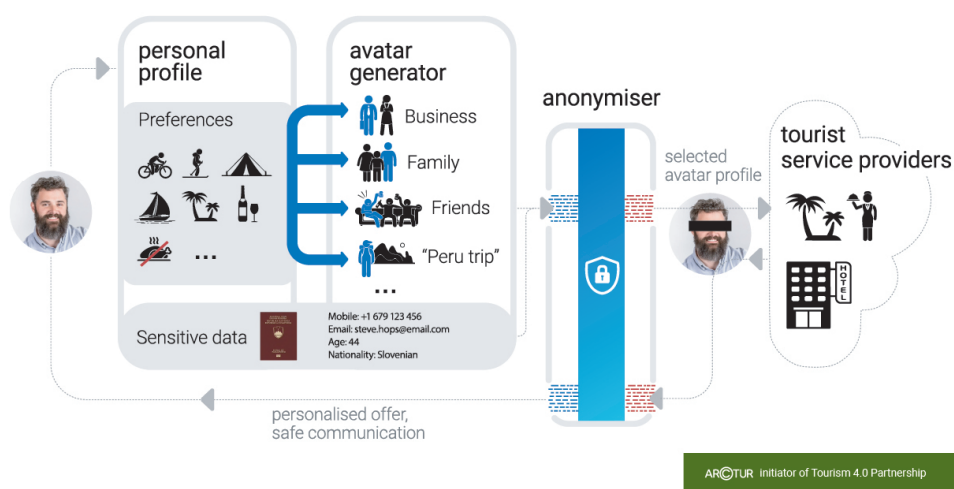


Figure 3: Digital Online Tourist Identity
(Source: Arctur)

How does it work:

In the DOTI mobile application, the user creates his or her ID (private key), enters personal data, sets priority choices for preferences and interests. All data is securely stored in the cold wallet of the mobile phone which is a part of DOTI. The user can create one or more avatars (characters) in his or her profile, with which (s)he anonymously communicates with tourist providers. Different sets of traits are assigned to the avatars, depending on the travel purpose: travel with family, friends,

business etc, and for each occasion a selected avatar is shared with the tourist provider to communicate with.

DOTI is a part of the Collaboration Platform T4.0 Core, through which transparent data exchange with third party services based on blockchain technology takes place.

5 Conclusion

The article provides an insight into the importance of focus of the research of new technologies, such as blockchain, not on the technology itself but on how it can be used for the benefit of consumers and suppliers, while at the same time creating new tourism products or systems. Using the example of Collaboration Impact Token and Digital Online Tourist Identity, the article suggests the development of a system with use of key enabling technologies from Industry 4.0 that will enable a personalised service for guests, reward them for positive behavior, if they are contributing to the positive effects of tourism, and redirect them on less burdened areas with the aim to offer a significantly better tourist experience and the development of more balanced sustainable development.

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Note

This is a Published Scientific Conference Contribution.

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