

BLUTOURSYSTEM

Strategic vision for driving
innovation in CB sustainable
tourism- report

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1. Innovations in tourism

Innovation is one of the five drivers of productivity growth alongside skills, investment, enterprise and competition (DTI, 2007, p. iii.). It is a widely used term but still a concept hard to grasp. A number of different definitions of innovation, more than 60 found by some authors are a proof of this (Brooker and Joppe, 2012). A common thread among all of them is the aspect of “newness” (Johannessen et al., 2001). However, some note that innovation has become a buzzword for any sort of improvement, regardless of the extent of newness (Brooker and Joppe, 2012). Thus, a useable definition of innovation must provide answer to three questions: what is new, how new and new to whom (Johannessen et al. (2001). The first question refers to the **types of innovation** commonly differentiated as product/service, process, marketing and organizational innovation (OECD, 2005; Schumpeter, 1934). The answer to the second question differentiates incremental (significant improvement) from radical (completely new) innovations (Schumpeter, 1934) while the answer to the third questions reveals whether the innovation is new to the world or to the unit of observation i.e. firm (Sørensen, 2004). Another key feature of innovation is implementation (Kessler et al, 2015) i.e. innovation occurs when products/services, processes, marketing methods and organizational measures are put to use in organization’s operations.

Over the past two decades, the literature on innovation in tourism has been growing steadily (cf. Gomezelj, 2016). However, it is fully reasonably argued that more empirical evidence is needed (Hjalager, 2010) with reasons for the paucity of research being multiple. Firstly, since tourism is not a standard sector in national classifications, the research on tourism innovation is mostly based on case studies and selected samples of companies, as opposed to large national surveys such as CIS (Hall, 2009). Secondly, the tourism product definition poses problems (Smith, 1994) as well as the inappropriateness of standard innovation indicators used in other areas/sectors, such as the number of patents and investments in research and development (Pivcevic and Garbin Pranicovic, 2012). The other problems derive from the specific features of services in general i.e. intangibility, perishability, inseparability, variability, co-terminality (Tether, 2004; Van der Aa and Elfring 2002) which makes it difficult to collect objective data about many service-related constructs, including innovation.

Innovation in tourism share many similarities with innovation in service sectors in general, especially with those dealing primarily with end-users. These are:

- *The simultaneousness of service production and consumption* – in tourism, customers are in fact active “co-creators” of tourism experience, with different level of involvement in the service process. Thus, is the distinction among the product/service and process innovations more complex, leading to increased orientation of innovation activities to adaptization-customization to customer needs (Torres i Jacob, 2001 as cited Jacob and Groizard, 2007);
- *Information intensity* is very pronounced in tourism, this being the reason why tourism activities have always been at the forefront of development and application of different information technologies and electronic business. However, there is a need to balance the “high-tech” and “high-touch” innovations in tourism i.e. investment in technology need to be coupled with investments in human resources in order to maintain and improve the tourism

experience (Keller, 2006, as cited in Hall and Williams, 2008) although studies in hotel sector have shown this is not the case in practice (Garbin-Praničević et al., 2010);

- This is an additional argument for *human factor importance*, especially having in mind that most tourism services are work-intensive. In this matter, the issue of quality not only quantity of personnel is raised, especially having in mind that in most cases tourism employs a large proportion of part-time, seasonal work force (Hall and Williams, 2008);
- *Organizational factors* also play an important role in tourism. Namely, tourism experience is made of encounters and relations/transactions with different tourism service providers which can be connected, harmonized and coordinated by different organizational forms. This can lead to new combinations i.e. new tourism products (innovations, like tourism packages). Thus cooperation and networks are an important element of tourism firms' innovation activity (Sørensen, 2004; Pikemaat and Weiermair, 2007).

These specifics result in several aspects that need to be taken into account when analyzing and measuring innovation in tourism (Figure 1).

Figure 1. Service specifics and the resulting specifics of innovation in tourism and its measurement

<i>Service specifics</i>	Aspects to be taken into account in studying and measuring innovation
<i>Co-terminality of service production and consumption</i>	<ul style="list-style-type: none"> ▪ the role of customers in innovation process ▪ difficult distinction of product/service and process innovations
<i>Information intensity on services, products and processes</i>	<ul style="list-style-type: none"> ▪ the importance of ICT for innovations
<i>High importance of human factor</i>	<ul style="list-style-type: none"> ▪ structure and investment in human resources as an important prerequisite and determinant of innovation
<i>Critical role of organizational elements</i>	<ul style="list-style-type: none"> ▪ the importance and frequency of organizational innovations

Source: author's elaboration

On the other hand, tourism services encompass other specifics which are not reserved only for tourism, but nevertheless their combination makes tourism innovation unique (Hall and Williams, 2008, p. 15). These are:

- *Clustering of related activities* – as the tourism experience is made of partial services of individual tourism providers - hotels, restaurants, transportation firms, retail, attractions, amusement, etc.). Thus, tourists' satisfaction depends upon his/hers cumulative quality perception (Weiermair, 2006). This interconnectedness is important for innovation as it can affect the whole destination positively or negatively. Positively, when innovation in one activity triggers innovation in others and negatively when the non-innovativeness in one activity as is preventing introduction of changes in other activities (Hall and Williams, 2008).
- *Services perishability and the co-terminality of service production and consumption* are features of almost all tourism services as they are time-specific (Weiermair, 2005). Thus, the optimization of tourism capacities is one of the major business challenges (Frey, 2002).

However, the perishability of services is of relative nature and innovations are a means to overcome it. For example, changing the dates of events can increase visitation, the amendment of hotel offer and equipment can increase out-of-season visitation, etc.;

- *Tourism enterprises' inseparability from location/destination.* Destination is the primal cause for tourists' visitation but this is also of relative nature and can be changed in the long run. In other words, it also entails innovation potential -for example, building of a new attraction such as an amusement park. However, in the short-run, inseparability from location is an important innovation determinant due to tourism firms' interconnectedness explained above (Hall and Williams, 2008). Spatial closeness also amplifies the issue/problem of intellectual property protection and innovation imitation. It also fuels the importance of public goods and their maintenance/investments. On the other hand, inseparability from location creates potential for stronger connections, collective learning and cooperative activities. Finally, it can act as the impediment for innovations in competing destinations and their businesses.
- *Tourist – tourist industry contacts,* are a necessity but also an element making the innovation investments of tourism firms visible. As a result, tourism sector innovations are focused on business aspects with direct customer contact as it determines the overall tourism experience (Hall and Williams, 2008).
- *Tourists – host community contacts* and the issues of environment protection are becoming increasingly important in tourism (Jacob and Groizrad, 2007). Continuous tourism growth and its mass character have made sustainable tourism to become a frequent topic in tourism practice and research. The same goes for tourism innovation field so no wonder that the first academic papers on tourism innovation were focused on environment and sustainable development (Hjalager, 1997). This interaction leads to increased importance of organizational and institutional innovations as effective sustainable tourism development policies are not possible without effective cooperation, but nonetheless important are process innovations (i.e. energy and water saving models) and product/service innovations (for instance, eco-hotels, eco-resorts etc.).

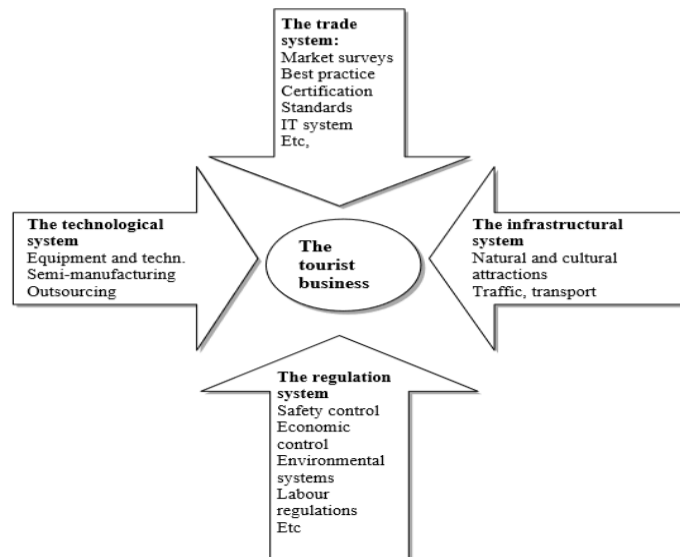
Many academics point that innovation in tourism mostly originates from outside the tourism industry (Hjalager, 2002) and tourism entrepreneurs and managers agree with this (Weiermair, 2005; Volo, 2004). Hjalager (2002, p. 437) points that the „...bright brains of importance for innovation in tourism are just not employed in the tourism industry, but elsewhere”. The reasons are found in difficult structural and behavioural preconditions for innovations in tourism industry (Hjalager, 2002):

- the dominance of small and medium enterprises, whilst innovation activity is mostly found to be positively correlated with firm size;
- large tourism firms are much quicker in implementing new ideas and handling information, thus creating competitive advantage; small firms mostly follow and imitate;
- the non-trust culture among tourism firms due to “free rider” problem in the area of public goods; as a result cooperation is mostly achieved through other organizations' mediation (e.g. tourist bureaus/boards);
- destination product is composed of a number of service providers;

- high volatility rate of ownership in tourism has a negative effect on introducing changes and new elements in operations.

Thus, innovation process is in fact a process of transfer among key tourism businesses and determinants of innovation, i.e. trade system, technological system, infrastructural and regulatory systems, as shown by Figure 2.

Figure 2. Knowledge transfer channels to the tourism business



Source: Hjalager (2002)

On the other hand, being essentially conservative, firms do not introduce changes if they are not challenged i.e. threatened. This is also the case with traditional tourist destinations; faced with decreased productivity and growth, they increasingly see innovation as a solution for increasing the competitiveness of tourism products, businesses and destinations (Hall and Williams, 2008; Pechlaner and Volgger, 2012). Another reason is the ever intensive competition in tourism industry, making competitiveness of tourism enterprises increasingly dependent upon their innovation activity aimed at lowering costs and/or rising quality of their outputs (Mattisson and Orfila-Sintes, 2009). Most frequent areas of innovation in tourism are improved and individualized products and services, environmental protection and information and communication technology usage.

However, tourism businesses have significant difficulties in “protecting” their innovations as competitors easily copy new successful ideas (Camisón and Monfort-Mir, 2012). Thus, tourism firms are forced to continually innovate in order to preserve their competitive advantage (Porter, 1998) and are prompted to identify innovations that are difficult for competitors to copy (Vila et al., 2012). Consequently, innovation is crucial in reducing production costs, enhancing marketing and providing product value (Weiermair, 2005) i.e. to stay ahead of competitors in this highly competitive sector (Hall and Williams, 2008).

However, most studies find that the degree of innovation in tourism is lower than in other manufacturing and service industries (Volo, 2004; Camisón and Monfort-Mir, 2012), although it has potential for increased innovation activity (Hjalager, 2002; Sundbo et al., 2007; Pivcevic and Petric, 2011; Carvalho and Sarkar, 2014). However, there is an agreement among academics that more research and effort to measure, quantify and compare innovation in tourism are needed as well as better understanding of tourism within the national innovation policies (Hjalager, 2010; Hall, 2009).

In analysing innovation, different approaches can be adopted. The first one focuses on innovation at the *destination level* i.e. the integral tourism product of an area (Volo, 2005; Sundbo et al. 2007). The second one focuses on a *partial tourism product* i.e. the product of a specific tourism firm such as a hotel (for example studies of Orfila-Sintes et al., 2005; Pivčević and Grabin Praničević, 2012) or other types of tourism firms such as those in intermediaries, transfers, F&B, attractions, amusement etc. (Cheng and Cho, 2011; Brooker et al, 2012). The third group is focused on small and medium-sized tourism enterprises - despite their predominance in the tourism sector, only minimal understanding of their role in innovation in tourism is reached (Thomas and Wood, 2014). Similar to this, others argue that innovation can be analyzed at the firm, resort, destination and national tourism system level (as cited in Booyens, 2015). Firm level analyses are dominant in academic studies, covering 69.08% of papers/studies, with almost a quarter of them focusing on hotel firms (Gomezelj, 2016).

Measuring innovation had always been a thorny task which is no wonder owing to the complex nature of the concept. In first attempts, indicators proxing the innovation activity were applied, such as the number of patents or investment in R&D. These originated primarily from manufacturing and are clearly not appropriate for tourism as it is an industry not prone to neither of the two activities. The next generation of measurement methods were object based i.e. they have focused on measuring the outcomes of innovation activity i.e. the new products. However, as this is only one of four innovation types (Figure 3), these were also found incomplete and favouring the manufacturing again. The next generation are subject based approaches in which firms that introduce innovations, are the observation units and are being directly asked about their innovation activity. The most famous and widely spread research of this kind is the EU Community Innovation Survey (CIS), since 2006 conducted every two years. However, the problem with tourism innovation in this case comes from the mere character of tourism activities i.e. the fact that is not an industry *per se* but an amalgam of different sectors and therefore cannot simply be tracked in the NACE classification.

Thus, the only possible measurement method is the **object-based approach** targeted specifically at tourism firms, which is, of course, time-consuming and costly. In this approach the typology of innovations is important and the Figure 3 gives a comparison of the most cited/used tourism-specific typology by Hjalager (2002) and the CIS typology (EUROSTAT, 2014) with examples provided for the tourism industry. The latter seems more appropriate as it more clearly distinguishes the four firm-level innovation types. Furthermore, as it has been widely recognized and accepted, it enables comparison with other studies/sectors. To be noted in Hjalager's typology presented in the Figure 3 is the institutional innovation category - it goes beyond the individual's firm activity but sets the new rules of game for it. Thus, these are the system-level innovations (be it regional, national or global)

that can and need to be analyzed at those levels. A prominent example in the most recent literature is the sharing economy concept.

Figure 3. Types of innovation in tourism – comparison of Hjalager and CIS typology
Hjalager's typology *CIS typology*

<i>Hjalager's typology</i>		<i>CIS typology</i>	
<i>Description</i>	<i>Examples</i>	<i>Description</i>	<i>Examples</i>
<p>Product innovations</p> <p>Visibly new products or services for customers, competition, suppliers or the company</p>	<ul style="list-style-type: none"> ▪ <i>Loyalty programs for customers</i> ▪ <i>Environmentally sustainable accommodation facilities</i> ▪ <i>Events based on local traditions</i> 	<p>Product innovations</p> <p>Market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems, new to the enterprise, developed by enterprise itself or by others.</p>	<ul style="list-style-type: none"> ▪ <i>Wellness or congress facilities in hotels</i> ▪ <i>New tour package for tourism agency</i>
<p>Process innovations</p> <p>Raising performance of existing operations by means of new or improved technology, or by redesigns of the entire production line, e.g. as a result of process re-engineering. Can be combined with or result in subsequent product innovations</p>	<ul style="list-style-type: none"> ▪ <i>Computerised management and monitoring systems,</i> ▪ <i>Robots for cleaning and maintenance</i> ▪ <i>Self-service devices.</i> 	<p>Process innovations</p> <p>Implementation of a new or significantly improved production process, distribution method, or supporting activity new to the enterprise developed by the enterprise itself or by others.</p>	<ul style="list-style-type: none"> ▪ <i>Smart scales usage in kitchen processes</i> ▪ <i>Smart PMS systems</i> ▪ <i>New or significantly improved supporting activities (laundry, maintenance, accounting, computing)</i>
<p>Management innovations</p> <p>New job profiles, collaborative structures, authority systems, etc. Often come in combination with the introduction of new products, services and production technologies.</p>	<ul style="list-style-type: none"> ▪ <i>Staff empowerment through job enrichment, decentralisation, training, etc.,</i> ▪ <i>Deskilling enforced by the (re)introduction of</i> 	<p>Organizational innovations</p> <p>New organisational method in enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used, being the result of strategic decisions taken by management, excluding mergers or acquisitions.</p>	<ul style="list-style-type: none"> ▪ <i>Business re-engineering,</i> ▪ <i>Introduction of quality management</i> ▪ <i>Decentralization</i> ▪ <i>Integration or de-integration of departments,</i> ▪ <i>Introduction of</i>

		<i>scientific management methods</i>			<i>education/training systems</i> ▪ <i>Entrance into alliances</i>
Logistic innovations	Recomposition of external commercial liaisons. This can affect the position of an individual enterprise in the value chain.	<ul style="list-style-type: none"> ▪ <i>Vertical linkages in the food and restaurant industries,</i> ▪ <i>Integrated destination information systems,</i> ▪ <i>CRS systems and Internet marketing,</i> ▪ <i>Enhancement of airport hub systems.</i> 	Marketing innovations	<i>Implementation of a new marketing concept or strategy that differs significantly from existing marketing methods and which has not been used before, requires significant changes in product design or packaging, product placement, product promotion or pricing, excluding seasonal, regular and other routine changes in marketing methods.</i>	<ul style="list-style-type: none"> ▪ <i>Aesthetic redesign of hotel interior and exterior</i> ▪ <i>New media usage in promotion i.e. social media</i> ▪ <i>Rebranding</i> ▪ <i>Franchise system entrance</i> ▪ <i>Variable pricing system usage</i>
Institutional innovations	Go beyond the individual enterprise, representing collaborative and regulatory structures in small or larger communities. Institutional innovations transect public and private sectors, and set out new rules of the game.	<ul style="list-style-type: none"> ▪ <i>Reform of financial incentives that restructure social or health tourism concepts;</i> ▪ <i>Destination management systems and units that control access to vulnerable areas;</i> ▪ <i>Setting up or change of credit institutions - changes in the conditions for obtaining finance</i> 		<i>Not included as they go beyond the scope of an individual enterprise</i>	

Source: author's elaboration based on Hjalager, 2002 and CIS, 2014 questionnaire

2. Theoretical framework for creation of the SCBDS Business Ecosystem

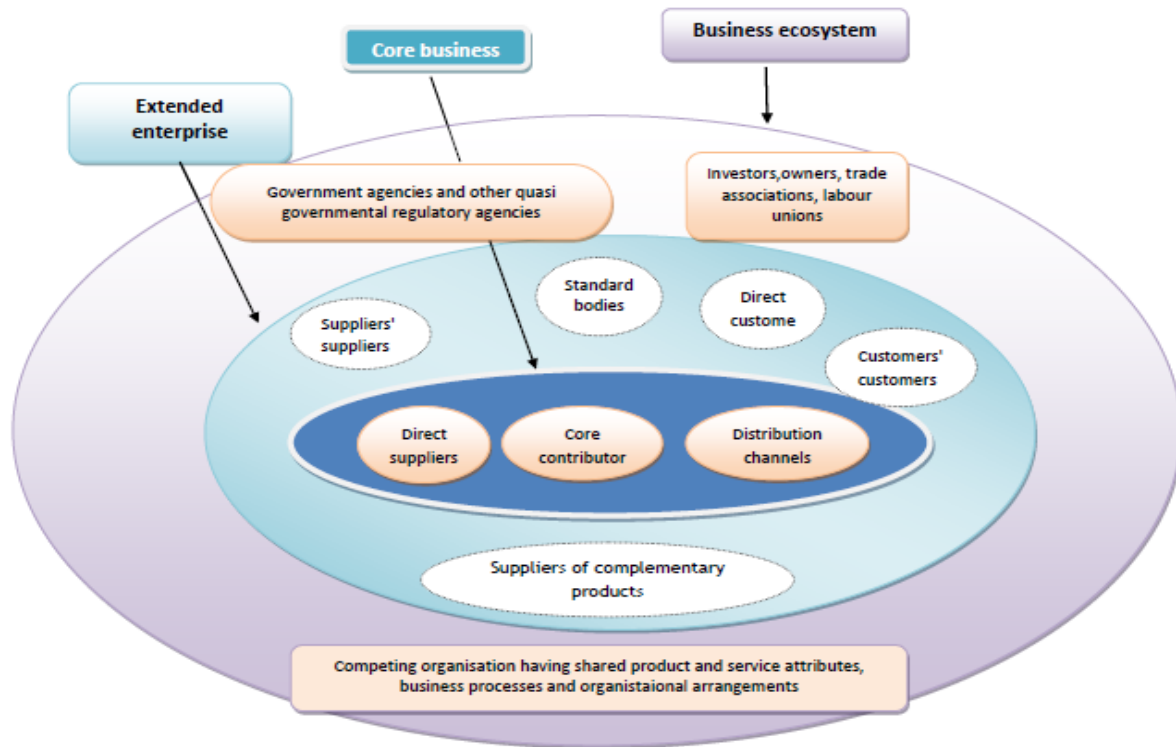
2.1. Business Ecosystem and tourism

The concept of the business ecosystem was introduced into literature by J. Moore in 1993. He described it as an economic community supported by a foundation of interacting organizations and individuals from the business world, producing goods and services of value to customers, who are themselves also members of the ecosystem.

According to Moore (1996), the business ecosystem is made up of many different subjects, such as customers, market intermediaries, complementary products' producers and sellers, with the core companies, thought of as the focal point of the ecosystem (figure 4). The business ecosystems can be considered as small business initiatives or vast collections of enterprises, with the blurring boundaries. In 1998 Moore has enriched his business ecosystem definition by adding socio-economic environment, and institutional and regulatory frameworks as key concepts enabling business ecosystems functioning.

A business ecosystem may be complemented by a technological infrastructure aimed at creating a digital business ecosystem (DBE) as introduced by Moore (2003), supporting cooperation, knowledge sharing, and development of open and adaptive technologies and evolutionary business models (Stanley and Briscoe, 2010). Most recently, Gretzel et al. (2015) refer to smart tourism ecosystem (STE) that can be defined as a tourism system that takes advantage of smart technology in creating, managing and delivering intelligent touristic services/experiences and is characterized by intensive information sharing and value co-creation. The core functions of STE are collection, processing and exchange of tourism-relevant data (Zhang, 2012). The STE includes a variety of "elements" such as touristic and residential consumers, tourism suppliers, tourism intermediaries (travel operators and travel agents), support services (telecommunications, banking/payment services), platforms and media (Facebook, TripAdvisor, AirBnB, etc.), regulatory bodies and NGOs, transportation carriers, travel technology and data companies (Amadeus, Sabre, etc.), consulting services, touristic and residential infrastructure (pools, parks, museums, etc.) and companies typically assigned to other industries (medical services, retailing, etc.) (Gretzel et al. 2015; Buhalis and Amarangana, 2014).

Figure 4 Business eco-system



Source: adapted from: Moore, J. (1996).

Similar to other industries, companies in tourism industry increasingly compete between tightly integrated Tourism Supply Networks (TSNs), rather than between separate firms and supply chains (Ketchen et al. 2014, cited in Selen and Ogulin, 2015). These tourism networks consist of tourists, service providers or intermediaries, government agencies, technology providers, consultants and not less important - communities, making up Tourism Business Ecosystem (TBE) (Baggio and Chiappa 2014).

Literature on tourism destination often identifies it as a network of interrelated stakeholders, both public and private (Selen and Ogulin, 2015; Gretzel et al, 2015; Buhalis, 2000; Buhalis and Amaranggana, 2014, etc.). In terms of dominance of stakeholders within the business ecosystem, one can distinguish a community-driven approach, where no particular stakeholder is dominant or a corporate approach where the network of partners is dominated by either a powerful business or a corporatized government agency. The first case is closely aligned with a product-led perspective, focused on sustaining the destination on economic, social, cultural and environmental values while corporate stakeholder approach is in line with a market-led mind set (Selen and Ogulin, 2015).

In tourism destinations, i.e. in Tourism Business Ecosystem stakeholders compete and collaborate at the same time thus creating economic, social and environmental value for all (Fyall, 2011). In regard with the dominance of stakeholders in a destination (Business Ecosystem), the alike division as the aforementioned one may be applied, although the community-driven approach is more likely to occur according to the recent practice.

2.2. Quadruple helix model of innovation

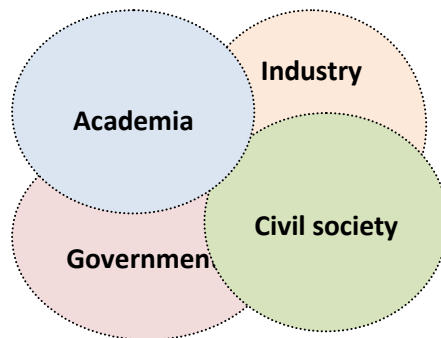
As stated above, stakeholders in Tourism Business Ecosystems cooperate for the purpose of creating new values, generated by the means of new and/or innovated products/services, processes, marketing/management activities and organisations. With this regard, Quadruple Helix (QH) approach is introduced aiming to create synergistic and simulative cooperative framework.

Both the Triple Helix (TH) and the Quadruple Helix (QH) approach are grounded on the idea that innovation is the outcome of an interactive process involving different spheres of actors, each contributing according to its 'institutional' function in society (Cavallini et al, 2016). In the triple helix concept developed by Etzkowitz and Leydesdorff (2000), 'helices' that intertwine and by this generate a national innovation system are made up of academia/universities as the innovation leaders, of industry, and of state/government. Building on the triple helix model, the quadruple helix model (figure 5) adds a fourth component, the civil society, or as Carayannis and Campbell (2009) state, media-based and culture-based public. Cavallini et al. (2016; 23) define it as 'a collective entity formed by individual users living on a territory and interacting with university, industry and government as customers, citizens or members of a community in order to contribute to build new innovation paths which are able to promote the socio-economic growth of the territory'.

The quadruple helix model, according to Carayannis and Campbell (2009) refers to structures and processes of the 'glocal' knowledge economy and society with a diversity of agents, actors and organisations: universities, small and medium-sized enterprises and major corporations, arranged along the matrix of fluid and heterogeneous innovation networks and knowledge clusters.

Opposite to the "linear model of innovation" that starts with universities whose research results are later adapted and dispersed throughout economy by other subjects, in the Quadruple helix mode, a "non-linear or systemic innovation model" occurs, i.e. all stakeholders join together in the co-creating process. All the helices within the Quadruple helix concept have to interact each other intelligently, effectively, and efficiently (Styanti, 2017). Considering its focus on local community participation, and development and integration of intelligent solutions, Quadruple helix model enables the development and evolution of traditional toward smart tourism destinations (Lopez de Avila et al. 2015).

Figure 5 Quadruple helix model of innovation



Source: author's elaboration

2.3. Open innovation platform

Growing attention has recently been devoted to the concept of “Open Innovation”. Namely, in the earlier, closed innovation approach, businesses have leaned on their own strengths/resources in developing new business processes, new products or new management and marketing innovations. However, according to Chesbrough (2003), several factors have led to the erosion of this approach. First of all, the mobility and availability of highly educated people has increased over the years, resulting in large amount of knowledge existing outside the companies. Secondly, due to the increase of available capital there is an opportunity for many ideas to be realized. As a result, companies have started to look for other ways to increase the efficiency and effectiveness of their innovation processes. This new trend was recognized in 2003 by Henry Chesbrough who has coined the concept of “open innovation” considering it an antithesis of the traditional vertical integration model where internal research and development (R&D) activities of a firm lead to internally developed products that are then distributed by the firm.

Chesbrough’s open innovation approach treats research and development as a more open system and suggests that valuable ideas can come from inside and outside the company and can enter the market from inside or outside the company as well. After Chesbrough’s seminal work (2003), the term ‘open innovation’ has become a major buzzword in innovation management literature. However, despite the fact that a unanimous definition hasn’t been adopted yet, openness lies at the very foundations of any open innovation approach. Namely, open source and open access, are fundamental to the creation of creative innovation ecosystem architecture. Thus innovation becomes a co-creative collaborative procedure between the industry or service provider and the user, for example via crowd sourcing tools to capture valuable ideas produced by communities (Vallet, 2009). Given the above stated, the new co-creative collaborative procedures to innovation can only be enabled by open access and open functional platform architecture, which allow two-way communication between the user and service provider to take place.

Open and user-oriented innovation activities can be implemented using different methods. For example, crowdsourcing, co-creation or living labs include many practices that can be used to involve

outside groups in development activities in both digital and physical environments (Raunio et al, 2016).

2.4. Living labs and co-creation

Innovation, which was traditionally restricted to academics or research and development departments, now increasingly calls on users as co-creators. User involvement in the QH innovation model can range from the systematic collection and utilization of user information, in which case we talk about user-oriented approach, to the development of innovations by users themselves, defined as a user-driven approach (Arnkil et al, 2010). With regard to this, methods are being modelled on innovation networks or ecosystems from the IT industry, including Living labs.

Living labs fall within the open innovation paradigm and involve a user-centric approach. They provide physical space or virtual realities in which stakeholders form public-private-people partnerships (PPPP) of firms, public agencies, universities, institutes, and users all collaborating for creating, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts (Leminen et al., 2015: 7).

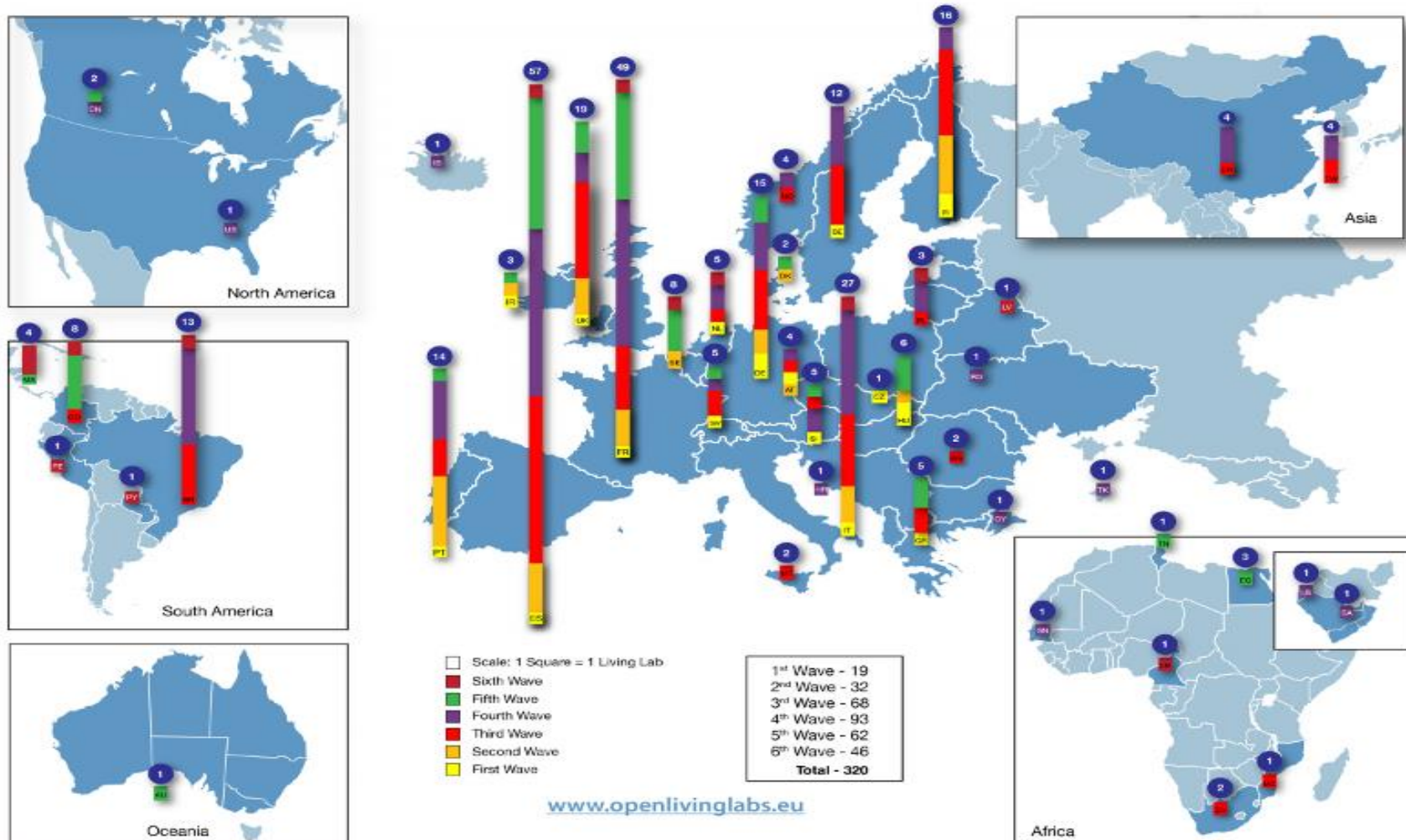
The concept of living lab originates from professor William Mitchell in Boston, MIT, and has already been used in different areas of development and business, including telecommunications, health, housing, tourism, energy, and governance. There is no firm consensus on the definition of the living lab but is seen as a methodology, an organization, an environment and/or a system (Svensson et al. 2010).

According to the European Network of Living Labs (ENoLL)¹ a living lab is both a methodology for user-driven innovation and the organizations that primarily use it. Till 2016 ENoLL network had over 170 active living labs worldwide (Abeyasinghe, 2016), while in 2018, 340 active LLs have been registered around the world (figure 6)².

¹ <http://www.openlivinglabs.eu/> (accessed on November 5th, 2018)

² <https://pro.europeana.eu/post/introducing-enoll-the-european-network-of-living-labs> (accessed on November 5th, 2018)

Figure 6 Living labs worldwide map



Source: https://pro.europeana.eu/files/Images/Europeana_Creative_images/Blog%20Posts/introducing_enoll_blog02.png, (accessed November 5th, 2018)

Arnkil et al. (2010; 7-9) propose four different types of quadruple helix models adopting the Living Lab approach. Each of the proposed models is characterised by a specific owner of the innovation process and by the involvement of the users:

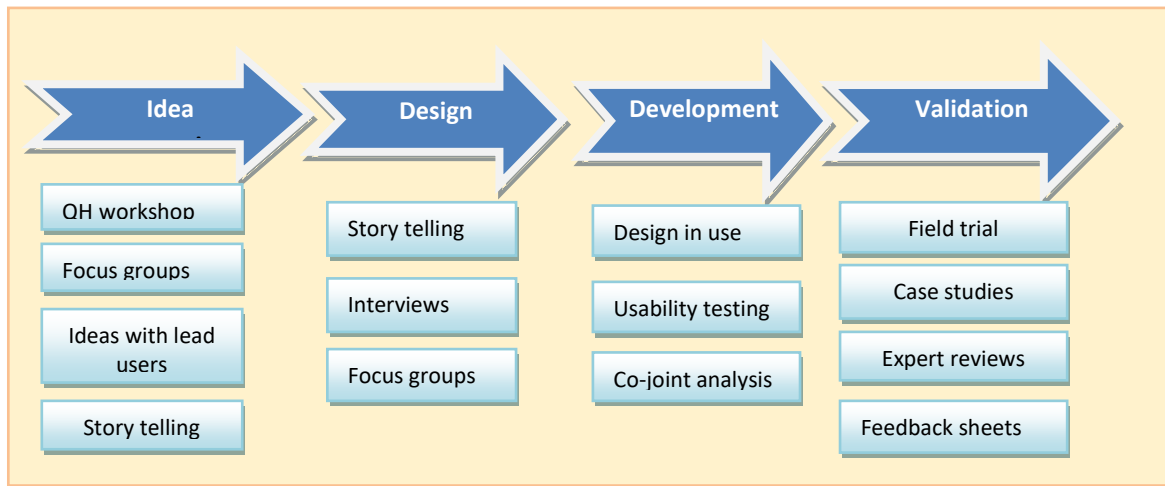
- The **'Triple Helix + user model'** is essentially an approach where innovation has a technical nature and knowledge a scientific one, and where the owners of innovation belong to the Industry or to the University sphere.
- The **'Firm-centred living lab model'** includes all the potential sources of innovation based either on the frontier-research or on the new applications or combinations of already-existing knowledge and/or on user knowledge. Although the owner of the innovation process remains the industry sphere and users are considered as both informants and developers, innovation is designed with users.
- The **'Public sector-centred living lab model'** focuses on innovation in the public sector and its services. The owner of the innovation process is the government sphere. In this case, innovation is designed with users and feedback information from the citizens can be gathered with traditional methods (e.g. surveys, interviews), with dialogue events (e.g. virtual forums, events) or within living lab environments.
- Within the **'Citizen-centred QH model'** innovation is led by citizens with the support of the other three spheres. Civil society is the owner of the innovation process and innovation is designed by users.

In practice, the last model is essentially a theoretical approach; the Public sector-centred living lab model have been identified in some projects aimed at developing public services, while only the TH + users model and Firm-centred living lab model have actual applications.

Co-creation makes the essence of the living lab concept. As stated by Prahalad and Ramaswamy (2004), the co-creation may be defined as a management initiative, or form of economic strategy, that brings different parties together (for instance, a company and a group of customers), in order to jointly produce a mutually valued outcome. The co-creation is associated with different phases of innovation process, i.e. with idea generation, design, development and validation and is carried out

by different types of co-creative activities, from workshops to focus groups, field trials, expert reviews, and many others, as shown in the figure 7.

Figure 7 Co-creation in LL innovation processes



Source: Guzman et al, 2013, cited in Arnkill et al, 2010.

A highly competitive environment coupled with major technological change, has placed innovation at the heart of the tourism phenomenon. The internet and mobile phones have un-leashed a wave of innovation that keeps transforming the ways of travelling and the tourist experience (Buhalis & Law, 2008; cited in Guimont et al., 2017: 63). Although tourists should be the focus of every supplier's activities, they are rarely involved in innovation processes. Hence, the role of tourists has to be changed and they ought to be treated as potential co-creators of the products and services intended for them. In order to encourage the experience co-creation, firms of the destination supply system have started to build and manage competitive experience environments in which tourists can actively intervene, contributing to increase the destination's competitiveness, especially thanks to the support of technology, in the pre-travel and post-travel phases (Buonincontri and Micera, 2016).

With regard to the role of Destination Management Organisation (DMO) in this process, Guimont et al. (2017) state that despite the suppliers' expectation on the active role of DMOs in developing new knowledge and innovations, they all have trouble adapting to the current technology revolution and hence to position themselves as innovation leaders. Moreover, they are even blamed to hinder innovation (Najda - Janoszka, 2013, cited in Guimont et al., 2017) which is why tourism organizations are looking for other innovation models, such as living labs. Examples of LL good practice may be seen in a number of cases³ especially with regard to cultural and creative industries. Following are the cases of tourism related Living labs.

³ See more in: Asia-Europe Foundation (2016), Cities: Living Labs for Culture? Case Studies from Asia and Europe. Asia-Europe Foundation (ASEF), Editors: Mangano, S., and Sekhar, A., <http://www.asef.org/images/docs/asef-living-labs-for-culture.pdf>, accessed on November, 5, 2018

In both cases living labs' creation is associated with academia, which is in charge of managing an open source content management system, while other stakeholders include business, consumers/tourists, and public sector/DMOs. In the first case the Living Lab activities were limited to two years, i.e. as long as the project has lasted, but with the new project jointly outlined after success of the first one; in the other case LL it is not connected with any particular project, but is engaged on the permanent basis.

Box 1. Case of Rivière-du-Loup's tourism community (Quebec, Canada)

The Rivière-du-Loup's DMO is a private association with a membership of some 230 tourism organizations and businesses. Members also include the municipalities, which provide nearly 50% of the operating budget through public funds. In this case LL context involves three stakeholder groups: the LL associated with the local teaching institution, the DMO and a local web developer. A steering committee made up of one representative from each group is in charge of project co-ordination. The breakdown of stakeholder groups is as follows:

- Tourism stakeholders: Volunteers who commit for two years. 19 tourism stakeholders, all DMO members. They take part in eight co-creation workshops, both in-situ and on the online platform. Recruited from the pool of DMO members.
- Tourists: Volunteers, French-speaking tourists who use information and communications technology (ICT) and own a tablet or smartphone. 21 tourists from Quebec. Online participation only.

The DMO's initial goal was to update its sightseeing routes (available on paper maps), in particular its rural attractions. The LL approached the DMO and offered to lead a co-creation process involving stakeholders and tourists working together to develop a technology proposal for the sightseeing route up-date.

However, more results have been achieved than expected:

- Stakeholders have not only raised their innovation capability in the specific context of the project, but also developed new innovative projects:
- New inspiration/search module better suited to visitors' needs on the DMO's website
- Creation of a research and development unit, as part of the web developer training program, that works on developing a bank of techno-concepts (AR, VR, connected objects, geolocalization, etc.) that can be used in tourism contexts.
- Launch of two technology-enhanced experiences in a museum: Free Alice! and The Haunted Room of Alice.
- Launch of a joint geocaching/treasure hunting project by the town and county departments of cultural development.
- New action research project aimed at turning an island in the St. Lawrence river into a tourist destination using LL-inspired collective intelligence processes.

Guimont, D, Lapointe, D, & Sévigny, A. 2017. Changing collaborative practices in tourism – a Living Lab case. *Canadian Journal of Regional Science / Revue canadienne des sciences régionales* 40(1), 63-69.

Box 2. Case of Gorenjska region Living Lab

The Eco tourism pilot is hosted by University of Maribor, Faculty of Organisational sciences in Kranj, within its Living lab environment, pursuing innovation and development in the tourism sector. The Pilot represents the Gorenjska region in Slovenia. The Living Lab is utilized by the common platform where Tourist Service Providers (TSP) and tourists share opinions, ideas and comments. Tourist Service Providers upload their offer and tourists upload their real life experience of attractions and routes they discovered. The platform enables the co-creation of new and innovative touristic routes, where users can share, rate and comment the content. This enables immediate collaboration and feedback between stakeholders. Objectives of the pilot are:

- ✓ To bring more tourists into the area.
- ✓ For tourists to spend at least one night longer in the region.
- ✓ To understand the trends in the field of eco-tourism.
- ✓ The co-creation of new touristic products and content together with end users/stakeholders.
- ✓ Tourist service providers and tourists comment, rate and share content.
- ✓ Cross border collaboration.

The Living Labs methodology allows collaboration of all stakeholders in co-creating new products and services by using of an open source content management system, Drupal.

More information is available at: <http://centralivinglab.eu/index.php/en/pilots/eco-tourism>

By learning from the above cases as well as many others, this project proposes trajectories on the possible way of driving innovation in the Cross Border Tourism Ecosystem (Italy-Croatia) by using Living Lab approach.

3. Strategic vision for driving innovation in CB sustainable tourism

3.1. Declining the innovation indicator for the analysed contexts in a long term perspective

Tourist destination is, according to Buhalis (2000) a combination (or even a brand) of all products, services and ultimately experiences provided locally, that enables assessment of the impact of tourism regionally, as well as management of demand and supply in order to maximize benefits for all stakeholders. In order to define in more details what the basic components of a destination are, Buhalis has introduced the 6 A framework consisting of: Attractions, Accessibility, Amenities, Available packages, Activities, and Ancillary services (figure 8). Attractions, as the main reason for tourist visitation may refer to natural, artificial and/or cultural resources. Accessibility refers to entire transportation system within destination that comprise of available routes, existing terminals and adequate public transportations; Amenities characterize all services facilitating a convenient stay, namely accommodation, gastronomy and leisure activities; Available Packages are a product by intermediaries to direct tourists' attention to certain unique features of a respective destination; Activities have the role of triggering tourists to visit the destination; and Ancillary Services refer to daily use services which are not primarily aimed for tourist such as bank, postal service, hospital and alike.

Figure 8 Destination's six A's



Source: adapted from: Buhalis, D. (2000)

Being such a complex system, consisting of a number of actors whose goals are diverse and sometimes even conflicting, tourist destinations on the global market are facing many challenges

trying to become competitive as well as to remain so. On the other side performance of any individual company/organization in a destination depends on the behavior of others thus additionally proving its ambivalent nature. Many of the challenges tourist destinations are facing, are often related to its flexible boundaries which are dependent on tourism demand requirements. Thus tourist destination is more than a mere geographical area; in fact, being an amalgamation of products, services, natural and cultural resources, other artificial elements and information able to attract visitor into a place (Leiper, 1995; Bieger, 1998; Buhalis, 2000, etc.), it may be treated as a homogenous, functional region (Petrić, 2011, etc.). Given this, and in light of the need of any system to be managed, it is obvious that functional destination (with no firm boundaries) may fail in implementing proper management system. One of the most important causes for this stems from the information inadequacy, in terms of not being able to feed management system with necessary and timely data.

Given the above, in this project a new approach to tourism destination (i.e. tourism business ecosystem) governance is introduced, based on new ways of information collection and dissemination. It is aimed at providing new knowledge based tools that facilitate creativity and help utilizing innovation process in a (cross-border) destination to its full extent.

With this aim a cross-border tourism network is to be created in order to improve collaborative capacities and provide a new market intelligence through the advice points by involving focal stakeholders at the Living Lab, thus creating a Quadruple Helix collaborative virtual space.

Considering that tourism business eco-system consists of many different stakeholders generating and producing a number of products and services that must encounter tourist needs, it must be observed and managed at a holistic level. To this end networking and cooperation is a basic precondition to generate a real value at cross - border level. In other words, by an open innovation approach (through the Living lab platform) stakeholders are enabled to get many information as well as an advice if needed, in developing their own products or services, or processes, or to make changes in their organization and management activities.

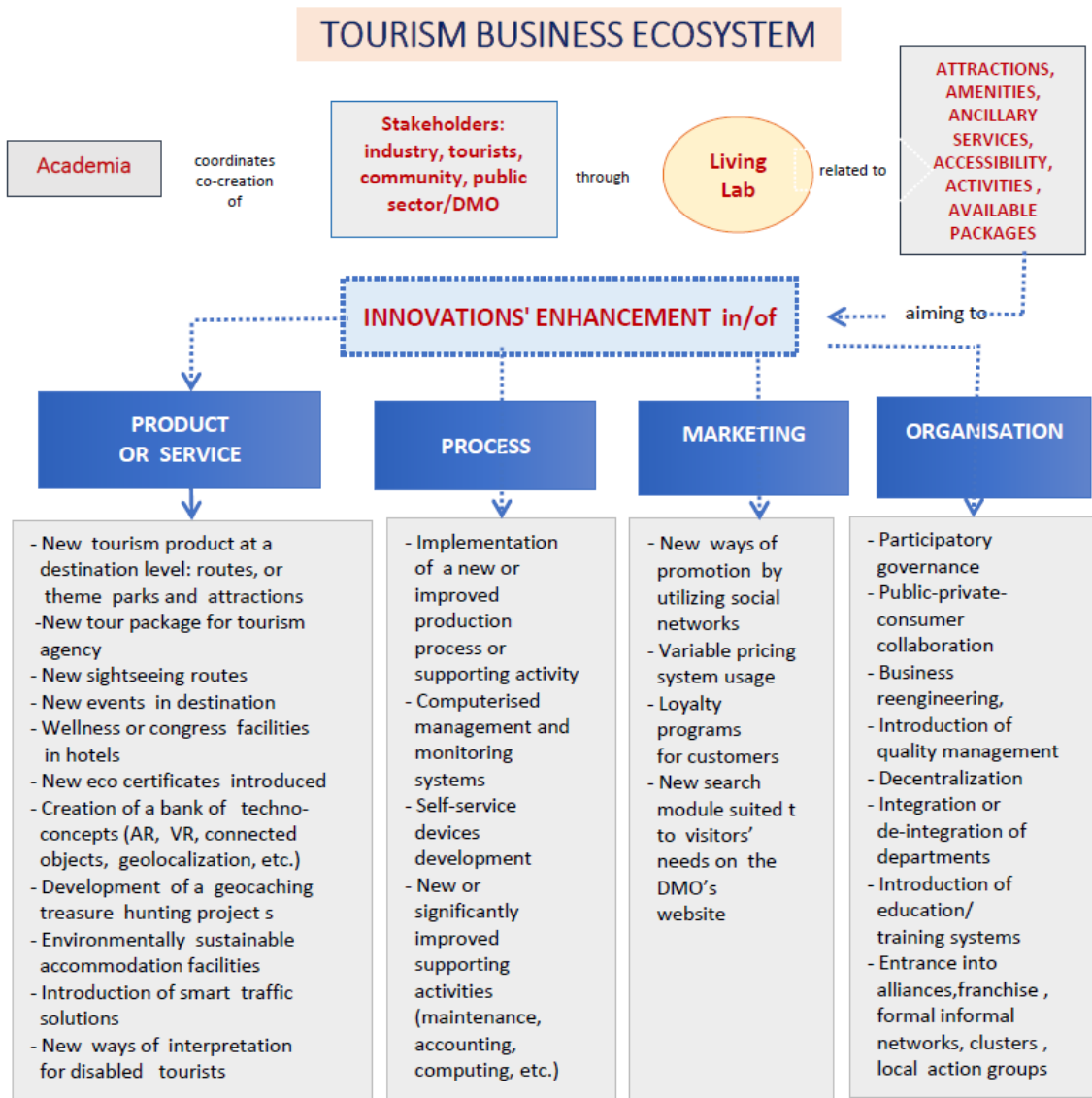
As explained earlier in the figure 3, different types of innovations may be applied to products/services, processes, management and organization activities within an individual enterprise/organization. In comparison with the application of innovation in tourism businesses, application of innovation in tourism destination is much more difficult because of its fragmented nature. The reasons lying behind the introduction of innovations in a destination may be both positive and negative nature. For example, in a declining destination DMO may develop new strategies to overcome the crisis. On the other hand, fulfillment of new ambitious strategic objectives can be a driving force for the introduction of innovation.

The most frequent innovations in tourism destinations (business eco-systems) are **product/service innovations**, as well as innovations associated with the **reorganization of management** (figure 9).

Also **marketing** area presents the huge potential for development of innovations (Maráková and Medved'ová, 2016). Alsos et al (2014) claim that numerous destinations and regions have discovered

the benefit of cooperation as the main source of innovation. Given that potential for **cooperation** is also one of the indicators of innovation performance.

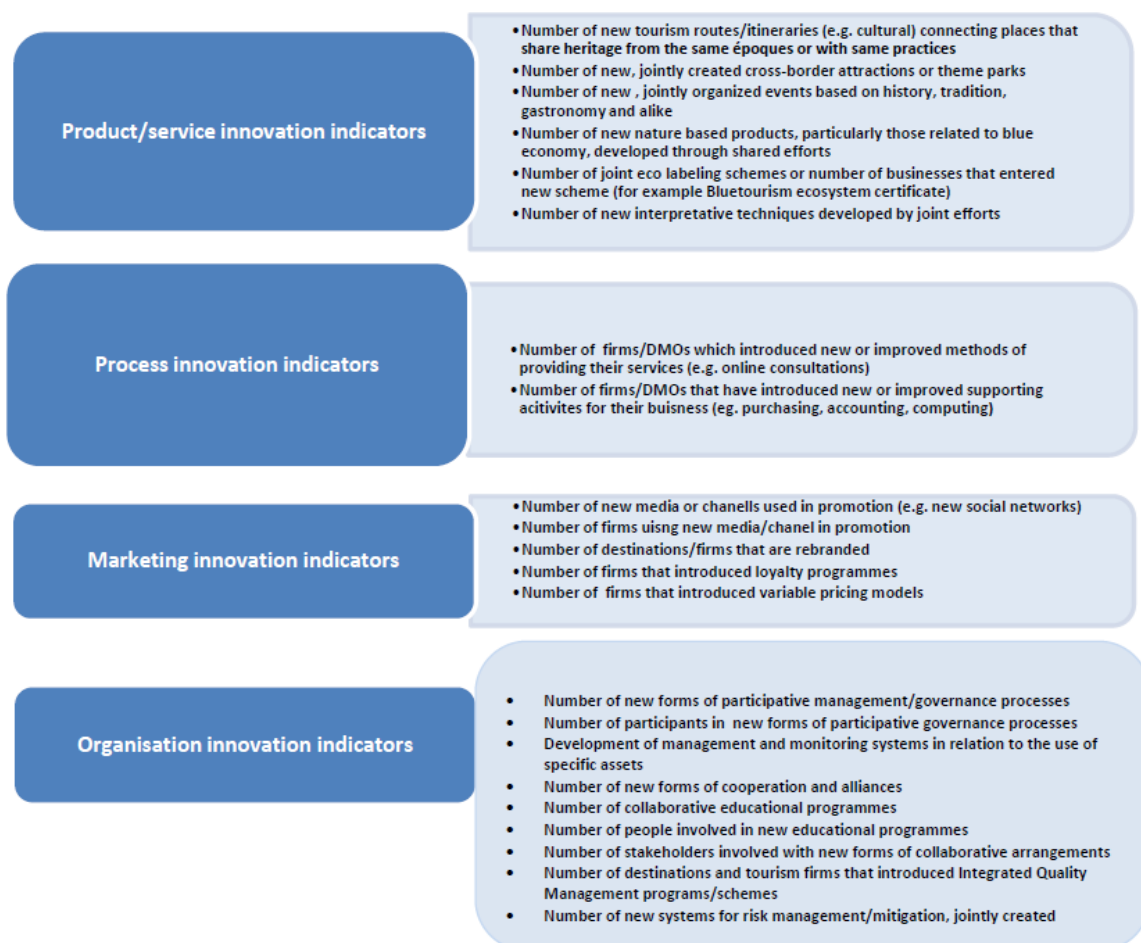
Figure 9 Tourism Business Ecosystem innovation potential



Source: author's elaboration

Based on what has been stated so far it can be concluded that innovations may be measured on the level of an individual enterprise as well as on the level of a destination, with more or less alike indicators. This refers to a cross-border eco system (destination) too, but given its specificities indicators of its innovative potential use the prefix "joint" or "common" as all the innovations are supposed to be done in cooperation (figure 10).

Figure 10 Tourism business eco-system innovation potential indicators



Source : author's elaboration

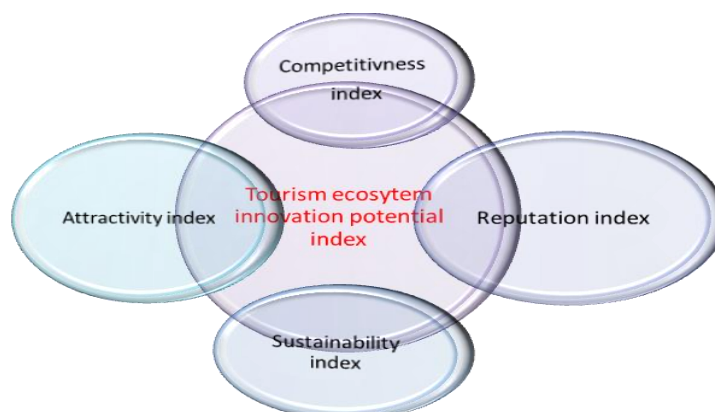
Finally, given the results of the projects Tourmedassets and Shapetourism as well as theoretical framework of the concept of open innovation in the cross border eco system (Italy and Croatia), relationships among four groups of indices indicating destination's reputation, attractiveness, sustainability and competitiveness and destination's innovation potential index are presented (figure 11). Evidently, innovativeness lies in the core of all the four indices, especially in relation with attractiveness and reputation.

Main groups of indices may be created in the following way:

- **Reputation**; the data on reputation for *attractions, rentals, restaurants and hotels* are based on electronic word of mouth (eWOM), i.e. TripAdvisor or other online platforms;

- **Attractiveness;** attractiveness refers to anthropic, economic, environmental, institutional and social capital. The attractiveness ranking may be relevant indicator for cross border cooperation, considering it may point out converging regions and provide the partial explanation for convergence;
- **Competitiveness;** the competitiveness index is a regionalized version of Travel and Tourism Competitiveness Index (TTCI) and encompasses a number of indicators, chosen from the World Economic Forum's database;
- **Sustainability;** indicators of economic, ecological and socio-cultural pressures may be created on the basis of the European Tourism Indicators System (ETIS);
- CB tourism eco- system **innovativeness;** sources may be the same as for the aforementioned groups of indicators, as well as periodical questionnaires among CB destination's stakeholders.

Figure 11 Relationship among Tourism business eco system innovation potential index and other indices



Source: author's elaboration

3.2. A strategic vision for driving innovation in CB sustainable tourism

On the basis on what has been elaborated so far, a question is raised on the issue of ***the CB (Italy-Croatia) Quadruple Helix network stakeholders and their roles in driving innovation in the CB sustainable tourism.***

First of all, it is ***academia, i.e. universities and research institutions*** that play a significant role in the development of the Qudaruple helix innovation model. They create new knowledge and make it available to other helices by using a platform enabling virtual space (living lab) for knowledge exchange. There, different stakeholders, above all SMEs can find advanced support services and an open space for innovation and testing. In this way academia becomes a kind of **knowledge advice**

point that helps reducing the gap between research and practices. On the other side, by cooperating with the entrepreneurial helix (as well as with other helices), academia gets necessary inputs for its further research and innovation thus closing up the feedback loops. Given the above it is recommended that representatives of academia within the CB (Italy-Croatia) Quadruple Helix network would be two institutions already participating in the project, i.e. Ca'Foscari Venice University, Department for Economics, as the leading partner and Split University, Faculty of Economics, Business and Tourism as collaborating partner. However these two universities being well networked with other universities and research institutes in the CB area may include in the process other universities and institutes, such as Politecnico of Marche Region, University of Zadar, Pula, Rijeka, and Dubrovnik as well as the research institute of Padua in Italy and Institute for tourism from Zagreb, Croatia.

Second helix refers to **economic operators** from the field, i.e. SMEs active in blue tourism: accommodation, sharing economy subjects, food and beverage, incoming tour operators and other tourism related enterprises that may enjoy benefits from the innovation co-creative process. Cultural and Creative industries and organizations, training organizations, and other alike associations also make essential part of this helix. Being essentially the most creative organizations, they may have an extremely important contribution to the "bluetour" network. By taking part in QH network enterprises receive a support in terms of knowledge and capacities development. They improve skills and competences what eventually leads to new innovations. As for the particular organizations to be involved in the CB LL activities, except for those project partners that have already been involved in it in the first project stage (30 businesses), as "the engine for project development", in the implementation phase it is recommended to reach more different economic/business operators from tourism related activities such as: organizations representing tourism SMEs (chambers, development agencies and alike) transport and mobility managers, cultural organizations, creative industries representatives.

The third helix refers to **civil sector, including some relevant NGOs as well as local communities and tourists** who have very important role in the co-creation of contents and data. Their opinions and contributions to the innovations may be valuable considering that on one side, tourists as consumers may precisely evaluate products and services they consume, while local population on the other side, being most directly influenced by tourism industry, may be creative in finding solutions to the problems posed by it. In order to reach this audience Living lab would have to be accessible to both these two groups of stakeholders who may use the content and share opinions and ideas through then LL platform.

Finally, the fourth helix, **public sector** is inevitable in the Quadruple Helix living lab platform. Besides regional authorities taking part at the partnership, local municipalities are also to be involved. Namely, some of destination's 6A assets, being public goods (commons) are under direct jurisdiction of the public authorities (such as accessibility assets, some of the heritage attractions, ancillaries etc.). Therefore, there is no doubt that they make an intrinsic element of the QHelix network, the one that may give a valuable contribution to innovations related to public goods management and enhancement. Within this helix an unavoidable element is Destination Management Organization.

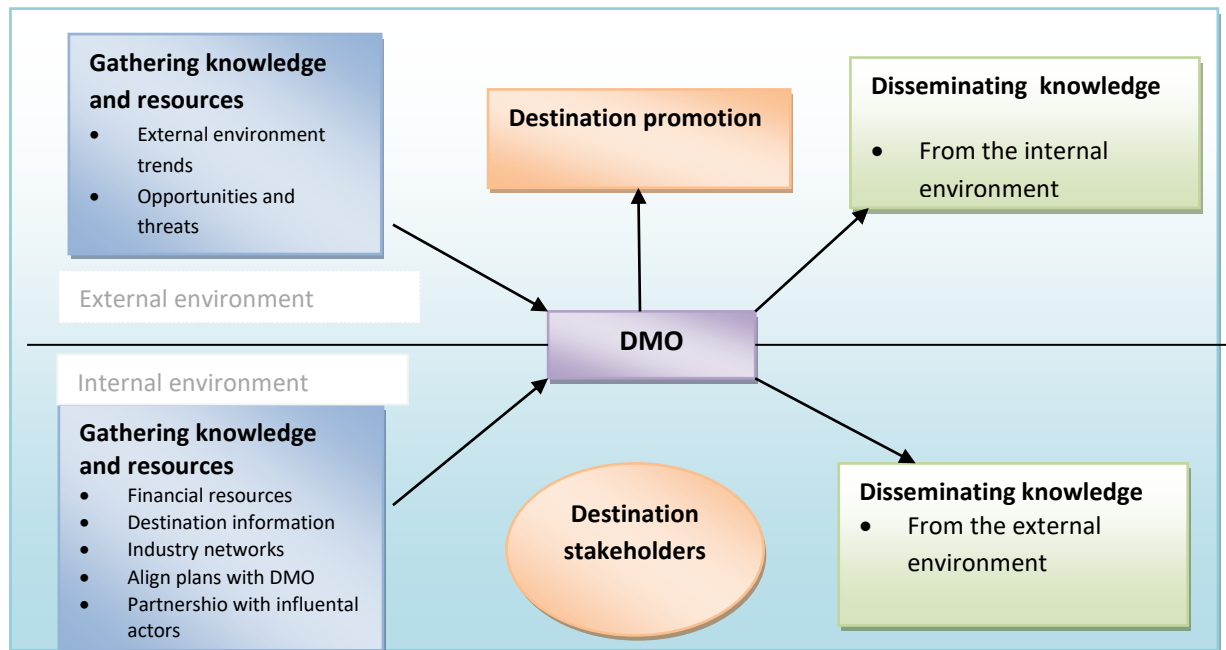
DMOs have recently changed their role, from purely marketing oriented organizations towards those having coordinating and strategic management role.

As stated by the UNWTO (2007), contemporary DMOs have three basic goals, being as follows:

1. To create an appropriate environment for tourism development in a destination; with regard to this, it is strongly involved with: Facility site planning activities; Human resource planning and development; Development of technologies and support systems and Complementary industries' support. Of course, it is not a DMO itself that is in charge with all of these activities but is definitely one of the most important stakeholders in these processes.
2. DMO is responsible for making destination as attractive as possible for not only tourists but also for other groups of stakeholders. With this aim it undertakes different marketing activities such as: Promotion, image and brand creation; Entrepreneurs' attraction campaigns; Information services development; Reservation systems' development to facilitate booking, and Customer Relations Management.
3. In order to enhance visitor experience quality in a destination, DMO is in charge for a number of operational activities, such as: Product development (*manifestation development, attractions development and management, development of tourist routes, itineraries, tourist destination resources' and attractions' interpretative techniques development*); Education and skill enhancement; Business counselling, Strategies, R&D, Environmental management plans and Risk management plans.

Given all these responsibilities, DMO requires a whole set of information and data collected from both, destination system itself as well as from its external environment. By doing so it creates new knowledge and transfers it to stakeholders inside and outside of a destination system (figure 12), thus becoming a specific information exchange hub. To be as efficient and innovative as possible in the processes it is in charge of, it has to act as a learning organisation (Sheehan et al., 2016). Hence, the role of (regional and local) DMOs within CB QHelix is of utmost importance in dissemination/transfer of knowledge and cooperation enhancement. However, as explained before, in present circumstances DMOs are not always up to the task they are given due to a number of reasons (institutional, financial, organisational, etc.), which is why Living Lab concept may be of a great help.

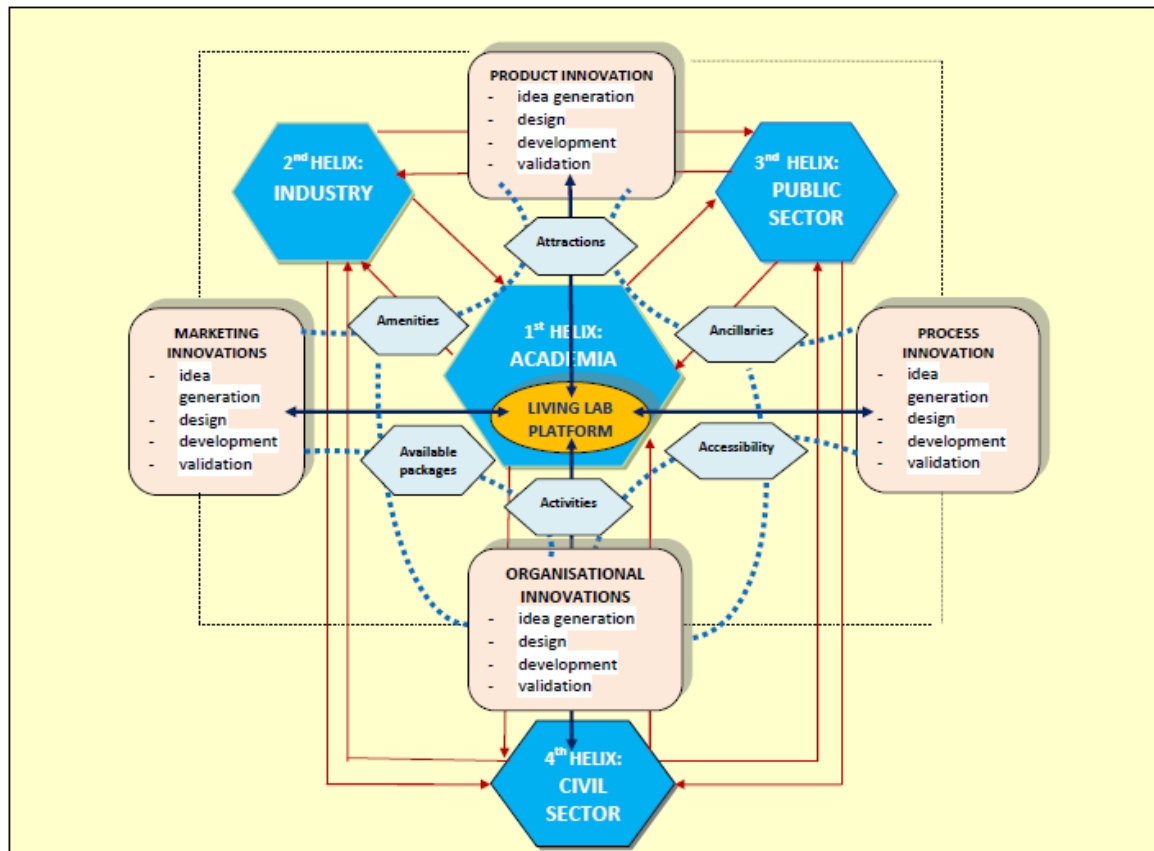
Figure 12 DMO as a learning organization



Source: adapted from: Sheehan, L., Vargas-Sánchez, A., Presenza, A., Abbate, T. (2016)

As explained, all of the helices (stakeholders) networked in the Cross-Border Tourism Business Ecosystem are co-operating by using Living lab platform aiming to innovate different ecosystem's components, i.e. attractions, amenities, accessibility, activities, ancillaries and available packages in all aspects, i.e. products, processes, management/marketing and organisation, from the idea generation phase, through design, development and finally validation, as shown by figure 13. The flows of information and cooperation run in all directions on multi-level, multi-stakeholder and multi-activities' bases.

Figure 13 Information flows among TBE constituents, helices, and processes



Source: author's elaboration

An important question in this analysis is in which way this particular *Blutoursystem platform may become operational*. With this regard some directions are proposed being as follows:

Creator of the LL platform:

The leading institution, Ca'Foscari University is to create web platform which becomes Bluetoursystem Living lab, i.e. virtual meeting point for all the stakeholders invited to become members and participate it.

LL platform contents organization:

As far as the LL platform content is concerned, different types of internet posts could be put on the platform to be shared. They have to be logically organized on the platform's main screen; first of all, under the headings named by the four helices, i.e. academia, tourism industry, civil sector (or civil sector and tourists) and public sector (or municipalities and regions and DMOs), all kind of useful information and data may be posted, from scientific and professional studies' results, results of the

surveys, interviews, online reviews of the services (obtained through big data mining), photographs, etc. These sources may be additionally distributed (structured) into several subheadings on the basis of two possible approaches:

- ✓ The first one is **innovation based approach**, which suggests that under the main headings related to helices, sub-headings may be organized in a way that they share contents under the titles referring to different areas of innovation - product/service innovation, process innovations, management/marketing innovations, and organizational/institutional innovations. However, as the stakeholders who may use this platform come from different helices and are not necessarily acquainted with the theoretical background lying behind the contents, this approach may be too difficult to handle.
- ✓ The second approach is based on the **Tourist Business Ecosystem 6 As**, i.e. on a destination's constituent elements - attractions, ancillaries, activities, available packages, amenities, accessibility, which allows stakeholders, by entering into a concrete helix headings to share contents related to these 6 A sub-headings. For the perspective of an end-user, this approach seems more appropriate (figure 11 partially explains the logic of this approach).

Responsibility for administrating contents:

Special attention is to be given to the matter of responsibility for administrating contents shared through the LL web platform. It seems logical that all the stakeholders involved may put posts and share them. As the members/participants of the Living lab will be (in the first phase) those subjects who participated panel of stakeholders, it is them who may take part in this process directly, after passing through workshops where they get instructions on how to deal with this task.

However, as such a collaborative process ought to be directed, the role of a DMO seems to be of a huge importance. This is why we opt for another approach, which makes regional DMO, being a "learning organization" responsible for information collection and dissemination, to become a kind of an administrator for all of its members. It may make an arrangement with its members to collect their documents through the first three weeks of a month and at the end of month post them all on the living lab platform.

Besides its role of an administrator, DMO would also have to occasionally organize co-creation workshops, both on the online platform and/or in-situ, particularly when the issues of new CB joint products are concerned, particularly new joint cultural routes and events or new types of collaborative arrangements.

Academia is, on the other side responsible to administrate its own posts in the same way, i.e. on a monthly basis. It is important to stress that academia should be in charge of posting results on 5 basic tourism eco-system indices, i.e. index of attractiveness, reputation, competitiveness, sustainability and innovation potential index, not necessarily all of them on a monthly basis but maybe on a half a year basis.

How to share ideas?

Apart from the issue of administrating LL platform contents, another important question is how to enable participants to share ideas and help each other solving problems related to their products/services, processes, and organizational (management) and marketing issues. With this aim a web platform developer may open forum on the main screen as to enable open discussion and posting questions. It may be structured in two possible ways:

- Firstly, forum may be organized under the separate heading on the main screen, enabling participants to interactively chat in a real time or to put questions on any matter and wait for answers with delay.
- Secondly, it may be structured in a way that several subheadings are organized under the main heading, enabling interaction on forums related to specific themes (attractions, accessibility, amenities etc.), thus helping participants to easily approach those stakeholders who share the same interest. Additionally, one subheading dealing with general topics is to be enabled too, helping interactions in both real time and with delay.

Is it possible to involve wider local community and tourists into LL activities?

- Since tourism is deeply embedded into **local community** and strongly affects it in many ways, the involvement of the citizens seems to be inevitable. They know the best all problems within a destination and can easily recognize possible solutions. The best way to involve them is through the activities of a local DMO that can organize local forums, workshops, questionnaires and alike and share the results on the LL platform with other stakeholders trying to get their comments on the matter.
- Another solution may be to directly involve representatives of the local community into LL activities; they may be representatives of the local NGOs, or Local Action Groups or Community Groups...
- Third approach is to open free access to all the public in the communities involved in the CB pilot areas in which case special attention has to be put to the technical issues related to the organisation of posts, their length, contents etc.

Involvement of **tourists** may be operationalized in two possible ways;

- The first one is also through an open access, meaning that all tourists may post their comments on the living lab platform forum. In order to enable easier access to the platform, the link to it

would have to be accessible on some popular tourist sites. However, it is not likely that many tourists would leave their comments on this way.

- Another, more appropriate way to get tourists' opinions is to collect information and data from the social networks and tourist related platforms such as Trip advisor, Booking com, and alike and after being processed by academia, results should be put on the platform under appropriate headings/subheadings. In case when tourist opinions are collected by questionnaires or interviews that are occasionally run by DMOs, themselves may be the ones who are in charge for disseminating results on the platform.

Finally in order to make the Living lab activities more transparent and efficient, creation of a kind of an operational manual is needed to make its results the best possible.

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