

TECHNOLOGICAL INNOVATION IN E-TOURISM: THE ROLE OF INTEROPERABILITY AND STANDARDS

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ABSTRACT

Creativity and innovation are the watchwords on which today, more than ever, companies and organizations base their competitiveness and success. Besides individual characteristics, innovation and creativity can be highly favored by a number of environmental factors. This is particularly true in the case of tourism, where the issue of competitiveness is only partially attributable to individual operators, but strongly depends on the characteristics of the local system (the destination) in which they operate. In a rapidly evolving technological world, a standardized and interoperable environment has become an infeasible element for companies that want to take advantage from modern technologies. This contribution discusses these issues and focuses on the role played by interoperability and standards as elements that can provide that favorable environment for enhancing the innovative capabilities of tourism businesses.

KEYWORDS

Innovation, eTourism, standards, interoperability

INTRODUCTION

Creativity and innovation are the watchwords on which today, more than ever, are based the competitiveness and the success of companies and organizations around the World. Those who are able to manage well their processes and innovate products and practices, and are more willing to adapt to a dynamic environment in which the constraints of space and time seem to be gone, are those that seem to have a good chance to compete successfully in the global market. Innovation, however, is not just about producing new artifacts or new gadgets or new accessories for old products. It rather means, above all, analyzing business processes, optimizing them, integrating as much as possible new and improved technologies and increasing awareness, knowledge and ability to add value to what has been built in the past (Amabile, 1988).

Processes of this kind, as is now evident, are not possible in isolation. A wide research effort and numerous studies have shown that these are processes that originate more easily when a network of individuals or companies are working together rather than for the momentum of a single individual (Sawyer, 2009; Schilling & Phelps, 2007). Furthermore, beyond the individual characteristics and

the possibilities of those involved, the available media play a fundamental role in a global and highly competitive scenario. This is especially true in the case of tourism where the issue of competitiveness is only partially attributable to single operators, but is rather a feature of the local system - the destination - in which they operate (Molina-Azorin et al., 2010). Moreover, in matters that strongly depend on information technology this becomes even more important (Baggio & Del Chiappa, 2013).

Two factors seem to play a crucial role as innovation catalysts: the possibility to produce and manage objects with relative simplicity, and the speed with which the technologies and methods of use change and evolve. Thus, it becomes essential to be able to count on an availability of infrastructures and architectures that are designed and implemented with a high degree of standardization and interoperability so that it can be possible to focus on content rather than on the forms (and details) to promote creations based on these elements, and to generate a virtuous circle of innovation (Farrell & Saloner, 1985). In fact, when it is not possible to rely on standardized environments, the need to act on a case by case basis, and to depend on diverse technical platforms or systems, necessarily lead to the demand of large investments and resources, making it an arena in which only a few can operate successfully and in which the push to innovate is much weaker (Farrell & Saloner, 1985).

The history of civilization offers many examples in this regard. The standardization of the gauge of the railway lines removed the many problems of incompatibility and promoted, starting from the second half of the nineteenth century, the beginning of a new commercial revolution. This improvement of transport technology was one the basis of the phenomenon now known as mass tourism. More or less at the same time, the choice of alternating current as the sole “form” of electricity and the birth of power distribution companies that would deliver it in a standard way freed large and small companies from the necessity of having to assemble their own energy supply. In this way they were able to access power produced by independent suppliers and distributed on a large scale, making it possible to choose, from a greater range of sources at significantly lower costs, the quantity required for the specific purpose and for the time needed. This not only changed the modes of production, but generated a series of economic and social changes that led to the World as we live in today (Derry & Williams, 1993).

Aim of this conceptual contribution is to highlight the importance of these factors (standardization and interoperability) and discuss the role they have in fostering innovative developments in the challenging area of eTourism (the application of computerized information technologies to tourism activities).

INFORMATION TECHNOLOGY AND TOURISM: A CHALLENGING RELATIONSHIP

The observations made so far assume a great importance when considering the varied world of tourism activities, where the strict dependence on technology for the efficient and effective management of information has caused, in recent years, a real revolution due to the diffusion of online applications. The most recent developments of the Web and social networks have then further accentuated the influence of ICTs (Information and Communication Technologies) on the sector (Eftekhari et al., 2011).

The relationship between technology and tourism has become a delicate and challenging relationship. On the one hand ICTs have made available to all stakeholders (supply and demand) instruments that are highly effective and efficient to produce and distribute or to choose and buy.

On the other hand they have strengthened their influence and caused a sometimes brutal selection of the actors, especially from the supply side, triggering the expulsion from the market of those who have shown little ability to use well what is available (Berne et al., 2012).

The majority of studies on the behavior of tourists highlight the fact that the first choice concerns the destination of their trip (unless it is forced as in the case of business travels). The destination is selected well before deciding which specific facility (hotels, attractions, etc.) to use during the trip. In this process, tourists seem to be attracted more by the richness and diversity of supply than by economic factors (prices). They devote much of their time to making comparisons on all aspects they consider important or interesting from an individual point of view, and do not hesitate to revise the decisions on the details of their trip many times and in very fast ways. At the end, the preference goes to destinations that stand out for their ability to propose diversified offerings and good tools to dynamically customize the elements of travel and stay. In this framework, the individual operator has little say if isolated from the rest of the destination and is less attractive and competitive than assemblies of well-organized groups (Crouch, 2011; Jacobsen & Munar, 2012).

Indeed, sometimes the wide uncoordinated spread of technological tools leads to unforeseen and unintended consequences such as an increased seasonality or a push towards the use of price as an exclusive choice factor (Boffa & Succurro, 2012).

Today, we tend too often to enhance the external aspects of modern ICTs, by magnifying the possibilities they offer to those who want to promote, persuade, inform or sell services and products, in few words focus on the business-to-consumer (B2C) aspect. In this way, we leave behind the infrastructural factors, often forgetting that a large part of the success in marketing and sales is determined by the quality of the product being offered. If this product, which is known as essentially informational in nature, is mostly assembled and defined by information technology tools, then the nature of the systems and of the infrastructures needed to support them constitute a crucial and significant element (Antonioli Corigliano & Baggio, 2011).

The emphasis on B2C world, however, is not only a prerogative of tourism. If we consider the economy that revolves around the Internet phenomenon, we find that these “exterior aspects” are actually the component of lower weight, while the use of the possibilities offered by the Internet is much more intense in other activities such as those involving the direct relations between economic actors (individuals, companies, organizations, etc.), what are known as business-to-business (B2B) activities. In fact the available estimates on the market eCommerce B2C and B2B show a ratio of 1:10 between the two. According to IDC (2011), the global B2C eCommerce market is worth about 698 billion euro, while the B2B accounts for about 6422 billion euro. Yet the large majority of analyses, studies, reports and articles concentrate, in any field, on the consumers’ uses of ICTs. The structure and efficiency of the supply chain become a key element. In the world of industrial production this concept is clear; the supply chain is that part of the value chain refers to the physical flow of goods and materials and to the parallel flow of information through the phases of procurement, production and distribution of a product or service. Today is considered to be the by far more important than the value chain itself, and able to condition it in a strong manner. Rational management of the chain or supply networks is an essential element for the survival and the growth of any company and can ensure good competitive positions in the global market. Supply chain administration is considered one of the paradigms (and one of the most important) for the management of the new millennium (Drucker, 1998).

In tourism this concept has not yet been well elucidated and defined, but it is safe to say that, by analogy with other industrial sectors (manufacturing or services) the supply chain plays a key role

and is the main contributor to the value chain (Zhang et al., 2009). Its organization and management must therefore necessarily be the most effective and efficient possible if a firm or an organization wants to achieve the growth targets set and satisfy the needs and desires of tourists. It must be said that the task, here, is also (in a sense) facilitated by the consideration that the only goods to be moved is information and that today methods and techniques for the processing of information are, or may be, extremely effective, efficient and flexible.

There are two elements that can facilitate this process: a good technological infrastructure of communication, and the adoption of common standards for the processing and transmission of information.

The main point to consider, although it may seem trivial, is that we are dealing with machines, whose operating modes are well defined and different from those of other human systems. The language with which machines talk and communicate plays a key role, as well as the physical channels of communication established between them. It can be quite difficult to obtain good outcomes if there is little or no access to connections able to support with great reliability and high performance the transfer of the huge amounts of data that modern technological developments impose. In other words, without a widespread distribution of cost effective broadband connections, there is little meaning in pushing towards large efforts for developing applications, systems, or encouraging the intense exchange of views, comments and complaints to which the world of Web 2.0 has accustomed us have.

INTEROPERABILITY AND STANDARDS

Interoperability is the ability of a product or system, through appropriate interfaces, to work in concert with other products or systems, present or future, without (excessive) access restrictions. The term was born in the realm of technology and information technology, but has a quite general application. To make this possible it is necessary to define a standard, that is an accepted norm, a reference model to which all adhere, and establish shared rules regarding interfaces and transfer modes together with the formal content of these transfers.

The adoption of a standard is an important element in many cases. The role that this adoption may have for companies and consumers has been long debated. On the one hand it is argued that a strong push to standardization is likely to block the development of products and services, and to prevent the improvements when new and better technologies or production methods become available. On the other hand, it has been emphasized that standardization can have a positive role in encouraging innovation. This seems to happen mainly when there is complete information, for example in the case of open and public standards (Farrell & Saloner, 1985).

Many studies confirm this position. In them, the predominant view is that standardization leads to lower production costs, reduces output on the market of new products, limits errors and promotes the search for new solutions with a solid foundation on which to build. At the same time shared norms greatly expand the horizon spatial and temporal affairs by providing access to wider markets. In particular, standards that reflect the state of the art in a field provide a fertile ground for innovators by facilitating interoperability between existing solutions and increasing consumer confidence in the features and reliability of the products. Finally, the adoption of open standards, that is standards developed through a consensus process which are publicly available and can be used by anyone based on reasonable and non-discriminatory agreements, can promote

interoperability encouraging innovation, increasing competitiveness and expanding the opportunities for producers and consumers (Egan, 2002; Friedrich, 2011; Jiang et al., 2012). A brief analysis of two cases will better make the point.

The transport of goods

The tonnage of a ship has been for long time the measure of its capacity, representing the volume of all closed spaces available on board. Today a ship's capacity is measured in TEUs, an acronym for *twenty-foot equivalent unit*, that is the number of standard 20 foot containers that the ship would be able to load.

Containers are boxes made of aluminum or steel of different sizes, but almost all multiple or submultiple of $20 \times 8 \times 8 \frac{1}{2}$ feet, identified unambiguously, with the corners built so that it is possible to fasten them to each other or to the means of transport, to hook, load and unload with special cranes positioned on the dock or the platform, and which are managed in a fully automatic way. All this independently from the manufacturer, the handler or the shipper.

A 20 ft. container can hold 20 to 30 tons of goods. If shipped by sea, its arrival can be predicted with an accuracy of 15 minutes for a two-week trip. The record handling is of about 734 containers unloaded from a ship in an hour. The largest ships in operation today can have capacities of several thousand containers (the biggest capacity is of about 15 000 TEUs). Except for oil and a few other substances, all packed goods travel today in containers of various sizes.

The story begins in the late 1950s. In little more than twenty years, after many hard economic and legal battles, containers have become a reality. Their consecration takes place during the Vietnam War (in the late 1960s – early 1970s), when the impressive organization of the U.S. Army logistics widely used these boxes in order to optimize times and transportation costs.

Today hundreds of millions of containers travel across oceans, waterways, roads and railways. They can be quickly and easily moved from one means of transport to another, and due to their unique identification, it is possible to follow their travels, know at any time their position or make reliable predictions on their arrival at destination. Without a system of this kind the supply chain of industries around the world were still at the levels they were in nineteenth century, the development of many countries or economic systems would have been far more slow and difficult, and concepts such as production efficiency, the optimal management inventory and just-in-time would still only interesting theoretical speculations (Levinson, 2008).

The Internet

The second example concerns the role played by the architectural design in the technology development and diffusion of the Internet. In general, there is not a wide and deep knowledge about how the Internet functions and what are the possibilities or constraints imposed by the use of all the available technologies. This can be good because we can concentrate on the contents without having to attain a sophisticated know-how, but it may become problematic when designing strategies and actions that contemplate the use of such means which could, beyond their charm, be affected because the tools were not built to meet certain desires. Also, without decisive action in this sense, technology providers will continue to develop and change the network, but not necessarily in a way that will lead to community economic, social or cultural benefits. A better understanding of the inner workings can help trying to avoid such risks.

The incredible expansion of the Internet is, as many know by now, mainly due to the technical choices that underlie its structure. The architecture was designed based on some general principles (Carpenter, 1996; Schewick, 2010):

- *modularity*: objects, systems and programs are made up of small independent parts that can be aggregated to provide specific functions of greater complexity. In addition, the entire system is composed of a multitude of independent networks that communicate with each other because they agree on a shared set of communication protocols;
- *stratification*: the necessary functions are performed by different levels of software that communicate between them. Each level consists of multiple entities (applications, processes, hardware, etc..) and performs a specific set of operations. The goal of a level is to provide services in a transparent way to the upper level entity, hiding all the implementation details of services' delivery. In this way users can focus only on the operations needed to solve their specific problem, and rely, for the remaining operations, on a combination of other protocols and levels for which the only knowledge needed is the one related to the interfaces between them (i.e. how to call a specific function and how to get the answer);
- *net neutrality*: even if highly *intelligent*, the network behaves neutrally with respect to the capacity of the terminals connected (end-to-end). The responsibility to have all the functions necessary to carry out the operations pertains to the terminals. The network is not bound to any particular class of applications or machines and can be used for the most diverse purposes.

Besides that, what is more important is that the network has been designed as an open system. Its use is based on a set of standard protocols agreed and shared between the many different actors. The standards are public and available to anyone who wants to use them. There are no *owners* to whom licenses should be paid or from whom permits should be obtained.

The protocols underlying the Internet (known as the TCP/IP suite) were developed in the early 1970s with the strong support of the U.S. government through a specifically created agency, the Defense Advanced Research Projects Agency (DARPA). All protocols were standardized at the beginning of the 1980s. In 1995, with the DARPA project coming to an end, the network is *sold* to private commercial organizations. The U.S. government, however, continues to strongly encourage and support the use of TCP/IP so that they become a (de facto) standard way of communication between the government and companies that work with the government (Leiner et al., 2001).

In the early 1990s another subset of protocols comes to light, developed with the same philosophy and built on the foundation provided by TCP/IP, we know it as the World Wide Web. These protocols are immediately recognized as being the missing link allowing an usage no longer confined to groups of scientists or specialists, but able to reach a large mass of users (Berners-Lee, 1996).

The original characteristics of the network, however, have not changed in this time frame, and are the solid basis of a phenomenon that today affects in a decisive way the World's wealth, generates millions of jobs and is considered to be one of the major engines of development. Its impact is believed to be greater than that due to the industrial revolution in the nineteenth century.

In the most advanced countries (the so-called G20) the use of the Internet has generated about 10% of GDP between 1995 and 2009, and for the past five years has contributed to over 20% of their economic growth. The estimate is that its value in the G20 countries will be in excess of four trillion

dollars in 2016. In other words, if it were a national economy, Internet would be among the top five in the world after the U.S., China, India and Japan and coming before the strongest European country, Germany (BCG, 2012; MGI, 2011).

More importantly, the positive effects on economic growth occur in a very *democratic* way: regardless of size, firms and organizations that use intensively the Network and its technologies grow more than others. This can be especially important for tourism, given the structure of the sector and the size of the stakeholders involved.

In this virtual world we have seen the most creative and innovative adventures, some of which have profoundly changed our ways of living and working and completely altered whole economic and industrial sectors. As a set of general purpose technologies, the Internet creates value in itself. Applications serve as a transmission belt between the general functions of the network and what gives value to its users, and to society in general. Internet standard protocols form a particularly fertile humus and extremely effective for the production of applications that help people and companies perform their work, or help them to do so more efficiently.

STANDARDS FOR ETOURISM

There are numerous known examples of how a shared interoperable standard environment has favored the spread of innovation, such as the effects of the GSM standard in the telecommunications market in Europe, or those in the movie industry with VHS and CD first and DVD and Blu-ray later, or the role played by MP3 in the music industry. All this has been demonstrated at both empirical and theoretical levels (Gasser & Palfrey, 2007).

The importance and role of standardization are also well recognized at institutional level. The Communication from the European Commission to the European Parliament on the Innovation Union 2020 Flagship Initiative states: " Standards play an important role for innovation. By codifying information on the state of the art of a particular technology, they enable dissemination of knowledge, interoperability between new products and services and provide a platform for further innovation " (European Commission, 2010: 16).

These examples, and the cases described in the previous sections, allow us some considerations that can be applied to the eTourism arena.

First of all, technology standards and technology innovation are core factors that affect market competition, mainly for what concerns tourism activities. Moreover, technology standardization is crucial in improving industrial innovation systems, as some scholar has well noted (Jiang et al., 2012), and there is a clear transitive relationship: high quality technology innovation can promote technology standards and high-level technology standards that are widely implemented can boost technology innovation. Also, in this symmetric connection, institutional policy setting plays a fundamental role for favoring the process.

When exchanges of large quantities of information about products are into play, a seamless transfer can only be possible with a shared language. Business standards define data formats and establish rules, forming the basis for efficient B2B and B2C business processes (ordering, delivering and billing) and for quick, automated and efficient internal processes.

The benefits are important:

- standards ensure clarity of understanding as well as reduce and remove ambiguity;

- the widespread use of a chosen standard for each business process results in reduced total cost of ownership (lifetime) as there is less customization needed, and allow the sharing of ongoing costs with more organizations;
- the use of a common standard can act as a catalyst for exchanging and improving business processes, such as those within a supply chain or community, permit reduced cycle times and so reduces inventory. In some cases, this can even lead to global warehouse or vendor managed inventory;
- within organizations, common naming and financial standards result in better information management.

Interoperability is likely to foster innovation by reducing lock-in effects and lowering entry barriers. Interoperable identification systems, for instance, allow Internet users to switch between different providers, but also to choose more freely among businesses engaged in e-commerce (e.g. online travel agency), thus enhancing competition among them. Enhanced competition benefits users by reducing prices and by providing incentives for product and service innovation (Gasser & Palfrey, 2007).

Empirical evidence of the connection between interoperability and innovation is not conclusive, but anecdotal evidence is plentiful, and the absence of much evidence to the contrary is sufficient to support the claim of a positive link, in general, between interoperability and innovation, with major benefits being openness of market (more choices), increase in “healthy” competition, operational efficiency and effectiveness. In this framework time, maturity, barriers to entry, and complexity of relationships are key factors. It is also recognized that certain conditions need to be met such as strong collaborative environments or government-led top-down policies. Interoperable standards address the need for:

- cooperation among the agents in the tourism value chain with the aim to establish tourism services;
- exchanging information among the agents in the tourism value chain;
- sharing and reusing information among the agents in the tourism value chain to increase efficiency;
- improved overall service delivery;

History shows that the choice of a standard does not necessarily fall on the most innovative proposal or most technologically advanced, but it is almost always a compromise between these characteristics and the effective presence in the field. Moreover, as the studies on the diffusion of innovations teach (see Rogers, 1962: as the first and most famous example), the factors that determine success are different. Besides the obvious innovative content, other elements are equally important: the social, economic and regulatory environment, and the presence of a set of products, accessories and features that facilitates practical uses. Then:

- there is a level, albeit minimal, of collaboration between the different actors involved that leads individuals and companies to agree on the use of a certain standard and to contribute actively to its complete definition;
- there is a critical moment in which the action of a catalyst gives a major boost for a full adoption pushing also still reluctant actors to realize the need to support the decisions made.

In the economic thought, there have long been two extreme opposite. The first is the liberal idea, which considers the absolute freedom of the market as a condition for the development, reputing that a free competition would lead to an optimal allocation of resources. Here the production and distribution of goods and services are much more efficient than those that can be obtained by allowing any top-down regulation. The second idea, socialist, argues that the economy should be fully planned and that the management of the dynamics of an economic system rests with the State that establishes plans, sets goals and regulates the use of resources in order to facilitate an equitable distribution. As is well known, none of these ideas (which are extreme and have seen many hybrid applications) has produced fully acceptable results.

When tourism is considered, then, a fundamental element to take into consideration is the presence of common resources (common goods such as the environmental or cultural resources), which, if left in an environment totally free from any constraint, strongly risk falling into that *tragedy of commons* described by Garrett Hardin (1968). According to this interpretation the users of a common resource can be caught in a dilemma between individual interest and benefit to the community. The only solution seems to be the intervention of an external regulator authority. In fact, as shown by others (Ostrom, 1990), neither the centralized management of common goods nor its total privatization are viable solutions. The analysis shows that it is impossible to generalize theoretical models, and reveals how individual communities are able to reach agreements through a sustainable self-organization and the formation of responsible managing institutions.

Even the eTourism world has highlighted these problems. In the last fifteen years we have seen a *de facto* liberalization mostly due to a lack of understanding of the importance of the Internet phenomenon and to the *castling* of many public and private actors into protectionist positions that refused the technological advancements. This has left the field open to those who had instead begun to operate actively and has created a market characterized by the strong presence of a few operators; an oligopoly that dictates the conditions for participation. As a matter of fact, the last European online tourism survey by Phocuswright (2012) forecasts the first five online travel agencies (OTA) to reach 40% of the eTourism market in 2013.

In regions of the World such as Europe, where tourism as an economic activity is characterized by a high fragmentation and very small firm sizes, the situation depicted above is becoming less and less sustainable mainly for small operators who have limited resources and skills for achieving effective advantages (Baggio, 2012). Moreover their recognized strong (and often excessive) competitiveness has led to a condition of technological anarchy, in which each actor (or small group of actors) has developed or adopted her own system, with her own definition of the elements that compose it and her own methods to access the available distribution channels.

As mentioned earlier, however, a human being could quite easily understand that objects or activities with different names and different descriptions might belong to the same class, but a machine cannot do it and considers all these as different. For an efficient functioning of a network of machines a common way to describe the items to be handled is needed, that is an ontology, a formal representation of a shared and explicit conceptualization of a domain of interest. In addition to this, the network requires a standard communication protocol: a formal set of data formats and rules for recording and transferring the different messages.

The attempt to collect and organize the tourist objects in a more or less centralized is an effort that does not seem to be able to achieve high success. For example (data are for March 2013), the Alexa (www.alexa.com) popularity ranking assigns places around the 50 000th - 100 000th position to the

most recognized regional portals while the OTAs rank among the first 500 (an extreme example is the 562 970th position achieved by visiteurope.com, the European tourism portal).

One reason can be that these huge realizations need extensive resources, not always easily available to the different organizations, but, above all, their push to centralization collides with the very nature of the medium that is used, Internet, which is genetically inclined to sharing, open communication and connections. It is no coincidence that the recent developments (Web 2.0 and social media) have been imposed so powerfully undermining many positions captured and forced to reformulate strategies and approaches.

Besides that, the wide variety of technical approaches used by tourism organizations and the lack of standardization, makes very difficult, if not impossible, to provide a coordinated access to online resources. Moreover, this situation holds back effective and practical possibilities to easily assemble composite products that users are so keen to have. As some scholars have shown, in fact, an excessive fragmentation of the offers confuses travelers more than well-organized proposals (Park & Jang, 2013), or may stress rather than ease issues such as seasonality when search costs are too high (Boffa & Succurro, 2012).

One final consideration is in order. It may seem that the lack of standards is not necessarily a restraint to innovation, even in tourism. For instance, one can see mobile technologies as the most innovative and growing current environment. Yet, this field is characterized by a strong competition between non-compatible systems. Android, iOS (Apple), Windows (to cite only the major players) have provided a wealth of possibilities to design and develop applications (apps) that have created an intense phase of innovation for products and services in which tourism is the main field of application. These systems, however, are completely incompatible, forcing developers to a multiple effort to guarantee market success of their offers. In this situation some start to remark that, after an initial enthusiasm, we are facing some disillusion, and companies and developers are questioning whether they should continue on the native app way or turn to some more universal standard (although not really standardized) such as HTML5 for their mobile applications (Pongracz, 2013; Quigley, 2013; Quilligan, 2013).

A CONCLUDING REMARK

The strong relationship existing between ICTs and tourism leads almost naturally to considering a tourism system as an integrated ensemble in which both a real physical component (the companies and organizations active in the field) and a virtual one (the digital representations of the physical elements) act in a strongly coupled way. The resulting networked system can be seen as a digital business ecosystem in which the structure and the dynamic behavior are of peculiar nature (Baggio & Del Chiappa, 2013).

Building on the considerations made so far, it seems rather clear that mainly for what concerns the development, if not the survival, of small and medium tourism operators, a technological cooperation strategy is to be adopted without further delay.

This strategy has to be founded on the recognition of the need for a standard and interoperable set of protocols that could enable an effective exploitation of the incredible advantages modern ICTs can provide. Among the many systems in use for tourism operators what seems really missing is a shared platform that allows matching buyers and sellers in a virtual marketplace and facilitating automatic transactions. In other words a wide network in which supply and demand, in their different and varied forms, can convene in a structured way in order to meet the dynamic demands

of the market and where it is possible to evaluate bids, negotiate costs and conditions, and make deals without having to go through lengthy or cumbersome bureaucracies or slow traditional communication channels. Proposals of this kind have been put forward several times in the past and methods and schemes for rational choices exist (Reino et al., 2013).

Interoperability and standards are, as discussed in this contribution, a crucial prerequisite for encouraging creativity and innovation, commonly reputed a main determinant for the attractiveness and competitiveness of tourism destinations or actors.

Any strong policy action in the eTourism arena should aim to act as a catalyst for these elements (infrastructure and interoperability standards) and to promote their establishment and use, rather than addressing almost exclusively the B2C side by proposing, for example, purely marketing or promotional platforms (e.g. portals and the such). On their side, tourism operators have to give up, at least partially, positions of excessive competition and come to an agreement on standards for digital interoperability of their offers.

As Egan (2002: 63) notes: “firms need to get involved in the frequently arcane business of standards-setting if they are to avoid losing competitive advantage. If they do not get involved, their competitors are likely to set standards, and define the way products are tested and certified.”

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