Abstract: This chapter discusses the advent and the impact of Information and Communication Technologies (ICT) on the travel and tourism industry. It first reviews and highlights the most important milestones in the last two decades that changed tourism communication, focusing on three main areas of development: the persuasive nature of tourism websites, social media conversations, and mobile computing. It is then argued that these technological developments have led to the transformation of tourism that is best characterized by the development of the Internet of Things (IoT) and the notion ‘travelling in the network.’ The chapter concludes that this ambient networking of the various tourism systems will further transform the tourism experience and therefore lead to a new paradigm for tourism communication within an increasingly ICT-support environment.

Keywords: ICT, eTourism, communication, web development, social media, mobile computing, tourism experience, Internet of Things.

The development of Information and Communication Technologies (ICTs) in the last two decades has dramatically transformed the tourism industry (Inversini and Buhalis 2009; Werthner and Klein 1999). Poon (1993) predicted that a whole new system of ICTs would be rapidly diffused throughout the tourism industry and no player could escape its impact. Indeed, ICTs have had a profound impact on the operational and strategic practices of tourism organisations, and have altered the competitive landscape of enterprises and regions around the world (Fesenmaier and Xiang 2013). At the tactical level, ICTs enabled eCommerce and helped tourism organisations maximise efficiency and effectiveness whereas at the strategic level, ICTs have helped to restructure the travel and tourism value chain as well as the relationships between tourism organisations and their stakeholders (Buhalis 2003).

Modern travellers are exigent and constantly in need of information during the entire consumption process of travel (Gretzel et al. 2006). The complex array of information needed by travellers before, during, and after the tourism experience can be delivered on different devices, with different strategies, and by different stakeholders thanks to today’s technologies (Inversini et al. 2009). Wise tourism managers guard different channels and use various strategies to develop the relationships with customers and to provide them with the most relevant information at the right place and at the right time. This suggests that effective communication holds the key to assisting travellers in the multifaceted pre-trip planning process, helping them making en route and on-site decisions, and supporting their
engagement with their social circle after the trip (Jeng and Fesenmaier 2002; Gretzel et al. 2006; Inversini and Cantoni 2009).

However, the intrinsic nature of the tourism product characterised by experiential services and goods with high level of complexity poses many challenges for the industry (Gretzel and Fesenmaier 2002; Pine and Gilmore 1999). Travel and tourism is an unique industry wherein the purchased product is created at the moment when the actual experience takes place (Tresidder and Hirst 2012). The intangibility of the tourism experience gives rise to many problems for effective communications between the supply and demand. To address these challenges, many technological solutions have been proposed and tested in order to facilitate and enhance online tourism communications along with technological developments in other domains, resulting in a rich stream of literature (Fesenmaier et al. 2006). In the last two decades we have witnessed a series of significant development in online tourism communications characterised by richer content, more personalized services, higher level of interactivity, and, most importantly, highly diverse and extremely dynamic modalities of dialogues and engagement.

This chapter synthesises the literature that reflects the evolution of information and communication technologies in travel and tourism over the last two decades. Specifically, this discussion focuses attention on three important areas of ICT development including website design, social media, and mobile technology as they support a wide range of communication needs throughout the travel process. To provide an outlook for the future development, this chapter also proposes an emergent paradigm for online tourism communication.

1 New media in tourism communication: two decades of change

Information is the lifeblood of the tourism industry, and the uses of ICTs have always played a critical role in distribution and management (O’Connor and Frew 2004; Sheldon 1997). From the development of Computer Reservation Systems (CRSs) in the 1970s to the Global Distribution Systems (GDSs) in the 1980s until the advent of the Internet in early 1990s, the tourism industry has always been confronted with the rise of new developments that posed as both opportunities and challenges (Buhalís and Law 2008; Ip et al. 2011). However, it was during this first decade of the Internet (roughly from 1991–2002) that ICTs assumed a critical importance for communication purposes. As illustrated in Figure 1, the tourism industry became one of the leaders in the use of the Internet as this new tool was enabling them to communicate easily and effectively with their existing and potential customers. Every American tourism organization had developed a website by the early 2000’s, and many had gone through the evolution from a simple
Fig. 1: Six generations of Internet development.

‘electronic brochure’ to highly interactive systems that supported reservations, search and even virtual tours; importantly, the website had become the primary (and in many circumstances, the only) source of contact with potential visitors (Zach et al. 2010). In retrospect, this transformation is easily understood as the use of computers already existed within the domain (i.e. the various GDSs linking travel agencies to the airlines). Also during this time, many innovative destination marketing organizations (DMOs) began to realize their new role as partners within the tourism system wherein they became ‘information brokers’ as they sought to develop and coordinate a range of new systems that would be used by their stakeholders (Fesenmaier and Xiang 2013; Gretzel and Fesenmaier 2002; Wang and Xiang 2012) to share relevant information.

Interestingly, the second decade (2001–present) was a time of even greater change for tourism marketing and communication where the focus of technology emerged from website development (i.e., growth in the number of websites) and usability to one of persuasion and customer empowerment, and more recently to ubiquity through mobile systems. That is, while many of the core industry changes were realized in the first decade, the rise of Web 2.0 created a new round of adaptation, which required another new and even more transformational framework for tourism marketing and communication. The first part of this second decade of the Internet saw the expansion of high-speed connections where the richness of the new interactive medium could be exploited (e.g. pictures and videos), leading eventually to the development of brochures which largely realized the interactive and personalized vision of the early developers. The most important feature of this decade is the development of new ‘social’ systems. TripAdvisor, for example, was launched in 2000 and fifteen years later (in 2014) it handled over 50 million inquiries monthly; Wikipedia was launched in 2001 and by 2014, it hosted over 250 million articles in 285 different languages; and Facebook,
launched in 2004 grew such that it serviced over 1 billion users annually by 2013. Importantly, during about the same time mobile phone systems began to penetrate the marketplace to enable travellers to communicate more easily and from essentially anywhere on the planet.

Finally in the later part of the decade, the introduction of smartphones, mobile computing systems that incorporate a variety of technologies including communications, global positioning systems (GPS), photography and the Internet, enriched the social environment further such that it empowers users to substantially control their travel experience anytime, anywhere. Within the tourism literature, Buhalis (2003) provided the leading book which discussed in practical terms how the tourism industry could successfully navigate through this new world. More recently, Sigala, Christou, and Gretzel (2012) offer a different vision, which is situated within this new rich socially created environment whereby the “army of travellers” is now the central player within the value chain; further, Wang, Park, and Fesenmaier (2012) conclude that the increased mobility supported through smartphones substantially changes the nature of the travel experience. The Internet, together with the new interactive way of communication provided by social media and with the location based browsing, fundamentally changed the nature of travel and tourism communication and marketing (Gretzel et al. 2006).

1.1 The website: from functionality to persuasion

The Internet provided the ability to expand the customer base to cover the global population cost effectively. Large organisations such as airlines and hotel chains were able to access an international clientele and develop the tools to manage properties around the world at the touch of a button (Egger and Buhalis 2008). Smaller companies could also for the first time develop their “virtual size” and offer their services to global markets (Spencer et al. 2012). Tourism enterprises – at all levels – recognized the importance of technologies in their field and they acknowledge that a correct management of an holistic online presence is a prerequisite for success (e.g. Inversini et al. 2012).

Travel and tourism organizations rely upon the Internet to facilitate users’ experience when approaching the destination in the online environment (Gretzel et al. 2006). Indeed, the cornerstone of the online tourism communication continues to be the organization’s website (Baloglu and Pekcan 2006); for example, Choi, Lehto, and Oleary, (2007), as well as Wang (2008) and Zach et al. (2010), found that tourism destinations use official websites to provide users with information during the three phases of tourism goods consumption, in order to promote a coherent destination image throughout the travel experience. Similarly, hospitality businesses also put a lot of effort in creating the hotel website to be the focal point of the digital marketing and communication strategy as well as of the digital selling strategy (Phelan et al. 2011) thus fostering disintermediation (Law 2009), or in
other words the possibility of selling rooms independently by third party operators. The adoption of these technologies required a lot of effort on the industry side which was not prepared to embrace the changes required by the management of a 24/7 worldwide contact point (i.e. the website) and a 24/7 worldwide sales centre (i.e. the reservations page) due to organizational problems (Card et al. 2003).

Tourism researchers drew inspiration from many other disciplines including digital communications (Hoffman and Novak 1996) and product design/marketing (Pine and Gilmore 1999) to conceptualize the key issues in online tourism communications based upon the unique characteristics of the tourism product. Early academic discussion around tourism websites (at both the destination and hospitality level) dealt with issues related to website functionalities including completeness (Choi et al. 2007), quality (Inversini and Cantoni 2009), scope (Morrison et al. 2004) and performances (Lee and Morrison 2010) using different methodologies and outcomes. This literature as well as the amount of attention given to this topic demonstrates the relevance of the subject both at academic and practical level (Ip et al. 2011). What is clear is that tourism websites, which moved from being an online brochure to a more complex communication tools, are not mere technological artefacts but also instruments that impact on management, promotion, and commercialization (Inversini et al. 2012). Moreover, they are important tools for studying the preferences of the target audiences of the destination/hotel, engaging consumers’ interest and participation, and capturing key information (Wang and Fesenmaier 2006).

A key development in tourism website design evolved through seeing online communication from simply a collection of functionalities to a way of persuasion with the emphasis on change in website users’ attitudes and behaviours. While this line of research has taken on perspectives from multidisciplinary fields such as human-computer interaction and digital communication, a solid grasp of the intangible, perishable, and experiential nature of the tourism product serves as the conceptual foundation for developing effective online communication strategies. Early research in this area focused attention on offering rich and interactive virtual experiences as well as community-based information exchanges for tourists looking for destination information (Cho et al. 2002; Wang et al. 2002). Gretzel and Fesenmaier (2002) argued that the inherently complex and personally-based nature of the tourism product entails the integration of the narrative logic when building a tourism information system. From a human-computer interaction perspective, Xiang and Fesenmaier (2005) further suggested that interface metaphors should serve as a critical element in website design that aims to represent the tourism product that best connects with the traveller’s mental model of a tourist place. In line with the development in computer science, tourism research also placed much attention on online recommendation systems (Fesenmaier et al. 2006). For example, strategies such as case-based reasoning and collaborative filtering have been built into systems that make suggestions for tourist destinations
(Ricci et al. 2002; Ricci and Werthner 2004; Gretzel and Fesenmaier 2006). As part of this effort, Gretzel et al. (2004) tested the effectiveness of using travel personality to predict travellers’ preferences of suggested tourism destinations. Recently, research on persuasive communication in online tourism also took into consideration the travel information search process to understand the impact of different channels/websites on travel planning and decision-making on the Internet (Gretzel and Fesenmaier 2006; Kim and Fesenmaier 2008; Pan et al. 2011). Perhaps, a framework that integrates various elements of persuasion such as “attract, engage, relate, and learn” epitomizes best the communication strategies that are more likely to succeed in online tourism (Gretzel et al. 2006; Wang and Fesenmaier 2006). Generally speaking, the understanding of the tourism website continues to progress from a representational tool to a communication platform that actively engages and transforms its visitors.

1.2 The power of social media: from mass broadcasting to social conversations

The emergence of web 2.0 (O’Reilly 2009) and social media has generated important impact on travel and tourism, particularly in online communication. In general, social media can be understood as Internet-based applications that encompass media impressions created by consumers, typically informed by relevant experiences, and archived or shared online for easy access by other impressionable consumers (Blackshaw and Nazzaro 2006). These Websites, in various forms of consumer generated content represented by blogs, virtual communities, product review sites, wikis, social networks, and collaborative tagging, and media sharing Websites like YouTube and Flickr, have gained substantial popularity in online travellers’ use of the Internet (Xiang and Gretzel 2010). Many of these websites support consumers in posting and sharing their comments, opinions, and personal experiences, which then serve as potentially valuable information for others. This new form of online communication supports the argument by Thomas Friedman (2006) that “the world is flat” because consumers are gaining substantially more power in determining the production and distribution of information owing to the flattening of access on the Internet. Importantly, the ever growing presence of social media has changed the dynamics of online communication, i.e., from mass broadcasting to social conversations.

Research has focused attention on the socio-psychological aspects of social media use. From the early days of the commercialization of the Internet, travel related virtual communities have attracted the attention of tourism researchers because of their important role in generating online word-of-mouth. Virtual tourist communities such as LonelyPlanet and IGoUGo, where tourists can exchange opinions and experiences on topics of common interests, have been around at least since the late 1990s, and several researchers have investigated their roles and
impacts in the context of travel (Tussyadiah and Fesenmaier 2008; Tussyadiah and Fesenmaier 2009; Wang and Fesenmaier 2006; Wang et al. 2002). Social media grew to include a range of new applications such as RSS-based content syndication, AJAX, tagging, wikis, ratings and evaluation systems, virtual worlds (e.g., Second Life), podcasting, blogs, and online videos. For example, consumer blogs have emerged as one of the most prominent themes in research on social media in travel and tourism. This research aims to understand the functions of blogs in creating and sharing new experiences (Pudliner 2007), its trustworthiness to online travelers (Mack et al. 2008), as well as the use of it as marketing intelligence (Pühringer and Taylor 2008; Waldhör and Rind 2008). As evidenced by the success of websites like TripAdvisor, Yelp, and Zagat, online travel-related review sites also represent a significant proportion of social media in travel and tourism (Gretzel and Yoo 2008). Multimedia sharing (i.e., video, photos, podcasting, etc), represented by Websites such as YouTube and Flickr, has attracted tourism researchers by generating interests in understanding the role of social media in transforming travel experiences (Tussyadiah and Fesenmaier 2008).

The structure of the tourism domain has changed drastically with the emergence of social media as new players in the field of online communication. Social media has given rise to issues with respect to how tourism marketers can leverage this electronic word-of-mouth in order to support their online marketing efforts. For example, Schmallegger and Carson (2008) suggested that strategies for using blogs as an information channel encompass communication, promotion, product distribution, management, and research. Many travel and tourism operations have also recognized the importance of including consumer generated content on their websites, usually in the form of edited testimonials (e.g., VisitPA.com and Sheraton.com). Adoption of social media as a marketing tool has been widespread among hospitality and tourism organizations including using it for public relations purposes (Chan and Guillet 2011; Curtis et al. 2010; Stankov 2010) as well as for prediction of market trends (Asur and Huberman 2012). However, organizations are also facing huge challenges due to the loss of control in online communication (Fotis et al. 2011; Hays et al. 2013). For example, many of them are struggling with fighting negative comments or reviews that could have devastating impact on their businesses (see, for example, http://www.bizjournals.com/boston/blog/techflash/2013/08/dirtiest-hotel-tripadvisor-lawsuit.html). Innovative organisations, on the other hand, will need to rapidly identify consumer needs and to interact with prospective clients by using comprehensive, personalised and up-to-date communication media for the design of products that satisfy tourism demand (Yu et al. 2011). Social media, thus, provide clear credentials for organizations and enable consumers to tell their side of the story with the possibility of posting online reviews about a given product/service. Social networking sites offer innovative ways to develop customer relationship management strategies and engagement that can have a direct influence a (i) company’s credibility, (ii) influence, (iii)
reputation and (iv) word-of-mouth advertising. It seems that social media will remain, in the foreseeable future, a significant force that drives the online conversations in travel and tourism.

1.3 Mobile computing: engaging consumers on-the-go

Mobile communication has evolved in the last few years. The advent of the Apple iPhone followed by the spread of the so-called smartphones has revolutionized the consumer market. It was envisioned that smart phones soon would become an ‘ordinary device’ for consumers in order to stay in touch with friends and to browse the web (Katz 2008). into essential tools in the ordinary routines of the masses. This trend is generating an enormous impact in the tourism sector (Inversini and Violi 2013). There are indications that mobile technologies will become the next wave of innovation that drives travel and tourism. With power-efficient processors, modern operating systems, broadband Internet access, large viewing screens, user friendly interfaces, pervasive computing capabilities, as well as productivity-enhancing apps, smartphones offer a wide range of possibilities to support travelers in their use of information and communications home and away. Particularly, smartphones offer increased connectivity, communication, content consumption, and content creation. As such, mobile technologies have even been touted as the catalyst for the emergence of a new generation of modern tourists (Gretzel 2011; Gretzel and Jamal 2009) Recent research indicates that the smartphone supports tourists’ needs for mobility and information/communication on-the-go and, in turn, transforms the meaning of travel (Wang et al. 2012).

There are several characteristics of mobile technology that distinguish it from the traditional, stationary technologies in terms of its support of the tourism communication. First, as discussed by Gretzel, Fesenmaier, and O’Leary (2006), tourists frequently need information support due to the uncertainty of the environment, inadequate capability in making judgments because of a lack of experience, and unexpected changes in plans. Smartphones provide nearly anywhere and anytime access to information services, and connectivity with one’s social circles is taking shape, which is, in many ways, different from the time when most of information for travel is accessed on a desktop computer (Egger and Jooss 2010). As such, smartphones support the different phases in the travel process.

Second, information needs of users may change during a trip due to a possible change in location and context. As such, location-based and context aware services can then be used to support travellers on the go, particularly with the ability to suggest modification in the planned tourism experience (Angerer 2010; Lamsfus et al. 2012). The notion of context can be defined as any situation that can be used to characterize the situation of a person, place, or object (Dey and Abowd 2000). Time and location are two of the most important context parameters (Angerer 2010) but dimensions such as weather or the users’ personal interests (Egger and
New media in travel and tourism communication: toward a new paradigm

Jooss 2010) are crucial for the application of this technology in the tourism sector. They filter information and provide a series of choices that are relevant and tailored for the given user in the given context. Recently, context-driven services arise to help tourists on the move by leveraging not only on “physical” aspects of context such as time and location but also potentially more complex situations pertaining to the nature of the tourism experience (Lamsfus et al. 2013). As such, mobile devices, and especially the smartphone, play a central role in facilitating dynamic decision making for travellers on the move.

Third, another aspect of mobile communication is the connection between travel sphere and the traveller’s everyday life. Travel can be seen as a special stage of technology use, which is connected with other settings (Gretzel 2011). As a result, tourist carries part of “himself/herself” (e.g. habits, routines, connections with friends and families) as well as her/his capability and mentality of technology use to the context of travel. Thus, use of the mobile technology consists of not only the decision-making aspects of the trip but also the information, communication, and entertainment needs resulting from the traveller’s everyday life. For example, travellers use the same social network applications (e.g., Foursquare, Flickr, Instagram, Facebook, Twitter, and Skype) in both travel and everyday lives. They follow the same procedures to find direction as they do in everyday life. Tourism marketing must consider the exchange of information between a traveller and others in different physical and virtual domains.

2 Travel in the network: toward a new paradigm for tourism communication

Technological forces of change have heavily impacted all facets of the tourism world – they have fundamentally changed how travellers experience travel, how destinations market themselves, which in turn, how the tourism industry develops and measures its success. Evidence of this restructuring is manifest in many ways, none more so that in an article by Gretzel (2012) entitled Travel in the Network: Redirected gazes, ubiquitous connections and new frontiers wherein she used, like Castells (1996), the “network” as a metaphor to describe the various systems that have fundamentally changed the travel experience; and in articles by McCabe (2012) and MacKay and Vogt (2012), who suggest that there is a huge “spillover effect” which links our daily lives, both in terms of how we behave and our use of technology, and the way we experience travel. These articles are essential in that they clearly explain the formation of new models of travel behaviour, new models for product design, and new models for research and evaluation which, in turn, establishes a new paradigm of tourism communication and marketing.

As suggested by Gretzel (2012) and others (see for example, Gretzel et al. 2006; Wang and Fesenmaier 2012), travel today differs substantially from travel fifty
years ago when mass tourism began in earnest. Indeed, it appears that the change in travel follows in parallel to the “stages of change” model proposed by Contractor, Wasserman and Faust (2006), Gretzel, Yuan and Fesenmaier (2000), and Yuan, Gretzel and Fesenmaier (2005) regarding the impact of technology on organizations. In particular, they argue that the first two stages of technology use create an “expansion” in activity, but not any fundamental change in behaviour and that only in the third stage we do see real structural changes in the nature of use – that is, travel behaviour. A recent book by Turkle (20011) is mirrored by Gretzel and her colleagues (2012, 2006), MacKay and Vogt (2012), Tussyadiah (2012), Tussyadiah and Zach (2012), and Wang and Fesenmaier (2012), who suggest that there are now important structural changes in travel behaviour whereby travellers tend to ‘extend’ daily life into travel, become much more involved in creating/controlling the tourism experience by sharing with others, are more involved and creative as they seek authentic experiences, and today’s travellers tend to adapt much better to local settings by using various forms of mobile technology.

These new notions to describe change in travel behaviour require a new paradigm of tourism communication and marketing. In particular, the metaphor of “travel in the network” suggests there are a number of new conditions for tourism marketing and communication as the result of behavioural change in travel. First, it has already been well documented that, in general, today’s marketing and communication practice, from political campaigns to selling groceries, is primarily driven by information technology as the penetration rate of the Internet, for example in the United States, has reached to a maximum level of saturation (see www.pewinternet.org). Also in travel and tourism, the Internet is the predominant information source for travel planning, Within this context, the notion of “travel in the network” offers a new lens for understanding today’s travellers. That is, instead of simply seeing travellers as users of technology, today’s travellers can be considered an active partner in technology-supported networks, which further consist of numerous information spaces (e.g., DMO websites) and channels (e.g., OTAs and travel search engines) that support the basic information activities of the traveller. Thus, the Internet is no longer a monolithic eCommerce platform; instead, it offers countless networks and platforms vying for the traveller’s attention and spending power by supporting information seeking and transactions (Xiang et al. 2008). And from a communication and marketing standpoint, creating and delivering the right message to the right person at the right moment is fundamentally important. Indeed, it may be of primary importance for marketers to focus on understanding how travellers navigate these information spaces and channels within the network structure in order to build and anticipate their upcoming travel plans and experiences.

Second, technology-supported networks are social and community-based. Indeed, tourism information on the Internet has been such from the very moment when the Internet became a public and commercial infrastructure; examples
include VirtualTourist and IGoUGo whereas virtual places travellers congregate to share their experiences (Wang and Fesenmaier 2006). However, the explosive growth of Web 2.0 with a variety of tools and platforms that support consumer-generated content has further transformed the Internet into the networks for social interactions (Xiang and Gretzel 2010). Facebook, Twitter, Youtube, and Pinterest are quintessential Web 2.0 applications in that they are developed as novel ways to facilitate exchange of information and social networking. Particularly in travel and tourism, websites such as TripAdvisor and Yelp are social spaces wherein word-of-mouth is created, distributed, and shared among peer travellers and consumers. As a result, tourism marketing and communication is no longer a practice of advertising and promotion; rather, the focus now has shifted to participating in and being part of the online conversations. Therefore, social media marketing has emerged as a new strategic area for tourism marketing with a growing interest in “listening” to the online social spaces in order to effectively manage a destination’s reputation (Gretzel, et al. 2006; Inversini, Cantoni & Buhalis. 2009; Sigala et al. 2012).

Third, another important aspect of the travel in the network metaphor is that technology-supported networks are mobile, where today’s cutting-edge apps offer all kinds of tools for travellers to search for information and to make decisions on-the-go thereby creating what are described as Tourism Activated Networks. It is argued that mobile technology such as smartphones (and iPads) can be used to strengthen traveller’s social ties and interactions. For many people, a mobile phone is far beyond a communication tool or an accessory of daily lives, and it has become an inseparable part of his/her life or even body (Turkle 2011; Wang and Fesenmaier 2012). As such, the ubiquitous presence of these devices in people’s lives potentially intensifies and encourages the participation in mobile social networking.

3 Conclusions

Two decades of ICT development has changed the fundamental nature of tourism communication. Today’s tourism businesses are engaging travellers and guests with richer content and higher level of interactivity as well as through various socially constructed media spaces. Without doubt, ICT will continue to evolve and consequently drive tourism communication and marketing. The networks that surround travellers in trip planning and their mobility encompass systems that capture and generate enormous amount of consumer data, and the so-called Big Data (George, Haas, & Pentland 2014) offer numerous opportunities and pose new challenges for tourism marketing and communication offering enhanced customer intelligence, improving business processes, and, ultimately, enabling the development of new strategies for navigating an increasingly competitive environment.
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New media in travel and tourism communication: toward a new paradigm


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