

Santtu Kauppila

Smart Tourism: Achieving Sustainable Development



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TIETOJENKÄSITTELYTIETEIDEN LAITOS
2016

Abstract

Kauppila, Santtu

Smart Tourism: Achieving Sustainable Development

Jyväskylä: Jyväskylän yliopisto, 2017, 22s

Information systems science, Tietojärjestelmätiede, kandidaatintutkielma

29.03.2017

Councillor(s): Makkonen, Pekka

Smart Tourism is the evolution of electronic tourism, utilizing interconnected systems and users in data gathering. The goal of this paper is to view the available systems in place from the viewpoint of sustainable development and what the best way to utilize them would be for this purpose.

The literature available suggests promoting optimized and customized experiences to tourists, while facilitating the needs of the local businesses and population to their benefit. Large scale infrastructural changes are not currently feasible in most locations and, as such, most smart tourism systems are internet based, generating value based on infrastructures already in place.

Keywords: Smart Tourism, Sustainable Development, Smart City, Tourism,

Tiivistelmä

Smart tourism on elektronisen tourismin seuraava askel, mikä käyttää hyväkseen yhteenliitettyjä systeemejä ja käyttäjiä datankeräyksessä. Paperin tarkoituksena on katsoa aihetta kestävän kehityksen kannalta ja löytää keinot, jotka ovat parhaita auttamaan tätä tarkoitusta.

Saatava kirjallisuus suosittelee elämysten optimointia ja kustomointia turisteille, samalla kuin pidetään yllä paikallisten yrittäjien ja asukkaiden tarpeita. Laajan kaavan infrastruktuuriset muutokset eivät ole vielä kaikkialla mahdollisia, jonka takia suurin osa smart systeemeistä ovat internet käyttöisiä, luoden arvoa liittyen jo olemassa oleviin infrastruktuureihin.

Avainsanat: Smart Tourism, Kestävä Kehitys, Smart Destination, Smart Kaupunki, Turismi

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1 Introduction

Tourism refers to the travel done for pleasure or business; it also refers to the business of attracting, accommodating, and entertaining tourists. Despite its massive role in the service industry and the world, there is no consensus on the definition of tourism. ([John Tribe 2009](#)) As such, for the purpose of this review, I will divided into these categories, depending on what part of travel this particular function of tourism applies to. These are: marketing, before, during, and after.

1. Marketing in tourism refers to the action of finding and luring customers into using your services, be it locations before a travel, or restaurants during a travel.
2. Before a travel is mostly the planning the trip. Information gathering and reserving high cost, high certainty servies, such as plane tickets, is done at this point.
3. During a travel tourism consists of finding locations, be it by following mapping apps or preference to a specific type of cousine, reserving low cost, low certainty tickets and services, such as bus, taxi or restaurant reservation.
4. After a travel consists of using the data the user provides into furthering new services and bettering current ones. Many Smart Tourism applications require input from the user, be it through written reviews or giving thumbs up or down. Marketing, be it in the form of automated Smart Tourism system or physical team, then is capable of iterating their systems so the right services find the right customer.

It is to note, this definition puts great emphasis on the user and their actions, and does not mention the different service industries that tourism could also be defined into, such as travel, food, and entertainment. They are all combined into marketing which attempts to have the user find these services.

For the purposes of this review, to simplify the discourse, any reference to 'eco-friendly' practises, 'environmentally friendly', or 'green', are simplified as 'green' to refer any and all business practices, product qualities, and consumer behaviors. ([Rahman, Raeynolds, & Svaren 2012](#))

With these two concepts in mind, Smart Tourism and environmental friendly practises, this paper attempts to answer the questions of:

- What purpose is Smart Tourism most suited for?
- How can Smart Tourism systems help achieve Sustainable Development?

2 Smart Tourism

Smart tourism is the natural progression of e-tourism in the field of tourism and travel. While many other similar transitions from simple electronic medium and internet usage to self-correcting and predicting systems encompassing each phase along the way, few have been as quickly adopted by the general populace as Smart tourism has been. Nowadays, the percentage of tourists using electronic services to aid their travel is closing in on 60% for air travel, 55% for accommodations, 50% for railway or waterway tickets, and a quickly decreasing percentage as the necessity, certainty, and the price of the ticket grows cheaper, for example taxi and bus travel. ([ICT Data, 2016](#)) And the practise of tourism amounts for nearly 50% percent of all business-to-customer e-services. ([Hannes Werthner](#))

It is not unreasonable to assume that because of the interconnected nature of tourism, and decision making based purely on information and confidence alone before the e-revolution, it was in a unique position to quickly, and willingly, adapt these systems into its practise. As such, travel and tourism have been regarded as a forefront of all IT applications and advantages, and can be used to predict the advances made in other fields. ([Hannes Werthner](#))

"Smart" as a buzzword is fairly recent that is used to describe technological, economic and social developments fuelled by technologies that rely on sensors, big data, open data, new ways of connectivity, and exchange of information and, most importantly, an innate ability to infer and reason, and allow for massive amounts of data to be transformed into value propositions, either for companies or the end user. ([Ulrike Gretzel & al. 2015](#)) Tourism, as defined by [UNWTO](#), is "a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes." Combining the two terms gives a wide spectrum of possible applications, which will be covered here in this paper in the form of *Smart Experience*, *Smart Business Ecosystem*, and *Smart Destination*. ([Ulrike Gretzel & al. 2015](#))

Smart Experience refers to how technology can mediate and enhance your experience through personalization, context-awareness, and real-time monitoring. ([Buhalis and Amaranggana 2015](#)) For example, a Smart Experience map software could recalculate a suggested route based on the use data of other users and news relating to the area. Is the route congested? Is the route unused, signaling a road work or other impasse?

On the side of personalization, Smart Experience isn't limited to just being able to choose preferred activities at a destination and receiving suggestions based on that, but also extends to marketing that changes depending on season, prices, and trends. How every tourist now carries a device capable of can translate words and speech live through camera and microphone, give transportation advice and reviews in real-time based on user feedback, locate you anywhere in the world, act as your boarding pass, book your dinner reservation or hotel room has drastically altered the landscape of tourism service industry. The fact that smartphones are an everyday commodity nowadays gives more opportunities on the front of personalization. ([Dan Wang & al. 2012](#)) Now, every service is instantly responsible for their quality and performance that translates directly to their overall desirability. ([Mark de Reuver & al. 2015](#)) In addition, the general perception among the users of these apps is that the data submitted by their fellow user is trustworthy. ([Sparks and Browning 2010](#))

This perception of trust seeps into the next concept of *Smart Business Ecosystem*, or *Smart Business* for short, which builds the ecosystems that allow the sharing of information, resources, and experiences, while also facilitating the co-creation of the mentioned areas. ([Buhalis and Amaranggana 2014](#)) Mark de Reuver and his team (explain in their study the link between Perceived Costs, Trust and Customer Loyalty. For as long as the perceived costs (infringement on individualistic user experience, encryption, reputation, cost of use, opportunity cost etc.) of the service or software are low, the trust in the software or service provider increases. This then leads to increased opportunities of monetization, which again leads to a problem of trust as the perceived costs of the app increase because of it. "Consumers tend to rely on online comments (a form of e-word-of-mouth) that allow them to obtain information and to have indirect purchasing experiences, thus reducing their level of perceived uncertainty." ([Jin-Young Kim & al. 2016](#)) When this is successful, this loop operates as a self-reinforcing mechanism where the more people trust the platform, the more people join in to use it. The key aspect of Smart Business is the unique collaboration of public and private stakeholders as more and more governments allow for more open technology infrastructure and data.

The inclusion of governments and municipalities into the picture brings us to Smart Destination, or Smart City, where the city takes this available data and usage, incorporating it into their own development and services, such as, improving the traffic scheme based on the known problem areas using examples of cities with similar cityscape but less congestion. ([Buhalis, & Amaranggana 2014](#)) The core function of the smart tourism system is collecting, processing and exchanging tourism-relevant data within the ecosystem and then feeding it back into the system where it can be used to enhance and improve on the functions already in place, or in creation of new ones.

A Smart City is akin to an organic system where the cooperation of all parts in the process, from infrastructure to services to end users, allow the creation of a comprehensive whole that works as an intelligent and forward-thinking organism interested in the profit and satisfaction of all involved. ([Rosabeth and Stanley 2009](#))

	e-Tourism	Smart Tourism
<i>Sphere</i>	digital	bridging digital & physical
<i>Core technology</i>	websites	sensors & smartphones
<i>Travel phase</i>	pre- & post-travel	during trip
<i>Lifeblood</i>	information	big data
<i>Paradigm</i>	interactivity	technology-mediated co-creation
<i>Structure</i>	value chain/intermediaries	ecosystem
<i>Exchange</i>	B2B, B2C, C2C	public-private-consumer collaboration

KUVIO 1 Smart tourism: foundations and developments (Gretzel & al., 2015)

Some of the key differences between e-Tourism and Smart Tourism is the application and userbase. A thoughtout plan for purchasing and reserving tickets well in advance is much less reliant on the instantaneous updating that Smart systems are capable of. On the flip-side, the constant connectivity of Smart Tourism allows, or draws, users that don't mind doing last minute changes and reservations to their plans. Overall, both forms currently serve some function within the large concept of modern tourism, where e-tourism is used before and after trip and Smart Tourism during the trip.

3 Apps

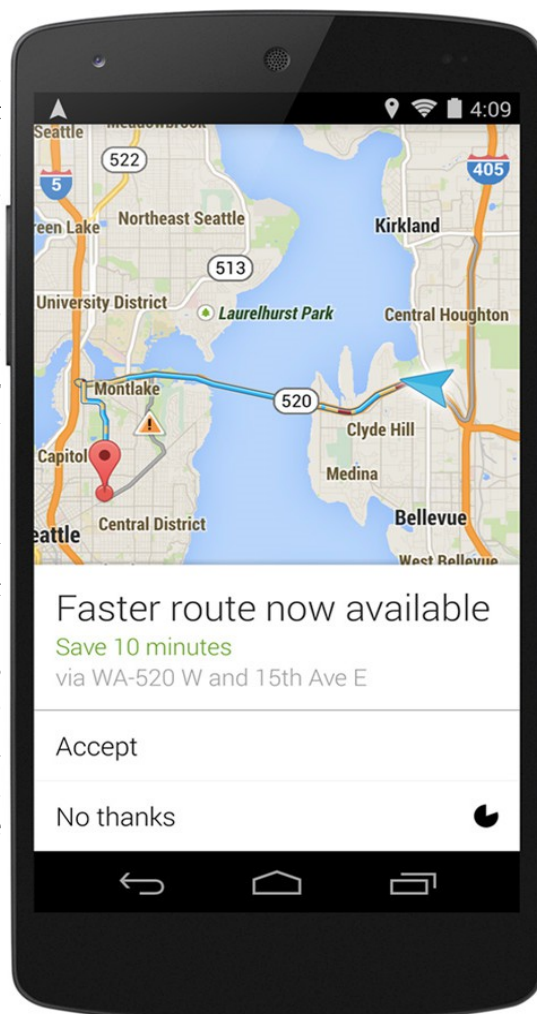
In this section I aim to illustrate examples of Smart Tourism software and apps that are in use.

3.1 Google Maps Link

Easily the most widespread Smart Tourism system to date, Google Maps sports over 90 million users worldwide. ([Business Insider](#)) Google Maps provides nearly global coverage for roads and route calculations. Many other Google products are interlinked to Google Maps allowing a good overview of what a Smart System as a whole is. These linked products include:

Google Streetview, that allows 360 look on most locations reachable by car, and sometimes by foot, to be viewed through it. Being able to turn abstract grayscale maps into images gives context to locations. Some locations overlay street and place names into these images, bordering on Augmented Reality. This overlay also allows businesses and companies to promote themselves as people viewing their stores and locations through streetview can be linked directly to their sites or give information about the place.

Google Traffic, that is the way Google's acquires their traffic data, that is then fed into the other systems. The system tracks the GPS data, that is already required for most other Google Maps application, of any user and calculates based on the speed and frequency of users what areas are congested with traffic.



[Google](#) stated: "When we combine your speed with the speed of other phones on the road, across thousands of phones moving around a city at any given time, we can get a pretty good picture of live traffic conditions."

Google Transit, a comprehensive collection of public transport data that spans hundreds of cities in North America, Europe, Africa, Asia and Australia. While there is nothing specially remarkable about a public transport planner, what is remarkable is how all these B2B relations have been collected into this one application in an effort to benefit the end user, which in turn benefits the businesses. The data of public transit usage is commonly claimed to be better than the original company providing the bus service. ([Google](#))

And finally the mobile app Google Maps itself, which, despite its name, does not function the same as the web app. Mobile Google Maps is capable of changing route on the fly based on data fed to it through the other linked applications, while also tracking current progress of the route and providing voice instructions. With all these functions and services, provided freely with no intrusive advertising, it is no wonder that Google Maps is far and beyond the most used Smart Tourism system on the market today.

3.2 [Tripadvisor Link](#)

Website based application that has every and all reviews and advertisements done by sent reviews from users. While there are many similar software like it, the way Triptadvisor incorporates reserving plane tickets alongside restaurant reviews or surfing locations makes it more encompassing than any other on the market, thus removing the need for any other platform alongside it. Another key point of Tripadvisor, that moves it from a simply multi-functioned e-Tourism site to an example of Smart Tourism, is the ability for the site to make recommendations based on current trends and availability. With the way the site is linked to major air companies allows it to track for a cheap alternative to any plans you have. A simple subscription and a button press makes the site send e-mails whenever it finds a place similar to your destination and suggest it for you. This also helps alleviate seasonal rushes and move the pressure from sites that are reaching their breaking point, to places that have the capacity to have tourists but are slightly out of season. ([R. W. Butler 1994](#)) This helps not only by providing affordable options to travellers, but also creating a much more sustainable income to local businesses that suffer from seasonality.

3.3 Roomer Link

A more contained tripadvisor, focusing only on one thing: wrong hotel bookings. As was previously explained, the instantaneous nature of Smart Tourism and Smartphone apps is a draw to many people using these services, which has given a new opportunity to services that would otherwise be near impossible. Roomer focuses on users selling their booked tickets they personally can't use anymore, usually with drastically cut prices.

The sold rooms are generally on a quick deadline, either demanding the traveller to make it to the country in a few days or hoping there already is one at the location searching for one; and thanks to the interconnectivity of its userbase and other businesses, this is a realistic opportunity for many. Others seeking for cheap deals and others attempting to minimize their losses. Overall the site provides a sort of safety valve on reservations, removing a layer of uncertainty from the process, and thusly lowering the barrier for travelling. Another notable inclusion is that the site is linked with both Tripadvisor and Google Maps for ease of use.

4 Sustainable development

From the available literature on the subject of sustainable development, it has dawned that most articles are divided into one of two categories: how to promote sustainable development in law-makers and businesses, and how and what systems to implement. The papers usually draw a distinction between sustainable ecological development and sustainable economic development, but here they will be treated as the same with the definition: "Sustainable development is the principle for meeting human development goals while at the same time maintaining the ability of natural systems to provide the natural resources necessary for future goals."

Government rarely is the limiting factor when it comes to implementing sustainable development practises, unless the industry receives no benefit from 'going green', at which point government turns into a driving force. This isn't the case for tourism, which is directly linked to the satisfaction and trends of the customer, forcing quick changes and adaptations in service practises. ([Hannes Werthner](#)) As such, this paper will not focus on political sustainable development that deals with implementing sustainable practises and focuses more on the business and user side.

Sustainability as a concept is elusive in any field, but tourism has often been described as "alarmingly unsustainable." ([Freya Higgins-Desbiolles 2009](#)) Tourism is in a "two way relationship" with climate change. Climatic changes will directly impact the available destinations and tourist flows, while at the same time tourism itself is a massive contributor to climate change. ([Bakhat & Roselló 2011](#)) The biggest contributor from tourism is obviously transportation with 76.5% of all energy consumption in tourism going towards it. While the issue of aviation transportation is unlikely to be solved, there remain ideas for offsetting the carbon emissions and optimizing the current transportation systems.

As Smart Tourism is mostly based on internet and smartphone applications, it does not require any specific implementation from businesses and governments as a basic function. However, as the benefits of the system are clearly available for any business, it is no wonder TripAdvisor and Google Maps allow you to find any service withing them. The questions arise during the implementation of Smart Cities, that then require massive infrastructural implementations and changes to fully utilize.

What is important in developing a Smart City seems more to be letting go off control for the businesses and governments. ([Anttiroiko & al. 2014](#)) Instead, Anttiroiko is advocating for 'lead from behind' method of infrastructural opportunities and leaving the Smart City to build and evolve itself from multifaceted, diverse urban systems based on open access and integrated information systems. Such a system would have city governments cede as simple service providers and instead supporting businesses as a stimulating, innovative force.

Another issue tourism has faced with sustainable development comes from the lack of profitability as it is perceived to go against common business responsibilities for making profit. ([Tanja Mihalic 2014](#)) While there has been a lack of political involvement in enforcing the connection of sustainable development and tourism, there are major organizations striving to promote awareness and good will on the subject, such as United Nations World Tourism Organization, henceforth UNWTO, who have undoubtedly altered the views for major portion of consumers, who then cause the businesses to adapt as well.

While simple applications, such as implementing wifi service providers in public places, are not a major hurdle, optimizing roads to better suit traffic are a huge endeavor. Ways for optimizing bus stops is already available for citizen useability. ([Spasovic & al. 1993](#)) There are very few applications of Smart Tourism provided big data used in this context, or any other context for that matter, yet. As such, any current day solutions should be based mostly on adapting current infrastructure to better facilitate sustainable development, rather than building new infrastructure.

[UNWTO](#) describes the preferable traits for sustainable travel destinations and services as follows:

1. Decision-making - Lowering the risks and costs involved in travel
2. Identification of emerging issues - Allowing prevention and quick response
3. Identification of impact - Allowing the correct actions to be taken
4. Performance measurement of the implementation of plans and management activities - A process for evaluating progress
5. Risk management - Identifying limits and opportunities
6. Accountability - Credibility of information to both the public and other stakeholders
7. Constant monitoring - Building solutions into management

For the purposes of this paper, I've combined and rephrased the traits into more defining aspects, to avoid unnecessary overlap they have. These are:

1. Risk Management, which combines aspects of 1 and 5 as the process of any decision involves a management of risks associated with the perceived conclusion and the implementation of it.

2. Accountability, which combines aspects of 2 and 6 as the capacity to identify emerging issues prefaces that we are aware who are causing the issues. The purpose of accountability isn't to scapegoat the problems away, but find solutions to clear cause and effect relationships.
3. Monitoring, which combines aspects of 3 and 7. The process of judging the impact of any solution requires a functioning infrastructure of monitoring, otherwise the extrapolations are done with insufficient data.
4. Measuring Success, which rephrases trait 4. I have also made the choice to move it as the final trait, seeing how all the previous build towards success, which then can be used to evaluate and improve on all the rest of them.

This paper will look sustainable development through these principles and attempt to solve them using smart tourism practises and systems.

4.1 Risk Management

As the end users begin prioritizing and favouring services that suit their perception for sustainable future, it has caused businesses to comply, with a certain conflict. As sites, such as TripAdvisor, allow users to list the 'greenness' of any particular site, it has given birth to a new brand of green hotels and destinations. But the conflict arises when, for example, hotels begin altering their practises to more green ways. For example: lowering the temperature or water supply for your customers is perceived as a desirable 'green' practice quality, while in reality being extremely bad business practice for consumers. ([Jin-Young Kim & al. 2016](#)) The percentage of customers appreciating the practises is notably lower than the percentage of people claiming they prioritize green in their consumer habits. ([Peattie 2010](#))

The perfect solution is yet to be found but the dissonance between customer satisfaction and desire for green practises is lesser, the more the principles of green line up to the principles of the hotel. ([Slevitch & al. 2013](#)) A sort of way for the customers to better themselves, rather than forcing any green practises directly onto them. Knowing which hotel fits each traveller is nowadays a possibility with the opportunity of personalization that Smart Tourism allows.

A concept of Tourism Carrying Capacity, henceforth TCC, refers to the capacity each location has for arriving tourists before the location begins to suffer because of it. ([Harry Coccossis & Alexandra Mexa, 2002](#)) TCC is an abstract calculation based on the current infrastructure, location and cultural factors. And as it is abstract and hard to define, any implementation of it has been lacking so far. However, with the systems Smart Tourism brings, made for scattering the tourists into locations where the infrastructure is capable of supporting more allows for more sustainable income through constant use. Hotels are then capable of keeping more people working without resorting to seasonal layoffs that also help the local economy, and thusly the governing body. ([R. W. Butler 1994](#)) A congested season of tourists isn't beneficial for the industry as customers need to be turned away, who then have to rely on substandard hotels, lowering competitiveness. In the case of Smart Tourism these customers would not even be recommended into the locations as they can inform the user of the availability of rooms, but the end result would be the same.

What does solve the issue is implenting this strategy of recommending suitable hotels in the pre-travel phase. If a user knows beforehand the hotel they plan to visit is not available, the system could recommend a similar hotel in a similar place as an alternative. Instead of simply refusing to travel or being unsatisfied with the results because of perceived risk being too high, the possibility for this user to travel and remain satisfied are increased.

4.2 Accountability

Underlying problems, if gone without response, can collapse environments. Cases where tourism is the cause for collapsing a sustained system, or is an indicator for a collapsing system are numerous. ([Gianna Moscardo & Laurie Murphy 2014](#)) Whichever the case, the key to solving it, is information and the ability to respond. Moscardo, in her study use the case of Hawaiian town Kailua as an example, where the impacts of tourism had started to work against the needs for the public:

"These negative impacts included inflation, increases in housing prices, loss of social networks, an influx of temporary strangers, increased crime, and tourists demonstrating undesirable behavior to local children."

But due to the area already having grown reliant on tourism as an income, the government kept promoting the location as a tourist destination.

For any strategy, the balance between stakeholders is an important aspect for maintaining a sustainable environment, and each stakeholder should have the right to be treated as the presumed end-user. ([Elise Sautter & Brigit Leisen, 1999](#)) Applying this idea to sustainable development means that any practise or policy implemented shouldn't be considered whether it is a net-positive but, instead, whether it has an overall positive impact on the well-being of all stakeholders. Any unbalance between stakeholders is thought to be detrimental to the overall quality and sustainability of a destination.

Smart Tourism systems, with their near-instantaneous connectivity and feedback, is used to facilitate identifying overall dissatisfactions with destinations, but only from their perspective. The case Moscardo described the dissatisfaction the destination had with the tourists and governing bodies, which isn't nearly as explored. Most Smart Tourism systems in place work on the basis of C2C, where fellow tourists provide feedback and data that is used to enhance other tourists. Some of this issue can be solved by suggesting alternative destinations, but should tourism be a major hazard to a location, another system needs to be put in place.

An example of a solution is online dynamic pricing, ([Robert M. Weiss & Ajay K. Mehrotra 2001](#)) where prices to destinations are updated on a constant basis. Two customers could see two different prices for the same product, simply based on the relative wealth of their IP-location or previous browser history and use. Instead of just as a way for creating maximum profit per customer for businesses, businesses and governments alike could use the system to throttle tourist flow away from suffering destinations. The system could be used to either increase the prices for disruptive tourists or incentivizing more sustainable practises in both tourists and businesses.

4.3 Monitoring

While the feedback and responses from stakeholders can help identify more immediate issues, some problems, such as consumption, air and water pollution or socio-ecological change, can be much more hidden from the public eye. Some effects can't be perceived through simple feedback as the users are unaware of the effect they are having. For example, in Mallorca, water consumption in rural areas is 140 l/ per person/ day, in urban areas 250 l/ per person/ day, while the average tourist consumption is 440 l/ per person/ day, or even 880 l/ per person/day in urban areas. As such, the strain tourists place on a destination can be exponential compared to the local population, without either of them necessarily being aware of it. (Coccosis 2002)

While activities such as scuba diving can be harmful to the environment while being perceived as nature-friendly, and can be solved by educating tourists and practisers, most of the damage tourism causes is done by infrastructure and transportation. ([John Davenport 2006](#)) A seasonal rush of tourists drain water storages empty, pollute the air due to high personal transport usage and traffic, and cause other environmental damage through littering or wildlife disturbtion.

The damage this causes can be very hard to monitor through current Smart Tourism systems as most of the data is compromised of experiences and electronical services. However, should local research data be included in these Smart Systems, the possibilities for locating problems and creating opportunities to solve them will increase. For example, [IBM Big Data and analytics in travel and transportation](#) talk of a 50% decrease in losses caused by waiting passangers alone by implementing Smart diagnostics to their railway system. And as any service grows more optimized, the strain on environment, both green and economical, are lessened while at the same time increasing profit and profitability, leading into a more sustained world. ([Slevitch & al. 2013](#))

Some other solutions of these harmful practises are including the tourists with the local society, instead of alienating them into a paradise. (Moscardo 2014) Explaining tourists of the "do's and don'ts" could help mitigate the damage their presence and activities cause to the location. However, this relates back to the forced 'green' practises covered before. Not every tourist is at all willing or interested in preserving the sustainability of their destination, instead wanting to enjoy their isolated paradise experience. Customization of Smart Tourism systems can then be used to insentivize tourists willing to participate in these practises, while these harmful tourists can be steered to more contained locations, for example by enforcing an increased water or petrol tax on them. Other solutions in locations ask their visitors to participate in training or be refused altogether.

4.4 Measuring success

Simple calculations based on increase to GDP and similar are nothing new to perceiving value for tourism within any system. How it then compares to the losses caused by harming the sustainability of the location remains a question. Each stakeholder holds different parts of the equation valuable; and as each stakeholder is intrinsically valuable to the whole, a balanced, beneficial solution is required to sustain development. ([Thomas Donaldson & Lee E. Preston 1995](#)) Emphasis is placed on a constant monitoring of effects and drawing long-term, conclusive data, instead of seasonal reports. ([UNWTO](#))

However, the current systems are not capable of the refinement required for such practises. Just the process of identifying a problem could take years and asking a 'suffering' location to wait for a perfect solution can be utopistic as best. No matter how intrinsically valuable each stakeholder is, some are clearly more powerful than others. Businesses need to make their bottom-line; imposing tariffs on customers is harmful for business. Sources holding the data can benefit from withholding the data from public knowledge. Smart system can't cover for corrupt abuse. Sustainability is a hard concept to quantify and for the people making decisions, current monetary increase can be tempting even at the cost of sustainable development, as seen with the city of Kailua.

But as long as there remain a portion of users valuing sustainability and green practises, some destinations will deem it valuable enough to alter their practises to accomodate the tourist. As has been discussed many times already, it is rarely beneficial to ask for the tourist to comply to the needs of the location, unless they want or are willing to do so. Smart Tourism systems have provide the users with the ability to decide based on perceiveably trustworthy sources on the quality of each location. To some, value is not based on the monetary value they gain, but on the experiences they participate in, be it the possible saving the world. ([Paulina Pchelin & Ryan T. Howell, 2012](#)) Maybe the fact Smart Tourism is possible at all, i.e. post-travel feedback, participatory userbase and the wish to share their experiences is a symptom of it? ([Yu Chen, Gloria Mark & Sanna Ali 2016](#))

Whatever the case may be, it is important to note how value is perceived differently by each stakeholder and, as such, any calculations on success should take that into accord. Smart Tourism systems provide an instantaneous feedback possibility for the end-user. Combined with other Smart systems, this feedback could be encompassing, greatly increasing the ability to perceive, respond and correct emerging issues, helping sustainable development through satisfying each stakeholder.

5 Conclusion

Smart Tourism recognizes consumers as a way of creating and offering as well as being able to monitor and moderate the discourse, taking on business and governance over themselves. Smart Tourism is on its way to revolutionising the travel industry, but not by creating a completely new untapped frontier, but by providing personalized and optimized options for each user, lowering the uncertainty of travel, increasing the trust about destinations and services, and generating data for businesses and governments to implement more beneficial, profitable, and sustainable services.

The biggest gains from Smart Tourism, as it turns out, are not building cities from ground up to the perfect optimisation, but linking the most suitable customer to the most suitable service and doing it in a way that is quick, effortless, and automated. Data management and instant accountability hold private stakeholders more responsible for their actions and practises, overall increasing the quality for all, while at the same time providing possibilities for businesses to specialize in other aspects of travel, such as green 'responsustainable' practises.

The time for wide spread Smart City implementations is still in the future once businesses have reached a level playing field in the application of Smart Tourism and they need to gain additional advantage over the competition again through an innovation. For some cities, such as Madrid, Amsterdam and Sao Paulo, that day is today, but for most, it is not.

While the amount of material based on the positives of Smart Tourism was staggering, there seemed to be an underlying current of harms caused by this information overload on some individual travellers. So far, there hasn't been much any research on this topic and what could be done to alleviate it, while also keeping up the current standards of travel. Also there is currently still a clear lack of big Smart City implentation examples, leaving most studies as well researched speculation, and ideas or ideals. Similarly, some suggested implementations for sustainable development, such as relying on the good will of all stakeholders, are utopistic at best.

Overall Smart Tourism provides a major innovation on the field of tourism. As the tourism industry also serves as a forefront for the progress of other industries, it is to be expected that this Smart revolution will be similarly replicated on many other industries in the information era. It remains to be seen what happens to the percentage of tourists who averse the changes when Smart Tourism, and its fast paced options, becomes the prevelant way of tourism, but, then again, the carriage gave way to the car eventually.

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