Article

Smart Community & Smart Dashboard to Support Slow Tourism: The Case Study of Santa Barbara Walk (Sardinia, Italy)

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Abstract: Information and communication technologies play an increasingly important role in the process of knowledge and management of places at different scales. ICTs allow a rapid diffusion of data not only through institutional channels but also through social networks where the smart community share experiences and perceptions. In this sense, ICTs become strategic tools to support the promotion of sustainable tourism development of territories, especially if the digital data are organised within a circular smart dashboard, a decision support tool in which the information output provided by the system is used in a circular way, that is putting it as a new input for the system. This research focuses on the case study of the Santa Barbara Walk (SBW), an ancient mining route in the Sulcis Iglesiente region (Sardinia, Italy), where the authors have recognized a state of disorganization in slow tourism promotion activities. In fact, if the SBW represents a network - material infrastructure - which connects the main points of interest along the Walk, its digital network - intangible infrastructure and flows - is fragmented in terms of policies and contents. The goal of this study is to provide a comprehensive set of data and to propose the architecture and design for a circular dashboard of the SBW, capable of organizing information concerning the main features of the walk, in order to facilitate a shared governance for an effective tourism promotion¹.

Keywords: Smart community; Smart dashboard; Smart governance

1. Introduction

Information and Communication Technologies (ICTs) play an increasingly important role in the process of knowledge, management, enhancement and promotion of the territory at different scales. Information is no longer managed only by a few institutional subjects through official portals but built to a significant extent by digital communities that populate the network of social networks and media, sharing experiences and perceptions. New ICTs are tools to support the promotion of sustainable development and reconversion of the territories, including tourism, especially if organized within the smart dashboard [5-13].

¹ This study is based on the Research project TSULKI - Tourism and Sustainability in the Sulcis (Sardinia-Italy) and on the agreement protocol between DICAAR Department of Cagliari University and Foundation of the Santa Barbara Walk has been signed in December 2018.

The area of Sulcis Iglesiente Guspinese, located in the South-Western part of Sardinia (Italy), has been going through a phase of economic conversion based on the model of sustainable slow tourism development [14-17] referring to abandoned mines [18, 19]. This is the part of cultural tourism that arises from the reinterpretation, conservation and enhancement of the material and immaterial mining heritage [20].

In Sulcis, this type of tourism is becoming a driving force for economic and employment development [20], responding to the recent trend to prefer trips for recreational and spiritual purposes [21], training or work and slow and sustainable forms of mobility [22]. This is in line with the objectives of the Historical Environmental Geo-mining Park of Sardinia, established in October 2001 to safeguard and enhance the architectural and landscape heritage. In addition, it is also in line with the subsequent establishment (2017) of the SBW [23] and the birth of the homonymous Foundation has been confirmed as a slow tourist use of the territory [24]. The risks and opportunities of this process of economic and social transformation, both in terms of policy and governance, led the authors to develop a specific research activity [24-27] which highlighted the correlation between the fragmented nature of management - promotion of the territory and the numerous public administrations.

In the area of the Sulcis Iglesiente Guspinese, in fact, the presence of points of historical-cultural and naturalistic interest, mining sites, reception and refreshment activities that are not managed within a single network was detected. Many sites are equipped with portals and dedicated web pages, but the promotion is not performing because of the disorganized materials and poor management of the information. The website of the SBW Foundation deserves attention, it's in fact a first attempt at an institutional network of slow tourism [28].

The present contribution intends to systematize both institutional and smart community digital information in order to strengthen smart governance initiatives related to tourism development [29]. In the information age, the Smart Community [30] represents a significant part of our contemporary society that makes use or extensive use of available technological tools, services and devices to promote organization and efficiency, to improve the quality of life but also to share personal knowledge, opinions and interests [31]. For these reasons, the Smart community has gradually become an extraordinary source of data for policy makers [32].

In such sense, we consider here the smart community, and particularly the data coming from this community as inputs of the proposed dashboard, those actors contributing to the awareness on the SBW by means of their activity on social network and media. In this particular case, we force the concept of a smart community as the set of social network and media users, from Wikiloc paths collectors, to social networks and media users - both tourists and operators: if in the common use such identification would appear as a simplistic one, in this particular context we could state that the social network and media users related at different levels the SBW are proactively interested in its development and growth. Therefore, we assume that, using, already at this initial stage, the data and information provided by them we can help building a bottom up participation process, in which the dashboard will represent the extent in which a true smart community set up, linking together users and decision makers.

The 'heritage and new technologies' binomial contains an immense material and immaterial heritage of history, art, traditions and values enhanced through the most recent forms of fruition of the Tourist Experience Design [33], according to which it becomes fundamental to offer each user personalized information and unique emotions, influencing both the cognitive and the emotional sphere.

The goal is to provide content and define the layout for a circular smart dashboard. It is based on the simultaneous management of data from different sources (eg meteorological services, social network streams, geographic data, etc.) which makes it a tool where data and information gathered are actually used and managed for taking decisions and therefore influencing the next input data. Some scholars [6] define the circular dashboard as "the process of data gathering, processing and organization of decision makers and users for planning purposes. In this domain the information obtained from the dashboard is used to evaluate urban performances and calibrate further and future

city actions". In this sense, the dashboard of the SBW organizes the characteristics and information of the path:

- Intrinsic characteristics - length (km), "difficulty" and duration (hours);
- Extrinsic characteristics - sites of historical-cultural and natural interest located in a 1 km buffer;
- Smart community information.

Furthermore, the dynamism of the data of the proposed dashboard allows to elaborate coherent outputs with the institutional objectives and the indications of the smart community.

The authors, after having framed the recent literature of new technologies for slow tourism development, have articulated the contribution in four sections: in the first, the case study of the SBW is explored (paragraph 2.1); the second one develops the methodology (paragraph 2.2), elaboration (paragraph 2.2.1, paragraph 2.2.2) and proposal of the architecture and design for the Dashboard referred to the case study (paragraph 2.2.3); in the third the main research results are reported and a discussion is carried out (paragraph 3); in the fourth one we discuss the conclusions and anticipate the future developments (paragraph 4).

2. Materials and Methods of the case study: Santa Barbara Walk

2.1. The Santa Barbara walk

SBW (Figure 1) traces the ancient mining routes of the Sulcis Iglesiente, in south-western Sardinia, reinterpreted from the point of view of tourism.

Figure 1. Territorial framework and the SBW

This historical region for several decades was the most important center for international mining for the production of lead and zinc, constituting the main economic source for Sardinia. The subsequent crisis in the sector and the closure of the mines in the 1990s required rethinking the territory also through a form of tourism linked to industrial archeology in a particularly beautiful coastal landscape.

Within this context is the establishment, in October 2001, of the Historical and Environmental Geo-mining Park of Sardinia (Geopark) [34], divided into 8 areas covering 81 Municipalities of

Sardinia, for a total area of approximately 3800 Km², which since 2007 is part of the "Global Geoparks Network" of UNESCO [35].

The SBW is located within the "area 8" of the Park of Sulcis Iglesiente which, in addition to being the largest, is the one most characterized by ancient mining activities.

Today the SBW is included in the regional register of historical-religious paths of Sardinia and in the year 2017 it was included in the Atlas walk of Italy of the Ministry of Cultural Heritage and Activities [36]. The walk is 75% developed on paths and mule tracks, crossing places of worship dedicated to Saint Barbara, the patron saint of miners. It develops with a ring shape with a total length of about 400 km and is divided into 24 stages. It can be traveled on foot, by bicycle and on horseback [23, 28]. The landscape of the SBW is characterized by the presence of numerous points of historical, cultural and natural interest that enrich the already evocative mining landscape, stimulating even more the interest of the smart community [24, 26].

However, to date the challenges are still many and constantly call for new policies to manage and enhance the Way and cultural, natural and landscape resources. In this framework, the contribution of the dashboard proposed by the authors is inserted.

2.2. Methodology

After analyzing the case study of the SBW, the authors decided to plan the realization of a dashboard to gather information and indicators on the walk. This required to develop a methodology for designing the dashboard, articulated in the following phases, consisting of:

1. organization of the contents of the dashboard, consisting in the collection, analysis and classification of the objective characteristics (intrinsic and extrinsic) of the Way (paragraph 2.2.1), and of the subjective ones from the smart community (paragraph 2.2.2);
2. definition of the conceptual architecture and design to organize the contents of the SWB circular dashboard (paragraph 2.2.3).

This methodology reflects the conceptual framework of the dashboard proposed by the authors (Figure 2). As a matter of fact, the dashboard architecture we propose is thought as a collector capable of organizing a comprehensive data set - objective and subjective - respectively elaborated by the authors and collected by the main social networks, as discussed below.

Figure 2. The Dashboard conceptual architecture.

2.2.1. Survey and analysis of the Intrinsic and extrinsic features of the walk

The data concerning the intrinsic characteristics of the route, which describe the physical conformation of each of the 24 stages: length (km), "difficulty" and duration (hours) (Figure 3), were found from the SBW Foundation official website.

Figure 3. Intrinsic features of each of the 24 tracks: length (km), "difficulty" and duration (hours). Source: [15,20].

The extrinsic characteristics, on the other hand, refer to the points of interest included in a 1 km buffer which contribute to increase the attractiveness of the SBW. Among these, the authors consider also the urban areas, understood as qualifying factors for tourism activities, as well as dynamically linked to the context. The points of interest are classified according to the following categories (Figure 4):

1. Abandoned mining sites (distribution areas and nodes): villages and mining plants, industrial archeology facilities;
2. Sites of historical and cultural interest (areas and nodes) rural and archaeological villages, churches, museums and historic buildings;
3. Sites of naturalistic interest (areas and nodes): natural parks, salt marshes, waterfalls and springs, caves, lakes, beaches, natural monuments;
4. urban areas.

Figure 4. Points of interest (areas and nodes) within the 1 km buffer from the walk.

Furthermore, for the organization of the extrinsic features the authors used the open source data provided by the Sardinia Region in shapefile format, available on the website [37, 38].

Subsequently we proceeded to classify the intrinsic and extrinsic characteristics, assigning a specific score index referring to an average evaluation of difficulties²:

1. Intrinsic characteristics - a maximum weight has been assigned for the stages of shorter length, difficulty and travel time.
2. Extrinsic characteristics - a maximum weight has been assigned for the stages with the greatest number of points of proximity interest, including accommodation facilities and refreshment points.

Below is reported the classification of intrinsic and extrinsic characteristics (Table 1).

² As it happens in the case of hiking maps, a value of difficulty will be given to these tracks. A set of expert users will be selected to evaluate the difficulties of the tracks.

Table 1. Score index - Intrinsic and Extrinsic characteristics of each SBW tracks.

Objective features of the track	Type	Range	Weight
Intrinsic ¹	length (Km)	0-10	3
		10-20	2
		20-30	1
	difficulty	low	3
		medium	2
		high	1
	travel time (ore)	0-5	2
		5-10	1
Extrinsic ²	No. of points of interest (buffer 1 km)	0-20	1
		21-40	2
		41-60	3
		61-80	4
	No. of tourist accommodation facilities (buffer 1 km)	0-10	1
		11-20	2
		21-30	3
		31-40	4
	No. of food and beverage points	0-10	1
		11-20	2
		21-30	3
		31-40	4

¹ Data source: <https://www.camminominerariodisantabarbara.org/>

² Data source: <http://webgis2.regione.sardegna.it/catalogodati/card.jsp?uuid=ae5a776b-ef08-417b-acf3-752478f0d0b1>

This classification then allowed the authors to elaborate two indexes for each stage: the walkability index (WI) and the attractiveness index (AI).

Within the debate on urban walkability [39, 18], according to Blečić et al. (2015) [40], the authors have rethought the definition of walkability adapting it to the peculiarities of the SBW, inserted in an extra-urban context and of considerable landscape value, together with the physical properties of the path and the reference context.

The authors have thus proposed the walkability index (WI), given by the sum of the weights attributed to the individual intrinsic characteristics (Wi), which can vary from a minimum of 3 to a maximum of 8 (1); and the attractiveness index (AI), understood as the sum of the weights attributed to the individual extrinsic characteristics (We), which can vary from a minimum of 3 to a maximum of 12 (2). To standardize the indexes to the more known and used Tripadvisor classification, WI is given by the product between the summation of Wi and the ratio of 5/8; while AI is given by the product between the summation of Wi and the ratio of 5/12.

$$WI = \frac{5}{8} \sum_{W=3}^8 WI \quad (1)$$

$$AI = \frac{5}{12} \sum_{W=3}^{12} We \quad (2)$$

The following is an example of the tracks No. 02, 06, 07 and 21, selected for the application of the methodology because they are characterized by a significant landscape heritage and industrial archeology that makes them among the most attractive of the walk (Figure 5).

Track 06 - Piscinas-Montevocchio

OBJECTIVE DATA TRACK 06		value	weight
INTRINSIC*	length (km)	18,8	2
	difficulty	medium	2
	travel time (hours)	6,3	1
WI =3,1/5 medium			
ESTRINSIC*	point of interest (no.)	16	2
	tourism accomodation facilities (no.)	8	1
	food and beverage points (no)	4	1
AI = 2/5 medium			

Track 07 - Montevocchio-Arbus

OBJECTIVE DATA TRACK 07		value	weight
INTRINSIC*	length (km)	17,8	2
	difficulty	medium	2
	travel time (hours)	6	1
WI =3,1/5 medium			
ESTRINSIC*	point of interest (no.)	23	3
	tourism accomodation facilities (no.)	20	2
	food and beverage points (no)	19	2
AI = 2,9/5 medium			

Track 02 - Nebida-Masua

OBJECTIVE DATA TRACK 02		value	weight
INTRINSIC*	length (km)	10,1	2
	difficulty	medium	2
	travel time (hours)	3,3	2
WI =3,7/5 high			
ESTRINSIC*	point of interest (no.)	20	1
	tourism accomodation facilities (no.)	3	1
	food and beverage points (no)	1	1
AI = 1,2/5 low			

Track 21 - S. Antioco-Carbonia

OBJECTIVE DATA TRACK 21		value	weight
INTRINSIC*	length (km)	22,5	1
	difficulty	medium	2
	travel time (hours)	6	1
WI =2,5/5 medium			
ESTRINSIC*	point of interest (no.)	45	3
	tourism accomodation facilities (no.)	40	4
	food and beverage points (no)	34	4
AI = 4,6/5 high			

Range WI: 0-1,6 = low; 1,6-3,3 = medium; 3,3-5 = high

Range AI: 0-1,6 = low; 1,6-3,3 = medium; 3,3-5 = high

Figure 5. Walkability index (WI) and Attractiveness index (AI) of the No. 02, 06, 07 and 21 SBW tracks.

2.2.2. Survey and analysis of the data provided by social network

The second component of data necessary for the development of the dashboard concerns the subjective characteristics of the path, provided by the smart community.

They were found through the main social websites such as Facebook, Instagram and Tripadvisor, for the main sites of interest of the 24 stages, with reference to the abandoned mining sites. In fact, from the analysis of GPS tracks related to walking and / or cycling routes downloaded from the Wikiloc platform³ [24-26], these sites were found to be the most frequented by the smart community [27], as is shown from Figure 6.

³ Walk tracks have been downloaded between 20 and 29 January 2018; bike tracks have been downloaded between 21 January and 3 February 2019.

Figure 6. Comparison between the concentration of disused mining sites and the location of digital tracks (source Wikiloc) from the smart community.

Furthermore, the disused mining sites were selected by the authors as a survey category to evaluate the approval rating of the smart community, which required the following activities of investigation:

1. of active Websites for each abandoned mining site: (Figure 7)
2. of profiles in the main social web (Facebook, Instagram and Tripadvisor) (Figures 8 and 9).

Figure 7. Web Site Map of the mining sites in the SBW. Period of investigation: 1-31 July 2019. Author: Michele Pinna.

Figure 8. Mining sites with Facebook profile (a) and Facebook Social Rating (b). Period of investigation: 1-31 July 2019. Author: Michele Pinna

Figure 9. Mining sites with Instagram profile (a) and Instagram followers (b). Period of investigation: 1-31 July 2019. Author: Michele Pinna

Figure 10. Mining sites with a Tripadvisor profile (a) and Tripadvisor Social Rating (b). Period of investigation: 1-31 July 2019. Author: Michele Pinna

From the investigation it emerged that only a minimal part of the abandoned mining sites is equipped with an official web page and a Facebook and / or Instagram profile to support the management and promotion activity (Figures 7, 8, 9).

In particular, it can be stated that the most important mining sites are provided with a portal and social profiles, while in some cases the social profile is preferred to the website. The analysis confirms that the most significant mining complexes, such as Montevecchio and Serbariu, collect the greatest number of likes on Facebook (Figure 8b), while the Museum of Mining Art in Iglesias reaches the greatest number of followers on Instagram, followed by the Mine Rosas (Figure 9b).

The Tripadvisor platform, the main one currently in use at international level, also provides the satisfaction index associated with the type of user according to its own classification, shared by the authors and adopted in Figure 10 and Table 2.

In this case, Piscinas and Porto Flavia are the sites that have collected the highest number of reviews, and therefore are also the most visited ones.

An analysis of the data provided by the social webs resulted in a matrix for each individual abandoned mining site. However, here we report the only matrix of social media analysis of the Montevecchio Mine Complex because it is one of the most appreciated and best managed (Table 2). In fact, the Complex, in addition to having a well-structured and content-rich website, also has a Facebook and Instagram profile, and is reviewed on Tripadvisor.

Table 2. Matrix of the data provided by the social network (Facebook, Instagram, Tripadvisor) for the Montevecchio Mine Complex. Period of investigation: 1-31 May 2019. Author: Michele Pinna

MONTEVECCHIO www.minieramontevecchio.it			
Social Web	Type of Data	No.	Download Date
Facebook	Like	5891	May 2019
	Follower	6013	
	Review	200	
	Rating	4,6 / 5	
Instagram	Post	56	May 2019
	Follower	423	
	No. profile	49	
Tripadvisor (Period 2014 – May 2019)	Valuation	No. review	360
		Rating	4,5 / 5
	Type of visitor	Family	64
		Couple	135
		Group	66
		Single	5
		Businessman	1
	No. visitors/ trimester	March-May	81
		June-August	149
		September-November	74
		December-February	16

Montevecchio has a high rating on both Facebook (4.6 / 5) and Tripadvisor (4.5 / 5). The data provided by Tripadvisor shows that the site is visited mainly during the summer (June-August) and mainly by couples.

All these data reveal the state-of-the-art in terms of tourist promotion activities carried out by each mining sites. At the same time, they are useful to inform future management and promotion policies of the several points of interest.

In particular, while Instagram inform about the number of followers, Facebook provides also the rating manifested by the smart community, along with comments and opinions, which reveal strengths and weaknesses of each point of interest and therefore guide specific actions.

Going beyond the data provided by social networks, Tripadvisor describes each site in terms of community satisfaction, type of visitor and the visiting period. These data allow to inform, in different cases, the need to attract certain types of visitor, as well as to encourage their presence throughout the year in order to guarantee an extension of the seasonal tourism [25].

2.2.3. Architecture and design of the proposed circular Dashboard of the SBW

The classification of the objective characteristics (intrinsic and extrinsic) and subjective characteristics of the SBW and the definition of the walkability index (WI) and attractiveness index (AI) for each track allowed us to develop the architecture and design of the SBW circular dashboard.

After having framed the recent literature about data, techniques and platforms of existing Dashboards [41] and Big data dashboards as decision support tools [42], we decided to use the open source Google Sites tools as a framework for developing the dashboard, as compatible with the SBW

Foundation website, so that the project presented here can be easily implemented and developed in the future. Moreover, we have considered the digital platform dedicated to the Regional Bicycle Mobility Plan of Sardinia [43], from which we extracted the tracks of the walk organized in biking tracks; furthermore, we selected the SBW Foundation website [28] for the walk and horse riding tracks. These were merged and used into the proposed dashboard, to represent the main reference to develop the dashboard design and to facilitate the dissemination of the results.

The dashboard architecture we propose [44] is thought as a collector capable of organizing a comprehensive data set - objective and subjective - respectively elaborated by us as the authors and collected by the main social networks, as discussed in this study. It is not yet fully integrated and linked to the existing Foundation website. In the present stage of the research, we did focus on the concept, design and architecture of a dashboard which will support both potential tourists and planners in future decisions for the area and for the Region of Sulcis Iglesiente. So, from the design and style point of view, we decided to maintain the general layout of the existing website, in order to allow, once the dashboard is implemented, an easy integration with the existing material. mentioned are part of our proposal. In our vision, the dashboard consists of a homepage of general information of the SBW, and of specific several web pages dedicated to the objective and subjective characteristics of each of the 24 tracks. In the following figures and paragraphs we present the dashboard’s proposed structure and a mock-up of the set of data and information for one selected segment of the walk as a demo of the possible contents to be collected, gathered and shared. The homepage (Figure 11) allows users to select each track and go to the next page (Figure 12). The web page dedicated to the track No. 06 Piscinas - Montevecchio (Figure 12), provides four types of geospatial information:

1. Track and points of interest georeferenced in Google Maps (down on the left);
2. Physical profile of the track, and its Walkability Index (WI) and Attractivity Index (AI) (on the top);
3. Rating provided by the main social networks analysed (down on the right).

Figure 11. SBW Dashboard design.

Figure 12. The web page of the track No. 06 Piscinas – Montevecchio.

The architectural system here proposed can be defined as a smart dashboard because gives real time performance indicators with reference to dynamic information such as the weather, the Attractivity Index (AI) and the rating provided by the main social networks. This is also a circular dashboard because supports public institution to monitoring what happens along the Walk and the data provided are fundamental to inform future policies.

3. Results and discussion

The proposed dashboard is the first result of a broader research project named “TSulki” (Tourism and Sustainability in Sulcis-Iglesiente area), currently in progress, regarding the sustainable tourism of the Iglesias area.

Starting from the interest of the smart community towards the landscape mining, with this contribution the authors have identified the following score index: WI and AI. In addition, the degree of interest based on the grade was assessed for each section attributed by the smart community through the main social networks. Finally, the framework and architecture of the SBW Dashboard was organized aimed at both users and decision support.

The subsequent development of this study will cover the implementation of the dashboard, also for aspects linked to the safety of the place and the active role of the smart community.

As a matter of fact, the following steps will consist in submitting the dashboard to a selected group of users, expert and non-expert users, looking forward to its inclusion on the SBW Foundation website and, therefore, usable for the public consultation.

In this sense, the proposed dashboard, including subsequent advances and possible implementations, represents a strategic tool to support governance policies and to promote the territory, in order to overcome the deep crisis left by mining activities.

The first results that we can derive from this research deal with the data that we collected from the different sources. The added value to propose into this project is given by combining a set of available data and information with a set of indicators, useful for evaluating the characters and

performances of single tracks, providing both potential users and managers and planners of the SBW with useful insights into the usability of the same parts of the Walk, as well as estimating the possible points or set of segments where specific interventions can be addressed. Also, the layout of the dashboard has been thought in order to implement it as part of the evolution of the SBW organization tools to promote the activities and to monitor the results of the performances.

4. Conclusions and future development

The research activity we carried out has led to some first results, that can be resumed as follows. We analyzed the SBW in terms of its network structure and the features related to the same walk and proposed the realization of a dashboard for gathering data and ad-hoc developed indicators on the performances on the walk.

After an introduction to these research objects, we derived an image of the SBW as a network perfectly integrated into the surrounding territory. In this sense, it emerged that it is characterized not only by its physical features, but also by a set of the several points of interest in its proximity: in the present case we discovered those located within a 1 km buffer from the different segments belonging to the walk. Such first set of results resulted as a starting point for developing the research methodology, that consisted of three main phases:

The first phase was dedicated to the collection, analysis and classification of the objective characteristics of the walk (intrinsic and extrinsic), and that allowed to develop a Walkability Index (WI) and an Attractiveness Index (AI) for each of the 24 tracks. Both of these two indexes are considered useful to describe the different parts of the walk and, therefore, to guide the users' choice.

The second phase was dedicated to the collection, analysis and classification of the subjective characteristics of the points of interest located along the SBW. These data, provided by the smart community through the main social networks (Facebook, Instagram and Tripadvisor), reveal the state-of-the-art in terms of tourist promotion activities.

The third phase appeared as that devoted to the systematization of the web info data and the team data analysis to develop a conceptual architecture and a design for the circular dashboard of SBW.

The analyses conducted have shown that the smart community is contributing significantly to the affirmation of a new model of sustainable development based on slow tourism. The main form of care for the contexts is entrusted to the individual sensitivity of visitors. In fact, awareness and knowledge of history are fundamental to the re-invention of the past. Slow tourism is softly included in the Sulcis Iglesiente region, free from compulsive mass tourism and its forms of sophistication and forgery. Through the material and immaterial networks and the intrinsic and extrinsic characteristics organized in the SBW Dashboard, the aim is to transform the condition of periphery of disused contexts making them emerge as a new tourist destination.

The future developments of the project imply the validation of the data and information to be put into the same dashboard. In particular, we will select a set of users, basing the analysis on ad hoc users, to test the design and the validity of the indicators used. Successively, we will proceed with the physical realization of the fully operational dashboard, taking care of the automatization of the process of data collection and gathering, particularly of those coming from the social networks and media platforms involved, as well as of those feeding the indicators considered in the dashboard itself.

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