Beacon Südtirol - Alto Adige

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D4.1

Beacon Network

List of beacon requests

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Index

Index 2

1 - Introduction 3

1.1 - Project overview 3

1.2 - Project history 3

2 - The Beacon Network 5

2.1 - The collection of point of interest 5

2.2 - Requests per stakeholder 7

2.2.1 - Tourism Associations 7

2.2.2 - LVH - APA 10

2.2.3 - Messe Bozen - Fiera di Bolzano 10

2.2.4 - The Blueslemon Project 11

2.2.5 - Systems 11

2.2.6 - The Medical Center of Bolzano 11

2.2.7 - NOI Techpark 12

2.2.8 - The Bletterbach Natural Park 12

2.2.9 - Eurac Research 12

2.2.10 - Centro Trevi 13

2.2.11 - Castel Mareccio 13

2.2.12 - Belka 13

2.2.13 - A22 14

3 - Problems, solutions and lesson learned 15

3.1 - Problems and solutions 15

3.1.1 - Installation coordination with stakeholders 15

3.2 - Lessons learned 16

1 - Introduction

The goals of the WP 4 “Beacon Network” of the Beacon project are:

- create a beacon network over the whole South Tyrol;
- develop the software tools needed to proper manage and use the beacon network.

In this document the user will find the information about:

- the methodology to collect the list of point of interest to associate to the beacons provided by the project;
- the list of points of interest collected.

1.1 - Project overview

This document describes part of the activities of the 4th Work Package of the project "Beacon Südtirol - Alto Adige". The aim of the work package is build a physical network of 3.500 Beacons and distribute these Beacons over the territory of South Tyrol. Furthermore, within the 4th Work Package the software tools which allow the use and the administration of the network will be developed .

The 4th work package includes the following activities:

- the identification of the point of interest for the beacons;
- the installation of 3.500 beacons distributed over the whole South Tyrol;
- the development of Open Source libraries (iOS and Android) that can be used by stakeholders which will use the installed beacons in their apps;
- the development of an Open Source web tool to manage and maintain the beacon network;
- the development of an Open Source Android app to manage and maintain the beacon network;
- the creation of a plan for the maintenance and the future development of the beacon network.

In particular this document focuses on the methodology of collection of the points of interest to be associated with the beacons.

1.2 - Project history

The Beacon Südtirol - Alto Adige project started officially on 1st May 2018. The 8th of June 2018 NOI Techpark organized a Kick Off event in order to present the project and get in contact with the stakeholder interested in the beacon network. NOI Techpark, through a public call for a point of interest, started the collection of Point of Interest to be equipped with beacons. Every institution and/or company

interested in beacons had the possibility to manifest their interest by writing an email at the following email address info@beacon.bz.it and sending the information about their point of interest.

The 30th of October 2018 in a public tender KONVERTO was awarded for the creation and the maintenance of the Beacon Network and the development of the software tools needed for the use and the maintenance of the network. The public tender was divided in the following two parts:

1. the development of the software components;
2. installation and maintenance of the beacon network.

The 12th of December 2018 NOI Techpark organized a kickoff meeting with KONVERTO in order to:

- plan the development of the software tools;
- plan the installation of the beacon network.

In order to plan the installation of the beacons, the first call for points of interest was closed at the end of January 2019. All the requests collected after this date where inserted in a waiting list.

Originally, the whole project should have been completed within 30th of June 2019. Considering some unexpected problems (the complete list of problems will be mentioned and described in detail in the lesson learned section of the WP4 final report) emerged during the implementation of the project, NOI Techpark, Autonomous Province of Bolzano, KONVERTO and ERDF fund agreed a project extension until the 31st of January 2020.

The creation of the software packages was completed in March 2019 in accordance with the original project plan and, after a testing period, was officially handed over by the project owner (NOI Techpark) on 21st of May 2019.

The present project was officially accepted and completed by the project owner (NOI techpark and Autonomous Province of Bolzano) on 29th of January 2020. The installed Beacon network was taken over into regular operation by the Autonomous Province of Bolzano and will be maintained in the next five years.

2 - The Beacon Network

As mentioned in the Introduction chapter, the main goal of the 4th Work Package of the Beacon Südtirol - Alto Adige project is to create a network of 3.500 beacon over the whole South Tyrol.

2.1 - The collection of point of interest

The identification of the stakeholders interested in beacons began at the project's kick off meeting where a first call for Point of Interest was presented. Everyone interested in getting beacons had the opportunity to send a request at info@beacon.bz.it including the list of points of interest with a short description and the GPS coordinates.

The first call of Point of Interest was closed at the end of January 2019. The following institutions/ companies answered to the first call by sending their point of interest via email:

- 67 tourism associations of South Tyrol (under the direction of IDM);
- the „Landesverband der Handwerker“ (LVH-APA);
- the „Handels- und Dienstleistungsverband Südtirol“ (HDS);
- Dolomiti Superski;
- the Messe Bozen - Fiera di Bolzano;
- the Blueslemon project (LP 14 project of Gruppo FOS and MAV Tech);
- Systems;
- Athesia;
- the medical center of Bolzano;
- the NOI Techpark.

In Table 1 are shown the number of the beacons requested by each institution or company that answered to the first call of Point of Interest.

Institution / Company	Number of Beacons
Tourism Associations (IDM Südtirol)	1.472
LVH-APA	150
HDS	550
Dolomiti Superski	100
Messe Bozen - Fiera di Bolzano	150
Blueslemon Project	100
Systems	10

Athesia	65
Medical center of Bolzano	350
NOI Techpark	816
Total	**3.763**

Table 1: *result of the first call for Point of Interest.*

After the first call for Point of Interest, in order to plan and share the installation methodology, dedicated meetings with the single institutions and companies have been organized.

Moreover, to test the installation procedure for the Tourism Organizations, in February 2019 pilot installation sessions have been organized with the Merano, Prissian and Castelfeder Tourism Organizations. The cooperation with these pilot communities was very successful and the installation of the beacons in these locations was completed on time. The aim of these pilot installations was to gain practical experience and to test the different installation methods of the beacons on different surfaces. Furthermore, the aim was to test the optimal processes and communication channels for the planning of further installations.

Once the pilot installation has been concluded the roll out process has been finalized and shared with all the companies and institutions involved.

The installation of the beacons (roll out) in the other zones of the tourism associations started with end of April 2019, discussions were held with the other organizations or companies. With individual organizations (e.g. Gruppo FOS and Systems) this proved to be very easy and the beacons could be installed or handed over in a timely manner. With other organizations the process was more effort demanding. NOI Techpark and KONVERTO where strongly in contact with the most critical organizations and companies.

Setting of an ultimatum (due to the approaching end of the project) led to a final decision of these stakeholders. Some of them (e.g. HDS, Athesia, Dolomiti Superski) decided not to participate directly in the project and be only observers. Others decided to take over the beacons assigned to them and apply them themselves (e.g. LVH-APA, the medical center of Bolzano).

In order to collect other stakeholder interested in beacons a second call for Point of Interest was opened during the summer 2019 and the following organizations and institutions answered to it:

- Bletterbach Schlucht;
- Eurac Research:
- Centro Trevi;
- Oberalp;
- Castel Mareccio;

- Belka.

In Table 2 are shown the number of the beacon requested by each institution or company who answered to the second call of Point of Interest.

Institution / Company	Number of Beacons
Bletterbach Schlucht	300
Eurac Research	40
Castel Mareccio	20
Oberalp	100
Centro Trevi	65
Belka	10
Total	**535**

Table 2: *result of the second call for Point of Interest.*

The second call for Point of Interest allowed to assign the beacons left over by the companies and organization that, considering the effort to install the beacons, decided to not become directly part of the Beacon Südtirol - Alto Adige Project

2.2 - Requests per stakeholder

In this section will be summarized all requests of beacon including the number of the beacons requested and a short description of the goal of the stakeholder

2.2.1 - Tourism Associations

As mentioned in the previous sections, in the tourism domain, 67 tourism associations of South Tyrol applied for a request for beacons. Their goal is to use the beacon in order to improve the digital services provided to the tourists by using the beacons. One example is the integration of the beacon technology in the Südtirol Mobile Guide in order to:

- provide notification when the people are in front to their favorite point of interest even in absence of GPS signal;
- collect more information about the location that the tourists like more in order to provide better suggestions.

In Table 3 are summarized the number of beacons requested by each Tourism Association.

Institution / Company	Number of Beacons
Abtei - Badia	31
Ahrntal - Valle Aurina	15
Aldein-Radein - Aldino	9
Algund - Lagundo	24
Andrian - Andriano	0
Antholzertal - Valle di Anterselva	11
Bozen - Bolzano	39
Brixen - Bressanone	15
Bruneck - Brunico	13
Castelfeder	65
Corvara - Colfosco	16
Deutschnonsberg	6
Dorf Tirol - Tirolo	7
Eggenthal - Val d'Ega	39
Eppan a.d.W - Appiano s.s.d.v.	21
Gitschberg Jochtal - Rio Pusteria	22
Gossensass - Colle Isarco	5
Gsieser Tal-Welsberg-Taisten	25
Hafling-Vöran-Meran 2000	21
Innichen - San Candido	6
Jenesien - San Genesio	25
Kaltern a.d.W. - Caldaro s.s	30
Kastelbell-Tschars - Castelbello-Ciardes	24
Kiens - Chienes	10
Klausen Barbian Feldthurns und Villanders	41
Lajen - Lajon	20
Lana	89
Latsch-Martell mit Goldrain, Morter, Tarsch	31

Institution / Company	Number of Beacons
Leifers-Branzoll-Pfatten	14
Lüsen - Luson	0
Mals, Schluderns, Taufers im Münstertal und Glurns	34
Marling - Marlengo	4
Meran - Merano	198
Mölten - Meltina	13
Nals - Nalles	14
Naturn/Plaus - Naturno/Plaus	9
Natz/Schabs - Natz/Sciaves	15
Niederdorf - Villabassa	17
Obervinschgau - Alta val Venosta	0
Olang - Valdaora	15
Ortlergebiet im Nationalpark Stilfserjoch	4
Partschins/Rabland/Töll - Parcines/Rablà/Tell	22
Passeiertal - Val Passiria	20
Prad am Stilfersjoch - Prato allo Stelvio	28
Pragsertal - Valle di Braies	5
Reschenpass - Passo Resia	26
Ritten - Renon	29
Rodeneck - Rodegno	13
San Virgilio - San Martino	6
Sand in Taufers - Campo Tures	17
Sarnthein - Sarentino	11
Schenna - Scenna	6
Schlanders/Laas - Silandro/Lasa	20
Schnalstal - Val Senales	10
Seiser Alm, Seis, Tiers, Völs, Kastelruth	37
Sexten - Sesto	12

Institution / Company	Number of Beacons
St. Ulrich/St. Christina/Wolkenstein	39
Sterzing/Ratsching - Vipiteno/Racines	16
Südtiroler Unterland	30
Terenten - Terento	9
Terlan - Terlano	4
Tiesens/Prissian- Tesimo/Prissiano	20
Toblach - Dobiacco	26
Tramin a.d.W. - Termeno s.s.d.v.	27
Trudner Horn	14
Ultental/Proveis - Val D'Ultimo/Proves	8
Villnös - Funes	16
Wengen - La Valle	4
Total	**1472**

Table 3: *number of requested beacons per Tourism association.*

2.2.2 - LVH - APA

LVH - APA requested 100 beacons to use in innovative projects with their associated. Moreover LVH - APA is interested in testing an innovative system for the promotion of their members during fairs.

Institution / Company	Number of Beacons
LVH - APA	100
Total	**100**

Table 4: *number of requested beacons by LVH.*

2.2.3 - Messe Bozen - Fiera di Bolzano

The Fair of Bolzano requested 150 beacons in order to implement an innovative indoor navigation system that helps their visitor in find the stand that they are searching. Moreover the Fair of Bolzano is interested in provide more information and statistics (e.g. number of people that visited the stand, time spent at the stand, etc.) to the exhibitors.

Institution / Company	Number of Beacons
Fair of Bolzano	150
Total	**150**

Table 5: *number of requested beacons by the Fair fo Bolzano.*

2.2.4 - The Blueslemon Project

The Blueslemon is a project funded by the LP14 that involves two local companies (Gruppo FOS and MAV Tech) and one Research Institute (Eurac). The goal of the project is the development of an innovative system to monitor landslides by using a combination of Beacon Technology and drones. The project team requested 100 beacons in order to build a first prototype of the system.

Institution / Company	Number of Beacons
Blueslemon project	100
Total	**100**

Table 6: *number of requested beacons by the Blueslemon Project.*

2.2.5 - Systems

System asked for 10 beacons to test the beacons as instrument to implement an innovative indoor navigation system.

Institution / Company	Number of Beacons
Systems	10
Total	**10**

Table 7: *number of requested beacons by Systems.*

2.2.6 - The Medical Center of Bolzano

The Medical Center of Bolzano applied a request of 300 beacons in order to integrate in the new CUP (Centro Unico Prenotazioni) application a system that guides the patients in front of the right medical office of the new first aid of the hospital of Bolzano.

Institution / Company	Number of Beacons
Medical Center of Bolzano	300
Total	**300**

Table 8: *number of requested beacons by the Medical Centre of Bolzano.*

2.2.7 - NOI Techpark

The NOI Techpark applied for 816 beacon in order to create an open testing environment that companies, institutions and research centres can use for free in order to implement, test and improve innovative services.

Institution / Company	Number of Beacons
NOI Techpark - A1 Building	379
NOI Techpark - A2 Building	170
NOI Techpark - A4 Building	13
NOI Techpark - D1 Building	217
NOI Techpark - P1 Garage	26
NOI Techpark - Outdoor	11
Total	**816**

Table 9: *number of requested beacons by NOI techpark.*

2.2.8 - The Bletterbach Natural Park

The Bletterbach Natural Park applied for 300 beacons in order to develop an innovative system that helps their visitors to move in a safe way within the park. The goal of the Natural Park is the development of a system that provides useful information to the visitors and, in case of need, allows the managers of the park to know how many people are located in the different zones of the park to better plan their rescue.

Institution / Company	Number of Beacons
Bletterbach Natural Park	300
Total	**300**

Table 10: *number of requested beacons by Bletterbach Natural Park*

2.2.9 - Eurac Research

Eurac Research applied for 10 beacons in order to develop together with a local company a innovative system to monitor the location of instruments within a certain area. The goal of the project is the optimization of the work processes, the increase of the safety of the working areas and the reduction of loss of instruments.

Institution / Company	Number of Beacons
Eurac Research	10
Total	**10**

Table 11: *number of requested beacons by Eurac Research*

2.2.10 - Centro Trevi

Centro Trevi applied a request of 65 beacons in order to develop an innovative system that helps the visitors of their bibliotheque to find the book that they are looking for.

Institution / Company	Number of Beacons
Centro Trevi	65
Total	**65**

Table 12: *number of requested beacons by Centro Trevi*

2.2.11 - Castel Mareccio

The Castel Mareccio applied for 13 beacons in order to develop an innovative Gamification Application to guide their visitors within the castle and provide interesting information about the castle history by playing a game..

Institution / Company	Number of Beacons
Castel Mareccio	13
Total	**13**

Table 13: *number of requested beacons by Castel Mareccio.*

2.2.12 - Belka

Belka applied for 10 beacons in order to set up a testing environment in their office to develop innovative applications useful for the promotion of tourism locations.

Institution / Company	Number of Beacons
Belka	10
Total	**10**

Table 14: *number of requested beacons by Belka.*

2.2.13 - A22

They applied a request of 2 beacons in order to develop a first demonstrator of a system that provides useful information to the drivers at the gates.

Institution / Company	Number of Beacons
A22	2
Total	**2**

Table 15: *number of requested beacons by A22.*

3 - Problems, solutions and lesson learned

This chapter collects the main problems, the solution and the lesson learned of the activities related to the collection of the point of interest.

3.1 - Problems and solutions

This section is dedicated to the problems and the difficulties bumped up during the collection of the Point of interest.

3.1.1 - Installation coordination with stakeholders

The coordination of the installations (agreeing the POIs, making appointments for the installation, meetings with associations, getting the authorizations and access to the places) in some cases was a difficult challenge. In particular during the installation we found the following problems:

- since in some cases the contact provided by the organizations or the companies was not the one responsible for the locations, were difficult to get appointments with the supervisor of the locations where the beacons were installed;
- some organizations or companies renounced to their beacon during the installation phase;
- In some municipalities any beacon was planned on a private location and we didn't get the authorization by the owner.

In order to deal with this issues, the project team implemented the following countermeasures:

- wrote a how to document with a list of task that the company/organization asking for beacons has to fulfill in order to be able to define a date to install the beacons;
- several meetings with the most critical companies and organizations were organized in order to help them to clarify their doubts and to coordinate the pianification work;
- A second call for Point of Interest has been organized in order to collect other locations to associate to the beacons taken over by some organizations and companies.

3.2 - Lessons learned

Learning from the experience done in this project, the project team was able to identify some optimizations and tricks that could be adopted in future projects in order to further optimize the resources and the activities.

During the coordination with the stakeholders interested in getting the beacons it appeared clear that the collection of the information and the coordination of the installation activities was quite effort demanding also on their side. Considering that, in future projects similar to Beacon Südtirol - Alto Adige, the suggestion is to assign a little budget to this stakeholder for the coordination of the installation activities and eventually also their own members.