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Project Acronym: i-locate

Grant Agreement number: 621040

Project Title: Indoor/outdoor LOCation and Asset management Through open gEodata

D.7.2 Risk Log

Revision: Final

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P	Public	X
C	Confidential, only for members of the consortium and the Commission Services	

REVISION HISTORY AND STATEMENT OF ORIGINALITY

Revision History

Revision	Date	Author	Organisation	Description
V 01	02/12/2014	Catherine Delevoye	TECHOPORT	Contribution
V 02	02/12/2014	Giorgio Saio	GISIG	Contribution
V 03	05/12/2014	Daniele Miorandi	U-HOPPER	Contribution
V 04	08/12/2014	Ramona Candea	INDSOFT	Contribution
V 05	22/12/2014	Giuseppe Conti	TRILOGIS	Quality Check

Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

1. Table of Acroyms

Acronym	Description
A	Other
D	Risk related to the accessibility of data
I	Impact
M	Risk related to project management
N	Risk linked to norms or regulatory framework
O	Risk related to operating activities
P	Probability
T	Technological Risk

2. Executive Abstract

The risk plan in i-locate has been edited following the recommendations by the Project Management Institute (PMI) as detailed within the document Project Management Body of Knowledge (PMBOK®). The plan provides a "system" approach to the project risk management through a process that begins with the preparation of the risk plan, which defines the methodology for risk management, and it continues throughout the project lifecycle through constant monitoring, detection, evaluation (qualitative and quantitative) and documentation of risk factors, the identification of any mitigating action, and the subsequent monitoring of residual risks until their complete resolution is achieved or the project activities are concluded.

This document provides the results of the activity of continuous monitoring of the project activities. The report covers the first 12 month period, from the 1st of January 2014 to the 31st of December 2014.

Table of content

1. TABLE OF ACROYMS 3
2. EXECUTIVE ABSTRACT 4
3. RISK ANALYSIS 6
4. RISK ANALYSIS 8
4.1. Technological Risks 8
4.2. Risks Related to Operating Activities 11
4.3. Risks Related to Project Management 14
4.4. Risks Related to Norms or Regulatory Framework 16
4.5. Risks Related to the Accessibility of Data 17
4.6. Other Risks 18

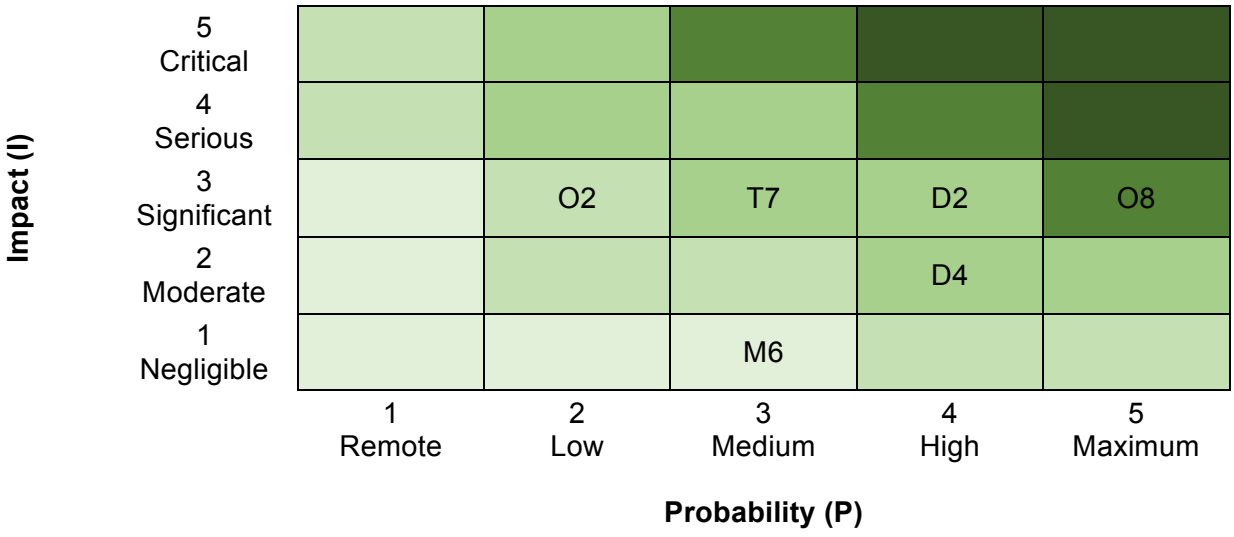
3. Risk Analysis

This document provides the results of the activity of continuous monitoring of the project activities. It covers the period of the project activities from the 1st of January 2014 to the 31st of December 2014.

Risks in the i-locate project have been articulated into the following categories:

- T = Technological Risk.
- O = Risk related to operating activities.
- M = Risk related to project management.
- N = Risk linked to norms or regulatory framework.
- D = Risk related to the accessibility of data.
- A = Other.

The following rating has been used for project risks according to their severity and the probability of happening.



Probability	Description
5 = Maximum	Will surely happen: “1 on 1” chance
4 = High	May happen frequently, chances are between “1:1” and “1:10”
3 = Medium	May happen, chances between “1:10” and “1:100”
2 = Low	May happen rarely, chances between “1:100” and “1:1000”
1 = Remote	Very rare chance, less than “1:1000”

The classification in terms of probability (P) and impact (I) of risk factors, as per the graphic above, allows the definition of the Matrix Risk Index (RI), as presented within the following Table 1. The risks are herewith grouped according to a classification of the risk level.

Table 1. Matrix Risk Index Table

IR >= 20	Max	High risk of non-compliance of the project results, significant impact on the functionality provided by the system as well as on the timing and costs.
16 <= IR < 20	High	High risk of non-compliance of the project results, possible adoption of alternative technologies or methodologies with small variations on the final results but with a significant impact on costs and time.
6 <= IR < 16	Middle	Low risk of non-compliance of the project results, possible mitigation through adoption of alternative technical solutions with reduced consequences (time/costs).
4 <= IR < 6	Low	No risk of non-compliance of the expected results, minor changes compared to the nonfunctional requirements, marginally behind schedule (which can be absorbed in the course of further project activities) and costs.
IR < 4	Min	No risk of non-compliance, no change to functional characteristics, no impact on costs / time.

4. Risk Analysis

4.1. Technological Risks

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
T1	Risks inherent to the usage of open source tech., with poor commercial support.	3	2	No		
T2	Open source – possible sustainability issues generated from lack of interest to keep it updated.	2	2	No		
T3	Defined use-cases from the final users are not compatible with the technical requirements.	4	2	No		
T4	Some of the technology to be integrated are not mature enough and do not scale when deployed in the pilots.	4	1	Yes	Yes	Uncertainty regarding the final release of IndoorGML as stable standards forced to adopt draft specifications as reference implementation from the data model to be supported by i-locate. The eventual adoption of IndoorGML as standard by OGC on Sept. 2014 with no changes to the initial draft concluded this risk.

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
T5	The indoor localization technology chosen fail to provide the required accuracy.	3	2	No		
T6	Problems with integration of different technologies available to the project.	4	1	No		Due to limitation in the API available for GALILEO, it may not be entirely possible to develop the solution for iOS devices (instead the Android version is being developed with no specific issue), since this may require non-standard solution (i.e. jailbreaking of the smartphone). Solutions to this issue are being considered by the technical team. In case of a technical barrier full GALILEO support will be ensured for Android devices only.
T7	Delayed delivery of results.	3	3	Yes	No	There has been some delay in the delivery of interim releases of the toolkit component responsible for the routing (developed by TUE) with particular regard to the indoor routing features (the outdoor routing are fully functional). This has been caused by the complex specifications of the IndoorGML model. The WP leader has constantly monitored the situation informing in a duly and timely manner the PC. While the situation is recovering, it will still be kept under strict surveillance by the WP leader to ensure that no delays can harm the timely deployment of the pilots. However, the great degree modularization of the toolkit has allowed isolating possible issues emerging

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
						from delayed development. On the positive side, the modularization of the software toolkit and associated development activities has been so successful that, on average, the development progress of the overall toolkit has been faster than originally planned, leading to an interim version of the toolkit (scheduled at M12) with more features than originally expected. Adjustments to the work plan by the WP leader has allowed mitigating the overall risk and will lead to complete recovery of the few delays by the official final release of the toolkit, expected at M18.

4.2. Risks Related to Operating Activities

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
O1	Low involvement of the final users in the definition of Use-Cases	4	2	No		
O2	Low involvement of the final users in later activities of the project	3	2	No	No	The late joining of Comune di Tremosine sul Garda together with the change of administration (new mayor and new assembly) has caused initial lower feedback by the partner. As remedial action, the coordinator has called several times a meeting with the new mayor and the other management staff them to engage them within the project activities. The new administration is now fully committed within the project therefore this risk may be soon terminated.
O3	Scarce participation by the stakeholders in validating the results from the pilots	5	3	No		
O4	Training material is not suitable for the purpose or not in the right format	4	3	No		
O5	Participation in the training actions by the targeted users is low	4	1	No		

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
O6	Breach of system security	4	2	No		
O7	Insufficient or incorrect maintenance	3	2	No		
08	Change to pilot areas	3	5	Yes	No	A major landslide which has occurred within Comune di Tremosine has caused the administration to request (during a meeting in December) a change in their pilot area. The need to monitor a part of the territory where the landslide occurred, has introduced the need to move the pilot area from the initial segment of street to another segment of territory. In fact it has been requested by the partner to move the pilot area to the sealed off area where no vehicles nor people are allowed to enter. Therefore the use case of monitoring people and vehicles remaining the same while the location will have to be changed. Once the alert will be terminated (in few months), the hardware used for localization of users and vehicles (the video cameras) will be moved back to a different point of the road network in line with the previous “classic” road monitoring scenario. This will require an update of some sections of the following deliverables:

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
						• D.1.1 - UC description and PTVRA • D.1.3 - Pilot scope description and system requirements. • D.2.1 - Data Survey Report The new documents will be reviewed by the coordinator with active support from the partner involved (Comune di Tremosine sul Garda) and with support of WP1 and WP2 leader.

4.3. Risks Related to Project Management

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
M1	Original plan within the DoW not corresponding to actual project costs or efforts	4	1	No		
M2	Partner delivering poor or unsatisfactory results	4	1	No		
M3	Technical partner leaving the project	4	1	No		
M4	Supporting technical partner leaving the project	4	1	No		
M5	Pilot partner leaving the project	4	1	No		
M6	Marginalisation of partner	3	1	Yes	Yes	Since the mayor of Tremosine Municipality changed within this year, a lot of slowdowns occurred. However, a close pursuing of the partner has helped the Consortium to solve its marginalization and poor commitment.

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
M7	Limited involvement of members of the Advisory Board	2	1	No		
M8	Problems with liaising with international initiatives	2	1	No		

4.4. Risks Related to Norms or Regulatory Framework

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
N1	Regulatory elements that set constraints to the pilots' deployment and use of the ***ilocate*** toolkit.	5	3	No		
N2	Differences between legal framework may cause undue constraints.	3	1	No		
N3	Problem with privacy issues related to use of location based services with patients or differently abled citizens	4	1	No		

4.5. Risks Related to the Accessibility of Data

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
D1	Data update, as changes in infrastructure may occur.	2	4	No		
D2	Limited data availability (data variance, change of specifications, data coverage).	4	3	Yes	No	Some of the partners did not have fully digital data. The remedial action envisaged is an appropriate process of data creation and collection, which is actually in progress. This risk will be completely mitigated shortly.
D3	Limited accuracy and precision.	3	2	No		
D4	Limited or no access to indoor mapping data of old buildings.	4	2	Yes	No	Indoor maps are being created by taking into account this possibility.
D5	Inability to collect indoor data beyond the pilots involved.	1	2	No		
D6	Limited access to other data Sources.	3	2	No		

4.6. Other Risks

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
A1	Limited involvement of international community.	1	1			
A2	Unsatisfactory impact of standardisation activity.	1	2			

4. Risk Analysis

4.1. Technological Risks

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
T1	Risks inherent to the usage of open source tech., with poor commercial support.	3	2	No		
T2	Open source – possible sustainability issues generated from lack of interest to keep it updated.	2	2	No		
T3	Defined use-cases from the final users are not compatible with the technical requirements.	4	2	No		
T4	Some of the technology to be integrated are not mature enough and do not scale when deployed in the pilots.	4	1	Yes	Yes	Uncertainty regarding the final release of IndoorGML as stable standards forced to adopt draft specifications as reference implementation from the data model to be supported by i-locate. The eventual adoption of IndoorGML as standard by OGC on Sept. 2014 with no changes to the initial draft concluded this risk.

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
T5	The indoor localization technology chosen fail to provide the required accuracy.	3	2	No		
T6	Problems with integration of different technologies available to the project.	4	1	No		Due to limitation in the API available for GALILEO, it may not be entirely possible to develop the solution for iOS devices (instead the Android version is being developed with no specific issue), since this may require non-standard solution (i.e. jailbreaking of the smartphone). Solutions to this issue are being considered by the technical team. In case of a technical barrier full GALILEO support will be ensured for Android devices only.
T7	Delayed delivery of results.	3	3	Yes	No	There has been some delay in the delivery of interim releases of the toolkit component responsible for the routing (developed by TUE) with particular regard to the indoor routing features (the outdoor routing are fully functional). This has been caused by the complex specifications of the IndoorGML model. The WP leader has constantly monitored the situation informing in a duly and timely manner the PC. While the situation is recovering, it will still be kept under strict surveillance by the WP leader to ensure that no delays can harm the timely deployment of the pilots. However, the great degree modularization of the toolkit has allowed isolating possible issues emerging

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4.2. Risks Related to Operating Activities

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
O1	Low involvement of the final users in the definition of Use-Cases	4	2	No		
O2	Low involvement of the final users in later activities of the project	3	2	No	No	The late joining of Comune di Tremosine sul Garda together with the change of administration (new mayor and new assembly) has caused initial lower feedback by the partner. As remedial action, the coordinator has called several times a meeting with the new mayor and the other management staff them to engage them within the project activities. The new administration is now fully committed within the project therefore this risk may be soon terminated.
O3	Scarce participation by the stakeholders in validating the results from the pilots	5	3	No		
O4	Training material is not suitable for the purpose or not in the right format	4	3	No		
O5	Participation in the training actions by the targeted users is low	4	1	No		

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
O6	Breach of system security	4	2	No		
O7	Insufficient or incorrect maintenance	3	2	No		
08	Change to pilot areas	3	5	Yes	No	A major landslide which has occurred within Comune di Tremosine has caused the administration to request (during a meeting in December) a change in their pilot area. The need to monitor a part of the territory where the landslide occurred, has introduced the need to move the pilot area from the initial segment of street to another segment of territory. In fact it has been requested by the partner to move the pilot area to the sealed off area where no vehicles nor people are allowed to enter. Therefore the use case of monitoring people and vehicles remaining the same while the location will have to be changed. Once the alert will be terminated (in few months), the hardware used for localization of users and vehicles (the video cameras) will be moved back to a different point of the road network in line with the previous “classic” road monitoring scenario. This will require an update of some sections of the following deliverables:

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4.3. Risks Related to Project Management

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
M1	Original plan within the DoW not corresponding to actual project costs or efforts	4	1	No		
M2	Partner delivering poor or unsatisfactory results	4	1	No		
M3	Technical partner leaving the project	4	1	No		
M4	Supporting technical partner leaving the project	4	1	No		
M5	Pilot partner leaving the project	4	1	No		
M6	Marginalisation of partner	3	1	Yes	Yes	Since the mayor of Tremosine Municipality changed within this year, a lot of slowdowns occurred. However, a close pursuing of the partner has helped the Consortium to solve its marginalization and poor commitment.

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
M7	Limited involvement of members of the Advisory Board	2	1	No		
M8	Problems with liaising with international initiatives	2	1	No		

4.4. Risks Related to Norms or Regulatory Framework

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
N1	Regulatory elements that set constraints to the pilots' deployment and use of the ***ilocate*** toolkit.	5	3	No		
N2	Differences between legal framework may cause undue constraints.	3	1	No		
N3	Problem with privacy issues related to use of location based services with patients or differently abled citizens	4	1	No		

4.5. Risks Related to the Accessibility of Data

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
D1	Data update, as changes in infrastructure may occur.	2	4	No		
D2	Limited data availability (data variance, change of specifications, data coverage).	4	3	Yes	No	Some of the partners did not have fully digital data. The remedial action envisaged is an appropriate process of data creation and collection, which is actually in progress. This risk will be completely mitigated shortly.
D3	Limited accuracy and precision.	3	2	No		
D4	Limited or no access to indoor mapping data of old buildings.	4	2	Yes	No	Indoor maps are being created by taking into account this possibility.
D5	Inability to collect indoor data beyond the pilots involved.	1	2	No		
D6	Limited access to other data Sources.	3	2	No		

4.6. Other Risks

ID	Description of possible risks	I	P	Occurred?	Finished (if occurred)	Remedial actions
A1	Limited involvement of international community.	1	1			
A2	Unsatisfactory impact of standardisation activity.	1	2			