RISK ASSESSMENT REPORT

D10.2 – Risk Assessment Report (I) (M6)

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Abstract

Long-term research and development projects carried out by partners distributed all around Europe involve risks that must be properly managed.

The purpose of this Risk assessment report is to define and document, how the USER-CHI project will assess, monitor and handle project-associated risks. Risk management provides the tools, processes, and procedures, which will be used to assess and control risk events. The report also describes the roles of the different partners in the project and internal coordination mechanisms. A table summarising the risk management plan is presented at the end of this report.

Keywords

Risk assessment, Risk event, Risk exposure, Risk handling, Risk management, Risk monitoring

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Executive summary

Throughout the duration of the USER-CHI project, the management process will identify and monitor technical, managerial, financial and ethical risks that might affect the project's progress towards its objectives, in order to carry out mitigation actions as early as possible.

While the Work Package (WP) Leaders are responsible for the risk assessment and monitoring within their WPs, the Project Coordinator (PC) will be ultimately responsible for the oversight of the entire project against milestones and the risk management effectiveness.

Risks can arise from unexpected technical difficulties or scientific findings, poor communication or co-operation between the partners, resource shortage by the partners, objectives not achievable in terms of budget or feasibility, partners leaving the consortium, human operational errors, planning errors, poor quality, etc.. Risks should be identified as early as possible and their probability and impact should be evaluated in order to assign them a rating. According to the magnitude of the rating, risks will be handled and/or monitored until they are considered low.

Risks will be continuously updated and included in the risk management plan tables.

Table of Contents

1 Introduction

The consortium's experience in managing complex international projects in conjunction with its technological competence allows identifying the main areas of possible risks. The management process described in this deliverable will identify and monitor internal and external risks as well as any other issues that might affect the project progress towards its objectives. This process will be carried out throughout the project implementation, in order to undertake mitigation actions as early as possible.

The main types of risks are the following:

- **Technical risks**: Difficulties in meeting any technical product specification that may have an impact on achieving project requirements.

- **Managerial risks**: Lack of key resource availability or schedule risks which could delay the project milestones.

- **Financial risks**: Deterioration of the economic situation of a partner, which imposes a stop or an unacceptable reduction of the partner's activities.

- **Ethical risks**: Negative consequences of misconduct which can affect legal liabilities and cause ethical or reputational harm (the monitoring of ethical issues is fully described in the deliverable D11.1 Ethics monitoring report).

Furthermore, the combination of these main risk areas, which could result in an even greater impact, is considered.

The level of technical risk is substantially reduced by the composition of the USER-CHI consortium, with a well-assorted set of industry partners, research centres, cities and end-users deeply involved in the development process. USER-CHI partners have demonstrable consolidated experience as leaders in the technological areas in which each of them contributes to the project. Most of the USER-CHI partners have been involved in H2020 innovation actions and are experienced in managing and mitigating risks.

The main set of managerial, financial and ethical risks have already been identified and are documented in this report. The list will be revised and updated periodically.

The periodic risk review activities will monitor existing and new risks in the project and define clear action plans for minimizing the impact. It will identify progress and success in risk mitigation and will increase or decrease the priority and severity of the measures, based on the evaluation of potential impact, time to mitigate and risk probability. Risk management tables will be periodically reviewed and updated during the duration of the project, according to the current status at the time of review. The Risk Management Table is available in the Alfresco project repository to all partners.

For the USER-CHI project, a risk is defined as an event that may or may not occur in the future, which could potentially have a negative effect on the team's progress and success. A risk has a severity of impact and a probability of occurrence – formal definitions can be found in the next section.

1.1 Definitions

1.1.1 Risk

Risk is a measure of the inability to achieve overall project objectives within defined cost, schedule, and technical (performance and quality) constraints. It is measured by a combination of two parameters [1]:

- The probability of failing to achieve a particular outcome (**likelihood**)

- The consequences of failing to achieve that outcome (**impact**).

For USER-CHI, the risk is a measure of the difference between the actual performance of a process and the known best practice for performing that process.

Risk event

Risk events are those events within USER-CHI that, if they occur, could cause problems in the achievement of expected research results, the development and evaluation of USER-CHI tools, and the dissemination of results. Risk events should be defined in such a way that risks and causes are understandable and can be accurately assessed in terms of probability/probability and, consequently, to establish the level of risk.

1.1.2 Types of risk

Technical Risks

Technical Risks are risks associated with the evolution of the research results and the development of the USER-CHI tools affecting the level of performance necessary to meet the requirements of the project.

Managerial Risks

Managerial Risks are risks associated with the adequacy of the time estimated and allocated for the achievement of the goals of the project, i.e. the design, development, and deployment of the products, the achievement of the research results and the dissemination of project results. Three kinds of risk events exist in the USER-CHI project:

- Lack of resources availability

- Non-realistic or reasonable schedule estimates and objectives

- Project execution falling short of the schedule objectives as a result of failure to mitigate technical risks.

Financial Risks

Financial Risks are associated with the ability of the project to achieve its cost objectives as determined in the USER-CHI Grant Agreement. Two kinds of risk events have been identified:

- Non-accurate or reasonable cost estimates and objectives
- Project execution not meeting the cost objectives as a result of a failure to mitigate technical risks.

Ethical Risks

Ethical Risks are associated with the respect and the protection of the privacy of the involved end-users. Two kinds of risk events are defined:

- Absence of participants consent
- Infringement of personal data.

1.1.3 Risk rating

The risk rating is the value that is given to a risk event based on the analysis of the likelihood/probability and impact of the event. For USER-CHI, risk ratings of *Low*, *Moderate*, or *High* are assigned to each risk based on the following criteria:

- **Low**: Has little or no potential for degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Actions within the scope of the planned project and normal management attention should result in controlling acceptable risk.

- **Moderate**: May cause degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Special action and management attention may be required to control the acceptable risk.

- **High**: Likely to cause significant degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Significant additional action and high priority management attention will be required to control acceptable risk. This type of risk may be subject to a report to the European Commission Project Officer.

1.1.4 Contingency plan

Once identified and assessed, risks need to be traced in their status (Risk Monitoring) and in their mitigation measures if needed. Thus, the contingency plan should cover the registration and reaction to the change of environmental conditions to avoid risk events.
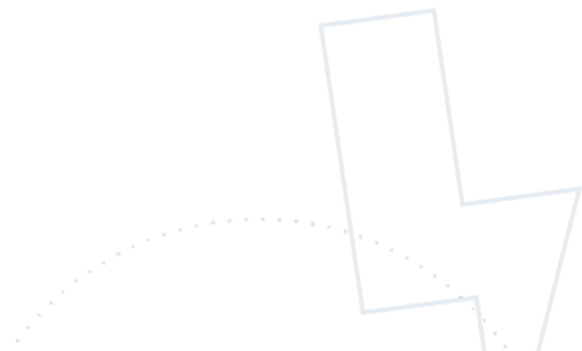
2 Risk management organisation and responsibilities

With the aim of achieving effective and efficient risk management, each partner has the responsibility to report immediately to their respective **Work Package (WP) Leader** any hazardous situation that may arise and could affect the project objectives or their successful completion.

If deemed necessary, project partners also have to inform the **Project Coordinator (PC)** directly. Any change in the schedule of deliverables or in the allocated budget must be reported to the responsible WP Leader and/or to the PC. In case of problems or delays, the **Project Management Board (PMB)** will be consulted, and it may install task forces to take mitigating actions. In case that no resolution is reached, the PMB will establish mitigation plans to reduce the impact of risks occurring.

2.1 Project Coordinator (PC)

ETRA, the USER-CHI Project Coordinator is the overall risk manager and responsible for:

- Monitoring the project to identify any new or changing risks

- Updating the initial risk list with the support of the consortium

- Briefing the consortium on the status of USER-CHI risks during Consortium Plenary meetings

- Monitoring the effectiveness of the risk management strategies

- Tracking efforts to reduce high risk to acceptable levels

- Facilitating consortium-level risk assessments during PMB meetings

- Combining risk briefings, reports, and documents as delivered by the WP leaders and required for project reviews by the Commission.

2.2 Work Package Leaders (WP Leaders)

Work Package Leaders are – within their Work Packages – responsible for:

- Risk identification

- Risk owners' identification

- Risk analysis

- Risk handling

- Risk information to the PC (in case of moderate or high risk)

- Risk monitoring

- Briefing the respective WP members on the status of risks

- Tracking efforts to reduce low and moderate risk to acceptable levels

- Preparing risk briefings, reports, and documents required for project reviews during PMB meetings.

2.3 Project Steering Committee (PSC)

The **Project Steering Committee** is responsible for:

- Monitoring the assigned risks and informing the PC of any threats or opportunities to the project

- Assessing the probability that a risk will occur and specifying the criteria used to assess the probability

- Assessing the impact of risks on project cost, time, scope, and quality objectives, and specifying the criteria used to assess the impact.

2.4 Project Management Board (PMB)

The Project Management Board, composed of the PSC and WP Leaders, is responsible for developing and/or updating the risk response strategy.

3 Risk management process

This section describes the USER-CHI risk management process and provides an overview of the USER-CHI risk management approach. Figure 1 shows, in general terms, the overall risk management process that will be followed in USER-CHI and includes risk identification, analysis, handling and monitoring. The whole risk management process shown in Figure 1 is discussed in the following paragraphs, along with specific procedures for executing each function.
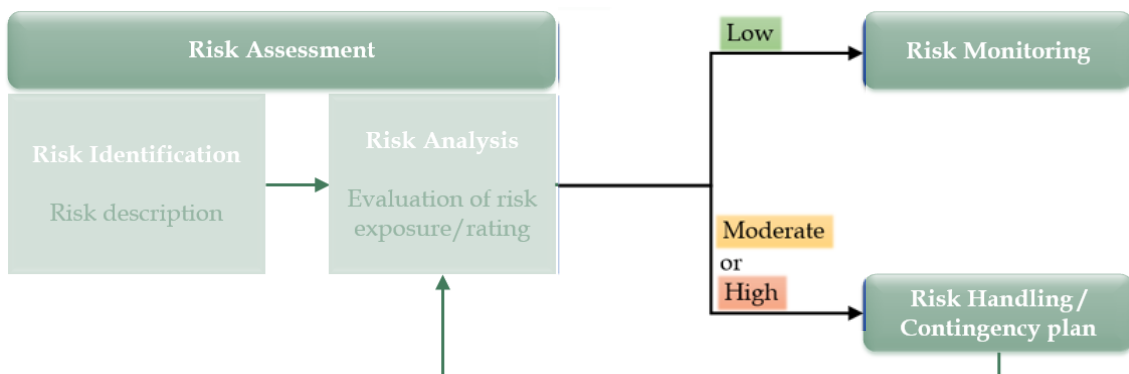
FIGURE 1: RISK MANAGEMENT PROCESS

3.1 Risk assessment

Risk assessment includes the identification of critical risk events/processes, which could have an adverse impact on the project, and the analysis of these events/processes to determine the likelihood of occurrence/process variance and consequences.

Risk assessment is an iterative process. Each risk assessment is a combination of risks identified/analysed in the previous phase and the identification/analysis of risks on current milestones/deliverables according to the project objectives.

3.1.1 Risk identification process and procedure

Risk identification is the first step in the assessment process. The basic process involves an evaluation of the entire USER-CHI project plan to determine critical events that could potentially prevent the project from achieving its objectives.

All identified risks will be documented in the Risk Management Tables – see section 4 – with a description of the risk, its identification number, its rating, the concerned WPs, and the risk-associated contingency plan.

The basic procedure of identifying risks consists of the following steps:

1. Generating a common understanding of the requirements, the overall projects quality goals and the projects performance goals

2. Identification of the processes and activities (tasks) that are needed to achieve the desired goals

3. Evaluation of each activity/task against sources/types of risk.

3.1.2 Risk indicators

It can be helpful to watch the following indicators to identify risks:

-   Lack of stability, clarity, or understanding of requirements: Requirements drive the research and the design of the USER-CHI tools. Changes in the requirements or poorly stated requirements foster the introduction of performance-, cost-, and schedule deviations.

-   Failure to use best practices virtually assures that the project will experience some risk. The further the deviation from best practices, the higher the risk.

-   Insufficient or inadequate resources: People, funds, schedule, and tools are necessary ingredients to successfully implementing a process. If any are inadequate, to include the qualifications of the people, there is a risk.

-   Test failure may indicate that corrective action is necessary. Some corrective actions may not fit available resources, or the schedule, and may contain risk.

-   Negative trends or forecasts are cause for concern and may require specific actions to regain control.

-   Transparency and good communication between the PC, WP Leaders and all partners is a critical success factor for USER-CHI. Failure to provide available information actively as well as to demand required information actively can introduce considerable risk.

3.1.3 Risk analysis process and procedure

Risk analysis is an evaluation of the identified risk events to determine possible outcomes, critical process variance from known best practices, the likelihood of those events occurring, and the consequences (impact) of the outcomes. Once this information has been determined, the risk event may be rated against the project's criteria and an overall assessment of risk exposure (low, moderate, or high) may be assigned [2].

The basic procedure for analysing risk comprises the following steps:

1. Gathering of all identified risks

2. Assignment of likelihood and impact to each risk event to establish a risk rating

3.   Prioritisation of each risk event relative to other risk events

4.   Quantitative analysis.

For each risk identified during the risk identification process, an assessment of risk exposure using likelihood and impact is performed. This quantitative approach is schematised by a risk assessment matrix, as is shown in Figure 2.
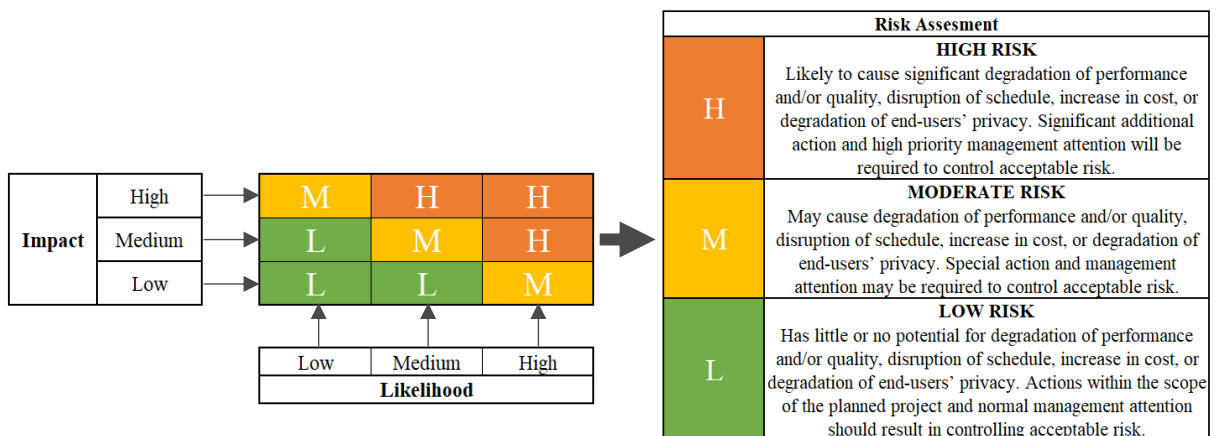
		Low	Medium	High		Risk Assesment	
Impact	High	M	H	H	**H**	**HIGH RISK** Likely to cause significant degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Significant additional action and high priority management attention will be required to control acceptable risk.	
	Medium	L	M	H	**M**	**MODERATE RISK** May cause degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Special action and management attention may be required to control acceptable risk.	
	Low	L	L	M	**L**	**LOW RISK** Has little or no potential for degradation of performance and/or quality, disruption of schedule, increase in cost, or degradation of end-users' privacy. Actions within the scope of the planned project and normal management attention should result in controlling acceptable risk.	
		Low	Medium	High			
		Likelihood					

FIGURE 2: QUALITATIVE LIKELIHOOD RISK ASSESSMENT MATRIX [4]

3.1.4 Evaluation of risks

To complete the risk assessment process, the quantitative evaluation assigns a rating to each risk (low, moderate, high). This delivers an overview of the risk status over the entire course of the project and is part of the risk table in section 4.

During Risk Analysis, identified scenarios of occurring risk events may embroil several impact areas. In this case, the worst case of the risk assessment (high risk, moderate risk, low risk) is applicable and influences the required actions as described in the matrix. Of course, all identified consequence areas must be identified and recorded.

3.1.5 Global Risk Indicator (GRI)

The Global Risk Indicator is calculated based on five criteria:

-    Probability (P)

-    Technical Performance (TP)

-    Schedule (S)

-    Cost (C)

-    Impact on other teams (I)

The Probability that the risk being analysed will occur is evaluated on a scale from 1 to 4:

1.   Remote

2. Unlikely

3. Likely

4. Highly Likely

On the other side, the Consequence or Impact of the risk is assessed considering four sub-criteria: Technical Performance, Schedule, Cost and Impact of other Teams. Each of the sub-criteria is evaluated also on a scale from 1 (low impact) to 4 (very high impact).

With this assessment, the Global Risk Indicator is calculated according to the following formula:

$$GRI = P\,(TP + S + C + I)/16$$

In the Table 1 is shown an example of the descripted calculation method for obtaining the Global Risk Indicator:

TABLE 1: GLOBAL RISK INDICATOR CALCULATION FOR USER-CHI RISK ASSESSMENT

Probability HL/L/U/R	Consequence/Impact 1=Minimum-4=Maximum				Global Risk Indicator (GRI) 0=Minimum 4=Maximum
	Technical Performance	Schedule	Cost	Impact on other teams	
3	2	3	1	3	1,6875
2	2	3	1	4	1,25
3	3	2	2	3	1,875
3	3	2	0	2	1,3125

3.2 Risk monitoring

3.2.1 Risk monitoring process

Risk monitoring systematically tracks and evaluates the performance of risk-handling actions. Essentially, it compares predicted results of planned actions with the results actually achieved to determine the status and the need for any change in risk-handling actions. Risk exposure will be continuously re-evaluated and modified accordingly and the results of monitoring and control will be documented.

To ensure that significant risks are monitored effectively, risk-handling actions will be documented in the State of the play for risk mitigation table (Table 13) and analysed at each Consortium Plenary meeting. Identifying these risk-handling actions and events in the context of the work breakdown structure establishes a linkage between them and specific WPs, making it easier to determine the impact of actions on cost, schedule, and performance. If any new risks

are identified by a partner, they will be analysed as those on the original risk list and then added in the register.

3.2.2   Risk monitoring procedure

Each member of the consortium is responsible for monitoring and reporting the effectiveness of the handling actions for the risks assigned.

Risks rated as **High** will be reported to the PC, who will handle and track them until the risk is considered Medium or Low and recommended for "Close Out".

Risks rated as **Moderate** will be reported to WP Leaders, who will also track them until the risk is considered Low and recommended for "Close Out".

Risks rated as **Low** are tracked within the work package and monitored continuously to ensure they stay low.

The risk management process is continuous. Information obtained from the monitoring process is fed back for reassessment and evaluations of handling actions to improve the process itself.

3.3 Contingency plan

3.3.1   Risk handling process

After the project's risks have been identified and assessed, the approach to handle each significant risk must be developed. There are essentially four techniques or options for handling risks [2]:

- Avoidance (use of an alternate approach in order to avoid the risk event)

- Control (observe the environmental conditions which could influence an already assessed risk)

- Transfer (giving the liability to another party, usually by contract)

- Assumption (supposing the risk eventually happens, accepting it and proceeding with contingency plan).

For all identified risks, the various handling techniques should be evaluated in terms of feasibility, expected effectiveness, cost and schedule implications, the effect on the system's technical quality/performance and the most suitable technique selected.

If new risks arise after the start of the project, the risk management process remains the same and the contingency plan will be documented in the risk's management tables.

3.3.2 Risk handling procedure

The respective WP Leader (or in case of high risk, the PC) is responsible for evaluating the risk handling options that are best fitted to the project's circumstances. Once approved, these are included in the work package's or project's strategy or management plans, as appropriate.

For each selected handling option, the responsible consortium member will develop specific tasks that, when implemented, will handle the risk. The task descriptions should explain what has to be done, the level of effort, and identify necessary resources. The consortium member should also provide:

- Start date
- Completion date
- Effect on the project schedule
- Cost estimate

The description of the handling options should list all assumptions used in the development of the handling tasks.

4 Risk management tables

According to the risk analysis performed jointly by the partners beforehand, risks of every type have been considered. Their level of likelihood and impact has been evaluated, and also, in case that the risk becomes a reality, a proposed set of mitigation measures have been established. The first risk management table was produced prior to the project launch, and the tables in this deliverable (Table 1 to Table 11) include all the risks identified until month 6. The working Risk Management file has been and will be reviewed and updated during the duration of the project periodically, according to the situation of each moment. This file includes the information shown in these tables and, in addition, other information that contributes to the management and follow-up of each risk.

The complete Risk Management Table contains the following information:

- Risk Number
- Task Name
- WP/task leader or Risk Manager
- Date
- Risk description
- Type of Risk (Technical/Financial/Schedule)
- Risk responsible
- Deliverable affected
- Probability HL/L/U/R
- Consequence/Impact 1=Minimum-4=Maximum
- Risk Assessment
- Global Risk Indicator
- Dates and trends
- Contingency Plan or link to the document
- Comments

TABLE 2: USER-CHI WORK PACKAGE 1 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP1 - Analysis of user needs and patterns for requirements definition	TR101	T1.1.1 Big data analysis	Limited access to demo sites and consequential delay in gathering demo information for the Big Data Analysis	VMZ	D2.1	HIGH	1,6875	Close communication with cities to know the availability and the format of that kind of data
	TR102	T1.1.2 User-Driven Innovation approach	Willingness of end-users to participate	IBV	D1.1	HIGH	1,25	The different options will be explored: city user's databases, online platforms for anonymous recruitment such as Survey Monkey
	TR103	T1.2 Usage scenarios	Insufficient details or wrong selection of use cases and requirements or not deep enough that lead to underestimating the performance to achieve.	IBV VMZ	D1.2	HIGH	1,875	Collaboration and contributions of the technical WP/product leaders and demo sites will help to deeply design the use cases and requirements
	TR104	T1.3 Technical and legal requirements	Insufficient details in the specification of the demonstrators' requirements that lead to incomplete information models or poor interoperability among systems	WP1: IBV WP6: VMZ	D1.3	HIGH	1,3125	Collaboration and contributions of the technical WP/product leaders and demo sites will help to deeply design the use cases and requirements

TABLE 3: USER-CHI WORK PACKAGE 2 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP2 - Design, development and test of a DSS tool	TR201	T2.1 Requirements and targets	Input from Big Data Analysis required. Insufficient details in the data provided by the cities that lead to an incomplete user-centric approach	WP2: VMZ	D2.1	HIGH	1,5	Close communication with cities to gather the required data and qualitative, quantitative and co-creation data analysis to contribute to the User-centric approach
	TR202	T2.4 Integration & Testing	Lack of understanding of the product by the urban mobility planners that could lead to a lack of acceptance and poor testing	WP2: VMZ	D2.5	MODERATE	0,625	Workshops and graphic material creation in order to show the capabilities of the new product

TABLE 4: USER-CHI WORK PACKAGE 3 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP3 - Definition of an interoperability framework and platform	TR301	T3.1 Design and specification of services	EMSPs and CPOs which will join INCAR platform are not yet fully identified, so communication and planning with them in advance is not possible.	WP3: ETRA	D3.1	HIGH	1,125	Current approach: telco with each pilot site, presenting two alternatives: ask for EMSPs and CPOs contacts for direct communication, or the city would have to act as an intermediary.
	TR302	T3.2. INFRA – Interoperability Framework implementation	Lack of understanding of the product could lead to a wrong framework definition	WP3: IKEM WP3: ETRA	D3.2	MODERATE	0,875	Close communication between ETRA and IKEM and material creation in order to identify the right interoperability aspects
	TR303	T3.3. INCAR – Interoperability, Charging and Parking Platform development	It is not clear if an agreement between each EMSP and CPO involved in INCAR is necessary. If does, poor collaboration could lead to an incomplete interoperability features demonstration.	WP3: ETRA	D3.3	HIGH	1,125	Close collaboration with partners involved in legal and business model tasks
	TR304	T3.4 Integration and testing	Low commitment of the demo site partners to integrate INCAR with the systems of CPOs and EMSPs in each city. Lack of collaboration between CPOs and EMSP will difficult the product implementation in a real environment.	WP3: ETRA	D6.2	HIGH	1,6875	Good communication and explanation of the product requirements for implementation in order to anticipate the needs of external collaboration

TABLE 5: USER-CHI WORK PACKAGE 4 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP4 - Smart grid integration services for charging infrastructure	TR404	T4.3. Smart grid integration module development	CPOs management system maybe does not support full SMAC services	WP4: ETRA	D4.2	MODERATE	0,625	Product demo flexibility to suit CPO management system
	TR405	T4.4. Smart grid services lab-testing and refinement	Charging infrastructure in demo sites maybe does not support V2G operations	WP4: ETRA	D4.2	HIGH	0,9375	If this could be solved just with OCPP 2.0 implementation, we could offer ECOVE to CPOs

TABLE 6: USER-CHI WORK PACKAGE 5 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP5 - New technologies development, inductive and low power DC-charging Management Services and Applications	TR501	T5.1. Design of services and specifications of INSOC	Lack of technical knowledge to define the software and hardware services design	DSI	D5.1	HIGH	1	A deeper definition of the INSOC scope and requirements
	TR502	T5.2. Development of INSOC	Lack of leadership in the development of the product	DSI ENEL	D5.2	HIGH	1,125	Support and communication between involved partner, WP leaders and coordination team to identify the scope of design and development of INSOC
	TR503	T5.4. Design of services and specifications of INDUCAR	Insufficient services due to the infrastructure available in the demo site	IPT	D5.3	MODERATE	0,75	Close communication with AMB in order to identify all the infrastructure characteristics (vehicles availability, power supply...)
	TR504	T5.5.1. Retrofitting the cars with wireless charging capability	Loss of warranty due to retrofit made on the vehicle	IPT AMB	D5.4	MODERATE	1,125	Explore the possibility of ensuring the vehicles and the installation against possible damage

TABLE 7: USER-CHI WORK PACKAGE 6 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP6 - Demonstration in demo sites and TEN-T nodes	TR601	T6.1: Demonstration Concept and Implementation Plan	Insufficient details or wrong selection of pilot site or not deep enough that complicates the implementation plan.	IBV VMZ FIT	D6.1	HIGH	1,312	Use cases and scenarios definition task will deeply define the pilot sites
	TR602	T6.1: Demonstration Concept and Implementation Plan	Lack of standards and interoperability problems among the different systems	VMZ ETRA DSI IPT	D6.2	MODERATE	1	Standardization activities and Interoperability Framework product will analyse and mitigate this risk
	TR603	T6.2: Implementation of Demonstrator Technologies, Platforms and End-User Applications	Insufficient details or lack of understanding of products that detracts from and restricts the product demonstrations.	VMZ ETRA DSI IPT	D6.1	MODERATE	0,75	Close communication among product and demo site leaders will minimise this risk
	TR604	T6.2: Implementation of Demonstrator Technologies, Platforms and End-User Applications	Lack of communication among the cluster participants in pilot sites	Demo leaders	D6.2	MODERATE	0,75	Internal periodic meetings for each cluster will minimise this risk
	TR605	T6.2: Implementation of Demonstrator Technologies, Platforms and End-User Applications	Insufficient or corrupted raw measurement data collected from demonstrations to be used for the evaluation process	VMZ FIT	D6.3	LOW	0,75	Detailed measurement procedures will be defined for the raw data collection
	TR606	T6.3 Demonstration Execution	Insufficient feedback collected from end-users during the demonstration phase to be used for the evaluation process.	VMZ FIT	D6.3	MODERATE	1	Coordinated work among ETRA, IBV, EUROCITIES will be performed in order to define procedures, engage and collect the feedback for the end-users
	TR607	T6.3 Demonstration Execution	Insecure storage of pilot data/data breaches	VMZ FIT	D6.3	MODERATE	1	Data management procedures will be considered in order to ensure the data storage (Data Management Plan)

TABLE 8: USER-CHI WORK PACKAGE 7 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP7 - Cross-site evaluation and impact assessment Management	TR701	T7.1: Cross-site evaluation methodology and plan	Insufficient or not proper KPIs selected or defined for both cross-site evaluation and impact assessment	FIT	D7.1	LOW	0,625	Use of well-known methodologies for KPIs selection and definition with the support of both USER-CHI AB and SG.
	TR702	T7.2: Local and cross-site evaluation	Limited access to demo sites and consequential delay in gathering demo information and implementing project demo actions.	FIT Demo leaders:	D7.2	HIGH	0,9375	Negotiate early access to demo sites if possible, speed up demo process in later phase if access restrictions persist
	TR703	T7.3: Impact assessment	The assessment of impacts (performance, environmental, social and economic) is strongly linked to the evolvement of the current pandemic (uncontrollable factor) and related measures induced by local, regional and national governments and need to be considered when analysing the effectiveness of the interventions	IKEM	D7.3	LOW	0,5	Monitoring of the evolvement of the pandemic and its effects on mobility behaviour, the environment and economic/socio-economic state in each USER-CHI site

TABLE 9: USER-CHI WORK PACKAGE 8 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP8 Replication plans, scale-up and business model analysis	TR801	T8.2 Replication and implementation	Insufficient capacity of replication and evolution of concepts and services developed in the project.	VMZ FIT	D8.4	MODERATE	0,75	Extensive analysis will take place of the situation in other areas in order to define a roadmap for replication.
	SR801	T8.5 Project Stakeholder Advisory Group	Absence of physical meetings prevent stakeholder advisory groups meetings	EUR		LOW	0,1875	Online meetings will be defined to replace the physical ones
	TR802	T8.6 Business model analysis	Missing market perspective (Proposed innovation does not match market demand. The developed technologies do not take into account the actual user needs and the barriers existing on the market).	FIT	D8.8 and D8.9	HIGH	1	Business model definition will minimise the probability and impact of this risk
	TR803	T8.7 Targeted dialogue with key stakeholders, market influencers, financiers	Missing key stakeholders in the business models	FIT	D8.8 and D8.9	HIGH	1	Business model definition will minimise the probability and impact of this risk
	TR804	T8.8 Exploitation plans	Unsuccessful exploitation strategy in terms of attracting the relevant stakeholders.	ETRA	D8.10	LOW	0,75	Individual exploitation plans will be created in order to mitigate this risk
	TR805	T8.8 Exploitation plans	The risk that competitive forces will reduce revenue (e.g. a price war)	ETRA	D8.10	LOW	0,75	The consortium will make sure that we can differentiate our products and segment our customers.
	SR802	T8.9 Standardisation activities	Risk of delayed standard because the document development or the consensus achievement takes longer.	UNE	D8.14	LOW	0,25	

TABLE 10: USER-CHI WORK PACKAGE 9 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP9 - Communication and Dissemination	TR901	T9.1 Communication and Dissemination strategy	COVID-19 Risk of delayed workshops or unable to perform workshops using face-to-face meetings.	EUR		MODERATE	0,9375	Can be mitigated by using e.g. remote workshops but might affect quality of feedback received.
	SR901	T9.4 Digital communication tools	COVID-19 Travel bans and sanitary rules might impact the timely delivery of videos	EUR	D9.3	MODERATE	0,375	Close communication with cities will ensure the optimal way of creating this material. In case of delay of the video creation, its scope will be increased.
	TR902	T9.6. Project events	COVID-19 Travel bans and sanitary rules might prevent the organisation of physical meetings and events.	EUR		MODERATE	0,375	The whole consortium is able to connect via MS Teams to the online meetings and events, however, the absence of face-to-face events could affect the quality of the communication.

TABLE 11: USER-CHI WORK PACKAGE 10 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP10 - Project Management	SR1001	T10.1 Administrative and financial management	Underestimation or resources not well balanced for the design and development of the products	ETRA	D10.4	MODERATE	1,125	Can be mitigated by using e.g. remote workshops but might affect quality of feedback received.
	SR1002	T10.2 Technical coordination, risk management and innovation management	Missing skills in the consortium when facing innovation and business challenges	VMZ ETRA IPT	D10.1 D10.4	LOW	0,625	Close monitoring with the partner responsible for the deliverable. Permanent reporting of status.
	SR1003	T10.2 Technical coordination, risk management and innovation management	Disagreement or lack of communication among partners	VMZ ETRA IPT	General	LOW	0,625	Close monitoring and communication to identify small issues at an early stage
	SR1004	T10.2 Technical coordination, risk management and innovation management	Losing the global aim of the project spending too many resources on the solutions for singular detailed problems	VMZ ETRA IPT	General	LOW	0,625	Close monitoring and communication to maintain all partners aligned
	SR1005	T10.2 Technical coordination, risk management and innovation management	The risk that technology investments will become obsolete	VMZ ETRA IPT	General	LOW	0,625	Exploring other possibilities in line with the product requirement and the state-of-the-art of the technology
	SR1008	T10.2 Technical coordination, risk management and innovation management	Delay in preparation and submission of deliverables during COVID-19 outbreak	ETRA	General	LOW	0,625	

TABLE 12: USER-CHI WORK PACKAGE 11 AND 12 – DETAILED MANAGEMENT PLAN FOR THE IDENTIFIED RISKS

	Nr of Risk	Task Name	Risk description	Risk responsible	Deliverable affected	Risk Assessment	Global Risk Indicator	Contingency Plan or link to document
WP11 - Privacy, data management and ethics requirements **WP12: Ethical requirements**	TR1101	T11.1 Ethics monitoring and Responsible Research & Innovation (RRI) T11.2 Ethics analysis on the involvement of research participants	The project contravenes ethical principles or applicable legislation	IKEM	D11.1 D11.2 D11.3 D11.4 D12.1 D12.2	MODERATE	0,9375	IPR and access right clauses will be included in the CA which will be signed before the project starts in order to avoid future disputes.
	SR1101	T11.1 Ethics monitoring and Responsible Research & Innovation (RRI)	The gender dimension of the project needs to be taken into account from an early stage (relevance for WP1, Technical products, and WP9)	IKEM	D11.1	MODERATE	1	Webinars (Diversity in Transport M4) and other activities will be organised to address this issue.
	TR1102	T11.2 Ethics analysis on the involvement of research participants	Implementation of ethical requirements for vulnerable research participants in surveys/demo sites	IKEM	D11.2	MODERATE	1	Cooperation with IKEM & the Ethics Committee in advising the project partners on matters of implementation
	TR1103	T11.3 Data Management and Protection and IPR strategy	Lack of cooperation of the project partners due to IPR issues	IKEM ETRA	D11.3	LOW	0,75	There is a specific WP in the project to ensure compliance with the ethics requirements of the project.
	SR1102	T11.3 Data Management and Protection and IPR strategy	Overview of data, which will be generated throughout the project in order to create the Data Management Plan	IKEM	D11.3	MODERATE	0,875	There is a specific WP in the project to ensure compliance with the ethics requirements of the project.
	TR12001	POPD - Requirement No. 2	Insufficient protection of personal data managed during the project pilots	IKEM ETRA	D12.2	MODERATE	0,8125	Specific procedures are defined to collect, store, protect, retain and destruct sensitive and confidential personal information from participants of the pilots.

4.1 State of the play for risk mitigation

TABLE 13: STATE OF THE PLAY FOR RISK MITIGATION

ID	Period (Starting Date – Completion Date)		Did your risk materialise?	Comments
	DD/MM/YYYY	DD/MM/YYYY	[YES/NO]	[Actions of the Contingency Plan that were applied, Cost and schedule implications]

5 Conclusions

USER-CHI relevant associated risks and the way in which risks are going to be assessed, monitored and handled during the project are summarised in this document.

This Risk assessment report documents the processes, tools and procedures in order to manage and control the risks and events that could have a negative impact in the project.

The Deliverable acts as a starting point for the risk management and allows the controlling and continuous update throughout the project's lifetime.

References and acronyms

List of references

[1] "ISO 31000:2018 - Risk management".

[2] "Risk Management Planning," BC Open Textbooks, [Online]. Available: https://opentextbc.ca/projectmanagement/chapter/chapter-16-risk-management-planning-project-management/. [Accessed 26 June 2020].

[3] E. Commission, "USER-CHI Grant Agreement," 2019.

[4] P. Burek, "Collaborative tools and techniques to build the project risk plan.," Paper presented at PMI® Global Congress 2007—North America, Atlanta, GA. Newtown Square, PA, 2007. [Online]. Available: https://www.pmi.org/learning/library/tools-techniques-build-project-risk-plan-7223.

List of acronyms

Acronym	Meaning
AMB	Área Metropolitana De Barcelona (Project partner)
BUD	Municipality Of The City Of Budapest (Project partner)
CLICK	Charging Location and Holistic Planning Kit
D	Deliverable
DSI	Digital System Integrator S.R.L. (Project partner)
EC	European Commission
ENEL	ENEL X SRL . (Project partner)
ETRA	Etra Investigación Y Desarrollo S.A. (Project Coordinator)
EUR	EUROCITIES (Project Partner)
FIT	FIT Consulting . (Project partner)
GA	Grant Agreement
IBV	Instituto De Biomecánica De Valencia (Project partner)
IKEM	Institut Für Klimaschutz, Energie Und Mobilität (Project partner)
INCAR	Interoperability, Charging and Parking Platform (Product of the project)
INDUCAR	Inductive Charging for e-Cars (Product of the project)
INFRA	Interoperability Framework (Product of the project)
INSOC	Integrated Solar DC-Charging for LEVs (Product of the project)
IPT	IPT TECHNOLOGY GMBH (Project partner)
SMAC	Smart Charging Tool (Product of the project)
TUR	City Of Turku (Project partner)
UNE	Asociación Española De Normalización (Project partner)
USER-CHI	Project Title: innovative solution for USER centric CHarging Infrastructure
VMZ	VMZ Berlin Betreibergesellschaft mbH (project partner)
WP	Work Package

Figures and Tables

List of Figures

List of Tables