SCALE Risk REGISTER

Project deliverable D7.1

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1 Deliverable administrative information

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1.1 Legal Disclaimer

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2 Project Executive Summary

SCALE (Smart Charging Alignment for Europe) is a three-year Horizon Europe project that aims at preparing EU cities for mass deployment of electric vehicles and the accompanying smart charging and V2X infrastructure (Hardware & Software). SCALE is at the forefront of innovation in the cross-cutting fields of energy management and electric vehicle mass deployment. The uptake of EVs in a mass-deployment scenario, coupled with the flexibility of renewable energy generation, could form the basis of a de-centralized power system simultaneously decarbonizing both transport and energy sectors. To this end, SCALE's different V2X solutions and innovations will be systematically tested, validated and deployed across various demonstration sites and use cases in Europe, thus, being globally the first-of-its-kind attempt at this scale with the strategic objective to create an open system solution, deploying a user-centric approach for cleaner energy and transportation systems.

3 SCALE partners

List of participating cities:

- Oslo (NO)
- Rotterdam & Utrecht (NL)
- Eindhoven (NL)
- Toulouse (FR)
- Greater Munich Area (GER)
- Budapest & Debrecen (HU)
- Gothenburg (SE)

List of partners:

- (Coordinator) STICHTING ELAAD NL
- POLIS - PROMOTION OF OPERATIONAL LINKS WITH INTEGRATED SERVICES, ASSOCIATION INTERNATIONALE POLIS BE
- GoodMoovs NL
- Rupprecht Consult – Forschung & Beratung GmbH RC DE
- Trialog FR
- WE DRIVE SOLAR NL BV NL
- UNIVERSITEIT UTRECHT NL
- LEW Verteilnetz GmbH DE
- BAYERN INNOVATIV - BAYERISCHE GESELLSCHAFT FUR INNOVATION UND WISSENSTRANSFER MBH DE
- ABB E-mobility BV NL
- Enervalis BE
- GEMEENTE UTRECHT NL
- Equigy B.V. NL

- SONO MOTORS GMBH DE
- Meshcrafts As (Current) NO
- Research Institutes of Sweden AB SE
- ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS (CERTH) GR
- FIER Automotive FIER NL
- Emobility Solutions Kft. HU
- Serviced Office Belbuda Kft HU
- Enedis FR
- L'ASSOCIATION EUROPEENNE DE LA MOBILITE ELECTRIQUE (AVERE) BE
- Norsk elbilforening NO
- VDL ENABLING TRANSPORT SOLUTIONS BV NL
- Urban Electric Mobility Initiative UEMI DE
- Renault FR
- Chalmers University SE
- Polestar SE
- Hyundai NL

Social Links:

 twitter.com/scaleproject_

 www.linkedin.com/company/ scale-project-smart-charging-alignment-for-europe

 www.youtube.com/channel/UC1HVFu5uJPCNSV96b3l_rcg

For further information please visit **WWW.SCALE-HORIZON.EU**

4 Deliverable executive summary

4.1 Abstract

Possible risks are caused either by developments occurring during the project implementation or by external influences on the project. Some of them are predictable, and some are not. The handling of these risks – risk management – serves as a main management tool within the project. The aim of risk management is to deal transparently and proactively with potential risks that may arise during the implementation of the project. Risk management means being prepared for possible risks. Therefore, it is necessary a) to identify potential risks and b) to outline contingency plans.

General and project-specific risks have been gathered and discussed within the project with all consortium partners. Key to managing those risks will be an internal reporting process to closely track project progress and spending, as well as an established procedure for monitoring risks and handling them if or when they materialize. There are three main elements to the project's risk management: a) risk monitoring, b) internal reporting, and c) external review.

5 List of abbreviations and acronyms

Acronym	Meaning
CA	Consortium Agreement
HEMS	Home Energy Management System
KoM	Kick-off Meeting
KPI	Key Performance Indicator
TCO	Total Cost of Ownership
V2X	Vehicle to Everything
V2G	Vehicle to Grid
WP	Work Package

6 Purpose of the deliverable

A risk is an event or condition that, if it occurs, could have a positive or negative effect on a project's objectives. The level of risk on a project will be tracked, monitored and reported throughout the project lifecycle using this risk register which will be a live document operational throughout the lifetime of the project.

It is the responsibility of each SCALE and especially the WP leaders to communicate to the Project Management Board about the status and effectiveness of each risk and mitigation plan in order to update the risk register and assess the relevance of the tools.

Risk exposure will be continuously re-evaluated and modified accordingly. Risks with "High" category in terms of likelihood and impact as listed in table 1 of this deliverable will be kept by the project team and will be reported as a component of the project status reporting process for this project. All project change requests will be analyzed for their possible impact on the project risks. The Project Management Board will be notified of important changes to risk status as a component of the Project Status Report.

7 Introduction

The SCALE project consortium is aware that cooperation projects with different partners from different countries with local specifics and with a long duration carry a considerable degree of risk. Several factors such as the complexity of the implementation process of integrated measures, continued political acceptance, external dependencies of demonstrations and others may put the whole project or parts of it at risk. To be prepared for any deviations which may arise during the lifetime of the SCALE project**, a project risk register has** been developed.

This tool is an evolving document reacting to upcoming developments and changes throughout the project's lifetime. Therefore, all partners will continuously update the register. The latest version will be made available on the project's internal SharePoint.

8 Approach

Possible risks are caused either by developments occurring during the project implementation or by external influences on the project. Some of them are predictable, and some are not. The handling of these risks – **the risk management** – serves as a main management tool within the project. Risk management means being prepared for possible risks. Therefore, it is necessary a) to identify potential risks and b) to outline contingency plans.

The first step is a static analysis of potential risks as they can be identified at the beginning of the project bearing in mind that no precise information is available of what actually will happen during the lifetime of the project. However, the exercise will help the responsible persons (work package leaders, measure/ output implementers) to think about potential risks, i.e. to become aware of the risks. The second step is the estimation of the likelihood of risks and the outline of corresponding contingency plans.

Referring to 1), the following **risk types**, applying to both, the project and to the output level, have been identified:

1. Political risks (e.g., change of mobility policy priorities or reduction of funding due to elections; cooperating agencies are governed by oppositional political parties; resistance or lobbying, politicisation of measure topics);

2. Financial risks (e.g., costs increase for major components, budget modifications, underspending/ overspendings, inadequate financial administration, financial crisis);

3. Involvement risks (e.g., participation of people, partners and stakeholders in decision-making, implementation and promotional activities);

4. Management risks (e.g., managerial changes within the project, conflicts between partners);

5. Communication risks (e.g., insufficient communication between the partners, non-responsive and nonperforming partners, conflicts between partners);

6. Evaluation risks (e.g., transferability and consistency risk, missing data, statistical significance of results and trends).

7. Dissemination risk (e.g., selection of wrong target audience, dissemination of wrong information)

8. Implementation risk (e.g., technical, administrational, information problems).

9. Externalities (e.g., incident during charging and discharging sessions, change of mobility patterns, etc.).

10. Others

This list of risk types serves as framework for the identification of actual (or possible) risks in various work packages and the SCALE use case activities. The intention is that work package leaders and the responsible person for use case implementation reviews their activities and identifies possible risks, evaluates the probability of their occurrence and outlines corresponding contingency plans. For this purpose, a table has been prepared where all work package leaders and responsible persons of local activities define possible risks, their likelihood and contingency plans.

Consortium Agreement

In addition to the content-related risks, the project partners have signed the SCALE Consortium Agreement (CA) which can be considered as an integral part of risk management and contingency planning. The Consortium Agreement covers i.a. responsibilities of all partners, determines procedures and consequences for non-performing partners, liability rules, decision-making procedures, withdrawal of partners, financial provisions and payments.

9 Risk Register & Contingency Plans

This table has been filled out by the project management together with the respective work package leaders and partners.

9.1 Use case implementation-related risks

REF. NO.	RISK	DESCRIPTION	LIKELIHOOD + IMPACT	MITIGATION MEASURES
1	Lack of clarity in demo sites on ambition level and the boundaries	Demo sites can be over or under ambitious about the goals of what can be achieved within the time and cost frame of the project	High	SCALE project management structure including demo site leader + WP3 leader + core committee will establish communication and expectation management mechanism to bridge the gap
2	Scope of the use cases can be unclear	Functionalities that are being tested could go from smart charging to V2X to V2G and related services from a wide range of stakeholders'' point of view	Medium	Local workshops led by WP3 leader Fier to steer the use cases keeping both local and overall project goals in mind will bring more clarity
3	Some of the key external stakeholders' support needed to implement (like in the case of Budapest shopping malls – shop owners, mall owners, regulators, visitors' car, etc.)	Since SCALE is all about developing services for mass deployment, partnerships and cooperation needs to be established with some of the key external stakeholders which can be challenging to pull off	High	Stakeholder mapping including the internal partners in the smart charging and V2X/G value chain should highlight the bottlenecks using which strategies will be developed locally to solve cooperation issues
4	Imbalance in resources and efforts for smaller use cases	Efforts may get directed for ambitious and resource intensive use cases which will have bigger impact for the overall project and smaller use cases may get lesser focus	Low	All the demos will be given equal importance to envision, layout the objectives, monitor the progress, make changes and also create services/business models that can be upscaled.

9.2 Regulatory & political risks

REF. NO.	RISK	DESCRIPTION	LIKELIHOOD + IMPACT	MITIGATION MEASURES
5	Varying regulations and laws in different EU countries	In general, for example, Netherlands is leading in smart charging and V2X applications and business models which brings in the requirement for regulations also to follow the industry innovation and uptake but on the other hand, since electrification, is not so matured yet equally in all parts of Europe including the ones in SCALE, there will be disparity	Medium	For countries falling behind the curve, SCALE will ensure at least to identify the gaps, make recommendations on one hand. On the other, to facilitate the implementation of use cases, special provisions may be planned for regulators to act for the duration of the project also as a sandbox for legal and regulatory requirements which will then serve as a proof of concept to have long term regulations in place
6	Varying maturity of the regulations	This risk is a subset of risk 16. Even though there are regulations concerning smart charging and V2X, the boundaries and requirements may not fit well to push the use cases beyond the start of the art	Low	Similar mitigation measure as of risk 16. Exceptions will be identified for authorities to decide and facilitate the demonstrations which will give data on also needed maturity of the regulations to achieve full benefits of smart charging and V2X applications

9.3 Management-related risks

REF. NO.	RISK	DESCRIPTION	LIKELIHOOD + IMPACT	MITIGATION MEASURES
7	Lack of coordination/ effective communication based on human connection/ biases between	Effective communication is essentially a soft skill that may sometimes go missing due to not	Low	1st Consortium Meeting held at Utrecht and Arnhem has set a solid baseline which included networking events

	personnel within the consortium	knowing the partners working on the project too well which may lead to lack of coordination		between the partners. More such collaborative events, online meetings and other formats will be planned to bridge the gaps
8	Not a clear change/ handover process in place due to change of personnel. Example – PhD/Post-doc positions from research institutes and universities	For a project duration of three years, personnel change is a risk and lack of effective handover as a personal responsibility may yield varying results and contributions to the project.	High	The Project Management Board will put in place a checklist for the handover process and monitors the personnel change closely with the partners. It will be mandated to get a sign off from the person leaving the SCALE project
9	Passive participation for different reasons	Possible reasons among others for passive participation: a. Inconsiderable budget b. Insignificant value addition to their daily business from SCALE	Low	Irrespective of budget, role or value an organization associates themselves with the SCALE project, the roles will be defined and followed up which will get maximum out of an organization in turn identifying the unique value proposition for each organization which should ensure active participation from all the partners
10	Very wide range and sometimes unrealistic/ unclear answers for the question – “When is SCALE successful to your organization?”	Since we are in the middle of quick developments in the industry involving leading market players, there is risk of defining the scope and targets of individual organizations within SCALE framework can be challenging	Medium	Project management team will periodically have bilateral call with the individual organizations and overall cohesion with the group will be worked on consciously to help organizations define their own success stories within the umbrella of SCALE project

9.4 Business case-related risks

REF. NO.	RISK	DESCRIPTION	LIKELIHOOD + IMPACT	MITIGATION MEASURES

11	Challenging to show replicability of the use cases in different countries/ sites	Upscaling potential can be challenging given the maturity level of products, services, regulations, investment strategies and several other factors needed to pull together the replicability of use cases	Medium	The use case will be defined keeping upscaling potential in mind and the solutions will be constantly matched with the matching requirements across different countries involved in the SCALE project which should dilute the challenge of replicability
12	Capacity building of MSPs, CPOs, etc. who is involved in smart charging and V2X value chain is crucial for upscaling the innovations at speed	Training different levels of functional capacities in an organization part of the smart charging and V2X value chain may need significant efforts	Low	Systemic change will be the key for realizing the full potential of use cases that are being implemented. SCALE serves as one of the leading projects also coming up with capacity building strategies while also the organizations will be coached for what kind of capacities will have to be developed beyond the lifetime of the project
13	Putting a pin on the value delivered from each actor in the value chain and distributing the revenue stream for each actor – meaning overlapping/blurry picture on who the beneficiary of a service is and challenging computation of ROIs	Value proposition from individual parties in the value chain may sometimes overlap and cause conflicts about who generates the revenue and who bears the benefits of the solutions	High	The methodology to develop ROI will be shown in two different ways giving the followers significant idea in terms of the breakdown of value along the value chain and if possible, make a suggestion as to which method should be preferred to calculate ROIs making justice for all the actors along the value chain

9.5 Technology-related risks

REF. NO.	RISK	DESCRIPTION	LIKELIHOOD + IMPACT	MITIGATION MEASURES
14	Product/ service maturity is low to even apply and test in different sites	Since SCALE is at the early stage of the innovation cycle of a market which is still	Medium	Even though state of the art products are developed further in SCALE, they should

		niche and is undergoing a transition itself, products may not be updated to be tested in use case sites		always be open to add new layers and functionalities based on the use case requirements
14	Limited learning opportunities between use cases within one innovation cluster and also between innovation clusters at the project level	Lack of coherence and learning opportunities in terms of business development and services within and between the innovation clusters	Medium	As unique as the services in each use case are, hardware and software development will have common learnings which will support the service development with a red thread
15	Demo sites independent on the supply of charging stations which can lead to uncertainties on expectations of the outcomes & related timeline	Demo sites like Gothenburg, Budapest, Munich and Utrecht have planned the demos with the existing or cross-funded charging stations which can risk the start, duration and the end of testing activities which needs to be harmonized	Medium	Despite non-dependency of the charges from a common supplier in the project from the demo sites, guiding framework/ boundaries of time are governed by management structures of the project which should eliminate uncertainties
16	Mismatch of V2G-enabled vehicles' timeline with that of the SCALE timeline	Testing vehicles should be ready at the demo sites for testing, but availability of prototypes is dependent on number of external factors and their suppliers	High	Testing activities will be planned with an optimum time buffer to accommodate for uncertainties and delays; A monthly meeting specifically with the OEMs and the relevant demo site partners will be planned to follow the OEMs' plans closely. In parallel, the timeline of the use case, which is not ready, will be adjusted and will be taken up later also allowing for exchange of technologies from use case site which has already tested the technology

17	Mismatch of timeline of smart charging and-or V2G ready charger	Same risk as that of vehicles	Low	Since most of the sites are self-dependent and procure/use existing charging stations, there is lower risk of project timeline disrupted but there is minimum buffer planning to accommodate the unexpected delays
18	Gap analysis in the value chain of smart charging and V2G especially when sector coupling comes in for example, HEMS	Simple smart charging and V2X within the automotive and energy supply industry is itself in the niche now and when it comes to sector coupling, identifying gaps itself can be a very challenging due to lack of experience	Low	Hardware and software developers in SCALE like Enervalis and Elaad among others work on horizontal industries that will in future be important for smart charging and V2X applications giving SCALE an edge as market research will be a constant driving force guiding the solutions
19	V2G chargers and cars are expensive (both AC & DC)	The diffusion of new innovation curve as proven before shows us that any new innovation will have to be taken up by pioneers and early adopters before going to mass market which is still a risk for SCALE	Low	While on one hand, services and new business models will test new revenue streams for end users to offset the initial higher cost of purchase lowering the TCO. On the other, OEMs' vision and strategies in SCALE intends to harmonize the costs and explore measures beyond SCALE to keep the costs competitive
20	Lack of opportunity to feed electricity back to the grid	Regulations in several EU countries prevent end users to participate in the energy markets	High	SCALE intends to become the leader in showing how complex issues can be resolved in order to allow the end users to participate in the energy market to an extent possible
21	Building codes and demands on developers for	From the overall electric vehicle market perspective, the	Medium	SCALE considers the factor of lack of regulations on building

	provision of charging infrastructure completely different between the EU countries hampering the upscaling potential	sector is still a niche to an extent that there are as of yet, no common regulations that mandate developers to make provision to set up charging infrastructure which is crucial for both smart charging and V2X standpoint as well as mass deployment standpoint		codes as a status quo and builds necessary recommendations and strategically plan the use case implementation such that the pilot sites are equipped with necessary infrastructure.
22	Set structure of electricity market that is hard to break and takes more time to push innovations at SCALE as it involves investment decisions/strategies of big players on the market	Electricity supply to our homes, industries, etc. has been the same for a long time and is in a mold in itself as it is all about scale. Embracing innovations that caters to niche and takes longer time to bear fruits because of its dependency on several other factors does not go well with the established businesses in the industry which is a risk for SCALE which is ushing forward decentralized ecosystem	High	The mapping of stakeholders in the beginning of the project also the rigidity in structure of how electricity market is set up and what different roles of these different actors in the value chain are. This gives a solid base to develop strategies to breakdown the convention and push forward the vision of tomorrow's electricity ecosystem. On the other hand, partners such as Enedis, LVN who represent DSO and TSO community are also part of forward-thinking SCALE project which is significant to bring in the change
23	Supply chain disruptions	Globally, the automotive industry faced a chip shortage recently. To put together hardware required for the project in time for the implementation/testing the developments,	Medium	With an intention to prove interoperability of the solutions, SCALE involves more than one OEMs in its consortium whose development cycles are largely different compared to each other which

		SCALE may also run this risk. For example – testing car not ready for the time of testing due to re-building of the charging socket to accommodate the final version of ISO 15118		means at any given point of time when vehicles are required for testing, reducing the risk of vehicles availability due to supply chain issues

10 Conclusion

Each partner is responsible for executing the risk-mitigation activities keeping a close eye on the risks listed in this register (deliverable 7.1) which relate to the WP they are part of. If a mitigation action cannot be effectively carried out or does not solve the risk, the risk exposure is likely to become more important. In this case, visibility of the risk will be highlighted by the project manager and the mitigation measure modified in an efficient way. An item can be considered closed when the following criteria are brought together: the risk-mitigation measures have been implemented and a new risk exposure is estimated.