IRIS

Integrated and Replicable Solutions for Co-Creation in Sustainable Cities

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European level replication plan

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Version History

Version	Date	Modifications made by
0.1	21/10/2020	VAASA created the first structure of the deliverable
0.2	3/12/2020	VAASA created first draft for internal review
0.3	19/12/2020	First internal review done
0.4	01/01/2021	Input from WP2 and WP3 received
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0.6	26/02/2021	New structure done according to input
0.7	18/03/2021	New version according to all received input and comments
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0.9	29/06/2021	Final changes done according to 2nd review
0.91	12/10/2021	Additional changes with additional input from FCs
1.0	19/10/2021	Final version to be released to the EC

Disclaimer

Executive Summary

The present document is the deliverable **D8.12** entitled as **European level replication plan** for the IRIS project.

The report presents the IRIS project's role in activating cities in Europe into smart city networks. The role of the IRIS project is firstly to inspire, give confidence and demonstrate that smart city replication actions are possible.

Report will focus on removing obstacles to investment, providing visibility and technical assistance to investment and replication in additional areas and making smarter use of new and existing financial resources.

The deliverable is related to the task **T8.7 European scale-up activities** that aims to activate a minimum of 80 cities into existing European cities networks.

The document's scope and context are largely focused on the IRIS project's work with other smart city networks and how the project is working with disseminating information regarding replication outside the project.

This report is an overview of the work IRIS is doing with smart city networks with the aim of activating new cities into them, and should be read as such.

The impact of the deliverable will be an overview to work with in the task T8.7 when performing actions to activate new cities for smart city replications.

Input for the deliverable comes mostly from **D8.1 A Roadmap for replication of activities** and **D8.3 Replication tool box** in WP8 where the smart city networks are mentioned and briefly explained. Input is also taken from **WP2 EU wide cooperation with ongoing projects, initiatives and communities** and **WP3 Development of Bankable Business Models and Exploitation Activities**. WP8 is working closely with WP2 and WP3 when it comes to smart city networks and other initiatives outside of the project.

One important aspect of this deliverable are the four objectives that the SCC Task Group Replication has:

- Objective 1: Knowledge sharing between SCC01 Lighthouse projects on Replication Strategies.
- Objective 2: Knowledge sharing between the SCC01 Lighthouse projects on Barriers and Drivers for Replication as experienced by the SCC01 Fellow Cities' ecosystems.
- Objective 3: Collaborate with European networks outside SCC01 to accelerate scale-up and replication.
- Objective 4: Contribute to research in support of replication.

Other important aspects are the co-operation with SCIS, EIP-SCC and the SCALE project, and the upcoming Smart Cities Market Place.

Some key processes has already been identified in the co-operation with SCALE; Peer-to-Peer Support process, Roadshows, Extending the outreach through a partnership with the Covenant of Mayors, Organize events and Partnership and Replication as main focus.

Regarding National Networks there is a list included of other cities in the same countries as the IRIS cities.

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List of Abbreviations and Acronyms

Abbreviation	Definition
EU	European Union
WP	Work Package
LH	Lighthouse city
FC	Fellow city
SCC	Smart Cities and Communities
EIP-SCC	European Innovation Platform – Smart Cities and Communities
SCIS	Smart Cities Information System
SCALE	European Smart and Lighthouse Cities Amplified
ICT	Information and Communication Technology
CIP	City Innovation Platform
NGO	Non-Governmental Organization
DFID	Department for International Development
EERA	European Energy Research Alliance
JPSC	Joint Programme Smart Cities
PEB	Positive Energy Building
PED	Positive Energy District
SET	Strategic Energy Technology
SECN	SmartEnCity Network
GA	Grant Agreement

1. Introduction

This deliverable is part of **WP8: Replication by Lighthouse regions, Follower cities, European market uptake** in the IRIS project.

The objectives of WP 8 are to design & implement replication plans for the LHs regions and FCs that are scalable to other EU markets and cities through the creation of a tool box for capacity building, training, active mentoring & knowledge transfer. All LH and FCs will be involved in developing a roadmap (and business/financing plan) for replication of activities based on their specific expertise and best practices. A strong emphasis is given to active mentoring by LHs to the FCs. The replication plan will be implemented through a combination of solutions already available during the project or within a few years after the end of the project depending on the expertise and suitability of each FC.

The deliverable is related to the task **T8.7 European scale-up activities** that aims to scale-up existing European Smart Cities Networks. The milestone-goal is to engage with a minimum of 80 active cities (local authorities) through activities co-organised by IRIS in collaboration with the various existing Smart Cities Networks (such as the joint-SCC -01 Lighthouse projects group, the Smart Cities Information System and the EIP-SCC Marketplace). IRIS will organize activities and produce content for an "activity line" in co-operation with the chosen European smart cities' networks (SCC-01 Lighthouse and Fellow City group, SCIS, EIP-SCC Marketplace). To reach the ambitious goal of 80 city members "recruiting activities" will be carried out.

Deliverable **D8.12 : European level replication plan** is a report on European level, and beyond-project, replication.

1.1. Scope, objectives and expected impact

The main objective of this deliverable is to provide an overview of the work that the IRIS project is doing regarding replication actions on a European level, and how the IRIS projecting is planning on activating 80 cities into European smart city networks. The main objective also includes a focus on removing obstacles to investment, providing visibility and technical assistance to investment and replication in additional areas and making smarter use of new and existing financial resources.

The secondary objectives of this deliverable are:

- Clarifying the role that the IRIS project has on a European level regarding replication actions.
- Introducing the reader to the different main networks, organizations and initiatives that the IRIS project has worked with, regarding European level replication actions.
- Telling the story of the replication action voyage that the IRIS project has had outside the project.
- Introducing the work the IRIS project is doing on national, and regional, levels in network building.

The expected impact of this deliverable comes by giving a good overview, and plan, of how the IRIS project sees its role in the European level work that is going on regarding smart city actions and the work with activating more cities in Europe to become smart cities.

The deliverable will focus on removing obstacles to investment, providing visibility and technical assistance to investment and replication in additional areas and making smarter use of new and existing financial resources.

1.2. Contributions of partners

This deliverable is based on the contribution, results and experiences of all horizontal partners in the IRIS project, but mainly from the horizontal partners in the following work packages:

- WP2 EU wide cooperation with ongoing projects, initiatives and communities (UTR)
- WP3 Development of Bankable Business Models and Exploitation Activities (IMCG)
- WP9 Monitoring and evaluation (RISE)
- WP10 Communication and Dissemination (ESCI)

Most of the actions regarding European level replication activities has been done together with WP2.

Another important foundation for the deliverable is the contribution, results and experiences of the networks, organizations and initiatives that the IRIS project has worked with during this time.

- SCC Task Group Replication
- SCIS (Smart Cities Information System)
- EIP-SCC (Smart Cities Marketplace)
- SCALE (European Smart and Lighthouse Cities Amplified)

1.3. Relation to other activities

As previously mentioned, this deliverable has its strongest relations to the other horizontal work packages of the project.

The relation of this deliverable to other tasks and deliverables are the following:

WP2 EU wide cooperation with ongoing projects, initiatives and communities

Input from WP2

The work in WP2 has been of great value to the task **T8.7 European scale-up activities**, as it has clarified the 'how' of the task through the cooperation with other Lighthouse projects and smart city networks and initiatives. The leaders of WP2 and WP8 are also co-chairing the SCC Task Group Replication at the time of writing.

Output to WP2

The joint work of WP2 and WP8 regarding T8.7 and T2.1 creates valuable content for D2.1 and this deliverable is a good overview of that content.

WP3 Development of Bankable Business Models and Exploitation Activities

Input from WP3

Define and clarify the role and offer of the IRIS project to other cities outside the IRIS project.

Output to WP3

Define and clarify the role and offer of the IRIS project to other cities outside the IRIS project.

WP9 Monitoring and evaluation

Input from WP9

Information regarding KPIs in the IRIS project is valuable for the European level cooperation. Reports regarding impact of actions are important for the IRIS knowledge exchange with other networks and new potential smart cities.

Output to WP9

Information gained from e.g. SCC Task Group Replication is valuable for the work on monitoring and evaluation in the IRIS project.

WP10 Communication and Dissemination

Input from WP10

Communication is key when it comes to the task of European level replication actions and how to activate new cities into smart city networks, and all communicative actions within the project serves as tools for the set goals.

Output to WP10

The IRIS European level replication actions in the SCC Task Group Replication and other networks generates materials for communication, and provides visibility for the communication materials generated in WP10.

1.4. Structure of the deliverable

The main chapters of the deliverables are the following, provided with an overview of the content in each one:

3. Overview of IRIS European level replication actions

Provides an overview of the actions carried out in the IRIS project on a European level.

4. IRIS role in activating cities into smart city networks

Describing the role that the IRIS project has in activating new cities into EU smart city networks.

5. SCC Task Group replication

Explains the role of the SCC Task Group Replication, its background, previous actions, coming action plan and how IRIS works with the group to reach the targets of the project.

6. Other SCC Lighthouse projects approach to replication

Provides an overview how other SCC Lighthouse have approached replication, how the interpretation of replication might have changed from experience and lessons learnt, and what findings they have shared with other SCC Lighthouse projects.

7. SCIS (Smart Cities Information System)

Presents SCIS, and the role of the IRIS project in the cooperation with SCIS to reach set targets.

8. EIP-SCC (Smart Cities Marketplace)

Presents EIP-SCC, and the role of the IRIS project in the cooperation with EIP-SCC to reach set targets.

9. SCALE

Presents SCALE, and the role of the IRIS project in the cooperation with SCALE to reach set targets.

10. Other EU Smart city networks

Describing the role of IRIS in other EU smart city networks to reach set targets.

11. National and regional networks

Describing the role of IRIS in national and regional networks to reach set targets.

12. Exploitation plan and operations

Presenting connection to deliverable *D3.8 IRIS exploitation plan and operations*, and the work with exploitation in the IRIS project.

13. Confirming that European cities have been activated into smart city networks through the IRIS project

Describing how the IRIS project will confirm that new cities have been activated into smart city networks through the actions of the IRIS project.

14. Addressing beyond-project replication

Describing the work done and planned regarding removing obstacles to investment, providing visibility and technical assistance to investment and replication in additional areas and making smarter use of new and existing financial resources, through setting good examples.

2. Methodology

As the report focuses on beyond-project, European level, **replication**, and removing obstacles to investment, providing visibility and technical assistance to investment and making smarter use of new and existing financial resources, the methodology approach has been the following:

- **Creating an active role** for the IRIS project in European smart city networks and initiatives focusing on replication.
- **Reviewing materials and publications** regarding replication from other projects, networks and initiatives.
- **Arranging and attending events** on replication together with other projects, networks and initiatives.

Based on the information, contacts and knowledge achieved through the previously mentioned actions the IRIS project can define the role it should take on a European level to be able to activate 80 cities into smart city networks.

Another main focus has been on impact and sustainability.

The methodology has been carried out in such a way to identify the networks, actions and initiatives that has the best requisites to gather created value from all smart city projects and retaining the value in sustainable networks with a longer life-span than the projects creating the experience on replication.

3. Overview of IRIS European level replication actions

The IRIS project joined the SCC Task Group Replication from the beginning of the project. IRIS Replication Manager Mauritz Knuts (VAASA/VASEK) and WP2 leader Muriël Pels (UTRECHT) were both representatives in the group. Before Mauritz took the role of replication manager, Maria Backman (VAASA) worked with the responsibilities and also attended SCC TG Replication.

During the smart city event Nordic Edge in Stavanger, Norway, a discussion was held with Han Vandevyvere from SCIS regarding challenges for replication of smart city solutions, and how the projects could work together with SCIS to overcome mentioned challenges.

The IRIS project took an active role in the SCC TG Replication and later took the role of co-chairing the task group together with the +CityxChange project in 2019.

Originally the task T8.7 had the target of creating a IRIS smart city network and a IRIS secretariat coordinating the network, and to activate 80 cities from Europe into that network. However, it was noticed that the impact and lifespan of a IRIS network would be much smaller than the impact of a network that would outlive the project and could have a longer lasting impact for post-project replication. Therefore it was decided to focus more on creating a more active role for the IRIS project in the work being done together with networks like SCIS and EIP-SCC.

Examples of European level actions were IRIS has had a role:

- Two Fellow Cities in the IRIS project functioned as test-platforms for the EIP-SCC Smart City Guidance Package in its development phase. The workshops were carried out in FCs Vaasa and Santa Cruz de Teneriffe.
- Contributed to the creation of the SCIS solution booklet on citizen engagement (see Figure 1).
- Arranged replication workshops during live events where SCC TG Replication attended.
- Attended, arranged and presented at regional and national network events.
- Created the action plan for the SCC Task Group Replication.
- Planned SCALE supporting actions for SCC Task Group Replication.
- Reviewed publications and documents on replication.

Based on these actions, and others, the role of the IRIS project has been defined regarding European level replication actions with target of activating 80 cities into smart city networks.

The 80 cities activated will be documented as to be able to verify the result of the actions carried out by the IRIS project.

Figure 1: SCIS Solution Booklet on Citizen Engagement

4. IRIS role in activating cities into smart city networks

Figure 2: Summary Image of SCIS Final Conference session on replication

We in the IRIS project see that our role is to inspire and to give confidence to other cities to start the journey of becoming a smart city, and to demonstrate that it is possible.

The target is to activate 80 cities outside the project.

The IRIS project will take this role in several different networks and contexts.

In the SCC Task Group Replication IRIS has the role of co-chair and a strategic decision to be as active as possible in the group as part of WP2 and of WP8, particularly through T8.7.

IRIS will also focus on being active in creating and developing regional, and national, smart city networks in each country where a partner city in the project can be found. These networks serve as key networks to activate the 80 cities outside the project. If each city in the IRIS project can activate about 10 cities in their regions and countries, then the target of 80 cities will be achieved through these networks alone.

The IRIS project has taken a strategic decision to be an active partner to SCIS and to EIP-SCC in their actions, with their publications and in the creation of their tools for replication.

A close cooperation has also been established with the newly (at time of writing) initiative SCALE.

5. SCC Task Group replication

Figure 3: Presentation by Muriël Pels on Task Group Replication

The community of Lighthouse projects (17 in June 2020) has since 2014 developed a cooperation structure in support of better visibility, more impact, faster scale-up and wider replication of the Lighthouse projects and solutions. This cooperation is coordinated by a Board of Lighthouse projects Coordinators (BoC), and supported by five Task Groups (TGs). Each TG consists of representatives of all Lighthouse projects, chaired by one Lighthouse project, sometimes supported by another Lighthouse project. One of these five TGs is the TG Replication.

IRIS has been a member of the SCC Task Group replication since the project started in 2017. IRIS has co-chaired the SCC Task Group replication since 2019.

TG Replication: contacts, organization (2020)

Chair: Muriël Pels (m.pels@utrecht.nl) with Mauritz Knuts (mauritz.knuts@vasek.fi) - IRIS

Vice-chair: Giulia Carbonari (giulia.carbonari@r2msolution.com) - +CityxChange

Meetings: virtual every month, live twice a year (October, April: connected with SCC01 event)

Members: 68 (June 2020), mostly R&D institutes, cities, and city networks.

Members: 68 (June 2020). Participants in meetings: 20-30, representing over 85% of the running Lighthouse projects and related initiatives (SCIS/EIP-SCC).

TG Replication: Action Plan 2020-2021

TG Replication's mission is: to accelerate demand-driven market uptake, scale-up and replication of the Lighthouse projects' solutions in Europe and beyond. TG Replication agreed on the following objectives and activities for 2020-2021:

Objective 1: Knowledge sharing between SCC01 Lighthouse projects on Replication Strategies.

Activities:

a) Share Lighthouse projects' replication approaches through presentations in TG Replication (to be recorded for later reference).
b) Share Lighthouse and Fellow cities' national/regional replication cooperation and approaches through presentations in TG Replication (to be recorded for later reference).
c) Gather in TG Replication's common repository Lighthouse project's Deliverables and tools for replication (replication roadmaps, tool catalogues, replication potential assessment tools,..).
d) Support and promote TG Communication's calendar of most relevant SCC-01 organized webinars/events, and Lighthouse project's joint participation in these webinars/events.
e) Support TG Monitoring's mapping and alignment of Lighthouse project's KPIs for replication.

Ad b) The emerging EU-regional and national SCC01 city networks play an important role in demand-driven market uptake, scale-up and replication of knowledge and solutions, as cities in the same EU-region or Member State share similar contexts such as legislation, climate, culture, infrastructure typology, and city typology. Working together in regional and national networks also has practical benefits such as same first language and shorter travel to on-site events. This lowers the threshold to work together, and to engage cities outside the SCC01 cities network. Examples of existing regional and national SCC01 city networks that contribute to replication are Smart City Sweden / Viable Cities, and the Dutch Community of Practice of Dutch Lighthouse Cities.

Objective 2: Knowledge sharing between the SCC01 Lighthouse projects on Barriers and Drivers for Replication as experienced by the SCC01 Fellow Cities' ecosystems.

Activities:

a) Share Fellow City replication experiences, identifying barriers for replication at national and European level, through presentations in TG Replication (to be recorded for later reference).
b) Support the production of SCIS Solution Booklets in co-creation with Lighthouse projects.
c) Promote and support SCC01, EIP-SCC/SCIS/Smart City Market Place replication events.

This objective builds on the lessons learnt in EIP-SCC/SCIS, TG Replication and TG Business modelling and finance (BM&F) in 2019-2020.

Objective 3: Collaborate with European networks outside SCC01 to accelerate scale-up and replication.

Activities:

a) Establish cooperation with European Strategic Energy Technology (SET) Plan Action 3.2 (June 2018) to identify added value for SCC01 projects, and to provide evidence/experience-based input to upcoming joint calls, the Horizon Europe Driving Urban Transitions Partnership, and other strategic priorities.

b) Establish cooperation with European Energy Research Alliance (EERA) Joint Programme Smart Cities (JPSC) to identify added value for SCC01 projects regarding methodology for PEBs/PEDs planning, definition, implementation, monitoring and evaluation, and qualification and replication of solutions and processes, and to provide evidence/experience-based support to cities in the next 2-5-10 years.

c) This objective aims to collaborate with two major European networks outside SCC01 that support SCC01-type solutions to accelerate market uptake, scale-up and replication of energy solutions:

    a. The SET-Plan Action 3.2, which aims to support replication of 100 'Positive Energy Districts', through the EERA Joint Program Smart Cities & Communities; and

    b. EERA JPSC, which already includes at least one partner from each SCC01 project, and coordinators of the most recent SCC01s.

Objective 4: Contribute to research in support of replication.

Research questions raised in TG Replication 2019-2020:

a) What has been replicated by FCs in Lighthouse projects, and what can be learnt from it?
b) How to capture replication outside of Lighthouse projects, and what can be learnt from it?
c) Could there be value in development of a joint vision on replication, or a joint replication methodology, to be able to study and understand better what works and what not?
d) What is the role of business modelling in replication, notably in relation to cities' business models and financing for sustainability?

SCC Task Group replication will be one of the most important tools mentioned in D8.12 and for T8.7, especially when it comes to knowledge exchange of best practices for replication that can inspire other cities to start working on becoming smart cities and replicate smart city solutions.

6. Other SCC Lighthouse projects approach to replication

Part of the IRIS actions on European level replication is to study the approach of other SCC Lighthouse projects' approach to replication, what has succeeded, what has not, and most importantly what replication actually is and how to do it. These results are the most crucial to present to cities who are planning to start smart city actions.

Some of the Lighthouse projects drivers for replication are presented here, but to get a complete understanding of all the projects one has to visit the websites of the projects and study their deliverables on replication.

This summary was made in the SCC Task Group Replication 2020 – 2021.

6.1. TG replication 2020-2021 lighthouse projects presentations: drivers for replication

TRIANGULUM/SPARCS FC/LHC Leipzig 17 Sep 2020:

Tools to decide what to replicate:

- Integrated Urban Plan (LHP RemoUrban) development concept for 2030, with interdisciplinary priority districts.

Drivers for connectedness:

- Establish local networks with stakeholders of public utilities, local businesses, science, research and civil society, gathering input for different local strategies, developing multi-layer and multi-stakeholder projects, including securing financing, e.g. for Urban Data Platform.

Drivers for capacity building:

- Establish municipal internal governance structure for smart city.

- Create a Digital City competence centre within and for the city administration as well as for external enterprises, civil society and science.

- Bring examples of Lighthouse cities to the FC and invite experts.

Drivers for capital: not mentioned.

Other:

Replication is NOT COPY-PASTE projects and solutions. This is because of variations in:

- Legal and institutional framework conditions;

- Context of citizen engagement.

- Available budget and financing instruments.

- Engagement of stakeholders (e.g. public utilities may / may not be part of the project).

Replication IS:

- Knowledge transfer and capacity building between cities.

- Support for FCs in defining a vision for smart city development.

- Open exchange and discussions at FCs: "a view from the outside".

- Sounding boards, e.g. for a Digital City Unit / Competence centre.

+CityxChange 28 Jan 2021:

The project +CxC analized 46 deliverables publicly available from 9 SCC01 projects (Remourban, GrowSmarter, Triangulum, Replicate, SmarterTogether, SharingCities, SmartEnCity, Ruggedised and MySmartLife) to understand how these projects dealt with replication.

What the analysis highlighted is that most of the deliverables available are replication plans, however we are not aware of how replication proceeds after the SCC1 projects. This should be captured somehow. Where possible information should be made available to the public to support replication. Easy-to-use documents should be made available for cities interested in starting the journey to become smart.

Tools to decide what to replicate:

- FC profile / framework conditions

- Smart solution descriptions.

- District specific profile / framework conditions.

- Assessment and adaptation of measures towards the most effective deployment and integration at district level.

- Triangulum decision making tool

- RemoUrban urban regeneration model

- SCIS solution booklets.

Drivers for connectedness:

- Engage in existing networks. Find friends also among other LHPs, to learn how others overcome barriers: not only in replication plans, but also through replication stories.

Drivers for capacity building:

- Offer simplified information to increase understanding e.g. of terminology.

- One easy-access "go-to place" for knowledge on solutions already available (e.g. the SCIS Booklets), methodologies/tools that you can build on (e.g. tools to decide what to replicate), and Deliverables of other LHPs that are relevant for replication (including finished LHPs) – *currently present in TG Replication folder on MSOneDrive.*

Drivers for capital:

- Think outside the box for financing of local implementation (structural funds, EIB instruments, institutional investors, ECP, Public-private partnerships etc.

Other:

- Barrier: local organisation in silos.

- Barrier: procurement procedures.

- Barrier: missing or confusing legal standards.

RUGGEDISED with Parma 25 Feb 2021:

Tools to decide what to replicate: not mentioned.

Drivers for connectedness:

- Building a strong relationship with the stakeholders.

- Seeking commitment and support of motivated politicians to get accountability, leadership, direction, and control of the smart city process.

- Starting a pilot project with start-ups, with regular meetings to get support from all levels of an organisation and strengthen stakeholders' confidence to overcome the habit to work in silos.

- Clarity of purpose for the city, to get full political support in a long-term vision of the city.

- Establish a local smart city governance group for commitment and for established procedures, to ensure continuation after LHP ends, "survive" political election cycles, and set a standard practice (possibly also across other urban policy areas). *Local governance structure: Project Manager, Smart City Leaders (political + operational), Decision Group (mayor, 3 deputy mayors, general director), Core Team (municipality, university/research institute), and Expert Group (municipality).*

Drivers for capacity building:

- Establish a local smart city governance group for commitment and established procedures, continuation after LHP ends, to "survive" political election cycles, and become a standard practice possibly also across other urban policy areas.

- Replication workshops for cities to share experiences and get into details, e.g. regarding governance, technological aspects, regulations.

- Study visits to Lighthouse cities to identify concrete actions.

Drivers for capital: not mentioned.

mySMARTLife with Bydgoszcz 25 March 2021:

Tools to decide what to replicate:

- Energy demand scenarios

- PESTEL analysis

- Techno-economic analysis

- Value creation ecosystems (VCE)

- City model canvas (CMC)

- Replicability score in spider web

Drivers for connectedness:

- FC established a multidisciplinary team that works on the LHP tasks/solutions.

Drivers for capacity building:

- Establish a multidisciplinary team that works on the LHP tasks/solutions.

- Mentoring sessions between LHCs and FCs on energy, smart lighting, mobility, ICT, and non-technical actions.

- VCE and CMC are useful not only to decide what to replicate, but also for FC domain strategy development (e.g. e-mobility strategy).

Drivers for capital:

- Start thinking/talking about financing the replication plan while drafting it.

Other:

- VCE and CMC tools are also useful not only to decide what to replicate, but also for FC's application for European Awards such as the European Green Capital Award.

MatchUp with Kerava 29 April 2021:

Tools to decide what to replicate:

- PESTEL analysis

Drivers for connectedness:

- National (Finnish) network of LHCs has been very valuable to learn and share experiences, because of same legislation, same climate, same culture etc.

- FC political support for Lighthouse solutions replication plan.

Drivers for capacity building:

- Support in raising awareness in the city of what already has been done, and on focusing on the most impactful actions.

- Gaining insight in the biggest sources of CO_2 emissions and define strategy to tackle these.

- Use of social media to stay informed of what's happening in the LHP.

Drivers for capital:

- The LHP funding for replication activities in FC has enabled climate work in FC.

- Resources to fund implementation after the project are essential

Other:

- Barrier: the municipality is not so open to new solutions, which hinders financial model development.

Barrier: resources for climate are still scarce, therefore discontinuation of developments after the project may occur.

7. SCIS (Smart Cities Information System)

This chapter is about the Smart Cities Information System (SCIS), describing what it is and how IRIS has worked together with SCIS and what is planned.

Figure 4: SCIS Brochure

7.1. About the Smart Cities Information System (SCIS)

Ask, Learn & Share

The Smart Cities Information System (SCIS) is a knowledge platform to exchange data, experience and know-how and to collaborate on the creation of smart cities, providing a high quality of life for its citizens in a clean, energy efficient and climate friendly urban environment. SCIS brings together project developers, cities, research institutions, industry, experts and citizens from across Europe.

Listen to the Smart City

SCIS focuses on people and their stories – bringing to life best practices and lessons learned from smart projects. Through storytelling, SCIS portrays the "human element" of changing cities. It restores qualitative depth to inspire replication and, of course, to spread the knowledge of smart ideas and technologies - not only to a scientific community, but also to the broad public!

More Livable & Sustainable Cities

Launched with support from the European Commission, SCIS encompasses data, experience and stories collected from completed, ongoing and future projects. Focusing on energy, mobility & transport and ICT, SCIS thus showcases solutions in the fields of energy-efficiency in buildings, energy system integration, sustainable energy solutions on district level, smart cities and communities and strategic sustainable urban planning.

Projects in the scope of SCIS are mostly co-funded by the European Commission, for example, the 12 Horizon 2020 Smart Cities and Communities (SCC1) projects (such as Triangulum, Sharing Cities or Stardust), the 7th Framework Program projects CELSIUS and City-zen, and many more!

The overall goal is to foster replication! SCIS therefore analyses project results and experiences to:

- Establish best practices which will enable project developers and cities to learn and replicate.
- Identify barriers and point out lessons learned, with the purpose of finding better solutions for technology implementations and policy development.
- Provide recommendations to policy makers and policy actions needed to address market gaps.

More than a database

SCIS offers webinars and workshops on findings of the projects and replication possibilities as well as trainings on the SCIS database and the website's resources.

Share your knowledge

SCIS allows for individual publishing of KPIs, best practices and lessons learned at the SCIS website.

SCIS website:

https://smartcities-infosystem.eu/

7.2. How IRIS works with SCIS

IRIS has worked with SCIS mostly through the SCC TG Replication, where SCIS has presented possibilities for collaborations, requests for input for publications, discussed new initiatives, presented new opportunities for projects and been active in planning of events and workshops.

The following is an excerpt from WP2 D2.1 "Lessons learnt through cooperation with other Lighthouse projects", with some additions:

In 2018, a cooperation between EIP-SCC and Smart City Information System (SCIS) was established to develop 12-15 Solution Booklets before end 2020. A Solution Booklet is a summary of the management framework, primarily written for cities. It seeks to reduce the effort, speed up the process, strengthen quality and confidence in outputs, align across disciplines, and generally prepare a city to engage the market to acquire a solution. By the end of 2020 there are eight Solutions Booklets; Citizen Engagement, Building Envelope Retrofit, From Idea to Implementation, Batteries and PV, Heat Pump Driven District Heating Systems, District Heating and Cooling, Urban Freight Logistics, E-Bus.

All Solution Booklets follow the same Table of Contents, in which five chapters contain lessons learnt, which cover barriers as well as drivers for replication:

- What & Why
- City Context
- *Societal and User aspects (including lessons learnt)*
- *Technical specifications (including lessons learnt)*
- *Business models and finance (including lessons learnt)*

- *Governance & Regulation (including lessons learnt)*
- *General lessons learnt*

Slightly before developing these Solution Booklets, SCIS worked on a Deliverable called ***Why may replication (not) be happening*** (targeted at EU policy makers), which was published in web-version November2018. In this paper, SCIS mentions, remarkably hidden on page 7, the following aspects of replicability of smart city solutions, which may be underlying the typology used seven months later for the above mentioned Booklets (targeted at cities):

- *technologies*
- *business models*
- *governance*
- *legal context*
- *social acceptance*
- *user motivation*
- *capacities & knowledge*
- *budget*

End of 2020, the EC aims to have merged EIP-SCC and SCIS into one platform under one new name. IRIS will follow this process closely.

8. EIP-SCC (Smart Cities Marketplace)

This chapter describes what the EIP-SCC (Smart Cities Marketplace) is and how the IRIS project has worked together with it.

Figure 5: EIP-SCC Brochure

8.1. About EIP-SCC

The Smart Cities Marketplace plays a distinctive and new role compared to other European Commission platforms. Engaging cities, industry and financiers in interest matching activities, leading to project design and delivery shall be the Marketplace's team objective. Building solutions and facilitation are the two main tasks of the Marketplace to help deliver investments.

Who is EIP-SCC, what do the EIP-SCC do?

The Smart Cities Marketplace is a major market-changing undertaking supported by the European Commission bringing together cities, industries, SMEs, investors, researchers and other smart city actors.

Clusters:

An Action Cluster is an assembly of partners committing to work on specific issues related to smart cities, by sharing the knowledge and expertise with their peers.

Initiatives:

An Initiative is a thematic collection of projects. Each of the initiatives is being led by one of the six Action Clusters.

Projects:

Smart City Projects are a very common occurrence across cities, some funded by EU budgets, some by city, regional or national budgets and some by the private sector.

How the platform can help?

- Find the latest news, events and documents related to innovation in Smart Cities.
- Find information on many existing EU funding sources.
- Launch a debate on a specific issue, initiative or practice.
- Share information, documents and links to enhance the visibility of your events.
- Find interesting completed or ongoing smart cities projects.
- Get in touch with potential partners or peers who work on the same subject.

EIP-SCC website:

https://eu-smartcities.eu/

8.2. How IRIS works with the EIP-SCC

IRIS and EIP-SCC has mostly worked together during live events and in the SCC Task Group, where the EIP-SCC has presented opportunities and possibilities for smart city projects and new publications from the EIP-SCC, where the Smart City Guidance Package is the most noteworthy of them. IRIS Fellow Cities Vaasa and Santa Cruz de Tenerife functioned as test-beds for the guidance package and the EIP-SCC arranged workshops in both FCs.

The following is an excerpt from WP2 D2.1 "Lessons learnt through cooperation with other Lighthouse projects", with some additions:

In 2014-2017, the Task Group Replication worked on identification of barriers and drivers in the Lighthouse projects, mostly through meetings of the projects' Replication Managers and a SCC01 replication event in Brussels, co-organized with INEA. This work provided input for the paper published in 2017 by the coordinator of Task Group Business Models & Financing, Graham Colclough, on behalf of the EIP-SCC (European Innovation Partnership on Smart Cities and Communities): *Towards a joint investment programme for European smart cities.* The paper aimed to speed up the adoption of smart city solutions in Europe, by having 300 cities invest 1 billion euro in by 2019. The paper observed in 2017 a trend in cities to continue externalisation of what was in the past considered 'public' services: utilities, transport, health, waste and the like. As a result, cities shift from investing/operating to commissioning performances. Savings and/or revenues must be factored in alongside capital investment decisions. New

business models are required that involve cross-functional (and often cross-sector) interdependencies in which delivered value accrues to different parties over different timescales.

The EIP-SCC *Towards a joint investment programme for European smart cities* program paper intended to build investor and broader market confidence by developing the concept of 'packaging solutions', as Lighthouse projects are implementing fairly similar measures.

End of 2020, the EC aims to have merged EIP-SCC and SCIS into one platform under one new name. IRIS will follow this process closely.

9. SCALE (European Smart and Lighthouse Cities Amplified)

This chapter will describe the SCALE project, and how IRIS work together with it.

Figure 6: From SCALE presentation

9.1. About SCALE

SCALE is a city-led initiative that will provide large-scale, long-term support for the cities and projects involved in the H2020 Smart Cities and Communities Lighthouse Group with 18 projects and 128 cities participating.

SCALE will serve as a unifying element, networking and connecting all Smart CIty projects trying to improve the overall performance and enhance the significance of the Smart Cities and Communities Group by creating a supporting framework providing enhanced cooperation, design, communication, logistical support, consultations, and application of a stable governance approach.

Energy Cities is responsible for the city coordinators group, outreach to the CoM and other city led initiatives and to set up and manage a grant to support the replication of smart cities solutions.

Support

- New ways of working with the SCC-LG group
- Supporting the SCC-LG group to maximize the program impact at the European level
- Set-up more structured process and support to increase the impact of the SCC-LG combining mid term vision and agile implementation
- Set-up a governance providing more visibility and sustaining in the long run the SCC-LG

Scale

- Accelerate the replication and the upscale of the pilots and the solutions through a city tailored approach (roadshow, demand aggregation)
- Accelerate the dissemination and knowledge sharing through a joint roadmap and tools

Promote/Extend

- Extend the outreach through partnerships with key network such as the COM
- Organise the participation of SCC-LG groups to strategic events
- Develop a joint brand and online outreach of the network
- Advocacy collecting and providing insights from the SCC-LG to decision-policy makers

Small step, big leap

- Peer-to-Peer support
- Scale grant for ad-hoc replication
- Mobilising key expertises

SCALE has a value proposition to create a city-led approach and mindset, tailored to the SCC-LG own mindset.

11 key processes (KP) to support the SCC-LG group

Key Process 1: Establish the governance structure and manage the interactions

Key Process 2: Secretariat Support to BOC, TGs strategic and operational management

Key Process 3: Support to City coordinators group

Key Process 4: Peer-to-Peer Support process

Key Process 5: Roadshows

Key Process 6: Extending the outreach through a partnership with the Covenant of Mayors

Key Process 7: Organize events

Key Process 8: Packaging

Key Process 9: Partnership and Replication

Key Process 10: Online tools

Key Process 11: Branding and communication

9.2. How IRIS works with SCALE

IRIS will work together with the SCALE project mostly through the SCC TG Replication and in all key processes of the project, and linking it to the targets of T8.7 of activating new cities into smart city networks.

Most work will focus on the following key processes which has the strongest connection to European level replication:

- Key Process 4: Peer-to-Peer Support process
- Key Process 5: Roadshows
- Key Process 6: Extending the outreach through a partnership with the Covenant of Mayors

- Key Process 7: Organize events
- Key Process 9: Partnership and Replication (main focus)

10.   Other EU Smart city networks

There are plenty of other EU smart city networks, and it would be impossible to keep up an active collaboration with them all.

Therefore the IRIS project will identify the main networks to work with more actively, but will remain open for collaborative actions with all if a suitable opportunity would open up.

Other EU smart city networks that IRIS will follow and work with, with chosen actions adding to the target of T8.7:

- Mission Board
- Urban Agenda
- Urban Europe JPI
- Urban Land Institute
- Climate KIC
- Covenant of Mayors
- Digital Europe
- CIVITAS
- Eurocities
- ICLEI
- FEDARENE
- Foundation Bloomberg
- Smart City Council
- CEMR

Below follows a table with all known networks as of Q1 2021:

Network	How it supports SCC01 replication and implementation	Contact
SCC01 Task Group Replication	Dissemination of SCC01 knowledge on replication between SCC01 projects, and with networks outside SCC01, by monthly meetings with all SCC01 replication managers and representatives of SCC01-related networks outside SCC01.	Muriel Pels (City of Utrecht), Mauritz Knuts (City of Vaasa)
SCMP Smart Cities Market Place	Matchmaking between cities and market parties for implementation and replication, e.g. by standardization, joint procurement, and communication and dissemination of financing solutions.	Judith Borsboom
SCALE support project (same website as SCMP, incl SCIS)	Communication & dissemination on SCC01 implementation and replication, e.g. website with all SCC01 information (a.o. solution booklets), roadshows, expert meetings, **funding** of replication activities additional to LHPs.	Francisco Goncalves (Energy Cities)

EERA JPSC European Energy Research Alliance Joint Program Smart Cities	Research to help cities implement PEDs, within and outside SCC01, e.g. how to work across silo's, organize public-private partnership, deal with risk management, make information available understandably for stakeholders.	Annemie Wyckmans (NTNU)
JPI Urban Europe Joint Programming Initiative Urban Europe	Executes EU **SET** (Strategic Energy Technology) **Plan Action 3.2**: **PEDs and neighbourhoods for sustainable urban development**. This PED Prorgam aims to exchange knowledge and experiences between European cities within and outside SCC01 (coordinated by Viable Cities), and has **funding** for this**.** Talks with TG Replication (Muriel).	Christoph Gollner (Urban Europe)
COST Actions European Cooperation in Science and Technology, network of 240 running Actions, a.o. on PEDs (CA 19126 PED-EU-Net)	Funding organisation for research and innovation networks. Is creating a knowledge and evidence repoistory for PED development. COST has **funding** for doing this. Is talking to JPI Urban Europe's PED programme (see above) regarding mapping of knowledge and evidence for the repository, and with TG Replication (Muriel): how can we make something that can cover the interest of the different platforms?	Vicky Albert-Seifried (Fraunhofer)
HorizonEurope Mission Climate-neutral & Smart Cities	Showcase, promote and **co-funding** 100 European cities in their systemic transformation towards climate neutrality by 2030, through Climate City Contracts.	…
Covenant of Mayors - Europe network of cities for climate and energy	Communication of signatory cities' SECAP (Sustainabale Energy and Climate Action Plan) baselines, ambitions and achievements. Runs a.o. the CoM peer learning program with some **funding** for travel and hosting..	…
ICLEI Europe global network of local governments for sustainability	As a part of the GreenClimateCities Program, the ICLEI climate neutrality framework calls on all local and regional governments to accelerate climate action now..	Carsten Rothballer (ICLEI)
EUROCITIES network of 139 mostly European cities	EUROCITIES facilitates the exchange of knowledge, eperience and good practices between (member) cities to scale up urban solutions.	Manon Ghislain (EUROCITIES)
IEA EBC Annex 83 International Energy Agency, Energy in Buildings&Communities programme	The aim of Annex 83 is to develop an in-depth definition of PED and the technologies, planning tools and planning, and the decision-making process related to positive energy districts. Experience and data will be gained from demonstration cases.	Francesco Reda (VTT)

11. National and regional networks

Figure 7: Picture from Finnish National workshop on Replication in Tampere

National and regional smart cities networks have been identified by the IRIS project as a main key in achieving the targets of the task T8.7 and the aim of activating 80 cities into smart city networks.

In all countries that have cities represented in the IRIS project (FCs and LHCs) there are also other active SCC projects. Together with these cities there is a possibility to create an active national smart city network, that can active e.g. neighbouring cities to become smart cities as well, or cities that have an existing cooperation agreement or good relations on a general level, where the cities are used to have exchange on experiences and knowledge.

Here is a list of other cities in the same country as the partner cities in the IRIS project:

Netherlands (Utrecht):

- Eindhoven (Triangulum)
- Rotterdam (Ruggadised)
- Amsterdam (Atelier)
- Alkmaar (Pocityf)
- Groningen (Making-City)

France (Nice):

- Lyon (Smarter Together)
- Nantes (mySMARTLife)

- Bordeaux

Sweden (Gothenburg):

- Stockholm (GrowSmarter)
- Umeå (Ruggedised)

Finland (Vaasa):

- Oulu (Making-City)
- Tampere (Stardust)
- Espoo (Sparcs)
- Helsinki (mySMARTLife)
- Kerava (MAtchUP)
- Turku (Response)

Spain (Santa Cruz de Tenerife):

- Valencia (MAtchUP)
- Pamplona (Stardust)
- San Sebastian (Replicate)
- Bilbao (Atelier)
- Vitoria-Gasteiz (SmartEnCity)
- Sestao
- Valladolid (Remourban)
- Palencia (mySMARTLife)
- León
- Santiago de Compostela (Smarter Together)

Greece (Alexandroupolis):

- Kozani

Romania (Focsani):

- Suceava (Grow Smarter)
- Cluj-Napoca
- Alba Iulia

Working through these national and regional networks the IRIS project should be able to reach the target of activating 80 cities outside the IRIS project.

11.1. IRIS LHC and FC city networks and replication result promotion

Reaching the target of activating 80 cities outside the IRIS project into smart city networks requires activities from all the cities in the IRIS project. The cities have mapped some of the city networks that they each are involved in, and the events that could reach other cities to whom replication results can be promoted.

City networks that the IRIS LHCs and FCs are part of:

Utrecht

- National: NL-SCC-01 network, consisting of Dutch Lighthouse Cities Amsterdam, Rotterdam, Eindhoven, Groningen, Alkmaar and Utrecht.
- National: Platform 31 network on Positive Energy Districts
- National: Nationale Agenda Laadinfrastructuur
- National: Elaad = organisation aimed at connecting and collaborating on EV-charging
- Regional: U16 = collaboration of 16 municipalities in the western half of the Province Utrecht. Joint approach to create Regional Energy Strategy as part of the Dutch Climate Agreement
- Regional: Regional Energy Alliance, with triple-helix organisations, exchanging knowledge on policy, projects, citizen engagement.

Nice

- Agence Française des Villes et des Territoires Méditerranéens Durables (AVITEM)
- AVERE (association des véhicules électriques routiers européens)
- Capenergies
- EBN (European Business Network)
- Energy cities
- ENNOL (European network of living labs)
- Eurocities
- FIWARE
- Forum européen pour la sécurité urbaine – EFUS
- Mission opérationnelle transfrontalière (MOT)
- Pôle SCS
- Réseau des villes EUROMED
- UITP (Union internationale des transports publics)
- Initiative Living.eu
- Intelligent Cities Challenge (ICC)
- Initiative pour les droits numériques

Gothenburg

- National: Vinnova: National Innovation platforms for strategic learning, organization and dissemination of innovation.
- Networking: Lighthouse projects in Sweden. We have had contacts, meetings and xchange of information (read the LH city site manager & WP leader) with Stockholm/ Grow smarter and Umeå/Ruggedised, but not really any networking.
- Locally: CLOSER – Mobility
- National: Klimatkommunerna
- National: SKR - Sweden's municipalities and regions
- National: DIGG – Agency for digital Government (several national networks)
- National and international: Open data and platform networks in Sweden through several local and national and international projects like Lov-IoT (national). SCORE-Water (International), SCORE (International/about replicating IoT solutions)

- National and international: Smart City Sweden - Smart City Sweden is a state-funded export platform that initiates cooperation between Sweden and other countries within smart & sustainable city solutions (through Business region Gothenburg/Green Gothenburg who is a City owned company).

Vaasa

- Union of Baltic Cities (UBC)
- The Association of Finnish Local and Regional Authorities
- The national network of Lighthouse projects in Finland
- Kvarken Council
- The Council of Ostrobotnia

Alexandroupolis

- Regional Union of Municipalities of Eastern Macedonia and Thrace
- Hellenic Inter-Municipal network of Healthy Cities
- Central Union of Municipalities of Greece

Santa Cruz De Tenerife

- Regioanl city networks with other region capitals in The Canary Islands
- Regional city networks with minor municipalities in The Canary Islands

Focsani

- Romanian Municipalities Association
- South-East Development Region

These are the events that the cities could use as platforms for promoting replication results of IRIS in order to inspire and motivate cities to join smart city networks:

Utrecht

- European Week of Regions and Cities
- Electric Vehicles Symposium
- ElaadNL Webtalks
- Het Nationaal Warmte Congres
- Nationale Energie Week
- Network meetings of Platform 31

Nice

- No recurring events identified yet

Gothenburg

- Looking at the four different interviews, the respondents answered more or less the same regarding the two different questioned posed. To begin with, the respondents are aware of the various networks their specific departments or organizations within the City of Gothenburg are

involved in and its purpose. The different networks mentioned are active both locally, nationally as well as internationally.

- Almost everyone interviewed mentioned that their department alone does not communicate directly with another city. Still, they are involved in the exchange and communication that the City of Gothenburg has with different actors in Europe and neighboring countries. The respondents continue by saying that informing other organizations about IRIS rarely happens as a stand-alone event, but more often when presenting Gothenburg as a whole. Only one interviewee mentioned that he had discussed the project at different events and workshops with other cities in Europe.
- JSP:s communication with other cities in Europe happens mostly through their projects. Webinars, study visits, and other activities are just some of the tools used to exchange ideas. Before the pandemic, larger conferences were also typical. Nationally the course of action is more or less the same. Through the project, IRIS JSP has had an exchange with both Stockholm and Umeå, two other Lighthouse cities in different EU-projects.

Vaasa

- Possible to promote events, possible to arrange events within the UBC (for example promote Energy Week)
- Potential to do something together with Lighthouse cities Turku and Helsinki, which are also members in UBC (TBC)
- Could be possible to use the Council of Ostrobotnia to facilitate some regional event on Smart Cities? (TBC)
- To arrange some session on the international Energy Week event and invite cities and municipalities from Finland and the Nordic Countries

Alexandroupolis

- European sustainable energy week
- Events of Institute of Energy for South-East Europe
- Events of International Center for Digital Transformation by CISCO
- Bilateral meeting with twinned cities

Santa Cruz De Tenerife

- No recurring events identified yet

Focsani

- Romanian Municipalities Association General Assembly

12. Exploitation plan and operations

12.1. D8.3 IRIS exploitation plan and operations

This deliverable sets the framework for how the consortium will exploit its results and reach the objective of recruiting 100 cities to follow IRIS. It also indicates what needs to be done and by whom. Several sets of questions are presented, and these are to be seen as tools that will enable all solution providers to make their individual exploitation plans.

D3.8 is an exploitation plan and a first version to describe what most probably needs to be done and by whom in order for the IRIS solutions to replicate IRIS solutions to Follower Cities (FCs) and to reach the objective of recruiting 100 cities (80 within Europe and 20 beyond Europe).

The LH cities are capable and willing to scale-up the solutions within the city – district by district. Furthermore, the credibility of the solutions' value will be higher if the follower cities (FC) of IRIS replicate one or several of the solutions, which is one main objectives of the IRIS project.

The objective with the plan is to educate and show IRIS partners what is needed to be done in order to exploit the results, reach market impact and reaching smart cities with potential to implement IRIS solutions or replicate IRIS business models - not only within the project and within Europe, but beyond Europe.

When identifying business models that are proved bankable, they will be of interest to other cities facing the same kind of challenges (within the same kind of transition tracks) as the cities of IRIS.

The IRIS grant agreement states that this deliverable is to be describing exploitation plan and operations for the IRIS solutions that are born global, contribute to that:

a) Up to 20 companies representing IRIS solutions will have the opportunity to pitch to cities outside Europe that have the ambitions to deploy smart city solutions.

b) There will be at least 20 official replication/deployment agreements.

c) At least 5 installations of IRIS developed solutions will have started to be deployed.

D3.8 is written so that all partners of IRIS will understand their important and specific role in seeing to that the IRIS project's results make market impact.

12.2. The Solutions Providers of IRIS

Some of the solution providers might have the objective of only scale-up within their own city and some will want to replicate elsewhere. Depending on their interest and means for growing, the IRIS project and the lighthouse community provide a great platform for expanding the business. This will not happen by itself, the solution provider have to be dedicated to the task and early on state whether they are

interested in growing their business or if it's their business model that is to be replicated. There will be solution providers with no intention to scale-up nor replicate. Here, focus is on the business model, which can be used for replication elsewhere by a local actor in that particular place.

12.3. The Solution Managers of IRIS

The solution managers are the first ones to implement the new solutions and they play an important role as they can speed up both scaling-up within your own property stock and being great ambassadors for cities that want to replicate what's being done in one of the IRIS LH cities. Knowledge-sharing is key.

Replication from IRIS cities to other European cities and to cities beyond Europe:

- What solutions are capable of going global? - Identify and highlight the "born global" IRIS solutions (LH cities, solution providers)
- What is the IRIS offer? - Package the IRIS offer to LH cities' districts, to FCs and cities within as well as beyond Europe (LH cities, Vaasa, Utrecht, IMCG)
- How are we going to let the world know about the IRIS solutions? - Set a yearly plan for dissemination activities to promote replication (ESCI, IMCG, Vaasa)
- How do we reach the world? - Activate IRIS's collective network of cities within and beyond Europe (LH cities, solution providers, IMCG)
- How is the world to get the IRIS information? - Allow prospect cities to take part of IRIS progress and results (LH cities, solution providers)

The IRIS grant clearly indicates that several of the IRIS partners have established connections with cities both in Europe and outside of our continent. These contacts are of utter importance for the success rate of exploiting the project results. This exploitation plan shows a start of how to collect information from different partners. There are also city communities in which IRIS play a part or could play a part.

Focus would be for cities to communicate what kind of smart city solutions they need and let the industry understand what there is a market for. A demand-driven scenario.

Exploiting the results of a project is highly depending on the ability of tech and non-tech partners to cooperate and to rely on each other's competences. The technical knowledge must be there, but without the understanding of how to communicate the customer value, the high-tech solution will never reach the market. And if the solution, product or service is a result of a collaborative work, it is of essence that somebody can state ownership of it. If not, nobody will be able to invest in it or buy it.

The initial workshops arranged in each IRIS Lighthouse City during spring 2018 led to the conclusion that the city authorities not are the key actors to replicate implementation of IRIS Solution. The most important actors are private and public companies which practically act as solution managers, purchasing solutions from suppliers on the market and offering services to end-users, i.e. citizens.

The conclusion also implicates that the main audience for the smart solutions, are solution managers within the Lighthouse cities. A city can play the role of an enabler or a buyer. The easiest assumption is to see the city as the buyer of integrated solutions that solve the challenges the city is facing. However, many times it is other actors, such as property developers, that play the crucial part as buyers, as they design and implement the solutions.

When a solution is to be replicated it is necessary for the solution provider to understand who is to handle the solution on the buyer side of the transition. To describe the solution managers as the actors that purchase solutions from suppliers and offer the solution service to their customers, or to the citizens if the manager is a city authority. An integrated solution is often a result of several value propositions and key activities and sometime several business models as a business model is related to one actor only.

Needless to say, the solution providers are key to the results of the IRIS project. Through the exploitation plan they can either increase their business by start delivering value to other districts within their city and from there also start delivering to the follower cities and to cities outside the project and beyond. If this is not an option for the solution provider, the business model of the solution provider is the one that can be exploited and replicated in other cities.

12.4. IPR management

IMCG works strategically with IPR management in several EU projects to encourage partners not only to rely on the Consortium Agreement, but to sign legal documents regulating details minimizing the risk for legal disputes and maximizing the possibility for the invention to reach market impact. The overall aim of an innovative Horizon 2020 project is to push innovative ideas all the way to the market. But when the EU project starts to show results that can be commercialized, it is important to understand that a CA is not enough. There is an enormous risk that it won't be clear what partner owns the outcome.

A Non-Disclosure Agreement (NDA) can be used to regulate details.

If intellectual property (IP) issues are solved with clarity early on in the project, potential future conflicts are avoided. Business angels, investors and financial institutions are the ones who can enable that the invention reaches the market, and they won't invest in your innovation if you might own it. They will want proof of that it yours.

Not handling Intellectual Property Right (IPR) issues can be a barrier when it comes to entering the market. If it's not clear what you own, nobody will buy your technology or invest in it. Therefore, not handling IPR can also inhibit you to scale-up and to replicate your solution in other cities. Make sure that you have the right to exploit the results that you believe are yours. Make sure to protect your solution. Be sure of that not all legal aspects are covered by a general agreement in an EU project.

12.5. Exploitation of IRIS results – solution provider level

Questions to consider for solution providers that want to grow their business by scaling-up:

- Who is the end-user/customers and what problem are you solving for them?
- What value do you deliver?
- What is your business model? How scalable is it?
- How do you handle ownership/IPR?
- How do you involve end-users/handle innovation management?

The solution providers of IRIS need to consider who their end-users and customers are, what the use of the solution is and what problem is being solved by the solution. It should also be clear how the solution is better than existing ones. Evaluate if this is the right target group or not or/and if adjustments of the solution is need to fulfil the needs of the end-users. Study the market regarding what other options that are available for the end-users. Through IRIS you have the possibility to not only look at the local market but learn from the markets in the other LH cities and the FCs.

Solution providers needs to be able to pitch their solutions. The better material they have for this, the easier it will be for other partners in the project to help them reach the market, and thereby move towards the 100 cities that are to be recruited by the IRIS project.

The solution providers need to be able to describe what value they are delivering. Does the end-user understand the solution's purpose? If it's a new innovation the potential user might not have any prior knowledge of what this should be useful for. What is most important for the end-user? Is it that they provide a sustainable solution? Or is it to be able to say that they are the first one to have bought this solution, being a forerunner? Does their business plan describe the value and the way they will scale-up?

Through the IRIS project the solution providers get to exploit their existing/new business models through scale-up. They will have to see if there is a business case and that there is an actual market for the product. They will have to consider through what way will you provide the customer with the solution – sales, licenses subscription? Needless to say, they will need a clear business plan before they get started.

- Improve the existing business models to make them more bankable
- Develop new (smart city) business models for the new IRIS services
- Adapt existing business models to new contexts through replication

A successful demonstration of an innovative solution contributing to solving a city defined problem, needs to be followed by a city-wide scale-up.

We in IRIS need to identify what solutions that can be replicated. Business models need to be evaluated and market barriers must be identified in order to make replication possible. An IRIS offer must be expressed, and it needs to be attractive on a European as well as on a global level. To reach global attention we also need to activate all IRIS partners' international city relations.

There is a need to package the IRIS offer to LH cities' districts, to FCs and cities within as well as beyond Europe. Below you will find an overview of the offer suggested we will use to different target groups.

The IRIS offer is intended to create an interest in replication of IRIS solutions. The IRIS offer needs to be packaged to suit the different target groups. The IRIS' offer could be categorized by being intended to districts within the LH-city, to FCs within the project and to the 80+20 cities outside the project.

WP8 and WP1 can guide you into finding the deliverables describing relevant solutions. It's up to the FCs of IRIS to pay interest and carefully study the LH cities in order to be able to identify which solutions that will be relevant for the FCs to replicate. As the replication results within the project are inspiring for cities outside the project.

12.6. The IRIS offer

The IRIS' offer will be presented in a broad context and focus on transition tracks; the challenges. When cities outside of Europe have showed interest for a specific track, we can go further and present the specific "born global" solutions within the chosen track.

A set of questions regarding replication outside the project within and outside the project:

- What solutions are capable of going global?
- How to communicate the IRIS solutions to the world?
- How do we reach the world?
- How is the world to get the IRIS information?
- How are we going to present a result?

The IRIS offer is enhanced by both transition track pitches and individual pitches for the "Born global" solutions. The transition track pitches will be made by city representatives or anyone in the consortia who is suited for it – the transition track spokesperson. The pitches regarding the solutions are naturally made by the solution providers themselves.

In order for cities around the globe to get access to the IRIS information we need to allow prospect cities to take part of the progress and results of IRIS.

12.7. Connection between WP 2 and WP 8

This deliverable (D8.12) is very similar to D3.8. Therefore, it has been suggested that D8.12 could be an up-dated and extended version D3.8. That means that it could also include beyond Europe activities. This deliverable shows that WP8, responsible for leading the work of recruiting 80 cities within Europe, will be helped by working closely together with WP2. This deliverable indicates that there is a need for transition track pitches.

When letting other cities know what IRIS has to offer, it's easier to speak in wider terms and talk about transition tracks – the challenges cities are facing – rather than speaking about specific solutions within the transition tracks.

We have to change mindset on what to show the world. It's perfectly fine to show what's being demonstrated even though everything is not finalized and in place. Other are interested in the journey we are making, rather than the final product. They're interested in the collaboration between academia, society, industry and companies that we manage to handle, in order to strive towards demonstrating the integrated solutions.

13. Confirming that European cities have been activated into smart city networks through the IRIS project

The IRIS project will document which cities that have been activated and into what network they have been activated through the actions of IRIS.

A list will also be up kept through which actions the IRIS project have inspired new cities into smart city networks through being a good example of how it can be done, and by providing tools and publications to open up what it means to be a smart city.

These documents and confirmations of activated cities will be presented in:

D8.13 : Establish & operate IRIS European smart cities network with Seven European level regional arrangements [60]

Related to T8.7. Report on European scale-up activities to have minimum 80 active cities as active members, connections to and co-operation with existing European cities networks and seven European level regional arrangements (networks).

14. Addressing beyond-project replication

The best way of promoting beyond-project replication is by setting good examples, that is why successful replication in the IRIS project is key to being able to inspire others to reach for similar smart city goals and solutions.

The way to successful replication, is best shown, through the FCs replication plans, see deliverables:

- D8.4 Vaasa replication plan
- D8.6 Alexandroupolis replication plan
- D8.8 Santa Cruz de Tenerife replication plan
- D8.10 Focsani replication plan

And the best way to guide other cities in Europe will be through the coming deliverables on European level implementation guides:

- D8.5 Vaasa Northeastern Europe implementation guideline
- D8.7 Alexandroupolis Southeastern Europe implementation quideline
- D8.9 Santa Cruz de Tenerife Southwestern Europe implementation guideline
- D8.11 Focsani South-Central Europe implementation guideline.

14.1. Removing obstacles to investment, providing visibility and technical assistance to investment and replication

The replication plans and the regional European implementation guidelines will help removing obstacles to investment by the following:

- Presenting clearly, meticulously and in detail the planned and potential smart integrated solutions.
- Sharing knowledge and information about the situation and requirements about the advancement. of the solutions: present situation, objectives, impacts, stakeholders, time schedule, drivers & barriers, possible interconnections.
- A document, which provides technical assistance and data to understand the Transition Tracks' various solutions. Thus, the reader receives a good and reliable holistic view of the overall picture; steps of advancement, framework and guidelines to move forward to achieve more enhanced level of sustainability, carbon neutrality, energy efficiency, smart mobility and mobility services, and citizen engagement.
- Provides information to provide solid basis for business plans, SWOT and other analysis, marketing, collaboration plans, implementation process and
- Draws together and links the city's climate, sustainability, mobility and decarbonisation goals with the replication plan's integrated solutions, thus presenting concrete measures to achieve these goals.
- Acts as a manual for decision-makers, financiers, service providers and contractors.
- In short, the Replication plan is (at best) a document, which can be used as highly instructive and reliability-building tool to support implementation process, business plans, market analysing and

investment scouting. In addition, it encourages and entices to perceive new business opportunities and possible revenue streams, encourages to take action, and brings the required stakeholders on the same page to see eye to eye on objectives, interests and possible benefits and profits.

14.2. Making smarter use of new and existing financial resources

Making smarter use of new and existing financial resources is significantly more challenging than working with obstacles to investment, providing visibility and technical assistance to investment and replication. To be able to respond to this need, a more comprehensive knowledge and data are needed regarding current funding options, their potential for development, and a number of influences that can vary widely depending on the country, city, project and its required resources, strategies, other plans, stakeholders and past projects, reviewing their challenges and successes.

A good overview of different funding options can be found in **D3.7 Financing solutions for cities and city suppliers**. From this the project can continue working with different financing solutions and create guides and tools for making smarter use of new and existing financial resources, together with European Smart City networks.

D3.7 Financing solutions for cities and city suppliers

Deliverable D3.7 intends to give the reader an overview over a number of Financial Instruments available for enabling of innovation scale-up and replication. The deliverable provides a tool-section describing important steps that partners need to take before it is meaningful to approach an entity providing Financial Instruments. The tool section also shows the estimated relevance of the various instruments compared to the five IRIS innovation tracks. Furthermore, the deliverable addresses the cities need for capital to invest in innovative solutions from suppliers and the suppliers need for capital to invest in product and service development and in competence and human resources.

14.3. European implementation guidelines for different areas

Every Fellow City in the IRIS project has a deliverable focusing on implementation guidelines with a specific focus for the area in Europe where the Fellow City is situated. These guidelines provides details on how other areas may start replication of activities. They will describe a set of actions and directions and guidance on how to implement activities specific for the specific European areas.

These guidelines will be important in the task of reaching, and activating, 80 cities in Europe into smart city actions.

The deliverables are the following and will be done by M60 in the project:

D8.5 Vaasa Northeastern Europe implementation guideline

D8.7 Alexandroupolis Southeastern Europe implementation guideline

D8.9 Santa Cruz de Tenerife Southwestern Europe implementation guideline

D8.11 Focsani South-Central Europe implementation guideline

These implementation guidelines will serve as an extension of the FCs Replication Plans, describing lessons learnt and how to implement smart city solutions as the FCs have done in the IRIS project.

The implementation guides will not just mirror, instruct and explain to other cities how the replication activities were started, but also utilize the information gathered during the Replication plan process about everything related to the creation of the FCs replication plans, how they were utilized, how lessons learned and knowledge sharing was done.

There are three levels of replication activities to be found in the replication plans; those that have been around for a long time, those that will be launched soon and the ones that are being planned. Therefore, there is a lot of information regarding the replication plan and the actions involved, how it would be best to implement them and what they require to be successful.

The implementation guidelines for areas in Europe can also be connected to the work with the national smart city networks described in chapter 11 in this deliverable.

15. Output to other work packages

Work package **WP 8 Replication by Lighthouse regions, Follower cities, European market uptake** , task **T8.7 European scale-up activities**, deliverable **D8.12 European level replication plan**, will provide relevant output to the following work packages, tasks and deliverables in the IRIS project:

WP2 EU wide cooperation with ongoing projects, initiatives and communities

T2.1 EIP-SCC: cooperation with selected Lighthouse projects

D2.1 : Lessons learnt though cooperation with other Lighthouse projects

Relevant output:

The joint work of WP2 and WP8 regarding T8.7 and T2.1 creates valuable content for D2.1 and this deliverable is a good overview of that content.

This deliverable presents a good overview for WP 2 of the work that is being done and being planned with other networks for smart city actions.

WP3 Development of Bankable Business Models and Exploitation Activities

T3.6 Beyond IRIS

D3.9 IRIS Beyond business plan

Relevant output:

High-lighting ongoing networks that facilitate and use valuable results from the IRIS project. Will be of use and help for the strategy to capitalize on the developed values during the project.

WP9 Monitoring and evaluation

T9.5 Overall evaluation and impact analysis for impact enhancement

D9.7 : Report on evaluation and impact analysis for integrated solutions

Relevant output:

Being able to facilitate impact results to other networks and organizations to keep the good results for coming projects and initiatives.

16. Conclusions

The main concluding question for this deliverable is:

How will IRIS reach the target of activating 80 cities on a European level into smart city networks?

To reach the ambitious target of activating 80 cities into smart city networks, and to inspire them to start the journey, the IRIS project will focus on cooperation with strong existing smart city networks, projects and initiatives. Doing joint collaborative actions mostly through the SCC TG Replication.

The actions will include finding and distilling materials regarding smart city actions, arrange events, workshops and webinars, working towards finding the best way to develop the smart city networks.

IRIS will be active in creating a story of why more cities in Europe should strive to become smart cities and to replicate the many good solutions being demonstrated in the IRIS project, and in all the other Lighthouse projects.

Continuing to work together with SCIS, EIP-SCC and SCALE, and all the other smart city networks in Europe, the impact will be on a large scale and implementation of replication on a European scale will be a fact.

Results from the European level replication actions by the IRIS project will be presented in the deliverable:

D8.13 : Establish & operate IRIS European smart cities network with Seven European level regional arrangements [60]

Related to T8.7. Report on European scale-up activities to have minimum 80 active cities as active members, connections to and co-operation with existing European cities networks and seven European level regional arrangements (networks).