IRIS

Integrated and Replicable Solutions for Co-Creation in Sustainable Cities

Project Acronym:	IRIS
Project Full Name:	Integrated and Replicable Solutions for Co-Creation in Sustainable Cities
Grant Agreement:	No 774199
Project Duration:	5,5 years (starting 1 October 2017)

Deliverable 8.14

Capacity building activities based on the IRIS smart cities tool box

Work Package:	WP 8: Replication by Lighthouse regions, Follower cities, European market uptake
Task:	T8.2 Replication tools development for capacity building, training and knowledge transfer
Lead Beneficiary:	VAASA
Due Date:	30/09/2022 (M60)
Submission Date:	1/03/2023 (M66)
Deliverable Status:	Final
Deliverable Style:	R
Dissemination Level:	PU
File Name:	D8.14 Capacity building activities based on the IRIS smart cities tool box

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 774199

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Version History

Version	Date	Modifications made by
0.1	30/09/2022	VASEK created the first structure of the deliverable
0.2	31/12/2022	VASEK contribution added
0.3	8/2/2023	UPB, ICEM and CERTH contribution added
0.4	13/02/2023	Version ready for review
0.5	23/02/2023	Updated version according to review comments
1.0	1/03/2023	Final version to be released to the EC

Disclaimer

Executive Summary

Deliverable **D8.14 Capacity building activities based on the IRIS smart cities tool-box** is related to task **T8.2 Replication tools development for capacity building, training and knowledge transfer.** This deliverable aims to present all capacity-building activities carried out during the IRIS project that were based on the IRIS smart cities tool-box in terms of training, disseminating results and knowledge transfer through mentoring, training sessions and workshops.

The document gives an overview of how the IRIS project has worked with capacity building to accelerate the process of implementing smart city solutions in the IRIS Fellow Cities (FC) through replication projects. It is based on the project's replication tool-box, which is presented in deliverable D8.3 (Replication tool box).

The main focus of the IRIS capacity-building activities was on the training and mentorship of the FCs local ecosystems. The activities are organised into the nine elements of the IRIS smart cities tool-box:

1. IRIS deliverables
2. Events
3. Solution Factsheets and Cookbooks
4. Webinars
5. Workshops
6. Meetings
7. Study visits
8. Mentoring visits
9. Peer 2 Peer activities

The organised activities had a significant impact on the preparation of the Fellow Cities (FCs) replication plans and the kick-starting of many projects that are included in the replication plans. Moreover, the activities helped the FCs to engage local stakeholders in the implementation of the replication plans. Furthermore, this report provides valuable information for other European-scale projects, which include replication or capacity-building elements.

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List of Abbreviations and Acronyms

Abbreviation	Definition
API	Application Programming Interface
BIM	Building Information Model
DSO	Distribution System Operator
CIP	City Innovation Platform
CPB	Consortium Plenary Board
DHS	District Heating System
EIB	European Investment Bank
EIP-SCC	The European Innovation Partnership on Smart Cities and Communities
EMS	Energy Management System
ESCO	Energy service company
EU	European Union
FC	Follower City
FIWARE	A curated framework of open source platform components to accelerate the development of Smart Solutions
ICT	Information and Communication Technologies
IS	Integrated Solution
KPI	Key Performance Indicator
LH	Lighthouse
LHC	Lighthouse City
RES	Renewable Energy System
ROI	Return on Investment
SC	Smart City
SCIS	The Smart Cities Information System
SCC	Smart Cities and Communities
SWOT	Strengths, Weaknesses, Opportunities, and Threats

TG	Task Group
TSO	Transmission System Operator
TT	Transition Track
USEF	Universal Smart Energy Framework
WP	Work Package

1 Introduction

1.1 Scope, objectives and expected impact

The deliverable D8.14 is related to T8.2. "Replication tools development for capacity building, training and knowledge transfer" in WP 8 "Replication by Lighthouse regions, Follower cities, European market uptake". The objective of the deliverable is to document all capacity building activities in the IRIS project and to explain how they were carried out and their outcomes and impact. The types of the capacity building activities have been defined in the deliverable D8.3 Replication tool box, which identified many types of actions in terms of training, disseminating results and knowledge transfer through mentoring, training sessions and workshops.

The organised activities had a great impact on the preparation of the Fellow Cities (FCs) replication plans and the kick-starting of many projects that are included in the replication plans. Moreover, the activities helped the FCs to engage local stakeholders in the implementation of the replication plans.

This report is relevant for the IRIS partners in the FCs, but the broader target audiences are organisations with an interest in knowing how the IRIS project achieved the replication results of the project through the actions related to capacity building, training and knowledge transfer. Moreover, they can plan their own capacity building activities.

1.2 Contributions of partners

This deliverable sums up the actions within the project related to capacity building, training and knowledge transfer and was drafted by the following IRIS partners:

Municipality of Vaasa (VAASA), Vaasanseudun Kehitys Oy VASEK (VASEK), National Research & Development Institute for Energy (ICEM), University Politechnica of Bucharest (UPB) and Centre for Research and Technology Hellas (CERTH).

1.3 Relation to other activities

This deliverable is related to the following tasks:

- T8.1 Replication activities planning and roadmap creation
- T8.2 Replication tools development for capacity building, training and knowledge transfer

This deliverable is related to the following deliverables:

- D8.1 A Roadmap for replication of activities
- D8.2 A mentoring roadmap
- D8.15 First update of the mentoring roadmap
- D8.16 Second update of the mentoring roadmap

- D8.3 Replication tool box

1.4 Structure of the deliverable

Chapter 2 presents the methodology for the selection of the activities.

Chapter 3 presents the IRIS capacity building activities.

Chapter 4 presents how this deliverable was used by other IRIS work packages.

Chapter 5 presents the conclusions and recommendations.

Chapter 6 includes the references.

2 Methodology

The main focus of the capacity building activities is on the training and mentorship of the FCs local ecosystem. The preparation of that activities is based on the IRIS capacity building elements that were defined in the deliverable D8.3 Replication tool box:

- IRIS deliverables
  - Main source of information in the project for knowledge transfer
  - Documentation of the demonstrations in the LHCs
- Solution Factsheets and Cookbooks
  -
- Events
  - Important aspect of dissemination in the project
  - Key in creating personal contacts and networks
- Webinars
  - Essential way of presenting information regarding smart city solutions
  - Efficient option during the Covid pandemic, and after in some cases
- Workshops
  - Effective tool for co-creation
- Meetings
  - Necessary for the project to keep things on track
- Mentoring and study visits
  - Creates great impact but requires a lot of preparation to give results
- Peer 2 Peer activities
  - Probably the action that gives most results towards implementation of replication

3 Capacity building activities based on the IRIS smart cities tool box

This chapter presents the capacity building actions carried out in the IRIS project and describes how they were planned, carried out and what kind of results they produced.

3.1 IRIS deliverables

The deliverables of the IRIS project are the main source of information for all the capacity buildings actions for replication and implementation. The public deliverables are published in the IRIS website[1] while the confidential are available to all IRIS partners through the project's private documents repository.

Figure 1 present the structure of the IRIS implementation plan. The implementation activities are divided into 11 work packages dealing with different topics:

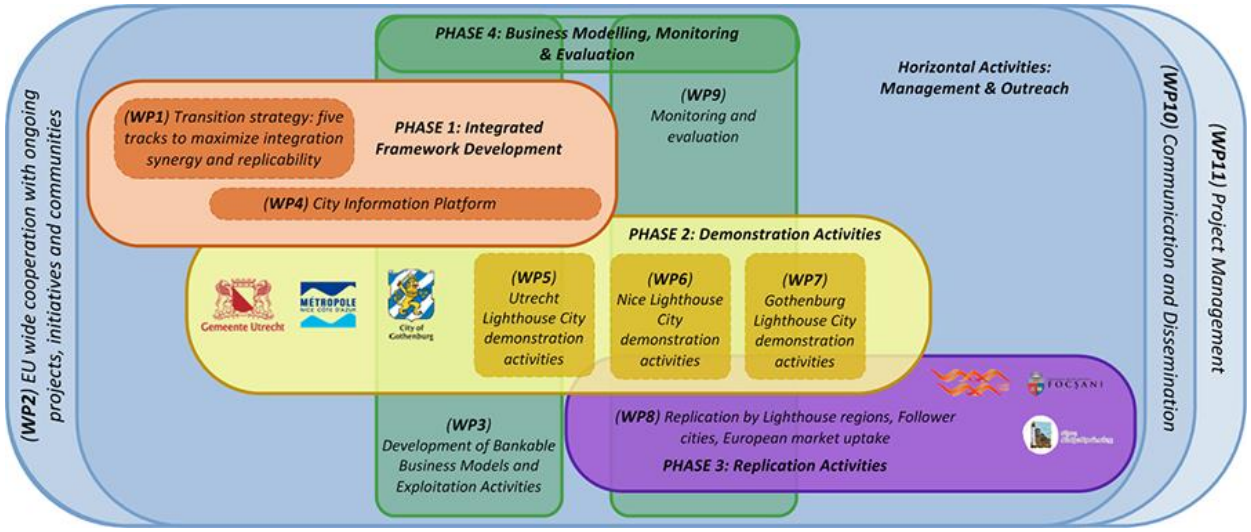

Figure 1 – Structure of the IRIS implementation plan

WP1: Transition strategy: five tracks to maximise integration synergy and replicability
WP2: EU wide cooperation with ongoing projects, initiatives and communities
WP3: Development of Bankable Business Models and Exploitation Activities
WP4: City Innovation Platform
WP5: Utrecht Lighthouse City demonstration activities
WP6: Nice Lighthouse City demonstration activities
WP7: Gothenburg Lighthouse City demonstration activities
WP8: Replication by Lighthouse regions, Follower cities, European market uptake

[1] https://irissmartcities.eu/public-deliverables/

WP9: Monitoring and evaluation
WP10: Communication and Dissemination
WP11: Project Management
WP12: Ethics requirements

Each work package has to summarise its activities and findings and deliver this information to the European Commission. The majority of the deliverables is available to the public while some of them are confidential. Below, there is the list of the deliverables generated by the IRIS project.

WP1: Transition strategy: five tracks to maximise integration synergy and replicability

D1.1: Report on the list of selected KPIs for each Transition Track (TT)
This deliverable contains a list of KPIs that will be used for facilitating the monitoring phase of the demonstrated Solutions and their evaluation. The repository of KPIs will differentiate based on the character of each of the five Transition Tracks (TT) already identified and described in the context of IRIS.

D1.2: User, Business and Technical Requirements of T.T.#1 Solutions
This deliverable summarises the know-how about existing solutions relevant to increase of RES harvesting and utilisation of waste heat streams among partners and their integration with smart components in order to become smart controlled and more replicable on an EU level. The report provides detailed requirements and specification of the corresponding solutions, and recommendations capable of allowing the demonstrated solutions to become more transferable among EU cities.

D1.3: User, Business and Technical requirements of T.T.#2 Solutions
This deliverable summarises the know-how about existing solutions relevant to energy management and storage among partners and at second level their integration with smart components in order to become smart controlled and more efficient. The report provides detailed requirements detailed requirements and specifications of the corresponding solutions, and recommendations capable of allowing a smarter and more efficient grid balancing, not only as concerns the electricity, but also additional energy streams distribution as those of heating/cooling on a city level basis.

D1.4: User, Business and Technical requirements of T.T.#3 Solutions
This deliverable summarises the know-how about existing solutions relevant to mobility schemes promoting RES use and management (e.g. EVs, V2G) among partners and their integration with smart components in order to become smart controlled and more replicable on an EU level. The report provides detailed requirements and specifications of the corresponding solutions, and recommendations capable of allowing the demonstrated solutions to become more transferable among EU cities.

D1.5: User, Business and Technical requirements of T.T.#4 Solutions
This deliverable describes the compliance of the City Innovation Platform (CIP) for each city with existing and developing standards, open protocols, security measures, international initiatives and the EU technical regulations already in force for grid monitoring (e.g. European Smart Grid Task Force for grid monitoring). The report provides detailed input for implementing an open, flexible platform that matches existing and developing initiatives.

D1.6: Report on Citizens requirements from the T.T.#5 Solutions
This deliverable compiles and summarises existing approaches to citizen engagement and parallel co-creation approaches. It examines in detail how the different solutions can include the requirements of

citizens in their development and deployment and will consider the individual characteristics of the targeted citizen populations in each city. A citizen engagement plan has been formulated and described for each demonstration area that includes activities for stimulating and encouraging citizen engagement and for creating appropriate end user profiles that will be used in WP3, 5-7 and 8.

D1.7: Transition Strategy, Commissioning Plan for the demonstration & replication
This deliverable provides a detailed transition strategy plan, comprising of the demonstration, replication and opinions exchange planning among cities / administrations / cities planners and all involved stakeholders, on the basis of the analysis of all the defined solutions in the five IRIS transition tracks. It also includes a commissioning plan that will further be developed and commonly approved by all involved partners, to be used in the demonstrations of the three LH cities.

WP2: EU wide cooperation with ongoing projects, initiatives and communities

D2.1: Lessons learnt though cooperation with other Lighthouse projects
This deliverable summarises the outcome of the IRIS collaboration with other similar European projects. It identifies and analyses barriers and drivers in legislation, regulations and policies as experienced by the LHs and FCs at local, national and European level, and provides recommendations for adaptation, mitigation and lobby addressing specifically the barriers, focusing on barriers that can be addressed effectively within the scope of the project.

D2.2: Report on improvement of existing standards and interoperability issues of ICT
This deliverable summarises the outcome of the IRIS collaboration with other similar European projects and initiatives on standards and interoperability. It presents the related standards, suggestions for adaptation or improvement of standards, and recommendations for interoperability of the ICT and data to ensure that the data can be used in the various systems without extra handling or loss of the significance of related information.

D2.3: Recommendations for KPIs based on CITYKEYS and SCIS (R, PU, M60)
This deliverable summarises the outcome of the IRIS collaboration with other similar European projects on the monitoring end evaluation of smart city projects. It provides recommendations for a complete and meaningful set of Key Performance Indicators (KPIs), as well as for a successful monitoring and impact assessment process.

WP3: Development of Bankable Business Models and Exploitation Activities

D3.1: Learnings from innovative business model adaptation tool
This deliverable provides insight into what factors in the local environment are creating conditions for developing and implementing new business models, and what factors are barriers to such business model development.

D3.2: Sustainable Business Model Dash-board tool
This deliverable provides a dashboard tool where Lighthouse (LHs) and Follower Cities (FCs) can position themselves, in view of helping them generating a Sustainable Business Model (SBM) in the process of replication from LHs to FCs. This tool is intended to identify structural weaknesses in the replication strategy, and how to go beyond in reference with 3 pillars structuring the SBM.

D3.3: European cities and district market analysis

This deliverable contains identified efficient pathways for replication and deployment of IRIS solutions by trending and mapping legal, political, acceptance and financial conditions throughout Europe.

D3.4: SCUIBI-program 3.0 handbook for implementation in IRIS cities & beyond
This deliverable provides a handbook for the implementation of a Smart Cities User Innovation and Business Incubation Program we have developed and implemented in Utrecht, Nice and Gothenburg. The program we present is tried, tested and lessons have been drawn from experience in the three LH-cities. The handbook is ready to implement in the follower cities

D3.5 : IP landscape review
This deliverable explores the Intellectual Property (IP) landscape and the existing IP options related to IRIS project developments. It provides supportive material to be considered by the consortium when taking decisions regarding IP protection implementation.

D3.6: IRIS City innovation management performance and roadmaps
This deliverable aims to enhance the IRIS cities' innovation management capacity. It provides the baseline and the initial performance of the IRIS cities innovation management, showing best practices and Achilles heels. There is also a list of focus areas that relates to all IRIS cities and WP3 implies that it will benefit replication activities if the cities take action on each area. D3.6 also presents a tool that can be used when, in the end of the project, one wants to see the different cities development regarding innovation management. The objective is for the IRIS cities to find means on how to increase their present innovation management performance.

D3.7 : Financing solutions for cities and city suppliers
This deliverable 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.

D3.8 : 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.

WP4: City Innovation Platform

D4.2 Functional & technical requirements for integrated, interoperable and open solutions, standards and new business models
This deliverable presents the standard-based reference CIP architecture and technology stack for connecting, managing and providing large volumes of data and information coming from vertical solutions, platforms and external data sources/partners. The reference architecture contains the foundation for a City Data Market, to provide support for realising integrated solutions, new business models and applications. It also describes the Data Management Framework, including requirements for data governance policies and compliance with security and privacy regulations (GDPR).

D4.3 Data Governance Plan
This deliverable provides a methodology and practical guide to implement a Data Governance Plan in a City Information Platform. It provides information applicable to the different parties involved in the IRIS project in accordance with all the common decisions taken to build the current architecture.

D4.4 Document with technical solution reference architecture for CIP-components
This deliverable describes the business and technical capabilities needed for the CIP. It also contains a description of technical aspect like API's and FIWARE components used.

D4.5 Implementation and integration of core CIP components
A guide for integration and configuration of FIWARE components and source code of the CIP core components and APIs of the CIP platform with technical documentation and test plan.

D4.7 Software updates on CIP-components, standards and processes (version 1 and version 2)
This deliverable describes the everyday operation of the CIP deployed and integrated in the LH cities and the results of the monitoring of the health status and performance of the CIP.

WP5: Utrecht Lighthouse City demonstration activities

D5.1 Report on baseline, ambition & barriers for Utrecht lighthouse interventions
This deliverable provides precise and realistic specification of ambitions, activities and planning for each of the interventions planned, running in parallel and in close cooperation with activities in WP1 on the extraction of requirements for the 5 Transition Tracks, including baseline definition of citizen energy and mobility behaviour, along with setting up of the monitoring principles and early business modelling development.

D5.2 Planning of Utrecht integration and demonstration activities
This deliverable provides the coordination structures and procedures concerning governance, communication, monitoring and impact analysis, local risk assessment, periodic reporting, and planning of Utrecht integration and demonstration activities aligned between Utrecht ecosystem partners.

D5.3 Launch of T.T. #1 Activities on Smart renewables and near zero energy district (Utrecht)
This deliverable describes the progress in Transition Track #1 'Smart renewables and closed-loop energy positive districts' per end 2019 within the IRIS Utrecht demonstration project. Transition Track #1 focuses on seven measures:

- Measure 1: District wide PV
- Measure 2: LT district heating
- Measure 3: HEMS TOON
- Measure 4: NZEB refurbishment
- Measure 5: Smart (hybrid) e-heating systems
- Measure 6: AC/DC home switchboxes
- Measure 7: Smart DC Street Lighting

D5.4 Launch of T.T.#2 activities on Smart energy management and storage (Utrecht)
This deliverable describes the progress in Transition Track #2 Smart energy management and storage for flexibility per end 2019 within the IRIS Utrecht demonstration project. Transition Track #2 focuses on four measures:

- Measure 1: Solar V2G charging points for e-cars
- Measure 2: Solar V2G charging points for e-buses
- Measure 3: Stationary storage in apartment buildings
- Measure 4: Smart energy management system.

D5.5 Launch of T.T.#3 activities on Smart e-mobility (Utrecht)
This deliverable describes the progress in Transition Track #3 in the Smart e-mobility per end 2019 within the IRIS Utrecht demonstration project. Transition Track #3 focuses on two measures:

- Measure 1: V2G E-cars
- Measure 2: V2G e-buses

D5.6 Launch of T.T. #4 activities on CIP and information services (Utrecht)
This deliverable describes the progress in Transition Track #4 in the City Innovation Platform (CIP) and information services per end 2019 within the IRIS Utrecht demonstration project. Transition Track #4 focuses on five measures:

- Measure 1: Monitoring E-Mobility with LoRa network
- Measure 2: Smart Street Lighting with multi-sensoring
- Measure 3: 3D Utrecht City Innovation Model
- Measure 4: Monitoring Grid Flexibility
- Measure 5: Fighting Energy Poverty

D5.7 Launch of T.T. #5 Activities on Citizen Engagement and motivating feedback (Utrecht)
This deliverable describes the progress in Transition Track #5 'Citizen engagement and Co-creation'. This deliverable describes five measures that are developed and implemented in the demonstration area 'Kanaleneiland-Zuid' in Utrecht:

- Measure 1: Community building by Change agents
- Measure 2: Campaign District School Involvement
- Measure 3: Co-creation in Local Innovation Hub
- Measure 4: Campaign Smart Street Lighting
- Measure 5: VR New Home and District Experience

D5.8 Preliminary report on Utrecht lighthouse demonstration activities
This deliverable presents the intermediate results of the Utrecht lighthouse demonstration activities, comparing these results with the ambitions, specifications and planning of the Utrecht demonstration activities defined in D5.1, providing input for fine tuning the Utrecht citizen engagement activities and business models leading to optimisation of Utrecht demonstration and replication activities until the end of the IRIS project.

D5.9: Final report on Utrecht lighthouse demonstration results and lessons learnt
This deliverable presents the final results of the Utrecht lighthouse demonstration activities and compares them with the ambitions, specifications and planning of activities defined in D6.1 and refined in D6.8. The deliverable captures the lessons learnt of all demonstration activities in M1-M66 including citizen engagement and business modelling results and provides input for knowledge dissemination and for optimization of Utrecht solutions and business models, and for replication of the IRIS smart city solutions across and beyond Utrecht city.

WP6: Nice Lighthouse City demonstration activities

D6.1 Report on baseline, ambition & barriers for Nice lighthouse interventions
The deliverable identifies the strengths and weaknesses, opportunities and threats of the Nice LH ecosystem and generates guidelines for the development of the IRIS action plan. In parallel and close cooperation with activities in WP1, the report includes citizen energy and mobility behaviour issues in view of defining early business modelling development.

D6.2 Planning of Nice integration and demonstration activities
This deliverable defines the optimal coordination, collaboration and communication between the Nice ecosystem partners and involved stakeholders, supporting optimal preparation and implementation of all foreseen Nice lighthouse interventions.

D6.3 Launch of T.T.#1 activities on Smart renewables and near zero energy district (Nice)
This deliverable describes the progress in Transition Track #1. The applied solutions concern:

- Measure 1: Collective self-consumption at building scale combining locally produced solar PV electricity and battery storage
- Measure 2: Optimisation of heating load curve
- Measure 3: Commissioning process from the design to the operation
- Measure 4: Dashboard to raise environmental awareness

D6.4 Launch of T.T.2 activities on Smart energy management and storage for flexibility (Nice)
This deliverable describes the progress in Transition Track #2 in Nice and its associated use cases and functionalities. The measures described are:

- Measure 1: IS 2.1 – Flexible electricity grid networks
- Measure 2: IS 2.2 – Smart multi-sourced low temperature district heating with innovative storage solutions
- Measure 3: IS 2.3 – Utilising 2nd life batteries for smart large-scale storage schemes

D6.5 Launch of T.T. #3 activities on Smart e-mobility (Nice)
This deliverable describes the progress in Transition Track #3 in Nice and its associated use cases and functionalities. The measures described are:

- Measure 1: Smart – Solar – V2G EVs charging
- Measure 2: Innovative Mobility Services for the Citizens

D6.6 Launch of T.T. #4 activities on City Innovation Platform and information services (Nice)
This deliverable describes the progress in Transition Track #4 in Nice and its associated use cases and functionalities. The measures described are:

- Measure 1: Sensors data collection in air quality
- Measure 2: BIM/CIM data display
- Measure 3: Data control and monitoring for Smart e-mobility
- Measure 4: Data interoperability with energy cloud

D6.7 Launch of T.T. #5 Activities on Citizen Engagement and motivating

This deliverable describes the progress in Transition Track #5 in Nice and its associated use cases and functionalities. The measures described are:

- Measure 1: Public awareness campaign Air Quality
- Measure 2: Public awareness campaign Energy – School & Collège; Youth & Family
- Measure 3: Citizens individual engagement – IoT invoices

D6.8 Preliminary report on Gothenburg lighthouse demonstration activities
This deliverable presents the intermediate results of the Nice lighthouse demonstration activities, comparing these results with the ambitions, specifications and planning of the Nice demonstration activities defined in D6.1, providing input for fine tuning the Nice citizen engagement activities and business models, leading to optimisation of Gothenburg demonstration and replication activities until the end of the IRIS project.

D6.9: Final report on Nice lighthouse demonstration results and lessons learnt
This deliverable presents the final results of the Nice lighthouse demonstration activities and compares them with the ambitions, specifications and planning of activities defined in D6.1 and refined in D6.8. The deliverable captures the lessons learnt of all demonstration activities in M1-M66 including citizen engagement and business modelling results and provides input for knowledge dissemination and for optimization of Nice solutions and business models, and for replication of the IRIS smart city solutions across and beyond Nice city.

WP7: Gothenburg Lighthouse City demonstration activities

D7.1 Report on baseline, ambition and barriers for Gothenburg lighthouse interventions
This deliverable provides precise and realistic specification of ambitions, activities and planning for each of the interventions planned, running in parallel and in close cooperation with activities in WP1 on the extraction of requirements for the 5 Transition Tracks, including baseline definition of citizen energy and mobility behaviour, along with setting up of the monitoring principles and early business modelling development.

D7.2 Planning of Gothenburg integration and demonstration activities
This deliverable provides the coordination structures and procedures concerning governance, communication, monitoring and impact analysis, local risk assessment, periodic reporting, and planning of Gothenburg integration and demonstration activities aligned between Gothenburg ecosystem partners.

D7.3 Launch of T.T.#1 activities on Smart renewables and near zero energy district (Gothenburg)
This deliverable explains the work to date to achieve the demonstrators under Transition Track #1 in Gothenburg in the IRIS project. The deliverable covers seven measures in the two sites Riksbyggen Brf Viva and HSB Living Lab:

- Measure 1: Demonstration of at least 200 kWh electricity storage in 2nd life batteries powered by 140 kW PV
- Measure 2: Demonstration of heating from geo energy with heat pumps (2-300 m deep boreholes)]
- Measure 3: Demonstration of cooling from geo energy without chillers
- Measure 4: Demonstration of local energy storages consisting of water buffer tanks, structural (thermal inertia of the building) storage and long-term storage in boreholes

- Measure 5: Demonstration of seasonal energy trading (cooling in summer season) with adjacent office block
- Measure 6: Development and demonstration of advanced Energy Management System to integrate PV, DH, grid and all abovementioned storage options to achieve peak shaving and minimal environmental impact]
- Measure 7: Demonstration of how Building Integrated Photovoltaics (BIPV) can be used in facade renovation process

D7.4 Launch of T.T. #2 Activities on Smart energy management and storage for flexibility (Gothenburg)
This deliverable describes the preparation and launch of activities performed in Transition Track #2 (Smart energy management and storage for flexibility) in Gothenburg. The measures described are:

- Measure 1 Demonstration of A 350 V DC building microgrid utilising 140 kW rooftop PV installations and 200 kWh battery storage
- Measure 2 Demonstration of a low temperature DH 45/30 system for six buildings
- Measure 3 Demonstration of A 1700 kWh PCM (Phase Change Material) cooling storage.
- Measure 4 Demonstration of integration and evaluation of a 200kWh energy storage

D7.5 Launch of T.T. #3 Activities on Smart e-mobility (Gothenburg)
This deliverable describes the preparation and launch of activities performed in Transition Track #3: (smart e-mobility) in Gothenburg. A new Mobility as a Service (MaaS) concept called EC2B ("Easy to be" or "Easy to B") is implemented in Gothenburg with two specific measures:

- Measure 1: EC2B for tenants in Brf Viva
- Measure 2: EC2B for employees on Campus Johanneberg

D7.6 Launch of T.T.# 4 activities on City Innovation Platform and information services (Gothenburg)
This deliverable describes the preparation and launch of activities performed in T7.6, Demonstrating Transition Track #4: City Innovation Platform of the IRIS project. The measures described are:

- Measure 1: The City Information Platform
- Measure 2: The Energy Cloud

D7.7 Launch of T.T. #5 Activities on Citizen engagement and motivating feedback (Gothenburg)
This deliverable describes the preparation and launch of activities performed in T7.7, Demonstrating Transition Track #5: Demonstrating citizen engagement and motivating feedback of the IRIS project. The measures described are:

- Measure 1: Minecraft as a dialogue tool for citizen engagement
- Measure 2: Min Stad (My City) as a dialogue tool for citizen engagement
- Measure 3: Demonstration of a VR/AR visualisation of BIM and sensor data
- Measure 4: Demonstrating citizen engagement and motivating feedback; Personal Energy Threshold (PET)

D7.8 Preliminary report on Gothenburg lighthouse demonstration activities
This deliverable presents the intermediate results of the Gothenburg lighthouse demonstration activities, comparing these results with the ambitions, specifications and planning of the Gothenburg demonstration activities defined in D7.1, providing input for fine tuning the Gothenburg citizen engagement activities and

business models, leading to optimisation of Gothenburg demonstration and replication activities until the end of the IRIS project.

D7.9: Final report on Gothenburg lighthouse demonstration results and lessons learnt
This deliverable presents the final results of the Gothenburg lighthouse demonstration activities and compares them with the ambitions, specifications and planning of activities defined in D7.1 and refined in D7.8. The deliverable captures the lessons learnt of all demonstration activities in M1-M66 including citizen engagement and business modelling results, and provides input for knowledge dissemination and for optimization of Gothenburg solutions and business models, and for replication of the IRIS smart city solutions across and beyond Gothenburg city.

WP8: Replication by Lighthouse regions, Follower cities, European market uptake

D8.1 A Roadmap for replication of activities
The roadmap presented in this document will guide replication actions, both for LH cities, and FCs in the IRIS project. It is the main document in guiding FCs to produce replication plans and to move forward step by step in the process of replicating the integrated solutions demonstrated by the lighthouse cities in the IRIS project.

D8.2 A mentoring roadmap (D8.15 first update, D8.16 second update)
This deliverable presents the mentoring actions for knowledge exchange and capacity building for the FCs in their replication projects. Moreover, the deliverable contains all the mentoring activities in the IRIS project.

D8.3 Replication tool box
This deliverable presents the project's exploitable results available for post-project and beyond-project continuation for capacity building, training and knowledge transfer. The deliverable gathers all tools available for replication activities in the IRIS project, together with explanations of what the tools are, when they can be used, how they are to be used and also when, and to whom, they are available.

D8.4 Vaasa replication plan
This deliverable provides a planning template for potential replication actions and development projects for Vaasa's ecosystem. Additionally, the Deliverable strives to prioritise the potential replication activities, to promote Vaasa's decarbonisation aspirations with well-described and feasible integrative solutions, to describe the risks involved, and to provide implementation of KPIs monitoring plan. Moreover, this replication report focuses on removing obstacles from investments and capital expenditure planning, by providing visibility and technical assistance about the integrated solutions. It also provides knowledge, technical assistance and visibility for replication activities in wider perspective for key stakeholders, and utilises the latest and established financial resources.

D8.5 Vaasa North-Eastern Europe Implementation Guideline
This deliverable presents an update to the FC Vaasa's replication plan. It documents the city's journey in becoming a smart city during the IRIS project and to work as a guideline to Nordic region cities on their path to becoming smart cities. Moreover, the deliverable provides set of actions, specific guidance and general guidelines for Northeastern Europe region that can be used for development and implementation of smart city projects.

D8.6 Alexandroupolis replication plan

This deliverable aims to support the city of Alexandroupolis to implement innovative, IRIS inspired, measures by providing technical assistance and visibility. The document provides with a detailed list of prioritised selected solutions to be implemented in Alexandroupolis city, answering the recognised local challenges and needs. It provides with specifications of the replication activities and assessment of the techno-economic feasibility, as well as financing opportunities and knowledge gap identification. Alexandroupolis' Replication Plan is the first coherent smart city plan of the city of Alexandroupolis.

D8.7 Alexandroupolis Southeastern Europe implementation guideline

This deliverable presents an update to the FC Alexandroupolis' replication plan. It documents the city's journey in becoming a smart city during the IRIS project and to work as a guideline to South-Eastern Europe region cities on their path to becoming smart cities. Moreover, the deliverable provides set of actions, specific guidance and general guidelines for South-Eastern Europe region that can be used for development and implementation of smart city projects.

D8.8 Santa Cruz de Tenerife replication plan

This deliverable represents the initial smart city plan of the city of Santa Cruz de Tenerife. It defines the foundations for project development and implementation regarding every single one of the selected measures based on the integrated solutions demonstrated by the IRIS Lighthouse cities. The document presents in a structured way the set of actions to be deployed across the city during the coming years regarding the smart city plan of the municipality with the following subsequent objectives; carbon footprint reduction according to SCT's SECAP, improving mobility issues of the city as the main citizenship's concern, creating conditions for new business models and boost employment based on innovative public services and infrastructures, refining the innovation culture of the municipality and increasing citizens' participation in the local public policies.

D8.9 Santa Cruz de Tenerife Southwestern Europe implementation guideline

This deliverable presents an update to the FC Santa Cruz de Tenerife replication plan. It documents the city's journey in becoming a smart city during the IRIS project and to work as a guideline to South-Western Europe region cities on their path to becoming smart cities. Moreover, the deliverable provides set of actions, specific guidance and general guidelines for South-Western Europe region that can be used for development and implementation of smart city projects.

D8.10 Focsani replication plan

This deliverable presents the replication projects that can be implemented in the city of Focsani using the IRIS experience, especially experience of the Lighthouse cities. The document provides with a detailed list of prioritised selected solutions to be implemented in Focsani city, answering the recognised local challenges and needs. It provides to Municipality well-structured and defined plan for implementation.

D8.11 Focsani South-Central Europe implementation guideline

deliverable presents an update to the FC Focsani's replication plan. It documents the city's journey in becoming a smart city during the IRIS project and to work as a guideline to South-Central Europe region cities on their path to becoming smart cities. Moreover, the deliverable provides set of actions, specific guidance and general guidelines for South-Central Europe region that can be used for development and implementation of smart city projects.

D8.12 European level replication plan

This deliverable presents the IRIS project's role in activating cities in Europe into smart city networks. The deliverable aims to facilitate the replication activities on a European level by supporting actions that

remove obstacles to investment, provide visibility and technical assistance to investment and replication, and make smarter use of new and existing financial resources.

D8.13 Establish & operate IRIS European smart cities network with 7 European level regional arrangements
This deliverable presents how IRIS has remained active in activating a number of cities within Europe and outside by enhancing their understanding, knowledge sharing and providing assistance in their quest to becoming smart cities.

D8.14 Capacity building activities based on the IRIS smart cities tool-box
This deliverable presents all capacity building activities carried out during the IRIS project that were based on the IRIS smart cities tool-box in terms of training, disseminating results and knowledge transfer through mentoring, training sessions and workshops.

WP9 – Monitoring and evaluation

D9.1 Data Management Plan (Including the updates presented in D9.8, D9.9, D9.10 and D9.11)
This deliverable gives an early Data Management Plan based on the initial definition of KPIs. The DMP describes the data management life cycle for the data to be collected, processed and / or generated, and includes information on the handling of data during and after the end of the project; what data will be collected, processed and/or generated; which methodology and standards will be applied; whether data will be shared/made open access; and how data will be curated and preserved (including after the end of the project). The early strategy also gives recommendations to ensure privacy and security of sensitive information.

D9.2 Report on monitoring and evaluation schemes for integrated solutions (Updated version)
Report on the KPIs and target numbers in relation to the all-embracing monitoring program, designed to be able to evaluate the effectiveness and impact of the cities proposed integrated solutions at different time horizons, including necessary harmonisation of metrics. The report will also contain an evaluation plan based on defined KPIs as well as a defined monitoring program, which is necessary to create a baseline for later reference.

D9.3 Report on data model and management plan for integrated solutions
Report with definitions on the monitoring infrastructure and comprehensive data collection approach and model which are needed for coordination and supervision of information collection.

D9.4 Report on unified framework for harmonised data gathering, analysis and reporting
Report on the design, development and deployment of the project unified monitoring and evaluation framework for that will allow smooth and integrated data gathering from all the LH cities, enabling the monitoring, post-processing, visualisation and permitting easy sharing and cooperation between the consortium partners.

D9.5 Report on monitoring framework in LH cities and established baseline
D9.5 is the result of 2 years of work with several iterative processes involving the LH cities and their partners with the ultimate goal to: (1) Define a set of Key Performance Indicators (KPIs) which evaluate the effectiveness and impact of the cities proposed measures, (2) Setup monitoring plans for each IS to define how each parameter is being measured to ensure that the KPIs can be calculated and (3) Define how the baseline and the targets are defined and measured.

D9.6 Intermediate report after one year of measurement
This deliverable provides the early results on the impact of actions carried out in the IRIS LH cities. Based on the initial KPIs defined and through continuous analysis and evaluation of the results, along with the impact analysis, this deliverable will give an early indication on the effective potential of each integrated solution and technology implemented in the LHs.

D9.7: Report on evaluation and impact analysis for integrated solutions [64]
This deliverable provides the final report on the impact of all actions carried out in the IRIS LH cities.

WP10 – Communication and Dissemination

D10.1 Communication and dissemination plan with conference agenda (Including the updates D10.10 and D10.11)
A framework document and strategy for effective and relevant local, national and European communication and dissemination across multiple channels. Facilitates a network of core communications contacts and locally generated content to engage citizens and stakeholders in sustainable change and boost demand for smart city solution replication.

D10.2 Corporate identity design and guide
Coordinated and clear visual identity for the project. Easy identification and understanding of key project goals, outputs and potential.

D10.3 First version of website and key social media channels online
Report on the establishment of the first version of the IRIS project website and the accompanied IRIS online social media channels to distribute IRIS content to interested media, specialist and public audiences. Basis for coordinated digital outreach and impact across multiple platforms. Development of social media to distribute IRIS content to interested media, specialist and public audiences.

D10.4 Interim social media and content distribution monitoring report
The deliverable presents the outcome of the IRIS project's online activity until month 30 and recommendations on how to improve its digital strategy. The IRIS project achieved its C&D goals for the reporting period, as it managed to establish its presence in the field of smart and sustainable cities (be visible) and to exploit the achieved results so far by distributing more editorials, articles and deliverables (be credible).

D10.5 Final social media and content distribution monitoring report
The deliverable presents the outcome of the IRIS project's online activity until month 66.

D10.6 Interim report on national and international conferences
The deliverable provides an overview of IRIS representation and participation in international and national events, including webinars, with the aim to evaluate and where possible, improve the contribution of the communication and dissemination actions at international and national events and webinars.

D10.7 Final report on national and international conferences [64]
This deliverable presents summarises the results of the participation of IRIS partners in specific national and international event and conferences.

D10.8 Report on local news desks and citizen journalism programs

This deliverable presents the key initiatives and lessons learned in fostering culturally appropriate local communications that drive sustainable behaviour change and demand for smart city solutions. Highlights peer to peer exchange, video content and citizen generated content and social media impact.

D10.9 Communication and dissemination tools and materials [60]
This deliverable presents the project's key communication tools to circulate, share and create awareness in person.

D10.12 Communication highlights, insights and lessons learnt from IRIS [64]
This deliverable presents best practices for communicating in and around smart city initiatives in Europe. A practical set of key takeaways for long-term engagement and uptake.

WP11 - Project Management

Although the WP11 is related to the project's management activities, it contains a deliverable that it is extremely useful for the FCs.

D11.5 Quality Assessment Plan, Risk Assessment and Contingency Plans (including the updates D11. 19 and D11.20)
This deliverable presents the project's Quality Assessment planning, as well as the risk assessment analysis and the corresponding contingency planning for each identified risk.

3.2 Solution Factsheets and Cookbooks

The IRIS partners created two solution factsheets, which provide in-depth information on the following IRIS solutions:

- Mobility as a Service (MaaS) in Gothenburg
- Battery Energy Storage Systems - Experiences in IRIS Lighthouse Cities

Moreover, Utrecht University coordinated the creation of eight cookbooks, which provide "recipes" for the following topics:

- FIWARE (Digital) hackathon
- Startup in Residence Utrecht
- ChangeU Student Hackathon
- Citizen Innovation Challenge
- Energy Poverty Challenge
- Gothenburg Smart City Challenge
- Smart Lighting Challenge
- Utrecht Mobility Challenge

The factsheets and the cookbooks are available on the IRIS website (https://irissmartcities.eu/solution-factsheets/)

3.3 Events

Throughout the IRIS project events have been arranged both for the project partners, but also for target groups outside the project. These events have been focused on networking, workshops and presentation of results and demonstrations.

The events arranged by the IRIS project have proven to be a valuable tool for capacity building, especially during the Covid pandemic when arranging physical meetings was difficult if not impossible.

Key replication events arranged by the IRIS project:

- IRIS Kick-off meeting:
  Utrecht, The Netherlands, 23-25.10.2017
- IRIS Consortium meetings:
  Gothenburg, Sweden, 27-29.03.2018
  Métropole Nice Côte d'Azur, France, 16-18.10.2018
  Vaasa, Finland 4-6.06.2019
- IRIS Site Management and Replication Board meetings (online):
  Monthly or bi-monthly meetings starting on 9.02.2021 and lasting until the end of 2022.
- IRIS Site Management and Replication Board meetings (offline):
  Métropole Nice Côte d'Azur, France, 28-30.09.2022 during Transition Forum event
- European Week of Regions and Cities:
  Joint session with FCs of other projects on Positive Energy Districts as Innovation Ecosystems for climate-neutrality: customised Connections - Competence – Capital, online, 12.10.2021
- Scalable Cities community event: Moving from solutions to system change:
  Utrecht, The Netherlands, 1-2.06.2022
- IRIS Smart Cities – Final Celebration, Gothenburg, Sweden, 7-8.03.2023

Figure 2 - Presentation in the Scalable Cities event: Moving from solutions to system change

3.4 Webinars

Webinars are an excellent tool for capacity building, but during the Covid pandemic the webinars as a tool took a real development leap for the better.

The IRIS project has actively throughout the project arranged and produced webinars for capacity building.

Webinars arranged by the IRIS project (https://irissmartcities.eu/webinars/):

- Grid Flexibility: An antidote to relieve pain in the changing energy system? 08.10.2018
- A new lease of life: 2nd generation batteries in residential buildings, 02.05.2019
- Vehicle 2 Grid (V2G) technology, 23.09.2019
- How numerical software tools support the creation of replication plans in smart cities energy projects, 17.12.2019
- Developing & applying a successful Mobility As A Service (MaaS) business model, 24.03.2020
- A Paradigmatic Shift in Citizen Engagement, 22.04.2020
- City Innovation Platforms: applications in energy efficiency and environmental risk, 15.07.2020
- Battery Energy Storage Systems, 08.12.2020

- Smart City Business Models – How to boost sustainable innovation and make it a financial success! 04.02.2021
- Creating Smart City Business Models through Ideation Tools and Business Incubation, 20.01.2022
- Urban Data Platforms-Experiences from the IRIS LH Cities, 28.11.2022

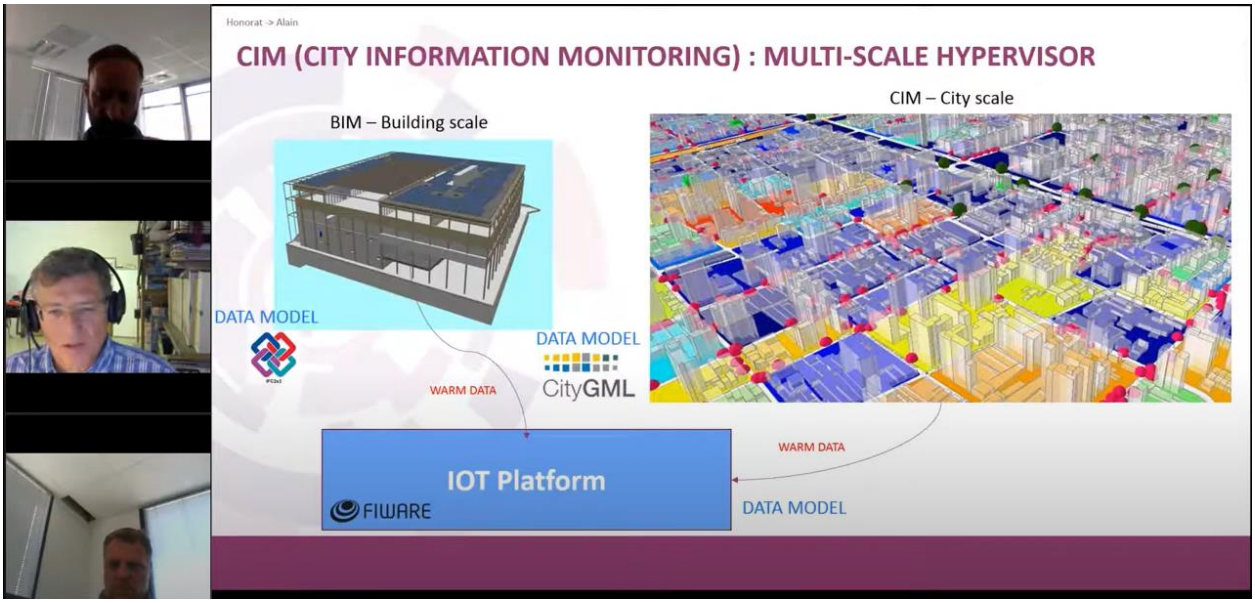

Figure 3 – Webinar on City Innovation Platforms: applications in energy efficiency and environmental risk

3.5 Workshops

Workshops, both face-to-face and online, were an integral part of the successful replication process for the FCs in the IRIS project and were arranged on a regular basis in the project.

All project meetings were used for arranging workshops throughout the project, mostly during consortium meetings and online during the site management and replication board meetings, but also always in connection to visits.

Workshops always require quite a lot of preparatory work to be efficient and to be able to produce results for the process. But also a lot of post-workshop work was required to utilise the results from the workshops for the project.

Figure 4 - Partners working in groups in an IRIS Workshop

Figure 5 - Another example of the working process in an IRIS workshop

3.6 Meetings

The concept of “all aboard” is essential to reach satisfactory results in a replication process, the meetings of the project worked as the glue that kept the consortium together and kept things moving forward at all time. Thanks to motivated partners in the project attendance in the meetings was always good, and the meetings always held a high level of quality thanks to good preparatory work from the project coordinators. Using many different tools for engagement and co-creation during project meetings also benefited the project and the replication process greatly. The project partner HKU was a key factor in making the meetings interesting and productive, resulting in creating results that were valuable for the next steps.

Figure 6 - A presentation in an IRIS meeting

3.7 Study visits

Study visits was one of the most successful parts of accelerating the replication process in the FCs, but required the most effort. Identifying key experts and stakeholders in the FCs to engage before, during, and after the visits was a crucial factor which required a lot of effort from both the FCs and the LHs. Study visits are carried out all the time in all kinds of projects, but too often what is seen and learnt is not implemented

when going back home. If a study visit is to create real impact in the visiting city a process needs to be worked through before going. This process is detailed in the replication roadmap (D8.1 : A Roadmap for replication of activities) and replication toolbox (Deliverable D8.3: Replication tool box) of the IRIS project where the ecosystems for innovation and implementation are mapped and developed in the FCs. Having the right people on a study visit is key to being able to implement bring home and implement what is seen and learnt. For this, it is essential that the necessary experts and stakeholders are identified, engaged in the preparation of the study visit, and participants in the study visit. This requires a functioning ecosystem for innovation and implementation of smart city solutions in the FCs.

Each IRIS Lighthouse city organised a study visit for the FCs. Besides the IRIS partners from each FC many local stakeholders participated, which were also involved in the implementation of the Replication Plans. See Annex 1 for more information on the Study Visits and the topics addressed.

Figure 7 - Study visit in Utrecht LH city

Figure 8 - Study visit in Henriëttedreef social housing building in Utrecht LH city

3.8 Mentoring visits

Due to the Corona pandemic during the time of the project, the mentoring visits had to be replaced by digital on-line visits and additional peer 2 peer meetings between key persons, experts and stakeholders.

The project coordinators arranged online visits to all FCs and mentored them in the replication project processes, and additional project partners and horizontal package leaders mentored the FCs in different areas such and financing of replication projects and citizen engagement methods.

3.9 Peer 2 Peer activities

Peer 2 Peer activities was perhaps the most important key for successful replication results for the FCs in the IRIS project. As mentioned earlier also the peer 2 peer activities were heavily dependent on functioning ecosystems for innovation and implementation of smart city solutions in the FCs. If the FCs wouldn't have worked hard on their ecosystems in the beginning of the project it would have been difficult, if not impossible, to carry out peer 2 peer activities resulting in real impact and results for smart city development in the FCs.

A large number of peer 2 peer activities were done during the IRIS project, and they are all presented in the mentoring roadmap and its updates in the following deliverables:

- D8.2 A mentoring roadmap
- D8.15 First update of the mentoring roadmap
- D8.16 Second update of the mentoring roadmap

The importance of experts on the same level within the same field meeting cannot be stressed enough for the replication process.

Figure 9 - Peer to Peer activity in Utrecht

4 Output to other work packages

As this deliverable summarises capacity building actions throughout the project and is finished by the end of the project, the output towards other work packages is minimal.

Most output from this deliverable will be for post-project replication actions and for other projects and cities interested in the replication process of the IRIS project and what capacity building activities that were carried out in order to reach the replication results of the project.

5 Conclusions

This chapter concludes the results from the capacity buildings actions of the IRIS project and presents lessons learned and reflections from experiences gathered in the project.

5.1 Conclusions

The first and most important conclusion is that communication and people engagement is required to reach any kind of capacity building results for smart city solutions. Stakeholder and innovation management is of great importance and also challenging. Without the right people engaging and receiving communication about what the solutions implemented are, and how they came to be, nothing will happen.

Continuous communication is needed to keep up a required level of activity from all sides to be able to share knowledge and increase the capacity with the receiving end, in this case the FCs.

The need for the LHs to all the time keep the FCs updated on what was going on in the demonstrations was really important, and also easily forgotten as implementing innovative smart city demonstrations is a very demanding task that easily consumes all focus and resources available. There needs to be functions in place to share information about on-going processes and not just the results when those are reached. IRIS identified the main functions (i.e. deliverables, events, webinars, workshops, etc.) and used them to facilitate the knowledge exchange between the LH and FCs.

The knowledge transfer and capacity building activities supported the ecosystem development in the IRS FCs. By engaging a broader number of stakeholders (apart from the IRIS partners), including city officials, planners, engineers, and technology providers, these activities helped them to acquire new skills and knowledge about smart city technologies, applications, and governance. Moreover, the capacity building activities fostered collaboration among different stakeholders. The primary outcome was a better understanding of how to plan, design, implement, and maintain smart city solutions that meet the needs and expectations of the citizens. By leveraging the IRIS knowledge and resources, the local stakeholders can support the implementation of the replication plans and co-create new innovative solutions that address urban challenges.

5.2 Recommendations

Key lessons learned and take-aways from the capacity building actions within the IRIS project for other (Fellow) cities:

- There are no turn-key replicable solutions. Replication is a lot more complicated than expected and is much broader than just technical and financial aspects. Therefore,
    - replication needs all aboard!
    - make sure to engage Fellow Cities from the beginning: be in contact and start preparing replication activities from day one to enable FCs to learn from LHCs on a regular basis.

- Communicate the project in the FC ecosystem actively: this requires marketing materials! Also, consider the language barrier and prepare the materials in the local language.
- As Peer-2-Peer learning is most effective, start identifying and engaging key local stakeholders in the FC innovation eco-system from day one! (See for guidance the Scalable Cities report on Systemic Changes in Governance - Equipping local governments for realising climate-neutral and smart cities, Jan 2023). Consider also that Peer 2 Peer meetings need more pre and post work than anticipated.
- Create a good baseline in FCs, that connects the project to the city vision, strategies and other programs, building on existing processes, city targets and plans.
- Citizen engagement is very important and needs to be a part of every step in the process of replication.
- Acknowledge that replication projects have a tendency to change and take new directions.

6 References

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Annex 1 – Study visits topics

Utrecht Study Visit for Fellow Cities	
Date:	Tuesday 31st of May, Thursday 2nd of June, 2022
Capacity Building Part 1: Plenary presentation followed by short Q&A. Tuesday 31st of May	
11.00-11.30	**Session 1.1: Strategies for Zero Emission Mobility in Utrecht** Policy mix of promotion of active transportation, electrification of transport, charging infrastructure roll-out, low emission zones. Speaker(s): **Matthijs Kok** (Senior policy advisor electric mobility)
11.30-12.00	**Session 1.2: Policies, planning and design for cycling in Utrecht** Speaker: **Herbert Tiemens** (Senior policy advisor cycling)
12.00-12.30	**Session 1.3: Traffic Management in Utrecht** Traffic management and traffic control center: infrastructure and operations of traffic lights, video cameras, public lightning etc. Speaker(s): **Huib Beets** (Senior advisor traffic management)
12.30-14.00	Lunch with topical roundtables Utrecht / Fellow City colleagues • **Table 1**: Herbert Tiemens and cycling policies • **Table 2**: Matthijs Kok on zero-emission mobility • **Table 3**: Huib Beets on traffic management
Capacity Building Part 2: Parallel site visits to Utrecht sites. Tuesday 31st of May	
14.00-17.00	**Site visit 2.1**: **Smart Charging of Electric Buses**: Participants will take the tramline to the Qbuzz bus depot in Utrecht Westraven. Qbuzz operates about 65 zero emission buses in Utrecht and uses smart charging strategies to optimise their operations towards sustainability. Speaker/Host: **Tim van Twuijver (QBuzz)**
	Site visit 2.2: **Utrecht Bidirectional Charging Ecosystem**: Participants will visit highlights of the bidirectional charging ecosystem visiting bidirectional charging infrastructures, V2G-shared car systems and stationary batteries, functioning together as a Virtual Powerplant. Speaker/Host: **Robin Berg (Lomboxnet), Matthijs Kok**
	Site visit 2.3: Urban densification, cycling-friendly and multi-modal mobility: Guided walk through the inner-city densification projects Beurskwartier and the largest multi-modal hub of the NL, visiting underground bicycle parking for more than 25 000 bicycles, public transport facilities and surrounding urban development projects Speaker/Host: **Bart Budel**

Capacity Building Part 3: Parallel site visits to Utrecht sites. Thursday 2nd of June	
9.00-11.00	1. **Utrecht Lighthouse demo: Bidirectional Charging Energy system:** guided bike ride through highlights of the bidirectional charging ecosystem visiting bidirectional charging infrastructures, V2G-shared car systems and stationary batteries in the Utrecht Lighthouse district Kanaleneiland, functioning together as a Virtual Powerplant. 2. **Urban densification and multi-modal mobility**: a guided walk through the inner-city densification projects Beurskwartier and the largest multi-modal hub of the Netherlands visiting underground bicycle parking for more than 25 000 bicycles, public transport facilities and surrounding urban development projects. 3. **First high-rise retrofitted Positive Energy Building**: participants will visit by bike the Henriëttedreef apartment building. In 2021 this 10-story high social housing block was renovated towards a Positive Energy Building with an electricity surplus to the grid. During the tour participants will be able to visit the building. 4. **Utrecht Lighthouse demo: Inclusive energy transition – co-creation with citizen**: many smart city projects face challenges in the mismatch between citizen needs and smart city solutions. We need to shift our thinking and start with the citizen. Design approaches give us a tool. During this guided walk through the Lighthouse demo district Kanaleneiland we will learn and discuss how to connect with citizens and co-create future districts together.

Nice Study Visit for Fellow Cities

Date:	Thursday 29th of September, 2022
Site visits' round 1	
14.00-16.00	• Visit #1: Energy Tour to the IMREDD building • Visit #2: Geothermal network • Visit #3: City Innovation Platform and Innovation Management
Site visits' round 2	
16.00-18.00	• Visit #1: Energy Tour to the IMREDD building • Visit #2: Geothermal network • Visit #3: City Innovation Platform and Innovation Management

Gothenburg Study Visit for Fellow Cities

Date:	Thursday 9th of March 2023
Site visits	
9:00 – 12:00	1. **Electric Public Transport** (Group 1 and 3 share the same start of the study tour and split up when we get to Lindholmen.) We meet at A Working Lab, Sven Hultins Plats 5 (the red building where we were the day before) where we get a presentation of ElectriCity - Gothenburg's collaborational effort to electrify the public transport before entering the electric bus that takes us to Lindholmen. When we arrive we have coffee and listen to a presentation of Lindholmen Science Park. Ericsson will showcase prototypes of 5G connected bicycle and 5G connected autonomous bicycle ferry before we walk together to the ferries taking passengers across the river. Here, public transport company, Västtrafik, will present how they are working to electrify its vehicles, including ferries. We take the ferry across the river and go together by public transport back to Johanneberg Science Park. 2. ***Energy efficient buildings*** We meet in the golden building at Sven Hultins Plats 1-2 (across the street from where we were the day before). Per Löveryd, Akademiska Hus, presents the energy system on campus, before we walk together up the hill to Brf Viva (10 min walk), where we have coffee. Pierre Hult, Riksbyggen, presents the energy system at Viva. We then take a walk around the buildings, look at the battery room and peek into one of the apartments. We then walk to HSB Living Lab (15 min walk) and listen to a presentation by Evdoxia Kouraki, Johanneberg Science Park. Then we take a tour around the house, before walking back to A Working Lab (5 min walk) where Per Löveryd will show us the PCM energy storage and solar panels. 3. ***Digital twins and platforms*** (Group 1 and 3 share the same start of the study tour and split up when we get to Lindholmen.) We meet at A Working Lab, Sven Hultins Plats 5 (the red building where we were the day before) where we get a presentation of ElectriCity - Gothenburg's collaborational effort to electrify the public transport before entering the electric bus that takes us to Lindholmen. When we arrive we have coffee and listen to a presentation of Lindholmen Science Park. We then enter into the Visual Arena where we will get a demonstration of Gothenburg's digital twin and a discussion about the city's efforts into digitalisation.