Developing a Strategy for the Implementation of ICT in Energy Efficient Neighbourhoods

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A3: Smart Energy Solutions

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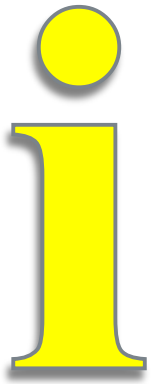


- Introducing IREEN (Overview, Scope, Partners)
- Methodology
- First Results (Use Cases, Future Scenarios, Roadmap)
- Participation

IREEN: ICT Roadmap for Energy Efficient Neighbourhoods

- A Coordination Action (CA) funded by DG Connect (Directorate General for Communications Networks, Content and Technology)
- IREEN will deliver a comprehensive strategy for European-scale innovation and take-up in the field of ICT for energy-efficiency in neighbourhoods

Roadmap and strategy for digitally driven and information enabled Smart Cities!

HORIZON 2020

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

Start Date: 09.09.2011
End Date: 30.11.2013

IREEN
ICT Roadmap for Energy Efficient Neighbourhoods

COOPERATION

IREEN Partners

CSTB
le futur en construction

MANCHESTER
CITY COUNCIL

VTT

acciona
Infraestructuras

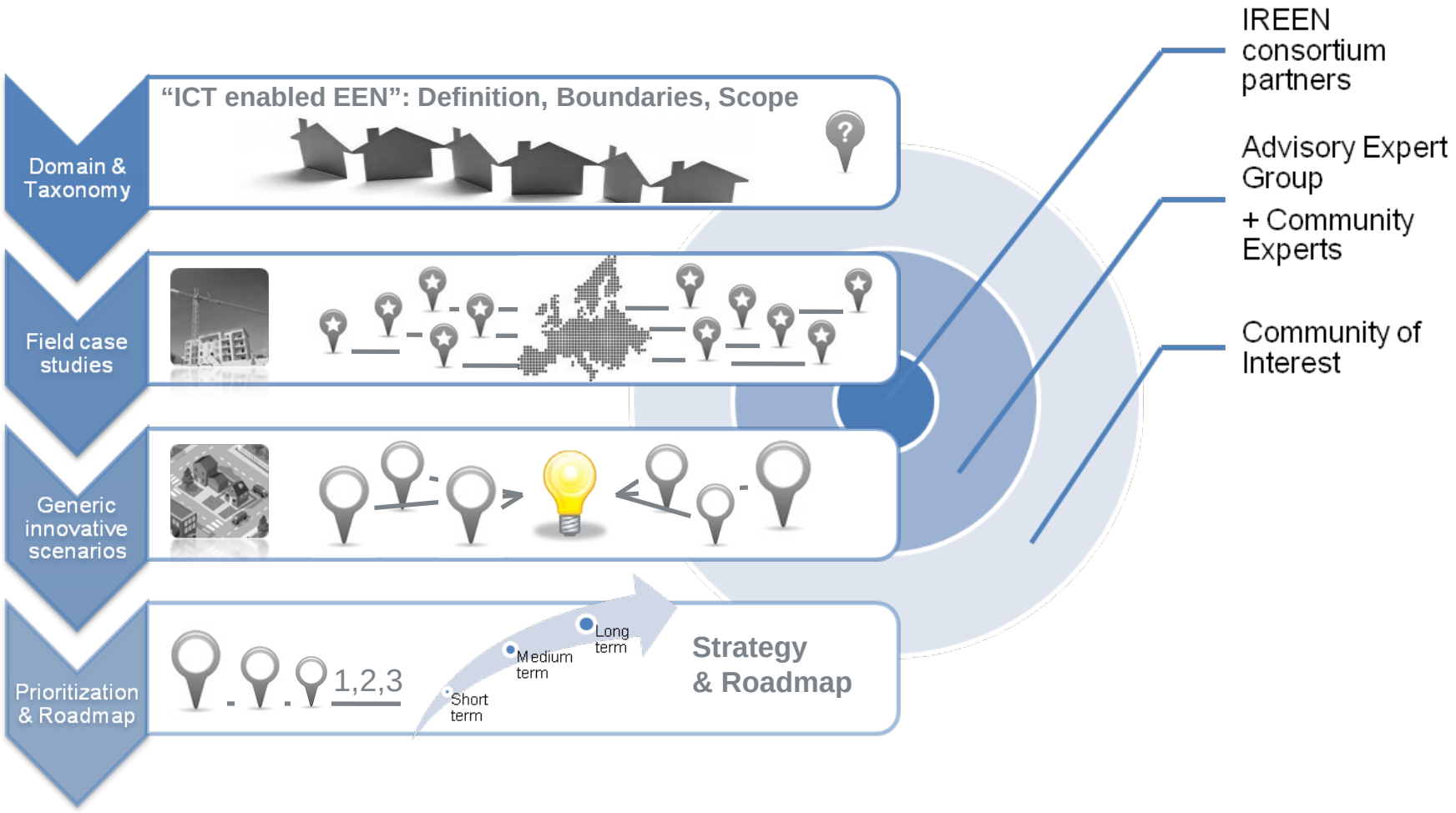
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

Greenit
amsterdam region

D'APPOLONIA

Atos

Methodology Overview



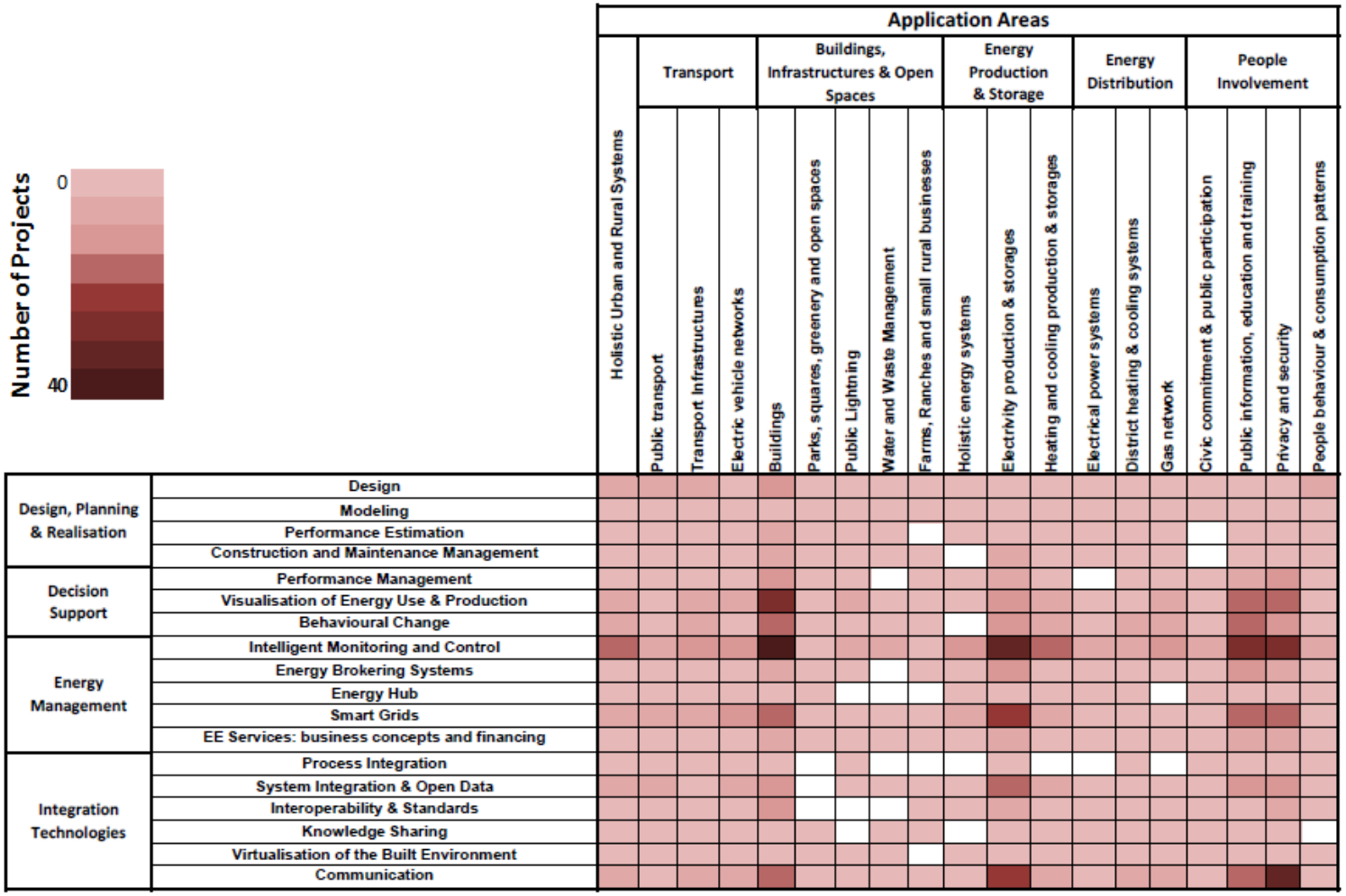
Taxonomy Matrix

Technology Areas	Application Areas: Neighborhoods - Urban and Rural Communities																			
	Holistic urban and rural systems			Transport			Buildings, Infrastructures & Open Spaces					Energy Production & Storage			Energy Distribution			People Involvement			
				Public transport	Transport Infrastructures	Electric Vehicle Networks	Buildings	Parks, squares, greenery and open spaces	Public Lightning	Water and Waste Management	Rural infrastructures	Holistic energy systems	Electricity production & storages	Heating and cooling production & storages	Electricity systems	District heating & cooling systems	Gas network	Civic commitment & public participation	Public information, education and training	Privacy and security	People behaviour & consumption patterns
Design, Planning & Realisation																				
Design																				
Modelling																				
Performance Estimation																				
Construction and Maintenance Management																				
Decision Support																				
Performance Management																				
Visualisation of Energy Use & Production																				
Behavioural Change																				
Energy Management																				
Intelligent Monitoring and Control																				
Energy Brokering Systems																				
Energy Hub																				
Smart Grids																				
EE Services: business concepts and financing																				
Integration Technologies																				
Process Integration																				
System Integration & Open Data																				
Interoperability & Standards																				
Knowledge Sharing																				
Virtualisation of the Built Environment																				
Communication																				

Case Studies - one example of 82 selected

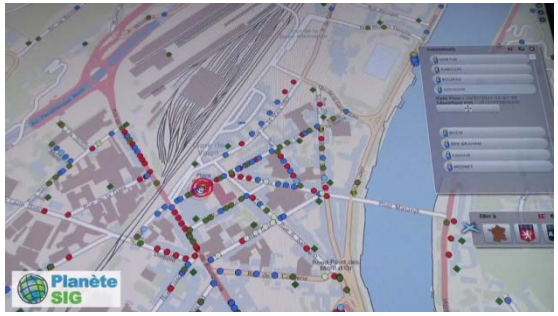
Project Title	**West Orange**
Project web-site	**www.amsterdamsmartcity.com**
Funding Context and Theme	**ERDF: European Regional Development Fund**
Starting Date and Duration	**2 years (2009/2012)**
Budget	**3 million euros**
Partnership	**NUON, IBM, Cisco, Far West, Ymere, Home Automation Europe, AIM**
Location	**Amsterdam**
Abstract	**Nuon, IBM and Cisco initiated the West Orange project in which 500 Amsterdam households test an innovative energy management system. Home Automation Europe is supplier of the display, Far West and Ymere are housing cooperations and partner in the project: their tenants will participate in the test. Grid operator Liander is responsible for the implementation of the smart meters. From an earlier small scale pilot it is expected that the energy management system will yield energy and CO2 savings of about 14 percent. The displays and smart meters were implemented in the period between October 2010 and March 2011. The measuring programme will run for almost a year to incorporate the seasonal effects. […]**
Type of Community	**Urban**
Relevant ICT results	**Implementation of smart meters** **Energy display: the energy display is a user-friendly display with the size of a small picture frame. The display is wireless connected to a digital gas and electricity meter of Liander and is therefore able to show real-time information of the total energy consumption. By entering personal energy saving targets in the display, the user is continuously stimulated and stays keen on their gas and electricity usage. This makes it easier for households to monitor and realize their energy saving objectives.**

State of the Art Coverage



Innovative Scenarios – one example

Urban area retrofitting

Visionary description	John is an urban planner at the “EPCOT” City Administration. […] The City has signed up to the Green Digital Charter and is engaged in a pluriannual programme to reduce its carbon footprint and improve the energy efficiency of the city with the use of ICT. […] In a first step, John, with the assistance of his technical team, launches the urban GIS platform of the city where he can visualize the location of the different components (network energy nodes) of the neighbourhood, and the energy balance for each of them. Indeed, during a previous campaign, all buildings of the neighbourhood, as well as the street lighting system, have been equipped with energy meters to inform in real-time on the energy consumption (or production) of the nodes. This energy information has been integrated in the city GIS. […]
Impacts	
Stakeholders and Beneficiaries	
Progress beyond State-of-the-Art	
Technology / Application Areas	

Extract of the Strategy (work in progress)

3. Energy Distribution: Vision: optimally planned & controlled distribution networks (heating, cooling, electricity and gas) with minimised losses, high stability, supporting the use of renewable energy technologies and energy efficiency measures (e.g. demand-side-management, use of waste heat, use of local storage).

Drivers	• National and local targets • Political goals (such as EU2020) resulting in requirement of increased ICT use • Technological advances (cost/capabilities) • Attractive regulative framework for business and actors.	• Cost savings through better use • Increased use of RES • Safety and reliability • Reduced emissions • Integrated and globally optimised energy grids • Multi-energy inter-connected networks.	Impacts
Barriers	• Increased complexity (increased cost, skilled workforce) • Cyber security, privacy issues • Costly and time-consuming standardisation and compliance.	• Grid and plant operators • ESCOs • City planners • ICT companies	Stake-holders

State-of-the-art	• Planning and operation of separate networks, optimisation at local level. • Increasing use of smart meters with limited use of data from them. • Central management of distribution networks. Various vendor specific approaches to energy information management.

Extract of the Roadmap (work in progress)

3. Energy Distribution

Optimally planned and controlled distribution network

Design, planning and realisation

Short-term:	Mid-term:	Long-term:
Design based on dynamic considerations with detailed data	ICT enabled planning of adaptive and flexible distribution networks	Co-simulation and optimization of complex interactions in different domains

Decision support

Short-term:	Long-term:
…	…

Energy management

Short-term:	Mid-term:	Mid-term:	Long-term:
…	…	…	…

Integration technologies

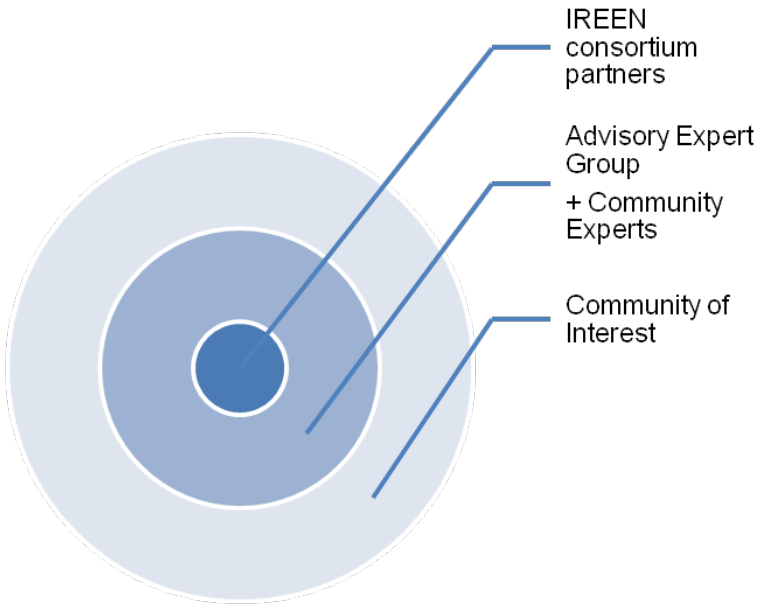
Short-term:	Mid-term:	Long-term:
…	…	…

You can participate as expert / consumer association / city!

LinkedIn Group:
"ICT for energy efficient communities"
Join and participate!

Workshops:
As an expert in your field we value your input and feedback!

Website:
Newsletter, Deliverables, Documentation
www.ireenproject.eu



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Thank you for your attention

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