D9.8: Dissemination Activities, Public Participation and Awareness 1

Project Acronym:	**VICINITY**
Project Full Title:	**Open virtual neighbourhood network to connect intelligent buildings and smart objects**
Grant Agreement:	**688467**
Project Duration:	**48 months (01/01/2016 - 31/12/2019)**

Deliverable D9.8

Report on Dissemination Activities, Public Participation and Awareness (year 1)

Work Package:	**WP9 – Dissemination of Results & Exploitation**
Task(s):	**T9.8 – Dissemination Activities, year 1**
Lead Beneficiary:	**AAU**
Due Date:	**31st December 2016 (M12)**
Submission Date:	**21st December 2016 (M12)**
Deliverable Status:	**Submission to the EC**
Deliverable Type:	**R**
Dissemination Level:	**PU**
File Name:	**VICINITY_Report on Dissemination Activities, Public Participation and Awareness.pdf**

VICINITY Consortium

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This project has received funding from the European Union's Horizon 2020 Research and innovation programme under Grant Agreement n°688467

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Revision Control

Version	Date	Status	Modifications made by
0.1	07/11/2016	Initial Draft	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero
0.2	16/11/2016	First Draft formatted includes feedbacks from WP 9 contributors (CERTH, ATOS and HITS)	Yajuan Guan, Juan C. Vasquez, Flemming Sveen, Katerina Margariti, Juan Rico, Carmen Perea Escribano, Josep M. Guerrero
0.3	22/11/2016	Second Draft formatted includes feedbacks from VICINITY partners (CERTH, UPM and HITS)	Yajuan Guan, Juan C. Vasquez, Flemming Sveen, Nigel Wall, Raúl García-Castro, Josep M. Guerrero
0.4	01/12/2016	Deliverable version for final review by partners	Yajuan Guan, Juan C. Vasquez, Heinz Christopher, Natalie Samovich, Mar Rechter, Thanasis Tryferidis, Josep M. Guerrero
0.5	01/12/2016	Final improvements	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero
0.6	01/12/2016	Deliverable version uploaded for Quality Check	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero
0.7	13/12/2016	Quality Check	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero, Christopher Heinz, Raúl García-Castro, Rolv Møll Nilsen
0.8	20/12/2016	Final Draft reviewed	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero
1.0	21/12/2016	Submission to the EC	Yajuan Guan, Juan C. Vasquez, Josep M. Guerrero

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List of Definitions & Abbreviations

Abbreviation	Definition
EC	European Commission
EU	European Union
IoT	Internet of Things
WP	Work-Package
DoA	Description of Actions
CFP	Call For Paper
H-EMS	Home Energy Management System
DC	Direct Current
OPGW	Optimal Power Ground Wire
PMU	Phasor Measurement Units
D.A.R.	Dissemination Activity Report
DG RTD	Directorate-General for Research and Innovation
H2020	Horizon 2020 Research and Innovation Programme
KPIs	key performance indicators

1. Executive Summary

The present document is deliverable "D9.8 – Report on Dissemination Activities, Public Participation and Awareness (year 1)" of the VICINITY project (Grant Agreement No.: 688467), funded by the European Commission's Directorate-General for Research and Innovation (DG RTD), under its Horizon 2020 Research and Innovation Programme (H2020).

The document introduces the VICINITY project dissemination activities, dissemination activity plan, national and international publications that are conducted to guarantee the high visibility, accessibility of the project and its results during the grant period. D9.8 will be a conclusion of the past dissemination activities, public participations and scientific and technical publications, meanwhile presenting the impact of these dissemination activities. It will be updated and adjusted as the project progresses.

In order to achieve the highest possible impact of its activities, VICINITY will focus on maximising the effectiveness and scope of its dissemination activities and public participations. These specific activities will not only address the general public to raise awareness on the project and its achievements, but also target key stakeholders having a relevant role in the field of activities undertaken by the project.

The VICINITY D9.8 has been structured in various sections presenting the dissemination activities, 2017 dissemination activity plan, scientific and technical publications and achievements.

2. Introduction

Work-Package 9 (WP9) "Dissemination of Results & Exploitation" as described in the VICINITY Description of Actions (DoA) aims at increasing the impact of the project through the wide dissemination of project outcomes and the intense communication of its achievements and activities towards each of the project target groups.

The specific objectives of the Work Package include:

- Formulating and implementing a global dissemination strategy based on the draft Dissemination and Exploitation Plan;
- Monitoring and ensuring the consistency of all external activities of the project;
- Organizing the planned project events and ensuring maximum participation and impact;
- Running training workshops for Science Gateway and other e-Infrastructure services' development;
- Showcasing key developments in these areas to communicate the benefits of these technologies to stakeholders;
- Delivering three VICINITY workshops and a final conference;
- Regularly examining and updating the project exploitation perspectives.

VICINITY deliverable "D9.8 - Report on Dissemination Activities, Public Participation and Awareness (year 1)" presents the achievements of T 9.3:

- Coordination the dissemination activities of project results to the international scientific and technical community as well as to the addressed VICINITY stakeholders;
- Promotion of the project during events (conferences, workshops, invited talks, seminars, etc.);
- Paper submission to national and international conferences, workshops, journals; Preparation of Call For Paper (CFP);
- Project demonstrations;
- Preparation of pre-commercial and commercial brochures and technical Newsletter to potential industrial and scientific users;
- Presenting the key outcomes and the progressions received during these activities;
- Providing useful input for further adopting and updating the project planning towards better meeting stakeholders' needs.
- Improving the visibility of the VICINITY project outcomes.

3. Dissemination strategy and implementation

3.1. Dissemination strategy

To disseminate, in the field of communication, means to broadcast a message to the public without direct feedback from the audience. The audience or a stakeholder can be considered any person, university, institution, or company that is interested in the project or will be affected by the project outcomes.

The Dissemination Strategy is composed of dissemination actions in order to raise awareness and visibility of the project and spread knowledge about the project outcomes to all stakeholders and public. These actions must be developed and conducted in times, places, regularly and modalities suitable to allow the broadest diffusion.

The objectives of the dissemination activities will be to:

Plan	Identify targets, messages, tools, and channels. Build an adequate and effective communication and dissemination plan to ensure the best impact of project results.
Design	Produce dissemination tools: design a comprehensive set of communication material (including the project logo) to ensure an easy identification of the project and a major exposure.
Distribute and represent	Use the dissemination channels (both internal and external).
Activities	Organise project events and participate in workshops, conferences, and international/EC meetings.
Sustain	Ensure a persistent and long-lasting visibility of the project activities and outcomes.

Table 1: Objectives of dissemination activities covers the entire lifecycle of the project.

Consequently, dissemination activities will maximise VICINITYs impact on prompting dialogues, cooperation and coordination with decision makers, developers, integrators, administrators, end users and establishing connections between European partners.

3.2. Dissemination implementation

VICINITY will produce a wide area of outputs and results. The dissemination implementation mainly depends on which kinds of outputs VICINITY have and what expectations of impact that fuels the actions that will be taken.

A number of dissemination channels and tools are considered for VICINITY dissemination implementation.

- Events: project events, project workshops, external events, EU parliament events, exhibitions.
- Publications: scientific publications, conference proceedings, event presentations, deliverables, project videos, press releases, newsletters.
- Online presence: VICINITY website, social media, research blog, related websites.
- Dissemination material: leaflets, posters, reference PPTs, invitation letters, brochures.

3.3. Dissemination implementation

WP9 Tasks leader is responsible for dissemination resources collection, dissemination channels and tools establishment and maintenance, coordination of dissemination activities of project results to the international scientific and technical community, in order to improve awareness and visibility about the project objectives and outcomes with VICINITY stakeholders and public audience. All partners need to contribute to dissemination activities. Dissemination activity information will be collected and distributed periodical through emails, tables, dissemination activity reports, weekly meetings, feedbacks from project consortiums, VICINITY Web portal and Owncloud information sharing.

4. Dissemination activities for M1-M12

4.1. Public participation

During M1 to M12, VICINITY partners have used their public participations in various channels to guarantee the high visibility, to expand the accessibility to the VICINITY project and its results, as well as to facilitate knowledge sharing, personal interaction, and community building with targeted audiences.

Some types of channels targeted by the project were:

- External events
- Conferences
- Workshops
- Invited talks
- Seminars
- Congresses
- Forums
- Webinars

Public participation is reported by a Dissemination Activity Report (D.A.R.) which consists on the following sections.

- Event Details
- Scope of the Event
- Description of the participation
- Other questions received
- Audience Reached
- Feedback
- Photos
- Event Program
- Useful Links

Please refer to Additional Annex 1 to Additional Annex 12 – D.A.R.s for more details about the public participations presented above.

A list of public participations where the project has already been presented during M1 to M12 is shown below:

	Type of Event	Name	Contribution	Type of Audience	Place and date
1	Workshop	ENERC	Organisation Startup Europe Week Alcoutim workshop and present VICINITY project	Scientific Community Industry Civil Society Customers	February 4, Alcoutim, Portugal
2	IoT Event	CERTH	VICINITY project presented at AIOTI Open Day on the Internet of Things	Scientific Community Industry Investors	February 8, Athens, Greece
3	Workshop	CAL	VICINITY project presented at Workshop on "Cyber Risk and Connected/Autonomous Vehicles"	Scientific Community Industry Civil Society Policy makers	February 22, Oxford University, UK
4	Workshop	CAL	VICINITY project presented at Internet of Things in the Smart Home workshop	Scientific Community Industry General Public Policy makers Investors	March 21-22, Sophia Antipolis, France
5	Workshop	UPM	VICINITY project presented at “ifcOWL-SAREF-FIEMSER VoCamp” workshop	Scientific Community Industry	March 22-23, Dublin, Ireland
6	Conference	ATOS	VICINITY project presented at IoT Week	Scientific Community Industry Investors	June 2, Belgrade, Serbia
7	Workshop	GNOMON, CERTH	Organisation VICINITY workshop on "Ways to strengthen e-health in Municipalities" and present VICINITY project	Scientific Community Civil Society General Public Investors	July 27, Thessaloniki, Greece
8	Webinar	ATOS	Organisation IoT Webinar and present VICINITY project	Scientific Community Civil Society	September 13, Belgrade, Serbia
9	Forum	CERTH, GNOMON, OTE	VICINITY project presented at eHealth Forum 2016	Scientific Community Industry General Public Policy makers Investors Medias	October 25-26, Athens, Greece
10	Congress	AAU	VICINITY project presented at IOT Solutions World Congress	Scientific Community Industry General Public Civil Society Investors Medias Customers	October 25-27, Barcelona, Spain
11	Workshop	CAL, UPM	ETSI IoT/M2M Workshop featuring the Smart World	Scientific Community Industry Policy makers	November 14-17, Sophia Antipolis, France
12	Workshop	CAL	Boring but lucrative, the real Internet of Things	Scientific Community Industry Policy makers	December 15, Cambridge, UK

Table 2: List of public participations where VICINITY project was presented.

4.2.Publications derived from VICINITY

During M1 to M12, six scientific and technical papers are published on international peer-reviewed journals or specialised magazines and high-ranking international conferences.

In WP6, the IoT home integration and lab testing have to be researched on and conducted. One main task is to integrate the home/microgrid energy management system (H/MEMS) with smart devices, sensors through VICINITY adapter. AAU has already started to work on these topics in order to smoothly connect to WP6. Publications 1-5 are the preliminary research results about IoT smart home by now more from energy side.

In order to contribute to the VICINITY eHealth use case (MPH remote care and monitoring integrated system) in line with WP8, GNO has started researches on realisation and evaluation of eHealth at Home Use Case as shown in publication 6.

The types of papers, contributors, paper titles and publication dates are listed as follows:

	Type of paper	Contributors	Title	date
1	Journal	AAU	A knowledge discovery in databases approach for industrial microgrid planning	July 2016
2	International conference	AAU	Optimal Real-time Dispatch for Integrated Energy Systems: An Ontology-Based Multi-Agent Approach	June 2016
3	International conference	AAU	An Efficient Multi-objective Approach for Designing of Communication Interfaces in Smart Grids	Sept. 2016
4	International conference	AAU	Development and Integration of a HEMS with an Advanced Smart Metering Infrastructure	Nov. 2016
5	Magazine	AAU	Intelligent DC Homes in Future Sustainable Energy Systems: When efficiency and Intelligence Work Together	March 2016
6	International conference	GNOMON	European Patient Summary Guideline: Focus on Greece	May 2016

Table 3: List of scientific and technical papers derived from VICINITY.

The detailed publication titles, authors, and main contributions are presented below.

1. **A knowledge discovery in databases approach for industrial microgrid planning**
   Gamarra, Carlos; **Guerrero, Josep M**.; Montero, Eduardo.
   Renewable & Sustainable Energy Reviews, Vol. 60, 07.2016, p. 615–630.
   - IoT and Knowledge Discovery in Databases technical literatures are reviewed
   - Innovative approach for microgrid planning is introduced.

2. **Optimal Real-time Dispatch for Integrated Energy Systems: An Ontology-Based Multi-Agent Approach**
   Anvari-Moghaddam, Amjad; Rahimi-Kian, Ashkan; Mirian, Maryam S.; **Guerrero, Josep M.**
   7th International Symposium on Power Electronics for Distributed Generation Systems (PEDG'16). IEEE Press, 2016. p. 1-7.
   - An ontology-driven multi-agent control system with intelligent optimizers is proposed for

optimal real-time dispatch of an integrated building and microgrid system considering coordinated demand response and distributed energy resources management.

- The optimal dispatch problem is formulated as a mixed integer nonlinear programing problem and solved through an agent-based approach.

3. **An Efficient Multi-objective Approach for Designing of Communication Interfaces in Smart Grids**
   Ghasemkhani, Amir; Anvari-Moghaddam, Amjad; Guerrero, Josep M.; Bak-Jensen, Birgitte.
   Proceedings of IEEE PES Innovative Smart Grid Technologies (ISGT 2016). IEEE Press, 2016. p. 1-6.
   - A novel dynamic Multi-Objective Shortest Path algorithm is presented to design a spanning graph of a communication infrastructure using high speed Optimal Power Ground Wire (OPGW) cables and Phasor Measurement Units (PMUs).

4. **Development and Integration of a HEMS with an Advanced Smart Metering Infrastructure**
   Diaz, Enrique Rodriguez; Palacios-Garcia, Emilio; Savaghebi, Mehdi; Quintero, Juan Carlos Vasquez; Guerrero, Josep M.
   2016 IEEE International Conference on Consumer Electronics (ICCE). 2016. p. 544 - 545.
   - A LabVIEW application for user interface and implementation of a Home Energy Management System (HEMS) based on advanced metering infrastructure is developed.

5. **Intelligent DC Homes in Future Sustainable Energy Systems: When efficiency and Intelligence Work Together**
   Diaz, Enrique Rodriguez; Quintero, Juan Carlos Vasquez; Guerrero, Josep M.
   IEEE Consumer Electronics Magazine, Vol. 5, No. 1, 03.2016, p. 74 - 80.
   - Point the challenges and barriers for intelligent DC homes
   - Proposed the prototype of DC home in Aalborg University.

6. **European Patient Summary Guideline: Focus on Greece**
   Alexander BERLER, Anastassios Tagaris and Catherine CHRONA
   International Conference on Wearable, Micro & Nano Technologies for Personalized Health (pHealth), 05.2016, p. 1 - 6.
   - Review implementation efforts for the implementation of an operational patient summary service in Greece drawing on challenges and lessons learned for sustainable standards-based large scale eHealth deployment in Europe and abroad, as well as the reuse of best practices from international standards and integration profiles.

4.3. VICINITY Web analytics

VICINITY website as a major external dissemination tool has been developed and periodically updated in order to spread project's concept, objectives, outcomes and latest dissemination activities to the publics.

In order to monitor the activity and the audience reached by the project website, Google Analytics free service is used, supporting the statistical analysis and facilitating the extraction of useful conclusions regarding trends and variations for its use by online visitors. Google Analytics is a very popular web analytics solution that gives rich insights into one's website traffic and marketing effectiveness. It allows for Advanced Segmentation, Custom Reports, Advanced Analysis Tools, Analytics Intelligence, Custom Variables and Data exports. Google Analytics can also track visitors from all referrers, including search engines, display advertising, pay-per-click networks, e-mail marketing and digital collateral such as links within PDF documents.

The following list summarizes the main parameters and indicators that will be used for monitoring of the VICINITY website throughout the course of the project.

a) Number of visits
b) Number of unique and return visitors
c) Average Session and Visit durations
d) Days of week and rush hours (pages, hits, Kilobytes for each hour and day of the week)
e) Domains/ countries of visitors
f) Host list, last visits and unresolved IP addresses list, most viewed, entry and exit pages
g) Browsers used
h) Number of times site is added to favorites bookmarks

As such, Google Analytics will help the consortium determine the effectiveness of its web tools and targeted dissemination activities and feed into impact reporting.

The website managed to attract many people on a constant basis, with new sessions being logged every day. In particular, the following graphics show an overview of the user activity. Figure 1 represents a monthly performance report that clearly shows constant user activity between January and November 2016. Figure 2 and Figure 3 give detailed overview statistics on the VICINITY website usage for the first 11 months of the project are provided.

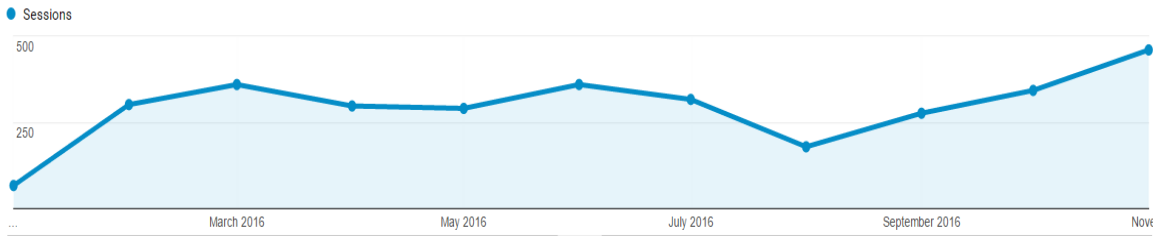


Figure 1: Monthly Performance Report

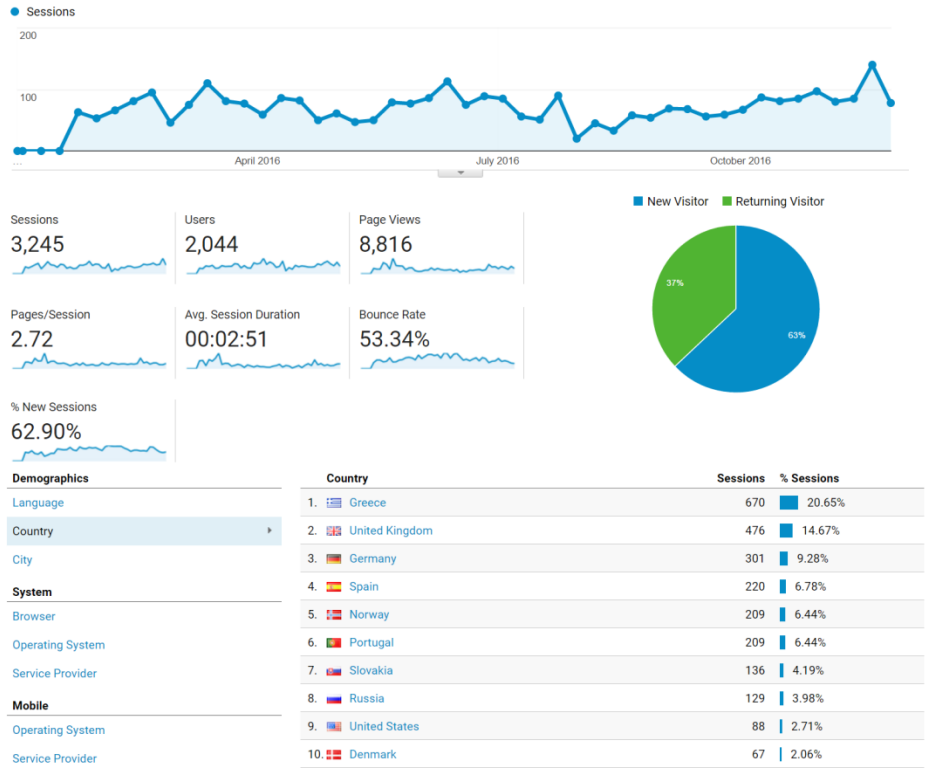
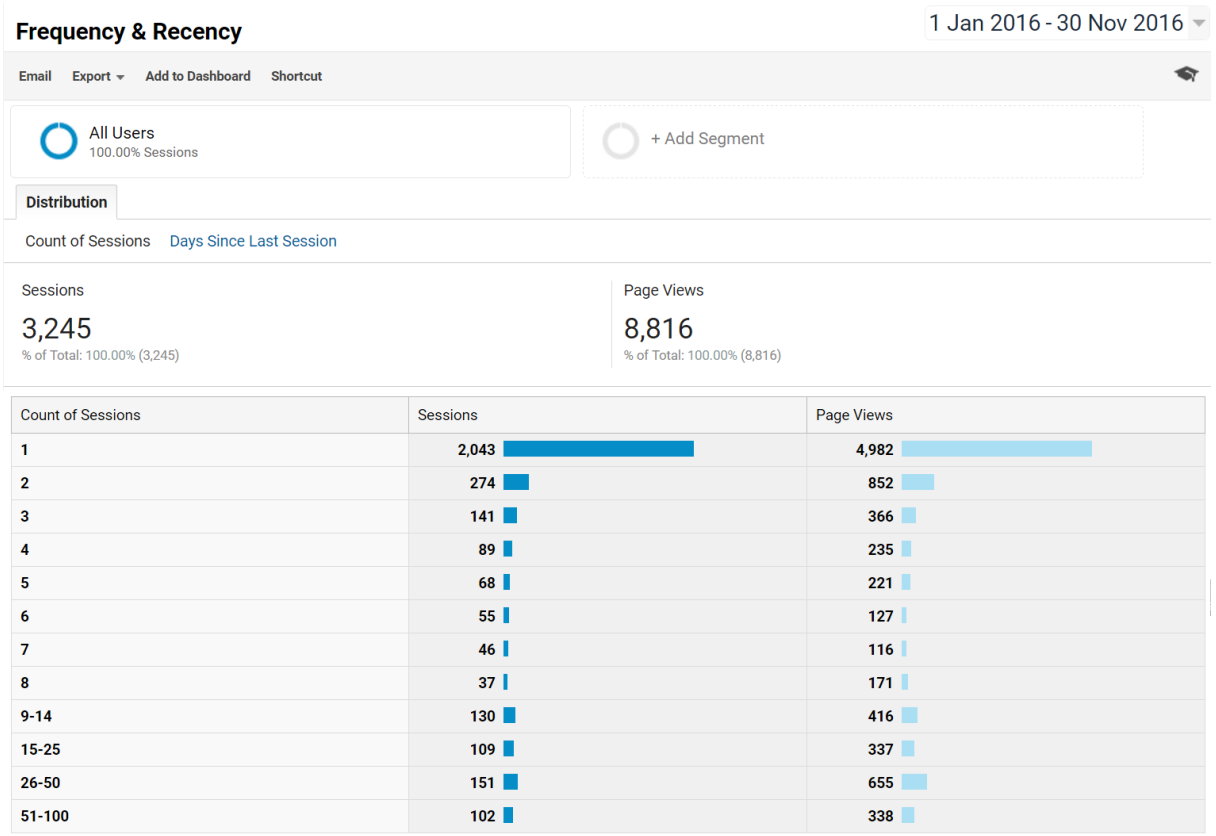


Figure 2: Audience Overview Statistics



Count of Sessions	Sessions	Page Views
1	2,043	4,982
2	274	852
3	141	366
4	89	235
5	68	221
6	55	127
7	46	116
8	37	171
9-14	130	416
15-25	109	337
26-50	151	655
51-100	102	338

Figure 3: Frequency and Recency Statistics

So far the total number of VICINITY website audience has reached more than 2000 users in more than 3200 sessions with an average duration of 02:51 min, while almost 37% of the visitors return. Based on these statistics, we believe that the total number of VICINITY website audiences will over the original target (5000 visitors) by the end of the project. These figures and other indicators are displayed in Figure 4 “General overview of the users’ activity” and Figure 5 “New Visitors – Returning Visitors”

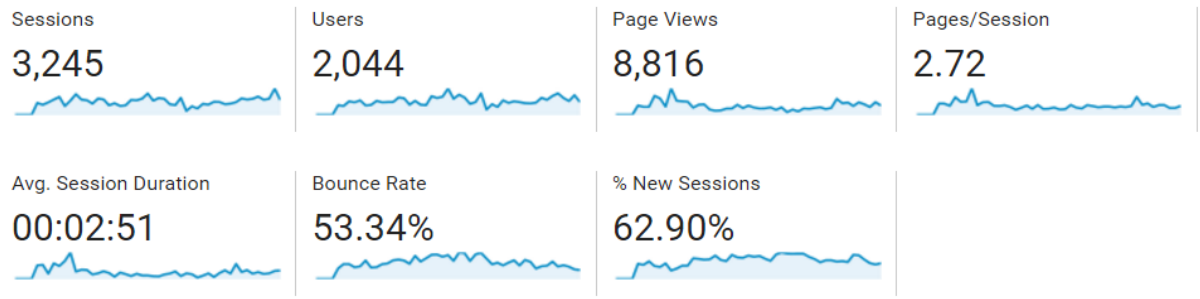


Figure 4: General Overview of the users’ activity

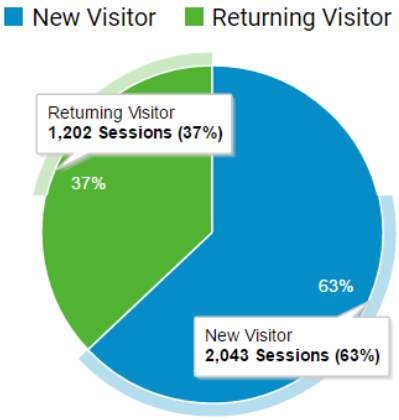
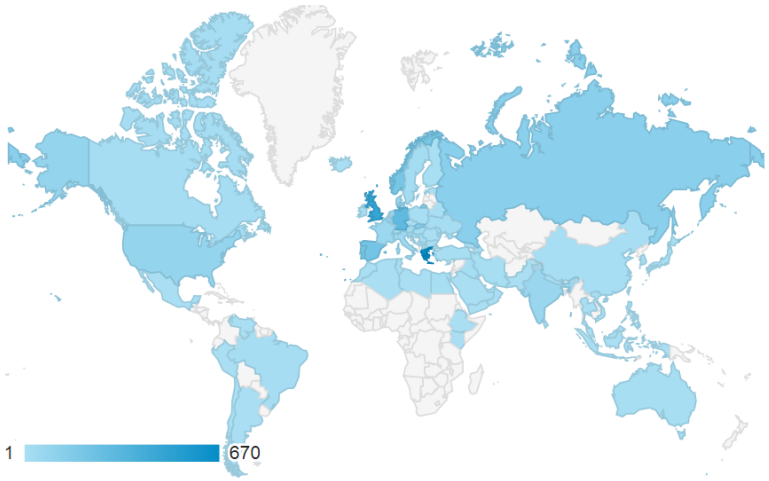


Figure 5: New visitors – Returning Visitors

The following figure reveals that the increased visits in the VICINITY website mostly consist from new users from all over the world. The most visits have been tracked from Greece, because of the main dissemination partner being from Greece, while the second visiting country is the United Kingdom. It is notable that there are many visits from outside Europe, in particular by the United States and India.



Country	Sessions	Sessions	contribution to total: Sessions
	3,245 % of Total: 100.00% (3,245)	3,245 % of Total: 100.00% (3,245)	
1. Greece	670	20.65%	
2. United Kingdom	476	14.67%	
3. Germany	301	9.28%	
4. Spain	220	6.78%	
5. Norway	209	6.44%	
6. Portugal	209	6.44%	
7. Slovakia	136	4.19%	
8. Russia	129	3.98%	
9. United States	88	2.71%	
10. Denmark	67	2.06%	

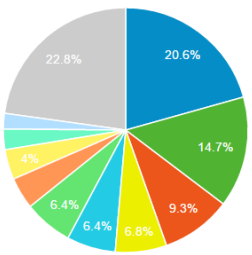


Figure 6: Visitors per country

4.4. VICINITY TV report

VICINITY project brought public attention from its early beginning, having the chance to present its core objectives and potential impact it can bring to the greater public through the German television. The project coordinator, Dr. Christoph Grimm of the Technical University of Kaiserslautern, highlighted the key objectives and the rationale behind the VICINITY concept, broadcasted on 21 January 2016 on SWR television of the ARD group.

Figure 7: The VICINITY TV spots

4.5.VICINITY Social media analytics

4.5.1 Twitter

In order to help the consortium to reach a wider spread with their dissemination activities, VICINITY social media channel - Twitter, applies continuous updates and engages a wide number of visitors.

Free Twitter analytics tools are used to evaluate the impact of the project communication activities. The Twitter analytics tools can track growth, content performance and progress. Besides, improve engagement and grow Twitter audience. In addition, tag tweets and replies for aggregate campaign analysis, meanwhile exporting profile and post-level Twitter reports. Furthermore, easily analyze comments, engagement and Twitter data.

A series of Key Performance Indicators (KPIs) are detailed below as the main considerations and indicators.

- Number of Twitter followers > 100
- Number of Tweets / retweets > 150
- Impressions of Tweets

Figure 8 represents impression of Tweets. During M1 to M11, 108 Tweets are published based on all VICINITY partners' contributions. The Tweets earned 11.8 K impressions between June to August. During the end of August to the beginning of November, impressions of Tweets increased to 14.8 K. In particular, during IoT EPI events, reference documentation and educational webinar period, the impressions significantly increased and reached the peak value (2.0 K) twice.

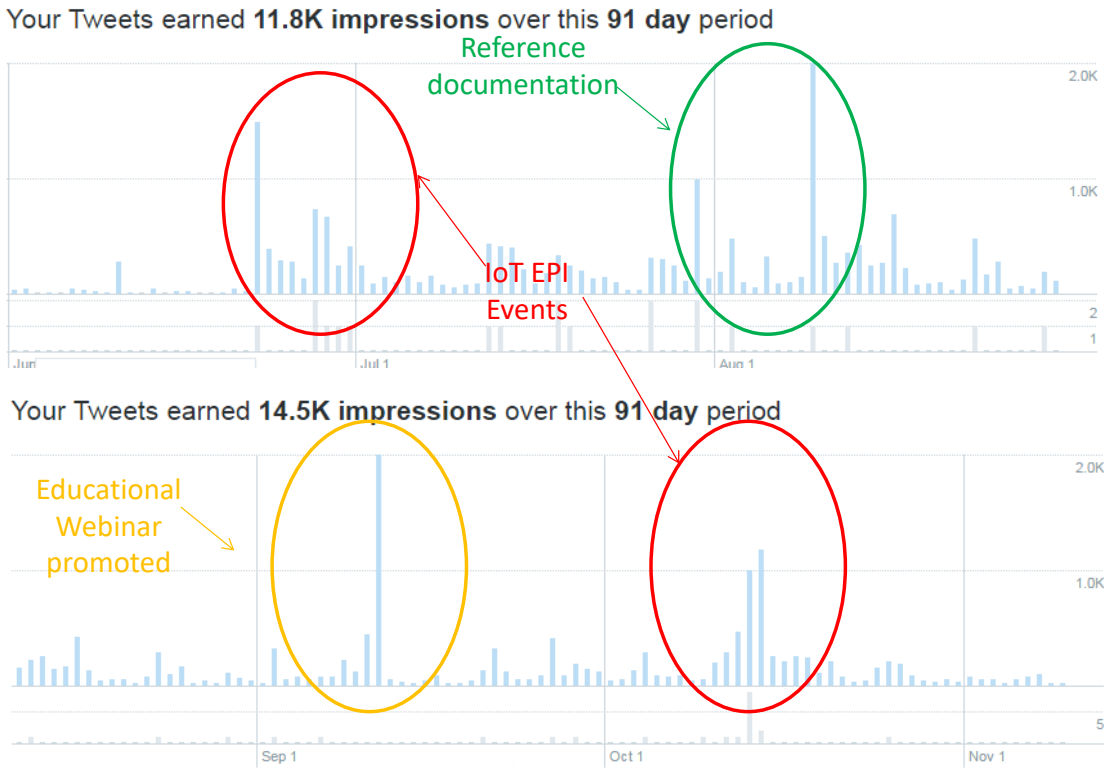


Figure 8: Impressions of Tweets

So far the total number of Twitter followers has reached 109 as shown in Figure 9. Almost one new follower is gained per day. The followers are main interested in technology and tech. news.

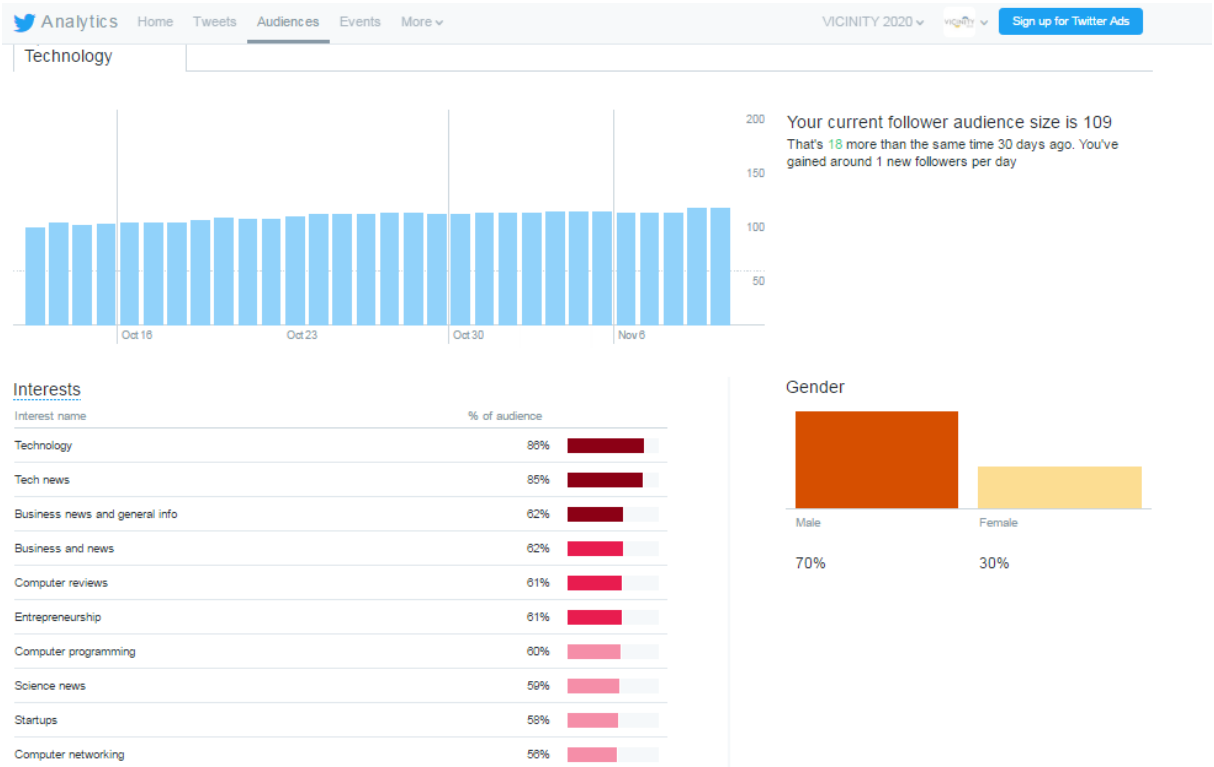


Figure 9: Analytics of Twitter followers.

Based on these analytics, it can be seen that the number of Twitter followers by now has already reached the target; meanwhile, the number of Tweets closes to the KPI requirement.

4.5.2 Other social medias

A number of social media channels, such as Facebook, YouTube, LinkedIn and Google Plus, have further been early established as well (from month 2 or month 3), to provide the project's objectives, VICINITY concepts, and to raise awareness on project's activities.

The VICINITY 2020 Facebook home page obtained 63 likes. Fourteen posts have been published during M1 to M12 which earned 20 likes and 5 shares.

A project video has been produced and published on YouTube channel and on the website's main page. The project video on YouTube has been viewed 194 times in year 1.

VICINITY 2020 groups have been created on LinkedIn and Google Plus, which now have 6 and 2 follows respectively. They will be more active in the next years.

4.6.Newsletter

The VICINITY project releases electronic Newsletter as an internal and external dissemination channel for covering project-related information in somewhat more detail than what can be communicated through social media, addressing the general research society, but also the general public to enhance project outreach.

Newsletter enables the consortium to update the project community with latest project activities and results. Contents of an Newsletter are based on the important information of the project, including but not limited to project's topics, latest achievements, news, results of the activities, development guides, study reports, milestones and ongoing activities of use-cases. The contents are derived from dissemination activity reports, VICINITY websites, deliverables, and all VICINITY partners' contributions.

The Newsletters are planned to be sent four times a year. This interval may decrease as the project progress, and more results and newsworthy information can be communicated to the participants and stakeholders. During M1 to M12, one Newsletter has been released. Dissemination list of the first Newsletter reaches VICINITY consortium members, IoT-EPI members, VICINITY website audience, social medium followers, etc. Total size of the dissemination list is more than 2000 recipients. The contents of this Newsletter include:

- Editorial
- Overview of VICINITY
- Standardization and Platforms
- From Web Summit to Industry Conferences, a warm welcome to the new concept: Ethics Everywhere
- Pilot Sites/ Use Cases/ Test Labs
- DEMO site visits
- Milestone

- State of the Union
- Latest News and Upcoming Events
- Scientific and Technical Publications

Please refer to Annex 1 – Newsletter January to November 2016.

4.7.Other dissemination activities

Besides the aforementioned dissemination activities and channels, a special effort has been made on the design of VICINITY illustrations and graphical elements. Furthermore, VICINITY project results have been also disseminated among the research community, policy-makers, private sector, IoT and service-providers, related projects and initiatives, and a wider audience by the following tools.

A project factsheet has been produced at M2 to promote VICINITY key concepts and messages, including clear and appealing info-graphics to be distributed on the web (social media, communities, partners' networks, external blogs, etc.). Printed copies have been distributed in external events.

Brochures have been produced to present a short overview of the project concepts, search domains, use-cases, VICINITY consortium, etc. The brochures have been distributed both on the Web and in external dissemination activities.

In addition, two videos and three posters have been developed and displayed in external events.

- Factsheet
- Information brochures
- Invitation letters
- Videos
- Posters

Please refer to Annex 2 to Annex 5 for more details.

4.8. Dissemination channels and target audience

As mentioned above, a number of dissemination channels and tools have been used and various dissemination activities have been conducted in 2016. The goal has been to inform of the project and get in touch with stakeholders.

VICINITY has identified and addressed the following audience:

- Present and prospective developers and integrators of smart devices.
- Stakeholders within public administration, entrepreneurs and institutions.
- Early adopters, non-technical users, and residents of health homes.

Project results have been disseminated among the research community, policy-makers, and the private sector. Additionally, VICINITY has made a particular effort towards communicating project information to a wider audience.

A detailed description is presented below.

Dissemination tools and channel	Internal/external		Target audience					
	Internal	external	Policy-makers	Industry	R&D Community	Private sector	Related projects & initiatives	General public
Project website		√	√	√	√	√	√	√
Other websites (partner websites, EC services, etc.)		√	√	√	√	√	√	√
Social media and professional networks	√	√	√	√	√	√	√	√
Project events	√			√	√	√		
External events		√	√	√	√	√	√	√
Target publications and scientific magazines		√		√	√	√	√	
Media (radio, tv)		√	√	√	√	√	√	√
Newsletter	√	√	√	√	√	√		
Exhibitions	√	√	√	√	√	√	√	√

Table 4: Dissemination channels and target audience

As observed from Table 4, different dissemination channels and tools have different target audience and result in different impacts and feedbacks. Give that, all of the dissemination channels and tools will be kept for the next years.

As it is now, VICINITY consortium has developed a lot of communication material in order to gather the attention of owners of pilot site and defining good use cases in cooperation with residents of these "living labs". With this as basis, we are developing a dissemination and communication strategy especially targeted toward finding technology partners and integrators, as well as finding common grounds with the other IoT EPI projects for further cooperation. These activities includes participation at venues, presentation within clusters/incubators (which of course also are interested in the Open Calls), discussing with other suppliers looking for synergy-effects, and also influence some of the opinion makers that may affect the topics that VICINITY aims to address.

4.9. Feedback analytics

Through the various dissemination activities, VICINITY project raised increased interest and a number of feedbacks in a positive way for the concept and ambition of VICINITY. Totally, more than 1000 audience, which include a wide range of representatives from the IoT communities, industrial companies, research communities, devices suppliers, policy makers, end-consumers, public administration, etc. have been involved in VICINITY dissemination activities.

The main feedbacks, audience reached and total attendees are listed below.

Domains	Main feedbacks	Total attendees	Audience reached
Buildings	• Complexity and fragmentation of standards leading to a lack of interoperability at all levels. • Major concerns about Security, Privacy and Trust. • Data Semantics and interworking. • Seamless IoT data interoperability in the different pilots and supporting the social network of data interchanges.	257	• IoT community including the standardization, industrial, and research communities • Several vendors of IoT devices/gateways (such as sensinov)
Mobility	• Business model: This is not clear yet but will evolve as new applications become available based on open data. • Security and privacy • Low Power Devices	65	• Major motor manufacturers and their suppliers • Thought leaders from consultancies • Government policy makers • Senior academics from Oxford, Cambridge and other universities such as Warwick which are specialising in the areas of transport and cyber security.
Energy	• A major step forward towards increasing efficiency of current functions in energy systems. • Promote the establishment of new developments and create better living conditions for their citizens. • Help improve loss of inhabitants' trend in rural areas. • Although the use case that received the most interest so far is Smart Energy, it was not the only use case mentioned or promoted. • How VICINITY and IOT integrated with microgrids and smart grid?	140	• Public Administration • SMEs • Higher educational institutions and Universities • Final consumers • Large industry companies including Schneider, GE, HUAWEI, etc. • Manufacturers • Distributors and service providers within the IoT industry.
eHealth	• Great interest on how VICINITY, and especially the envisioned value-added services, could efficiently contribute to the major improvement of the e-Health services. • The definition of the business barriers and requirements of the VICINITY project in the equivalent Work Package will base on the answer of the D1.2 questionnaires. • Security and privacy for accessing and sharing sensitive health data and communicating with medical devices and sensors. • Legislation framework that is currently changing and to which VICINITY proposed architecture and pilot demonstrations need to comply. • Open Calls - many companies and IoT technology providers show interest in getting funding in order to test the VICINITY platform and implement and demonstrate value-added services in the emerging eHealth ecosystem.	211	• Representatives of collaborating Municipalities that offer e-Health citizen services in Northern Greece • Representatives coming from one of the major hospitals of Thessaloniki, Greece • Doctors and care givers • Assisted living and ICT/application providers • Municipality and institutional scale authorities and legal representatives.

Domains	Main feedbacks	Total attendees	Audience reached
Standards and Platform	• The best projects will focus on integrating different initiatives. • Security and privacy are major concerns. • Battery-free devices are the way forward for mass deployment of sensors. • Ontologies are becoming increasingly important for semantic interoperability. • The competing technologies at the semantic layer are not clear. • Configuration of devices must be seamless and transparent or the IoT in the Smart Home will always have a limited market. • A number of ontologies have been received that might be useful for VICINITY ontology. • Why the specific platforms selected were chosen? • How to extend the number of standards covered and what business models we envisioned for that?	146	• Representatives from the EC • Service providers • Equipment vendors • Administrations • Policy makers and regulators • Research institutions and universities
IoT and interoperability	• Raise increased interest in "VICINITY virtual Neighbourhood" concept for allowing IoT interoperability in cross-domains. • Value-added services • Open Calls • Promote interoperability across ICT-30 projects. • IoT EPI as CSA is interested in working on increasing awareness for promoting participation of relevant actors in them.	320	• IoT technology solution providers in Greece • Telecommunications and energy providers • End-users • Research representatives • Online audience • Representatives of IoT community • Public administrations • Large companies, including SMEs and final consumers. • Atos Sales team and part of the development teams • Start-ups in the IoT community, including William Webb • Founder of CW • Chair of the Weightless SIG • Project Manager for Smart Cambridge • Chair of the LoRa Alliance.

Table 5: Main feedbacks, audience reached and total attendees.

All in all, VICINITY project have been very welcome. VICINITY project raised increased interest in a positive way for the proposed "VICINITY virtual Neighbourhood" concept for allowing IoT interoperability in cross-domains. The envisioned value-added services were a point of discussion, showing interest from the application-development scope, revealing the new horizons possible in combing real-time data from diverse sources and allowing clustering of related information to provide value-added applications under new business models. The Open Calls was another important point of discussion, both during the open discussion and the networking session that followed. Many companies and IoT technology providers showed interest in participating in the process, to have the opportunity to get funding through the open call procedures in order to test the VICINITY platform and implement and demonstrate value-added services in new cross-domain fields. Semantic Interoperability, security and privacy, low power devices, business model and standards are the hot topics as well.

The questions and comments have been addressed during open discussion and the simultaneous

brainstorming during each dissemination activity. Cooperation opportunities on areas of common interest have been appeared. These would have to be organised based on equal contribution of effort and funding for equal benefits. Contact will be maintained for further discussion and the identification of collaboration opportunities.

Therefore, they were great opportunities to receive early feedbacks on the VICINTY concept, objectives, VICINITY task planned, research methods, etc., and to look for collaboration opportunities.

Because on the dissemination activities where VICINITY presented research issues form a project that was just starting, it was not surprising that most of the interest was from the academics. In fact, VICINITY project have been presented in front of major industry companies and devices suppliers as well in year 1, and have received a number of feedbacks from them. In the next years, more and more industrial-related dissemination activities will be planed and conducted, such as exhibitions, congresses, demonstrations, etc.

5. Dissemination activity plan for 2017

5.1. Public participation

In 2017, VICINITY partners plan to extend their public participations to further promote the visibility and accessibility of VICINITY project and the latest results proposed in WP3. VICINITY Server Implementation, WP4. VICINITY Client Infrastructures Implementation, WP5. Value-Added Services Implementation, and WP6. VICINITY Framework Integration & Lab Testing.

Based on the experiences obtained from the external event participations in 2016, a tentative list of public participations in 2017 is presented below:

Topic	Events, Conferences and Workshops
ICT and IoT	• Internet of Things Conference • IEEE International Conference on Emerging Technologies • ICT Innovations Conference • Internet of Things Developers Conference • IEEE World Forum on Internet of Things
Transport	• Intelligent Transport Systems Forum UAE • IT-TRANS conference and exhibition • IEEE Conference on Intelligent Transportation Systems
Energy	• IEEE Energy Conversion Congress & Exposition (ECCE) • Annual Conference of the IEEE Industrial Electronics Society (IECON) • ICCE International Conference On Consumer Electronics (ICCE) • IEEE PES PowerTech Conference • Start-Up Week Europe • Start-up Portugal
eHealth	• Health Tech Event • HealthyIoT • International Conference on Wearable Micro and Nano Technologies for Personalized Health, pHealth

Table 6: A tentative list of public participations in 2017

5.2. Publications plan

The VICINITY consortium will continue showcasing project outputs in international peer-reviewed journals or specialised magazines. They will be prepared each time the project has key findings to disseminate. Those publications will be derived from the results of the research activities, development guides, laboratory testing results, study reports, use-cases operations, status, etc.

A tentative list of publication journals and magazines in 2017 is presented below:

Topic	Peer-reviewed Journals and Magazines
ICT and IoT	• IEEE Internet of Things Journal • IEEE Journal of Big Data • Springer Advances in Intelligent Systems and Computing
Transport	• Elsevier Transportation Research Part C: Emerging Technologies • Taylor & Francis Smart and Sustainable Transport • IEEE Transactions on Intelligent Transportation Systems • IEEE Journal of Intelligent Transportation Systems
Energy	• Organize special sessions and Call For Papers (CFP) in relevant 2017 IoT-Energy conferences and forums • IEEE Transactions on Smart Grid • IEEE Transactions on Industrial Informatics • Elsevier Energy & Buildings
eHealth	• International Journal of E-Health and Medical Communications • Telemedicine and e-Health Journal

Table 7: A tentative list of publication journals and magazines in 2017

5.3. Other dissemination activities

A variety of dissemination tools and channels will continuously be adopted and updated, such as project website, social media, Newsletters, factsheet, information brochures, invitation letters, videos, posters, etc.

Additionally, the VICINITY consortium will organize national talks and keynotes to attract IoT and ICT companies, solution providers within smart buildings, transport, e-health and energy management industries.

Furthermore, laboratory demonstrations (AAU IoT Microgrid Lab, ATOS Internet of Everything Lab (IoE Lab), UNIKL Test Lab, and CERTH Test Lab) will be held to present the integration of IoT devices, VICINITY Framework, and lab. testing for visitors and stakeholders in line with WP6. System Integration & Lab Testing.

6. Conclusion

The hereby Report on Dissemination Activities, Public Participation and Awareness aims to summarise dissemination activities' and public participations' categories, feedbacks, details; publication numbers, contributors, types, topics; statistics analytics of various dissemination channels and tools developed or participated by VICINITY consortium, thereby analysing and

evaluating the visibility, impression, accessibility of each dissemination activity.

It will give rich insights into the achievements of previous dissemination activities, furthermore, help the consortium determine the effective and targeted dissemination channels, tools, and dissemination activities, and improve on the activities based on lessons learned from the first year.
A matrix has been created to address the needs of each participant at the current status. This matrix will contribute to have the activities becoming anchored in the organisation, and making the goals clearly defined.

The matrix will also clarify how to handle invitations to pilot sites, organising material that is relevant for long and short meetings – as well as following up afterward.

Channels	Target group	Material available	Material needed
Posters, brochures, and fliers	Everyone needs to provide information	Yes	More materials are needed for next year
Social media	Everyone needs to provide information	Yes	More materials are needed for next year
Press releases and press conferences	Everyone	Yes	More materials are needed for next year
Columns and reports	Everyone	Yes	More materials are needed for next year
News stories in both print and broadcast media	Everyone	Yes	More materials are needed for next year
Outreach and presentations to other Horizon programs, IoT providers, community groups, municipalities and institutions.	Everyone	Yes	More participations are needed for next year
Special events, demonstrations and open houses that participants and stakeholders are holding	ENERC, HITS, TINYM, BVR	No all	Demo sites ready
Newsletters	Everyone needs to provide information	Yes	More information is needed for next numbers

Table 8: Each participant need to develop their own communication matrix to help planning

A comparison between the main dissemination activity achievements of M1-M12 and dissemination plan is shown in the following table. It can be seen that most of the pre-set KPIs are very well reached and even overfulfilled in several dissemination channels, e.g. participation in external events and project social media. A special event also has been taken place at the Norwegian pilot sites. VICINITY consortium has been invited by IoT-EPI to participate in their exhibition stands, and will probably be part of it next year. VICINITY partners have been done a great dissemination job in the first year with participating and informing about VICINITY at various internal/external events, and with promoting project visibility by a number of dissemination channels and tool conferences. Through the various dissemination activities, VICINITY project raised increased interest and received many positive feedbacks from a wide range of stakeholders, such as IoT communities, industrial companies, research communities, devices suppliers, policy makers, end-consumers, public administration and so on.

Based on the lessons VICINITY has learnt after this first year in terms of dissemination activities and materials, several targets have been updated as shown below. Additionally, demonstrations, VICINITY exhibition stands, roll-ups, giveaways will probably be ready for next year. Some of the dissemination channels, e.g. LinkedIn, Google plus will be more active in next years.

Dissemination channels and tools	KPIs		Achievements of M1-M12	Updated targets		
	Items (month 48)	Targets		M12-M24	M25-M36	M37-M48
Participation in external events	Contributions external events	12	9, which includes: - Event: 1 - Workshop: 5 - Conference: 1 - Congress: 1 - Forum:1	9	9	9
Project events	**VICINITY workshops** Number of workshops: Number of participants per workshop:	3 30	3, which includes: - Workshop: 2 - Webinar: 1 34	3 35	3 35	3 35
Publication	Number of journal, conference publications:	> 20	6	6	6	6
Project website	Number of visitors December 2016 (Month 12): Average duration of visits:	2000 1 min	> 2000 (M1-M11) 2:51 min	2000 3 min	2000 3 min	2000 3 min
Project social media	Number of Twitter followers Number of Tweets / retweets Size of the LinkedIn Group	> 100 > 150 > 150	109 (M1-M11) 108 6	> 110 > 110 > 50	> 110 > 110 > 50	> 110 > 110 > 50
Project biannual e-Newsletter	Number of e-Newsletters published Size of the dissemination list	10 > 1 000	1 > 2000	4 > 2000	4 > 2000	4 > 2000
Information brochures	Number of brochures	2	2	2	2	2
Videos	Number of videos to be produced	2	2	1	1	1
Project factsheet	Number of factsheet	1	1	1	1	1
Invitation letters	Number of Invitation letters	2	2	2	2	2

Posters	Number of posters	2-3	3	> 8, at least 1 for each main domain/use case
Press releases	Number of press releases	4	1	4
Business cards	Number of Business cards	2	2	> 2, 2 alternative versions: 1x VICINITY specific with all graphical elements 1x VICINITY related, using just logo

Table 9: A comparison between the main dissemination activity achievements of M1-M12 and dissemination plan.

Annex 1: Newsletter

Newsletter
January-November 2016

"Interoperability as a Service" – Connecting IoT infrastructures and smart objects

By 2020, the Internet of Things (IoT) is expected to have a value roughly 7.5x that of the Internet today. Interoperability in the IoT opens the way to wider adoption of the IoT in a range of applications and domains. For example, in eHEALTH to optimize resources and improve care by using social care alarms; in the BUILDING domain to reduce emissions and optimise energy usage; in ENERGY domain to reduce consumption and optimize resources, and in the MOBILITY domain to optimize usage.

“Cross domain data-driven services can be offered to B2C and B2B end-users to reduce in field of energy consumption through demand side management, use of renewable energy sources and innovative energy storage, buildings environment quality supporting health assistance services, advanced parking services considering drivers and vehicles profiles and parking purpose”

“Interoperability in the IoT provides the opportunity opens potential to use clean energy and further optimize the use of resources. Understanding how energy and resources (e.g. energy, water, heat, room occupancy availability of parking spaces) are produced and consumed creates the potential for dynamic pricing, better invoicing and better management of resources”.

Editorial: From VICINITY to the IoT

Prof. Dr. Christoph Grimm

Coordinator VICINITY project

Kaiserslautern University of Technology

It is a pleasure to write this editorial for the first VICINITY newsletter. It should provide a lot of insight and information on things going on in the VICINITY project, the European Platform Initiative (EPI), and the IoT in general.

The IoT is created by networking things from our world from all kind of domains, including home, energy, work, traffic, healthcare, security. While the networking is the technical basis the IoT is more than just the capability to communicate. Its novelty lies in the ability to combine data and functionalities of different things, maybe even from different domains, and to create new value-added services on top of these.

The key to creation of such value-added services is interoperability among things, across silos created by different manufacturers, in different domains, or by relying on different standards or using different platforms. At the recent ETSI IoT/M2M workshop in Sophia Antipolis it was stated that open standards in IoT deployments would accelerate growth by 27% and reduce deployment costs by 30%. VICINITY has undertaken a thorough review of all existing standards and platforms, selecting those that are needed to build a service or to create some interoperability among different standards and platforms.

The newsletter includes a summary and overview of results from the VICINITY project in that direction, giving brief answers to questions such as: Which is the architecture of an IoT system? Which platforms are

available for implementing the components of it? Which standards are relevant for my project? How can we achieve interoperability?

While selection of platforms and standards is a key issue, the best solution would be to rely on interoperability. This is, what VICINITY offers us: interoperability as a service. The VICINITY project was started in January 2016, and we were busy capturing requirements from use-cases, stakeholders, sites, and to create based on this information the technical requirements and specifications that will lead us to an implementation in the coming years.

Overview of VICINITY

The VICINITY project will build and demonstrate a platform and ecosystem that provides “interoperability as a service” for infrastructures in the Internet-of-Things (IoT). The approach is bottom-up, decentralized and user-centric and involved in standardization without relying on a single standard. VICINITY aims to retain full control of the ownership and distribution of data across the different IoT domains.

VICINITY has introduced the concept of virtual neighbourhoods, where users can share access to their smart objects without losing the control over them. A virtual neighbourhood will be a part of an IoT infrastructure that offers decentralised interoperability, preventing the vendor lock-ins that are present in current IoT ecosystems.

The availability of large amounts of data in semantic formats generated by IoT devices and applications will also make possible new independent value added services across a range of IoT domains.

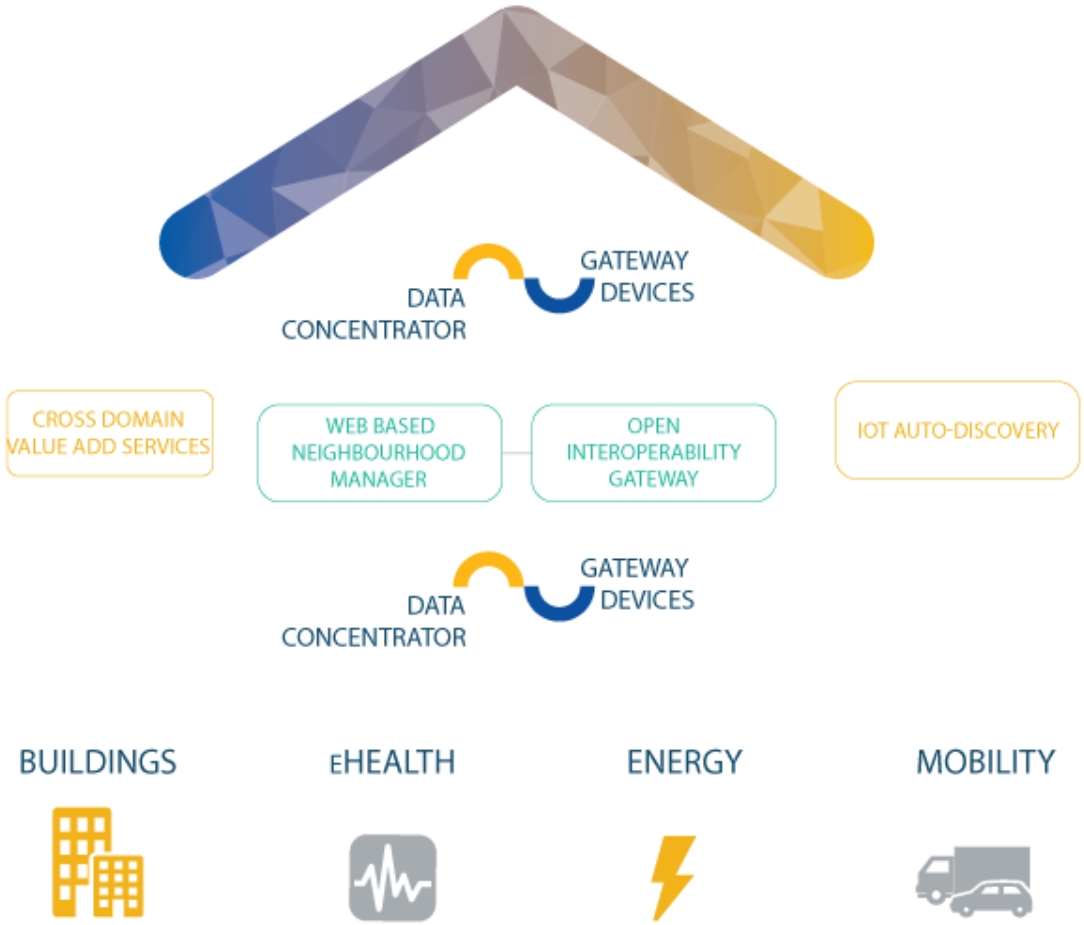


Figure 1: VICINITY bottom-up ecosystem.

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Standardization and Platforms

The IoT is a rapidly growing topic that has the potential to change the way people live, work, and think. However, evolution to the IoT will be a complicated process with many challenges. One of the main challenges is interoperability, either technical or at a higher, semantic level.

Technical interoperability allows communication of devices using different communication protocols while semantic interoperability allows communication of different infrastructures ("things") interpreting shared information in a correct way. Thus, IoT solution needs to be thought as end-to-end or device-to-cloud communication.

The key to achieving technical interoperability is the use of IoT gateways. IoT gateways are universal devices that translate different communication protocols to a common one that allows communication with the cloud. For the implementation of such devices it is always beneficial to use existing solutions than build new solutions from scratch.

Requirements for VICINITY standards can be divided into two main groups: the requirements of the underlying technology and foundations of the IoT ecosystem grouped as horizontal technologies and the requirements of the VICINITY Pilots in the domain of eHealth, smart transport, smart energy and smart parking, as shown in Fig.2.

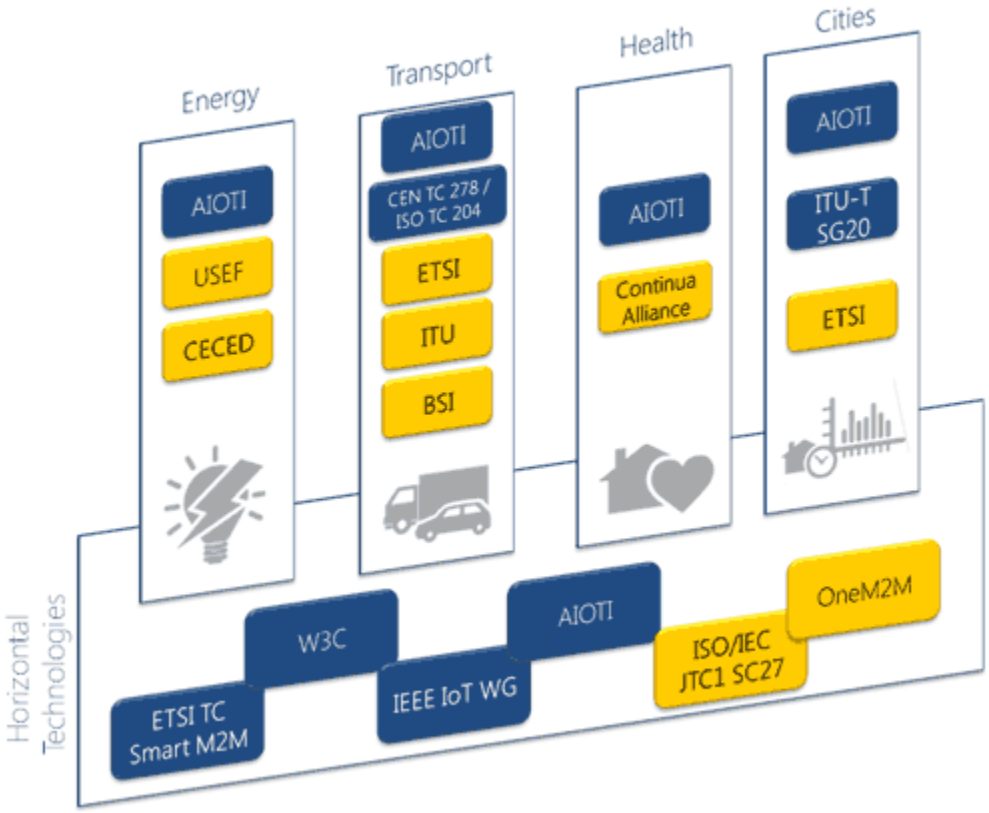
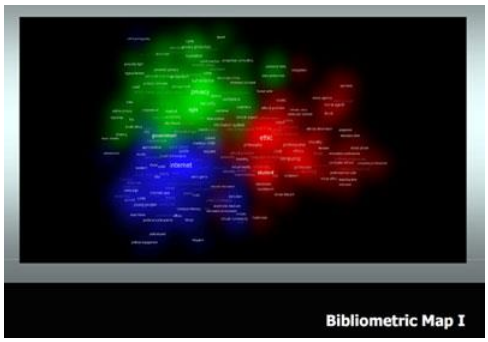


Figure 2: Landscape of IoT standards considered for VICINITY

From Web Summit to Industry Conferences, a warm welcome to the new concept: Ethics Everywhere

Natalie Samovich

VICINITY Ethics Board Chair with support by EB members



Source: ETICA "Ethics of Emerging ICT's" EU FP7, 2011

The topic of ethics and uncertainty in the development of trust-driven concepts in an increasingly digital technology driven society has featured prominently in keynotes and conference programmes across Europe in 2016. What are the biggest ethical challenges in the digitizing world? They range from data ownership questions, data sharing, privacy, to equality and value creation and distribution. The topic´s complexity and the importance of ethics is steadily rising to the point that "Data Hippocratic oath" is needed to uphold specific ethical standards. The idea was shared and discussed during the Future Societies conference at the Web Summit in Lisbon, signaling an overarching importance and relevance of the topic and pointing to the lack of consensus around it.

"From Generation Y sharing platforms, to data leaks and automated marketing, we discuss if privacy as we know it is on the brink of extinction." – as the Web Summit states in the title of the Future Societies conference. Ethics principles in relation to all these challenges, coupled with the new EU General Data Protection Regulation (GDPR), are guiding how these challenges are addressed.

European Utility week, Web Summit, Smart Cities events, and the Big Data analytics conferences might not have provided given

all the answers to these questions, but the questions have been raised now and are at the forefront of our minds: “Will the world develop universal data protection laws across borders?”, “Who should own consumer data?”, “Who is preparing for the next wave of hacking...?”.

If most of the assets we know today were available as a service, then the sole asset that is expected to remain would be our "digital identity" and as a result, privacy rights and knowledge of it would become an advantage. The relationship of trust between solution providers and users could be facilitated by certification of compliance when sanctions under the EU General Data Protection Regulation have come into force in 2018. Demonstration of compliance will not be sufficient to meet customers' expectations in an environment where 100% security is a major challenge. The systems of systems in the future would be expected to act ethically.

The VICINITY Ethics board will meet regularly to discuss the above issues, raising awareness of the consortium and incorporating principles in the solutions we are working on. Protecting data, maximizing the value received by VICINITY stakeholders, and raising awareness of what is being exchanged and on what level in a transparent and a secure way, is a major challenge that VICINITY aims to

answer. We will build on previous studies from the FP7 program, as well as new commitments such as UK PETRAS IoT Hub which is focusing on privacy and trust among other topics.

Ethics Everywhere is a concept that would shape Data Everywhere and would need to drive the process and provide many answers impacting future development of the digitizing world.

Use Cases and Pilot Sites

Use case: Intelligent Building System

This use case will target the interconnection of smart objects under a "virtual neighbourhood" of intelligent buildings, addressing both geographic proximity as well as the use of energy profiles. These will allow neighbourhoods to negotiate as a group their potential forecast energy flexibility within a Smart Grid ecosystem, allowing the realisation of dynamic Demand Side Management (DSM) strategies. The use case will be deployed and demonstrated at Oslo Science Park consisting of four semi-independent buildings, as well as a basement parking garage, for a combined area of 55,000 square meters. The use cases at Oslo Science Park will have three main focuses. First, a use case on energy flexibility in buildings in a smart neighbourhood. The second use case is about Smart Parking/Booking/ Electric Vehicle (EV) charging and optimizating this across a local grid. The third use case is a Smart Grid use case to optimise local energy flexibility in a smart urban neigbourhood.

Ongoing activities:

The Oslo Science Park houses almost 2,400 office and laboratory workers. The use case explores and demonstrates how wireless sensors from Serinus Technology, EV chargers from Meshcrafts and general data capture can be utilized in a smart neighborhood setting. The goal is to spend less money on energy, while improving the indoor environment for the people who use the premises. Smart EV chargers will allow them to recharge their vehicles while parked.

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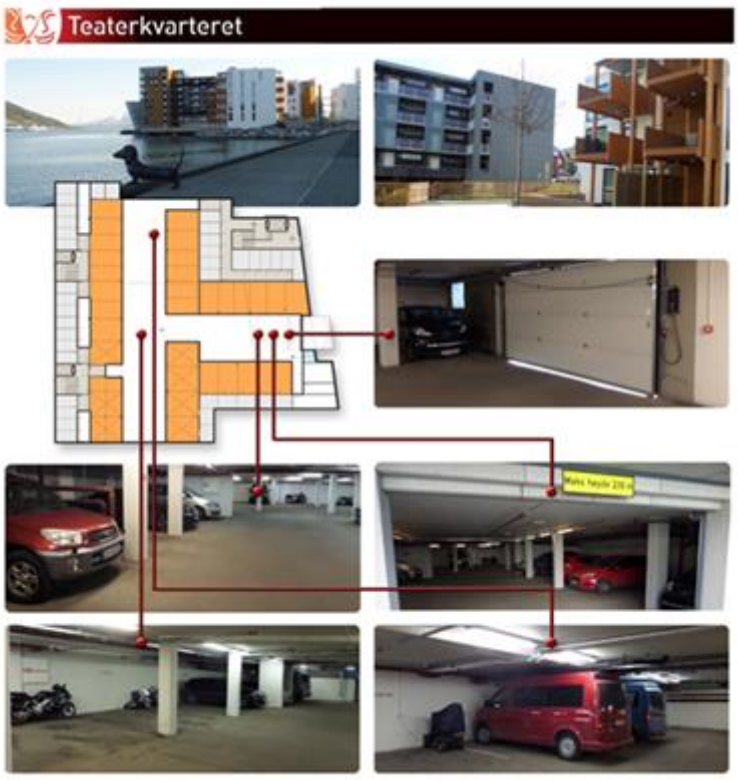
Use case: Smart Parking

The Smart parking demonstration is located in Tromsø, Norway offering an extendable service for sharing available parking space. The initial test site is located in a newly constructed cluster of a living community for residents, elderly and young people, some of them requiring health and assistive service from the municipality. The area is crowded with appartments, offices, theater and amusement activities with less and less outdoor parking space. The demo site is a small and manageable providing services for residents to be supported by IoT devices.



Ongoing activities

Most of the value-added opportunities that have been offered lies within sharing parking space for shorter and longer periods, when a resident wants to share his space. Health care personnel and ambulance/blue light agencies will be the first group to benefit from this new service. Also, sharing parking spaces will be offered when larger events, like conferences and concerts are taking place in this neighbourhood.

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Use case: Smart Energy System

The Use Case in Alcoutim, will target collaborative management of a community-scale energy ecosystem linking the Solar Lab, Demonstration Platform, Meteo Station and a cluster of Municipal buildings. This energy ecosystem will form a data exchange with flows from both the Generation and Demand sides. Data will be obtained from sensors and build information models that will allow for information to be generated upon which an environmental quality service can be provided for the Municipal Building Smartgrid environment including the School, Swimming Pool and Retirement Home as well as the

SolarLab facility.

Ongoing activities:

An energy audit of the Municipal Buildings was performed by ENERC, with a view on identifying the current energy profile of the buildings, and understanding their historic energy performance. In a next step, sensor types will be selected based on the data requirements for each use case, and deployed along with a smart meter system for additional data output. Deployment of IOT enabled white goods from Gorenje is also under study to add to the cross domain use case environment, and further applicable use case implementation.

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Use case: Smart Health/Assistive Living System

This Use Case will demonstrate how sensors, actuators and integrated communication devices installed at home can provide assisted living to elderly people and people with long terms needs, allowing remote monitoring of end-users' health parameters and providing them direct means of communication with a 24-hours call centre with specialist staff in case assistance is needed.

Ongoing activities:

The Municipality of Pilea-Hortiatis is currently operating an eHealth at home scheme, installed and maintained by GNOMON partner, supporting around 50 registered homes in the municipality area. In its current state, the solution comprises of below equipment:

- A communication device, installed in-line with the user's regular telephone device.
- A pressure monitoring device and a weight monitoring device.
- A wearable "panic button", allowing contacting the call center with a single tap at any time of day.
- Special fall detection sensors, worn around the neck.
- A wearable GPS Positioning device for elderly people with dementia.

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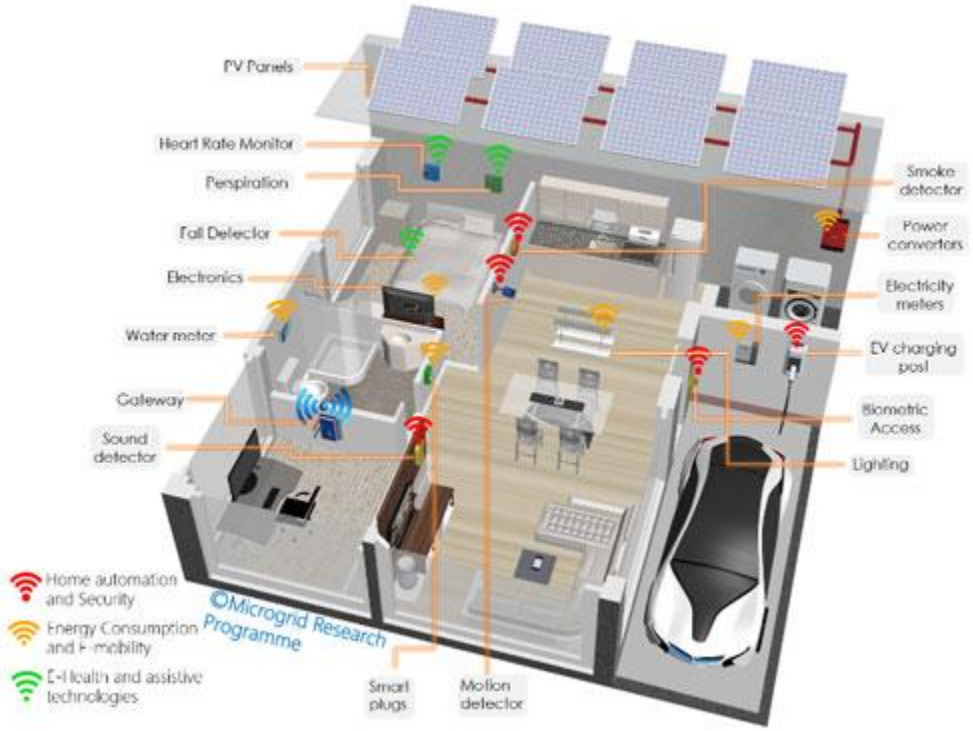
Lab tests

Lab test: AAU Microgrid IoT Laboratory

The AAU IoT home laboratory is located in Aalborg University, Aalborg, Denmark. It will be used as a demonstration of a home microgrid with smart devices for residential applications.

The Energy Management System (EMS) in addition with the smart devices will allow the user to have full-access to the system´s information, and also provides the user the option to remotely control the system. Smart devices will work and provide valuable information to the EMS as described, to manage efficiently the home microgrid. It is expected that the energy management system together with the smart products will enhance the overall system performance and users experience, reaching new levels of flexibility, controllability, comfort and efficiency.



Ongoing activities:

2 kW PV panels and a 2 kW wind turbine are installed on the roof of IoT home laboratory. Electronic appliances (laptops, cellphones, LED lights, home entertainment systems and white goods) are already placed in the living area and kitchen area of the home lab.

Read More

Lab test: ATOS IoE Laboratory

The lab addresses technological contributions in the scope of IoT components, connectivity, platforms and services integration, fostering the usage of open and standard technologies, while also ensuring wider adoption and implementation of the IoT paradigm. The lab is moreover composed by a multidisciplinary technological team targeting embedded systems, sensorized devices, open web technologies and the application of best-practices, agile developments and continuous integration through a self-designed platform and integration services.

Ongoing activities:

ATOS lab could provide a heterogeneous cluster of different ARM platforms managed through an infrastructure and software management system; enabling developers to implement and test easily and simulating production environments.

Read More

Lab test: UNIKL Test Laboratory

In order to validate the correct behaviour of the VICINITY in the early development phases, that is before actual deployment in the field, a model-based development process is reasonable. With the Test Lab at University of Kaiserslautern (UNIKL), this will be met to an extend, that “virtual” devices are connected to the VICINITY Server. That way real use-cases can be simulated, analysed and the correct behaviour can be validated before deployment. The overall structure is shown in figure 3:

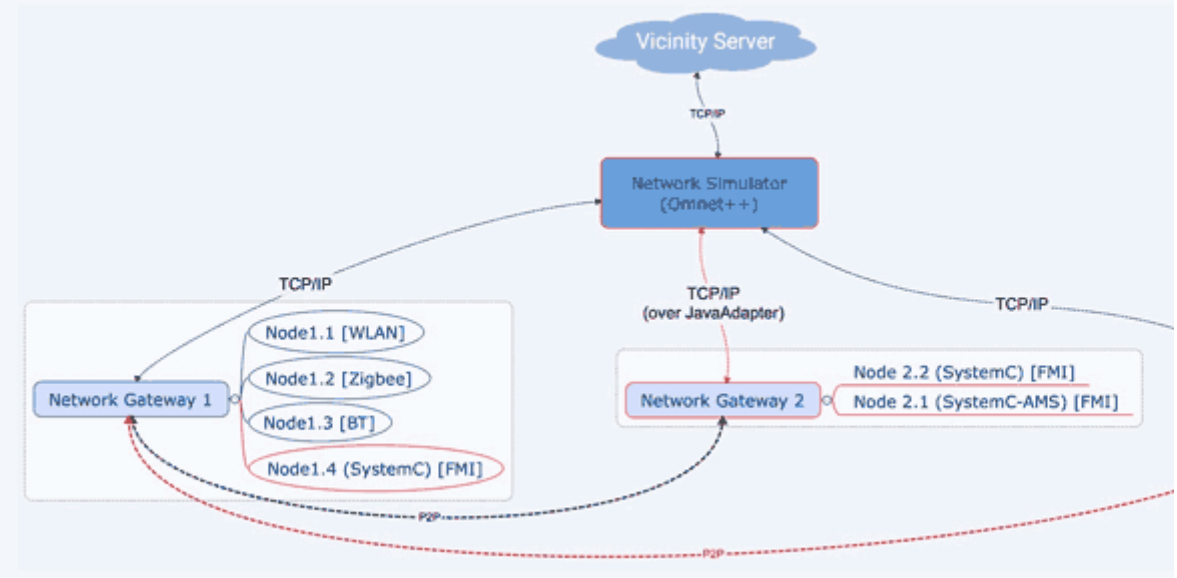


Figure 3: Overview of virtual Environment

A network Simulator is directly connected to the VICINITY-Server on one side, and to a variety of real and simulated devices on the other side. The devices themselves are communicating via different Network Gateways. They can be pure virtual devices/gateways (marked in red) or real existing ones. Both are integrated seamlessly into the VICINITY, enabling the simulation and evaluation of any possible IoT Scenario. Performance, scalability and runtime behaviour will be evaluated with the ultimate goal

of simulating a “virtual Oslo” (see Use case – Intelligent Building System).

Ongoing activities:

Not all devices in the IoT are directly connected to the Internet. For those devices, an IoT Gateway is necessary to establish the connection between devices and the VICINITY (or any Cloud) Server.
Currently UNIKL is evaluating existing hardware- and software platforms for IoT Gateways. A full list of considered platforms is shown in Project deliverable D2.1.
Furthermore, an IoT Developer Survey from April 2016 by The Eclipse IoT Working Group, IEEE IoT and AGILE IoT showed, that the most dominant messaging protocols in existing IoT deployments are HTTP (REST) and MQTT. These will be analysed in terms of scalability and performance in order to evaluate their value and possible use for the VICINITY.

Lab test: CERTH Test Laboratory

CERTH Test laboratory comprises the Institute’s main offices and a dedicated experimental Smart House. Both buildings are equipped with numerous IoT sensors and automation infrastructure to facilitate the experimentation and test operation of the VICINITY framework at the early stages of its development. In particular:

- The offices building comprises of offices where CERTH personnel work and interact during their every-day operations. Most areas are fully equipped with IoT oriented devices and sensors allowing real-time monitoring of environmental, energy and consumption related information, further allowing interaction and control at device level. This building will be the primary test bed infrastructure for the VICINITY platform, allowing valuable information to be extracted during implementation and integration phase, rendering the evaluation and validation processes feasible and more close to real case scenarios.
- The Smart House is a real house simulation building where occupants can experience actual living scenarios, equipped with a vast variety of sensors,

useful test bed for the experimentation of all foreseen use case scenarios of the VICINITY framework.

Ongoing activities:

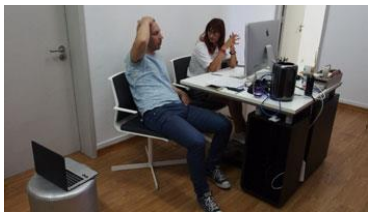
Different IoT sensors and infrastructures have already been promoted for integration in the Smart House, in particular for the eHealth use case, to be demonstrated in real housed of municipal citizens of the nearby Municipality of Pilea-Hortiatis in Greece.

Pilot site visits

A number of site surveys took place during the year, so that the team could visit the site of future DEMO implementation. Teams from Enercoutim (ENERC), Tiny Mesh AS (TYNM), bAvenir s.r.o. (BVR) and HAFENSTROM AS (HITS) surveyed relevant parts of the site, participated in organised workshops with a range of stakeholders within each domain ecosystem and discussed the development of use cases in order to prepare for implementation. These face to face meetings and site visits resulted in a deeper understanding of user requirements, needs and expectations towards IoT implementations overall as well as what customers expect from VICINITY solution.

Visit 1: Martim Longo and Alcoutim, Portugal
1st - 3rd of August, 2016

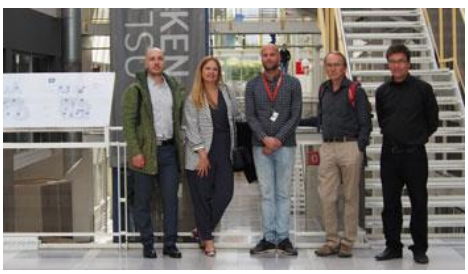
The team visited the Municipality of Alcoutim and held discussion with the technical team, the Solar Lab at Solar Demonstration Platform, the Platform operations and maintenance facility as well as the Municipal buildings cluster.



Visit 2: Oslo Science Park and Municipality of As, Norway
22nd - 25th of August, 2016

TINYM hosted a site visit and workshop with Forskningsparken facilities management team that is overseeing building management. A visit to the Oslo Start-up Lab and discussions on the demonstration potential of the Lab were held with the lead team of this accelerator. Oslo Start-up Lab is an accelerator for more than 100 start up companies. It has IoT laboratory to provide access to the latest technology, allows for demonstration support and cross leverage of solutions. The VICINITY team also held discussions with Municipality of As and visited Renewable Energy cluster organisation to discuss dissemination and collaboration opportunities.



Visit 3: the Municipality of Pilea-Hortiatis Region, Greece

1st-2nd of September, 2016

The Municipality of Pilea Hortiatis together with CERTH organised a two-days' workshop in Thessaloniki, in order to bring together municipal health services and technical stuff, in order to properly address the challenges of the VICINITY eHealth Use Case demonstration. People from the assisted living services and social care personnel participated in the workshop giving the opportunity for a thorough analysis of the particular requirements and problems anticipated so far, together with interested lessons learned that should be taken into account. The scope of the workshop was to find ways to extend and broaden the scope of the use cases towards providing cross-domain and multi-functional services to the municipal citizens, further revealing the potential and added-value services that can be brought by the VICNITY infrastructure. Furthermore, a set of useful and challenging cross-domain value-added services where identified and drafted, to allow the demonstration of the VICINITY concept within real-life environment.

Read More

Visit 4: The Smart Parking site in Tromsø, Norway
4th of December 2016

e VICINITY team traveled to Tromsø and visited a residential cluster of buildings where the location of the future smart parking site is. It is directly linked with recently built and functioning home care apartments. The team managing the apartments was engaged in prioritisation of needs discussions. A workshop was held with the regional government representatives in charge of international projects management during the visit as well. Cross dissemination and open discussion of all the use cases in VICINITY took place and further need for ecosystem building was recognised and supported by local stakeholders. This activity was positioned as part of continuous information exchange and visits to the demonstration sites.

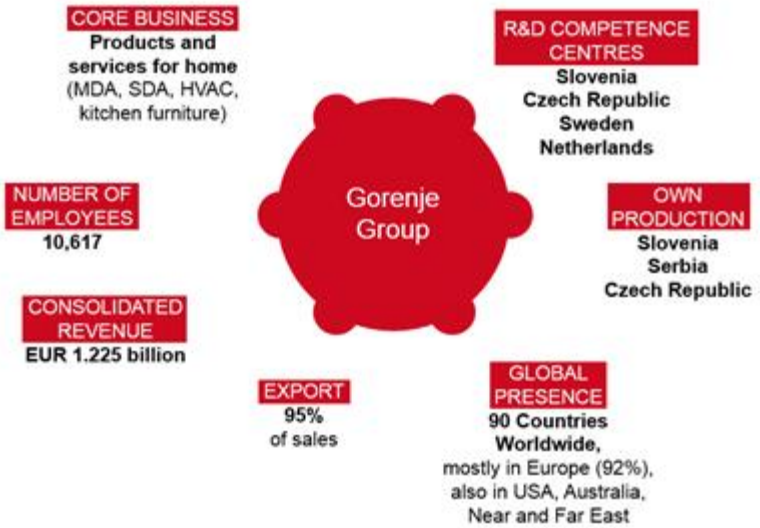



Gorenje - Non-Technical challenges in VICINITY

Gorenje Group is moving from being a traditional manufacturer of white goods to services-oriented organization, through participation in various national and international R&D projects such as VICINITY. Gorenje is developing connected home appliances from premium and upper/mid segments, mobile application, and other IT solutions, as well as contemporary business solutions. Connected appliances are being developed but are not commercially available yet. These will be enabled by the services which are planned to be demonstrated by VICINITY. Using a holistic digital business transformation approach, Gorenje Group will enable provision of digital services for users of connected home appliances. Gorenje Group is taking this journey

together with reliable technology partners with proven references through the VICINITY project.

One of Leading European Manufacturers of Products for Home



Business Transformation

IoT technology not only brings technological innovations but will change the business map in which consumers will be looking for comprehensive solutions and not just individual unconnected products or services.

The traditional product manufacturers will have to refine their business models towards service-oriented business models. In particular, solution providers will be strongly connected with providers from other, complementary industries.

The household appliances industry is already in the middle of intensive development in the direction of digitization of its solutions.

Expectations

IoT, in the term of connected home appliances and smart apps, along with modern business models will enable Gorenje Group to bridge the gap with consumers, i.e. establish the B2C relationship.
We will be able to understand how our products are used, what works and what doesn't, as well as what our customers' habits are and what solutions they need. Connected home appliances with complementary services will allow Gorenje Group to:

- Retain its existing sales and create new revenue from sales,
- Optimize the productivity of its business processes and the related operational costs.

Milestone

- IoT EPI Review Meeting
  13 Oct. 2016, Vienna

- VICINITY IoT-EPI Common Meeting and General Assembly
  21st to 24th of June 2016

Read More

- VICINITY project broadcast on German Television
  21 January 2016

Read More

- VICINITY kick-off meeting: Starting the quest towards IoT connected virtual neighbourhoods!
  20-22 January 2016

Read More

State of the Union

Synergies with IoT EPI

The collaboration with IoT EPI offers VICINITY the potential to boost its reach while keeping costs under control. Collaboration among all ICT-30 projects and being represented in large events as a group provides VICINITY a higher visibility among IoT stakeholder, meaning not only big companies, but also developers and start-ups ecosystems. This collaboration has already taken place in events like IoT Week and

IoT Meet-up in Belgrade and Vienna, and we are actually involved in the preparation of several events with different communities engaged.

VICINITY role in IoT EPI events

VICINITY as one of the RIAs is committed to contribute to the events with the material that is requested by the organisers. We have material available that includes the following assets already presented in previous sections of this document:

- Posters – covering project main message and description of the pilots
- Slidesets – providing deeper insights of the activities that are planned
- Videos – Summary of 2 min of the main activities of the project and the approach VICINITY follows.
- Leaflets – showcasing the pilots and the ecosystems

Introducing the Members of the VICINITY Stakeholders Advisory Board

We are delighted to announce the members of VICINITY's Stakeholders Advisory Board (SAB): a body that is intended to support, guide and challenge VICINITY during the project as we continue to influence and contribute to IoT.
The SAB consist of the following members (in alphabetical order):

Name	Role	Domain of expertise
Dr. Pantelis Angelidis	Founder & CEO of Vidavo	eHealth
David Boswarthick	ETSI Secretariat, Smart Cities and IoT	Smart Cities Standards
Charles Brookson OBE	Chair ETSI TC Cyber	Security Standards
John Davies	Chief Researcher at BT	Expert in Big data & IoT
Omar Elloumi	Nokia, Chair oneM2M Technical	M2M Standards
Mike Perry	Senior Consultant, Buildings Research	Smart Buildings

	Establishment	
Dolores Ordoñez	Director of AnySolution	SmartCities / SmartDestinations
Prof. Antonio Ruano	Member of the Portuguese Associated Laboratory for Energy	Energy
Björne Grimsrud	Strategy and Development Director Statsbygg	Intelligent Buildings
Leif Næss	PhD, MBA, University college of Southeast Norway Campus Kongsberg	eMobility

Latest news and upcoming events

Latest news

- VICINITY project presented by CAL at "Boring but lucrative, the real Internet of Things" workshop on December 15, 2016 in Cambridge, UK.
- VICINITY participation in the ETSI IoT/M2M workshop in Sophia Antipolis, 15-17 November 2016.
- VICINITY project presented by AAU at IOT Solutions World Congress on October 27, 2016 in Barcelona, Spain.
- VICINITY project presented by CERTH, GNOMON and OTE partners at "eHealth FORUM 2016" on October 25, in Athens, Greece.
- IoT EPI Review Meeting on October 13, 2016 in Vienna, Austria.
- VICINITY workshop on "VICINITY eHealth Use Case definition" organised by CERTH on September 2, 2016 in Thessaloniki, Greece.
- VICINITY workshop on "Ways to strengthen e-health in Municipalities" supported by CERTH on July 27, 2016 in Thessaloniki, Greece.
- VICINITY project presented by ATOS at IoT Week on June 2, 2016 in Belgrade, Serbia.
- VICINITY project presented by UPM at “ifcOWL-SAREF-FIEMSER VoCamp” organised by SWIMing Project on March 22, 2016 in Dublin, Ireland.
- VICINITY project at “Internet of Things in the Smart Home” workshop organised by ETSI on March 21, 2016 in Sophia Antipolis, France.
- "Cyber Risk and Connected/Autonomous Vehicles" organised by GCHQ & CCAV, 22 Feb 2016, Oxford University, UK.
- VICINITY project presented by CERTH at AIOTI Open Day on February 8, 2016

in Athens, Greece.

- VICINITY presentation by Enercoutim at Startup Europe Week on February 4, 2016 in Martim Longo, Portugal.
- ENERC will co-organise Microgrid Forum and present VICINITY in November 2016 in Lisbon.

Upcoming events

- VICINITY General Assembly on January 24-25, 2017 in Bratislava.

Scientific and technical publications

Five scientific and technical papers have been published in international journals and magazines, and at international conferences.

- A knowledge discovery in databases approach for industrial microgrid planning. / Gamarra, Carlos; Guerrero, Josep M.; Montero , Eduardo. Renewable & Sustainable Energy Reviews, Vol. 60, 07.2016, p. 615–630.
- Optimal Real-time Dispatch for Integrated Energy Systems: An Ontology-Based Multi-Agent Approach. / Anvari-Moghaddam, Amjad; Rahimi-Kian, Ashkan; Mirian, Maryam S.; Guerrero, Josep M. 7th International Symposium on Power Electronics for Distributed Generation Systems (PEDG'16). IEEE Press, 2016. p. 1-7.
- An Efficient Multi-objective Approach for Designing of Communication Interfaces in Smart Grids. / Ghasemkhani, Amir; Anvari-Moghaddam, Amjad; Guerrero, Josep M.; Bak-Jensen, Birgitte. Proceedings of IEEE PES Innovative Smart Grid Technologies (ISGT 2016). IEEE Press, 2016. p. 1-6.
- Development and Integration of a HEMS with an Advanced Smart Metering Infrastructure. / Diaz, Enrique Rodriguez; Palacios-Garcia, Emilio; Savaghebi, Mehdi; Quintero, Juan Carlos Vasquez; Guerrero, Josep M. 2016 IEEE International Conference on Consumer Electronics (ICCE). 2016. p. 544 - 545.
- Intelligent DC Homes in Future Sustainable Energy Systems: When efficiency and Intelligence Work Together. / Diaz, Enrique Rodriguez; Quintero, Juan Carlos Vasquez; Guerrero, Josep M. IEEE Consumer Electronics Magazine,

Vol. 5, No. 1, 03.2016, p. 74 - 80.

- European Patient Summary Guideline:Focus on Greece. / Alexander BERLERa,1 Anastassios Tagarisb and Catherine CHRONAKI. 13th International Conference on Wearable, Micro & Nano Technologies for Personalized Health (pHealth). 2016, p. 1-6.

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This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement no 688467.

European Commission | Horizon 2020 European Union funding for Research & Innovation

European Platforms Initiative

You receive this newsletter as a registered stakeholder in the Horizon2020 project VICINITY.

VICINITY adheres to Article 13 of Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector, and sending unsolicited email (spam).

Unsubscribe by send a message to subscribe@vicinity2020.eu

Annex 2: Factsheets

European Commission

VICINITY 2020

"Interoperability as a Service for the Internet of things – a bottom-up approach."

The VICINITY project will build and demonstrate a platform and ecosystem that provides "interoperability as a service" for infrastructures in the Internet-of-Things (IoT). The approach is bottom-up, decentralized and user-centric and involved in standardization without relying on a single standard.

Project title:

Open virtual neighbourhood network to connect IoT infrastructures and smart objects

Coordinator: TU Kaiserslautern (DE)

Partners:

TU Kaiserslautern - Germany,
ATOS Spain SA,
CERTH - Greece,
Aalborg University - Denmark,
Gorenje - Slovenia,
bAvenir - Slovakia,
Climate Associates - UK,
InterSoft - Slovakia,
Universidad Politécnica de Madrid - Spain,
Gnomon Informatics - Greece,
Tiny Mesh - Norway,
Hafenstrom - Norway,
Enercoutim - Portugal,
Municipality of Pylaia Chortiatis - Greece

Duration: 01/2016 - 12/2019

Total cost: 7.5m €

EC Contribution: 7.5m €

Programme: H2020-ICT-30-2015

Website: www.vicinity-h2020.eu

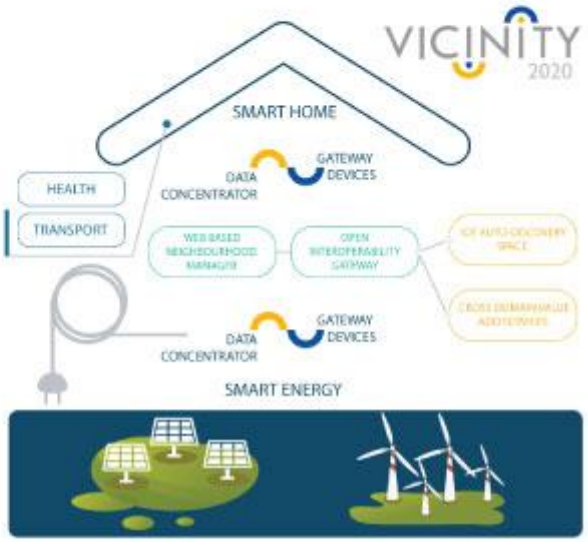

Figure 1 : Vicinity architecture for smart home.

Context and motivation

Deployment of various IoT infrastructures for sensing, measuring, controlling, and business process optimization purposes in various domains is advancing and progressing. As a result, different IoT platforms and standards are emerging within small, isolated islands in the global IoT landscape. Inter-operability between these islands, and compling to privacy requirements is a necessary basis for value added services creation.

Challenge

There are various standards and platforms for the Internet of Things solutions.

For pure technical communication there is a limited number of standards, e.g. WiFi or ZigBee. Hence, exchange among IoT devices of data is not the problem.

The problem is the discovery and classification of services, and the communication at semantic layer that is summarized under the term "Machine to Machine communication (M2M)". In this context, achieving interoperability and establishing services is much more challenging. It requires in addition knowledge from different domains and applications that can hardly be standardized. Instead, knowledge is dynamically changing rapidly, and also dependent on particular applications, or locations and use cases.

The interconnection of smart objects under a "virtual neighbourhood" of intelligent buildings, addressing both geographical proximity as well as energy profile relevance aspects that will allow them to negotiate as a group their potential forecasted energy flexibility within a Smart Grid ecosystem, allowing the realisation of dynamic Demand Side Management (DSM) strategies.

Intelligent Transport and Smart Parking. In the demonstrated solution, prioritized parking space, booking, heating management, traffic analysis, customized and messaging services based on biometric data will be adjusted according stored rules. The sensors will report proximity and temperature, which will be accessible for the health house and made available to the virtual neighbourhood.

Demonstration Pilot Site will be located in the municipality of Martim Longo in the Algarve region, Portugal, the most populous urban center in the municipality, with over 1300 inhabitants. The Demo site consists of three clusters: Solar energy production site, Cluster of the municipal buildings, Solar Lab NZEB building, hosting variouse equipments, including Meteo station and advanced DNI measurement.

The use case will target the management of a community-scale smart energy system IoT enabled within the municipal setting. Generation and Demand sides, could be obtained and matched by gathering data from sensors and building information models that will allow for resources optimization, delivery of value add services to the community through interlinking the data from various sources.

CERTH SMART HOUSE
The goal of this Test bed infrastructure is to perform extensive trials on the integration and interoperability of VICINITY platform to buildings and objects were IoT Devices and Multi-sensorial networks have been already installed. To that end, the use of two Buildings at CERTH's premises (IT Building and KRIPIS Smart House Building) will be utilised towards ensuring the robust and efficient operation of the VICINITY framework.

HEALTHECare at home
This use-case will be demonstrated in the municipality of Pilea-Hortiatis in Northern Greece, with the participation of a number of all above targeted people, identified through municipality health care services. The improvement in terms of ease of installation/integration with existing systems and extension with more sensors as brought by the VICINITY platform will be accessed to compare to the current "baseline" scenario and indicate the advancements brought by VICINITY.

VICINITY's Solution

The solution of VICINITY is to connect IoT devices in smart entities, i.e. a smart home contributing to a smart grid via a local gateway and the VICINITY open interoperability gateway.

The *local gateway* (Fig. 1, top middle) technically communicates with the local IoT devices. It is able to run apps that control local services, supported by the VICINITY open interoperability gateway.

The *open interoperability gateway* (Fig. 1, middle) provides the local premises with data for service discovery and semantic information. However, its main function is to host and provide value-added services that build on top of recognized services in local premises and its (digital) vicinity.

The *value added services* are a novel kind of functionality, based on availability of the rich data and functionality that stems from the IoT devices of different users, different smart entities that enables new business models. An example is the aggregation of different smart appliances to a virtual smart grid. Via VICINITY, then a kind of micro-energy trading driven bottom-up by users is enabled. Other value-added services are the use of the same infrastructure for other domains or use-cases, e.g. use of smart appliances and its data for eHealth applications.

A prime concern is *privacy*: the VICINITY approach gives each user the ultimate control of its data. Each user has the decision whether to contribute IoT devices and/or it's data to which value-added services or not via the *web-based neighbourhood manager (Fig. 1, left)*. Privacy in VICINITY is hence "built-in" as local data aggregators are under control of the users.

Demonstration and Impact

The VICINITY project's solution will provide an IoT platform that is able to connect so far isolated islands, and that allows integration of end-users and creation of new business models. VICINITY strives for large-scale demonstration of the applicability of the solution in different use cases that implement and demonstrate different value-added services on top of the VICINITY platform.

The first use case is a smart energy micro-grid that is enabled by municipal buildings (Enercoutim, Portugal). The VICINITY value-added services will provide users with information on potential energy savings and thereby increase awareness of the contributors.

The second use case shows how to *combine infrastructure* from different domains: a Smart Grid ecosystem is combines with an Assisted Living use case (Tiny Mesh, Norway).

The third use case is eHealth (GNOMON, Greece). In this use case we study particular applicability in the domain of eHealth with its specific needs and constraints. Value-added services are the detection of abnormal events, and the possible finding and clustering of similar patients based on data mining.

The last use case shows how a large number of different data sources from different domains can be combined for an intelligent parking space (Hafenstrom, Norway), considering data from booking, heating management, health status, and considering user incentives.

VICINTY is open and welcomes participation of further interested consumers, integrators and developers of value-added services.

VICINITY 2020

VICINITY 2020

VICINITY

Open virtual neighbourhood network to connect IoT infrastructures and smart objects

SUMMARY

The VICINITY project will build and demonstrate a platform and ecosystem for IoT infrastructures that will offer "Interoperability as a Service". The platform aims to be device and standard agnostic, and will rely on a decentralised and user-centric approach. VICINITY aims to retain full control of the ownership and distribution of data across the different IoT domains.

VICINITY introduced the concept of virtual neighbourhood, where users can share the access to their smart objects without losing the control over them. A virtual neighbourhood will be a part of an IoT infrastructure that offers decentralised interoperability and will release the vendor locks that are present in the current IoT ecosystems.

New independent value added services across IoT domains may benefit from the availability of the vast amount of data in semantic formats that are generated by IoT assets.

CHALLENGE

The lack of integration across different disciplines, vendors and standards prevents exploitation of the huge potential in successful large-scale IoT implementations.

It is difficult to control the data flow and privacy settings within a virtual neighbourhood consisting of IoT devices, and it creates both social and technological barriers which affects the development of new value-added services.

Identifying, configuring, managing and updating information concerning the IoT ecosystem demands technical expertice, which makes it less feasable for the smaller stakeholders, and ultimately may lead to slow adoption rate among the users that may be in the most need - especially within the eHealth and assisted living domain. This is however also something that influence smart home appliances and green energy implementations, as well as how smart home systems are tied in with transportation and the nearby surroundings.

SOLUTION

VICINITY presents a virtual neighborhood concept. A decentralized approach resembling a social network will be used. The users are allowed to configure installations and integrate standards according to the preferred services, as well as being able to fully control their desired level of privacy.

Data exchange between different devices is handled through the VICINITY open interoperability gateway, which reduce the need for having a technical background in order to exploit to the VICINITY ecosystem.

An API will allow for easy development of an adapter to the platform. Once an IoT infrastructure is integrated, its owner can simply manage the access to his/her IoT data and controls using the VICINITY neighbourhood manager (VNM).

Connecting to detected IoT infrastructures is handled by the open VICINITY auto discovery device. The device will automatically discover the smart objects. These devices will appear in an device catalogue, and will allow the users to manage access rules for the discovered smart objects.

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VICINITY 2020

VICINITY

Open virtual neighbourhood network to connect IoT infrastructures and smart objects

USE CASES

Use case #1: SMART ENERGY MICROGRIDS COMMUNITY
Intelligent management of power and heat requirements in municipal buildings based on information models and sensor data.
Use case #2: SMART ENERGY MICROGRIDS NEIGHBOURHOOD
Creating an energy flexibility forecast within a smart grid ecosystem based upon information from smart devices.
Use case #3: INTELLIGENT TRANSPORT AND SMART PARKING
Defining prioritized parking space for residents with certain disabilities based on properties, proximity to access points, traffic analysis and urgency.
Use case #4: eHEALTH AT HOME
Realtime sensor information from electronic medical care services such as wearables and communication devices will be provided for improved quality of life.
Use case #5: SMART HOUSE TEST-BED
Using a vast variety of sensors, actuators, and smart devices to demonstrate the VICINITY framework.

HOW TO GET INVOLVED

VICINITY seek to identify and engage stakeholders across different domains, such as healthcare/ assisted living, smart parking/mobility, smart home/building and smart energy. Insight will be gained through interviews and pilot installations, and stakeholders are encouraged to participate.

A stakeholder may be end users as well as IoT integrators and developers. It can also refer to municipalities, management and opinion makers, as well as other parties influenced by the VICINITY platform.

Focus is placed on creating a robust platform for creating interoperability within the IoT domain, making it possible to create user friendly, secure and transparent solutions to integrate, operate and manage smart devices.

The goal is to explore barriers as well as business drivers and new value added services within the IoT ecosystem.

AT A GLANCE

Project Coordinator	Prof. Dr. Christoph Grimm, FB Informatik, Technische Universität Kaiserslautern (DE)
Partners	Technical University of Kaiserslautern (Germany), ATOS Spain SA (Spain), Centre for Research and Technology Hellas (Greece), Aalborg University (Denmark), Gorenje Gospodinjski Aparati D.D. (Slovenia), Hellenic Telecommunications Organization S.A. (Greece), Bavenir, S.R.O. (Slovakia), Climate Associates Limited (United Kingdom), Intersoft A.S. (Slovakia), Universidad Politecnica de Madrid (Spain), Gnomon Informatics S.A. (Greece), Tiny Mesh AS (Norway), Hafenstrom AS (Norway), Enercoutim (Portugal), Municipality of Pilea-Hortiatis (Greece)
Duration	January 2016 - December 2019
Funding	7.5m €
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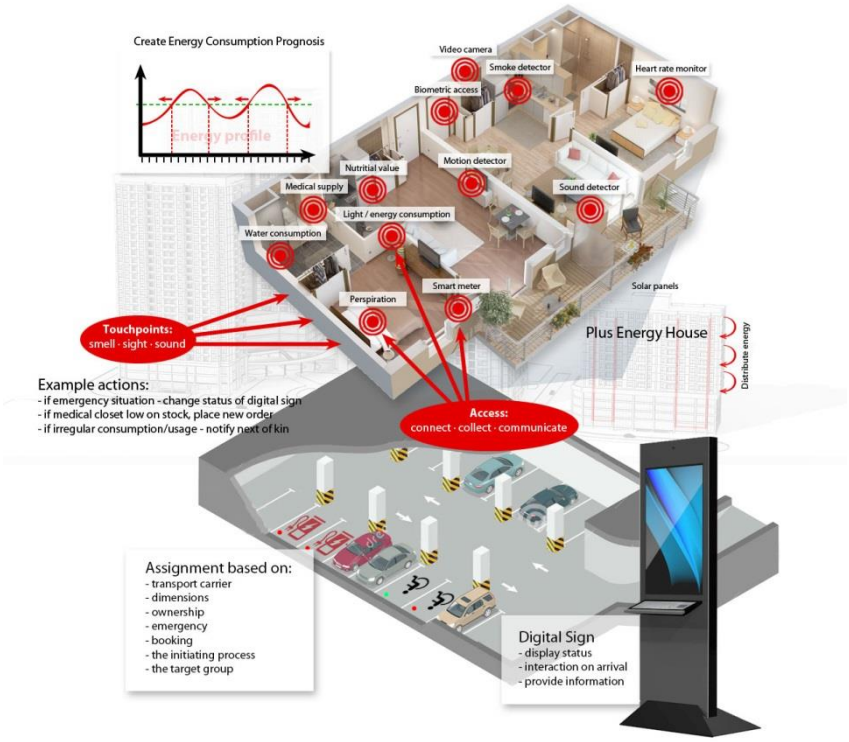
Email address	post@vicinity2020.eu

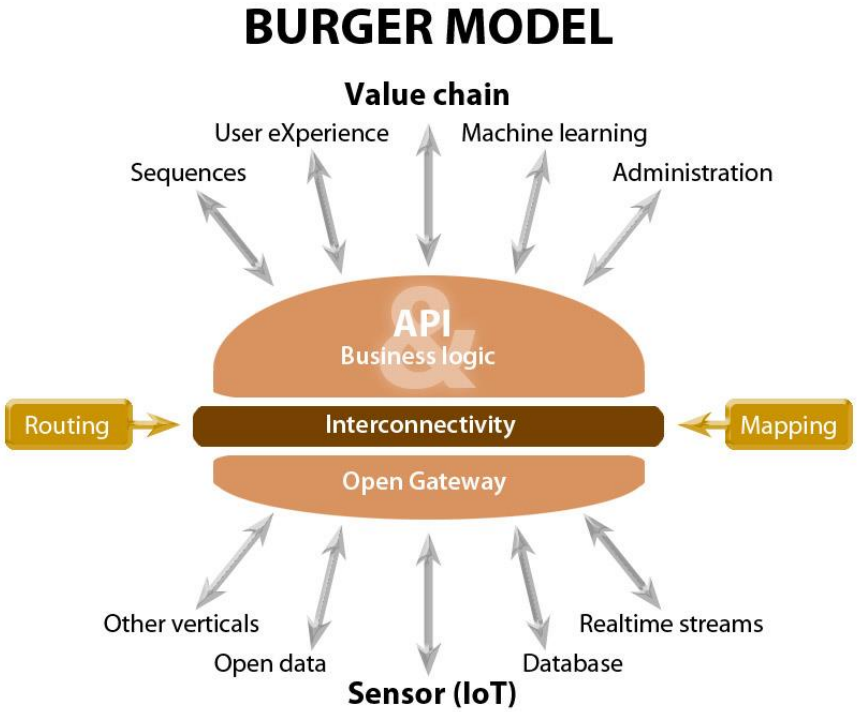
www.iot-epi.eu info@iot-epi.eu

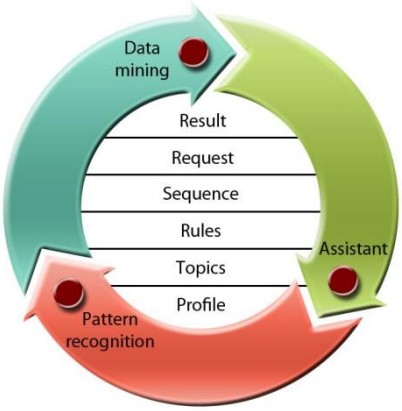
Member of IoT European Platforms Initiative

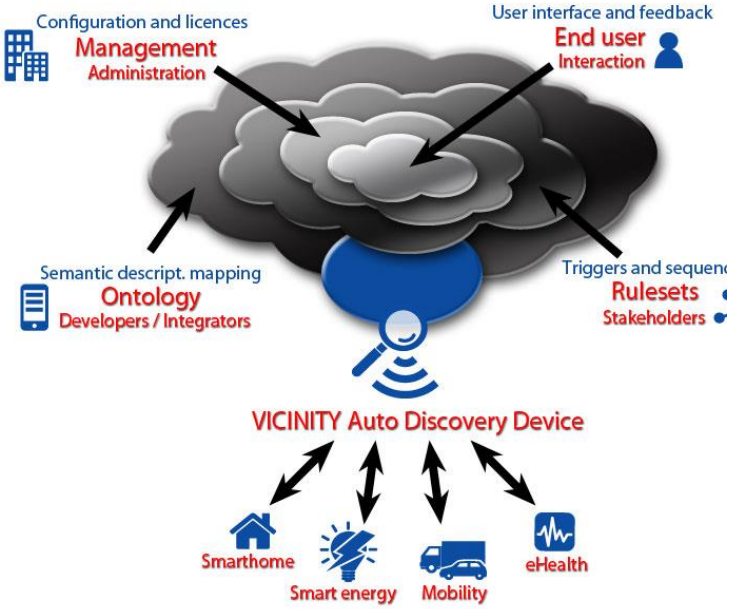
Co-funded by European Commission

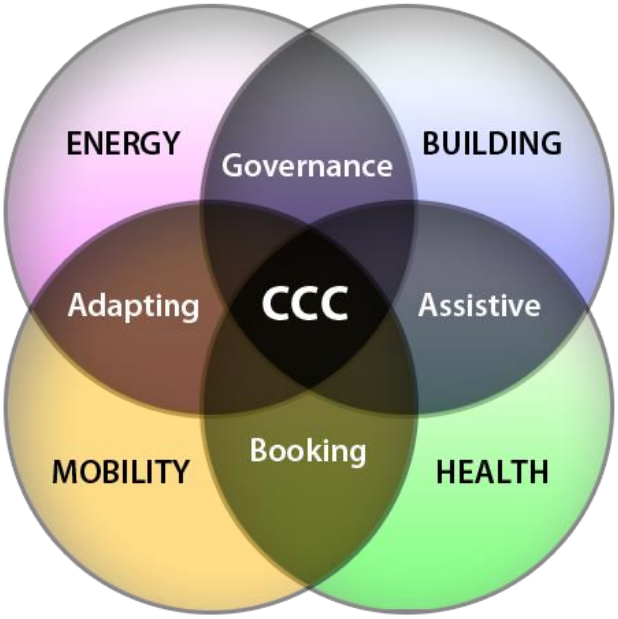
Annex 3: Examples of illustrations and graphical elements

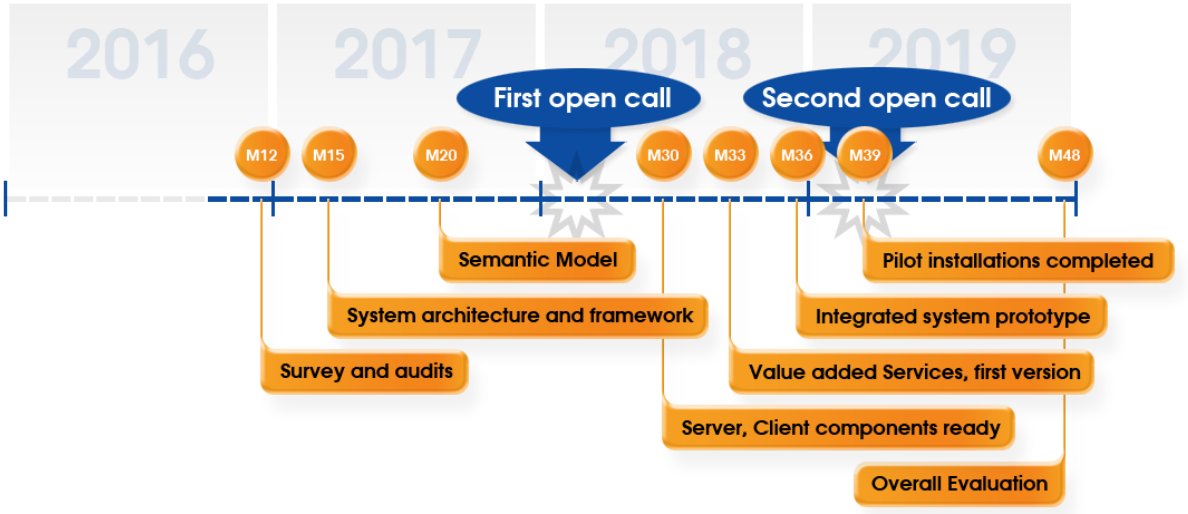





Data mining
Result
Request
Sequence
Rules
Topics
Profile
Assistant
Pattern recognition


Configuration and licences
Management
Administration
User interface and feedback
End user
Interaction
Semantic descript. mapping
Ontology
Developers / Integrators
Triggers and sequen
Rulesets
Stakeholders
VICINITY Auto Discovery Device
Smarthome
Smart energy
Mobility
eHealth

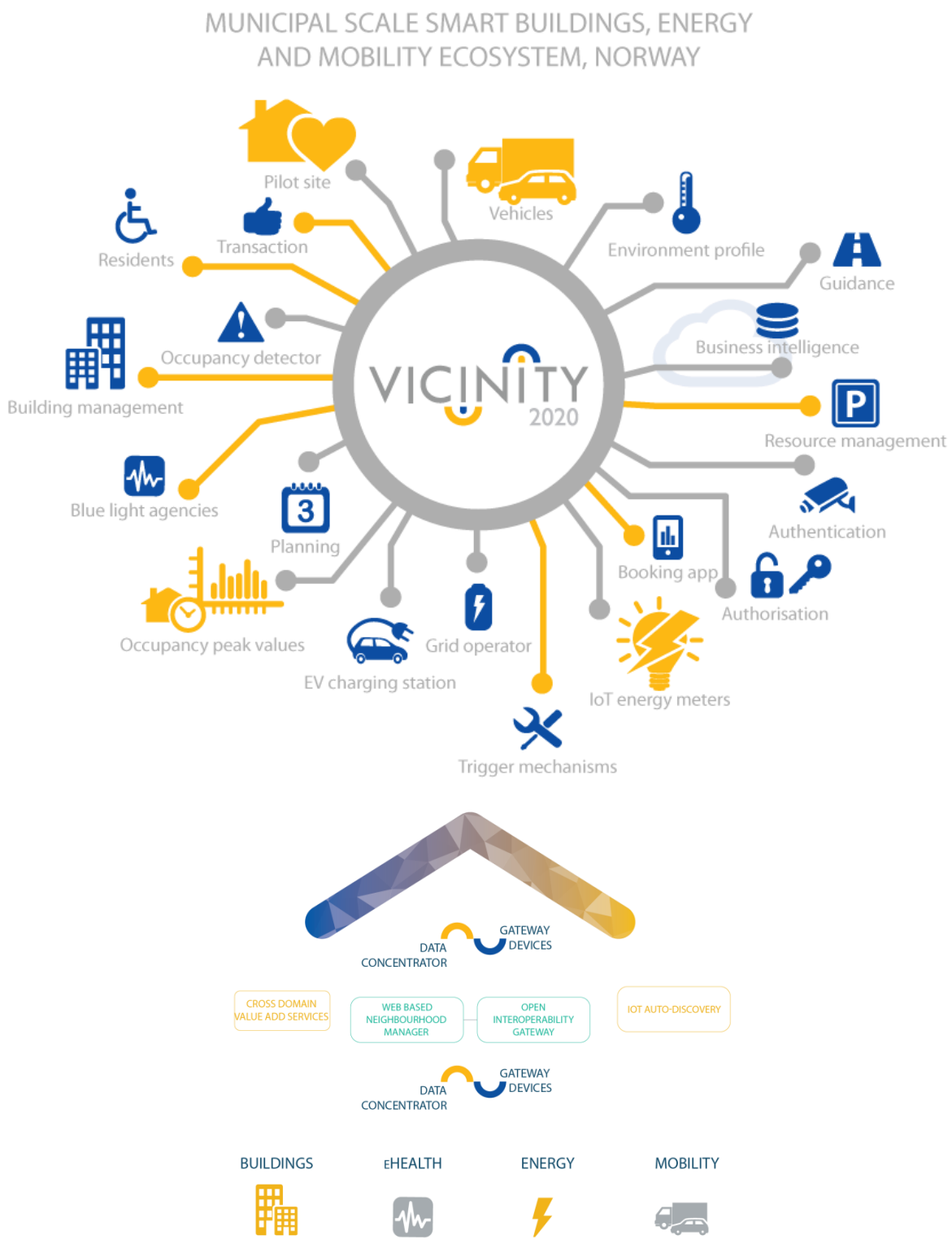

ENERGY
Governance
BUILDING
Adapting
CCC
Assistive
MOBILITY
Booking
HEALTH


2016
2017
2018
2019
First open call
Second open call
M12
M15
M20
M30
M33
M36
M39
M48
Semantic Model
System architecture and framework
Survey and audits
Pilot installations completed
Integrated system prototype
Value added Services, first version
Server, Client components ready
Overall Evaluation

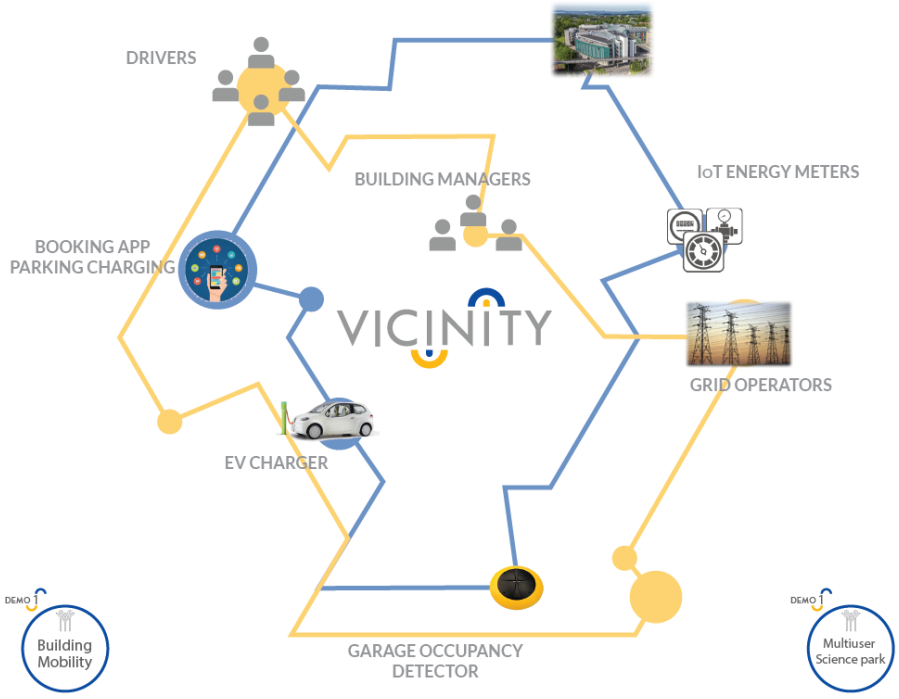

DEMO 3 USE CASES
Healthcare Ecosystem, Pilea-Hortiatis GR
Healthcare
a. eHealth & Assisted Living (eHealth, Smart Building)
b. Fitness & Preventive Medicine (eHealth, Wearable IoT)
DEMO 2 USE CASES
Energy Ecosystem, Martin Longo PT
Smart Energy and Buildings
a. Solar Demonstration Platform (RES generation), Solar Lab (Energy, Building)
b. Municipal buildings cluster (Buildings, Energy)
DEMO 1 USE CASES
Building Mobility NO
Parking and Mobility
Optimised parking based on historical data, user preferences and needs.
DEMO 1 USE CASES
Multidomain Teaterkvarteret, Tromsø NO
Smart buildings, Neighbourhood and Cities
a. Building Performance (Building, Energy, Environment)
b. Parking (ITS, Energy, Building)
c. Healthcare (Administration, Care response center)


VICINITY
2020
Energy ecosystem
Transport ecosystem
eHealth ecosystem
GRID OPERATOR DSO
IoT ENERGY METERS
SECURITY
Business intelligence
Blue light agencies
EV CHARGER
Health IoT integration
GARAGE OCCUPANCY DETECTOR
VISUAL INDICATORS
Travellers
Residents
BOOKING & ASSIGNMENT
Resource planning
APPLIANCES
Building managers
SOCIAL CARE ALARM
eHEALTH MONITORING
SMART BUILDING IoT SENSORS
eHEALTH MEASUREMENTS @GINTE
Fitness citizens
Doctor nutritionists
MUNICIPALITY CALL CENTER
Relatives
ELDERLY PEOPLE @HOME
FITNESS TRACKING WEARABLE IoT
CITIZENS
School
Future residential
Retirement home
MUNICIPAL BUILDINGS
Sports center & swimming pool
RESEARCH INFRASTRUCTURE

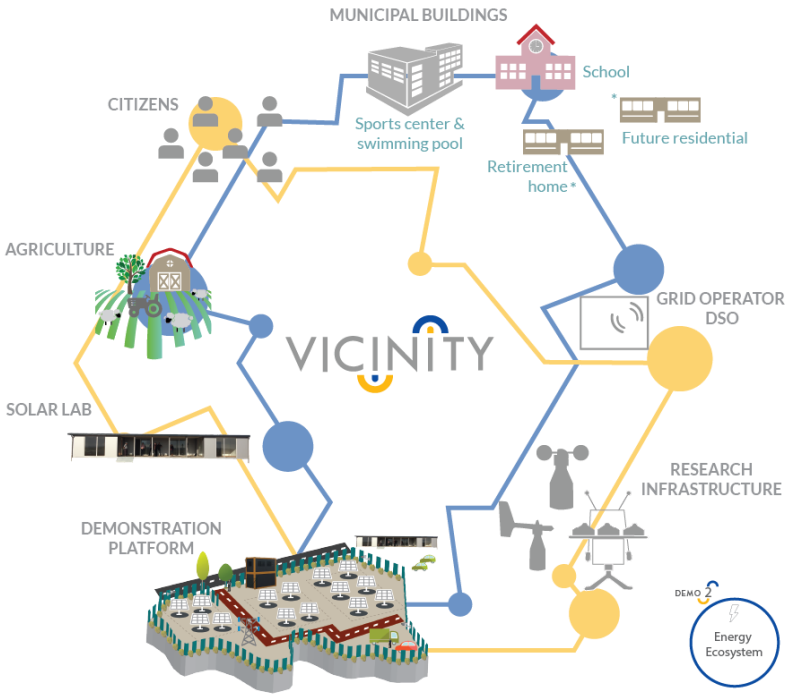

Innovative
Inspiring
Inclusive
Innovative
Inspiring
Inclusive

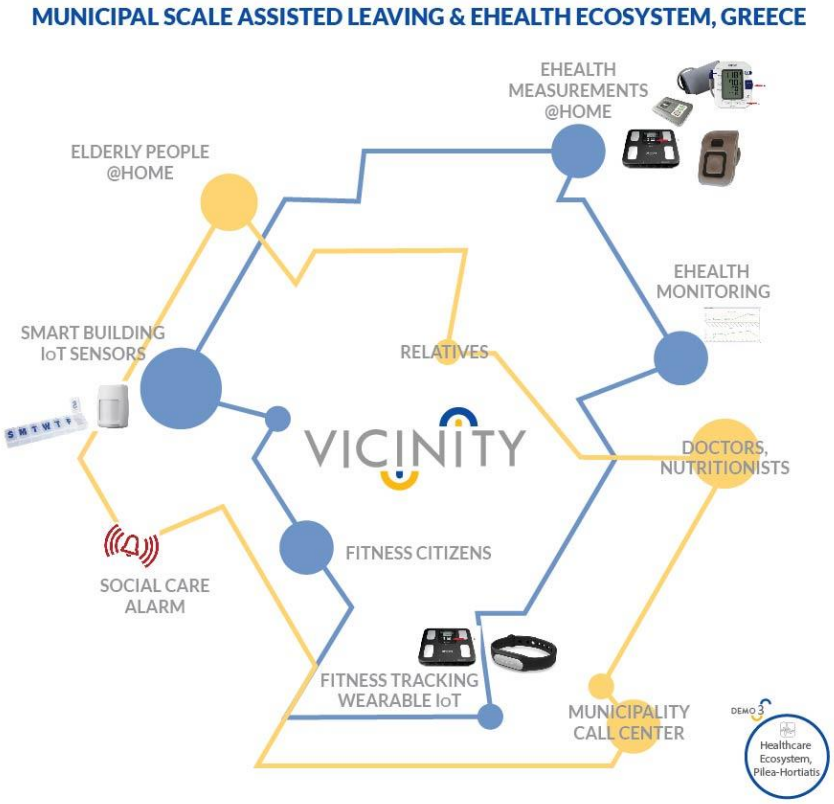

MUNICIPAL SCALE SMART BUILDINGS, ENERGY AND MOBILITY ECOSYSTEM, NORWAY
Pilot site
Vehicles
Residents
Transaction
Environment profile
Guidance
Occupancy detector
Business intelligence
Building management
VICINITY 2020
Resource management
Blue light agencies
Planning
Authentication
Booking app
Authorisation
Occupancy peak values
Grid operator
EV charging station
IoT energy meters
Trigger mechanisms
GATEWAY DEVICES
DATA CONCENTRATOR
CROSS DOMAIN VALUE ADD SERVICES
WEB BASED NEIGHBOURHOOD MANAGER
OPEN INTEROPERABILITY GATEWAY
IOT AUTO-DISCOVERY
GATEWAY DEVICES
DATA CONCENTRATOR
BUILDINGS
eHEALTH
ENERGY
MOBILITY

MUNICIPAL SCALE SMART BUILDINGS, ENERGY AND MOBILITY ECOSYSTEM, NORWAY



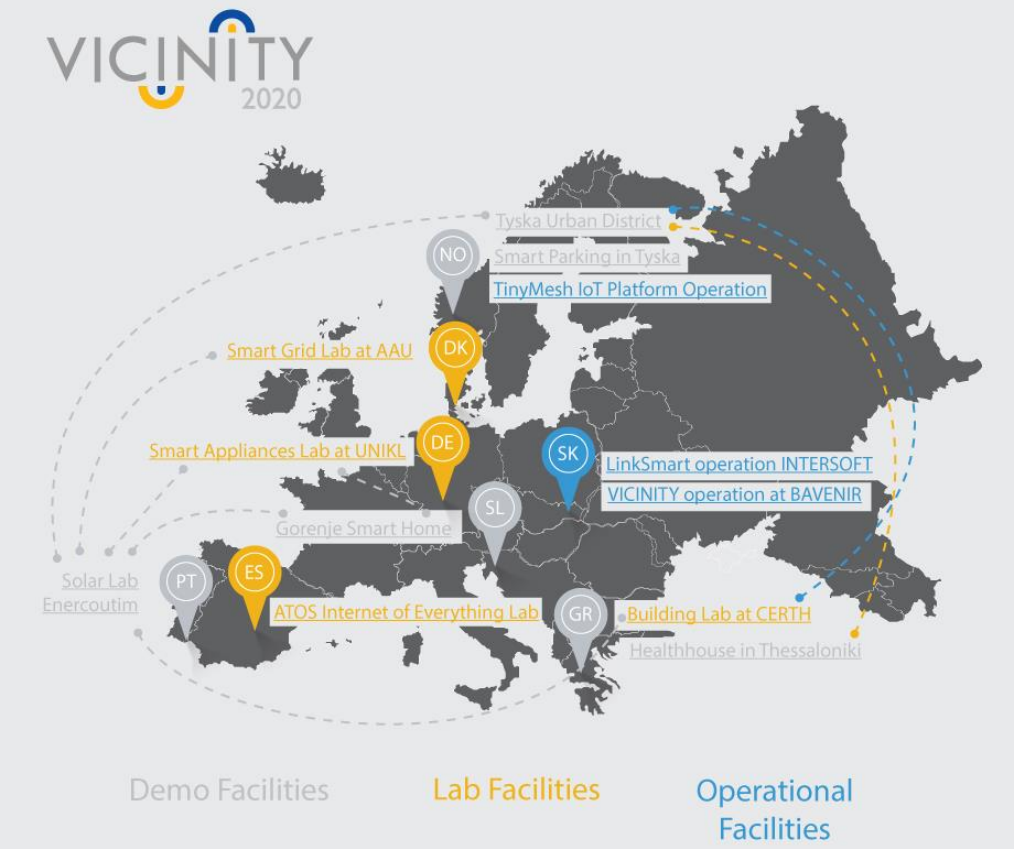
MUNICIPAL SCALE SMART ENERGY ECOSYSTEM, PORTUGAL, ALCOUTIM

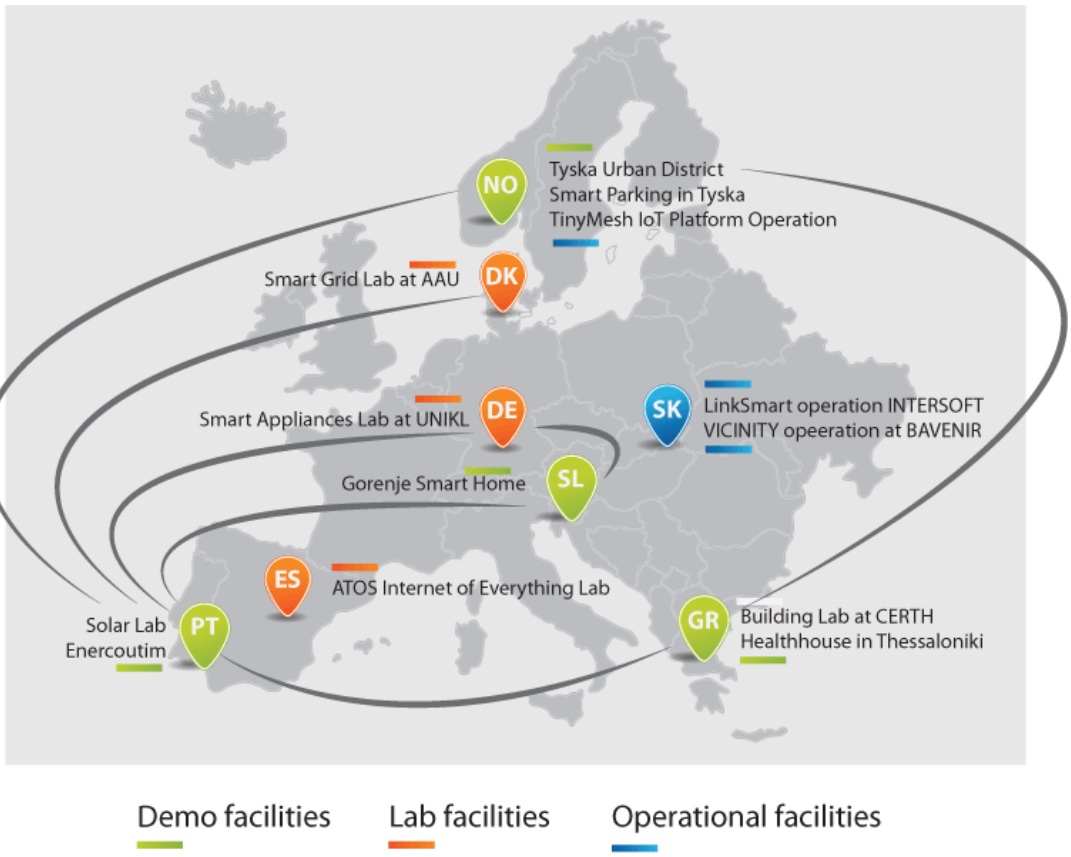



MUNICIPAL SCALE ASSISTED LEAVING & EHEALTH ECOSYSTEM, GREECE
EHEALTH MEASUREMENTS @HOME
ELDERLY PEOPLE @HOME
EHEALTH MONITORING
SMART BUILDING IoT SENSORS
RELATIVES
VICINITY
DOCTORS, NUTRITIONISTS
FITNESS CITIZENS
SOCIAL CARE ALARM
FITNESS TRACKING WEARABLE IoT
MUNICIPALITY CALL CENTER
DEMO 3
Healthcare Ecosystem, Pilea-Hortiatis


VICINITY
inside


USE AND MANAGEMENT
DATA PROVIDERS
Building management
Vehicles
Site owners - personal and public
Parking sensors - proximity/occupancy
Agencies - blue light and caretakers
Energy meters
Drivers and residents
Anonymised access and authentication
Mobile app - booking, administration/planning
Building and external sensors


VICINITY 2020
Tyska Urban District
Smart Parking in Tyska
TinyMesh IoT Platform Operation
NO
Smart Grid Lab at AAU
DK
Smart Appliances Lab at UNIKL
DE
SK
LinkSmart operation INTERSOFT
VICINITY operation at BAVENIR
SL
Gorenje Smart Home
Solar Lab
Enercoutim
PT
ES
ATOS Internet of Everything Lab
GR
Building Lab at CERTH
Healthhouse in Thessaloniki
Demo Facilities
Lab Facilities
Operational Facilities


NO
Tyska Urban District
Smart Parking in Tyska
TinyMesh IoT Platform Operation
Smart Grid Lab at AAU
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DE
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Gorenje Smart Home
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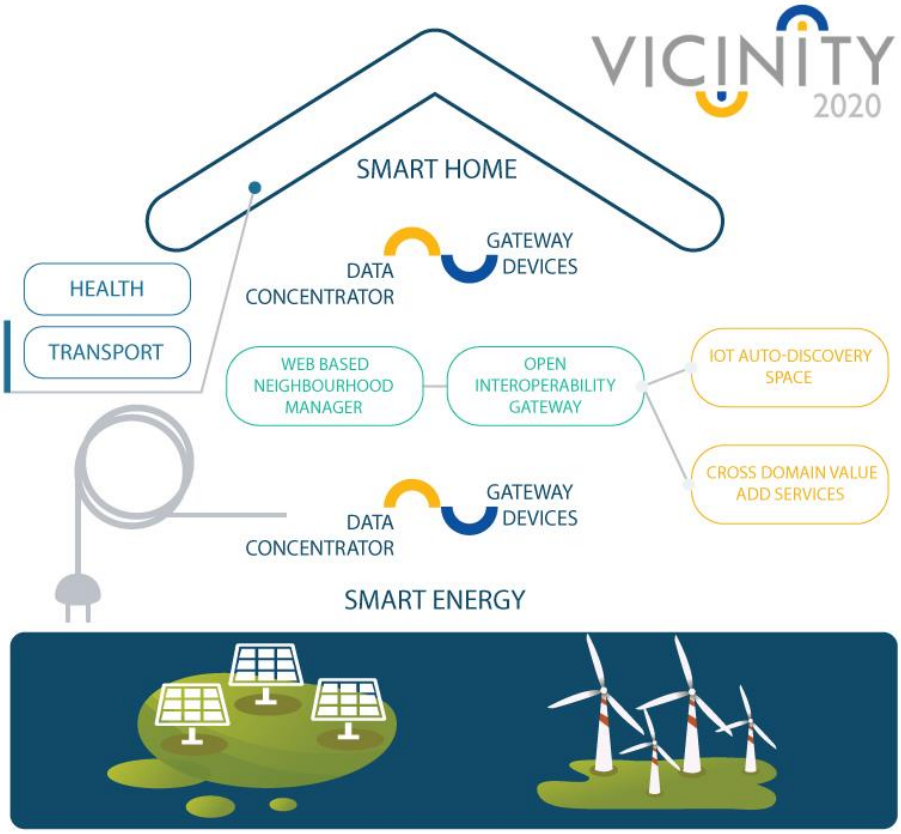
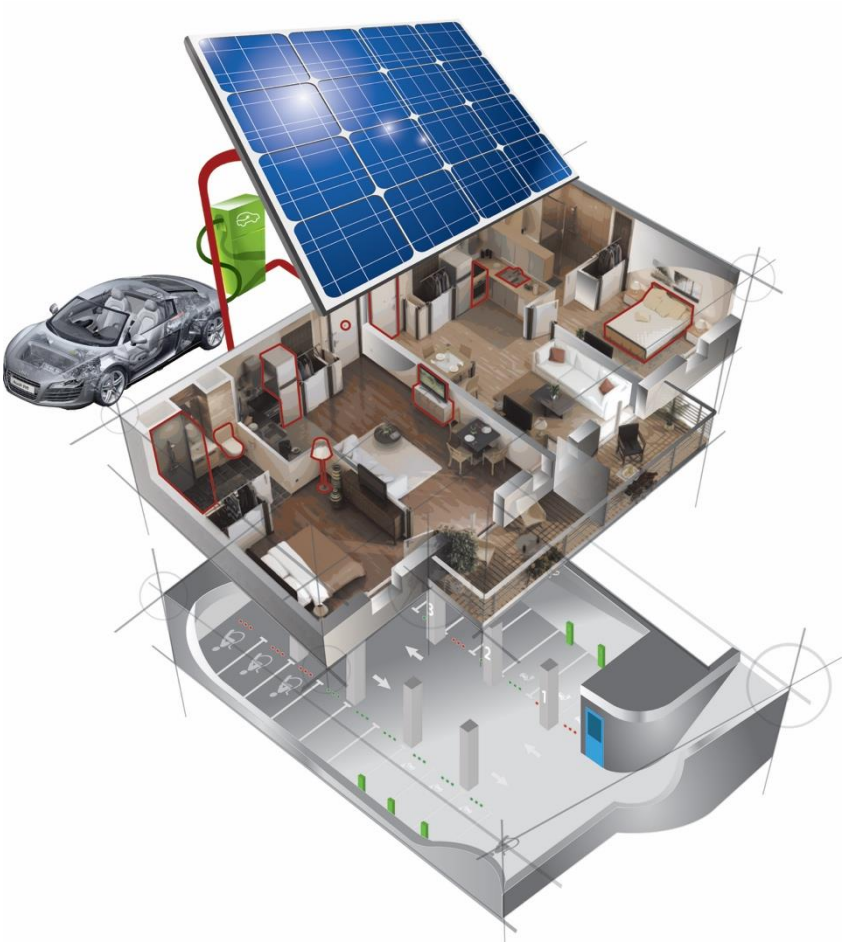
ATOS Internet of Everything Lab
Solar Lab
Enercoutim
PT
GR
Building Lab at CERTH
Healthhouse in Thessaloniki
Demo facilities
Lab facilities
Operational facilities


VICINITY
2020
SMART HOME
GATEWAY
DEVICES
DATA
CONCENTRATOR
HEALTH
TRANSPORT
WEB BASED
NEIGHBOURHOOD
MANAGER
OPEN
INTEROPERABILITY
GATEWAY
IOT AUTO-DISCOVERY
SPACE
CROSS DOMAIN VALUE
ADD SERVICES
GATEWAY
DEVICES
DATA
CONCENTRATOR
SMART ENERGY



Annex 4: Information brochures

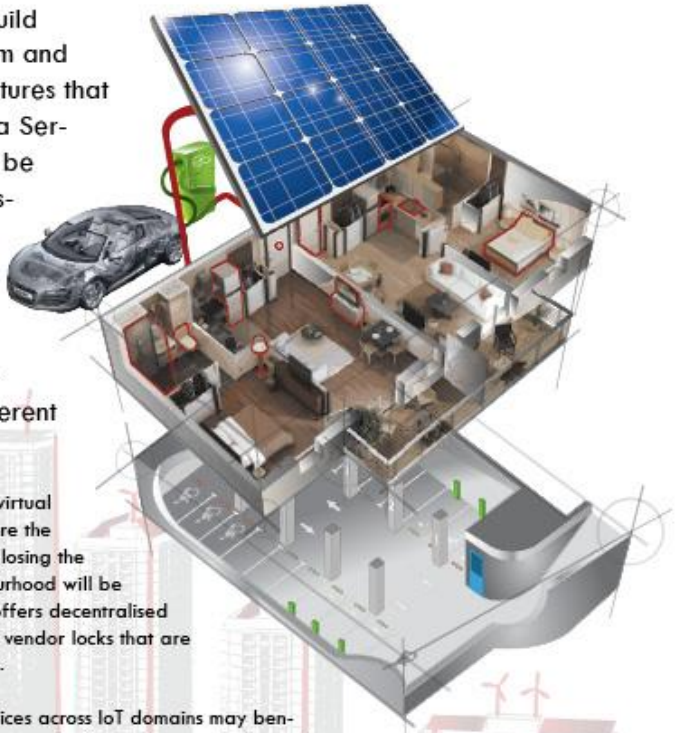
VICINITY 2020

Full projectname:
Open virtual neighbourhood network to connect IoT infrastructures and smart objects

Budget 7.5m €
January 2016 - December 2019

European Platforms Initiative
Co-funded by

The VICINITY project will build and demonstrate a platform and ecosystem for IoT infrastructures that offers "Interoperability as a Service". The platform aims to be device and standard agnostic, and relies on a decentralised and user-centric approach. VICINITY aims to retain full control of the ownership and distribution of data across the different IoT domains.



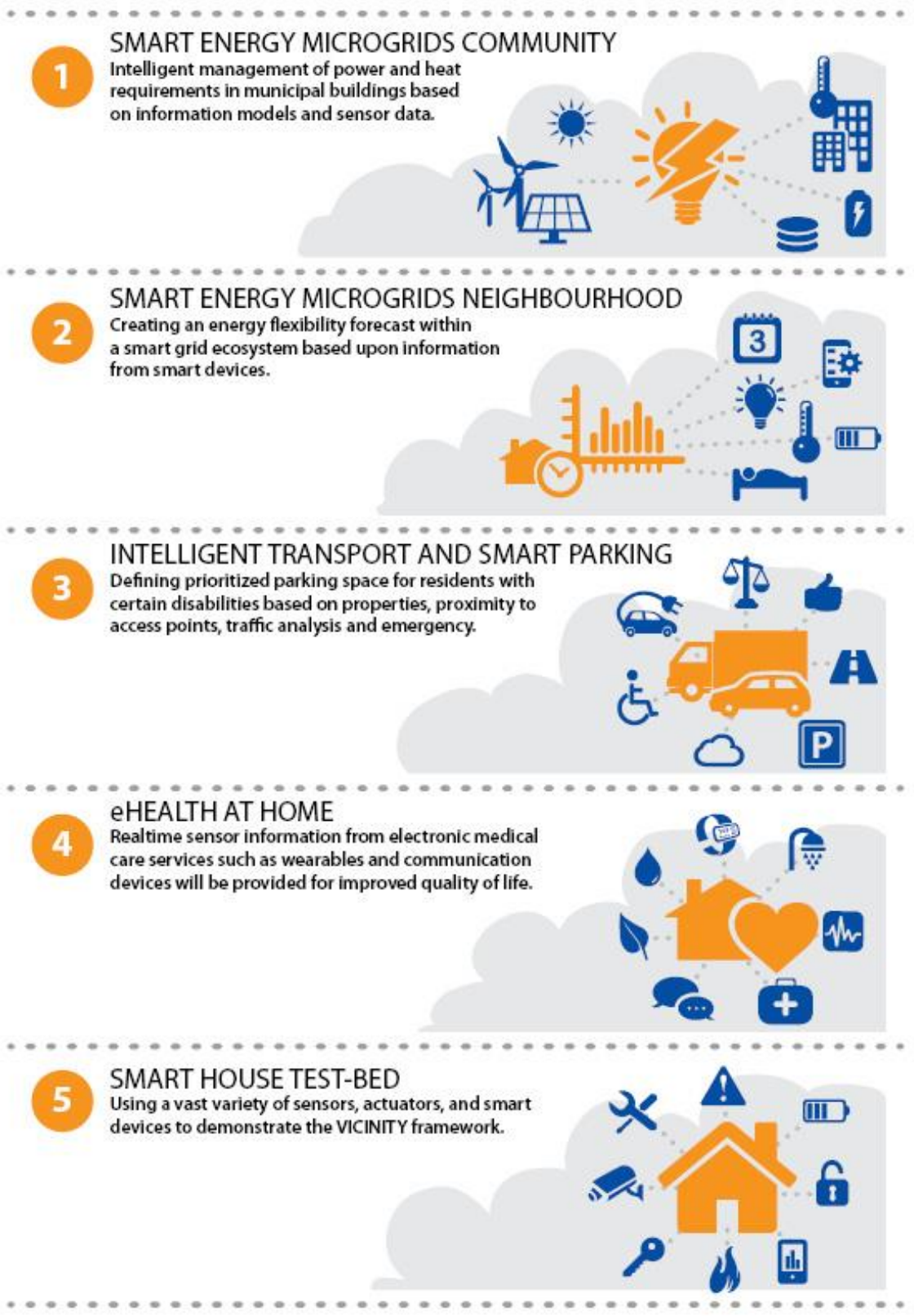
VICINITY introduced the concept of virtual neighbourhood, where users can share the access to their smart objects without losing the control over them. A virtual neighbourhood will be a part of an IoT infrastructure that offers decentralised interoperability and will release the vendor locks that are present in the current IoT ecosystems.

New independent value added services across IoT domains may benefit from the availability of the vast amount of data in semantic formats that are generated by IoT assets.

VICINITY is funded through the IoT European Platform Initiative (EPI) and co-funded by the European Commission.
The consortium consists of 15 partners from 9 different countries.

Atos · BAVENIR · CERTH · Climate Associates · ENERCOUTIM · gnomon · gorenje · hafenstrom · OTE · Tinymesh

VICINITY2020.eu


1
SMART ENERGY MICROGRIDS COMMUNITY
Intelligent management of power and heat requirements in municipal buildings based on information models and sensor data.
2
SMART ENERGY MICROGRIDS NEIGHBOURHOOD
Creating an energy flexibility forecast within a smart grid ecosystem based upon information from smart devices.
3
INTELLIGENT TRANSPORT AND SMART PARKING
Defining prioritized parking space for residents with certain disabilities based on properties, proximity to access points, traffic analysis and emergency.
P
4
eHEALTH AT HOME
Realtime sensor information from electronic medical care services such as wearables and communication devices will be provided for improved quality of life.
5
SMART HOUSE TEST-BED
Using a vast variety of sensors, actuators, and smart devices to demonstrate the VICINITY framework.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VICINITY is funded under Horizon 2020 and the consortium consists of 15 partners from 9 different countries.
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Atos
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CERTH
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Climate Associates
ENERCOUTIM
gnomon INFORMATICS
gorenje
hafenstrom
intersoft
TECHNISCHE UNIVERSITÄT KAISERSLAUTERN
OTE
Tinymesh
VICINITY
2020
Conservative estimates indicate there will be more than 50 billion smart devices by the year 2020. The entire society will profit from their ability to communicate.
VICINITY will demonstrate how smart devices can communicate and share access without losing control over the ownership of the data.
VICINITY2020.eu
European Commission
Horizon 2020
European Union funding
for Research & Innovation

Seamless access to smart devices regardless of vendors are among VICINITY's objectives. The large amount of data being generated will open for a lot of new value-added services.

VICINITY uses an approach to configure and share information similar to social networks. Users can set up and integrate smart devices based on desired services, security and privacy.

Users without technical backgrounds will be allowed to generate information that can be shared with the ecosystem of Internet of Things.

Additionally, by combining services that supports user-specified access, new opportunities are created across implementations and vendors.

The VICINITY platform will demonstrate various use cases. The objective is to demonstrate the feasibility of solutions in different contexts and configurations.

Healthcare

Improved home care and assisted living through use of health profiles and realtime information.

Smart homes and cities

Exchange of data from remote sensors regardless of standards and based on user preferences.

Parking and mobility

Optimised parking based on historical data, user preferences and needs.

Energy and smart grid

Marketplace for exchanging energy flexibility and realtime calculation of energy profiles.

The concept will be implemented in several large-scale installations. 8 facilities in 9 European countries will demonstrate how the VICINITY platform can be integrated in areas like smart energy microgrid, automation in smart buildings, healthcare and mobility solutions.

New value-added services such as micro trading of energy, smart management of urban areas and business logic using the Internet of Things, are examples of potential the platform offers.

DEMO 1
Smart grid and Parking
NO

In the demonstrated solution, prioritized parking space, booking, heating management, traffic analysis, customized and messaging services based on biometric data will be adjusted according stored rules. The sensors will report proximity and temperature, which will be accessible for the health house and made available to the virtual neighbourhood. Mobile app will report status for the parking space and report status from the health home. Both booking and configuration of units in the virtual neighbourhood will be available through the mobile app.

- Intelligent parking for residents with particular needs is especially suited for health buildings and clusters of housing estates tailored for user groups like cancer patients and people with various physical disabilities like wheelchair dependent.

- Parking space and proximity to access points.

- Access control and appraisal systems.

- Healthcare and blue lights agencies.

DEMO 2
Smart Energy Neighbourhood
PT

- The use case will target the management of a community-scale smart energy system IoT enabled within the municipal setting.

- Generation and Demand sides, could be obtained and matched by gathering data from sensors and building information models that will allow for resources optimization, delivery of value add services to the community through interlinking the data from various sources.

- Energy generation, DNI measurement, cluster of municipal buildings, NZEB Solar Lab.

DEMO 3
eHealth at home
GR

The envisaged eHealth at home concept can comprise of a number of services such as:

- An emergency button connected with the user's telephone device that enables the direct automated contact with the specialist staff on a 24-hour call-centre, so that the owner does not feel unsafe when being alone at home. This button can also recognize potential unpredicted accidents (fall detection), and after some seconds of immobility, it automatically activates the emergency call.

- Location detection device, which is currently exploited to assist elderly residents with Alzheimer disease and combines the basic functions of a GPS as well as a mobile device.

- Heart pressure measurement device, which demonstrates user's heart pressure recordings and enables the specialized Municipality doctor to remotely assess patients advance.

DEMO 1
Smart grid and Parking
NO

The interconnection of smart objects under a "virtual neighbourhood" of intelligent buildings, addressing both geographical proximity as well as energy profile relevance aspects that will allow them to negotiate as a group their potential forecasted energy flexibility within a Smart Grid ecosystem, allowing the realisation of dynamic Demand Side Management (DSM) strategies.

Intelligent Transport and Smart Parking. In the demonstrated solution, prioritized parking space, booking, heating management, traffic analysis, customized and messaging services based on biometric data will be adjusted according stored rules. The sensors will report proximity and temperature, which will be accessible for the health house and made available to the virtual neighbourhood.

DEMO 2
Smart Energy Neighbourhood
PT

Demonstration Pilot Site will be located in the municipality of Martim Longo in the Algarve region, Portugal, the most populous urban center in the municipality, with over 1300 inhabitants. The Demo site consists of three clusters: Solar energy production site, Cluster of the municipal buildings, Solar Lab NZEB building, hotsing variouse equipments, including Meteo station and advanced DNI measurement.

The use case will target the management of a community-scale smart energy system IoT enabled within the municipal setting. Generation and Demand sides, could be obtained and matched by gathering data from sensors and building information models that will allow for resources optimization, delivery of value add services to the community through interlinking the data from various sources.

DEMO 3
eHealth at home
GR

CERTH SMART HOUSE
The goal of this Test bed infrastructure is to perform extensive trials on the integration and interoperability of VICINITY platform to buildings and objects were IoT Devices and Multi-sensorial networks have been already installed. To that end, the use of two Buildings at CERTH's premises (ITI Building and KRIPIS Smart House Building) will be utilized towards ensuring the robust and efficient operation of the VICINITY framework.

HEALTHE Care at home.
This use-case will be demonstrated in the municipality of Pilea-Hortiatis in Northern Greece, with the participation of a number of all above targeted people, identified through municipality health care services. The improvement in terms of ease of installation/integration with existing systems and extension with more sensors as brought by the VICINITY platform will be accessed to compare to the current "baseline" scenario and indicate the advancements brought by VICINITY.

In the demonstrated solution, prioritized parking space, booking, heating management, traffic analysis, customized and messaging services based on biometric data will be adjusted according stored rules. The sensors will report proximity and temperature, which will be accessible for the health house and made available to the virtual neighbourhood. Mobile app will report status for the parking space and report status from the health home. Both booking and configuration of units in the virtual neighbourhood will be available through the mobile app.

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- Parking space and proximity to access points.
- Access control and appraisal systems.
- Healthcare and blue lights agencies.

- The use case will target the management of a community-scale smart energy system IoT enabled within the municipal setting.

- Generation and Demand side monitoring can be obtained, could be obtained and matched by gathering data from sensors and building information models that will allow for resources optimization, delivery of value add services to the community through interlinking the data from various sources.

- Distributed energy generation
- DNI and weather station monitoring
- Cluster of municipal buildings
- Near Zero Energy Building Solar Lab facility

- The Solar Demonstration Platform and the Solar Lab linked with the nearby community forms a cluster whereby VICINITY can be demonstrated.

The envisaged eHealth at home concept can comprise of a number of services such as:

- An emergency button connected with the user's telephone device that enables the direct automated contact with the specialist staff on a 24-hour call-centre, so that the owner does not feel unsafe when being alone at home. This button can also recognize potential unpredicted accidents (fall detection), and after some seconds of immobility, it automatically activates the emergency call.

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- Heart pressure measurement device, which demonstrates user's heart pressure recordings and enables the specialized Municipality doctor to remotely assess patients advance.

DEMO 1

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DEMO 2

Smart Energy Neighbourhood PT

Demonstration Pilot Site will be located in the municipality of Martim Longo in the Algarve region, Portugal, the most populous urban center in the municipality, with over 1300 inhabitants. The Demo site consists of three clusters: Solar energy production site, Cluster of the municipal buildings, Solar Lab NZEB building, hotsing variouse equipments, including Meteo station and advanced DNI measurement.

The use case will target the management of a community-scale smart energy system IoT enabled within the municipal setting. Generation and Demand sides, could be obtained and matched by gathering data from sensors and building information models that will allow for resources optimization, delivery of value add services to the community through interlinking the data from various sources.

DEMO 3

eHealth at home GR

Certh smart house

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VICINITY

Konservative anslag sier det vil finnes mer enn 50 milliarder smarte enheter innen år 2020. Hele samfunnet vil tjene på at disse enhetene kan snakke sammen.

VICINITY skal vise hvordan man kan få smarte enheter til å forstå og dele tilgang til hverandre uten uten å miste kontrollen over eierskapen til dataene.

En sømløs tilgang til smarte enheter uavhengig av leverandør er blant målsettingene til prosjektet. Dette vil åpne for nye verditjenester som benytter seg av de store datamengdene som blir generert fra Tingenes Internett.

VICINITY anvender et konsept som ligner de man kan finne i sosiale nettverk. Brukere kan selv sette opp og integrere smarte enheter ut fra ønskede tjenester og personvern.

Ut fra denne informasjonen vil det bli generert tilgang som vil brukere uten teknisk bakgrunn for å bli tilknyttet økosystemet til VICINITY.

I tillegg vil kombinasjonen av tjenester innen ulike bruksområder sammen med brukerspesifisert tilgang til egne data, åpne for nye muligheter på tvers av løsninger og leverandører.

Konseptet vil bli demonstrert gjennom storskala installasjoner. 8 fasiliteter i 7 forskjellige land skal dekke områder innen ulike bruksområder. Disse inkluderer smart energi/microgrid, automatisering i smarte bygninger, helse og mobilitetsløsninger.

Mulighetene til å skape nye verdiøkende tjenester skal vises gjennom mikrohandel av energi, smart styring av urbane områder og forretningslogikk ved hjelp av Tingenes Internett.

VICINITY2020.eu

European Commission | Horizon 2020 European Union funding for Research & Innovation

VICINITY plattformen vil bli demonstrert gjennom ulike scenarier. Målsettingen er å vise gjennomførbarheten av løsningen i ulike sammenhenger og tekniske oppsett.

Helse og omsorg

Anbefalte helseforbedringer til brukere med samsvarende helseprofiler og behov.

Smarte hjem og byer

Utveksling av data fra sensorer i nærheten uavhengig av standarder og basert på brukers ønsker.

Parkering og mobilitet

Optimalisert parkering basert på historiske data, brukerpreferanser og behov.

Energi og smart strømnett

Markedsplass for utveksling av energi fleksibilitet og sanntidsberegning av bygningers energiprofil

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Asbjørn Hovstø
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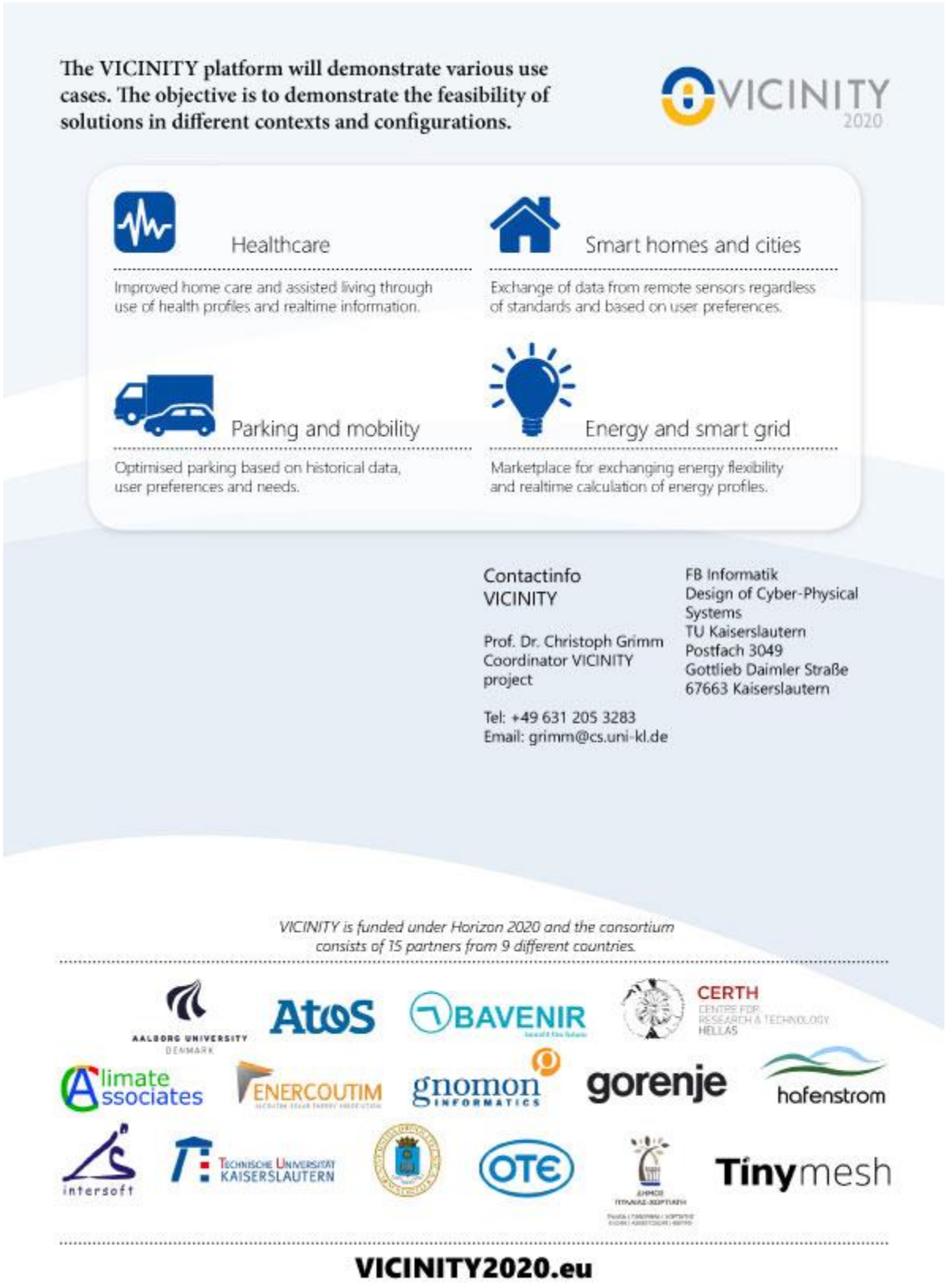
VICINITY er finansiert under Horizon 2020, og konsortiet består av 15 partnere fra 9 forskjellige land.

A toolbox for virtual neighbourhood in smart cities

H2020-2015-ICT-30 Internet of Things and Platforms for Connected Smart Objects
Title: «Open virtual neighbourhood network to connect intelligent buildings and smartobjects»

Annex 5: Invitation letters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Energy and smart grid
Marketplace for exchanging energy flexibility and realtime calculation of energy profiles.
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gnomon INFORMATICS
gorenje
hafenstrom
intersoft
TECHNISCHE UNIVERSITÄT KAISERSLAUTERN
OTE
Tinymesh
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