H2020 – EE – 11 – 2015

Innovation Action

charged

CleAnweb Gamified Energy Disaggregation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696170

D5.7 1st Year Dissemination report including communication material

Report Identifier:	D5.7		
Work-package, Task:	WP5	**Status – Version:**	1.00
Distribution Security:	PU	**Deliverable Type:**	R
Editor:	ED		
Contributors:	ALL		
Reviewers:	PLEGMA		
Quality Reviewer:	ED		
Keywords:	dissemination, communication, statistics, presentations, material, KPI		
Project website: http://www.charged-project.eu/			

Disclaimer

Use of any knowledge, information or data contained in this document shall be at the user's sole risk. Neither the ChArGED Consortium nor any of its members, their officers, employees or agents accept shall be liable or responsible, in negligence or otherwise, for any loss, damage or expense whatever sustained by any person as a result of the use, in any manner or form, of any knowledge, information or data contained in this document, or due to any inaccuracy, omission or error therein contained.

The European Commission shall not in any way be liable or responsible for the use of any such knowledge, information or data, or of the consequences thereof.

This document does not represent the opinion of the European Union and the European Union is not responsible for any use that might be made of it.

Table of Contents

List of Tables

List of Figures

Abbreviations

ADDMA	Athens Development and Destination Management Agency
CORDIS	Community Research and Development Information Service
EASME	European Commission Executive Agency for SMEs
ESCos	Energy Service/Savings Companies
IEEE	Institute of Electrical and Electronics Engineers
KPI	Key Performance Indicators
MCIS	Mediterranean Conference on Information Systems

Executive Summary

The main objective of the ChArGED dissemination strategy is to describe the achieved and planned dissemination activities and tools to ensure that various target groups get aware of the activities of the project. More specifically, through these activities, ChArGED aims to create public awareness and generate interest to different communities (scientific, industrial, wider public, policy makers, etc.) as well as to inform and consult industrial players in the field across Europe about the ChArGED solutions for energy efficiency in public buildings, in general. Dissemination/ Communication activities help towards the identification of the benefits of the ChArGED outputs and the exploitation of these in order to maximise the impact of the project on all stakeholders.

To this end, the project has been communicated (during the first year of its life) through different online and offline channels; these activities are thoroughly presented in this document.

1 Introduction

This report, part of WP5, summarises the dissemination activities, along with the communication material, that were performed during the first year of the ChArGED project. At the beginning of the project, the identity and the main communication channels with the stakeholders were built. The identity contributes into the recognition of the ChArGED project, and is mainly based on the graphical consistency of the material and the dissemination of project results. The following are the main topics of the ChArGED dissemination efforts during the first year:

- The ChArGED as a project in general,
- The ChArGED planned system and pilot applications,
- The ChArGED end-user requirements (results of WP2),
- The ChArGED architecture and initial design (results of WP3),

A wealth of activities, online and offline, have taken place. These are described in more detail in the next chapters.

2 Communication material

2.1 Logo and graphic identity

A logo was designed in order to make ChArGED recognisable. In order to make the graphic identity referable to the project name and innovation, a charged power indicator was designed and combined with . a tree leaf, to show the positive environment impact that the project results may have by achieving energy efficiency.

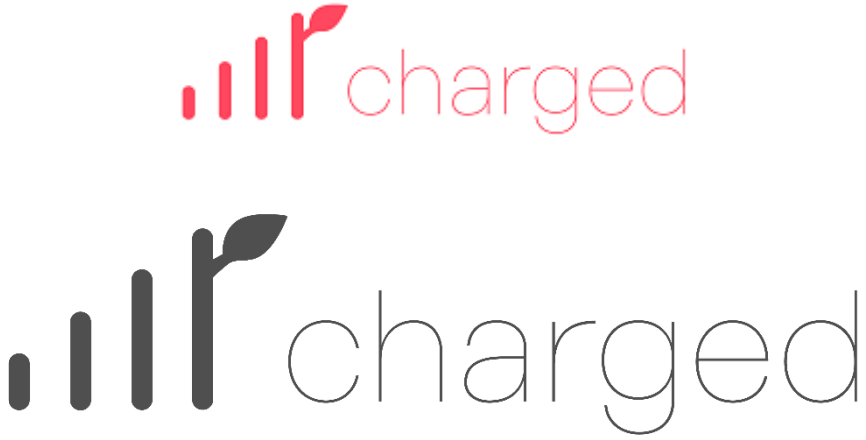


Figure 1 ChArGED logo

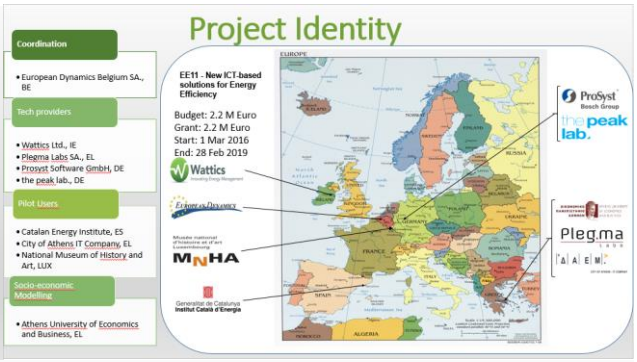
2.2 Flyer and poster

A flyer was designed, as presented in D5.3 – Project flyer. The flyer is also publicly available for download at the ChArGED website.

Figure 2 ChArGED flyer

2.3 Presentation template

A presentation template was created, either for complete project presentation or for presentation of results, further contributing to the identity forming and making the project recognisable.



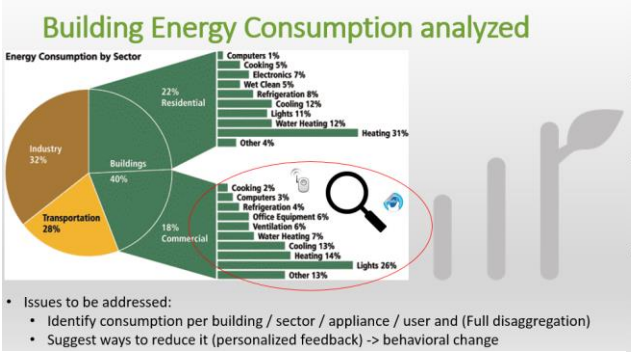
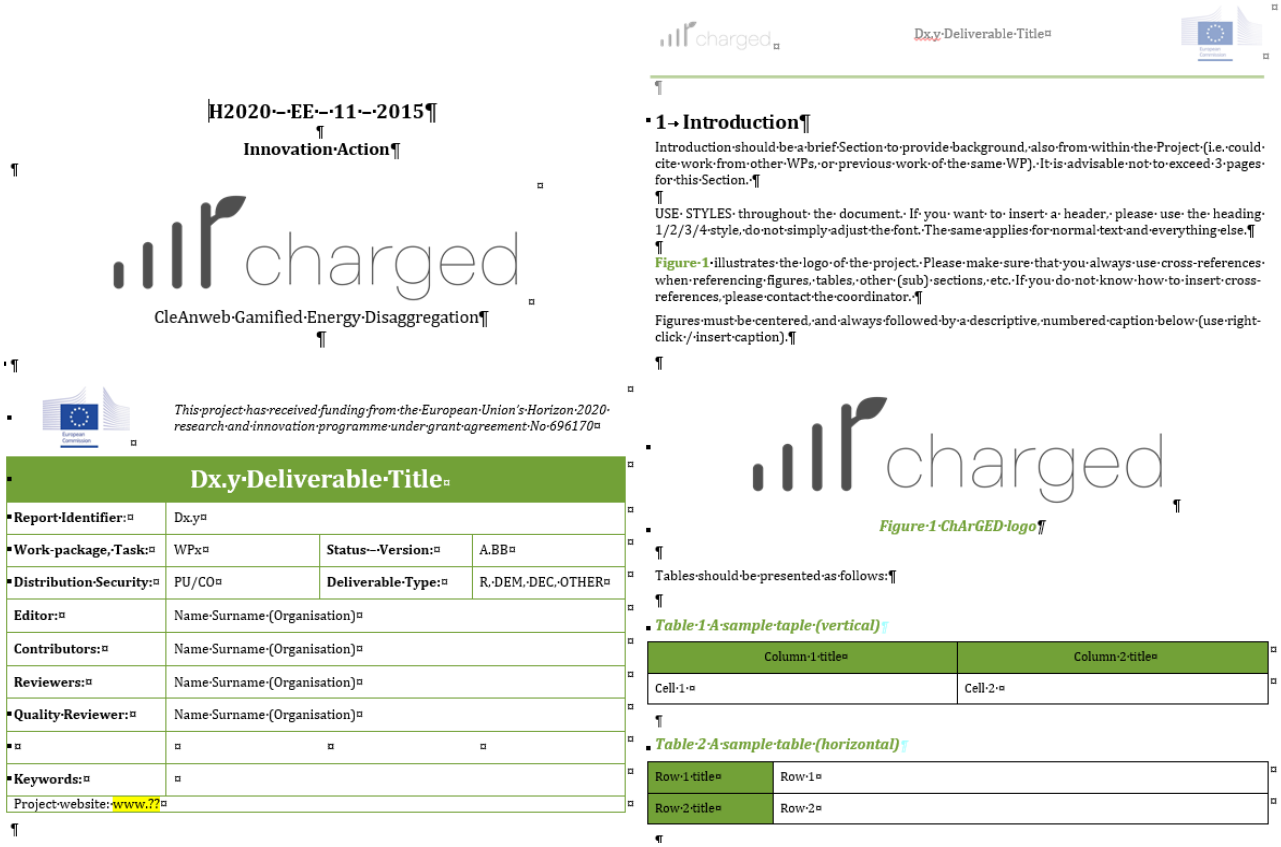


Figure 3 Extracts of ChArGED baseline presentation

2.4 Document templates

Although document templates can be considered part of the quality management, since some deliverables are public, the consistent form of these documents contributes to the ChArGED graphic identity.



H2020 - EE - 11 - 2015
Innovation Action

charged

CleAnweb Gamified Energy Disaggregation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696170

Dx.y Deliverable Title			
Report Identifier:	Dx.y		
Work package, Task:	WPx	**Status - Version:**	A.BB
Distribution Security:	PU/CO	**Deliverable Type:**	R, DEM, DEC, OTHER
Editor:	Name Surname (Organisation)		
Contributors:	Name Surname (Organisation)		
Reviewers:	Name Surname (Organisation)		
Quality Reviewer:	Name Surname (Organisation)		
Keywords:			
Project website: www.??			

Dx.y Deliverable Title

1 Introduction

Introduction should be a brief Section to provide background, also from within the Project (i.e. could cite work from other WPs, or previous work of the same WP). It is advisable not to exceed 3 pages for this Section.

USE STYLES throughout the document. If you want to insert a header, please use the heading 1/2/3/4 style, do not simply adjust the font. The same applies for normal text and everything else.

Figure 1 illustrates the logo of the project. Please make sure that you always use cross references when referencing figures, tables, other (sub) sections, etc. If you do not know how to insert cross references, please contact the coordinator.

Figures must be centered, and always followed by a descriptive, numbered caption below (use right click / insert caption).

charged

Figure 1 ChArGED logo

Tables should be presented as follows:

Table 1 A sample taple (vertical)

Column 1 title	Column 2 title
Cell 1	Cell 2

Table 2 A sample table (horizontal)

Row 1 title	Row 1
Row 2 title	Row 2

Figure 4 Extracts of ChArGED deliverable template

3 Online Activities

A website, at http://www.charged-project.eu/ , was designed and updated with all the ChArGED latest news and events. The structure (sitemap) of the website is designed to qualify visitors with immediate access to all public information of the project. For the visitors' convenience almost all subpages of the website are accessible by the main page with respective quick links. Moreover, links to the social media accounts (LinkedIn and Twitter), "amplifying" the branding of the project, are available on the Main Page of the website.

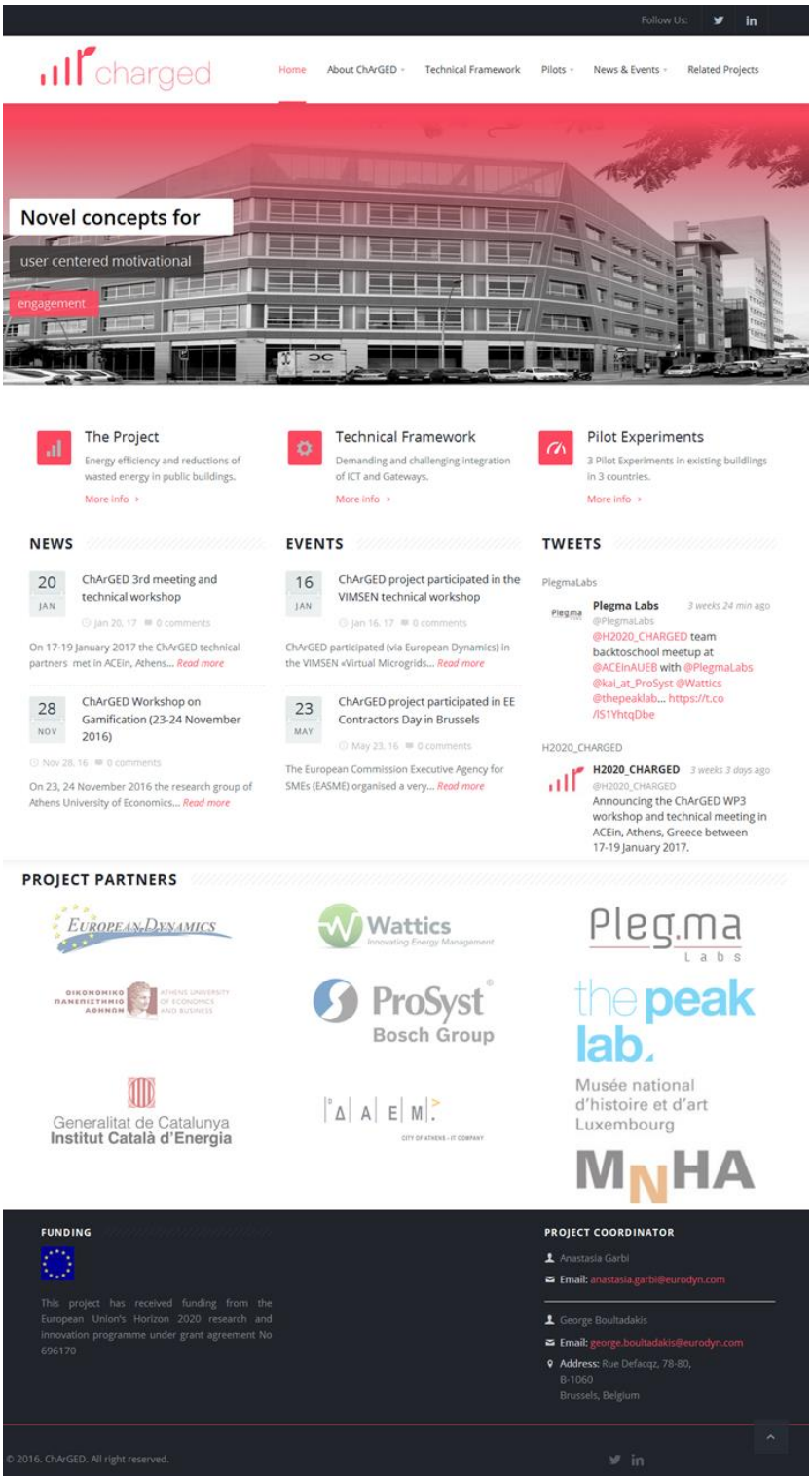


Figure 5 Screenshot of ChArGED website (main page)

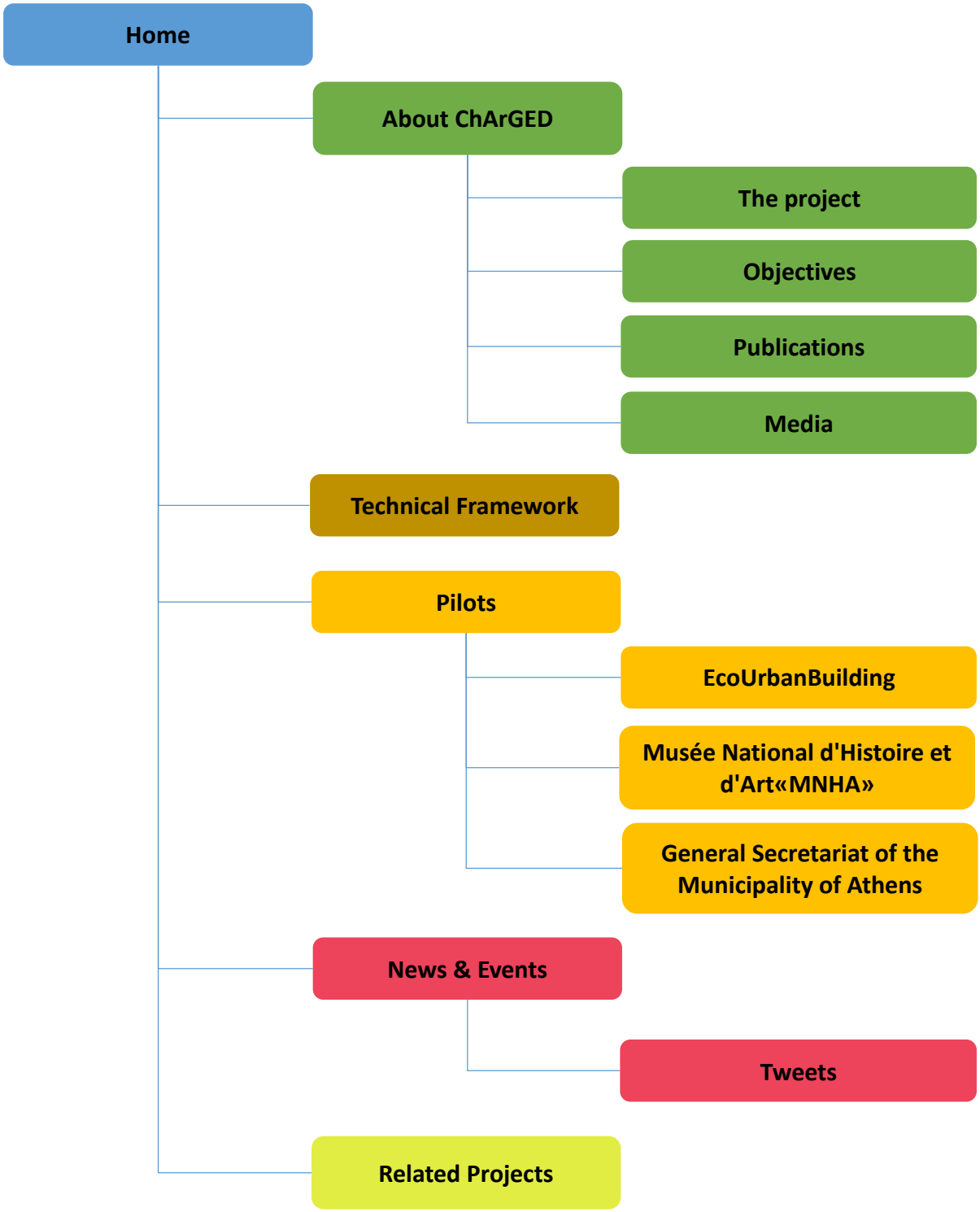


Figure 6 ChArGED website sitemap

The ChArGED website has proved highly effective in the dissemination of the project. The number of visitors shows increasing trends, while the monthly number of unique visitors is steadily in the range of

400 to 800. A boost at the number of visits appears in January '17, after the dissemination of ChArGED in the European Utility week and the VIMSEN project workshop.

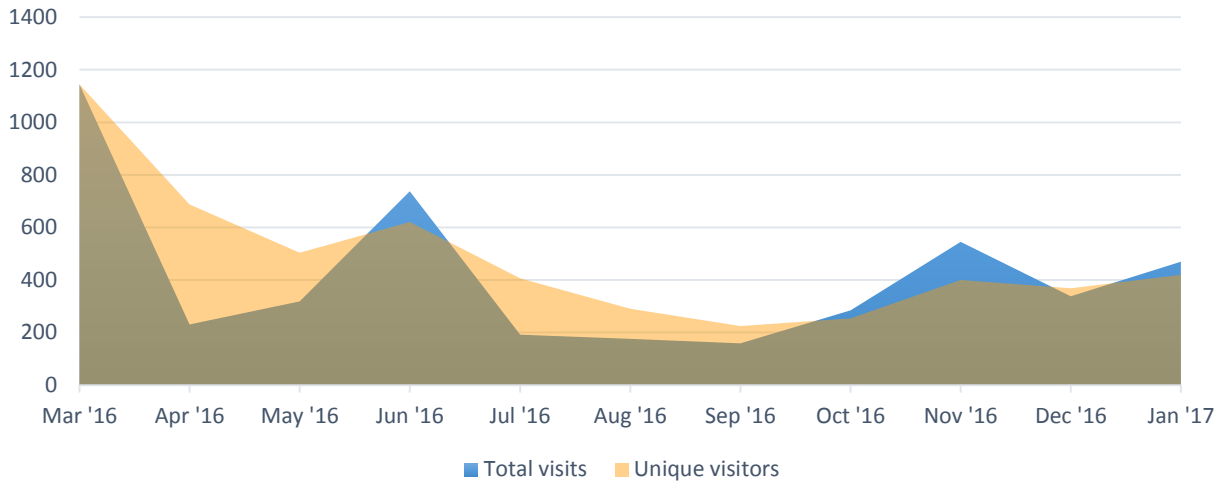


Figure 7 ChArGED website sitemap

The duration of the visits, which is one of the factors in calculating the audience engagement[1], is steadily growing. It is worth to mention that this increasing trend in the duration follows the increased number of unique visits, validating the increased engagement and indicating that it the statistics are not random. More specifically, the monthly average duration is over 1.5 minute, while the overall average, for the website launch, shows steady increasing trend since early 2016, and settlement trend at over 3 minutes per visit.

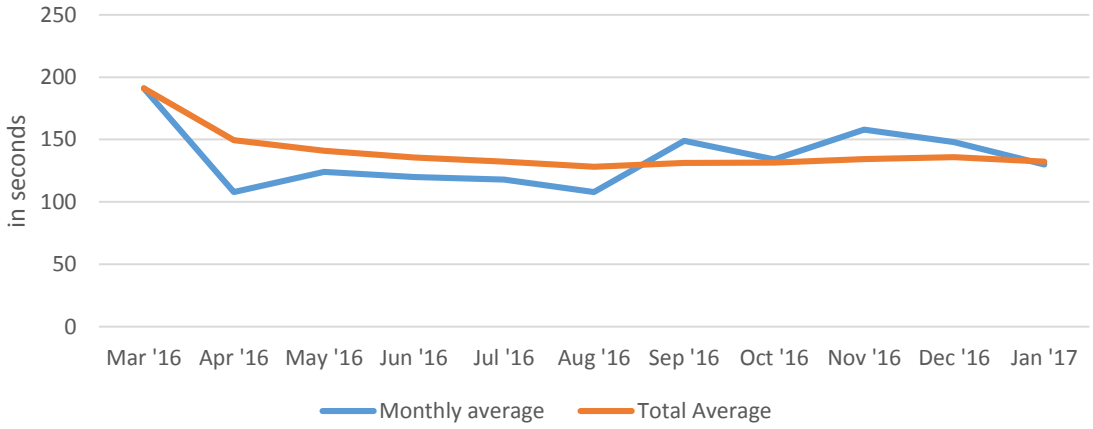


Figure 8 ChArGED website visit duration

[1] The other factors are: click depth, return frequency and long-term loyalty, Peterson E., Carrabis J., "Measuring the immeasurable: visitor engagement", WebAnalyticsDemystified, 2008

Hits via direct access on the project web pages show the same trends as the previous figures.

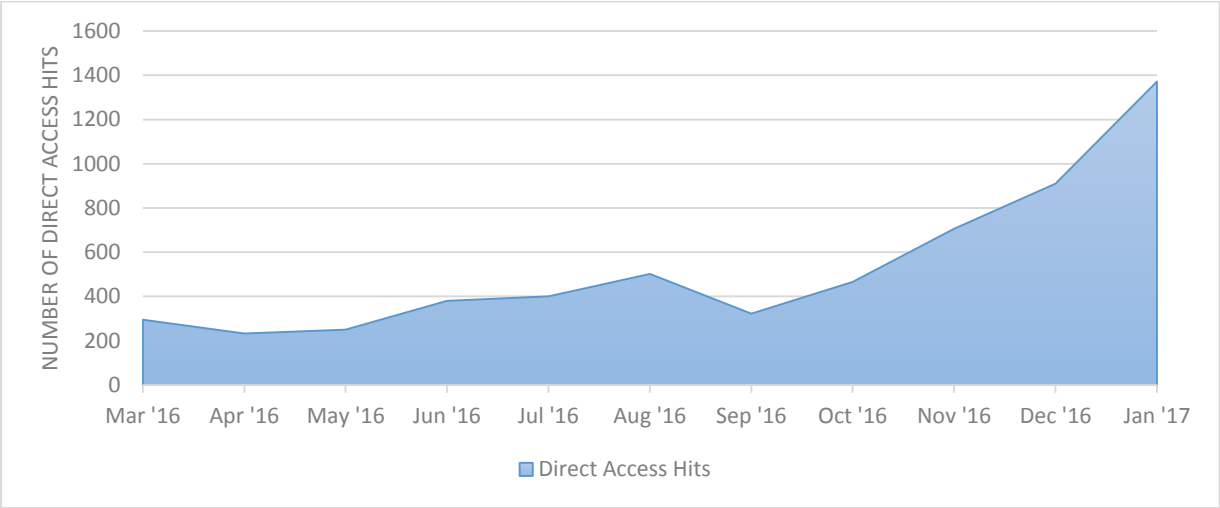


Figure 9 ChArGED website direct access hits

Public deliverables are also available for download at the website since October 2016. The total number of downloads over the last months is constantly over 20 downloads per month.

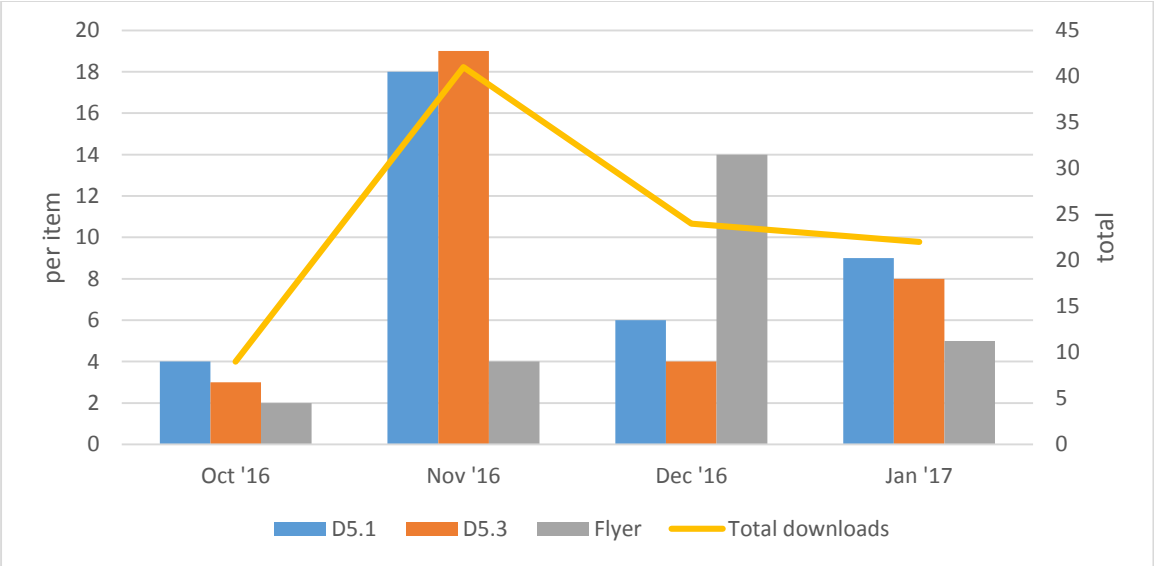


Figure 10 Public deliverables downloads

3.1 Social media

3.1.1 LinkedIn

A LinkedIn group was created and updated with the latest ChArGED news and events.

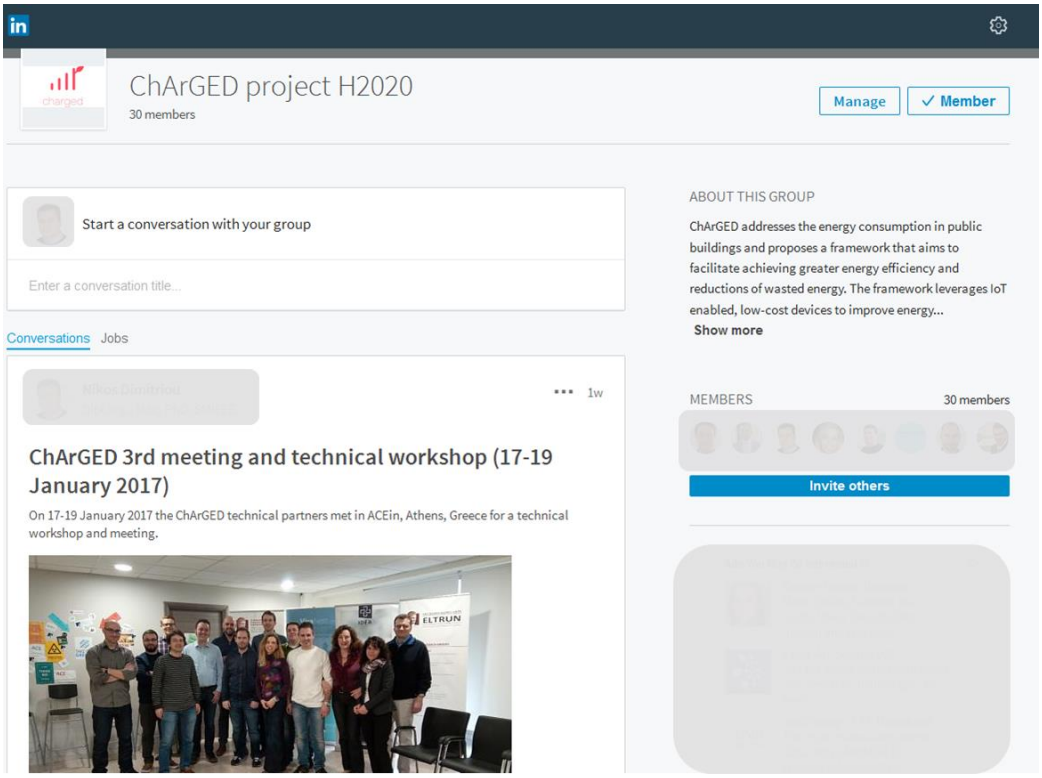


Figure 11 LinkedIn ChArGED group

Up to the time of creating this document the group had 30 LinkedIn members, including partners of the consortium as well as people and organisations that are willing to follow and participate in the ChArGED discussions and activities. The aim is to engage with the different communities (academic, industrial, etc.) and enable them to actively participate in the professional conversations or even initiate their own, thus creating a focused audience.

3.1.2 Twitter

A twitter account has been also set up and updated with the latest news and events.

Figure 12 ChArGED twitter account

Up to the time of creating this document the twitter account had 27 followers and a total of 15 tweets.

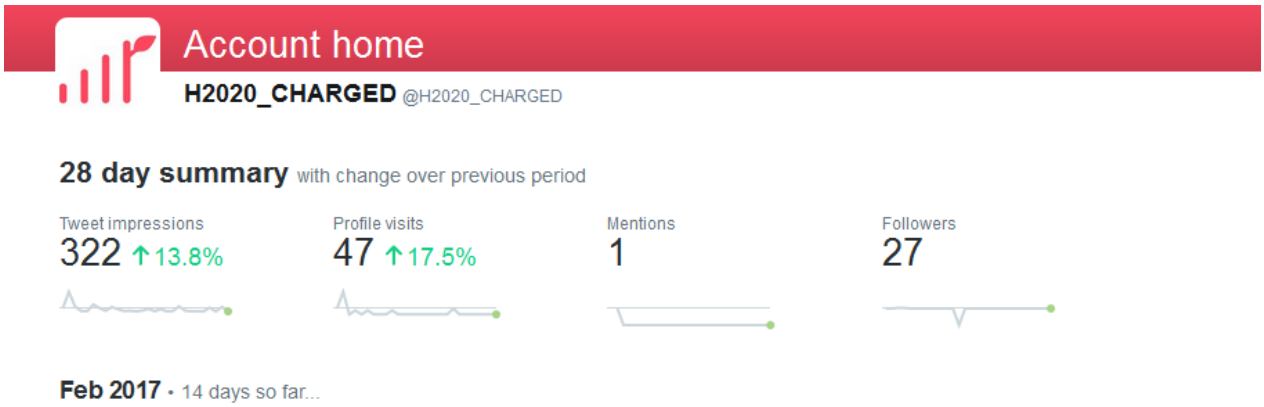


Figure 13 Last 28 days summary of Twitter account

The ChArGED tweet impressions, as expected do not have a constant number since they are largely dependent on the number and nature of the tweets themselves. However, a constant trend for an average value of 400 tweet impressions per month can be observed.

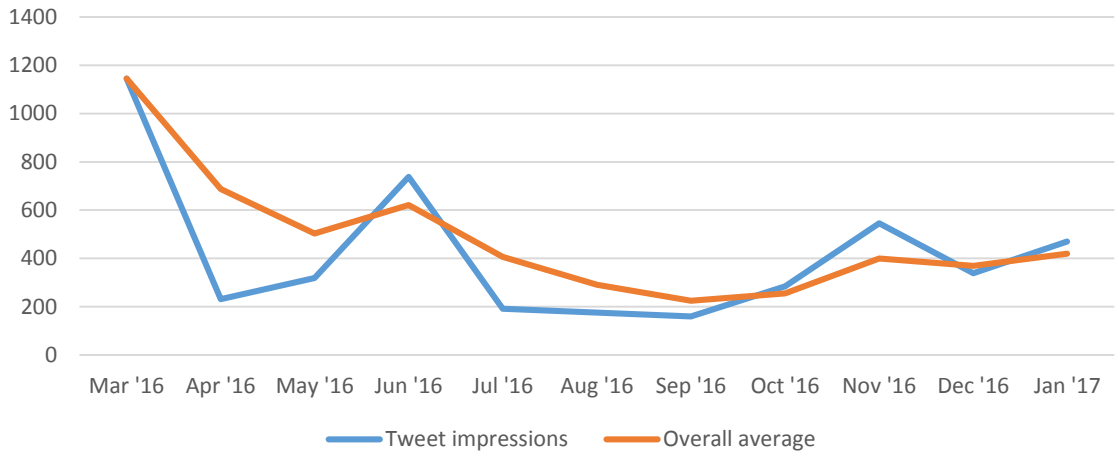


Figure 14 ChArGED tweet impressions

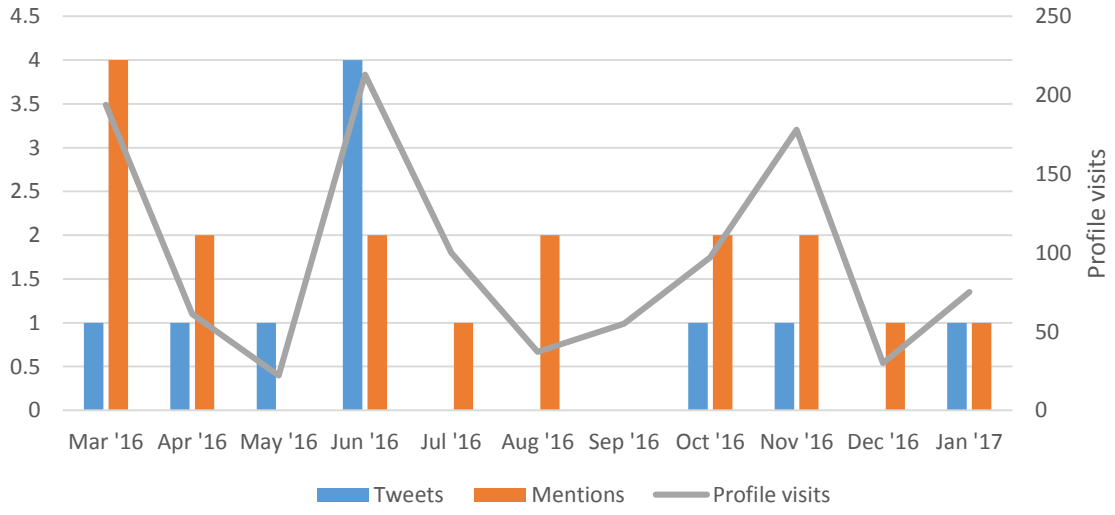


Figure 15 Twitter profile monthly statistics - Tweets, mentions and profile visits

3.2 EC and partner websites

Partners have added links to the ChArGED website at their own websites, boosting the overall visits.

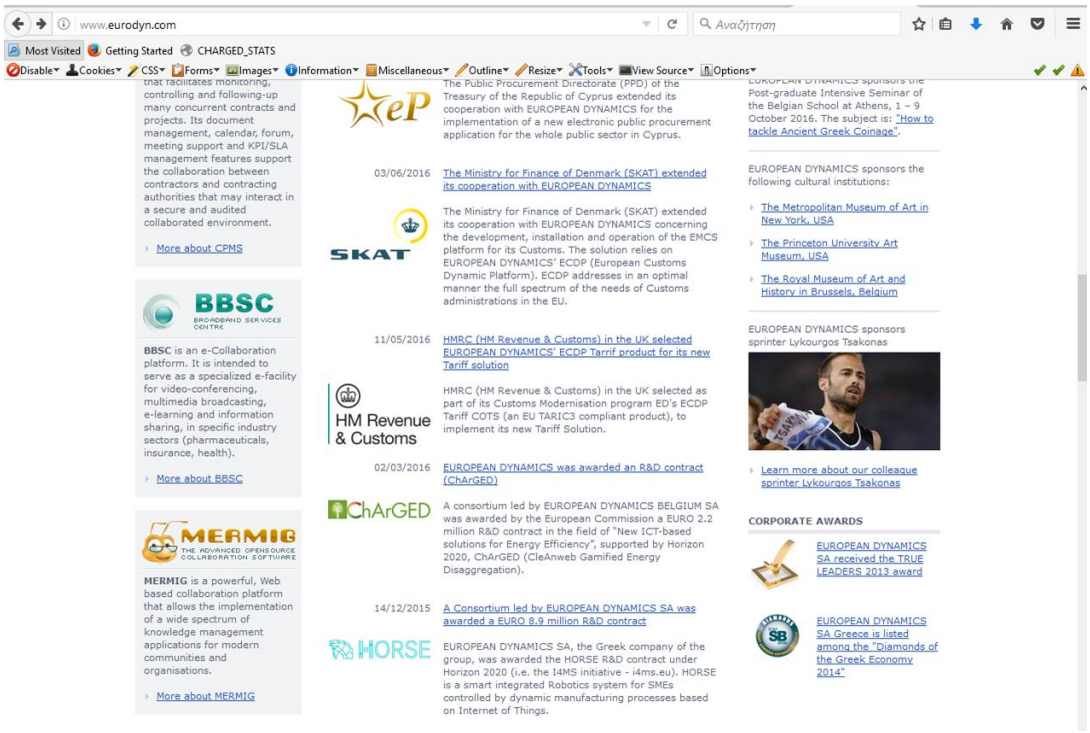


Figure 16 Example of partner website link (ED)

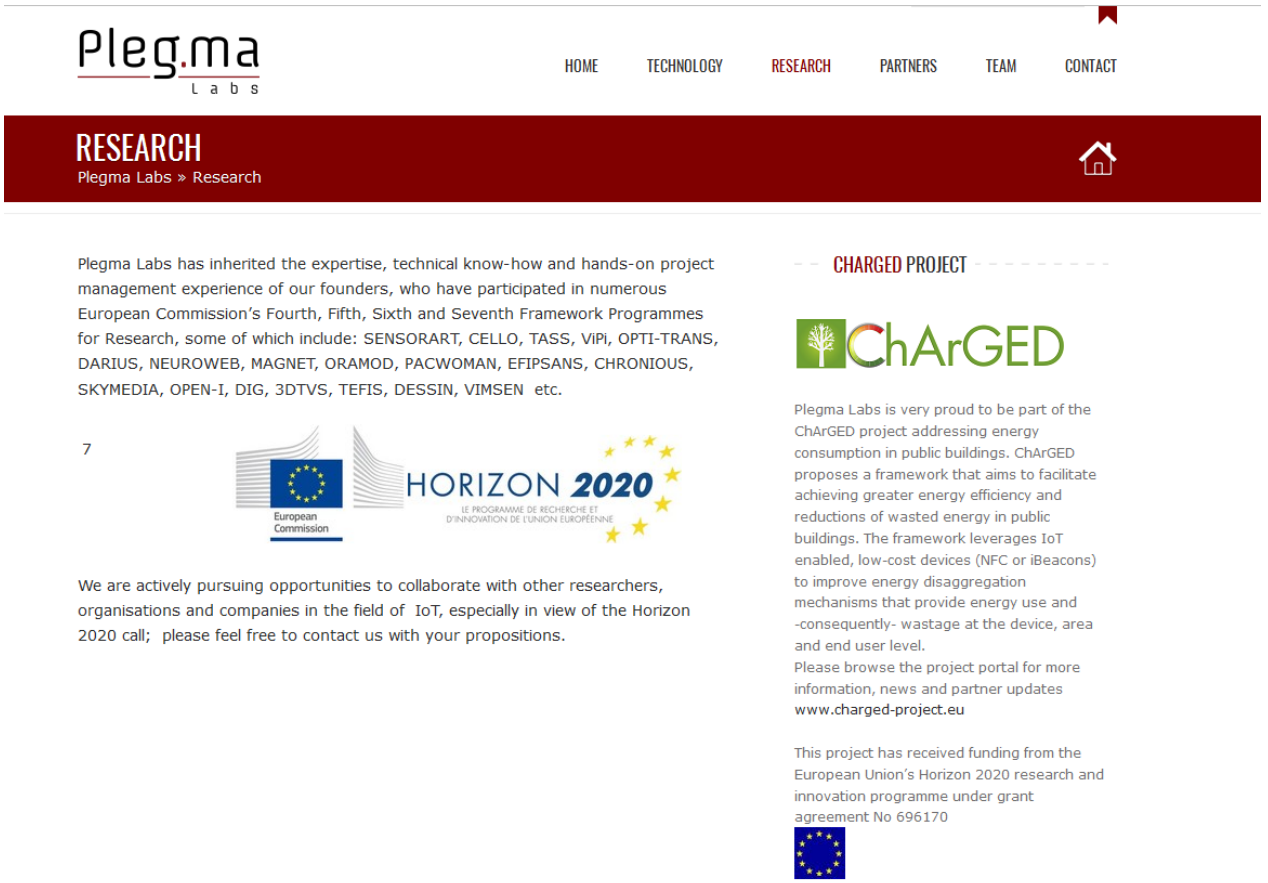


Figure 17 Example of partner website link (PLEGMA)

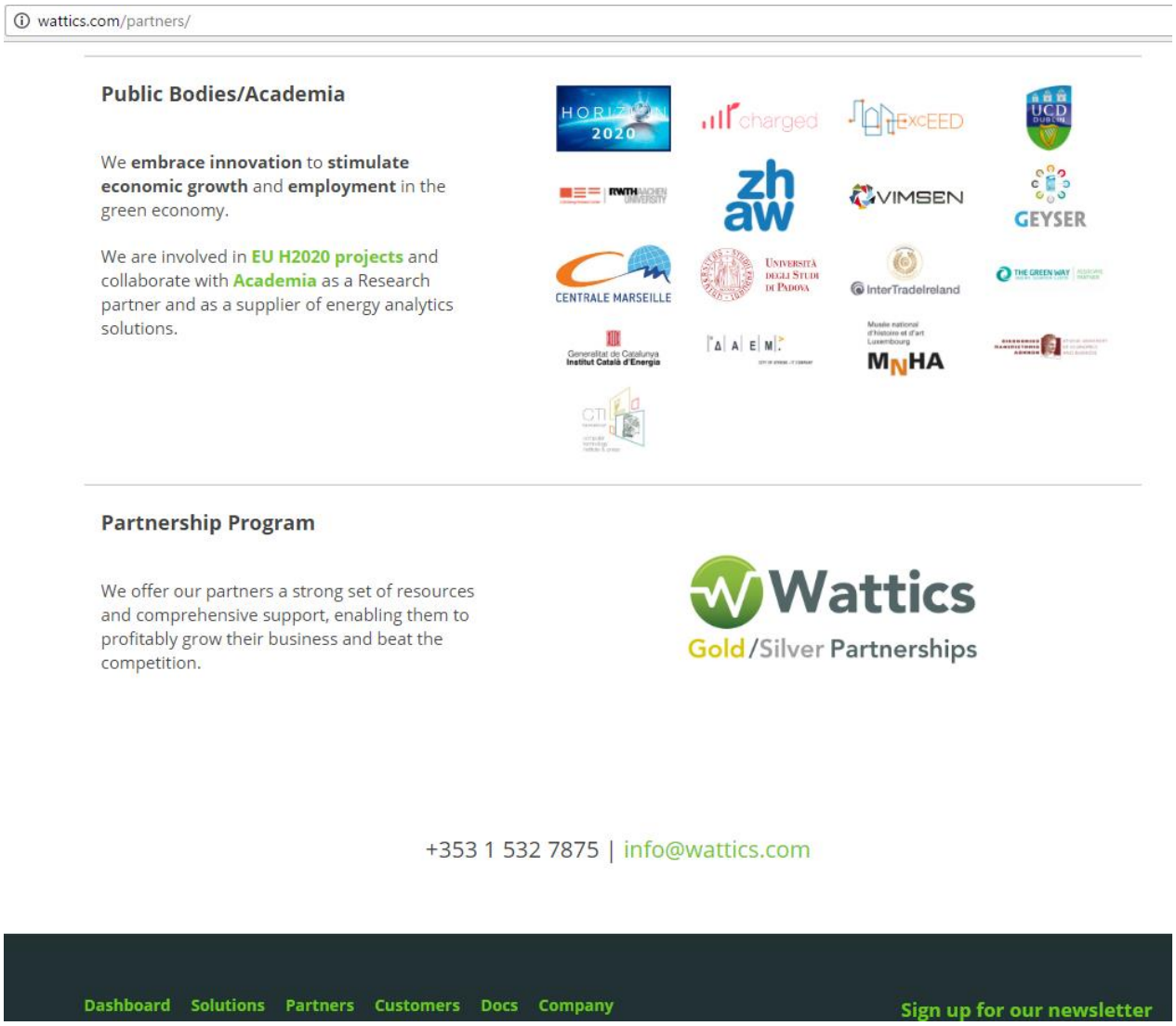


Figure 18 Example of partner website link (WATTICS)

Project information is also available at the EC Community Research and Development Information Service (CORDIS).

Figure 19 CORDIS project web page

4 Offline activities

4.1 Publications

4.1.1 Press articles

The following articles for ChArGED have been published to the press:

1. ChArGED - “Cleanweb Gamified Energy Disaggregation”, article published at the

4.1.2 Scientific Publications

The following articles have been presented in conferences or published in scientific journals:

- T. Papaioannou; V. Hatzi; I. Koutsopoulos, "Optimal Design of Serious Games for Consumer Engagement in the Smart Grid," in IEEE Transactions on Smart Grid , vol.PP, no.99, doi: 10.1109/TSG.2016.2582298
URL:http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7494677&isnumber=5446437

Optimal Design of Serious Games for Consumer Engagement in the Smart Grid

Thanasis G. Papaioannou*‡, Vassiliki Hatzi† and Iordanis Koutsopoulos‡
*Center for Research & Technology Hellas (CERTH), Greece
†University of Thessaly, Greece
‡Athens University of Economics & Business (AUEB), Greece
Email: *thanasis.papaioannou@iti.gr, †vahatzi@uth.gr, ‡jordan@aueb.gr

Abstract—Serious games are a promising approach for demand-side management that aims to higher user engagement and active participation. In this paper[1], we introduce the problem of optimal serious-game design for achieving specific energy-consumption reduction goals. We consider a serious game, where a serious-game designer entity presents publicly to all consumers a list of top-K consumers and a list of bottom-M consumers according to their respective energy-consumption reduction at peak hours. The driving forces of this serious game are the user discomfort due to demand load reduction, the user desire for social approval and the user sensitivity to social outcasting. We formulate the problems of the serious-game designer as an operational-cost minimization one for the utility company and that of each consumer as a utility-maximization one. The serious-game-design problem is to decide on K, M and on the feedback provided to the consumers, while the consumer-side problem amounts to selecting the behavioral change to energy consumption that maximizes the expected user utility. By a series of simulations, we show how the choices of K, M affect the energy consumption reduction for different types of customers.

Index Terms—gamification, social enforcement, power demand, utility theory, optimization, energy conservation

I. Introduction

THE reduction of carbon footprint is the holy grail of our times and is to be realized primarily through prudent energy consumption. Different techniques have been proposed, spanning the entire chain of energy generation, transmission, distribution and consumption in the context of realizing a smart energy grid towards reaching the goal above. However, the weakest link in the chain above remains the end-consumer. No matter how sophisticated these techniques become for the rest of the chain, it is the end-consumer that determines to a large extent the mode of energy consumption in the end.

Demand-side management (DSM), which includes demand response (DR), is an active research area that aims to reduce or smoothen energy consumption. Pricing-based and incentive-based DR schemes have been proposed; e.g., by having different prices per unit of energy presented to consumers for different times of the day (i.e., TOU pricing), rational consumers are forced to shift part of their demand-load from peak-times to off-peak times. Incentives may be provided to the consumer in the form of monetary or non-monetary rewards. For example, in the Critical Peak Rebate incentive scheme, participants are paid for the amounts of power by which they reduce consumption below their predicted consumption levels during critical peak hours. In the presence of a DR scheme, consumers optimize some form of utility functions that factor the monetary gains from load shifting/reduction and the inconvenience cost induced by the shift.

The main shortcomings of pricing-based incentives are the strong financial-rationality assumption about consumers and that they are often met with negativity by consumers. Also, more often than not, consumers are not bill-payers (e.g., they are employees in an office building or younger/elderly household members), while their energy literacy level (i.e., awareness and capability to act on energy savings) varies. In reality, consumers are humans and their decision-making process is often influenced by multiple factors, such as sentiments or interest about the social norm, as opposed to strict financial motives. The interface with which the incentive scheme is addressed to the end-consumer is also a decisive factor, in the sense that it should serve the purpose of making the interaction seem (and be) worthwhile and joyful.

Serious games design is a new area that aims at addressing precisely the issues of educating and maximizing user engagement in various contexts [2]. A serious game is a game that is designed for a purpose that goes beyond that of offering pure entertainment. There have been some initial attempts to use serious games for demand-side management [3], [4], [5], [6] with great success in realistic case studies [7]. To the best of our knowledge, building a foundational theory on modeling and understanding serious games with the purpose of extracting guidelines for serious games design in this context has not hitherto been explored.

In this paper, we introduce the problem of *optimal serious-games design for the purpose of enforcing prudent energy consumption*. We define a simple serious-game scenario that does not employ direct monetary incentives for the consumers and a generic game-theoretic mathematical framework for the optimization of the parameters of the serious-game. We assume that a serious-game designer entity (e.g., the energy supplier, a private entity or an energy-efficiency minded administrative authority) aims to design a serious game for smoothening the energy-consumption behavior of consumers. The serious-game designer runs daily contests on energy consumption reduction on behalf of the players during the peak hours.

We consider a simple class of serious games, where the serious-game designer publicly announces a list of top-K

[1]Part of this work was published in IEEE SmartGridComm 2014 [1].

[15], albeit with no modeling or analysis on the serious-game design, as opposed to our work. In [5], a serious game for smart grids is organized as a virtual world with many user roles and actions, involving direct actions and training for sharing a Medium/Low Voltage transformer among prosumers. A serious game for energy conservation among students is described in [6]. The serious-game website and associated game mechanics are provided by the Makahiki system [16]. Similarly to our setting, no monetary rewards are included in the game; incentives are introduced through competition among consumers for points for energy conservation actions and for participation to online educational and real-world activities. According to [6], energy feedback systems should be actionable, include training and be time-persistent to have long-term effect into energy consumption behavior. Our serious-game model is time-persistent.

Also, the game “Energy Battle” [14], similarly to [6], aimed at encouraging occupants of student-households to save energy by means of competition. In [17], Johnson *et al.* review multiple energy competitions among university students and identify several pitfalls in their design. Specifically, the use of total energy consumption or (relative) energy-consumption reduction for winner determination is deemed as not adequate when static baseline calculation methods are employed and may be unfair for already “green” consumers.

An online game for improving home energy behavior, named Power House, is proposed in [4]. Its objective is to track activities and assist each member of a virtual family to save energy, while real-world energy behaviors produce particular in-game advantages and disadvantages. An online serious game (“EnerCities”) is presented in [3] to increase the environmental and energy-related awareness of secondary school students, and to influence their energy-related behaviors. Also, a virtual pet game designed for energy use reduction in a commercial office setting is presented in [15], where device-specific energy consumption is reflected in the fitness of virtual pets. There are also a number of studies on gamification in general [18], [19], which verify that specific serious-game design elements, such as leaderboards, points and levels, positively influence user participation, engagement and behavioral change.

In a different class of work, a number of game-theoretic dynamic-pricing schemes that involve interaction between the utility company and the consumers for energy-consumption smoothening have been proposed [13], [20]. However, [21] shows that dynamic pricing mechanisms can lead to peak-shifting when consumers rationaly respond to price signals, unless specific strategies of bounded rationality are employed. In our paper, consumers take decisions based on social influence, as opposed to financial incentives.

Finally, prospect theory is employed in [22] for studying the problem of customer-owned energy storage management in the smart grid in a less rational manner, as opposed to the von Neumann-Morgenstern utility theorem employed here. In [22], a human player subjectively observes and makes her charging/discharging decisions based on the potential value of the benefit from selling energy and of the penalty from power regulation rather than the final outcome.

VI. Conclusion

This paper makes a first attempt to develop a theory from first principles on the design of a simple class of serious games for energy efficiency. The game designer optimally selects the game parameters, so as the utility-maximizing choices of consumers to minimize the operational cost of the utility company for energy production. The sole game parameters utilized are the sizes of the upper list (i.e., winners) and of the lower list (i.e., losers) of consumers according to their energy-consumption reduction. Simulation experiments show that even such simple serious games can provide adequate incentives to the consumers, so that the utility company achieves specific demand-side management objectives. Our serious game model can be deployed in practical settings and is privacy-friendly, as only normalized energy-consumption increase/decrease needs to be shared by the users with the game designer. As a future work, we will consider additional design choices of serious games for demand-side management and more comprehensive user decision-making models based on behavioral sciences.

Acknowledgment

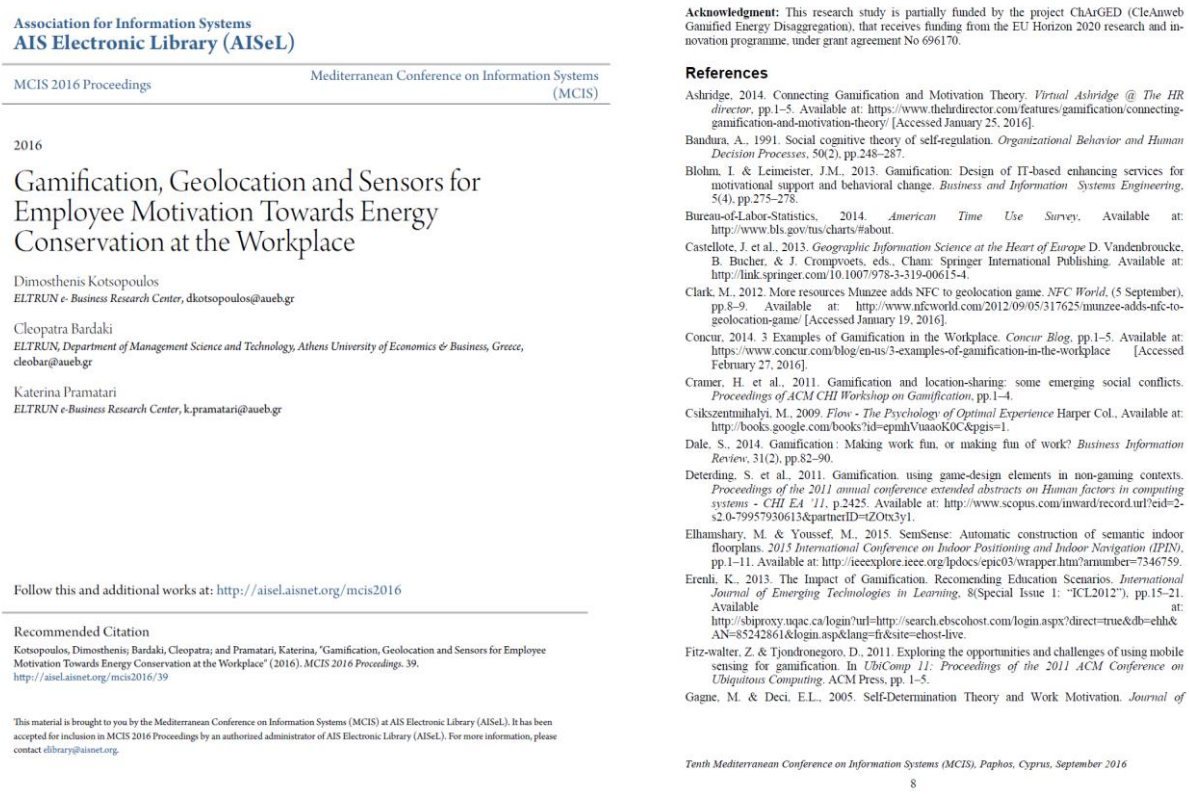
T. G. Papaioannou has been partially supported by the activities of EU project ChArGED (funded from the European Unions Horizon 2020 research and innovation programme under grant agreement No 696170). V. Hatzi and I. Koutsopoulos acknowledge the support of ERC08-RECITAL project, co-financed by Greece and the European Union (European Social Fund) through the Operational Program “Education and Lifelong Learning” - NSRF 2007-2013.

References

[1] T. G. Papaioannou, V. Hatzi and I. Koutsopoulos, “Optimal Design of Serious Games for Demand Side Management”, in *IEEE SmartGridComm*, 2014.
[2] T. Marsh, “Serious games continuum: Between games for purpose and experiential environments for purpose”, *Entertainment Computing*, vol.2, no. 2, 2011.
[3] E. Knol and P. De Vries, “EnerCities: A Serious Game to Stimulate Sustainability and Energy Conservation:Preliminary Results”, *eLearning Papers*, no. 25, 2011.
[4] B. Reeves, J. J. Cummings, and D. Anderson, “Leveraging the engagement of games to change energy behavior”, in *CHI Workshop on Gamification*, 2011.
[5] A. Bourazeri, J. Pitt, “Serious game design for inclusivity and empowerment in smartgrids”, in *IDGEI*, 2013.
[6] R. S. Brewer, Y. Xu, G. E. Lee, M. Katchuck, C. A. Moore, and P. M. Johnson, “Energy feedback for smart grid consumers: Lessons learned from the Kukai Cup”, in *ENERGY*, 2013.
[7] Y. Lurie. Gamification for Utilities: Captivating Customers with Energy Information. Simple Energy Report 2014. http://simpleenergy.com/
[8] D. Kozikowski, A. Breidenbaugh, and M. Potter, “The Demand Response Baseline”, in *EnerNOC OPS Publication*, v.1.75, 2006.
[9] S. Rottiers, “The sociology of social recognition: competition in social recognition games”, Working paper no. 1004, *Heman Deleeck Center of Social Policy, University of Antwerp*, 2010.
[10] L. Gkatzikis, I. Koutsopoulos, T. Salonidis,“The Role of Aggregators in Smart Grid Demand Response Markets,” in *IEEE Journal on Selected Areas in Communications*, vol.31, no.7, pp.1247-1257, 2013.
[11] N. Forouzandehmehr, S. M. Perlaza, Z. Han, and H. V. Poor, “A Satisfaction Game for Heating, Ventilation and Air Conditioning Control of Smart Buildings,” in *IEEE Globecom*, Atlanta, GA, December 2013.
[12] I. Glicksberg, “A Further Generalization of the Kakutani Fixed Point Theorem, with Application to Nash Equilibrium Points,” *Proc. of the American Mathematical Society*, vol. 3, pp. 170-174, 1952.

Figure 20 Extracts from the IEEE Transactions on Smart Grid paper

- Kotsopoulos, Dimosthenis; Bardaki, Cleopatra; and Pramatari, Katerina, "Gamification, Geolocation and Sensors for Employee Motivation Towards Energy Conservation at the Workplace" (2016). The 10th Mediterranean Conference on Information Systems (MCIS 2016), Paphos, Cyprus, 4-6 September 2016.
URL:http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1039&context=mcis2016



Association for Information Systems
AIS Electronic Library (AISeL)

MCIS 2016 Proceedings — Mediterranean Conference on Information Systems (MCIS)

2016

Gamification, Geolocation and Sensors for Employee Motivation Towards Energy Conservation at the Workplace

Dimosthenis Kotsopoulos
ELTRUN e- Business Research Center, dkotsopoulos@aueb.gr

Cleopatra Bardaki
ELTRUN, Department of Management Science and Technology, Athens University of Economics & Business, Greece, cleobar@aueb.gr

Katerina Pramatari
ELTRUN e-Business Research Center, k.pramatari@aueb.gr

Acknowledgment: This research study is partially funded by the project ChArGED (CIeAnweb Gamified Energy Disaggregation), that receives funding from the EU Horizon 2020 research and innovation programme, under grant agreement No 696170.

References

Ashridge, 2014. Connecting Gamification and Motivation Theory. *Virtual Ashridge @ The HR director*, pp.1–5. Available at: https://www.thehrdirector.com/features/gamification/connecting-gamification-and-motivation-theory/ [Accessed January 25, 2016].

Bandura, A., 1991. Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), pp.248–287.

Blohm, I. & Leimeister, J.M., 2013. Gamification: Design of IT-based enhancing services for motivational support and behavioral change. *Business and Information Systems Engineering*, 5(4), pp.275–278.

Bureau-of-Labor-Statistics, 2014. *American Time Use Survey*. Available at: http://www.bls.gov/tus/charts/#about.

Castellote, J. et al., 2013. *Geographic Information Science at the Heart of Europe* D. Vandenbroucke, B. Bucher, & J. Crompvoets, eds., Cham: Springer International Publishing. Available at: http://link.springer.com/10.1007/978-3-319-00615-4.

Clark, M., 2012. More resources Munzee adds NFC to geolocation game. *NFC World*, (5 September), pp.8–9. Available at: http://www.nfcworld.com/2012/09/05/317625/munzee-adds-nfc-to-geolocation-game/ [Accessed January 19, 2016].

Concur, 2014. 3 Examples of Gamification in the Workplace. *Concur Blog*, pp.1–5. Available at: https://www.concur.com/blog/en-us/3-examples-of-gamification-in-the-workplace [Accessed February 27, 2016].

Cramer, H. et al., 2011. Gamification and location-sharing: some emerging social conflicts. *Proceedings of ACM CHI Workshop on Gamification*, pp.1–4.

Csikszentmihalyi, M., 2009. *Flow - The Psychology of Optimal Experience* Harper Col., Available at: http://books.google.com/books?id=epmlhVuaaoK0C&pgis=1.

Dale, S., 2014. Gamification : Making work fun, or making fun of work? *Business Information Review*, 31(2), pp.82–90.

Deterding, S. et al., 2011. Gamification. using game-design elements in non-gaming contexts. *Proceedings of the 2011 annual conference extended abstracts on Human factors in computing systems - CHI EA '11*, p.2425. Available at: http://www.scopus.com/inward/record.url?eid=2-s2.0-79957930613&partnerID=tZOtx3y1.

Elhamshary, M. & Youssef, M., 2015. SemSense: Automatic construction of semantic indoor floorplans. *2015 International Conference on Indoor Positioning and Indoor Navigation (IPIN)*, pp.1–11. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=7346759.

Erenli, K., 2013. The Impact of Gamification. Recomending Education Scenarios. *International Journal of Emerging Technologies in Learning*, 8(Special Issue 1: "ICL2012"), pp.15–21. Available at: http://sbiproxy.uqac.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=85242861&login.asp&lang=fr&site=ehost-live.

Fitz-walter, Z. & Tjondronegoro, D., 2011. Exploring the opportunities and challenges of using mobile sensing for gamification. In *UbiComp 11: Proceedings of the 2011 ACM Conference on Ubiquitous Computing*. ACM Press, pp. 1–5.

Gagne, M. & Deci, E.L., 2005. Self-Determination Theory and Work Motivation. *Journal of*

Figure 21 Extracts from the MCIS paper

4.2 Events

4.2.1 Participation in conferences, seminars and workshops

ChArGED was disseminated via the participation of consortium partners to various events.

- **Dissemination event #1: Workshop for EE 2014 & 2015 Coordinators**

Date: 23-24 May 2016

Audience/Activity
EASME POs, EE2015/2015 project coordinators

Short description
The European Commission Executive Agency for SMEs (EASME) organised a very creative workshop for EE 2014 & 2015 Coordinators on the 23rd-24th of May 2016, in Brussels. Project coordinators had the chance to meet, present their projects, interact with the POs and get the insight of the "ICT for Energy Efficiency" initiative, acquire a clear view of the other projects' content and create synergies.

Figure 22 Extracts from the presentation given at the EASME workshop

- **Dissemination event #2:** **Internet of Things Conference 2016, Athens-Greece**

Date: 19 September 2016

Audience/Activity
Business Community, IoT researchers

Short description

The conference focused on the predictions and trend of the IoT ecosystem, the regulatory framework that will determine the function and the platforms upon which business applications will be based. A lot of case studies were presented to show the practical issues concerning the IoT ecosystem, which will eventually influence business plans and future investments. AUEB participated in the conference and presented ChArGED project to the audience (presentation title: IoT applications in Retail and Energy-efficient Workplace).

Webpage: http://iotconference.boussiasconferences.gr/default.asp?pid=1&la=2

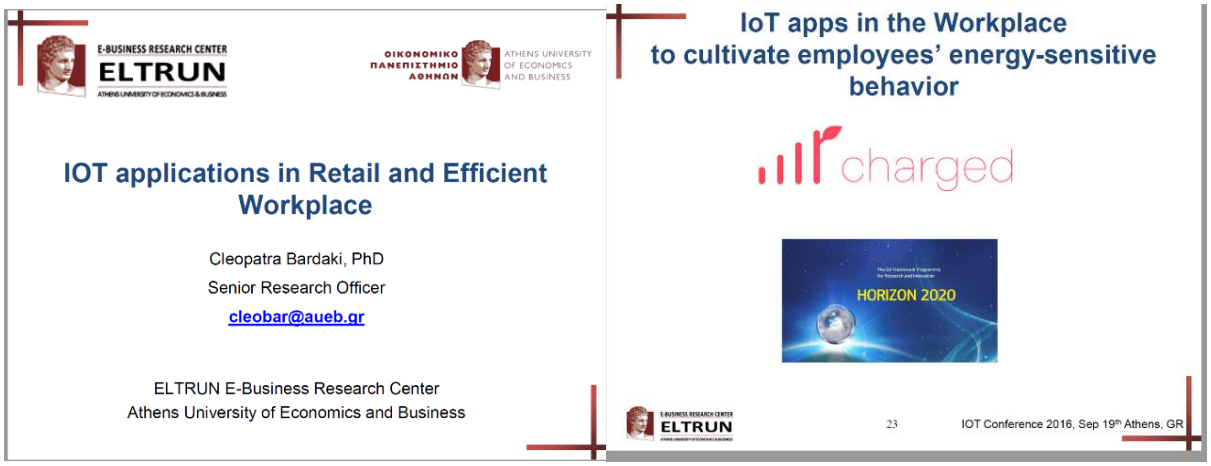


Figure 23 Extracts from the presentation given at the Internet of Things Conference 2016 workshop

- **Dissemination event #3: Stakeholder Engagement Event 2016-Icarus project (Integrated Climate Forcing and Air Pollution Reduction in Urban Systems)**

Date: 03 November 2016

Audience/Activity
PAs (Greek), Local Authorities/Municipalities & Regions, Academia/Researchers, Business, NGOs, Institutes

Short description
The ICARUS Stakeholder Engagement Event was organized by the Athens Development and Destination Management Agency (A.D.D.M.A.) and the Environmental Engineering Laboratory (EnvE-Lab) of the Aristotle University of Thessaloniki (A.U.Th.) on 3 November 2016 in Athens. At the event distinguished experts presented their insights and discussed policy framework measures that together with the ICARUS innovative technological tools can contribute to air pollution reduction and mitigation of climate change and lead towards the development of Resilient Cities. DAEM participated promoting CharGED.

Webpage
http://icarus2020.eu/icarus-stakeholder-engagement-event/

https://www.facebook.com/daemitcompany/posts/1160117017376652

Figure 24 Photos from the ICARUS workshop

- **Dissemination event #4: European Utility Week 2016**

Date: 15-17 November 2016

Audience/Activity
Utilities, hardware manufacturers, investors, ESCos

Short description
European Utility Week is the premier business, innovation and information platform connecting the smart utility community, with experts from utilities, network operators, vendors, consultants, startups and system integrators covering the entire smart energy value chain.
Wattics had a stand at the trade event and took the opportunity to promote CHARGED together with its own solutions for the duration of the event.

Webpage: http://www.european-utility-week.com

Figure 25 Photo from the WATTICS booth and the ChArGED screen at the European Utility Week

- **Dissemination event #5: Urban Policies Workshop**

Date: 18-19 December 2016

Audience/Activity

PAs (Greek), Local Authorities/Municipalities & Regions, Academia/Researchers, Business, NGOs, Institutes

Short description

The Urban Policies Workshop Event was organized by CoE Civic School of Political Studies in Greece - Symbiosis and the Athens Municipality Resilience and Sustainability Office on 18 and 19 December 2016 in Athens. This Lab used a political and institutional perspective to explore cities as governance systems. Participants engaged in analysing urban politics and governance from political and institutional perspectives. The objectives included the exchange of best practices relating to the local authorities' communication with their citizens through information and data sharing. DAEM participated promoting CharGED.

Webpage

https://resilientathens.wordpress.com

Figure 26 Photos from the Urban Policies workshop

- **Dissemination event #6: VIMSEN workshop**

Date: 13 January 2017

Audience/Activity
EE project partners, related stakeholders, academics, entrepreneurs, researchers.

Short description
ChArGED participated (via European Dynamics) in the VIMSEN «Virtual Microgrids for Smart Energy Networks» technical workshop that was organized on 13 January 2017 in Athens, Greece with a presentation entitled "H2020 ChArGED project: Cleanweb gamified energy disaggregation"

Webpage: http://www.ict-vimsen.eu/index.php/news

INVITATION

FOR THE INDUSTRIAL WORKSHOP OF THE VIMSEN PROJECT:

«Virtual Microgrids for Smart Energy Networks»

Friday, 13 January 2017

OTE Academy, Room Σ123, Buiding of Schools, Ground Floor (Pelika & Spartis 1, 15122, Maroussi)

We invite you to participate to the **VIMSEN project: «Virtual Microgrids for Smart Energy Networks»** workshop.

This Workshop will be held on Friday, 13 January 2017 at 9:30 AM, at OTE Academy, Room Σ123, Buiding of Schools, Ground Floor (Pelika & Spartis 1, 15122, Maroussi).

Participants will have the opportunity to see specific functionalities of the VIMSEN platform as well as follow speeches, presentations and demonstrations of pilot programs of other ongoing EU FP7/H2020 research and innovation projects.

The VIMSEN Project (http://ict-vimsen.eu/), is a 7th Framework co-funded Program of the European Commission (FP7-ICT-2013).

The main objective of the workshop is to inform all stakeholders of the results of the VIMSEN project as well as communicate and disseminate the results of many more EU R&I projects.

12:50-13:10	**H2020-INPUT Project: "In-Network Programmability for next-generation personal cloud service support"** Dr. George Lymperopoulos, Head of Research & Development Dept., Fixed & Mobile COSMOTE S.A.
13:10-14:15	*Lunch*
14:15-15:55	**Topic 3: Innovative software platforms in the energy sector using ICT**
14:15-14:35	**Advanced customer profiling and recommendation services to emerging utilities and ESCOs: The VIMSEN commercial solution** Dr. Vasilis Nikolopoulos, CEO, INTELEN Ltd.
14:35-14:55	**H2020 SOCIALENERGY project: "A Gaming and Social Networking Platform for Evolving Energy Markets' Operation and Educating Virtual Energy Communities"** Dr. Nikoleos Efthymiopoulos Senior Researcher Institute of Communications and Computer Systems (ICCS)
14:55-15:15	**H2020 CHARGED project: Cleanweb gamified energy disaggregation** Dr. Nikos Dimitriou, Senior R&D consultant, European Dynamics S.A.
15:15-15:35	**FP7 OS4ES project: The FP7 OS4ES project and Hypertech IoT solutions** Dr. Antonis Panagiotakopoulos, Senior Project Manager, Hypertech S.A.
15:35-15:55	**ENTROPY – An innovative IT ecosystem for improving energy efficiency through consumers' engagement and behavioural changes** Ms. Eleni Fotopoulou, Senior Software Engineer, UBITECH
15:55 – end of day	*Networking session among all participants*

VIMSEN
Virtual Microgrids for Smart Energy Networks

Prof. Manos Varvarigos
VIMSEN project coordinator
Tel: +30 210 7724731
Email: manos@ceid.upatras.gr

Dr. Prodromos Makris

Figure 27 Extracts from the VIMSEN workshop agenda

Figure 28 Extracts from the presentation given at the VIMSEN workshop

4.2.2 ChArGED, Organisation of conferences, seminars and workshops

- **Event: ChArGED WP3 workshop on Gamification Design**

Date: 23 – 24 November 2016

Audience/Activity

WP3 partners, invited external innovators/experts.

Short description

A ChArGED WP3 workshop on Gamification Design was hosted by AUEB in the Athens Center for Entrepreneurship and Innovation (ACEIn) in Greece. During this workshop external innovators (in the areas of gamification and mobile app design) were invited to assist the WP3 partners in the concept of the ChArGED game and mobile app design/development. The workshop inlcluded a presentation of the main ChArGED concepts to the invited experts, as well as brainwritting 6-3-5 method sessions in order to gather ideas for developing candidate scenarios, epicss, acceptance criteria and userstories that would be used as inputs for the generic ChArGED game and mobile App design.

Webpage: http://www.charged-project.eu/?q=content/charged-workshop-gamification-23-24-november-2016

E-BUSINESS RESEARCH CENTER ELTRUN ATHENS UNIVERSITY OF ECONOMICS & BUSINESS

ATHENS CENTER FOR ENTREPRENEURSHIP AND INNOVATION

charged

ChArGED Gamification Design Workshop

23 – 24 November 2016, 10:00 – 17:00
Athens Center for Entrepreneurship and Innovation
Greece, Athens, Kefallinias 46, 2nd Floor

Wednesday 23rd November 2016				
Time	**Module**	**Presented By / Facilitated By**	**Attended By**	**Module Outcome**
09:00 - 09:15	Welcome / Registrations	AUEB	Partners and Invited	
09:15 - 09:45	Workshop Agenda Presentation	AUEB	Partners and Invited	Presentation of Agenda and Brainwriting 6-3-5 Familiarization
09:45 - 10:45	Gamification in Energy Efficiency SoA	AUEB	Partners and Invited	Familiarization with Project Scope, Current trends of Gamification in Energy Efficiency, Indicative output of User feedback
10:45 - 11:00	**Coffee Break**			
11:00 - 11:30	New Concepts Design: Brainwriting 6-3-5 Method	AUEB	Partners and Invited	Different top level game concepts
11:30-12:00	New Acceptance Criteria Design: Brainwriting 6-3-5 Method	AUEB	Partners and Invited	Different in-game structures of actions / reaction
12:00 - 14:00	NCD : Elaboration on previous module	AUEB and PEAK	Partners and Invited	First rough version of EPICs + AC
14:00 - 14:30	**Lunch** (And/or Voting dependent on Philippe's schedule)			
14:30 - 17:00	Outline of NCD + Voting	AUEB	Partners	Updated version of EPICs

Figure 29 Extract from the Gamification workshop agenda

Figure 30 Photos from the Gamification workshop

5 Impact evaluation

Key Performance Indicators for the impact evaluation are documented in D1.1 – Project management plan. It is worth to mention the high rate of success of the dissemination and communication activities, with most of the targets to have been overachieved.

Table 1: Targets and actual impact of the dissemination and communication activities

		KPI	Target (M36)	Target (M12)	Achieved	
WP5 – Project Impact	5-1 Effectiveness and Impact of Dissemination activities	5-1-1 Visibility of the public ChArGED website	Approximately 1500 visitors	500	4597	✓ 👍
		5-1-2 Number of written and electronic publications (in academic and technical media)	≥ 5	2	2	✓
		5-1-3 Number of written and electronic publications (in industrial, business and public media)	≥ 5	1	1	✓
		5-1-4 Number of website / newsletter articles via partner's channel	≥ 5	1	1	✓
		5-1-5 Number of presentations (in symposiums, meetings, congresses)	≥ 6	2	3	✓
		5-1-6 Number of Project workshops	≥ 1	1	1	✓
		5-1-7 Number of followers on Twitter	≥ 50	20	27	✓ 👍
		5-1-8-Number of followers on LinkedIn	≥ 50	20	30	✓ 👍
		5-1-9 Number of publications on LinkedIn	≥ 15	5	11	✓ 👍
		5-1-10 Number of Communication videos	≥ 1	0	0	●
	5-2 Innovation creation and exploitation activities	5-2-1 Number of third party organisations contacted for technology licensing	≥ 3	0	0	●
		5-2-2 Participation to industry leading trade fair events	≥ 3	1	1	✓
		5-2-3 Number of partners integrating part of the Project' technology within own product range	≥ 2	0	0	●
	5-3 Business Modelling and Socio-economic Sustainability	5-3-1 Number of new business models (BMs) for offering gamified solutions for energy efficiency are defined and evaluated	≥ 3	0	0	✓
		5-3-2 Expected socio-economic evaluation of the project solution based on the data from the pilot studies	Positive	N/A	N/A	●

✓ Achieved	● Target for M24
👍 Significant overachievement	✗ Not Achieved

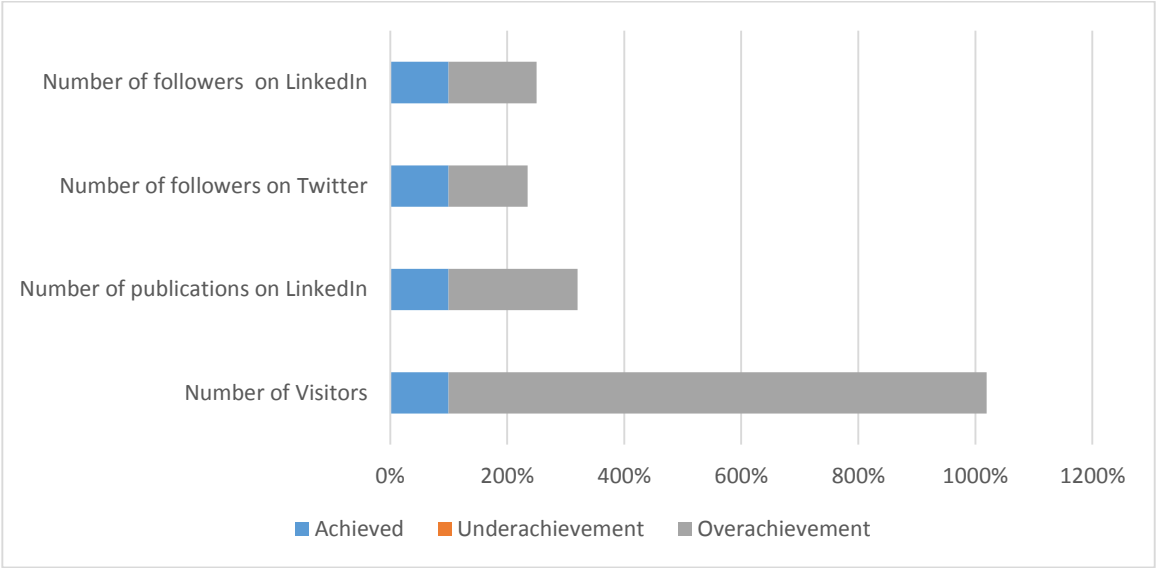


Figure 31: Actual performance compared to yearly targets

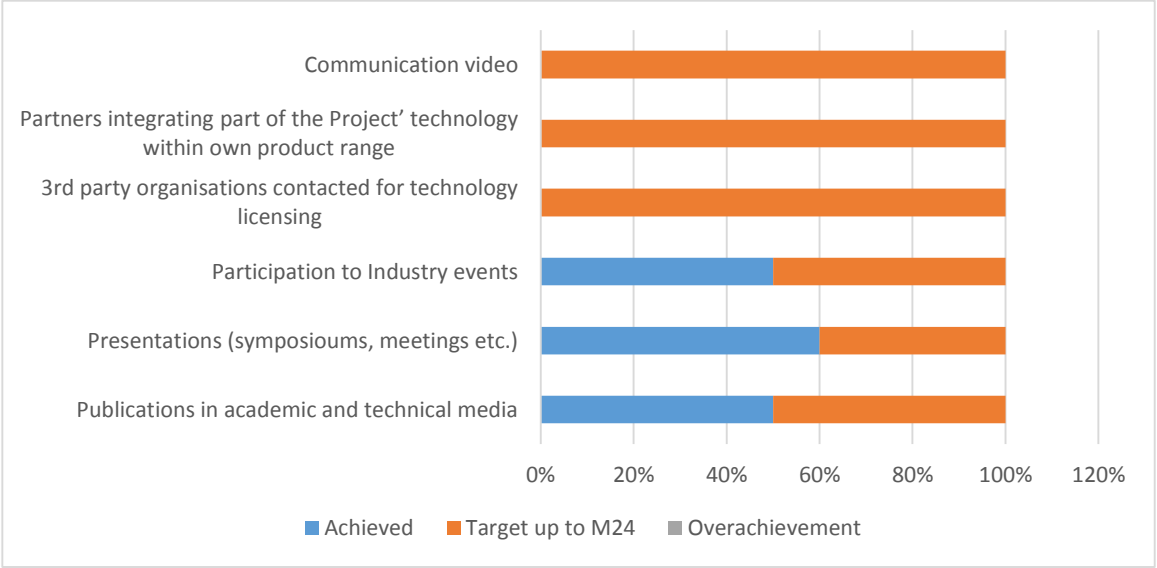


Figure 32: Actual performance and distance to cover for M24 targets

6 Conclusions

The project has overall conducted various dissemination activities for the first year. Most of the relevant KPIs for the period have been achieved and some of them significantly overachieved. The project will continue to intensify these activities during the next year, especially since more results will be available that can be demonstrated.