



Dissemination activities in year 1

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Abstract

This document describes the activities undertaken until M16 regarding the CLOMMUNITY project's dissemination activities and updates on knowledge management.

Executive Summary

In Work Package five, (WP5), the CLOMMUNITY consortium carried out tasks on knowledge management, dissemination and exploitation of the community cloud. In the first deliverable D5.1 of WP5, knowledge management was reported.

In this deliverable, we focus on dissemination activities of T5.2 during the first reporting period and update on T5.1, building upon D5.1.

At the beginning of the project, a public website, a public Wiki and the CLOMMUNITY leaflet were created. They have been regularly updated with news and technical information on the evolution of the project. A plan for the project dissemination was elaborated to reach different audiences and stakeholders. During the first reporting period of the project, scientific and technical project results have been published and presented to different kinds of audiences, including researchers, industry and citizens. CLOMMUNITY, in combination with the CONFINE project, co-organized and shaped the International Workshop on Community Networks and Bottom-up-Broadband (CNBuB), that was co-located with the IEEE WiMob 2013 Conference.

Regarding standardisation, an option for participation in the dnssd IETF working group was identified in order to build a solution close to the evolution of the related standard in WAN service discovery, an interesting feature for community clouds.

A short video explaining the aims of the CLOMMUNITY project in simple terms, followed by interviews to some participants, was produced and shown several times at the International Summit for Community Wireless Networks (2013.wirelesssummit.org) in Berlin, where a panel discussion devoted to the project was also held. The video is freely downloadable from <http://clommunity.blog.pangea.org/> and from <http://wireless.ictp.it/video>.

Different aspects of the project have been presented in many conferences and international events in Europe and the Americas.

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1 DISSEMINATION ACTIVITIES

The audiences for which the offer and results of the CLOMMUNITY project could be interesting are very heterogeneous. Dissemination of CLOMMUNITY activities aims at reaching a broad spectrum of social groups. Among the targets we considered: the community networks in Europe and similar initiatives overseas, the scientific community, university engineering students, local and civic governments and policy makers, entrepreneurs, companies and network operators.

The dissemination media channels available include some or all of the following: web/internet-based material (direct and indirect), articles in professional journals, articles in mass media, TV/radio comment, exhibitions - exhibiting, conferences - speaking, conferences - arranging and closed-group 'invitation only' briefings and production of short videos.

The following sections describe progress made in dissemination achieved until M16 of the project.

1.1 DISSEMINATION PLAN

Community networks, and clouds in community networks, are driven by sectors in society that aim at the combination of social and computing infrastructure as a model for the construction of the Future Internet. For such model to become a reality in society three pillars are considered essential and are therefore objectives of the dissemination plan: 1) gain participants to put into practice the socio-technical models that extend and diversify community networks and clouds, 2) provide a theoretical understanding of the socio-technical fundamentals of such systems, and 3) foster socio-economic-political conditions that are favourable towards recognizing and supporting the value of the proposed model.

Given as objective the achievement of these pillars, referring to the first one, the Clomcommunity project needs to gain participants for clouds in community networks. These participants can come from different societal groups, while each group will be attracted by different opportunities that the project can present to them. Depending on that opportunity, Clomcommunity will have more or less possibilities, and require different efforts, to engage participants successfully. In order to address the right audience at the right time, the evolution of the project outcomes needs to be taken into account. We need to be aware that the project will start with developing and implementing ideas and in the first phase of the project clouds in community networks do not exist, while in the second phase evidences of their existence and their benefits can be shown.

Being able to provide a theoretical understanding of community clouds, i.e. the second of the pillars, means to leverage the research community to work in the area of community clouds and community networks. The Clomcommunity project should therefore contribute to building up a research community that works on the fields related to our area. The research community will help with the gained understanding to support these grassroots efforts with solutions to build more stable, better performing and sustainable systems. Such research community should persist beyond the time of the Clomcommunity project. The current situation regarding the existence of such a research community is that it is fractured into many disciplines and interactions between research and bottom-up activism is rather weak.

As third pillar, such socio-technical Future Internet models like community clouds should at least

not find major obstacles from political and administrative bodies. The current situation in this respect seems to be in general positive in the sense that the exploration of alternative models is supported. Although business-driven Future Internet models are clearly dominating any other approach, new ideas seem to be up to a certain point welcome. Sometimes also the limitations of current approaches oblige to consider additional models, e.g. it is worth mentioning the potential role of complementary clouds in disaster mitigation efforts. Such clouds could help significant in early warning mechanism for many disasters, in particular when coupled with sensors they can be invaluable for natural disaster prevention. Nevertheless, the deluge of data generated after a disaster occurs pose a significant burden on the telecommunications infrastructure, and efficient ways to handle these situations must be contemplated.

Along with the stated objective, we have to consider the evolution and duration of the project: Starting from the initial development of the community cloud system at the project beginning, involving users in the cloud deployments is achieved in the second phase of the project, with the outcome of a community cloud architecture and platform. The duration of the project is of 2.5 years: In order to achieve the desired impact, the dissemination activity has to start early.

Dissemination media options, according to the DoW, may include some or all of the following: Web/internet-based material (direct and indirect), articles in professional journals, articles in mass media, TV/radio comment, Exhibitions – exhibiting, Conferences – speaking; Conferences - arranging, Closed-group ‘invitation only’ briefings. To this initial list of the DoW, we add 1) show cases which allow demonstrations and evidences, and 2) standardization bodies, and 3) community network communication channels, e.g. social and technical meetings, mailing lists.

Target constituencies, according to the DoW, may include some or all of the following: Local and civic government (officials and elected representatives), central government public policy makers, consumer electronic vendors; capital markets – banks and financial institutions, telecoms operators, local community groups and entrepreneurs, existing utility operator (water/electricity/gas), ‘big content beasts’ that are pro net-‘neutrality’. To this initial list of the DoW, we add 1) the scientific and academic community and 2), citizens as users and producers of community clouds.

Given these considerations, dissemination will be roughly split into two goals: **awareness raising** and **results dissemination**. The first kind will be undertaken during the first reporting period and the second kind is planned for the second reporting period, when the results for the year’s activity are available.

In order to assess the impact of the planned actions over the different types of dissemination media on different stakeholders, a simple ‘assessment matrix’ is considered (Table 1). This will allow choosing the dissemination options within the available budget that will achieve maximum dissemination impact for reaching our overall objective. The colour of the square indicates the expected reach of the respective dissemination media within the respective target group. For example, journals have high reach in the scientific and academic constituencies and are marked red (dark). Some fields have events mentioned which show an option how to materialize the dissemination action. In addition to the impact on different target constituencies, the dissemination cost must also be considered to decide on the selection of the dissemination action.

Valuable ideas for dissemination to be taken into account were already expressed as a preliminary dissemination plan in the DoW of Clomunity, summarized in the following proposed actions: scientific journals and conferences, industry and social activities, organization of workshops,

training efforts, CLOMMUNITY Website, cluster and concentration activities in the FP7 program, brochures and posters, contributions to standards, university education.

Given the before mentioned high-level objectives, the Clommunity project will need to be present in a several media since early in the project. In the early beginning of the project, the first objective, awareness raising, will start with publications in order to reach the scientific community, and use the most of the project's duration for establishing and consolidating research lines on community networks/clouds. Scientific publications should target different research communities to capture the multidisciplinary nature of community networks, and the participation in panels, discussions, workshops, conferences should be pursued. EU concertation meetings should be attended to exhibit the project. Demo tracks of conferences should be targeted to show developed systems. The CNBuB workshop¹ should be continued and opportunities for increasing its scope should be pursued. Community networks should be integrated for development and research at the Master and PhD level, respectively, in curricula of Clommunity project partners.

In order to gain participants (e.g. citizens, entrepreneurs, SMEs, CN activists, municipalities etc), results dissemination will be applied: It is assumed that such participants will be better reached by tangible results, working code, prototypes, demonstrators and working use cases. As soon as such kind of results of the project can be shown – mainly in the second reporting period of the project - the second objective, result dissemination, needs to be started.

- Important events for reaching CN activists are the Battlemesh, IS4CWN and SAX, in addition to the usual CN channels. Therefore, demonstrators and working services in community clouds should be elaborated.
- Innovative applications, e.g. coming from the IoT field which might show in particular the potential and applicability of community clouds, should be pursued. Such innovative applications could be suitable to gain activists, municipalities and SMEs.
- Reaching industrial partners could be achieved on one hand by approaching companies already active within Guifi. On the other hand, attending meetings organized by applied EU research that involves companies like the FI-PPP program could help to start conversation on the exploration of business opportunities in community clouds.
- WG of standardisation organizations like the IETF and IRTF should be approached if their technical challenge is related to community cloud research challenges. Such participation of Clommunity could either contribute requirements to solutions proposed by these WG, or could contribute that solutions, which Clommunity uses, apply current standards and are prepared for upcoming standards. We note that it is expected to be important for the sustainability of community clouds that solutions based on standards are sought.

In order to foster favourable socio-economic-political conditions, the project will work on a specific task in WP5 in the second reporting period of the project. This task should leverage on assessing and applying the work of other related initiatives combined with the proper experience and challenges faced by the community cloud operation during the project. E.g. initiatives like the GAIA working group of the IRTF should be closely followed. Activities within Guifi that address solutions on socio-economic-political issues commented over the Guifi mailing lists should also be followed.

This dissemination plan is integrated in the work plan of Clommunity in the sense that WP2 produces practical results to gain participant and WP3 produces research results to gain the

¹ <http://research.ac.upc.edu/CNBuB2014/>

scientific community.

Measures for the controlling and assessing the success of the dissemination plan are proposed by T4.1 of WP4 and reported in D4.1.

The results of the actions of this dissemination plan should achieve that, when the Clommunity project ends, the explained key pillars are in place such that community clouds will continue beyond the end of the Clommunity project.

	Academic /		Supra-national /	Consumer Electronics			CN	Existing	"Big Content Beasts"	Citizens
	Scientific	Local	Central		Capital	Telecom	Activists	Utility		Cloud users and
	Community	Gov.	Gov.	Mfrs	Markets	Operators	Entrepreneurs	Operators		contributors
Web/ Internet										
Academic / Professional Journals, Technical magazines	- IEEE Internet Computing - ComNet - CCR					- IEEE Internet Computing - ACM CCR				
Articles in mass media										
TV / Radio commentary										
Trade exhibitions										
Conferences - speaking	- WiMob - TRIDENT-COM - ICDT - CNBuB - UCC - CloudCom - GECON - Cloudnet		- EU concertation meetings: - Future Internet Summit - FIRE - WG - FIA				- IS4CW - N - Battle mesh - F2C - WALC - IEEE - GHTC - GIIS			
Conferences - arranging	- CNBuB									
Private briefings										
Demonstrators	- experimental infrastructure - HGW scenario						- Cloudy - Cloud-based services			
Standardization bodies	- IRTF			- IETF		- IETF				
CN channels										

Reach
High
Medium
Low

Table 1: Assessment matrix for the dissemination activities.

During the first 16 months of the project, a high-level dissemination plan was formulated addressing the following two main goals:

- awareness raising and
- results dissemination

The first kind was undertaken in the first reporting period and the second kind is planned for the second period of the project, when the results of the first year's activity are available.

The CLOMMUNITY project has actively been presented by different project partners to different audiences (municipalities, engineering students, politicians, community network activists, computer activists, ...). Among these presentations were:

- Community Applications presentation at the International Summit for Wireless Community Networks (IS4WCN), 4-7 October 2012, Barcelona, by Felix Freitag (UPC)
- Experimentation on Community Clouds presentation at the FIRE Engineering Workshop, 6-7 November 2012, Ghent, by Felix Freitag (UPC)
- Collaboration Opportunities in Community Network Research and Applications. Presentation to staff and students at Addis Ababa University, 25 January 2013, Ethiopia, by Desta Gebra and Jesus Berdun (UPC-AUCCOOP)
- Clomunity presentation to researchers and PhD students at Computer Science Department of Universidad de Chile, 31 January 2013, Chile, by Roc Meseguer (UPC)
- Wireless BattleMesh 2013, Research in Community Networks, Community Clouds, 17 April 2013, Aalborg (DK) by Leandro Navarro (UPC).
- Demo at IEEE International Symposium on a World of Wireless Mobile and Multimedia Networks (WoWMoM), 4-7 June 2013, Madrid, Spain, by Pau Escrich (Guifi.net).
- Presentation at IEEE International Conference on Computer Supported Cooperative Work in Design (CSCWD) , 27-29 June 2013, Whistler, Canada.
- Clouds for Community Networks. Presentation at the Future Network & Mobile Summit, 3 - 5 July 2013, Lisbon, Portugal, by Roger Baig (Guifi.net).
- Demo of the hardware and software components of Community Home Gateways at, International Conference on Peer-to-Peer Computing (P2P), 9-11 September 2013, Trento, Italy.
- Sustainable communities: networks, clouds and markets: Keynote speech at International Conference on Economics of Grids, Clouds, Systems, and Services (GECON), 19 September 2013, Zaragoza, Spain, by Leandro Navarro (UPC).
- Production of a short video describing the objectives of the CLOMMUNITY project in very simple terms and with graphic animations, to make it appealing to a wide audience. Two versions of this video were made, a short one with only the animations and voice over, and a second one (about 9 minutes) augmented with interviews with some of the participants of the project. Both versions are available from the project's web site at <http://clomunity-project.eu> and also from <http://vimeo.com/75876170>, <http://vimeo.com/80379501> as well

as from <http://wireless.ictp.it/video>.

- Organization of the panel “Clommunity: A Cloud Solution for Community Networks” at International Summit for Community Wireless Networks (IS4CWN) 2013, that was held in Berlin, October 2-4. This panel had the participation of Ermanno Pietrosemoli (ICTP), Leandro Navarro (UPC), Roger Baig (Guifi.net) and Felix Freitag (UPC). The audience was from Europe, the Americas and Asia, with people from variegated backgrounds, stretching from technologists, activists and even politicians. During the summit, the CLOMMUNITY video was presented to the panel audience and also to the general audience in the media room, in which was shown in a continuous loop along with other 3 videos.
- Participation at IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 7-9 October 2013, Lyon, France
- Organization of a tutorial on Community Networks at the IEEE Global Humanitarian Technology Conference (GHTC), 20-24 October 2013, San Jose, California, US, during which the CLOMMUNITY project was presented by Marco Zennaro and Ermanno Pietrosemoli from ICTP, to a global audience with different backgrounds, all sharing interests in the social and technical aspects of community projects.
- Keynote Presentation on Community Wireless Networks at the “Workshop America Latina y Caribe” (WALC) (<http://www.eslared.org.ve/walcs/walc2013/>), 14 October 2013, at Universidad Nacional de Ingenieria, Managua, Nicaragua, by Ermanno Pietrosemoli (ICTP).
- Poster presentation at IEEE Global Information Infrastructure and Networking Symposium (GIIS), that took place in Trento, Italy, 28-31 October, 2013, by Ermanno Pietrosemoli (ICTP).
- Presentation at IEEE International Conference on Cloud Engineering (IC2E), 10-14 March, 2014, Boston, Massachusetts, US.
- Participation with poster at Future Internet Assembly (FIA), 17-20 March, 2014, Athens, Greece.

For next year, we propose to have a two days long dissemination event, in which the results of the project can be show cased, as well as future users of the developed tools can be trained. This will be held at ICTP in Trieste in April. We plan to have the results of the CLOMMUNITY project presented as demonstrations in this venue and to provide hands-on training to the participants. For the rest of the second reporting period, we plan to participate in relevant conferences to which the results of the project can be presented.

Among others, we plan to present at:

Tech4Dev 2014, the International Conference organised by the Unesco Chair on Technology for Development at the EPLF in Lausanne, Switzerland, June-4-6, 2014.

WALC 2014, Workshop for Latin America and the Caribbean, Manta, Ecuador, October 27-31.

GIIS 2014, Global Information Infrastructure, Montreal, Canada, September 15-19.

CNBUB 2014, The third International Workshop on Community Networks and Bottom-up-Broadband, in Larnaca, Cyprus, October 8.

1.3 INTERNET-BASED ACTIVITIES

This section outlines Internet-based activities undertaken to promote the CLOMMUNITY project. Further details are given in deliverable D5.1.

1.3.1 CLOMMUNITY WEBSITE

A website for the CLOMMUNITY project has been set up² as a publicly-available repository for CLOMMUNITY material. Key content includes:

- A number of finalised documents (project deliverables, project facts, research publications, etc.).
- A news section focussing on the publication of events in which the project participates in or organises.
- Posts with articles on different topics in community networking.
- A link to the project's Wiki
- A link to the project's videos.

1.3.2 PUBLIC WIKI

A public Wiki has been set up³. This Wiki is used for on-going documents and other public information. External parties can follow the project progress and get first hand insight into current activities and decisions. Editing is restricted to partners of the consortium.

Documents pertaining to on-going activities are held in the CLOMMUNITY Wiki whereas finalised documents are kept in the CLOMMUNITY Web site.

1.4 BROADER MEDIA DISSEMINATION ACTIVITIES

1.4.1 LEAFLET

A brochure on the CLOMMUNITY project was published at the beginning of the project on the CLOMMUNITY Web site, and has been distributed at public events.

1.4.2 LOGO

To build up a unified identity of the project, a logo was created at the beginning of the activity. This logo (Figure 1) is included in publications, presentations and posters to increase the recognition and branding of the CLOMMUNITY project.

² <http://clommunity-project.eu/>

³ <http://wiki.clommunity-project.eu/>



Figure 1: The CLOMMUNITY logo

1.4.3 PROMOTIONAL VIDEO

During the second half of the first year of the project, ICTP coordinated the production of a promotional video for the CLOMMUNITY project.

A first version of the video was shown at the IS4CWN 2013 and is available at the CLOMMUNITY Web site and also at <http://vimeo.com/8035347> as well as at <http://wireless.ictp.it/video>.

A second extended version of the video adds interviews of community network members and project participants. The extended version of the video is also available at the CLOMMUNITY Web site, at <http://vimeo.com/80379501>, and at the ICTP web site <http://wireless.ictp.it/videos>.

Besides of being available through the CLOMMUNITY Web site, the video was used several times in diverse meetings to explain the community cloud idea in simple language.

1.5 SCIENTIFIC PUBLICATIONS

Conferences and journals are considered to be an important means to disseminate the project's knowledge to the scientific community. In the first year of the project, CLOMMUNITY aimed at publishing its results at workshops and conferences. In the following the academic papers that are already published and are accepted for publication are listed.

1.5.1 SCIENTIFIC PAPERS

- **Effort-Based Incentives for Resource Sharing in Collaborative Volunteer Applications.** Davide Vega, Roc Meseguer, Felix Freitag and Sergio Ochoa. In 17th IEEE International Conference on Computer Supported Cooperative Work in Design ([CSCWD 2013](#)).

This paper evaluates different strategies to incentivize resource sharing in collaborative and voluntary computing scenarios. The results show how such strategies can provide user rewards for different types of participation. Such mechanisms are expected to be part of the community cloud system in order to regulate resource sharing and encourage users to contribute.

- **Deploying applications with Community-Lab in wireless community networks.** Marc Aymerich, Roger Baig, Pau Escrich, Ivan Vilata, Axel Neumann, Davide Vega, Ester Lopez, Felix Freitag, Leandro Navarro. Demo in The Fourteenth International Symposium on a

World of Wireless, Mobile and Multimedia Networks (IEEE [WoWMoM 2013](#)).

This paper focuses on demonstrating the deployment of applications and cloud infrastructures in Community-Lab, which is the testbed facility used by the CLOMMUNITY project. By means of selected applications, we show how Community-Lab can be used by researchers to perform experiments with applications in community networks.

- **Support Service for Reciprocal Computational Resource Sharing in Wireless Community Networks.** Ümit Büyüksahin, Amin Khan, Felix Freitag. The 5th International Workshop on Hot Topics in Mesh Networking (IEEE [HOTMESH 2013](#)), co-located with WoWMoM 2013.

We propose in this paper a service to incentivize the contribution of computing and storage as cloud resources to community networks, in order to provide an infrastructure for the deployment of services and applications.

- **ElastMan: Autonomic Elasticity Manager for Cloud-Based Key-value Stores.** Ahmad Al-Shishtawy, Vladimir Vlassov. The 22nd ACM International Symposium on High-Performance Parallel and Distributed Computing ([HPDC '13](#)).

This paper reports on the initial design of Elastman.

- **ElastMan: Elasticity Manager for Elastic Key-Value Stores in the Cloud.** Ahmad Al-Shishtawy, Vladimir Vlassov. The ACM Cloud and Autonomic Computing Conference ([CAC 2013](#)).

The paper presents the design and evaluation of ElastMan, an elasticity controller for Cloud-based elastic key-value stores. ElastMan combines feedforward and feedback control. Feedforward control is used to respond to spikes in the workload by quickly resizing the service to meet SLOs at a minimal cost. Feedback control is used to correct modelling errors and to handle diurnal workload. ElastMan was implemented and evaluated using the Voldemort key-value store running in a Cloud environment based on OpenStack. Evaluation shows the feasibility and effectiveness of our approach to automation of Cloud service elasticity.

- **Community Home Gateways for P2P Clouds.** Pau Estrich, Roger Baig, Ivan Vilalta, Axel Neumann, Marc Aymerich, Ester Lopez, Davide Vega, Roc Meseguer, Felix Freitag, Leandro Navarro. Demo in the IEEE International Conference on Peer-to-Peer Computing ([P2P 2013](#)).

In this demo paper we present the hardware and software we propose for Community Home Gateways. These devices can be seen as low-end cloud resources of the Community Cloud, able to host platform and application services.

- **Towards Incentive-Based Resource Assignment and Regulation in Clouds for Community Networks.** Amin M. Khan, Umit Cavus Büyüksahin and Felix Freitag. 10th International Conference on Economics of Grids, Clouds, Systems and Services ([GECON 2013](#)).

The sustainability of Community Clouds requires contributions from their participants. We study in this paper the effects of incentive-based resource allocation strategies. Such strategies applied in the Community Cloud should facilitate the regulation of demand and supply of cloud resources.

- **Clouds of Small Things: Provisioning Infrastructure-as-a-Service from within Community Networks.** Amin M. Khan, Leila Sharifi, Luís Veiga, Leandro Navarro. The 2nd

International Workshop on Community Networks and Bottom-up-Broadband ([CNBUB 2013](#)), co-located with WiMob 2013.

This paper studies the performance of community cloud infrastructures compared with that of data centre type clouds. It is an effort towards seeing clouds built out of resource-constraint devices, a vision that down-sizes the hardware that is typically associated with clouds.

- **Supporting Cloud Deployment in the Guifi.net Community Network.** Javi Jimenez, Roger Baig, Pau Escrich, Amin M. Khan, Felix Freitag, Leandro Navarro, Ermanno Pietrosevoli, Marco Zennaro, Amir H. Payberah, Vladimir Vlassov. The 4th Global Information Infrastructure and Networking Symposium ([GIIS 2013](#)).

We explain our approach to bring clouds into the Guifi.net community network. For this we have started integrating part of our cloud prototype into the Guifi.net community network management tools. We present the proof-of-concept cloud infrastructure that is currently under deployment in the Guifi.net community network.

- **Deploying PaaS for Accelerating Cloud Uptake in the Guifi.net Community Network.** Javi Jimenez, Pau Escrich, Roger Baig, Felix Freitag, Leandro Navarro. IEEE International Workshop on the Future of PaaS 2014, co-located within IEEE International Conference on Cloud Engineering ([IC2E 2014](#)).

We present in this paper the relevance of PaaS for achieving cloud uptake in community networks. PaaS (Platform as a Service) is the strategy we follow by deploying the Guifi-Community-Distribution (GCODIS) on all cloud nodes, a distribution containing common services and applications.

1.5.2 TO APPEAR

- **Towards a Community Cloud Storage.** Ying Liu, Vladimir Vlassov, Leandro Navarro – to appear in the 28th IEEE International Conference on Advanced Information Networking and Applications ([AINA-2014](#)).
- **Prototyping Incentive-based Resource Assignment for Clouds in Community Network.** Amin M. Khan; Ümit Büyükşahin; Felix Freitag – to appear in the 28th IEEE International Conference on Advanced Information Networking and Applications ([AINA-2014](#)).
- **Exploring the Role of Macroeconomic Mechanisms in Voluntary Resource Provisioning in Community Network Clouds.** Amin M. Khan; Felix Freitag – to appear in 11th International Symposium on Distributed Computing and Artificial Intelligence ([DCAI 2014](#)).
- **Community Clouds for supporting data services in underserved areas.** Felix Freitag, Leandro Navarro, Roger Baig, Pau Escrich, Javi Jimenez, Agusti Moll, Roger Pueyo - to appear in 2014 Tech4Dev International Conference.

1.6 OPEN DATA AND REPOSITORIES

CLOMMUNITY aims to be an open project with regards to access to knowledge, tools and interaction, and be visible for the different communities.

We have registered the CLOMMUNITY project⁴ in the Open Cloud Directory⁵, an online catalogue about European and other Cloud Computing R&D projects.

We have uploaded our publications to Zenodo⁶, making them accessible to interested audiences.

We also use OpenAire⁷ as additional channel to make our work accessible.

In addition to open repositories for specific developments, Redmine⁸ is used to provide an open repository.

The CLOMMUNITY Wiki⁹ informs in an open approach on the on-going works in the project.

1.7 MAJOR ORGANISED EVENTS

1.7.1 IS4CWN 2012 – INTERNATIONAL SUMMIT FOR COMMUNITY WIRELESS NETWORKS

Previous to the official start of the CLOMMUNITY project, Guifi.net and UPC co-organised and hosted the 2012 International Summit for Community Wireless Networks (IS4CWN 2012)¹⁰. This event was held in Barcelona, Spain in October 2012. Over eighty delegates attended more than 30 events held over a four day period. Constituencies represented include academia, industry and third- sector groups. By origin, attendees were broadly spread, coming from Europe, the Americas and Asia.

In IS4CWN 2012, the CLOMMUNITY concept was presented in a panel formed by Jonathan Baldwin (New America Foundation), Josep Bonciolli (AWMN) and Felix Freitag (UPC).

1.7.2 CNBUB 2013 - SECOND INTERNATIONAL WORKSHOP ON COMMUNITY NETWORKS AND BOTTOM-UP-BROADBAND

In order to bring the concepts of clouds in community networks to the academic community, the CLOMMUNITY and CONFINE project members joined efforts to organise the Second International Workshop on Community Networks and Bottom-up-Broadband (CNBuB 2013)¹¹, held on 8th October 2013. This event was co-located with the 9th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob 2013), both events took place in Lyon, France.

The topic of cloud in community networks was specifically mentioned in the CfP of CNBuB 2013, in order to broaden the scope of what should be seen in community networks, beyond of what was covered in CNBuB 2012.

The CNBuB 2013 workshop was chaired by Roger Baig (Guifi.net) and Felix Freitag (UPC).

4 <http://www.ocdirectory.org/organization/about/clommunity>

5 <http://www.ocdirectory.org/>

6 <https://zenodo.org/collection/user-clommunity>

7 <https://www.openaire.eu/index.php?>

[option=com_openaire&view=browsepublications&Itemid=162&project=corda_____::24897482e1841a29527edf8a0b83316e](https://www.openaire.eu/index.php?option=com_openaire&view=browsepublications&Itemid=162&project=corda_____::24897482e1841a29527edf8a0b83316e)

8 <http://redmine.confine-project.eu/projects/clommunity>

9 <http://wiki.clommunity-project.eu/>

10 <http://wirelesssummit.org/>

11 <http://research.ac.upc.edu/CNBuB2013/>

1.7.3 BATTLEMESH v6

CLOMMUNITY members participated in the BattleMesh v6¹² in Aalborg in May 2013. The challenges of the project were presented to participating activists representing community networks from Europe and overseas, and interesting options for solutions were discussed.

Roger Baig and Pau Escrich from Guifi.net participated in the collective organisation and program of the BattleMesh v6.

While the BattleMesh is attended primarily by developers, IS4CWN is attended by activists and promoters of networking initiatives.

1.8 PARTICIPATION IN CONCERTATION ACTIVITIES

The participation in concertation activities led to information interchanges with participants of other projects and initiatives. CLOMMUNITY currently interacts with other FIRE projects through its participation in the FIRE forum and FIRE board.

- FIRE Engineering Workshop, 6-7 November 2012, Ghent. Presentation of the CLOMMUNITY project. Participant: Felix Freitag (UPC)
- Future Network & Mobile Summit 2013 in Lisbon, Portugal. Poster presentation CLOMMUNITY. Participant: Roger Baig (Guifi.net),
- FIRE KPI WG Meeting and Dissemination WG meeting 24-Oct in Ghent, Belgium. FIRE Board meeting on 25 October in Ghent, Belgium. The meetings were attended by Felix Freitag (UPC).
- Future Internet Assembly (FIA), March 2014, Athens, Greece. Portugal. Poster presentation CLOMMUNITY. Participant: Roger Pueyo (Guifi.net), Paris Carbonne (KTH), Amin Khan (UPC), Felix Freitag (UPC)

1.9 INTERACTION AND SYNERGIES WITH MULTIDISCIPLINARY INITIATIVES

Interactions with other EU projects are accomplished on one hand through direct participation of consortium members in both projects, and on the other hand from discussions with other projects representatives. Both efforts have contributed to concrete collaboration work.

1.9.1 CONFINE

A natural interaction with the CONFINE project¹³ takes place since CONFINE provides to CLOMMUNITY the experimental facility, Community-Lab, required to perform experiments.

In addition, UPC and Guifi.net are partners in both project consortiums.

Experiments of CLOMMUNITY in Confine have been fed back to improve the Confine testbed.

CLOMMUNITY has extended Community-Lab with additional hardware, especially microclouds formed by PCs and recently wireless sensor boards. Experiments through Community-Lab can include now a distributed heterogeneous cloud infrastructure (see D4.2 for more technical details).

¹² <http://battlemesh.org/BattleMeshV6/>

¹³ <http://confine-project.eu/>

1.9.2 FED4FIRE

Community-Lab through UPC is part of Fed4FIRE and as such is part of the federation of testbeds. Since Community-Lab is used by CLOMMUNITY, this federation of testbeds will also benefit CLOMMUNITY. In Fed4FIRE, there are also Cloud testbeds such as Bonfire, whose federation solution might be applicable for CLOMMUNITY clouds. After UPC's adoption of SFA for Community-Lab, we will explore the opportunities which the federation of testbeds will ultimately provide to evaluate community clouds.

1.9.3 MODACLOUDS PROJECT

MODAClouds¹⁴ is an on-going FP7 project that aims at providing a decision support system (DSS) to enable cloud developers and cloud operators to choose between several cloud providers, and at the runtime of a cloud application, monitor the performance and if needed, enable application migration between clouds. MODAClouds scenarios are commercial cloud environments.

During several interactions with MODAClouds partners and also physical meetings in FIA in Athens March 2014, and Barcelona in April 2014, different collaboration opportunities were identified, among these are:

1. Integrate the specific features of community clouds, such as social metrics, into the MODACloud DSS.
2. Deploy the DSS within the community network to enable users to select between community cloud providers.
3. Deploy the DSS in a federated scenario where community clouds “compete” with commercial clouds and cloud users may choose according the advantages each provider offers for particular user case.
4. Evaluate advanced features for the DSS with community clouds where openness of data is available in contrast with the offers of commercial cloud providers.

Currently the 2nd scenario is identified by both projects to be of high interest. It depends on the implementation progress of the DSS system when this deployment will take place. The 3rd scenario is also of interest and the CLOMMUNITY projects is uniquely suited for this application.

1.9.4 OPENWRT WITH LIBVIRT

Some developers of COMMUNITY are active in OpenWRT¹⁵, which has enabled the porting of libvirt to OpenWRT¹⁶. Libvirt is a library which is used by popular cloud management platforms. Thus this port potentially allows OpenWRT-based hosts to be managed by such cloud management platforms. Support for LXC by OpenNebula, while it was available through a third party contributions, did not get into the official releases. OpenStack has decided to supports LXCs through Docker. As a result, we see a future potential for our contribution, but a definite decision on LXC by cloud management platforms is a prerequisite for this to happen. The recent endorsement of Docker by Google is significant in this respect.

14 <http://www.modaclouds.eu/>

15 <https://openwrt.org/>

16 <http://wiki.clommunity-project.eu/soft:node-software>

1.9.5 WALC WORKSHOP

Keynote Presentation by Ermanno Pietrosemoli during WALC 2013 at Universidad Nacional de Ingenieria in Managua, Nicaragua, on the topic of Community Networks. The keynote on October 14 was attended by an international audience of 220 participants from the Academia, Industry and Government of several countries in Latin America. Details of the role of community clouds were discussed, with emphasis in the privacy afforded by the fact that data are confined to the community network and do not leave its boundaries.

1.9.6 GLOBAL HUMANITARIAN TECHNOLOGY CONFERENCE

Tutorial on Community Networks delivered by Marco Zennaro and Ermanno Pietrosemoli during the IEEE Global Humanitarian Technology Conference held in San Jose, California, US, on October 20, 2013. This tutorial was the second one at which Marco Zennaro and Ermanno Pietrosemoli were invited, and this year we focused more on the cloud developments and their relations with community networks that are of paramount importance for the empowerment of rural communities which are often cut-off from traditional telecommunications media due to the lower return on investment in telecommunication infrastructure in sparsely populated areas.

1.10 OUTREACH TO COMMERCIAL CLOUDS

UPC has signed a collaboration agreement with a cloud company called Ackstorm¹⁷, as a consequence of mutual interest in the concept of community clouds.

Ackstrom has developed a commercial cloud broker called ECManaged¹⁸. ECManaged allows cloud users to choose between different cloud providers (supporting among others OpenStack managed clouds). The collaboration foresees the free usage of ECManaged for non-commercial community clouds in Guifi.net. CLOMMUNITY and future community cloud users will benefit from being able to use a professional tool for cloud usage. We expect that ECManaged will allow CLOMMUNITY to reach additional stakeholders and user groups of community clouds. Within this collaboration, the community cloud testbed of the project has been extended (see deliverable D4.2 for technical details).

Additional cloud providers in terms of companies operating within Guifi.net are foreseen to be approached in the second reporting period of the project when the community cloud system is available with permanent services within Guifi.net.

¹⁷ <http://www.ackstorm.es/>

¹⁸ <http://www.ecmanaged.com/>

2 STANDARDISATION ACTIVITIES

As part of the development of the community cloud and the needed support for self-management, Avahi based service discovery was seen as a realistic and practical solution. Since Avahi is designed for LAN, but not for WAN, our technical solution takes advantage of the Tinc platform to create an L2 network between cloud nodes. This solution is practical and working up to a certain scale, but is not designed for thousands of nodes.

The WG *Extensions for Scalable DNS Service Discovery*¹⁹ of the IETF is currently addressing the extension of DNS-SD, whose solution could be very relevant for the self-service publication and discovery in community clouds. Participants of the CLOMMUNITY project follow the activities of this IETF WG.

The IETF Homenet WG²⁰ addresses issues related to protocols and management of home networks. Proof-of-concept implementations were using OpenWRT. Their approach is closely related to the CLOMMUNITY concept of community boxes as home gateways. Members of the CLOMMUNITY project followed the session of the Homenet WG at the IETF 89 in London.

Members of the CLOMMUNITY project further participate in the IRTF Gaia Working group²¹. The GAIA WG (GAIA - Global Access to the Internet for All) covers a broad range of issues related to community clouds in underserved areas. The “Community Networks, Definition and taxonomy” paper, proposed as Informational Internet Draft document, is being written by members of this group with the participation of several Clommunity partners.

19 <http://tools.ietf.org/wg/dnssd/>

20 <http://tools.ietf.org/wg/homenet/>

21 <http://tools.ietf.org/group/irtf/trac/wiki/gaia>

3 Discussion and outlook

This section assesses the dissemination efforts so far undertaken and looks at some of the events and efforts already identified for the second reporting period.

3.1 DISCUSSION

The dissemination activity in this first reporting period aimed at awareness rising by reaching of different stakeholders. Important stakeholders for this project are

- Members of Community Networks
- The academic community
- Technology oriented enterprises
- Social activists

These stakeholders have been addressed by the participation in many conferences, symposia, international events and the production of a short video which explains the CLOMMUNITY projects in easy to understand terms.

3.2 OUTLOOK

3.2.1 ORGANIZATION OF SCIENTIFIC CONFERENCES

Community networks and clouds need to be supported by scientific work to provide the technical foundation needed to allow the participants and activists to fully exploit the capabilities of the collective infrastructure. This goal can be achieved by the interaction allowed by scientific conferences. To this end, some of the initiatives contemplated are:

CNBUB 2014: In collaboration with the CONFINE project, CLOMMUNITY has applied to WiMob to organise CNBUB 2014, the Third International Workshop on Community Networks and Bottom-up-Broadband, again co-located with WiMob in 2014. This workshop proposal has recently been accepted. The Web of the workshop has already been created²². The CfP specifies cloud-based services for community networks as one of the subjects.

The CNBuB 2014 workshop will be chaired by Roger Baig (Guifi.net), Bart Braem (iMinds) and Felix Freitag (UPC).

SPECIAL ISSUE ON COMMUNITY NETWORKS AND CLOUDS: We have started negotiations with Elsevier's computer networks to organize a special issue on community networks and clouds, related to the research areas addressed in CNBuB.

IS4CWN 2014: we plan to participate actively to this event, but at the time of writing no official

²² <http://research.ac.upc.edu/CNBuB2014/>

statement about the location of IS4CWN 2014 is available.

UNESCO 2014 International Conference in Technologies for Development: What is Essential?, will be held in Lausanne, Switzerland from 4 to 6 June, 2014. Several members of the CLOMMUNITY project will participate. Ermanno Pietrosemoli will chair this session and Felix Freitag will present the paper “Community Clouds for supporting data services in underserved areas” .

GIIS 2014 will be held in Montreal, Canada, on September 15-19, 2014. Ermanno Pietrosemoli will chair the “Telecom Policies and Development of Global Access” track.

WALC 2014 will be held in Manta, Ecuador, on October 27-31. The CLOMMUNITY project will be presented to an academic, governmental and industrial Latin American audience by Ermanno Pietrosemoli, member of the organising committee.

SAX 2014²³ is the annual of Guifi.net where community members meet. CLOMMUNITY members co-organize this event and will participate in presentations.

3.2.2 INTERACTION WITH COMPANIES

We plan to extend our collaboration with Ackstorm²⁴ by bringing in their ECManaged²⁵ tool into communities. ECManaged will allow community cloud usage through this professional cloud provider selection tool. We expect that ECManaged will attract an additional range of stakeholders to become interested in participating and using community clouds.

3.2.3 NEW APPLICATION OF COMMUNITY CLOUD TO CITIZEN SCIENCE BY MEANS OF SENSOR NETWORKS

A new opportunity for community clouds was identified consisting in the gathering of environmental meteorological data by members of the community network by means of wireless sensor networks (WSN). These are small and low cost devices capable of collecting several meteorological parameters and sending them to a gateway which in turns communicates with a database hosted in the community cloud. This database is publicly accessible and can be used to make comparison and draw interesting conclusions, in particular with relevance to significant issues like the amount of contaminants in the air in different places at the same time, and the possible correlation with weather issues.

²³ <https://sites.google.com/site/sax2014morella/home>

²⁴ <http://www.ackstorm.es/>

²⁵ <http://www.ecmanaged.com/>

4 CONCLUSIONS

The CLOMMUNITY project's dissemination activities in the first reporting period have successfully addressed different stakeholders. The consortium brought community networks research to the academic audience through the organization of the CNBuB 2013 workshop. The interaction with the international promoters of community networks took place in the IS4CWN 2013 event. The presentation of CLOMMUNITY to the community network activists was achieved through participation of Guifi.net in the BattleMesh v6. ICTP introduced clouds for wireless communities in Latin America and in a tutorial ICTP representatives gave at GHTC 2013. A large number of presentations were given by attending several events and scientific papers were published by CLOMMUNITY members.

Furthermore, the academic partners introduced PhD and Master students to the ideas of the CLOMMUNITY, and included CLOMMUNITY in courses and seminars. Several PhD theses have been started that relate to research issues of clouds in community networks.

In terms of standardisation, the consortium recognized the closeness of some of our technical challenges with issues addressed by active WGs of the IETF and IRTF.

The CLOMMUNITY project interacted through concertation meetings and bilateral interchanges with other European and international projects.

The collaboration with Ackstorm, a company working in the cloud sector, is promising to open community clouds usage to a wider spectrum of stakeholders.

A new application area for community clouds, dealing with WSN and cloud based data storage has been initiated.

Licence

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