



Glocal enterprise network focusing on customer-centric collaboration

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Project objectives

GloNet is a 3-year project in the 7th Framework Program, under the Factories of the Future - Virtual Factories and enterprises (Grant N° 285273), which started on 1st Sep 2011.

GloNet aims at designing, developing, and deploying an agile virtual enterprise environment for networks of SMEs involved in highly customized and service enhanced products through co-creation and end-to-end collaboration with customers and local suppliers.

The notion of *glocal* enterprise is implemented in GloNet with value creation from global networked operations and involving global supply chain management, product-service linkage, and management of distributed production units. Focused issues:

- Information / knowledge representation (product catalogue, processes descriptions, best practices, company profiles, brochures, etc.)
- User-customized interfaces, dynamically adjusted to assist different stakeholders (smart enterprise approach)
- Services provision through cloud
- Broker-customer interaction support: from order to (product/service) design (open innovation approach)
- Negotiation support
- Workflow for negotiated order solution & its monitoring
- Forecast risks & suggest prevention measures

The guiding use case is focused on the production and life cycle support of solar parks. The norm of operation in this industry is that of one-of-a-kind production. The results (products and services) are typically delivered through complementary competences shared between different project participants.

A key challenge is the design and delivery of multi-stakeholder complex services along the product life cycle (typically 20 years).

Other business scenarios include smart grid and intelligent buildings.

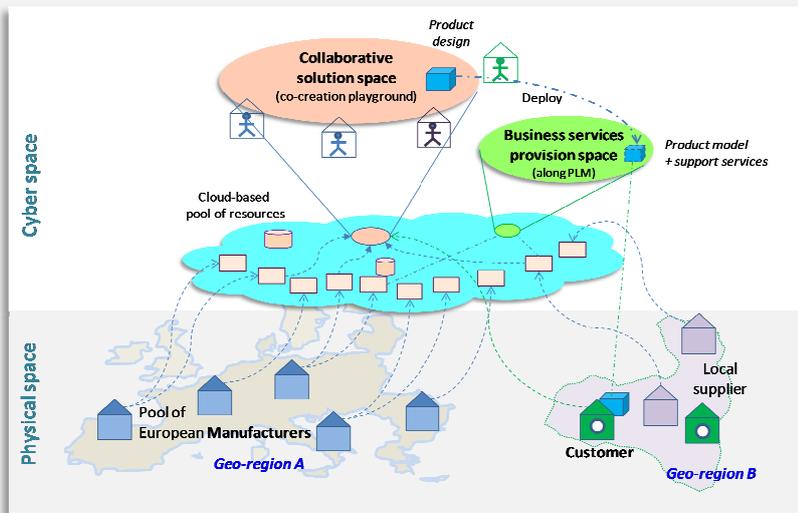
March 2012



GloNet spaces

GloNet adopts a cloud-based approach for the development of such support environment so that its supporting services can dynamically upgrade without influencing the nodes and stakeholders in the environment. As such the environment stakeholders procure the use of upgraded services, which are always available through the cloud, rather than buying static products which typically need to be installed and maintained by the stakeholders, on adequately supporting computing facilities. Specifically, over the cloud two virtual spaces are considered

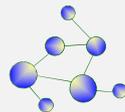
- *Collaborative solution space* – where producers of equipments and services, local suppliers and customers meet to co-design the equipment and its associated services.
- *Business service provision space* – a “registry” of the products, along their life-cycle, where the customer can have access to the specific business services associated to the customized product.



A mix of long-term and goal-oriented collaborative networks are involved in GloNet:

Manufacturers network

- Small & relatively stable VBE
- Mostly located in Europe
- Little overlapping
- Various membership levels



Customer's "network"

- Not clearly organized as a net
- Local suppliers, R&D, regulators, etc



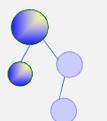
Product development network

- Virtual enterprise (temporary)
- Members from “manufacturers network” & “customer network”



Product servicing network

- Virtual enterprise (long term)
- Members from “manufacturers network” & “customer network”
- Long duration, evolution



Relevance of Solar Industry

The development of solar resources worldwide has mirrored the trend of renewable energy worldwide. The major difference in solar technology, however, has been the large initial gap in production costs between solar and other renewables and the dramatic decreases in solar production costs that have narrowed that gap. Studies have shown that solar production costs have been declining by 20 percent for each doubling of production, due mostly to technological advances.

[Stanford Business School Energy Conference Proceedings 2004 on www.gsb.stanford.edu/news/headlines/2004_energyconf.shtml]

The average annual growth rate worldwide, reflecting this increased cost competitiveness, is expected to be 27% through 2009, rising to 34% between 2010 and 2020 as solar generation is more widely adopted in developing countries. By 2020, 276 TWh of solar electricity is expected worldwide, and solar resources are forecasted to meet some 10% of total demand in OECD Europe, thereby providing electricity for over 1 billion people and 2 million jobs.

[EPIA/Greenpeace. *Solar Generation: Solar Electricity for over 1 Billion People and 2 Million Jobs by 2020.*

http://eu.greenpeace.org/downloads/energy_SGIreport.pdf]

iPLON in India

iPLON, an end user of GloNet has opened a branch office in Chennai, India. Mr. Madhavan, who will run the business in India, is a well known consultant in the Indian Solar business and regularly writes articles in Solar Magazines and does presentations in Exhibitions like Intersolar India. He will contribute to GloNet Project in the Requirements and Scenario definitions and will play a major part in getting the customer data for the GloNet platform.

Larsen and Tuebro, a leading Solar EPC company has chosen iPLON as its supplier for the Monitoring and Control of its 20 MWp Solar Plant in India. The results of GloNet platform will be used and evaluated by this company in Chennai, India.

Initial GloNet Publications

General overview paper:

Collaborative Networks in Support of Service-Enhanced Products

L. M. Camarinha-Matos (Uninova), H. Afsarmanesh (UvA), B. Koelmel (CAS)
Proceedings of PRO-VE'11, 17-19 Oct 2011, S. Paulo, Brazil, *Adaptation and Value Creating Collaborative Networks*, IFIP AICT Series 362/2011, Springer, pp. 95-104.
DOI: 10.1007/978-3-642-23330-2_11

Other related publications:

Emotions in Collaborative Networks: A Monitoring System

Filipa Ferrada and Luis M. Camarinha-Matos (Uninova)
Proceedings of DoCEIS'12, 27-29 Feb 2012, C. Caparica, Portugal, *Technological Innovation for Value Creation*, IFIP AICT Series 372/2012, Springer, pp. 9-20.

Electronic Negotiation Support Environment in Collaborative Networks

Ana Inês Oliveira and Luis M. Camarinha-Matos (Uninova)
Proceedings of DoCEIS'12, 27-29 Feb 2012, C. Caparica, Portugal, *Technological Innovation for Value Creation*, IFIP AICT Series 372/2012, Springer, pp. 21-32.

From CRM to xRM: Managerial Trends and Future Challenges on the Way to Anything Relationship Management

Johannes Britsch, Bernhard Koelmel (CAS)
Proceedings of e-Challenges 2011, 26-28 Oct 2011, Florence, Italy, IIMC International Information Management Corporation Ltd 2011, ISBN 978-1-905824-27-4.

Other dissemination:

iPLON will exhibit its products and services at the world's largest Solar Exhibition in Munich in June 2012.

www.intersolar.de/en/intersolar.html

An initial **press release** announcing the launching of the project was published at OpenPR site at 13 Sep 2011:

www.openpr.com/news/191438.html

The *SOCOLNET News* N^o 7, Dec 11

www.socolnet.org

includes two short articles related to GloNet:

- GloNet overview
- FinES Task Force on CNs

First GloNet Public Deliverables

In February 2012, GloNet has released its first deliverables, which are available through the project website [www.glonet-fines.eu/]:

D1.1: Detailed requirements for GloNet use case and domain glossary

D1.1 is one of the first deliverables of the project, which sets the base for research in all other WPs in GloNet. The findings reported in this deliverable are resulted through direct involvement of the two energy related industries within the GloNet consortium (iPLON and Prolon), as well as the literature investigation in this area. Specifically, the iPLON industry in the consortium of GloNet, is a provider of PV (Photovoltaic) related services and equipment to solar energy parks, which constitutes the main application area addressed by GloNet. Representing an advanced service providing stakeholder in solar plant environment, this industry gives GloNet consortium the needed insight and access to information about both the enhanced services, as well as other categories of stakeholders in this area. Furthermore, iPLON has customers both in Europe and in Asia (specifically in India), which also brings to GloNet its export market view. With the research results reported in this deliverable, we create a better understanding of this complex environment and its requirements. As such, this deliverable provides means for communication among the project partners (who come from different background disciplines and expertise), as well as for interaction of consortium partners with different types of stakeholders external to the project, e.g. developers, providers, and users in the solar plant energy environment.

Description of the GloNet **domain context**, followed by the specification of the **main entities and concepts** in this environment are used for generating the base GloNet **glossary**. These elements set the base to **analyse requirements for provision of advanced integrated services** in this environment, and constitute the base for both **characterization and profiling of the main stakeholders**, and identification of requirements for **solar plant customer support**. In the next step of the project, the elements introduced and organized in D1.1 are used towards the formation of the GloNet validation scenario cases, addressing the development of advanced integrated services.

D8.1: Web-Site and Project Brochure

Project web sites and leaflets are classical dissemination tools for project results. This report briefly describes the design goals, structure and initial contents of GloNet's web site and brochure.

The web site is organized around two main groups of functionalities: public dissemination; support for internal information sharing and coordination.

The actual contents of the site is quite limited at the initial stage and will be gradually enriched as the project progresses and planned results are achieved.

The leaflet, in its current version, is aimed at general dissemination and thus provides basic information on project goals and contacts. An updated version, focused on results, is planned for the third year of the project.

D8.2: Dissemination Strategy and FinES Cluster Collaboration Plan

This report introduces the general dissemination strategy for GloNet, which addresses various target groups, namely: Academic and research community; Business / industry community, with particular focus on the solar energy domain and cloud computing technology developers; Related projects community, through FinES cluster; and Society in general.

As specific communication channels and formats are needed for each group, a discussion of the considered channels and dissemination materials is included.

An initial dissemination plan is defined and the first actions already carried out are also included.

Naturally this plan will need periodic updates considering the schedule of achievement of project results and the dissemination opportunities that can be identified, namely external events organized by other entities.

FInES Task Force on Collaborative Networks

This new FInES Task Force aims at contributing to the establishment of a sound scientific and engineering basis for Collaborative Networks.

Along the last 15 years Europe has established a clear lead in this area, supported by a large number of projects and practical implementations on different forms of collaborative networks, including virtual enterprises, virtual organizations, extended enterprises and dynamic supply chains, business ecosystems and other forms of virtual organizations breeding environments, professional virtual communities, etc. Consolidating those results and pursuing a sounder foundation that provides a common basis for further sustainable developments is a critical need.

The new set of projects recently funded under the 'Factories of the Future' (FoF) challenge, strongly focused on building working solutions for collaborative enterprise networks, open new opportunities for creating synergies, leveraging the existing scientific legacy, and establishing new research avenues.

Under a more general perspective, the Task Force will actively seek the engagement of other active researchers and communities in the area, namely the SOCOLNET (Society of Collaborative Networks) and PRO-VE (Working Conference on Virtual Enterprises) communities.

Scope of activities:

- Organize & consolidate base concepts on CNs
- Contribute to the reference model on Collaborative Networks
- Identify & characterize emerging challenging areas
 - Novel application domains, their potential and needs
e.g. CyberPhysical Systems, Smart grid, Ageing, "Social factories"
 - New collaboration forms & their organizational structures
- Identify research needs

Planned outcomes:

Short term:

1. Report: Taxonomy of Collaborative Networks forms
2. Special FInES TF session at PRO-VE'12

Medium term:

1. Collaborative Networks framework for CyberPhysical Systems (Industrial Internet / Sensing Enterprise): Challenges, approach and research agenda
2. Special journal issue

Active researchers on Collaborative Networks are welcome to join this initiative.

For a TF overview:

http://www.fines-cluster.eu/fines/jm/Publications/Download-document/259-3-Collaborative_Networks_TF-Camarinha_Matos.html

www.fines-cluster.eu/fines/jm/FInES-Task-Forces/collaborative-networks-task-force.html

About FInES:

Future Internet Enterprise Systems has emerged as a field of activity that aims at enabling enterprises, including SMEs, by means of ICT, to exploit the full potential of the Future Internet.

FInES is a cluster of research projects in this area, funded by the European Commission.



PRO-VE'12

13th IFIP Working Conference on Virtual Enterprises

Bournemouth, UK, 1-3 October 2012

Collaborative Networks in the Internet of Services

Recent developments under the umbrella of Future Internet offer new concepts and mechanisms to support a new generation of advanced collaborative networks. Particularly relevant is the consolidation of the **Internet of Services** and its associated infrastructures and related concepts such as service ecologies and service parks. Complementarily, recent progress on **Cyber Physical Systems** induce new virtualization possibilities for resources and capabilities, leading to notions of Industrial Internet, Sensing Enterprise, Internet of Events, etc.

Moving from services provided by a single entity to more complex or **integrated multi-stakeholder services** requires new approaches in dynamic service composition and thus the effective consideration of the "collaboration" perspective. This is a fundamental step in reducing the gap between the notions of software service and business service.

Collaborative Networks naturally benefit from such new possibilities, but they also bring important elements to the future Internet at various levels, including structural and behavioural models, value systems and value creation, and the business perspective. On the other hand, development of the so-called **Services Science** adds clarification to the semantics of the service concept in which context synergies with collaborative networks need to be further explored.

www.pro-ve.org

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www.glonet-fines.eu