CROSS-BORDER INDUSTRIAL COOPERATION PROJECT: »INTERNET OF THINGS«

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0. Introduction: Cross-Border industrial cooperation project »Internet of Things«

"Internet of Things (IoT)" is an important and exciting new technology with great impact on many current applications in healthcare, transportation & logistics, industrial process control, agriculture as well as enabling new revolutionary systems in areas such as global-scale environmental monitoring, precision agriculture, home and assisted living medical care, smart buildings and cities, etc..

"IoT" is a worldwide network of interconnected objects. The market size of IoT is much bigger in comparison to the classical Internet. Despite a lot of similarities there are substantial differences in critical technologies, applications and key success factors. Due to its complexity and fusion of different technologies, cooperation within industry is a precondition for managing business risks. Companies should be aware of their competences and how they can successfully cooperate with the goal of generating sustainable revenues in this highly growing market. The iCon – IoT project gives companies from border regions an opportunity to evaluate their capabilities and to leverage with regional partners for successful commercialization of new applications and technologies enabled and required by "Internet of Things"

PROJECT FOCUS GROUPS:

- Information & Communications Technologies
- Green Economy
- Bio-medicine & Health
- Logistics
- Shipbuilding
- Automotive

1. Why "Internet of Things (IoT)" ?

"Internet of Things (IoT)" is the next generation of "Internet". It is a world-wide network of interconnected objects, including computers, mobile phones, RFID and especially Wireless Sensor Networks (WSNs). Global predictions are that by 2020, more than 50 billion devices will be connected. These connected devices will be able to join the network dynamically, collaborate and cooperate efficiently to achieve specific tasks. That is going to have a huge impact on our daily life. In such a scenario, Wireless Sensor Networks will gain a new perspective. As WSNs collect surrounding context and environment information, they become the eyes, ears, nose and even skin of the "Internet of Things". WSNs will also, as never before, get strong support from IoT, such as Artificial Intelligence and Cloud Computing.

WSNs are going to face new challenges in many fields: micro-controllers, wireless MCUs, MEMS, sensors for detecting pressure, location, motion, temperature, humidity, and gases. Energy harvesting solutions and miniature low voltage rechargeable batteries should enable sustainable power sources to WSN blocks. WSNs are generating huge amounts of data. Storing, analyzing and evaluating this data would need cloud computing and high performance computers to perform near or real-time computing. Transition from Smart-Sensors to Smart-Sensing would require advanced semantic tools for data analysis and system behavior predictions.

Application areas for IoT are broad and growing. The market size of IoT is even bigger than the size of the "Internet". "Compound Annual Growth Rate (CARG)" in the last 5 years is 15 %.

2. What are the Project Goals?

The "Internet" and "Internet of Things" have a lot of similarities, but blind adoption of business models which worked well in the "Internet" can be a high risk. Miniaturization and fusion of many advanced technologies are a precondition for new "IoT" applications. Even the biggest single company is not able to cover such broad activities successfully. In this tough economic crisis it is also very risky for companies to start creating new competences and enter new business opportunities independently. Business risks can be greatly reduced by:

☐ Cooperation and capabilities sharing

☐ Mastering company's capabilities

☐ Understanding and fulfilling customer needs

Understanding and envisioning technology trendsMajor building blocks of "IoT" are "Wireless Sensor Networks", therefore they shall be the focus of the cooperation project.

It is industrial cooperation projects with the goal of forming networks with companies which already have, or would like to establish, capabilities of mastering technological needs for "Wireless Sensor Networks" or would like to design, develop and/or commercialize applications based on "Wireless Sensor Networks".

3. Working Methods and Tools

iCON partners have selected "Internet of Things" as a specific innovative opportunity for companies, which have decided to participate in one or more of the selected cross-border focus groups, either on the technological or application side.

Cooperation and implementation will be based on sustainable innovations and supported by advanced online information tools enabling the creation of Digital Business Ecosystems (DBE).

Besides an advanced DBE platform, project participants will also use the most advanced semantic knowledge bases and leading software platform for managing innovations - Goldfire.

Thus, sustainable innovation and DBE tools can be easily initiated and deployed simply by defining a clear project focus, specific objectives and cooperation opportunities. The companies will therefore use the DBE tools to create dynamic coalitions and identify concrete cooperation opportunities based on preferences and concrete operational needs.

Such an approach is more challenging since it requires active participation of the project consultants and implementers during the total duration of the project. However, with this approach the project implementation risks can be reduced significantly and the cross-border economic cooperation could be achieved with greater ease. Management and development of company competences within each focus group, as well as exploitation of synergistic effects of cooperation between companies will be the key priority.

4. About Sustainable Innovations

Current tough market conditions are demanding a dramatic increase of deliverables from a company's product pipeline - both for the concept and design of the products and the processes that manufacture, deploy, and maintain them. These solutions must come faster, with higher quality and greater competitive differentiation as well as at lower resource cost than ever before. There is consensus among management that innovation is the magic word that best describes the "silver bullet" needed to achieve these goals. But there is little consensus about how to promote and sustain the capability for repeatable innovation.

For most organizations innovation is still an accidental event mainly generated by internal staff. You can assign a certain number of engineer-hours to a project, but you can't guarantee that any specific level of innovation will happen. But that is not a viable business strategy; especially today when companies are cutting costs and streamlining resources. And extensive reliance on ideas from external "Open Innovation" networks is not a long term fix; in fact it can create a dependency that erodes the development of a company's intellectual assets and competencies.

But conventional wisdom is wrong – it is based on a lack of awareness of the mechanisms available to drive repeatable innovation. The innovation process can be systemized. The key to this process is to be found in a deeper understanding of the elements of creative problem solving and effective decision-making. However, awareness alone is not sufficient. The process must be organizationally nurtured through executive leadership, internal promotion, skill training programs, an innovation platform to guide best practice in applying the process and information technology to bring just-in-time relevant and actionable knowledge to the engineer's desktop. Such elements constitute the pillars of a sustainable innovation culture.

Organizations with a serious commitment to these elements rapidly evolve from accidental and sporadic innovation to repeatable, high-performance innovation.

Sustainable innovation principles and access to semantic knowledge bases enable many innovative tasks. Participants in the iCON-IoT will have possibilities and resources to execute following innovation tasks:

☐ Quickly understand technology space: by assessing new technology that has hit the market; understand business impact of a new or existing technology; assess a competitive threat.

☐ Generate a strategic plan for product evolution: including concepts for tactical or incremental evolution of current products; strategic alternatives for breakthrough configurations; product line extension paths for new markets or users.

☐ Analyse technology landscaping: to evaluate a technology for entry into a new market; assess a technology's ability to drive an extension of a current product; support a make-or-buy decision around a technology.

☐ Design a new system: by a robust analysis of the current state-of-the-art, relative to the technology and market space under consideration; validate the rationale for exploring the new technology and market space; generate one or more conceptual designs and, for each design, an understanding of the challenges of executing it in the new space; generate a set of potential implementation strategies and specify recommendations for a market-entry strategy.

☐ Design a hybrid system: to create a new type of product that leverages existing assets, in order to deliver value across multiple market-opportunity spaces; address a competitive challenge by determining how to incorporate new capabilities from the competition into an existing product; improve a system, replacing its deficient attributes with superior features from another system while preserving its functional assets.

5. About the Digital Business Ecosystem (DBE) Platform

The DBE platform will support the different innovation phases by offering specific tools facilitating corporate profiling, interests/competencies elicitation, coalition formations, identification of core priorities and opportunities, negotiation of functional & business requirements of the project and establishment of a concrete collaboration and venture plan.

The iCON/DBE website and platform will therefore offer the following functionalities:

Company Registration and Profiling:

The web portal offers the main user access point to the DBE infrastructure. Through the Web site the user has the possibility of register in his/her contact data first and then profiling his/her company by clearly identifying the name of the company, the corporate address and nationality, the activity sector, the supported languages, the interested markets and many other fields. Therefore the user registers on behalf of the company in the DBE, independent of any cooperation/innovation opportunity.

Elicitation of Competencies:

After registration, the system asks the user to provide a set of core competencies the company has carefully honed over the years and which could facilitate interactions among peers. The process aims to identify the knowledge, skills, abilities and other qualities (KSAOs) required for effectiveness in a specific job role within a specific organization. The DBE environment will offer a well-designed competences module/sorter that should ensure clearly defined standards and methods for the companies, facilitating search and matchmaking.

Search and Yellow Pages:

The platform will offer a broad spectrum of search options where the given tags are matched against any tag. In addition, it is possible to search for specific meta-data such as: name, description, competencies, author, creation, modification, announce and starting date-time.

Sharing Ideas, Sourcing and Formation of Dynamic Coalition:

It allows users to propose cooperation ideas as online-moderated "brainstorm" sessions. It allows companies to post specific problems they would like to solve with the help of other companies. After the registration procedure it is possible to login and start negotiating about a specific concept/idea offering concrete opportunities for setting-up new business coalitions.

Negotiation of Functional & Business Requirements:

It allows a negotiation instance to be created from a specific collaborative or competitive model. It contains all activities related to setting-up a negotiation. In particular this means: to select a negotiation model and to configure the negotiation according to the specific business requirements of the company starting the negotiation. In our specific case the negotiation will be around the definition of concrete functional and business requirements for the IoT/WSN collaborative project between the cross-border entities.

Operational Plan and Setting an Agreement:

It allows the companies to define a complete business agreement after the elicitation of the functional and business requirements. As in the previous step it will support the full implementation of the negotiation until agreement finalization. All the related objects, such as service, offer, date, participant selection criteria or agreement for example are created from the model.

6. Project Execution Details

Who can participate?

Participation is free for small and medium-size companies from the following regions:

Italy: Friuli Venezia Giulia, Veneto, Emilia-Romagna.

Slovenia: Goriška, Primorska, Gorenjska, Notranjska, Obalno-kraška, Central Slovenia.

Each company can select an arbitrary number of focus groups in which they would like to participate.

Beginning and Duration of the iCON-IoT project

The Project will start with a roundtable "How much knowledge in 1 cubic centimeter?" which shall be held on Monday, 8th of April 2013 at Area Science Park, Padriciano 99, 34149 Trieste - Italy starting at 3 pm.

Program of the roundtable "How much knowledge in 1 cubic centimeter?":

1.   General information about the iCON – IoT project

2.   Introduction to "Internet of Things" and "Wireless Sensor Networks"

3.   Sustainable innovations and managing innovation risks

4.   Digital Business Ecosystem platform

5.   Formation of focus groups

6.   Networking

Duration of the project is 4 months. Within that period, focus groups shall have regular working meetings on mutually agreed locations. In the initial phases, moderators will be present at the meetings who will train participants to use the innovative platform Goldfire to perform different innovative tasks related to "Wireless Sensor Networks": identification of key technologies, analysis of technology trends, analysis of competitors, identification of relevant international standards, functional design of WSN. Application based focus groups shall work on the design of WSNs for specific commonly identified applications.

During the duration of the project, focus groups will also start implementing the Digital Business Ecosystem platform and consequently transfer their networking and cooperation activities with the support of DBE designers in DBE. That would enable focus groups to continue their activities after termination of the iCON – IoT project.

iCON – IoT project will finish with the wrap-up conference at which each focus group will present results of their activities. Organizers of the wrap-up conference will also invite academia from entitled regions and companies outside of the region to this event, to enable further commercialization and technology cooperation.

7. About Project iCON:

Project iCON is co-financed by the "European Fund for Regional Development" within the Cross-border Cooperation Program Slovenia – Italy, 2007 – 2013; it is supervised by the Slovenian Ministry of Economic Development and Technology and the Italian Ministry of Economy and Finance.

The project iCON aims to strengthen the competitiveness of micro, small and medium enterprises in the border area between Slovenia and Italy.

The main purpose of the project is to increase the collaboration between Italian and Slovenian companies to promote a unique development framework for the cross border operators finalized to increase participation, knowledge and technology transfer.

The project is focused, in particular, on the promotion of innovation and on the development of common services to strengthen the investors' interest in the border region.

More information about Project iCON can be found on the official web page: http://www.icon-project.eu