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Progress and achievements in WP*33 Exploitation*

1. Progress towards objectives and details for each task

WP Objectives:

The main goal of WP33 is to will focus on a series of activities that will identify, create and work towards the exploitation and standardization opportunities of the FI-Core project results and the FI PPP Community.

This work package will define the exploitation strategy of the FI-Core results taking into consideration the view of the partners of the FI-Core consortium, The exploitation strategy will cover both individual partners and an the overall project, and leverage on the product brands FIWARE, FIWARE Lab and FIWARE Ops. This action does not intend to replace or overlap the exploitation activities defined at the Future Internet Public Private Partnership Programme level, but rather to complement in a synergetic way the work that other projects within Usage Areas, Take-Up and Support will do in terms of bootstrap of the FI PPP ecosystem. The exploitation of FI-Core results will not be based on a purely technological approach (technology-push), but on the needs and requirements of the future customers and stakeholders of the expected governance that will emerge from WP 3.2. As a result, both supply and demand will meet in this WP.

With that in mind the project's exploitation activities will have as main objectives the:

- Definition of project outcomes from an exploitation point of view, including identification of stakeholders and consumers that will make use of FIWARE, FIWARE Lab and FIWARE Ops products
- Definition of shared and individual exploitation plans
- Policy and Regulation Considerations
- Feedback of adjustments to project plan if necessary and promotion of the FIWARE, FIWARE Lab and FIWARE Ops product brands
- Business oriented communication and training activities to increase market awareness and impact, especially to support SMEs development and adoption of new technologies
- Definition and implementation of a standardisation strategy that will enable adoption and achievement of the project goals and ambitions

- Definition of impact indicators and management of those along the project duration
- This WP orchestrates all the exploitation activities through the involvement of all the relevant partners. This WP will be broken down into the following activities:
- Definition of exploitation strategy. The exploitation strategy will document and identify results that may be exploited by the consortia partners or other stakeholders of the targeted sectors.
- Recommendation for regulation and policies. Besides the internal characteristics of the consortium and the results of FI-Core, partners in this project are conscious that some regulatory and policy issues may prevent FI-Core from reaching its full potential in the market. As a result, these elements will be analysed in the project and suggestions will be made to overcome existing problems. This will be provided as input to relevant policy documents (e.g. To facilitate the implementation of the Digital Agenda)
- Community building and engagement. In addition to the technology provided by FI-Core, the project will support and promote FIWARE Lab that may help European and non-European to test, develop and deploy innovative applications on top of FIWARE GEs. To maximize the impact of FI-Core a Community Building and Engagement Platform will be created enabling the encounter and interaction between stakeholders of the innovation ecosystem. FI-Core aims to enrich: existing communities of developers, entrepreneurs, application sponsors, user, enterprises and other related organizations which are following FI PPP community activities..
- Standardization of relevant results. A specific Standardization task will deal with transferring the developed technologies (interfaces, languages, models, protocols etc.) from the FI-Core project to the related standardisation bodies, a critical step in creating the right conditions for wide-spread uptake and achievement of FI-Core's overall objectives. This work area will concentrate efforts on those standardization bodies that are identified as the focus of FIWARE

The main objectives of this WP are:

- Definition of individual exploitation plans
- Contribution to standardization activities
- Monitoring of Open Source communities involvement and submission

WP tasks and interrelations:

The exploitation of FI-Core results will not be based on a purely technological approach (technology-push), but on the needs and requirements of the future customers and stakeholders of the expected governance that will emerge from WP 3.2. As a result, both supply and demand will meet in this WP.

Main Progress in the period:

The main progress made during this period in the WP is:

- **FIWARE** is a general purpose platform, it is of **special interest in the field of smart cities, and particularly in the area Internet of Things,** because of the need of adaptation of technologies in this field, and the importance of the innovation

ecosystem in this environment.

- **Telefonica, Orange, Engineering and Atos decided to join forces** and announce that they will take the initiative towards **creation of the FIWARE Open Source Community** to foster and support the **evolution of standards for Smart Cities** and their spread worldwide
- FIWARE based on a reference architecture and a set of APIs to develop IoT applications can **become the de-facto standard for interoperability between IoT solutions**. Leveraging on FIWARE, companies will collaborate in relevant standard bodies which can play an important role in spreading the reference architecture, set of APIs and standard data models required to achieve interoperability and portability of solutions supporting IoT industry.
- **31 cities from 7 different countries proved to understand when they launched the Open and Agile Smart Cities (OASC**) initiative last March. Cities that are part of the OASC initiative **have agreed to adopt basic FIWARE APIs** and collaborate on the definition of standard data models relying on environments like the FIWARE Lab. They are now creating a great momentum and more cities have announced they will join so that we will probably reach the number of 100+ cities before end of this year…
- **FIWARE has defined a governance model with clear rules for the various types of community contributors**, addressing management issues for technical roadmap, evolution of existing specifications and **API, IPR, Branding, Training, and eventually adoption of FIWARE, FIWARE Lab and FIWARE Ops results**
- **Standardisation:**
  - OneM2M: Joint FIWARE/OneM2M interoperability Demo at ETSI M2M Workshop
  - ETSI: Plan for creation of an ETSI Industry Specification Group to establish a broad community for an enhancement of the OMA NGSI standard
  - TMForum: The forum collaborates on the FIWARE Business Framework with a focus on leveraging TMForum's Business APIs.
  - AIOTI: strong involvement of FIWARE especially in standardization related issues, semantic operability and reference architecture for IoT.
- Contribution to Open Source Communities: dissemination of FIWARE results in relevant Open Source Communities.
  - WP1.2 Cloud Hosting contributed to Openstack in two areas, PaaS and Object Storage. TID's PaaS contribution is the Murano Project. IBM's Object Storage contributions is the Storlet project.
  - XML3D is an extension to HTML-5 to describe interactive 3D scenes as parts of a Web page. The technology is developed also in the context of the W3C Community Group "Declarative 3D for the Web". DFKI contributed various enhancements to XML3D.

Task 33.1 Shared and individual exploitation plans

Task Objectives:

The main objective of this task 33.1 consists of discussion among partners regarding

exploitation and sustainability plan of FIWARE with a thriving community.

The direct exploitation from the project consortium partners in order to enhance their own products and provide better services to their customers will be the first one and commercial exploitation of project results by FI PPP Community and external stakeholders will be the second.

In order to pave the way for a successful exploitation and sustainability, FI-Core will work on setting up a shared exploitation **taken into account the inputs from the WP3.2 on governance models**. The share exploitation plan will take care of the IPR guidelines and the common Open Source framework that will be published for external stakeholders.

In addition, all FI-Core will provide the individual exploitation plans from the partners focusing on commercial launch, trying to reflect the more tangible business view of the industrial partner and a lot more substantive in describing the planned integration of the FIWARE outcomes into the mainstream business of the industrial partners

On the whole, **the success of FIWARE is likely to depend** on whether or not the main participants to the project will become the magnets that will **attract a large community of developers and users** (create impact through OSC)

Task Activities during the period:

The breakdown of the **contribution, results, deviation and proposed corrective action** of each partner in this task 33.1 are:

- **01-TID:**
  Contribution and results:
  - Work in the exploitation activities continues as planned
  - Contribution to the Shared Exploitation Plan providing an overview of the value generated in the ecosystem, contributing to the modelling FIWARE as a multi-sided market
  - Submission of an Individual Exploitation Plan covering the current project developments with focus on the ecosystem value and how TID intends to play a role and exploit the results in each application domain
  - Actively promoted FIWARE ecosystem in Spain and Latin America at different levels
  - Participated in the alliance between four main industrial partners (Telefonica, Orange, Engineering and Atos) to push for a Smart Cities de facto standard based on FIWARE platform
  - Promoted and contributed to the OASC (Open & Agile Smart Cities Initiative)
  - Worked on the internal adoption of FIWARE as a main platform for Telefónica products, with a relevant part of Telefónica IoT platform based on FIWARE GEs
  - Worked on the integration of FIWARE as part of the Unique Selling Proposition in Telefónica portfolio of offers to public administrations worldwide

Deviation and proposed corrective action:

- No deviation in this reporting period

- **02-Orange:**
  Contribution and results:

  - Orange prepared an individual exploitation plan focused on the specificities of how to support enablers operated in the edge domain of the FIWARE platform, which is to say on local platforms, close to the sources of data, rather than on a regular cloud
  - The configuration and operation of these platforms could range from full custom solutions to "edge of cloud" (a.k.a. fog computing) models where the distribution would be handled transparently, just as if they were part of a regular backend cloud. This has obviously a direct impact on the corresponding business models

  Deviation and proposed corrective action:

  - The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information.

- **03-TI:**
  Contribution and results:

  - TI prepared an individual exploitation plan, by considering the changed scenario in FIWARE: the GEs derived from past FIWARE releases were dismissed, while new GEris were proposed. The plan was therefore updated to incorporate the exploitation envisaged for such new GEs, first of all the Robotics GE and the GEs developed in the Data/Context chapter.
  - Integration with other FIWARE GEs was considered in the plan, to provide a more valuable, at least partial shared exploitation of GEs.

  Deviation and proposed corrective action:

  - As most of resources in FI-Core were devoted to the development of new GEs during the reporting period, less effort than expected could be put to support the development of the shared exploitation plan.

- **04-IBM:**
  Contribution and results:

  - IBM prepared an individual exploitation plan which included details about its work and exploitation plans for CEP (Procative Technology Online), Docker, IaaS, and Object Storage. This report described its plans in detail as it relates to FIWARE and its users, the Open Source Community and the rest of its business interests. The following bullets provide a brief description.
  - CEP: The CEP GE analyses event data in real-time, generates immediate insight and enables instant response to changing conditions. It includes means to integrate it with other components through REST interfaces. It

supports events in the NGSI format, and is integrated with other FIWARE GEs such as the Context Broker GE through events in the NGSI format. It is part of the FIWARE-IoT-Stack. The FIWARE-IoT-Stack is a principal asset in the Open and Agile Smart Cities (OASC) Initiative Besides FIWARE it is used in the other EU projects: FIspace EU , SPEEDD EU , and FERARI project.

- Docker: IBM and Docker announced a strategic partnership in December 2014 that enables enterprises to more efficiently, quickly and cost effectively build and run the next generation of applications on the IBM Cloud and on-premises via the Docker open platform for distributed applications. Enterprises can use the combination of IBM and Docker to create and manage a new generation of portable distributed applications. The most notable expression of this is IBM delivers Docker based containers services on its Bluemix. Bluemix is IBM's platform-as-service cloud offering.
- IaaS: OpenStack is IBM's prefered IaaS solution for its customers. IBM is a platinum member of the OpenStack community, one of the 3 leading code contributors, and has made a strategic decision to leverage OpenStack in all its future cloud products. In particular, this includes: IBM Cloud Manager with OpenStack (ICM), IBM Cloud OpenStack Services, IBM Cloud Orchestrator, IBM Bluemix, IBM Softlayer, and IBM UrbanCode. OpenStack is also used as an embedded component in several IBM's products, such as IBM PowerVC and IBM PureApplication.
- Object Storage: IBM provides object storage based on OpenStack Swift as part of its Cloud offerings. IBM enhanced Swift to support Storlets which allows users to initiate computation closer to the object storage. It is promoting Storlet as an open technology and continue to make it available to customers. IBM allow experimentation on its own "experimental storlets lab" on IBM SoftLayer cloud. IBM has enabled its internal environment running on IBM SoftLayer cloud for access to FIWARE users.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **05-ConSoft:**

Contribution and results:

- Enrichment of Consoft Sistemi's commercial offer by adopting FIWARE technology, in order to push FIWARE into open-source-based projects with customers in the scope of smart-cities and smart-industries environments.
- Attraction of new customers using the gained technology.
- Possibility to consider the exploitation of commercial FIWARE Lab instances.
- Preparation of the individual exploitation plan considering the previous mentioned points, including the identification of FIWARE business opportunities and evaluation of the potential addressable market.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **06-E-IIS:**

Contribution and results:

- The partner failed to provide this information for the present section and therefore this section is blank.

Deviation and proposed corrective action:

- The partner failed to express if there were deviations or not, as the coordination requested, and therefore we cannot provide this information.

- **07-TCS:**

Contribution and results:

- TCS has prepared and delivered an individual exploitation plan where exploitation for his GE (named Trustworthy factory GE) was detailed and put back into perspective of information coming from the Thales Business Lines.

Deviation and proposed corrective action:

- The GE owned by TCS was delivered at the end of the first period. The exploitation activities to promote it should start in July but due to the EC recommendation about stopping the new GEs, these activities were stopped.

- **08-TS:**

Contribution and results:

- TS did prepare and deliver an individual exploitation plan where exploitation for each of the GEs owned (namely PDP GE and Cyber Security GE) were detailed and put back into perspective of information coming from the Business Lines and areas of concerns.
- TS did also raise awareness of FI PPP Community and external stakeholders at large for them to exploit the GEs developed. As such TS did support/accompany some SMEs interested to exploit the GE results to either offer better services and/or products. This was especially the case for SME Montimage that did manage by exploiting some of the results of Cyber Security GE to extend its product offering.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **09-ATOS:**

Contribution and results:

- Working on exploitation activities as planned.
- Coordinated of the whole deliverable, sharing exploitation and individual plans
- Participated in the commercial alliance between four main companies (Telefonica, Orange, Engineering and ATOS) to push for common intentions for Smart Cities based on the FIWARE platform.
- ATOS has actively participated in the OASC (Open & Agile Smart Cities Initiative).

- Work on commercial and training activities to prepare the work as regards commercial steps we want to accomplish to both start transferring advantages of the benefits of FIWARE and fostering the usage of FIWARE internally, we have already set up meetings, webinar and trainings activities with other ATOS business units and provided commercial offers to other potential customers.
- In few months Atos will be ready to provide FIWARE commercial services through its own FIWARE instance; services will be provided by means of personnel of Atos Managed Operations. The recent decision of becoming also a FIWARE node operator supports this strategy and makes it stronger for reaching more customers, by offering a complete service to the customers: FIWARE infrastructure and its operation, services on top the platform and integration with customer's applications.
- Additionally, Atos is interested in the exploitation of its own GEs, AEON Cloud Messaging, which offers a cloud service to communicate in real time with an unlimited number of entities in any specific domain.
- Preparation of the individual exploitation plan considering the previous mentioned points, including the identification of FIWARE business opportunities.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **10-NEC:**

Contribution and results:

- In cooperation with NEC Laboratories Europe, NEC Singapore integrates FI-WARE building blocks into their commercial Public Safety Platform, that enables Interagency Collaboration and exchange of IoT data. Current status is that the IoT Broker GE is in the meantime integrated into the 'MAG1C' product, next steps are in preparation
- A commercial Smart City Control Center is created by NEC Iberia. NEC Laboratories Europe is providing technology and know-how, including FIWARE results. In particular, enablers from the FIWARE IoT Backend play a central role in this platform: the NEC IoT-Broker GE is used to retrieve live data from smart cities through the FI-WARE NGSI interface.
- Another collaboration exists between the NEC Laboratories and NEC's Cloud Center of Competence (Cloud CoC) in Madrid, Spain. As a result, FIWARE technology was included in the second release of their CCOC product.
- NEC has won commercial bids in Santander on Smart Waste Management and on Smart Street lighting. Both services will be using the Cloud City Operation Center (CCOC) which is build using FIWARE components.
- NEC recently introduced FIWARE technologies to major cities in New Zealand, which will complement 'Sensing City' activities in New Zealand in the upcoming months.
- NEC is working with Bristol-is-Open on defining an SDN-based city network. FIWARE technology and its extension to cover UK specific standards are a highly important technology to BiO.

- NLE is currently discussing the deployment of the IoT Broker GE in a live 'close to market' trial with NEC Asia Pacific in Singapore
- Since summer 2015 NEC Europe and NEC Japan are in concrete discussions on the conditions and impact of hosting a FIWARE Node in Japan
- FIWARE IoT chapter presentation and tutorial for Japanese companies.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **11-CREATE-NET:**
  Contribution and results:

  - No activity in the period considered.

  Deviation and proposed corrective action:

  - No deviation in this reporting period

- **12-CYBER:**
  Contribution and results:

  Cyberlightning Ltd authored and delivered an individual exploitation plan to be part of the Exploitation Document (ICT-2013-FI-632893-WP3-D.3.3.1). In that document exploitation activities were detailed to reflect tangible business view and the planned integration of the FIWARE outcomes into the business of Cyberlightning Ltd.
  As an example; Identification of FIWARE Business/Transfer Opportunities Cyberlightning will use FIWARE project results to extend its portfolio.
  - CyberVille®, open-source and standards based Internet technology, is part of the Cyberlightning product portfolio. FIWARE GE's are part of the CyberVille's architecture and by using GE's it is possible to extend product functionalities in fast space.
  - Results of the GIS Data provider GE and Real Virtual Interaction GE are planned to be used in the CyberVille® architecture

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **13-Admino:**
  Contribution and results:

  - Integration of Context Broker/Orion to Meshmoon/WebTundra. This has been demonstrated in several events, such as Smart City Expo 2014, 2015 and LeWeb, Paris, 2014.
  - Active participation in realXtend community

- FIWARE component based 3D city portal, MAPGETS productization and promotion of open data and APIs through it. The portal will be used in European ITEA2, C3PO program.
- Participation and collaboration in nationwide 6City Program in Finland, where open data and open APIs are being promoted and collaboratively utilized by the 6 biggest cities in Finland.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **14-ET:**

Contribution and results:

- Some main targets has been identified for exploitation which are large industries TIER1 from automotive (main market for Etxe-Tar), extractive and agricultural industry (market of some companies related with Etxe-Tar Group).
- However, exploitation strategy around FIWARE will be oriented to Smart Industry, where Etxe-Tar has strong commitment at european level. Therefore, during these 13 months it has been proved the real possibility to connect machines and robots inside production facilities. The next big step will be the conversion in “Smart” of the different industrial sectors.
- Contacts made to evaluated this opportunity are: Erle Robotics, Black Dog Robotics, PAL and Kuka.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **15-OKF:**

Contribution and results:

- Work has gone into making sure standardising on DCAT-AP for integration with other FIWARE partners.
- We frequently communicate with open source communities around CKAN as part of this WP.

Deviation and proposed corrective action:

- It turns out that an existing Swedish recommendation for DCAT-AP suited fine for our purposes so we have not had to spend too much effort on this WP. It might still become an issue later on when DCAT implementations are ready to be tested.

- **16-EPROS:**

Contribution and results:

- No contribution yet

Deviation and proposed corrective action:

- During the first months of FI-Core we were concentrated in the development and publication of the Advanced Middleware GE (WP 18). At this point we are starting with the other WPs, and an strong effort is expected for Exploitation during the next months.

- **17-Naevatec:**

  Contribution and results:
  NAEVATEC contributions to this task have been concentrated on the definition, consolidation and validation of the individual exploitation plan of project results. Relevant activities in this area have been the following.
  - Definition of an exploitation plan compatible with FIWARE licensing requirements and basing on professionals services commercial offers.
  - Validation of the suitability and feasibility of the exploitation plan through interviews with potential customers and partners.
  - Validation of she feasibility of the exploitation plan at a global (i.e. worldwide) level through polls and interviews with potential stakeholders in USA and Asia.

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **19-UPM:**
  Contribution and results:

  - UPM prepared an individual exploitation plan. What follows is in accordance with this plan.
  - With regard to the contribution of the project results to standardization bodies and open source projects, UPM has already started a joint standardization task force with the TM Forum association aimed at aligning/integrating the FIWARE Business Framework APIs with the TM Forum APIs Ecosystem and also at converting the GEris that make up the FIWARE Business Framework in the reference implementation of the TM Forum APIs Ecosystem. OpenStack has enriched also with the *Cloud Portal*, the *KeyRock Identity Manage***r** and the *Access Proxy* GEs. The three GEs enrich OpenStack platforms with a very efficient and advanced user interface implemented in HTML5, together with user management and access control with single sign-on based on OAuth2. Those components were missing in the OpenStack architecture and are considered of prime importance for the deployment of OpenStack Platforms. The source code of those components has been published as Open Software on GITHUB in the GING repository (https://github.com/ging) with the names: fi-ware-idm, fi-ware-cloud-portal and fi-ware-keystone-proxy. It has been submitted to the OpenStack project for incorporation in future versions.
  - With regard to the contribution to OSS communities, UPM attended some audioconferences in order to collaborate providing some feedback regarding the definition of the FIWARE open source community and its governance model. Additionally, UPM has started to collaborate with Civity (the initiator of FIWARE LAB Netherlands) in an initiative aimed at building an OSS

community around Wirecloud focused on smart cities. The initiative is targeted at developers working in www.fiware-lab.nl, the open innovation environment for smart cities set up in Netherlands, with the objective of creating, populating and maintaining a catalog of widgets for smart cities dashboards.

- With regard to education and teaching, the outcomes of FIWARE are being considered in the curricula of the "Service Oriented Computing" subject in UPM School of Computer Science's Master Course in Software and Systems. They are also being considered in the curricula of the 2nd Year Specialization "Internet of Things" of the Data Science Masters Programme offered by the EIT Digital Master School. Also is key for Telecommunication Engineers into operating and building new infrastructure for cloud computing (both operation and modification of the GE). Right now the subject is considered in the curricula of the "Data centers and service provisioning" and into "Network Computing" subject in the UPM´s Graduate Course in Telecommunication services and facilities. Also it is being considered the use of the cloud GE as part of the teaching computing infrastructure for the ETSIT UPM.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **20-Zhaw:**

Contribution and results:

- The partner failed to provide this information for the present section and therefore this section is blank.

Deviation and proposed corrective action:

- The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **21-DFKI:**

Contribution and results:

DFKI is an application-oriented research institute and most of its exploitation is in the form of new research projects that make use of FIWARE results directly or indirectly or doing new research that builds upon work done within FI-Core.

- DFKI has promoted and helped support FI-Core enablers within the FIcontent 2 project and has been a bridge between the two projects.
- DFKI has participated also in FITMAN through their OpenCall via two new Specific Enablers that were based on FIWARE WebUI as well as FIcontent technology.
- FIWARE WebUI technology (especially 3D-UI, Sync/Fives, and others) is playing a central role in the EU Interact project where it is responsible for the complete visualization and interaction aspects in this project.
- FIWARE technology is being used also in the EU project CIMPLEX for developing new visualization technologies for the Web.
- 3D-UI and other aspects of FIWARE have been used in the VERVE project that very successfully ended this year.

- FIWARE technology is being used extensively within the Software Integration Platform of the German Excellence Cluster "Multimodal Computing and Interaction" as part of the national Excellence Initiative in science.
- FIWARE technology is used very extensively in the German BMBF project Inversiv, where it forms the base platform for the entire project.
- DFKI is using FIWARE technology (especially from the WebUI chapter) in at least another dozen of its projects at the regional, national, and EU levels.
- DFKI has been and is using FIWARE technology also extensively in its direct industry collaborations with companies such as Intel, Daimler, BMW, Volkswagen, Invenio, and many others.

Deviation and proposed corrective action:
No deviation in this reporting period

- **23-UNIS:**
  Contribution and results:

  - Adoption of IoT Discovery GE in H2020 projects, e.g. FIESTA-IoT.
  - active participation in exploitation events and helping the demonstrator projects.
  - Initiation of integration process of IoT Discovery GE to Experimental IoT Testbeds

  Deviation and proposed corrective action:
  - The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **25-Red.es:**
  Contribution and results:

  - The contribution of Red.es in this task will consist of its individual exploitation plan. It is planned to get finished in the next reporting period. The manpower reported (0,25 MM, out of a total of 1 MM for this task) was used in preparatory work and attendance to meetings. Red.es, as manager of RedIRIS (the Spanish National Research and Education Network) has also engaged with academic and research institutions, promoting FIWARE among them..

  Deviation and proposed corrective action:
  - ...No deviation in this reporting period

- **26-ILB:**
  Contribution and results:

  - ILB is currently working with the Region to introduce the use of FIWARE in the collaboration projects funded by the region and to sustain the platform. This has also a link with the research institution and engineering school in order to make sure the FIWARE understanding and benefit is well understood.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **27-TNNET:**
  Contribution and results:
  - Trentino Network has developed an individual exploitation plan based on the opportunity to introduce in its infrastructure the openstack technology.
  - The exploitation plan tries to exploit the openstack functionalities regarding network- datacenter integration and the centralized management; in this way all the infrastructure should become more manageable.
  - An implementation strategy has been drafted, included all the aspects related to knowledge base and the transfer of best practices to techcnical operators.
  - Value proposition for the partner has been identified in a more manageable infrastructure; as a consequence the infrastructure OPEX should be lowered and the customer perceived quality of experience should be enhanced.

  Deviation and proposed corrective action:
  - No deviation in the reporting period

Task 33.2 Expansion beyond Europe

Task Objectives:

Contribution to these activities associated to task 3.3.2 (Expansion beyond Europe) **has been stopped** since these activities are already being assumed under the FI-Links project.

We will move the current contributions to the other Exploitation Tasks.

Task Activities during the period:

The breakdown of the **contribution, results, deviation and proposed corrective action** of each partner in this task 33.2 are:

- **02-Orange:**
  Contribution and results:

- Orange is preparing the deployment of FIWARE platforms in Tunisia and Senegal through its subsidiaries Orange Tunisie and Orange Senegal

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **06-E-IIS:**

Contribution and results:

- No Activities performed in this reporting period.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **03-TI:**

Contribution and results:

- No Activities performed in this reporting period.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **09-ATOS:**

Contribution and results:

- No Activities performed in this reporting period.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **10-NEC:**

Contribution and results:

- Since summer 2015 NEC Europe and NEC Japan are in concrete discussions on the conditions and impact of hosting a FIWARE Node in Japan.
- NEC provides in-depth consulting to NEC business units in Japan, which show high interest in FIWARE for their business
- NEC gave a number of introductions and tutorials on FIWARE to external organization in the Asia-Pacific region.
- NEC is using their close liaison with KETI, Korea (e.g., in OneM2M standardization) to raise interest in using FIWARE also by Korean organizations

Deviation and proposed corrective action:

- No deviation in this reporting period

- **11-CREATE-NET:**
  Contribution and results:

  - Activities carried out in the context of FI-LINKS project

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **13-Admino:**
  Contribution and results:

  - A shared start-up community with accommodation has been established to Silicon Valley area to companies from Oulu area. Adminotech has been involved in the planning and will look into further possibilities.
  - Participation in Global Forum event arrangements and demonstrations in 3D cave in Global Forum and Industry Summit.

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **14-ET:**
  Contribution and results:

  - As explained before, contacts with BlackDog Robotics (MN, U.S.A) has been made. BlackDog Robotics was formed as a division of NPC Robotics with a strong desire to assist law enforcement, first responders and the military by providing a resilient and dependable modular robot. The goal of this company is to design and develop a reliable and durable adaptable robotic tool to assist at high-risk scenes by providing planners and decisions makers with real time critical information to make optimized outcome decisions.
  - Some contacts has been made in UAE, with companies like Creative Robotics from Abu Dhabi and other companies from Dubai.
  - In the case of South America, Etxe-Tar is having conversations with Telefónica Chile regarding the applicability of FIWARE connected to manufacturing equipment.

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **16-EPROS:**
  Contribution and results:

  - No contribution yet

  Deviation and proposed corrective action:

- During the first months of FI-Core we were concentrated in the development and publication of the Advanced Middleware GE (WP 18). At this point we are starting with the other WPs, and an strong effort is expected for Exploitation during the next months.

- **18-URJC:**
  Contribution and results:
  URJC has contributed to this task by leveraging international events for enhancing awareness of FIWARE among relevant stakeholders and for the creation of relationships with them with the aim of generating later partnerships. These efforts have been concentrated in USA through the following activities:
  - FIWARE awareness generation and relationships establishment through the presence at the IIT RTC conference 2014 in Chicago
  - FIWARE awareness generation and relationships establishment through the presence at the WebRTC Conference and Expo 2014 in Silicon Valley
  - FIWARE awareness generation and relationships establishment through the presence at the WebRTC Conference and Expo 2014 in Silicon Valley
  - FIWARE awareness generation and relationship establishment through the presence in the IIT RTC Conference 2015 in Chicago
  - FIWARE awareness generation and relationship establishment through the presence in the Cloud Computing Expo 2015 in Santa Clara

  Through these activities, initial relationships have been established with USA based companies such as IBM, Facebook and Akamai.

  Deviation and proposed corrective action:
  - No deviations in this reporting period

- **20-Zhaw:**
  Contribution and results:

  - Activities carried out in the context of FI-LINKS project

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **21-DFKI:**
  Contribution and results:
  DFKI had not planned to contribute to this task and did not do so.

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **23-UNIS:**
  Contribution and results:

  - UNIS hsa collaboration with Wright State University in the US, and we work on semantic modelling extensions for the current GE.
  - UNIS has participated in ontology engineering events and organized by National Institute of Standardization (NIST) in the US and had discussed our

current GE and semantic models associated to it.
- We also plan to extend the collaboration with Taiwan (II institute) on possible large-scale semantic data exploitation using the IoT Discovery GE

Deviation and proposed corrective action:
- no deviations to report

Task 33.3 Contribution to standardization

Task Objectives:

The objective of this task is two-fold.

First, a project-wide standardization plan will be developed in order to identify the right targets, the right strategy and plan the standardization activities in accordance to the overall project planning and evolution. This standardization plan will take care of the Standardization Working Group activities which provide the consensus from the FI PPP community point of view.

This includes also a selection of topics to be proposed into standardization bodies in close cooperation with the other technical work-packages and a selection of standardisation organisations. Furthermore, participation within identified standardization organisations will be established and actively maintained.

These standardisation plans will be supported by the generation and improvement of existing and new Open Specifications and the development of reference implementations by the technical WPs. This is the second objective of this WP that will centralise all efforts required to generate and pursue these standardisation contributions.

This task will have the goal of focusing on a limited number of standards instead of scattering efforts in many fora. Standards will be key to some chapters (e.g. IoT) and may have a low profile or even not apply in others.

Task Activities during the period:

The breakdown of the **contribution, results, deviation and proposed corrective action** of each partner in this task 33.3 are:

- **01-TID:**
  Contribution and results:
  - As reported to the WIKI (D3.3.3a_Standardization) TID has contributed to the following groups /initiatives over the period:
    - GSMA IoT Data Exchange
    - AIOTI Board
    - AIOTI WG2 - Innovation Ecosystems
    - AIOTI WG3 - IoT Standardisation
    - AIOTI WG8 - Smart cities

- AENOR CTN 178 SC1 GT4: Smart Cities Platforms
- ETSI M2M Workshop Interoperability Event (preparation for 2015 event)

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **02-Orange:**

Contribution and results:

- Orange has contributed to the following :
  - AIOTI WG8 Smart Cities…
  - AIOTI WG3 - IoT Standardisation (subgroup on semantic interop)
- One M2M Management, Abstraction and Semantics Working Group

Deviation and proposed corrective action:

- The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **03-TI:**

Contribution and results:

- There we no active contributions to standardization bodies in the reporting period. Most of activities were linked to monitoring the evolution of standards and open source communities (i.e. ROS), to keep close alignment with current standards, and identify what contributions could be brought by FIWARE.

Deviation and proposed corrective action:

- No deviation in the reporting period.

- **07-TCS:**

Contribution and results:

- The partner failed to provide this information for the present section and therefore this section is blank.

Deviation and proposed corrective action:

- The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **08-TS:**

Contribution and results:

- TS did monitor relevant standardization bodies in the reporting period. Standards of interest for each of the GEs owned (i.e. PDP GE and Cyber Security GE) were reported as well as the rationale to get them used/ considered.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **10-NEC:**
  Contribution and results:

  - NEC is part of a group of companies that actively pursue the goal to harmonize FIWARE enablers with the oneM2M standard; thus further extending the reach of FIWARE.
  - As a first concrete activity, FIWARE as part of an oneM2M demonstrator was shown at the ETSI M2M workshop end of 2014, provided as joint development between NEC, Fraunhofer FOKUS, InterDigital, and KETI.
  - For the next ETSI M2M workshop in December 2015 a demonstrator is being developed by a group involving NEC, TID, EGM, together with KETI and Sejong University that focuses on showing the interworking between FIWARE GEs based on NGSI interfaces and an open source oneM2M implementation provided by KETI.
  - NEC participated at the first official meeting between FIWARE and OneM2M in March 2015 in Paris, and was bringing in expertise from both side, FIWARE and OneM2M, and discussed collaboration opportunities between these two entities and identified common interests and potential complementary activities.
  - NEC together with TID, Orange and EGM are the driving forces for the incorporation of an ETSI ISG (Industry Specification Group) to create a formal specification of a FIWARE extension of the OMA standard NGSI (for which NEC also was one of the key contributors)
  - NEC is a very active member in the AIOTI WG3 on Standardisation for IoT. Contribution were done to the report of semantic operability and the discussion on the high level architecture. In WG8 on Smart City NEC contributed to the requirement report for large scale pilots.

  Deviation and proposed corrective action:

  - No deviation in this reporting period

- **12-Cyber:**
  Contribution and results:

  - There were no planned contributions to standardization bodies in the reporting period. Our activities were mainly linked to follow the evolution of standards of the OGC (Open Geospatial Consortium) and there especially WFS (Web Feature Service Standards) to keep close alignment with current standards, and identify what contributions could be brought to FIWARE.

  Deviation and proposed corrective action:

  - No deviation in this reporting period.

- **13-Admino:**
  Contribution and results:
  - Active participation in realXtend community
  - TXML standard in use/exploitation in development work

  Deviation and proposed corrective action:
  - More focus will be put on exploitation in the coming months

- **14-ET:**
  Contribution and results:
  - Because the main interest from Etxe-Tar to connect machines and robots into an Industrial Environment (i.e Smart Industry Case), Etxe-Tar is in strong Contact with Open Source Robotic Foundation to study ROS2 into industry.

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **16-EPROS:**
  Contribution and results:
  - Our proposal for FIWARE Advanced Middleware (KIARA) was based on DDS and RPC over DDS, two middleware specifications from the OMG widely used in aerospace and defense and now increasing their adoption in the IoT. eProsima is a voting member of the OMG and contributes actively to the creation of these specifications, such as RPC over DDS, Web Enabled DDS, or DDS Security, and implements products based on these standards. The Object Management Group (OMG) is an international, open membership, not-for-profit technology standards consortium, founded in 1989. OMG standards are driven by vendors, end-users, academic institutions and government agencies.OMG is responsible of standards such as UML (Unified Modeling Language) and DDS (Data Distribution Service). KIARA is based in OMG standards: it has implemented existing specifications and has contributed to new:
    - RPC over DDS: eProsima is the main author of RPC over DDS standard. KIARA has influenced this standard, and viceversa. While not 100% compliant, KIARA follows this standard for the RPC epic.
    - IDL 4.0: KIARA uses and has contributed to this standard.
    - RTPS: KIARA implements this standard protocol
  - ROS has selected RTPS as the protocol for their future framework release. RTPS is the adopted protocol for DDS, a middleware specification from the OMG Standards body. eProsima Fast RTPS implementation is one of the candidates to be the default implementation of RTPS in the next ROS Release. The Robot Operating System (ROS) is a flexible framework for writing robot software. It is a collection of tools, libraries, and conventions

that aim to simplify the task of creating complex and robust robot behavior across a wide variety of robotic platforms. ROS is a de facto standard in Robotics.KIARA implements this protocol also, being natively compatible with ROS applications, and interesting feature given the wide adoption of ROS

Deviation and proposed corrective action:

- During the first months of FI-Core we were concentrated in the development and publication of the Advanced Middleware GE (WP 18). At this point we are starting with the other WPs, and an strong effort is expected for Exploitation during the next months. The contributions to standardization are a result of the development (WP18).

- **19-UPM:**
  Contribution and results:

  - UPM has already started a joint standardization task force with the TM Forum association aimed at aligning/integrating the FIWARE Business Framework APIs with the TM Forum APIs Ecosystem and also at converting the GEris that make up the FIWARE Business Framework in the reference implementation of the TM Forum APIs Ecosystem. In this regard, UPM has started to work with Mr. Pierre Gauthier, Chief API Architect, and members of his team at TM Forum, and has joined the TM Forum API Program. A number of conference calls (starting from July 2015) and a face-to-face workshop (held in September 2'015, at Telefónica headquarters) have taken place so far, with a concrete roadmap as a key outcome. There has been scheduled a regular weekly conference call to follow up the development of the agreed work plan.
  - OpenStack has enriched also with the Cloud Portal, the KeyRock Identity Manager and the Access Proxy GEs. The three GEs enrich OpenStack platforms with a very efficient and advanced user interface implemented in HTML5, together with user management and access control with single sign-on based on OAuth2. Those components were missing in the OpenStack architecture and are considered of prime importance for the deployment of OpenStack Platforms. The source code of those components has been published as Open Software on GITHUB in the GING repository (https://github.com/ging) with the names: fi-ware-idm, fi-ware-cloud-portal and fi-ware-keystone-proxy. It has been submitted to the OpenStack project for incorporation in future versions.

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **21-DFKI:**
  Contribution and results:
  DFKI has introduced XML3D as an extension of HTML-5 for interactive 3D graphics into FIWARE as its core technology. DFKI has been instrumental in establishing XML3D together with a significant set of related technologies as one of the premier technologies for 3D on the Web. DFKI has also co-founded the W3C Community Group on "Declarative 3D for the Web (Dec3D)" within the W3C. This group brings

together key players on the technology and market side. It has evaluated which aspects should or should not be part of the standard, collects applicable use cases, potential technology components, and promoted the standardisation in general.

The Dec3D group meets to discuss the all necessary topics related to preparing the standardisation. We have held courses and presentations at major events, including Siggraph, Web3D, WWW, W3C TPAC, and others. Particularly for Web3D and Siggraph conferences in August 2014 DFKI has organized workshops, tutorials, several paper presentations, and demos. At Siggraph 2015 a poster was presented on XML3D. DFKI has also presented this technology on the Intel booth at the large Siggraph exhibition floor.

Internally, we have released a draft for a possible submission of XML3D as a W3C standardisation proposal.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **26-ILB:**

  Contribution and results:

  - No activity in the reporting period

  Deviation and proposed corrective action:

  - No deviation in this reporting period

- **27-TNNET:**
  Contribution and results:

  - No activity in the reporting period.

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

Task 33.4 Involvement in open source communities

Task Objectives:

This task aims at monitoring the dissemination of FI-Core results in some relevant Open Source Communities. Based on existing results from FIWARE related to existing Open Source communities, it is critical that the contributions provided by FI-Core partners and in a middle term by partners involved in the new entity which should emerge from the governance model work done in WP3.2.

Involvement in Open Source communities is based on dedicated contributions which will be the results of collaborative work done in the technical WP. These collaborative results have to be identified as a results from FI-Core, supported by the FI PPP Community more than the contribution of a single partner.

This task aims at defining the process to validate the content which will be submitted to the different communities Open Source where FI-Core results are relevant and to monitor effectively their integration or adoption by the Open Source Communities themselves.

Task Activities during the period:

The breakdown of the **contribution, results, deviation and proposed corrective action** of each partner in this task 33.4 are:

- **01-TID:**
  Contribution and results:
  - As reported to the deliverable "D33.4.1 FIWARE Contribution to Open Source Communities report", TID has contributed to OpenStack MURANO project. The Application Management Service GE, which provides the basic support for hardware deployment and software installation management, is part of OpenStack MURANO. This project introduces an application catalog, which allows application developers and cloud administrators to publish various cloud-ready applications in a browsable categorised catalog, that can be easily used by cloud users. TID's contribution has been related mainly to the following advanced features:
    - Blueprint Template specification
    - Support for configuration languages

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **08-TS:**
  Contribution and results:
  - TS did follow the process and contributed to it

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **03-TI:**
  Contribution and results:
  - A continuous monitoring of the evolution of ROS (Robot Operating System) open source community was performed, as ROS is the underlying technology adopted for the Robotics GE, developed by TI jointly with other partners. There was no active involvement in the community during the reporting period.

Deviation and proposed corrective action:

- No deviation in this reporting period.

- **11-CREATE-NET:**
  Contribution and results:

  - No activity in the period considered.

  Deviation and proposed corrective action:
  - No deviation in this reporting period

- **13-ADMINO:**
  Contribution and results:

  - Active participation in realXtend open source community. Code commitments to realXtend open source code base.

  Deviation and proposed corrective action:
  - The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **14-ET:**
  Contribution and results:

  - Etxe-Tar has understood that it might be interesting to become long-term partner in the FIWARE foundation and to support the OSC should be enlarged.
  - Etxe-Tar is studying the possibility to incorporate ROS2 compatibility in the future and include CoAP/LWM2M.
  - Etxe-Tar is carrying out conversations with other large companies, like Telefónica I+D Chile, Gaindu, SoC-e and Spyro that could be interested in joining that group which will naturally evolve to support the FIWARE community and maybe as Core Members.
  - Etxe-Tar has done dissemination of the OSC on Feb 17th, 2015 - FIWARE Accelerate Program in Spain: this live demonstration of cloud robotics technologies will help you understand how robots can help you achieving your goals with new business developments.

  Deviation and proposed corrective action:
  - No deviation in this reporting period.

- **16-EPROS:**
  Contribution and results:

  - No contribution yet

  Deviation and proposed corrective action:

  - During the first months of FI-Core we were concentrated in the development and publication of the Advanced Middleware GE (WP 18). At this point we

are starting with the other WPs, and an strong effort is expected for Exploitation during the next months.

- **17-NAEVATEC:**
  Contribution and results:
  NAEVATEC maintained a relevant activity of involvement into open source software communities in the multimedia streaming and WebRTC areas. In particular, the following activities have been executed:
  - Strong activity in the GStreamer community, where relevant influence is being gained, through more than 40 patches with enhancements, new features and bug-fixes in topics related to WebRTC support. This activity was reinforced through the presence in the GStreamer 2015 conference with one talks devoted to explaining how FIWARE is contributing to the GStreamer community.
  - Strong activity in the openwebrtc community with relevant patches for bug-fixing and feature enhancement.

  Deviation and proposed corrective action:
  - No deviations in this reporting period

- **18-URJC:**
  Contribution and results:
  URJC maintained a relevant activity of involvement into open source software communities in the multimedia streaming and WebRTC areas. In particular, the following activities have been executed:
  - Strong activity in the GStreamer community, where relevant influence is being gained, through more than 50 patches with enhancements, new features and bug-fixes in topics related to WebRTC support. This activity was reinforced through the presence in the GStreamer 2015 conference with two plenary talks devoted to explaining how FIWARE is contributing to the GStreamer community.
  - Strong activity in the openwebrtc community with relevant patches for bug-fixing and feature enhancement.
  - Some activity in the Chrome open source community with bug reports.

  Deviation and proposed corrective action:
  - No deviations in this reporting period

- **20-Zhaw:**
  Contribution and results:

  - The partner failed to provide this information for the present section and therefore this section is blank.

  Deviation and proposed corrective action:

  - The partner failed to express if there were deviations or not , as the coordination requested, and therefore we cannot provide this information

- **21-DFKI:**
  Contribution and results:

- DFKI has been very active in W3C regarding the W3C Community Group on "Declarative 3D for the Web", which it co-founded and continues to co-chair since the beginning. Several high-profile events have been organized over the time including several events at some of the best conferences in the field (e.g. Siggraph, WWW, and others).
- Recently DFKI formulated a cleaned comprehensive specification of the XML3D technology that can act as a basis for future standardization within the W3C Open Source community. This specification already uses the standard format for W3C specifications.
- DFKI provides several of its FIWARE and other technologies (e.g. XML3D, Xflow, shade.js, FiVES, etc.) as open source. even outside of FIWARE. A small but active community of users has established around this technologies.

Deviation and proposed corrective action:

- No deviation in this reporting period

- **27-TNNET:**

Contribution and results:

- Trentino Network has been in contact with Openstack developers to overcome many issues that arose in the adoption of the various versions of Openstack, thus reporting bugs and not proper behaviours, from the field, to the Open Source Community.
- The activity, being basically a try and error process to understand as something has to be configured or why something does not behave as documented, is a very useful and really needed feedback.
- Trentino Network undertook this activity in a propositive approach aiming to achieve both a reliable and full functional infrastructure.

Deviation and proposed corrective action:

- No deviation in this reporting period.

2. Significant results

- FIWARE based on a reference architecture and a set of APIs to develop IoT applications can **become the de-facto standard for interoperability between IoT solutions**. Leveraging on FIWARE, companies will collaborate in relevant standard bodies which can play an important role in spreading the reference architecture, set of APIs and standard data models required to achieve interoperability and portability of solutions supporting IoT industry.
- **FIWARE has built a powerful open innovation ecosystem where key players can meet**
  - Offered to developers for free, they can experiment and deploy showcase using FIWARE technology and exploiting published open data.
  - 1000 startups and SMEs
  - Large industry
  - 2500+ developers
  - 800+ mentors & coaches
  - 50+ cities
- **Telefonica, Orange, Engineering and Atos decided to join forces** and announce

that they will take the initiative towards **creation of the FIWARE Open Source Community** to foster and support the **evolution of standards for Smart Cities** and their spread worldwide

- **31 cities from 7 different countries proved to understand when they launched the Open and Agile Smart Cities (OASC**) initiative last March. Cities that are part of the OASC initiative **have agreed to adopt basic FIWARE APIs** and collaborate on the definition of standard data models relying on environments like the FIWARE Lab. They are now creating a great momentum and more cities have announced they will join so that we will probably reach the number of 100+ cities before end of this year…
- **FIWARE has defined a governance model with clear rules for the various types of community contributors**, addressing management issues for technical roadmap, evolution of existing specifications and **API, IPR, Branding, Training, and eventually adoption of FIWARE, FIWARE Lab and FIWARE Ops results**

3. Deviations from Annex I and impact on other tasks, available resources and planning (if applicable)

No deviation in this reporting period

4. Reasoning for failing to achieve critical objectives and/or not being on schedule (if applicable)

Delay on the Standardization deliverable:

- The feedback for this deliverable was not satisfying: Some inputs had been extremely delayed, the last one came in beginning of last week.

5. Use of resources

https://docs.google.com/document/d/1MiWVD9b4zoo6TgSDtArjV5Fpi8MXUl23wX17tlWQKOM/edit#

The work package experienced an overall underspending in this first reporting year. Most partners reported less effort than planned.

- This was mainly due to the linear distribution of the planned effort and because exploitation intentions have not really been influenced by the change of the FICORE scope. None partners declared more effort than expected, on the contrary all the partners reported less effort than planned, saving work for the second year, and will work on all deliverables planned

- Additionally, contribution to the activities associated to task 3.3.2 (Expansion beyond Europe) has been stopped since these activities are already being assumed under the FI-Links project.

The four main companies integrating the CORE Group focused their exploitation efforts in the commercial alliance between these companies: Telefonica, Orange, Engineering and AtoS.

Comparing the effort declared with respect to the results obtained in the work package so far, the performances appear to be reasonable good for all the partners, we have set up periodic calls to continue working next year.

6. Corrective actions proposed (if applicable)

Contribution to the activities associated to task 3.3.2 (Expansion beyond Europe) **has been stopped** since these activities are already being assumed under the FI-Links project.