FIRE Call 10 Projects

Coordination & Support Action (CSA) Projects

**ceFIMS-CONNECT**

The ceFIMS-CONNECT Coordination action project will address the need for closer integration and coordination of ICT research and innovation among Member States and between Member States and the EU.

ceFIMS-CONNECT will support the European Future Internet Forum (FIF) by providing a Secretariat and supporting the activities of the FIF in the process of transition into Horizon 2020 and the new 5G PPP. It will support Member State and Associate State Future Internet initiatives and the National FI Chapters by facilitating the collection and sharing of information on Member State and Associate State FI initiatives, strategies and priorities by establishing mechanisms for exchange of experiences, best practices and for identifying common challenges and cooperation opportunities. It will also undertake targeted dissemination activities to Member States and Associated States in cooperation with other FIRE projects.

**Contact:** Jim Clarke  
**Email:** jclarke(at)tssg.org

**CI-FIRE**

The CI-FIRE project will support a broader and deeper coordination and integration of Future Internet Research Experimentation (FIRE) activities on EU and Member State level in order to enable the sustainable use of FIRE facilities.

To this purpose, CI-FIRE will analyse the sustainability potential of European FIRE facilities, develop an innovation business framework template, and perform a feature mapping and benchmarking analysis of FIRE facilities. In addition, CI-FIRE will analyse different collaboration models for making FIRE facilities sustainable.

Based on this analysis and the selection of a suitable collaboration model, CI-FIRE will facilitate the collaboration between FIRE and EIT ICT Labs as an exemplary case for achieving FIRE sustainability. Based on the insights from this concrete collaboration model implementation, CI-FIRE will develop a 'blueprint', i.e. a process standard, for similar collaborations of FIRE facility providers with other initiatives and organisations in order to open further paths to sustainability.

In addition to disseminating this process standard and other project results to relevant target audiences, CI-FIRE aims to increase the engagement of industry in the development and use of FIRE facilities. This will be done via a number of targeted activities, including two industry engagement workshops and a dedicated portal for stakeholder engagement and sustainability that will complement the existing FIRE web portal. Through these activities, CI-FIRE will foster new multidisciplinary experimental research and the implementation of sustainable business models for FIRE facilities.

The CI-FIRE support action is performed by an experienced consortium of five partners who closely cooperate with EIT ICT Labs.

**Contact:** Milon Gupta  
**Email:** gupta(at)eurescom.eu  
**Web:** http://www.ci-fire.eu/

**EU-China-FIRE**

The ECIAO (EU-China-FIRE) Project is a 2 years EU-funded project, facilitating coordination and support to EU-China cooperation on Future Internet Experimental Research (FIRE) and IPv6.

China is a very large country pursuing its ICT infrastructure development which could lead to pioneer the implementation of Future Internet advanced technologies as well as being a force to promote large scale IPv6 deployment more critically than EU due to lack of IPv4 resources.

Since Europe is investing substantially in Future Internet Research and Experiment (FIRE) and could benefit from exchange and experience from large scale deployment requirements in China, ECIAO will explore mutual benefit cooperation activities in particular in:

- Strengthening joint research efforts on the future Internet by developing interoperable solutions and common standards. Federation of test beds will be explored and interoperability initiatives will be undertaken.
- Reinforcing academic and industrial cooperation on future Internet experimental research, through a better networking between European and Chinese actors. ECIAO web portal linked also to leading social networks and with dedicated

More information about the FIRE: http://www.ict-fire.eu
FIRE Call 10 Projects

helpdesk will be provided offering an efficient exchange platform stimulating cooperation between EU and China researchers. A minimum of five common research areas will be identified and documented.

- Exchanging good practices for IPv6 deployment and supporting the creation of interconnected IPv6 pilot(s) between Europe and China.

In addition to an interactive web portal (www.euchina-fire.eu), two large conferences and workshops will be organised and many public deliverables will help to increase awareness of benefits of cooperation between EU and China in the area of Future Internet research and experiments.

Contact: Martin Potts   Email: martin.potts(at)martel-consulting.ch   Web: http://euchina-fire.eu/

Collaborative Projects (CP)

FORGE

Forging Online Education through FIRE (FORGE) is a project proposal bringing the FIRE and eLearning worlds together. FORGE will align FIRE with the ongoing education revolution for mutual benefit. In particular, this project is concerned with specifying development methodologies and best practices for offering FIRE experimentation facilities to learners and to the learning community in general, related both to communications and IT but also to other disciplines including the sciences and social sciences, leading to a strong connection between the learning community and existing FIRE platforms and supporting tools. The learning community will benefit from the use of the very high performance facilities. FIRE will benefit through the addition of an ever-growing set of FIRE-specific learning materials for an increasing number of FIRE-based students, leading to increased awareness and use.

Within the FORGE project we will:

- Study and develop new processes and approaches to online learning based on the integration of FIRE facilities and eLearning technologies.
- Inject into the higher education learning sphere the FIRE portfolio of facilities and tools.
- Introduce the learning community to the concepts of Experimentally Driven Research.
- Increase the overall accessibility and usability of FIRE facilities through the layering of how-to-use resources over the FIRE platforms.

The FORGE project believes that it is the right time for students, especially those at higher education institutes, to become familiar with FIRE’s portfolio. Most FIRE platforms and tools are already sufficiently mature to be used by end-users and thus can be introduced seamlessly to current student curricula. Moreover, by targeting students we are aiming at the next-generation future-internet facilities users who having learnt through FIRE facilities will be enthusiastic future FIRE users. By investing in students, FORGE is creating a path for FIRE’s long-term sustainability.

Contact: John Domingue   Email: john.domingue(at)open.ac.uk   Web: http://ict-forge.eu/

IoT Lab

IoT Lab is a research project exploring the potential of crowdsourcing to extend IoT testbed infrastructure for multidisciplinary experiments with more end-user interactions. It will research and develop:

1. Crowdsourcing mechanisms and tools enabling testbeds to use third parties resources (such as mobile phones), and to interact with distributed users (the crowd). The crowdsourcing enablers will address issues such as privacy by design, identity management, security, reputation mechanisms, and data ownership.
2. Virtualization of crowdsourcing and testbed components by using a meta-layer with an open interface, facilitating the integration and interaction with heterogeneous components. It should ease data integration and reduce the cost of deployment in real environment.
3. Ubiquitous Interconnection and Cloudification of the testbeds resources. It will research the potential of IPv6 and network virtualization to interconnect heterogeneous and distributed resources through a Virtual IoT Network and will integrate them into the Cloud to provide an on-line platform of crowdsourcing Testbed as a Service (TBaaS) available to the research community.
4. End-user and societal value creation by analysing the potential end-users and crowdsourcing participants to propose an

Future Internet Research and Experimentation – FIRE
More information about the FIRE: http://www.ict-fire.eu
FIRE Call 10 Projects

optimized model for end-user adoption and societal value creation.
5. "Crowdsourcing-driven research" as a new model in which the research can be initiated, guided and assessed by the crowd. It will compare it to other models.
6. Economic dimension of crowdsourcing testbed, by analysing the potential markets and business models able to monetize the provided resources with adequate incentives, in order to optimize the exploitation, costs, profitability and economic sustainability of such testbeds. It will also develop tools for future experiments.
7. Performing multidisciplinary experiments, including end-user driven experiments through crowdsourcing, to assess the added value of such approach.

Contact: Sébastien Ziegler  Email: sziegler(at)mandint.org  Web: http://www.iotlab.eu

MOSAIC 2B
Mobile Empowerment for the Socio-Economic Development in South Africa.

Mobile empowerment based on mobile technologies allows the development and implementation of new business models and new business opportunities targeting micro enterprises and their customers in developing countries like South Africa. The goal of MOSAIC 2B is to develop and test a new framework that uses cloud-based applications, innovative low-cost internet delivery mechanisms (delay tolerant networks and opportunistic communications) and affordable mobile technologies to unlock new mobile business opportunities, especially in rural villages. A consortium of European and South African partners builds upon the use case of mobile digital cinemas to run real life experiments demonstrating and evaluating the technological and economic viability of according innovations.

In essence MOSAIC 2B delivers a combination of mobile digital cinemas for edutainment (educational content and entertainment), mobile business and consumer services as well as visual analytics and interactive tools to obtain real-time knowledge of on-going processes, to support decision making, and to increase business opportunities. Ultimately the business case of South African micro entrepreneurs delivering edutainment to rural consumers serves as a showcase for broad based economic activities at the bottom of the economic pyramid in the developing world. Adapted innovative services at affordable cost offer sustainable access to new markets on a global scale to the benefit of underserviced populations, local and European service providers.

Contact: Didier Stricker  Email: didier.stricker(at)graphicsmedia.net  Web:

SMARTFIRE
The main target at which SMARTFIRE aims is the design and implementation of a shared experimental facility spanning different islands located in Europe (EU) and South Korea (KR). This large scaled facility will promote joint experimentation among EU and KR experimenters, encouraging them to conceive and implement innovative protocols, able to take advantage of the current leading network technologies. Existing testbed infrastructures in EU and KR, already featuring WiFi enabled nodes, wireless sensors and supporting WiMax, LTE and OpenFlow technologies, are going to be extended and federated in the experimental, as well as the control plane. These two directions are going to be supported by the leading experimental frameworks adapted by most EU testbeds, the cOntrol and Management Framework (OMF) and the Slice Federation Architecture (SFA). The OMF framework, currently supporting control and experimentation in wireless islands, is going to be expanded, in order to support experimentation with OpenFlow switches, thus integrating wireless with
OpenFlow testbeds. Moreover, unique features, only existing in the KR testbeds will be integrated into OMF, in order to unleash the hidden potential of experimenting with heterogeneous resources. The federation in the control plane that allows assignment of multiple heterogeneous resources under a single slice is going to be developed through the extensions of SFA. Interconnection of the aforementioned islands will take advantage of the GEANT network, in the case of the EU research sites, while the respective KOREN/KREONET will be utilized by the KR sites. The two currently disjoint networks are going to be interconnected via the Trans-Eurasia Information Network (TEIN3/TEIN4) and the Global Ring Network for Advanced Application Development (GLORIAD). Finally, SMARTFIRE aims at the implementation of various pilot use cases, designed to demonstrate the power of the EU-KR shared Future Internet experimental facility.

Contact: Mr. Dimitrios Messalouris  Email: dmessal(at)uth.gr  Web:
SUNRISE

We must learn to both sustainably exploit & protect our vast oceans, provider of oxygen, food, hydrocarbons & other resources. A solution lies in sensing & interacting through an Internet of Things, with distributed networks of intelligent sensors & actuators. Unfortunately, we currently lack a marine Internet, crucial to achieve distributed, coordinated & adaptive control, due to the rapid absorption of light & radio waves in seawater.

The SUNRISE objectives are to develop:

- 5 federated underwater (UW) communication networks (CommsNet), based on pilot infrastructure already designed, built & deployed by consortium partners, in diverse environments, web-accessible & interfaced with existing FIRE facilities to experiment with Future Internet technologies.
- A software-defined open-architecture modem & protocol stack that will empower open collaborative developments.
- Standard platforms for simulation, emulation & replay testing to estimate CommsNet performance at a fraction of current at-sea experiments, validated by tests conducted on the SUNRISE networks over a variety of applications & environments.
- A user-friendly interface for diverse users to interact with SUNRISE systems to conduct trials & benefit from databases of CommsNet performance data gathered over long periods from the SUNRISE infrastructure.

SUNRISE directly addresses FIRE objectives by combining technology with novel paradigms in new, open experimental facilities, integrating physical systems with software development in a new physical domain. SUNRISE will provide a way to select UW CommsNet standards based on objective measures of performance, strengthening as more sites are added in the future. The SUNRISE network will remain key for UW Internet development long after the project ends, with broad involvement of researchers, manufacturers & users ensuring that appropriate technologies are developed, selected & implemented in products that support sustainable maritime exploitation and management.

Contact: Daniela Picardi  Email: daniela.picardi(at)uniroma1.it  Web: http://fp7-sunrise.eu/

TRESCIMO

Smarter and greener cities are essential to address economic, social, and environmental challenges due to the increase in urbanization, requiring informed decisions based on Internet of Things generated data. A particular challenge is the unstable power supply of cities in underdeveloped countries (e.g. South Africa), thus requiring smart energy management. Future handling of grid overload in South Africa involves demand-response mechanisms, installing small devices at the end-user, communicating over different network technologies to a central controller, allowing loads to be measured and limited if necessary. Further challenges are the deployment of affordable smart sensors (e.g. ABS air sensors) as well as gathering information from nodes with limited power. In scenarios from energy consumption to waste bin levels, data is either sent over IP networks (which delivers data immediately) or collected in a delay tolerant mode by mobile devices of individuals or crowds. In delay tolerant mode the data is stored locally, to be delivered when a suitable network is reached. In cases of open data collection the devices in this Future Internet realm are targets of security attacks and might be vendor-locked with proprietary software stacks. Our approach to address these issues is to interweave a sophisticated Smart City platform and an ETSI/oneM2M compliant Machine-to-Machine (M2M) communication framework as well as a delay tolerant Smart Platform with the M2M framework. We emphasize secure identification and authentication of sensors and users as well as policy-based store and forward functionality. To validate our approach, we analyse the core developments in federated experimental facilities (testbeds) in Berlin and Cape Town using a Slice Federation Architecture (SFA) compliant testbed management framework (FITeagle) and follow an empiric approach by conducting field studies (pilots) in Johannesburg and Spain.

Contact: Anastasius Gavras  Email: gavras(at)eurescom.eu  Web:

FLEX

The information will be available later.

Contact: Dimitrios Messalouris  Email: dmessal(at)uth.gr  Web: