平成 25 年度日欧共同公募委託研究第 1 回中間レビュー評価結果（概要）

課題番号　167
課題名：新世代ネットワークの実現に向けた欧州との連携による共同研究開発（研究期間　平成 25 年度～平成 27 年度）

評価ランク：

- **S** **Excellent progress** (the project has fully achieved its objectives and technical goals for the period and has even exceeded expectations).
- **A** **Good progress** (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations).
- **B** **Acceptable progress** (the project has achieved some of its objectives; however, corrective action will be required).
- **C** **Unsatisfactory progress** (the project has failed to achieve key objectives and/or is not at all on schedule).

課題	研究課題名	受託者（共同研究者）	評価
ア	モノのネットワークとクラウドを融合するネットワークサービス基盤の研究開発 副題：スマートシティにおける市民の影響力を拡張する Cloud of Things 基盤技術[ClouT]	東日本電信電話株式会社 （慶應義塾大学 SFC 研究所・徳田英幸教授、国立情報学研究所、日本電信電話株式会社、パナソニックシステムネットワークス株式会社） （Commissariat à l'énergie atomique et aux énergies alternatives（仏）， Engineering Ingegneria Informatica SpA（伊）， University of Cantabria（西）， STMicroelectronics S.r.l.（伊）， Santander City Municipality（西）， Genova Municipality（伊））	A
主な評価コメント	Based on the review of the deliverables for year 1, it can be concluded that the progress of the ClouT project is going according to the plan as outlined in the DoW. The first year has mainly been used to set the stage for achieving the objectives set: A set of versatile use cases have been analysed, a very good inventory of possible components for reuse has been made, and based on a selection of existing components, a first version of the reference architecture has been proposed. The architecture is very appropriate and includes the definition of interesting technologies (e.g., virtualisation of sensors, event detection, mashup and other tools, etc.) that will be further elaborated in the upcoming months. A lot of work has been done towards the specification of the individual modules of CIaaS and CPaaS. Also the field trials are well set up and technical demonstrators for verifying the integration of components have been done. The trials are important to verify the achievements both from a technical and scientific perspective, as well as for providing the basis for further exploitation and reuse in other smart cities. The field trials and the involvement of the city authorities give clear and convincing examples of how the project as a whole or the individual beneficiaries can exploit the project results. Similarly, dissemination activities regarding the general public and the press are on track and above average. The project is managed well and shows excellent collaboration between both sides, EU and Japanese partners, from which the project is clearly benefitting.		

課題	研究課題名	受託者（共同研究者）	評価
イ	ネットワークテストベッドを活用した日欧における実証的共同研究 副題：大規模情報通信基盤実証実験のための連携テストベッド[FELIX]	産業技術総合研究所 （ＫＤＤＩ株式会社） （Instytut Chemii Bioorganicznej Pan(Poland)，　Nextworks（伊），　Fundacio Privada I2CAT，Internet I Innovacio Digital a CATALUNYA（西），SURFnet bv（蘭），　European Center for Informantion and Communication（独），IMINDS VZW（白））	A

主な評価コメント

The first technical review of the EU-Japan coordinated project FELIX has been hold in Brussels, on the 13th May 2014. The review was jointly organised by NICT and EC, and supported by independent experts from Japan and EU.

The primary objective of the FELIX project is to create a common framework in which users can request, monitor and manage a network slice provisioned over distributed and distant Future Internet (FI) experimental facilities in Europe and Japan.

To achieve its goals, FELIX proposes a new SDN-oriented service architecture capable of federating heterogeneous high-end FI facilities (e.g. OFELIA, JGN-X RISE) through high capacity Network Services Interface (NSI)-enabled networks (e.g. JGN-X, GÉANT, GLIF or NRENs), offering the creation of the experimental landscape in a dynamic and seamless way in order to satisfy demanding needs of European and Japanese research communities.

The FELIX platform is expected to be deployed and demonstrated in a world-scale test-bed involving key FI experimental platforms in Europe and Japan interconnected by high speed dynamic research networks.

In order to specify the experimental architecture and derive requirements, FELIX has defined six use cases. These use cases are planned to be used for validation purposes through deployment in the interconnected experimental facilities worldwide. The use cases are also planned to be demonstrated at influential international events in Europe and Japan, promoting unique capabilities of the new federation framework in order to stimulate the use of experimental facilities in both regions. Finally, the project is expected to facilitate Europe-Japan collaboration on new standards for infrastructure management (both IT and network resources) with the most prominent being the OGF NSI.

The FELIX project has completed its first year. Progress is generally quite good and within schedule. In particular, the project has made a thorough work in identifying a rich set of use cases to be used as a source of requirements for the FELIX architecture. Furthermore, these use cases have a value of their own as they act as examples of how to use SDN and virtualisation technology to deploy widely distributed experiments. Furthermore, the FELIX architecture is clearly acting more as a reference architecture to be used in the context of a common control framework.

The project plans to build on results from existing frameworks, developed in the scope of Future Internet initiatives, such as FIRE, in the EU, and RISE, in Japan. Two such components have already been identified as key building blocks – SFA (Slice-Based Federation Architecture, from the GENI initiative) for slice description and NSI (Network Services Interface, from the Open Grid Forum) for transit network configuration. Detailed definition of interfaces and protocols is expected to be carried out in the second year of the project.

More details about the FELIX architecture (FELIX space) will also have to be revealed during the upcoming period, especially through the choice of components and the APIs specified for usage by the users (User space) of the FELIX facilities. Such clarification will also have an impact on the standardisation strategy to be specified and implemented by the consortium as the technical work reaches maturity.

At this stage of the project, it is clear that the resources are being applied effectively to produce some good quality results. All deliverables are of very good quality and highly readable.

The reviewers would also like to praise the high level of collaboration and complementarity that have been demonstrated among partners from EU and Japan. This may be seen as a guarantee for the future success of the project.

課題	研究課題名	受託者（共同研究者）	評価
ウ	コンテンツ指向ネットワーキングによる省エネルギーコンテンツ配信の研究開発 副題：グリーンコンテンツ指向ネットワーキング(GreenICN)と応用[GreenICN]	ＫＤＤＩ研究所 （日本電気株式会社、パナソニックアドバンスドテクノロジー株式会社、東京大学・浅見徹教授、早稲田大学・中里秀則教授、大阪大学・長谷川亨教授） （Georg-August-Universität Göttingen（独），NEC Europe（英），CEDEO（伊），Telekomunikacja Polska – Orange Labs Poland(Poland)，University College London（英），Consorzio Nazionale Interuniversitario per le Telecomunicazioni（伊））	A

主な評価コメント

The GreenICN project comprises several Japanese and European universities and companies doing research in the the field of information-centric networking (ICN). GreenICN, a 3-year project (1/04/2013-31/03/2016) is jointly funded by NICT (National Information and Communications Technologies) and the EC (European Commission).

ICN is an important technology for information delivery in future networks and GreenICN aims at developing scalable and energy efficient ICN. The project addresses ICN challenges pertaining to (1) complexity and scalability, (2) push services, (3) security and privacy, (4) migration path, (5) routing efficiency, and (6) applicability in disaster scenarios. The general design is driven by application scenarios, and covers the architecture, the middleware, and the underlying network support. The network level provides name-based forwarding that can be used to build richer forwarding schemes. There are two application scenarios: (1) information delivery in fragmented networks with intermittent connectivity in the aftermath of a disaster, and (2) scalable and efficient video delivery in both normal and disaster situations.

During its first year (1/04/2013-31/03/2014), initial work was done on the architecture, routing, network-level publish/subscribe, congestion control, and priority-based forwarding as well as name-based replication. GreenICN proposes a network architecture founded on the notion of “Internames” and name-to-name communication. The main scientific results of the project so far are (1) the description and analysis of some application scenarios, and in particular a disaster-recovery scenario in which energy resources are scarce and network connectivity is partial and intermittent; (2) an initial architectural framework that includes the definition of a name-based addressing scheme and the corresponding name-resolution services; (3) an energy model of an ICN router; (4) a performance analysis and traffic engineering for energy-efficient ICN; and (5) a formulation of a publish/subscribe service built on ICN. The consortium also produced an initial demonstration of GreenICN based on a real estate advertising application.

Throughout this first 12-month period, the consortium has achieved good progress towards the planned final objectives of the project. Results of notable quality include the detailed analysis of requirements based on the disaster-recovery scenario, the energy usage model for an ICN software router, and specific energy-saving strategies including traffic engineering and priority-based forwarding.

Progress is good in most of the individual work packages with very small deviations from the original plans. Since the overall 'big-picture' vision for GreenICN is crucial for the success of the project, it is important that the consortium focus on integrating and harmonizing the contributions of each work package within a coherent GreenICN architecture.

Even at this early stage, the project has had a significant contribution to the state of the art, especially in terms of scientific publications and contribution to international standards. The prospects for future contributions are also good. In particular, if successful in supporting network communication in disaster recovery, GreenICN can open up new research avenues in ICN.

Project resources (staff, budget etc.) were utilized effectively to achieve the objectives of the project and the project management was particularly good and successful in executing the work according to the plan. GreenICN was also successful in creating a strong collaboration between the European and Japanese partners.

More information is available at the project website: http://www.greenicn.org