Ubi-Islands 2010 – The 2nd International Workshop on Interconnecting Ubiquitous Islands using Mobile and Next Generation Networks

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ABSTRACT
The Ubi-Islands workshop series focuses on the innovation, design and testing of ubiquitous services and their enabling solutions across islands of connectivity in heterogeneous mobile and fixed NGN infrastructure. The goal is to derive requirements that impact future network standards, systems, and terminals, and to stimulate partnerships and projects that work towards common testbeds for development and testing of new service concepts and prototype solutions.

Held in conjunction with TridentCom 2010 conference, Ubi-Islands 2010 is a hands-on and demonstration-oriented workshop for exchanging views on enablers and services leveraging the interconnection of local computing islands based on ubiquitous networking technologies (for example sensor/actuator networks and UPnP-based networks) via next-generation mobile and fixed wide-area networks. Of particular interest are user, technology and deployment aspects of service control solutions that enable ubiquitous connectivity in "multi-island" end-to-end environments.

Keywords
Pervasive and ubiquitous computing; sensor networking; interconnection; NGN; service control; wireless, cellular and broadband networking; heterogeneity, testbeds.

UBIQUITOUS SERVICES

Services leveraging ubiquitous networking technologies are often running in small local islands of connectivity, in the following called “ubiquitous islands”. Examples are home networks, sensor networks, in-car networks, personal area networks, and enterprise networks.

Developing and deploying services that reach across ubiquitous islands are topics that are complex and poorly understood, due to a high degree of heterogeneity, mobility and other dynamics on each layer. Technical requirements stemming from health care or energy management services, for example, differ significantly from those originating from entertainment services. Even within the latter area, the consumption of media and the playing of online games present completely different user and solution needs.

LEVERAGING NEXT GENERATION NETWORKS

Mobile networks are increasingly important to the creation of pervasive services that draw upon ubiquitous and cloud computing technologies. LTE and IMS are going to provide significant improvements in bandwidth and service control. Equally important, wide-area connectivity provided by next-generation networks will enable combining resources from diverse computing environments such as LANs, PANs and sensor networks.

The mobile phone also increasingly features as the device of choice for management and consumption of services. Recent advances in web technologies, operating systems, memory footprint, I/O modalities and sensor technologies enable new approaches for service design and management. Moreover, mobile devices will mediate information from sensors and other resources close to the user and integrate the user in ubiquitous islands and their pervasive services.

With fixed public networks, the issue is not so much the development of new access technologies, but the continued build-out of broadband technology and transition towards new service delivery platforms. The result is similar as the effects of deploying next generation mobile networks: more bandwidth for interconnection on top of a less fragmented delivery base. Yet, how to set up interconnections between network islands in a trusted and secure way is not self-evident, neither in practice nor in standardization.

It is essential at this stage of academic research, standards and industry development that requirements are gathered, gaps in current architectures are identified and solution alternatives are explored for connecting user devices across

ubiquitous islands and for supporting the delivery of a flexible service mix into and from such environments. This has a strong impact not only on the current work of bodies such as 3GPP, ETSI TISPAN, OMA, DLNA, UPnP, HGI, FMCA, CENELEC IPSO Alliance or Broadband Forum, but also on service and software platform design efforts such as OSGi, .NET, Android and Symbian Foundation and in the development of flexible service developer APIs.

WORKSHOP ORGANIZATION

The workshop is a follow-up event to the first international Ubi-Islands workshop that was held in Berlin in April 2009.

We are seeking original contributions and in particular demonstrators that **combine** aspects of mobile, ad-hoc, sensor network, fixed broadband and ubiquitous computing. Topics for discussion may include:

- Techniques, architectures and examples of creating services in global networks that leverage ubiquitous computing technology.
- Requirements from ubiquitous consumer and enterprise services on future network architectures.
- Interconnection, operations, and management of systems and networks for ubiquitous services through mobile and broadband networks.
- Terminals, applications, APIs and user interface concepts leveraging enablers for ubiquitous connectivity.
- Security, privacy and trust aspects for services combining global and local connectivity.

Workshop activities

The full-day workshop will consist of oral presentations based on submitted papers, combined with a demonstration track that encourages the submission of hands-on oriented work. The agenda will allocate ample time for presentation, demonstrations and discussion of the selected contributions.

LOGISTICS

The workshop will be held in the workshop track of the TridentCom 2010 conference in Berlin (May 18-20, 2010). Conference resources will be allocated accordingly.

Call for Papers

Position papers will be required for participation, presenting a relevant research or company position. Contributions that include a demonstration will be selected preferably.

Contributions should have 4-6 pages in length and follow the submission guidelines published at TridentCom web site. Hands-on proposals must clearly describe the contents of the demonstration, and be accompanied by a one-pager sent to the organizers that describes setup requirements. For communication with the organizers, the mail reflector ubiislands@uia.no should be used.

Workshop papers will be published in the TridentCom 2010 proceedings in Springer LNICST series.

Submissions will be attracted through the widely publicized CfP, and promoted among related industry groups and standards bodies. Participants will represent industry and academia, bringing together different interests in the field of interconnection of ubiquitous and wide-area networks.

Organizing Committee

The organizing committee will consist of Prof. Frank Reichert of UiA, Dr. Frank den Hartog of TNO and Prof. Theo G. Kanter of Mid-Sweden University serving as academic contacts, and Dr. Andreas Fasbender and Johan Hjelm of Ericsson as industry contacts. All organizers share an interest in how local area and wide area networks get interconnected to enable new global services.

Frank Reichert is the head of Agder Mobility Lab and faculty dean at University of Agder in Norway, undertaking research in wireless communication networks and services.

Frank den Hartog works as senior scientist Heterogeneous Consumer Networks at TNO, as co-chair of the Technical Working Group of the worldwide HGI, and as Preferred Expert of CENELEC SmartHouse Roadmap.

Theo G. Kanter heads computer science and computer engineering research at Mid-Sweden University, focusing on ubiquitous intelligent services involving sensors, mobile and broadband networks, and multimedia.

Andreas Fasbender and Johan Hjelm have a history in both ubiquitous computing and wide-area networking. Their main research interests include enablers for interworking of telecommunications networks with the connected home, the connected car, sensor networks and vertical industries.

Technical Program Committee

The TPC will consist of about 10 participants, including the members of the organizing committee and selected industry and academic experts. The full list of TPC members is published on the Ubi-Islands web site.

Expected outcome

The workshop will contribute to consensus building around the R&D agendas for academia and industry regarding the service requirements from different economic sectors and their impact on network design and standardization.

CONCLUSION

Ubiquitous computing technologies will increasingly leverage global networks in utilizing both the advanced features they support and the connectivity they offer.

The hands-on oriented workshop will explore requirements that such connectivity will create on networks, tools, and devices. Reversely, we seek insight in how ubiquitous islands enable the creation of advanced consumer and enterprise services.