The Living Labs Approach to a Virtual Lab Environment

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VIRTUAL LABORATORIES ENVIRONMENT: THROUGH THE LIVING LABS APPROACH

Today, new ways of constructing and delivering complex voice and data communication services require more elaborate and distributed design, prototyping, testing, and validation facilities. The idea of a test bed which is remotely accessible (De, Raniwala, Sharma, & Chiueh Tzi-cker, 2005), can provide an open and integrated test site infrastructure, and has associated development and testing environment for validating research (OPIUM 2002), is not new and has been used in many research projects.

However, as communication networks continue to evolve to encompass very large numbers of nodes, involving networks of networks (with more operators, equipment vendors and owners) and with larger technological diversity and heterogeneity of network elements, the insular, private approach to test bed infrastructures with restricted access, cannot continue.

There are also derivatives of this type of test and experimentation platforms in the usability and human computer interface domain (Ballon, Pierson, & Delaere, 2005), such as usability labs which are typically used for observing users as they work through a set of tasks to identify weaknesses and positive aspects of the communication service (Blom, Chipchase, Lehikoinen, 2005), experience prototyping, in which researchers, users, and clients gain appreciation of existing or future conditions through active engagement with prototypes (Koskinen, Kuusela, Battarbee et al., 2006), and commercial/social pilots, all of which are private test and experimentation platforms.

In the process of designing and developing ground breaking communication services, the need for multiple prototype labs, pre-integration demonstration labs and developer labs with organizational hardware and software infrastructure which all culminate to a virtual laboratory environment in which specific instantiation of the entire service architecture can be enabled is widely accepted to be the way forward (DAIDALOS 2005).

Of note, as technology in itself is no longer valid or marketable, the benefits and usefulness for people in their daily lives must be proven before the technology or service can be said to be a success. Whilst technology enables new value-chains, product and service development increasingly need to focus on true user needs in order to be successful in today’s increasingly global and competitive market (Vlek, & Cvetkovich, 1989). New R&D and innovation methodologies need to be developed to meet the challenge of addressing those needs.

The living labs (Markopoulos, 2001) network approach is an attempt to meet that challenge by superseding the existing prevalence of isolated private test beds with restricted access, with a model of providing open design, prototyping, testing and validation support to any research or product and service development project, and removes the need for projects to attempt to replicate testing environments for research results. From a European perspective, a network of living labs is a collaboration of public private partnership (PPP) in which private enterprises, public authorities, and citizens work together to create, prototype, validate and test new services, businesses, markets and technologies in real-life contexts, such as cities, city regions, rural areas and collaborative virtual networks between public and private players. The real-life and everyday world conditions are modeled such that the living labs provide a complete “living space” for rapid development and validation of service architectures against real-life communication services.