

Title : Adaptive communication for collaborative interaction in smart environments

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Long Abstract:

Significant advances have been achieved in information and communication technologies in the last decade. Recent advances include virtualization technology both at the processing and the communication levels as well as standardization. The progress in networking encompasses Machine-to-Machine (M2M) communication for Internet of Things and big data traffic as well as Network-Function-Virtualization (NFV) that constitute active research and standardisation activities in Europe by ETSI, and around the world by OneM2M. The design and deployment of interoperable solutions based on open systems and interfaces are identifiable as enablers for the digital market. The strategic application domains include e-health and remote assistance systems, connected and automated vehicles, advanced manufacturing, energy management and smart homes, buildings and cities. Our objectives, in this context, involve the development of design models and management solutions to discover, compose and manage, by semantic-enabled automated procedures, the properties of adaptability essential for autonomic reconfiguration in smart environments. These properties are critical for highly dynamic software-intensive Systems of Systems such as software-defined communication networks and IoT platforms, services and applications and can be implemented by model-based design approaches and ontology-based reasoning. This research direction is of interest for many applications that, on the one hand, have strong reconfiguration requirements to manage mobility, ubiquity, adaptation and self-healing, which are essential for autonomy, and that, on the other hand, are subject to non-functional constraints of quality of service, scalability and reliability. We present, in this talk our achievements in this domain including model-based multi-level reconfiguration solutions, in order to manage simultaneously and consistently the adaptation in the different architectural levels. This is necessary for service continuity and end-to-end quality we implemented by coordinating the adaptation actions to satisfy the evolving of the context.

Short abstract:

We present recent achievements in advanced interoperability and automated adaptation for collaborative interaction in smart environments and IoT Service platforms. The application domains include remote health monitoring, and advanced manufacturing.