

Title: Service Platform challenges for Converged B3G environments
Speaker: Christophe CORDIER (SPICE project)
Duration: Half Day (3 hours)
Affiliation: France Telecom R&D

Name and affiliation of the other speaker(s):

Mathieu Boussard (Alcatel-Lucent)
Sasu Tarkoma (Nokia)
Pieter Ballon (University of Brussels)
Jan van der Meer (Ericsson)
Herma Van Kranenburg (Telematica Institute)
Mariano Belaunde (France Telecom)
Jean-Pierre Le Rouzic (France Telecom)
Antonietta Spedalieri (Telefonica)

Rational: the overall objective of the tutorial:

The objective of this tutorial is to address the challenges of designing, developing and putting into operation efficient and innovative mobile Service creation/execution Platforms for networks beyond 3G.

Today's landscape of services provisioning will be analysed and solutions that provide simplicity and convergence at the service layer to enrich the service landscape and to ensure a faster deployment and adoption of services will be explored.

The following key research issues and concepts in the field of Service Platforms will be covered:

- Easy and quick service creation of intelligent and ambient-aware services
- Cooperation of multiple heterogeneous execution environments
- Pan-European seamless delivery of services across operator domains, networks and terminals
- Business models and roles in open platforms
- Inter-domain service roaming
- Semantic-based Generic Service Enabler Components infrastructure
- Service brokering and mediation
- User support and Distributed Communication Sphere Management
- Profiling, Personalisation, Knowledge management and Attentiveness in service delivery
- Service life-cycle management
- Service access control and Trust management
- Multimedia content delivery

Business models and roles in open platforms

From the perspective of feasible business models, the tutorial will identify the value proposition for the various stakeholders involved in mobile service development and execution. It will also explain the actor-role framework for next-generation mobile service platforms.

Middleware, Service Brokering, Service Enablers and Service Roaming

The following topics will be addressed in the tutorial:

- Middleware mechanisms to publish, mediate/broker and discover components which can be used by service designers to develop services.
- How to access to network capabilities as presence, location etc. and intelligent enablers as the Knowledge Management Framework (KMF).
Service Roaming Management to handle access to remote platforms to access/retrieve components when this is required by roaming end-users.

User support and Distributed Communication Sphere Management

The SPICE project defines the Distributed Communication Sphere (DCS) as 'the set of resources (devices, networks, services, etc.) available to the user at a given time'. The tutorial will introduce the DCS concept, the associated ontology work and the architecture developed to support user management of his DCS. This work has resulted in the definition of the DCS Management System that includes the SPICE Dynamic Desktop, which is the main user interface to the SPICE platform.

Intelligent Service Enablers

Intelligent service enablers will enrich future Converged Service platforms with intelligent personal information and knowledge provisioning that allow a service – in a multi-domain environment - to access and meaningful interpret the end-user's situation and to behave accordingly.

In this tutorial, we will investigate key functions and mechanisms needed in adaptive, mobile middleware that support ubiquitous, attentive and context aware distributed computing. Intelligent enablers retrieve and process information from heterogeneous context, user profile, and service profile sources. The information is processed with advanced context-based reasoning methods targeting at plausible and usable results. Scalable access mechanism will be addressed as well as exchange of information between platforms and domains. Prediction techniques, mechanisms anticipating (foreseeable) changes, and integration mechanisms will be studied yielding pro-active service enablers and extending the services with intelligence. These anticipatory service enablers allow for alertness and responsiveness to changes in the environment, pro-actively triggering mobile services in advance to changes having actually occurred.

Service creation and life-cycle management

Agile development of telecommunications services has become a major challenge for telecom operators and third party service providers. This tutorial will describe an approach for service development that make usage of a domain specific language to facility design, deployment and maintenance of integrated services running on an multi-platform environment. This language basically allows building composite services through reuse of basic service components. Automatic composition is allowed thanks to explicit semantic and non functional annotations on elements of the service description that are exploited by an automatic service composition engine. The service description complemented by deployment descriptors serves as inputs for building partial or almost complete implementations on the service components on top of various execution technologies like BPEL and JAINSLee.

Service access control and Trust management

In an open service platform environment, controlling the access to the service platform for users and third party service providers becomes a critical issue. Hence, the tutorial will also tackle access control mechanisms and the following topics will be investigated:

- Identity and credential management, also considering multi-domain issues,
- Policy management and enforcement
- Service Level Agreement.
- Accounting, charging and billing

Multimedia content delivery

Multimedia and content delivery system takes care about content related functionalities as a complement of service related ones, acting as the bridge between the platform and the user joint with the Dynamic Desktop. Through Multimedia and content delivery functionalities the end user will perceive directly how the platform works, and will be aware of all the powerful characteristics that belong to the platform. Summarizing, multimedia and content delivery system is mainly concerned with the aggregation, preparation, protection and delivery of multimedia content and with supporting information to access the content itself.

Outline: a brief structure of the tutorial:

Approximate time for each section is indicated.

1. Overview of converged service platform challenges (10')
Description of new service delivery paradigms and key concepts in B3G service delivery environments.
2. Architecture and Business models (15')
Architectural frameworks B3G Service Delivery platforms: state-of-the-art, relation to standards, new principles.
Reference models
Technology mapping: relation to underlying technologies such as IMS
Business models:
3. Middleware and Service Enablers (25')
Generic component infrastructures
Component acquisition: semantic publication and discovery
Service roaming
4. User support and Distributed Communication Sphere (DCS) (20')
DCS concept, ontology and architecture
DCS management system
Dynamic desktop
5. Intelligent Service enablers (25')
Personal Information Mgt
Intelligent Knowledge provisioning
Attentive Services
6. Service creation and life-cycle management (25')
Advanced Languages for Service Description
Multiplatform Service Execution Environments
Automatic service composition
Service Creation Environments
7. Service Access Control (25')
Multi-domain Identity Management and AAA (authentication, authorization, accounting)
User Privacy Management
Policy Management and Enforcement, Service Level Agreement
Charging and billing for composite services
8. Multimedia Content delivery ('25)
Content adaptation and delivery control
Content guide
Content protection

Intended audience:

Managers, engineers, scientists, and graduate students who want to understand what are the challenges of future service delivery infrastructures.

Biography of the speaker(s):

Christophe Cordier is senior project manager in the Middleware and Advanced Platforms Division of France Telecom R&D, in charge of Mobile Multimedia Standardisation coordination. He received his Telecommunications Engineering degree in 1995 from ENST in Paris. From 1996 to 2003, he conducted extensive research and managed projects in the field of radio interfaces design and network dimensioning / planning methods for 3G wireless systems, in Alcatel and Orange. He joined France Telecom in September 2003 and is the coordinator of the EU SPICE project.

Matthieu Boussard was graduated from the 'Institut National des Télécommunications' in 2000, specializing on parallel and distributed computing, in particular during an internship as a guest researcher at NIST. From 2001 to 2004, he has been working for Alcatel in the Network Management Unit as a development and system engineer. Since 2004, he has been working for Alcatel's Research & Innovation division, contributing to the Mobilife and SPICE IST projects and contributing to ITEA projects proposals. He was appointed WP3 leader and Technical Manager in SPICE during fall 2006 and is Alcatel representative at the eMobility platform expert group.

Sasu Tarkoma received his M.Sc. and Ph.D. degrees in Computer Science from the University of Helsinki, Department of Computer Science. He has managed and participated in national and international research projects at the University of Helsinki, Helsinki University of Technology, and Helsinki Institute for Information Technology. He has also lectured several courses on middleware and data communications. He has over 40 scientific publications and has also contributed to several books on mobile middleware. His research interests include middleware and distributed computing.

Pieter Ballon is Programme Manager at SMIT (Free University of Brussels) and Senior Consultant at TNO, the Netherlands Organisation for Applied Scientific Research. He specialises in innovations in broadband services, new business models and the mobile telecommunications industry, on which topics he has published extensively. Clients of his consultancy work include the European Commission, the World Bank, the Dutch Ministry of Economic Affairs, KPN, IBM, and the ING Bank. Pieter Ballon is currently coordinating the cross-issue on future mobile business models for all EU FP6 projects of the Wireless World Initiative.

Jan van der Meer is department manager of Technology Development at Ericsson Telecommunicatie BV. He has a background in design and development of the Ericsson service execution platforms, and participated in ETSI and ITU workgroups active on service control. His current interest are towards enhancing and combining the internet and telecom domain capabilities.

Herma Van Kranenburg is project manager & researcher at Telematica Institute, for research projects that focus on context awareness components and application-layer mobility support in the service and network infrastructure. She graduated (MSc and PhD) in electrical engineering and has been active in Wireless World Research Forum since 2000, on personalisation and context awareness. Her present research interests are in the area of context-awareness and tailoring of next-generation mobile services in a multi-access environment. Herma is a member of several program committees of international conferences, and regularly publishes papers both on a scientific and a technical popular level.

Mariano Belaunde is a research engineer at France Telecom R&D, expert senior in modelling technologies. It has been working in the definition of domain specific languages for the telecom domain such as a high-level design languages for interactive voice-based applications. It has been involved in standardization activities at the Object Management Group concerning model-driven engineering techniques.

Jean-Pierre Le Rouzic is an architect at France Telecom R&D. He has also been involved in several projects and positions at France telecom since 1979, smartcards, electronic payment, and quality and management consultancy, after-sale service. He graduated from Rennes University in Business Administration (~MBA).

Antonietta Spedalieri is an engineer at Telefonica I+D. She has a Telecommunications Engineering degree from both the Politecnico di Torino and the Polit cnica de Catalunya, and is currently doing PhD research on the optimisation of handovers and admission control for 3G radio networks. Her publications deal with her PhD subject and have been presented in several relevant international conferences. She has participated in various research projects through the Polit cnica de Catalunya. In SPICE, she leads the work package that deals with Multimedia and Content management, control and delivery.