OSIRIS
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J. Bermejo, H.P. Dahle, T.Grimstad

Integrating services on the run

The OSIRIS project targeted development of a cross-domain open-source platform that supports service provision, aggregation, delivery and dynamic contextual adaptation across many different domains and that makes use of the Internet infrastructure. A powerful business demonstrator is now being evaluated by the Norwegian authorities to simplify future electronic tax declarations by individuals and businesses.

The value of a software product is frequently lower than the services around it. In other cases the software is part of a product (e.g. embedded software) or provided as a service (e.g. Internet based services). As a result, open software is becoming a recognised strategy for focusing on real value. Moreover, services are currently driving the economy in the Organisation for Economic Co-operation and Development (OECD) countries. ICT services were already more than two thirds of ICT sector value added in most countries in 2003.

However, despite current IT technology leaders investing heavily in open-source development, few organisations really understand and foresee the key role it will play in future global service ecosystems.

In all business domains, value is strongly related to knowledge about the customer. There is a key difference between products and service systems: a product manufacturer has limited information about a customer once ownership is transferred. However, a service system maintains close interaction with the user, allowing for continuous improvement.
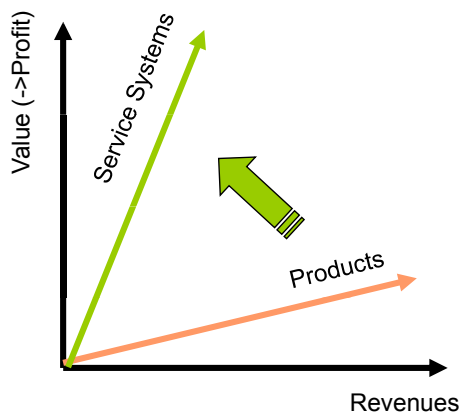
Service systems are product independent with value measured in terms of quality of service delivered to the customer – human or machine. They have clear competitive advantages compared with products as their close relationship with users allows continuous improvement and greater personalisation.

DEVELOPING A MULTI-ACCESS SERVICE
OSIRIS set out to demonstrate the technical possibility of deriving service systems for multiple domains from the same platform that allowed deployment and evolution in run-time without systems interruption. Demonstra-

tors from financial, customer relationship management (CRM), tax service, development tool and end-to-end service domains provided test beds for validating the achievements.
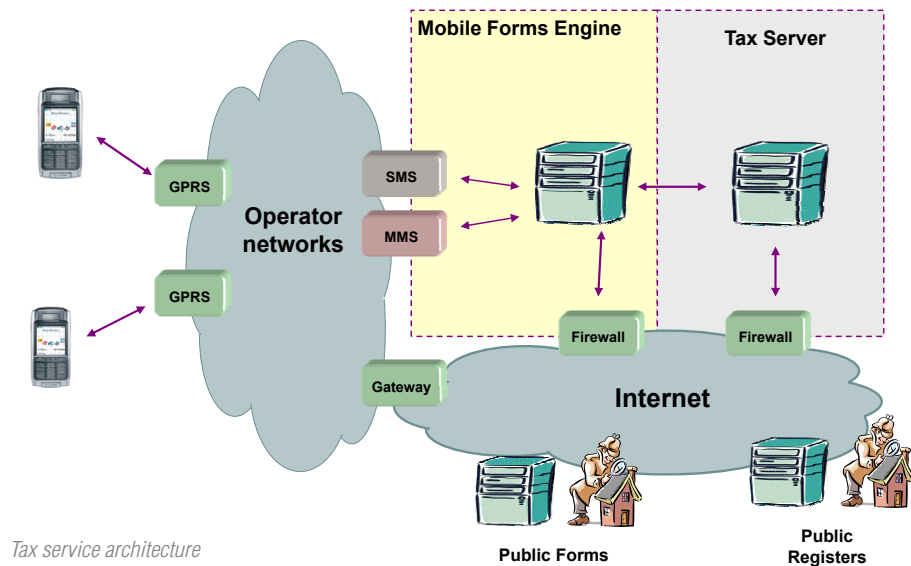
A service system for the Norwegian Tax Directorate illustrates the achievements of OSIRIS business demonstrators. Statistics for Norway show services dominate its ICT sector. Moreover the public sector is the driving force when applying ICT for services, with the Tax Directorate as the locomotive. A public web-based self-declaration service was launched in 1999. At the same time, the Directorate enabled reporting for companies via the web and directly from enterprise resource planning (ERP) systems.

Tax service architecture

Total sales in million NOK for ICT-services and ICT-Manufacturing industry, Source: http://www.ssb.no

So it was natural for ICT-Norway to invite the Tax Directorate to participate in OSIRIS, a project where the core theme is support for innovative services. The rationale for joining was twofold: to gain experience and competence in mobile technology and investigate if mobile phone and digital TV channels could be used for electronic tax services; and to get input for continuous development of electronic service and channel strategies.

Since the late 1990s, telecommunications companies had co-operated with the Technical University in Trondheim to develop a platform and laboratory for mobile services. Karde and TellU – subcontractors to ICT-Norway in OSIRIS – used these results to develop a prototype tax service running on a mobile phone for the Tax Directorate. The architecture involves mobile phones connected to a dedicated server through a mobile network. This dedicated server collects background services from tax and other servers located throughout the country in different public organisations.

CREATING A SET OF BUILDING BLOCKS

A year into the project it was agreed to create a set of building blocks enabling upstream definition and development of interactive tax services and downstream access to such services through mobile phones, digital TVs and the web. The idea was that a user could initiate a tax service session in one channel and, later, complete the activity through another channel.

Services were implemented in XForms and OSIRIS developed an XForms engine for the mobile phone. The same engine was used for the digital TV, as it was felt the TV was more like the phone than the web.

An important spin-off was a universal user interface for mobile phones to make electronic public services accessible to anyone, including those with cognitive and other difficulties. It is possible to add audio help features. The sound is streamed in real time from the server to the mobile phone. An adaptation mechanism enables constant matching of sound quality to available bandwidth.
Services accessed on small devices such as mobile phones require short, precise explanations. On the web, help functions for different tax services are long and complicated, with legally-correct statements that are difficult to apply in the mobile. Help functions need rework to fit the mobile channel; such simplification would also benefit the web services. This is a legal issue being discussed in the Tax Directorate.

Goals set for the tax activities in OSIRIS were met with three tax services trialled. The tax authorities are now debating if the project results should be the basis for production and launch of mobile tax services.

BUILDING A COMMON VISION

The project built on the platform developed in the ITEA OSMOSE project. The ITEA COSI software engineering project also contributed to building a common vision through the interaction between complementary software engineering and middleware initiatives.

Starting from the OSMOSE results, OSIRIS demonstrated the leveraging of its principles to service systems through powering of the computing nodes with a bus for visualising the distributed physical infrastructure. A repository of service implementations – the OSIRIS Active Repository – performs the role of software provisioning platform updating computing nodes on request/needs. Thus, the distributed physical infrastructure is transparent for the development of system services.

OSRIS demonstrated that investment in a single open-source platform can benefit service systems and vertical application in multiple domains. Its dynamic building approach also seems close to 'Cloud' principles for on-demand computing and software middleware infrastructure.

The OSIRIS project contributed to understanding of future challenges. Due to the close interaction between users and service systems the principles for the new generation of global service systems should be defined to avoid user lock-in and allow sustainable open-service ecosystems. Most OSIRIS partners together with others will elaborate further achievements in a follow-up project: OSAMI-Commons (Open Source Ambient Intelligent – Commons).