

The e-Framework

Briefing Paper - August 2006

The e-Framework is an initiative by the UK's Joint Information Systems Committee (JISC) and Australia's Department of Education, Science and Training (DEST), the initial e-Framework Partners. It has major implications for educational institutions as they seek to harness the potential of ICT to realise their strategic goals.

This guide explains the background, aims and benefits of the e-Framework and will be of interest to institutional decision makers.

Context

Over the last ten years the use of the Internet has moved from a small number of specialists to the population at large, including all ages and social groups. More recently, for those with access to computers and broadband, it has become almost ubiquitous, with people using it at work, on the move, and for all sorts of leisure and personal activities.

Much of this has been made possible by new approaches to systems design. These involve the development of web services which can be joined up in a wide variety of ways in a "mix and match" approach. This has meant that, in contrast to the model of IT companies making large, monolithic systems, developers have been making clever, small tools that can be shared and combined in ways that produce new flexible applications. Over the last decade it has become essential for organisations to adopt IT systems to support their business. A number of distinct phases in best practice and innovation can be identified during this time and web services are now seen as a way forward for both integrating existing, often large and monolithic, systems and developing smaller composable services..

Currently, the research and education world is experiencing many new drivers of change, partly enabled and stimulated by the new possibilities offered by the Internet, such as the idea of the researcher or learner who will move between various groups and institutions, and who might work in a number of different countries.

Yet this is in a context where the technical systems within one organisation cannot easily 'talk to each other' and share information, let alone across institutions, jurisdictions, or national boundaries.

The new software design paradigm focuses on the use of small components which can easily exchange data with each other and which can be 'mixed and matched' in what is known as a service oriented approach.

The vision is of a world where technology plays a role in supporting people in whatever they wish to do, and which is flexible and responsive, and easily adaptable to need rather than determining, or constraining, what it is possible for people to do.

The e-Framework

The e-Framework has been established to help the education and research worlds to take advantage of the opportunities offered by the service oriented approach. It is an ambitious and far-reaching programme, initiated by JISC and DEST and is now attracting growing international support. In Jun '06 New Zealand's Ministry of Education, and SURF in the Netherlands, became partners.

Much valuable experience has been gained by all those involved, and a great deal of technical development has taken place over the last few years. Now this approach is becoming more mature, both in this context but also in the wider software and business world, and a number of issues have begun to emerge.

There is a need for greater coherence in development, and for a map of what has been developed and the standards and specifications that underpin them. This information will enable a strategic approach to planning programmes of development, and would provide institutions with information on what is available and ready for adoption and mainstream use.

The e-Framework has been established to address these challenges, and it draws on two key technology developments - the service oriented approach and web services. Its website comprises two main technical aspects, sets of services and sets of domain maps, scenarios, process and service usage models, which will be supported by materials in the form of guides, methodologies and analysis. The e-Framework will provide a map of the areas of development against which specifications, standards, software tools, applications and services can be aligned.

It is guided by several underpinning principles:

- a service-oriented approach to system and process integration;
- a commitment to open standards;
- a recognition of the central importance of community involvement;
- the need for open and collaborative development activities;
- and,
- the deployment of these approaches in a flexible and incremental way.

Benefits

The benefits of the e-Framework can be seen from several perspectives.

For Institutions it will enable:

- the alignment of strategies and infrastructure development to support the areas of education and research
- more choice of systems and suppliers
- an improved return on investment in existing systems
- more effective communications between communities through shared understanding
- interoperability within and across institutions and national boundaries

For Developers it will lead to:

- a better understanding between suppliers and customers
- more rapid development cycles through reusable components
- the entry of small innovative players into the market
- a faster response to customer requirements
- communication and collaboration between developers
- flexible business models for software development

For e-Framework Partners it will provide:

- a map of a complex environment
- a strategic planning tool for
- prioritised investment in standards development
- prioritised investment in interoperability technologies
- an improved return on investment through coordination and collaboration between Partners

Deploying the e-Framework

The e-Framework will provide a map of the territory, but it is unlikely that any institution will deploy the whole of the framework. The more likely scenario is that institutions will use those aspects which address its needs at a particular time. Rather than replacing existing or legacy systems, it is intended to provide guidance on how these systems could be integrated with web service interfaces to specific parts of their functionality, thus deriving greater value from them.

Current progress (Sept '06)

Currently the e-Framework website is largely a sketch of what may be required and there remains an enormous amount of work required to fill out the detail. This is why developing collaboration and international partnerships is crucial to the progress of the initiative.

Collaboration at international level needs to combine overall coherence with local autonomy, and areas of responsibility across the partnership have been clarified.

Overall the e-Framework will provide a tool for thinking, planning and co-ordination; it will be a strategic tool, to support the international education and research communities in their exploitation of the next generation of technology development.

Explaining the jargon

Web services

A function can be made into a discrete 'service', and made available over the web, so that other applications or services can use it. A web service could be a common function e.g., checking that you are who you say you are (authentication) - and be shared and reused by many different systems.

Standards

In order for a range of web services from a variety of sources to be able to work together, they must conform to a set of technical standards to enable them to 'talk to each other' and exchange data. At a simplistic level this is analogous to agreeing to use the same type of electric plug.

Framework

The framework provides information about and references to services and their use that will be relevant for a range of domains (e.g., education, research etc). It is therefore possible for a wide range of possible infrastructures to be created based on different combinations of the same services.

Service oriented approach

When web services are joined up with each other and/or with other applications this is done through a service oriented approach (SOA). The end result can be a 'composite application' which provides all the functionality that the particular user requires, designed to suit them. This flexible approach allows systems, for example, to link with others without the whole system being replaced.

Domain Maps, Scenarios and Process Models

These are developed to address particular areas and tasks in learning, teaching or research. They provide context, analyses of tasks and processes involved, identify the sets of services used, how these will work together, and thus provide information that developers need to create implementations.

Further information and resources

To find out more you can:

subscribe to the newsletter: www.e-framework.org/news

go to the e-Framework website: www.e-framework.org/about/

contact Jon Mason, e-Framework Editor: jon@intercog.net

Reading

e-Framework for Education and Research: An Overview,

Bill Olivier, Tish Roberts, Kerry Blinco, July 2005 :

www.e-framework.org/resources/eframeworkrV1.pdf/file_view

Service-Oriented Frameworks: Modelling the infrastructure for the

next generation of e-Learning Systems, Scott Wilson, Kerry Blinco, Daniel Rehak, July 2004:

www.jisc.ac.uk/uploaded_documents/AltilabServiceOrientedFrameworks.pdf

Non-technical guide to technical frameworks, Sarah Holyfield, Feb 2005: www.elearning.ac.uk/features/nontechguide1

Further resources

JISC-CETIS Conference 2005 - The e-Framework: Priorities and Challenges for 2006 for conference epapers, discussions, podcasts: www.e-framework.org/events/conference/

CETIS - Centre for Educational Technology Interoperability Standards: www.cetis.ac.uk