

# The e-Framework for Education and Research

## A briefing paper

### August 2006

The e-Framework for Education and Research (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 primary goal of the e-Framework is to facilitate technical interoperability within and across education and research through improved strategic planning and implementation processes*

*A set of principles guides the development of the e-Framework:*

- *A service oriented approach to system and process integration*
- *Development, promotion and adoption of Open Standards*
- *Community involvement in development of the e-Framework*
- *Open collaborative development activities*
- *Flexible and incremental deployment*

## 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, all over the world. More recently, for those with access to computers and broadband, it has become almost ubiquitous, with people using it for working on the move, and all sorts of leisure and personal activities.

Over the last decade it has become essential for organisations to adopt IT systems to support their business. Educational institutions have followed this pattern and invested heavily in large systems to manage remote instrument control, large data-sets, finance, libraries, and e-learning. However these systems were not originally designed to interact or share data with each other. 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, including 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.

## Services as a New Approach

New approaches to systems design provide a way forward for integrating these, often large and monolithic, 'enterprise' systems. These involve the development of **services** which can be joined up in a wide variety of ways in a 'mix and match' approach. In contrast to the model of IT companies making large systems developers are now making small, innovative tools. These tools can be shared in the community and combined in ways that produce new flexible applications.

Both Google and Amazon, amongst many others, have been following this approach and their commercial success has made the large IT corporations respond, leading to new commercial and business models across the IT world.

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**.

Where these small components offer services that are based on open **standards** there is even greater opportunity to cost effectively integrate systems.

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 is possible.

## The e-Framework

The e-Framework has been established to help the education and research worlds to take advantage of the opportunities offered by a standards-based service oriented approach. It is an ambitious and far-reaching programme, initiated by JISC and Australia's Department for Education Science and Training (DEST) and is now attracting growing international support. Most recently New Zealand's Ministry of Education, and SURF in the Netherlands, have agreed to become involved.

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 would 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 advantage such an approach might offer will also mean that more development can take place within a fixed amount of funding.

There is also a need within Education to provide a coherent approach to development of technical infrastructure across e-learning, e-research and e-administration areas and to encourage educational institutions to implement compatible technologies.

The e-**Framework** has been established to address these problems.

The purpose of the e-**Framework** is to:

- Provide a strategic approach to technical infrastructure development within and across domains
- Provide a consistent technical vocabulary
- Provide a focal point for interaction with software developers and those provided services to education and research
- Act as a catalyst for the development of further specifications and standards

The e-**Framework** website will act as a knowledge base pulling together a wide range of information and making it available to the partners, institutions and developers. In order to achieve this, the development of shared terminology and definitions will be an essential foundation.

The knowledge base will be composed of

- a set of **services** and their descriptions
- sets of **service usage models (SUMs)**
- sets of guides, methodologies and analyses

The e-**Framework** will provide a map of the areas of development against which specifications, standards, software tools, applications and services can be aligned.

## Benefits

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

For **e-**Framework** Partners** it will provide:

- a map of complex environments
- 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

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

## 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 e-Framework. The more likely scenario is that institutions will take advantage of those aspects which address the requirements of a particular context 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 service interfaces that deal with specific parts of their functionality. These can then be used by other applications, or the data they provide can be integrated with that from other systems, thus greater value can be derived from existing systems.

## Current progress

Currently the e-Framework is largely a sketch of what may be required and there remains an enormous amount of detail to be addressed. This is why developing collaboration and international partnerships is crucial; along with the key role of standards which also require international consensus.

International collaboration needs to achieve overall coherence while accommodating local autonomy. The e-Framework knowledge base will provide the overall focal point for this goal of coherence. The governance arrangements and relationships between the partners will promote distributed development whilst maintaining quality assurance. The website will be the focal point for information and dissemination.

Building technical infrastructure and the implementation of services and applications based on the e-Framework will be a national, local and domain specific activity. Support for constituent communities will be achieved through sharing experiences.

Overall the e-Framework is an ambitious venture that will provide a means 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.

## *Explaining the jargon*

### **e-Framework**

The e-Framework for Education and Research is an international initiative aimed at facilitating technical interoperability within and across education and research through improved strategic planning and implementation processes.

### **Service oriented approach**

A service oriented approach describes a way of building systems using discrete service components. This highly flexible approach reduces the costs of system development and maintenance through reuse of components. Reusing services in this way also improves interoperation between systems and simplifies the extension of system capability.

### **Services**

Services perform specific tasks. These can be made available over the web – a well-known example of a service is Google Search. Others may be less well-known but could be just as useful – an example could be an authentication service (checking that you are who you say you are).

Services can be implemented using various technologies. The most common technology used today is referred to as “web services”.

### **Standards**

In order for a range of services to be able to work together they must conform to a set of technical standards. Standards enable services and systems to ‘talk to each other’ and exchange data. At a simplistic level this is analogous to agreeing to country codes that enable international telephone communications.

### **Service Usage Models (SUMs)**

SUMs are developed by communities to address their particular learning, teaching or research requirements. SUMs provide an analysis of the tasks involved, identify the sets of services that will be called upon, how they will work together, and provide information that developers will require to create the interoperability points for particular applications.

## **To find our more -**

subscribe to the newsletter - <http://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=e-framework&A=1>

go to the e-Framework website - <http://www.e-framework.org/>

contact - e-Framework Editor – [editor@e-framework.org](mailto:editor@e-framework.org)

## Reading

*The e-Framework for Education and Research: An Overview*, Bill Olivier, Tish Roberts, Kerry Blinco, July 2005

[http://www.e-framework.org/resources/eframeworkrV1.pdf/file\\_view](http://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

[http://www.jisc.ac.uk/uploaded\\_documents/AltilabServiceOrientedFrameworks.pdf](http://www.jisc.ac.uk/uploaded_documents/AltilabServiceOrientedFrameworks.pdf)

*Non-technical guide to technical frameworks*, Sarah Holyfield, Feb 2005

<http://www.elearning.ac.uk/features/nontechguide1>

## Further resources –

JISC-CETIS Conference 2005 - *The e-Framework: Priorities and Challenges for 2006* for conference papers, discussions, podcasts

<http://www.e-framework.org/events/conference/>

CETIS – Centre for Educational Technology Interoperability Standards –

<http://www.cetis.ac.uk>

This work is licensed under the Creative Commons Attribution- ShareAlike 2.5 License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/2.5/au/> or send a letter to Creative Commons, 543 Howard Street, 5th Floor, San Francisco, California, 94105, USA.

