

History has shown that it's not the biggest, strongest or cleverest that succeed but rather those that can adapt to changing circumstances. Enterprise Architecture (EA) is about enabling organisations to adapt to change by defining, in a generic way, how their business processes work in tandem with their Information and Communications Technology (ICT) systems. With this clarity of purpose, organisations are able to re-configure or replace their systems with a clear understanding of how these changes might impact on business processes across the organisation.

EA is already well established in the commercial sector and its potential is now being investigated by the Joint Information Systems Committee (JISC), the Universities and Colleges Information Systems Association (UCISA) and others in the context of higher and further education.

Architecture: *art or science of building; thing built, structure; style of building; construction*

Oxford English Dictionary

Why Consider Enterprise Architecture?

Universities and colleges are increasingly complex socio-technical systems that are hard to change and yet they face enormous pressures to increase operational efficiencies and to adapt to new challenges. In recent years, senior management teams have made large investments in corporate information systems to try to tackle some of these challenges.

Predominantly, these systems have been supplier led with institutions investing in-house resource on ensuring integration between different products. Often these products have overlapping functionality, for example fee billing can be part of a student record system or a finance system.

Architecture: *The fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution*

ANSI/IEEE Std 1471-2000

Sometimes niche systems are used to supplement the inadequate functionality of core systems. This heterogeneous environment is complex and often only understood by a small number of people within an organisation, which makes change difficult to predict and therefore risky.

Proponents of EA, such as Jeanne Ross and Peter Weill at Massachusetts Institute of Technology Sloan, believe that this is just one symptom of many. They argue that organisations that handle change well have what they describe as 'a better foundation for execution'. Such organisations have embedded ICT in such a way that there is transparency between organisational strategy and information systems strategy. In addition, Ross and Weill's research found that the companies that had fully and successively digitised their processes were more profitable, had faster product development times, were more adaptable to changing environments and, intriguingly, had *lower* ICT costs.

However, it's important to remember that EA is more than just a process for modelling, mapping and communicating the way in which existing business and ICT systems interact (something that is often referred to as the 'as is' state). It is also about providing a 'road map' to the future – how these systems might work in line with the vision and strategy of the organisation (the 'to be' state). It is therefore important to understand the role of EA as a kind of facilitator to

a transitional process: planning and designing at the organisational level for business evolution, change and agility.

What is Enterprise Architecture?

Enterprise Architecture is a high-level, strategic technique designed to help senior managers deal with complexity and plan for change at the enterprise level.

The use of the word 'architecture' conjures up images of the construction of beautiful buildings, and this is deliberate. Like that of a traditional architect, the office of the enterprise architect is replete with blueprints, views, plans, drawings and models. But the edifice under construction is not a physical building, but the far more intangible construction that is the enterprise – the socio-technical make-up of an entire organisation.

The architect's role is to analyse how it all fits together, to communicate models and views of that fit and to ask whether ICT infrastructure and business processes work together holistically to deliver an organisation's strategic plans and overall mission. Architects operate at the level where business objectives, operations, processes and management interact with information systems and ICT. In essence, EA attempts to capture the essentials of a business and answer the question as to whether the organisation's information infrastructure is, in the parlance of another age, a smooth, well-oiled machine.

Doing Enterprise Architecture

Undertaking EA is a process with a repeating lifecycle that is constantly evolving. Over the years a number of formalised methods or frameworks have been developed to describe step-by-step procedures that can be undertaken to construct and communicate both the architecture and the deliverables that are produced at each stage. Most of these methods involve procedures that take account of four common architectural areas or domains: Business Processes, Information/Data, Technology and Applications. These architectural domains contain components within an organisation which interrelate in certain ways in order to address the day-to-day requirements (the concerns) of key individual people, departments and functions (the stakeholders). Each of these stakeholders has a different view of the way the whole fits together.

But perhaps even more important than the particular method or framework is the role of the architect. In *Enterprise Architecture at Work*, Lankhorst points out that: 'To really profit from the strategic potential of enterprise architecture, an organisation needs to optimise the skills, methods and tools of its architects, and *give them the right position* in the

organisation' (page 313, italics added). It is absolutely critical to the success of any EA process that the practices and products of the architect are embedded into the organisational life of the enterprise in such a way that even the most senior managers engage with, and are informed by, the work of the architect.

Enterprise Architecture in Higher Education

Since the beginning of 2008, JISC has been providing funds, through the e-Learning programme, to allow early adopters to explore the use of EA within education. JISC will continue to explore the application of Enterprise Architecture within the context of Further and Higher Education and to communicate activities and outcomes as experience is gained. JISC suggests that institutions keep informed on progress via the JISC website in this area and ensure that this briefing is brought to the attention of appropriate colleagues.

John Townsend, Chair of UCISA Corporate Information Systems Group Committee, has been taking part in JISC's Enterprise Architecture Group Pilot project. He believes that 'UCISA sees EA as a very important area for development requiring serious attention; the work that JISC is doing in EA will be of great value'.

This briefing paper was written by Paul Anderson and Gaynor Backhouse of Intelligent Content, on behalf of JISC. It was produced by the JISC Communications and Marketing team.

Alternative formats of this briefing paper can be found at:
www.jisc.ac.uk/publications

Further Information

Lankhorst, M. et al, (2005). *Enterprise Architecture at Work: Modelling, Communication and Analysis*. Berlin: Springer-Verlag and Heidelberg GmbH & Co.

For more information on the JISC Enterprise Architectures Group Pilot see:

www.jisc.ac.uk/enterprisearchitectures