

e-Learning, e-Libraries & e-Research



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Integrating ICT within universities

top level view

ICT & universities

e-learning

e-libraries

e-research



the businesses



e-admin

the underpinning



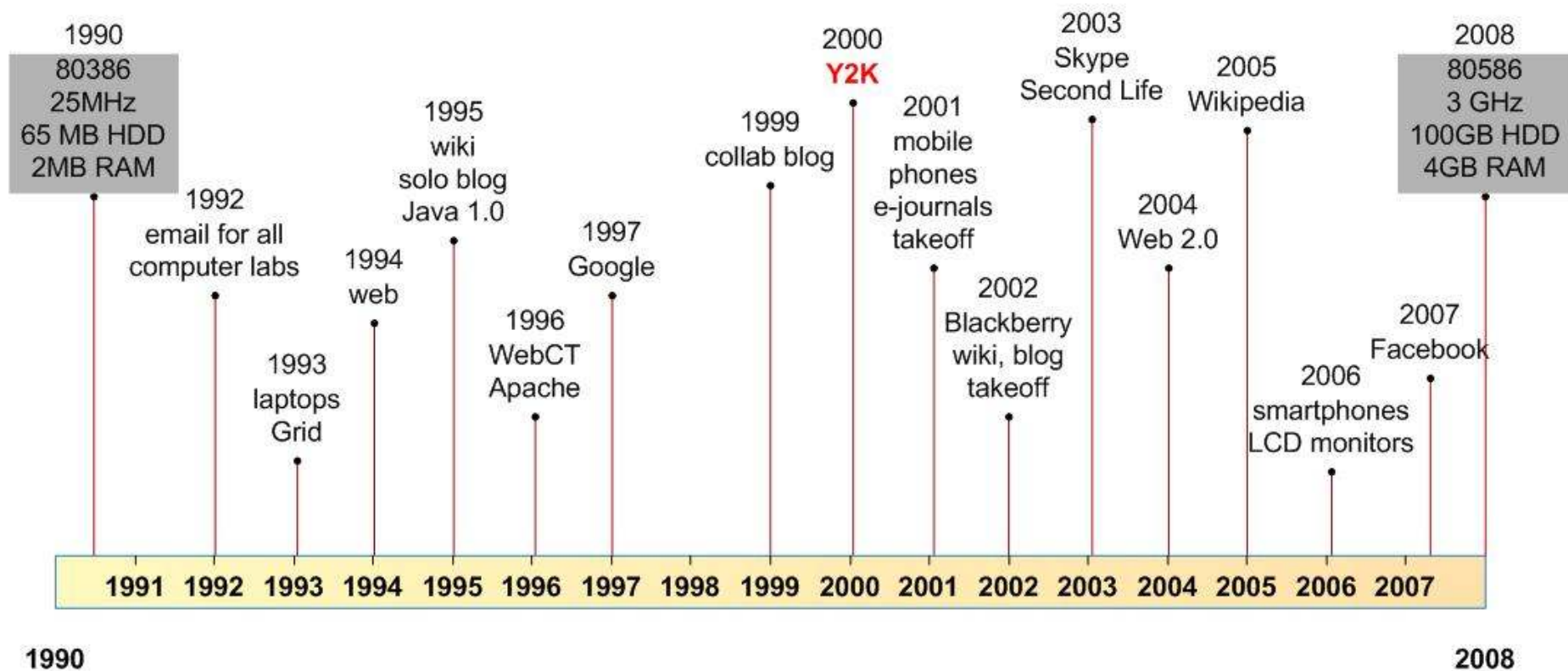
The (complicated) nature of universities

- mixture of businesses
 - research, teaching, knowledge transfer/commercialisation & admin
- mixture of funding sources
 - gov't, student fees, commercial, philanthropic, research contract
- diversity of / balance of subject areas
 - 'tribes'
- variable degree of decentralised management
 - from near anarchy to quasi-corporatism
- very long independent history of academe co-existing with rapid socio-politico-economic change
- combination of caution/conservatism & agility/responsiveness

e-Learning, e-Libraries & e-Research



A short history of general ICT & ICT in education





Top level statements to guide action

- explicit overarching strategy, underpinned by more detailed strategies for each major IT area
- develop from these implementation plans, with clear objectives that are measurable & with realistic timelines
- joined up across all areas eg university, IT, libraries, e-learning



Strategies & e-learning at Edinburgh

- University of Edinburgh Strategic Plan 2003-7 “Excellence in education”: *“To provide an outstanding educational environment, supporting study across a broad range of academic disciplines and serving the major professions; support the development of distance learning courses”*
- Knowledge Management Strategic Plan: Chapter 4, Vision: *“All courses will make appropriate use of e-learning to enhance the student experience of learning in a research rich environment. Teaching staff will have a wide range of e-learning options and tools at their disposal, be aware of their benefits, and have the skills to apply them. Virtual or managed learning environments (VLE, MLE) will have become ubiquitous.”*
- e-Learning Strategy: *“The University of Edinburgh actively supports the use of information and communication technology (ICT) in learning and teaching at all levels; undergraduate, postgraduate and continuing professional development. The university considers that appropriate use of such technologies can enhance the quality of the student learning experience, promote greater and wider access to the university’s courses, and improve the effectiveness of teaching. It is particularly relevant to supporting learning in a research-rich environment at this time, when use of ICT in research is also increasing rapidly.”*

Aim

To deliver services that exceed user expectations but are constrained by cost.

The aim puts the user experience at the heart of the strategy rather than the technology. To be able to exceed user expectations there has to be elements of setting or managing the expectations which is helpful in ensuring that the users do understand what the services and in turn approaches the compromises that the cost constraint impose.

Service Characteristics

- Anytime, anyplace - Services that are not constrained by time or location
- Easy to Use - Keep it simple and tell people about it
- Integrated - People expect organisations and their IT to be joined up
- Secure - Not a concern for the user

Principles

Keep it simple

Clear communication and simple routes for getting help and support are essential if we are to satisfy user expectations. There are many examples of **services available within the University that are under utilised** because users, and in some cases the IT support **staff do not understand them**, because the information needed to use them is not clear or easily available. Obviously where services are complex this exacerbates the problem.

User focused

Duplication

Standards

Using standards, whether they are standards we have set or industry **standards** or internationally accepted standards is an important strategy for **reducing complexity and duplication** and managing relationships with vendors. The **more 'standard' the item is the greater the pressure there should be to use standard offerings**. What standards are adopted and how their use is encouraged is a significant governance issue as everyone will support the use of standards until it comes to the crunch and they have to compromise to comply. An important element of the use of standards is having the relevant policies in a way that makes the information easily accessible.

Technology Change

Compliance

Vision

The University of Edinburgh will offer an excellent research computing infrastructure that contains world-class facilities and services, including:

- a high bandwidth network
- access to high performance computing
- data storage and services
- advanced and standard software
- support for all researchers to make the most of these services
- The infrastructure will be robust and resilient and will keep pace with changing needs and technologies. Business continuity will be assured.

Strategy *(sample of items only)*

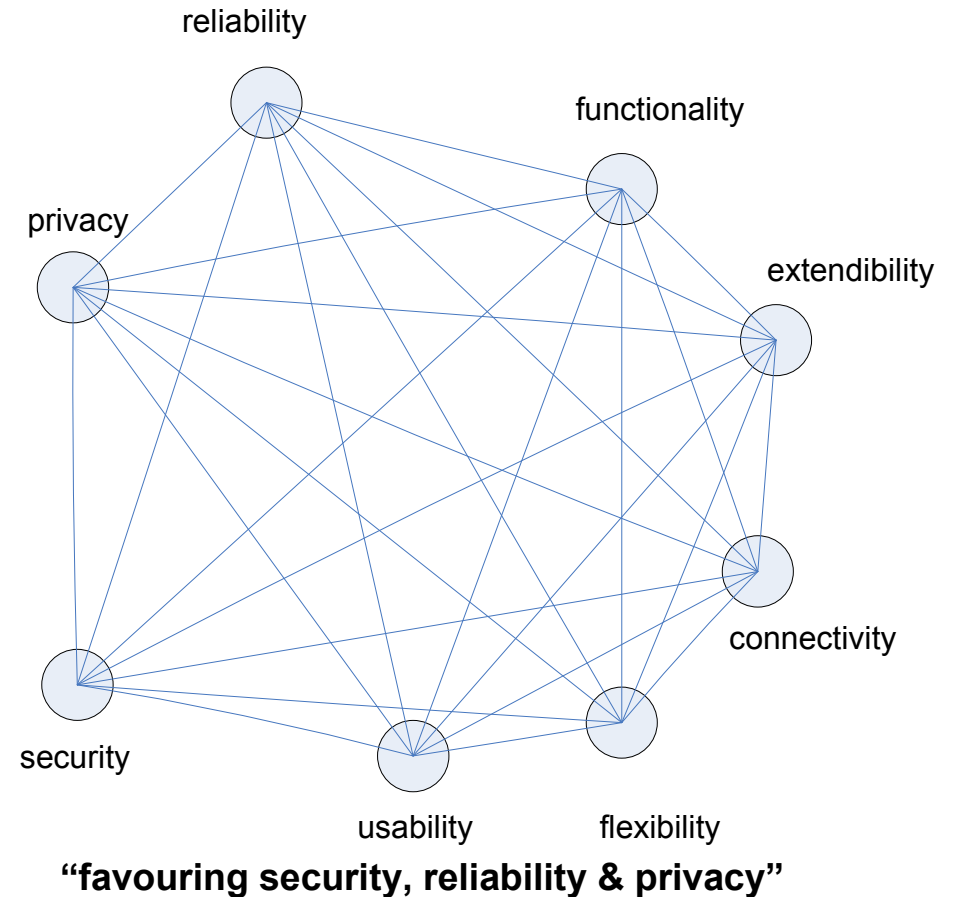
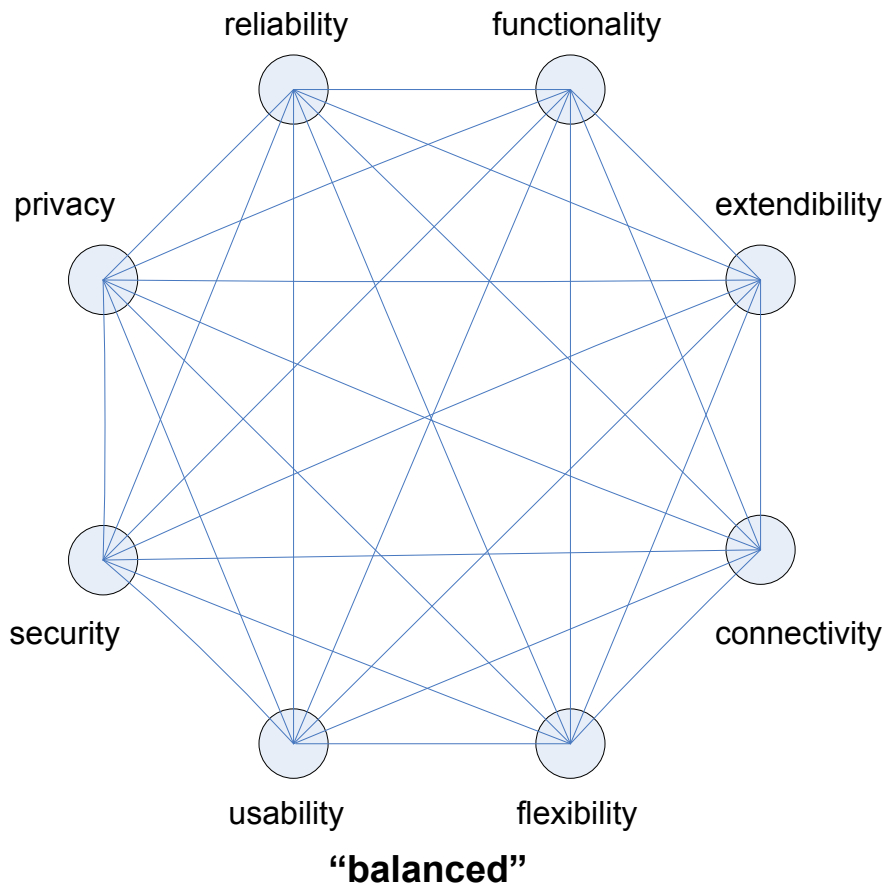
- Researchers will have access to **world-class data services** which will include storage, backup, sharing and access facilities to enable re-use, curation, and archive of data that they obtain through experimentation, observation and simulation or that is purchased or procured for use in research. It will be possible share data with groups both within and beyond the University.
- Researchers will have the **skills and knowledge** to make best use of the computational facilities available to them. Training will be available in order to ensure this is the case.
- Research services will conform to the University IT security strategy which is currently being developed.
- Flexible, composable services, which respect subsidiarity, will be available in recognition that **'one size does not fit all'**. The smallest number of solutions will be identified that will satisfy the community.
- Research facilities will be **available to collaborators** from different institutions and to independent visiting scholars and will support **mobile researchers**.

e-Learning, e-Libraries & e-Research

So, what sort of IT systems (e-learning, e-libraries etc) do universities need to support their business?



A web of choices in ICT-based systems



from Whitworth et al, 2006

ICT for TEACHING or what teachers/students value

ease of use; reliability; interface consistency; high scale capacity; single sign-on/permissions; copes with diverse media & formats; durable; integrated; remote access; 24x7x365 system & support; all OS supported;

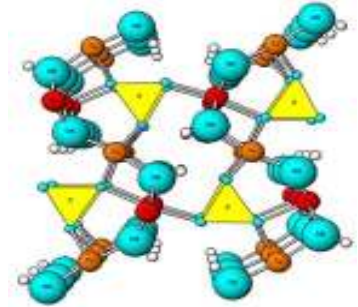
change process negotiation; slow-ish change preferred; low innovation demand; one-size-mc

low preparedness to take risks





ICT for RESEARCH or what researchers need & value



storage; data services; compute; very diverse software; all OS supported; training (but don't admit it!); instant support 24x7x365; facility to collaborate; high network bandwidth; low licence & maintenance costs;

agility; speed of response; flexibility; innovation support; NOT one-size-fits-all; coping with hi-end scale to single scholar innovation;

preparedness to take risks;

ICT for ADMIN

or **what administrators need & value**

best of breed; industry standards; upgrade path;
24x7x365 systems; 10x5x200 support; limited core
businesses; data warehouses;

reliability; security; economical; VFM; auditable; one-size-
MUST-fit-all;

very high risk aversion;





e-Learning

enhancing higher education



Reasons for choosing investment in e-learning

- enhancing on-campus = modernisation
- flexibility, off-campus, distance education
- reputation, brand, competition
- cost reduction or containment

which matters most if you cannot do them all??

e-Learning, e-Libraries & e-Research



you may not be able to change the educational model....

pedagogy

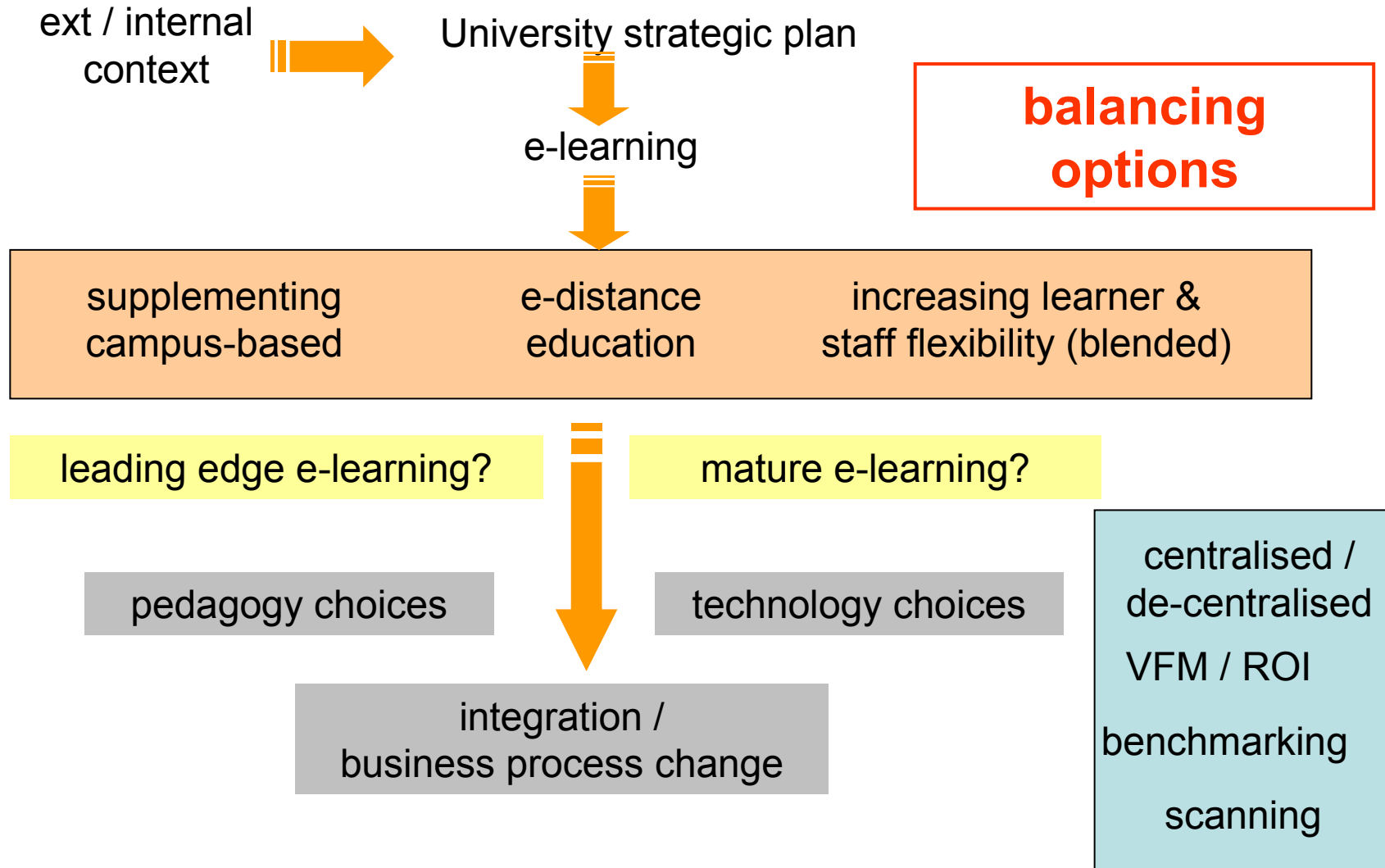
what do you wish to do from an educational perspective, and why?

what technologies are best suited to achieving these goals?

technology

technological change can drive you....

e-Learning, e-Libraries & e-Research





e-Libraries

serving both teaching and research

e-Learning, e-Libraries & e-Research

the hybrid library: digital

- increasingly digital – e-journals, e-books, e-reserve, video, audio
- linkages to other systems essential – single sign-on; permissions to access services; reading lists in VLE linkage to library (digital & physical) collections;
- research datasets, learning objects, open access repositories - curation & preservation



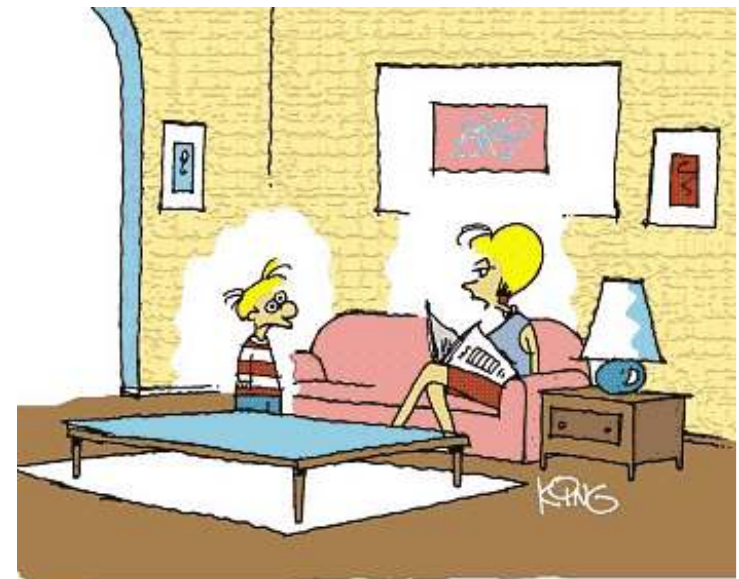
the hybrid library: physical

- physical collections still important for study – books, manuscripts, objects
- physical spaces still important for study, especially as student numbers increase
- physical spaces are increasingly technology-rich spaces



the hybrid library: skills development

- **help & advice** – for researchers, for students, for other support services Induction & training – Google Generation, digital literacies for early 21st century
- **multiple formats** - provide courses and on demand; users wish for extended hours/days of access; 24x7x365?, personal & online; mobile workers/learners; distance education



"No, you weren't downloaded.
You were born."



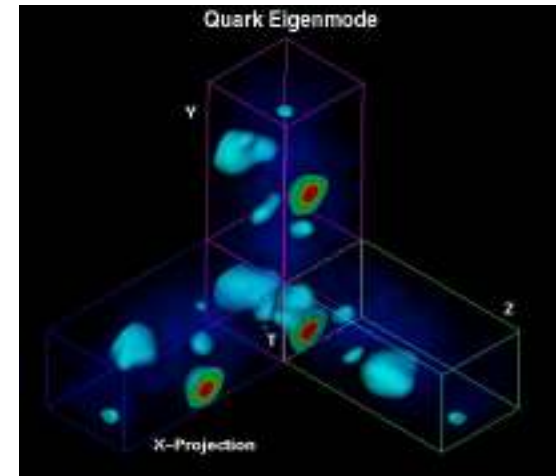
e-Research

serving the most diverse community

what researchers do today, they will teach with tomorrow –
e-research → e-learning

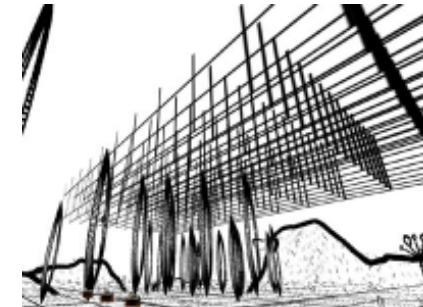
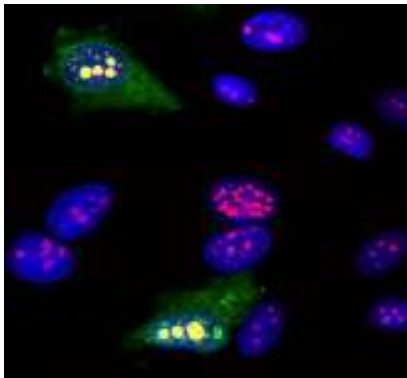
e-Research: top-end

- 'big iron' – super-computing; high-performance & high-throughput computing & data-intensive sciences
- simulation as 'third methodology'
- Grid & middleware



e-Research: mid-range

- modern social sciences: whole population datasets; linguistics; psychology experimental data; architecture; digital music....
- most of science: cell biology; immunology; geosciences; maths; engineering....



HUMAN_1AKZ	1	SWKKHLSGEFGKPYFKLMGFVAEERKH	NTVYPPPHQVFTWTQMCDFKDKV	VVILLGDDPYHGP	64	
ECOLI_1EUI	1	TWHDVLAEEKQOPYFLNLTQTVASERQSGVLIYPPKQDVENAFRETELGDVK	VVILLGDDPYHGG		65	
HUMAN_1AKZ	65	CAHGLCFSVORPVPPPSLENIYKELSTDIEDFVHPGHGDL	SGWAKGGVLLLN	AVLTVRAHDA	129	
ECOLI_1EUI	66	CAHGLAFSVRPGIATPPSLLNMYKELNTIPG	TRPNHGYLESWARGGVLLLN	TVLTVRAGDAH	130	
HUMAN_1AKZ	130	IKERGWQFTDAVVSMLNNSNGLVFLLLWGSYADKKGSAIDR	KHHVLQTAHPSP	LSVYRGFFG	194	
ECOLI_1EUI	131	HASLQWETFDKVISLINC	HREGVVFLLWGS	HAQKKGALIDRQHHVLKAP	HSP	195
HUMAN_1AKZ	195	RHFSKTNELLC	SGKKPI	DW		
ECOLI_1EUI	196	NHEVLANQWLE	QRGETP	I	DW	215

e-Research: new developments

- 'digital scholar' – new digital methods in humanities research
- text-mining; study of multimedia; automated analysis of non-textual media; virtual ethnography, sociology, psychology, education...
- new publication methods; communication tools; collaborative working tools (wikis etc) ...





e-Admin

underpinning & integrating

e-Admin: the glue

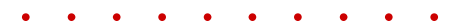
- email; e-diary; university website; portals; intranets...
- HR; finance; estates; student record; research grants...
- identity management; authentication; DNS...
- managed desktops; site licences; mobile access...
- information architecture; service oriented architecture (SOA); web services...



e-Learning, e-Libraries & e-Research



Information access	EASE/Active Directory/Other			
	Web/MyEd/Other			
	Integration Includes business intelligence strategy as well as transactional stuff			
Application Logic	Authorisation			
	Administration	Learning and Teaching	Research	Communication and Collaboration
Services	Common Middleware Services – Web servers, application servers, databases, soa support, desktop (file, print, office, etc)			
	Infrastructure – hardware, storage, file systems, networking, operating systems, and some higher level protocols			





Work with consistency across all domains

- adopt policies on common standards
- encourage universal use of best of breed service development & management
- encourage use of common processes to integrate & improve user experience
- develop agreed criteria to assess & minimise duplication
- encourage publication of SLAs* & KPIs* for all services

* Service level agreements

* Key performance indicators

quality of services, change control, service catalogues, operating procedures, resilience, disaster recovery etc especially relevant to IT staff but applies more widely where services are offered

ensuring that projects are completing each stage fully before moving forwards – especially on user engagement

Procurement

For available contracts in the UK Government, public sector, and preferred suppliers. This database is your first port of call...

Quick links

- ▶ [Contracts Database](#)
- ▶ [Gateway Reviews](#)
- ▶ [ITIL](#)
- ▶ [PRINCE2](#)
- ▶ [Supplier Feedback Service](#)
- ▶ [Supply2gov](#)

The Property programme will be the firm basis of a transformed government estate...

good practice in project management clarity on governance, objectives, stages, timescales, resource management etc

IMA WINNER ★ 2007
▶ [Find out more](#)

e-Learning, e-Libraries & e-Research



To design strategies, to ensure continuing agreement, to implement effectively - build, nurture & sustain...

- communities of professionals in each area (eg elearning, libraries, research computing, admin IT)
- ensure consultation & debate on developments and services at earliest stages
- find ways to enable professionals from across university to work together (eg on competence frameworks)
- promote & support joint staff development & training



Our approach: professional communities at Edinburgh

- **IT Professionals' Forum** – ~400 members; chair elected; financial support + encouragement VP; independent; focussed on discussion + self-development; offers advice to VP on IT matters; representation on top IT Committee
- **eLearning Professionals' & Practitioners' Forum** – ~60 members; organised as ITPF; representation on top eLearning Committee
- **Library, Archives & Museums Professionals' Forum** - ~30 members; just formed so still debating mode of operation;

Finally, on the 1-5 year horizon...

- outsourcing commodity IT / outsourcing innovative IT
- mainstreaming of mobile computing
- data storage & services (metadata, curation, preservation, archiving, Tbytes for all, training)
- “library/enterprise IT/researcher/teacher/learner 2.0”
- “digital library meets research computing” – data & publications
- next generation learning & research environments (virtual worlds, voice, video)
- true 24x7x365 support
- software virtualisation



Thank you for listening....

