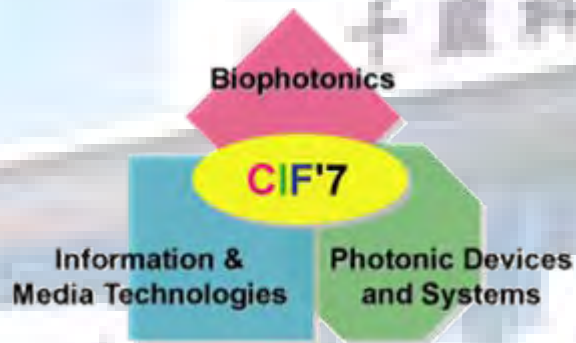


*Widening Perspective on ICT Infrastructure
for Education & Research:
Standards, Services, & Frameworks*



*Jon Mason
November 28, 2006*



WHAT is Photonics?

Definitions of **photonics** on the Web:

- The technology of transmission, control, and detection of light (photons). This is also known as fiber optics and optoelectronics.
www.intel.com/technology/silicon/sp/glossary.htm
- The study or application of electromagnetic energy whose basic unit is the photon, incorporating optics, laser technology, electrical engineering materials science, and information storage and processing.
fpmicro.com/resources/glossary.htm
- Photonics is the control, manipulation, transfer and storage of information using photons, the fundamental particles of light. A single optical fibre able to carry the equivalent of 300,000,000 simultaneous telephone calls. This new photonic technology enables, for the first time, sufficient capacity to meet the forecast demand for fully interactive, multimedia, internet services.
www.voiceanddata.com.au/vd/admin/glossary.asp
- The technology that uses light particles (photons) to carry information over hair-thin fibres of very pure glass.
www.eppic-faraday.com/glossary.html
- Photonics is the science and technology of generating and controlling photons, particularly in the visible light spectrum. The field of photonics has a strong interest in the use of photons to carry information. The science and applications of photonics are usually based on laser light. ...
en.wikipedia.org/wiki/Photonics



- Context
- Some Theoretical Considerations
- Web-based Learning
- Standards and Interoperability
- The e-Framework for Education & Research



- New capabilities of Internet technologies
 - Web 2.0
 - Service Oriented Architectures
 - Grid computing
 - Wireless & mobile access
 - Open source innovation
 - Semantic Web
- Standards & specifications are key



Context (2)

- “e” is enabling & transforming more than learning
 - Teaching, Learning, Training
 - Research
 - Administration
 - IT Services
 - Library Services
- ICT Infrastructure is costly to build & maintain
- Increasingly networked environment – people, organisations, technology



2005 – a year of pause, re-alignment, & new focus

- IMS strategic shift
- IEEE LTSC in maintenance mode
- ADL – SCORM & CORDRA
- SC36 – finding relevance
- Services – the new mantra



A Theoretical Pause



Learning

- Behaviourism
- Cognitivism
- Constructivism
- Connectivism
- ...???

Knowledge

- SECI
- Technocratic
- Economic
- Behavioural
- Complexity
- Sense-Making
- ...???



...

Thinking

- Analysing
- Concentrating
- Connecting – (laterally)
- Contemplating
- Day dreaming
- Engaging
- Inferring
- Intellectualizing
- Making Sense
- Operating
- Planning
- Recalling
- Reflecting
- Strategizing
- ...



"Excessive focus on explicit knowledge
leads to **paralysis by analysis.**"

"Only when tacit and explicit knowledge interact
can innovation occur."

Ikujiro Nonaka, *The Knowledge Advantage*



- The largest scale research & development project in the world today
- Knowledge representation
- Machine exchange of semantics
- Entity-relationship model



An Abstract Model





- Simple (a Google search)
 - Managed (via an LMS)
 - Unmanaged
 - Complex
 - Collaborative
 - Course-based
 - Just-in-time
 - Performance support
- } Links to KM

→ Many tools, but most focused on Content that emphasises “learning what” ... & “learning how”



“I Link, therefore I am”

William Mitchell, *Me++*



Boundaries

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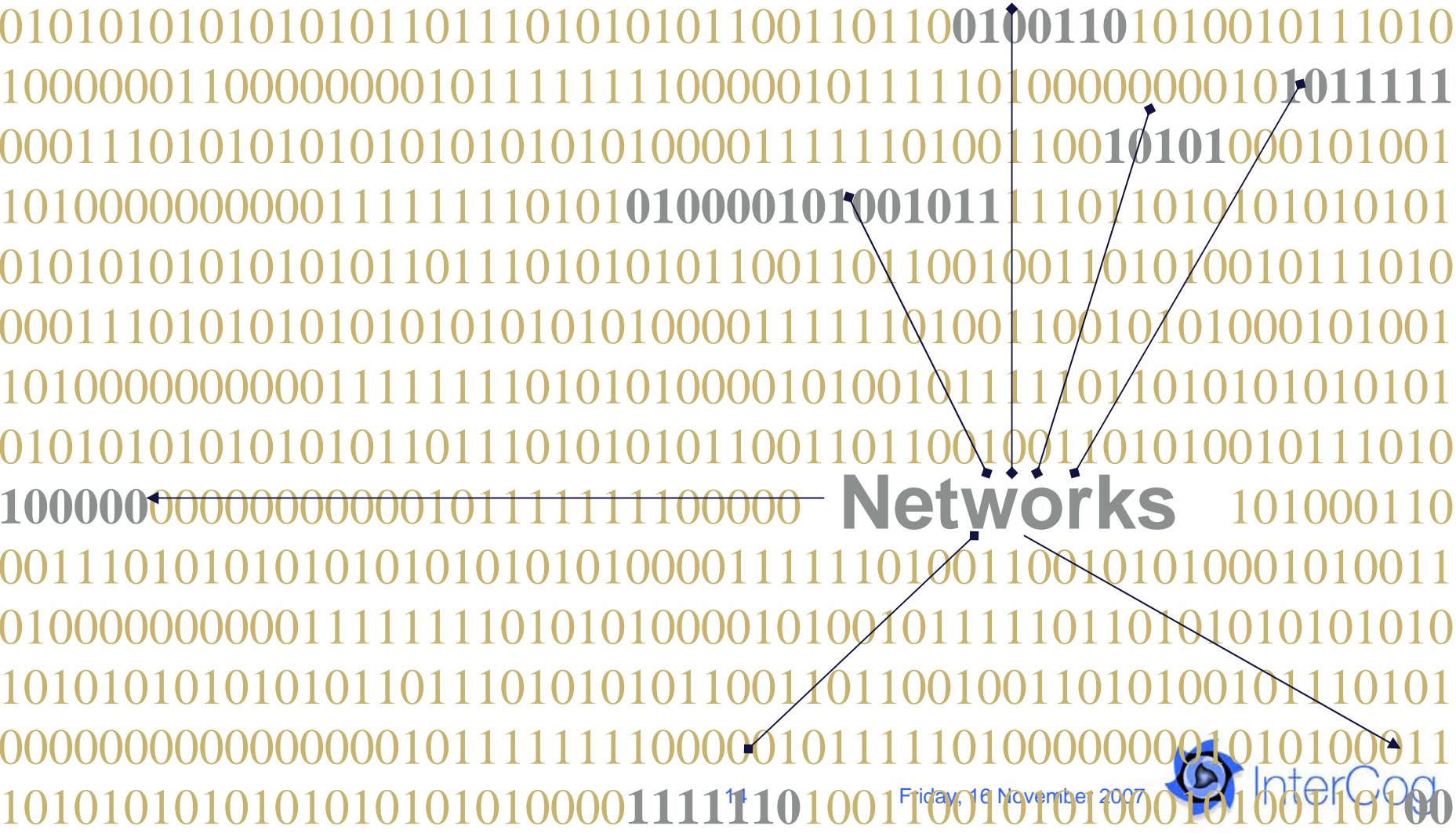
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Networks

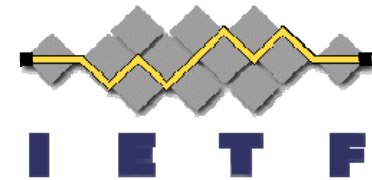
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Standards make things work!

The Broader Standardization Context

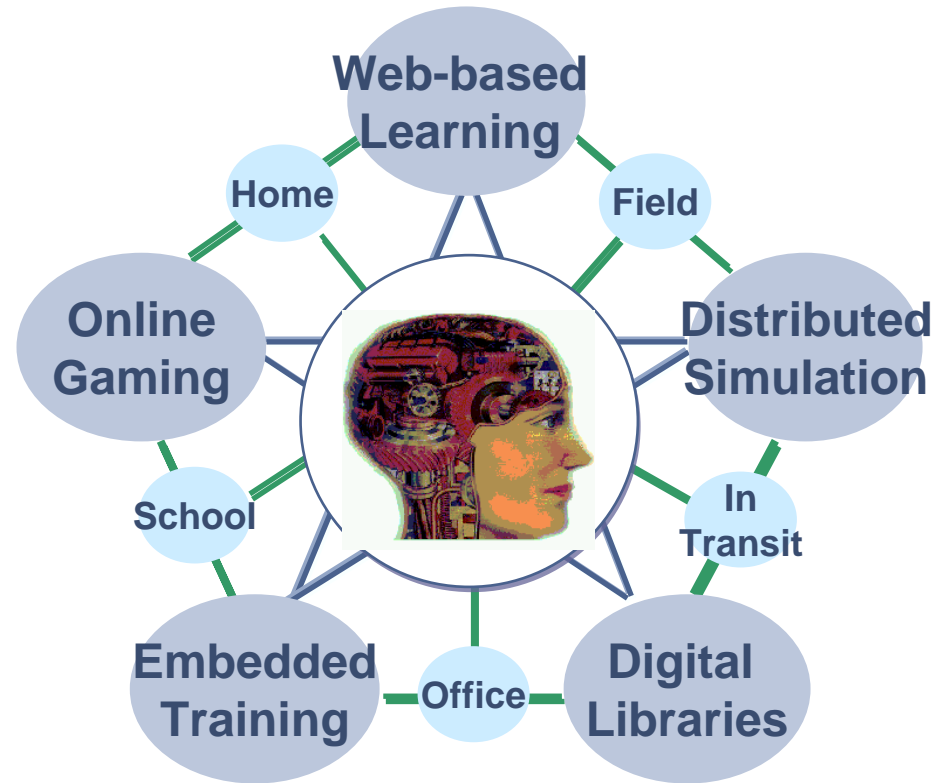


Advancing E-Business Standards Since 1993



What is the ADL Initiative?

- Collaborative effort
 - ✓ US DoD-initiated
 - ✓ Governments, academia, private sector
- Harness the power of information technologies to enhance structured learning and performance support.
- Vision: *Provide access to the highest quality education and training, tailored to individual needs, delivered cost effectively, anywhere and anytime.*





Global ADL Collaboration



Stewardship/Localization

- SCORM Maintenance
- Translation
- Certification
- Joint Research

Canada

- DND

Academic Co-Lab

ADL Co-Lab

Workforce Co-Lab

Joint Co-Lab

Latin America

- ILCE

United Kingdom

- Learning Lab
- UFI
- CETIS/JISC
- BECTA
- MOD

NATO/PfP

Korea

- MOCIE
- KIEC

Japan

- eLC
- NIME

Taiwan

- Tamkang
- III

Singapore

- NIE

Australia

- DEST



An example



An HR view of Enterprise issues

- Matching enterprise needs to talent & ability rather than position description or function
- Competency definitions & maps are critical
- The “flipside” of e-portfolio requirements

Aimed at

- Recruitment
- Staff retention
- Staff development



Smart Silos?



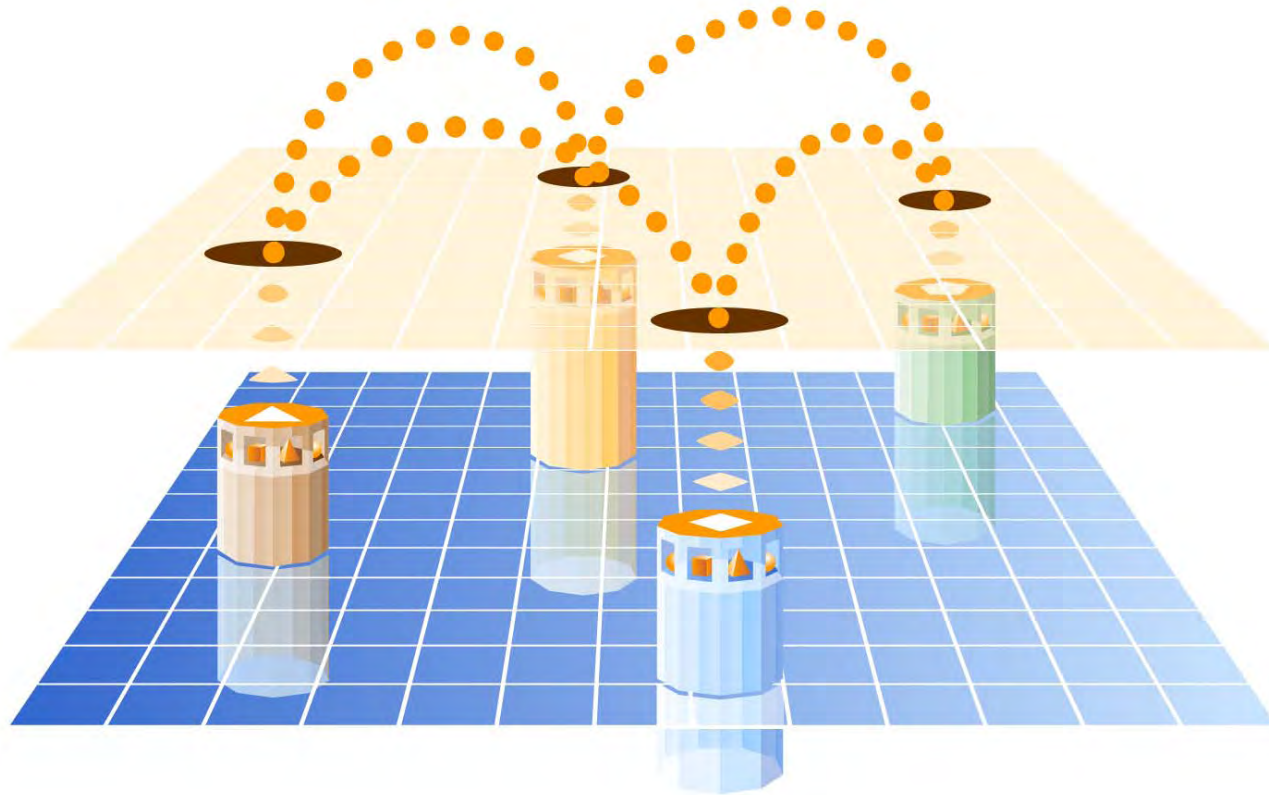


Smart Silos?



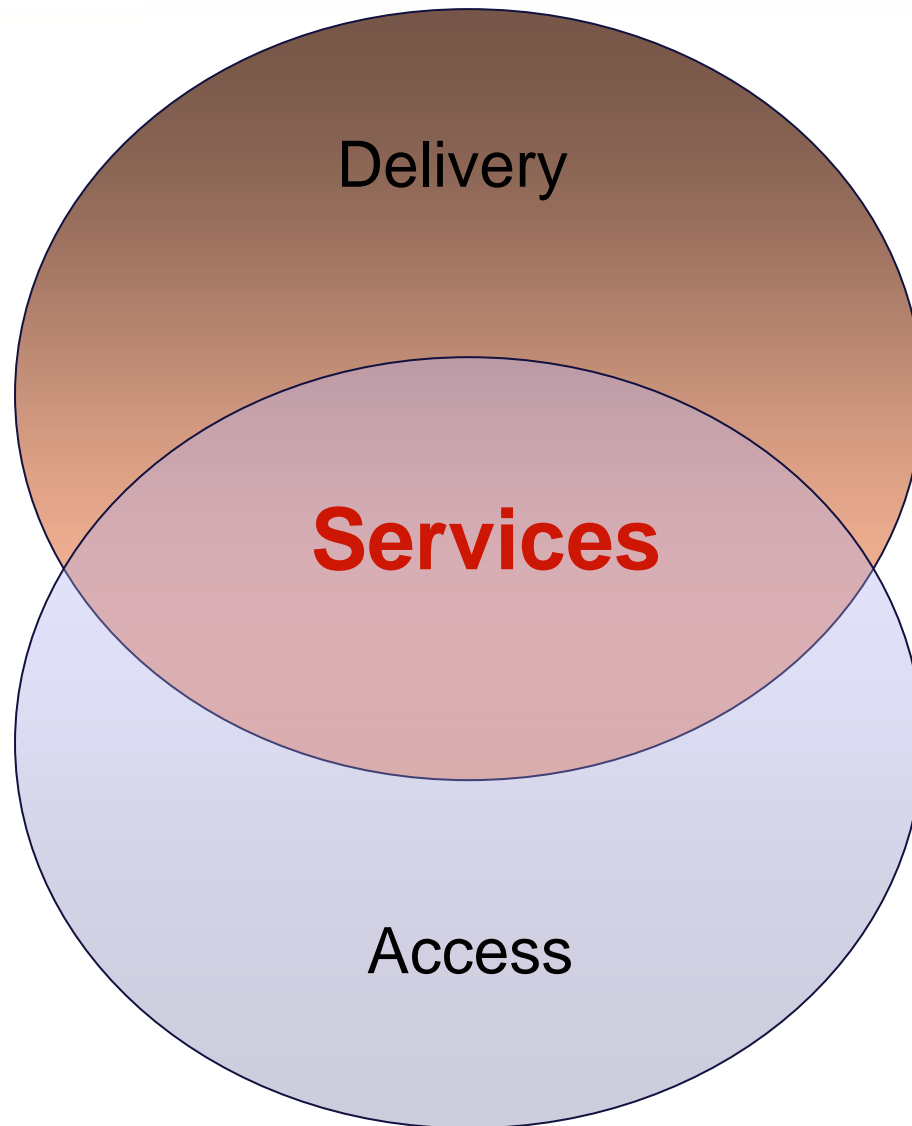


Smart Silos?



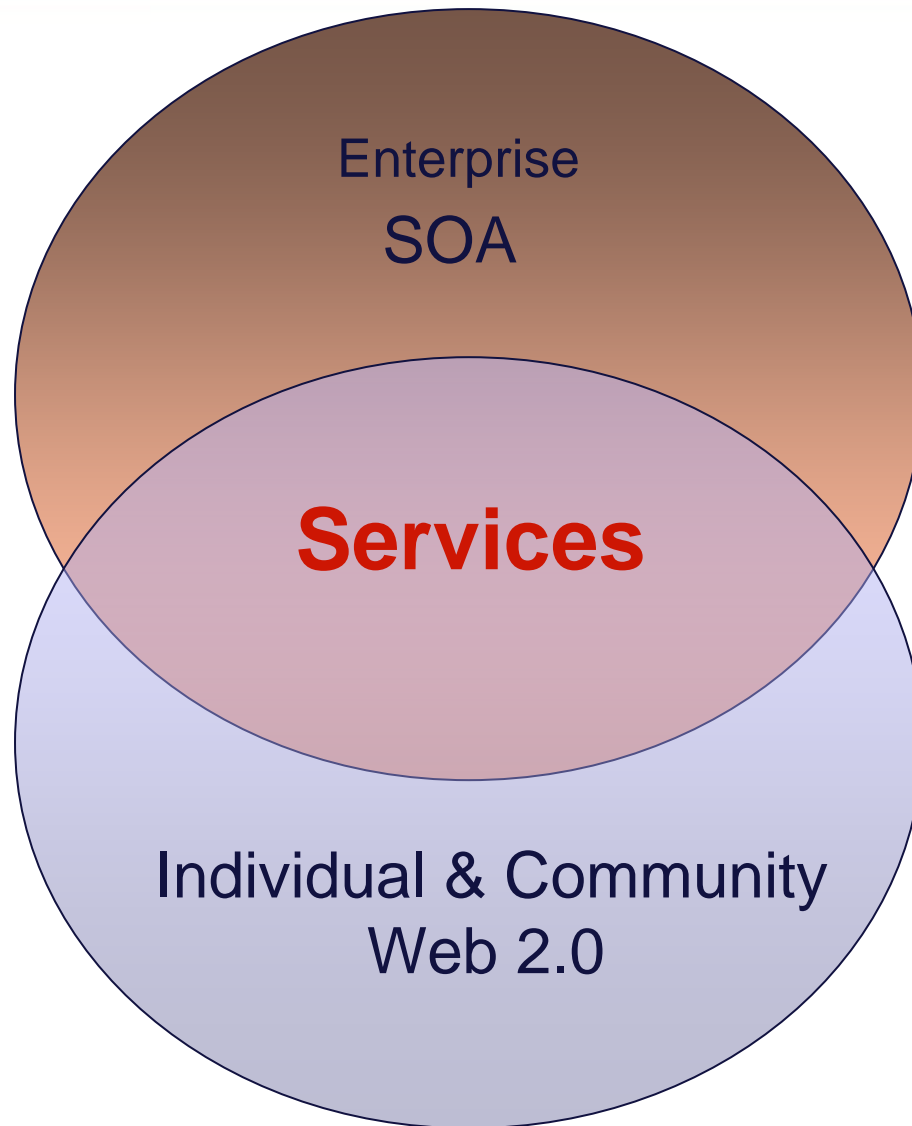


A Buzzword?





A Buzzword?





- Initiative of DEST and JISC (UK)
- Informed by earlier work
 - ELF (e-learning Framework)
 - IMS Abstract Framework
 - OKI
 - LSAL (Carnegie-Mellon)

- Primary goal:

to facilitate technical interoperability within and across education and research through improved strategic planning and implementation processes



A framework for thinking about & documenting
IT systems in terms of component behaviours

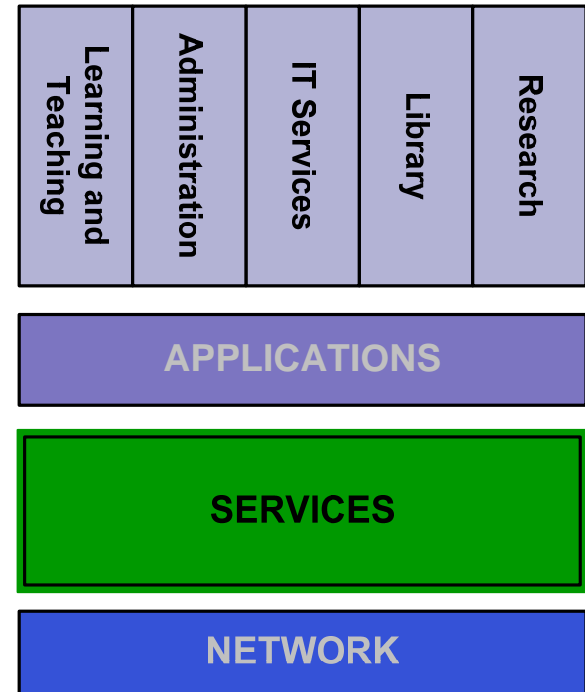
... described as services

and aimed at understanding better the
points at which we need to integrate &
interoperate



Open standards-based interfaces
for interoperability
In a service-oriented environment

The e-Framework analyses and documents
SERVICE INTERFACES





- 'Business' requirements leveraging IT resources flexibly
- Harnessing diverse IT capabilities through 'loose coupling' of discrete components
- Reducing complexity of IT systems development
- Empowering the user
- Connectedness, not silos!



Goals of SCORM

- Interoperability
- Reusability
- Accessibility
- Durability
- Adaptability

e-learning content & delivery systems



Goals of the e-Framework

- SCORM goals ++
- Composability
- Flexibility
- Agility
- Scalability
- Sustainability
- Simplicity
- Integration

Service Exposure,
Access & Delivery
across & within
Domains



www.e-framework.org

- Focal point for dissemination of methodologies, good practice guides & results of analysis
- Register of services & service usage models
- Opportunity for community input & engagement
- Supporting a strategic approach to technical infrastructure development within & across domains
- Provides a consistent technical vocabulary for documenting components & services
- Acts as a catalyst for the development of further specifications & standards



Questions



Thank You!



Questions



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