

The e-Framework from Reference Models to Domain Mapping

JISC Call, September 2006

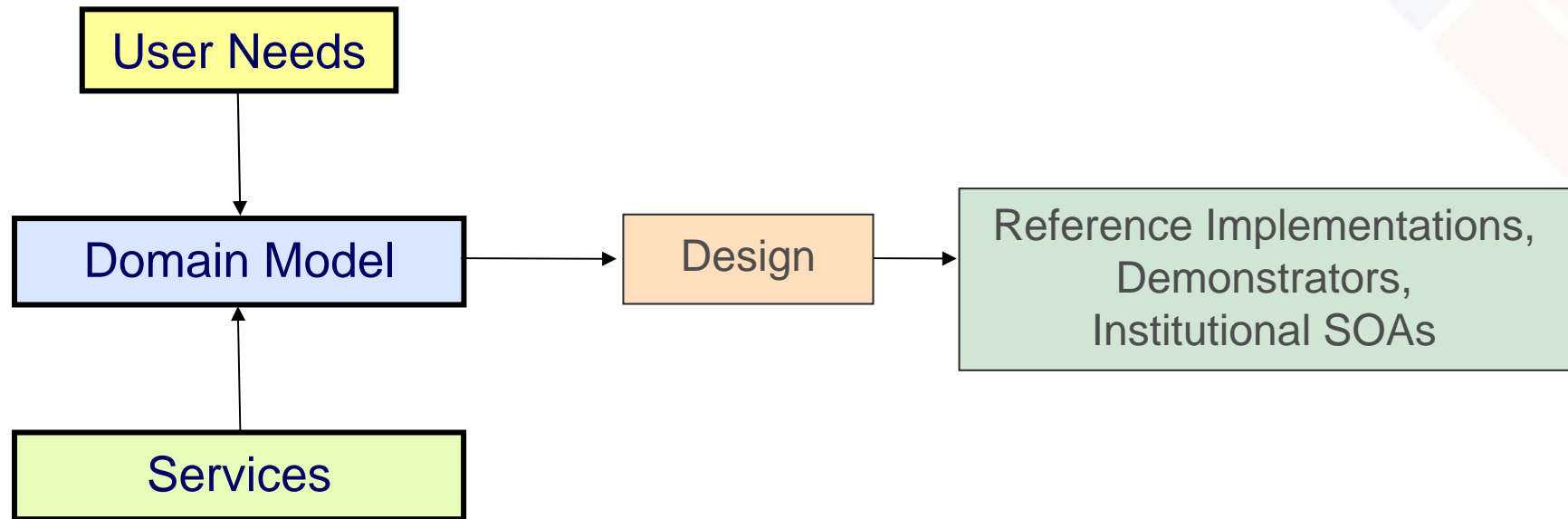
Bill Olivier, JISC

Why “Domain Models?”

Why is it so difficult to specify requirements?

- Introducing new software changes practices & processes
- It's hard to co-design software and new ways of working
- Users don't know what is feasible
- Technologists don't understand the practices
- It's even hard to identify where to apply development
- A dialogue is needed between users & technologists...

The Role of Domain Models



A Domain Model shows how the needs of its practitioners can be met by a set of Services.

A Domain Model may be used to help build Reference Implementations, Demonstrators and/or Institutional Service Architectures.

Domain Models form a Bridge between Users' Needs & Services

What are “Domain Models”?

- A “Domain Model” **bridges** :
 - the World of Users and their Work
 - the underlying Technical Services and their associated Interface Specifications
- We therefore need to make clear:
 - The Human Context:
 - The Machine Context

Why “Domain Models?”

What do developers for a domain need to know?

- Architects need to understand
 - The context
 - The stakeholders
 - the goals, functions and tasks

- Software designers need to understand
 - The roles/users, the tasks to be supported, where and how the software fits in
 - The information model/ data structures
 - the processes and information flows

Why “Domain Models?”

Software for a domain has many commonalities

- Domain Model seek to provide
 - Common features of a Domain
 - Shareable software
 - Interoperable software through common standards
- It thus provides a basis for
 - All future software development in the domain
 - A basis for dialogue between practitioners & developers
 - Identification and focus on where this software is different

What are “Domain Models”?

- The recently completed Reference Model projects identified a number of parts:
 - A human domain map / model / ontology
 - The stakeholders and roles and their goals
 - The functions and tasks
 - The entities used and their relationships
 - The workflows of practices and processes
 - As is (then identify problems and opportunities)
 - To be (innovations &/or improvements)

What are “Domain Models”?

- As seen, recently completed Reference Model projects identified a range of elements:
 - A human domain map / model / ontology
 - The stakeholders and roles and their goals
 - The functions and tasks
 - The entities used and their relationships
 - The workflows of practices and processes
 - The Information models and flows
 - Outline of services needed
- They converge on Domain Models

What are “Domain Models”?

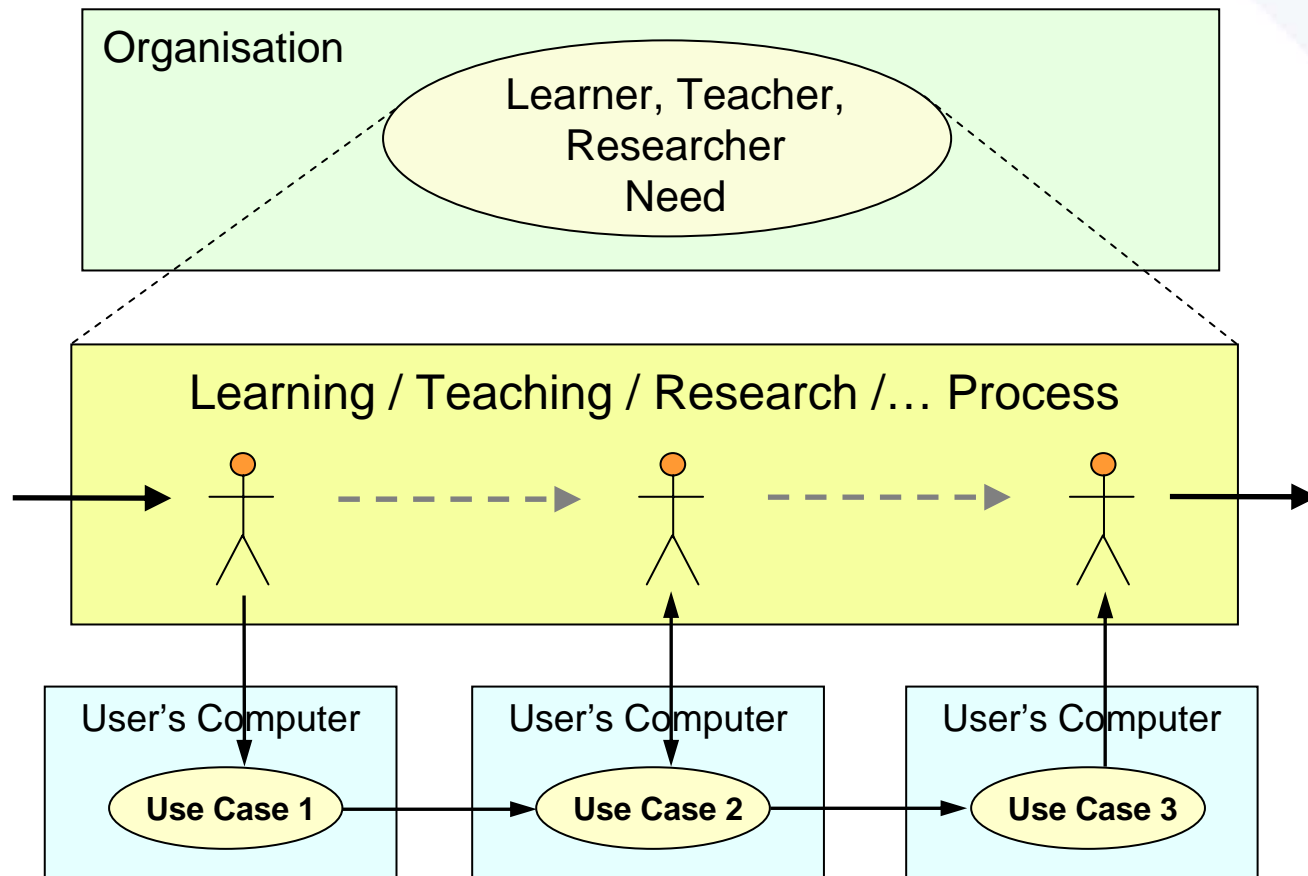
They also have a Technical part

- The user interface, tool or application layer
- The services that lie behind
- Between them: A Co-ordination Layer
 - An “orchestration” of services
 - Several services composed into one
 - A service “choreography”
 - Where multiple services work together without a central organiser, as when working across departmental or organisational boundaries and systems

Domain Models & Engagement

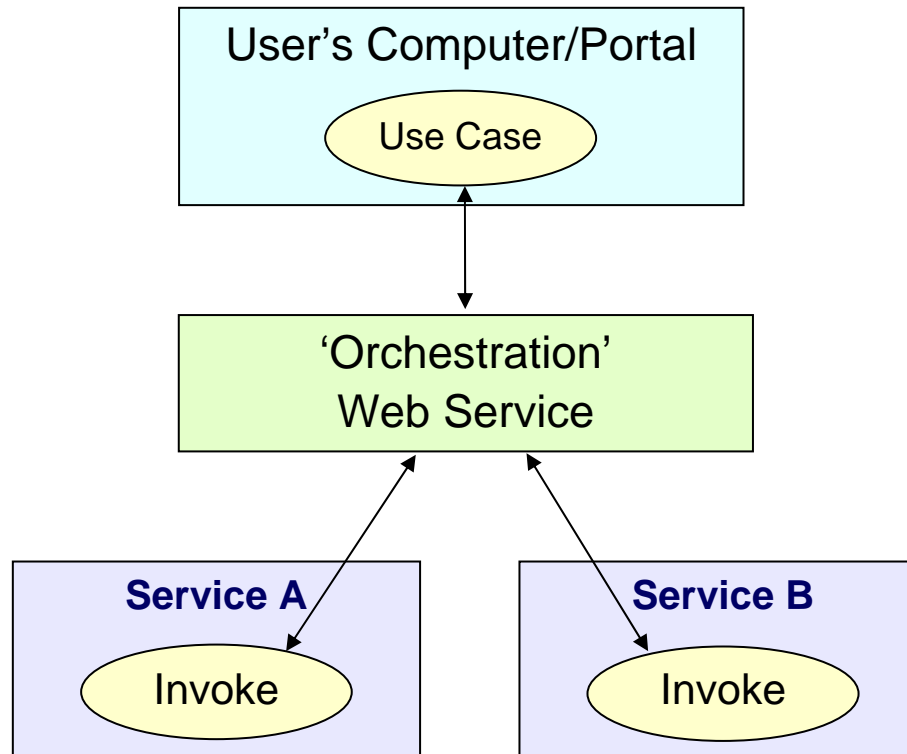
- But how are Needs to be identified?
 - not just for an institution
 - but across a sector
- Need to work with
 - Users
 - Domain Experts and Practitioners
- To Map and Model their Domain, so as to:
 - Reflect on current practices and processes
 - Identify problem areas & new opportunities
 - Set out what is common across multiple applications, as a basis for identifying services

Process Models (Human Level)



Many tasks require several people to work together in a workflow.
In such cases Scenarios & Process Models set this out,
showing how people and computers work together to accomplish the task.

Service Usage Models (Machine Level Processes)



Typically User Tasks need to call on several services.

'Orchestration' standards are emerging for coordinating a set of services.

We call a coordinated set of services a 'Service Usage Model'.

More Elements of a Domain Model

- Stakeholders & Roles Who?
- Aims & Goals Why?
- Information Models / Ontologies What?
- Functions / High Level Tasks What/How?
- Scenarios How?
When?
Where
- Practices & Process Models How?
- Use Cases & Use Case Models How?
- ICT System Model Where?

Documented by:

Service Usage
Models

- Domain, Information, Process and Service Usage Models

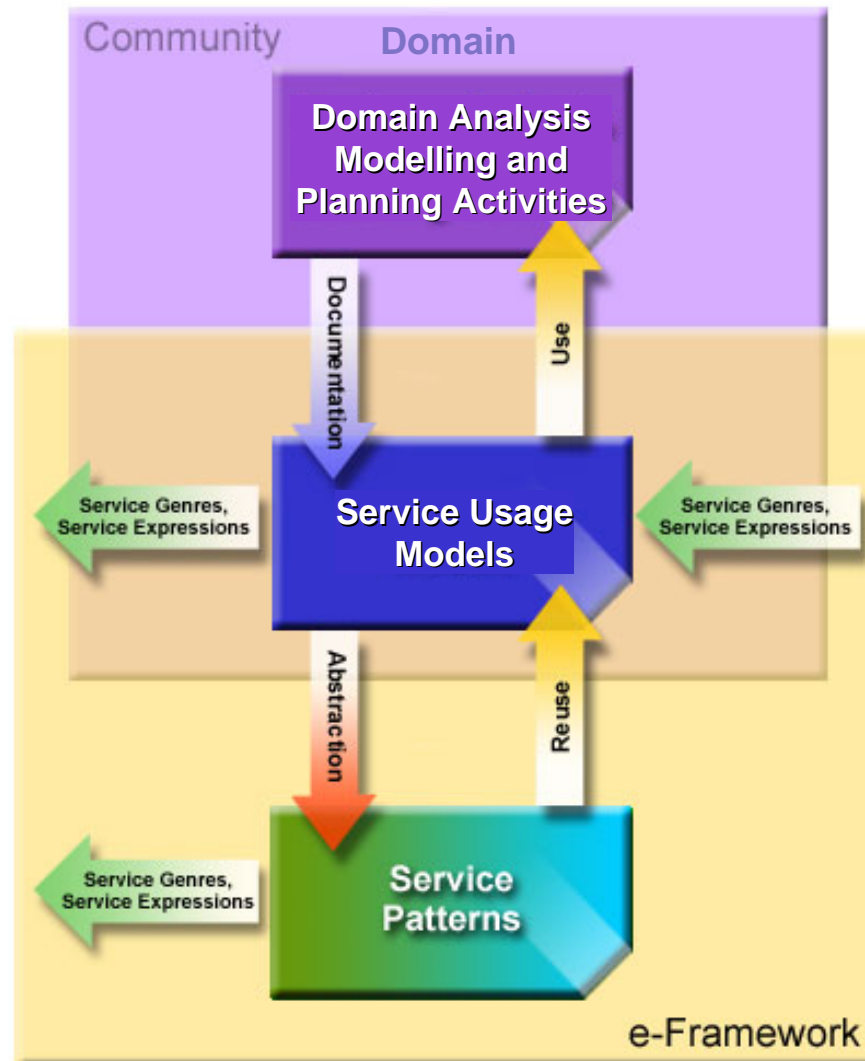
Services

- Services: definitions and descriptions

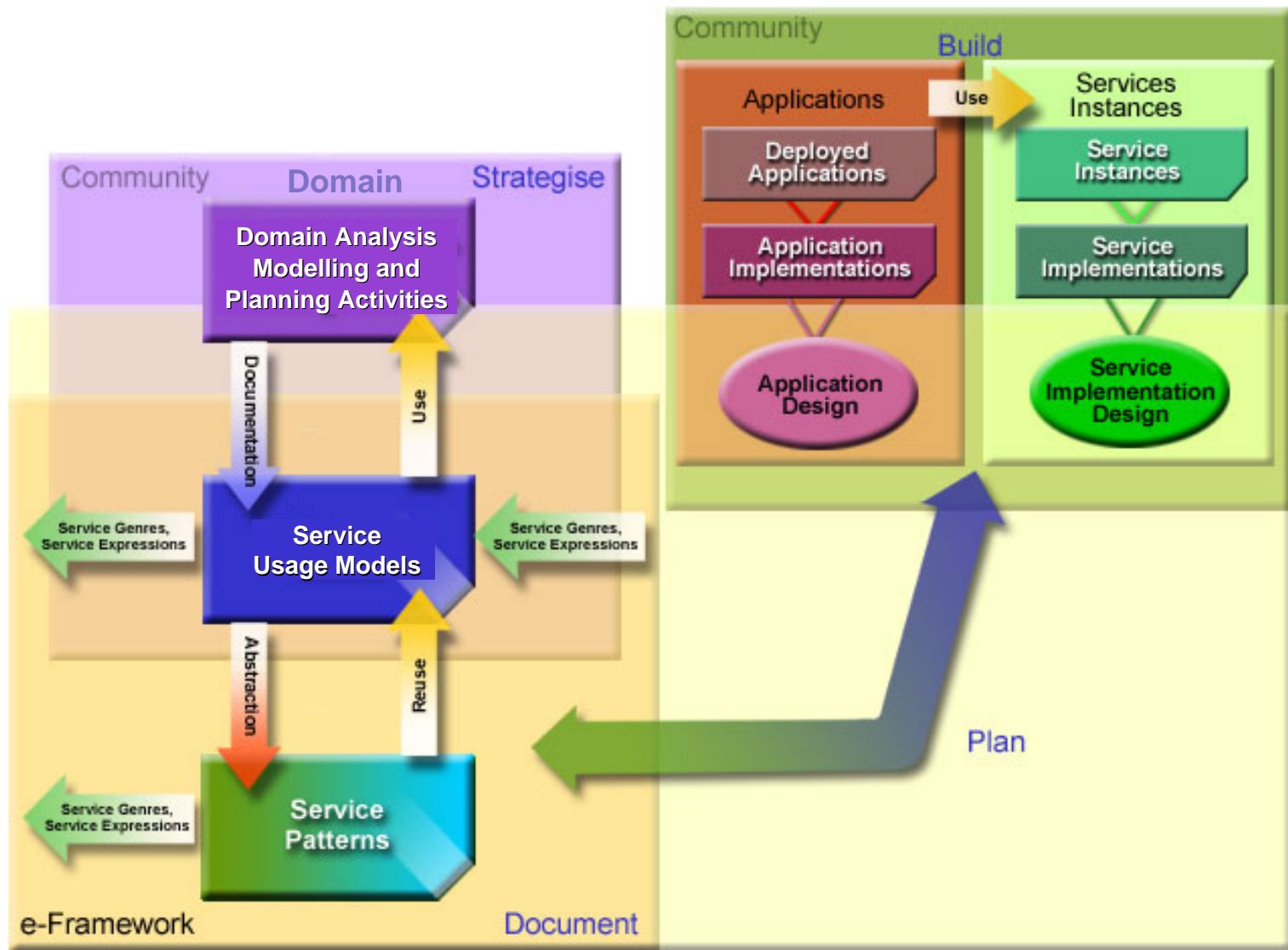
Guides
Methodologies
and Analysis

- Guides, Methodologies, Analysis

Domain Modelling Processes



Community use of the e-Framework



- Simple use case:
 - Several systems need to notify users
 - Users have different ways in which they can or need to be notified
- E-Framework has service genre:
 - 'Alert Users'
 - “Alerting services provide a mechanism by which information relating to an event can be sent to a human for attention”
 - Handles various message formats

- 'Alert users' genre has one service expression:
 - OASIS Common Alerting Protocol
 - No particular binding
 - For emergency services
 - But: some useful semantics

In short: roll your own, with some guidance...

- Your 'Alert user' service expression can make use of:
 - Service genre: 'Message user'
 - Service expression: XMPP
 - Service Implementation: Jabber
 - Service Instance: Google Talk server
 - 'E-mail transport'
 - SMTP
 - Sendmail
 - smtp.nottingham.ac.uk:25

3 Questions to Address:

HOW DO WE MODEL OUR WORLD?

- How can you identify and work most effectively your **communities of practice** (*which communities?*) to articulate their current, tasks, practices and processes, information models, ICT systems and capabilities?
 - How do you help them reflect on these to **identify critical problem areas...**
 - ... and work with developers to **identify new opportunities?**
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HOW DO YOU / WE DEVELOP OPEN SERVICE SPECIFICATIONS?

- How do you / we work **through our programmes AND with our partners** (funders, industry, standards bodies, OSS foundations) to define the many **open service specifications** that are needed to fill out the e-Framework?
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HOW DO WE SUPPORT ADOPTION?

- How should we be **supporting institutions** adopting a service oriented approach?
- How can we **share experiences?**
- How should we **communicate** successes (and failures) more widely?

WS Toolkits & APIs

Client Adapter



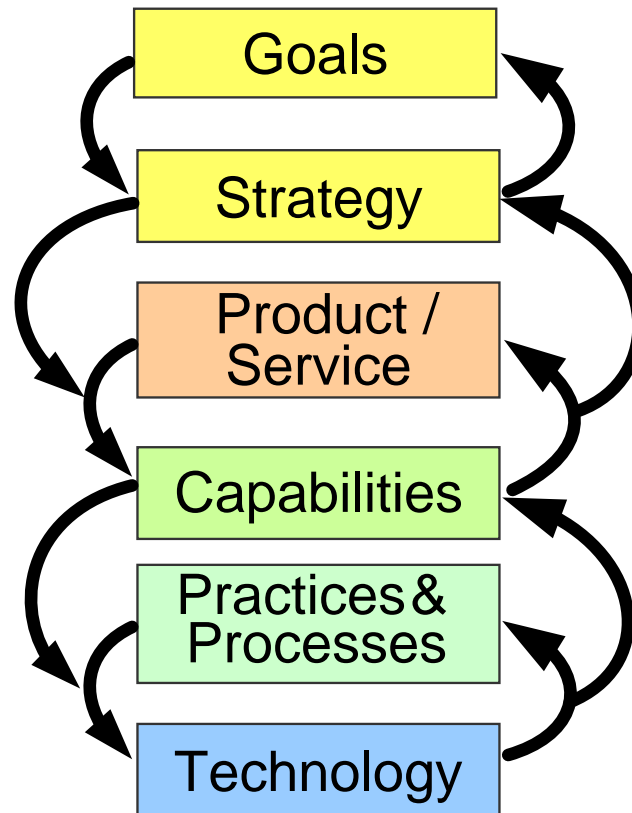
Service Adapter



Technology Push / Demand Pull

How should we balance / integrate Technology Push & Demand Pull?
 How should we link funded development with institutional strategies?
 How should we link institutional strategies with funded development?

Goals and Needs
 of the
 Organisation
 create Demands
 that cascade
 down and
 determine what
 is required of the
 Technology



New
 developments
 in Technology
 offer new
 Opportunities to
 do New Things
 or do things
 more Effectively
 or Efficiently and
 may need new
 Strategies or Goals