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ANSA Phase III

Information Services Framework overview presentation

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Abstract

This document is a presentation to give an overview of the Information Services Framework. It gives the background to the work, and a brief description of the objectives for the work, the strategy chosen to achieve those objectives, and the tasks that being carried out.

Current web technology makes accessing internet resources extremely easy; creating and managing these resources is much, much harder. The objective of this work is: to make it easier to manage and create new resources; and to make it easier to extend the functionality of the web.

The presentation looks at commercial application which uses current web technology; it shows how the technology being developed in the ANSA project would make building such an application much easier and opens up the possibility of much richer functionality than is possible now.

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Project Management (confidential to ANSA consortium for 2 years)

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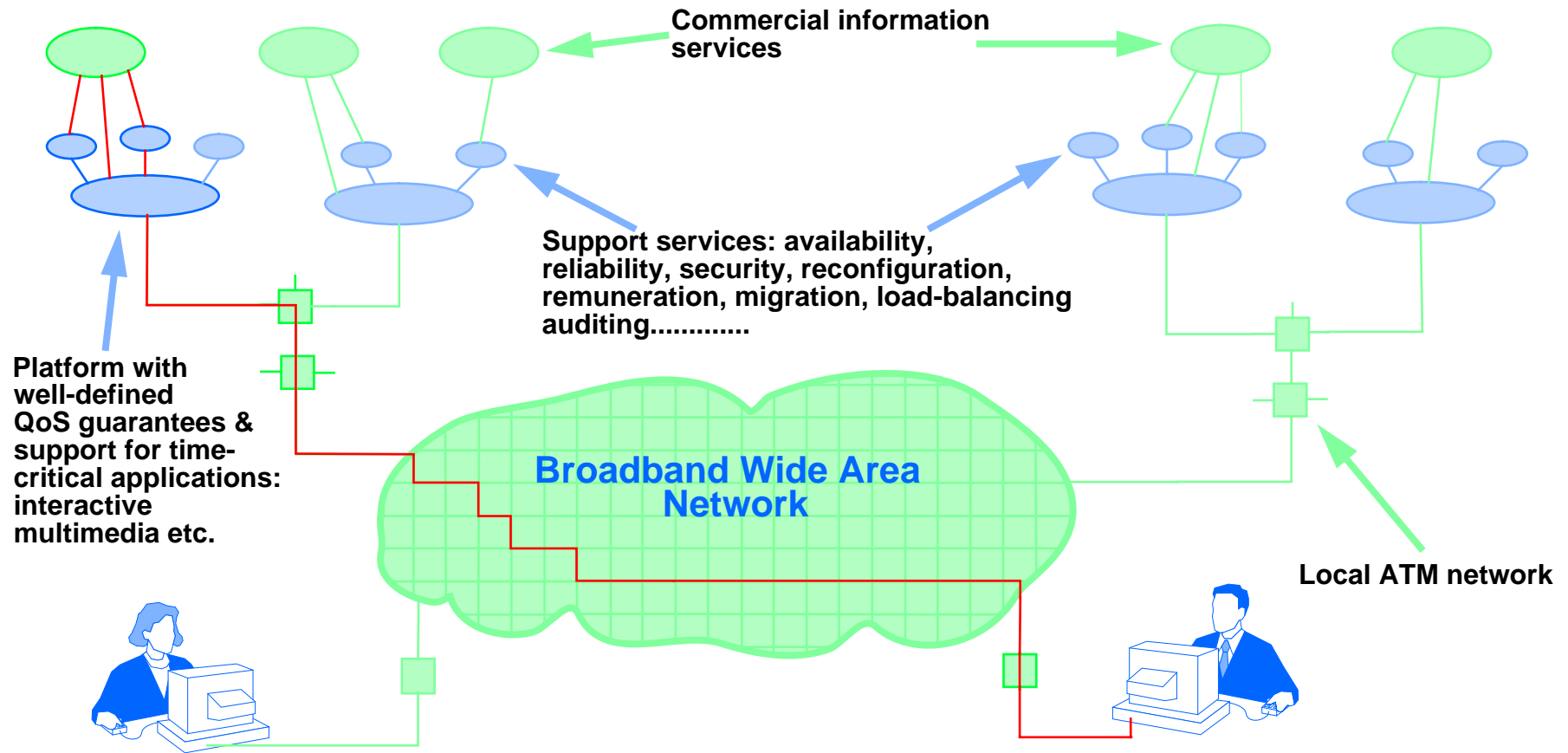


Information Services Framework Overview

Nigel Edwards

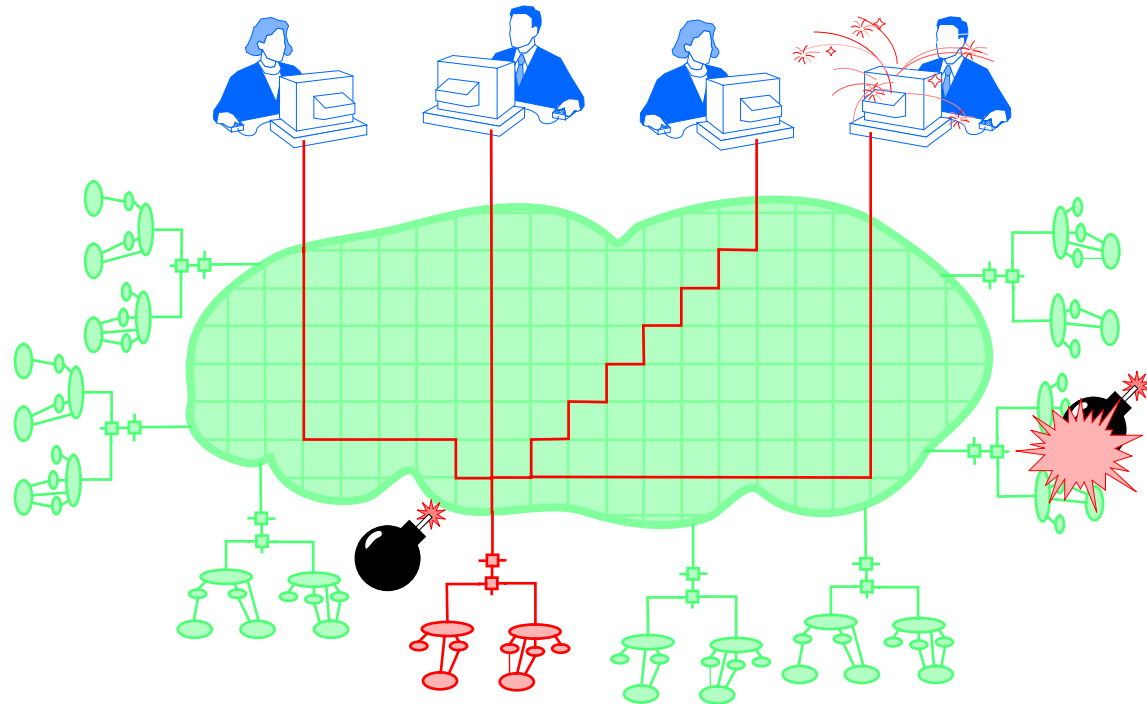
Owen Rees

Business using a broadband network



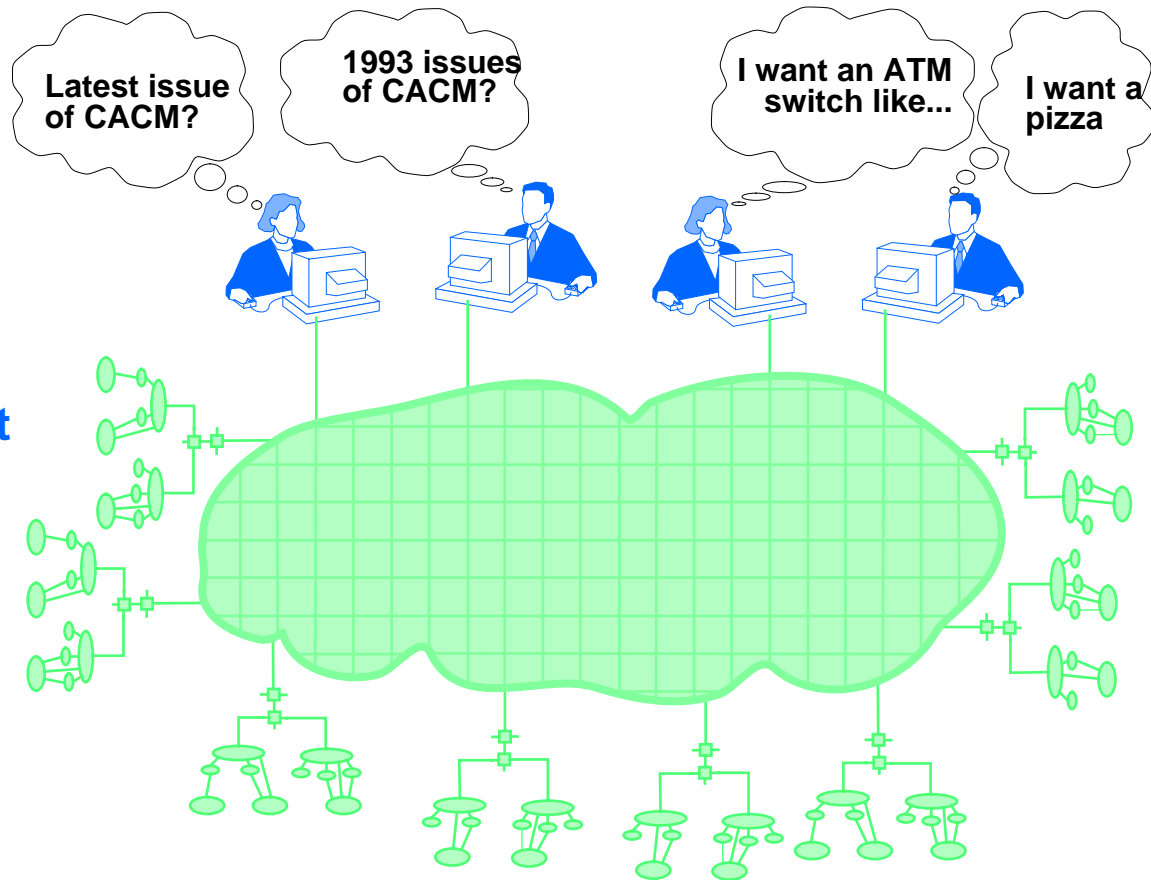
Technical Challenges

- Resource control
- Dependability
- Interactive Multi-media
- Ubiquitous connectivity
- Security
- Remuneration

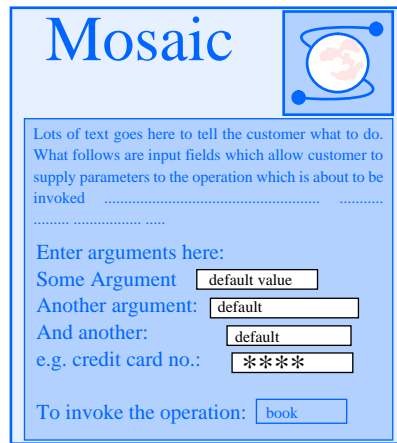


Technical Challenges (continued)

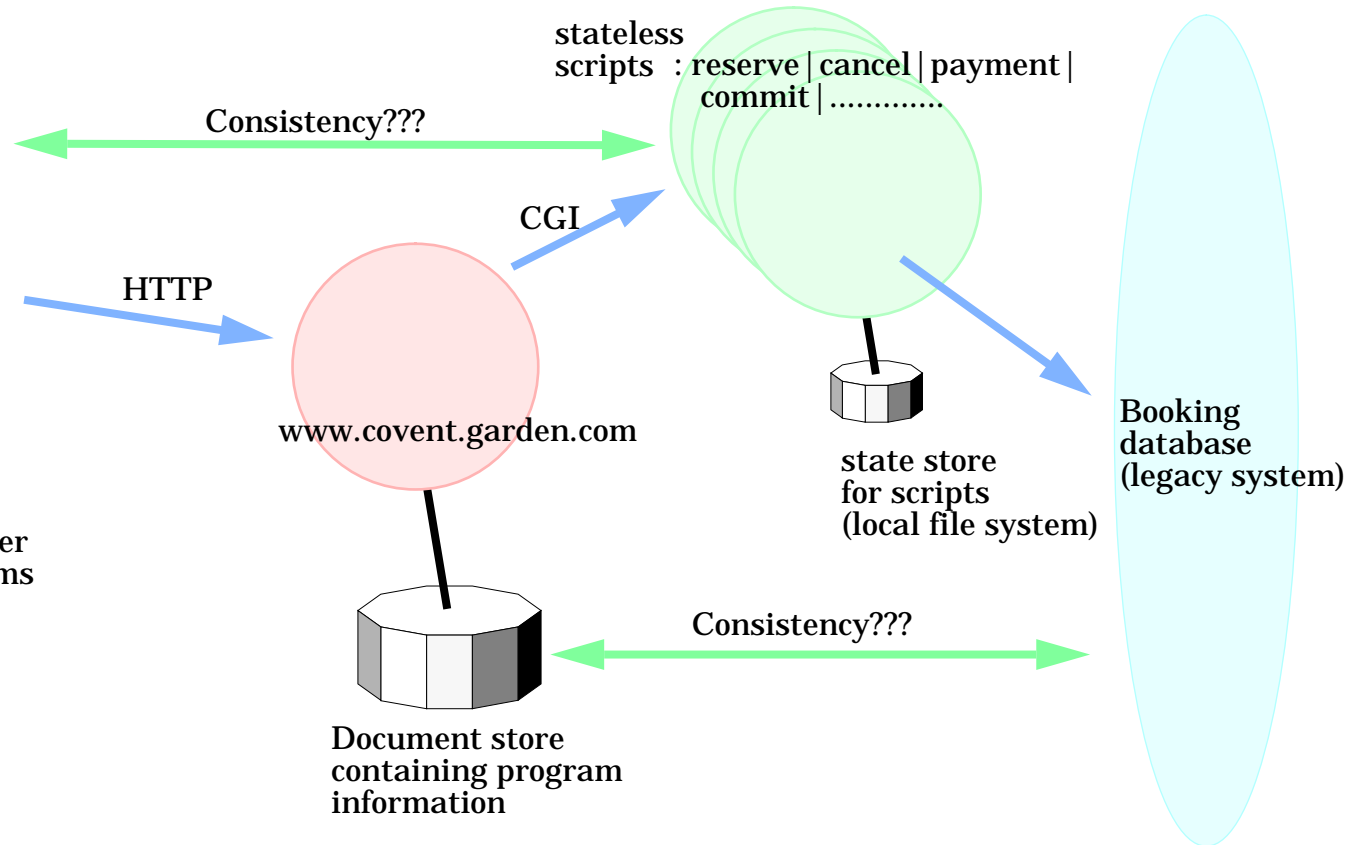
- Trading & naming
- Agents & brokers
- Fast service development & deployment
- Multi-party, federated collaboration



A “commercial” application



User interface: a web browser (e.g. Mosaic) using html forms

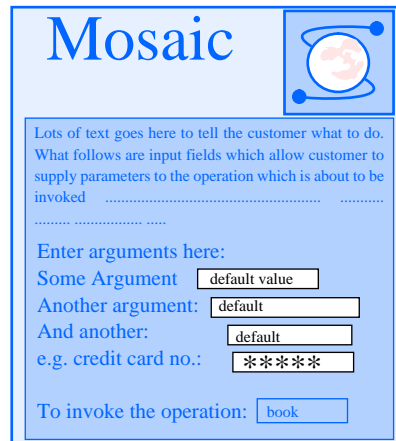




Notes for previous slide (not for presentation)

- Scenario: booking theatre tickets for various performances during a season — one payment at the end of the interaction
- Allowing customers to browse marketing material on forthcoming attractions would be easy — the web is well suited to this.
- Extending the functionality to allow bookings (possibly for multiple performances) is much more difficult — the only way of doing it now is to use scripts.
- Creating and managing the marketing material would be difficult (scripts which are external to the server would be needed to keep the document store & database consistent).
- Currently server/browser interaction uses HTTP - an RPC protocol. Server script interaction takes place using CGI: a protocol running over (unix) pipes.
- Even though HTTP has “PUT” and “POST” methods for creating and replacing resources, these are usually implemented by scripts external to the server, because the precise semantics of creation etc. is usually very dependent on the local environment. It is harder to implement with a “one-size” fits all implementation inside the server itself.
- It is hard (error prone) to write the code to unmarshal the parameters to the scripts.
- A script gets “forked” each time it is invoked, so state has to be stored externally.
- Scripts are driven by forms technology; no notion of bespoke client application.
- Bespoke client applications are crucial to take advantage of functionality enhancements and for market differentiation.
- Effort is required to keep scripts and the html forms which drive them consistent with each other.

New technology



Mosaic

Lots of text goes here to tell the customer what to do. What follows are input fields which allow customer to supply parameters to the operation which is about to be invoked

Enter arguments here:

Some Argument

Another argument:

And another:

e.g. credit card no.:

To invoke the operation:

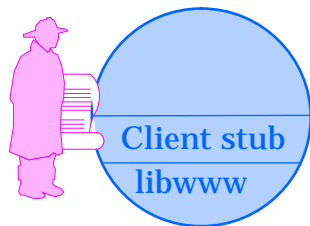
HTML forms automatically generated from IDL for script by stub compiler

Scripts described using IDL: marshalling code generated by stub compiler

HTTP Server

(booking database)

A Fully extensible HTTP Server: "scripts" appear as HTTP extension methods



Bespoke user interface
Stubs generated from IDL by stub compiler



Notes for previous slide (not for presentation)

- Much of the code for the scripts is now generated automatically from the IDL description of the services they provide.
- Template HTML forms can also be generated from the IDL — just need to add explanatory text.
- Hence we have partially solved the consistency problem between forms and scripts.
- By making it easier to write scripts we have also helped to solve the consistency problem between the document store and the database.
- It now becomes easy to write a bespoke client application the complexity is hidden by the client stubs — we have a web client which is a 2 line C program.
- Folding the scripts into the HTTP server allow choice between stateful and stateless interaction; improves performance because scripts are no longer forked each time they are invoked.
- We assume everybody has a browser; in general not everybody is going to have the bespoke client application — this means that it needs to migrate to the customer using agent technology.
- All interaction will bootstrap off browsers which are ubiquitous.
- Longer term objective: the bespoke client should be able to deliver real time media allowing the customer to view trailers of the film or video clips of the performance.



Information Services Framework — Summary

- **Objective:** “Develop the concepts and infrastructure needed to manage information services in the global network”
- **Strategy:** Apply ODP and CORBA experience to Internet
 - ODP concepts to identify technical challenges
 - CORBA technology to demonstrate solution framework
- **Tasks**
 - Building a distributed object oriented programming environment for WWW
 - Resource management (resource naming and meta information)
 - Scripts and Agents (extensible WWW servers and clients)