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ANSA Phase III

Re-engineering the WWW Infrastructure

Owen Rees

Abstract

There is currently a great deal of concern about the performance problems of the HTTP protocol used by the World Wide Web. It is perceived as an obstacle to providing high quality information services economically.

In order to resolve these problems, it is necessary to design, implement and deploy a protocol that offers better performance than the current HTTP. There are proposals both to modify the existing HTTP, and to develop HTTP-NG to replace it.

This presentation for the ANSA TC describes the problem with HTTP, and how it can be solved.

APM.1482.01

Approved

22nd May 1995

Project Management (confidential to ANSA consortium for 2 years)

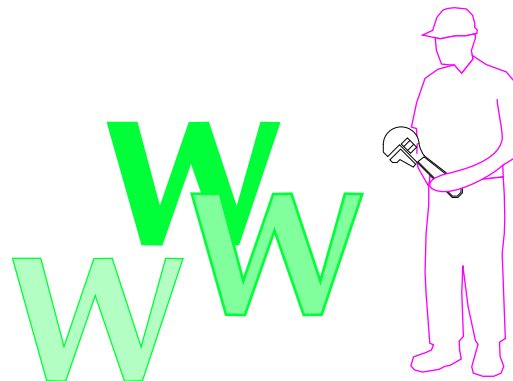
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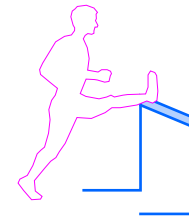
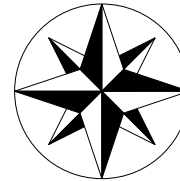
Re-engineering the World Wide Web

Owen Rees

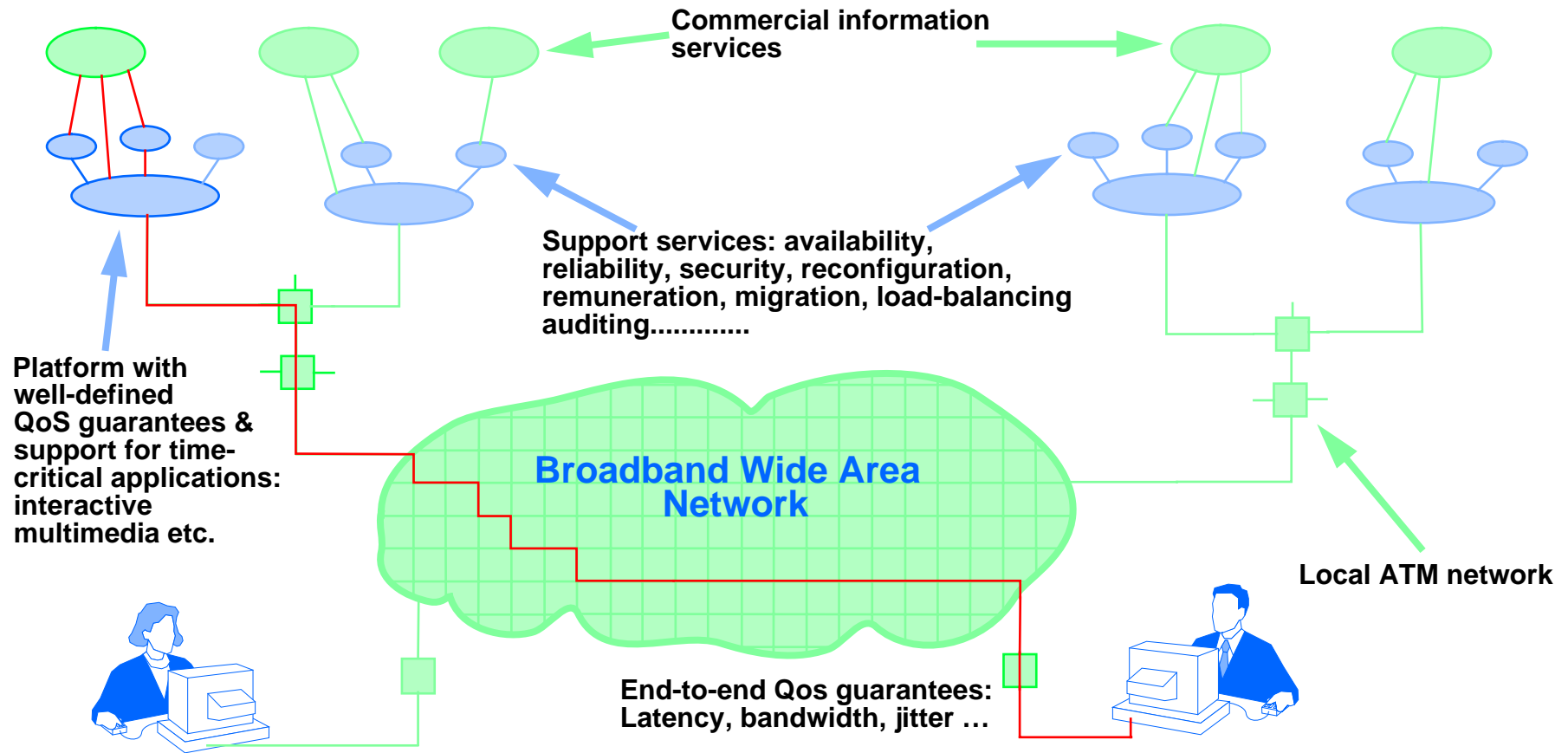


Overview

- The vision
- Where we are today
- Obstacles
- Solving the problems
- Critical success factors
- Re-engineering WWW
- What have we done so far
- What next?



The vision - where we want to be in the future

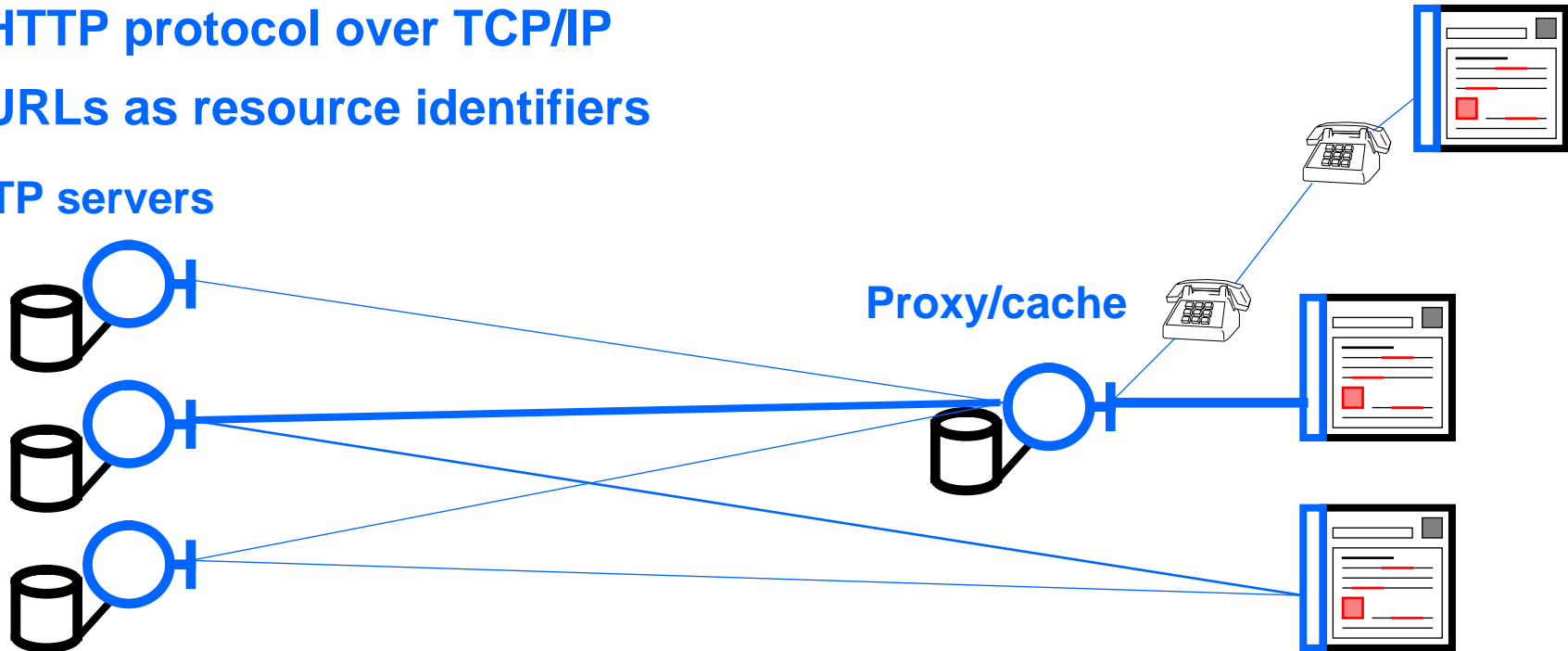




Where we are today - World Wide Web

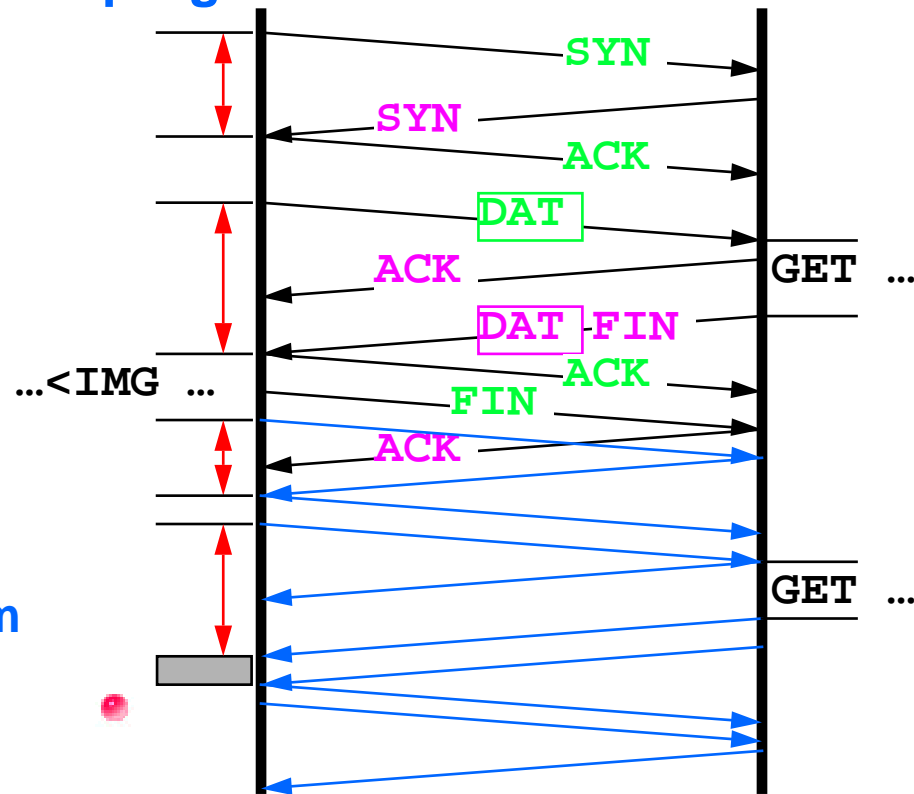
- IP network
- HTTP protocol over TCP/IP
- URLs as resource identifiers

HTTP servers



Obstacles

- **problems in WWW that obstruct progress towards the vision**
- **IP network**
 - variable delays
 - IPng will be better
 - *if new facilities are used*
- **HTTP protocol over TCP/IP**
 - latency problem
 - connection per item
 - TCP slow start every time
 - large overhead for small item
- **Other problems**



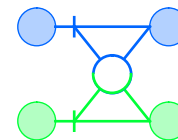
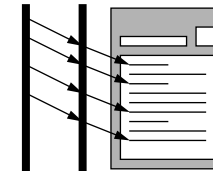
Solving the problems

- **current proposals**
 - **Connection: keep-alive under consideration for HTTP 1.1**
 - **HTTP-NG – new protocol connection management, security, meta-information, marshalling, pre-emptive delivery, ...**
- **ANSA preferred approach**
 - **Use distributed system/RPC experience**
 - **architecture**
 - **type framework for extensions**
 - **available technology**
- **A step towards the vision**

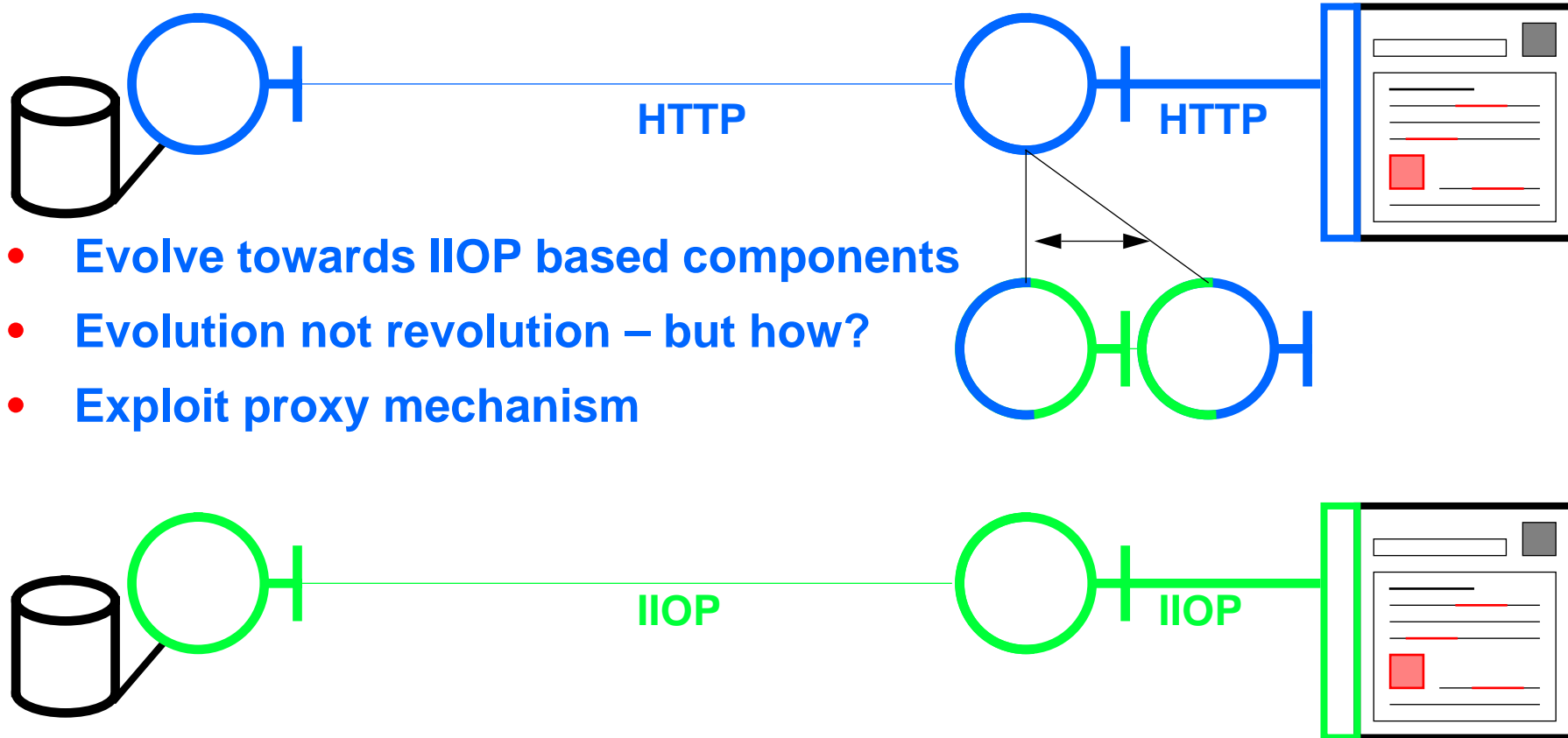


Critical Success Factors

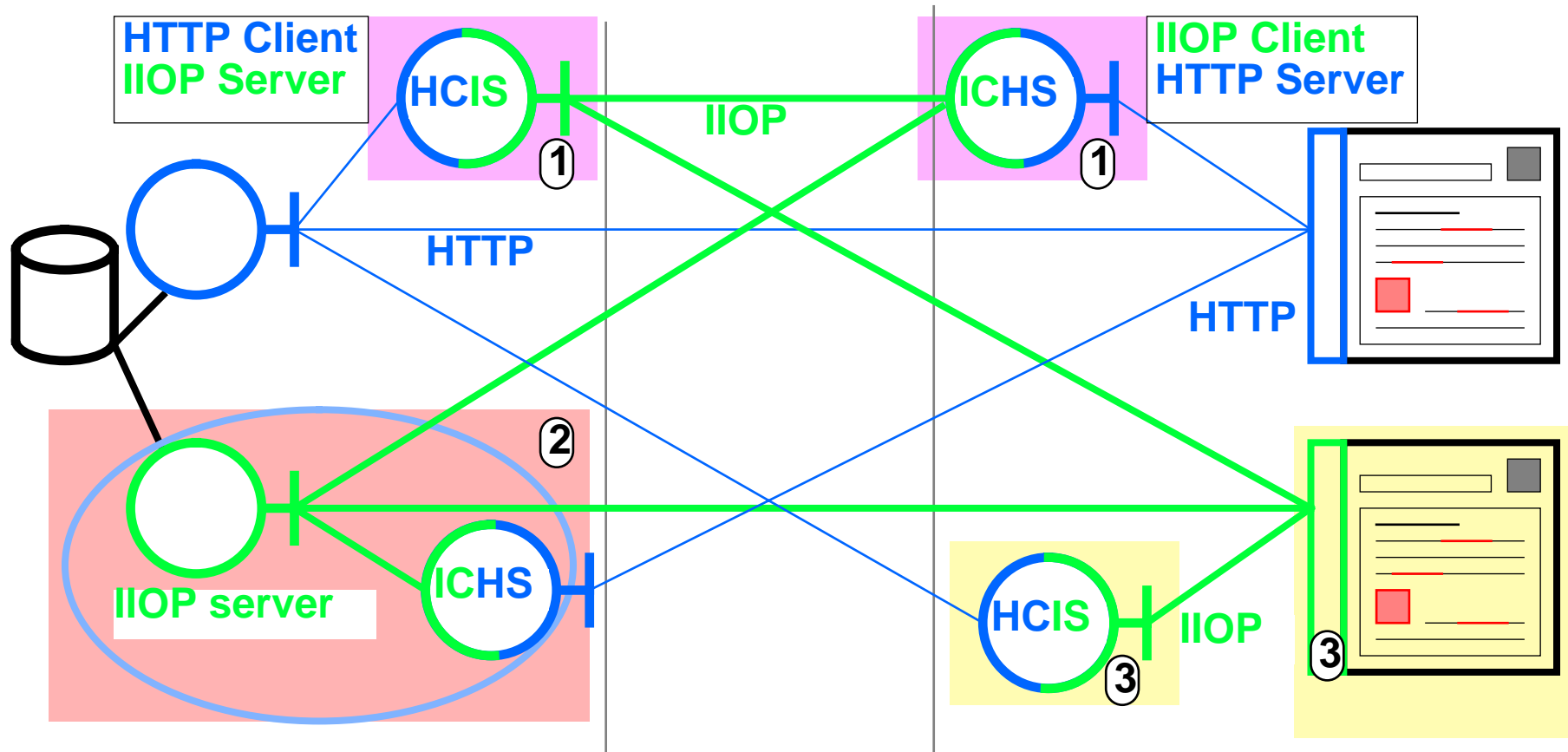
- **Time is of the essence**
 - the **W**orld will not wait
- **Anything you can do, I can do better**
 - must not lose any HTTP functionality
 - render as data arrives?
- **Availability**
 - basic version available free by FTP
 - all platforms – portability
- **Interoperability**
 - must interwork with HTTP



Re-engineering WWW with CORBA-IIOP

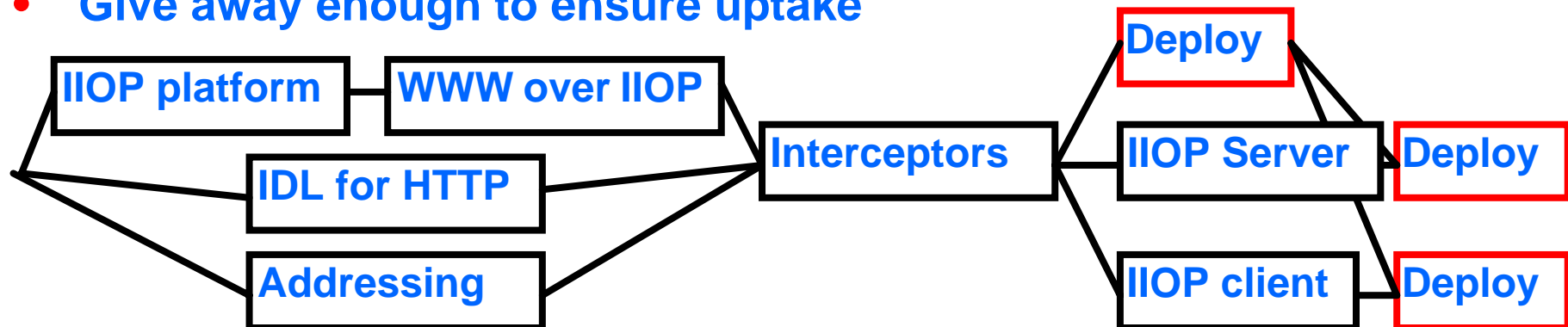


Overview of the evolution path




Strategy

- WWW over ORB – use IIOPIIOP
 - Sun Inter-ORB Engine – free
- Components – interceptors (proxies)
- Interoperability
 - HTTP methods in IDL
 - Addressing – HTTP URL but IIOPIIOP transport
- Give away enough to ensure uptake



Design issues

- **Stream behaviour**
 - render as data arrives, concurrent retrieval,  stop button
 - extend IDL, IIOp?
 - IDL for HTTP depends on solution
- **Addressing**
 - resource named relative to protocol by URL
 - how do we know that IIOp is available?
 - migration to URN is the same problem, not a solution
 - compatible with metadata in URCs objectives
- **What else?**



Implementation

- Sun Inter-ORB Engine available as base
- Improve portability
 - GNU autoconf for Unix, need Windows, Mac too
- Implement basic interceptor
- experiment with stream and addressing strategies

Testing

- Help wanted! – remote sites needed for proper tests

Deployment

- make code available
- run a service – we will, but we need bigger sites too




Getting other people to use it

- **Publicity is essential**
 - “You don’t have what you can’t find”
 - benefits must be explained
 - why should a busy webmaster bother?
- **Timing of the announcement**
 - too early – seen as vapourware
- **present at WWW conf in December**
 - submit paper by July 17th.
 - code must be available soon after
- **Short timescale**
- **Relationship to IETF standards?**

News of the Web
Objects on the Web

In a shock announcement today, distributed systems consultants ANSA revealed a strategy for migrating the World Wide Web onto OMG CORBA “The Web needs distributed objects; we have the technology, and an architecture to go with it” said ANSA Chief Architect An-



drew Herbert. Web experts are concerned about the resurces used by HTTP, and this announcement offers the



What Next?

- Write paper
- Implement interceptors
- Solve stream and addressing problems
- So much to do, so little time

Champions needed

- To interpret the idea for your company
- To collate feedback
- Contact for testing, deployment