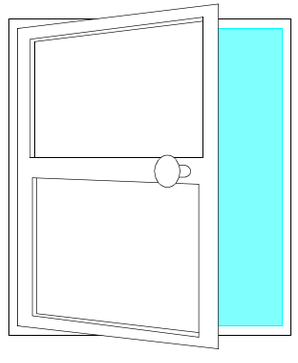
An Introduction to ANSA



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Agenda

- A view of the IT marketplace
- The ANSA vision for exploiting current and future technologies
- New technical requirements that these pose
- How ANSA is tackling these new challenges

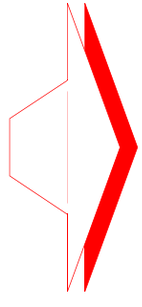
The Hidden Persuader in Open Systems

ANSA

Harvest research

Build on current technology and open standards

Intercept new requirements



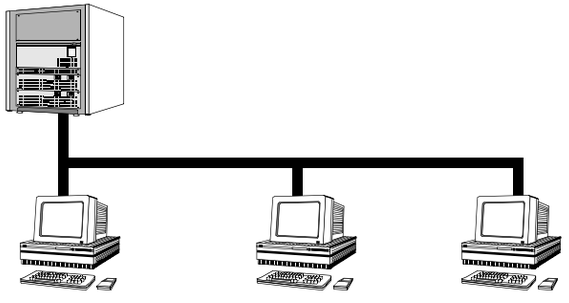
Vision

Architecture

Technology

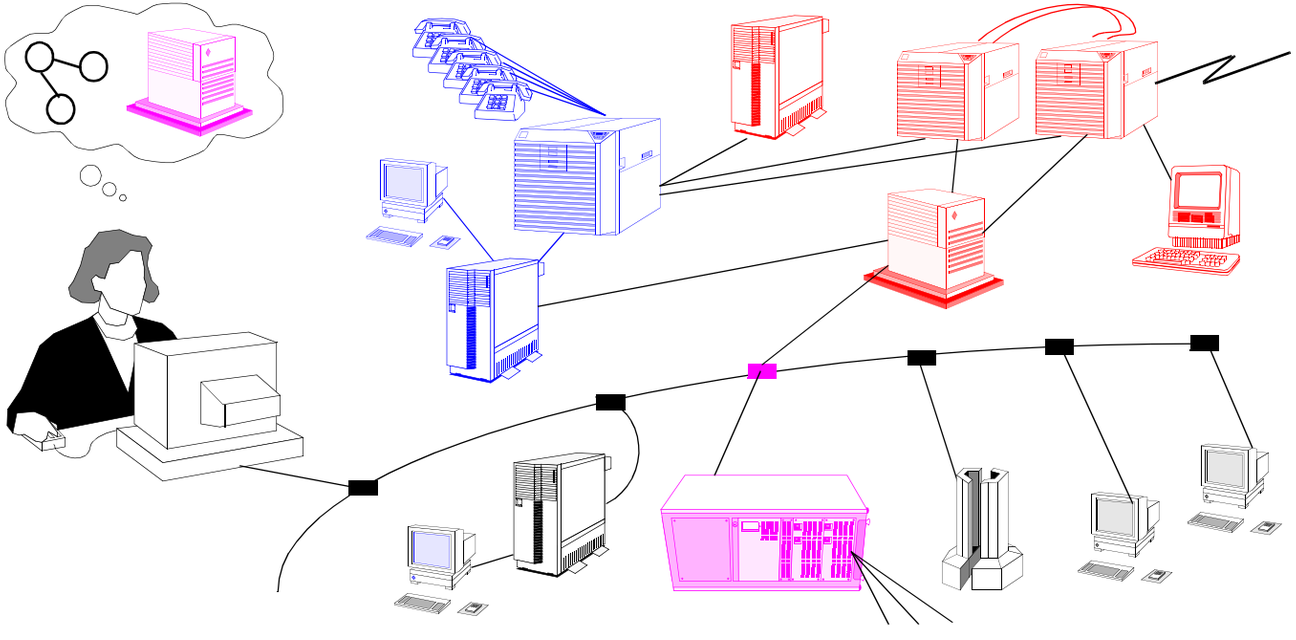
Standards

Issues for Client-Server Systems



- **Scalability**
  - **can the system expand as needed?**
  - **can the system be deployed in small and large configurations?**
- **Interoperability**
  - **can the system interwork with other systems?**
- **Dependability**
  - **can the system be made reliable and secure?**

Distributed Systems in the Real World



What's different about distributed systems

- **Diversity (heterogeneity)**
  - many types of hardware platforms, networks, operating systems, applications,...
- **Legacy**
  - many versions of software
- **Decentralization**
  - many points of control in many organizations

plus all the client-server issues on a large scale

Different policies for different applications

- ***Availability* versus *Consistency***
- ***Autonomy* versus *Uniformity***
- ***Security* versus *Convenience***
- **... and many other unavoidable trade-offs**

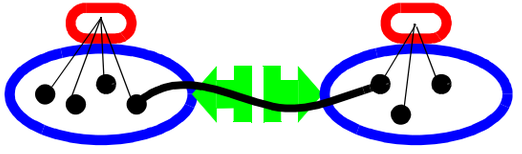
Technical challenges for distributed systems

- **Distributed systems have different properties to centralized systems**
- **Different applications need different solutions**
- **Unnecessary complexity should be masked from the applications**

The ANSA Architecture

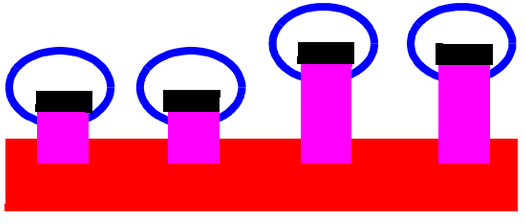
Trading and Federation

Controlled interoperability



Selective Transparency

One size does not fit all

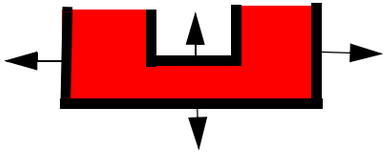


Abstract & Automate

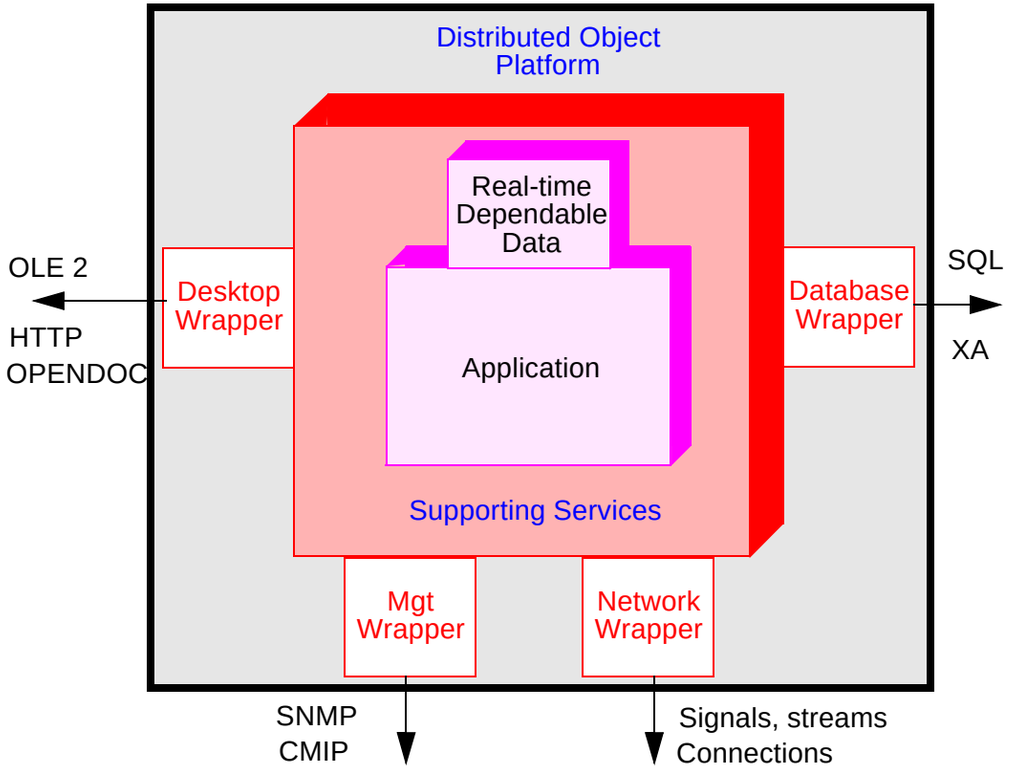
Tools replace APIs

Modular Engineering

Plug and play infrastructure

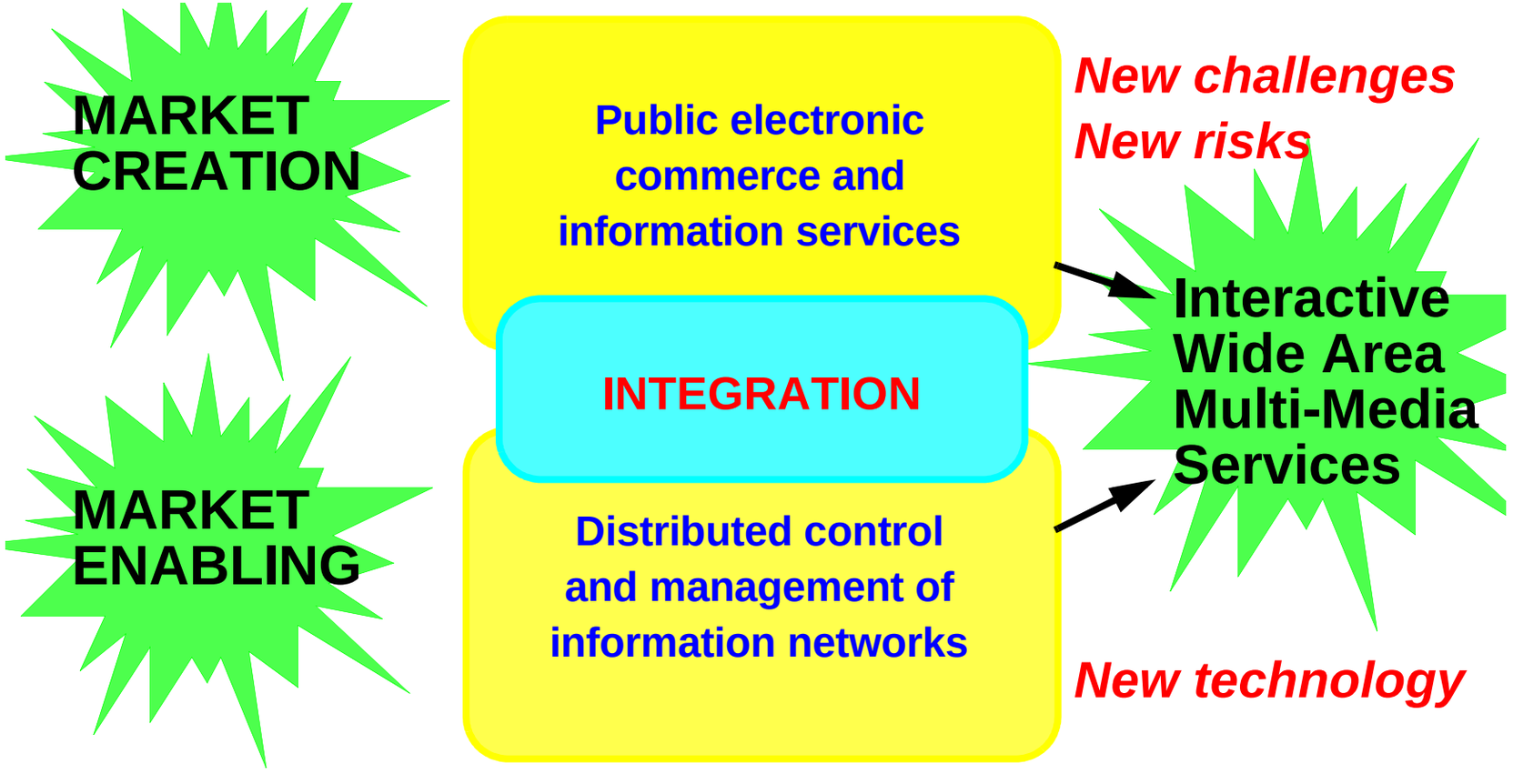


Distributed Object Environment for Open Systems

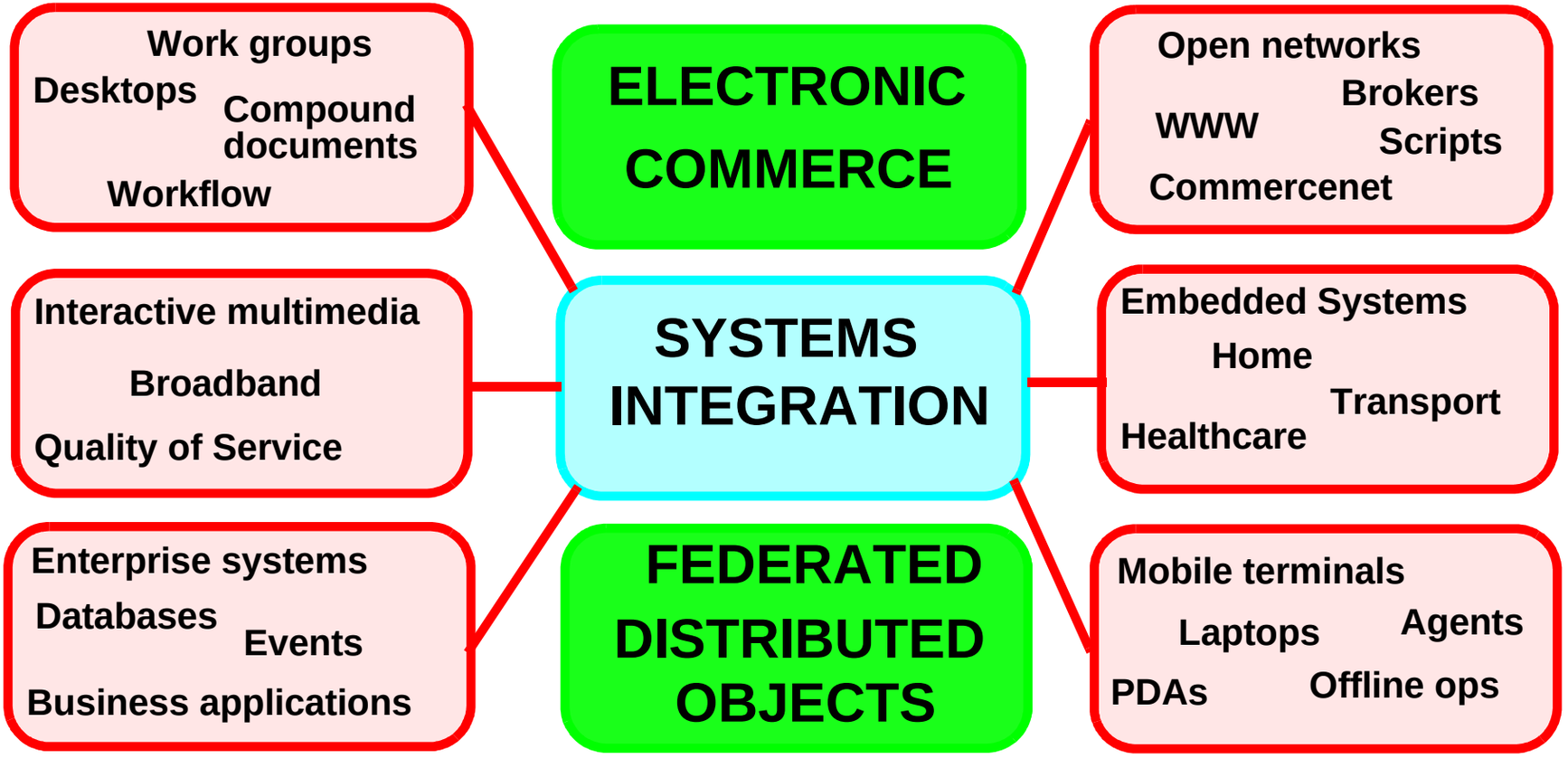


- **Information service system**
- **Business process support system**
- **Systems management system**
- **Interactive multi-media system**

The Market


MARKET CREATION
MARKET ENABLING
Public electronic commerce and information services
INTEGRATION
Distributed control and management of information networks
New challenges
New risks
New technology
Interactive Wide Area Multi-Media Services

ANSA Vision


Work groups
Desktops
Compound documents
Workflow
ELECTRONIC COMMERCE
Open networks
Brokers
WWW
Scripts
Commercenet
Interactive multimedia
Broadband
Quality of Service
SYSTEMS INTEGRATION
Embedded Systems
Home
Transport
Healthcare
Enterprise systems
Databases
Events
Business applications
FEDERATED DISTRIBUTED OBJECTS
Mobile terminals
Laptops
Agents
PDAs
Offline ops

New Requirements

Interactive Multi-media

Performance

Video/audio

Multiparty

QoS control

CORBA++

Open Networks

Federated naming

Intelligent broking and trading

Cooperative, autonomous management

Security

WWW ++

Distributed Information

CGI & JAVA++

Intelligent information filters and agents

Information servers

Computer assisted business processes

Embedded Systems

Down scaling

Predictable

Interoperability

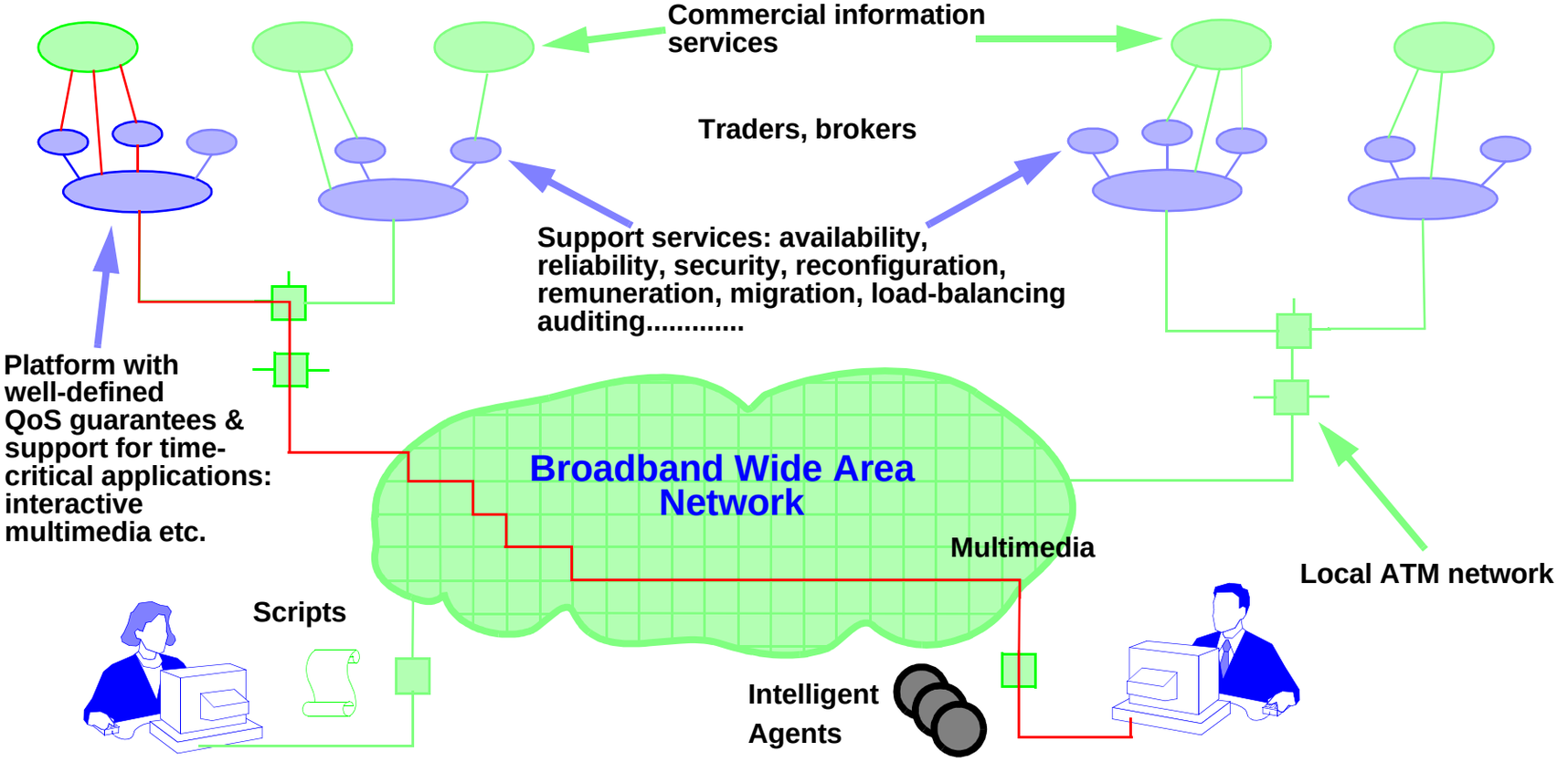
Mobile

CORBA--

Meeting the requirements

- **Extend the ANSA architecture with new concepts and mechanisms**
- **Deliver prototypes**
  - **to prove the concepts work**
  - **to show how to apply them**
  - **to enable application development**
- **Propagate the knowledge into high-profile industry groups**
  - **W3C, Smartcard Forum,...**
- **Feed the expertise into standards bodies**
  - **OMG, ISO, ITU, OSF**

Scenario


Commercial information services
Traders, brokers
Support services: availability, reliability, security, reconfiguration, remuneration, migration, load-balancing auditing.....
Platform with well-defined QoS guarantees & support for time-critical applications: interactive multimedia etc.
Broadband Wide Area Network
Multimedia
Local ATM network
Scripts
Intelligent Agents

ANSA Focus

Public electronic commerce and information services

Explore, demonstrate

Distributed control and management of information networks

Prototype, extend, validate

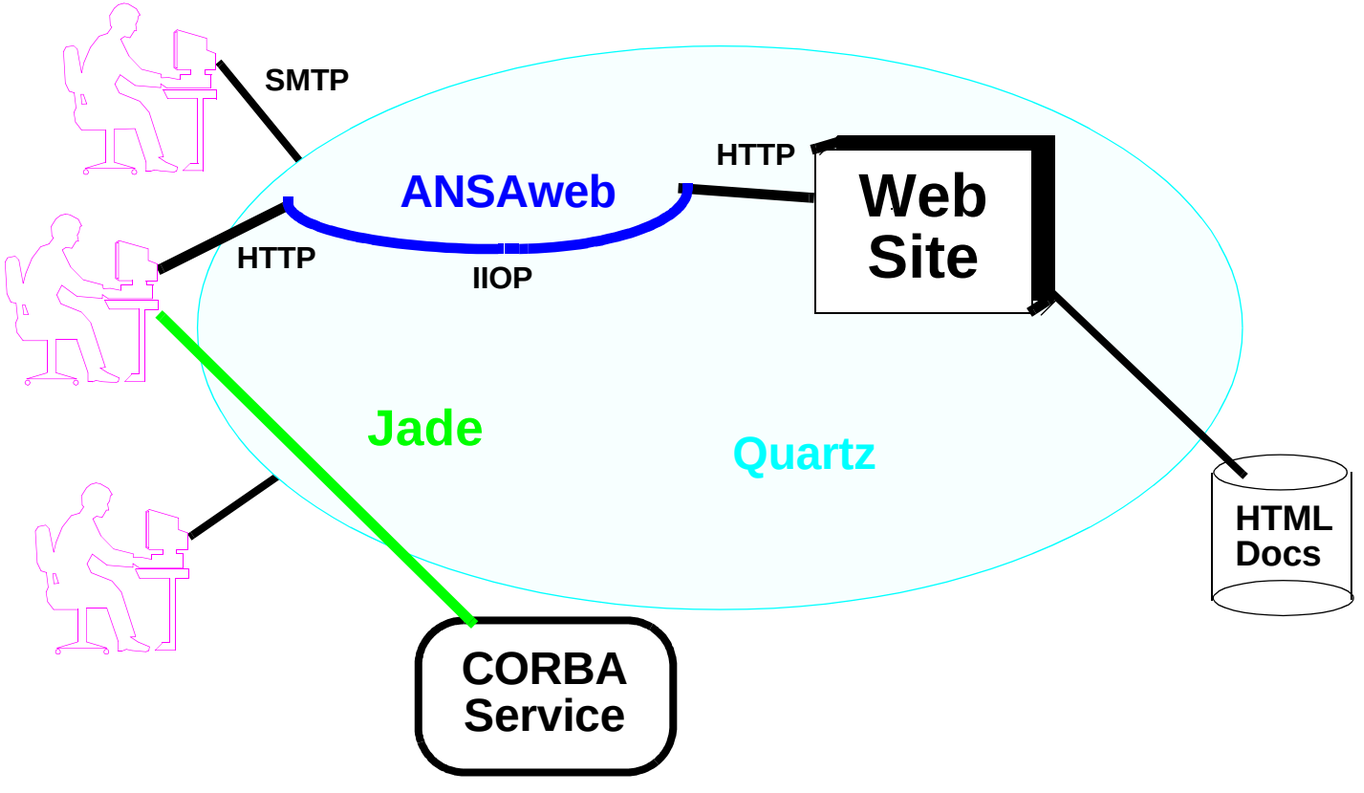
Information Services Framework - the need

- **World Wide Web is creating a uniform information space**
  - **Good presentation and authoring tools**
  - **Poor navigation, administration and development tools**
  - **Inefficient protocols**
  - **No support for active documents**
- **Distributed objects can help**
  - **using a tool-based approach**
  - **applying experience with protocols**
  - **applying federation principles**

Information Services Framework - the key technologies

- **Internet, the World Wide Web and its protocols**
  - **new capabilities still evolving and being standardized**
- **CORBA, and its IIOP interoperability protocol**
  - **for integrating distributed applications**
- **Java**
  - **for programming Internet applications**

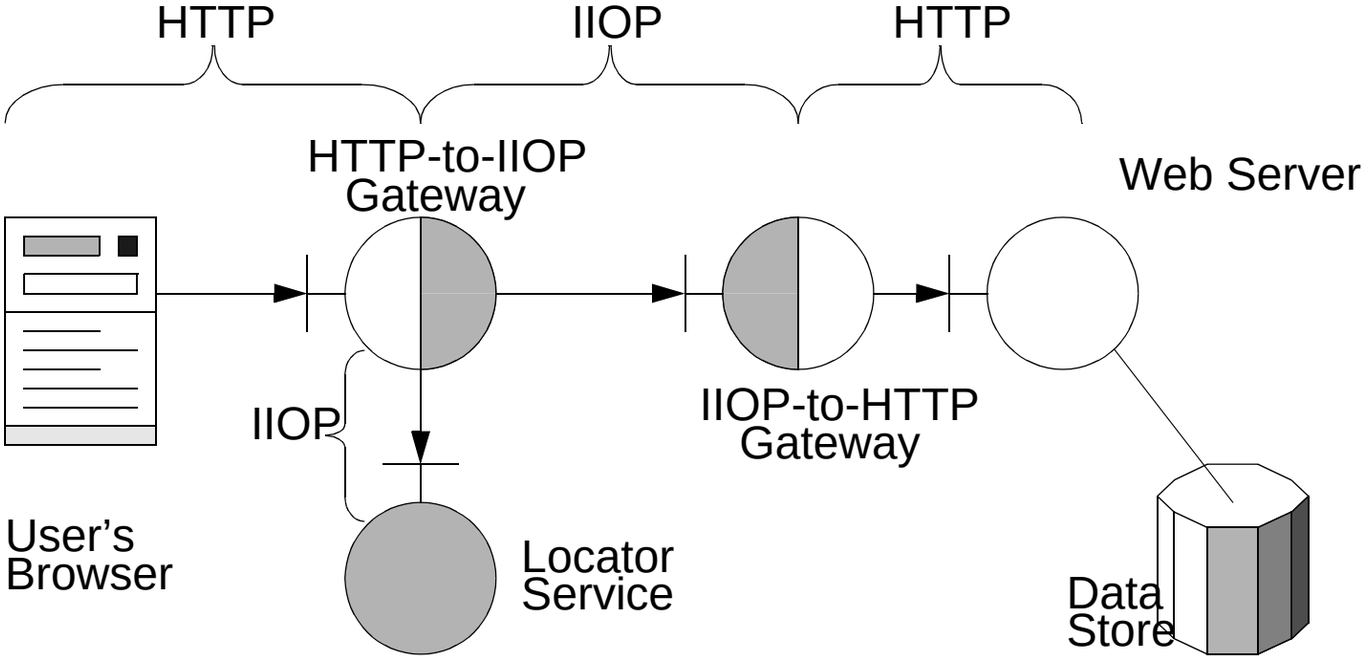
Information Services Framework



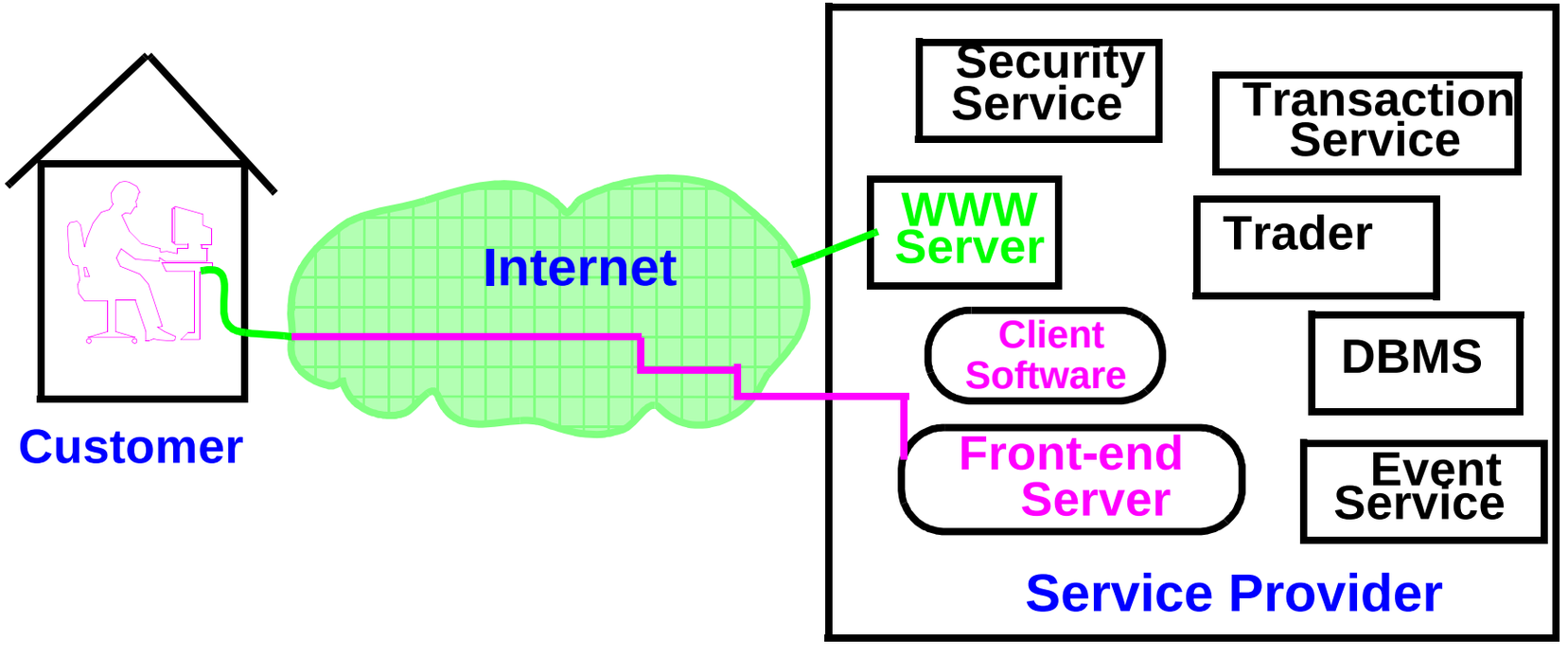
Information Services Framework - ANSA in action

- ISF links distributed objects and the World Wide Web
- ISF focuses on security
  - particularly in the associated E2S (End to End Security) EU project
- ISF contributes to World Wide Web standards
  - via IETF (Internet Engineering Task Force)
  - via participation in World Wide Web initiatives (W3C, and WWW conferences)

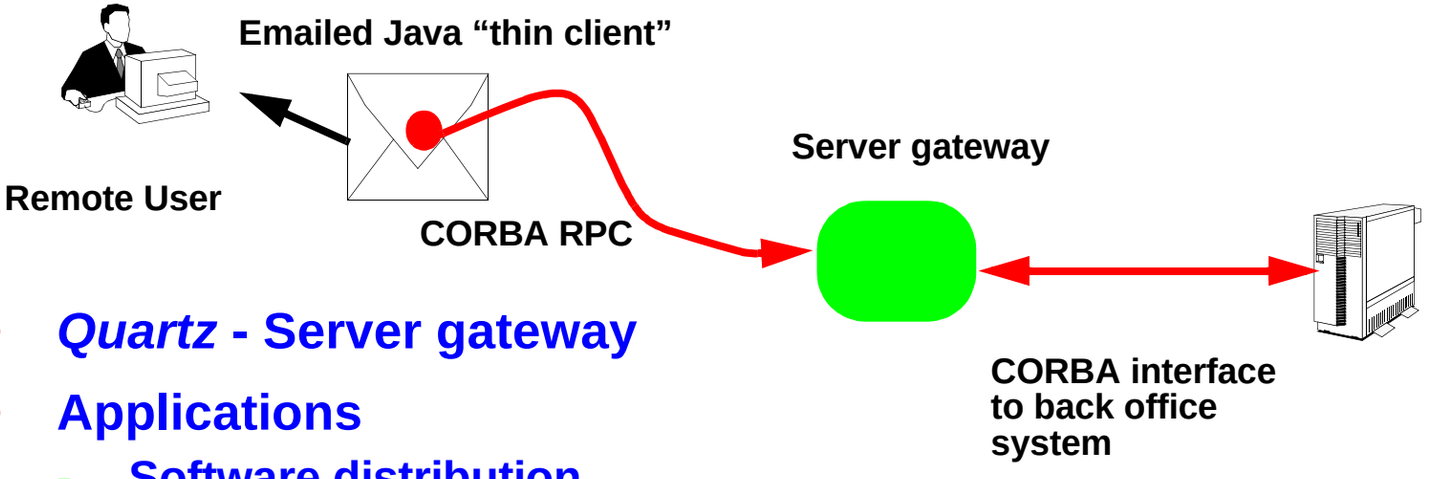
ANSAweb
Opening Gateways between CORBA and the Web



Jade
World Wide Web access to CORBA Services

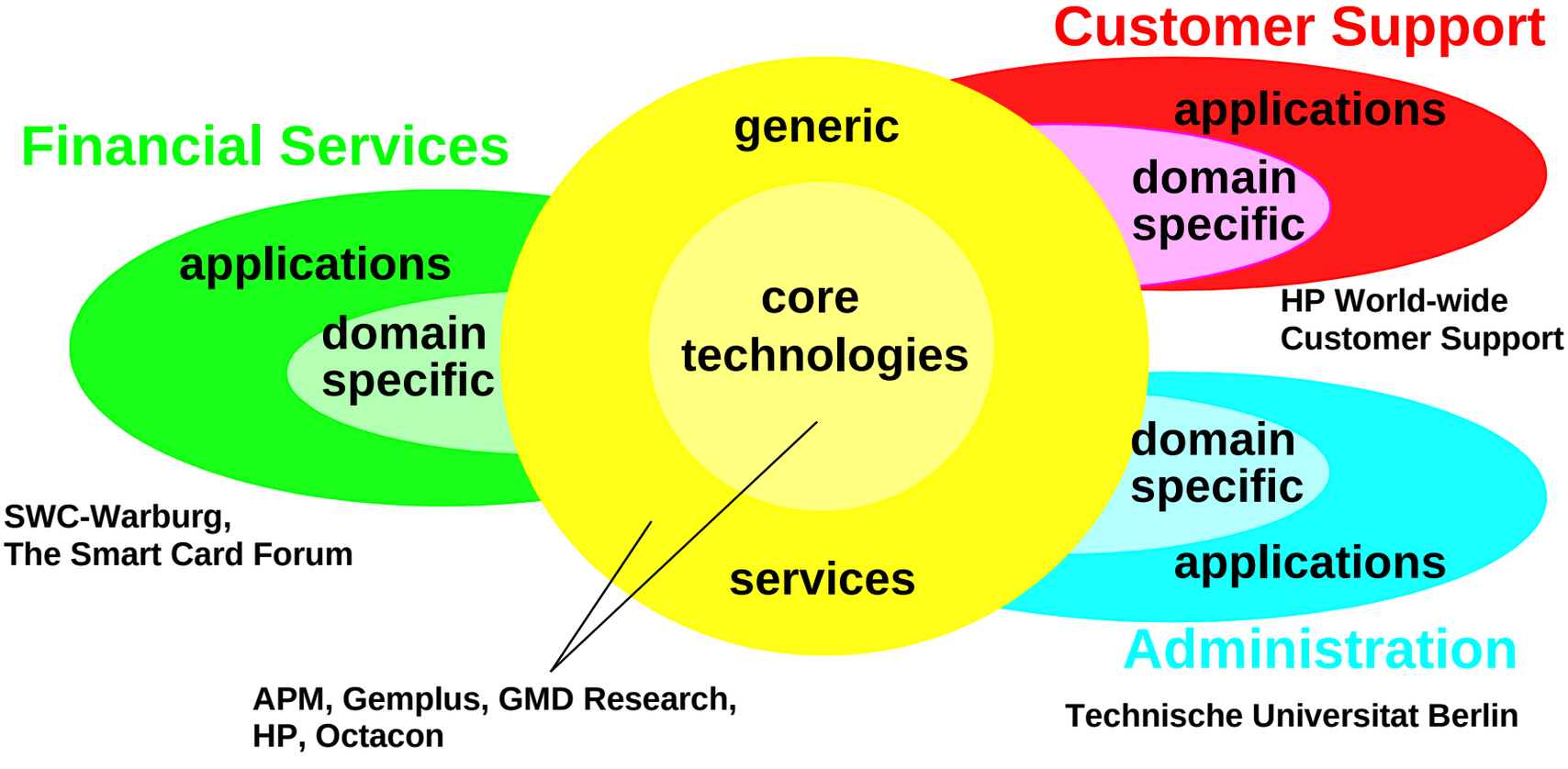


Quartz
Making CORBA objects easier to reach



- *Quartz* - Server gateway
- Applications
  - Software distribution
  - Data collection - active forms
  - Custom client applications

E2S
End-to-End Security for Internet Electronic Commerce



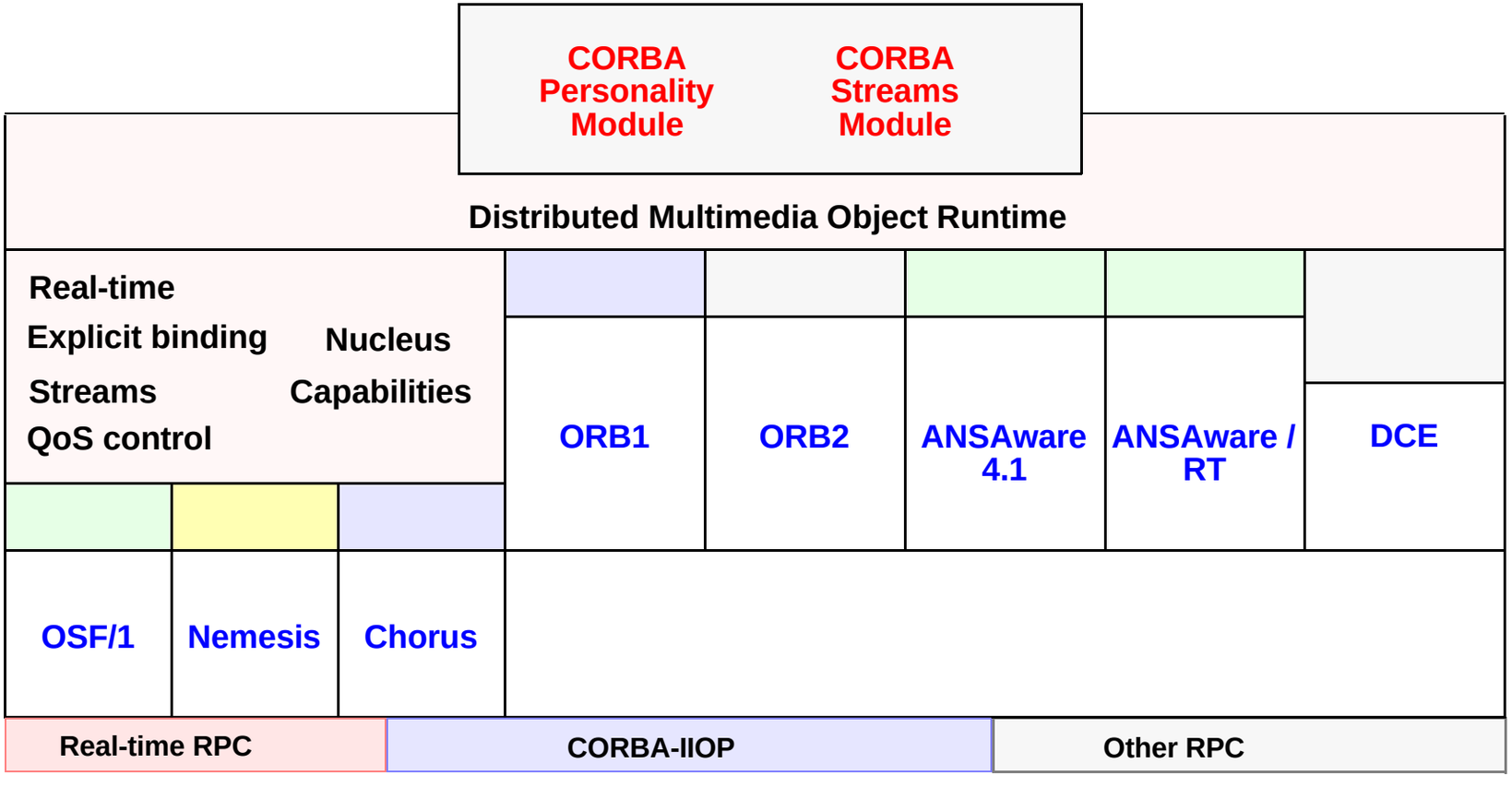
Distributed Multimedia Architecture - the need

- **Extend CORBA to handle multimedia streams, peer-to-peer communication, and quality-of-service negotiation and control**
- **Add real-time capabilities to the ANSA/ODP architecture**
  - **without compromise to federation, diversity, and scalability**
- **Provide interoperability between real-time and non-real-time objects**
  - **predictable islands in an unpredictable sea**
- **Provide real-time guarantees in an asynchronous distributed system**
  - **for high-performance distributed systems**
  - **for predictable distributed systems**

Distributed Multimedia Architecture - the key technologies

- **ATM (Asynchronous Transfer Mode) and broadband networking**
  - **for multimedia streams with quality-of-service guarantees**
- **Lightweight operating systems with multithreaded real-time support**
  - **for high-performance, low-cost platforms**
- **Distributed Processing Environments (CORBA and others)**
  - **for distributed applications**

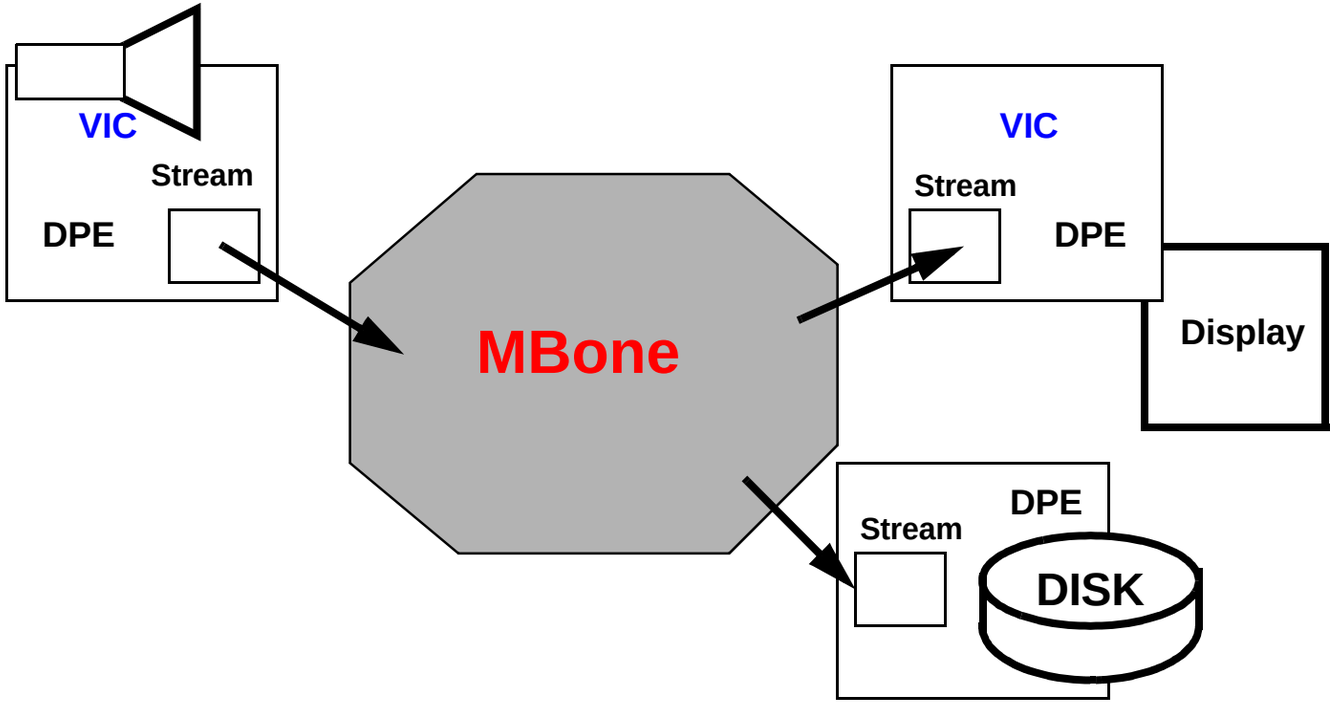
Distributed Multimedia Architecture



Distributed Multimedia Architecture - ANSA in action

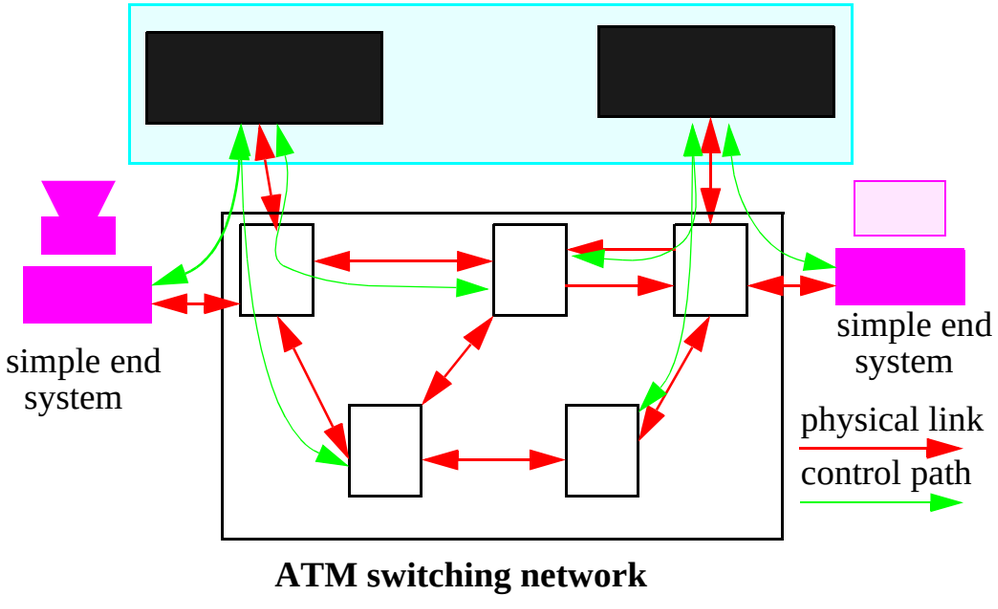
- Real-time mechanisms are already proven in ANSAware/RT
- ANSA infrastructure adds CORBA compatibility
  - and prototypes CORBA extensions for multimedia
- ANSA multimedia demonstrations exploit CORBA extensions
  - Amber
- Associated projects add broadband capability
  - ReTINA
  - DCAN
- ANSA contributes to multimedia and real-time standards
  - via OMG Telecom SIG
  - via ReTINA into ISO/ITU-T Open Distributed Processing (ODP) and TINA-C

Amber
Delivering Real-Time Streams via the Internet

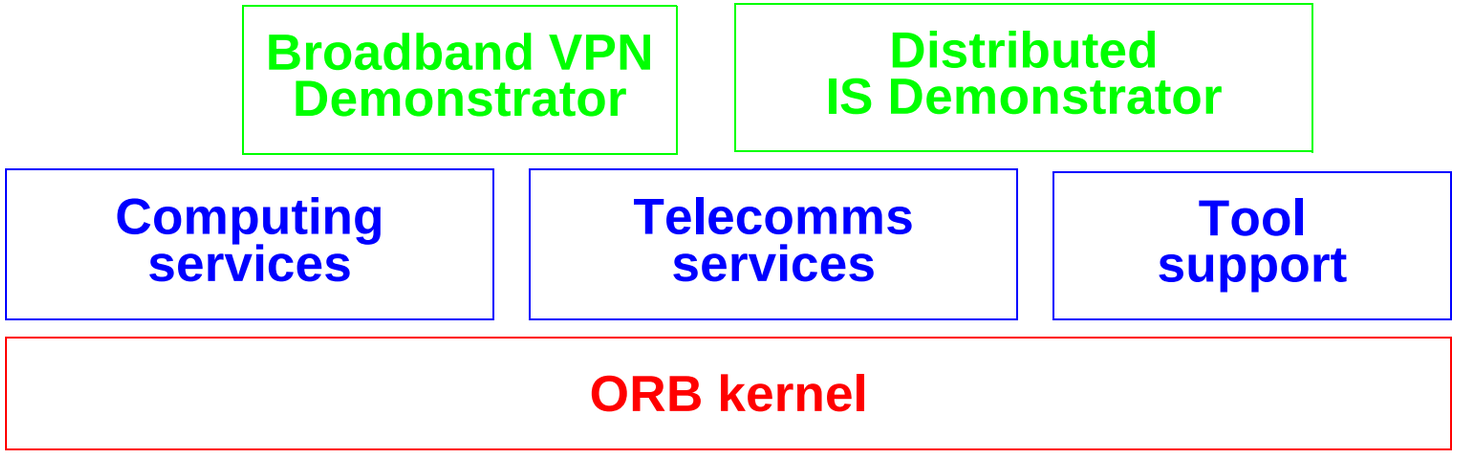


DCAN
Distributed Control of ATM Networks

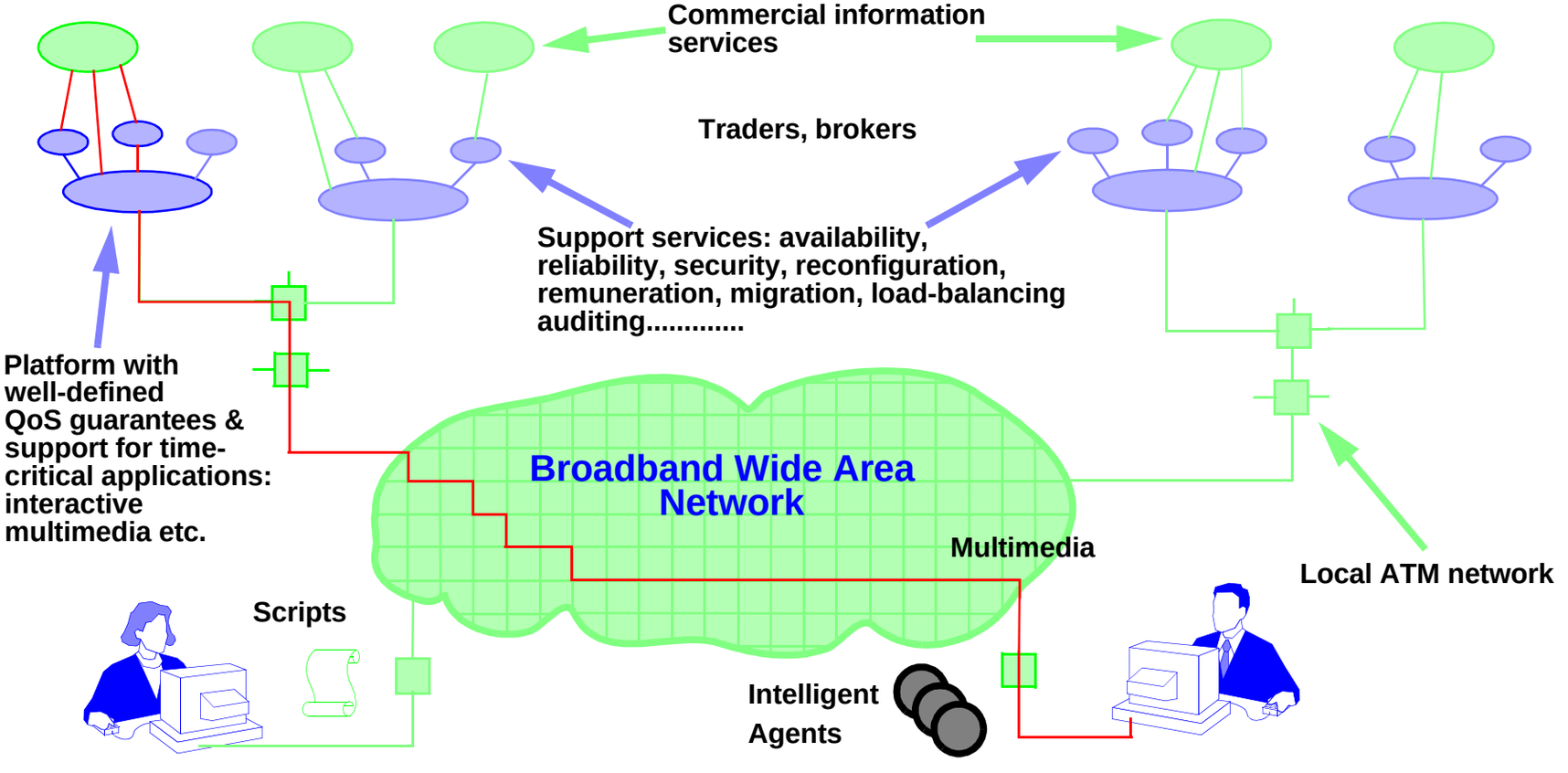
Control and management using a distributed processing platform



ReTINA
An Object Request Broker for Telecommunications



Scenario Revisited



Summary

- **ANSA is a firm foundation**
  - **being extended through ISF and Distributed Multimedia Architecture projects**
- **To find out more**
  - **see http://www.ansa.co.uk...**
  - **... and the rest of ANSAworks!**