



APM

POSEIDON HOUSE • CASTLE PARK • CAMBRIDGE • CB3 0RD UNITED KINGDOM
+44 1223 515010 • Fax: +44 1223 359779 • Email: apm@ansa.co.uk • URL: <http://www.ansa.co.uk>

ANSA Phase III

DIMMA Update

Ian Macmillan

Abstract

The business problem addressed is...

The technical problem created by that business problem is ...

The solution being offered is....

APM.1835.01

Approved
Briefing Note

14th October 1996

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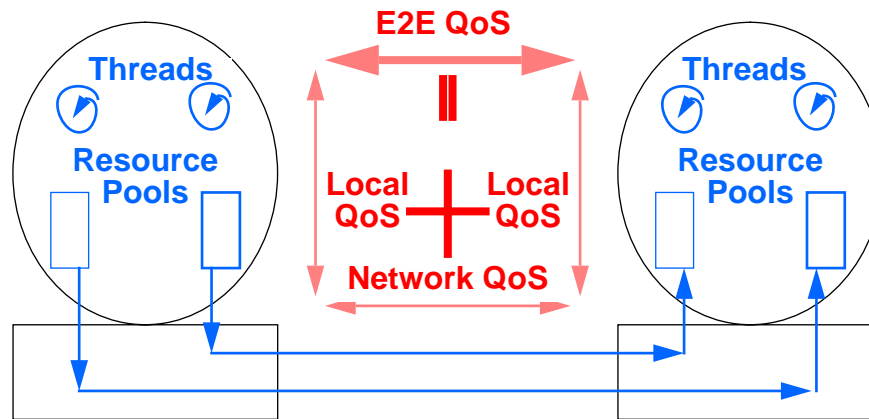
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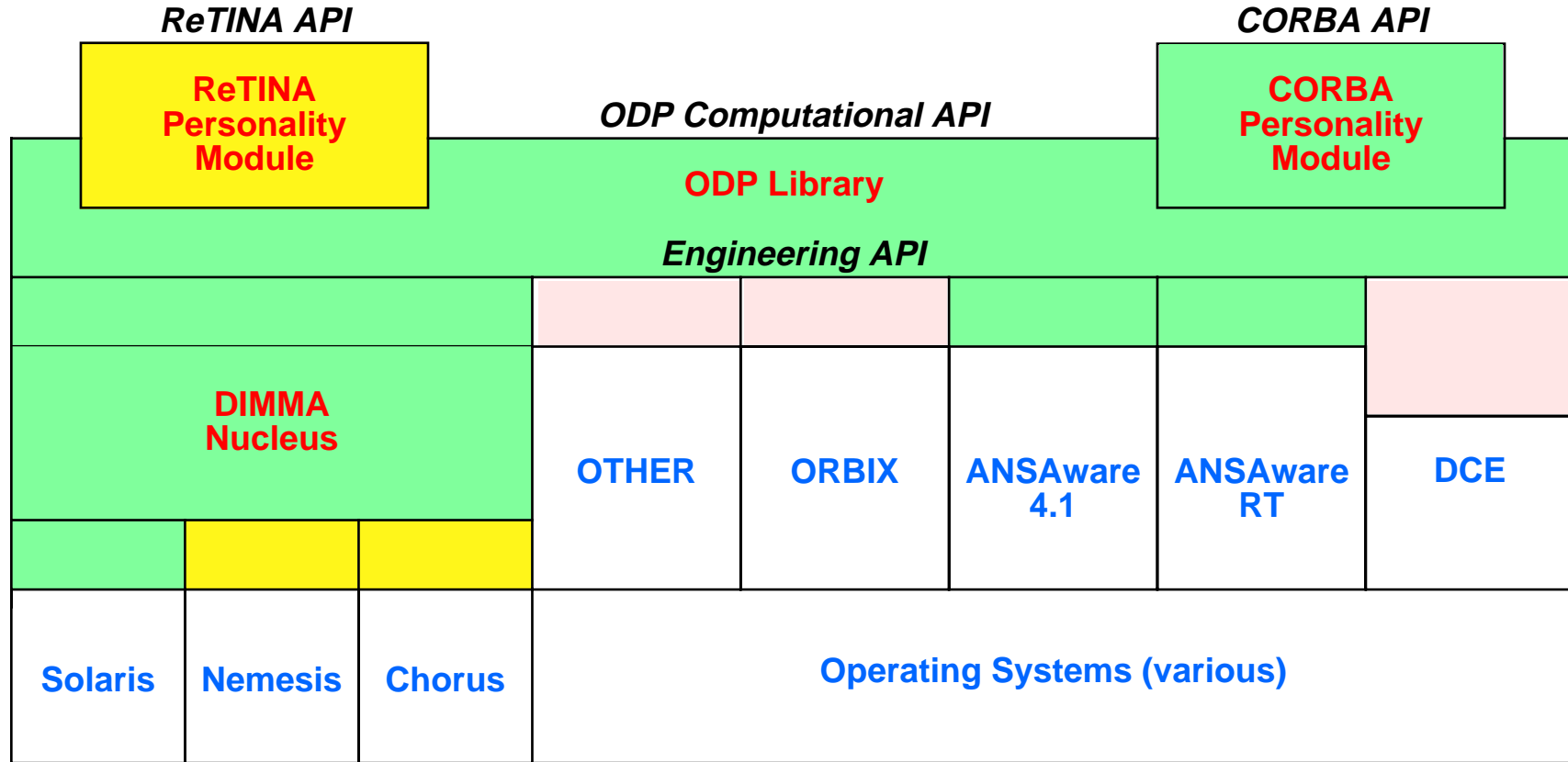
Multi-Media enabled CORBA



An update on the DIMMA project



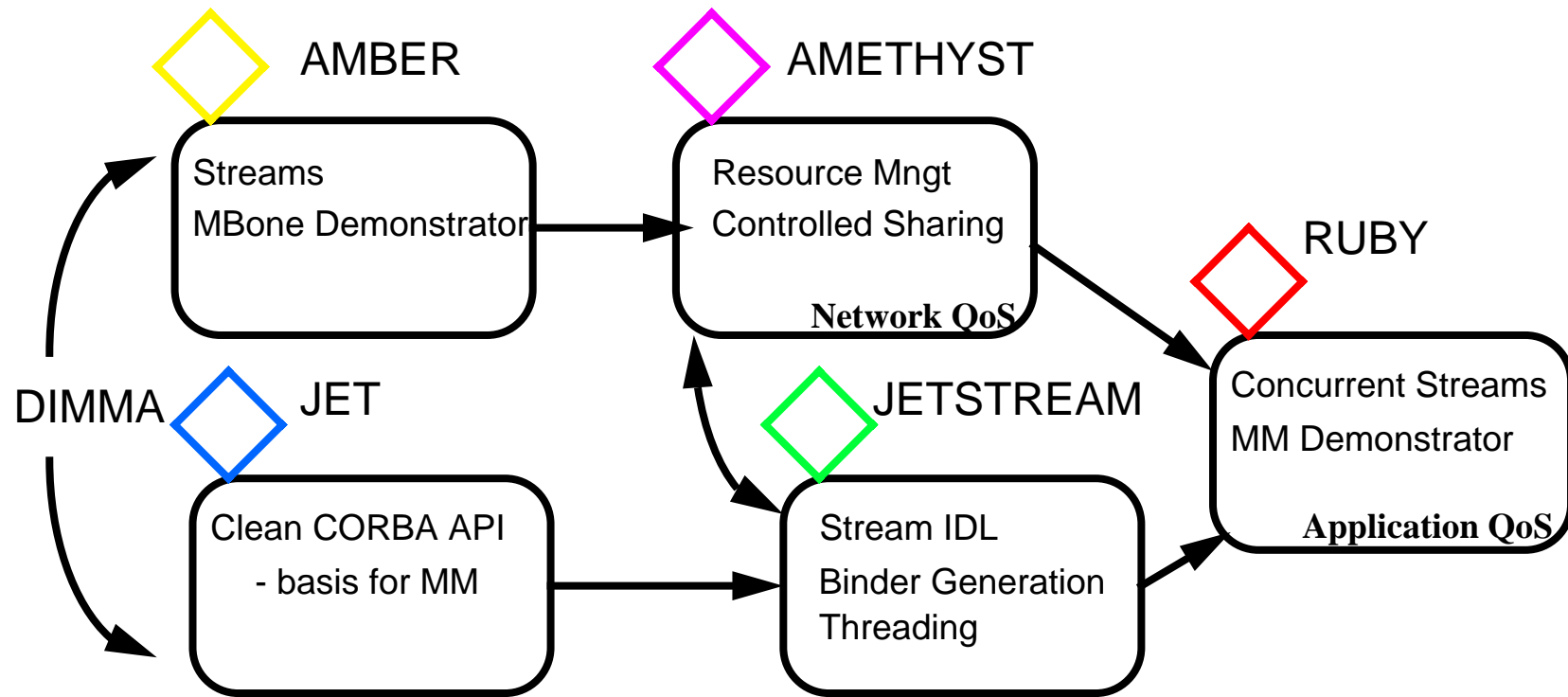
Architectural Perspective



■ Completed
 ■ ReTINA & DCAN
 ■ Not planned



DIMMA Project Roadmap



Current Position

- **JET and AMBER completed**
 - CORBA Personality Module
 - Engineering stream support developed using VIC multi-media demonstrator
- **JETSTREAM nearing completion**
 - Basic stream interfaces
 - Associated explicit binding
- **AMETHYST**
 - Resource Framework with a concrete example:
 - socket pool providing controlled multiplexing of RPCs over TCP connections (IIOP)

=> Code due end October



What's in this deliverable?

- **CORBA C++ API (JET and JETSTREAM)**
 - Usable subset without the clutter (e.g. no Dll nor Repository)
 - IDL extension for streams
 - Layered over ODP Library with DON adapter
- **Resource controlled DIMMA Nucleus (AMETHYST)**
 - Communications and Resource framework
 - Resource (sockets) controlled IOP RPC
 - MBONE RTP multicast stream protocol
- **User level threads**
- **Consolidated code base on Solaris platform**



Streams Requirements

- Asynchronous typed flows
- for Multi-media, Telcom ORBs
- High level of diversity:
 - formats,
 - binding,
 - clocking, QoS
- Application level stream processing
- v.s. Stream management and control

=> Stream Interfaces



Stream Standardization

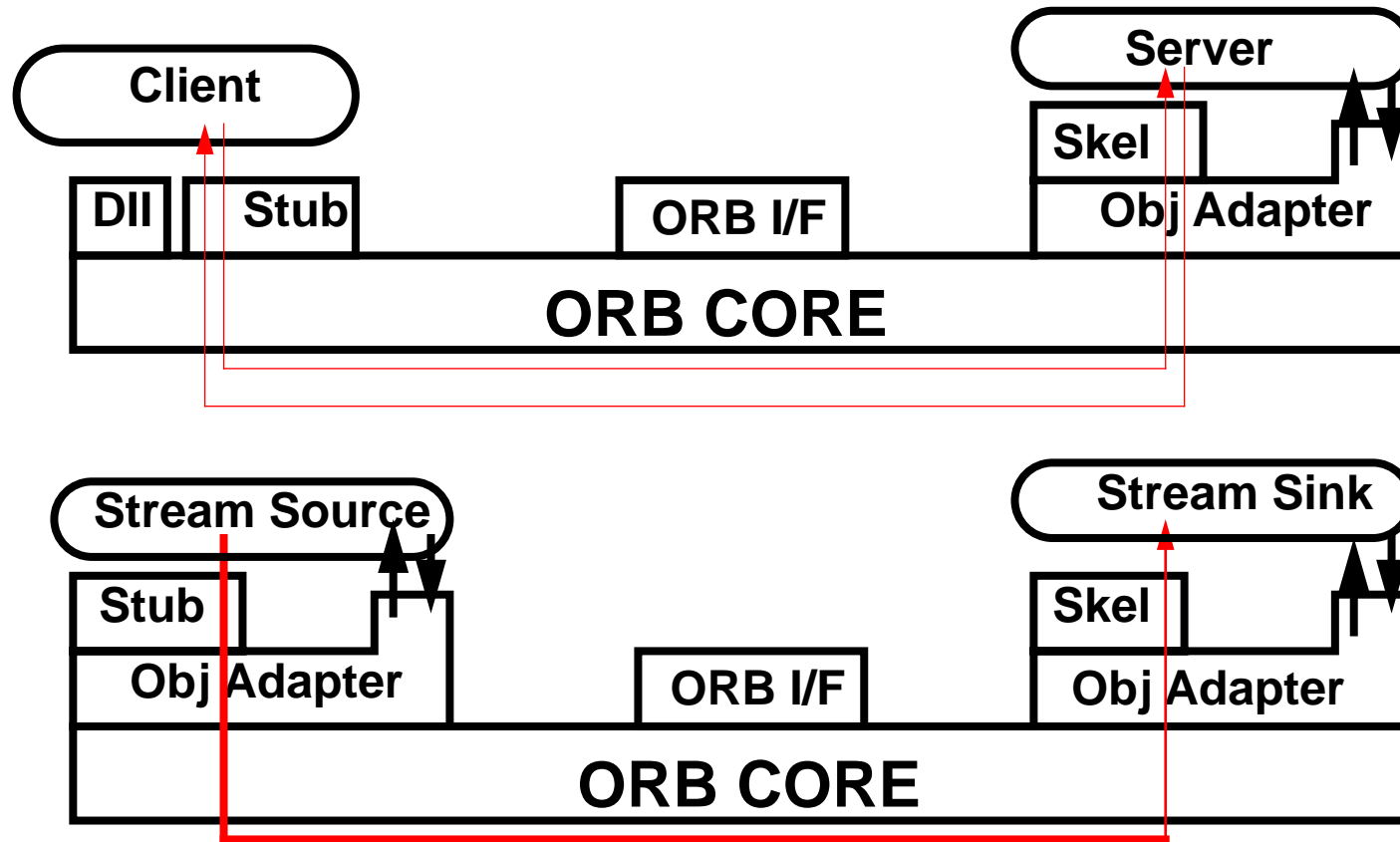
- **Stream IDL**
- **Stream Binding**

Danger of over-specification!

- **Forums: ReTINA, OMG Telecom SIG**



OMG Stream RFP



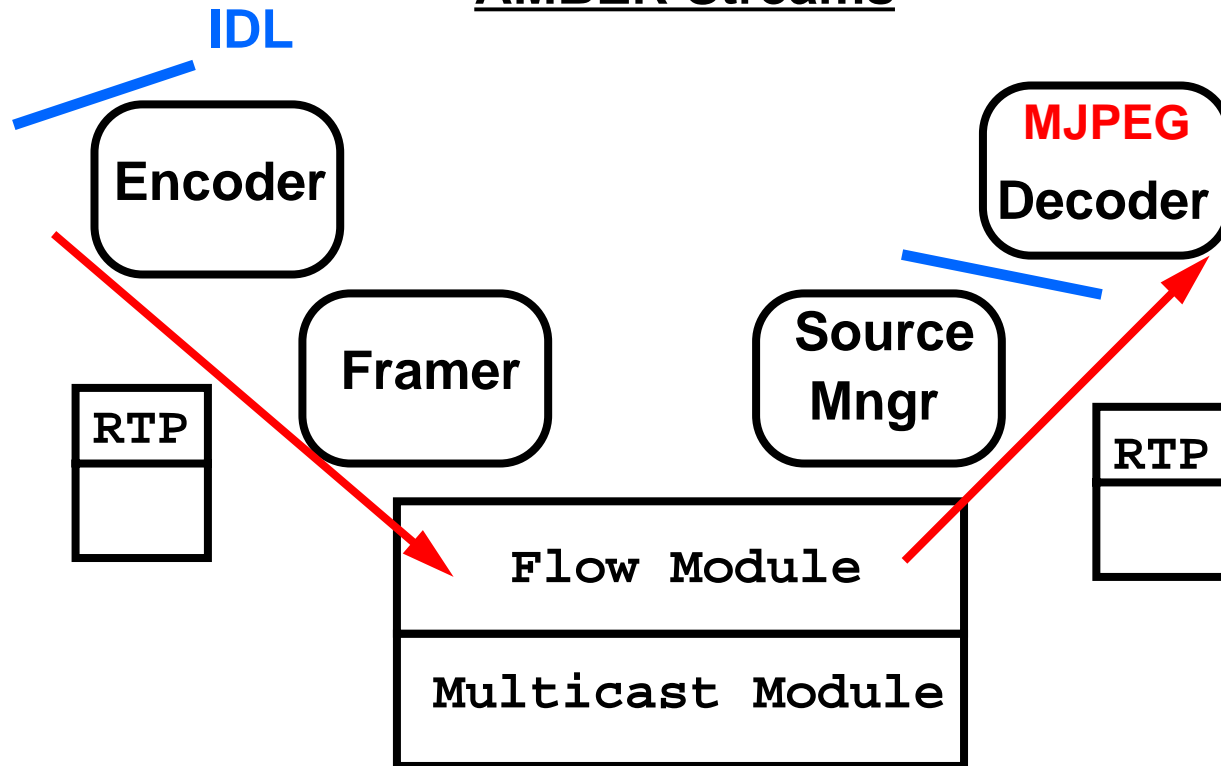
DIMMA Approach

- **Streams:** non-RPC interactions
- **Object Adapters:** binding control and resource mngt

=> General Binding Framework on DIMMA nucleus



AMBER Streams



Deliverable Streams

- **Stream Interfaces (from JETSTREAM project)**
- **Stream examples (from AMBER MM Demonstrator)**
- **Binding (full typed binder generation later)**

- ***Facilitates:***
 - **ReTINA portable binding framework**
 - **DCAN DIMMA ATM Streams**

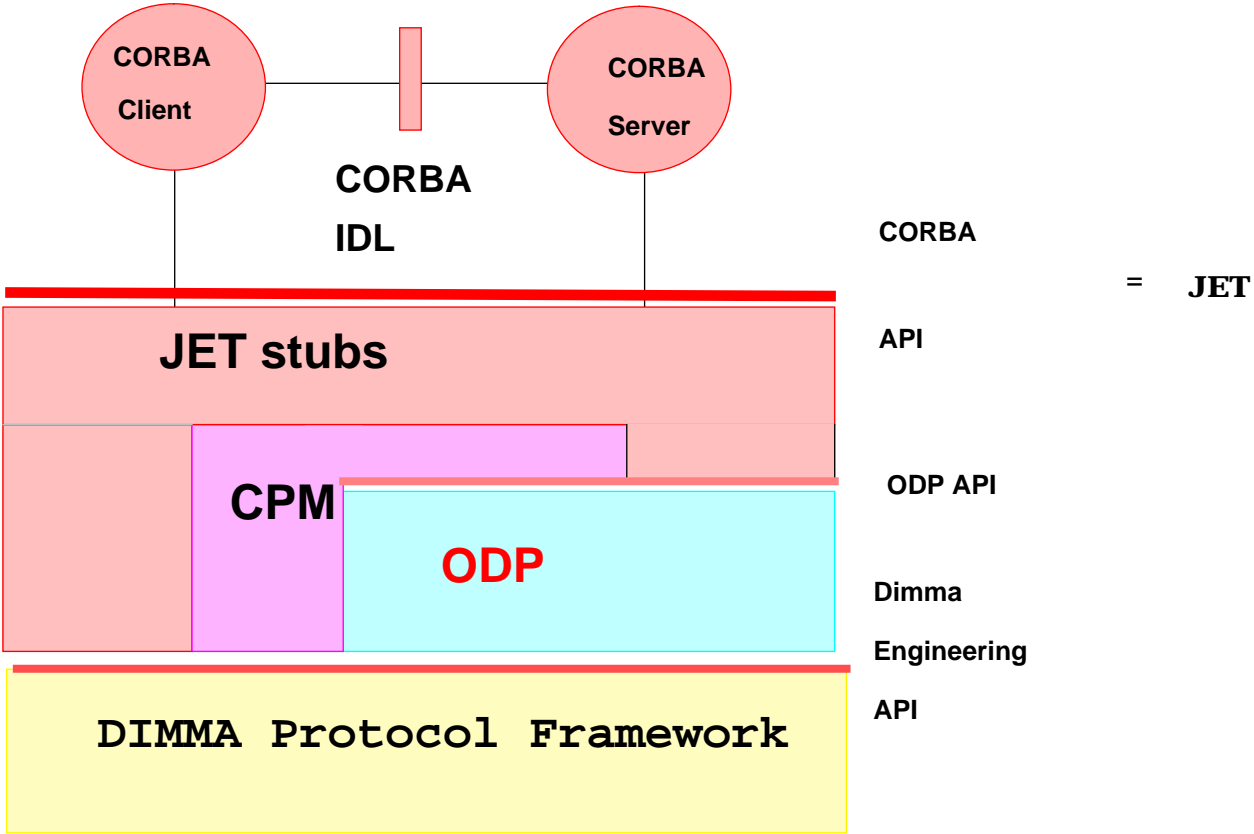


CORBA API

- **CORBA is the interoperability standard**
- **DIMMA for real-time and multi-media**
- **JET Stub compiler and CORBA Personality Module**



JET on DIMMA Nucleus



Deliverable CORBA API

- **Extended JET C++ mapping**
- **Full server-side support**
- **Robust stub compiler - Solaris port (Templates)**
- **Build integration: SCC, make, file generation**
- **Threading API**



Proved CPM concept:

- **Clean CORBA API**
- **Interoperable, portable:**
 - DIMMA, ANSAWare and Orbix
- **Extendable:**
 - Integrates with nucleus protocol and binding
- **E.g. Stream support:**
 - Range of IDL support (No extensions <---> ODP flows)
 - Mixed or pure stream IDL interfaces



Summary of Results

- **Validated the architecture**
 - **API separation from Nucleus**
 - **“Personalities” layered over ODP API**
- **Demonstrated that a flexible Framework DPE can be built**
 - **Binding: supporting explicit stream binding and implicit RPC**
 - **Communications: protocols consisting of reusable modules**
 - **Resource: pools to prevent application crosstalk**
- **Investigated how streams may be added to CORBA**
- **Delivering a prototype DPE in C++ incorporating these ideas**



What's next?

- **Further stream support**
 - e.g. bidirectional, multiple flows...
 - plus associated binding models
- **AMETHYST (resourced nucleus)**
 - Sufficient resource pools to support useful application QoS
 - plus associated Resource Schedulers
- **Research application controlled QoS (RUBY)**
 - Mapping of application QoS onto engineering mechanisms
 - to support controlled concurrency with predictability
- **Short term goal:**
 - Maintain single code base and produce updated version



Benefits

Advanced prototype MM resource controlled DPE

- Targeted at Telecommunications services
- Facilitate exploration of multi-media applications
- Vehicle for validating ReTINA Architecture
 - and for influencing standards through ReTINA
- Prototype ATM connection management architecture (DCAN)
 - an example of stream control rather than application stream processing

=> Migration path to next generation networks...

