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ANSA Phase III

Presentation slides for the 1995 - 1998 ANSA Plan

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Abstract

This presentation goes with the 1995-1998 ANSA Technical plan (APM.1528)

APM.1574.00.02

Draft

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Project Management (confidential to ANSA consortium for 2 years)

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ANSA Technical Plan

1995 - 1998

- Vision
- Scenario
- Objective
- Key ingredients
- Overview
- Tasks
- Staffing and dates

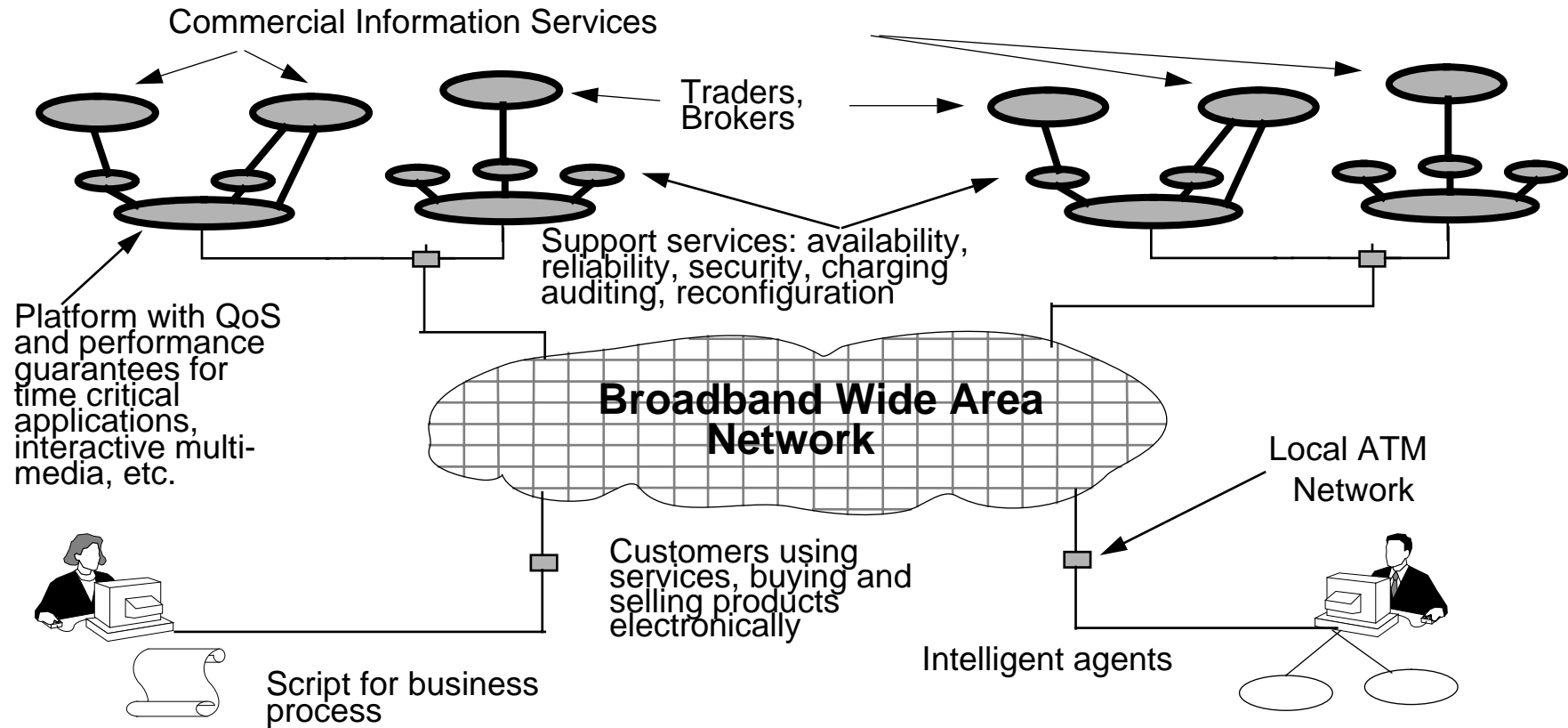


Vision

- **Electronic commerce**
 - currently based on the Internet and WWW
 - moving towards CORBA + WWW
 - commercial ORBs do not satisfy application requirements
- **Interactive multimedia**
 - delivered with (nearly) every PC
 - mostly desktop only or LAN
- **Broadband telecommunications**
 - currently low bandwidth available to all (PC + modem)
 - ATM begins to impact applications

Architected approach to integration of WWW + CORBA + Broadband

Scenario





Objective

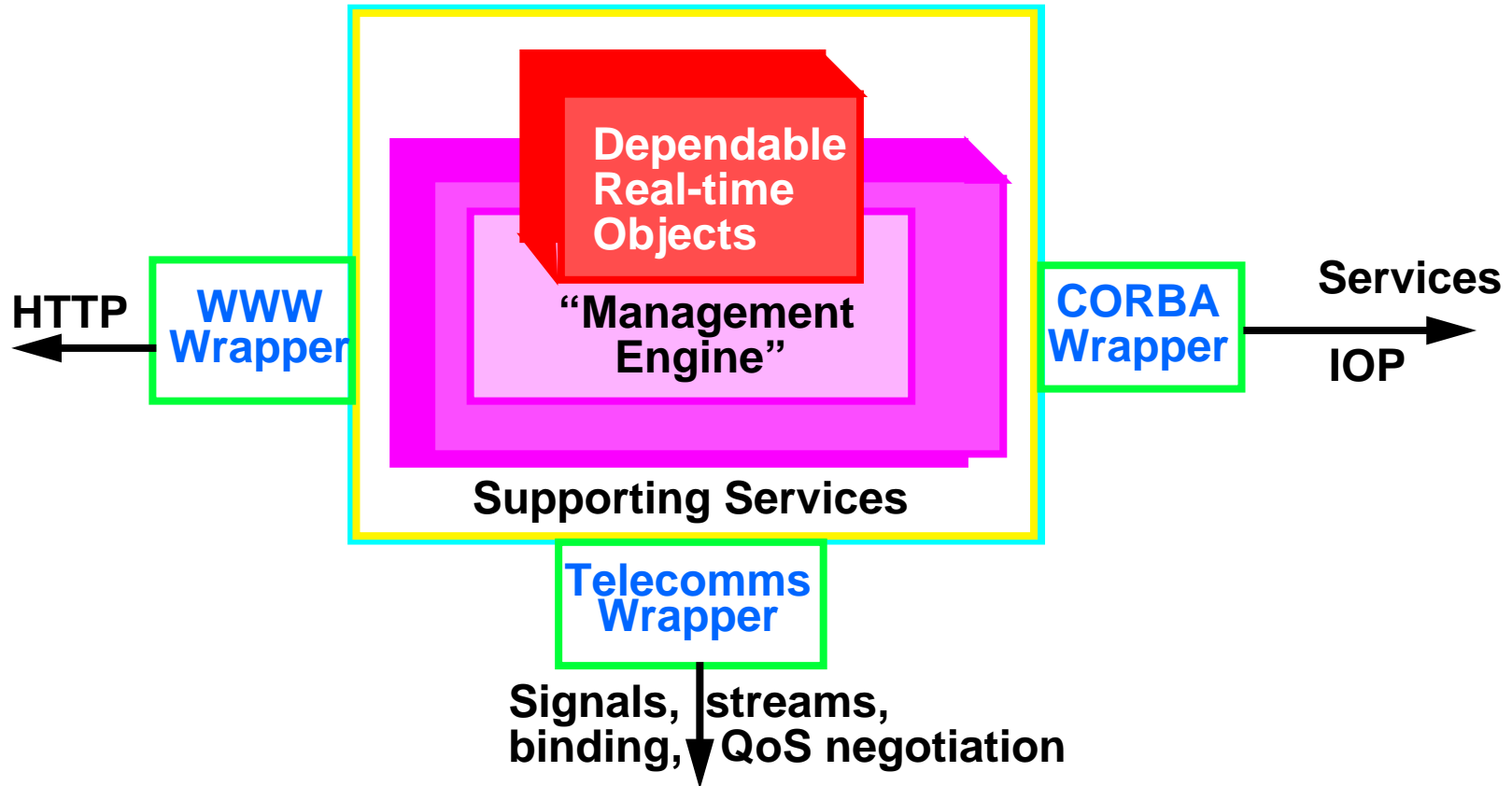
To bring together

- **electronic commerce**
- **interactive multimedia**
- **broadband telecommunications**

in an architectural framework and thereby enable our sponsors to

- **bring stability to applications & services in the face of industry turbulence**
- **earn revenue from electronic services**
- **deliver and manage services effectively**
- **integrate old, existing and new systems and applications**
- **specify and construct specialised platforms (e.g. Telecomms ORB)**

Key ingredients (1)

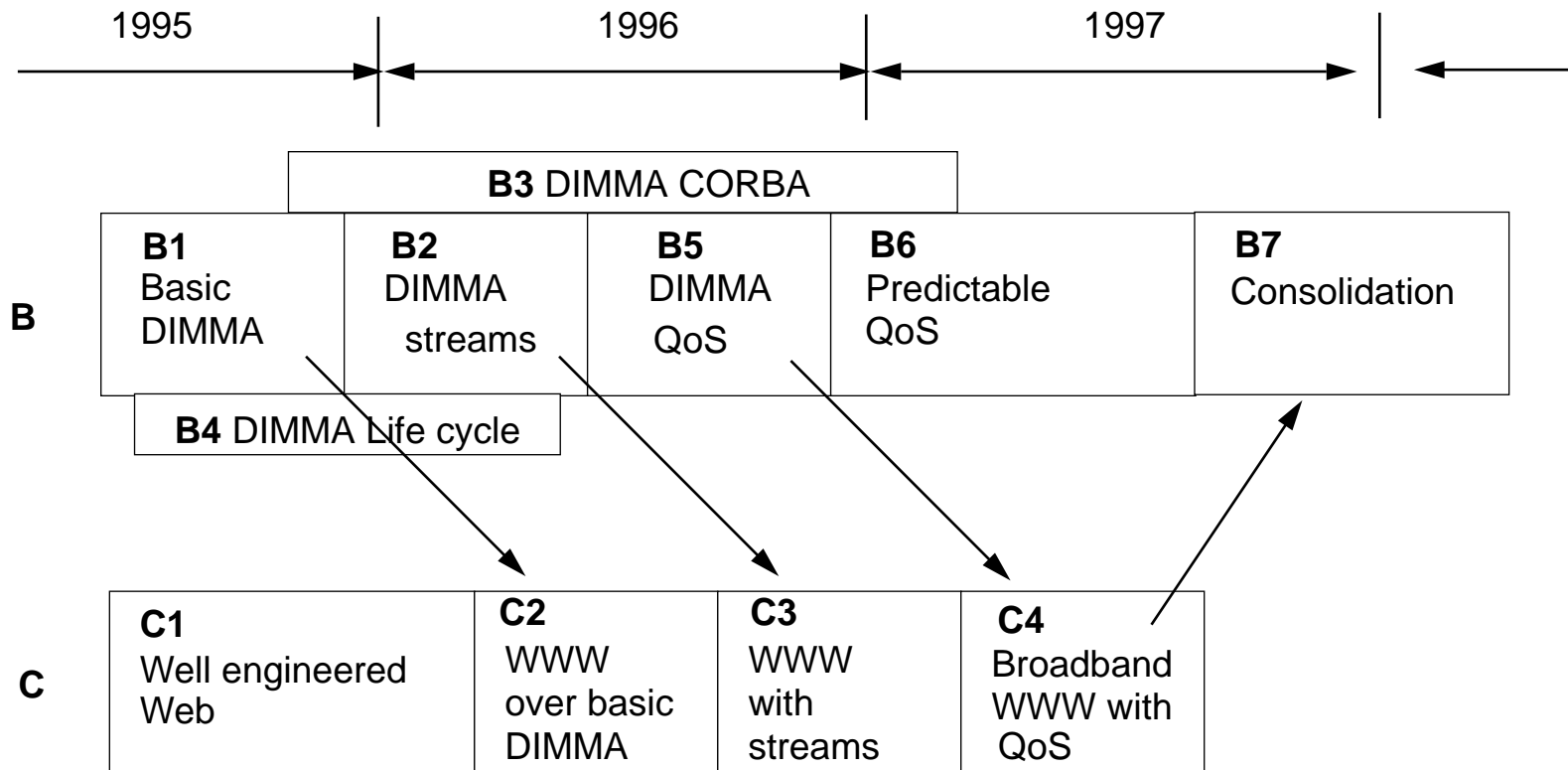




Key ingredients (2)

- **stream based model of communication**
 - without invalidating “CORBA” model
- **control over all resources required by the distributed application**
 - without centralised management
 - at connection time
 - during operation
- **demonstration and application to open wide area networks**
 - a Web based on established CORBA standards
 - extensions, allowing interactive multimedia and QoS control
 - test ground as well as requirements driver
- **standards contributions**
 - as and where appropriate: **OMG, IETF, W3C, TINA-C**

Overview





A - Series Stockpile Technology Transfer

- **Bring the benefits of the program to sponsors**
 - company consulting (A1)
 - technology transfer (A2)
 - process described in “ANSA Technology Transfer” (APM.1520)
- **Standards (A3)**
 - **OMG: introduce streams, binding and QoS extensions**
 - **IETF: resource naming and discovery consistent with current practice**
 - **W3C: encourage adoption of object technology**
 - **TINA-C: consultancy**



B - Series

Distributed Broadband Interactive Multimedia Architecture

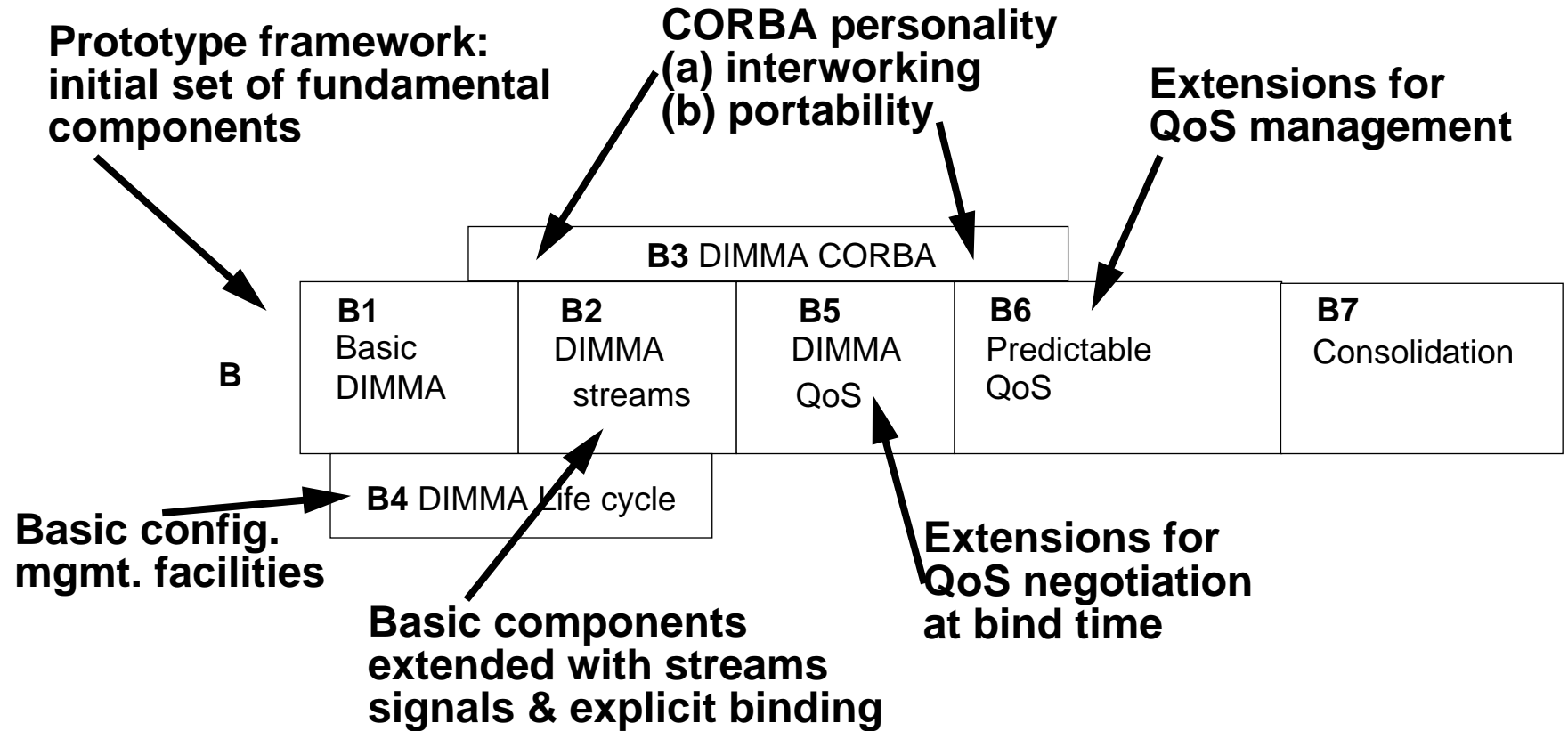
- **Provide programming support for**
 - **streams**
 - **synchronous programming**
 - **explicit binding**
 - **extensible types**
 - **fine grained allocation, monitoring and scheduling of resources**
- **Evolve ANSA/ODP and CORBA standards**
- **Based on 1994-1995 ANSA results:**
 - **ODP C++ API**
 - **nucleus with resource control facilities**
 - **AST, type checker, type inferencer, stubcompiler**



B - Application

- **Interactive MM**
 - video conference applications
- **Time critical applications**
 - telecommunications systems
 - air traffic control applications
- **Telemetry control applications**
- **Resource control**
 - load sharing applications
- **Basis for commercial services with delivery guarantees**
 - Web deliverables in the C series

B - Staged delivery of results





B - deliverables (1)

- **B1: Basic DIMMA (final stage)**
 - ODP C++ API for operations (for ANSAware and DIMMA nucleus)
 - nucleus with resource control facilities
 - Abstract Syntax Tree (AST) tool kit including stub generator, type checker and inferencer
 - usable together or separately
- **B2: DIMMA with streams**
 - extended AST to handle stream specifications
 - enhanced stub compiler
 - protocol support for signal access to TCP
 - stream handlers and schedulers added to DIMMA nucleus
 - explicit binding module
 - test in ATM environment (DCAN)



B - deliverables (2)

- **B3: CORBA personality for DIMMA**
 - AST front end to handle CORBA IDL
 - nucleus with IIOP
 - interworking demonstration (B3a) delivered early (Jan. 1996)
 - CORBA API on DIMMA engineering
 - portability demonstration (B3b) delivered later (Mar. 1997)
- **B4: DIMMA life cycle management**
 - CORBA compatible basic life cycle and trading services
 - event monitoring and recording tools
 - Management Information Base (MIB) style interface to system manager

B - deliverables (3)

- **B5: DIMMA with QoS negotiation**
 - AST front end to handle QoS specifications
 - stubs which access binding objects
 - binding objects to negotiate QoS at bind time
 - QoS controller to monitor QoS
 - nucleus with resource allocation monitoring functions accessible by QoS controller
- **B6: DIMMA with controlled QoS**
 - programming tools to write modules with predictable behaviour
 - signal interfaces at boundaries between sync & async components
 - streams to drive remote signal interfaces
 - provide support for predictable execution of signals (using reactive C++)



B - deliverables (4)

- **B7: DIMMA consolidation**
 - open ended to allow for additional work, driven by sponsors
 - performance enhancements
 - porting to other platforms
 - alignment with evolution of CORBA
 - wrappers for other environments
 - support for distribution transparency functions
 -



C - Series Broadband World-Wide-Web

- **Improve current WWW technology by adding CORBA**
 - make it easier to program and extend services
 - provide indirection in resource naming
 - improve resource discovery capability
 - add an object framework to enable client and server mobility
- **Extend WWW capability with interactive multimedia capabilities**
 - move WWW clients and servers over DIMMA deliverables
 - test DIMMA facilities
 - use facilities in the infrastructure to explore new applications



C - Application

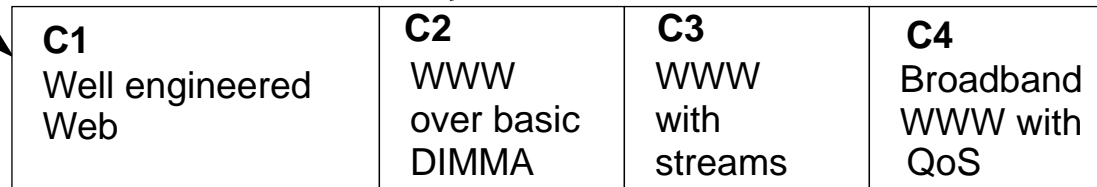
- **Toolkit as a basis for reducing programming effort**
- **Gateway between Web and CORBA**
- **Multimedia support for time critical applications**
- **Live audio/visual information transfers using “standard” web UI**
- **Web media phone**
- **Remote access to AV feed using apparently local CD-ROM interface**

C - staged delivery of results

WWW re-engineering work started in the 94-95 Workplan

WWW over basic DIMMA with portability and interworking

C



WWW immediate rendering by DIMMA streams standard browsers

ODP and CORBA QoS support for Web applications



C - deliverables (1)

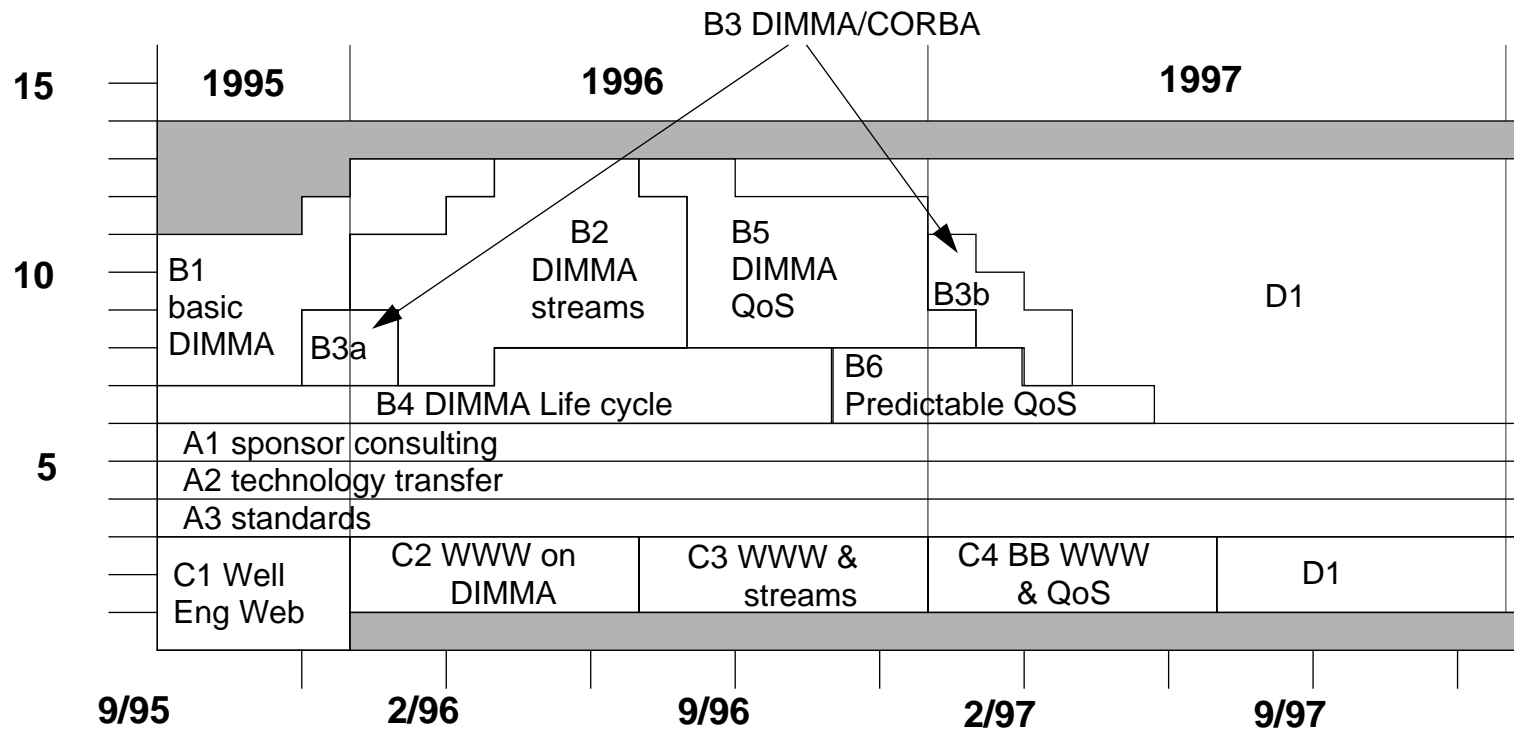
- **C1: Well-engineered web: ANSAweb (final stage)**
 - complete the work started under D1 in the 1994-1995 workplan
 - IIOp beside HTTP forming a migration path for server and client
- **C2: WWW over basic DIMMA**
 - integrate ANSAweb with DIMMA
 - SUN's Interorb engine alongside DIMMA nucleus
 - interoperability as well as portability
 - DIMMA version private, SUN's Interorb version public



C - deliverables (2)

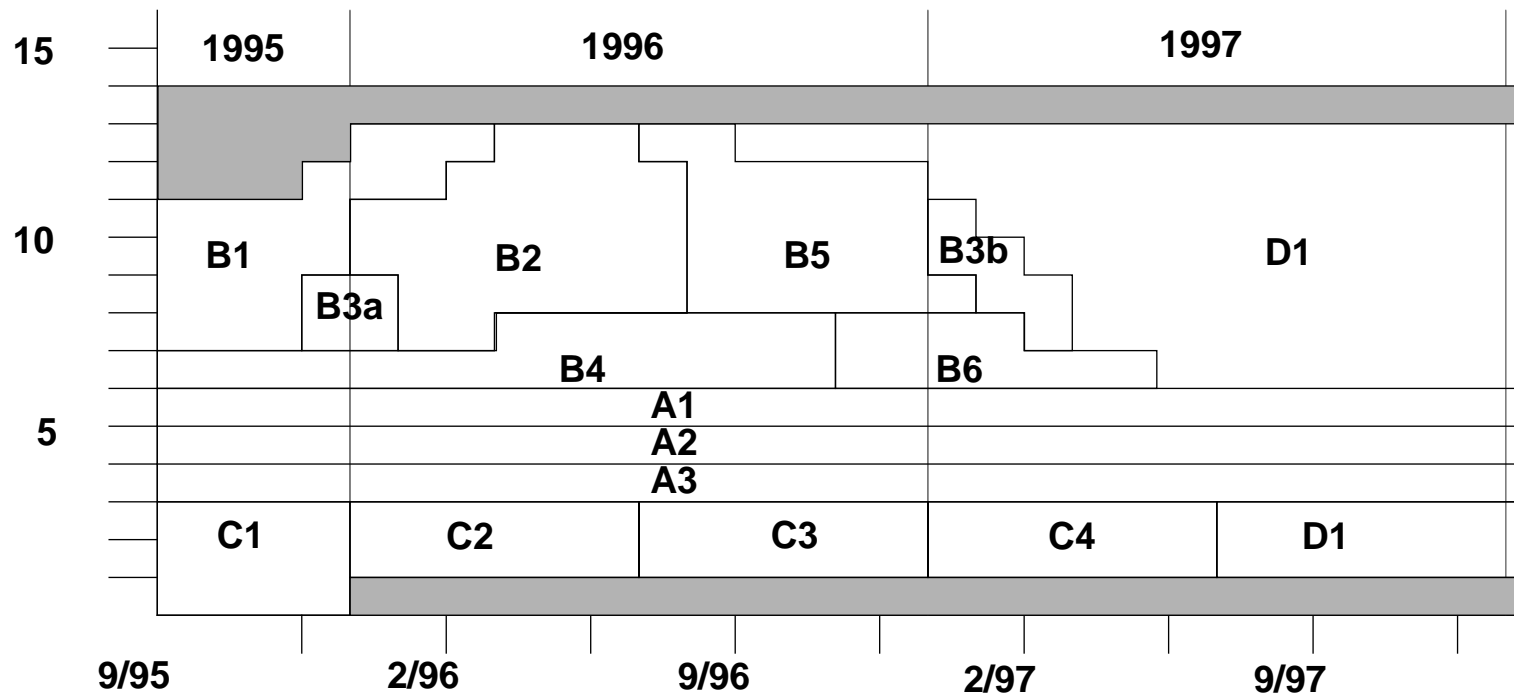
- **C3: WWW with streams**
 - Web immediate rendering done “properly” with streams
 - multimedia data shipped by DIMMA infrastructure
 - use of standard browser
- **C4: Broadband WWW with QoS**
 - web server with stream and QoS support
 - select a suitable browser and extend it

Dates





Staffing





Effort distribution

Tasks	Effort pm/m	%
A series (stockpile technology transfer)	3	25
B series (DIMMA)	7	58
C series (Broadband WWW)	2	17