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## **ANSA Phase III**

# **Telecoms ORB Workshop: Introduction**

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### **Abstract**

A set of slides setting out the scope of the ANSA Workshop on "Telecoms ORBs" as part of the ANSA Technical Committee Meeting 7th December 1994.

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**Distribution:**

**Supersedes:**

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## Why a “Telecoms ORB” workshop?

- **Telecoms is one of the primary application areas for ANSA**
  - mostly in system management situations
- **ANSA + distributed interactive multi-media - does it fit “Telecoms”?**
  - minimize overheads
  - resource and quality of service management: explicit binding
  - asynchronous communications: streams and signals
  - synchronous programming
- **CORBA is closest “standard” to ANSA - does it fit “Telecoms”?**
  - TINAC and other projects are selecting CORBA
- **How to fit the new ideas into CORBA?**
- **What else do we need?**



## Goals of workshop (1)

- **Understand requirements**
  - on the telecomms application programmer's interface
  - can we hide everything behind CORBA objects?
  - on the Telecoms ORB implementation
  - one size fits all?
- **Scope out technical solutions**
  - which parts of CORBA & Object Services are suitable, which are not
  - what additional functions are needed and where to add them



## Goals of Workshop (2)

- **Set implementation priorities for prototypes**
  - “must have” vs “useful” features
  - legacy interworking / portability constraints
- **Identify demonstrators and pilots**
  - who might want to use the prototype - to do what
- **Target for results**
  - e.g. further OMG standards
  - feed into vendor’s technology



## Structure

- **A set of seed presentations (tomorrow)**
  - **HP: Requirements**
  - **BT: CORBA in broadband networks**
  - **CNET: Retina - a TINA DPE**
  - **Nemesys: Distributed control of dumb ATM network devices**
- **An ANSA view of telecoms from me, now**
- **Open discussion**



## A Framework ORB

- **Thesis: one size does not fit all**
- **An ORB should consist of a core framework plus plug in modules**
  - **core should be lightweight and efficient**
  - **core provides hooks for managing, monitoring and resourcing modules**
- **Interworking between variants**
  - **alternate modules for same function within one ORB vs multiple parallel ORBs and bridges?**



## Objects considered harmful

- **An object library defines a virtual machine for a computational model**
  - the methods are the virtual instructions
  - why replace an API of 1196 procedure calls by a library of 1196 methods
- **An embedded language offers**
  - reduction of book-keeping and dynamic checking
  - more structure
  - increased static checking
  - increased automation
- **So is it CORBA for interworking, or CORBA for portability**





## CMIP considered harmful

- **GDMO and CMIS/CMIP are the sacred cows of network management**
  - but not really out in the field yet, and allegedly cumbersome
- **Can we hide them**
  - GDMO is yet another IDL,
  - CMIS is a DII/DSI interface,
  - CMIP is an RPC, so
  - put management modules in the framework
  - but can this really be done transparently
- **Regard OSI Mgt as a legacy and design native CORBA interfaces**
- **What management monitoring interfaces do we need into ORBs?**



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## ANSA Binding vs TINAC Connection Management

- Both provide a high-level abstraction of the connection management technology
- ANSA handles distribution through own infrastructure
  - better for heterogeneity and federation
- TINA-C assumes distribution done by technology
  - better for “legacy” signalling systems
- Practical systems will probably need a mixture of both



## Events considered harmful

- **Most telecoms applications are event driven**
- **but managing large, interlocking state tables is hard**
- **Event driven system are more memory efficient than thread-based systems**
- **Synchronous programming gives you best of both worlds**
  - **thread-like programming model**
  - **event driven infrastructure**
  - **pre-computed optimal schedules**



## Repository

- **CORBA objects have interface type names - used in ANY and DII/DSI**
  - either assumes a global repository, or
  - federation of repositories is solved by ORBs in some “clever” way
- **Type conformance undefined**
  - name equality: overhead of registering all types and exposed to (federated) repository management bungles
  - repository defined subtypes: even more exposed to bungles
  - server defined subtypes (c.f. COM): long term clutter
- **Use signatures in place of names and apply conformance checking**
  - repository ceases to be a) mandatory, b) ubiquitous
  - “false match” problem - sensible trading minimizes this



## Who needs an ORB anyway

### Modern internet protocols and routers are getting smarter

- multi-service: video, audio, data transport
- service integration: http
- group management, multi-cast
- resource reservation
- content-based queuing for resource control, policing, security,
- So a good comms interface is all you need
  - what is the best split between end-to-end vs hop-by-hop functionality



## Profile

- **Underlying OS**
  - assume kernel threads, fast IPC, shared libraries
- **Size constraints - footprint**
- **Number of objects, number of stacks, number of threads**
- **Object life cycle**
  - rate of create / delete / recycle
  - garbage collection vs explicit release
  - object mobility
- **Other key statistics**



## 'Nuff Said

- all the foregoing was an ANSA / CORBA view of telecoms
  
- ..... tomorrow we should look at the issue the other way round too!