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ANSA Phase III

Technical Proposals for ANSA and Object Laboratory

Andrew Herbert

Abstract

An updated version of a presentation to the ANSA Management Committee meeting of 12th July 1995 setting out the technical Proposals for ANSA Phase III as a research programme and Object Lab as a "proof of concept" programme. The update extends the original with additional detail recording views expressed in the course of the presentation.

This document is being used as the outline for detailed planning of ANSA Phase III work for 1995/6, and for the APM/OMG Object Lab.

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Project Management (confidential to ANSA consortium for 2 years)

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ANSA Management Committee 12th July 1995

**Technical Proposals for
Object Lab
and
ANSA**

(Updated Version)

**Andrew Herbert
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Scope

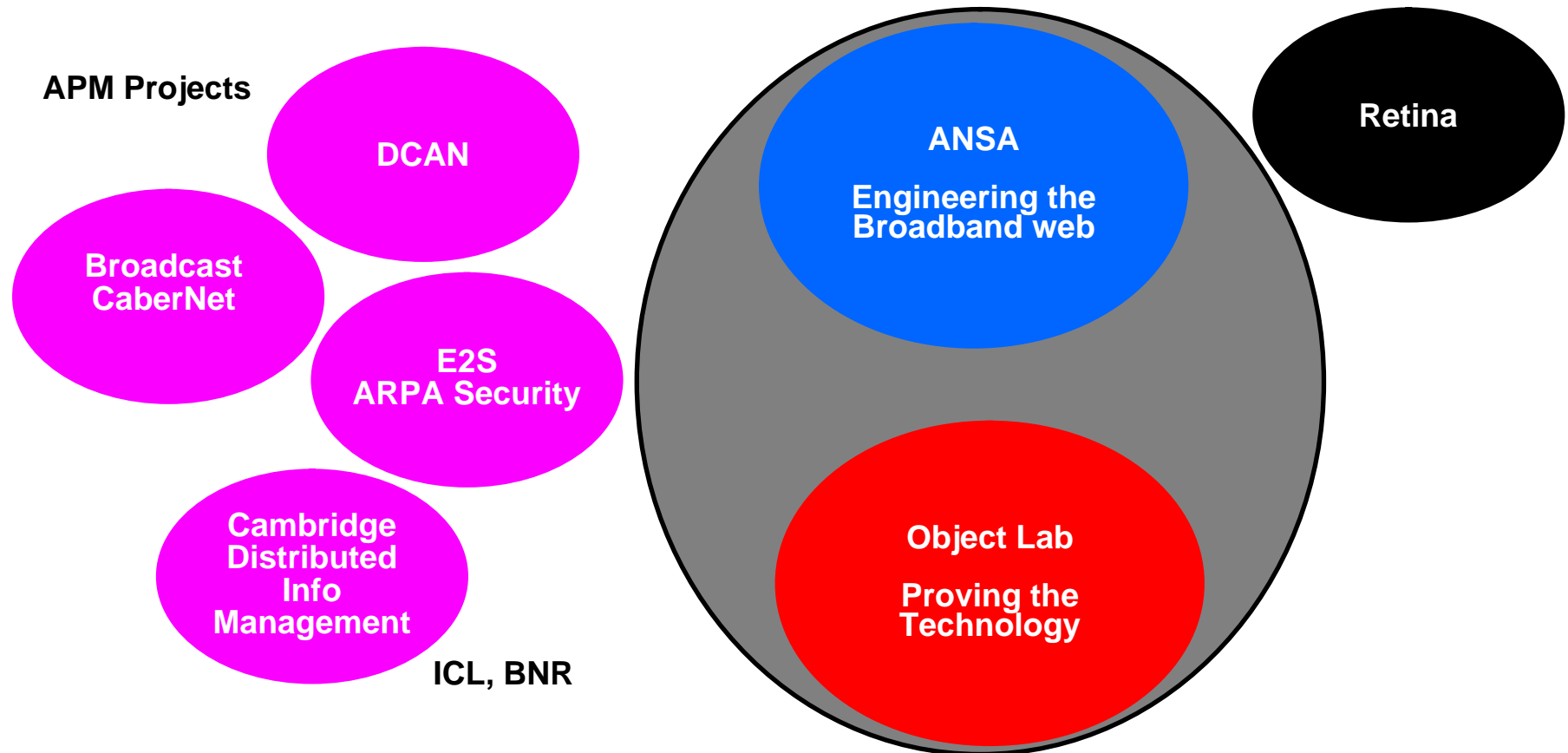
- **Object Lab**

- Show benefits of Distributed Object technology
- Combine ANSA architecture and OMG interfaces
- Target users via “meta applications”

- **ANSA**

- Research new technologies and application areas
- Building on ANSA strengths
- Target innovators

The Big Picture





Associated Projects (1)

- **Distributed Control of ATM Networks (Cambridge, Nemesys, APM)**
 - managing simple ATM devices (cameras) from workstations
 - microkernel optimized for interactive video applications
 - out of band control
 - piloting “desk area networks”
- **End-to-end Security (APM, HP, GemPlus, Swiss bank, GMD, SmartCard Forum)**
 - understand various Internet business models
 - develop user technology (e.g. Smartcards)
 - develop server and management technology (e.g. key management)
 - fit security to business model and not vice versa



Associated Projects (2)

- **ARPA Security (APM, MIT, OSF)**
 - develop further current ANSA architecture for process integrity in federated systems
- **BROADCAST**
 - ESPRIT academic basic research into distributed systems
 - dependability focus
 - nominated ANSA Consortium as their “channel to industry”
- **Cambridge Distributed Information Management**
 - ICL & BNR sponsored research
 - distributed solutions to handling large amounts of diverse data
 - anticipates UK ForeSight “Distributed Information Management”



Associated Projects (3)

- **Retina (France Telecom, BT, HP, ALcatel, Chorus, APM,)**
 - **build a prototype TINA DPE**
 - **one version to support real-time, interactive services**
 - **one version to support operations, administration and management**
 - **interworking between the two**
 - **converge TINA, CORBA and ANSA**



IPR Principles

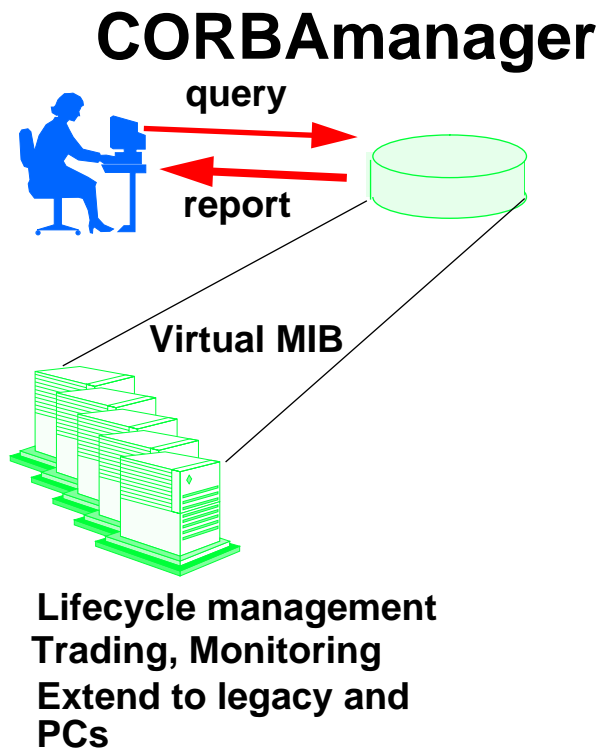
- **APM generated IPR made available to ANSA Sponsors**
- **External project IPR input to ANSA depends upon project consortium agreement**
- **ANSA IPR feed into projects controlled according to ANSA MC policy**
- **APM seeks projects that either**
 - **are complementary to ANSA workprogramme (gap filling, investigating new topics, supply extra resource etc)**
 - **are proof of benefit concepts**
- **APM aims to maximize benefit to ANSA sponsors through its projects**
- **(Project Director will produce a summary paper)**



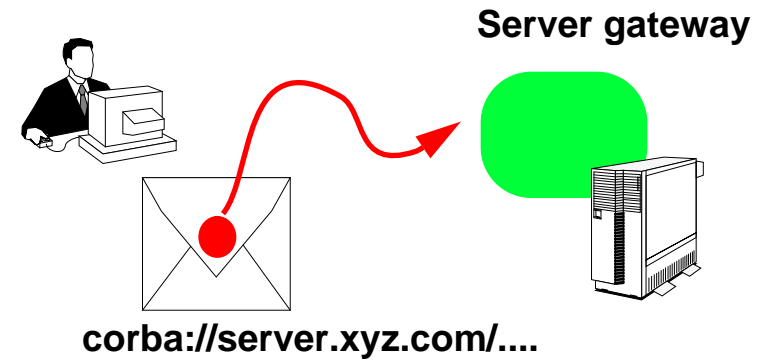
Object Lab

- Initial proposals
- All examples of “meta applications”
 - cross-domain in nature
 - canned solutions to tough problems
- Final choice by ANSA/OMG officers, moderated by user sign up
- Rolling series of parallel 12-18 month staged projects
 - deliverables every 3-4 months
- X-Consortium style
 - Working robust examples
 - regular releases, upgrades
 - Member’s briefings, feedback sessions
 - Electronic interface to team

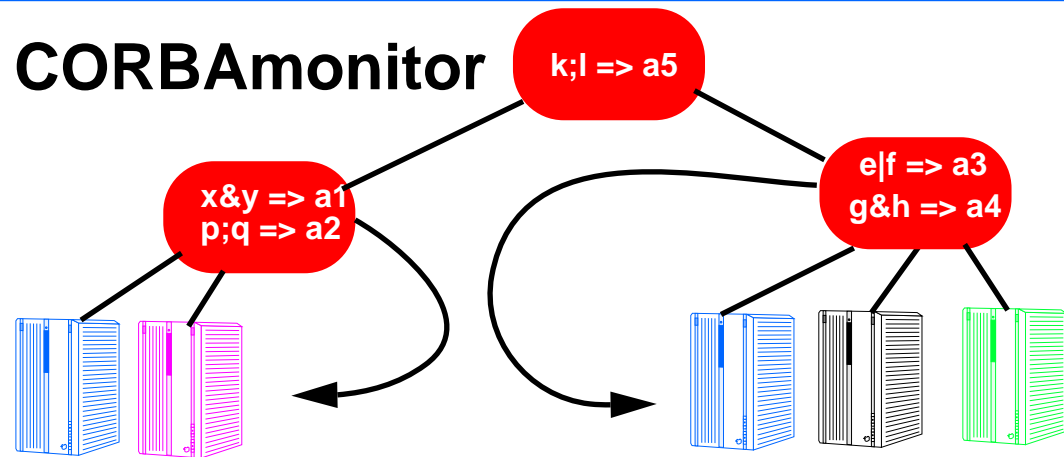
Object Lab Projects



CORBAMail



CORBAMonitor





CORBAmanager

- **Managing CORBA applications**
 - **Show how to use lifecycle and trading**
 - **Provide a distributed *Management Information Base***
 - **Extend to managing PC and legacy applications**
 - **2-3 (+2) person years**
- **Database = consistency**
 - **System management model integrity**
 - **Manage sets as well as elements**
 - **queries and reports**
 - **Single interface =
Simple automation =
Lower management costs**
 - **Management flexibility**
 - **add / move / replace / delete applications**

Target financial services sector



CORBAmail

- Send object pointer in mail messages
 - CORBA browser to enable user to invoke service
 - CORBAmail gateway to support mailed services
 - Integrate with MIME (hence WWW), OLE, ODBMG
 - 2(+1) person years
- Electronic direct mailing of services
 - c.f. electronic “shopping”
 - Software distribution / upgrade
 - under user’s control
 - asynchronous
 - Replace document paradigm by active content paradigm
- Target office automation sector



CORBAmonitor

- | | |
|---|--|
| <ul style="list-style-type: none">• Monitor events around a widespread system• Observers trigger actions when specific conditions met• Graphical interface for composing <i>event-condition-action rules</i>• Audit trail• Scalable, transparent• 1-2 person years | <ul style="list-style-type: none">• Alarms in telecoms, manufacturing• Fraud / integrity / exception management in business processes• Federating disjoint databases• Workflow automation |
|---|--|

- Target Telecoms sector



General Comments

- **Need to hit ground running**
 - leverage current ANSA CORBA-WWW interworking
- **The projects are canned applications, not “magic bullets”**
 - the projects are not a pancea for their domain - they are focussed on a specific set of requirements
 - e.g. CORBAManager is not a replacement for ONMF or associated products
 - all the examples are deliberately “meta applications” - they can be used in many domains
- **Need users to test/showcase the projects in real applications**
 - **OMG will find users as part of their marketing of Object Lab**



Others

- **CORBAledger**

- order entry and billing using distributed persistent C++ transactional objects accessible from COBOL, Powerbuilder etc

- **CORBAlinks**

- hyperlink database for searching, indexing and retrieving over databases, document servers and WWW

- **CORBAphone**

- CORBA-based TAPI and shared text/image whiteboard conferencing tool

- **CORBAedi**

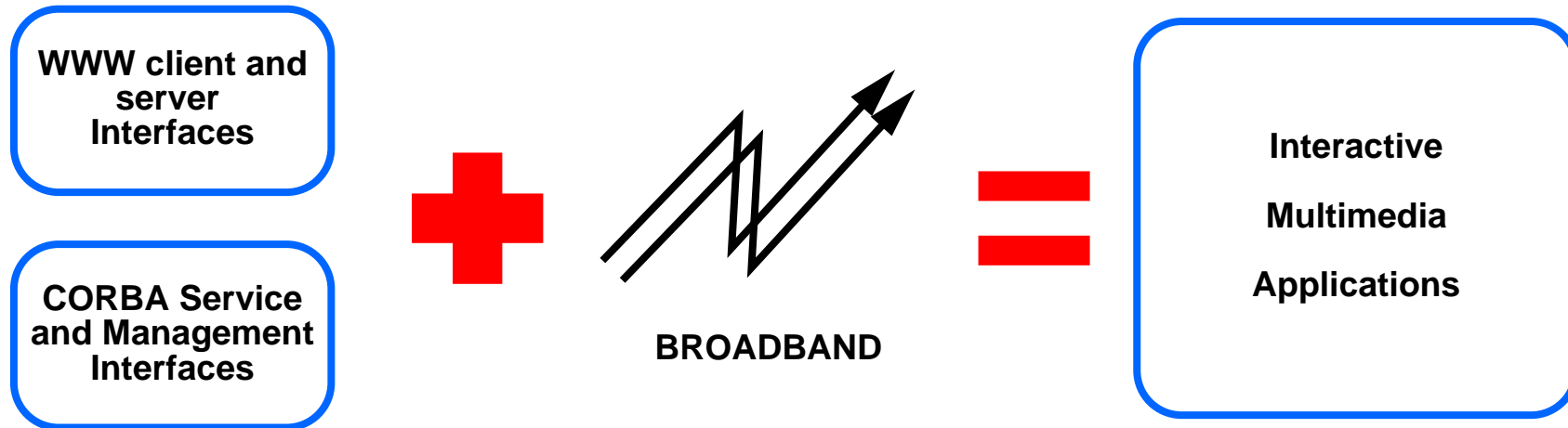
- CORBA-based gateway between edi domains



ANSA Work Programme 1995-6 and beyond



1995/6 Focus on Engineering the Broadband Web



Assets: ANSAware/RT (now)
Signals, Explicit binding (Feb 96)
WWW URCs and Agents (Dec 95)

New Nucleus (Sept)
CORBA-WWW (now)

C++ API (Sept)
IIOP-WWW (Nov)

Upcoming Research: Synchronous Programming
Switch and device control
Active content

QoS Management
Customized OS



Why Interactive Multimedia on the Web?

- **New opportunities**
 - 80% of IBM PCs sold last month had multimedia
 - 20% of world's computers on the Internet
 - ISDN renaissance through videoconferencing will increase domestic bandwidth
 - lightweight ATM from computer industry will dissolve workstation into a "desk area" multi-media network (including cameras, scanners, etc)
 - these technology changes will stimulate new **CONSUMER-ORIENTED** applications (c.f. growth in PC software industry once critical mass in place)
- **ANSA => Architectural stability over inevitable industry turbulence**
- **Carry forward systems integration benefits from ANSA I, II and III**
- **ANSA = Shared technical risk**

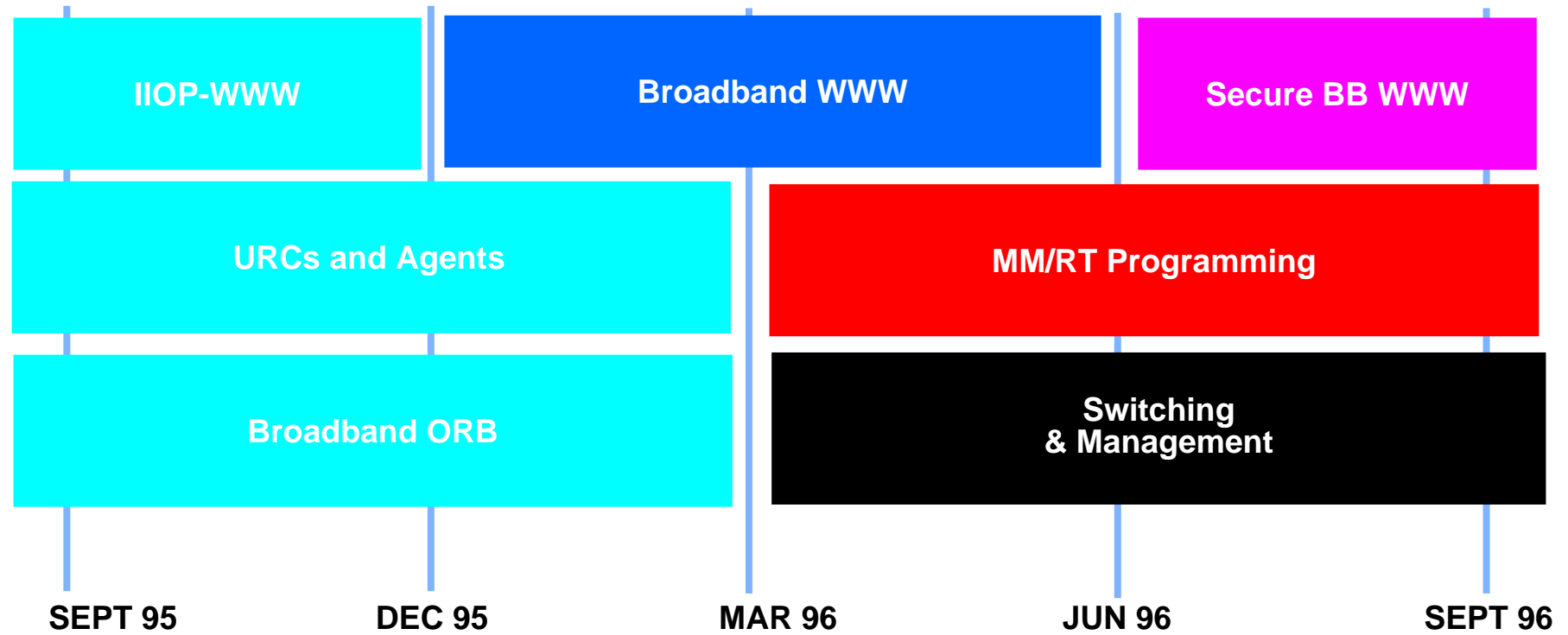


Why WWW and CORBA?

- **CORBA is the centre of gravity of systems integration**
 - CORBA defines interworking standard and portability standard for “glueware”
 - CORBA query, property, relationship and transaction functions open up databases
 - CORBA-CORBA, CORBA-OLE, CORBA-GDMO “bridges” available
 - only few applications and databases have been CORBAized
- **WWW enables consumer connectivity to open networks**
 - large amount of quality content and early examples of electronic commerce already visible amongst the dross
 - miserable tool set for connecting existing applications and data
- **By combining WWW and CORBA we speed up development of the WWW and stimulate the CORBA marketplace**



Immediate ANSA Plans - Outline





Tasks (1)

- **IOP-WWW**
 - current campaign to build a new (compatible) WWW with CORBA interfaces
- **Broadband WWW**
 - integration of IOP with Broadband ORB (see below) to enable interactive multimedia in the WWW
- **Secure Broadband WWW**
 - link in results from E2S to provide security foundations for copyright protection, access control, accounting, etc
- **URCs and Agents**
 - current work to understand engineering needs of agents and distributed hypertext linking systems
 - (note AI aspects of agents are outside the scope of ANSA)



Tasks (2)

- **Multimedia Programming**
 - investigate use of synchronous programming for multimedia applications
 - investigate operating systems support for interactive multimedia
- **Broadband ORB**
 - current work to build real-time / multimedia / telecoms ORB components and demonstrate their use
 - investigate both scaling up to serve large networks and scaling down to use in consumer appliances
- **Switching and Management**
 - for networks of multimedia devices



Tasks (3)

- **Duration and effort level of tasks implies**
 - a significant piece of work can be done and useful components developed
 - only some aspects of the problem space will be covered in depth
 - stands a chance of staying at the front of the pack
 - reasonably sized “groups” within ANSA team
 - defined goals for each group
 - shared objective between the groups



Futures

- **What is the longer term vision?**
 - there are several more years work in engineering the broadband web if the proposed work is successful as a first step
 - there will be a need to look at the needs of support for low power, small scale, wireless consumer appliances
 - e.g. a “silicon ORB“
 - there will be a need to develop techniques to enable applications to span the bimodality of high bandwidth (the demanding few) versus low bandwidth users (the great majority)
 - e.g. asynchronous techniques, variable level encoding
 - there will be a need to develop techniques to handle large federations of data and services, beyond current “traders” and “repositories”
 - a transition from the current “document” paradigm of computing to an “active content” paradigm



ANSA Process - A Reminder

- Strategy set by ANSA Management Committee
- Tasks agreed with Technical Committee
- Produce robust prototypes design documents
- Full access to ANSA team
- Technology transfer through workshops, visits, secondments