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## **Training**

# **A Technical Introduction to ANSA**

**Chris Mayers**

### **Abstract**

A generic 20-minute overview of ANSA, originally given to SmithKlineBeecham. Intended to be used in conjunction with other presentations; does not cover APM, or the background to the ANSA project. Not specific to ANSA Phase III.

The business problem addressed is the accelerating pace of change.

The technical problem created by that business problem is how to choose between the products in the marketplace.

The solution being offered is the application of ANSA.

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**Draft**

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Briefing Note

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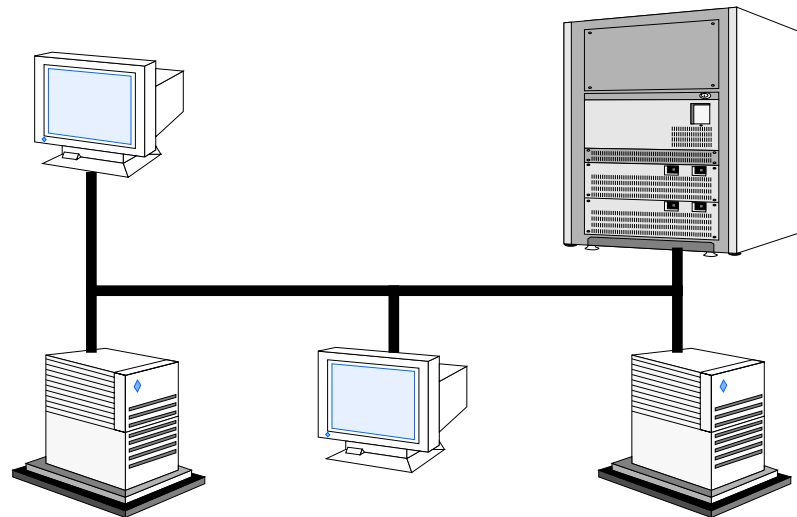
**Distribution:**

**Supersedes:**

**Superseded by:**



# Architecture for Distributed Systems



**Chris Mayers**

## The pressures for change

- **Political, economic, social, and technological...**

- **Globalization**



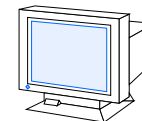
- **Rapid organizational change**



- **Increased customer expectations**



- **Inexpensive computing and telecommunications**





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## The demands of change

- **These pressures make distributed computing *necessary*, as well as *possible***
  - **in the near future, most systems will be distributed**
  - **world-wide business requires world-wide systems**
- **Information networks are the starting point...**
- **... how to build systems to coordinate information from many sources?**
  - **diverse sources: old systems, new systems, and other organizations' systems**
  - **separate sources: from different places at different times**



## **The demands of continuity**

- **Preserving investment**
  - **in people, and the legacy systems they use**
  
- **Bridging the old and the new**
  - **evolution not revolution**



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## ANSA - An Architectural Approach

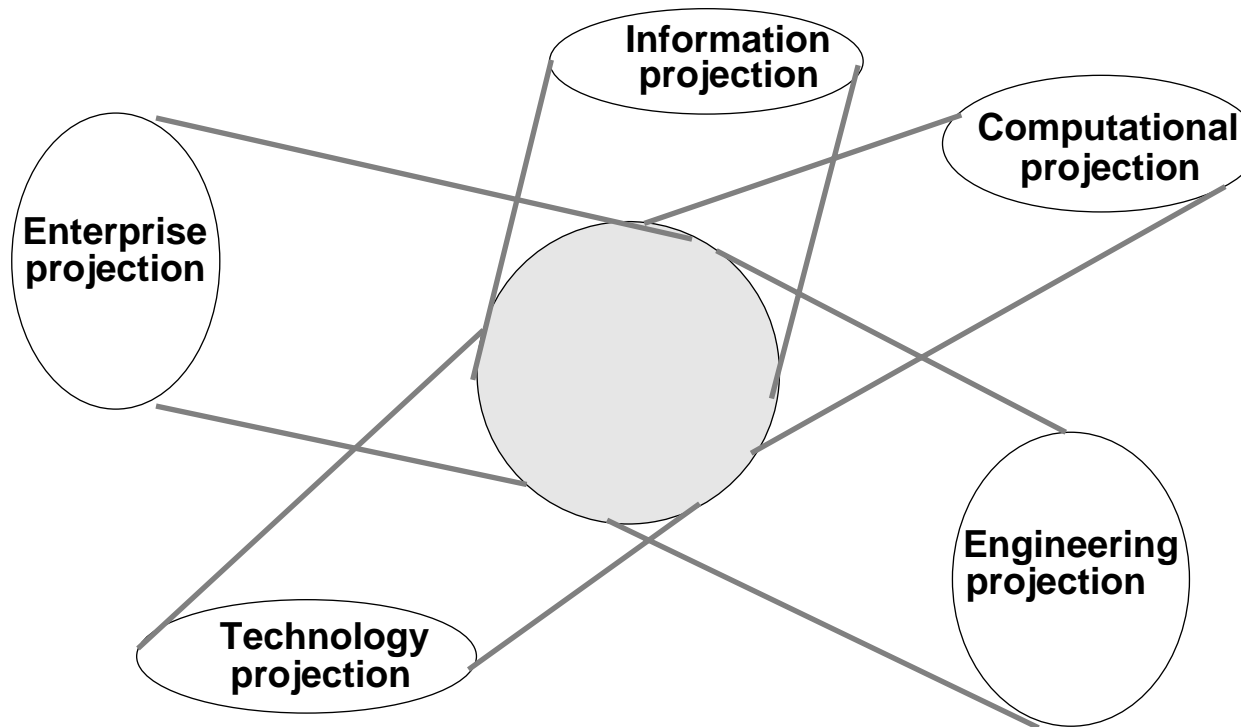
### Balancing change and continuity with:

- **a framework of 5 *viewpoints***
  - each reflecting the interests of the stakeholders: business managers, users, IT managers, IT developers
- ***services* encapsulated by *distributed objects***
  - providing specialized and standard services
  - freedom of choice via *trading*
- ***transparencies* to simplify applications**
  - exploiting the benefits of distribution



## The ANSA viewpoints(*projections*)

These are of the same system and are not layered



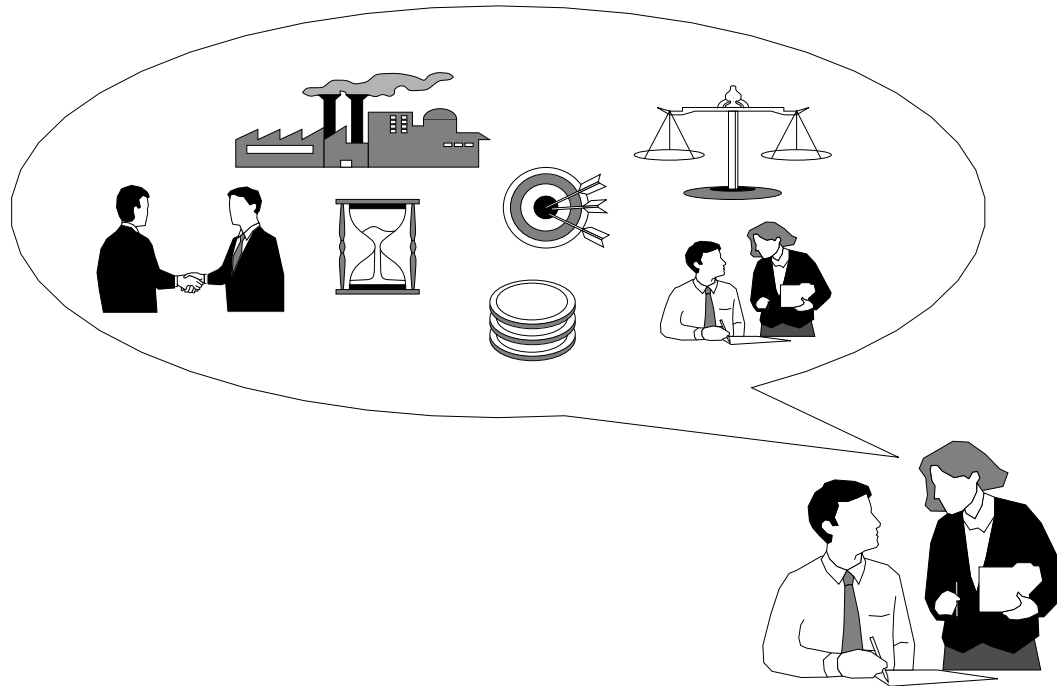




## Content of the 5 projections

- ***Enterprise*** - the *purpose* of the enterprise and the system within it
- ***Information*** - the *meaning* of the information within the enterprise
- ***Computational*** - the *execution* as a model of distributed processing
- ***Engineering*** - the *mechanism* for realising the computational model
- ***Technology*** - the *conformance* of hardware, operating systems, compilers,...

## Example: Enterprise projection



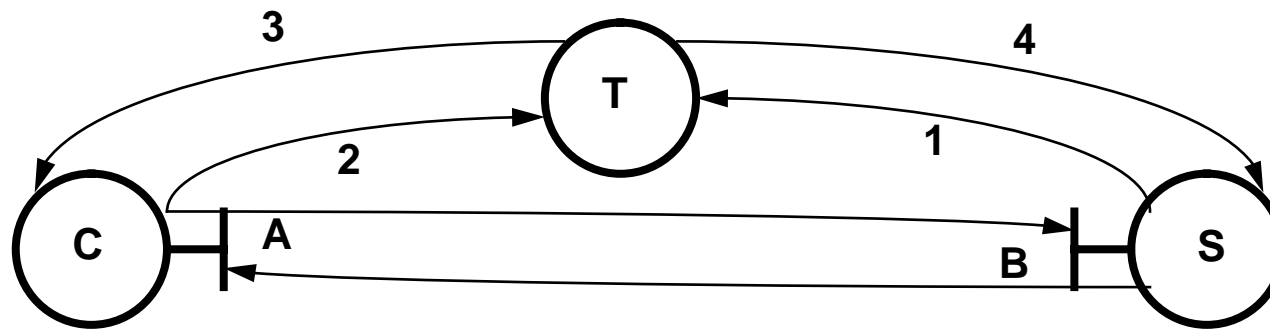
- **Describes agreements, targets, people, time, money,...**



## Services and Distributed Objects

- **what matters is the *function* of a service**
  - applications do not need to be aware of the underlying technology
- **... this is defined by its *interfaces***
  - an object provides the encapsulation
- **the object can reside anywhere**
  - a Trader allows interfaces to be found at run-time

## Trading



- 1. server->trader( $offer_s$ ,  $request_c$ , policy)
  - 2. client->trader( $request_s$ ,  $offer_c$ , policy)
  - 3. trader->client( $ifref_B$ ,  $request_c$ )
  - 4. trader->server( $ifref_A$ ,  $request_s$ )
- ***A transparency*** masks this detail from the application



## Properties of distributed systems

- **Diversity**
  - of type (hardware, operating system, communications mechanism,...)
  - of scale (speed, capacity, bandwidth)
- **Separation**
  - in space
  - in time
- **Federalism**
  - peer-to-peer and autonomous operation
  - within and between organizations
- **Concurrency**



## The ANSA approach

- **Balances the demands of change and continuity**
- **Represents the interests of stakeholders through viewpoints**
- **Implements services with distributed objects**
- **Exploits diversity and federalism for technical and business advantage**