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Training

ANSAwise - Distributed Object Systems in Action

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Abstract

Organizations are aware that distributed object systems may offer business benefits, but may be unsure exactly when is on offer, what the difficulties are, and whether they can actually deliver the promised benefits.

This is the first module of CORBA branch of the ANSAwise training programme, and outlines the business case for distributed systems.

This variant specifically focuses on the telecommunications market. Distributed systems other than CORBA are mentioned briefly.

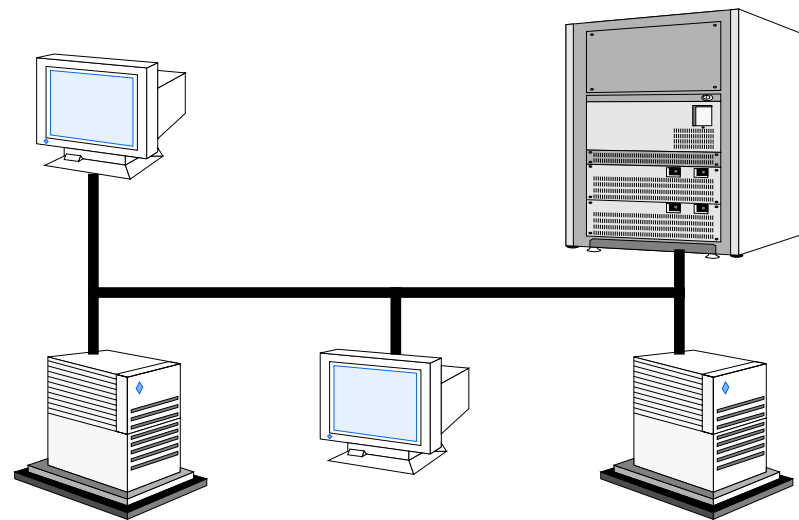
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Distribution:
Supersedes:
Superseded by:

Distributed Object Systems in Action





In this session

- *Explain the business issues surrounding distributed systems*
- *Explain in what ways distributed systems are different*
- *Examine some real applications*



What's the real business challenge?

Coping with change

The pressures for change

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

- **Globalization**



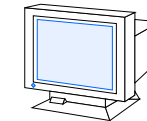
- **Rapid organizational change**



- **Increased customer expectations**

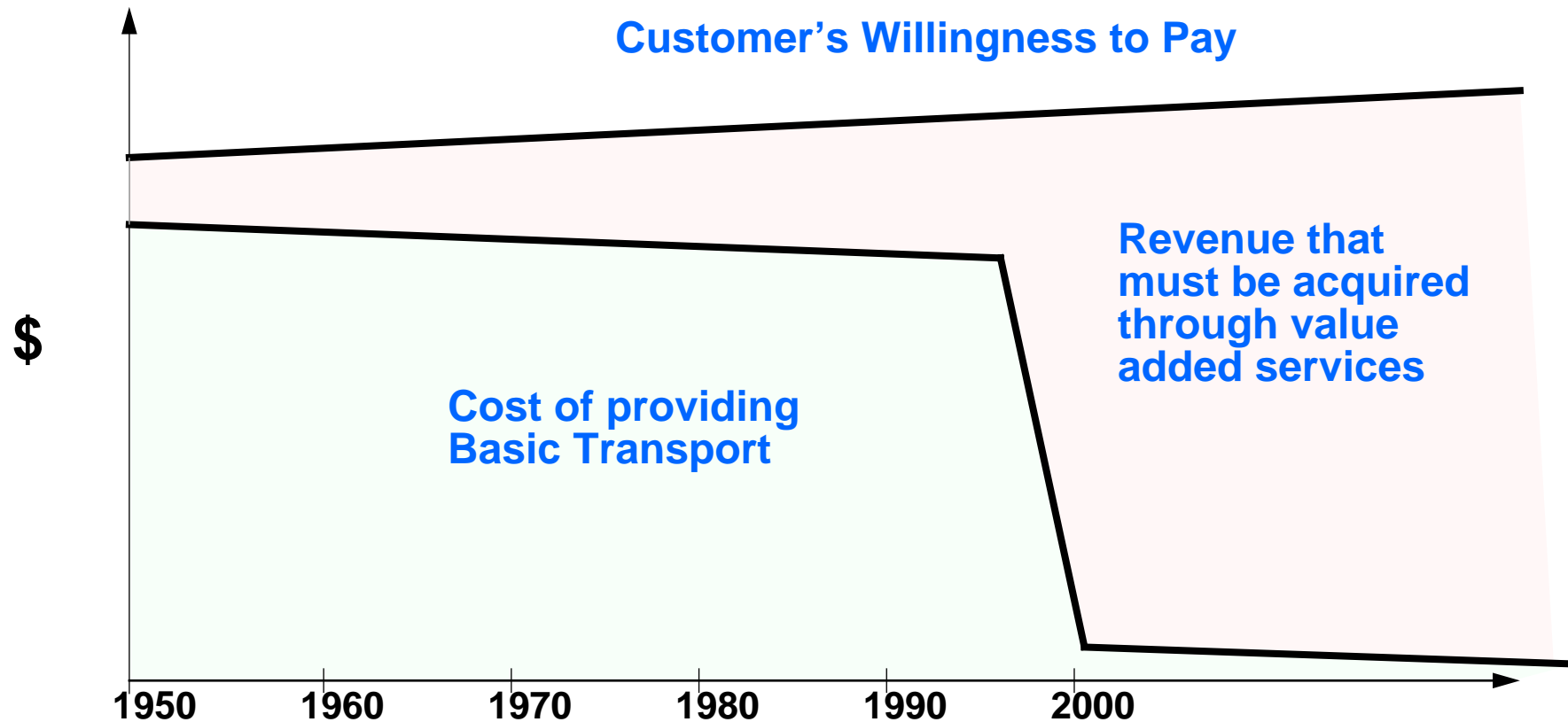


- **Inexpensive computing and telecommunications**





The business challenge for telecommunications





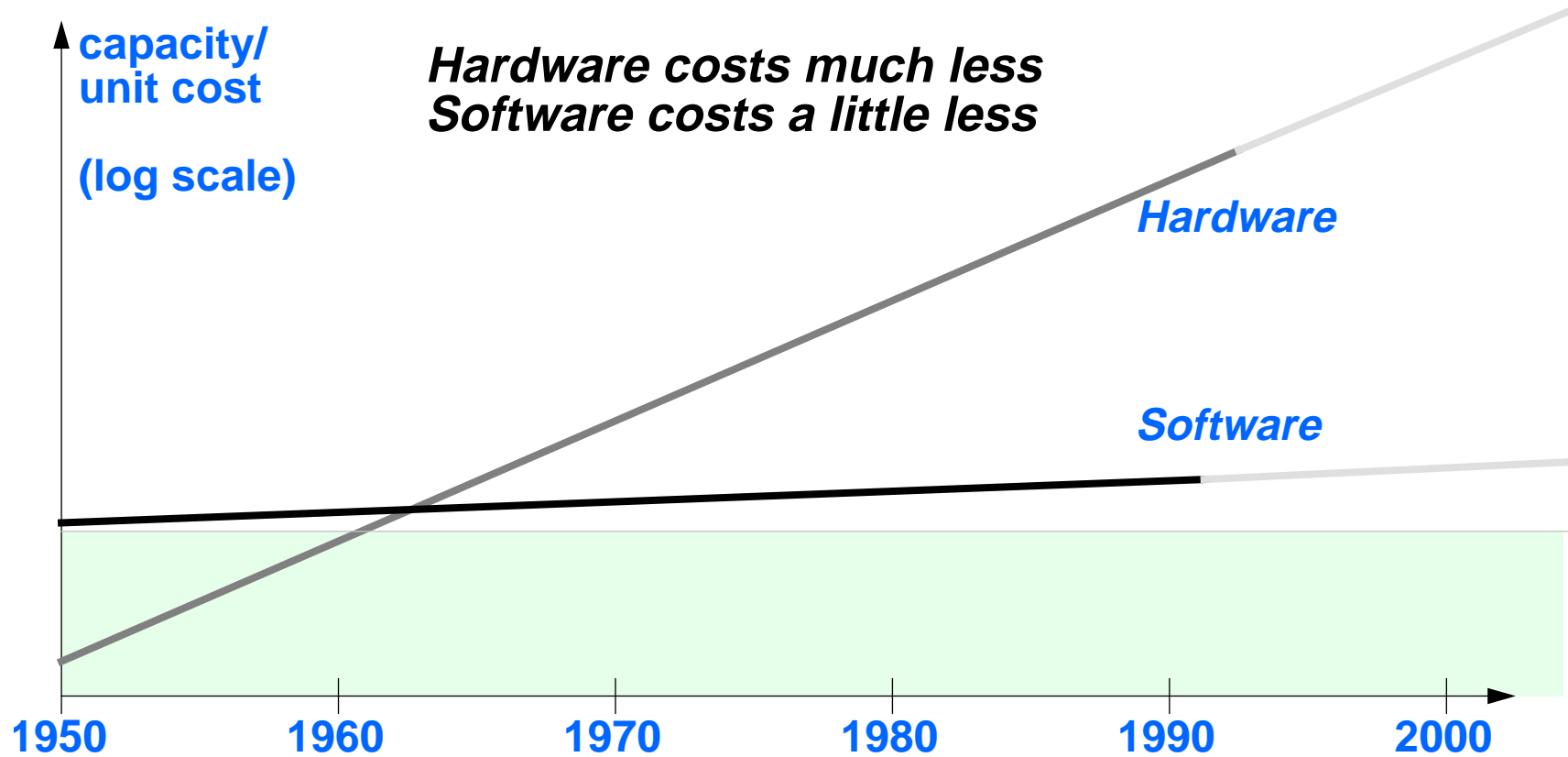
Meet the customer's service expectations...

- *timely:* *I want it immediately*
- *personalised:* *I want it to meet my needs*
- *competitive:* *I want to pay as little as necessary*
- *dependably predictable:* *I want it to be reliable*
- *integratable:* *I want it connected to my PABX, PC, ...*

.... before your competitor does



Costs of providing service





Software cost in providing services – a new problem?

- *We have already tried these solutions....*
 - Project management
 - Requirement analysis
 - Analysis and design methodologies
 - Informal and formal approaches

- *....they work, but not for complex systems*
 - they do not *scale*



The service provider's problem - Summary

- **Providing networked information services**
 - not simply the physical transport of data
- **Satisfying the Critical Success Factors**
 - services must be *developed rapidly*, to meet market windows
 - new services must *interwork* with existing services
 - services must be *easy to deploy*
 - services must be *easy to manage*
- **Meeting the customer's expectations**
 - before your competitors
 - at a price the customer will pay



About distributed systems

- *Distributed systems are those which consist of interconnected cooperating components*
 - there is no central machine or group of machines
- *Distributed applications are those written for a distributed system*
- *Distributed processing is the method for designing and building distributed applications*
- *Distributed computing is the technology we use in distributed systems*



Examples of distributed systems

- ***Diverse business areas***
 - **Telecommunications**
 - **Airline reservations**
 - **Retail point-of-sale**
 - **Banking**
 - **Command and control**
 - **... and many more**

- ***Built at the limits of the technology***



Distributed systems infrastructures

- *CORBA from the Object Management Group (OMG)*
- *DCE from the Open Software Foundation (OSF)*
- *Distributed OLE from Microsoft*
- *Other specialized distributed systems technology*
 - *for example, ANSAware 4.x*



Motorola Iridium Project

- *66 satellites in low orbit providing a Global Cellular Network*
- *First launch in 1996, open for service in 1998*
- *\$3.4 billion investment*
- *Distributed system controls the satellites*
- *Various ground control stations need to exchange “route maps”*
- *Uses IONA’s Orbix*



Telefónica PUEN Project

- ***Management system for distributed application services***
 - **operating system access services**
 - **distributed data management services**
 - **application monitoring**
 - **fault management**
- ***In the near future will integrate with TMN Q3 and IETF SNMP management interfaces***
- ***Uses IONA's Orbix and SunSoft's DOE***



Inherent features of distributed systems

- *Separation: physical and logical dispersal*
- *Diversity: many types of machines in the same system*
- *Legacy: evolution and interworking of existing systems*
- *Scalability: low cost of computing per machine*
- *Decentralization: no single point of control*
- *.... these differences are fundamental*

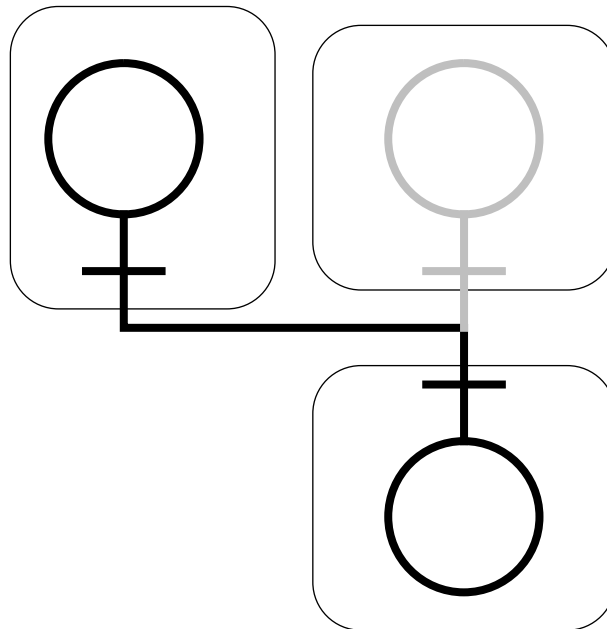


Transparency for distributed systems

- *These inherent features would make it complex for the application programmer*
 - unnecessary complexity should be masked from the applications
- *The distributed systems infrastructure should make these features transparent*
 - using special transparency mechanisms

Example Transparency - Migration

- **Migration Transparency**
 - application need not know where the object has moved to





Different policies for different applications

- *Availability versus Consistency*
- *Autonomy versus Uniformity*
- *Security versus Convenience*
- *... and many other unavoidable trade-offs*



“Openness”

- *Which of these would you class an “open system”?*

	Yes	No	Don't know
IBM PC			
Apple Macintosh			
Unix			
Microsoft Windows			
The worldwide telephone network			
Novell NetWare			
A 4GL that you know			

- *Which system most closely fits your idea of an open system (it may not be listed above)?*



Thinking about openness

- *Looking at your answers, try to write down what you think defines “openness”. (A list of keywords is fine)*

- *Try out your definition with some other systems you have heard of*

	Yes	No	Don't know

Get ready to discuss this



Your notes



Summary

- *The major business challenge is coping with change*
- *Distributed object technology is here today*
 - *there are real applications being built with industrial-strength products*
- *The inherent features of distributed systems make application programming difficult*
 - *unless the infrastructure provides transparency mechanisms*
- *Take care when assessing “openness”*



Where next?

- *In this course we'll be exploring CORBA from the Object Management Group (OMG)*
 - ...the specifications
 - ...the products
 - ...the challenges