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ANSA Phase III

Slides for BSI IST/21 QoS open meeting

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Abstract

This is a set of four or five slides for a 20 minute presentation to the BSI IST/21 open meeting on Quality of Service held on 15 December 1993.

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QoS in ODP

- **Definition:** A set of quality requirements on the collective behaviour of one or more objects (see QoS TR)
- **Use:** computational specifications include “environmental constraints” to describe necessary non-functional requirements (otherwise unspecified computationally)
- **Scope:** performance, timeliness, availability, security, safety etc. of communications, resources, bindings etc.
- **Importance:**
 - bindings may fail if environmental constraints required are not provided
 - the basis on which different transparencies (QoS mechanisms) are selected



Industry Need for QoS

- **Why QoS needs recognition:**
 - **No such thing as “absolute” quality, it falls into a large number of categories and in each category varies**
 - **Cost/quality and quality/quality trade-off: the highest quality in every category is not always the best choice for customers**
 - **QoS relevant both to customer and to supplier, standard qualities need to be defined, QoS is an important part of a customer/supplier agreement**
- **Where QoS is being recognized:**
 - **telecoms industry**
 - **multimedia transmission and presentation**
 - **industrial process control**
- **Of APM’s sponsors at least BellCore, BNR, CNET, GEC, GPT, HP and ICL have a strong interest in QoS and performance**



Importance of Performance

- **Includes timeliness of operation as well as its speed**
- **Speed:**
 - **Speed is the quality most immediately perceived by a user**
 - **Often a direct relationship between speed and the size of demand that can be satisfied**
- **Timeliness:**
 - **In the real world things can happen *too late***
- **Most applications have some performance requirement**



QoS in ANSA Phase III

- **Real-time computing is about 40 years old, distributed processing is about 20 years old (ODP about 10 years). How far can you get by adding the results of real-time research to Open Distributed Processing?**
- **Goals of current work:**
 - the integration of performance concepts into Open distributed architectures
 - define engineering architecture that enables QoS requirements to be met
 - not to define the syntax or semantics of QoS requirements
- **Approach is centred around ODP binding:**
 - engineer ODP infrastructure in a modular fashion (using objects)
 - parameterize each object template with the range of QoS it could provide
 - bind together appropriate objects with appropriate QoS specifications to fulfil overall QoS requirements
 - use pre-defined “QoS templates” to specify such mappings
 - define resource management functionality capable of supporting a binder in providing an object’s QoS requirements



QoS in ANSA Phase III

- **Extensions to ODP that might be considered as a result of this work:**
 - **define QoS capable of supporting performance requirements both at a QoS-mechanism-specific (“Low”) level and at a QoS-mechanism-independent (“High”) level**
 - **describe and allow the use of QoS information during binding (including binding to local infrastructure components)**
 - **provide a convenient and realistic means to map high level QoS to low level QoS**
 - **enable the extension of nucleus functionality in a modular fashion to support different forms of resource scheduling, allocation and management (in deference to the micro-kernel notion)**

