System Models of Distributed Systems - 1

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Three Models

- Physical Model
- Architectural Model
- Fundamental Model

Physical Model

- Early Distributed Systems
- Internet-Scale Distributed Systems
- Contemporary Distributed Systems

Generations

Distributed systems:	*Early*	*Internet-scale*	*Contemporary*
Scale	Small	Large	Ultra-large
Heterogeneity	Limited (typically relatively homogenous configurations)	Significant in terms of platforms, languages and middleware	Added dimensions introduced including radically different styles of architecture
Openness	Not a priority	Significant priority with range of standards introduced	Major research challenge with existing standards not yet able to embrace complex systems
Quality of service	In its infancy	Significant priority with range of services introduced	Major research challenge with existing services not yet able to embrace complex systems

Architectural Model

- Physical Entities – Node/ Process
- Communicative Entities – Objects / Components / Web Services
- Communication Paradigms – IPC / RPC / Indirect Communication
- Roles and Responsibilities
- Placement

Direct Communication

- Inter Process Communication
- Remote Procedure Calls
- Remote Method Invocation

Indirect Communication

- Group Communication
- Publish Subscribe Systems
- Message Queues
- Tuple Spaces
- Distributed Shared Memory

Roles and Responsibilities

- Client / Server
- P2P