NCC Enabled Organizations and Systems Mechanics, Issues, and Trends

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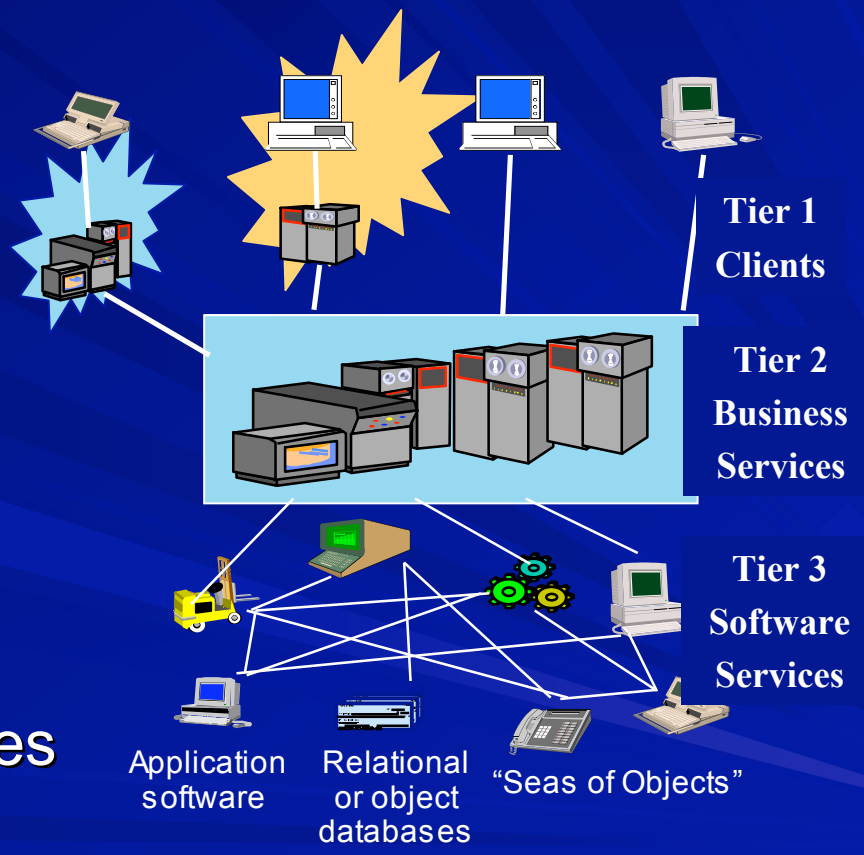
Enterprise Architecture Evolution

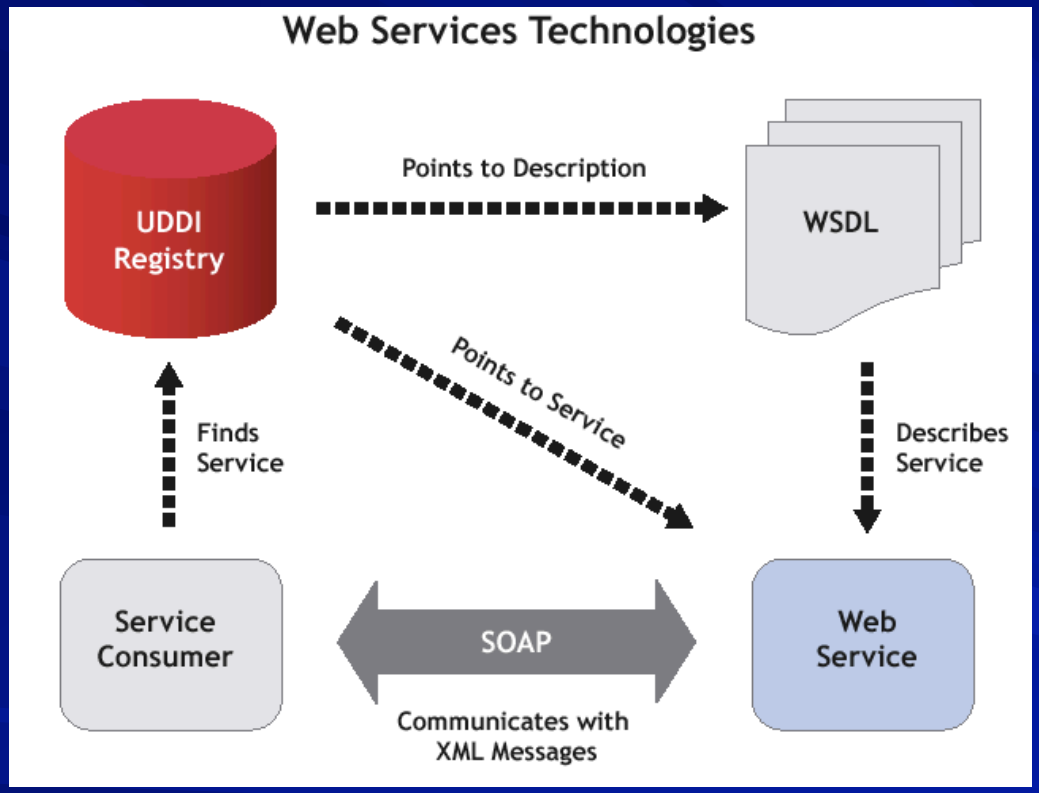
- Distributed Application
  - Client implements the represent logic
  - Middle tier provides the business services: Naming service, Transaction service
  - Backend software processes the middle tier request



Distributed Computing

- Distributed Objects
  - The basic idea is that a binary object standard allows various objects from various vendors, running on various platforms, to work together to create an N-Tier client/server application
- Web Services
  - The basic idea is to use Web enabled protocols and standards to access and integrate remote applications in a transparent way

Web Services Technologies



SOAP

Simple Object Access Protocol (remote invocation)

WSDL

Web Service Definition Language (service characteristics)

UDDI

Universal Description, Discovery, and Integration (directory)

Issues for Integrating Heterogeneous Applications

- Data exchange
- Data format conversion
- Delivery of data
- Data validation
- Performance
- Security
- Transaction management
- Extensibility

Additional Issues for Achieving EAI

- Service and data description
- Service and data selection
- Service orchestration
- Data mediation
- Performance
- Security
- Transaction management
- Scalability, Extensibility, Usability
- Economics and Planning

Research Topics in Software Interoperability and Integration

- Classification of issues in Interoperability and Integration
- Economics of Interoperability and Integration
- Software Architectures for Interoperable Systems
- Supporting technologies
  - Data and Meta-Data Exchange and Mediation
  - Ubiquitous Messaging and Control Integration
  - Enterprise-wide Service Composition Frameworks
- Security protocols (above transport layer)
- Testing and evaluation tools
- Self-integrating systems
- Adaptive Middleware