3. Service Oriented Architecture (SOA)

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D7.III-1 Implementation Roadmap for ASG-based services
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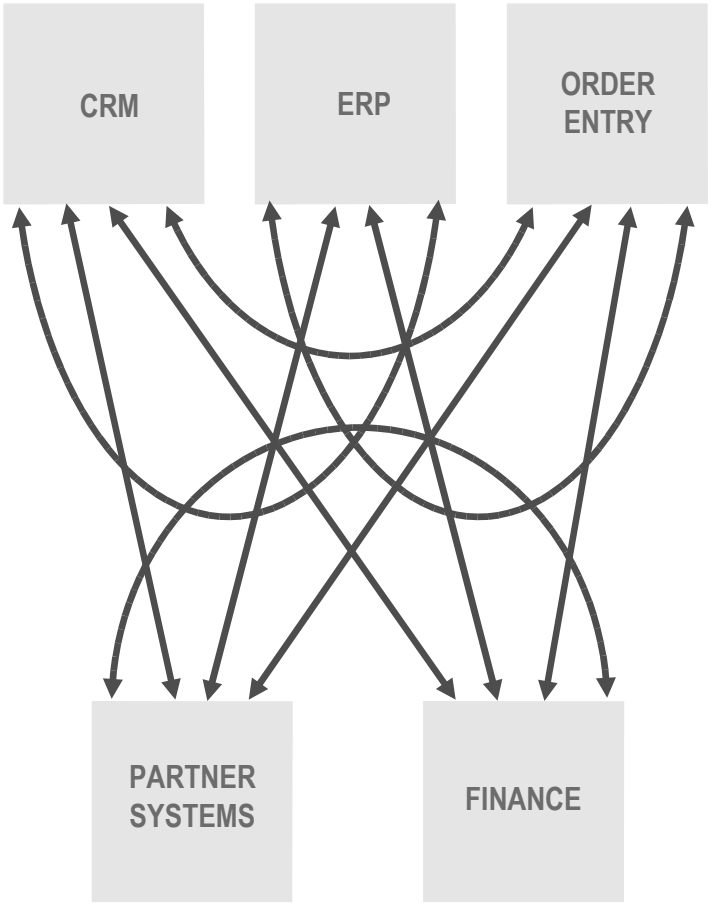
Service Oriented Architecture (SOA)

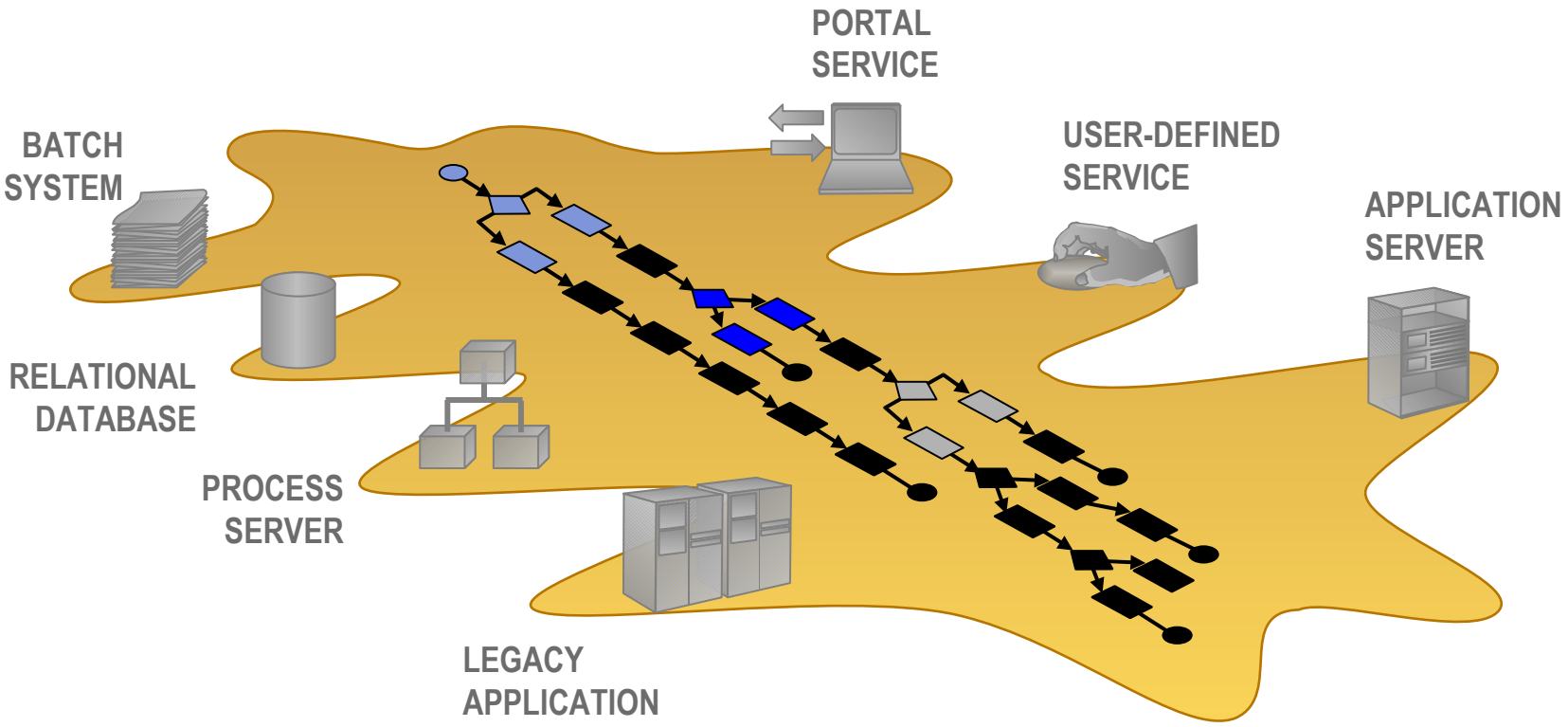
- Goal: Give industry better tools for business agility, i.e. adapt to ever changing business requirements and implement new programs to attract/retain customers
- How:
  - Streamline, refine, and measure business processes
  - Building a new underlying IT infrastructure (SOA) that has flexibility and capable of adapting to change

Today's architecture is often rigid, costly and difficult to operate

- Applications deployed in different departments and business units become silos of data and process.
- Proprietary technologies and skill sets
- Multiple communication infrastructures
- High cost of license, consulting and operation
- Lots of complex control and organizational issues

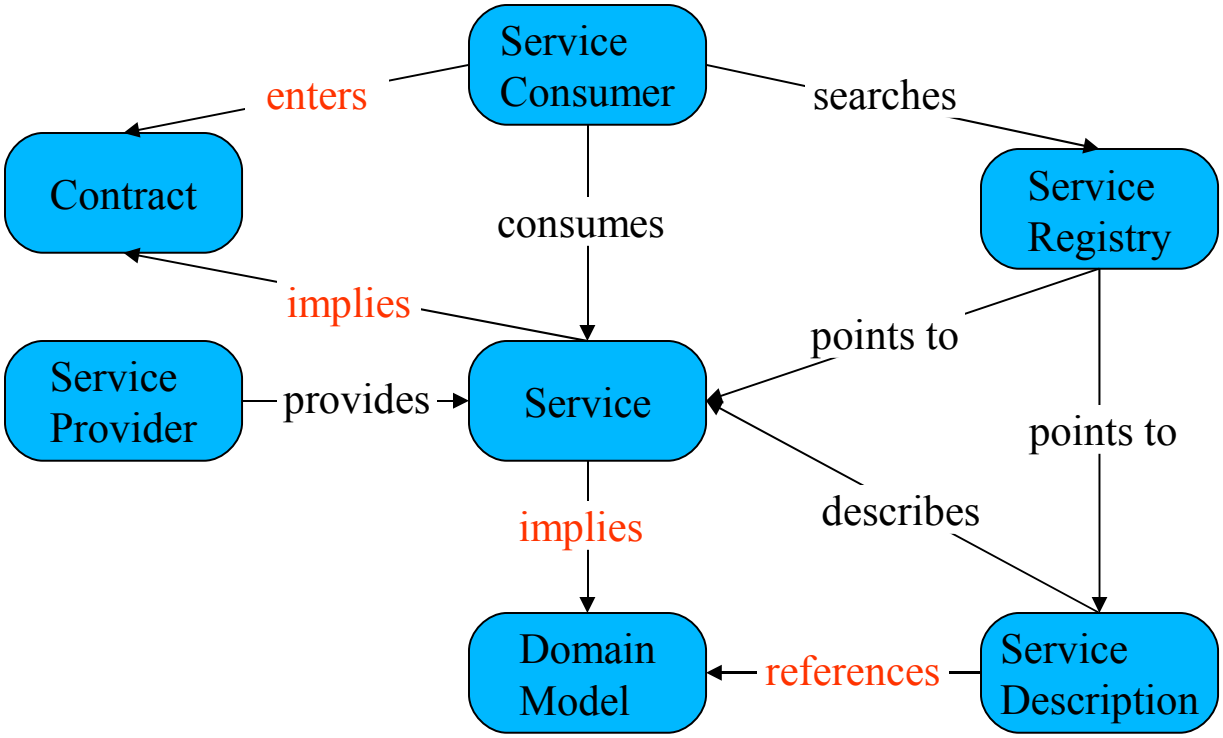


SOA Vision: Idealized world where data and processes flow easy



By 2008, Gartner predicts that SOA will be a prevailing software-engineering practice, ending the 40-year domination of monolithic software architecture

The OASIS SOA Reference Model (conceptual)



http://www.gmldays.com/gml2005/presentations/GML%20and%20S

Base Concepts of SOA

OASIS, "Reference Model for Service Oriented Architectures", Working Draft 09, 20 September 2005:

- **Service**: A service is a contractually defined behaviour that can be implemented and provided by a component for use by any component solely based on the contract.
- **Service Description**: Technical parameters, constraints, policies that come together to define terms of invocation
- **Advertising**: Service must somehow communicate its service descriptions in a manner that is accessible to potential consumers.
- **Data Model**: The specification and constraints imposed on instance data within a Service Oriented Architecture environment.
- **Contract**: The implicit or explicit bi-lateral or multi-lateral agreement between the owners or agents of a service and those who use the service.

Web Service

- Software applications available on the Web
  - XML as a supporting technology
  - interface to application functionality
  - abstraction layer separating the platform and programming-language-specific details of how the application code is actually invoked

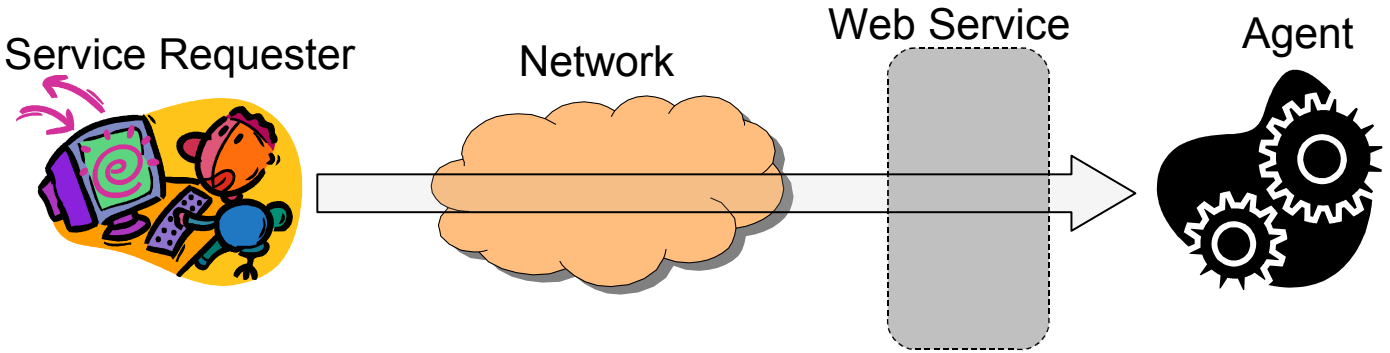
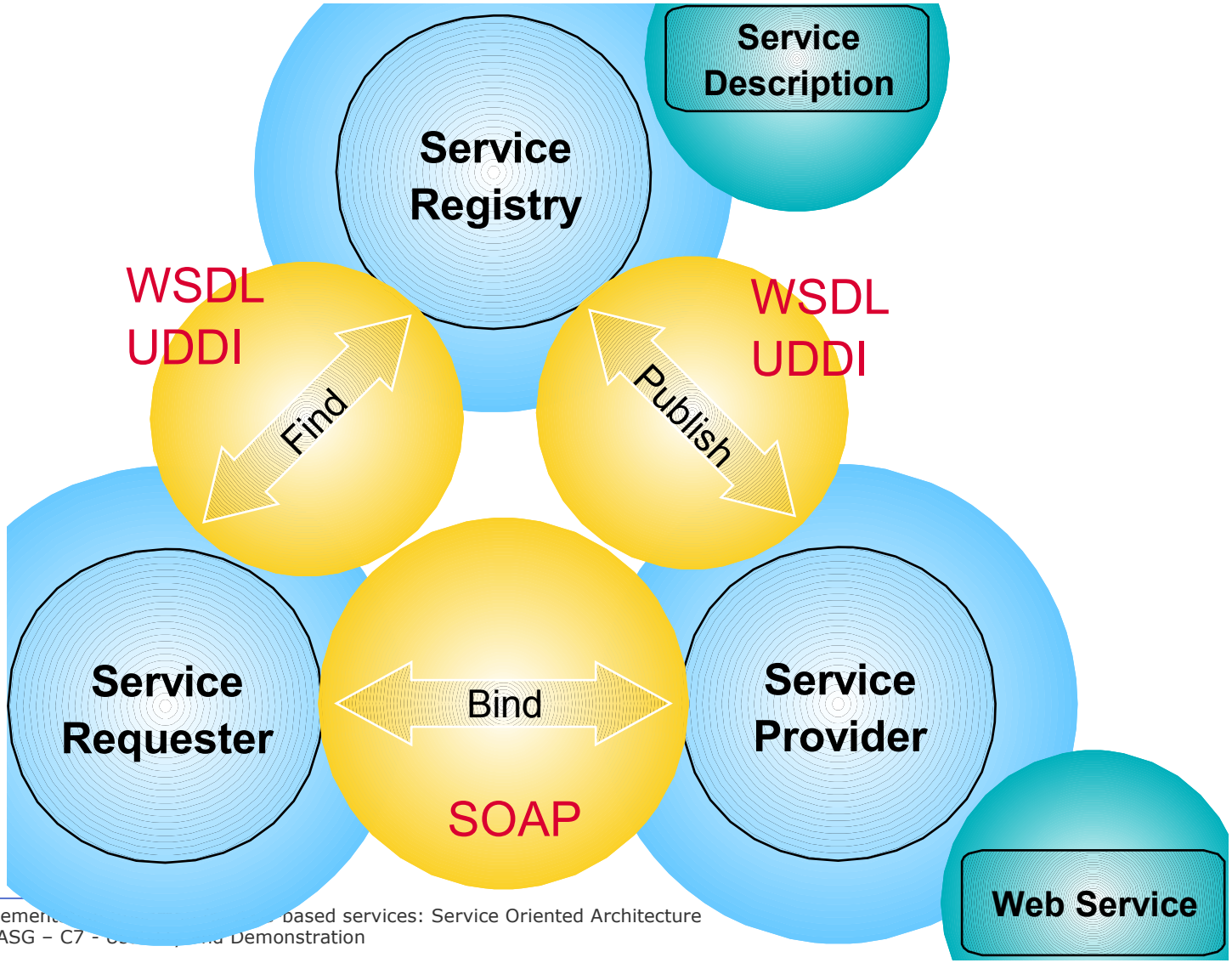


Figure source: Tidwell D., Snell J. & Kulchenko P. 2001. Programming Web services With SOAP. O'Reilly.

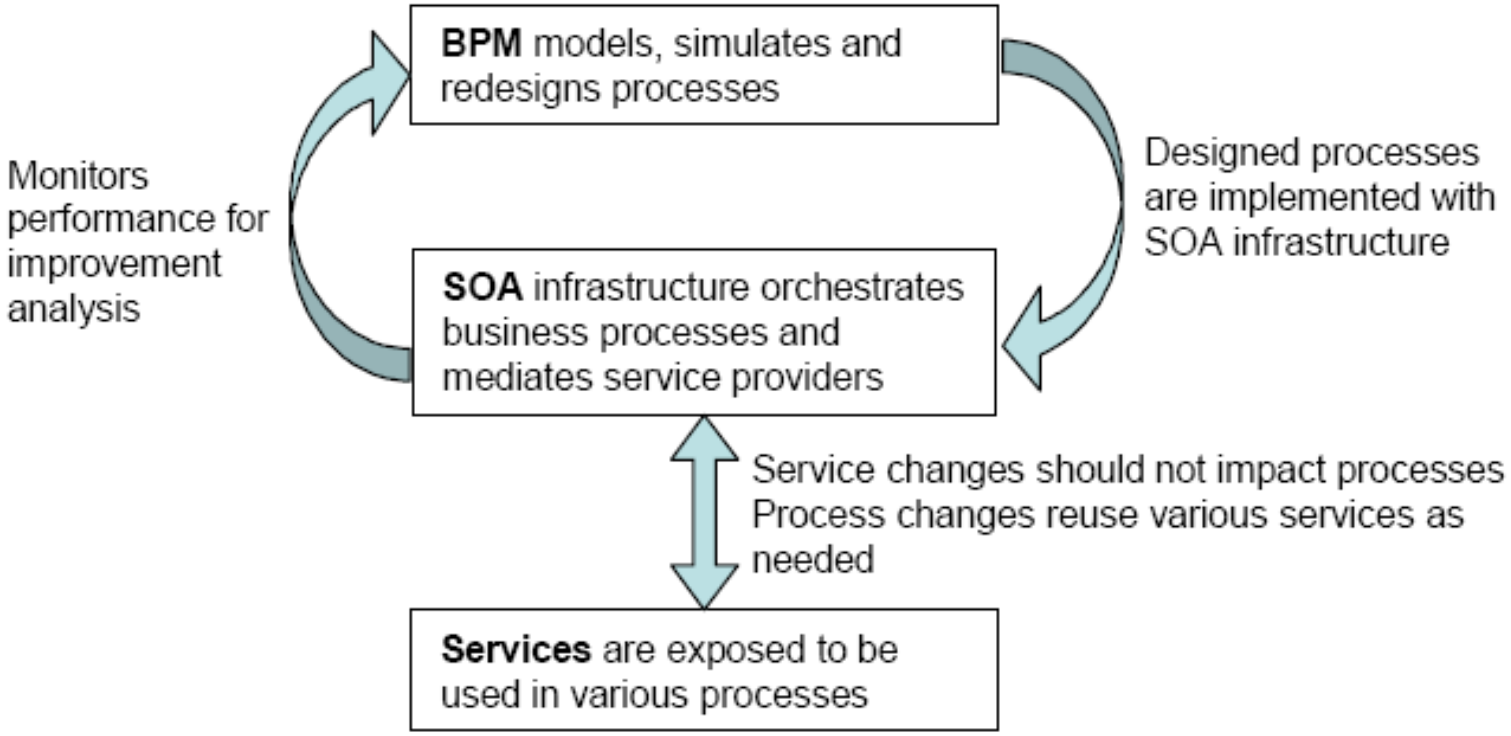
Web Services Model



Web Service Composition

- A major strength of the Web services is their capacity to be composed into high-level business processes known as *composite services*. When simple atomic Web services are used together, they can deliver complex functionality.
- Composition addresses the situation where any single Web Service can not satisfy the user's request and composite service obtained by combining set of atomic services might be used.

Relationship between BPM and SOA



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