UNITE 2002
Technology Conference

Web Services
as part of your
IT Infrastructure

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MGS, Inc.

Session MTP4054
1:30pm - 2:30pm
Monday, November 4, 2002

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Who is MGS, Inc.

- Software Engineering, Product Development & Professional Services firm founded in 1986

- We provide products and services to solve business problems:
  - **Software Engineering Services**
  - **Professional Services**
    - ❖ **Management Support Services**
    - ❖ **Consulting and Technical Services**
    - ❖ **Application Development Services**
    - ❖ **Training Services**
  - Product Development

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Why Listen to MGS, Inc.

- Over 30 years experience in computer solutions
- Experts in making computer solutions both reliable and efficient
- Experienced in a variety of hardware/software technologies
- Experts in operating system design and management
- Experts in data communications
- Experienced in solutions requiring multiple, diverse platforms

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Web Services

- In this presentation you will learn about …
  - The "Vision"
  - The "Reality"
  - What it can do "Today"
  - The "Business Case"
  - The "Technology"
  - The "Future"

Web Services – The Vision

- Major players
  - Microsoft
  - HP
  - IBM
  - Sun
- Goal
  - Make Internet program-to-program exchanges as easy as browsing the Web

Client Program — The Internet — Web Service

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Web Services – The Vision

- Internet based
- Universal directory
(like TCP/IP host name services)
- "Loose Coupling" between service provider and service consumer
  - Anonymous client
  - Service discovery
  - Flexible data content
  - asynchronous
- Charge per service
- Create a world-wide fabric of computing services (and commerce)

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Web Services – The Vision

- The Web Services Provider …
  - Service provider publishes a service
    - Deploys on an Internet connect computer
    - Publishes service in a global Internet directory
  - Provider establishes a way for customer to purchase the service

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Web Services – The Vision

- The Web Services Client …
  - Client shops the global Internet directory for the desired services
  - Software Interactive Development Environments (IDE) natively support browsing the directory and incorporation of service "objects"
  - Client purchases services necessary for the application
  - Develop/deploy application
  - Client applications use the Web Service(s) to provide business solutions

Web Services – The Reality

- Mission critical applications cannot depend on:
  - the Internet
  - "vended" services
  - the hope that someone is vending needed services
  - the hope that "vended" services operate exactly as the business requires
- Business interfaces do not benefit from:
 - Dynamic service discovery
  - Data flexibility

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Web Services – The Reality

- Similar to the problem of truly "open" systems
  - The "vision" never quite comes to fruition. No one vendor can/will take responsibility for the whole thing.
  - Difficult to make reliable
  - Problems in developing an integrated solutions (the parts never quite fit together)
  - Difficult to manage and maintain
- Don't buy into the Web Services "hype"

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Web Services – Today

- The Web Services concept does contain extremely valuable and powerful elements:
  - Technology independent implementation
  - Directory of services
  - Simple, well-defined, standards-based interfaces
  - Software IDE integration
  - Componentize Enterprise business functions
  - Encapsulate existing business functions for easier access

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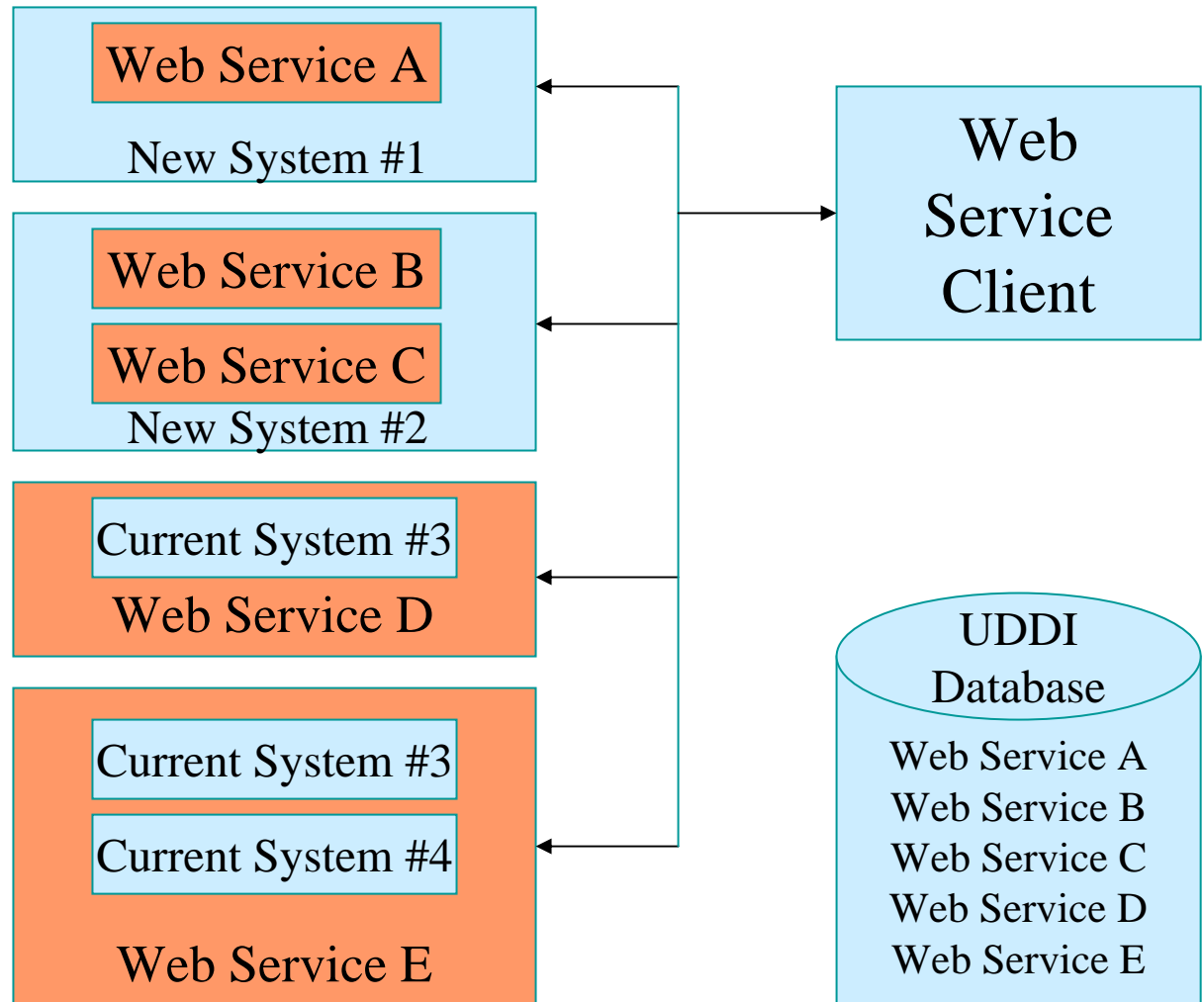
Web Services – Today

Web Services- Business Case

- Simpler and more flexible then "open" transaction protocols
  - **EDI** – **Electronic Data Interchange**
  - **DTP** – **Distributed Transaction Processing (OLTP)**

- Not technology dependent
  - **RPC** – **Remote Procedure Calls**
  - **DCOM** – **Distributed Component Object Model**
  - **RMI** – **Remote Method Invocation**
  - **CORBA** – **Common Object Request Broker Architecture**

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Web Services- Business Case

- Built on proven Internet communications standards
  - **HTTP – HyperText Transfer Protocol**
  - **SOAP – Simple Object Access Protocol**
  - **XML – eXtensible Markup Language**

- Includes service description and directory
  - **WSDL – Web Services Description Language**
  - **UDDI – Universal Description, Discovery and Integration**

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Web Services- Business Case

- **Supported by software IDEs**
  - Discovery of service
  - Automatic creation of Web Services client objects
  - Web Services Server object support
    - WSDL generation
    - UDDI update
    - Server program
  - Included as part of the application framework
    - Microsoft .NET
    - Sun Microsystems J2EE

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Web Services- Business Case

- Leverage existing business functionality
  - Rewrites are expensive
  - Redesigns are even more expensive
  - Placing a Web Services envelope around existing functionality is relatively inexpensive
  - Preserves investment in known, reliable business solutions

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Web Services- Business Case

Programs Worldwide in 2001 (in millions)

	Custom Applications	**Application Packages**
Total	**87.2**	**5.6**
Windows	**5.9**	**0.4**
UNIX	**15.7**	**1.0**
Other	**65.5**	**4.2**

Aberdeen Group, February 2002

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Web Services- Business Case

- Abstracts out business functionality
  - Creates machine (technology) independent functionality
  - Indirect reference to service
  - Trivial to re-locate the business function or functions
  - Improved scalability
  - Improved ability to re-host

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Web Services- Business Case

- Use proven Web Services elements to solve business problems
  - Organize IS services
    - **Description of each service**
    - **Directory of services**
  - Implement functionality shared between dissimilar systems
  - Provide well defined interfaces between business units
  - Leverage existing functionality
  - Not dependent on proprietary technology
  - Ease of use (IDE support)
- Standard warning …. don't implement technology for technology's sake

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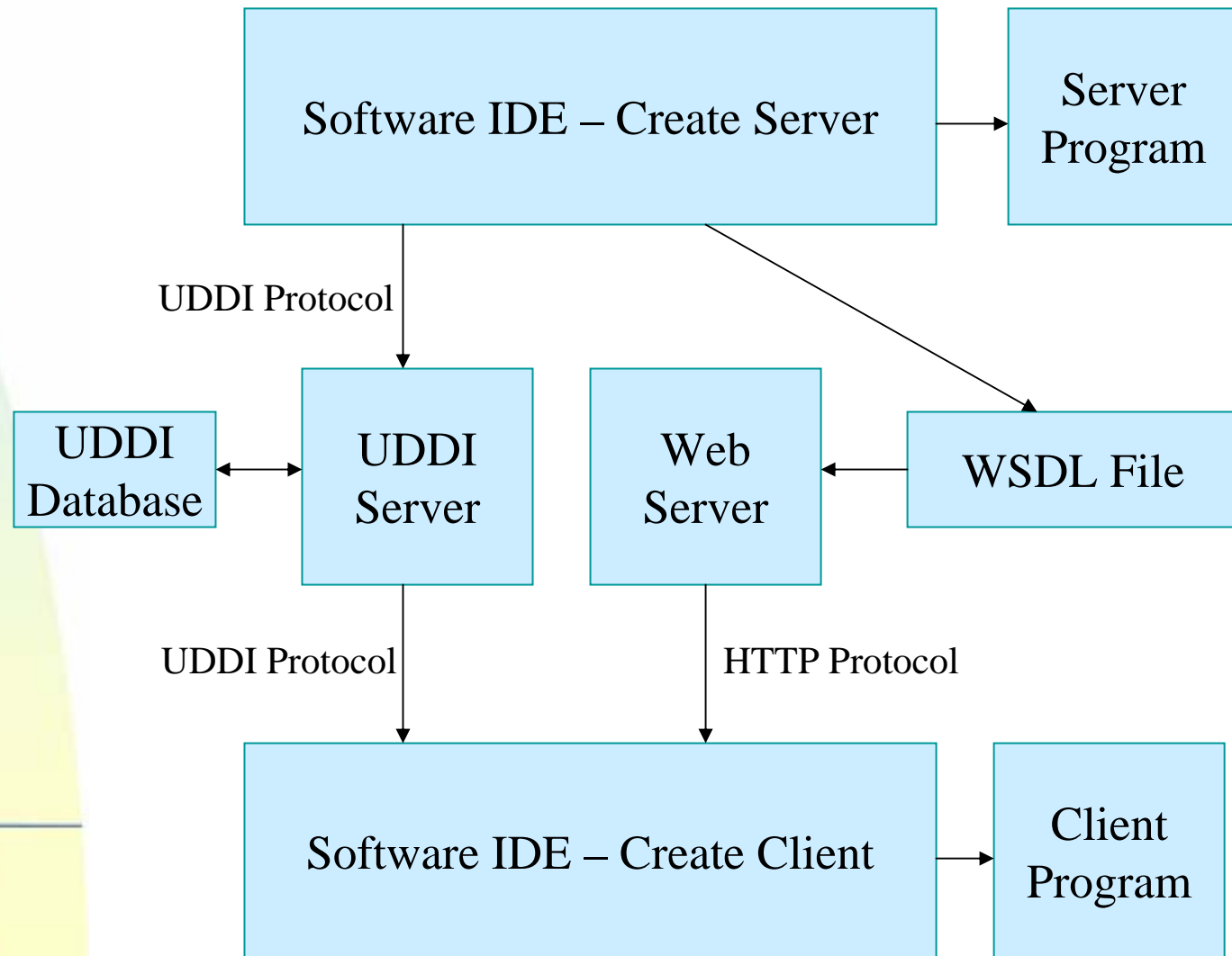
Web Services - Technology

Definition:

A Web service is a software application identified by a URI, whose interfaces and bindings are capable of being defined, described, and discovered as XML artifacts. A Web service supports direct interactions with other software agents using XML based messages exchanged via internet-based protocols.

WC3 Web Services Architecture Requirements Working Draft 11 October 2002

Web Services - Technology

- Development components:
  - Business function (application service)
  - Web Service definition (WSDL file)
  - Web Service directory (UDDI Server)
  - Web Service enabled IDE
    - UDDI browser
    - Create objects from WSDL
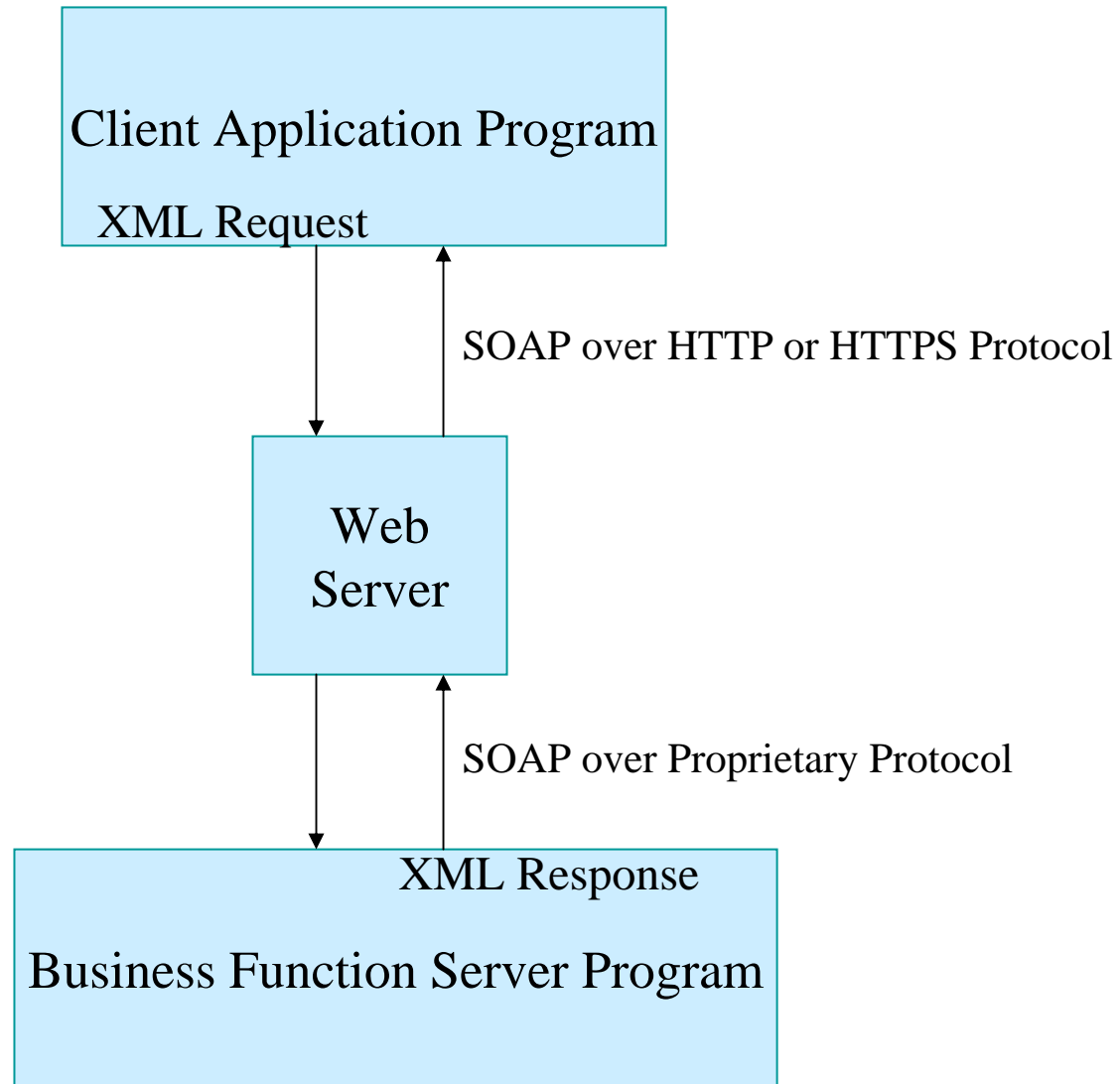   - Create Web Services servers

Web Services - Technology

Web Services - Technology

- Runtime components
  - Client application program
  - HTTP or HTTPS protocol
  - SOAP protocol
  - XML data request/response
  - Server application program

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Web Services - Technology

Client Application Program

XML Request

SOAP over HTTP or HTTPS Protocol

Web Server

SOAP over Proprietary Protocol

XML Response

Business Function Server Program

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Web Services - Future

- Languages for defining business processes based sequences of individual Web Services
  - **Microsoft/IBM – BPEL$_A$WS (Business Processing Execution Language for Web Services)**
  - **Sun – WSCI (Web Services Choreography Interface)**

- Web Services will become a requirement for systems to *participate* in the Enterprise just as TCP/IP has become a requirement for systems to *communicate* within the Enterprise

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Web Services - Future

"[by using Web Services] developers must consider how to build more modular components, how to share data across otherwise disparate sources , and ultimately, how to create applications out of these components and data sources."

- Infoworld June 10, 2002

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Additional Questions?

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This presentation is available on our WEB site

Reference Material

- **WC3 Web Services Architecture Requirements**
  http://www.w3.org/TR/2002/WD-wsa-reqs-20021011

- **WC3 Web Services Description Requirements**
  http://www.w3.org/TR/ws-desc-reqs/

- **Web-Enablement: Setting the Foundation for Web Services, eCommunity Presentation October 10, 2002**
  Wayne Kernochan, Aberdeen Group

- **Understanding XML Web Services, The Web Services Idea.**
  Tim Ewald, Microsoft Corporation
  http://msdn.microsoft.com/webservices/understanding/readme/default.aspx

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