Introduction to Web Services

What is a Web service?

- Web Services are web application components which can be published, found and used on the web

- The goal of Web Services is interoperability

- The capability of two different software applications to communicate with each other is generally referred to as interoperability.

- Web Service is a platform to build loosely coupled applications

- Web service technology is used to allow applications on different platforms to exchange business data

- A Web service can be invoked using **HTTP**

- A Web Service can dynamically interact with other Web applications using open standards that include **XML, UDDI and SOAP**

What is a Web service? (Contd.).

- Web Services do not provide the user with a **GUI**

- Web Services instead share **business logic**, **data** and **process** through a programmatic interface across a network

- Web services technologies are used for Application-to-Application (A2A) integration or Business-to-Business Communication(B2B)

- A2A refers to dissimilar applications within the same organization communicating and exchanging data between them

- B2B refers to Multiple organizations, typically Business partners exchanging data

Web Services Examples

- A stock quote service

- A route finder for delivery of goods

- A weather service

- A map service

- A Web search service

Why Web Service ?

- Web does not support software interactions very well

- Web businesses need a way to publish links to their applications and data

- Internet based applications need to be able to find, access and automatically interact with other applications

Benefits of Web Service

• Web Services enable interoperability between heterogeneous applications

• Using Web Services you can expose your application and its functionality globally

• Web services improve Internet use by promoting program to program communication

• Web Services enable applications at various Internet locations to be directly integrated and interconnected as a single, large IT system

• An enterprise would not depend on one particular vendor for all the solutions

Features of Web Service

. Web Services use standardized protocols SOAP, UDDI, WSDL and HTTP for implementation

• Web Services support most of the communication protocols and it can be implemented using FTP as well as HTTP

• Web services share business logic, data and processes through programmatic interface across the network

• Web Services follow a loosely coupled architecture

How Web Services work

Web service interfaces receive a standard XML message from the networking environment.

Next, this XML data is transformed into a format that will be understood by a particular back-end software system.

And optionally a reply message is returned.

Web Services Basics

The underlying software implementations of Web services can be created by using any

- ➢ Programming language
- ➢ Operating system
- ➢ Middleware system

Web services combine the execution characteristics of programmatic applications with the abstract characteristics of the Internet

In all these cases, the technology of Web services provide a standard glue connecting diverse pieces of software
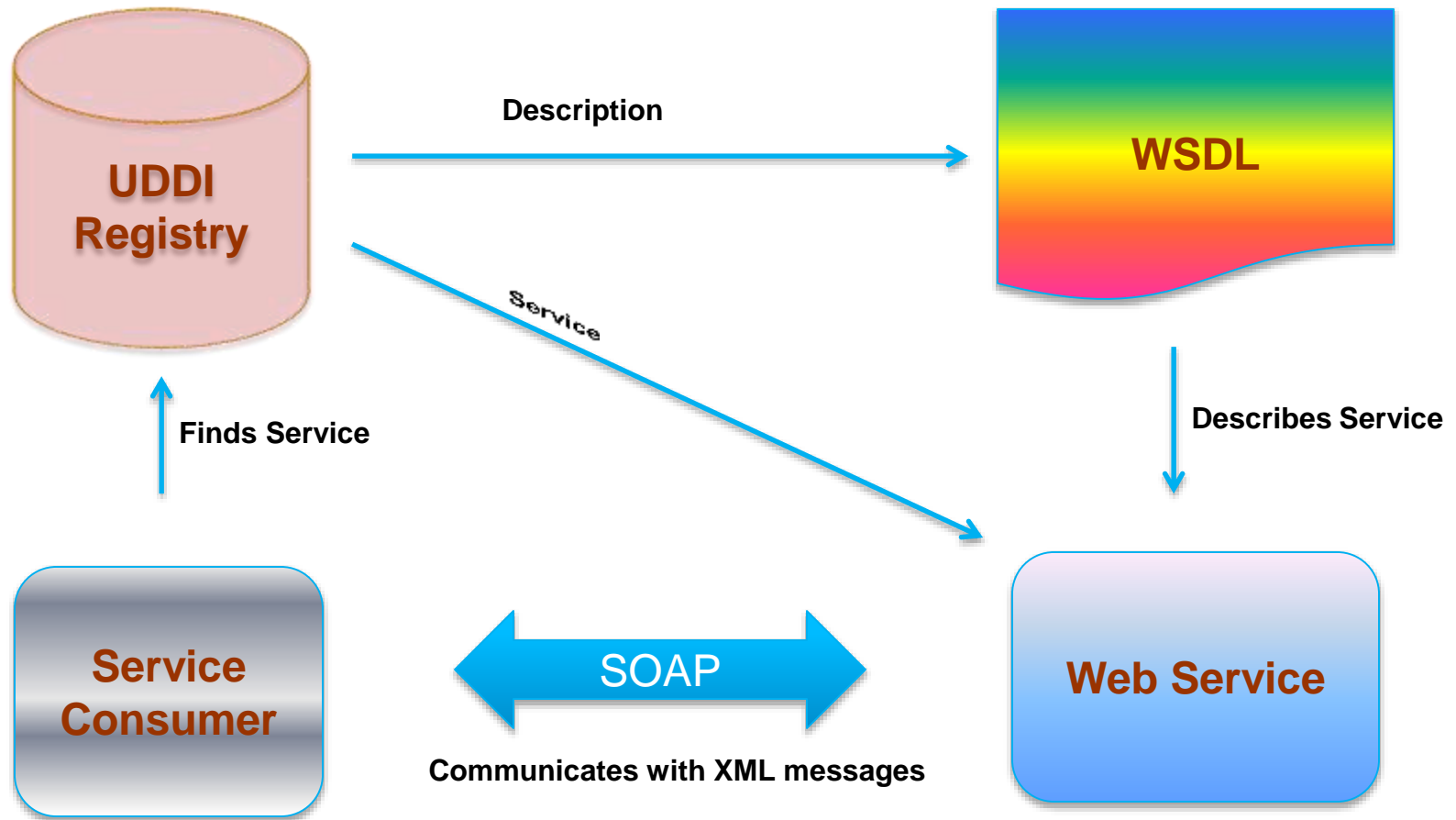
Web Services Basics (Contd.).

Web Services can:

➢ run on desktops and handheld clients to access Internet applications such as reservation systems and order-tracking systems

➢ also be used for business-to-business (B2B) integration, connecting applications run by various organizations in the same supply chain

➢ also solve the broader problem of Enterprise Application Integration (EAI), connecting multiple applications from a single organization to multiple other applications both inside and outside the firewall

Requirements of applications running on Web

- Applications that interact with one another over the Web must:

    - be able to find one another

    - discover information allowing them to interconnect

    - figure out what the expected interaction patterns are

    -negotiate such qualities of service as security, reliability and transactional composition

WebService Architecture

WebService Architecture (Contd.).

Web services require several related XML-based technologies to transport and transform data into and out of programs and databases

XML:

- The basic foundation on which Web services are built
- Provides a language for defining data and processing it
- Represents a family of related specifications published and maintained by the World Wide Web Consortium (W3C) and others

WSDL (Web Services Description Language):

- An XML-based technology that defines:
  - Web services interfaces
  - data
  - message types
  - interaction patterns
  - protocol mappings

WebService Architecture (Contd.).

SOAP:

- A collection of XML-based technologies
- Defines an envelope for Web services communications – maps to HTTP and other transports
- Provides a serialization format for transporting XML documents over the network
- Provides a convention for representing RPC interactions

UDDI (Universal Description, Discovery, and Integration):

- A Web services registry and discovery mechanism
- Used for storing and categorizing business information

Thank You