UDDI

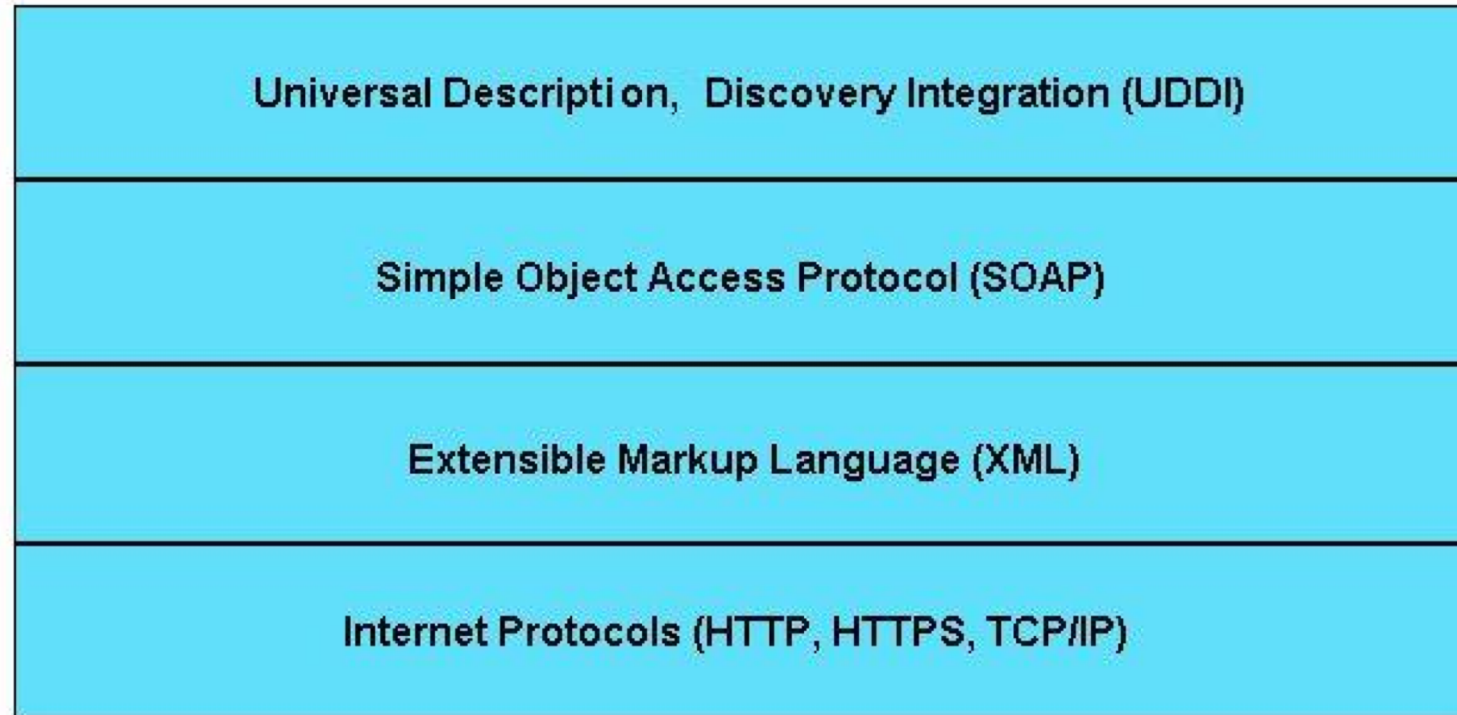Universal Description, Discovery and Integration

UDDI - Universal Description, Discovery and Integration

- A specification for a distributed registry of web services

- Provides a XML-based standard method for describing, publishing and discovering the web services

- Provides a model for a directory for storing information about web services
  - web service interfaces described in WSDL

- Serves as a platform-independent framework using the Internet for advertising:
  - describing services,
  - discovering businesses, and
  - integrating business services

UDDI Search

- Information provided in a UDDI registry can be used for three types of searches:
  - A white pages search returns basic information such as address, contact, and identifiers about a company and its services
  - A yellow pages topical search retrieves information according to industrial categorizations and taxonomies, such as the NAICS, ISO3166, and UNSPSC classification systems
  - A green pages service search retrieves technical information about Web services, as well as information describing how to execute these services

UDDI Technologies

Universal Description, Discovery Integration (UDDI)

Simple Object Access Protocol (SOAP)

Extensible Markup Language (XML)

Internet Protocols (HTTP, HTTPS, TCP/IP)

UDDI Technologies

- Written in XML

- Communicates via SOAP

- Based on World Wide Web Consortium (W3C) and Internet Engineering Task Force (IETF) Internet standards such as
  - XML, HTTP, and DNS protocols
  - UDDI registry is itself composed of Web services
- Advanced by the OASIS UDDI Specification Technical Committee
  - http://uddi.xml.org/uddi-org

UDDI Data Structure
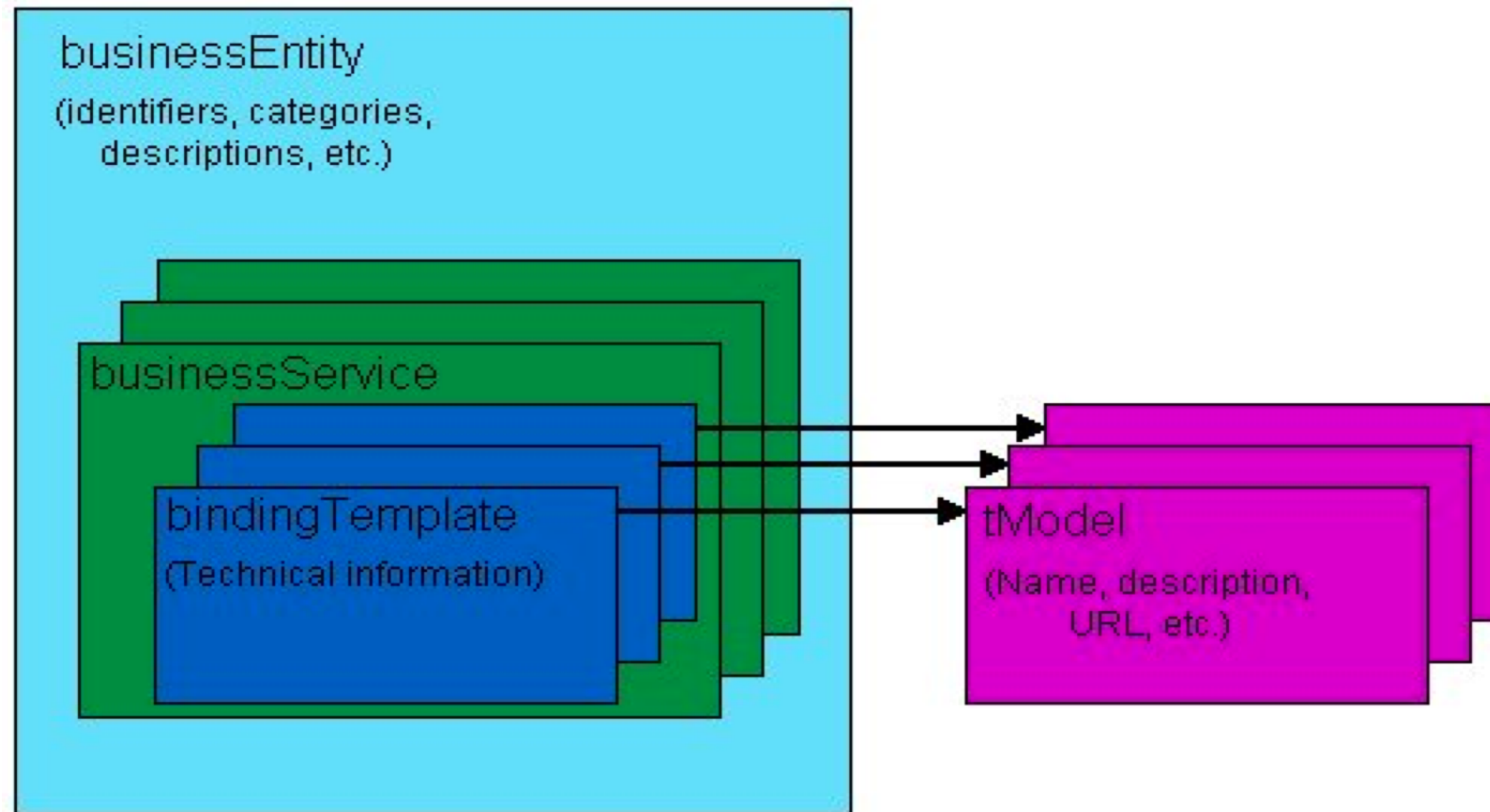
UDDI and WSDL

- The UDDI data model defines a generic structure for storing information about a business and the web services it publishes

- For UDDI, WSDL contents are split into two major elements:
    - interface
    - implementation

- A service interface contains an abstract description of types, message, portType, and binding elements that will be used to implement the service

- A service implementation document contains a description of a service that implements a service interface

UDDI and WSIL

- Web Services Inspection Language (WSIL)

- Service discovery mechanism that is
    - an alternative to UDDI as well as
    - complementary to UDDI

- WSIL allows direct request to the service provider and asking for the services it provides

- For more information on the WSIL Language specification, refer to
    www.ibm.com/developerworks/webservices/library/ws-wsilspec.html

Deficiency of Classic Web Services

- Needed web services that enable automated discovery, selection and execution

- WS technology missing automatic support for
    - understanding the available services and the data they use
    - how to find and compare service providers
    - negotiating and contracting services
    - composing, enacting, and monitoring services
    - dealing with numerous and heterogeneous data formats, protocols and processes

Semantic Web Services

- Possible solution - Semantic Web Services
  - frameworks for describing the Web Services and the related aspects (Web Service Description Ontologies)
  - ontologies as underlying data model to allow machine supported data interpretation (Semantic Web)

- Web Ontology Language (OWL) - Semantic Web language designed to represent rich and complex knowledge about things, groups of things, and relations between things

- OWL documents, known as ontologies, can be published on the web and may refer to or be referred from other OWL ontologies

- Semantic Web Services upgrade Web Services, do not replace them