UDDI

Universal Description, Discovery and Integration protocol

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History of UDDI

- First specification proposed in 2000 by IBM, Ariba and Microsoft
- Most current version of specification v3.02 in September 2005
- Control of UDDI given to OASIS – info found in uddi.org

Purpose of UDDI

"A UDDI registry, either for use in the public domain or behind the firewall, offers a standard mechanism to classify, catalog and manage Web services, so that they can be discovered and consumed. " UDDI V3.0.2 specification

Basic goals of UDDI

- Framework for describing and discovering business services, and service providers
- Defines data structures and APIs for publishing services descriptions to the registry and querying the registry
- Support developers in finding information about services
- Determine the security and transport protocols supported by a given Web service
- Support looking for services based on a general keyword

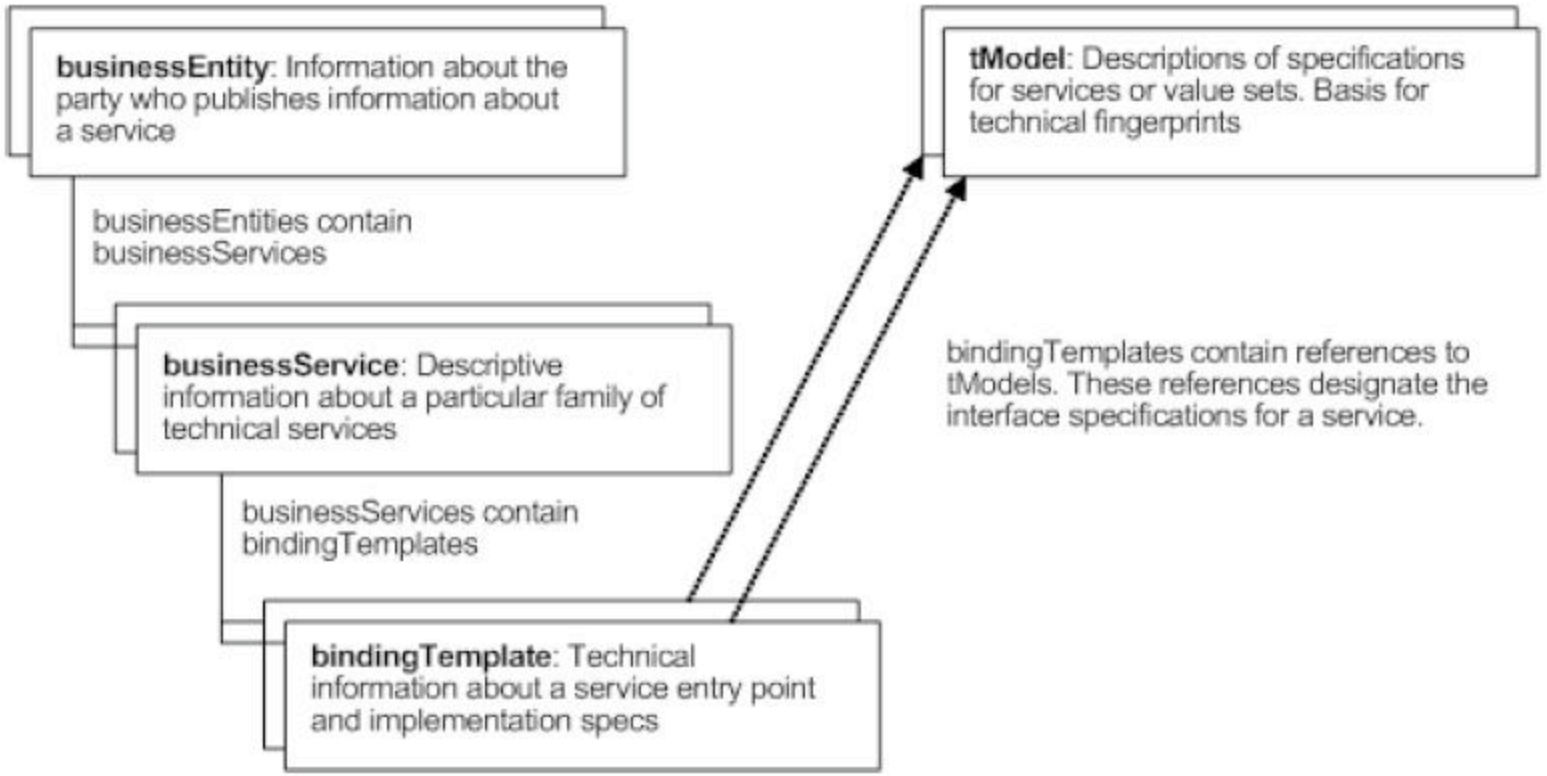
Ways to Use a UDDI registry

- White Pages
  - Obtaining listings of organizations, contact info, list of general services provided
- Yellow Pages
  - Look up information via standardized or user-defined taxonomies. UDDI supports standardized and user-defined classifications
- Green pages
  - Full descriptions of individual web services. Provided by pointers to service descriptions, which are usually stored outside of the registry

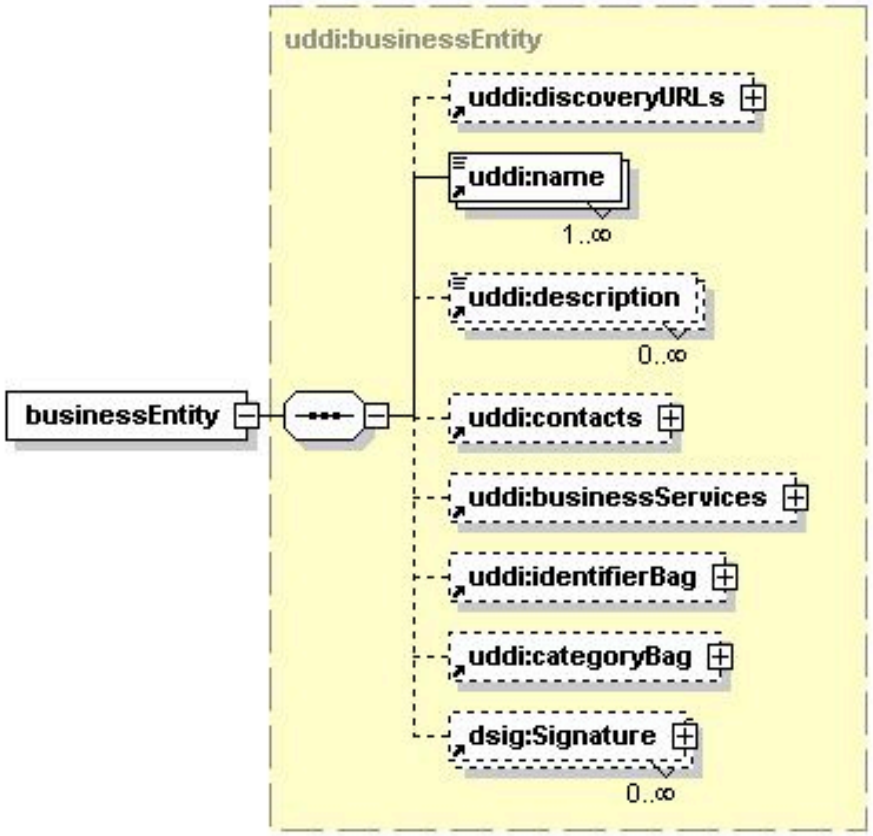
Structure of UDDI

- XML documents
- APIs are specified in WSDL with SOAP binding
- UDDI registry itself can be accessed as a web service
- Supports four core data structures:
  - businessEntity
  - businessService
  - bindingTemplate
  - tModel

Relationship of UDDI Core Data Types

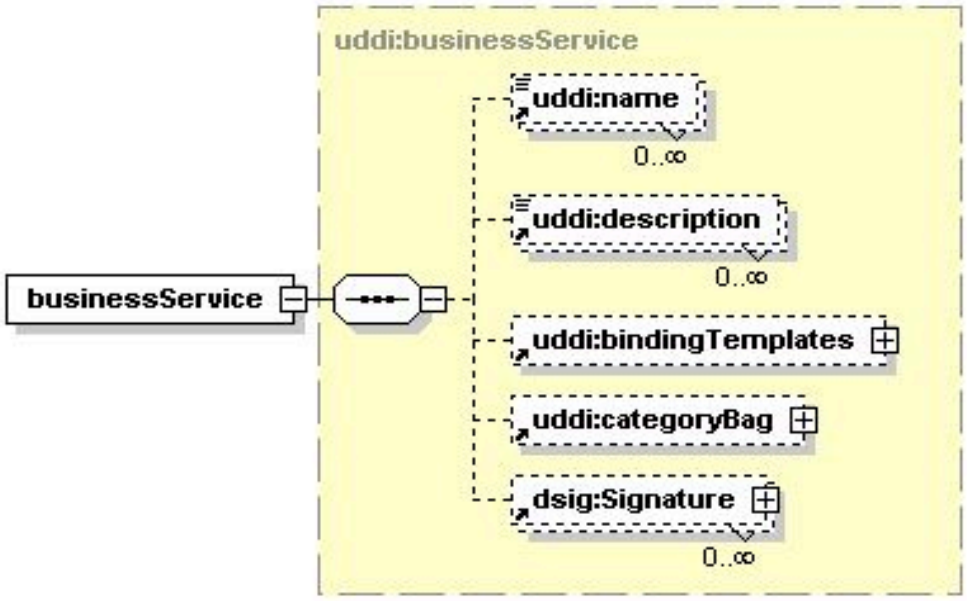


businessEntity fields



```
<identifierBag>
    <keyedReference
        tModelKey="uddi:uddi.org:ubr:identifier:dnb.com:d-u-n-s"
        keyName="SAP AG"
        keyValue="31-626-8655" />
</identifierBag>
```

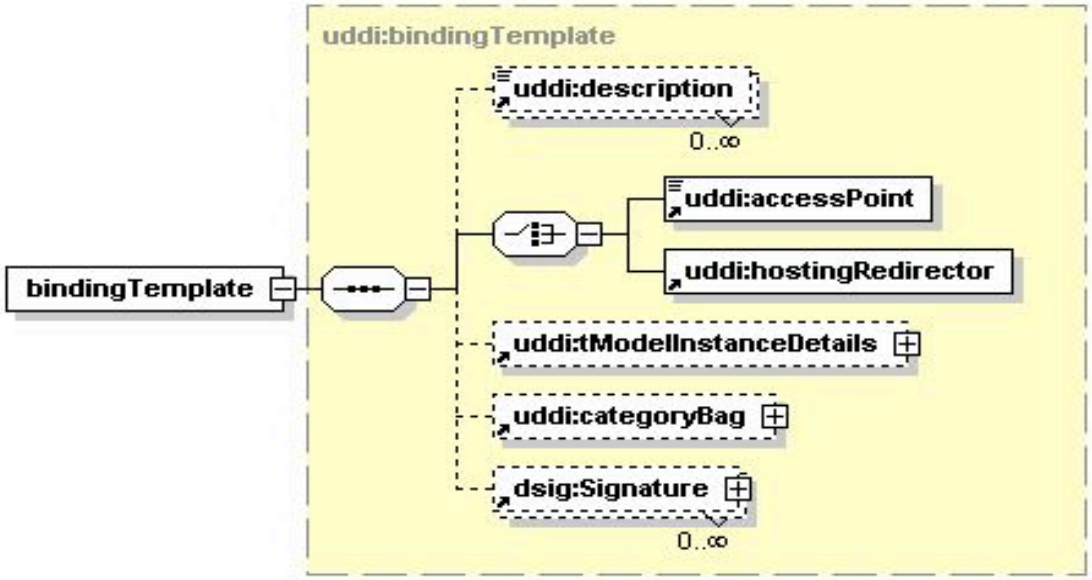
businessService fields



businessService

- Each businessService structure represents a logical grouping of Web services. At the service level, there is still no technical information provided about those services; rather, this structure allows the ability to assemble a set of services under a common rubric. Each businessService is the logical child of a single businessEntity. Each businessService contains descriptive information – again, names, descriptions and classification information -- outlining the purpose of the individual Web services found within it. For example, a businessService structure could contain a set of Purchase Order Web services (submission, confirmation and notification) that are provided by a business.

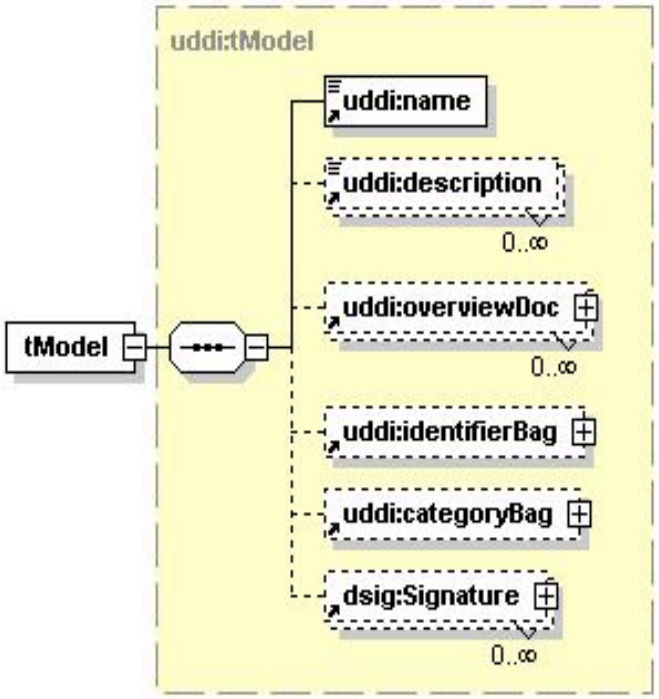
bindingTemplate fields



bindingTemplate

- Each bindingTemplate structure represents an individual Web service. In contrast with the businessService and businessEntity structures, which are oriented toward auxiliary information about providers and services, a bindingTemplate provides the technical information needed by applications to bind and interact with the Web service being described. It must contain either the access point for a given service or an indirection mechanism that will lead one to the access point.
- Each binding Template is the child of a single businessService. The containing parents, a bindingTemplate can be decorated with metadata that enable the discovery of that bindingTemplate, given a set of parameters and criteria.

tModel fields



tModel describing the UDDI API

```
<tModel tModelKey="uddi:uddi.org:v3_publication">
  <name>uddi-org:publication_v3</name>
  <description>UDDI Publication API V3.o</description>
  <overviewDoc>
    <overviewURL useType="wsdlInterface">
http://uddi.org/wsdl/uddi_api_v3_binding.wsdl#UDDI_Publication_
SoapBinding</overviewURL>
  </overviewDoc>
  <overviewDoc>
    <overviewURL useType="text">
      http://uddi.org/pubs/uddi_v3.htm#PubV3
    </overviewURL>
  </overviewDoc>
  <categoryBag>
    <keyedReference keyName="uddi-org:types:wsdl"
      keyValue="wsdlSpec"
      tModelKey="uddi:uddi.org:categorization:types" />
```

tModel

- … The UDDI information model is based on this notion of shared specifications and uses tModels to engender this behavior. For this reason, tModels exist outside the parent-child containment relationships between the businessEntity, businessService and bindingTemplate structures.
- Each distinct specification, transport, protocol or namespace is represented by a tModel. … To describe a Web service that conforms to a particular set of specifications, transports, and protocols, references to the tModels that represent these concepts are placed in the bindingTemplate. In such a way, tModels can be re-used by multiple bindingTemplates. The bindingTemplates that refer to precisely the same set of tModels are said to have the same "technical fingerprint" and are of the same type. In this way, tModels can be used to promote the interoperability between software systems.

Data encoded in tModels

- Transport and protocol definitions such as HTTP and SMTP.
- Value sets including identifier systems, categorization systems and namespaces. Structured categorizations using multiple value sets called "categorization groups."
- Postal address formats.
- Find qualifiers used to modify the behavior of the UDDI find_xx APIs.
- Use type attributes that specify the kind of resource being referred to by a URI reference.

Registering tModels

- UDDI.org will publish them on their members section
- Registration is "limited to tModels that represent a well-known concept and/or are owned by a well-known standards group, an industry vertical or a consortium"
- Must conform to UDDI best practices for coding
- See currently registered tModels here

UDDI Registry keys

- Each entity is assigned a unique key
- V3 allows keys to be defined in a way that they are unique across registries
- Now URI-based, patterned on DNS names
- UDDI key for UDDI API itself is uddi:uddi.org:categorization:types

UDDI Registry API

Six separate APIs that can be used by: service providers, requesters and other registries

- UDDI Inquiry API
- UDDI Publishers API
- UDDI Security API
- UDDI Custody and Ownership Transfer API
- UDI Subscription API
- UDI Replication API

UDDI Inquiry API

Intended for developers looking to locate services, and for clients at run-time for dynamic binding

- *find_business, find_service, find_binding, find_tModel*
- *get_businessDetail, get_serviceDetail, get_bindingDetail, get_tModelDetail*

Purposes for UDDI Registries

- Public implementation – UDDI Universal Business Registry – now disbanded - see here
- Stated purpose now seems to be within a business infrastructure See vendor toolkits available