

# Lecture 5.c

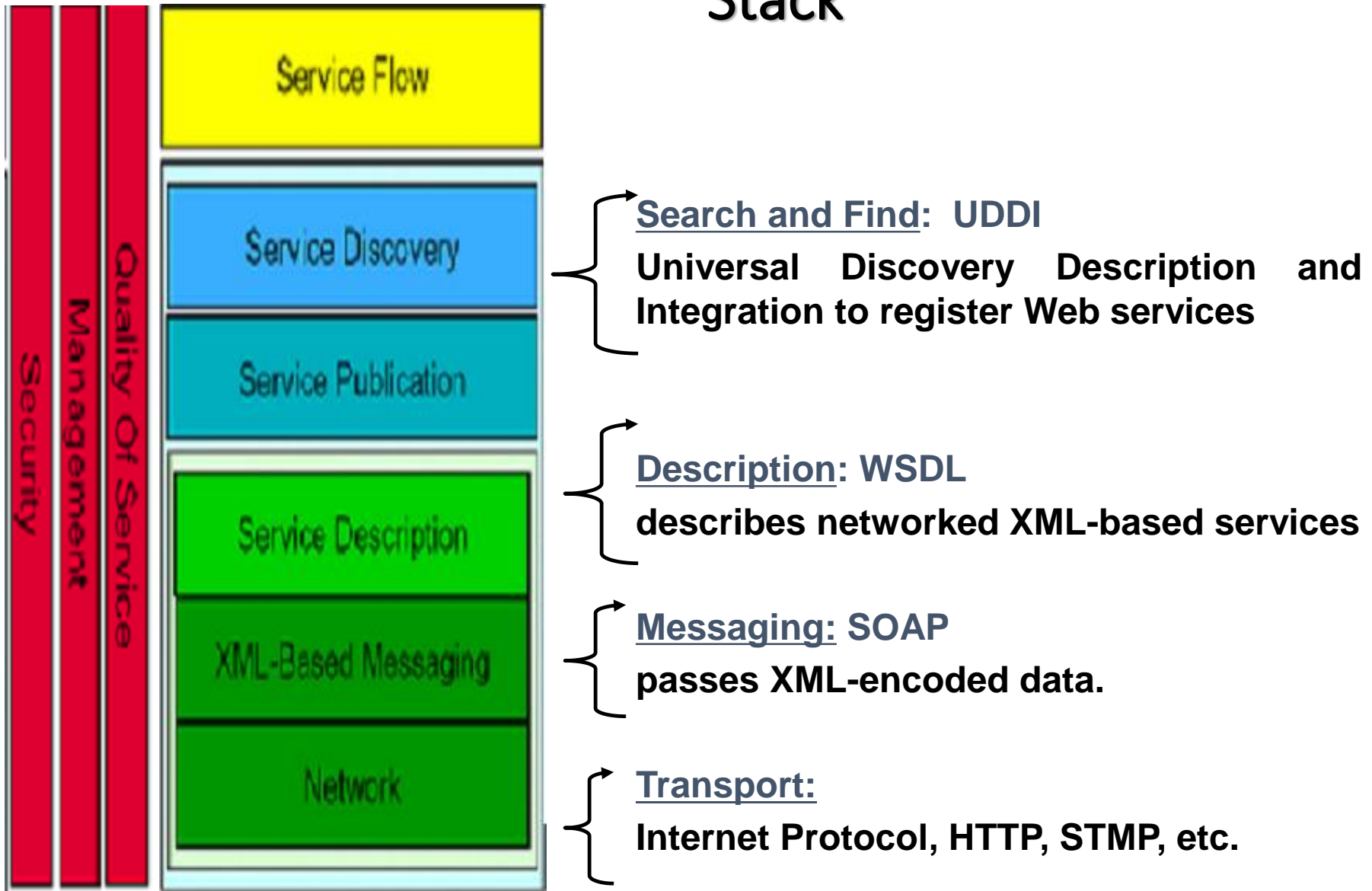
## Web Services I Web Service Stack

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# Web Service Stack

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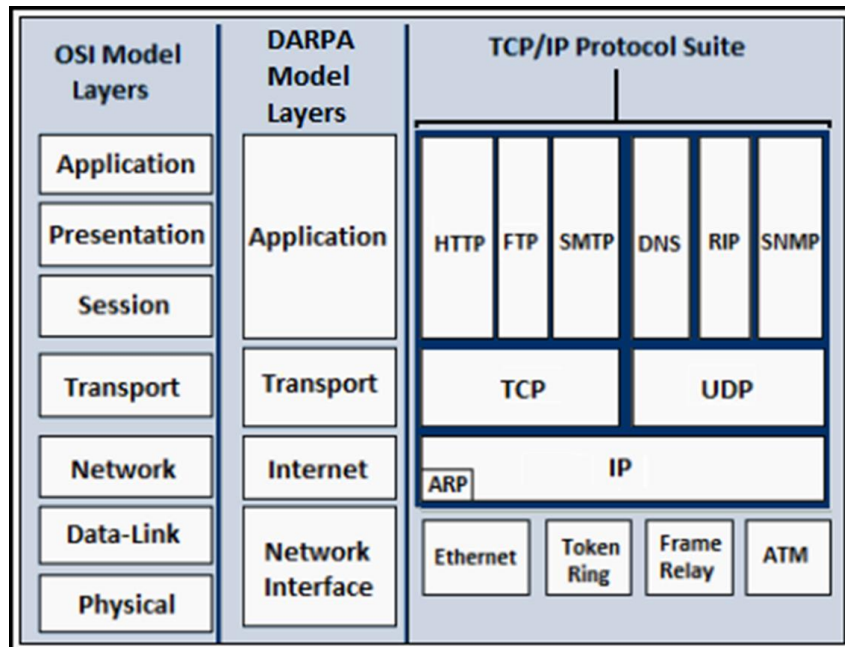


# Web Service Stack

## Functional Entities (1)

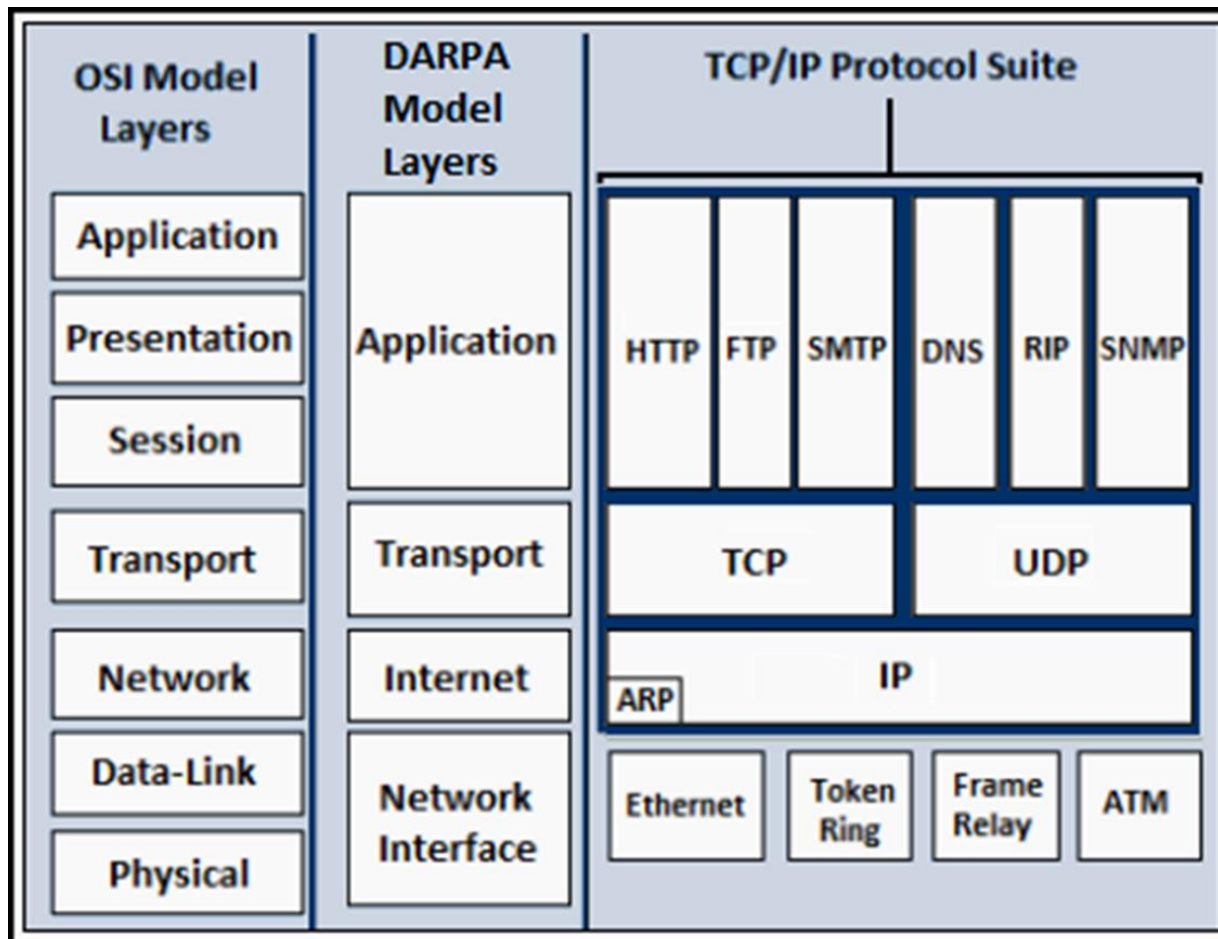
### Application Layer

- **SOAP over HTTP** to exchange messages over the public Internet using TCP/IP



# Web Service Stack

## Functional Entities (2)



# Web Service Stack

## Functional Entities (3)

### Message Layer

- Dispatches the service requests and responses to the next service node using the transport layer with guaranteed or without guaranteed message delivery
- It is built upon the transport layer and **SOAP** is used alone in combination with any transport protocols



# Web Service Stack

## Functional Entities (4)

### Message Layer

- All SOAP messages support the *publish*, *bind*, and *find* operations
- SOAP comprises three parts: an envelope to describe the content of a message, a set of encoding rules, and a mechanism for providing remote procedure calls (RPCs) and responses



# Web Service Stack

## Functional Entities (5)

### Service Description Layer

- Services are described in a common language that depicts the service type and functionality, for example, URI, ports, end-points
- Service description provides the means of invoking Web services
- **WSDL** is the basic standard for defining, in XML format, the implementations and interfaces of services





# Web Service Stack

## Functional Entities (2)

### Service Publication

- Agrees on what can be exchanged and is interoperable between the service requester and the service provider
- The service provider can send a WSDL document directly to a service client via e-mail (*direct publication*)
- The service provider can also choose to publish the WSDL document to a local WSDL registry, or to a public or private UDDI registry



# Web Service Stack

## Functional Entities (3)

### Service Discovery

- Searches and locates a service in the service registry
- Relies on service publication, if a Web service is not or cannot be published, it cannot be found or discovered



# Web Service Stack

## Functional Entities (3)

### Service Discovery

- The service client can make the service description available to an application at runtime, for example, can retrieve a WSDL document from a local file obtained through a direct publish (*static discovery*)
- Service can also be discovered at design or run time using either a local WSDL registry or a public or private UDDI registry



# Web Service Stack

## Functional Entities (3)



### Service Flow

- **Manages services as processes and/or workflows.**
- **Supports dynamically orchestrated execution of web services**

# Web Service Stack

## Non-Functional Entities



### Management

- Provides Management Services, such as service monitoring and administration

### Quality of Service

- Deals with "utilities," such as availability performance, scalability, etc.

### Security

- Supports message and transport layer security to support authentication, entitlement, and non-repudiation