DIS - Web Services

REST

WADL - Web Application Description Language

Web services

Overlay Networks
- Et virtuelt netværk
- Et applikationsspecifikt netværk, som tilbyder ekstra funktionalitet ud over gængs netværksfunktionalitet

A software system designed to support interoperable machine-to-machine interaction over a network

A web service as an interface in a machine-processable format (WSDL). Other systems interact with the web service in a manner described by its description using SOAP messages, typically conveyed using HTTP with an XML serialization.

XML

Extensible Markup Language bruges blandt andet når I henter hjemmesider. Det er ofte brugt med SOAP og har været en de-facto standard i rigtig lang tid. Det er dog oftest tungt at indlæse - hvorfor JSON er begyndt at vinde indpas i rigtig mange applikationer.
I java vil vi kunne sige "un-JSON", mens ved XML skal man kører en parser.

Elements

Attributes
id="123432

XML prolog
<?XML version = "1.0" encoding = "UTF-8" standalone = "yes"?>

XML namespaces
Arbejde

Dele
- XML stands for EXtensible Markup Language
- XML was designed to be self-descriptive
- XML is a W3C Recommendation
- XML is a markup language much like HTML

JSON

JavaScript Object Notation er et sprog, som er utrolig nemt at skrive og læse - og næsten ikke fylder noget. Langt de fleste sprog har parsers, som kan konvertere JSON direkte til objekter og arrays og det er derfor blevet udbredt ganske hurtigt.

Synchronous and asynchronous communication

synchronous form of communication, the sending and receiving processes synchronize at every message. In this case, both send and receive are **blocking** operations. Whenever a send is issued the sending process (or thread) is blocked until the corresponding receive is issued. Whenever a receive is issued by a process (or thread), it blocks until a message arrives.

asynchronous form of communication, the use of the send operation is non-blocking in that the sending process is allowed to proceed as soon as the message has been copied to a local buffer, and the transmission of the message proceeds in parallel with the sending process. The receive operation can have blocking and non-blocking variants. In the non-blocking variant, the receiving process proceeds with its program after issuing a receive
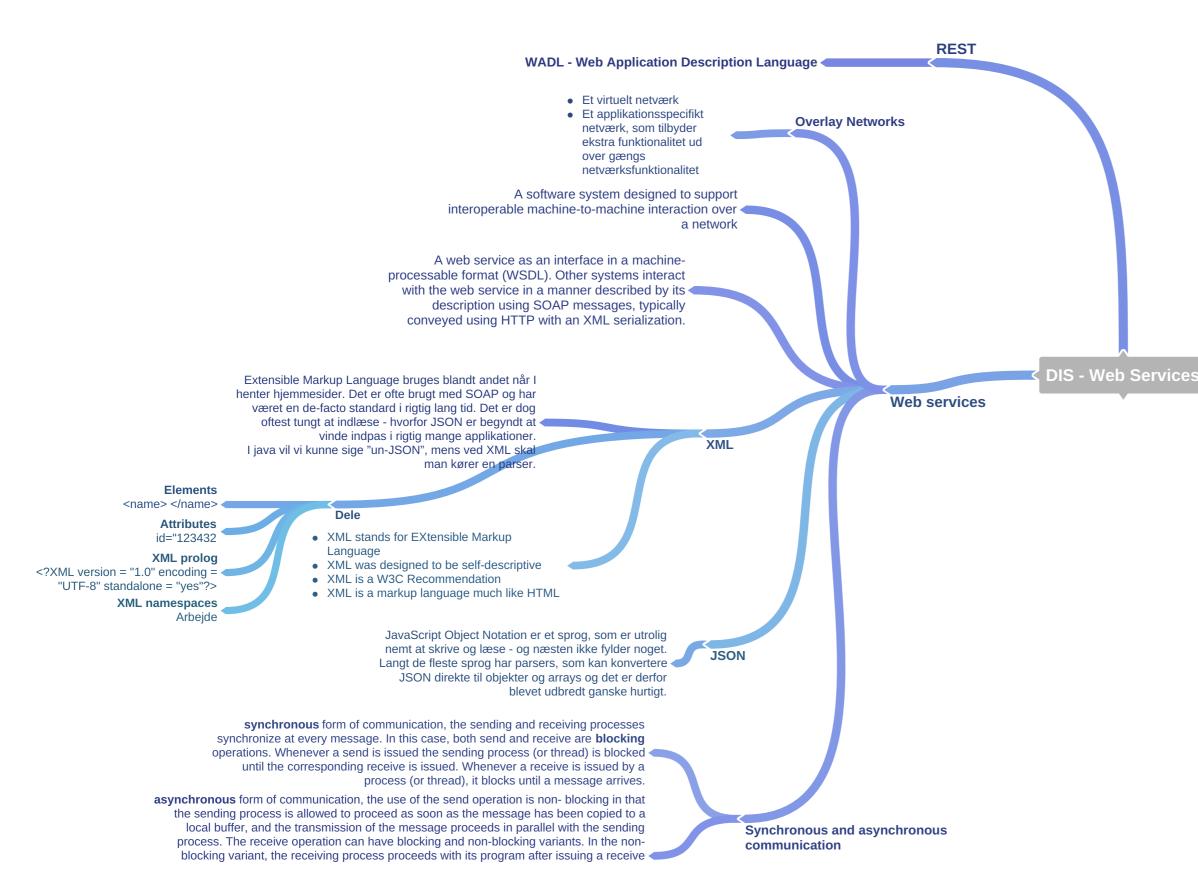
operation, which provides a buffer to be filled in the background, but it must separately receive notification that its buffer has been filled, by polling or interrupt.

SOAP

- how XML is to be used to represent the contents of individual messages;
- how a pair of single messages can be combined to produce a request-reply pattern;
- the rules as to how the recipients of messages should process the XML elements that they contain;
- how HTTP and SMTP should be used to communicate SOAP messages. It is expected that future versions of the specification will define how to use other transport protocols, for example, TCP

Sends an **envelope**, containing **header** (elements) and **body** (elements)

SOAP messages
A SOAP message is carried in an 'envelope'. Inside the envelope there is an optional header and a body, as shown in Figure 9.3. Message headers can be used for establishing the necessary context for a service or for keeping a log or audit of operations.

Svaghed
It implies that the developer must be involved in the details of the specific transport protocol chosen. In addition, it makes it difficult to use different protocols for different parts of the route followed by a particular message.

Transport of SOAP messages
A transport protocol is required to send a SOAP message to its destination. SOAP messages are independent of the type of transport used – their envelopes contain no reference to the destination address. HTTP (or whatever protocol is used to transport a SOAP message) is left to specify the destination address

Both SOAP and the data it carries are represented in XML, a textual self-describing format introduced in Section 4.3.3. Textual representations take up more space than binary ones and the parsing that they require takes more time to process. In document-style interactions speed is not an issue, but it is important in request-reply interactions. However, it is argued that there is an advantage in a human-readable format that allows for the easy construction of simple messages and for debugging of more complex ones

WSDL - Web Service Description Language/
Web Service Distribution Language

To allow for a variety of patterns of communication, the SOAP protocol (discussed in Section 9.2.1) is based on the packaging of single one-way messages. Its supports request-reply interactions by using pairs of single messages and specifying how to represent operations, their arguments and their results

SOAP is designed to enable both client-server and asynchronous interaction over the Internet. It defines a scheme for using XML to represent the contents of request and reply messages (see Figure 5.4) as well as a scheme for the communication of documents. Originally SOAP was based only on HTTP, but the current version is designed to use a variety of transport protocols including SMTP, TCP or UDP