AGILE PROJECTS

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ABSTRACT AND TRANSFER SYNTAX

- https://en.wikipedia.org/wiki/Abstract_syntax
- https://en.wikipedia.org/wiki/Abstract_Syntax_Notation_One

TYPE (ABSTRACT SYNTAX)

```
FooProtocol DEFINITIONS ::= BEGIN

    FooQuestion ::= SEQUENCE {
        trackingNumber INTEGER,
        question       IA5String
    }

    FooAnswer ::= SEQUENCE {
        questionNumber INTEGER,
        answer         BOOLEAN
    }

END
```

INSTANCE(ABSTRACT SYNTAX)

```
myQuestion FooQuestion ::= {
    trackingNumber     5,
    question           "Anybody there?"
}
```

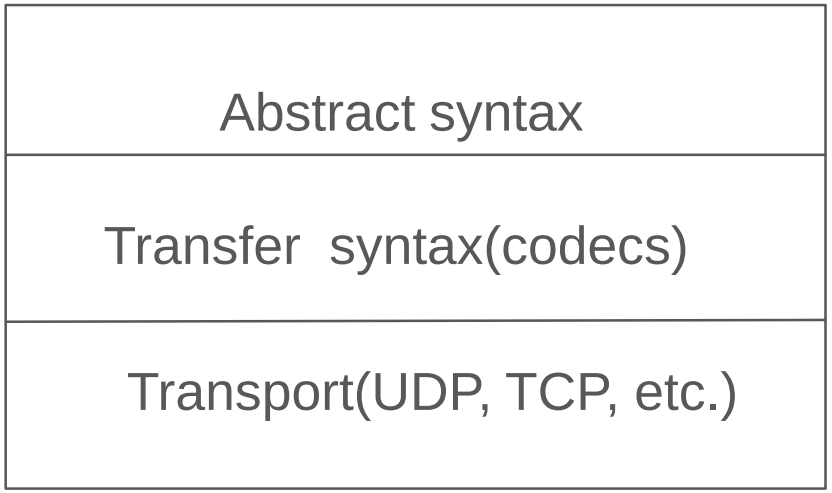
EXAMPLE ENCODED IN DER (TRANSFER SYNTAX)

- 30 — type tag indicating SEQUENCE
- 13 — length in octets of value that follows
- 02 — type tag indicating INTEGER
- 01 — length in octets of value that follows
- 05 — value (5)
- 16 — type tag indicating IA5String
- (IA5 means the full 7-bit ISO 646 set, including variants,
- but is generally US-ASCII)
- 0e — length in octets of value that follows
- 41 6e 79 62 6f 64 79 20 74 68 65 72 65 3f — value ("Anybody there?")

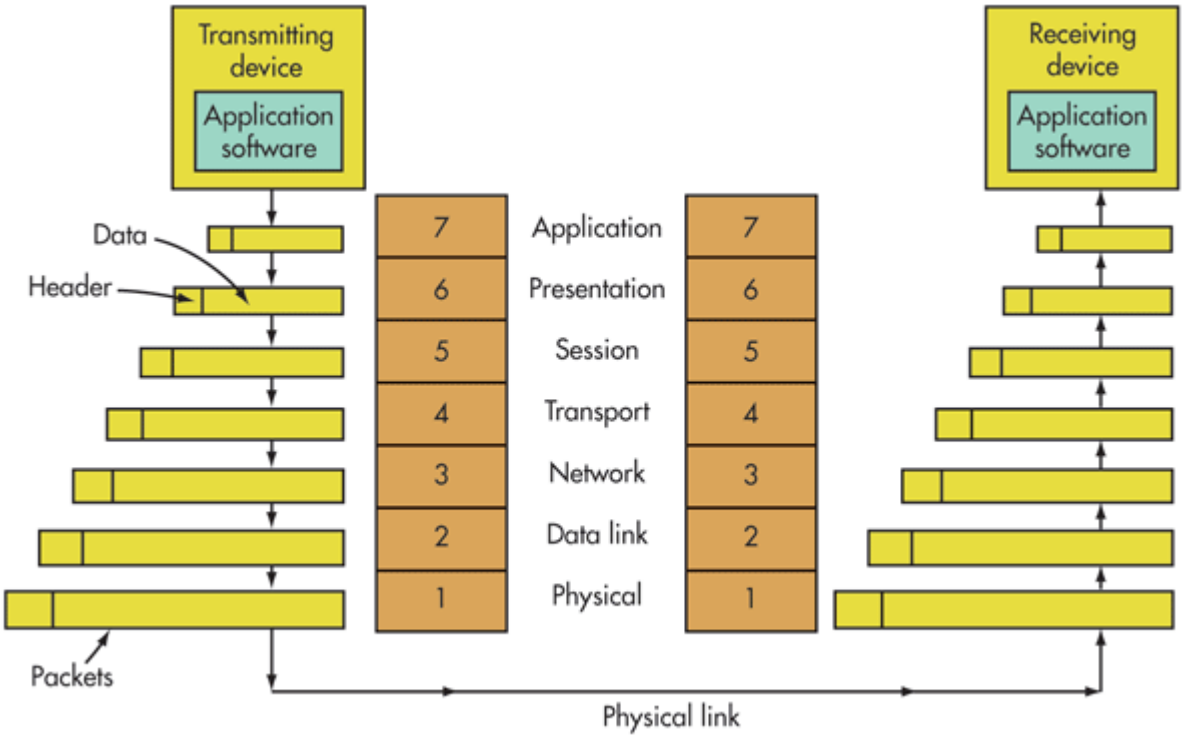
- **Besides binary, it can also be character string, XML etc.**

PROTOCOL STACK

- Abstract syntax: ASN.1, TTCN-3, Java, Python, C++….



ISO OSI 7 LAYER MODEL



1. HTTP/2

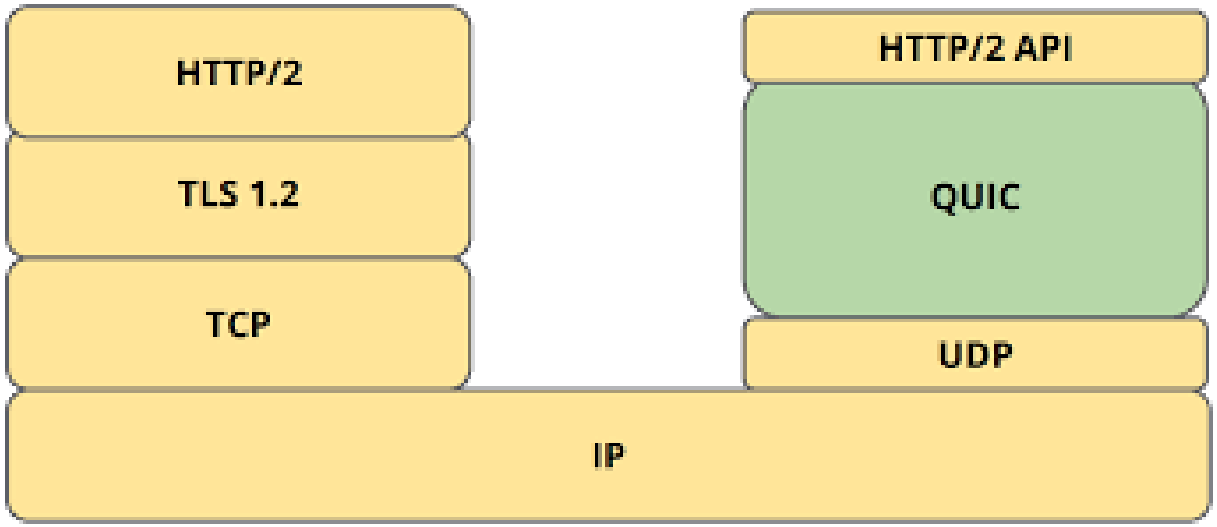
- Hypertext Transfer Protocol Version 2 (HTTP/2)
- https://tools.ietf.org/html/rfc7540

- Create a representation of the abstract syntax in your language of choice
- Implement the transfer syntax (codec)
- Deliverables: code, tests, documentation (github.com)

2. QUIC

- QUIC: A UDP-Based Secure and Reliable Transport for HTTP/2 draft-tsvwg-quic-protocol-02
- https://tools.ietf.org/html/draft-tsvwg-quic-protocol-02
- https://www.chromium.org/quic
- Create a representation of the abstract syntax in your language of choice
- Implement the transfer syntax (codec)
- Deliverables: code, tests, documentation (github.com)

QUIC AND HTTP/2



3. AMQP

- AMQP (Advanced Message Queuing Protocol)
- https://www.amqp.org/
- http://www.amqp.org/sites/amqp.org/files/amqp.pdf

- Create a representation of the abstract syntax in your language of choice
- Implement the transfer syntax (codec)
- Deliverables: code, tests, documentation (github.com)

JSON EXAMPLE

```
{
  "id": 1,
  "name": "Foo",
  "price": 123,
  "tags": [
    "Bar",
    "Eek"
  ],
  "stock": {
    "warehouse": 300,
    "retail": 20
  }
}
```

- **JSON: abstract or transfer syntax?**

4. CBOR

- Concise Binary Object Representation
- http://cbor.io/
- http://www.json.org/
- https://tools.ietf.org/html/rfc7049
- 4.1. Converting from CBOR to JSON
- 4.2. Converting from JSON to CBOR

- Implement JSON2CBOR
- Implement CBOR2JSON
- Deliverables: code, tests, documentation (github.com)

5. STOMP

- Simple Text Oriented Messaging Protocol
- https://stomp.github.io/

- Create a representation of the abstract syntax in your language of choice
- Implement the transfer syntax (codec)
- Deliverables: code, tests, documentation (github.com)

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