

fraber-
consulting


Web Services

**The driver of the B2B Revolution
Barcelona, February 2002**

- Intro
- What are Web Services?
- A Business Case
- Exercise 1: Parts Specification
- Wrapup: XML
- Communication Protocols
- Exercise 2: Protocol Specification
- Wrapup: SOAP
- The Future

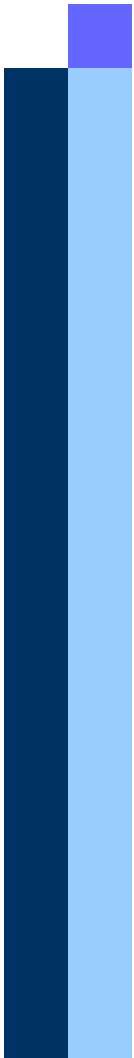
Contents

Strategy
Biz Processes
Biz Objects
DTDs
SOAP
Internet

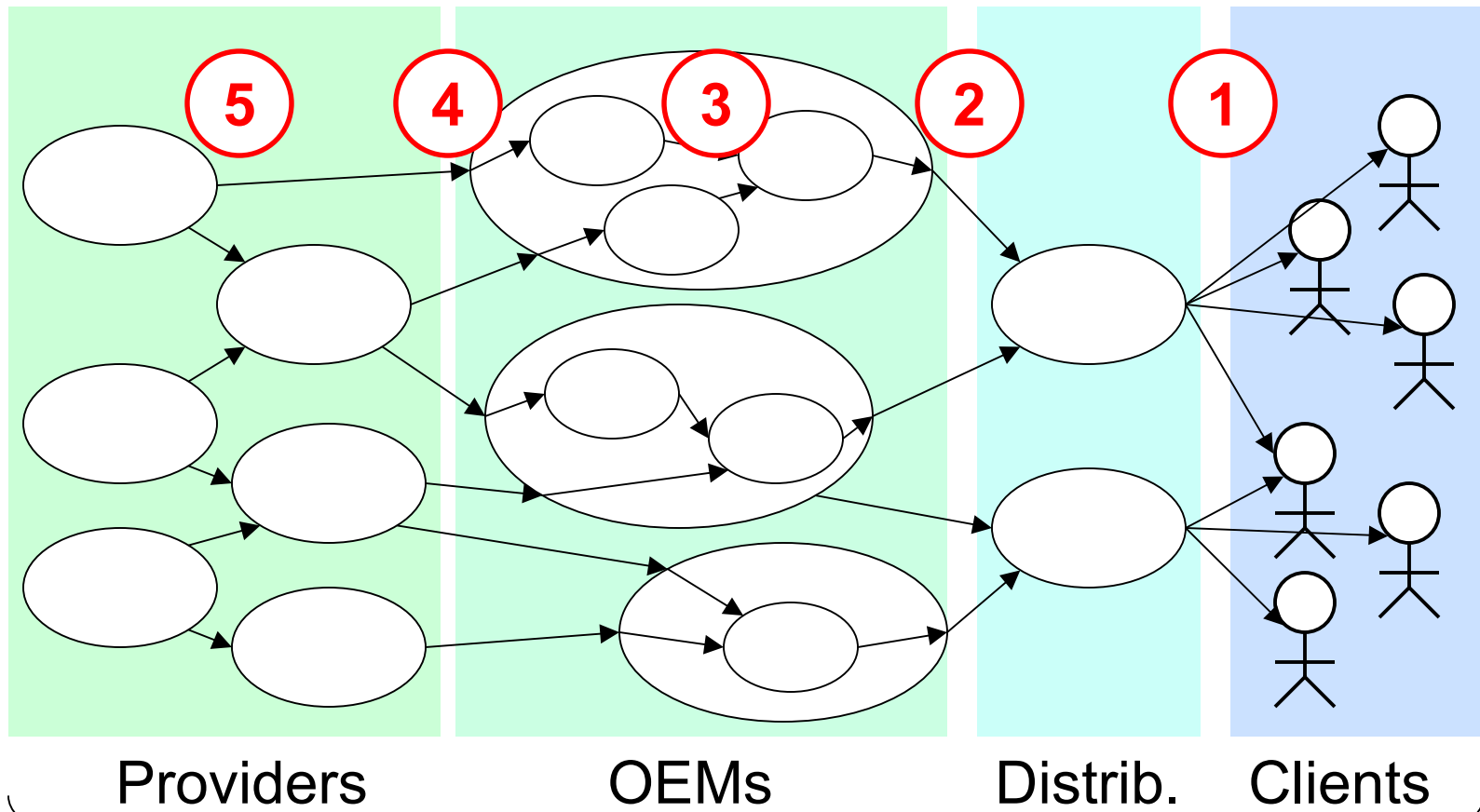
- 
- Please introduce yourself!
 - Scope: Tech stuff for Biz guys
 - Dehyping: What is this really good for?

What are Web Services?

- What do **you** think?




What are Web Services?



A Typical Industry Value Chain

What are Web Services?

- 
- B2C Commerce or Wireless
 - Distribution Chain Services
 - Intra-company distributed systems services
 - Supplier Network Services
 - Services amongst suppliers

What are Web Services Really?

- A convention how to call business objects (XML DTDs)
 - A convention for computers to talk to each other on the network level (SOAP and HTTP)
- Let's see the business case



Business Case: Hard to Find Auto Parts

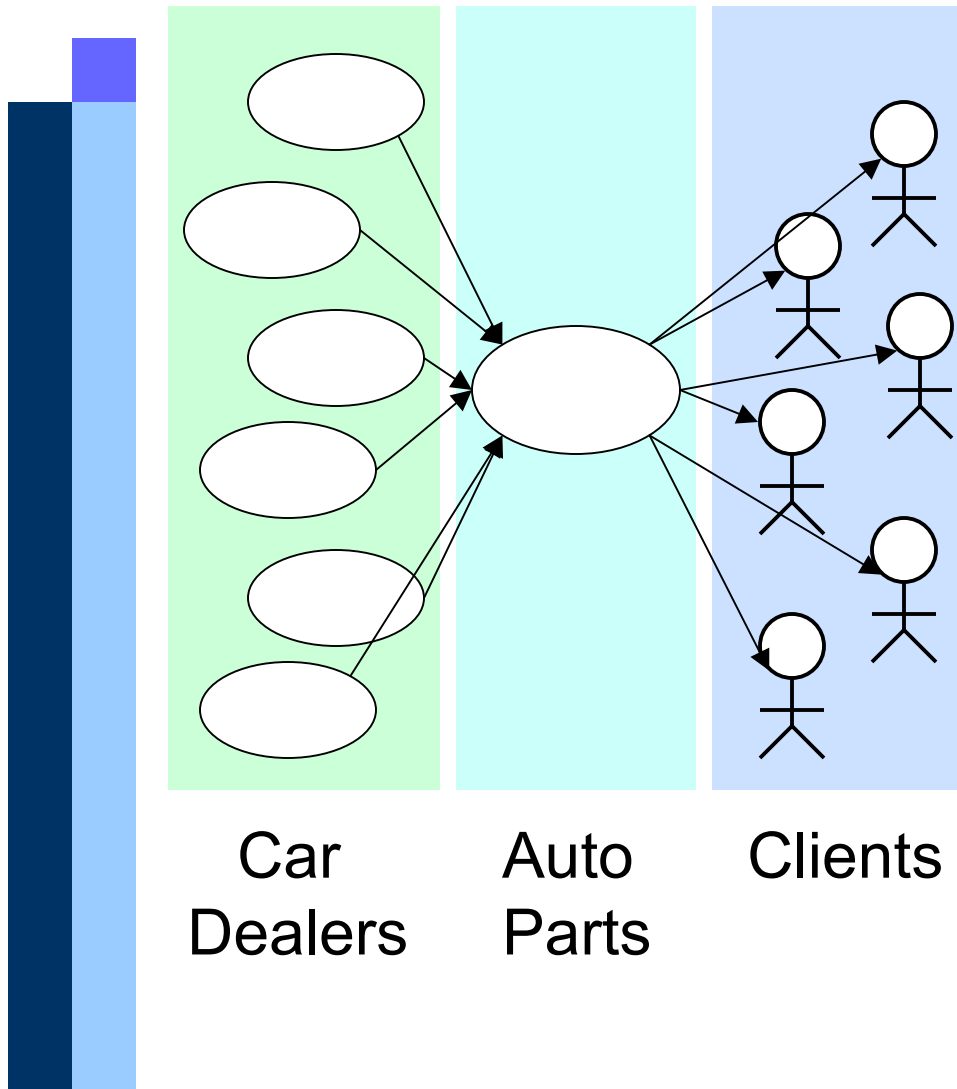
fraber- consulting

Mission

Provide customers with highly specialized auto parts in a timely manner and at a fair price.



Business Challenge



Find parts quickly
and at the best price
in the provider
network

fraber- **consulting**



Technology

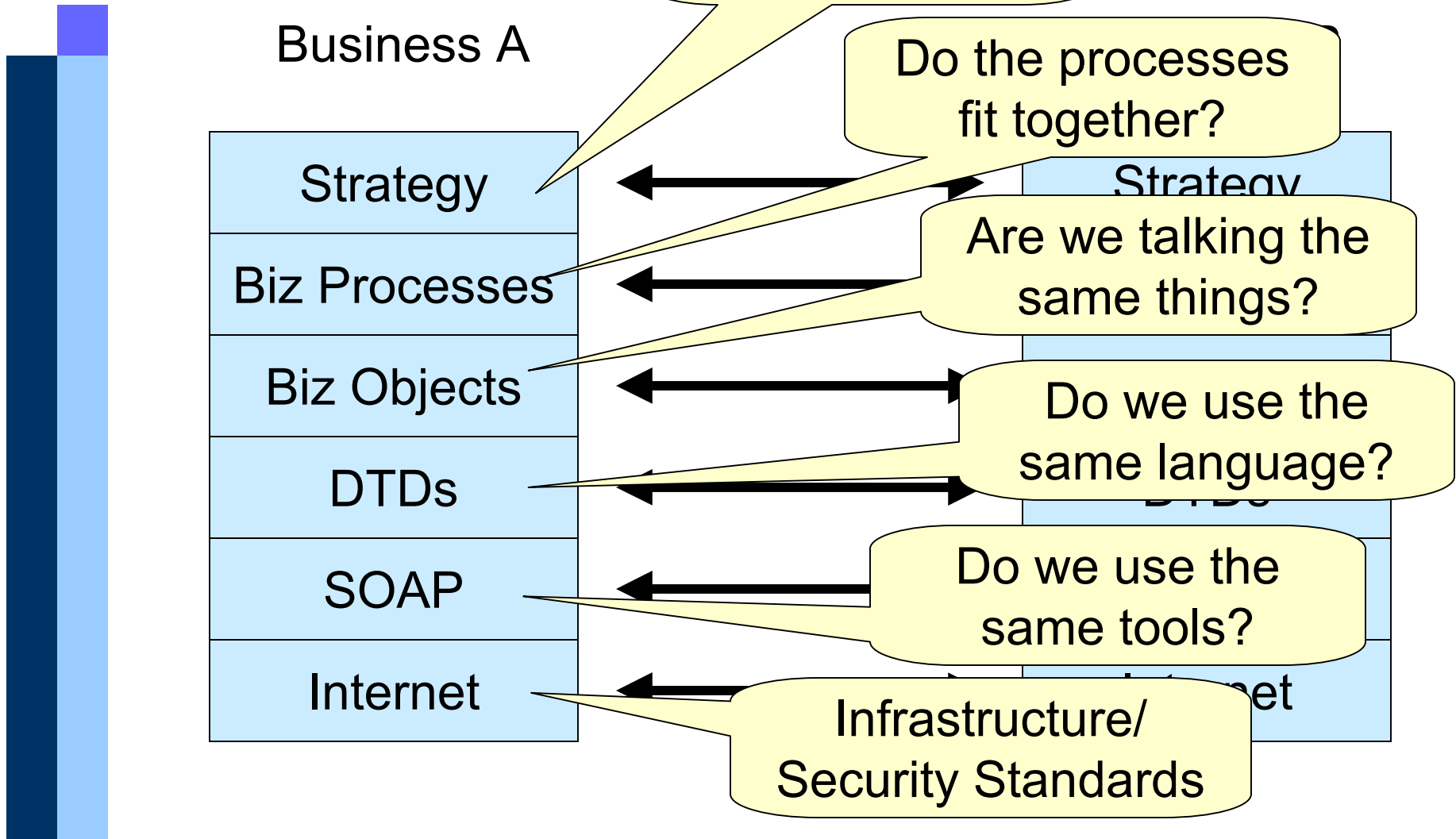
Use XML web services to build an integrated suppliers network.

Tech Solution



Each provider publishes his stock and price information using a web service, and we would be able to provide our customers with the parts from the closes source or for the least amount of money.

Business Alignment



What are the Issues?

- Common business process integration schemes
- System Integration at the provider level
- Internet Access: Each of the providers has to connect his systems to the Internet
- Security: How to protect the provider data from competitors and hackers?
- Protocol: Definition a common communication protocol with all providers

Rosetta Net
PIP

ODBC Access,
MQSeries, ...

Security Audit,
Firewalls, ...

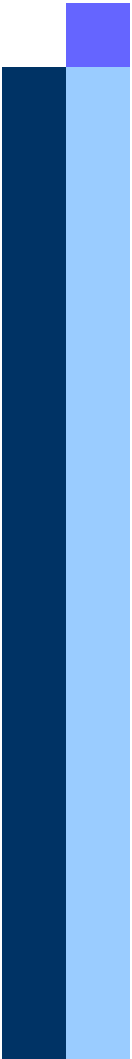
Next Slides




Exercise 1: Parts Specifications

- Write a sample XML description for the parts in the „Hard to Find Auto Parts“ business
- What are the necessary fields?
- How are these fields structured?
- Are there cultural/business process difference in the description?

fraber-
consulting



<Pause>



<Pause> ... </Pause>

Exercise 1: Solution

```
<part>  
  <oem>Ford</oem>  
  <partId>1758393685</partId>  
</part>
```

- partId is taken from OEM spare part catalog
- OEM name is taken from a list
- No part attributes necessary
- No model year necessary because part <->model relationship is handled by the OEMs



Wrapup: XML Communication

Why not HTML?

- HTML is understood by most browsers today.

```
<p><b>Mrs. Mary McGoon</b>  
<br>  
1401 Main Street  
<br>  
Anytown, NC 34829</p>
```

```
<p><b>Mrs. Mary McGoon</b><br>1401 Main Street<br>Anytown, NC 34829</p>
```

Mrs. Mary McGoon
1401 Main Street
Anytown, NC 34829

Rendering HTML

- HTML defines the appearance of data, but not their „semantics“ (=meaning)

Sample XML

```
<address>
<name>
<title>Mrs.</title>
<first-name>Mary</first-name>
<last-name>McGoon</last-name>
</name>
<street>1401 Main Street</street>
<city>Anytown</city>
<state>NC</state>
<zipcode>34829</zipcode>
...
</address>
```

- With XML, you can understand the meaning of the tags.
- More importantly, a computer can understand them as well.

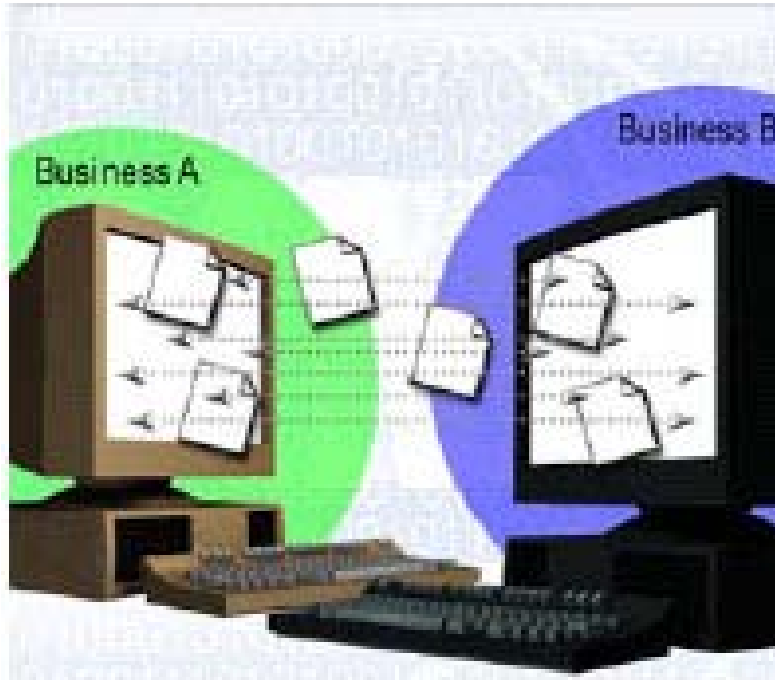
```
<address>  
<name>  
<title>Mrs.</title>  
<first-name>Mary</first-name>  
<last-name>McGoon</last-name>  
</name>  
<street>1401 Main Street</street>  
<city>Anytown</city>  
<state>NC</state>  
<zipcode>14829</zipcode>  
</address>
```

Mrs. Mary McGoon
1401 Main Street
Anytown, NC 34829

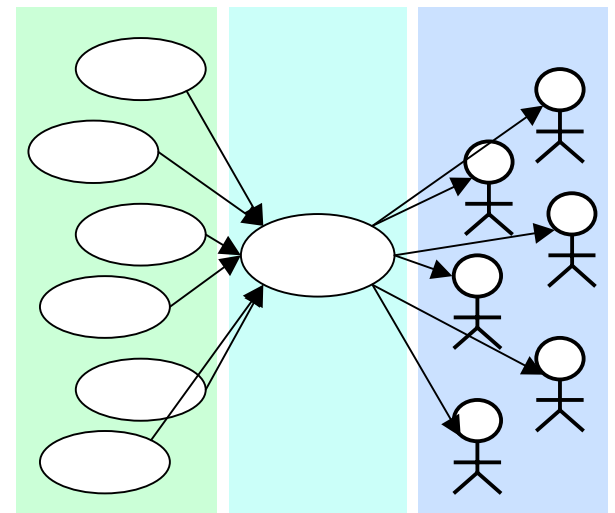
Rendering XML

- XML from the previous example might be rendered like this.
- Notice that even though the tags are different, they can still be rendered just like HTML.
- There are several options to render XML (CSSs and XSLTs)

XML B2B Communication



- Computers can exchange XML data automatically
- B2B communication needs no rendering



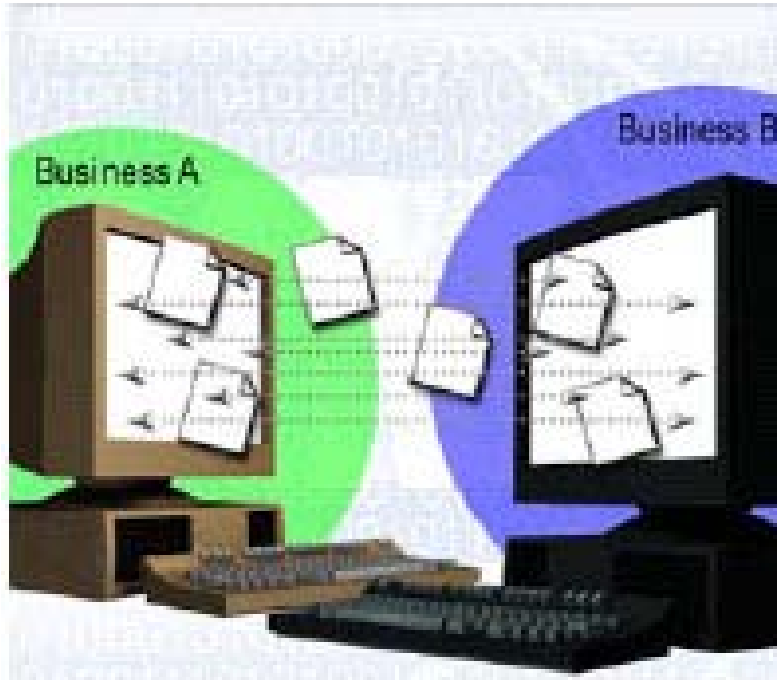
Car Dealers Auto Parts Clients

fraber-
consulting

SOAP



Communication Protocols



A specification of how two or more computers can talk to each other, including:

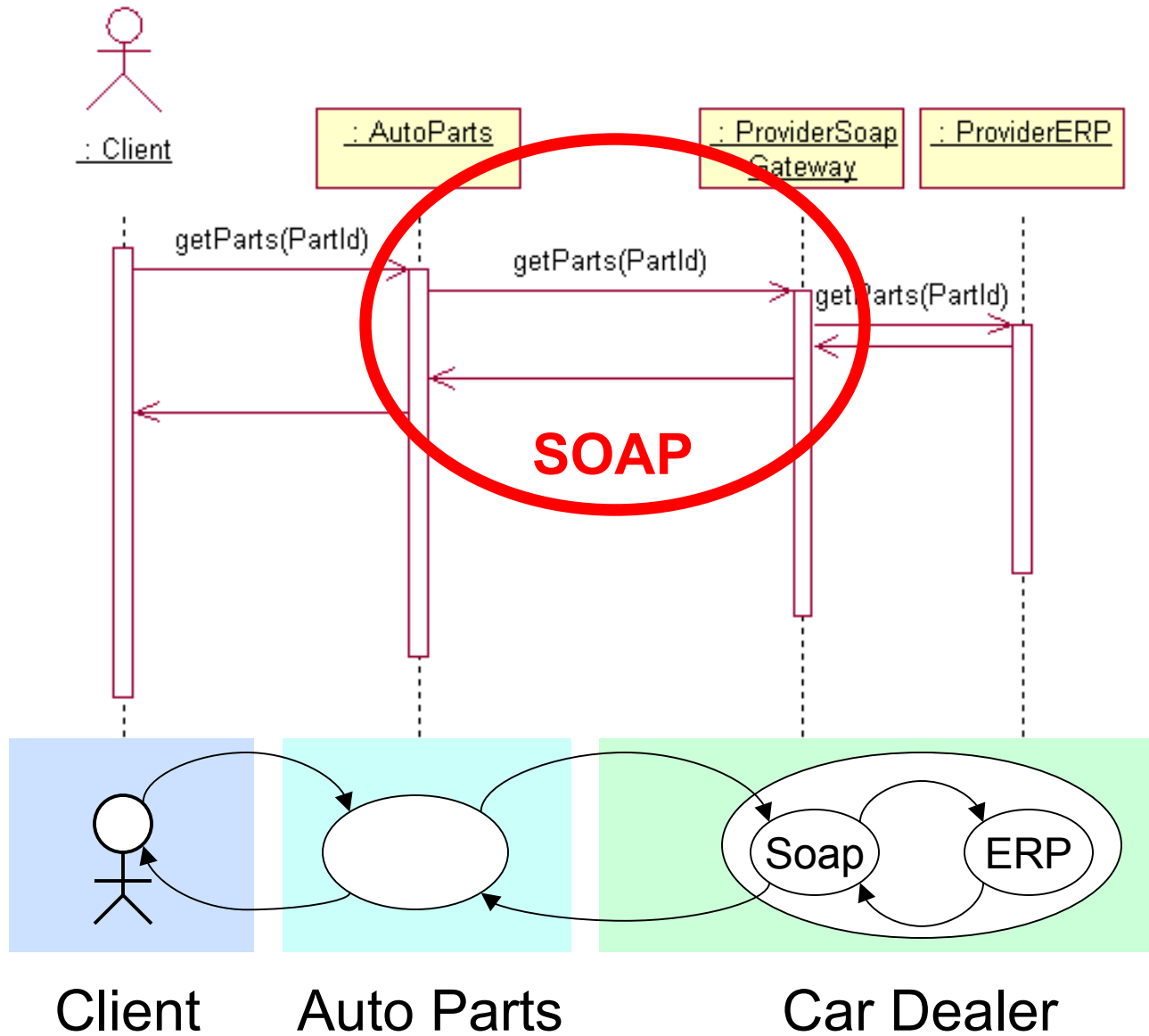
- The format of the data to interchange (messages)
- The meaning of the messages (semantics)
- Information about the order of messages

Message Data Formats

```
<address>  
<name>  
<title>Mrs.</title>  
<first-name>Mary</first-name>  
<last-name>McGoon</last-name>  
</name>  
<street>1401 Main Street</street>  
<city>Anytown</city>  
<state>NC</state>  
<zipcode>34829</zipcode>  
...  
</address>
```

- One option is to use XML to format messages and their data.
- Previous generations (EDI) used fixed-length fields for the data with type information outside the message.

Interaction Diagram

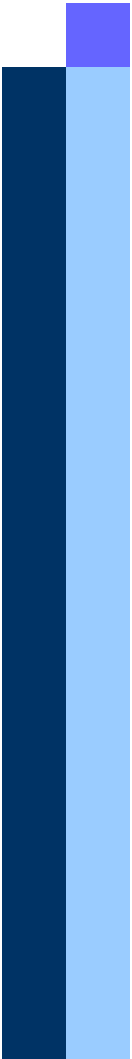


Exercise 2: Protocol Specification




- Define the communication protocol between Auto Parts and its partners.
- What type of „questions“ could be exchanged between Auto Parts and its providers?

fraber-
consulting



<Pause>



<Pause> ... </Pause>

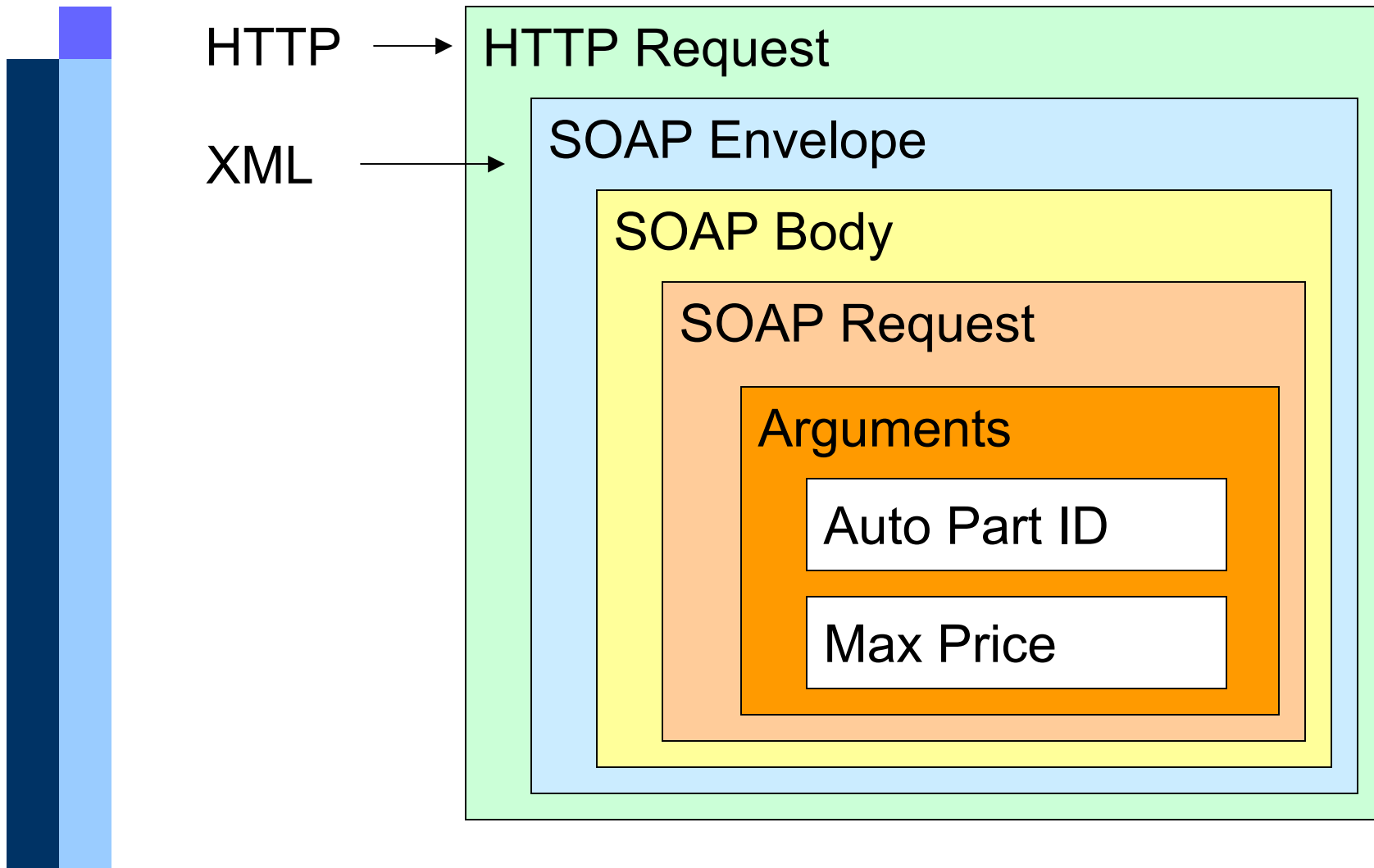
Exercise 2: Sample Solution

- `isAvailable(Part) ->`
 - `available(Part,Price)` (Price=0 => reject)
- `orderPart(Part) ->`
 - `confirm(Order)` (ID=0 => reject)
- `getOrderStatus(OrderID) ->`
 - `stock/inProcess/sent/unknown`
- `Invoice(OrderId) <-`
 - `confirm(Invoice)` (ID=0 => reject)
- `getInvoideStatus(InvoideID) <-`
 - `accept/inProcess/payed/unknown`



Wrapup: SOAP Communication

A SOAP Request



isAvailable Soap Request

```
POST /isAvailable-request HTTP/1.1
Host: xml.hfap.com
Content-Type: text/plain; charset="utf-8"
```

```
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV=http://schemas.xmlsoap.org/soap/envelope/
  SOAP-ENV:encodingStyle=http://schemas.xmlsoap.org/soap/encoding/
>
  <SOAP-ENV:Body>
    <c:isAvailable xmlns:c=http://xml.hfap.com/providers>
      <c:part>
        <c:oem>Ford</c:oem>
        <c:partId>1758393685</c:partId>
      </c:part>
    </c:isAvailable>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

isAvailableResponse

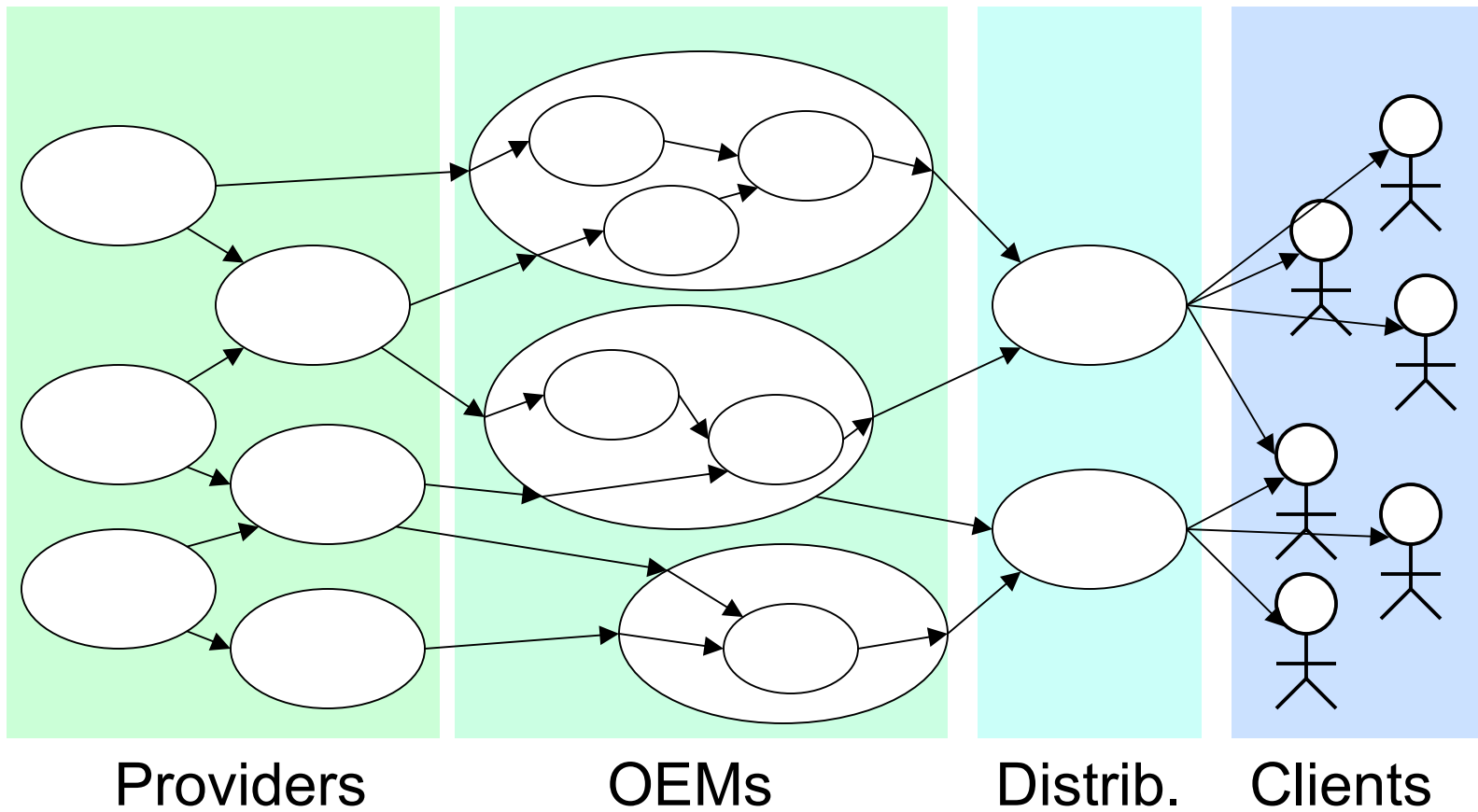
```
HTTP/1.1 200 OK  
Server: PythonSimpleHTTP/2.0  
Content-type: text/xml; charset="utf-8"
```

```
<SOAP-ENV:Envelope  
  xmlns:SOAP-ENV=http://schemas.xmlsoap.org/soap/envelope/  
  SOAP-ENV:encodingStyle=http://schemas.xmlsoap.org/soap/encoding/  
>  
  <SOAP-ENV:Body>  
    <c:isAvailableResponse xmlns:c=http://xml.hfap.com/providers >  
      <c:part>  
        <c:oem>Ford</c:oem>  
        <c:partId>1758393685</c:partId>  
      </c:part>  
      <c:price>$20.58</price>  
    </c:isAvailableResponse>  
  </SOAP-ENV:Body>  
</SOAP-ENV:Envelope>
```




The Future

A Wonderful New World?





- What are Web Services?
- What are Web Services not?
- What are they good for?
- Who are the winners/losers?

- 
- Microsoft .Net
 - They originated the hype
 - IBM/Apache XML Toolkit
 - The winners?
 - Sun ONE
 - Currently Vaporware
 - Perl SOAP::Lite
 - The prototyping tool?
- ➔ Everybody is going to provide XML toolkits