

System integration with Web Services and XML

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System integration with Web Services and XML

Target audience

 Developers, architects and IT-managers

Objectives

 Experiences from a real world project

Non-Objectives

 Intro to Web Services

To learn more

- ✍ *Gå inte in i väggen, när du kan använda dörren*
- ✍ Peter Norrhall
- ✍ O'Reilly, 2003
- ✍ ISBN 1111-2222-3333

- ✍ We accept all major credit cards

- ✍ 10 % off in the bar tonight




Agenda

- ✍ **Papyrus e-services**
- ✍ **Technical issues**
- ✍ **Business issues**
- ✍ **Summary**


PAPYRUS

E-business vision

Customer's preferred choice

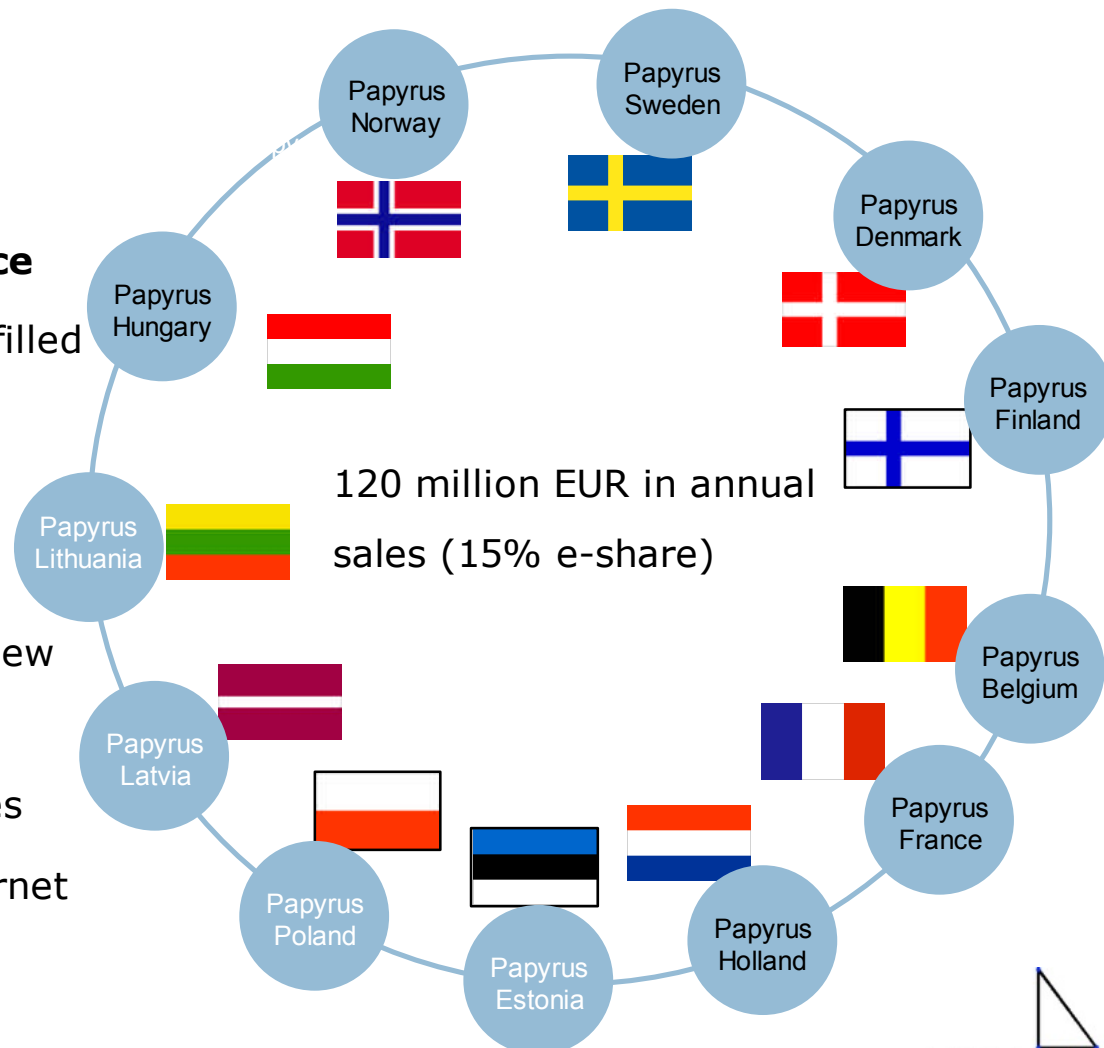
 All routine communication fulfilled through internet

Industry market leader

 Leading the development of new e-services

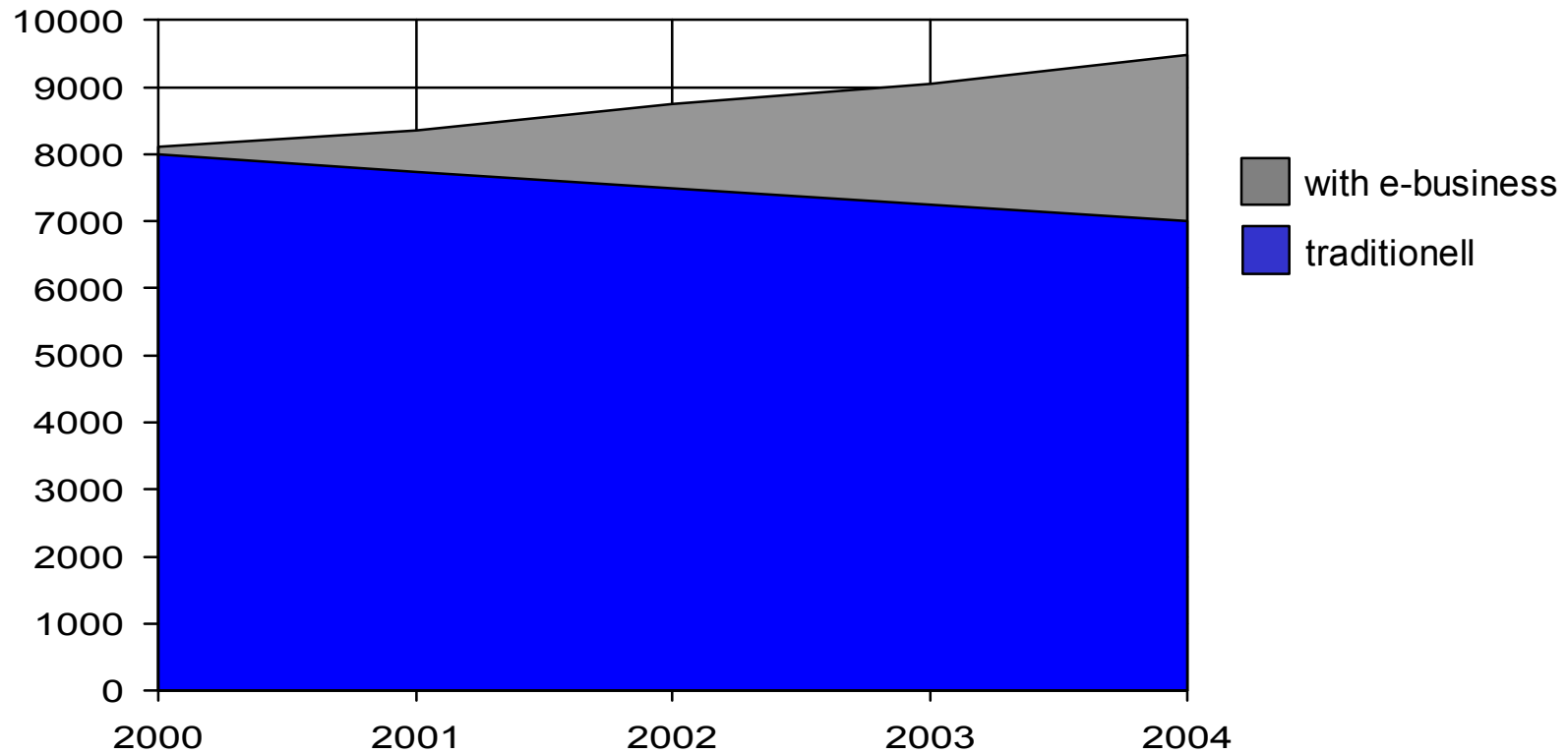
 Focus on value adding services

 Significant business over internet



E-business is growing

Key European markets, KTON



Papyrus e-business history

Supplier



Papyrus



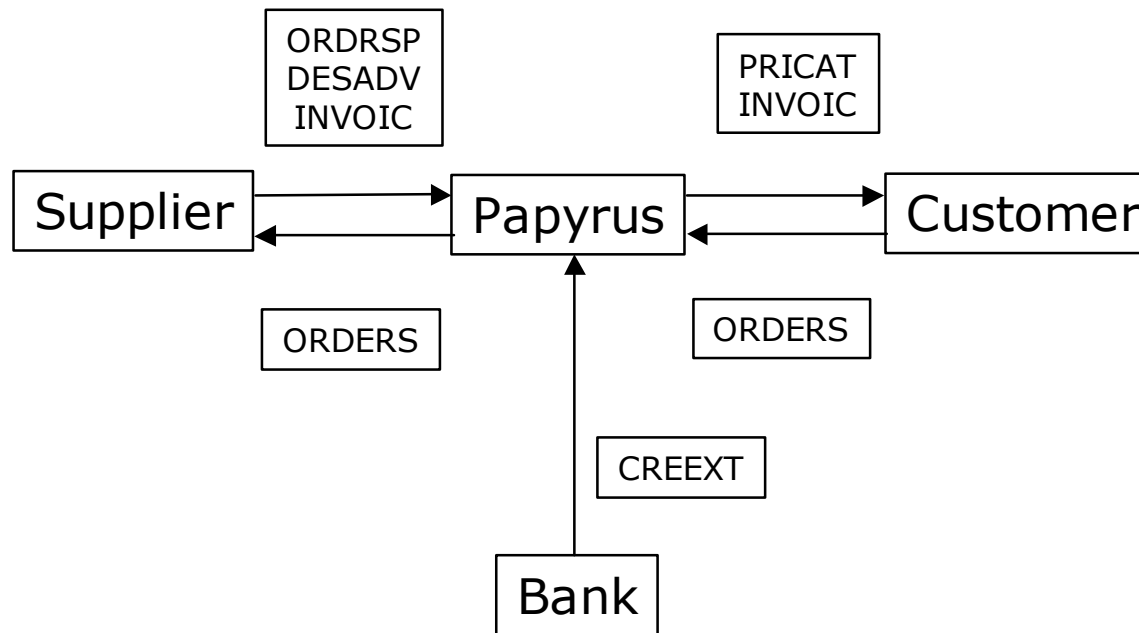
Customer



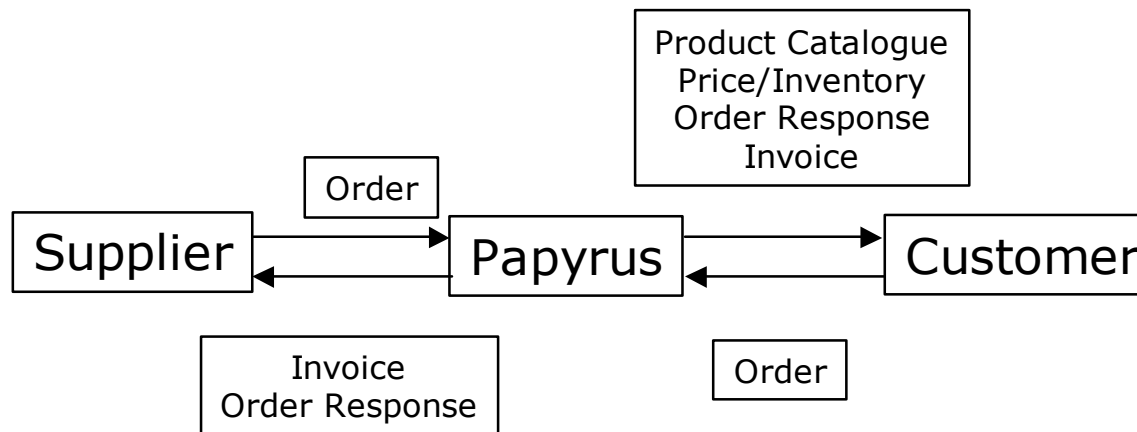
1975 First Integration
Replaced by EDI

1985 Partner 1.0,
online system
1989 EDI solutions
1997 Partner 2.0,
internet based
1999 papyrus.com
2000 Papyrus e-point
2002 Papyrus e-services

System Integration EDI



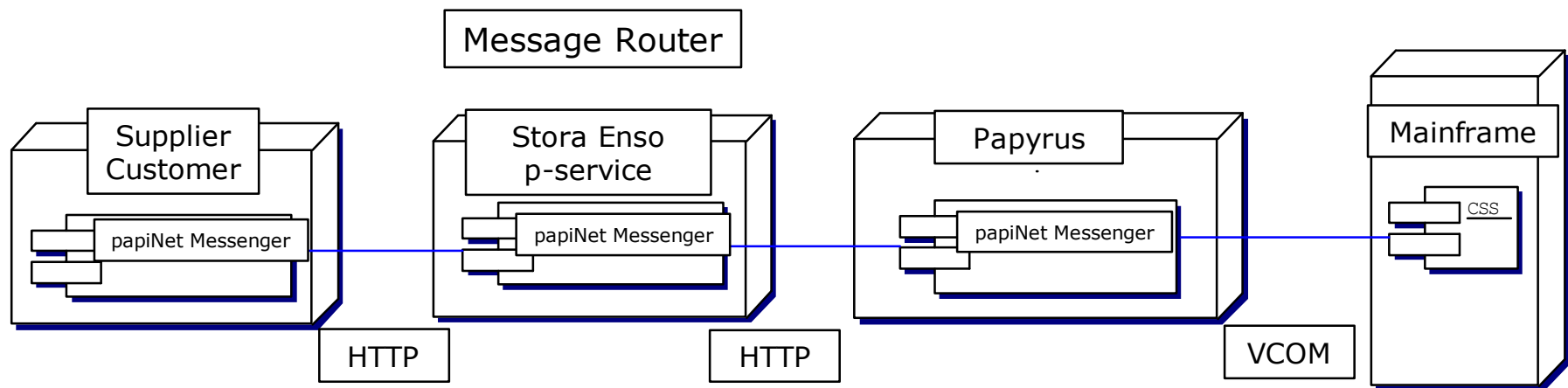
System Integration XML



papiNet.org

- ✍ XML DTD and Schema (Order, Invoice, RFP, etc), Case Studies, Business Flow
- ✍ papiNet Messenger

papiNet



ERP/Portal Integration using Web Services

✍ Technical Issues

- ✍ Interoperability

- ✍ Security

✍ Business Issues

- ✍ Business Rules

- ✍ Business Model

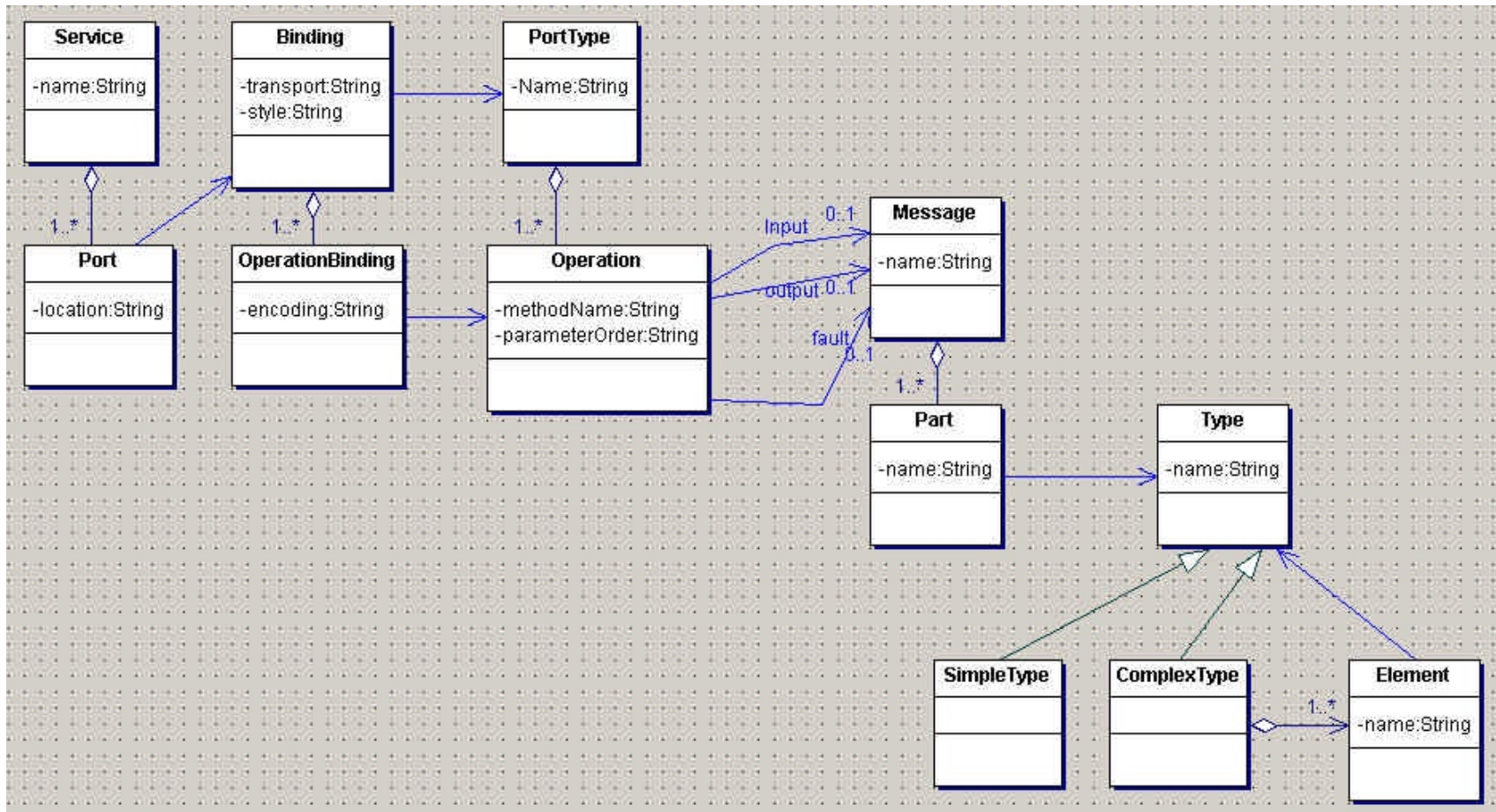
Interoperability

- ✍ Pick a "limited" number of target "client" platforms
 - ✍ MS (SOAP Toolkit, .Net), Java (Apache Axis, Apache SOAP, Sun WSDK, IBM WSTK, Systinet WASP, Oracle), Delphi/Kylix, Perl, ...
- ✍ <http://www.ws-i.org>
 - ✍ Basic Profile : XML Schema 1.0, SOAP 1.1, WSDL 1.1, UDDI 1.0
- ✍ <http://www.soapbuilders.org>
- ✍ <http://www.w3.org/2002/ws/>

WSDL

- ✍ IDL – start writing the interface
 - ✍ WSDL2Java, WSDL.exe, ...
- ✍ RPC (JAX-RPC)
 - ✍ Structured
- ✍ Document (JAXM)
 - ✍ Unstructured
 - ✍ Recommended by WS-I, MS, SOAP 1.2
 - ✍ XML Schema
- ✍ Message (Axis – non-standard)

WSDL



Data Types

✍ Simple (XML Schema Part 2 : Built-in Datatypes)

✍ Types that work

✍ String, boolean, int, ...

✍ Simple Complex Type (JavaBeans)

✍ Array of any valid type

✍ Beware of language specific types

✍ Floating-point, decimal and date data types

✍ Unsigned

✍ Enumeration

✍ `java.util.HashList`

✍ XML Schema

Encoding

✍ UTF-8

✍ Base64Encoding

✍ Attachment

Attachments

- ✍ Non XML documents
- ✍ Business documents (Order, Invoice, ...)
- ✍ Interoperability problem
 - ✍ DIME vs MIME
 - ✍ Different implementations
- ✍ Axis, SAAJ, JAXM

Example

WSDL

...

```
<message name="receiveCategoryInput">
  <part name="pId" type="xsd:string"/>
  <part name="pCompleteTree" type="xsd:boolean"/>
</message>
<message name="receiveCategoryResponse">
  <part name="result" type="xsd:string"/>
</message>
<portType name="CatalogServicePortType">
  <operation name="receiveCategory" parameterOrder="pId pCompleteTree">
    <input message="tns:receiveCategoryInput"/>
    <output message="tns:receiveCategoryResponse"/>
  </operation>
</portType>
```

...

Example

WSDL

...

```
<message name="receiveCategoryInput">
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Example

WSDL

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  </operation>
</portType>
```

...



Delphi

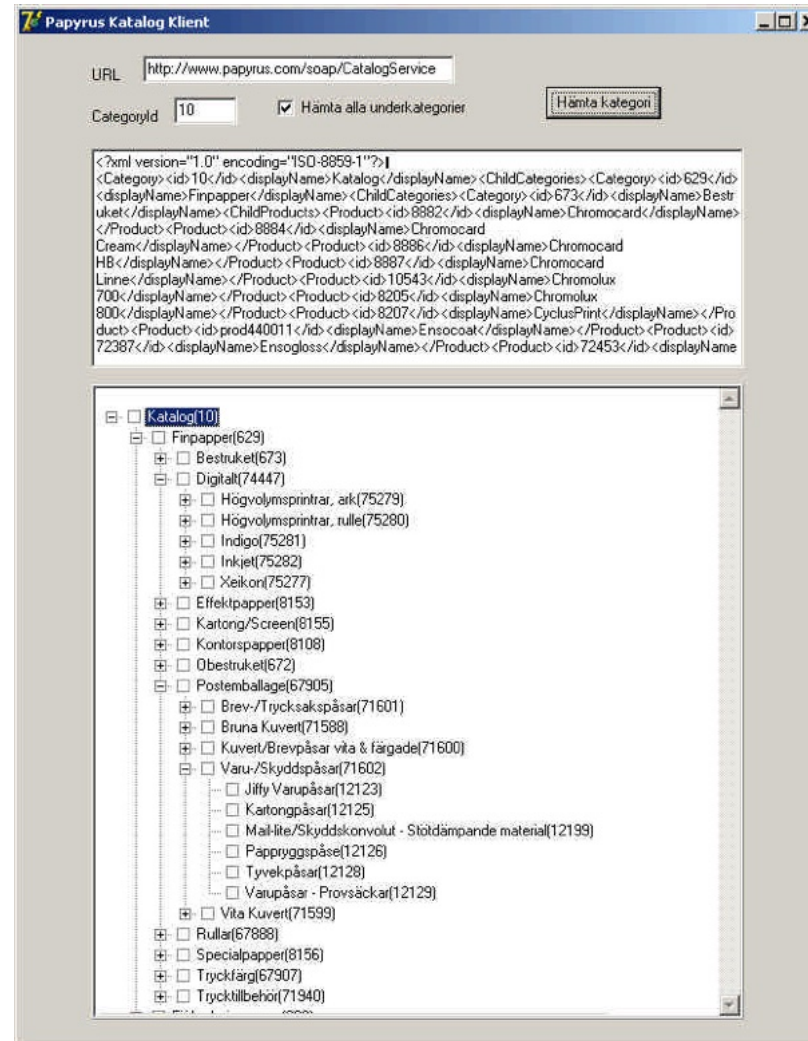
```
CatalogServicePortType = interface(IInvokable)
```

```
['{639DAB2C-6AF6-E86A-AF07-F958993627F8}']
```

```
    function receiveCategory(const pId: WideString; const pCompleteTree:  
        boolean): WideString; stdcall;
```

```
end;
```

Example



Security

- ✍ Basic Authentication and Security
 - ✍ Server and client X.509 certificates
 - ✍ SSL encryption
 - ✍ Userid and password sent in the message

- ✍ WS-S – endorsed by IBM, MS, Verisign, Sun, OASIS
- ✍ <http://www.oasis-open.org/committees/wss/>

Security

✂ The weakest link problem :



Sessions

- ✍ Do not rely on session support
- ✍ Depends on the application server and the client
 - ✍ HTTP sessions/Cookies
 - ✍ SOAPHeader
 - ✍ sessionId in message
 - ✍ Dynamic endpoints (.Net remoting)
- ✍ Performance issues



UDDI

 Not used

 JAXR

Testing

- ✍ Write, deploy, test
- ✍ Tools (OpenSource)
 - ✍ Soap/Tcp Monitor
 - ✍ Ant eater – <http://aft.sourceforge.net>
 - ✍ TestMaker - <http://www.pushtotest.com/ptt>

Business Issues



Pricing

✍ Customer unique

✍ Units –

✍ Sheet

✍ Package

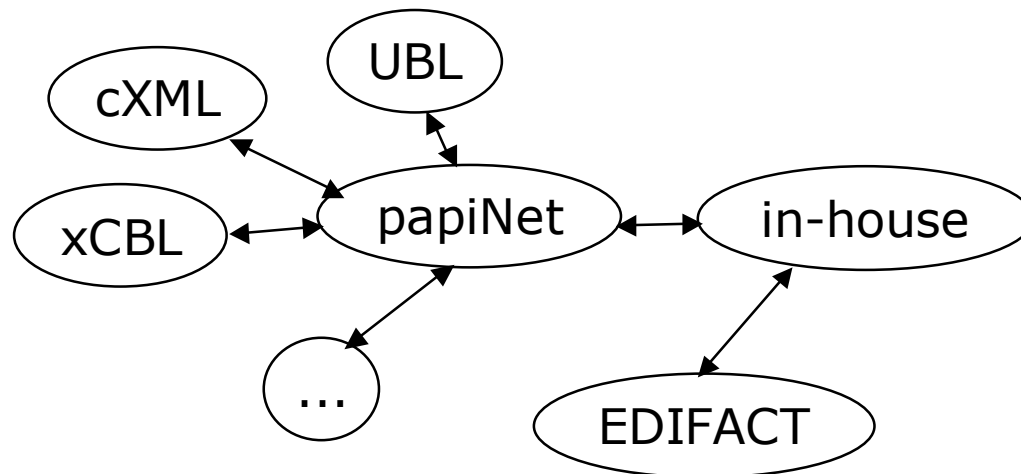
✍ Pallet

✍ Total quantity

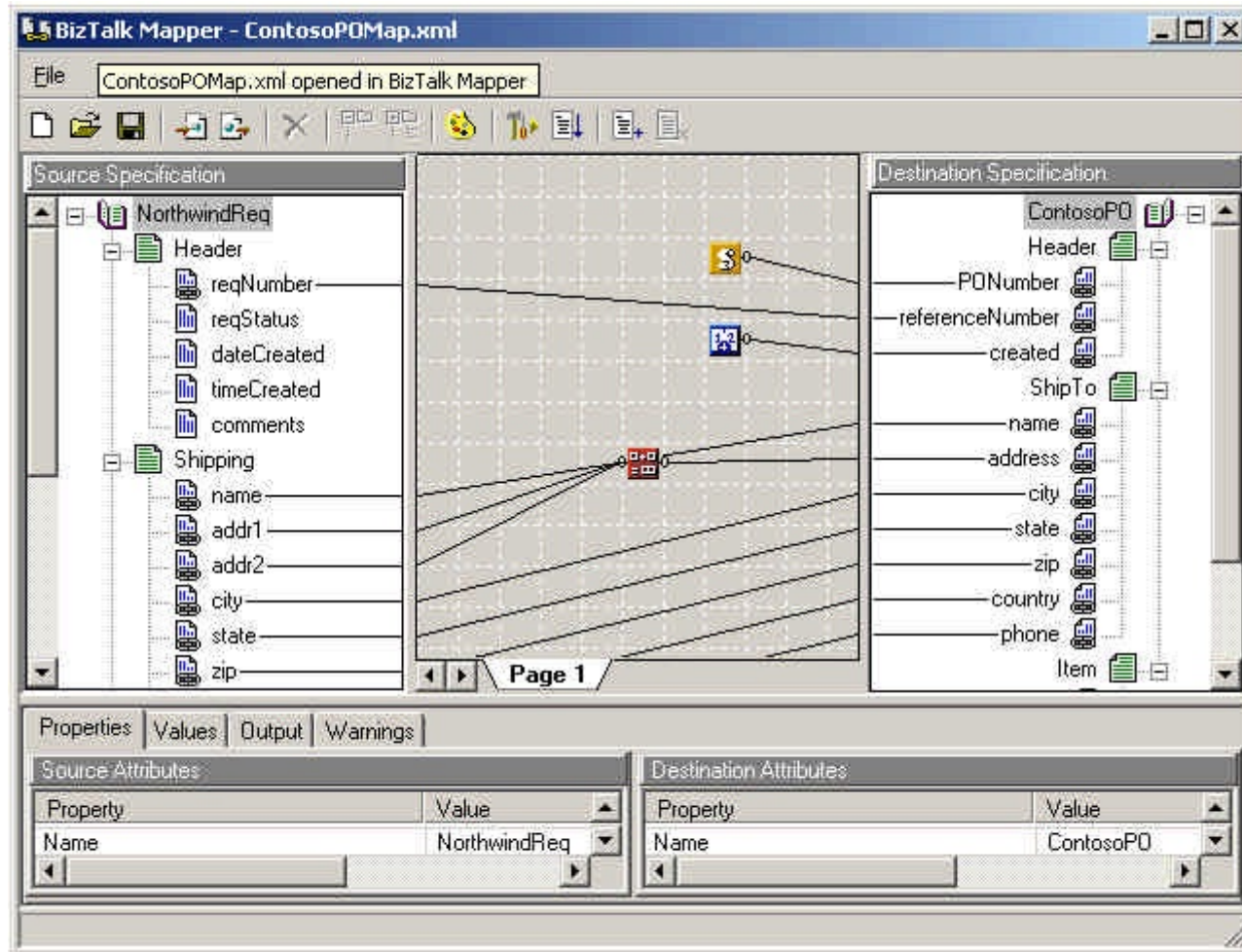
✍ Promotions

Business Model

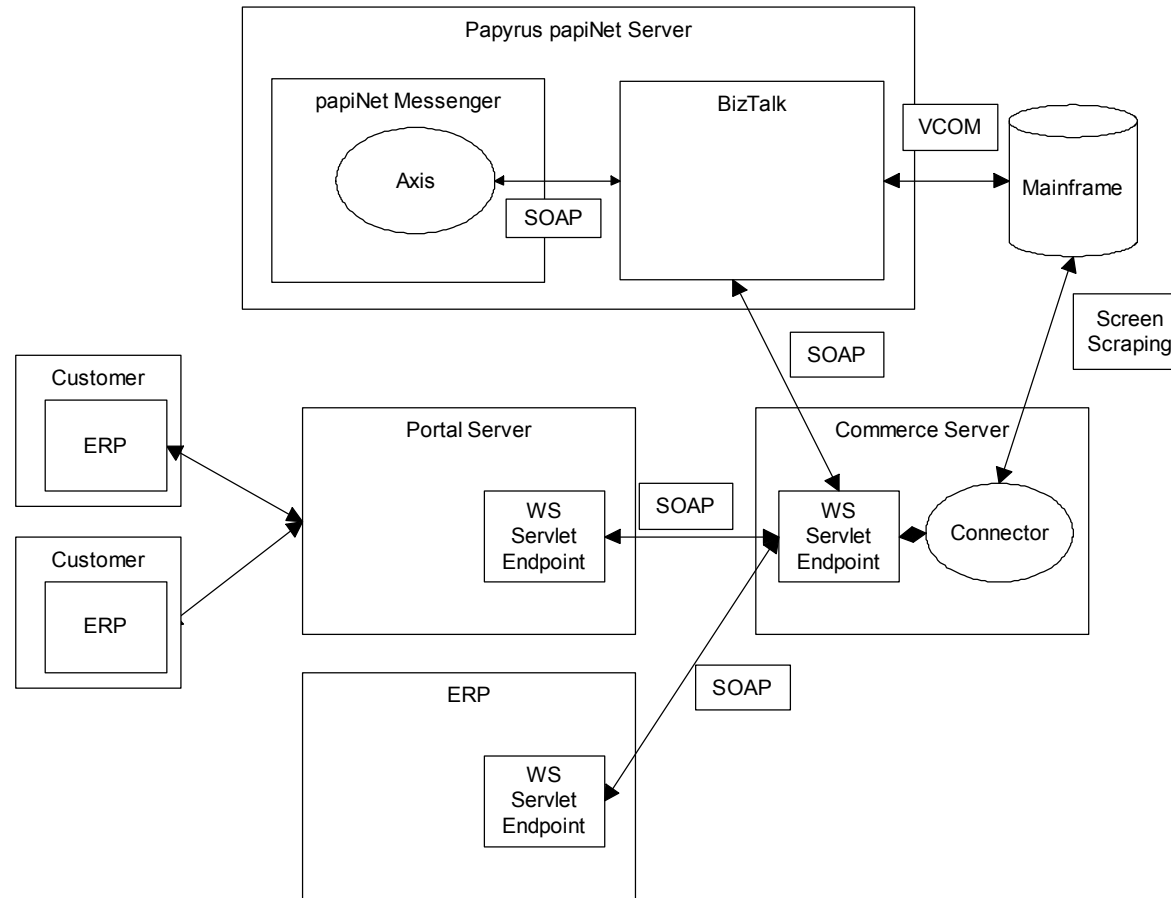
- ✍ Data Mapping – Agreement
- ✍ File formats
 - ✍ XML (papiNet, UBL, cXML, ...)
 - ✍ EDIFACT
 - ✍ in-house (flat file)
- ✍ Mapping tools and/or XSLT/XPath



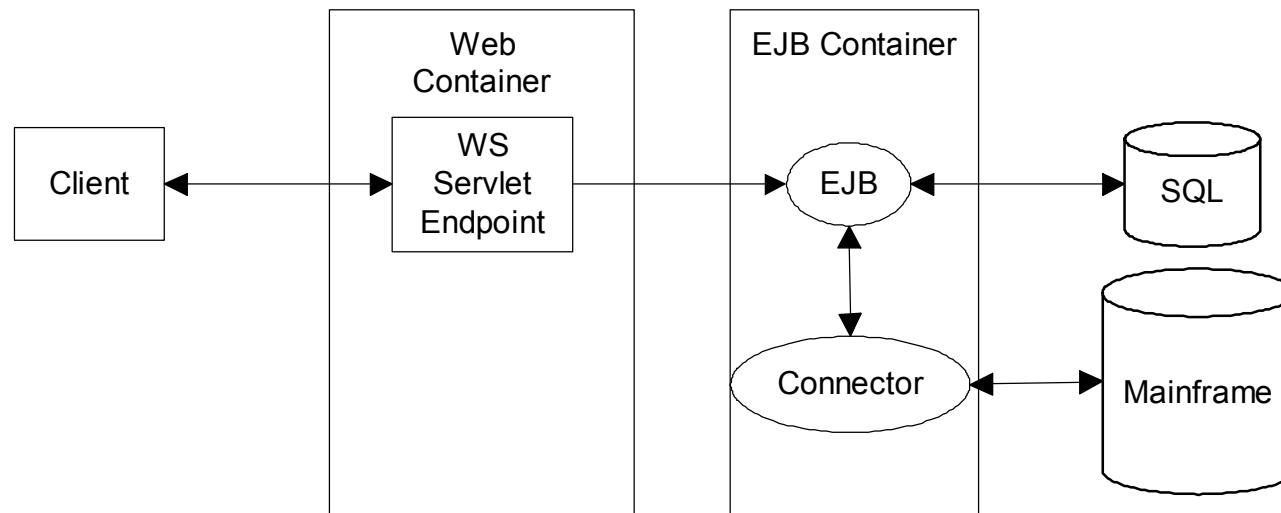
BizTalk Mapper



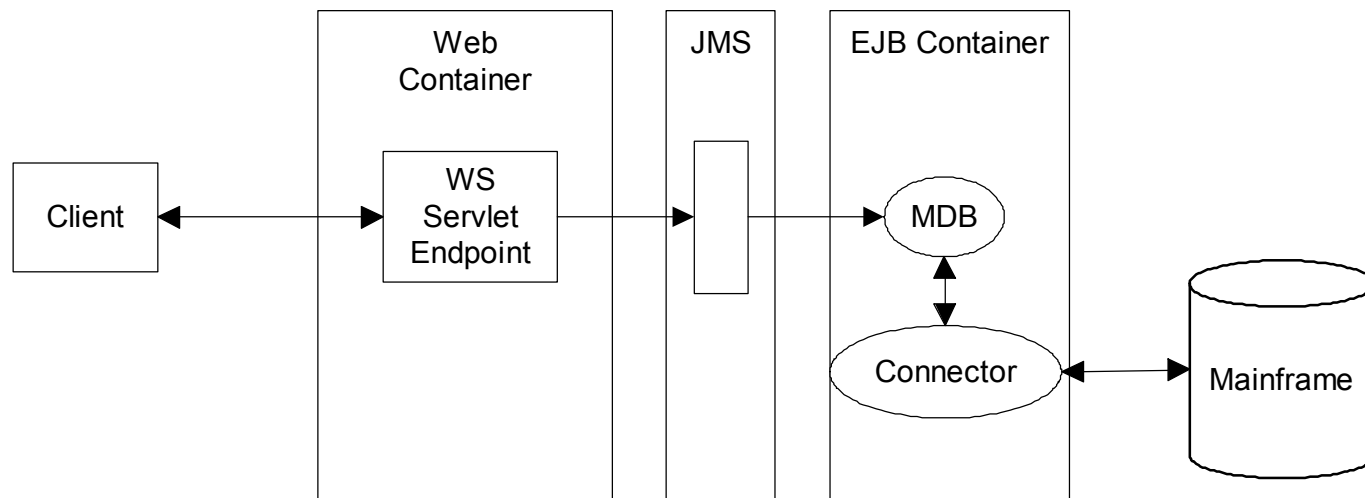
Architecture



Synchronous



Asynchronous



Summary

- ✍ It works
- ✍ Stay simple
- ✍ Tools is a "must"
 - ✍ IDE (JBuilder, JDeveloper, ...)
 - ✍ XML editor
 - ✍ Ant
 - ✍ ...
- ✍ Is Web Services the answer for your business?

Questions?