

# Next generation Internet: Web services

SkLUG Linux Weekend  
Október 2002, Žilina

Ing. Radovan Semančík

# Agenda

- Úvod
- História
- Web applications
- Web services
- Záver



# Úvod

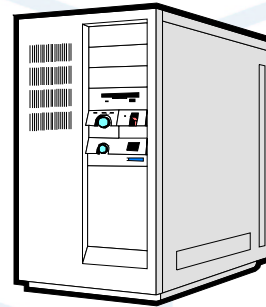
- Web applications ...cont.
- Next generation Internet
- Budúcnosť ....

# Agenda

- Úvod
- **História**
- Web applications
- Web services
- Záver



# 1985 A.D.



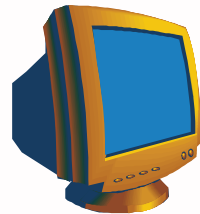
```
Mailbox is "/var/spool/mail/papek" with 35 messages [ELM 2.4 PL25]

0 11 Aug 14 XOOM.com      (85)  Make Your Modem Faster - FREE!
0 12 Aug 9  XOOM.com      (90)  Low Calling Card Rate: get your card
0 13 Aug 7  XOOM.com      (90)  Low Calling Card Rate: get your card
0 14 Aug 4  XOOM.com      (165) What's new at XOOM.com
0 15 Aug 2  XOOM.com      (91)  Your access to the world: deltathre
0 16 Jul 31 XOOM.com      (98)  Free your phone line with I-Ring Int
0 17 Jul 31 Listmaster    (343) Tripwire General Newsletter 02
0 18 Jul 28 XOOM.com      (110) Huge savings on top quality printer.
0 19 Jul 27 maillist@smartdraw (150) SmartDraw wins "Best Business Progra
0 20 Jul 26 XOOM.com      (100) 4 Language Software Set Only $34.95

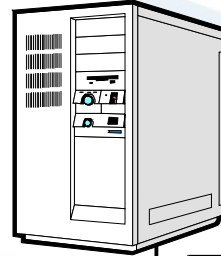
You can use any of the following commands by pressing the first character:
d)elete or u)ndelete mail, m)ail a message, r)eply or f)orward mail, q)uit
To read a message, press <return>. j = move down, k = move up, ? = help

Command: █
```

# 1995 A.D.



HTTP



HTTP Daemon

CGI script

[\[European Departments, Documents, and Theses\]](#), [\[Archie Gateway\]](#)

## Archie Gateway

Archie Servers help you to locate files on FTP Servers. There are Archies in several different countries.  
During business hours, you might have to wait some time for your answer.

[\(Up to other Archie Gateways\)](#)

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Please enter search term:

Please specify type of search:

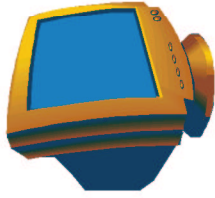
Choose Archie Server you want to search:

Maximum number of hits to be returned:

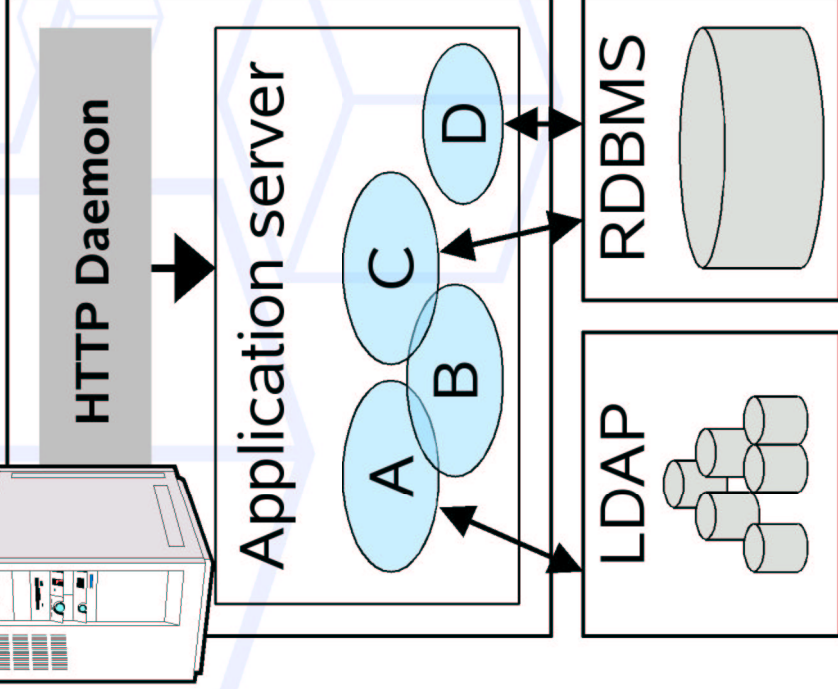
---

[stamer@merlin.physik.uni-oldenburg.de](mailto:stamer@merlin.physik.uni-oldenburg.de)

# 2000 A.D.

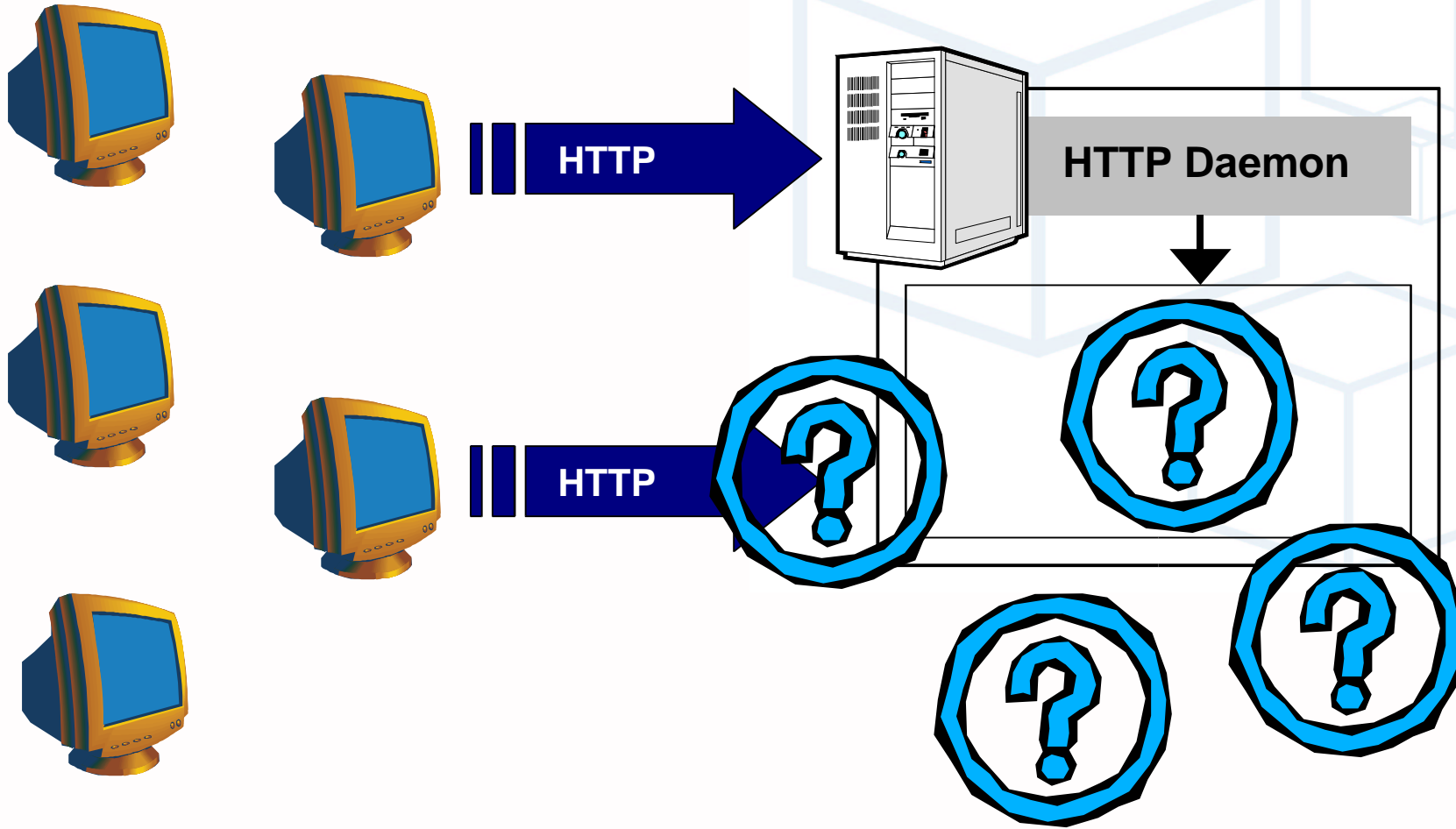


## HTTP



The screenshot shows a web browser window displaying a Sun Microsystems page. The page features a navigation menu with links for 'Products & Services', 'Support & Training', 'Contact Sales', 'Offers and Events', 'Related', 'Products', 'Services', 'Partners', and 'Resources'. The main content area is titled 'Solution Tour Network Identity' and includes a photograph of a man in a suit. Below the photo, there are several sections: 'Overview', 'Business Issues', 'Technical Issues', and 'Begin the Tour'. Each section contains text and links to related content. The footer of the page includes 'Copyright 1994-2002 Sun Microsystems'.

# 2005 A.D.



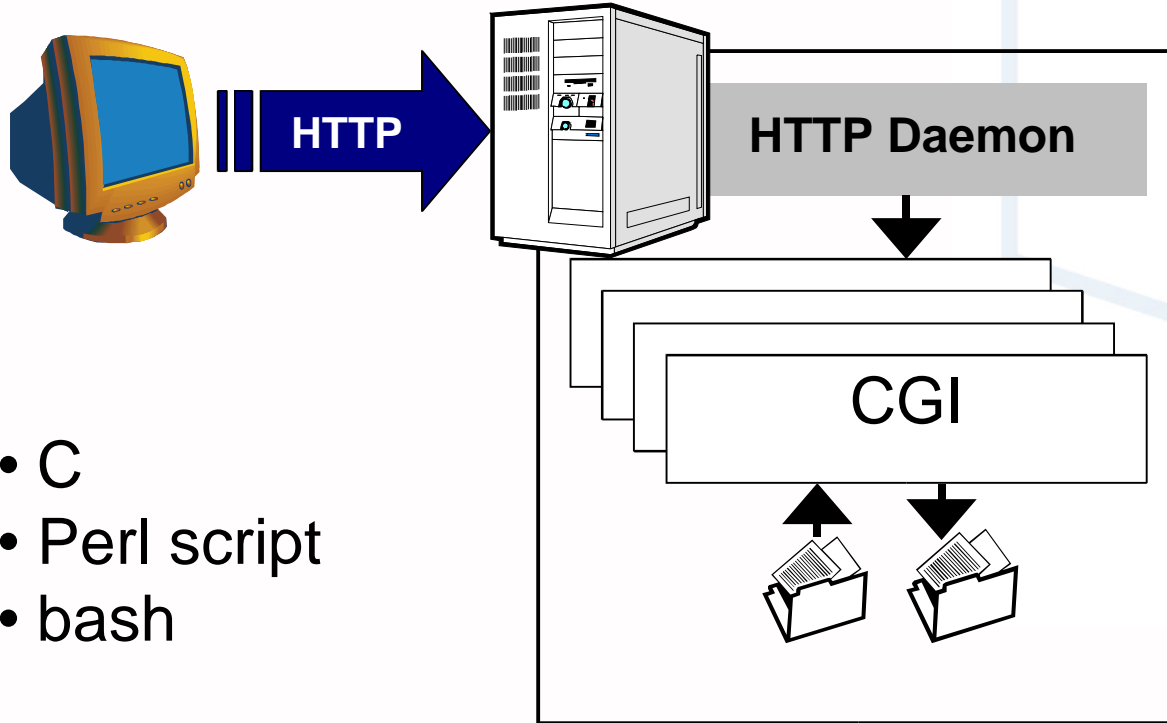


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- Web services
- Záver

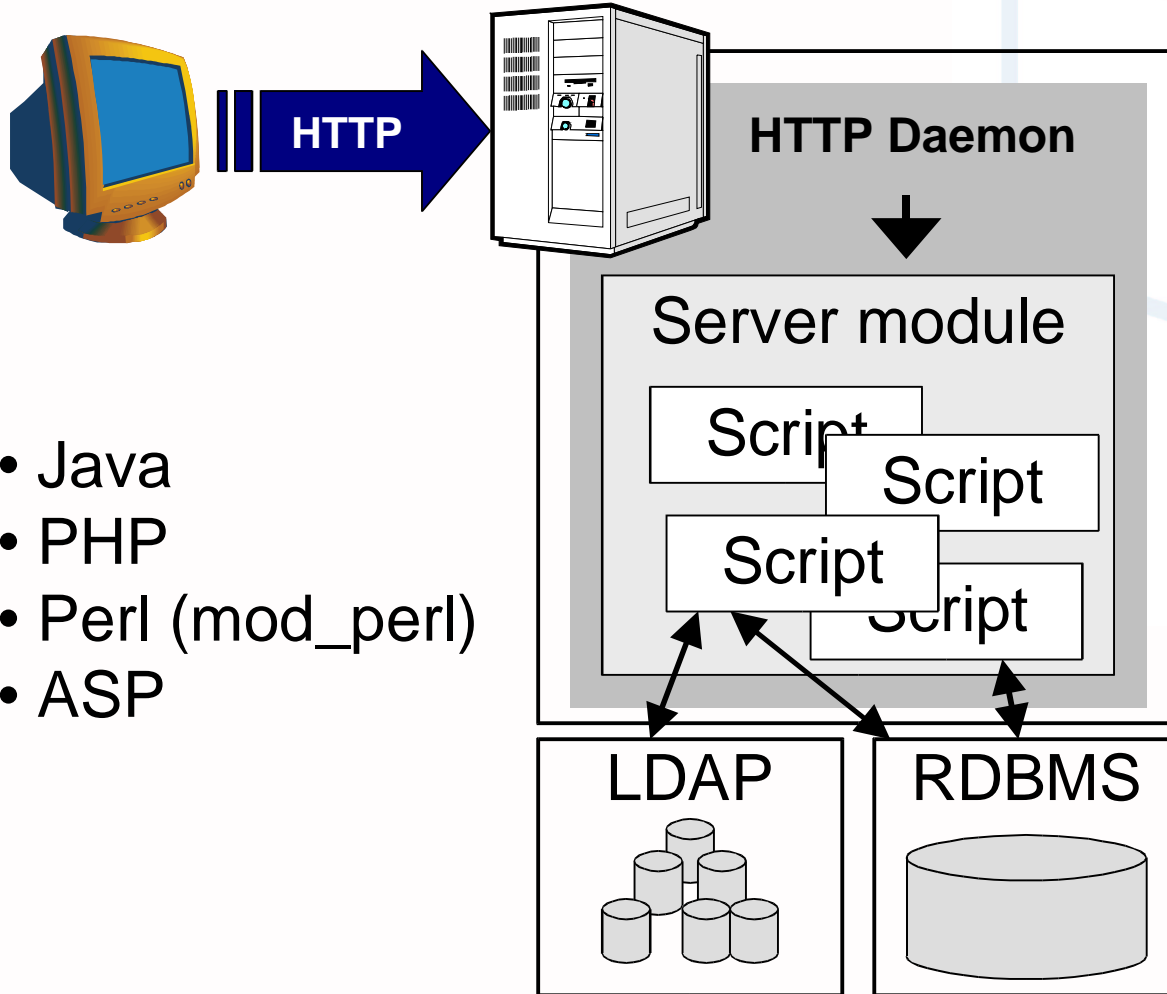


# Common Gateway Interface



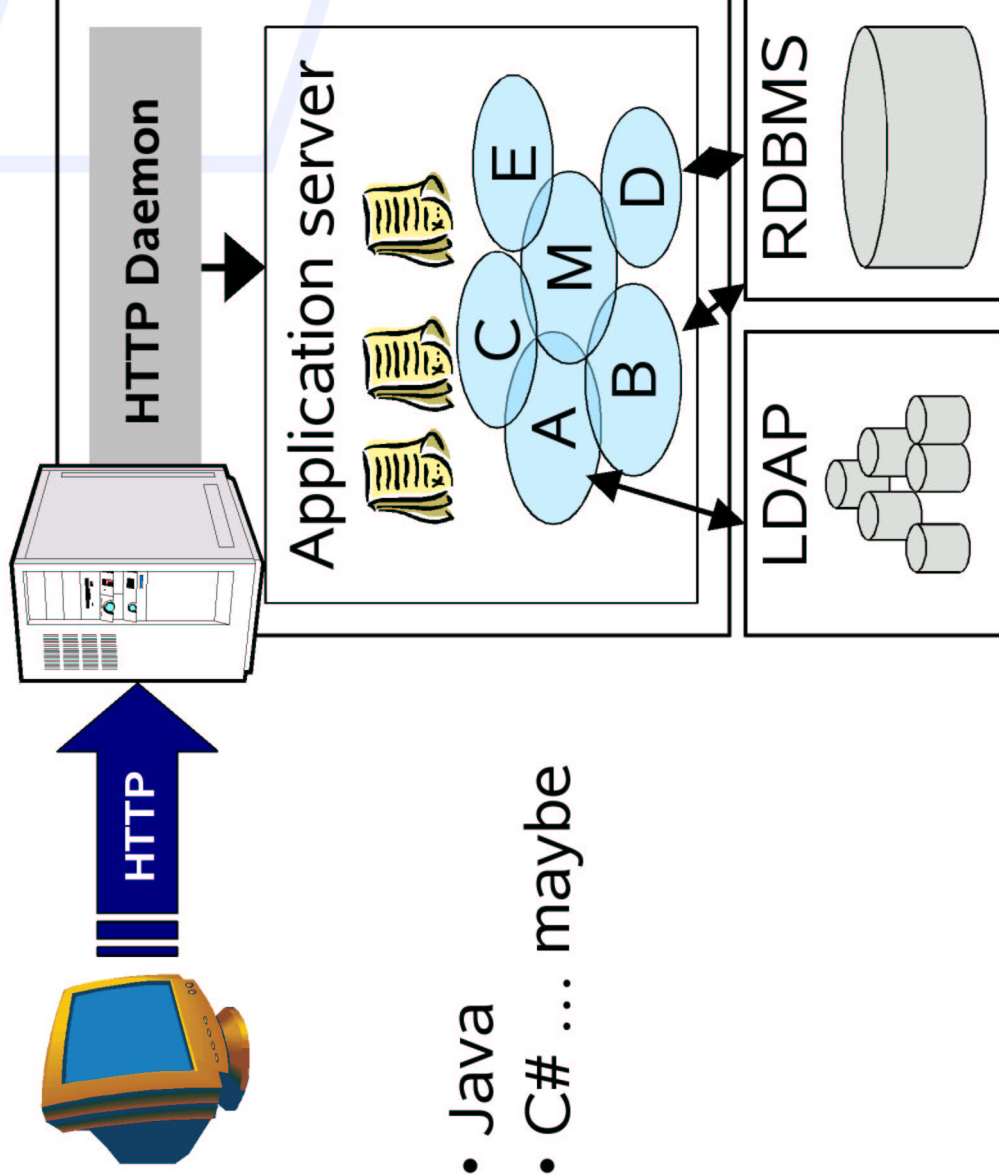
- C
- Perl script
- bash

# 2-tier application



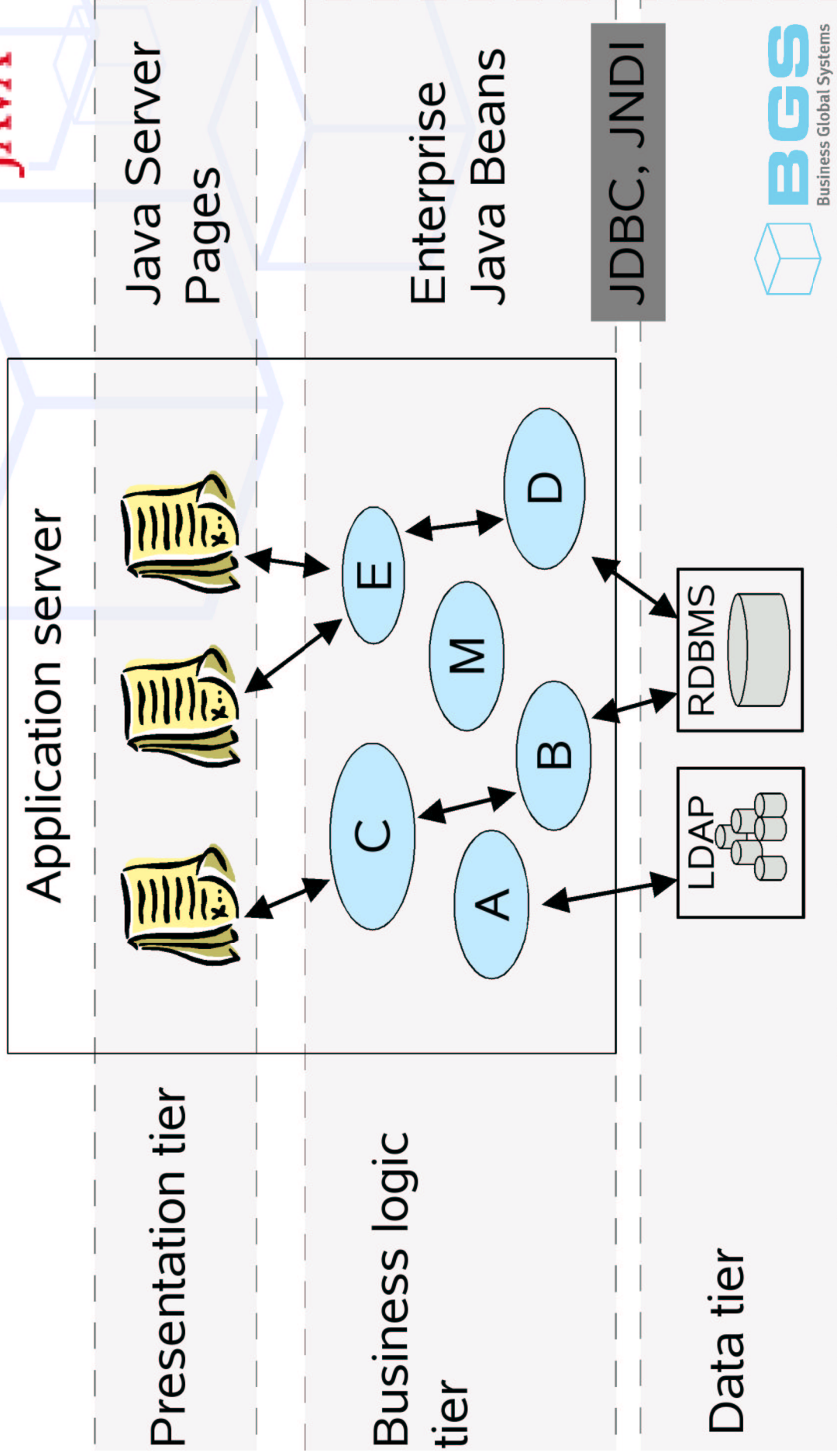
- Java
- PHP
- Perl (mod\_perl)
- ASP

# 3-tier application



- Java
- C# ... maybe

# 3-tier application details

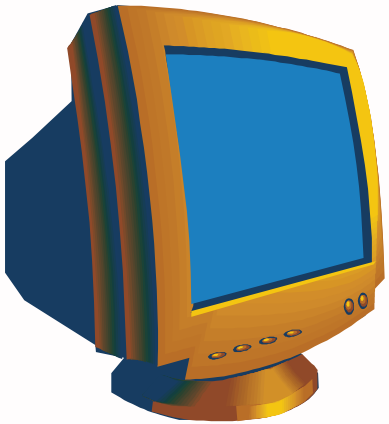


# Agenda

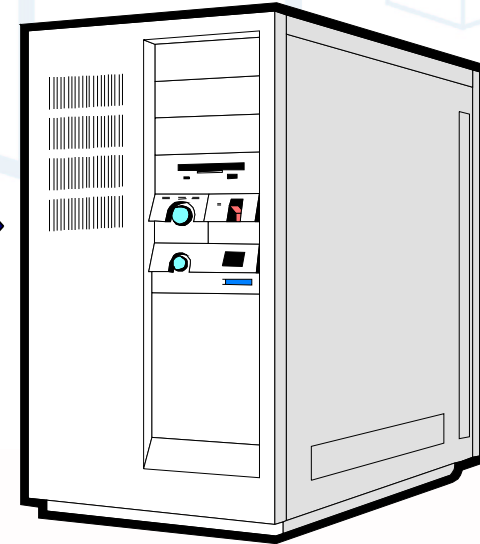
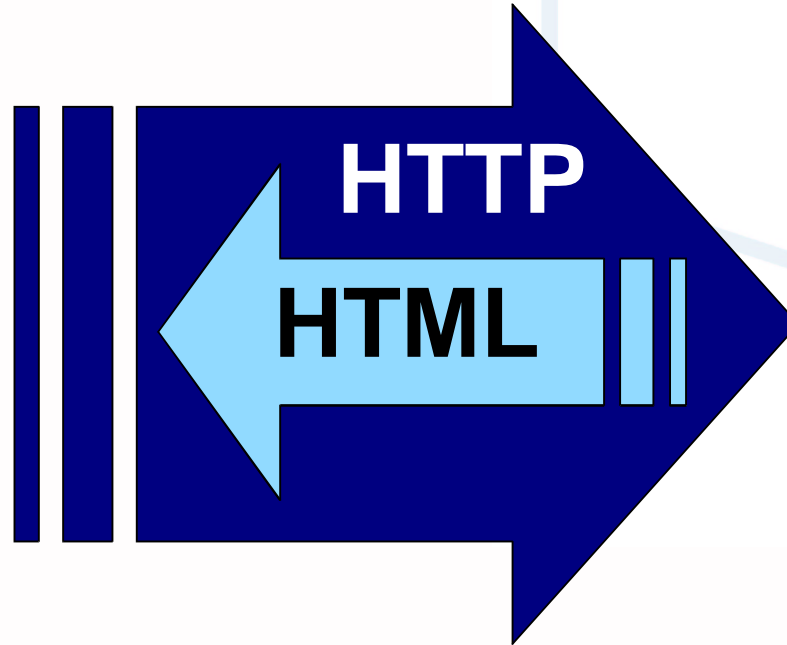
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# Web applications

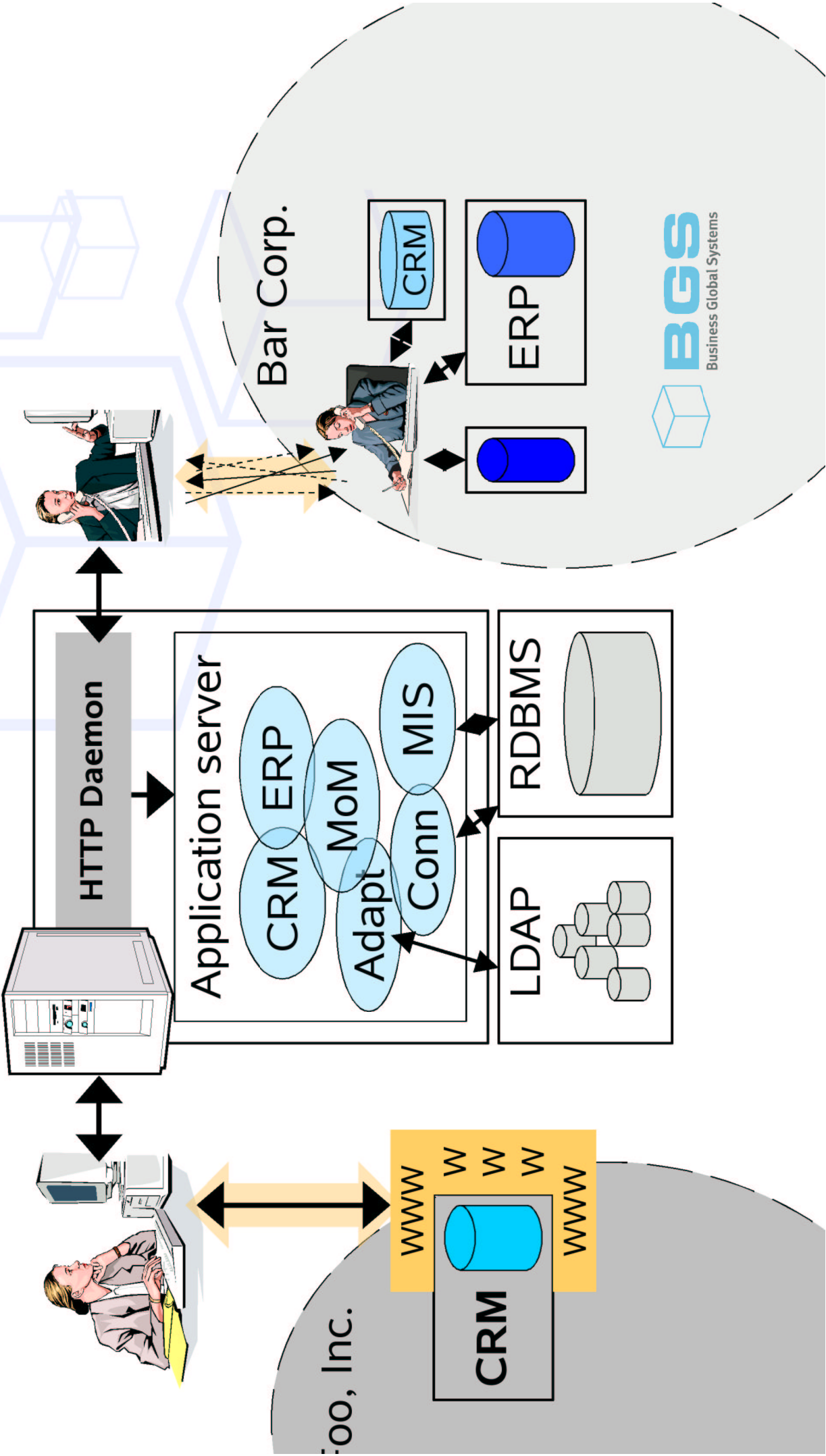


**Human**



**Computer**

# B2B eBusiness - Apps





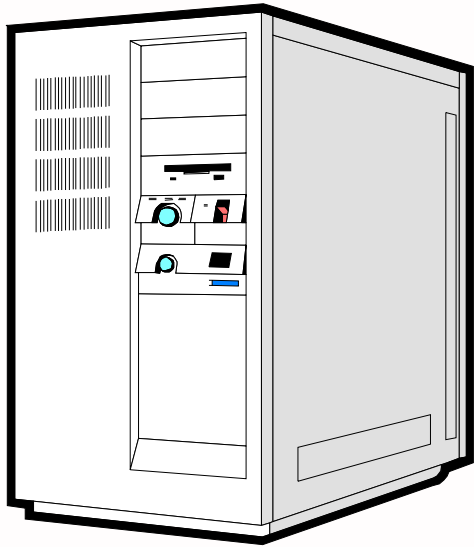
# Web applications

vs

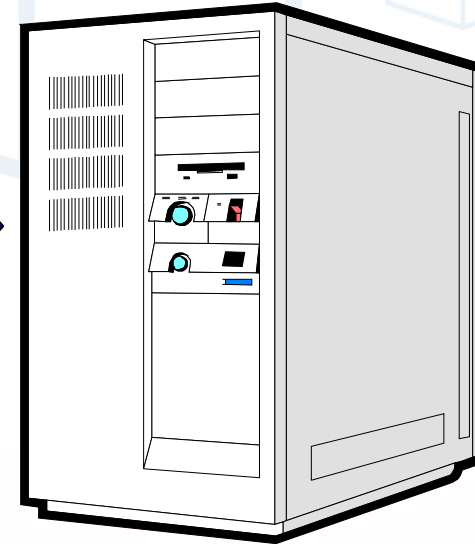
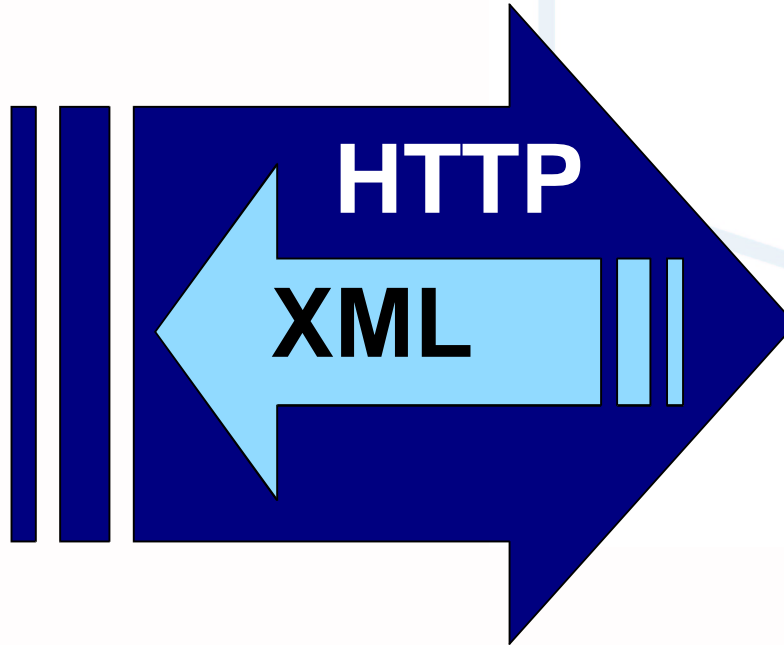
# Web services



# Web services

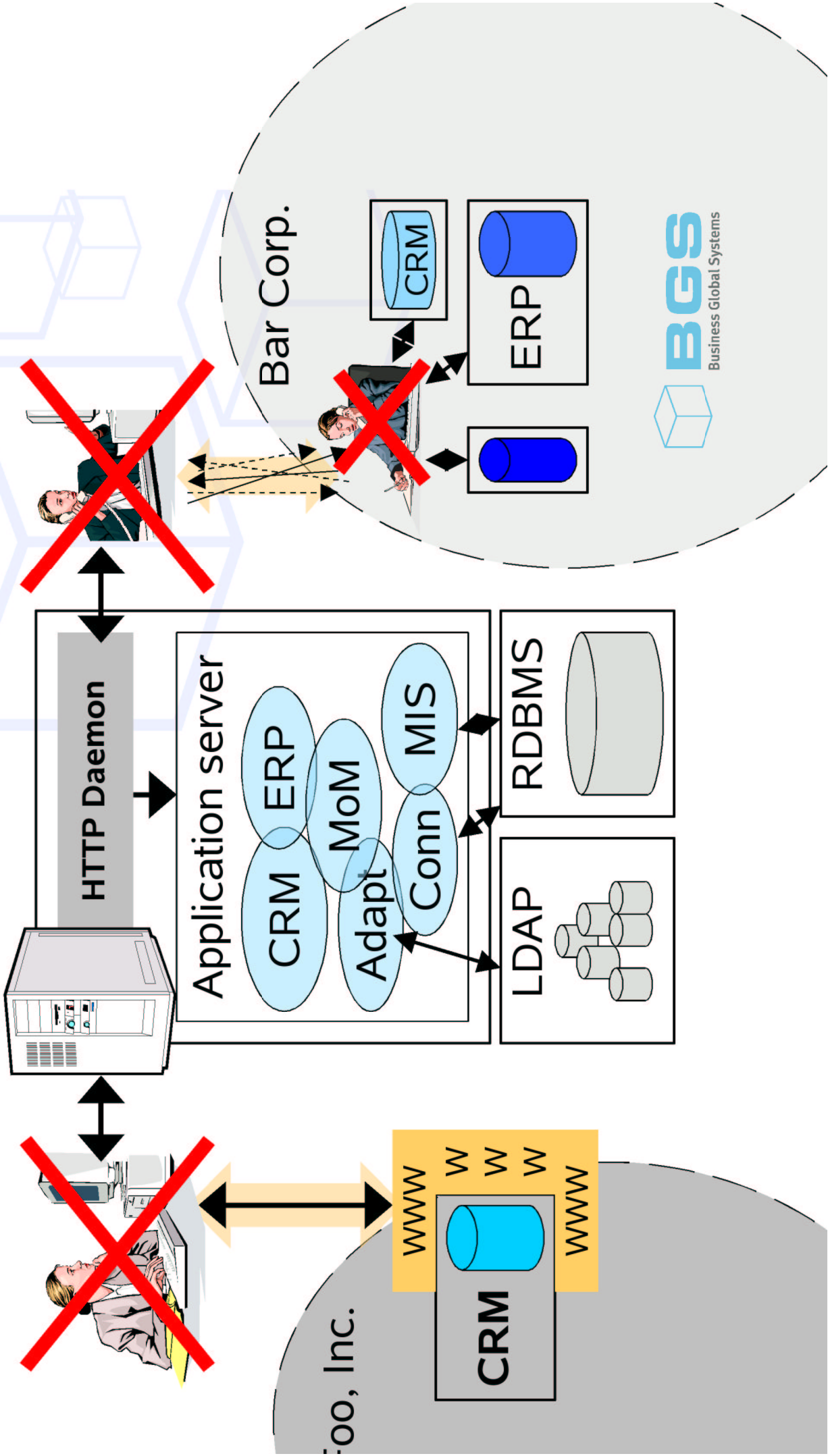


**Computer**

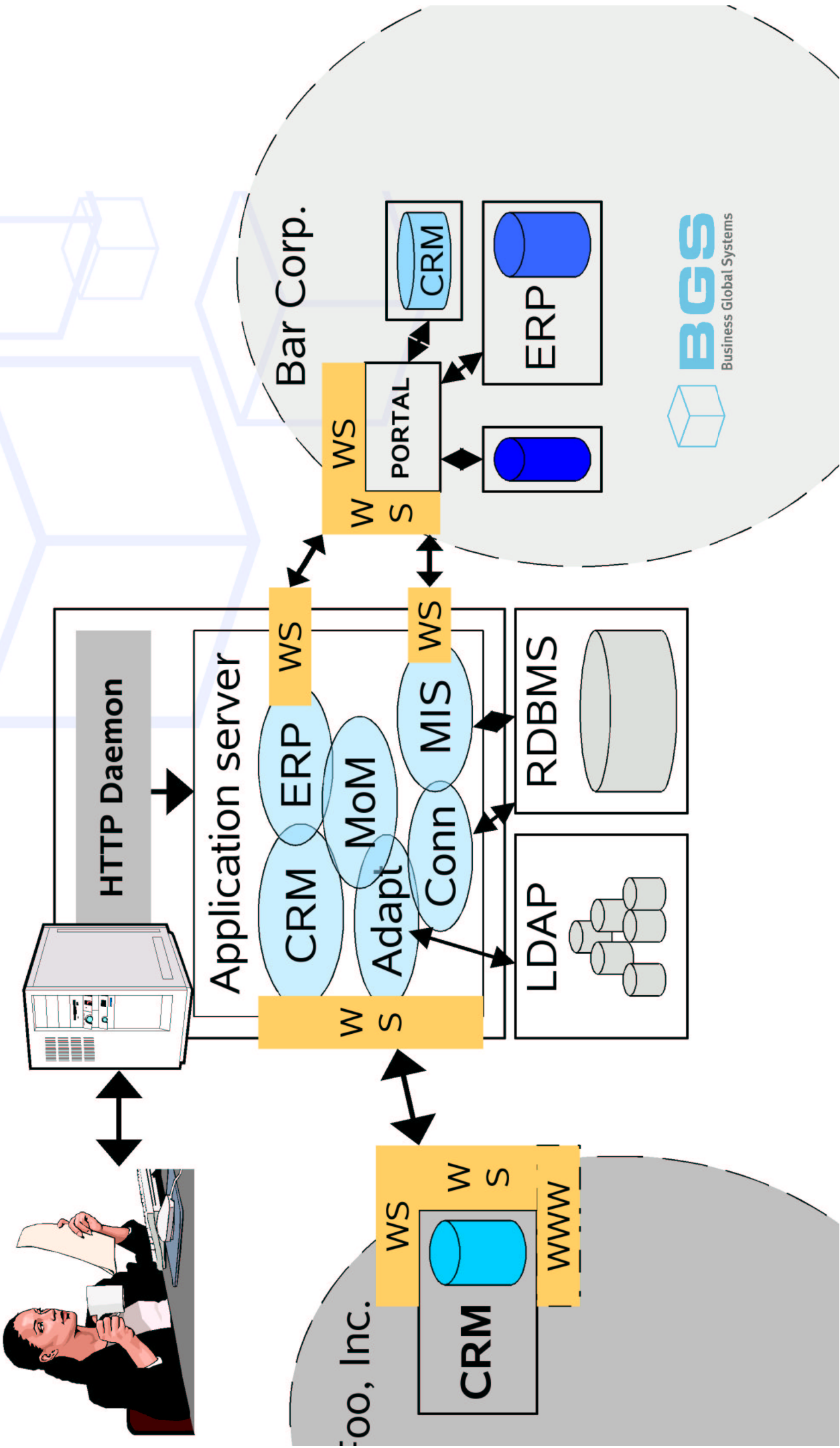


**Computer**

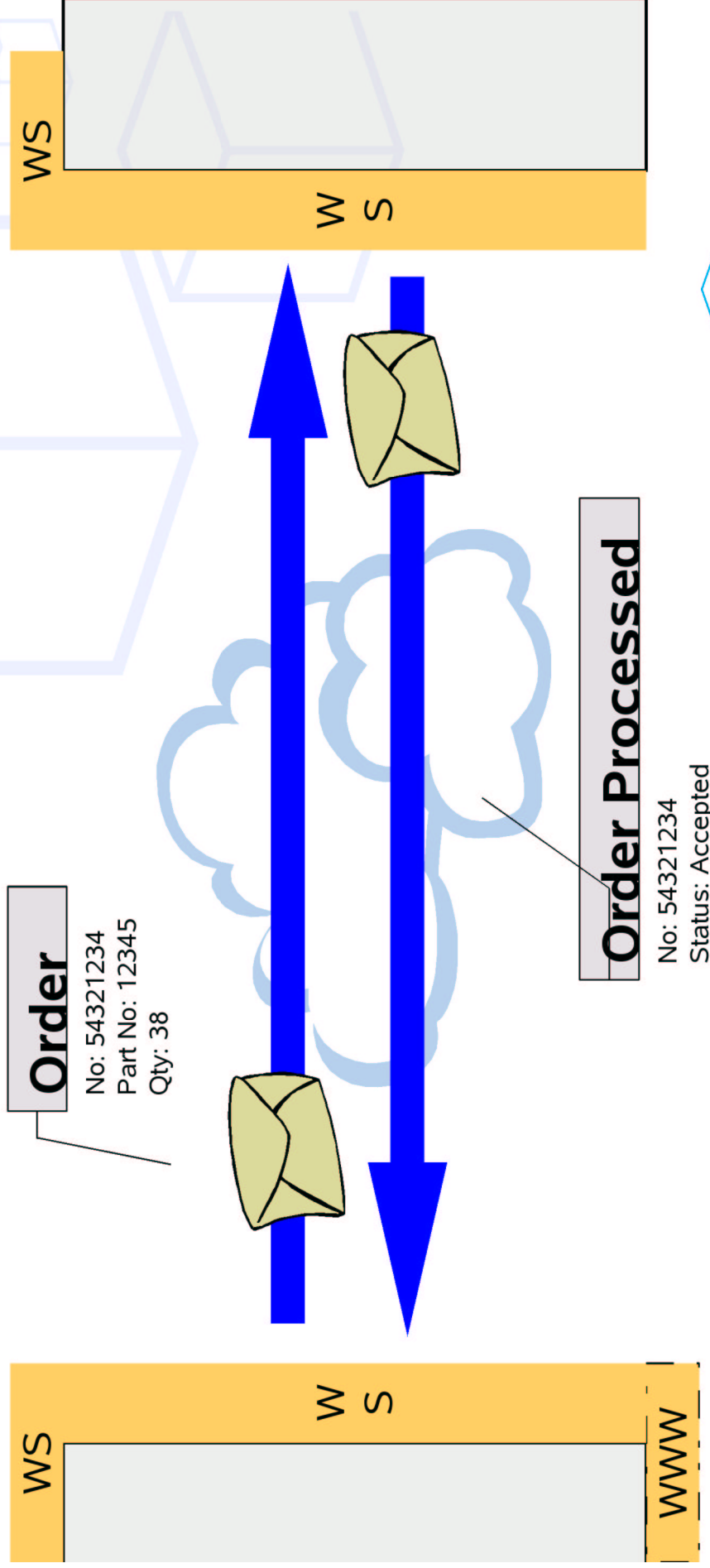
# B2B eBusiness – efficient?



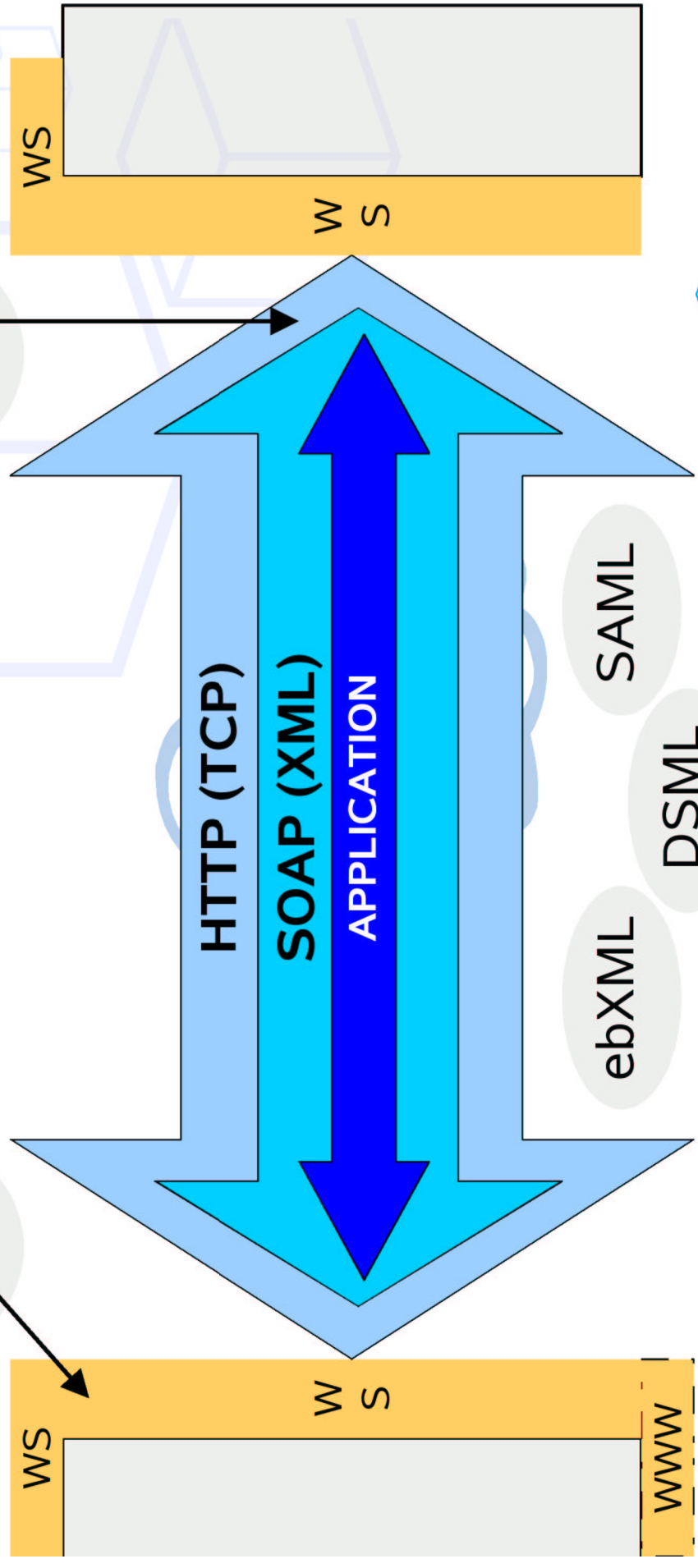
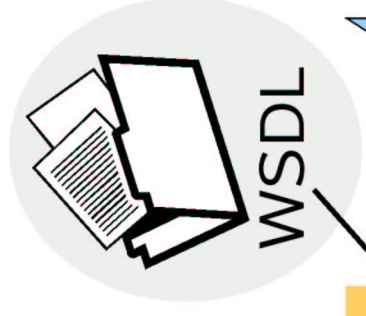
# Web services



# Web services (logika)



# Web services (technológia)



# Simple Object Access Protocol (SOAP)

- SOAP v2.1 - W3C Working Draft (June 2002)
- Based on XML, binding to HTTP
- HTTP is not only allowed transport
  - SMTP/POP3, RAW TCP, ...

# SOAP - development

- Java
  - IBM SOAP4J → Apache SOAP → SOAP4J
  - Sun Java Web Services Developer Pack
    - JAXP, JAX-RPC, JAXM, JAXR, ...
- Perl
  - SOAP::Simple



# How SOAP works?

## Java Interface

```
public interface Hello
{
    public String sayHelloTo(String name);
}
```

## SOAP Message (simplified)

```
<sayHelloTo>
<name>John</name>
</sayHelloTo>
```

## SOAP Response (simplified)

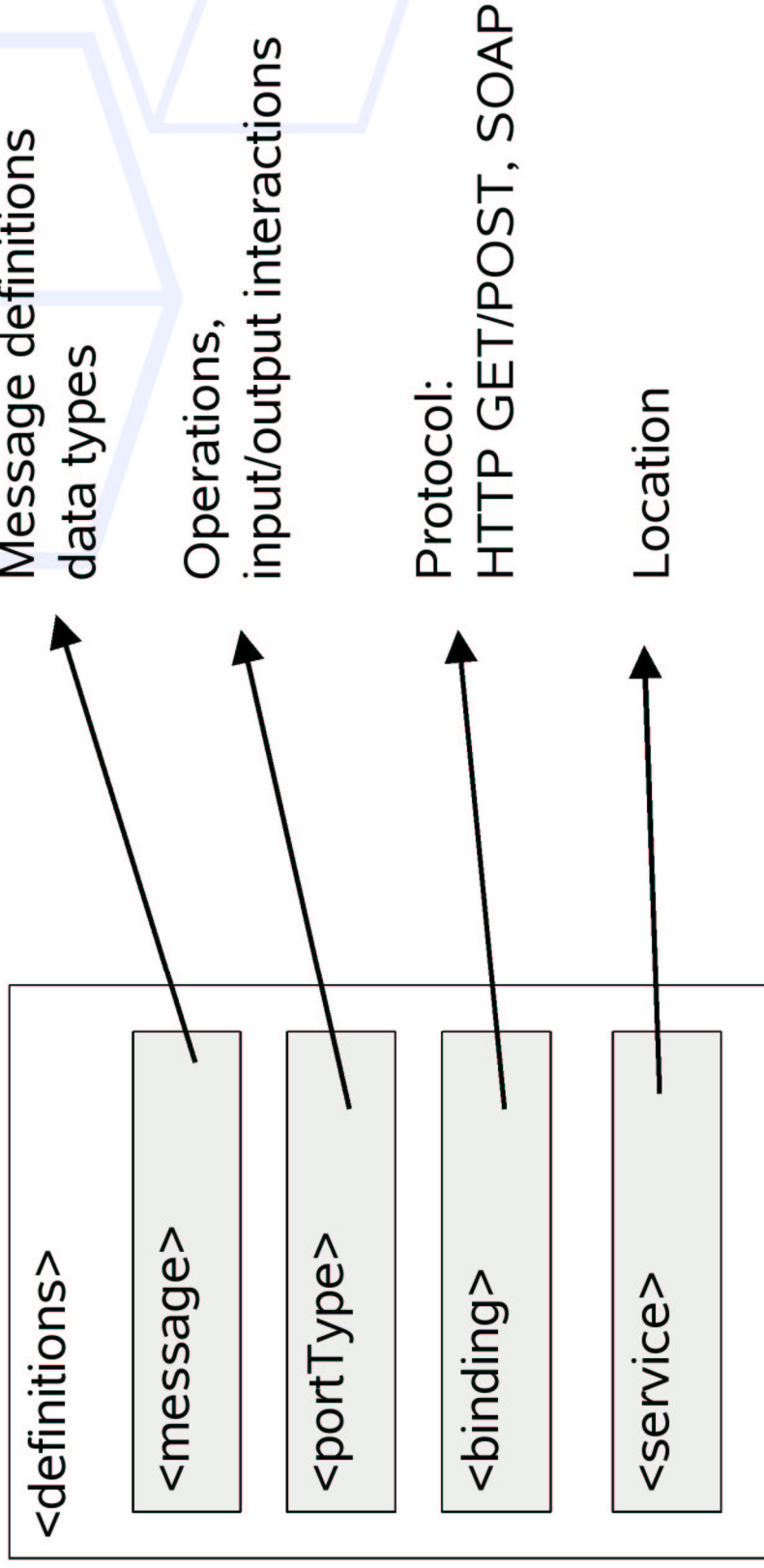
```
<sayHelloToResponse>
<message>Hello John, How are you?</message>
</sayHelloToResponse>
```



# SOAP Message Example

```
<soap:Envelope
  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
  <soap:Header>
    <t:Transaction xmlns:t="http://www.foo.com/transacations/">
      345627483451
    </t:Transaction>
  </soap:Header>
  <soap:Body xmlns:m="http://www.stock.org/stock">
    <m:GetStockPrice>
      <m:StockName>SUNW</m:StockName>
    </m:GetStockPrice>
  </soap:Body>
</soap:Envelope>
```

# Web Services Description Language (WSDL)



# WSDL example (message)

```
<definitions name="StockPriceService"
  targetNamespace="http://storm.alert.sk/StockPriceService.wsdl"
  xmlns="http://schemas.xmlsoap.org/wsdl/"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:tns="http://storm.alert.sk/StockPriceService.wsdl"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <message name="GetStockPrice">
    <part name="stockSymbol" type="xsd:string"/>
  </message>

  <message name="GetStockPriceResponse">
    <part name="stockPrice" type="xsd:decimal"/>
  </message>
```

..

# WSDL example (port)

```
...  
<portType name="StockPrice_PortType">  
  <operation name="getStockPrice">  
    <input message="tns:GetStockPriceRequest" />  
    <output message="tns:GetStockPriceResponse" />  
  </operation>  
</portType>  
...
```

# WSDL example (binding)

```
...  
<binding name="StockPrice_Binding" type="tns:StockPrice_PortType">  
  <soap:binding  
    style="rpc"  
    transport="http://schemas.xmlsoap.org/soap/http"/>  
  <operation name="getStockPrice">  
    <soap:operation soapAction="getStockPrice"/>  
    <input>  
      <soap:body  
        encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"  
        namespace="urn:examples:stockpriceservice" use="encoded"/>  
    </input>  
    <output>  
      <soap:body  
        encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"  
        namespace="urn:examples:helloservice" use="encoded"/>  
    </output>  
  </operation>  
</binding>  
...
```



# WSDL example (service)

```
...  
<service name="StockPrice_Service">  
  <documentation>WSDL def for Stock Price Service</documentation>  
  <port  
    binding="tns:Hello_Binding"  
    name="Hello_Port">  
    <soap:address  
      location="http://storm.alert.sk/soap/rpcrouter"/>  
    </port>  
  </service>  
</definitions>
```

# Web services vs CORBA

- Podobný princíp
- CORBA IDL  $\leftrightarrow$  WSDL
- CORBA IIOP  $\leftrightarrow$  SOAP
- COS  $\leftrightarrow$  UDDI, ...
- Ale CORBA je dost' „tight“



# Web services vs Java RMI

- WS sú language independent
- RMI je viazané na Javu
- a RMI je tiež dost' „tight“

# Web services vs DCOM

- WS sú OS independent
- DCOM je Windows only
- a DCOM je veľmi „tight“

# Je to také úžasné?

- Performance!!!
  - XML parsing
  - Human readable
- New technology
  - Not matured, veľa veľa otázok
  - Málo produktov, zatiaľ ...
- Doplnkové technológie ... nutné

# Záver

Ale aj napriek nevýhodám sa to oplatí

... Aspoň myslím 😊

Lebo:

- Cross-platform, cross-language
- Inter-organization integration
- B2B, EAI, XML, a ďalšie „buzzwords“

<?xml>

<questions> any? </questions>



# Next: Digital Identity

## 15:00

Ďakujem za pozornosť

Ing. Radovan Semančík  
Business Global Systems  
semancik@bgs.sk