Web Services

Modules of Vitual Organizations

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Why Web Services?

- transform applications in Web Applications

- Interoperability: use open standards enabling   communication between components written in different languages and for different platforms.

- Reusable application components:currency conversion, weather reports or even language translation as services

- Standardized interfaces : IBM, Microsoft, Sun, Oracle, SAP

- Easy, cheap implementation using XML
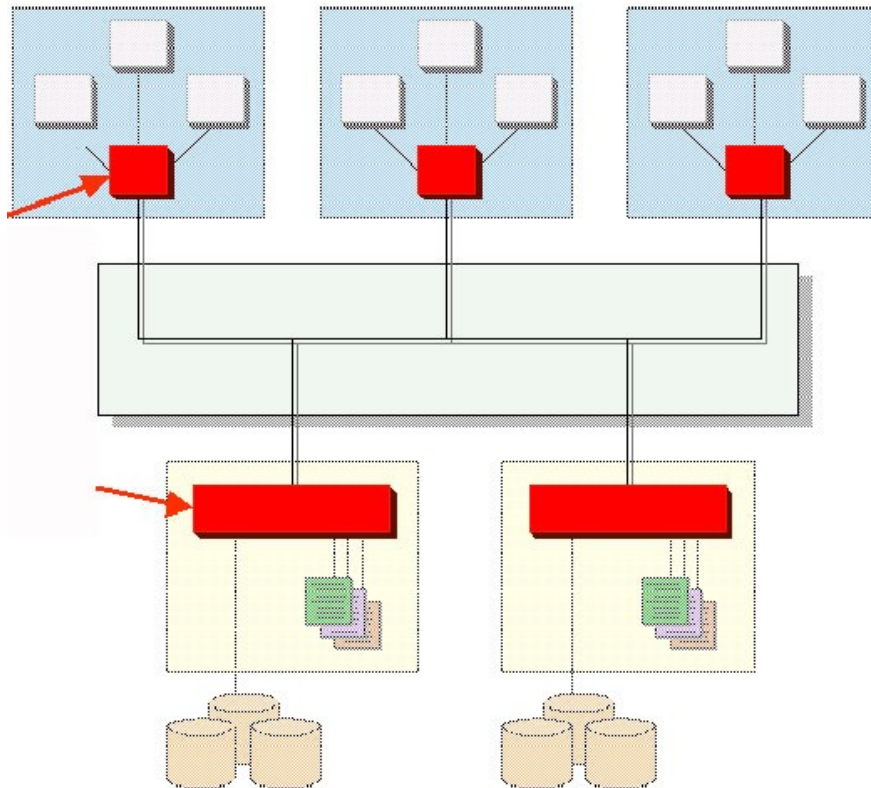
- E-commerce applications

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What are Web Services?

- Web Services: a software system designed to support interoperable machine-to-machine interaction over a network.

- Web Services are published, found and used through the Web.

- Web services are application components (weather reports)

- Web services communicate using open protocols (XML, HTTP)

- Web services are self-contained and self-describing modular application (**WSDL**= Web Services Description Language)

- Web services can be discovered using UDDI (Universal Description, Discovery and Integration)

- XML is the basis for Web services

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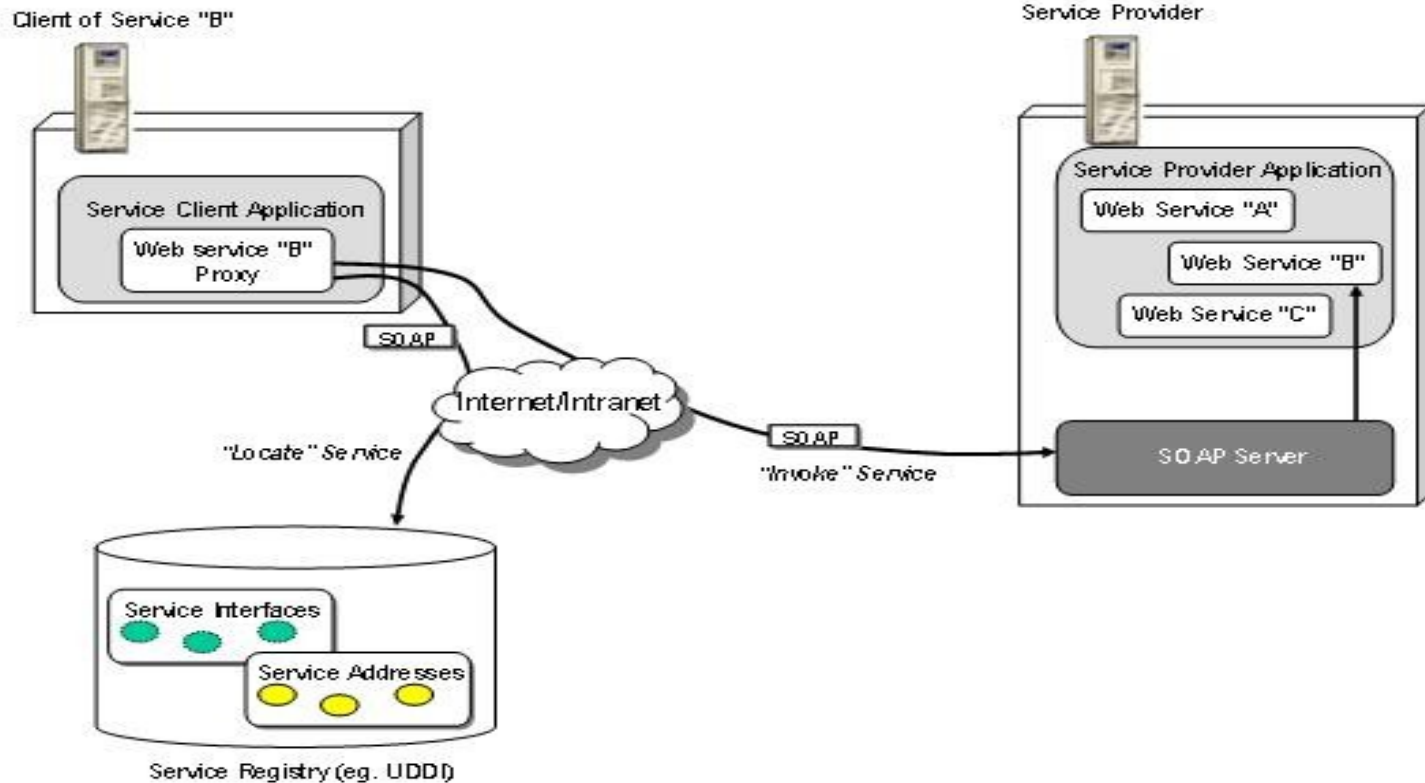# Web Services

Clients
Web Service Interface
Agent

Network
TCP/IP, Message Queues
(IBM MQ Series)

Service Engine
Web Services

Data Storage

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Web Services Architecture

Layer	Internet Protocols	XML protocols	Web Services Protocols	Layer
			UDDI	**Discovery**
			WSDL	**Description**
Messaging	**HTML**	**SOAP, XML-RPC**	**SOAP,XML-RPC**	**Messaging**
Transport	**HTTP,SMTP,FTP**	**HTTP,SMTP,FTP**	**HTTP,SMTP,FTP**	**Transport**
Network	**TCP / IP, UDP**	**TCP / IP, UDP**	**TCP / IP, UDP**	**Network**

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Web Services

• **Development platforms:**

.Net (C#)– Microsoft
     .Net My Services / .Net Passport

J2EE (Java)– Sun Microsystems
     Google / Amazon
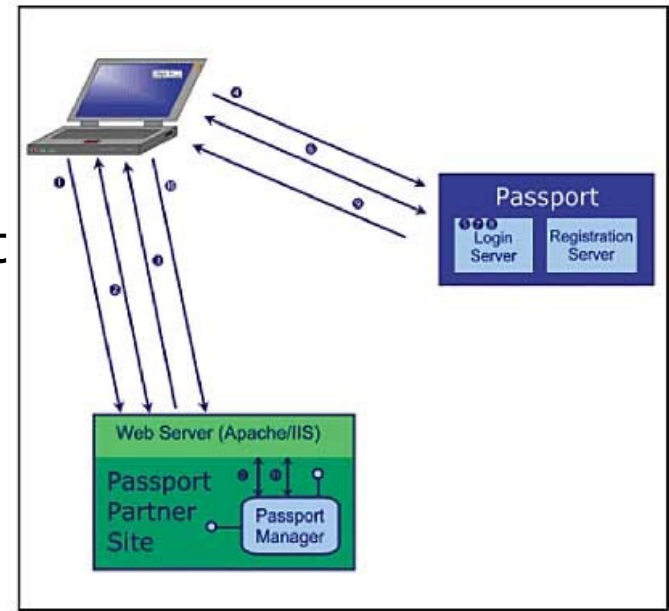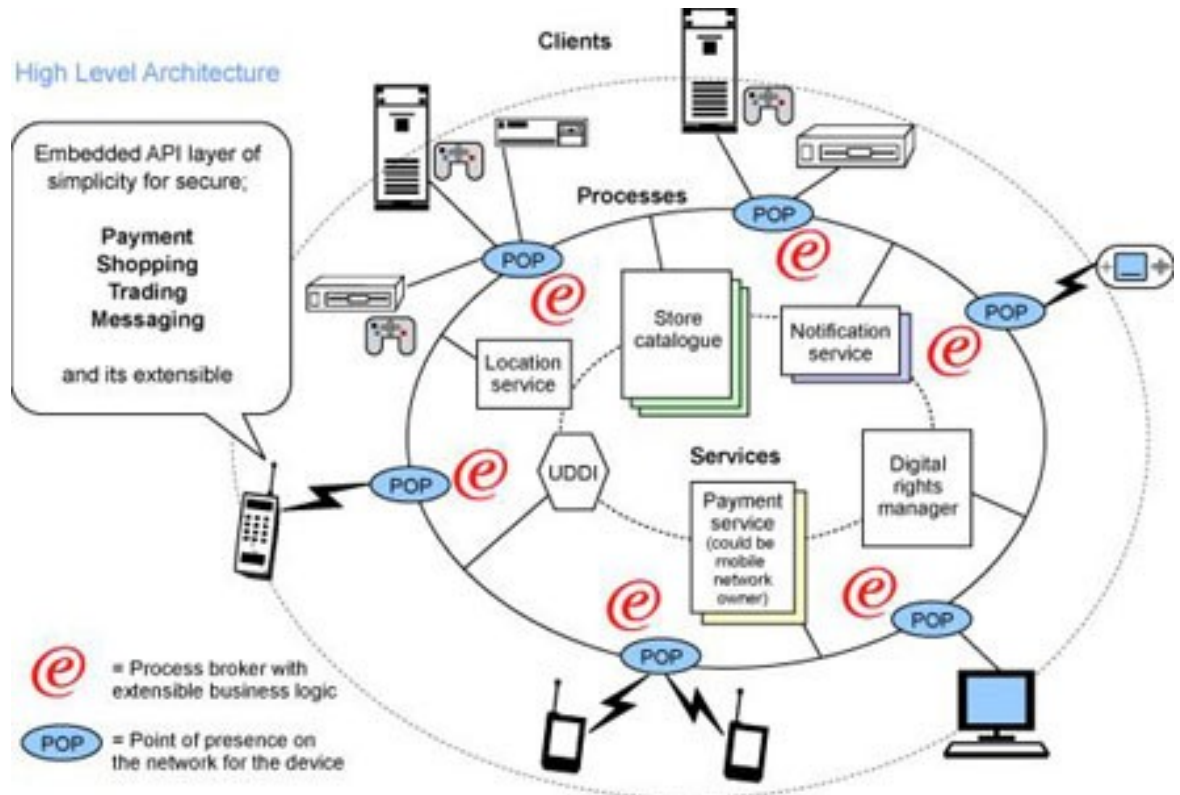

FIGURE 1 | **Authentication process**

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Web Services' Layers

• **The basic layer:**
basic activities of web service description, publishing, discovery , invocation

• **The value-added layer:**
activities of composition, security, reliability, monitoring, transaction handling and contracting

High Level Architecture

Embedded API layer of simplicity for secure;

Payment
Shopping
Trading
Messaging

and its extensible

Clients

Processes

POP

Location service

Store catalogue

Notification service

Services

UDDI

Payment service (could be mobile network owner)

Digital rights manager

e = Process broker with extensible business logic

POP = Point of presence on the network for the device

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Web Services where to?

- **Why are so few implementation?**

  Security: The absence of standard security procedures

  Quality of service: To guarantee quality of service

  Performance: slow responses and infrequent updates

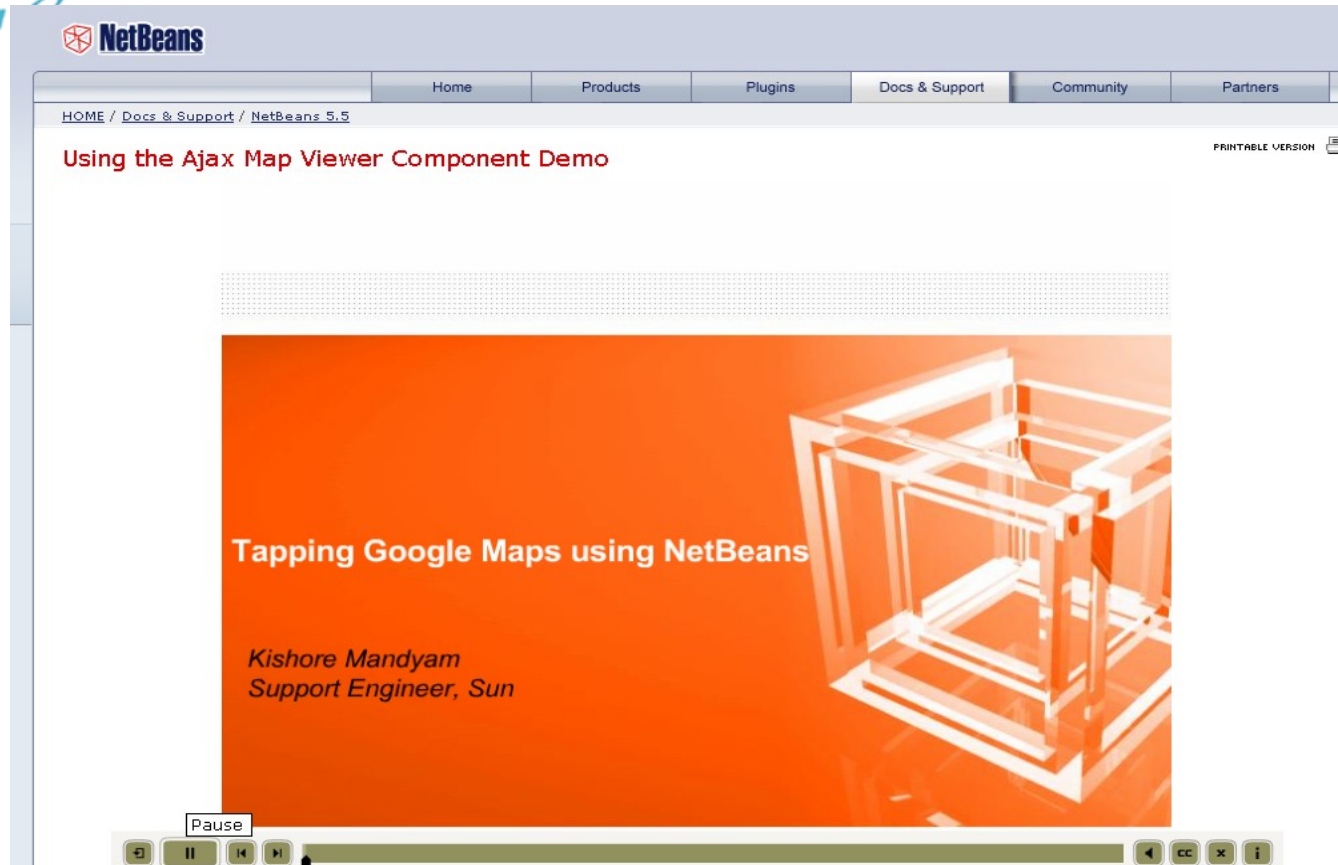 **Industry standards:** lack of industry standards on XML vocabulary , WS interfaces and policies

  Role of portals: Lack of standards of presenting WS results to humans

- **Semantic Web Services: DAML** is an extension of XML and Resource Description Framework (RDF) which uses ontologies to describe objects and the relationships between objects

  DAML=DARPA Agent Markup Language
  DARPA= Defence Advanced Research Projects Agency

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Web Services example

- http://www.netbeans.org/kb/55/vwp-ajaxmapviewer-flash.html

References

- Qingyu Zhang, 2006, *"Web Services and Virtual Communities"*, Arkansas State University, USA

- Thomas Severiens, 2003 *„Tutorial: Web Services"* Institute for Science Networking, Oldenburg, Germany

- Sheila A. McIlraith, Tran Cao Son, and Honglei Zeng, 2001, *"Semantic Web Services"*, Stanford University, USA

- Net Beans: http://www.netbeans.org/kb/55/vwp-ajaxmapviewer-flash.html

- www.w3schools.com