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Simple Object Access Protocol

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SOAP: Who is drafting SOAP?

UserLand, Ariba, Commerce One, Compaq,
Developmentor, HP, IBM, IONA, Lotus, Microsoft and SAP.
SOAP: What is SOAP?

SOAP is an XML based protocol to let software components and applications communicate using standard Internet HTTP.

SOAP: Introduction

- Is a lightweight communication protocol
- Is for communication between applications
- Is designed to communicate via HTTP
- Is not tied to any component technology
- Is not tied to any programming language
- Is based on XML
- Is simple and extensible
- Is proposed to W3C and will hopefully become a standard
SOAP: Why SOAP?

- Lack of standard – Hurts Interoperability
- DCOM
- CORBA – Object Management Group’s Internet Inter-ORB protocol (IIOP).

SOAP: How Remote Procedure Calls (RPC) Works
SOAP in a Nutshell

1. XML for encoding data
   - LANGUAGE OF COMMUNICATION
2. HTTP as transport
   - MEDIUM OF COMMUNICATION

SOAP:XML Structure

XML Document contains the following XML elements:
1. A SOAP envelope, that defines the content of the message
2. A SOAP header (optional), that contains the header information.
3. A SOAP body, that contains call and response information.
SOAP:SOAP Envelope

```xml
SOAP-ENV:encodingStyle="http://schemas.xml.org/soap/encoding/"/>

Namespaces are used to provide a context and guarantee the uniqueness of elements associated in this way.
```
SOAP:SOAP Body

```xml
<SOAP-ENV:Body>
  <m:NewCustomer xmlns:m="Some-URI">
    <Name>Dumser</Name>
    <Surname>Johann</Surname>
    <City>Cambridge</City>
    <ZipCode>01800</ZipCode>
    <State>MA</State>
    <Country>USA</Country>
  </m:NewCustomer>
</SOAP-ENV:Body>
```

The HTTP protocol is used so that the SOAP message will be transported effectively.

SOAP:HTTP Structure

HTTP Header:
POST / COMPUTER HTTP/1.1
Host: www.techmetrix.com
Content-Type: text/xml;
charset="utf-8"
Content-Length: 10
SOAPAction=http://www.techmetrix.com#EventManager
SOAP: Structure of a SOAP Message

SOAP: Message exchange Model

(display, actions, database access,...)
SOAP: Birds-eye-view

Islands of incompatibility interconnected by SOAP bridges
Philosophy of “Do one thing and do it well”
Focus on Interoperability

SOAP: Conclusion

- Extremely Promising Standard
- Solution for Interaction of heterogeneous systems
- SOAP Implementations
  a) Microsoft > SOAP Toolkit
  b) Apache (IBM) > SOAP4Java
  c) SilverStream > xCommerce
SOAP: Conclusion > recap

<table>
<thead>
<tr>
<th>THE PROS</th>
<th>THE CONS</th>
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<tbody>
<tr>
<td>FUNCTIONAL</td>
<td>FUNCTIONAL</td>
</tr>
<tr>
<td>Interoperate with diverse, varied environments</td>
<td>Still does not allow interoperability objectives to be reached as protocol is still young</td>
</tr>
<tr>
<td>Possibility of secure exchanges, through firewalls and filter messages</td>
<td>Security will have to move to the content of XML contracts embedded in SOAP messages</td>
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<tr>
<td>TECHNICAL</td>
<td>TECHNICAL</td>
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<tr>
<td>Technological simplicity</td>
<td>Existing implementation not satisfactory (numerous bugs, complicated installation, non upgraded specifications)</td>
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<tr>
<td>Based on standard elements, HTTP</td>
<td></td>
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<tr>
<td>XML</td>
<td></td>
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<tr>
<td>Separates content from transport mode</td>
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SOAP: Resources

- [http://www.w3.org/TR/SOAP/](http://www.w3.org/TR/SOAP/)
- [http://www.xmlrpc.xom](http://www.xmlrpc.xom)
- [http://discuss.develop.com/soap.html](http://discuss.develop.com/soap.html)
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