

A Framework for Context-Aware Adaptable Web Services

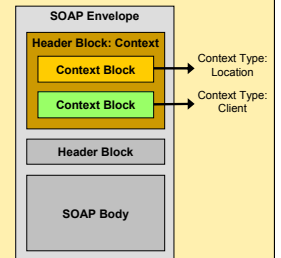
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The Context Framework

- Context: Information about clients and their environment that is used by Web services to provide clients with a customized and personalized behavior
- Separation of functional duties into external components: *context plugins and context services*
- Transparent and automatic usage of these components
- Generic solution, i.e., components are usable for a variety of Web services
- Implemented within the ServiceGlobe system, our open and distributed Web service platform

The Context Model

- Context consists of several context blocks
- A context block is associated to one context type
- A context type defines the type of context information in a context block, e.g., location, client device
- At most one context block is allowed for a context type within a context
- Context is transmitted as a SOAP header block



The Context Framework – Example Scenario

Local Context:

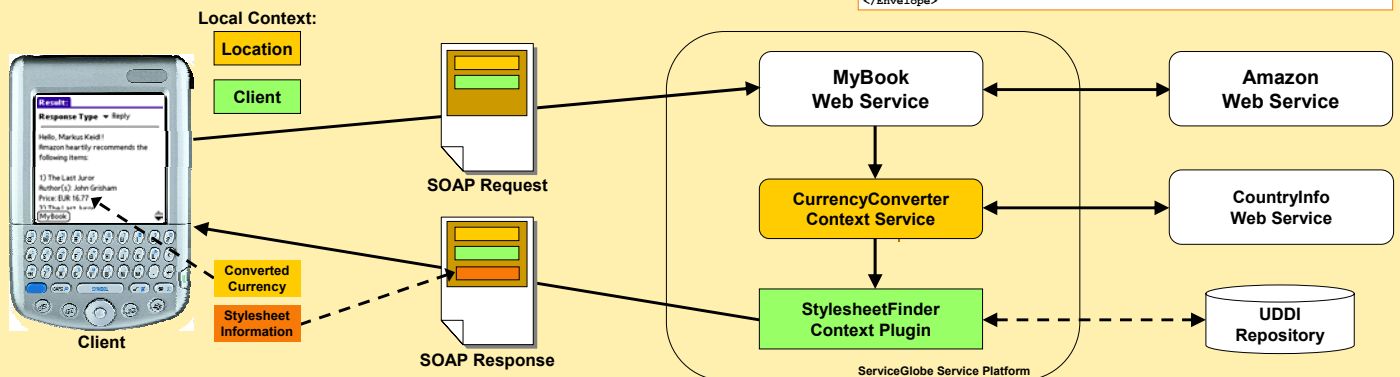
```
<Context>
  <Location>
    <address useType="Office">
      <addressLine keyName="Street">Innstraße 33</addressLine>
      <addressLine keyName="City">94032 Passau</addressLine>
      <addressLine keyName="Country">Germany</addressLine>
    </address>
  </Location>
  <Client>
    <DeviceDefaults>
      http://example.com/context/device/PDA
    </DeviceDefaults>
    <Hardware>
      <ScreenSize>320x320</ScreenSize>
      <IsColorCapable>Yes</IsColorCapable>
    </Hardware>
  </Client>
</Context>
```

SOAP Request:

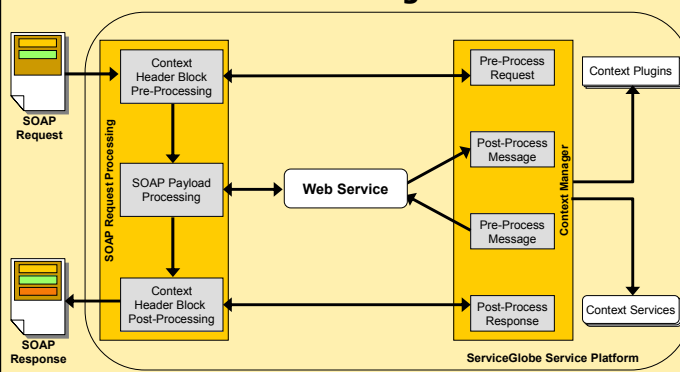
```
<Envelope>
  <Header>
    <Context>
      <Location>...</Location>
      <Client>...</Client>
    </Context>
  </Header>
  <Body>
    <KeywordSearchRequest>
      <KeywordSearchRequest>
        <mode>books</mode>
        <keyword>John Grisham</keyword>
      </KeywordSearchRequest>
    </Body>
  </Envelope>
```

SOAP Response:

```
<Envelope>
  <Header>
    <Context>
      <ReplyProperties>
        <StyleSheet>http://orioles/context/styleSheet-pda.xsl</StyleSheet>
      </ReplyProperties>
      ...
    </Context>
  </Header>
  <Body>
    <KeywordSearchRequestResponse>return
    <TotalResults>264</TotalResults>
    <Details>Details
      <ProductName>The Last Juror</ProductName>
      <Authors>Author:John Grisham</Authors>
      <ListPrice>EUR 16.77</ListPrice>
      <Reviews>
        <TotalCustomerReviews>100</TotalCustomerReviews>
        <CustomerReviews>CustomerReview<Comment>
          This book would have completely lacked any sort of suspense or
          sense of anticipation if ...</Comment></CustomerReview>
      </CustomerReviews>
    </Details>
    ...
  </Body>
</Envelope>
```



Context Processing Architecture



Context Processing Instructions

- Specify how and where context is processed:
 - Hosts to which context is transmitted
 - Hosts and components, i.e., context plugins and context services, that should process the context
- Provided within a client's context or the UDDI metadata of Web services, or determined automatically by the context framework