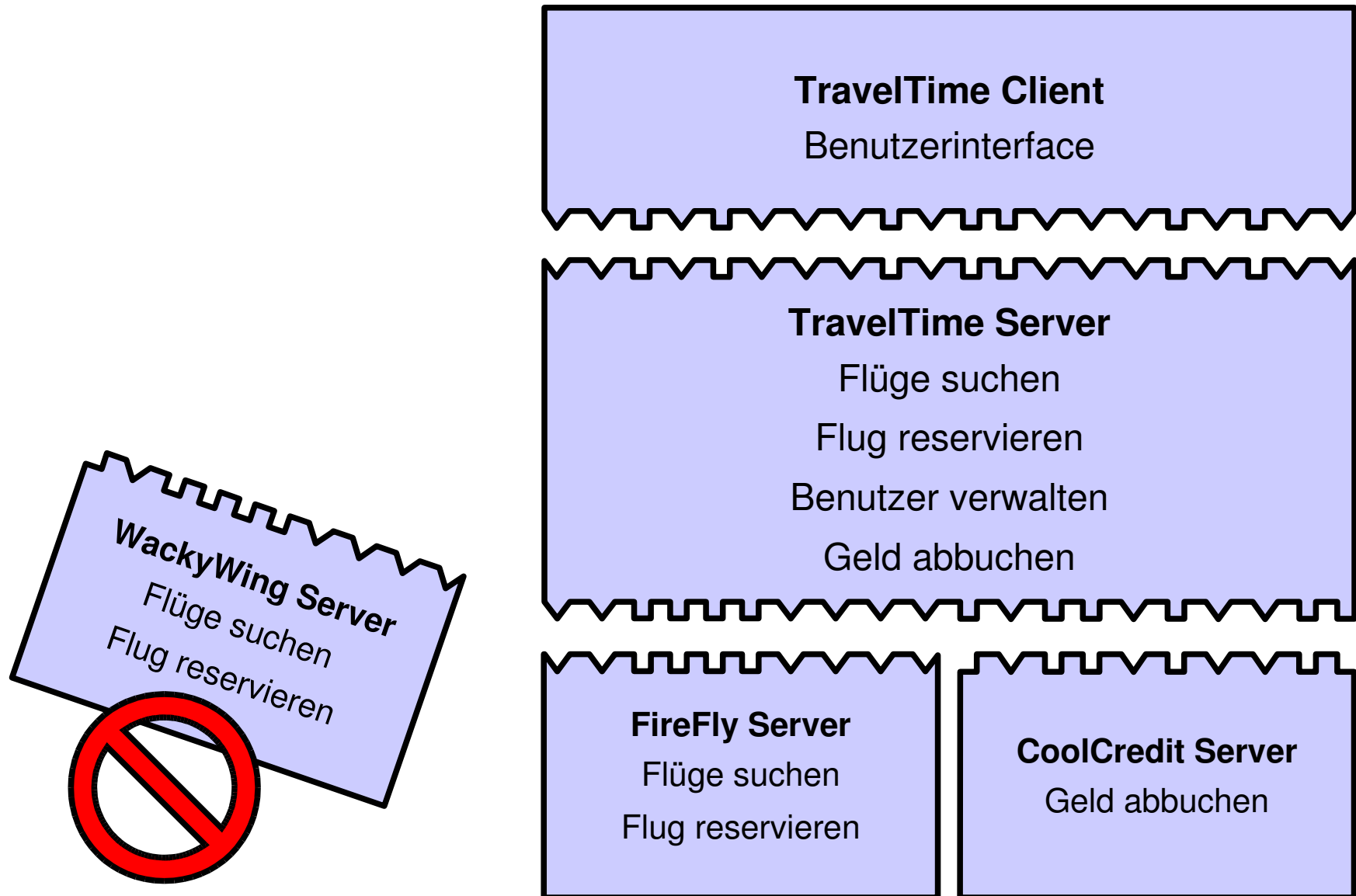


Architektur von SOAP basierten Web Services

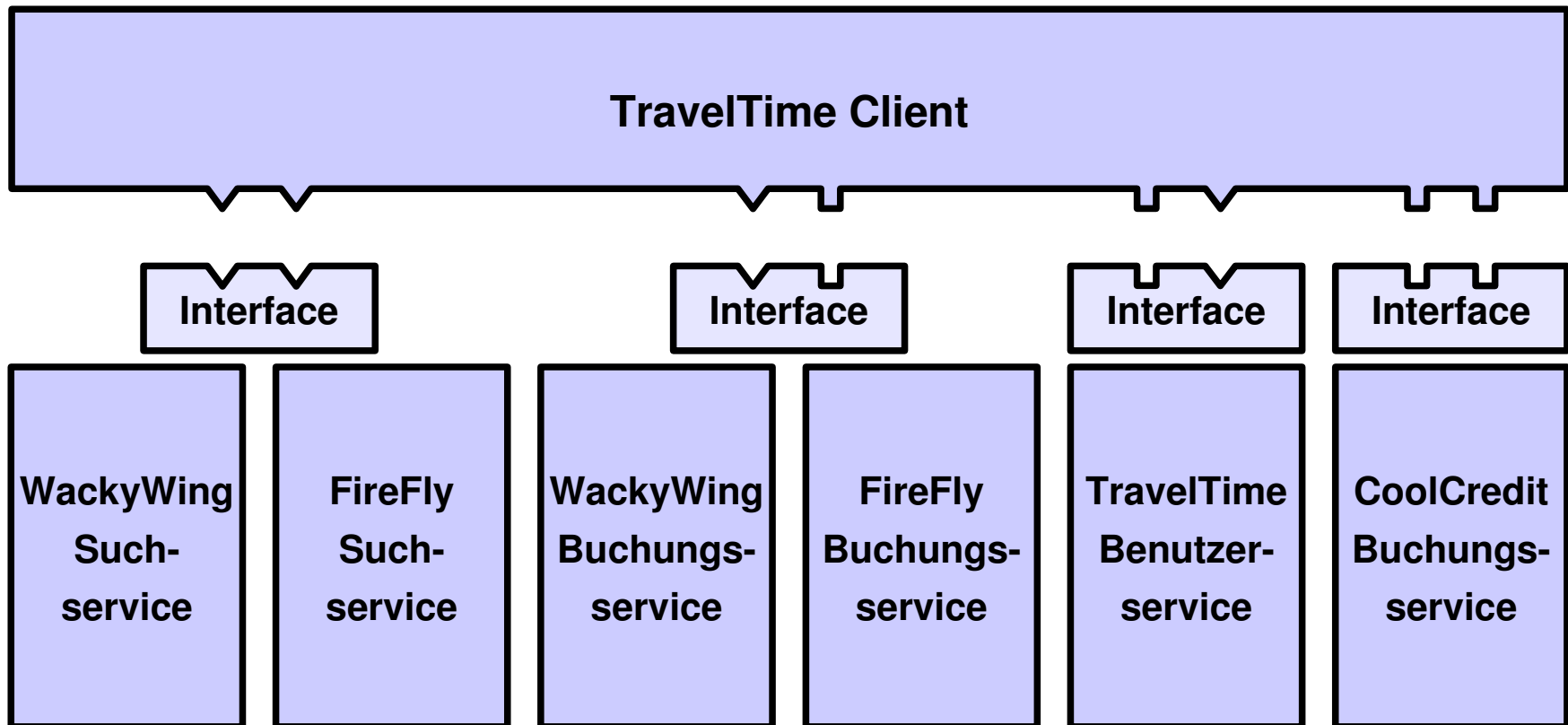
André Homeyer

28.11.2005

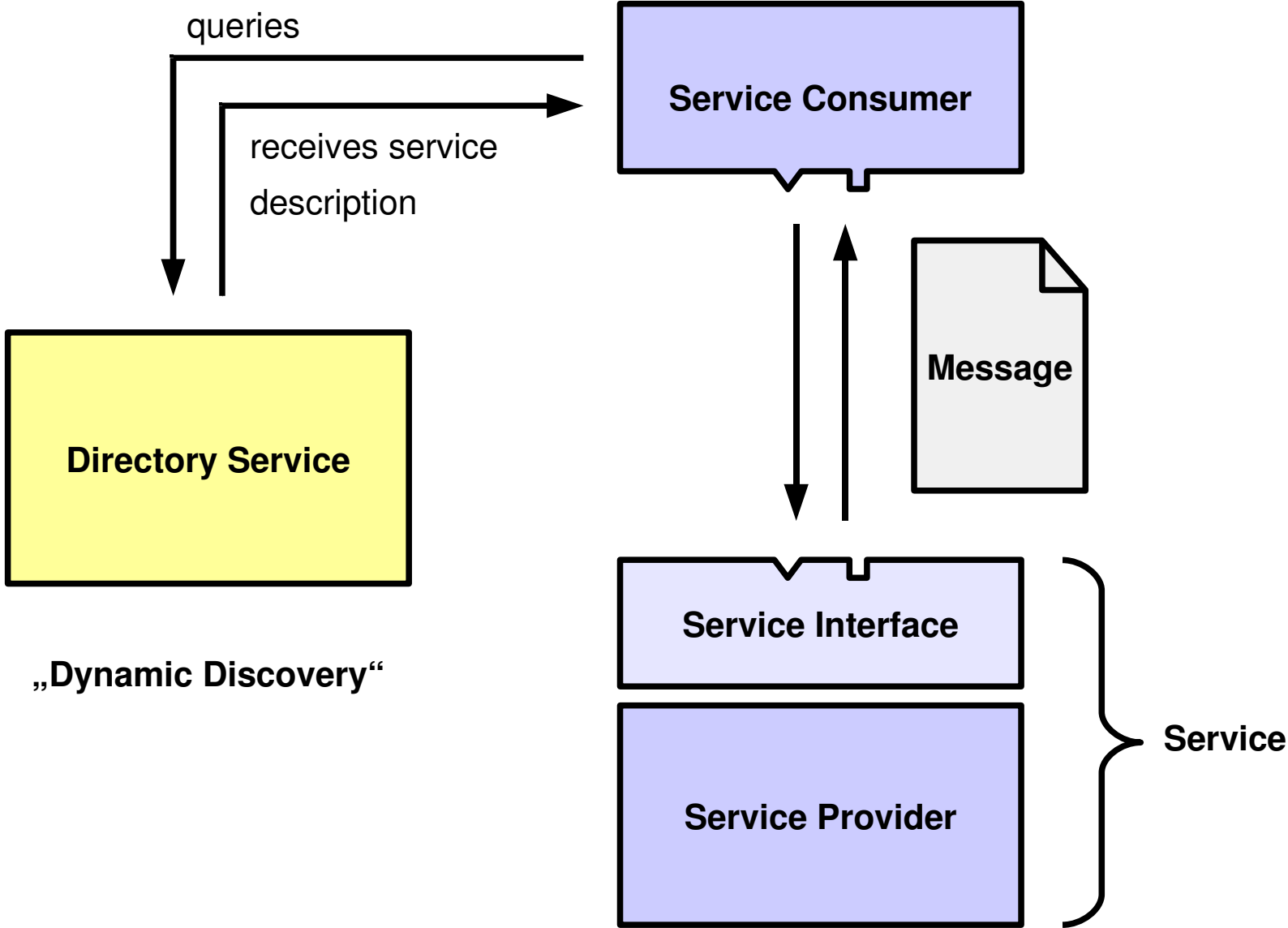
Worst-Case einer verteilten Anwendung



Redesign zur „Service Oriented Architecture“



Komponenten einer Service Oriented Architecture



Service Oriented Architectures

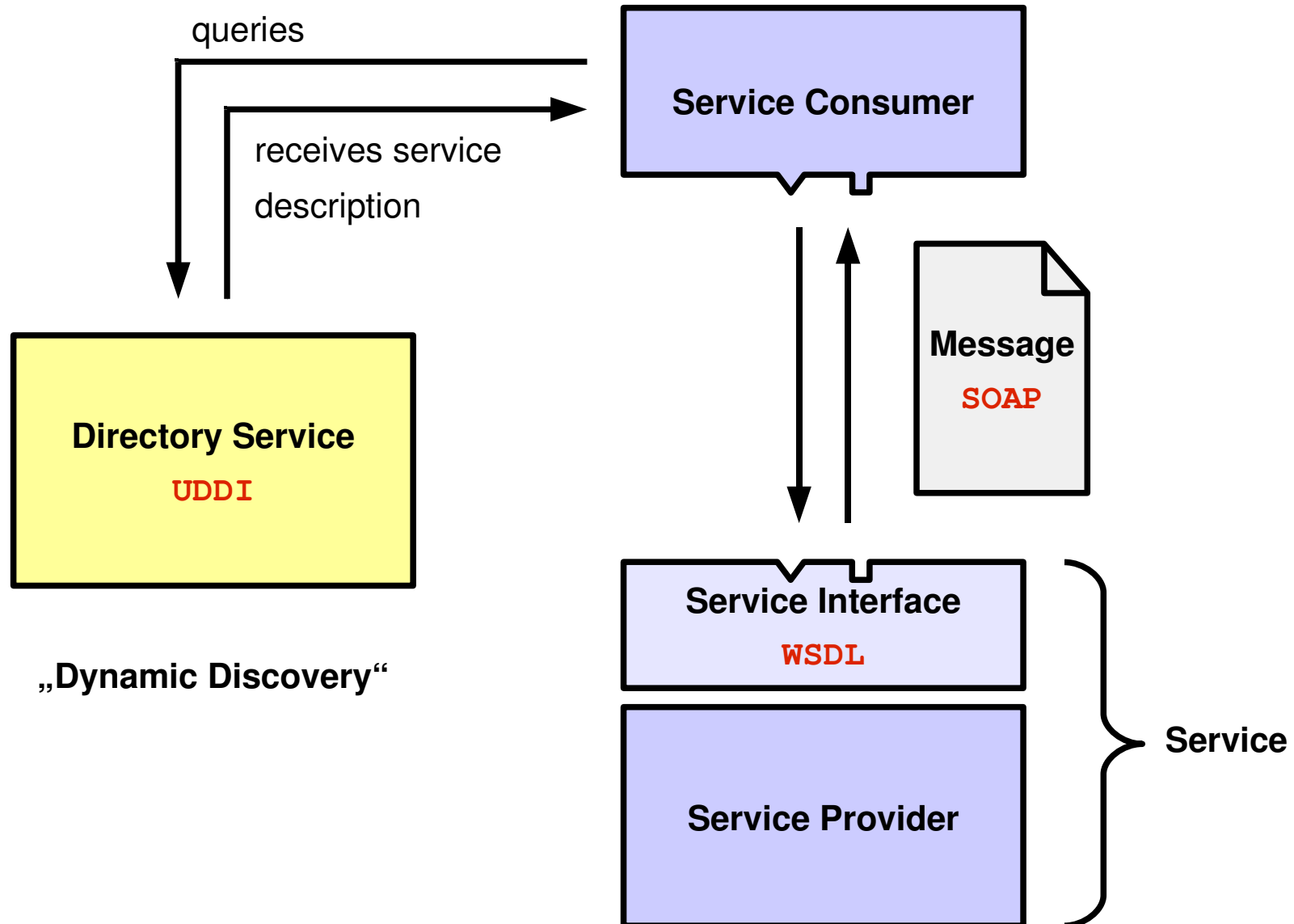
+

Web Standards

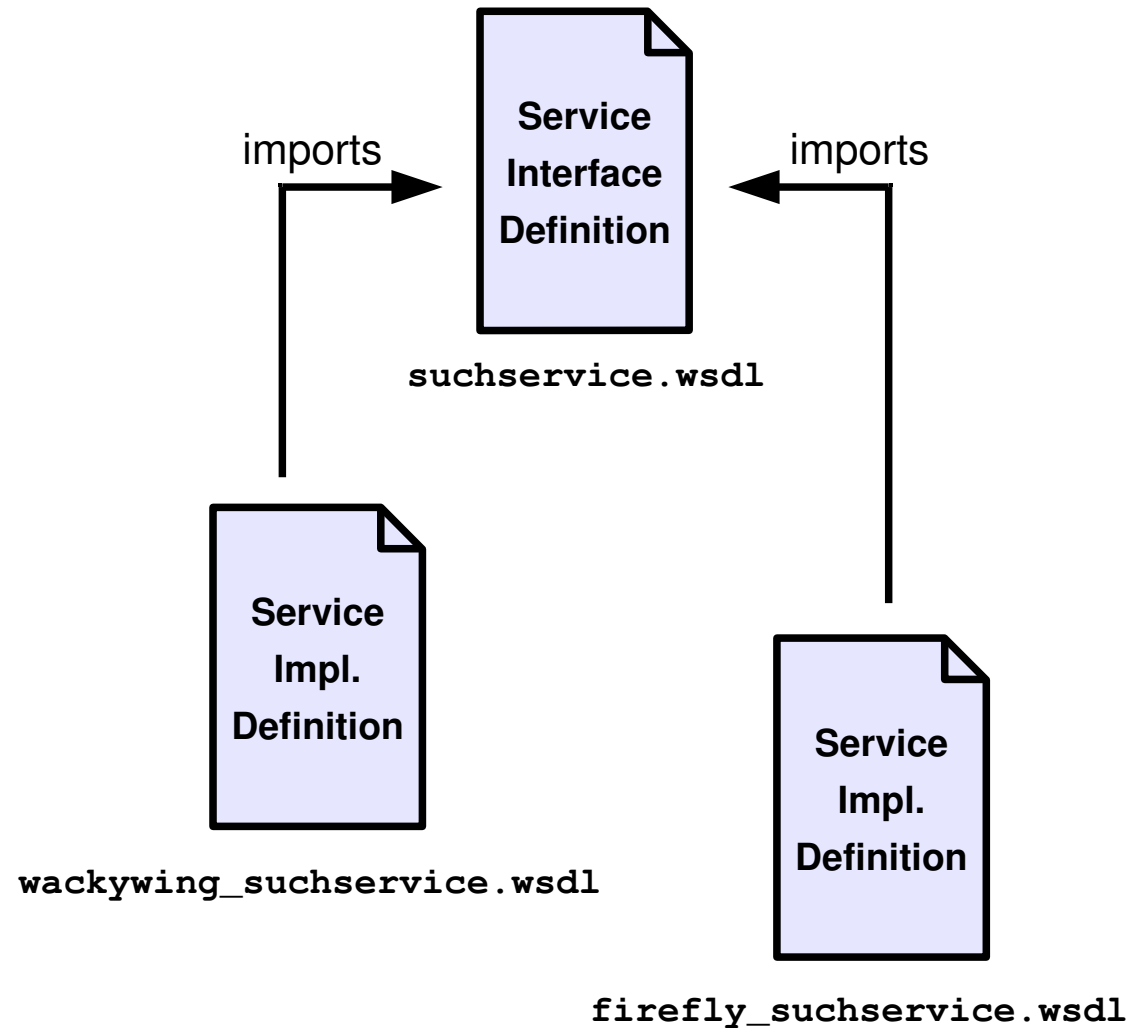
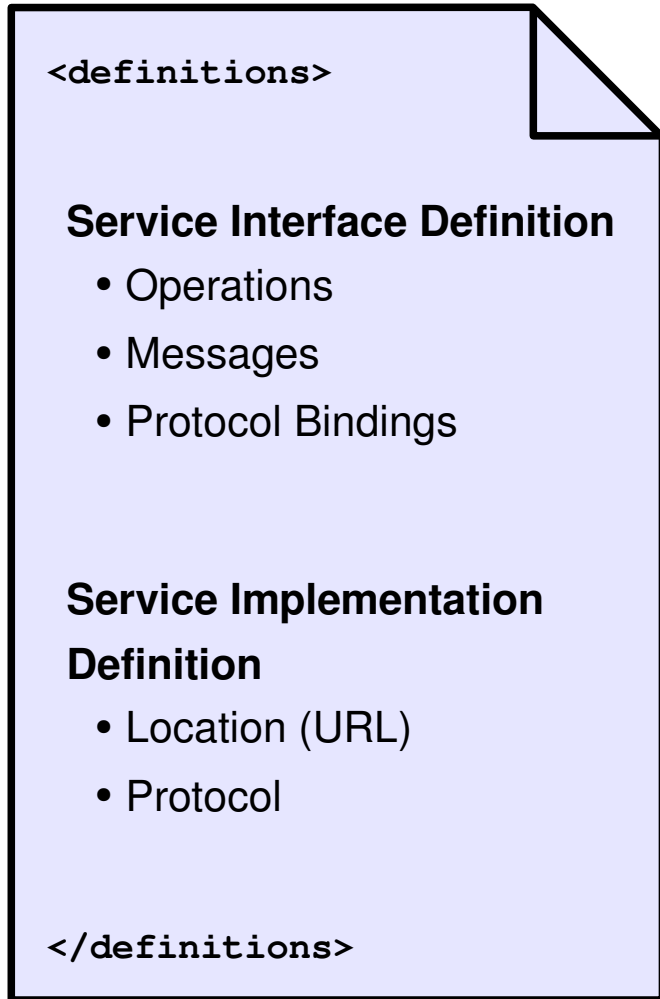
=

„Web Services“

Komponenten einer Web Service Architektur



Web Service Description Language



Beispiel für eine UDDI Registry

UDDI Business Registry

Find

Related Links:

- Web Services and UDDI
- IBM UDDI Business Test Registry

UDDI Business Registry Version 2

Universal Description, Discovery, and Integration

Service Details

Service Name(s)

Name	Language
Amazon.com Web Services	en

Service Description(s)

Description	Language
Set of web services that allow developers to create applications that consume Amazon.com core features. When tied to Amazon.com Associate program, developers can earn a percentage of each transaction that Amazon.com fulfills. Developers must have a token	en

Access Point(s)

Protocol	Address	Description	Actions
http	http://soap.amazon.com/schemas/AmazonWebServices.wsdl	The WSDL file that allows developers to make use of Amazon.com features on their own site.	Details

<https://uddi.ibm.com/ubr/registry.html>

Aufbau von SOAP Nachrichten

```
01 <?xml version='1.0' ?>
02 <env:Envelope
03   xmlns:env="http://www.w3.org/2003/05/soap-envelope">
04
05   <env:Header>
06
07
08     ...
09
10
11
12   </env:Header>
13
14   <env:Body>
15
16
17     ...
18
19
20   </env:Body>
21
22 </env:Envelope>
```

Message
Sender



Message
Receiver

Beispiel: Request zum Suchservice

```
01 <?xml version='1.0' ?>
02 <env:Envelope
03   xmlns:env="http://www.w3.org/2003/05/soap-envelope">
04
05   <env:Header>
06     <m:reservation
07       xmlns:m="http://www.flights.org/reservation"
08       env:role="http://www.w3.org/2003/05/soap-envelope/role/next"
09       env:mustUnderstand="true">
10       <m:id>uuid:ae3453-437deedd-7eba8436</m:id>
11     </m:reservation>
12   </env:Header>
13
14   <env:Body>
15     <p:flight-search xmlns:p="http://www.flights.org/search">
16       <p:from>Düsseldorf</p:from>
17       <p:to>Los Angeles</p:to>
18       <p:date>2001-12-14</p:date>
19     </p:flight-search>
20   </env:Body>
21
22 </env:Envelope>
```

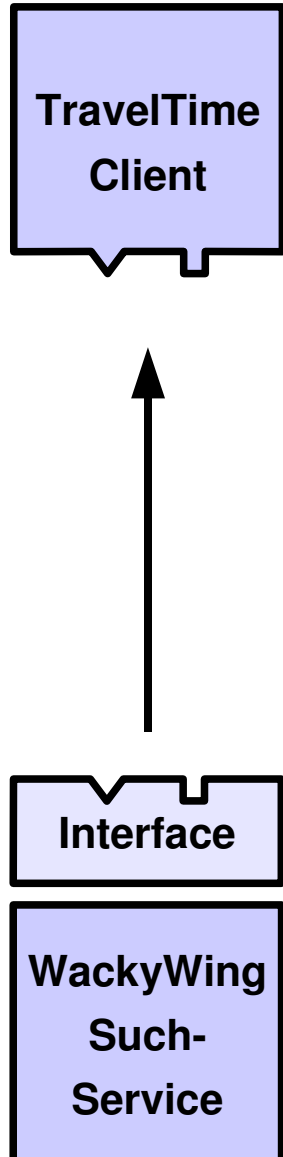
TravelTime
Client



Interface

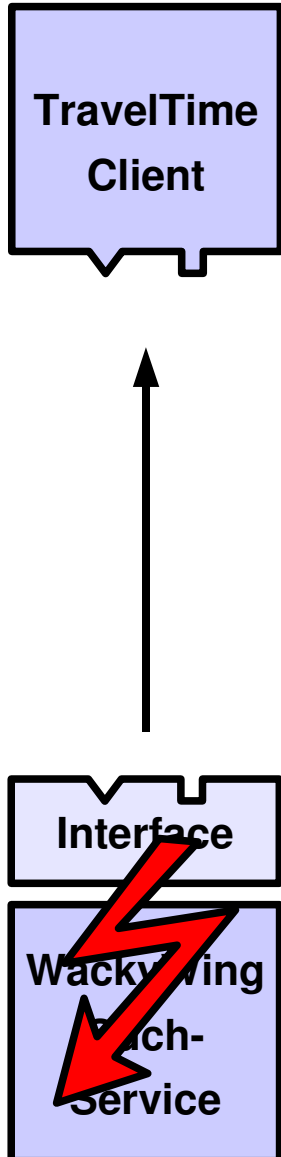
WackyWing
Such-
Service

Beispiel: Response vom Suchservice



```
01 <?xml version='1.0' ?>
02 <env:Envelope
03   xmlns:env="http://www.w3.org/2003/05/soap-envelope">
04
05   <env:Header>
06     <m:reservation
07       xmlns:m="http://www.flights.org/reservation"
08       env:role="http://www.w3.org/2003/05/soap-envelope/role/next"
09       env:mustUnderstand="true">
10       <m:id>uuid:ae3453-437deedd-7eba8436</m:id>
11     </m:reservation>
12   </env:Header>
13
14   <env:Body>
15     <p:flights-found xmlns:p="http://www.flights.org/search">
16
17       ...
18
19     </p:flights-found>
20   </env:Body>
21
22 </env:Envelope>
```

SOAP Error Handling



```
01 <?xml version='1.0' ?>
02 <env:Envelope
03   xmlns:env="http://www.w3.org/2003/05/soap-envelope"
04   xmlns:e="http://www.flights.org/faults">
05   <env:Body>
06     <env:Fault>
07       <env:Code>
08         <env:Value>env:Sender</env:Value>
09         <env:Subcode>
10           <env:Value>e:NoSuchAirport</env:Value>
11         </env:Subcode>
12       </env:Code>
13       <env:Reason>
14         <env:Text xml:lang="en-US">Invalid Airport.</env:Text>
15         <env:Text xml:lang="de">Ungültiger Flughafen.</env:Text>
16       </env:Reason>
17       <env:Detail>
18         <e:airport>Bielefeld</e:airport>
19       </env:Detail>
20     </env:Fault>
21   </env:Body>
22 </env:Envelope>
```

Transport von SOAP Nachrichten

Request

POST /Reservations HTTP/1.1

Host: www.wackywing.com

Content-Type: application/soap+xml; charset="utf-8"

Content-Length: nnnn

```
<?xml version='1.0' ?>
```

```
<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope" >
```

```
...
```

```
</env:Envelope>
```

Response

HTTP/1.1 200 OK

Content-Type: application/soap+xml; charset="utf-8"

Content-Length: nnnn

```
<?xml version='1.0' ?>
```

```
<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope" >
```

```
...
```

```
</env:Envelope>
```

Vor- und Nachteile von Web Services

Vorteile

- + Skalier- und Wartbarkeit durch unabhängige Schnittstellen
- + Interoperabilität durch Webstandards
- + offene Standards, keine Lizenzkosten

Nachteile

- keine einheitlichen Sicherheitsstandards -
- zum Teil unausgereift -
- Overhead durch die Verwendung von XML -

**Vielen Dank
für Eure Aufmerksamkeit**

Diskussion

Lohnt sich der Mehraufwand
Schnittstellen explizit in WSDL zu definieren?

Was könnte die Vorteile von Web Services zunichte machen?

Inwiefern lassen sich die Optimierungsansätze von SOAs
mit denen anderer Programmierparadigmen vergleichen?

Quellen

Print

- Java Web Services, Kim Topley, 2003, O'Reilly, 0596003994
- Java Spektrum, April/Mai 2004, SIGS-DATACOM GmbH

Web

- Web Services Architecture, W3C Working Group Note, <http://www.w3.org/TR/ws-arch>
- Service-Oriented Architecture Explained,
http://dev2dev.bea.com/pub/a/2004/05/soa_hashimi.html
- New to SOA and Web services,
<http://www-128.ibm.com/developerworks/webservices/newto>
- Web Services Description Language (WSDL) 1.1, <http://www.w3.org/TR/wsdl>
- SOAP Version 1.2 Part 0: Primer, <http://www.w3.org/TR/soap12-part0/>
- SOAP Version 1.2 Part 1: Messaging Framework, <http://www.w3.org/TR/soap12-part1/>
- SOAP Version 1.2 Part 2: Adjuncts, <http://www.w3.org/TR/soap12-part2/>