

Web Services Data Access and Integration Specifications: WS-DAI, WS-DIAR, WS-DAIX



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GGF-12 DAIS Spec Team

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- ... *not* a closed group!



Outline of Presentation

- Specification context and changes.
- Terminology and notions.
- Data Description.
- Data Access.
- Data Factory.
- Data Management.
- Mapping to WSDL.
- Relevant Sessions.



Specifications

- Web Services Data Access and Integration (WS-DAI):
 - A paradigm-neutral specification of descriptive and operational features of services for accessing data.
- The WS-DAI Realisations:
 - WS-DAIR: for relational databases.
 - WS-DAIX: for XML repositories.

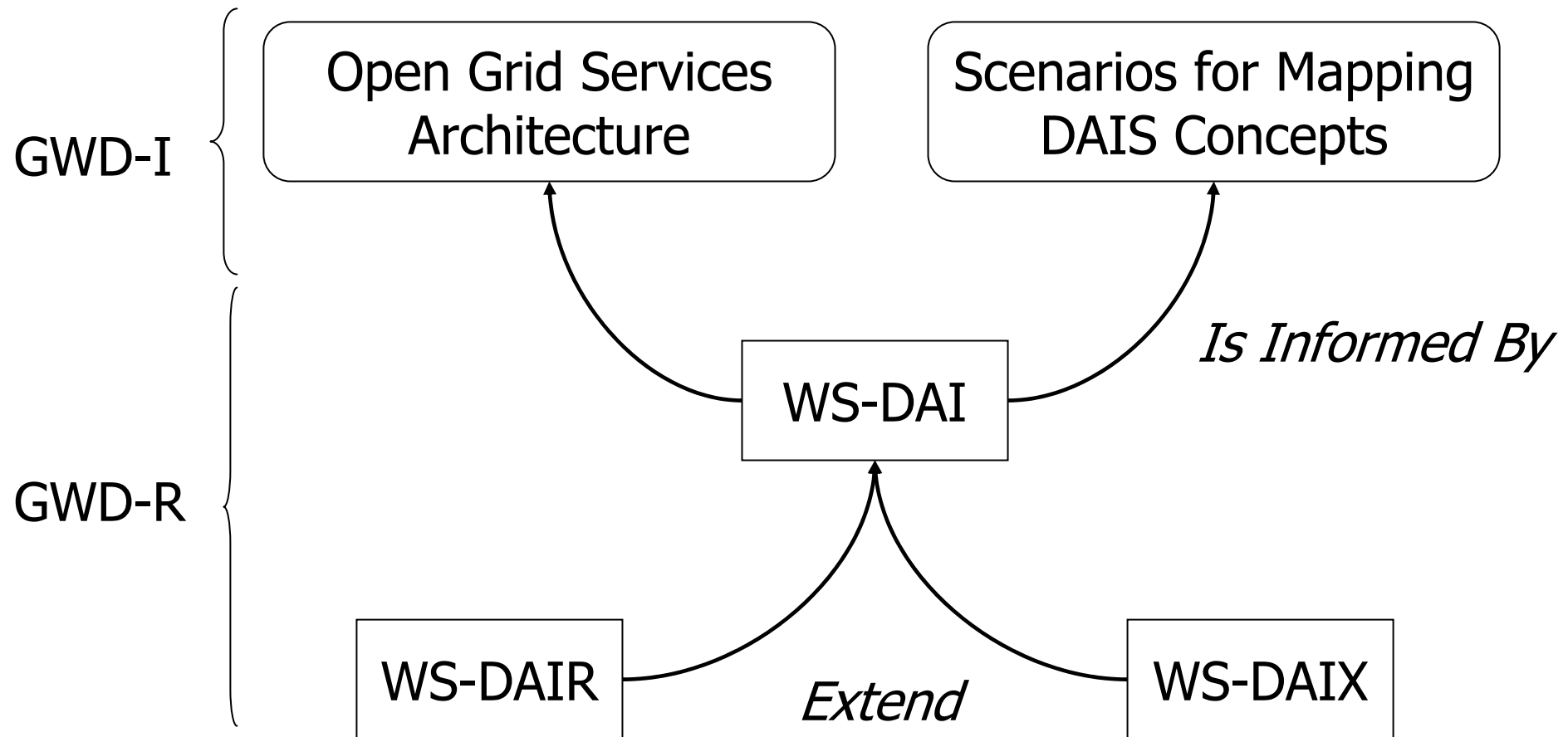


WS-DAI and the Grid

- Relationship to web service standards:
 - WS-DAI specifications are in terms of WSDL.
 - WS-DAI will depend (explicitly or in practice) on several Web Service standards.
- Relationship to GGF activities:
 - Provides service-based access to structured data resources as part of OGSA architecture.
 - Complimentary to other data grid activities within GGF, for example, on Information Dissemination, Resource Description, ...



DAIS Specification Landscape





WS-DAI GGF11 → GGF12

- Issues:
 - Logging of issues on GridForge.
 - Addressing of issues at telcons.
- Implementation:
 - GGF11 specification implemented at IBM Hursley by part of OGSA-DAI activity.
- Mappings:
 - Final draft of Mapping Scenarios Document.
 - Discussions on mapping options.
- Relationships:
 - Contributing to OGSA Data Design Team.



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Terminology - 1

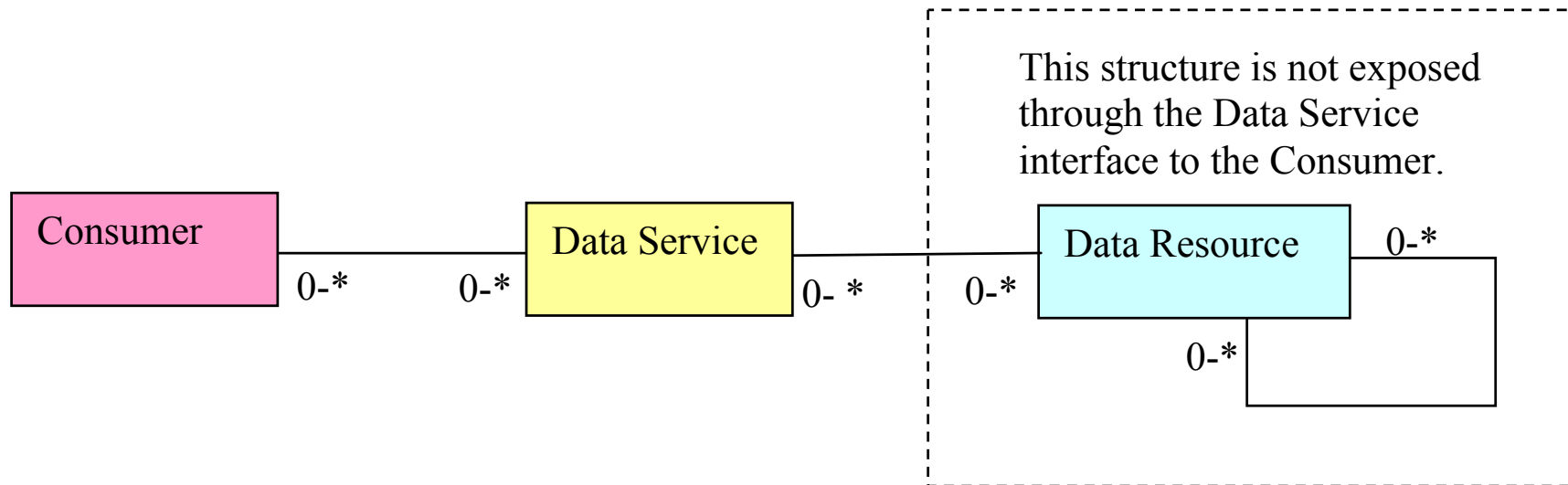
- *Data Service*: a web service that conforms to one of the DAIS specifications.
- *Data Resource*: any system that can act as a source or a sink of data (e.g. a relational database).
- *Consumer*: an application that exploits a Data Service to access a Data Resource.
- *Data Set*: an encoding of data suitable for externalising data outside a Data Resource.



Terminology - 2

- *Data Description*: provides metadata about a data resource and the relationship of that resource to a service interface.
- *Data Access*: provides access to data through a service interface.
- *Data Factory*: exposes derived data through a service interface.
- *Data Management*: manages the relationship between a service and the data resource that it exposes.

Data Service Model





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Data Description

- Few informational properties are described in WS-DAI:
 - */wsdai:Name*: The name associated with the Data Resource represented by the Data Service. The scope and structure of this name is not defined.
 - */wsdai:Description*: A free format textual description of the Data Resource as represented by a Data Service.
- Both WS-DAIR and WS-DAIX provide a collection of paradigm-specific data description properties.

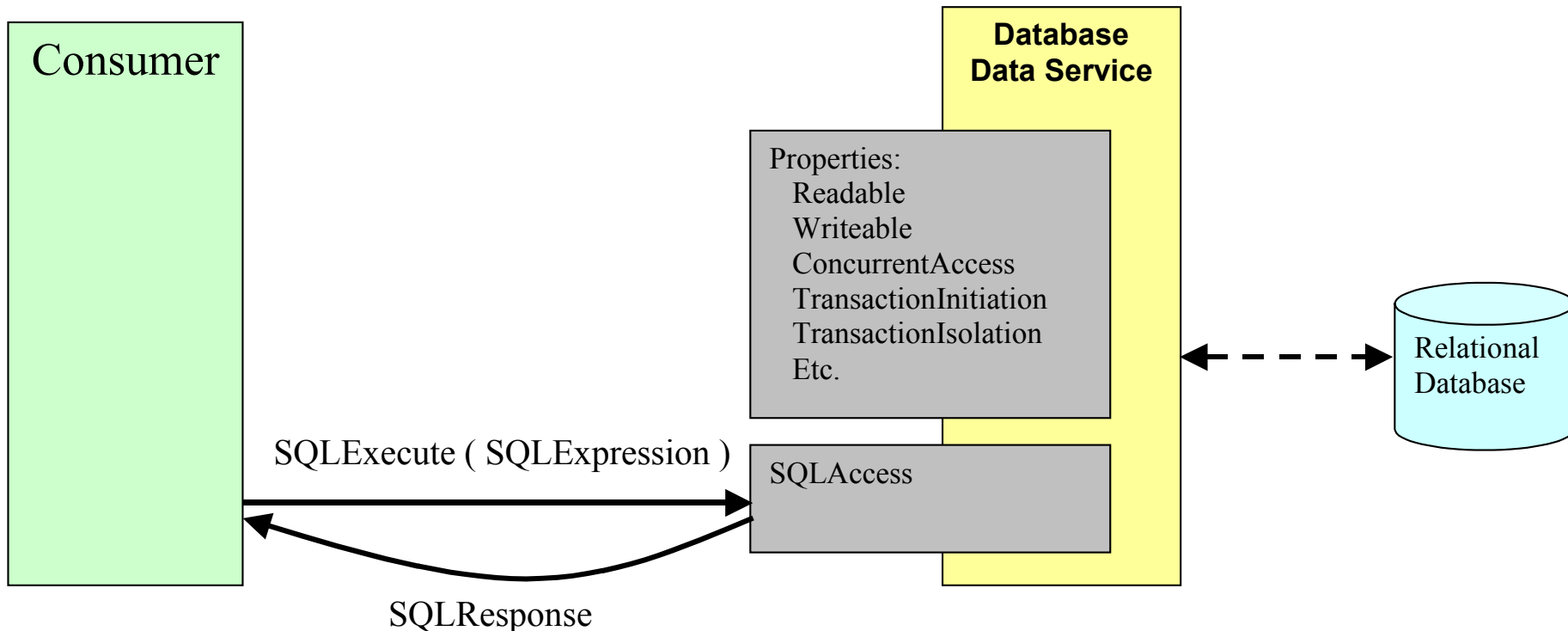


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Data Access

- Data Access collects together messages that access and/or modify a resource.





Behavioural Properties

- The following behavioural properties are defined:
 - Readable (boolean).
 - Writeable (boolean).
 - Concurrent Access (boolean).
 - Transaction Initiation (enumeration).
 - Transaction Isolation (enumeration).
 - Sensitivity (enumeration).
- Realisations MAY extend this list.



Message Patterns - 1

- To encourage consistency in the realisations, the following message pattern is provided by WS-DAI:

```
<wsdai:RequestMessage>  
    <wsdai:RequestDocument/>  
    <wsdai:ResponseFormat/>?  
</wsdai:RequestMessage>
```

- The ResponseFormat, if present, **MUST** contain a QName from the *RequestMessageResponseTypeList* informational property.



Message Patterns - 2

- **SQLExecute using the message pattern:**

```
<xsd:element name="SQLExecuteRequest">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element ref="wsdair:SQLExpression"
        minOccurs="1" maxOccurs="1"/>
      <xsd:element ref="wsdai:ResponseFormat"
        minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
```

- **Where:**

```
<xsd:element name="ResponseFormat"
  type="xsd:QName"/>
```



Outline of Presentation

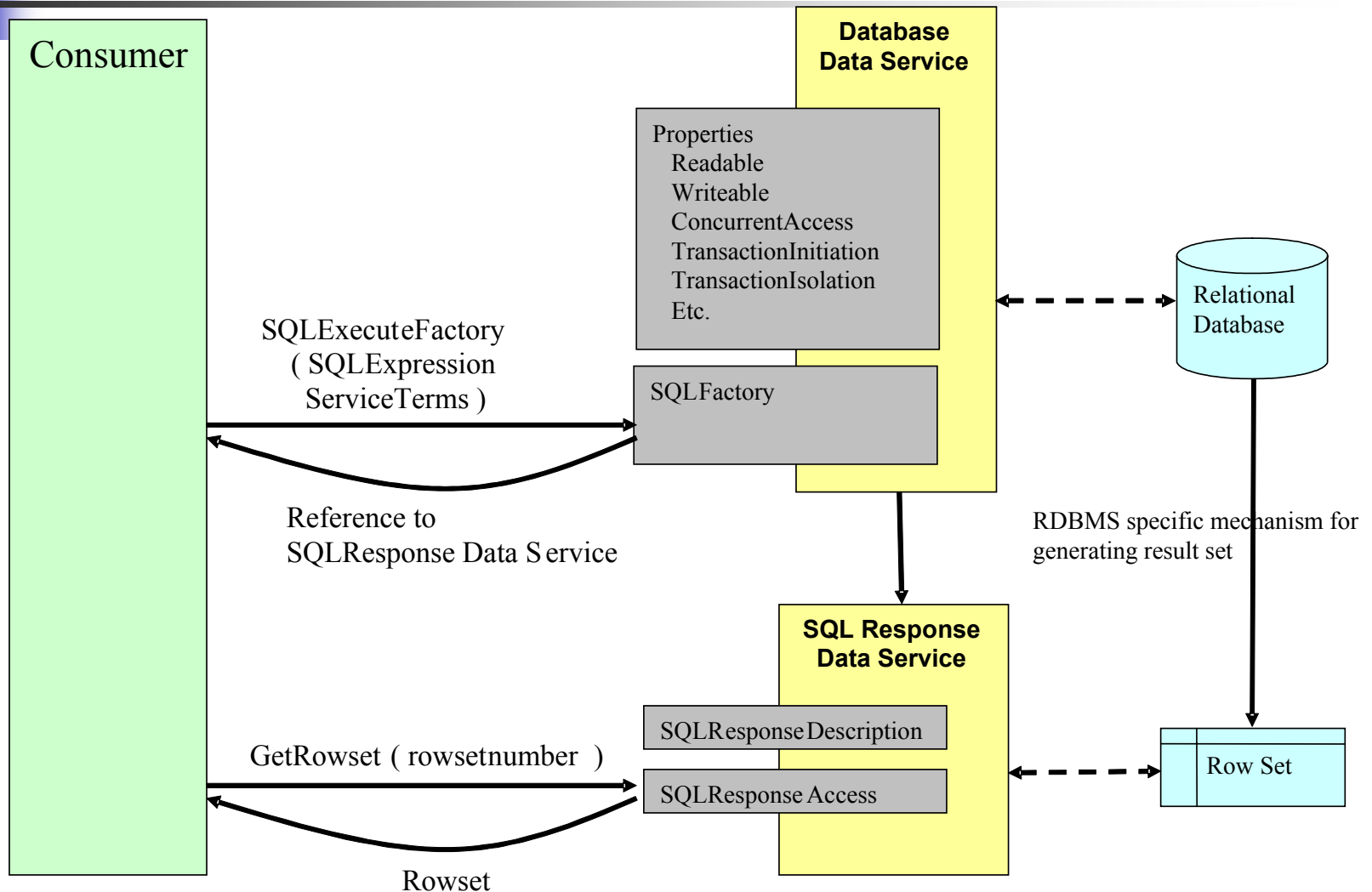
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Data Factory

- Data Factory collects together messages that implement the factory pattern.
- This factory pattern is used principally to support flexible handling of the results of requests.

Data Factory - 2





Message Patterns - 1

- To encourage consistency in the realisations, the following message pattern is provided by WS-DAI:

```
<wsdai:RequestMessage>
```

```
    <wsdai:RequestDocument/>
```

```
    <wsdai:BehavioralProperties/>
```

```
</wsdai:RequestMessage>
```



Message Patterns - 2

- The *BehavioralProperties* are initial values for the behavioural properties of the DataService used to access the result of this message.
- The *BehavioralProperties* document MUST specify the type of interface that is required to result from the factory message (e.g. using the QName of the portType).



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Data Management

- Data Management is not yet defined.
- Themes:
 - Managing the resource.
 - Managing the service.
 - Managing the service-resource relationship.
- Awaiting the outcome of Web Services Distributed Management (WSDM)
[WSDM] TC in OASIS.



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Mapping to WSDL

- The Mapping to WSDL should be seen as indicative. A wider discussion of Mapping issues for DAIS is provided in:
 - S. Laws, S. Malladi, S. Parastatidis, Scenarios for Mapping DAIS Concepts, Informational Draft, GGF12.
- The WSDL mapping provided in the specifications is in the context of WSRF.
- We are participating in the OGSA Data Architecture and the OGSA Naming design teams.



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Relevant Sessions

- Sep 22, 11:00-12:30:
 - Access to Data in Files BoF.
- Sep 22, 3:30-5:00:
 - Joint Session with GSM-WG.
- Sep 22, 5:30-7:00:
 - DAIS #2, Mappings Discussion.
- Sept 23, 9:00-10:30:
 - DAIS #3, Socialising and relationship to products.
 - CGS-WG: CIM extensions for SQL.