UNIDART
Uniform Data Request Interface

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Two additional slides added by Michael Lautenschlager
(WDCC / M&D/MPI-M)

General Project Information

- UNIDART is a EUMETNET Programme and DWD is the Responsible Member
- UKMO and KNMI are initial project partners
- start in 2001 with a feasibility study
- start of prototype development in 2003
- prototype software is installed at DWD, met.no, FMI and KMA
- installation planned at KNMI, MeteoSwiss, ZAMG and JMA
- test version of this software can be downloaded from UNIDART web site http://www.unidart.eu (see folder “Software & Tools”)

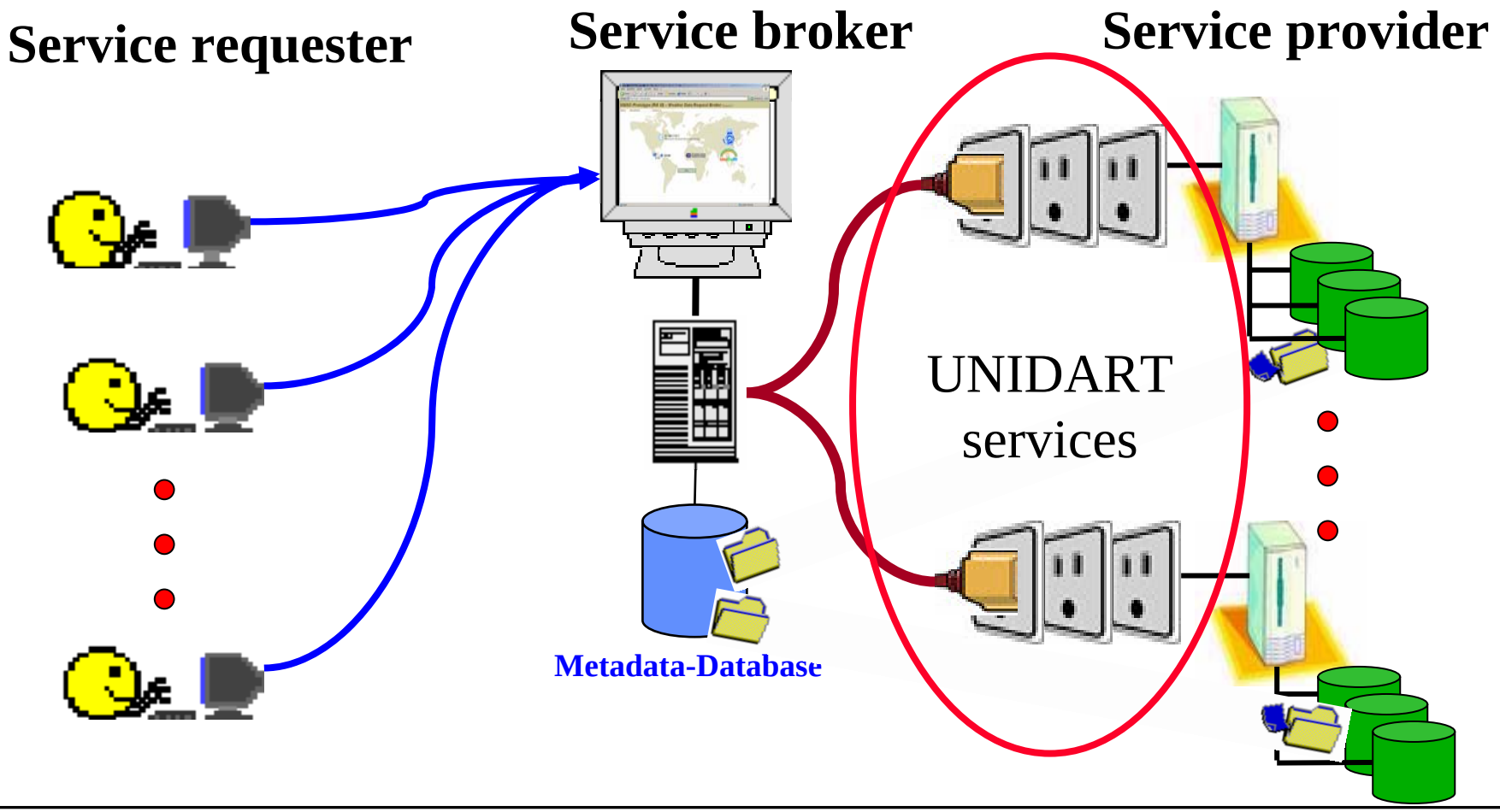
The main goal of UNIDART

Development of a Web-based information system that allows a **uniform and integrated access** to **heterogeneous and distributed data sources** which store **any kind of meteorological data and products**

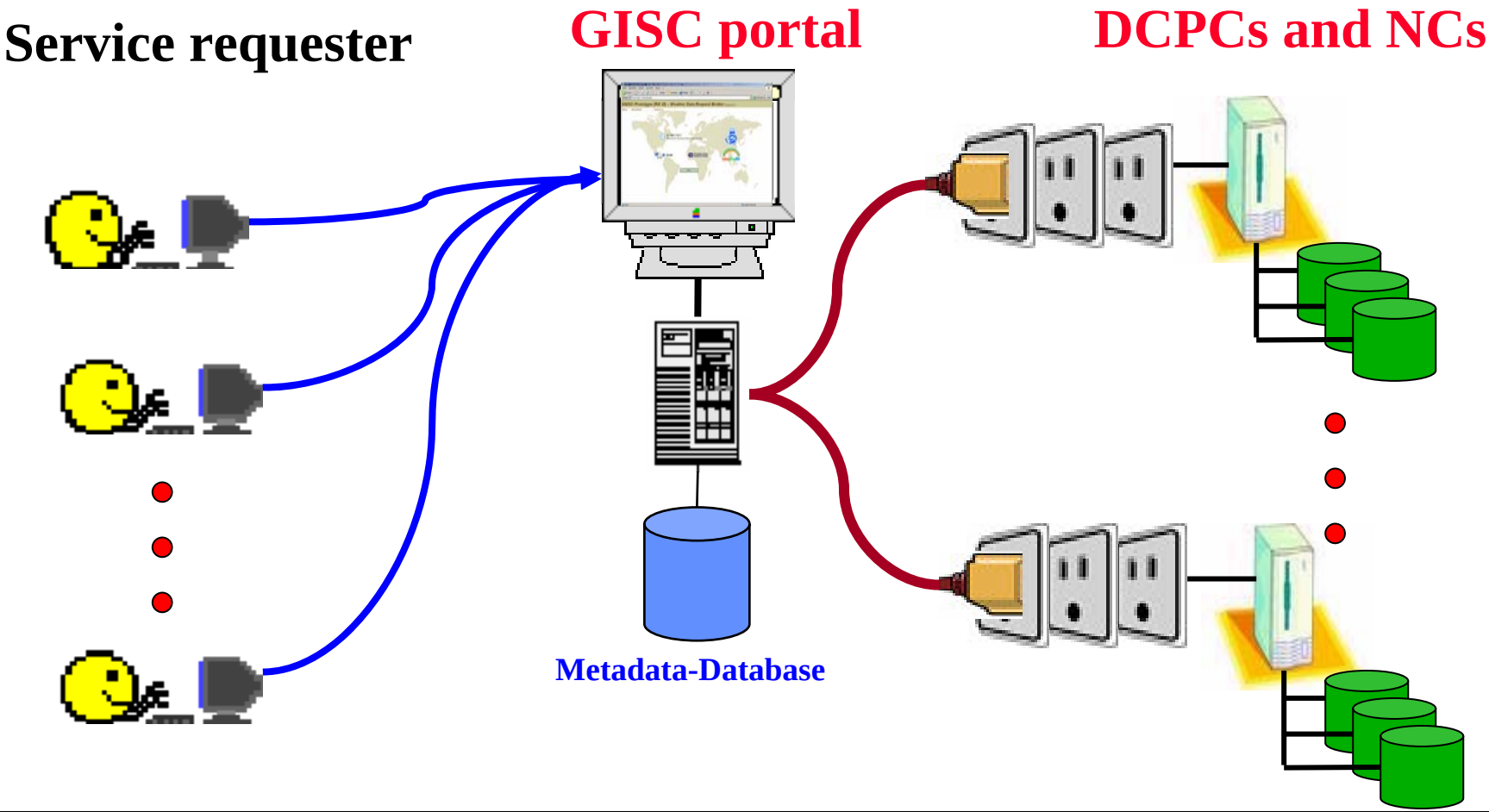
4 Steps to reach the Goal

- define data categories, e.g. climate time series, forecasts, satellite data, etc.
- develop a query syntax for each data category
- specify metadata templates to describe data sets of each data category
- write a web service for each data category

Usage Scenario



Relationship to WIS



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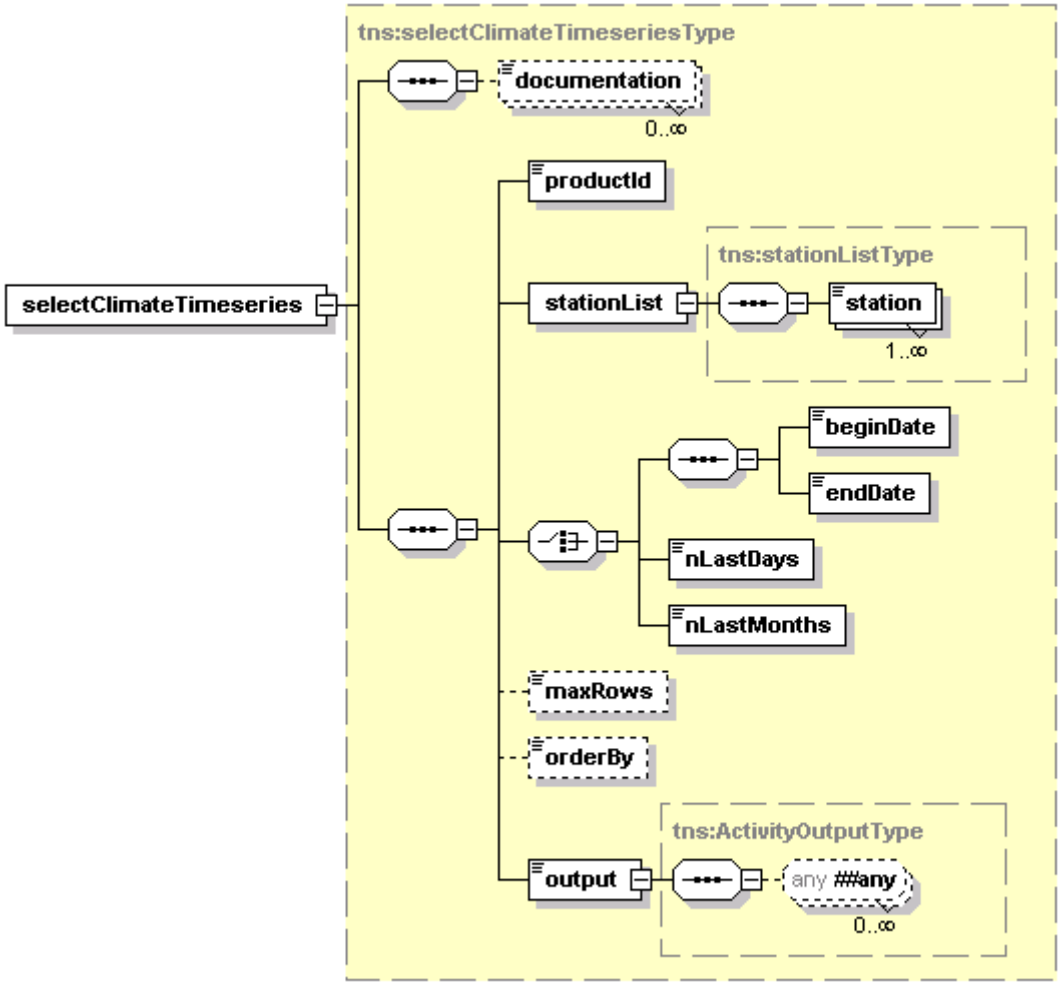
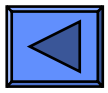
Query Syntax for Climate Timeseries



Generated with XMLSpy Schema Editor www.xmlspy.com

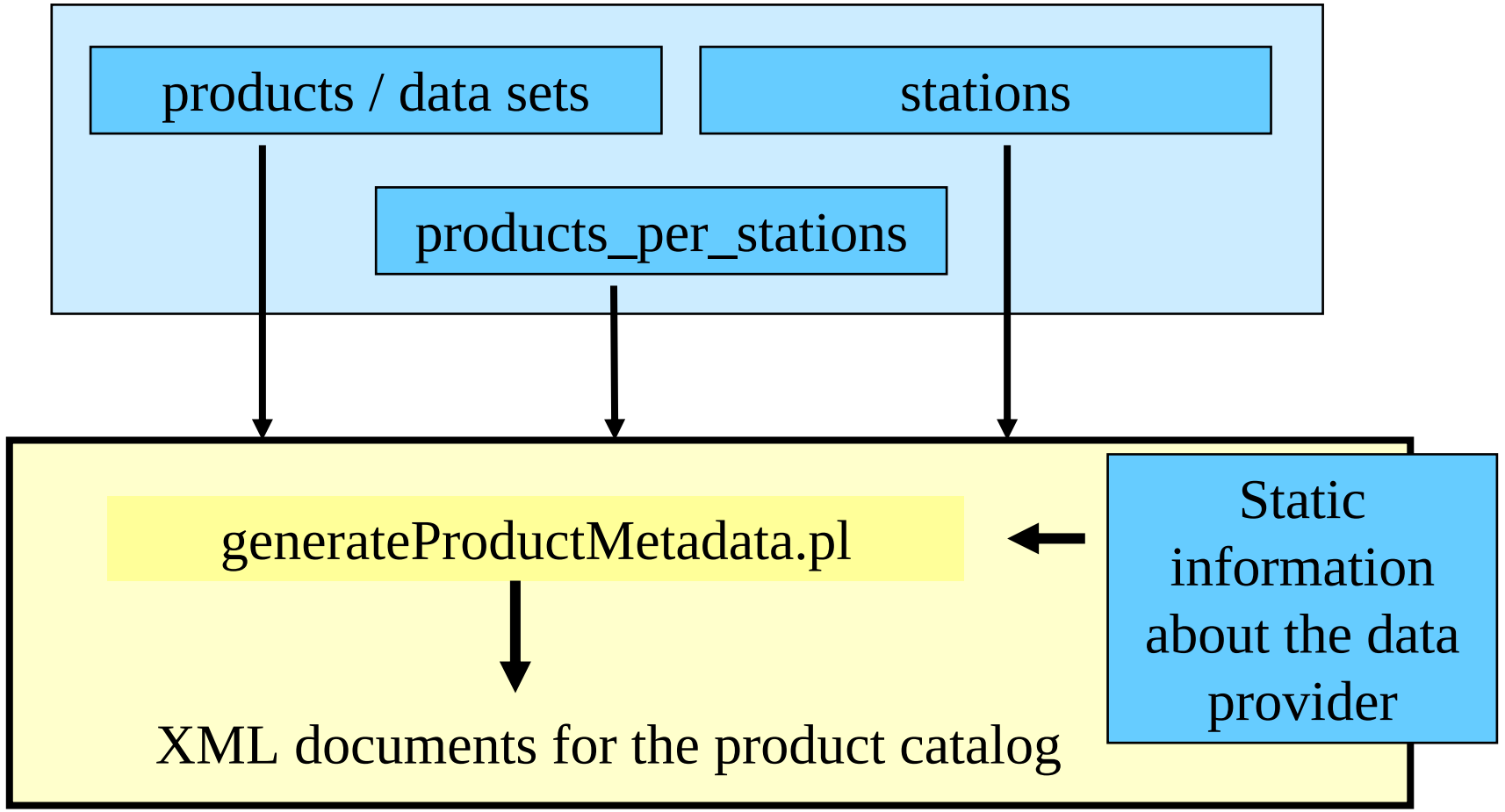
A sample request document

```
<?xml version="1.0" encoding="UTF-8"?>
<perform xmlns="http://ogsadai.org.uk/namespaces/2005/10/types">

        <selectClimateTimeseries name="query">
                <productId>de.dwd.klis.TADM</productId>
                <stationList>
                        <station>3</station>
                        <station>102</station>
                </stationList>
                <nLastDays>10</nLastDays>
                <orderBy>stationname</orderBy>
                <output name="resultOfQuery"/>
        </selectClimateTimeseries>

        <sqlTimeseriesToXML name="output">
                <sqlTimeseries from="resultOfQuery">
                <xmlTimeseries name="XMLresult">
        </sqlTimeseriesToXML>

</perform>
```



```
<?xml version="1.0" encoding="UTF-8" ?>
- <MD_Metadata id="de.dwd.klis-hom.RRMS1" xmlns="http://www.isotc211.org/2005/gmd"
    xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gml="http://www.opengis.net/gml"
    xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.isotc211.org/2005/gmd http://www.isotc211.org/2005/gmd/metadataEntity.xsd">
  - <language>
      <gco:CharacterString>en</gco:CharacterString>
    </language>
  - <characterSet>
      <MD_CharacterSetCode codeList="http://wis.wmo.int/2006/catalogues/gmxCodelists.xml#MD_CharacterSetCode"
        codeListValue="utf8" />
    </characterSet>
  - <hierarchyLevel>
      <MD_ScopeCode codeList="http://wis.wmo.int/2006/catalogues/gmxCodelists.xml#MD_ScopeCode"
        codeListValue="dataset" />
    </hierarchyLevel>
  - <hierarchyLevelName>
      <gco:CharacterString>dataset of climate time series</gco:CharacterString>
    </hierarchyLevelName>
  + <contact>
  - <dateStamp>
      <gco:Date>2006-09-07</gco:Date>
    </dateStamp>
  - <metadataStandardName>
      <gco:CharacterString>ISO 19115</gco:CharacterString>
    </metadataStandardName>
  - <metadataStandardVersion>
      <gco:CharacterString>2003</gco:CharacterString>
    </metadataStandardVersion>
  + <identificationInfo>
  + <distributionInfo>
  + <dataQualityInfo>
  </MD_Metadata>
```

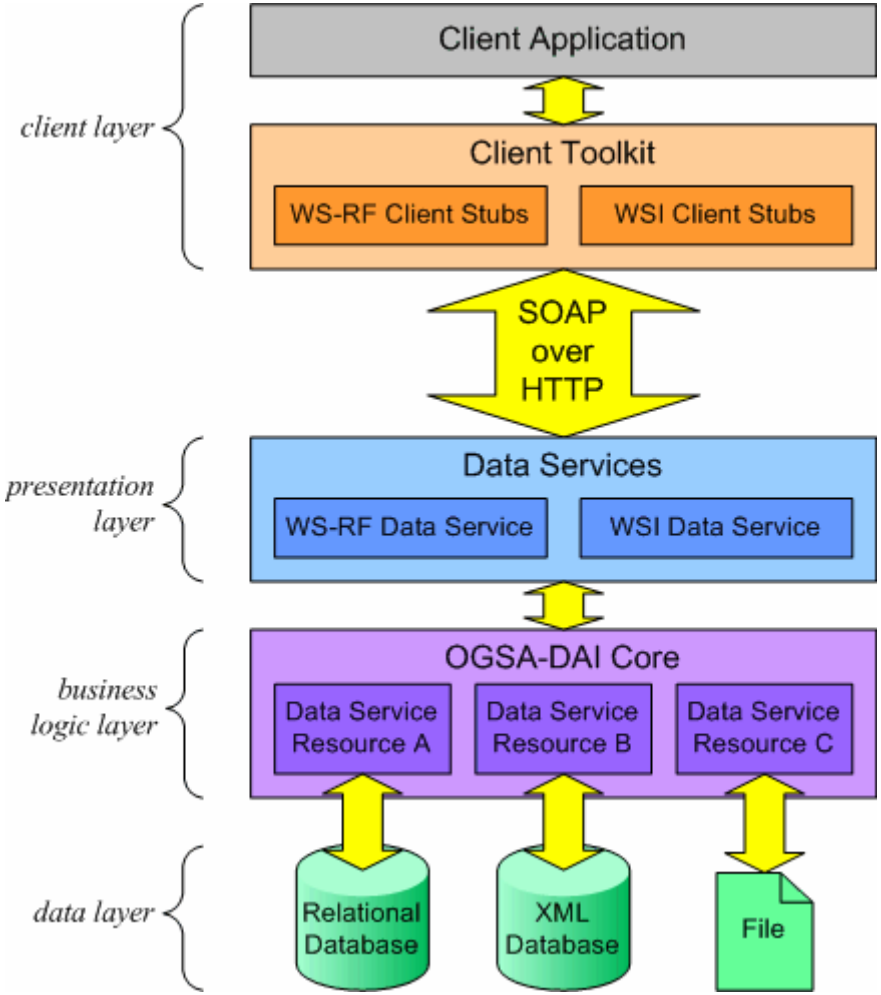
Creation of metadata

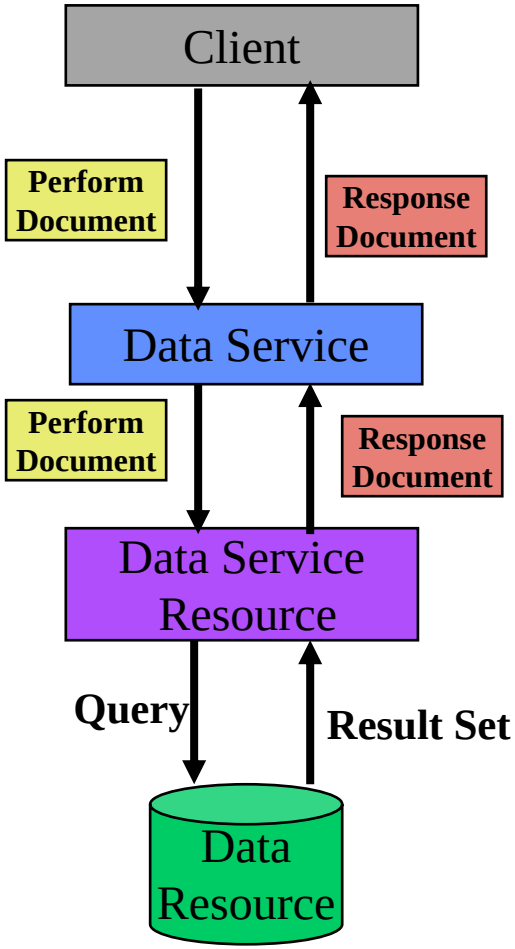


UNIDART Service

- create an OGSA-DAI activity for each data category
- an activity is performed by an OGSA-DAI data service resource
- main problem: heterogeneity of the data sources
- product definition table: contains a parameterised SQL query for each product

Architecture of OGSA-DAI





SQL statements

- bind variables
  - For the time range: :beginDate and :endDate
  - For list of station-IDs: :stationIdList
- output variables
  - stationname — name of the station
  - date — YYYY-MM-DD
  - quality — „very high“, „high“, „low“, „unknown“, „flagged“
  - latitude — degree N, decimal
  - longitude — degree E, decimal
  - altitude — in meter
  - value — according to the selected product

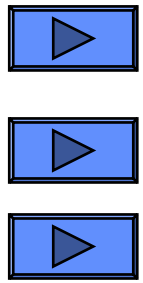
Product Definition Table

PID	description	definition
de.dwd.klis.FBDM	daily mean of wind force	select stationname, date, quality, latitude, longitude, altitude, windforce from stationen, wind_table where (stationid in :stationIdList) and .....
de.dwd.klis.FFDX	daily maximum of windspeed	select stationname, date, quality, latitude, longitude, altitude, windspeed from stationen, wind_table where (stationid in :stationIdList) and .....
de.dwd.klis.TAMM	monthly mean of air temperature	select stationname, date, quality, latitude, longitude, altitude, temperature_mean from stationen, temperature_table where (stationid in :stationIdList) and .....
.....		

Data Policy

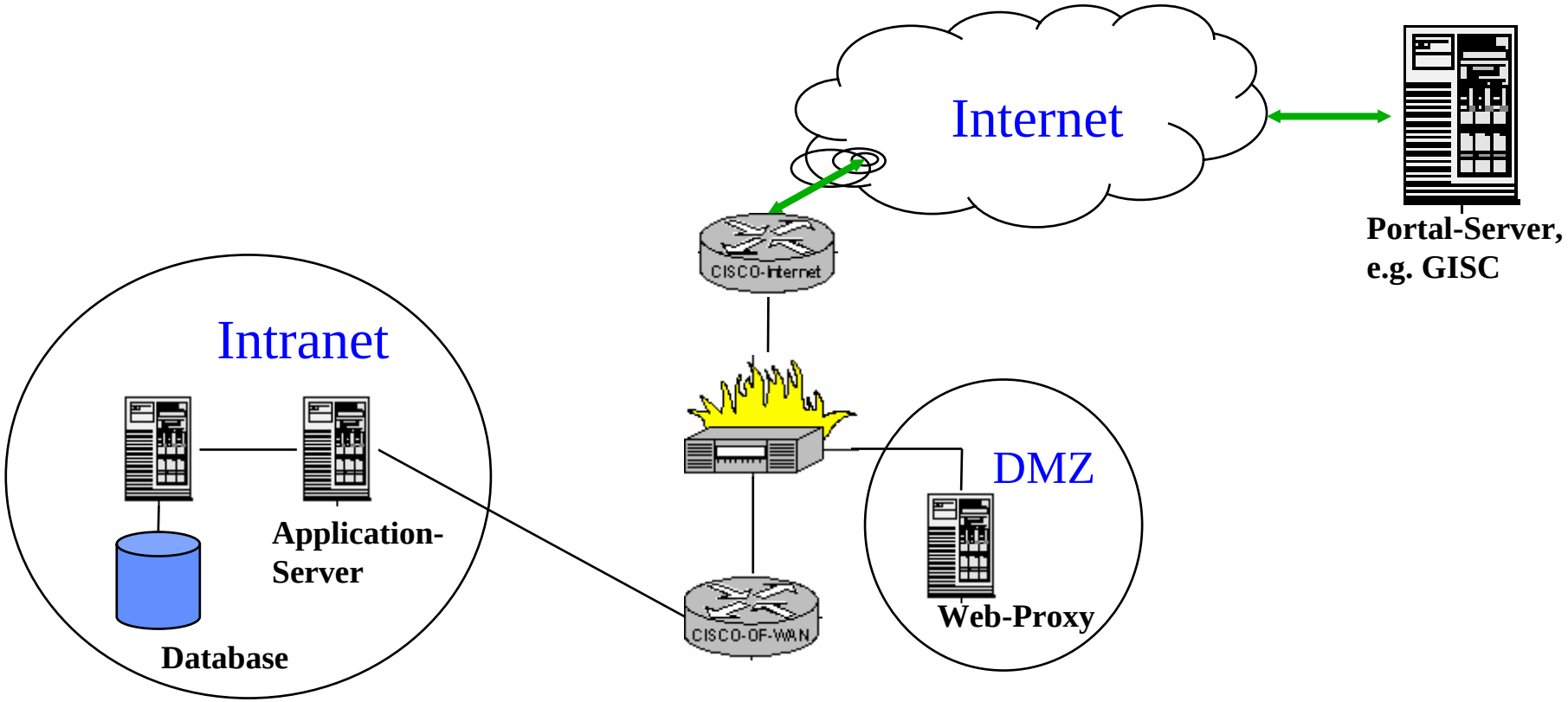
A data provider decides :

- from which machines data requests are accepted
- which users will be authorised
- which data sets are offered for download

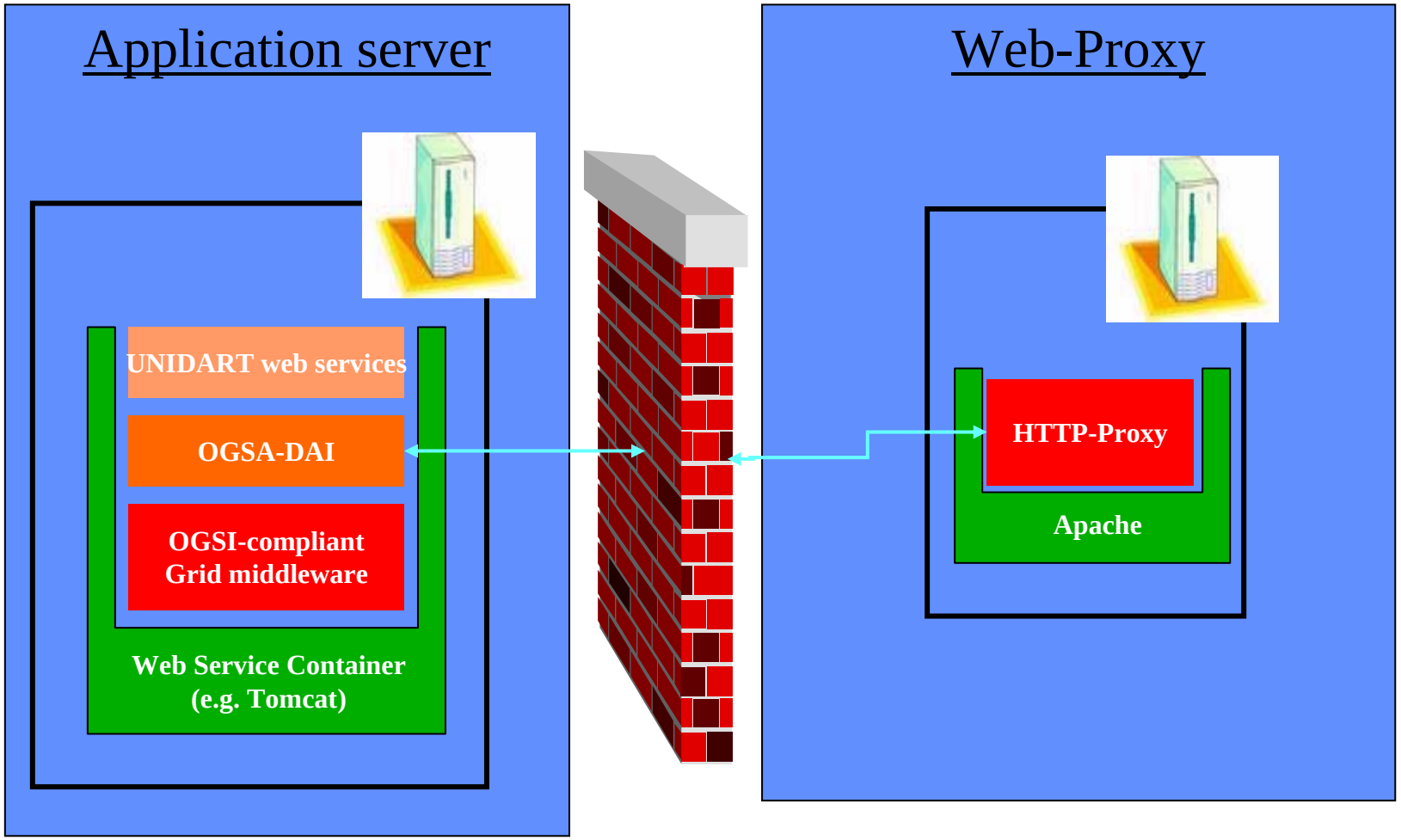


The access to data is controlled by the provider !

Architecture

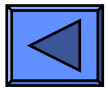


Application Server



Mapping certificates to database users

```
<?xml version="1.0" encoding="UTF-8"?>
<DatabaseRoles>

   <Database name="jdbc:oracle:thin:@oraserver.dwd.de:1521:DBASE1">
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=DWD"
                userid = "unidart_dwd" password = "******" />
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=FMI"
                userid = "unidart_fmi" password = "******" />
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=KNMI"
                userid = "unidart_knmi" password = "******" />
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=met.no"
                userid = "unidart_met.no" password = "******" />
   </Database>

   <Database name="jdbc:oracle:thin:@oraserver.dwd.de:1521:DBASE2">
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=DWD"
                userid = "unidart_dwd" password = "******" />
      <User dn = "/O=Deutscher Wetterdienst/OU=UNIDART/OU=simpleCA-oflsd17.dwd.de/OU=dwd.de/CN=FMI"
                userid = "unidart_fmi" password = "******" />
   </Database>

</DatabaseRoles>
```



Advantages for a data provider

- provide data together with other data centres increases satisfaction of users
- UNIDART can be used for the implementation of WIS
- connect to other data grids / applications
- participate on the built-up of a service-oriented architecture amongst meteorological centres

Currently there are three UNIDART applications for climate time series and forecasts:

VGISC-Prototype (RA VI) – Weather Data Request Broker at http://vgisc-2.dwd.de/vgisc/

SIMDAT at
http://simdat-cn.ecmwf.int:8080/meteo-portal2/home

WebWerdis at
http://werdis-cbs.dwd.de/bvbw/bvbwDWD.portal

Future of UNIDART:

o UNIDART-II project ends Dec. 31, 2006

o Continuation within EUMETNET: only if the majority of EUMETNET members decide to use the developed web services

o Alternative: Consortium of data providers decide to use and to develop the UNIDART-SW

o WS on the future of UNIDART is planned in February 2007 in Langen, Germnay

o UNIDART-SW as data infrastructure for BALTEX observational data?

o If yes, clear vote before Feb. 2007 is requested

Thank you !

Questions ?