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Abteilung Systeme und Betrieb



The Current Status of the EUMETNET Programme UNIDART

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The main goal

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**



What has been done in phase I?

- Workshop at DWD in January 2002
 - presentations on relevant topics
 - discussion about the requirements
- Preparation of a feasibility study
 - explores the metadata aspects
 - proposes a general system architecture
- two reviews of the study
 - proposes to consider the grid technology
 - study is not a technical specification; needs a refinement



Tasks of project phase II

- to prepare the detailed definition of the prototype, taking into account the possibility to use already existing solutions
- to fulfil the requirements set by ECSN for access to climatological data
- to fulfil the requirements set by WMO-CBS for the development of the Future WMO Information System (especially concerning a WMO metadata standard)
- to implement the prototype
- to evaluate and test the prototype



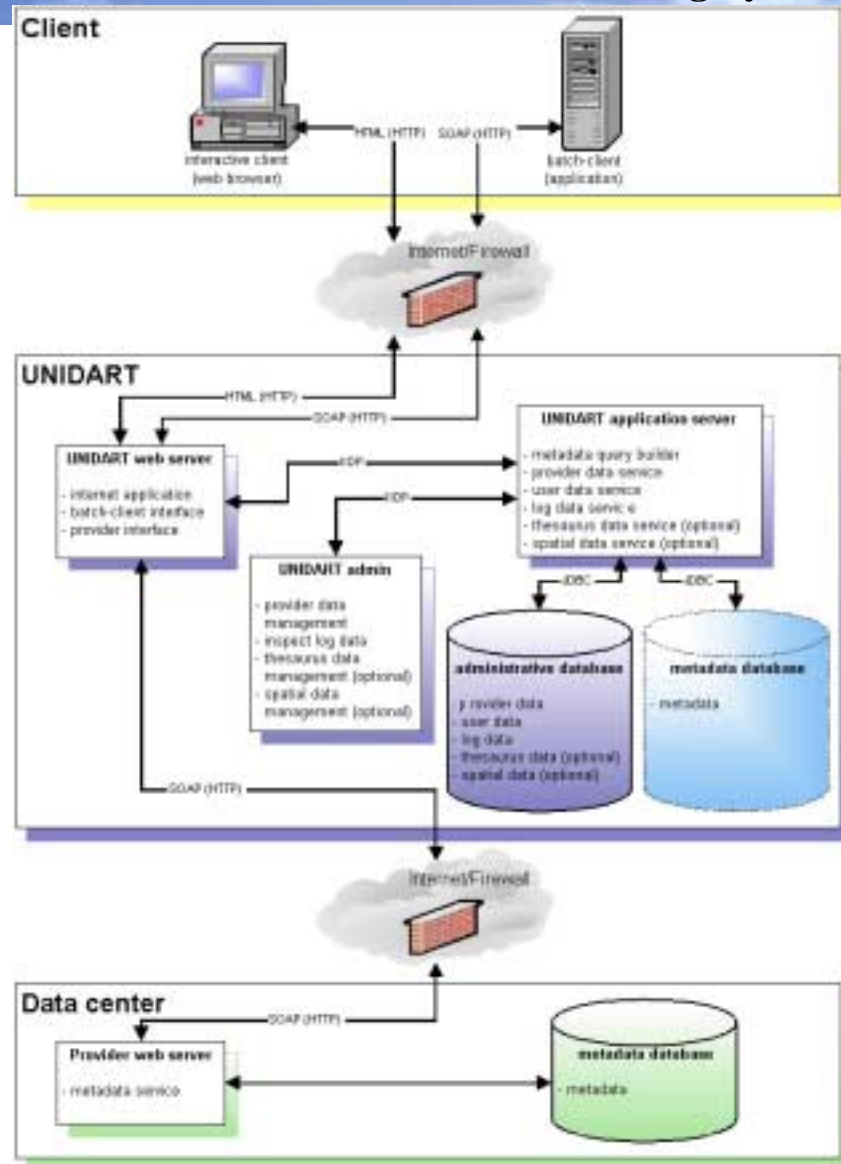
Partners in phase II

- Finland (FMI)
- Germany (DWD)
- Netherlands (KNMI)
- Norway (DNMI)
- Switzerland (Meteo Schweiz)
- United Kingdom (UKMO)



UNIDART system functionality

- search for data and products through metadata (**Data Discovery**);
- selection and download of data (**Data Selection**)
- browse and display of metadata for humans
- registration of new products and users



General architecture



A Data Grid

Introduction to Grid Computing with Globus, IBM redbook:

Data grids focus on providing secure access to **distributed, heterogeneous** pools of data. Through collaboration, data grids can also include a new concept such as a federated database. Within a federated database a data grid makes a group of databases available that **function as a single virtual database.**

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.

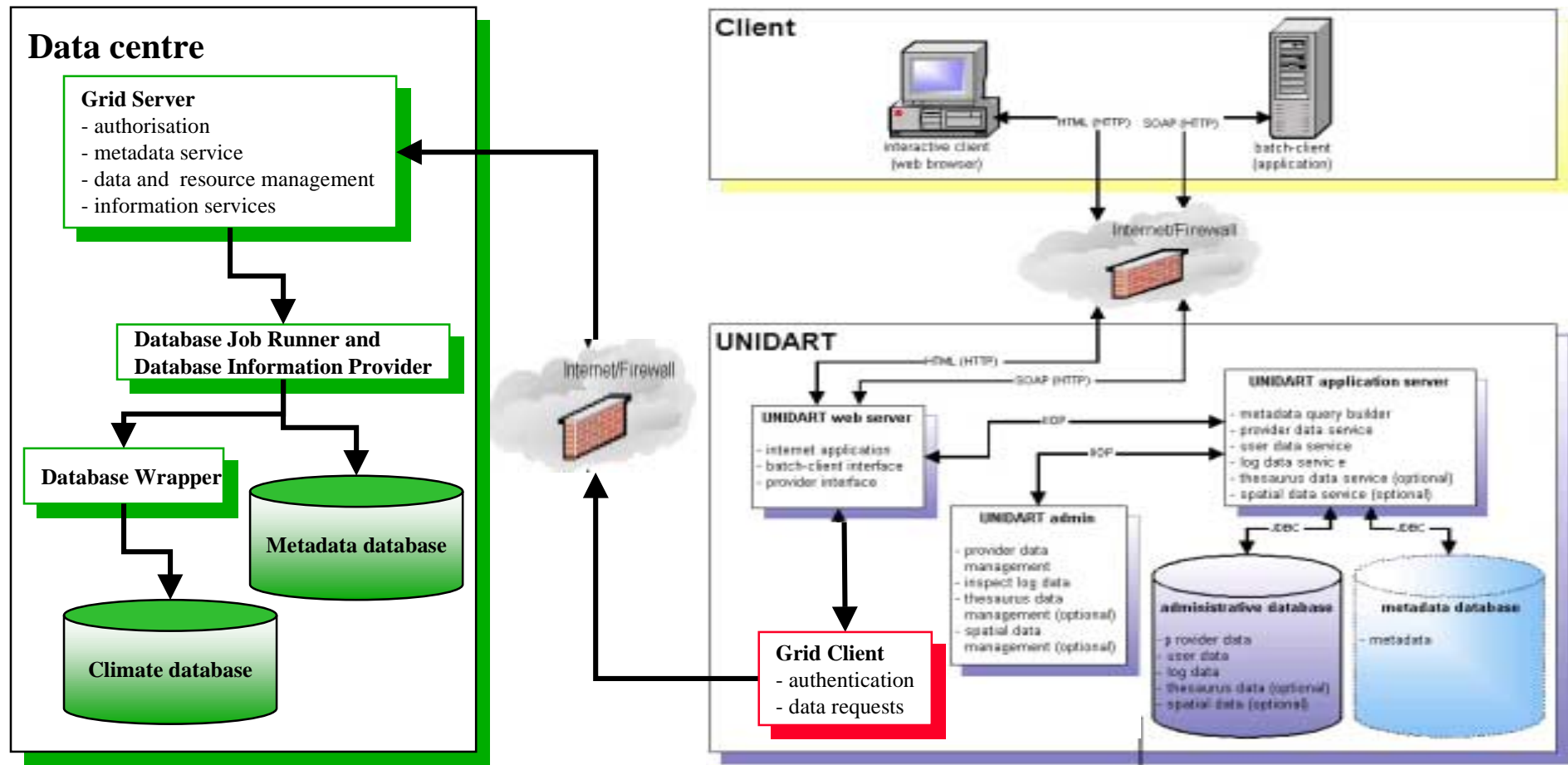


Why Grid Technology ?

- existing tools for authentication, authorisation, and encryption
- existing tools for monitoring resources and system availability
- allows submission of arbitrary jobs
- time for job execution can be limited
- existing standard with OGSA (**Open Grid Service Architecture**)
- will be pushed by several big companies, e.g. IBM and Oracle
- may be used also in other projects (similar to database servers)

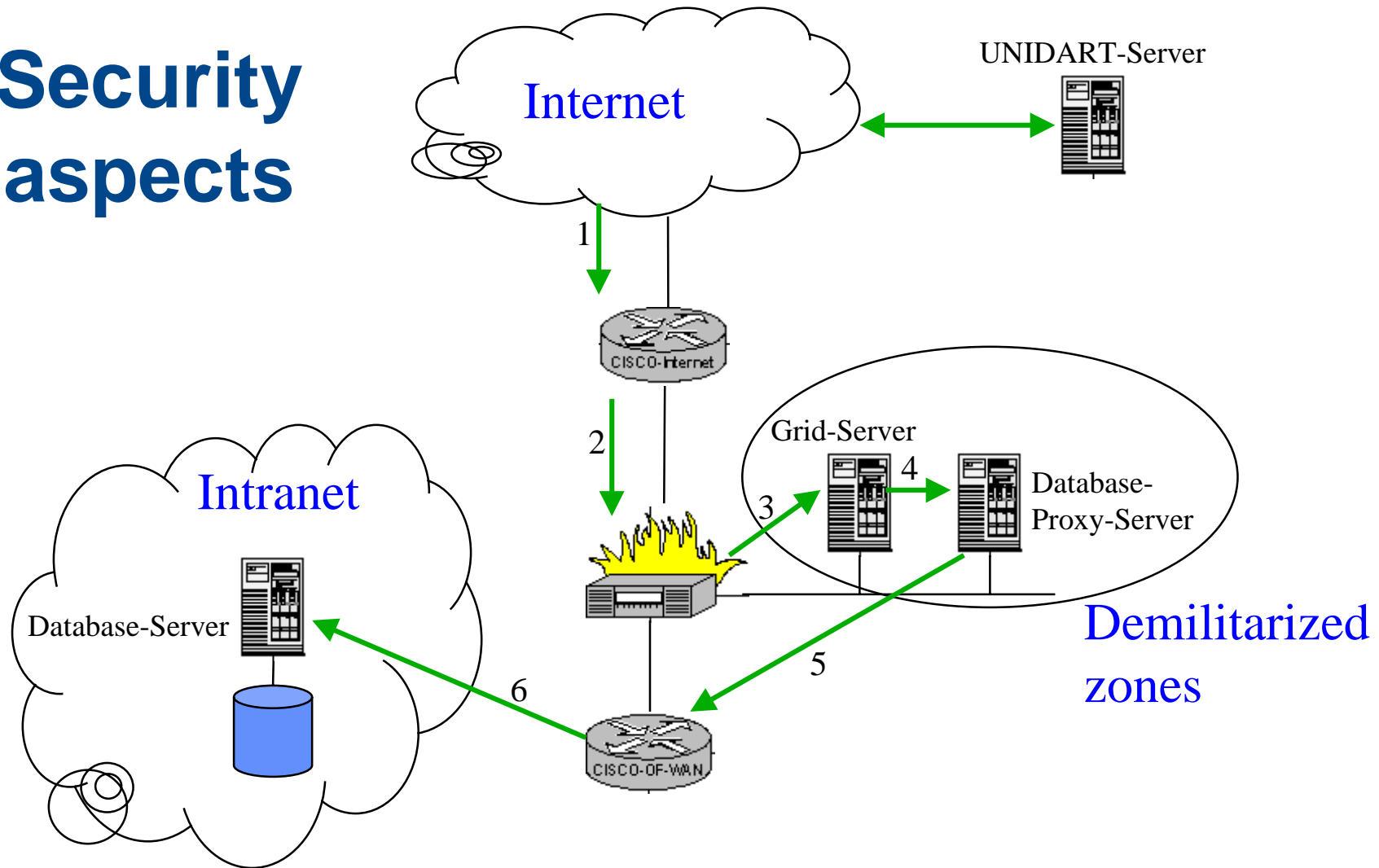


Revised system architecture





Security aspects



Data selection procedure (1)

product category



products



product instances




Data selection procedure (2)

The screenshot shows a web browser window with the address bar displaying 'http://ofisd01/'. The page features the UniDaRT logo (a rainbow over the text 'UniDaRT') and the tagline 'A Grid-Portal for the access to meteorological data and products'. A navigation menu on the left lists various options such as 'Introduction', 'Login', 'Logout', 'Check Login State', 'Product categories' (with sub-items 'Climate time series' and 'Forecasts'), 'Run Job', 'Job Management', 'File Transfer Options', 'Request for registration', 'Description', 'FAQs', and 'Contact'. The main content area contains several form fields: 'Data centre' (a dropdown menu with options like 'German weather service', 'Finnish Meteorological Institute', 'Netherlands Meteorological Institute', 'UK met office', and 'Swiss weather service'), 'Element category' (a dropdown menu set to 'All'), 'Time range' (with 'from' and 'to' input boxes), and 'Demand interval' (a dropdown menu). Below these is the 'Station Selection' section, which includes a 'Station name pattern' input box and a 'Geographic bounding box' section with a central compass rose and four surrounding input boxes for latitude and longitude coordinates. At the bottom of the form are 'Select time series' and 'Reset' buttons. The browser's status bar at the bottom shows 'Fertig' and 'Lokales Intranet'.



Data selection procedure (3)

Adresse <http://ofld01/>



UniDaRT

A Grid-Portal for the access to meteorological data and products

- [Introduction](#)
- [Login](#)
- [Logout](#)
- [Check Login State](#)
- Product categories
 - [Climate time series](#)
 - [Forecasts](#)
- [Run Job](#)
- [Job Management](#)
- [File Transfer Options](#)
- [Request for registration](#)
- [Description](#)
- [FAQs](#)
- [Contact](#)

	Station name	Station Id	Element name	time interval	start date	end date	from	until
<input checked="" type="checkbox"/>	Angermunde	164	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input type="checkbox"/>	Arkona	183	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input checked="" type="checkbox"/>	Artern	198	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input type="checkbox"/>	Aue	222	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input type="checkbox"/>	ALBORG	50000126	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input type="checkbox"/>	ANDOYA	50001876	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
<input type="checkbox"/>	ARJEPLOG	50001936	Lufttemperatur in 2m Hohe	Termin	01-JAN-01	24-NOV-03	<input type="text" value="01-JAN-01"/>	<input type="text" value="24-NOV-03"/>
			Lufttemperatur		31-	24-		



Prerequisites for a data provider

- Intel Pentium machine with at least 1 GHz clock speed, 512 MB main memory and 8 GB hard drives
- Linux Operating System (Red Hat or SuSE)
- grid software compliant to the OGSA standard, e.g. Globus or UNICORE
- Oracle client software
- man power
 - to set-up the data grid environment
 - to write programs for product instance generation
 - to maintain metadata and data sources



Summary

- Grid technology provides a very flexible interface to remote data and applications
- Security is one core feature of Grid technology. It is realised by services for authentication, authorisation and encryption.
- UNIDART will become a Grid portal.
- The main UNIDART functions are data discovery and data selection
- There are a lot of open questions