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PAUL SCHERRER INSTITUT

PSI

Umbrella AAI for Photon / Neutron Community

Björn Abt

EuroFEL FREE ELECTRON LASERS OF EUROPE

CRISP The Cluster of Research Infrastructures for Synergies in Physics

pandata Photon and Neutron Data Infrastructure

calipso way for light

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Umbrella is the revolutionary Authentication and Authorisation Infrastructure (AAI) concept for the Photon and Neutron community

It is the first time that such a kind of IT environment is offered

- European wide
- Community overlapping
- Shared between different EU projects

Umbrella is part of several FP7 projects:

- EuroFEL- ESFRI project Free Electron Lasers of Europe
- PaNData-Europe, PaNData ODI- FP7 projects
- CRISP – Cluster project of different ESFRI projects
- CALIPSO – renewal of I3 ELISA FP7
- NMI3 - I3 neutron community

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PaNdata Partners

- Alba, Spanish National Sychrotron Facility
- Diamond UK Synchrotron facility
- European Synchrotron Radiation Facility (ESRF)
- Elettra Sinchrotrone Trieste
- Deutsches Elektronen Synchrotron (DESY)
- Institut Laue–Langevin (ILL)
- Max IV Laboratory Lund
- ISIS STFC Neutron source
- HZB, Helmholtz Zentrum Berlin
- Paul Scherrer Institut (PSI), hosting SINQ and SLS
- Soleil, French National Synchrotron Facility

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CRISP IT Partners

- European Synchrotron Radiation Facility (ESRF)
- Deutsches Elektronen Synchrotron (DESY)
- European Organisation for Nuclear Research (CERN)
- European Spallation Source (ESS)
- GSI Helmholtz Centre for Heavy Ion Research (GSI)
- Institut Laue–Langevin (ILL)
- European X-ray Free Electron Laser (XFEL)
- Paul Scherrer Institut (PSI)

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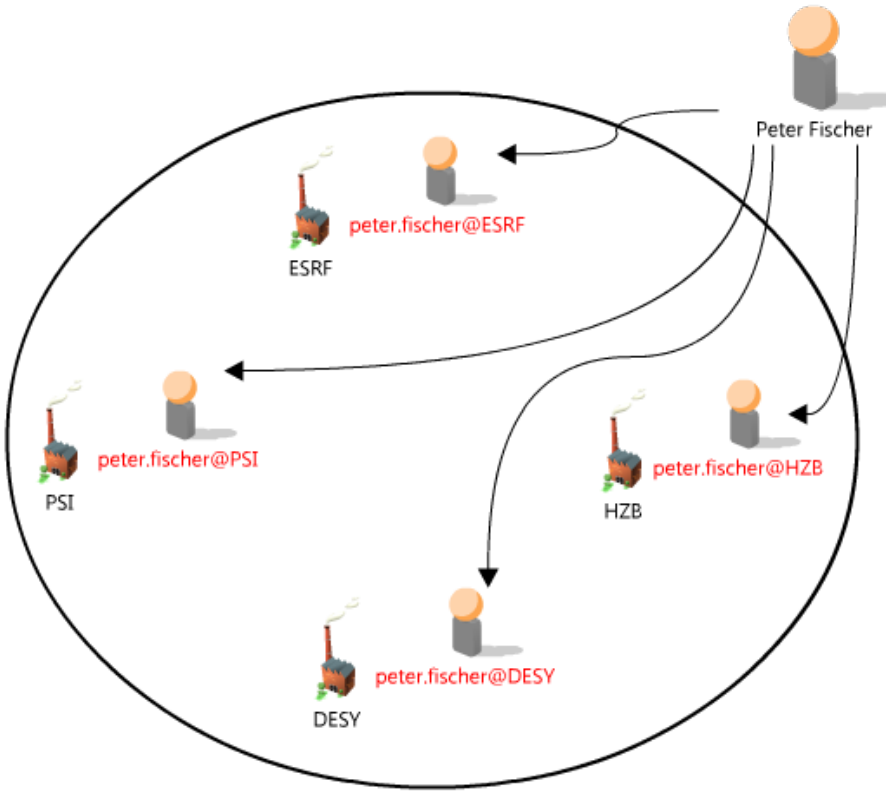
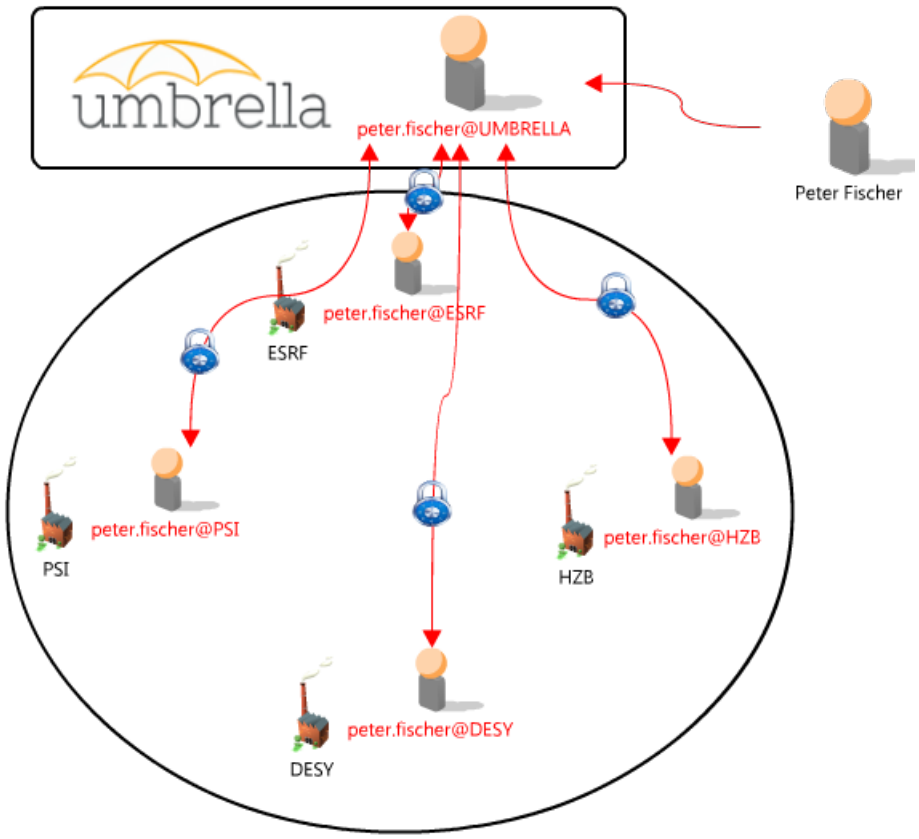
Current Situation



- Peter Fischer has 4 different accounts at photon and neutron research facilities.
- He has to remember 4 different username and password combinations.
- Probably 4 different tools for data access.

The Umbrella Concept



1. Peter Fischer creates an Umbrella account.

1. Connection of the Umbrella account with the 4 existing accounts at other research facilities by login in to the application.

1. From now on only Umbrella username and password necessary to get access to all his existing accounts.

1. The existing accounts are now permanently linked with each other.

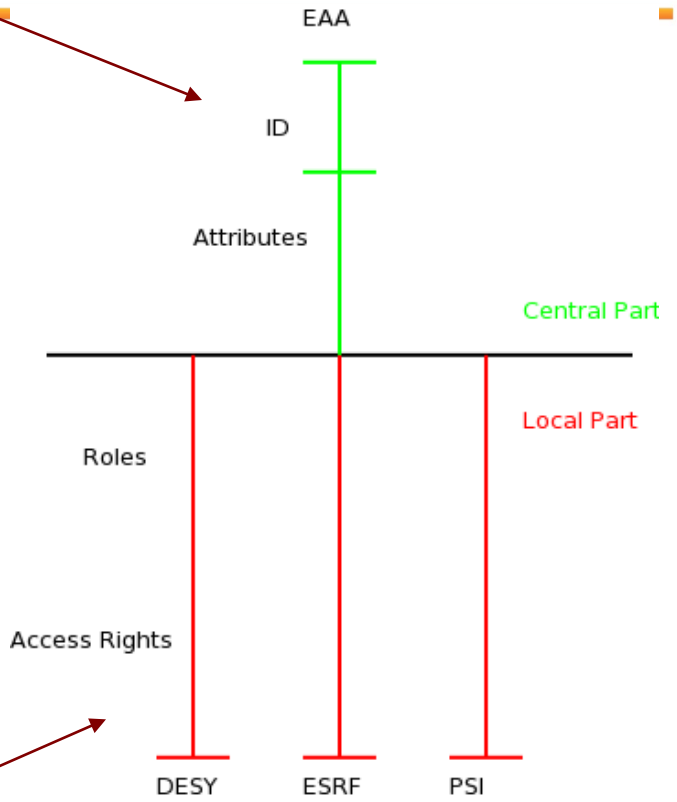
1. The link can be removed if e.g. an account ceases to exist.

1. This link acts as a common basis for tools which can exploit synergies between facilities, e.g. standardized tools for data access to facilities.

Hybrid Aspect

The idea is to split information in two parts:

- A central part at the EAA containing authentication-relevant information
- Local parts at the facilities containing in-depth information about roles and access levels for the specific facility

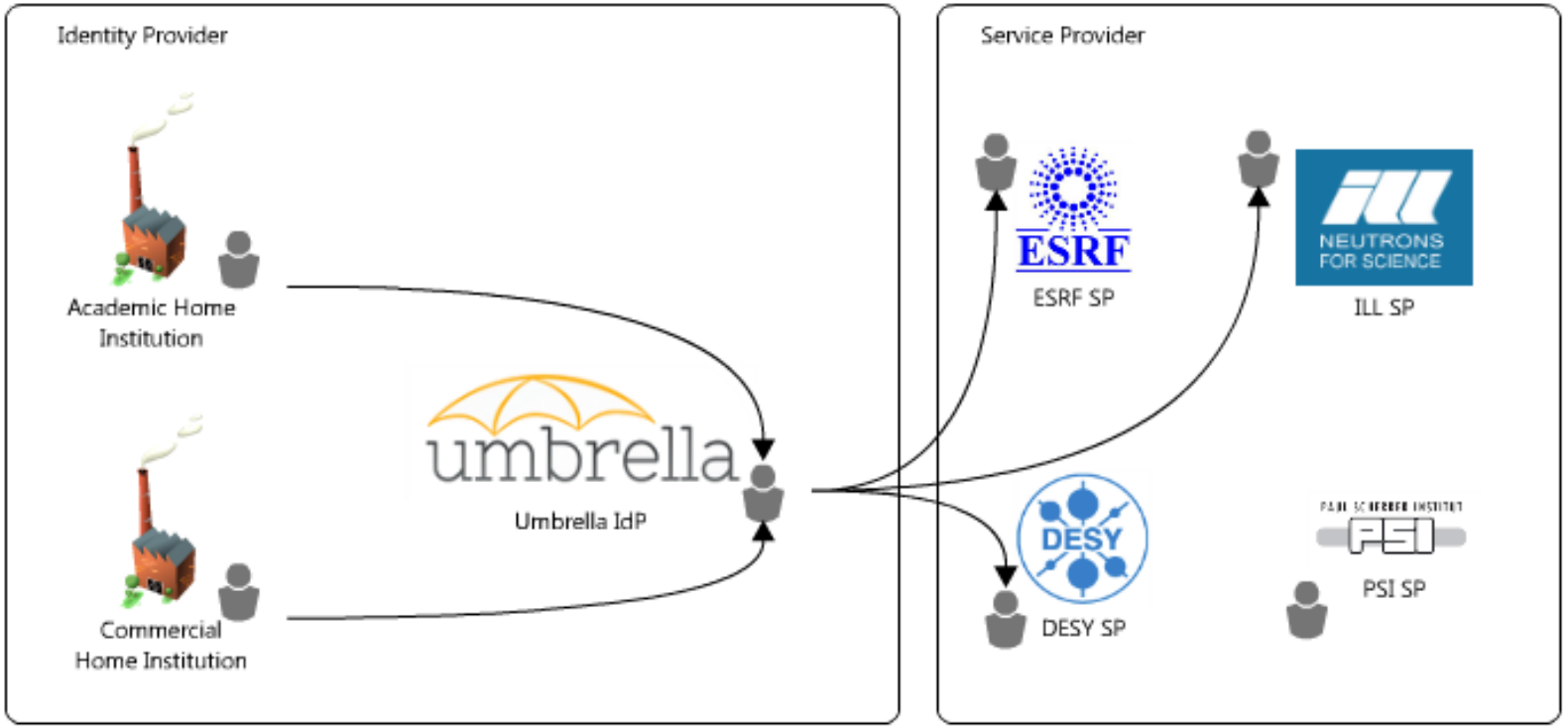


Non Invasive

- What means non-invasive by the Umbrella?
  - Use existing processes at facilities
  - Do not replace existing software
  - Enrich existing software with functionality
  - Use existing user accounts but link them to a central account
- Why is it important?
  - Leave existing facility-specific solutions
  - Allows facilities to stay autonomous
  - Limit integration needs at facilities
  - Facilitate overall acceptance by facility staff

Umbrella Characteristics

Overview



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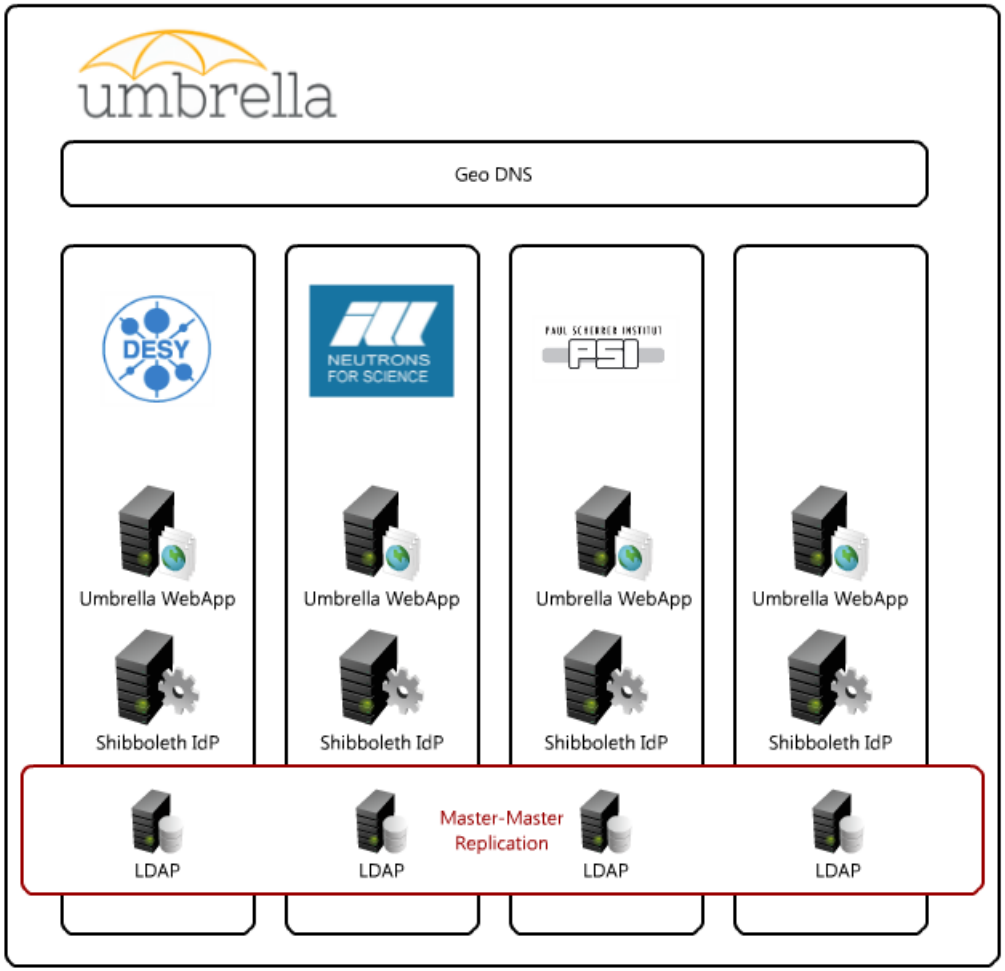
Umbrella Characteristics

Identity Provider



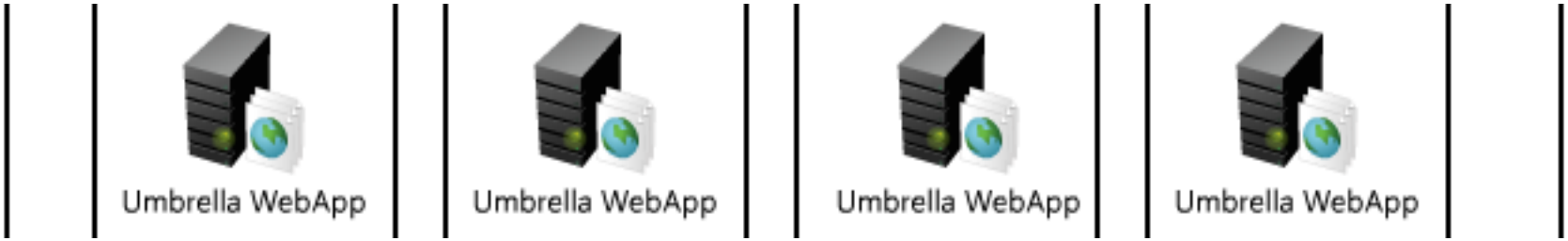
Master-Master Replication

- **Master-Master Replication of LDAP user information**
- **First tests with ILL and DESY positive**
- **This is the only level in the Umbrella IdP stack which needs synchronisation**

Shibboleth IdP

- **Independend Shibboleth IdP installations**
- **Needs a ServletContainer (e.g. Apache Tomcat) to run**
- **Only separated by Geo DNS**

Umbrella WebApp

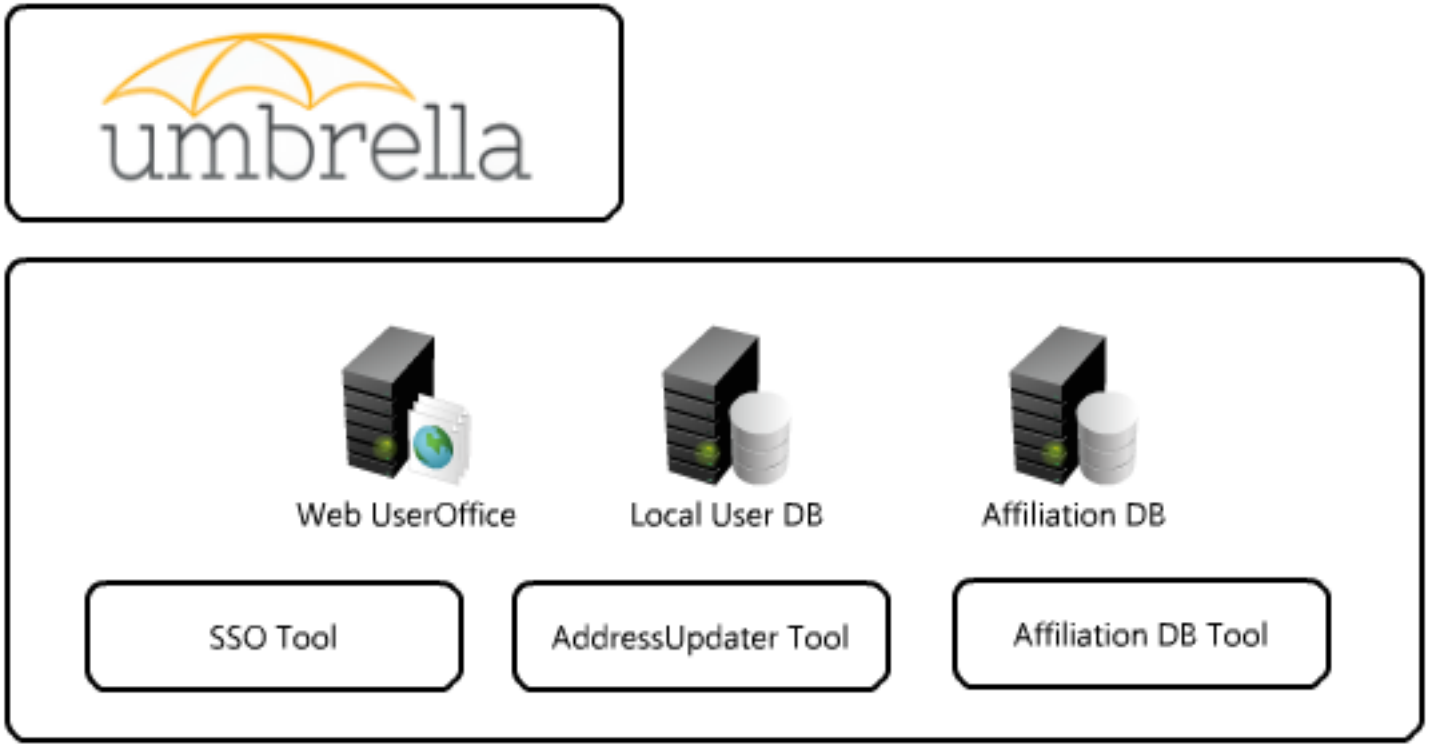


- **Independend Umbrella WebApp installations**
- **Needs a ServletContainer (e.g. Apache Tomcat) to run**
- **Only separated by Geo DNS**

Geo DNS

- **Central Geo DNS provider**
- **Best Solution still to be evaluated (e.g. http://www.geoscaling.com/competitors.html)**
- **Distributes requests to the Umbrella by IP address of a client**

Service Provider



Service Provider – SSO Tool

- **SAML2 SP**
- **Connects the local User Office with Umbrella**
- **Enables Single Sign-On between all participating facilities**
- **Account Linking process implemented**

Web UserOffice

SSO Tool

Service Provider – Address Updater

- **User initiated address delegation to all participating services**
- **Only sends information to facilities where the user is known**
- **Uses Challenge Response mechanism to ensure confidentiality**

Local User DB

AddressUpdater Tool

Service Provider – Affiliation DB

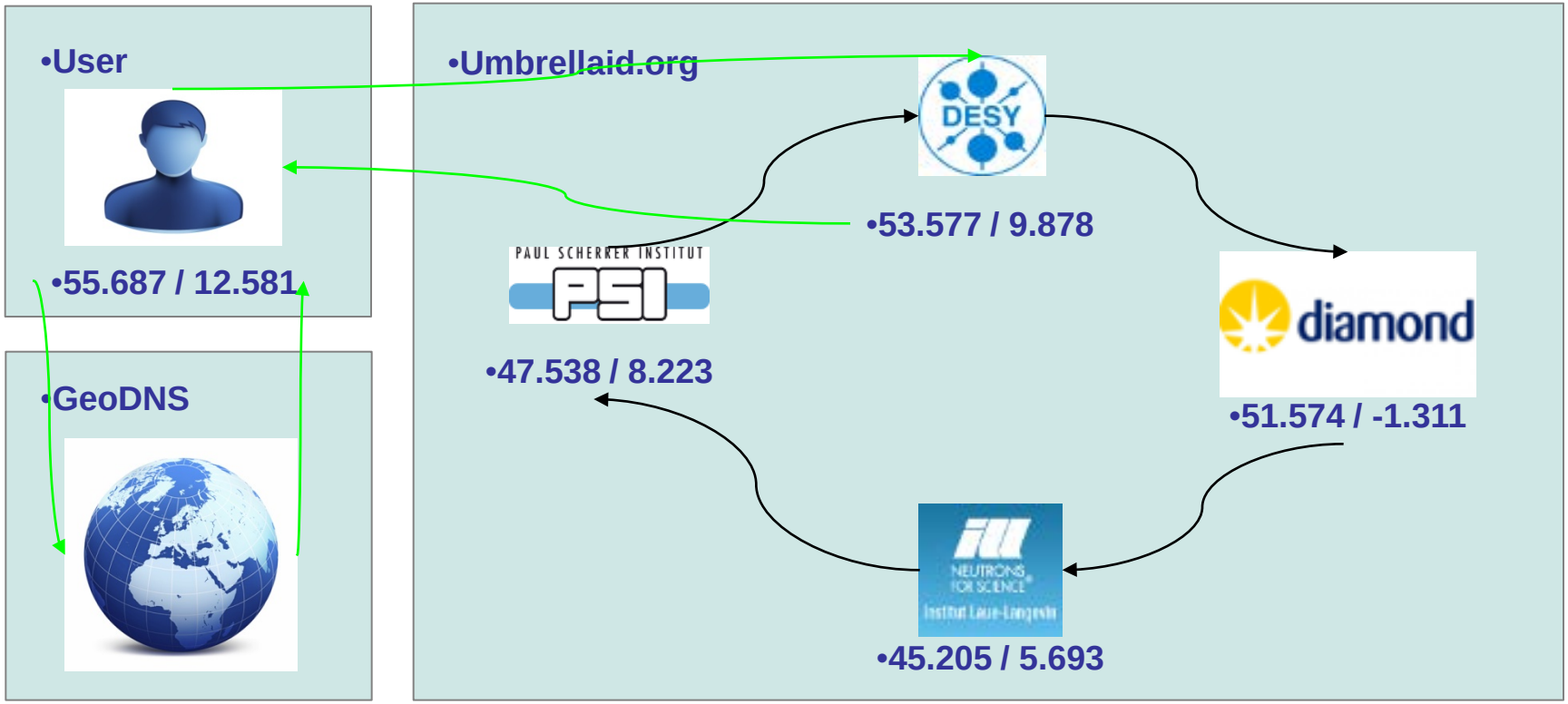
- **EU-wide approach to harmonize all Affiliation Databases at all P/N facilities**
- **Hybrid setup with local and central entries at each database which are linked together**

Affiliation DB

Affiliation DB Tool

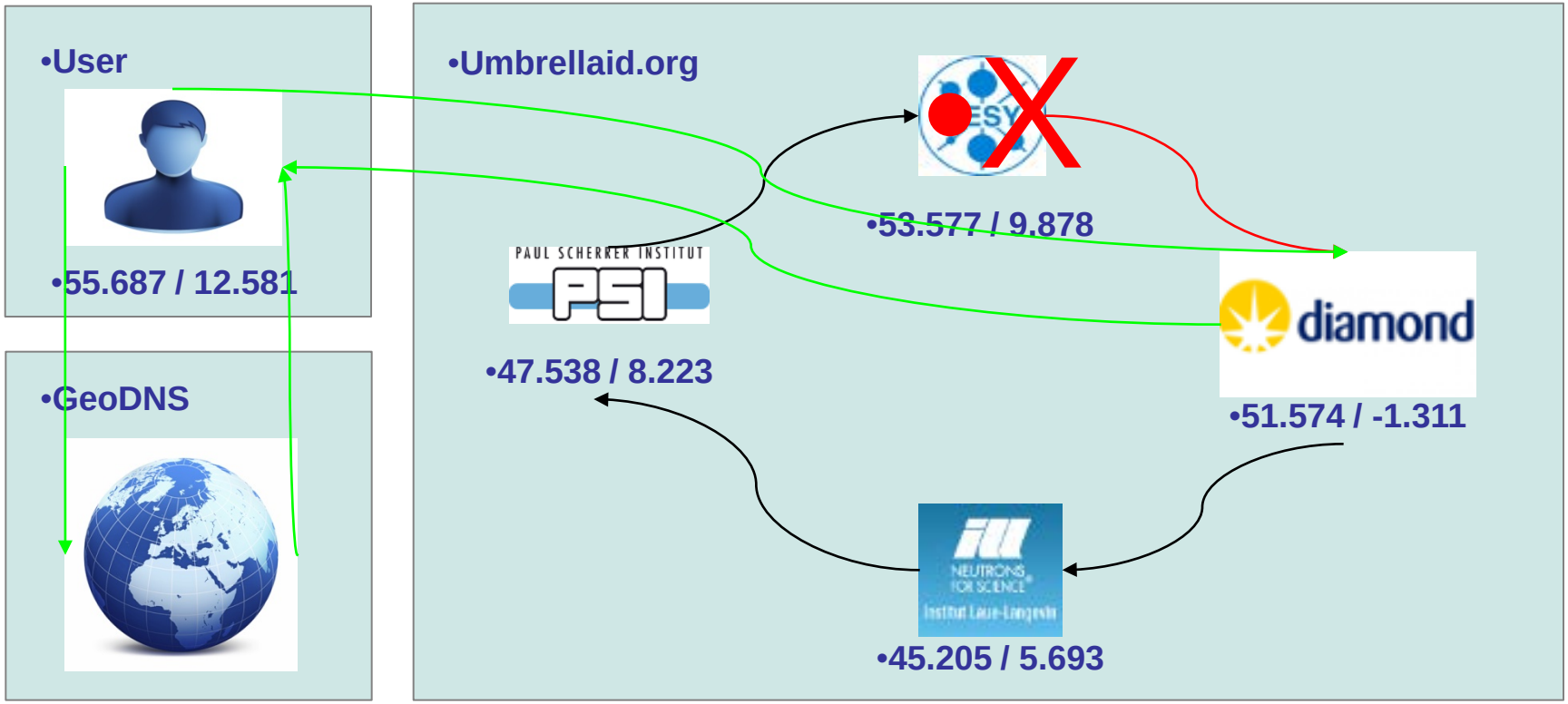
Umbrella Characteristics

Clustering / Load Balancing with coordinate triangulation:



Umbrella Characteristics

Clustering / High Availability with Failover Ring:



Status Umbrella

With Umbrella we try to use synergies on EU level:

- **Using synergies between these different EU projects.**
- **Not invent the wheel twice.**
- **Harmonisation meetings every 6 months (partners of all the projects)**
- **We take part in Federated Identity Meetings (different communities) every 6 months. PSI is speaker for Photon / Neutron Community.**
- **Live Implementation of Umbrella in progress since spring 2013**
- **Other communities are interested in Umbrella**
- **Umbrella cited in TERENA AAI paper**

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Thank you for your attention!