



# ***Umbrella Meeting ESRF***

# TOC

- ☐ ***Scope and goal of the meeting***
- ☐ *What are the IT requests?*
- ☐ *Umbrella as answer*
- ☐ *Hybrid concept*
- ☐ *Bridging*
- ☐ *Umbrella implementation / deployment*
- ☐ *Operation*
- ☐ *Collaborative work*

# Scope and goal of this meeting

- ❑ ***Umbrella in a nutshell***
  - ❖ What is it? For what do we need that?
  - ❖ How does it work (demos)
- ❑ ***Affiliation database***
  - ❖ Again, what is it? For what do we need that?
  - ❖ Demo
- ❑ ***How do we run all that?***

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# What are the IT requests? I

## ❑ **Huge datasets**

- ❖ Novel 2D detectors, quantum leap in data quality, but also data volumes
- ❖ Multi-image techniques (tomography, lens-less imaging)
- ❖ Molecular movies at FELs
- ❖ 'Petabyte' 'normal' unity; time over for 'hard-disk in the trouser pocket'
- ❖ Many talk about *storing* data, but must also to talk about *handling*, need for new strategies -> improve evaluation efficiency

## ❑ **Online, On-the-fly data analysis**

- ❖ Are the experimental parameters right?
  - React on-line
- ❖ Filtering?

## ❑ **Remote, non-local data access**

- ❖ Allow for data analysis from home but remotely at analysis center (facility)
- ❖ Combine datasets taken at different facilities [Umbrella + ICAT?]
- ❖ Combine different data types (raw, derived, published): data continuum
- ❖ Clouds (commercial, community-centered)
- ❖ Attract experts to centers (facilities not only service institutions!)

# What are the IT requests? II

- ❑ ***Trans-facility experiments***
  - ❖ 40%+ users at more than one facility
  - ❖ Increase science, reduce admin
    - Standardize proposal procedures on EU scale
    - Standardize metadata
- ❑ ***Remote experiment access***
  - ❖ Basic: passive online access to measured data
  - ❖ Advanced: active control [Umbrella + Moonshot?]
- ❑ ***PR Issues***
  - ❖ Improve corporate identity
  - ❖ Improve public lobbying (e.g. Verband der Automobilindustrie, Wissmann)

## What are the IT requests? III

- ❑ ***All that calls for non-local access***
  - ❖ - to facilities
  - ❖ - to services
  - ❖ - to data
  - ❖ - to experiments
  - ❖ - to analysis
  
- ❑ ***That requires an international identity***
  - ❖ Unique
  - ❖ Persistent
  - ❖ User-friendly, slim management

## What are the IT requests? IV specifically: user-office view

- ❑ ***Common requirements at facilities***
  - ❖ Very similar structure → very similar requirements
  - ❖ Cooperate, exploit synergies
- ❑ ***Facilities in competition***
  - ❖ Exploit synergies but
  - ❖ Each facility controls what is shared
- ❑ ***Facilities in full operation, no green-grass situation***
  - ❖ Impossible to introduce a day-0 (like change from left-hand to right-hand traffic)
  - ❖ Need for parallel operation



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# Umbrella as answer I

## □ **Concept**

- ❖ Unique user identification on EU (trans-facility) scale
- ❖ Only one (1) identity provider
- ❖ Hybrid information storage:
  - Authentication (minimal info): central Umbrella
  - Authorization (complete info): WUOs (local user offices)
    - (Lufthansa <-> Swiss)
- ❖ No sub-surface cross-facility information exchange
- ❖ Waterproof but slim data protection system

## □ **Base system on professional authentication standard**

- ❖ Shibboleth, federated Single-Sign-On System (SAML), widely used
- ❖ Specific photon / neutron user federation
- ❖ Supervising by local User Offices

## Umbrella as answer II

- ❑ ***Incorporate confidentiality aspects***
  - ❖ High competition, especially in structural biology
  - ❖ Allow for time-window structured access to experiments and data
  
- ❑ ***Rely on existing local user office structure***
  - ❖ Great experience
  - ❖ DIY (Do It Yourself) operation
    - Users: manage their personal entries
    - User offices: supervising; manage authorizations
    - Possibility for verification feedback

## Umbrella as answer III

- ❑ ***Affiliation database***
  - ❖ Common tool for Umbrella partners
  - ❖ Advantage & support for facilities
  - ❖ Advantage & support for users
  - ❖ -> Presentation Dominique Porte, Julien Savoyet, ESRF

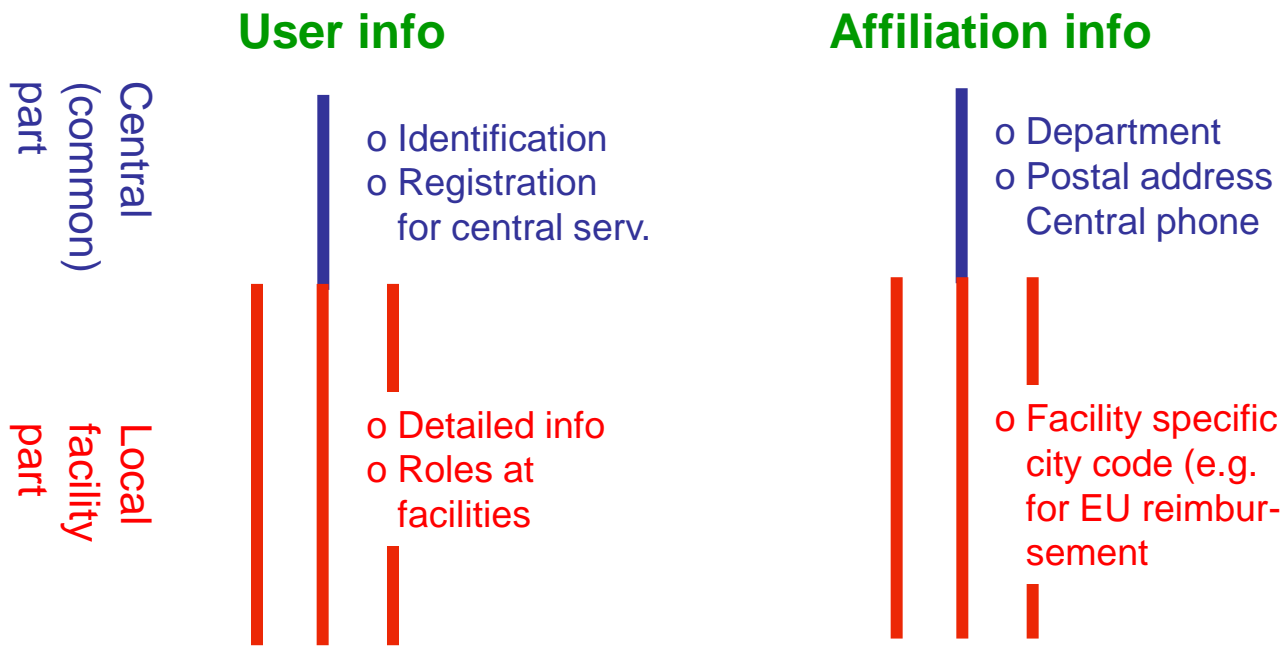
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## Hybrid concept (central and federated)

Answer to conflicting requests:

- Efficient technology
- Confidentiality
- Consequent distinction of authentication and authorisation:
  - Authentication: Umbrella
  - Authorization: WUOs (local user offices)



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# Bridging

- ❑ ***We are not on an island***
  - ❖ Many other identity systems
    - Academic (eduGAIN, ORCID, ...), more will come
    - Commercial (Facebook, Amazon, eBook portals, banking, ...) more ...
    - Cloud systems
- ❑ ***Why start always from scratch?***
  - ❖ Always enter same credentials
- ❑ ***Answer is 'bridging'***
  - ❖ Presentation from Bjoern



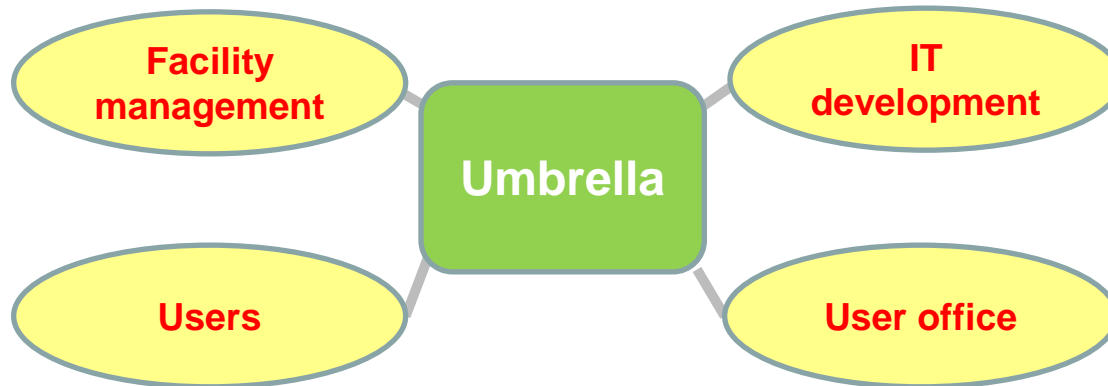
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# Umbrella implementation / deployment

## ❑ *Highly delicate*

- ❖ Affecting management of 30'000+ visiting scientists
- ❖ Touching holy grails of facilities -> only one (1) chance, like opening a new restaurant



## ❑ *Good old salami tactics:*

- ❖ small, overseeable steps
- ❖ Keep everybody in the boat

## ❑ *4 Phases*

- ❖ Open the gate gradually
- ❖ Keep option to go back

# Umbrella Implementation / Deployment

## □ **Phase 0: implementation of Umbrella-ready versions**

- Changes to existing WUO are
  - Trans facility Umbrella user ID, Umbrella -WUO handshakes
  - Harmonized local user db format
  - Umbrella username / password conventions

## □ **Phase I: Local experts**

- IT people involved, local user office staff
  - Goal is to verify the new procedures.

## □ **Phase II: Open to selected friendly users**

- Tell them that this is the 2<sup>nd</sup> phase of deployment. Tell them about what is to come (should include also estimates for harmonized proposal handling and ICAT)
- Ask them for their feedback
- Incorporate feedback

## □ **Phase III: Open to all users**

- Final phase

# Implementation teams

- ❑ **Project structure**
  - ❖ **Management team**
    - Priorities, MoU, facility coordination
  - ❖ **Technical team**
    - Specific technical questions
- ❑ **Holy document** *Legal / administrative issues*
  - Umbrella physical topology
  - Central user database
  - Local user database
  - Affiliation database
  - Security issues
  - User support
  - Procedure for handling further developments
  - Umbrella production version
  - Implementation steps
  - Operational issues
  - MoU

# Umbrella Implementation Teams

<i>Facility</i>	<i>Project</i>	<i>Management</i>	<i>Technical</i>
<i>Alba</i>	<i>P</i>	<i>D. Salvat*)</i>	<i>D. Salvat*)</i>
<i>DESY</i>	<i>P+C</i>	<i>F. Schluenzen</i>	<i>J.P. Kurz, U. Lindemann</i>
<i>DIAMOND</i>	<i>P</i>	<i>B. Pulford</i>	<i>S.Paetow</i>
<i>Elettra</i>	<i>P</i>	<i>C. Blasetti, O. Degiacomo</i>	<i>F. Bille</i>
<i>EMBL HH&amp; Biostruct X</i>		<i>J. Schmidt</i>	<i>J. Schmidt</i>
<i>ESRF</i>	<i>P+C</i>	<i>D. Porte</i>	<i>S. Schulze</i>
<i>European XFEL</i>	<i>C</i>	<i>K. Wrona</i>	<i>K. Wrona</i>
<i>FMI</i>		<i>D. Flanders</i>	<i>R. Schmidt</i>
<i>GSI</i>	<i>C</i>	<i>K. Schwarz</i>	<i>A. Montiel Gonzales</i>
<i>HZB</i>	<i>P</i>	<i>Th. Gutberlet</i>	<i>A. Tomiak</i>
<i>ILL</i>	<i>P</i>	<i>J.-F. Perrin</i>	<i>F. Festivi</i>
<i>ISIS &amp; STFC</i>	<i>P</i>	<i>T. Griffin</i>	<i>A. Wilson</i>
<i>PSI</i>	<i>P+C</i>	<i>S. Janssen</i>	<i>M. Knecht</i>
<i>Umbrella team</i>	<i>P+C</i>	<i>B. Abt, M. Van Daalen H.J. Weyer</i>	<i>B. Abt (lead) M. Van Daalen H.J. Weyer</i>

# Development strategy (salami)

- ❑ **Be conservative**
  - ❖ Step by step
- ❑ **Step 0**
  - ❖ Deploy basic Umbrella
  - ❖ Only access to local user-office system
  - ❖ Local accounts untouched
- ❑ **Next steps**
  - ❖ ICAT (towards remote data access)
  - ❖ Moonshot (towards remote experiment access)
  - ❖ Other tools
    - E.g. common access to Indico, but fully driven by demand

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# From prototype to operation

- ❑ ***IT graveyards full of brilliant prototypes***
  - ❖ Step from prototype to operation underestimated
  
- ❑ ***We want an operating tool which***
  - ❖ works in real life
  - ❖ saves (!) resources
  - ❖ Increases user-friendliness
  
- ❑ ***Umbrella is a loosely-coupled system with many key-players***
  - ❖ Only weak, indirect feedback on the performance



# Operation

- ❑ ***Also before many international projects***
  - ❖ Accelerator components
  - ❖ IT
  - ❖ But with a well-defined environment
  
- ❑ ***This now is something new***
  - ❖ Development
  - ❖ But the main issue is operation
  - ❖ Loosely-coupled elements, only weak feedback

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## Umbrella collaborators

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>❑ <b>ALBA (P)</b> <ul style="list-style-type: none"> <li>❖ Daniel Salvat</li> </ul> </li> <li>❑ <b>DESY (C+P)</b> <ul style="list-style-type: none"> <li>❖ Frank Schluenzen, Jan-Peter Kurz, Ulrike Lindemann</li> </ul> </li> <li>❑ <b>DIAMOND (P)</b> <ul style="list-style-type: none"> <li>❖ Bill Pulford, Stefan Paetow</li> </ul> </li> <li>❑ <b>Fermi/Elettra (P)</b> <ul style="list-style-type: none"> <li>❖ Cecilia Blasetti, Ornella Degiacomo, Giorgio Paolucci</li> </ul> </li> <li>❑ <b>EMBL HH / Biostruct X</b> <ul style="list-style-type: none"> <li>❖ Johannes Schmidt</li> </ul> </li> <li>❑ <b>ESRF (C+P)</b> <ul style="list-style-type: none"> <li>❖ Rudolf Dimper, Dominique Porte, Stefan Schulze, Julien Savoyet</li> </ul> </li> <li>❑ <b>European XFEL (C)</b> <ul style="list-style-type: none"> <li>❖ Krzysztof Wrona</li> </ul> </li> <li>❑ <b>Friedrich Miescher Institut</b> <ul style="list-style-type: none"> <li>❖ Dean Flanders, Roger Schmidt</li> </ul> </li> <li>❑ <b>GSI (C)</b> <ul style="list-style-type: none"> <li>❖ Almudena Montiel, Kilian Schwarz</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>❑ <b>HZB (P)</b> <ul style="list-style-type: none"> <li>❖ Thomas Gutberlet, Dietmar Herrendoerfer</li> </ul> </li> <li>❑ <b>ILL (C+P)</b> <ul style="list-style-type: none"> <li>❖ Jean-Francois Perrin, Frank Festivi</li> </ul> </li> <li>❑ <b>ISIS (P)</b> <ul style="list-style-type: none"> <li>❖ Tom Griffin</li> </ul> </li> <li>❑ <b>IPJ (Poland)</b> <ul style="list-style-type: none"> <li>❖ Robert Nietubic</li> </ul> </li> <li>❑ <b>MAXlab</b> Krister Larsson</li> <li>❑ <b>PSI (C+P)</b> <ul style="list-style-type: none"> <li>❖ Bjoern Abt, Stephan Egli, Stefan Janssen, Markus Knecht, Mirjam van Daalen, Heinz J Weyer</li> </ul> </li> <li>❑ <b>Soleil (P)</b> <ul style="list-style-type: none"> <li>❖ Frederique Fraissard</li> </ul> </li> <li>❑ <b>STFC (P)</b> <ul style="list-style-type: none"> <li>❖ Alistair Mills</li> </ul> </li> </ul> |
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**Thank you**