# IDIS Data Modeling

## *(Integrated and Distributed Information System)*

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*Oct. 3rd, 2011*

*EPSC-DSP 2011 - Nantes*

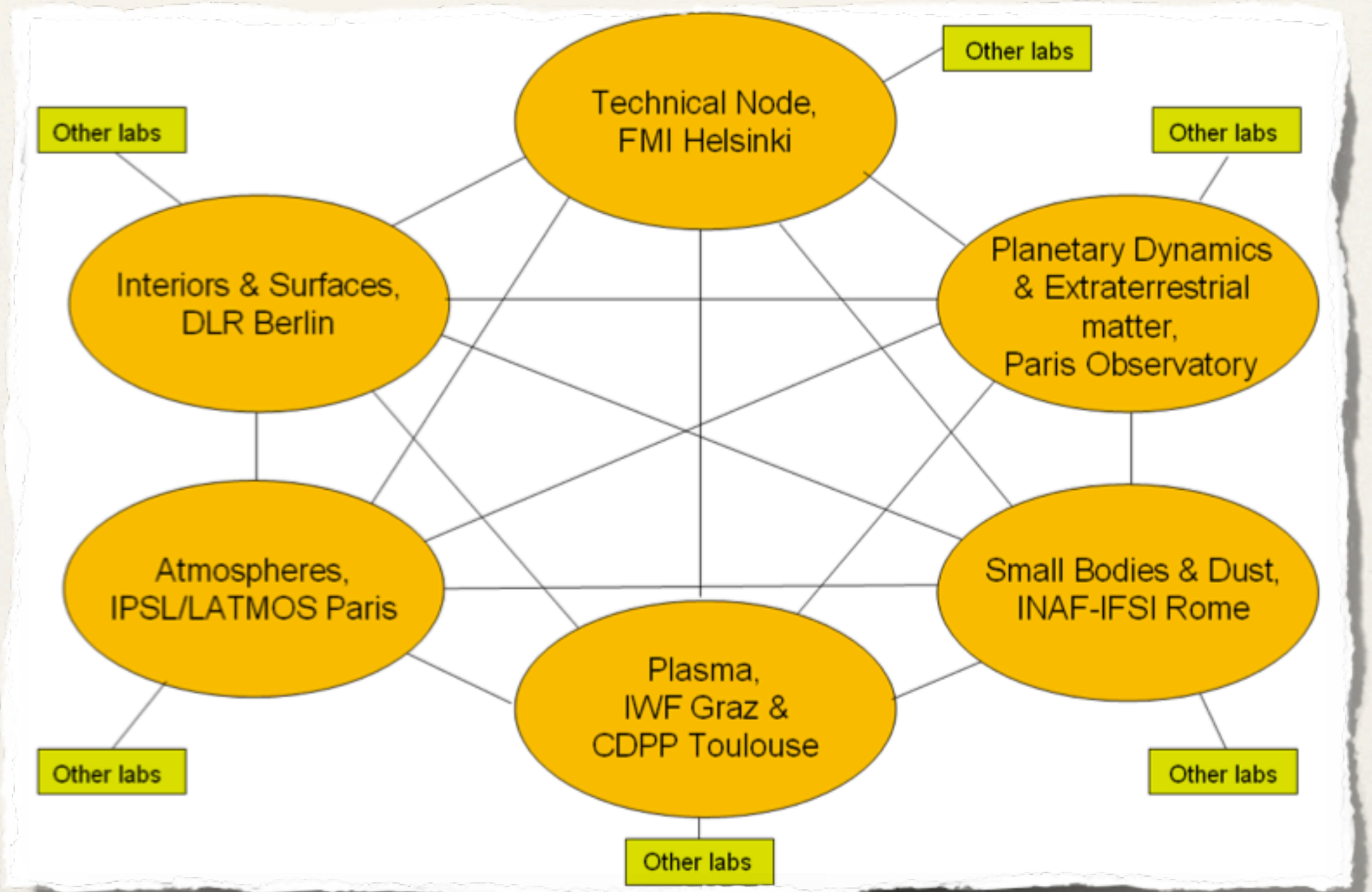
# EuroPlaNet / IDIS

- Europlanet Research Infrastructure: FP7 program
- http://www.europlanet-idis.fi/

- **Joint Research Activities** (JRA): tools development
  - JRA1: *Infrastructure Development for Supporting Planetary Missions;*
  - JRA2: *Planetary Facilities and Field Analogues;*
  - JRA3: *European Modeling and Data Analysis Facilities (EMDAF);*
  - JRA4: *Tools for transforming IDIS into a Planetary Virtual Observatory.*

- **Service Activity** (SA): data delivery

# Structure of IDIS



# IDIS Tasks

- web: http://www.europlanet-idis.fi/index.php?id=jra4
- Task 1: Coordination
- Task 2: Interoperable Data Access
- Task 3: Added Value Services to Users
- Task 4: New Databases

# IDIS Tasks

- web: http://www.europlanet-idis.fi/index.php?id=jra4

- Task 1: Coordination
- Task 2: Interoperable Data Access
- Task 3: Added Value Services to Users
- Task 4: New Databases

# IDIS - Task 2
## *Interoperable Data Access*

- Developing tools to move forward to a Planetary Virtual Observatory.

- Select, define: Data Model, Protocol
  - data model: required keywords for searches
  - protocol: PDAP and ObsTAP studied
  - other data model studied: XAMPS, OpenGIS, PDS4...

- Implementation of a prototype

- Deploying a basic VO infrastructure

# What is IDIS ?

- IDIS is:
  - a collaborative project!
  - an R&D project
  - a project to build a planetology VO prototype

- IDIS will:
  - aim at sharing existing data
  - use a series of identified protocoles to access data collections and services

- IDIS will NOT:
  - archive your data!
  - replace your existing VO-compatible interfaces

# Data Model: status
# Two Data Models Studied

- **IDIS-DM** (scope: identify required metadata inventory)
  - Last release (v1.18) in February, after the Feb. 2011 IDIS-GM.
  - Interface to built XML descriptors:
    http://oberoi.cesr.fr:8080/jaxfront/JAXFrontServlet?app=jaxfront&action=loadResource&resource=jumpStart/jumpStart.html
  - Data sets tested yet:

| | |
|---|---|
| - Cassini/CIRS: Abundance Profile at Titan | [derived data, IR] |
| - Cassini/RPWS/HFR: SKR data | [derived data, Radio] |
| - Geotail/EPIC/STICS | [calibrated data, particles] |
| - VEx/MAG | [calibrated data, magnetic field] |
| - STEREO/Waves | [calibrated data, radio] |
| - Ulysses/URAP/QTN: plasma parameters | [derived data, radio] |

  **Available here:** http://typhon.obspm.fr/idis/examples.html

- **IVOA-DM**
  In parallel (since last meeting): IVOA compatible version, using:
  VOResource, VODataCollection, ObservationCore, Characterization, STC...
- ***Only one Data Model will be implemented.***
  ***Final selection to be made in the coming weeks***

# Data Model: concepts (1)

- **Describe the resource** (= the data collection that is shared) in various ways:
  - resource level: owner, protocol, rights, version, name...
  - dataset level: target names or target types, instruments (incl. mission or observatory)...
  - parameter level: quantity, axes, coverage (space, time, other + reference frame)...

- These metadata are used by the access layer to build the response to a query using the selected protocole

- It is the data provider's choice to select the level of description of the shared data. Finer description leading to adequate response to queries

# Data Model: concepts (2)

- **Describing how and where the data has been acquired**
  - **Observation Device:**

  - Spacecraft observations: Mission Name, (Experiment Name), Instrument Name, Instrument Type
  - Ground-based observations: Observatory Name, Instrument Name, Instrument Type
  - Laboratory Experiment: Lab Name, Experiment Name
  - **Target:**

  - Natural targets: Target Name, Target Type (Planet, Comet...), Location on Target (need ref. frame for natural targets)
  - Laboratory targets, Modeled targets: ?
  - **Observation Conditions:**

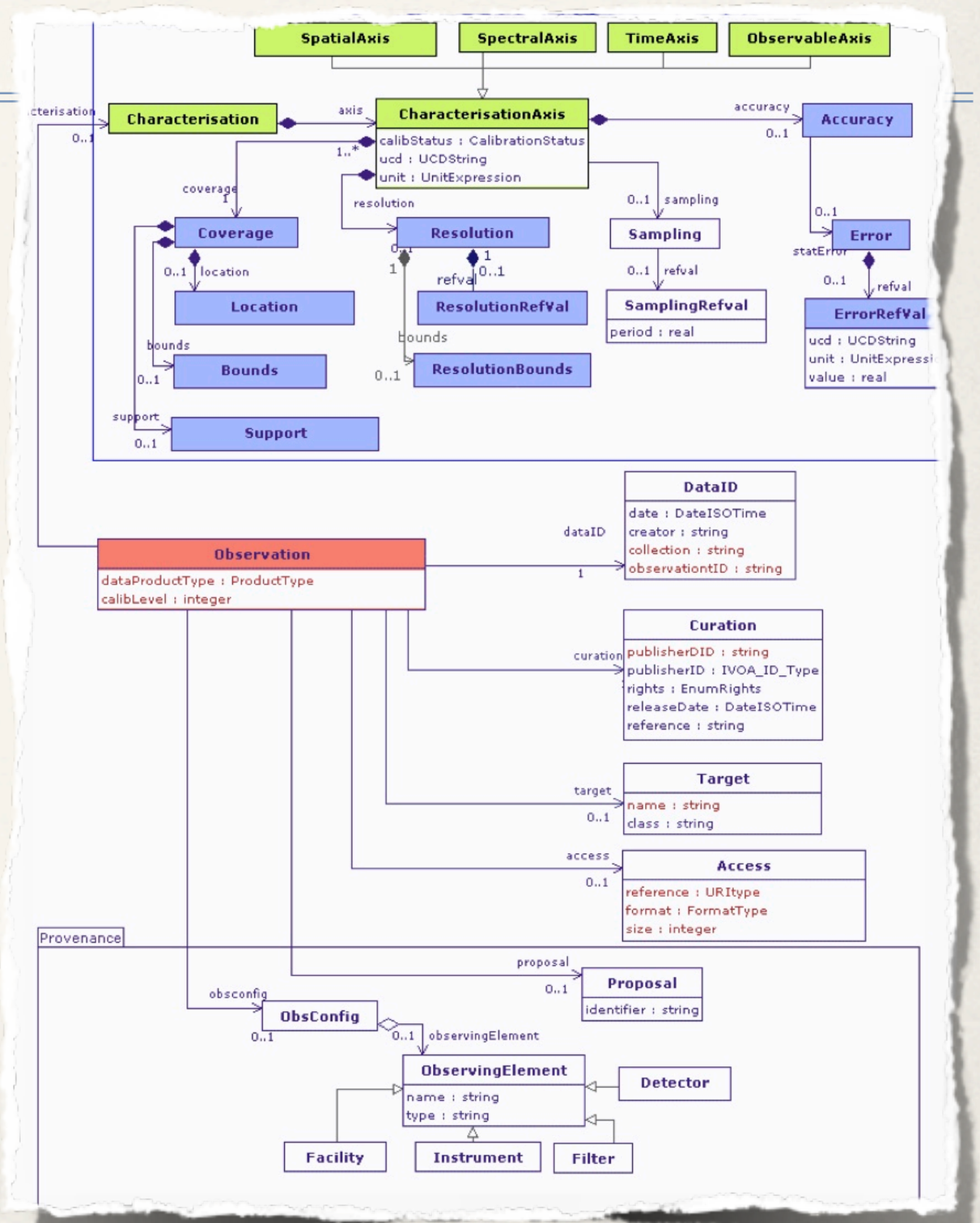
  - Observation geometry
  - Observation set up (integration time, filter...)

# Data Model: concepts (3)

- **Describing the physical parameter**
  - Physical quantity (ucd + utype)
  - Axes (Space, time, frequency) + Coverage (min, max, bins)
  - Target (ref)
  - Instruments (ref)

# Other Data Models studied

- Observation Core Data Model (IVOA): **under study**
- OGC-GIS: discussion/ assessment report needed
- SPASE used for plasma physics (HDMC/VxO)
- XSAMS used for molecular spectroscopy
- PDS4



# Protocols

- PDAP (Planetary Data Access Protocol) has been studied.
  - PDAP-Core to be released soon (end 2011) by IPDA
  - We are currently studying possible inputs to IPDA for extension definitions.

- TAP and ObsTAP are also under study (linked to Observation Data Model of IVOA)

- Implementing both protocols yield interoperability with IPDA and IVOA registries, services and clients.

# EPN-IDIS / Task-2
# Summary and Next steps