http://europlanet-ri.eu

EuroPlaNet-RI
IDIS
DATA MODEL

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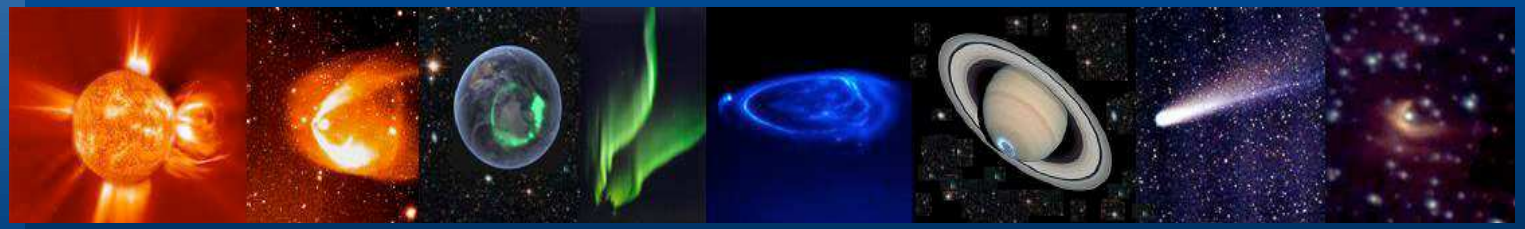
IVOA Interop Nara Japan



IDIS OVERVIEW

EuroPlanet

Europlanet RI, launched in 2009, is a 4 year project supported by the European Union under the 7th Framework Program. Europlanet RI is an Integrated Infrastructure initiative aimed at developing the cooperation between the different aspects of planetary sciences in Europe.

What is IDIS?

The Integrated and Distributed Information Service (IDIS) is one of the key projects of EuroplaNet RI. It is a remote service facility infrastructure dedicated to the access, and modeling of data collected from past and future planetary missions.

IDIS will offer additional tools to use, combine, analyse data, and compare them to numerical simulations and model predictions.

Towards a VO for planetary sciences

A VO for planetary sciences

The study of a planetary science object needs

- a multi-disciplinary approach
- a way to easily find and access

different kinds of resources (observation data, outputs of simulations, etc)

Plasmas
Fields
Radio
Dust
Moon Surface
Rings
Atmosphere
…

IDIS THEMATIC NODES

Plasmas

Atmosphere

Small bodies

Interior & surface

IDIS nodes

Atmospheric models

Radio Data

Plasma Data

Spectroscopy Data

Atmospheric CompositionData

Abundance Models

Comet data

Dust data

Rings data

Geology Data

Geology simulation outputs

IDIS DATA MODEL

- No existing Data Model adapted to VO capabilities in the wide planetology context
- The scope is to provide the community with a Data Model to be used to ***search for*** and ***get*** data
- A generic DM is being developped
  - To avoid or at least limit future node specific extensions
- First implementation for ***plasma physics*** but having in mind to be as generic as possible

Search Data for plasma studies

- **Main selection criterium**
  Time (single event or time span)
- **Others**
  - **Frequency range**
  - **Degree of polarization**
  - **Energy**
  - **Mass**
  - **Composition**
- **The observed object**
  - **Type**
  - **Name**
  - **Region**
- **The location of observation**
- **Temporal and Spatial Propagation**
- **Sensing Type**
- **Sensing Mode**

Waves

Particles

Star, Planet,Region,Feature,Exoplanet,S/C,etc

Magnetosphere,Ionosphere,etc

Local vs Remote

Active vs Passive

A hierarchical structure

The DM is decomposed as follows:

- A **DataSet** is a set of objects with the same properties (Granules)
- A **Granule** (usually data files) is composed of one or several Parameters
- A **Parameter** is a series of identical items/values (usually the data)
- The DM provides semantic description of the contents (not syntactic)
- The DM uses IVOA standards whenever possible

MetaData

Generic Metadata

- Dublin Core

  Title, ShortName, Identifier, Publisher, PublisherID, Creator, Contributor, Date, Version, Contact, Subject, Description, ReferenceURL, AccessRights, Rights

- Additional items

  ResourceID, OriginalResourceID, GranuleFormat, ReaderResourceID

- ObservationTarget Metadata

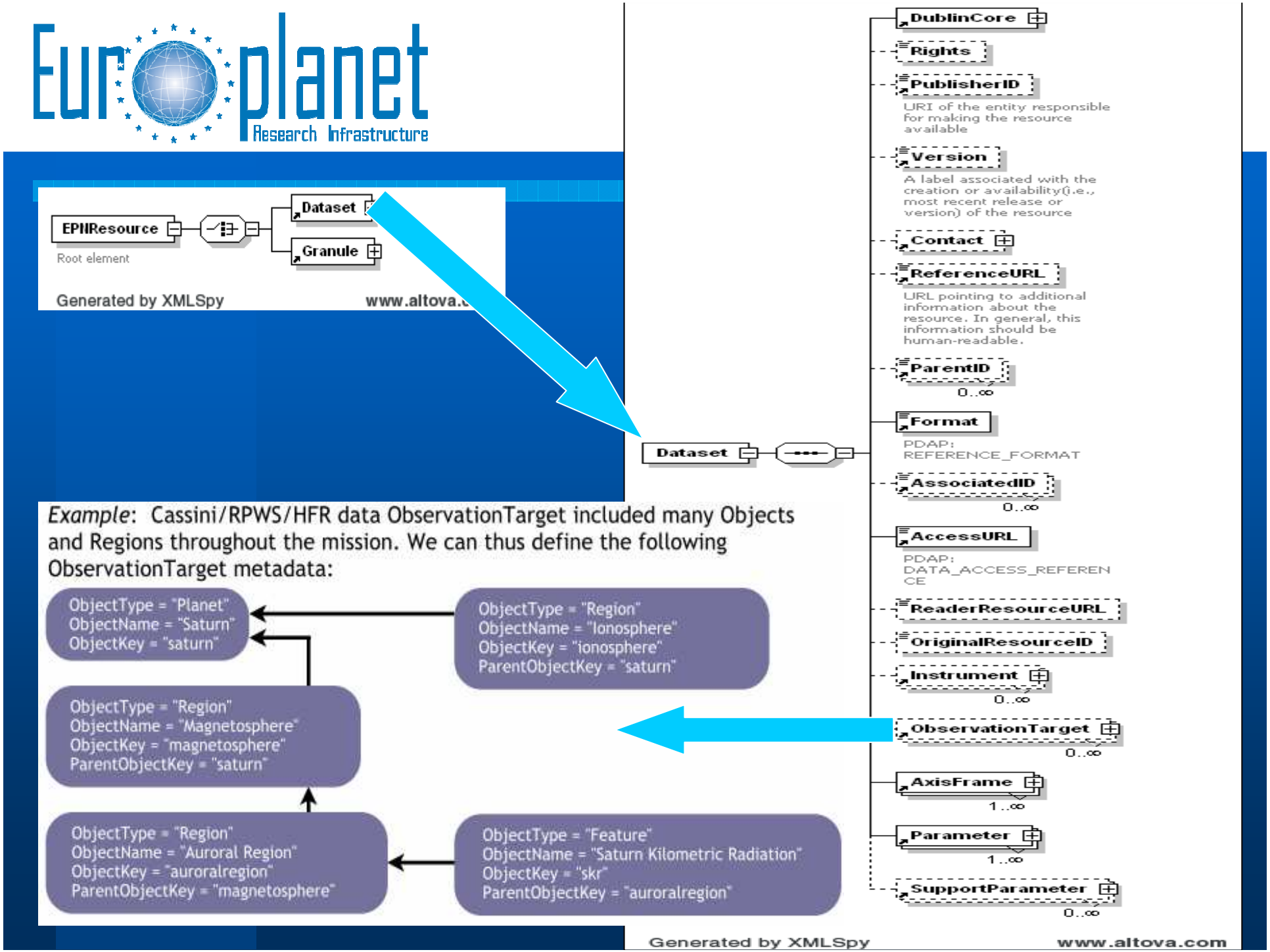
  ObjectType, ObjectName, ObjectKey, ParentObjectKey

- Instrument Metadata

  MissionName, InstrumentName, InstrumentType, InstrumentKey, ReferenceURL

- Parameter Metadata

  ParameterType, InstrumentList, Axis, ProcessingLevel, SensingMode, SensingType, ObservationDescription


Europlanet
Research Infrastructure
EPNResource
Root element
Dataset
Granule
Generated by XMLSpy
www.altova.com
Dataset
DublinCore
Rights
PublisherID
URI of the entity responsible for making the resource available
Version
A label associated with the creation or availability(i.e., most recent release or version) of the resource
Contact
ReferenceURL
URL pointing to additional information about the resource. In general, this information should be human-readable.
ParentID
0..∞
Format
PDAP: REFERENCE_FORMAT
AssociatedID
0..∞
AccessURL
PDAP: DATA_ACCESS_REFERENCE
ReaderResourceURL
OriginalResourceID
Instrument
0..∞
ObservationTarget
0..∞
AxisFrame
1..∞
Parameter
1..∞
SupportParameter
0..∞
Example: Cassini/RPWS/HFR data ObservationTarget included many Objects and Regions throughout the mission. We can thus define the following ObservationTarget metadata:
ObjectType = "Planet"
ObjectName = "Saturn"
ObjectKey = "saturn"
ObjectType = "Region"
ObjectName = "Ionosphere"
ObjectKey = "ionosphere"
ParentObjectKey = "saturn"
ObjectType = "Region"
ObjectName = "Magnetosphere"
ObjectKey = "magnetosphere"
ParentObjectKey = "saturn"
ObjectType = "Region"
ObjectName = "Auroral Region"
ObjectKey = "auroralregion"
ParentObjectKey = "magnetosphere"
ObjectType = "Feature"
ObjectName = "Saturn Kilometric Radiation"
ObjectKey = "skr"
ParentObjectKey = "auroralregion"
Generated by XMLSpy
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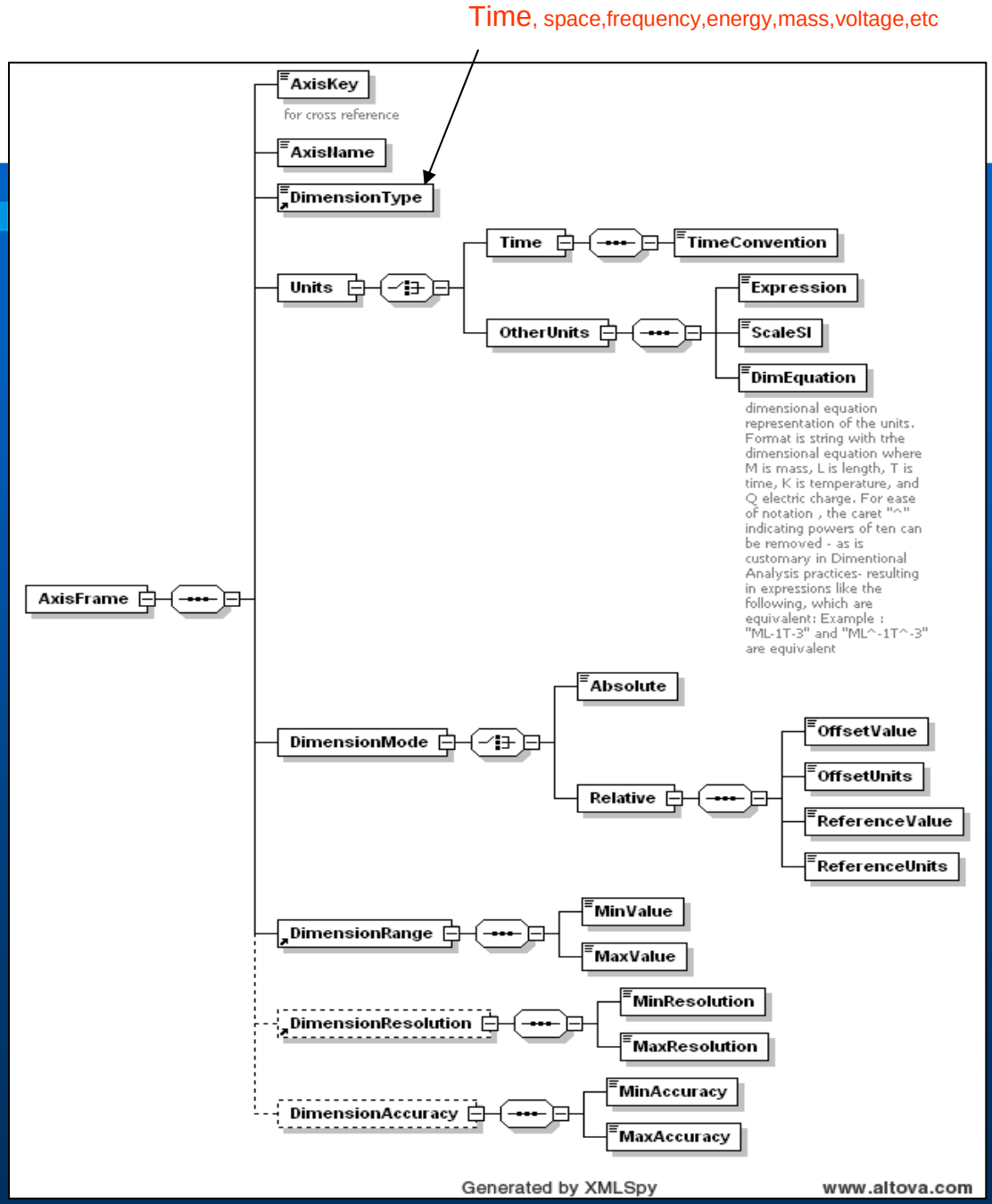
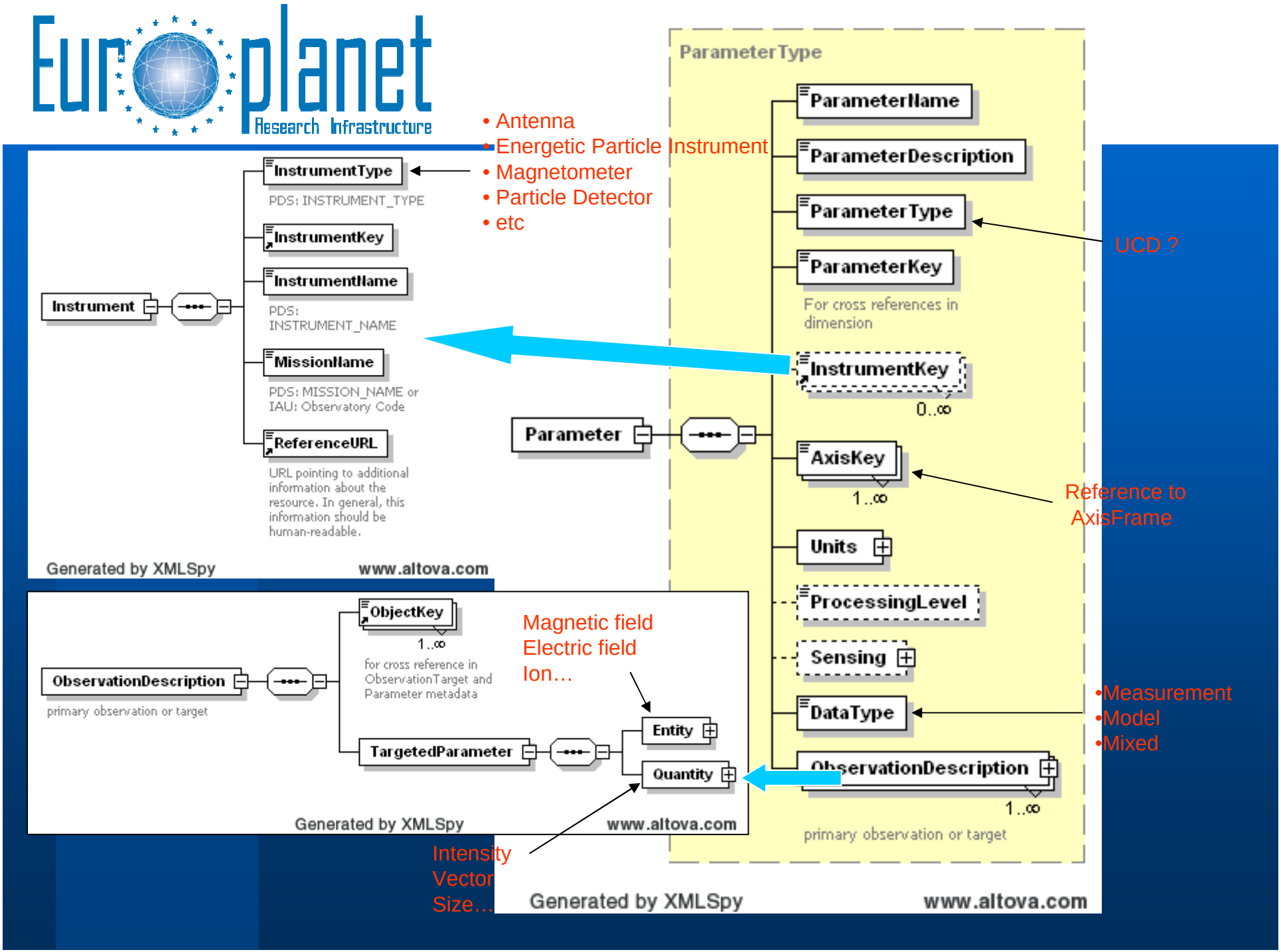
AXISFRAME

Based on the IVOA Characterization DM




Europlanet
Research Infrastructure
• Antenna
• Energetic Particle
• Magnetometer
• Particle Detector
• etc
Instrument
InstrumentType
PDS: INSTRUMENT_TYPE
InstrumentKey
InstrumentName
PDS: INSTRUMENT_NAME
MissionName
PDS: MISSION_NAME or IAU: Observatory Code
ReferenceURL
URL pointing to additional information about the resource. In general, this information should be human-readable.
Generated by XMLSpy
www.altova.com
ParameterType
ParameterName
ParameterDescription
ParameterType
UCD ?
ParameterKey
For cross references in dimension
InstrumentKey
0..∞
Parameter
AxisKey
1..∞
Reference to AxisFrame
Units
ProcessingLevel
Sensing
DataType
•Measurement
•Model
•Mixed
ObservationDescription
1..∞
primary observation or target
ObjectKey
1..∞
for cross reference in ObservationTarget and Parameter metadata
ObservationDescription
primary observation or target
Magnetic field
Electric field
Ion…
TargetedParameter
Entity
Quantity
Intensity
Vector
Size…
Generated by XMLSpy
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Generated by XMLSpy
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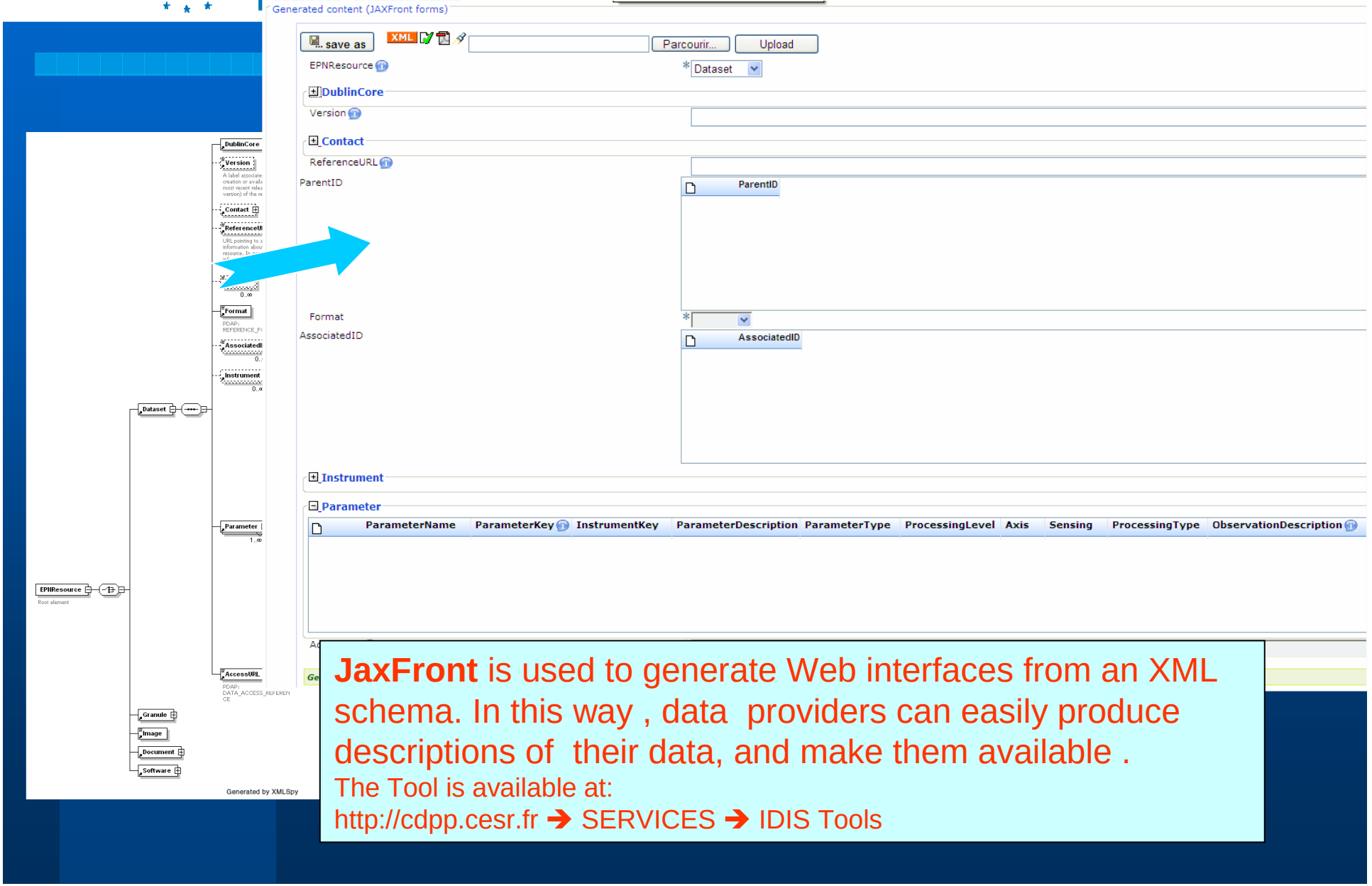
WEB Interface GENERATION



JaxFront is used to generate Web interfaces from an XML schema. In this way , data providers can easily produce descriptions of their data, and make them available .

The Tool is available at:

http://cdpp.cesr.fr ➔ SERVICES ➔ IDIS Tools