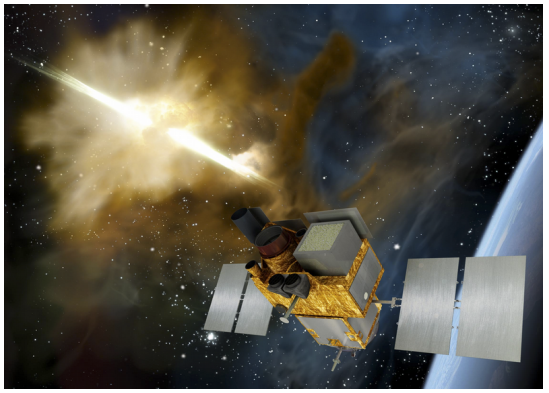
Feedback on VOEvent using planetary events at PADC

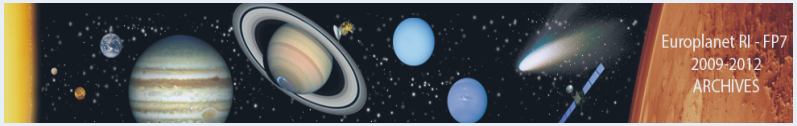
Baptiste Cecconi, Regis Haigron, Michel Gangloff, Cyril Chauvin, Pierre Le Sidaner

PADC
Paris Astronomical Data Centre

- **Request from projects to have VOEvent distribution**
  - **SVOM**

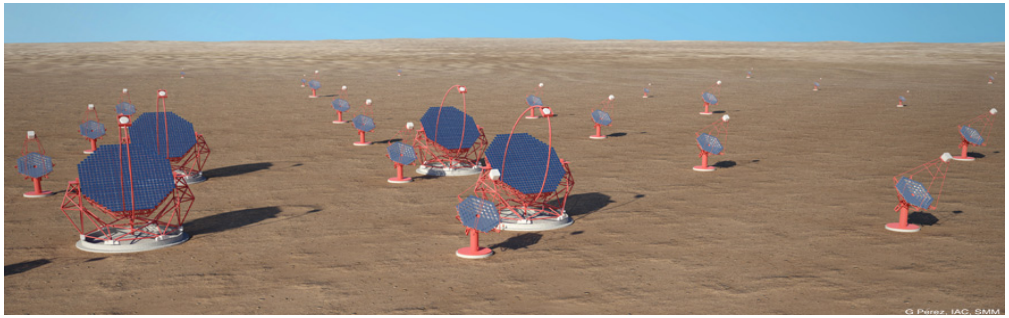


- **Europlanet – RI H2020 space weather**
- **Fripon**
- **Meteor shower**



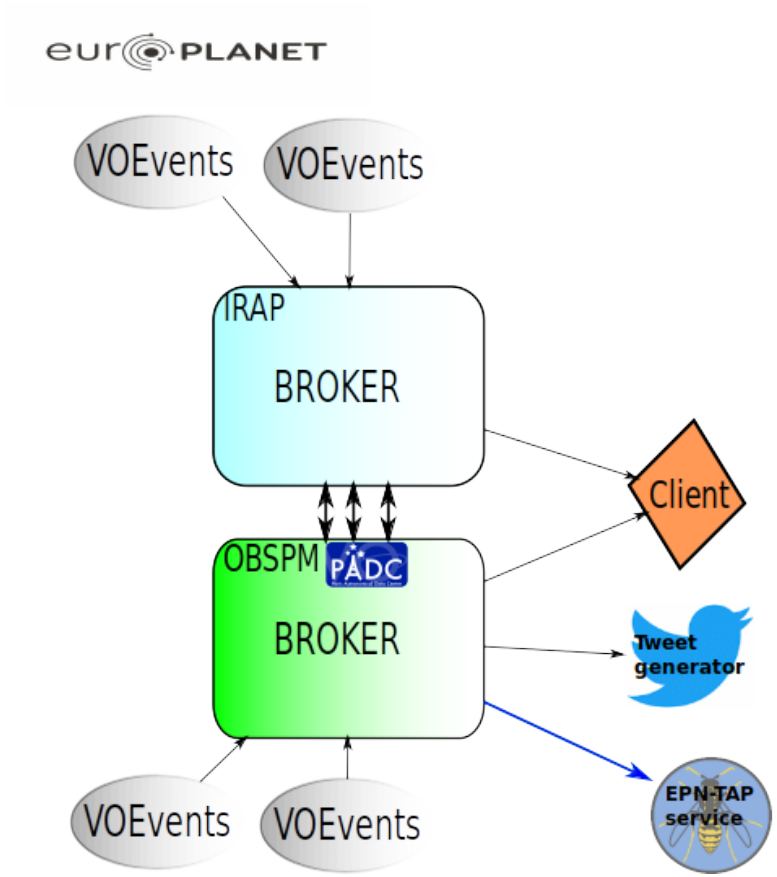
- **IMCCE eclipse and occultation for small bodies of the small bodies of solar system**

– **CTA**



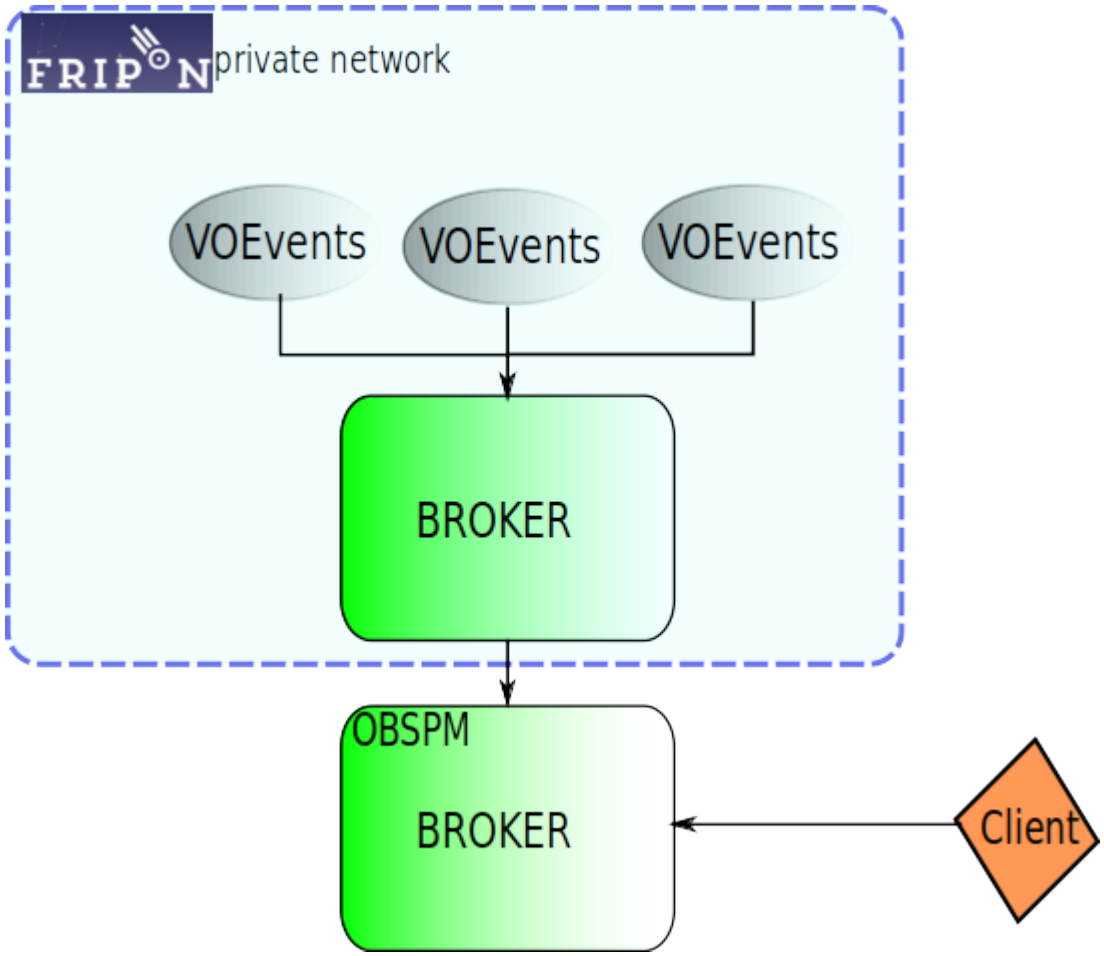
VOEVENTS USING COMET (1/2)

- **PSWS « Planetary Space Weather Services » (PSWS)**



VOEVENTS USING COMET

« Fireball Recovery and InterPlanetary Observation Network »
https://www.fripon.org



VOEVENTS – Problem on Where with planetary data

We would like a unique IVORN as primary key

Where can be on body surface, ring, atmosphere, plasma region ...

VOEvent

version, ivorn,
role = test, observation, prediction, utility
Who
What
WhereWhen
How
Why
Citations
D, R

WhereWhen

longitude, latitude, positionalError, time, timeError
*observatory, coord_system **
* equivalent information

How

D, R

VOEvent2 in a Nutshell

Who

AuthorIVORN or
Author
title, shortName, logoURL, contactName, contactEmail, contactPhone, contributor
Date
D, R

Why

importance, expires
Name
Concept
Inference
probability, relation
Name, Concept, D, R
D, R

Citations

EventIVORN
cite = followup, supersedes, retraction
D

What

Param
name, unit, UCD, dataType, utype, value
Value, D, R
Group
name, type
Param, D, R
Table
name, type
Param, Field, Data, D, R
Field
name, unit, UCD, dataType, utype, value
D, R
Data
TR
TD
D, R

Reference

uri, meaning, mimetype

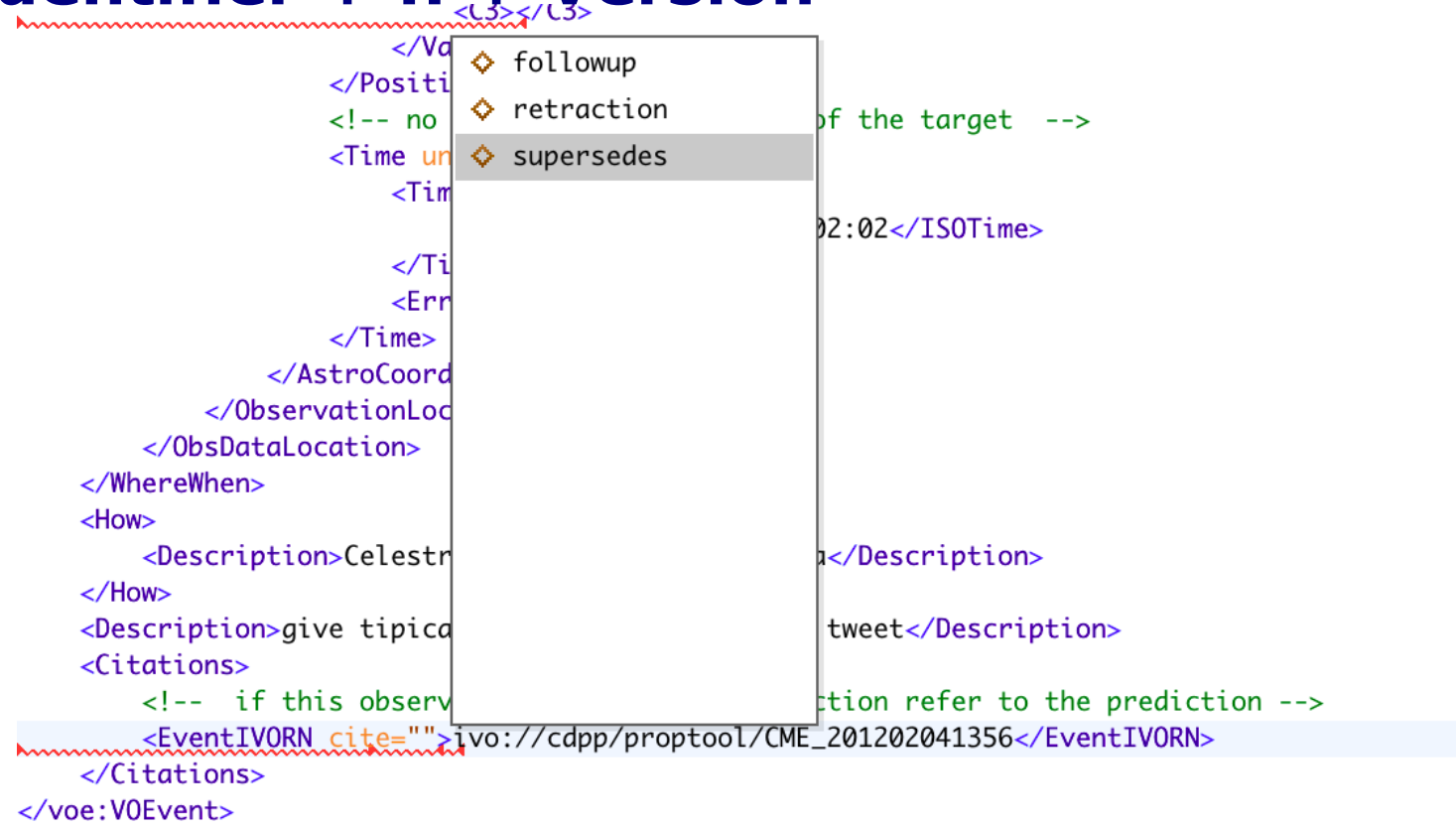
Description

Elements in black
Attributes in green

D = Description
R = Reference

Why removing condition of unique IVORN for VOEvent ?

- **On VOEvent 2.0 there is no more unique and we want it for Unique Identifier in VESPA**
- **How NASA deal with Unique Identifier and version :**
  - **Native Identifier + :: + Version**



How to define body as coordinate reference ?

- **There is no way to define where coordinate are apply**
- **Solar system body are define by target_name + target_class.**

```
<WhereWhen>
    <ObsDataLocation >
        <ObservatoryLocation  />

        <ObservationLocation>
            <AstroCoordSystem  id="UTC-GEOD-TOPO"/>
            <AstroCoords >
                <
                <!-
                <Ti
                                                    -27T10:02:02</ISOTime>
                </T
            </Astro
        </ObservationLocation>
    </ObsDataLocation>
</WhereWhen>
```

Position2D
Position3D
Time
/AstroCoords>
!-- -->
![CDATA[]]>

Part of WhereWhen

How to define body as coordinate reference system ?

- **Coordinate frame can not be associate to solar system body neither Sun**

```
<ObservationLocation>
    <AstroCoordSystem  id="UTC-GEOD-TOPO"/>
    <AstroCoords  coord_system_id="">
        <Position2D unit="">
            <Value2>
                <C1></C1>
                <C2></C2>
            </Value2>
            <Error2Radius></Error2Rad
        </Position2D>
        <!-- no place to tell the nam
        <Time unit="s">
            <TimeInstant>
                <ISOTime>2017-02-27T1
            </TimeInstant>
            <Error>600</Error>
        </Time>
    </AstroCoords>
</ObservationLocation>
</ObsDataLocation>
</WhereWhen>
<How>
```

- GPS-FK5-TOPO
- GPS-ICRS-GEO
- GPS-ICRS-TOPO
- TDB-FK5-BARY
- TDB-ICRS-BARY
- TT-FK5-GEO
- TT-FK5-TOPO
- TT-ICRS-GEO
- TT-ICRS-TOPO
- UTC-FK5-GEO
- UTC-FK5-TOPO
- UTC-GEOD-TOPO
- UTC-ICRS-GEO
- UTC-ICRS-TOPO

How to define body as coordinate reference system ?

- **STC provide elements :**
  - **StdRefPosType → ReferencePosition (JUPITER, SATURN ….)**
  - **StdRefPosType → ReferencePosition (HELIOCENTER, TOPOCENTER …)**
  - **SpaceRefFrameType (geodType, sphericalRefFrameType …)**

Conclusion

- We have to store event for later used or data mining. We will require VOEvent IVORN to be unique.

- We don't have mechanism for "Where" in VOEvent 2.0, Examples store it in "What". Plan to use FULL STC 1.3 in VOEvent migration to STC 2 ?

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