

PDAP Interoperable Implementations

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PDAP Interoperability project tasks

- PDAP specification status
 - Ensure evolution of specification
- PDAP future changes discussion
 - Get feedback from implementers and community on PDAP
- Provide support PDAP related projects
 - Create a forum to discuss PDAP issues during implementation
 - Hayabusa/Selene PDAP
 - VEX Interoperability project
- PDAP client/server implementation
 - Reinforce the creation of server and client implementations of PDAP specification



PDAP specification status

- Current published version PDAP v0.4 (IPDA pages)
- Minor changes introduced from previous version, mostly as a result of preliminary PDAP assessment work
 - Resource_class definition
 - Typos in data format in examples
 - Added position angle for ellipse shape
 - VOTable examples updated using **PDAP version**
 - Use of **PDAP version**
- Some issues under discussion not included
 - FlyByProduct
 - Free query
 - Pagination, score ranking, etc
 - File by file level



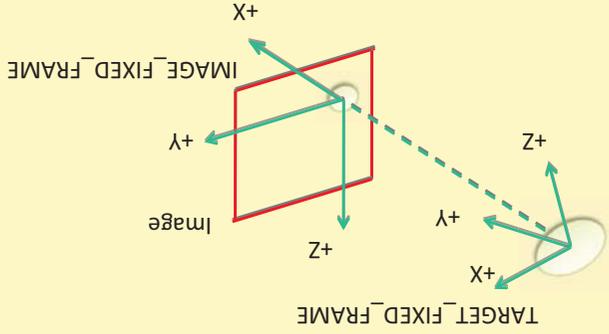
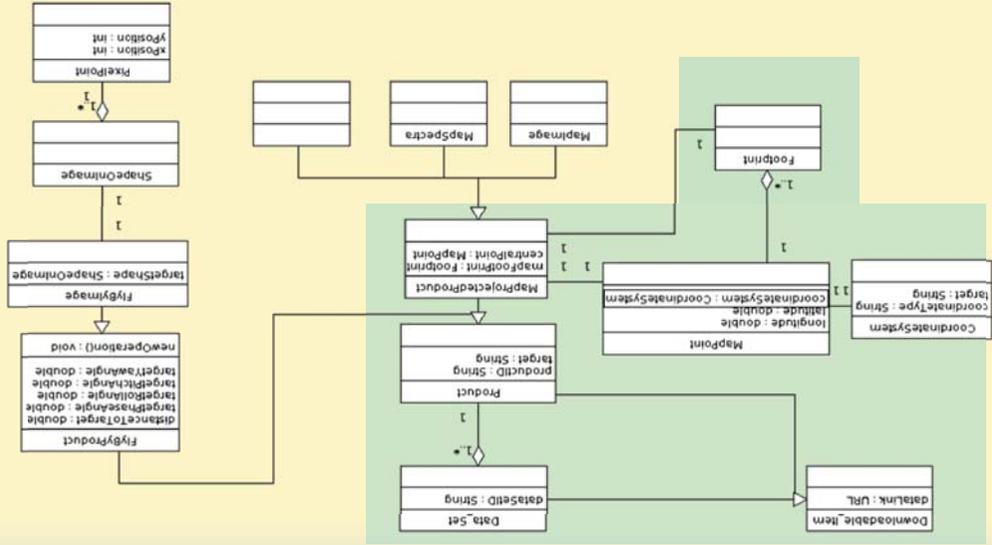
Current IPDA PDAP related projects

- VEX Interoperability project
 - PSA Interoperability subsystem server version including file by file support released
 - Client wrapper implementation by PDS Atm. Node
 - See R. Beebe presentation for details
- Hayabusa/Selene PDAP implementation project
 - Services created. Feedback to PDAP specification
 - See I. Shinohara and Y. Yamamoto presentations for details



PDAP discussions: FlyByProduct

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PDAP Free Query (I)

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- Need of a better granularity in the PDAP queries; in SQL syntax availability of "SELECT" and "WHERE" free conditions
- Introduction of RESULT parameter as per Steve Hughes proposal
- Similar work done in IVOA context (TAP Table Access Protocol)
- This is an example of the URL for a synchronous ADQL query on *r* magnitude:


```

            http://example.com/tap/sync?REQUEST=doquery&LANG=ADQL&QUERY=SELECT * FROM magnitudes as m where m.r>10 and m.r<16
            
```
- The URL for an equivalent PQL query would be:


```

            http://example.com/tap/sync?REQUEST=doquery&LANG=PQL&FROM=magnitudes&WHERE=r,10/16
            
```

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Haybusa project feedback

- Difficult to do on-the-fly coordinate systems conversions
- Service implemented (SPICE coordinate manipulation)
- Preliminary conclusions?
 - Possible alternative; footprint approach?
- See Yukio's presentation on Haybusa PDAP implementation



- **Pagination:**
 - TOP Number or records to be included in the PDAP response.
 - Problem on ranking of records
 - Pagination input parameters (FROM record TO record). It is needed to fix a syntax
- Asynchronous jobs. This could be specially useful for data access requests that require a long process to be generated. Full download of entire dataset, level 2 data on-the-fly generated, etc
- User credentials; useful to provide access to proprietary data but also to have control of the archive use

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Other general parameters



- A special section, appendix or separate document about PDAP use cases is needed
- Current use cases:
 - Access to Mars map-projected data from PDS and PSA
 - Prototype created
 - PDAP services on some PDS datasets
 - PDAP services on the full list of PSA datasets
 - PSA VEX data accessible through PDAP services
 - Datasets consumed at PDS using PDAP interface
 - Entire dataset accessible
 - "File by file" dataset level implemented at PSA and "look and feel" transformed at PDS side
 - Haybusa/Selene data PDAP service

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PDAP use cases (I)



- **TAP using ADQL:**
 - In favor:
 - Very powerful
 - Against:
 - It requires a very good defined data model (probably not so important for planetary data as per we use PDS keywords)
 - It requires a very well-defined language
 - Some consider it difficult to implement
- **TAP using PQL:**
 - In favor:
 - Easy to implement
 - Against:
 - Less powerful
 - It uses a new language not fully described

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PDAP Free Query (II)



- This was discussed during last splinter meeting and this could be in perfect combination with PDS4 Data Model effort
- Query Model outputs to be included in PDAP
- Possible mixed approach:


```
http://example.com/pdap/pdap.jsp?QUERY="SELECT
DATA_SET.START_TIME,DATA_SET.ID FROM DATA_SET
where DATA_SET.MISSION_NAME like 'MARS%'"&RETURN_TYPE=HTML
```
- Full text approach ("Google like" query) could be also added into the protocol.


```
http://example.com/pdap/pdap.jsp?RESOURCE_CLASS=PRODUCT&
FULLTEXTQUERY=MARS+IMAGE&RETURN_TYPE=HTML
```
- Technologies that can be used for full text approach could be discussed in the mailing list
- To be discussed at IPDA TEG level

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PDAP Free Query (III)



- PDAP map-projected services are not very far from kml services required by Google API
- Some differences:
 - PDAP services are designed to expose science data. Google is oriented to general public (fully process data)
 - Most of the data cannot be easily exposed in a Google "Map"
- However, map projected data can be displayed and accessed through the Google "Mars/Venus?" interface
- A PDAP to KML converter (e.g. XSLT) could be generated to allow the display of PDAP services on top of Google Map like applications
- Possible IPDA project
- General public Web Map Server services should also be registered for scientific use

Google Mars/Other adaptation

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- Plan to expose public data from different IPDA members in PDAP format
- Plan to consume PDAP services for all IPDA members inside the normal archives
- PDS datasets visible through PDAP services from PSA pages
- PSA datasets visible through PDAP services in a more global way (this is ongoing)
- Science use cases using interoperability
- **Action** to create a list of use cases where PDAP approach could be used

PDAP use cases (II)

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- In order to have a better control of the PDAP services, a registry of services is currently needed
- Where to locate it, technology, reusability of current infrastructures to be discussed
- Two different approaches identified:
 - PDS profile service; almost ready
 - Use/adapt EuroVO registry; this could be useful for some datasets that can have complementary VO resources
 - One approach does not exclude the other one
- Search capabilities and type of records are issues to be discussed
- To be discussed at TEG level

Registry of PDAP services

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- Adaptation of current archives to consume PDAP services
- Adaptation of applications to use PDAP services:
 - Nasaview or other image displays; possibility to progress the development in this line (?)
 - VOSpec, tool to display and manipulate spectra for the Astrophysical Virtual Observatory could be adapted to consume spectra from planetary data
 - Spectra format
 - Calibrated spectra (?)

PDAP clients

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