NAIF - Navigation and Ancillary Information Facility

A Discussion on
Ancillary Data Standards Provided
Under Auspices of the IPDA

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The Topic of this Presentation

- **Should the IPDA take on the question of setting standards for "ancillary data?"**
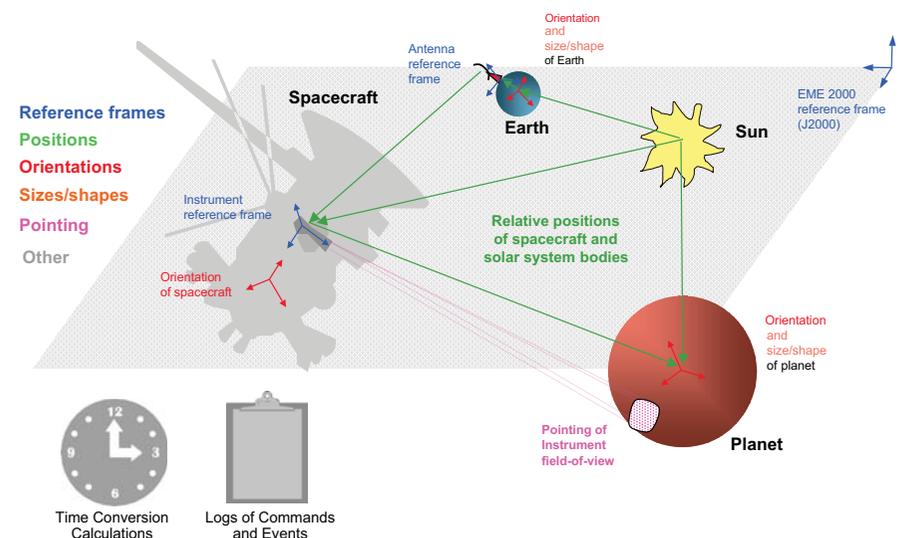

What are Ancillary Data?

- **In the context of this presentation, "ancillary data" are the flight dynamics and similar data needed to compute the variety of observation geometry parameters used in the planning and analysis of space science observations.**
  - **Might include related software**

- **A pictorial representation of ancillary data is shown on the next chart.**

Pictorial of Ancillary Data

Back to the Question

- **Should the IPDA address issues related to standards for ancillary data?**
  - **Possible reasons why "Yes"**
    - » **It's a good idea to have standard formats/content for ancillary data, just as for science data.**
    - » **Need improved geometry definitions in the (PDS/PSA) data dictionary**
    - » **Need better consistency and accuracy in how observation geometry parameters are computed**
    - » **Need more tools for using ancillary data, including tools supporting:**
      - **finding archived science data meeting user-supplied observation geometry constraints ("geometry engine")**
      - **science data analysis**
      - **correlation of science data across instruments/missions**
  - **Possible reasons why "No"**
    - » **IPDA already has its hands full dealing with instrument data**
    - » **Each of the national space agencies, ESA, and other entities interested in this topic are already providing ancillary data and computations derived therefrom**
    - » **Any needed improvements in definitions of geometry items provided via data dictionary keywords can be done within the current IPDA scope**

Scope, Process, Schedule, Participation

- **If the answer were "Yes"…**
  - **What process should be used?**
    - » **An IPDA "project," or some other approach?**
  - **What <u>current</u> problems and shortcomings related to the production, access to, and use of ancillary data should be addressed?**
  - **What <u>new</u> ideas should be considered?**

Possible IPDA-sponsored Activities - 1

- **Specify a set of functional capabilities that are recommended to be provided by a space agency.**
  - **Possibly several levels, such as "minimal" and "extended."**
- **Specify a canonical set of ancillary data products that should be part of an agency's ancillary data system.**
- **Provide a list of recommended practices regarding the production, distribution, archival, and access to ancillary data.**
- **Provide a "model solar system" containing simple, well documented geometric objects and conditions that may be used by anyone to help validate observation geometry calculations made using their own software.**
- **Offer training opportunities for scientists and engineers interested in learning about use of ancillary data.**
- **Offer training opportunities for people who are to become local experts in ancillary data for their national agencies ("ancillary data gurus").**

Possible IPDA-sponsored Activities - 2

- **Establish a "birds-of-a-feather" interest group focused on topics related to ancillary data.**
  - **Improve or fix existing geometry-related data dictionary definitions, and initiate or provide consultation on the acquisition of new ones.**
    - » **For example: "azimuth" and "elevation."**
  - **Establish standard practices (or recommendations) for the computation of geometry parameters.**
    - » **For example, when to use light-time and stellar aberration corrections.**
    - » **For example, where is the nearest point on a surface from a ray passing above that surface.**
  - **Establish a recommended set(s) of geometry items to be associated with any archived data product (perhaps following the idea of ESA's GEOLIB)**
  - **Establish standards (or recommendations) for the documentation of archival ancillary data.**
- **IPDA lobbies for specific support at the agency level for the local member(s) of this group.**
  - **The group would work mostly via email.**
  - **The group would likley hold annual or biannual meetings to address topics/issues of interest.**

Handling Legacy Capabilities

- **NASA**
  - It seems unlikely NASA would simply dissolve SPICE in favor of some new standard.
- **Other legacy capabilities to be retained**
  - ???

- **Need to deal with these points somehow**

Next Step

- **If IPDA agrees to deal with ancillary data…**
  - **When could/should work start?**
    - » **Is there reason to NOT start more-or-less "now"?**
  - **Which IPDA participating agencies would want to participate?**
    - » **At each agency who would have both the interest and the time to actively participate?**
    - » **Would such participation interfere with existing (more important) IPDA projects?**
  - **Should IPDA "advertise" the pending start-up of this activity to see who from outside the current IPDA membership might propose to participate?**

Who Might Participate?

- **NASA/JPL - Chuck Acton or someone from NAIF**
- **NASA/APL - Scott Turner?**
- **ESA/ESAC - Jorge Diaz?**
- **JAXA - Yukio Yamamoto?**
- **ISRO - ???**
- **RSA - ???**
- **Others - ???**
  - DLR, CNES, ASI, …?
  - Some university representatives?
  - Some commercial firms?