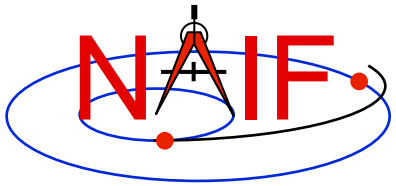


Navigation and Ancillary Information Facility

SPICE Development Plans and Possibilities

April 2016

Higher Fidelity Shape Models

Navigation and Ancillary Information Facility

- **Extension of the shape model subsystem**
  - Called Digital Shape Kernel (DSK)
  - Add two new shape model capabilities…
    - » tessellated plate model, for small, irregularly shaped bodies
    - » digital elevation model

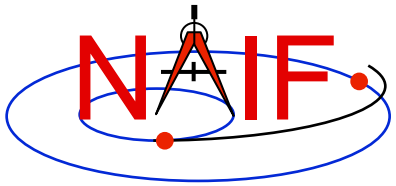
    to the existing tri-axial shape model found in PCK

  - Status
    - » The plate model component is about to be released as part of the N66 Toolkit
    - » Work on the digital elevation model is still ongoing
      - Date for release of a "final" version has not yet been set

More WebGeocalc Development

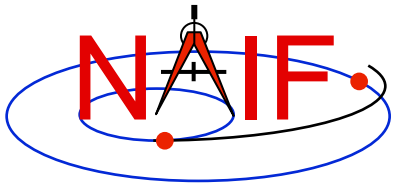
Navigation and Ancillary Information Facility

- NAIF implemented a client-server GUI interface to a SPICE geometry engine, named WebGeocalc
  - It's already seeing quite a lot of use around the globe
- We are now adding more capability to it, and hope to continue further development.



More API Interfaces

- **Java Native Interface (JNISpice)**
  - An alpha-test release was made in February, 2010
  - Date for official addition to the Toolkit is TBD
- **Python**
  - Considerable prototyping has been done by NAIF
  - It seems this is the most wanted new capability by the broad user community
  - We note that several SPICE users have implemented and are offering their own, partial Python interfaces to SPICE
    - » Check here for links to two of them
      - http://naif.jpl.nasa.gov/naif/links.html
- **Thread-safe and object oriented Toolkit**
  - It appears this is also of considerable interest to some users
  - We imagine building a whole new Toolkit in C++, while also maintaining existing languages
  - When and how are TBD



Some Other Possibilities

- More high-level computations, such as instrument footprint coverage
- More “geometry finder” computations
- Complete the star catalog subsystem started long ago
- Additional target models: rings, gravity, atmosphere, magnetosphere, …
- Develop a more flexible and extensible instrument modeling mechanism

What do You Suggest?

- **NAIF solicits suggestions from the user community.**
  - Caution: we're a small team and have a large backlog, so we can't promise any particular action.
- **We're interested in programmatic ideas as well as technical ones.**
  - Should NAIF promote use of SPICE beyond NASA's planetary science program?
  - What amount of cooperation and interoperability with foreign partners is appropriate and achievable?