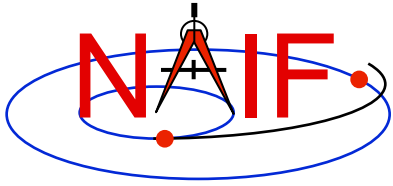


Navigation and Ancillary Information Facility

SPICE Development Plans and Possibilities

April 2016



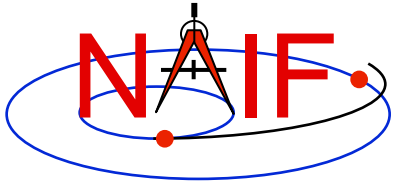
Higher Fidelity Shape Models

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- **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

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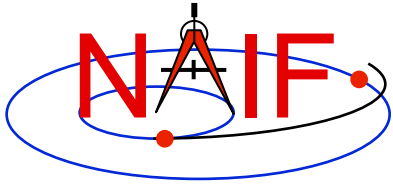
- **NAIF implemented a client-server GUI interface to a SPICE geometry engine, named WebGeocalc**
 - It's already seeing quite a lot of use around the globe
- **We are now adding more capability to it, and hope to continue further development.**



More API Interfaces

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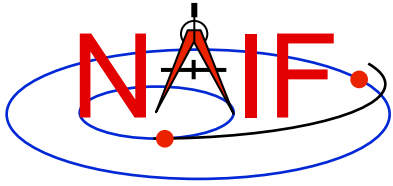
- **Java Native Interface (JNI Spice)**
 - An alpha-test release was made in February, 2010
 - Date for official addition to the Toolkit is TBD
- **Python**
 - Considerable prototyping has been done by NAIF
 - It seems this is the most wanted new capability by the broad user community
 - We note that 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

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- **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?

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- **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?**