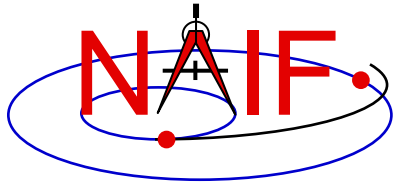




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SPICE Development Plans and Possibilities

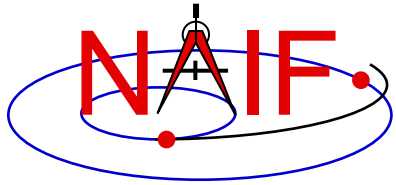
January 2018



DSK Shape Models

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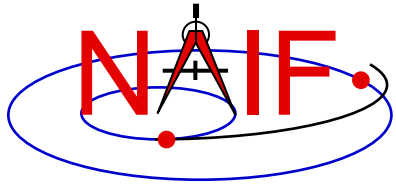
- **Extension of the DSK shape model subsystem**
 - Complete the digital elevation model (Type 4 DSK)
 - Add more functionality to the tessellated plate model (Type 2 DSK)
 - » The first official release of the Type 2 subsystem, for small, irregularly shaped bodies, was released in the N66 Toolkits



SPICE 2.0

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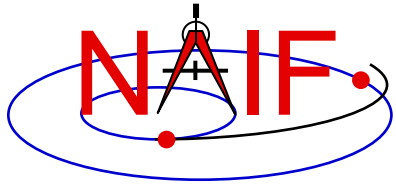
- **Develop SPICE 2.0: a re-implementation of the SPICE Toolkit from the ground, up, providing thread-safe and object oriented features**
 - This is the major undertaking, started in May 2017
 - Is being implemented in C++
 - Expected to take several years
- **No worries: none of the current Toolkits will be dropped.**



Program Development

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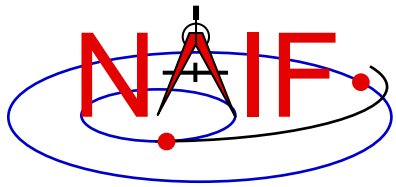
- **Continue adding capabilities to the WebGeocalc tool**
 - More kinds of calculations
 - More ease-of-use features
- **Continue adding capabilities to the Cosmographia 3D mission visualization program**



Model Development

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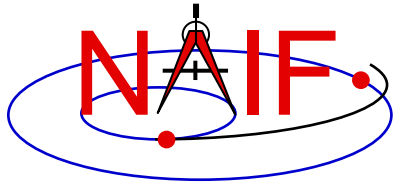
- **Complete and release a large set of dynamic frames in a generic frames kernel (or kernel set)**
- **Add some aspects of ring models**
 - At least ring reference frames
 - Maybe also shapes?



More API Interfaces

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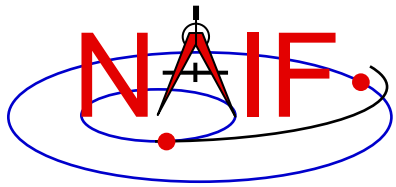
- **Complete the Java Native Interface (JNI) Spice Toolkit family**
- **Python interface**
 - **Several SPICE users have implemented and are offering their own, partial Python interfaces to SPICE**
 - » **Check here for links to two of them**
 - <http://naif.jpl.nasa.gov/naif/links.html>
 - **NAIF's use has been limited to preparing a few SpiceyPy lessons**
 - **Others report these appear to be good quality products**
 - **Thus NAIF seems unlikely to do any of its own Python work**



Some Other Possibilities?

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- **More high-level computations, such as instrument footprint coverage**
- **More “geometry finder” computations**
- **Develop a more flexible and extensible instrument modeling mechanism**



Programmatic Expansion

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- **NAIF will be helping the Republic of South Korea learn to use SPICE in support of their upcoming Korean Pathfinder Lunar Orbiter (KPLLO) mission**
- **Colleagues at LASP are helping the United Arab Emirates deploy SPICE in support of their upcoming Emirates Mars Mission**
- **We hope to find the means to support upcoming science-focused SmallSat/CubeSat missions**
 - **Example: Lunar IceCube**



What do **You** Suggest?

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- **NAIF solicits suggestions from you!**
 - How might we improve SPICE?
 - How might we improve NAIF's operations?
 - How might we improve SPICE operability across the large and still growing international community?
- **We're interested in programmatic ideas as well as technical ones.**