SPICE Tutorials Introduction

March 2006

Navigation and Ancillary Information Facility

SPICE Tutorials Introduction - 1

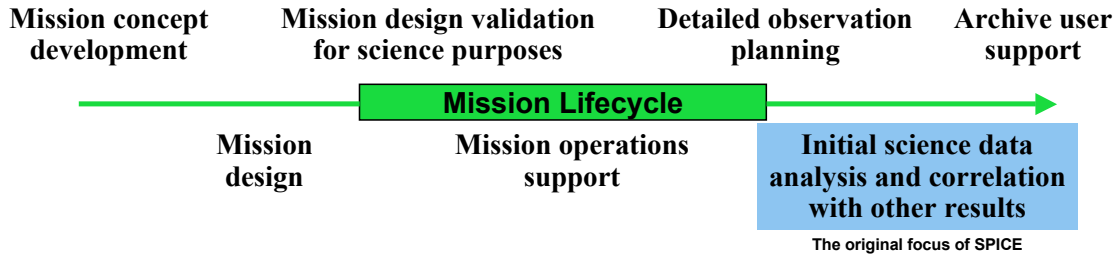
- Implementation of a precursor to SPICE was initiated by scientists in 1984 as part of a major initiative to improve archiving and distribution of space science data in all NASA disciplines
- Responsibility for leading this effort was assigned to the newly-created Navigation and Ancillary Information Facility (NAIF), located at the Jet Propulsion Laboratory
- Today's SPICE system dates from about 1991

SPICE Tutorials Introduction - 2

Navigation and Ancillary Information Facility

- The original focus of SPICE was on “ancillary” (engineering/housekeeping) data and associated software needed by scientists for science data analysis and correlation with other results.

- The scope of SPICE usage has now grown to cover the full lifecycle of a mission.



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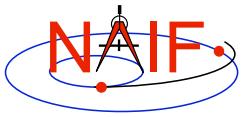
Navigation and Ancillary Information Facility

- SPICE is used on essentially all NASA planetary projects
  - Examples: All Mars missions, Cassini, Messenger, Deep Impact
- SPICE data have been (or are being) created for some past missions
  - Examples: Voyager, Viking Orbiter
- SPICE is used to some degree in support of some space physics and astrophysics missions
  - Examples: Hubble Space Telescope, SIRTF, Genesis, Kepler
- SPICE is used on some non-NASA missions
  - Russia’s Mars 96; ESA’s Huygens Probe, Mars Express, Rosetta and Venus Express; Japan’s Hayabusa
- SPICE is used at some terrestrial observatories



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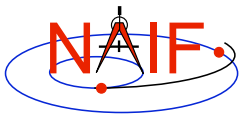
Navigation and Ancillary Information Facility

- SPICE is the U.S. Planetary Data System de facto standard for archival of ancillary data
- The SPICE ephemeris component is the preferred input for scheduling and using NASA's Deep Space Network antennas



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Navigation and Ancillary Information Facility

- SPICE system components are freely distributed
  - No costs to individual users
    - » Projects pay for adaptation, deployment and operation
  - Limited export restrictions
    - » No ITAR restrictions
    - » Restricted only from U.S. State Dept. "Designated countries"
- Users get complete source code and much documentation
- Core SPICE system development and maintenance is supported by NASA, based on the backing of the space science community

- **This set of tutorials has been presented and revised numerous times**
  - **The "good news":**
    - » **The quality is much better than earlier versions**
  - **The "bad news":**
    - » **No matter how hard we try, it seems impossible to:**
      - **Get all the facts absolutely right/up-to-date**
      - **Get the level of detail "right" for every student**
      - **Get all of the language clear, complete and concise**
      - **Present everything in the "correct" order**
- **These tutorials are meant to supplement–not replace–the subroutine headers and the "required reading" reference documents that are the primary sources for user information about SPICE**