



Navigation and Ancillary Information Facility

SPICE Introduction

October 2007



History

Navigation and Ancillary Information Facility

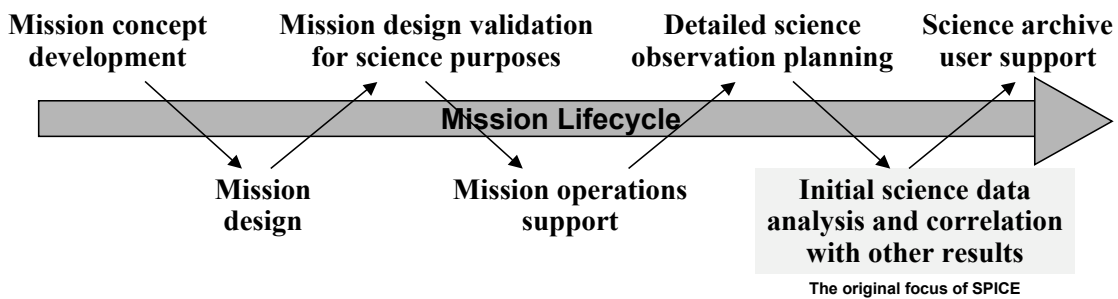
- **Implementation of a precursor to SPICE was initiated by scientists in 1984 as part of a major initiative to improve archiving and distribution of space science data in all NASA disciplines**
- **Responsibility for leading this effort was assigned to the newly-created Navigation and Ancillary Information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



Breadth of Use

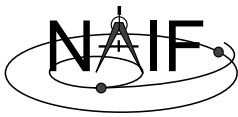
Navigation and Ancillary Information Facility

- 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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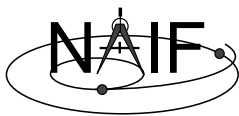
Major Customers

Navigation and Ancillary Information Facility

- SPICE is used on essentially all NASA solar system exploration projects
 - Examples: All Mars missions, Cassini, Deep Impact, Messenger, Juno
- Limited 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; India's Chandrayaan-1
- SPICE ephemerides are used at some terrestrial observatories
- SPICE is used by NASA's Deep Space Network for both scheduling and operating the antennas.

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Ancillary Data Archives

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- **SPICE is the U.S. Planetary Data System de facto standard for archival of ancillary data**
- **SPICE data for European planetary missions are archived in ESA's Planetary Science Archive**



Distribution

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- **SPICE system components are freely distributed**
 - No costs to individual users
 - » Projects pay for adaptation, deployment and operation
 - No ITAR restrictions
- **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**



Quality of Training Materials

Navigation and Ancillary Information Facility

- **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 and 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 training materials 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**