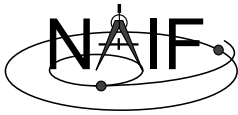




“Metadata” In SPICE Kernels

Also known as “comments”

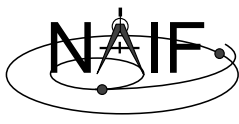
October 2007



What are Metadata?

Navigation and Ancillary Information Facility

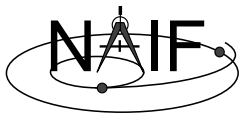
- **Metadata are information that describe the context of kernel data, i.e. “data about data”**
 - *“If you don’t write it down, it didn’t happen”*
- **Examples of metadata:**
 - **Data descriptions**
 - » **“This file contains representations of the trajectories for bodies X, Y and Z over the interval from launch to landing”**
 - **Data accuracy**
 - **Data pedigree**
 - » **How and by whom was the kernel created**
 - The program(s) and/or steps used in creation
 - Contact information for user’s questions
 - email address
 - phone numbers
 - » **Data sources used as inputs when creating the kernel**
 - **Intended kernel usage**
 - **Companion files**
- **In SPICE, we normally refer to metadata as “kernel comments”**



Where are SPICE Metadata Stored?

Navigation and Ancillary Information Facility

- **Binary Kernels contain a “comment” area**
 - A comment is text data
 - Comments may be placed in binary kernels or read or extracted from binary kernels using the SPICE utility program *commnt*
- **Text Kernels have comments interleaved with the data**
 - Comments in text kernels can be read using any editor, or UNIX’s *cat* or *more* processors



Using COMMNT on Binary Kernels

Navigation and Ancillary Information Facility

This example shows reading the comments

```
prompt> commnt

Welcome to COMMNT Version: 6.0.0
(SPACE Toolkit N0050)

COMMNT Options

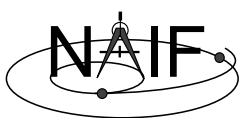
( Q ) Quit.
( A ) Add comments to a binary file.
( R ) Read the comments in a binary file.
( E ) Extract the comments from a binary file.
( D ) Delete the comments in a binary file.

Option: R

Enter the name of the binary file.

Filename? /home/mydirectory/myproject/kernels/spk/de403s.bsp
```

- **Filename must include any required path and be less than 257 characters**



Viewing Text Kernel Comments

Navigation and Ancillary Information Facility

```
prompt> more leapseconds.ker

\begintext
LEAPSECONDS KERNEL FILE
=====

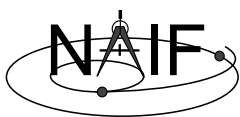
Modifications:
-----
1998, Jun 17  WLT  Modified file to account for the leapsecond
                  that will occur on December 31, 1998.

1997, Feb 22  WLT  Modified file to account for the leapsecond
                  that will occur on June 30, 1997.

1995, Dec 14  KSZ  Corrected date of last leapsecond from 1-1-95
                  to 1-1-96

etc....

--More-- (19%)
- More-- (19%)
```



How to Add Comments

Navigation and Ancillary Information Facility

- **Binary Kernels**
 - Include comment information at the time of kernel creation, using SPICE modules (subroutines)
 - » This capability not yet available in Icy or Mice
 - Use the *commnt* utility program
 - » Adds comments provided in an external text file
- **Text Kernels**
 - Use a text editor
 - » Begin comment sections with the “\begintext” marker alone on a line
- **Restrictions**
 - For both binary and text kernels
 - » Comment line length limit is 255 characters. However, NAIF recommends using no more than 80 characters per line as this makes your comments far more readable!
 - » Use only printing characters (ASCII 32 - 126)
 - » Manipulating binary kernel comments requires the kernel be in the native binary format for the machine being used
 - For text kernels
 - » Refer to “Kernel Required Reading” (*kernel.req*) for details