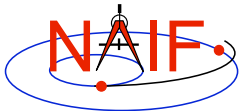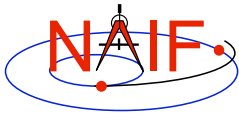# "Metadata" In SPICE Kernels
a.k.a. "comments"

March 2006
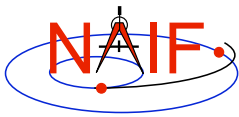
What are Metadata?

- **Metadata are information that provide important context--sometimes called "data about data"**
  - **What the "real" data represent**
    - » **"This file contains representations of the trajectories for bodies X,Y and Z over the interval from launch to landing."**
    - » **Accuracy of the data**
  - **Pedigree**
    - » **Programs used in creation**
    - » **Sources from which the data were derived**
    - » **When the kernel was created, and by whom**
  - **Intended usage**
  - **Companion files**
  - **Who to contact if you have questions**
    - » **email address**
    - » **phone numbers**
- **In SPICE we often refer to metadata as "comments"**

Where are SPICE Metadata Found?

Navigation and Ancillary Information Facility

- **Binary Kernels have a "comment" area**
  - **Holds text data**
    - » **80 character lines**
    - » **Printable characters (ascii 32 - 126)**
  - **Can be read using the SPICE utility program *commnt.***
    - » **Interactive menu of prompts**
    - » **Command line arguments**
- **Text Kernels have comments interleaved with the data**
  - **Any text editor, or unix's *cat* or *more* processors, can be used to read the comments (and the data)**

Using COMMNT on Binary Kernels

Navigation and Ancillary Information Facility

```
┌─────────────────────────── Terminal Window ──────────────────────────────┐
│                                                                            │
│  prompt> commnt                                                            │
│                                                                            │
│     Welcome to COMMNT Version: 6.0.0                                       │
│          (SPICE 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              │
│                                                                            │
└────────────────────────────────────────────────────────────────────────────┘
```
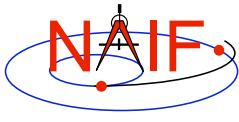
•Filename must include any required path and be less than 257 characters

Viewing Text Kernel Comments
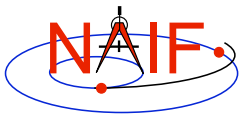
Navigation and Ancillary Information Facility

```
┌─────────────────────────────────────────────────────────────────┐
│ ▣                        Terminal Window                      ⊠  │
├─────────────────────────────────────────────────────────────────┤
│   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%)                                                   │
└─────────────────────────────────────────────────────────────────┘
```

How to Add Comments

Navigation and Ancillary Information Facility

- **Binary Kernels**
  - **Use the *commnt* utility program**
  - **Use calls to SPICE modules**
- **Text Kernels**
  - **Text editor**
- **Restrictions**
  - **Binary and text kernels**
    - » **No more than 80 characters per line**
    - » **Use only printing characters**
    - » **File must be in the native binary format for the machine being used**
  - **Text**
    - » **Begin comments with "\begintext" on a line by itself; begin data with "\begindata" on a line by itself**
    - » **See *kernel.req* for specifics**