

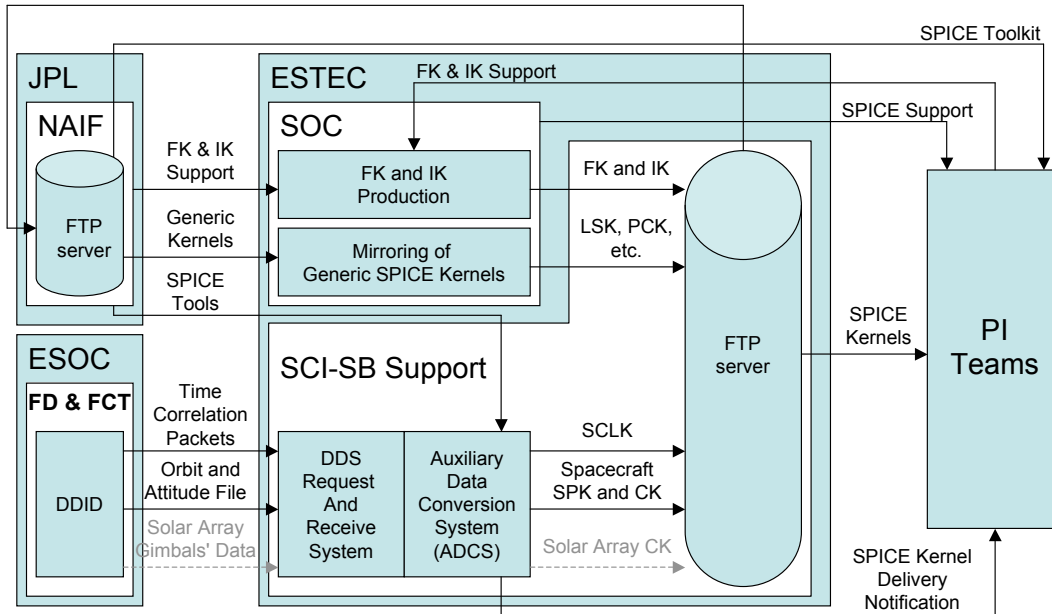
SPICE Production at ESTEC

April 2005

- SPK/CK production
- SCLK production
- FK and IKs production
- Other Kernels



Mirroring of ESTEC SPICE Kernels to NAIF FTP Server



SPICE Production at ESTEC



- Spacecraft SPK and CK files are created from ESOC/FD Orbit and Attitude files using ADCS:
 - Conversion is automated
 - ADCS also validates the conversion process.
 - ADCS converts only the format of the data, but the data themselves remain unchanged.
 - All ESA planetary missions' SPKs and CKs are generated with the same system.
- Solar Array CK files are produced from telemetry on request from the Teams (already foreseen production for Mars Express and SMART-1)
- ESA Ground Stations SPK files will be produced in the near future.



- SCLK files are created from:
 - Time Correlation Coefficient Packets for Mars Express and Rosetta.
 - Time Correlation Packets for SMART-1 (not yet implemented)
 - Venus Express SCLK source TBC.
- Fake SCLK files have been produced for SMART-1 and VEX and shall be used until a real SCLK file is provided (only for study purposes).
- Special SCLK files might be required for SMART-1 instruments AMIE and SPEDE.



- The Production of the Frames Kernels and Instrument Kernels for each mission is responsibility of the corresponding SOC.
- Instrument Teams and NAIF support the SOCs in the production of the Frames Kernels and Instrument Kernels:

SOC/Mission	FK/IK Supported by
PST/MEX	NAIF and Instrument Teams
RSOC/Rosetta	NAIF and Instrument Teams
STOC/SMART-1	Instrument Teams (no official support from NAIF)
VSOC/VEX	Instrument Teams (pending support from NAIF)



- All the other kernels that complete the Mars Express/Rosetta/SMART-1/Venus Express SPICE data set are obtained from NAIF, where they are produced. These kernels are:
 - **SPKs**: Planetary Ephemeris and DSN stations.
 - **FK**: DSN stations.
 - **PCK**: Planetary Constants.
 - Generic Text PCK for all bodies
 - High Precision Earth rotation binary PCK
 - Moon rotation binary PCK
 - Text PCKs for Rosetta targets
 - **LSK**: Leap-seconds and Time conversion constants.
 - Plate Model Kernels for asteroids and comet.



- SPICE kernels are available in the ESTEC FTP server:
 - MEX: <ftp://gorilla.estec.esa.int/pub/projects/MEX/data/spice/kernels>
 - Rosetta: <ftp://gorilla.estec.esa.int/pub/projects/rosetta/data/spice/kernels>
 - SMART-1: <ftp://gorilla.estec.esa.int/pub/projects/Smart-1/data/spice/kernels>
 - VEX: <ftp://gorilla.estec.esa.int/pub/projects/VEX/data/spice/kernels>
- SPICE kernels are also available in the NAIF FTP server for the following missions (ESTEC server is mirrored):
 - MEX: <ftp://naif.jpl.nasa.gov/pub/naif/MEX/kernels>
 - Rosetta: <ftp://naif.jpl.nasa.gov/pub/naif/ROSETTA/kernels>
 - VEX: TBD



- SPICE Data Sets for all ESA planetary missions will be archived within the PSA using PDS Standards.
- SPICE Data Sets will be accessible through the PSA web interface (www.rssd.esa.int/PSA). Additionally, the working repository will be kept available (see previous slide)
- For archival purposes, filenames might be changed; nevertheless, information about the original filenames will be available for trace-back purposes.
- SPICE to Archive Interface Control Documents will be available for all ESA missions and accessible through the PSA.