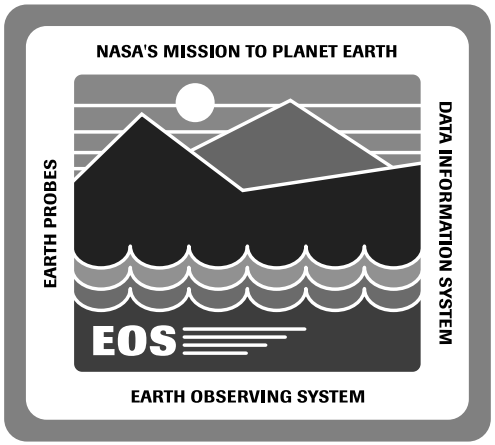
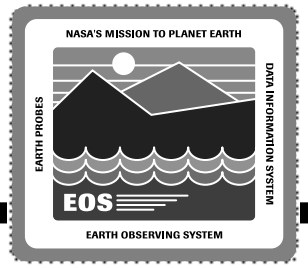


PAS Configuration Tools

Steve Pawlish

17 October 1995

Configuration Tools Overview



Tools for the Initialization and Maintenance of the User-defined Components of the Planning and Scheduling Software

Activity Definer

- **Defines command macros used In scheduling**

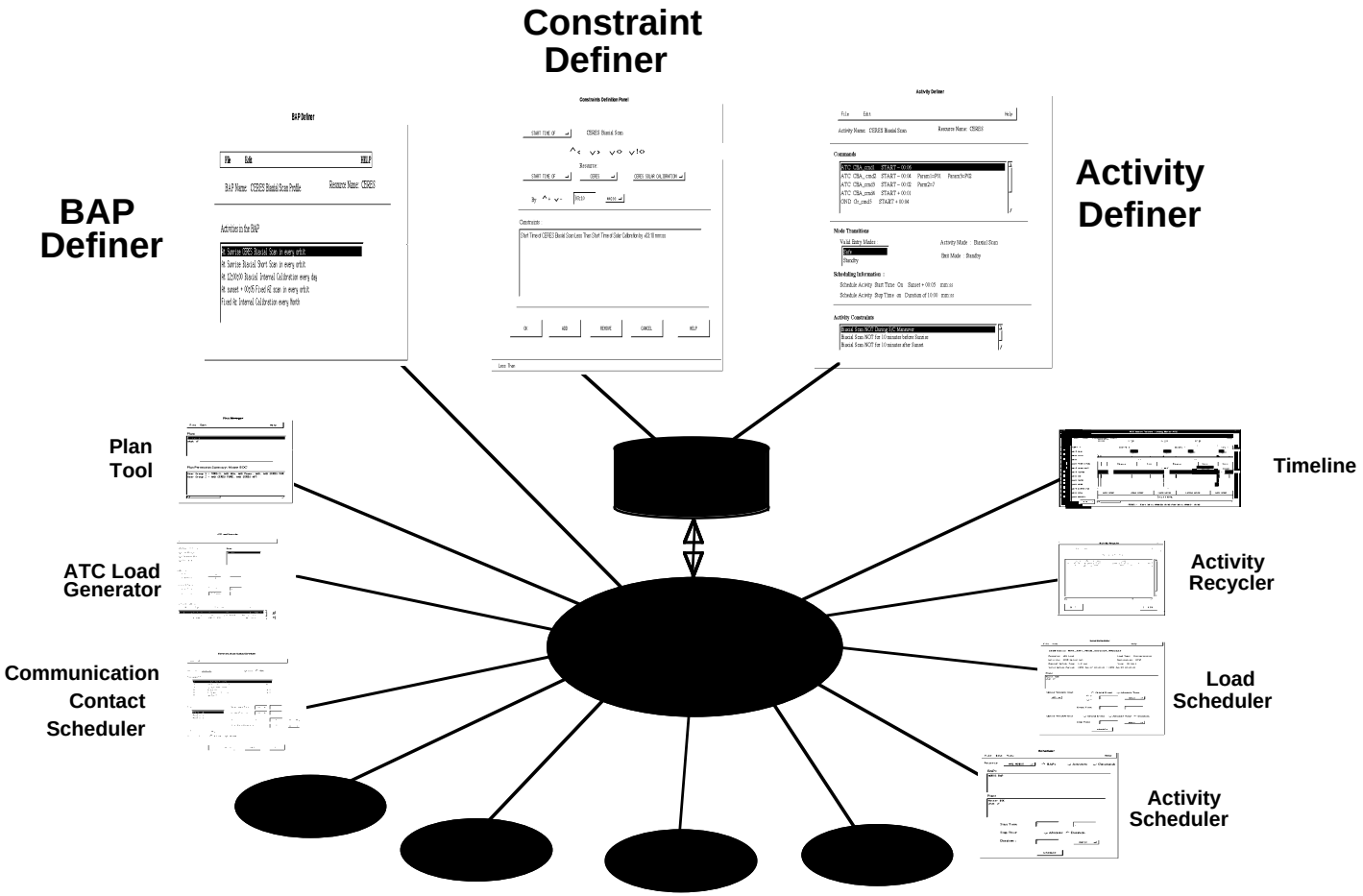
Baseline Activity Profile Definer

- **Defines groups of activities used to simplify scheduling**

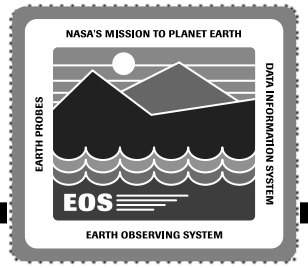
Constraint Definer

- **Allows users to specify scheduling constraints related to an activity**

Configuration Tools



Activity Definer Design



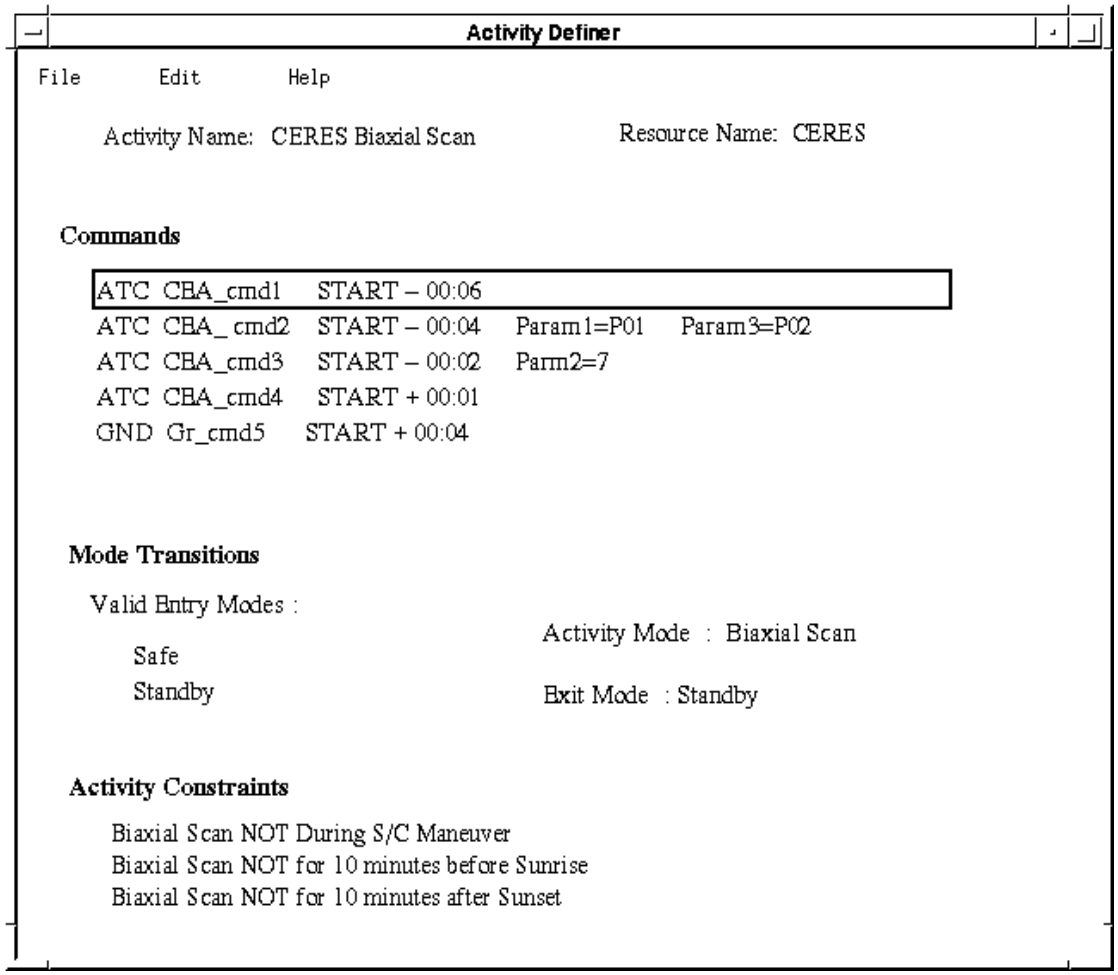
Defines Activities Containing

- **One or more commands**
  - **Time ordered**
  - **Offset from activity start or stop time**
- **Default parameters**
  - **Command parameters**
  - **Activity parameters (power and data volume consumption)**
- **Mode transitions caused by the activity's execution**
  - **Required for mode level constraint checking**

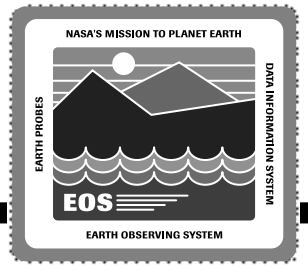
Approved Activity Definitions Stored in FOS Project Database

- **Activity parameter limits checked for health and safety**
- **Activities tested in test database prior to approval**
- **Command level constraint checks performed on definition**
- **Used later by P&S activity scheduler process**

Activity Definer Display



BAP Definer Design



Defines Baseline Activity Profiles (BAPs)

- **Repetitive sequence of activities**
  - **Define normal operations of instrument or S/C subsystem**
- **Used to simplify scheduling**

Period for Repetition of Activities in a BAP Determined By

- **Events (e.g. Sunrise, Sunset)**
- **Time (e.g. Every 2 Days at 01:00)**

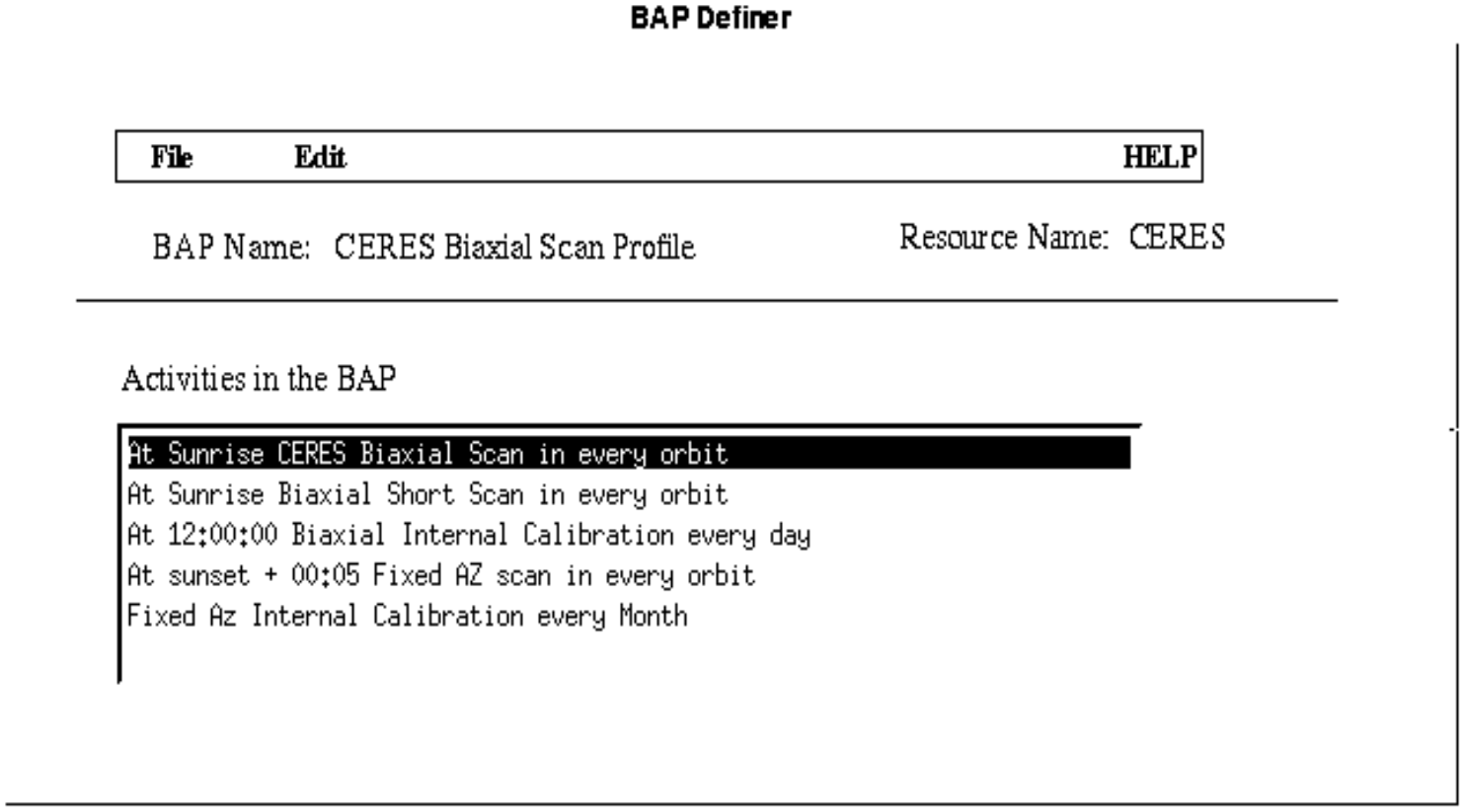
Uses Activities Defined in Project Database

- **Entered via Activity Definer**
- **Default parameters may be modified in BAP**

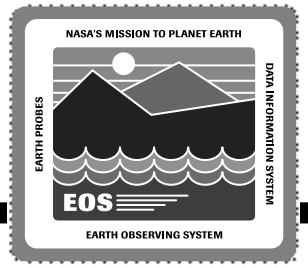
BAP Definition Stored in FOS Database

- **Activity parameter limits checked for health and safety**
- **Used later by activity scheduling process**

BAP Definer Display



Constraints Overview



2 Types of Constraint Checking

- **Activity level (checked by PAS)**
- **Command level (checked by CMS)**

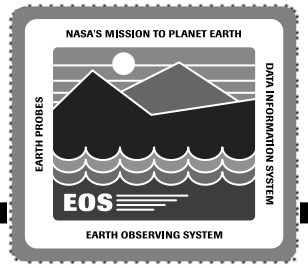
Constraint Checks are Performed During

- **Activity defining (command level)**
- **Scheduling (activity level)**
- **ATC load generation (command level)**

3 Types of Activity Level Constraint Checking

- **Instrument and S/C subsystem mode transitions**
- **Algorithmic constraints**
  - **Shared resources consumption (e.g. power and SSR buffers)**
  - **Resource specific constraints (e.g. HGA slew limitations)**
- **User-defined temporal constraints**

Constraint Definer Design



Defines User-defined Temporal Constraints

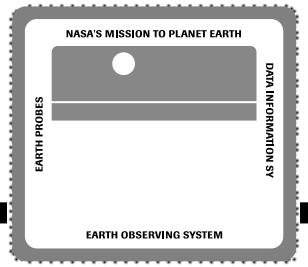
- **Activities related to activities, events or modes**
- **Supports basic temporal constraints**
  - **Before, after, during, contains**
  - **Negation (e.g. not during)**
- **Provides distinction between hard and soft constraints**

Custom Design Extensible to New Constraint Types

- **Generic constraint checker**
- **Specialized constraints derived from common base class**

Constraints Stored in FOS Database

- **Evaluated later during interactive scheduling**


NASA'S MISSION TO PLANET EARTH
EARTH PROBES
DATA INFORMATION SY
EARTH OBSERVING SYSTEM