# Planning and Service Request Concept

Planning and service requests are essentially the same, the principle differences being:

1. Planning requests do not result in “guaranteed” allocations of station facilities
2. Service requests contain additional information required to configure the requested services

Based on this same constraints/filters essentially apply to both Planning and Service requests, however the use of the constraints/filters is likely to vary dependent on the mission phase. Various possible uses are discussed below.

## Mission Design

The mission design phase will typically take place several years before the planned launch of a mission. During this phase it is likely that the planning requests submitted will specify minimal constraints, probably limited to asking what the actual visibility of the spacecraft is from a particular station or stations, but could also specify any other supported constraints that are deemed necessary to determine the possible support level that could be supplied to the mission.

## Long Term Planning

Long term planning tends to take place of the order of 6 months to a year before the expected operations will take place. At this stage the planning is usually still at a fairly high level with essentially a skeleton the expected operations in place. A planning request at this stage will again probably only contain a few constraints.

This information returned by the planning request at this stage will depend on what is supported by the station scheduling tools used by the service provider (and also the policy of the service provider) but may contain indications of:

1. Indications of possible contact periods
2. Indication of possible scheduling conflicts

## Medium Term Planning

Medium term planning takes place something of the order 1 to 3 months before the expected operations will take place. At this stage in the planning process more accurate trajectory predictions will be available and there will be a more refined understanding of the operations that are required and consequently a better understanding of constraints that may apply to requesting service. Consequently the filter criteria specified in the planning request may be more detailed than at the Long Term planning phase.

Again the information returned by the planning request will depend on what is supported by the stations scheduling tools used by the service provider (and also the policy of the service provider) but may contain indications of:

1. Indications of possible contact periods
2. Indications of possible scheduling conflicts
3. Indications of unallocated times in the ground station network (or part thereof) of the service provider.

The indication of free time may be useful to a mission if for some reason they need additional coverage as they can then generate addition planning requests for periods which are currently unallocated.

## Operational (Short Term) Planning

Operational planning takes place a 1 -2 weeks before the expected operations will take place. At this stage what will be submitted will be a service request. It is expected that the service request will specify all the constraints that apply to the missions abilities to utilise a service. As noted previously the service request will, in addition to the constraints, contain the information required to configure the requested service.

What will be returned at this stage is;

1. A list of scheduled service packages

And depending on the capabilities of the station scheduling tools used by the service provider and their policies the following information may also be returned:

1. Indications of scheduling conflicts
2. Indications of unallocated times in the ground station network (or part thereof) of the service provider.

Again the indication of free time may be useful to a mission if for some reason they need additional coverage as they can then generate additional service requests for periods which are currently unallocated.

# Common Elements of Planning and Scheduling Requests.

The following items are an initial pass at defining those elements that are common to Planning and Scheduling requests:

1. Trajectory predictions
2. Attitude predictions [TBC, Optional]
3. Reference to appropriate service agreement
4. Mission identifier
5. Period covered by planning request
6. Service(s) required
7. Maximum and minimum number of passes required per interval [Optional]
8. Specification of desired station(s) [Optional]
9. Indication if it is permissible to split coverage over 2 (or more ?) stations, i.e. in order to obtain the required pass time is it acceptable to have 1 (or more ?) stations handovers during the pass [Optional]
10. Duration of pass [Optional]
    1. Minimum length of pass
    2. Maximum length of pass
11. Interval between passes [Optional]
    1. Minimum interval between passes
    2. Maximum interval between passes
12. Timing Constraints [Optional]
    1. UTC Constraints
    2. Time of day constraints (i.e. passes only wanted during office hours)
    3. Constraints relative to events (including both defined events and additional events that are agreed on a bilateral basis), events can be (but are not limited to)
       1. Communications Events
       2. RFI Events
       3. Orbital events (e.g. eclipses etc.)
       4. Spacecraft Attitude
       5. Data rates
13. Range Constraints [Optional]
14. Anything else ?