# Requirements from the NAV group - DRAFT

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| 10 | An event shall contain timing information |

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| 20 | Timing information shall be either absolute or relative (exclusively) |

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| 30 | Absolute timing is defined by :  - an absolute time stamp : date + time  - the associated time scale |

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| 40-a | Relative timing is defined by :  - the time from a reference epoch (real number)  - the reference epoch (from which time is measured).    A reference epoch is defined by the same information as absolute timing: date/time + time scale. |

**Or**

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| 40-b | Relative timing information is defined by :  - the time from the reference epoch (real number)  - the associated time scale  - the reference epoch from which time is measured.    A reference epoch is defined by the same information as absolute timing: date/time + time scale.  Note: in this case, there may be two time scales: one for the relative time, one for the reference epoch. The two may be different from each other. |

**Or**

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| 40-c | Relative timing information is defined by :  - the time from the reference epoch (real number)  - an absolute time stamp : date + time  - the associated time scale  Note: in this case, there is only one time scale. |

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| 50-a | For absolute timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being UTC. |

**Or**

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| 50-b | For absolute timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being the time scale defined at a higher level or implicitly (that is in an ICD).    If no such time scale is defined, the time scale that shall be considered is UTC. |

**Or**

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| 50-b | For absolute timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being the time scale defined at a higher level.    If no such time scale is defined, the time scale that shall be considered is UTC. |

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| 60-a | For relative timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being UTC. |

**Or**

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| 60-b | For relative timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being the time scale defined at a higher level.  If no such time scale is defined, the time scale that shall be considered is UTC. |

**Or**

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| 60-b | For relative timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being the time scale defined at a higher level or implicitly (that is in an ICD).  If no such time scale is defined, the time scale shall be considered as UTC. |

**Or**

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| 60-c | For relative timing, the time scale may not be explicitly given. If no time scale exists in the events data, it is considered as being the same time scale as for the reference epoch. |

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| 70-a | For relative timing, the reference epoch not be explicitly given. If no reference epoch exists in the events data, it is considered as being the reference epoch defined at a higher level. |

**Or**

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| 70-b | For relative timing, the reference epoch not be explicitly given. If no reference epoch exists in the events data, it is considered as being the reference epoch defined at a higher level or implicitly (that is in a ICD). |

Example : reference epoch = 1 jan 2000 12:0:0 TT

defined either explicly or implicitly

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| 80 | It shall be possible to define lists (that is groups) of events |

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| 81 | The order in which events appear in the list of events does not matter. It has no impact on the definition of each event.  This means that the good processing of some event does not depend on the processing of some "previous" events. |

**(If applicable)**

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| 90 | It shall be possible to define time scale values independently of events |

**(If applicable)**

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| 100 | It shall be possible to define epoch values independently of events |

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| 110 | It shall be possible to add information to an event "structure".  The information that may be added is mission-specific. |

Example :

Event "aquisition of signal" (start of visibility pass), one may want to add the elevation at which the event occurs in the event "structure".

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| 120 | The information that may be added to an event can be event-type specific.  The information that may be added is mission-specific. |

Example :

* event related to ground station : elevation, name of ground station, ...
* event related to an orbit : argument of latitude, ...

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| 130 | It shall be possible to add information to an event list structure.    The information that may be added is mission-specific. |

Example :

Date/time when the list was generated, ...

This corresponds to the header/metadata of a typical NAV message.

Notes :

* The type of timing (absolute or relative) has no default value because it is not ambiguous whether it is absolute or relative.

* One question is whether it shall be possible to possibly have 2 time scales for relative timing : one associated with the (relative) time value, one with the reference epoch. Isn't it too complex ?
* One may want to define event time relative to other events: similar to 40-a or 40-b with the reference epoch being defined by another events. But this may be too complex.

# Additional remarks on events structure

(structure described in the draft Planning Information Book)

Additional remarks on the

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| Table A-1 - parameter "event" | Because the event is also the class itself, calling this field "event" is confusing.  eventName seems to be a better name. |
| Table A-1 - parameter eventTimeLatestOffset and eventTimeEarliestOffset | For the events structure to be used in a greater number of applications, why not make this parameter a real number (for applications that need a smaller timing resolution) |