Overview of OptionB_Rev1 Concept

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Introduction

- OptionB_Rev1 is a revision from the “original OptionB” to compromise with the comments and feedback from GERAN LCS group:
  - “Traditional GPS” is no longer included in the GNSS method, but GNSS method will complement GPS method
  - Acquisition assistance IE is included in form of GNSS Reference Measurement IE
  - GNSS Almanac Data IE is included
  - Bit efficiency maximized -> less bits than native Galileo data format, but still supporting the native data
  - Troposphere Model IE is left for further discussion
  - GNSS Timing (neighbor cell) Measurement IE is left for further discussion
  - Earth Orientation Parameter IE is left for further discussion
  - Galileo is favored, that is, Galileo system and Galileo L1 signal are the default values for GNSS and GNSS signal indexes

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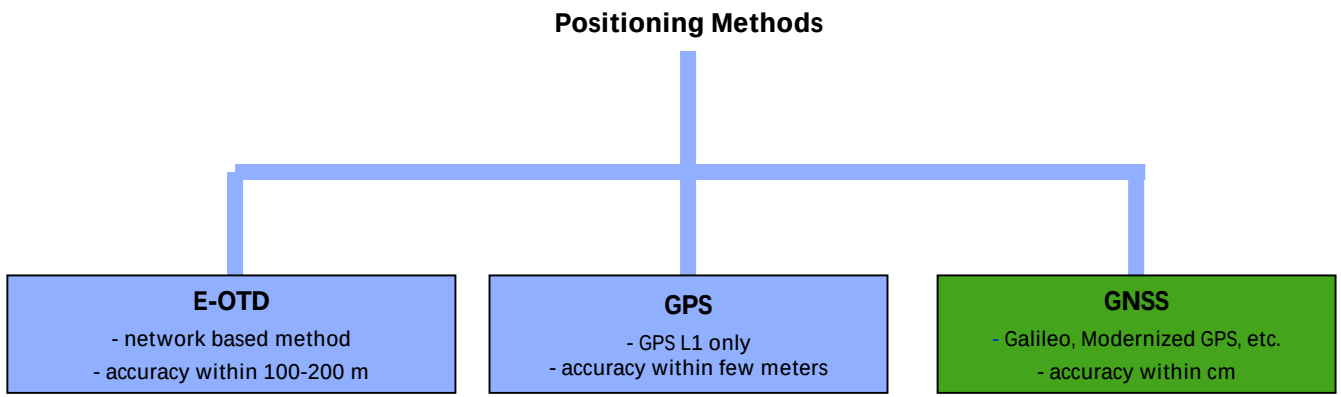
Positioning Methods



- GNSS method is added to include Galileo and other GNSS
- GPS and E-OTD methods not included or replaced by GNSS method
- GPS and GNSS co-exists e.g. in GPS L1 + Galileo L1 hybrid
  - Modernized GPS to be included in GNSS
- Specific GNSS systems not necessary to identify in GNSS method as assistance data IE's will be "tagged" with GNSS ID

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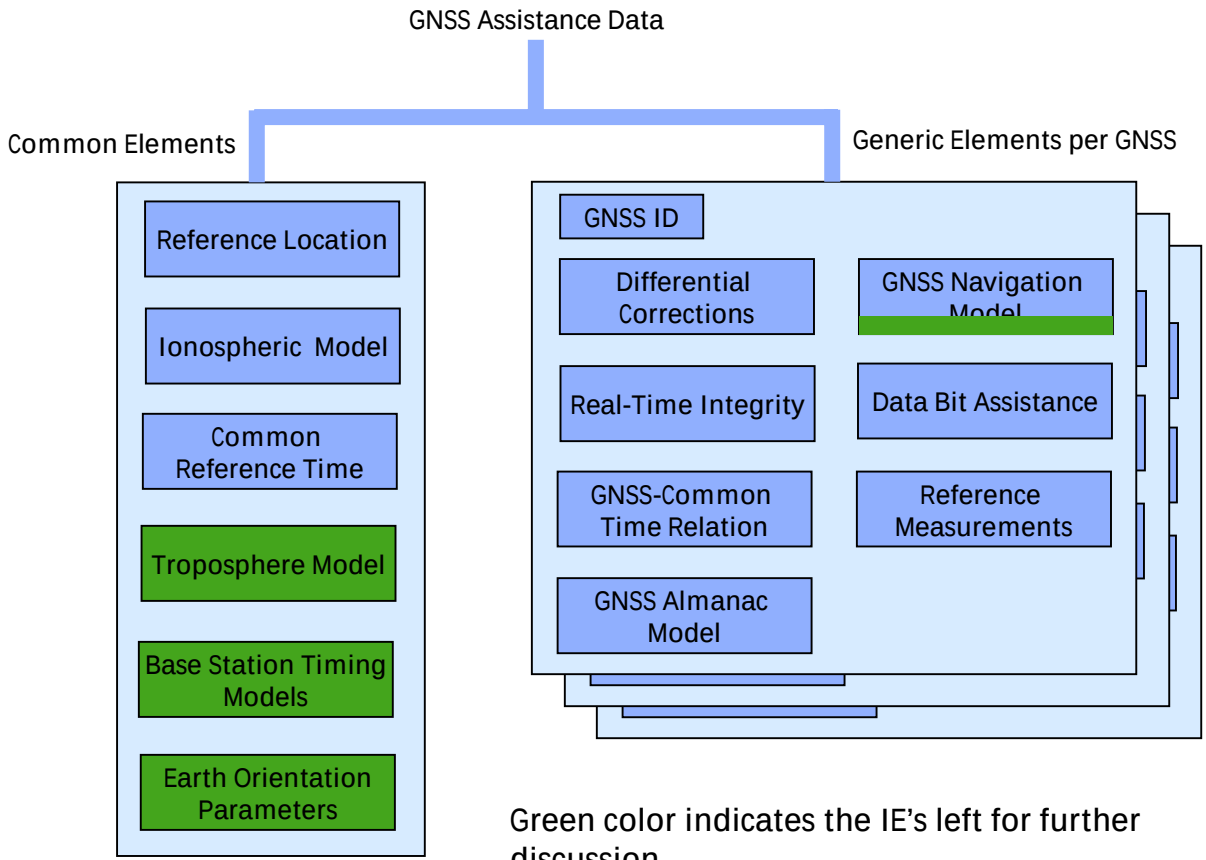
GNSS Assistance Data Information Element and Structuring

- GNSS Assistance Data is organized into two sets:
  - Common Elements and
  - Generic Elements
- Common elements are applicable to any GNSS
- Generic elements are repeated to each GNSS individually indicated by GNSS ID
- The contains of Generic Element "sheets" may vary from GNSS to GNSS
- Generic Elements are slightly modified from the "original OptionB" to maximize the bit efficiency
- IE's left for further discussion are:
  - Troposphere Model
  - Base Station Timing Model
  - EOP
  - GNSS Clock Accuracy Model (part of GNSS Navigation Model)



Green color indicates the IE's left for further discussion.

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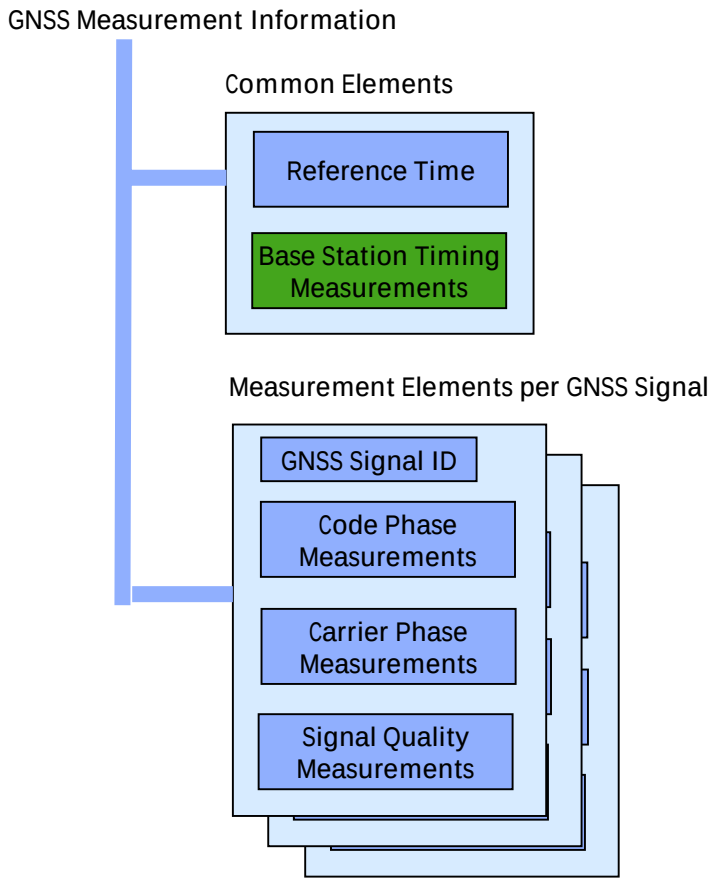
GNSS Measurement Information Response

- GNSS Measurement Information response is a generic structure designed for multiple GNSS with measurements from multiple GNSS signals.
- Reference Time definition is changed from the “original OptionB” as a compromise and to minimize complexity.
- Reference Time element contains the GNSS System Time from the GNSS given first in the Measurement Elements. If GPS L1 measurement are given in GPS Measurement Information, Reference Time is left out.
- Measurements are organized according to GNSS Signal ID’s and GNSS Measurement Response can contain multiple Measurement Elements.
- Measurement parameters are given in generic format, that is, in [m], [ms], [m/s]



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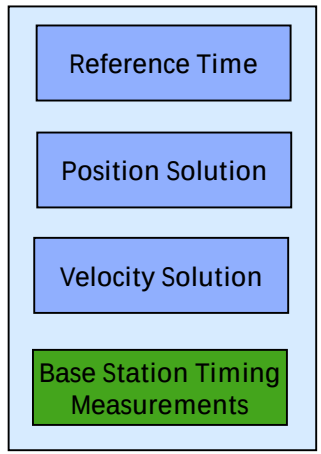
GNSS Location Information Elements

- GNSS Location Information response is used if the “traditional GPS” method is not requested.
- OptionB_Rev1 has a slight change compared to the earlier version in adding a new indication for “no-motion” state (Stationary Indication)
- Stationary Indication (1 bit) is used to
  1. replace Velocity Solution IE if the MS is not moving and/or
  2. replace Position Solution IE if the MS has not moved since the previous report
- Elements are also slightly modified from the “original OptionB” to maximize the bit efficiency

GNSS Location Information



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