| **Page** | **Section** | **Line** | **Type** | **Comment/ Rationale** | **Source of Comment (Name/Agency)** | **Suggested Disposition** | **Disposition**  **(Completed by Principal Editor)** |
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| 16 | 1.4.8 to 1.4.13 |  | ge | Even when trying to minimize the change wrt the previous version, reading this section and seeing the annex disorder is weird even if the reader knows the reason. | J.M.Lozano/ESA-GMV | Reorder these sections to have an ascending annexes order. | Updated with prior comment from Julie |
| 24 | Table 3-2 |  | ge | ORIGINATOR  As the TDM are not only created by agencies, it may be useful to consider this in the table. | J.M.Lozano/ESA-GMV | Either add non-agency examples and/or change agency by entity/organization in the definition. | Agree. Implemented “entity/organization”. What examples to use?  done |
| 27  29 | 3.3.1.12  Table 3-3 |  | te | The idea of using a reference to avoid repeating metadata in different segment is fine but the use of the keyword TRACK\_ID is misleading.  An SSA user would expect that a track is contained in a single segment. Example G-25 shows how we can split a track in several segments, but I am not sure how realistic is that example. As a user, a track that should not be too long, I would expect to receive it in a single segment. | J.M.Lozano/ESA-GMV | Reconsider if this is the best option to avoid repetition of metadata. It make sense to define an artifact to avoid repeating the participant, time scale, etc.. in all segment of a TDM, but TRACK\_ID may not work for this. | Need discussion  Juan: seems like if we have a unique TRACK\_ID per segment we should be ok.  Jose M.: It appeared the intent was to have TRACK\_ID used throughout the session. ~~To discuss with Ralph~~  Keep current implementation. Ralph will reach out if there are comments.  [exchanged info with Ralph, current implementation still works] |
| 29 | Table 3-3 |  | te | TRACK\_ID\_SEGMENT  The reference to verify receipt of all data may not be totally correct. If the last segment is missed the user will not know. | J.M.Lozano/ESA-GMV | Consider rewording. | Should we just remove the word “all”? It is an aid, not the ultimate solution.  Worked a solution in. |
| 30 | Table 3-3 |  | ed | DATA\_TYPES  The description says it is “comma-separated list” but the example shows several values without commas. | J.M.Lozano/ESA-GMV | To avoid misunderstanding it may be useful to add commas in the example. | Agree. Implemented. Note that this was not a new addition. Also changed the example implementation. |
| 30 | Table 3-3 |  | te | TDM\_BASIS  If only 4 values are acceptable and we are forcing user to select among them, we should clearly explain how to use them. For a reader, it may be clear the difference between test and simulated. If you are testing with simulated data, which is the right? Does it matter? | J.M.Lozano/ESA-GMV | Consider adding a explanation for some or all the possible values. | Offered some text  Looks good |
| 30 | Table 3-3 |  | te | TDM\_BASIS\_ID  The concept of this field is fine, but the name is misleading. Being after TDM\_BASIS it looks like it will identify the “modality” but it is really defining the dataset, and it is totally independent if the data is OPERATIONAL, etc... This is more a “track id. | J.M.Lozano/ESA-GMV | Reviewing if we should use a different term. | Need discussion / input  Keep the keyword name as it replicating the same from other nav messages. Text appears to work. |
| 32 | Table 3-3 |  | te | CDM\_MSG\_LINK\_n  Even when a CDM involves two objects, in most the cases only of them will be a participant in a given TDM. So there should be no ambiguity, but can we have a case in which we have a TDM where both object are participants. Maybe in a case of relative tracking.  Will in this case be acceptable/desired to include two CDM links, one for each participant, both referring to the same CDM. | J.M.Lozano/ESA-GMV | Consider adding an explanation for this case. | We can use the same CDM for both participant using the \_n index. |
| 33 | Table 3-3 |  | te | MODE  In some scenario double differences can be used. | J.M.Lozano/ESA-GMV | Consider adding DOUBLE\_DIFF or clarifying the right approach in this case.  Consider impact in PATH\_m. | Is this an actual data type being provided at this time? Or is the user expected to perform the double differencing?  J.M.: maybe the data transmitted is the raw measurements or the single differences, and not the double diff.  **No change**  **Not added** |
| 33 | Table 3-3 |  | te | PATH\_m  This field is conditional, but the condition is not clearly defined. | J.M.Lozano/ESA-GMV | Clarify the condition when it shall be included. | Added the following: “The PATH keyword may only be omitted when only one participant is defined.”  Implemented. |
| 38 | Table 3-3 |  | te | REFERENCE\_FRAME  If we are stating that only SANA values are acceptable, shouldn’t the examples be Normative?  Should it be a conditional field, as it is required using RADEC? | J.M.Lozano/ESA-GMV | Consider if a clarification is needed and if the field should be conditional. | #1 Normative: If we changed this to normative, the values we provide in the examples should cover all cases, but they do not. SANA has a lot more. I believe the “E” applies in that case.  Agreed  #2 Conditional: I agree. Changed to conditional. |
| 39 & 40 | Table 3-3 |  | te | TRANSMIT\_DELAY\_n & RECEIVE\_DELAY\_n  Does “ranging transponder delay” refers to a spacecraft transponder delay? Why are we only considering half? The spacecraft will be participant I and can have its own delay. | J.M.Lozano/ESA-GMV | Clarify how to handle spacecraft transponder. | The transmit and receive delay keywords are specific to each participant. The transmit portion of the transponder would be captured under TRANSMIT\_DELAY, and the receive by RECEIVE\_DELAY. Text was added to reflect the fact that if transmit and receive are independently known, they should be used. If not, then half of the delay is for transmit and half for receive.  No change required |
| 42 | Table 3-3 |  | Te | CORRECTION\_\*  Why if PARTICIPANT\_n is a spacecraft we cannot define a correction for tracking data? We would need it consider onboard transponder delay. | J.M.Lozano/ESA-GMV | Consider removing or clarifying the constraint. | As the document is now, it appears the CORRECTION\_RANGE\_n keyword can be used to provide a transponder delay for the right participant.  Changed the text live (5 Nov 2024). |
| 42 | Table3-3 |  | Te | CORRECTIONS\_ORDER\_n  CORRECTIONS\_APPLIED\_n  CORRECTIONS\_TIMETAG\_OBS\_k  The example ANG1 and ANG2 may be misleading, or it is wrong.  If the keyword is CORRECTION\_ANGLE\_1, should not the example be ANGLE-1? | J.M.Lozano/ESA-GMV | Consider updating the example. | Added the following note for this keyword and the next: “Note that section 3.3.1.12 defines abbreviations that may be used to identify each correction.”  This works |
| 44 | 3.3.1.13 |  | Ed | 4th paragraph  Reference to MAG should be RNG. | J.M.Lozano/ESA-GMV | Correct typo. | Had corrected already |
| 47 | Table 3-4 |  | Ed | Shouldn’t the parameter names be upper case? (See sec 4.2.6) | J.M.Lozano/ESA-GMV | Consider update. | Need to discuss what the best option is. They were in this format to differentiate from keywords.  J.M.: Does not seem standard. Votes for CAPS.  David: makes sense to have a distinction. It does appear clearly differentiated with start and stop keywords.  **Changed to UPPER\_CASE** |
| 52 | 3.3.2.6 |  | Te | The case of time of arrival difference is not cover by this section. Frequency of arrival difference may also not be covered by 3.3.2.6.5.  These are the observable for Passive Ranging systems. | J.M.Lozano/ESA-GMV | Consider adding them in this section. | Frequency difference at arrival was meant to be captured under 3.3.2.6.5. Corrected wording to clarify.  Implemented  Time difference of arrival is provided via the DOR keyword in section 3.3.2.6.8. It mentions differenced range, but the value is actually provided in seconds, which represents difference times of arrival. Should we clarify?  Dan: yes, clarify  #1  ADD KEYWORDS: TDOA and FDOA, so that it is clear to that specific set of users.  ~~#2~~  ~~ADD DESCRITPORTS OF TDOA and FDOA. The heading should include these clearly. Add to 3.5.3.1 and title, and 3.3.2.6~~  **Added TDOA and FDOA and removed DIFF\_FREQ (not used)** |
| 52 | General |  | Ed | There are several places where we use “Figures Figure X-1, … and Figure X-n”. | J.M.Lozano/ESA-GMV | Check if we can use “Figures X-1, X-2, … and X-n” of just “Figure X-1, … and Figure X-n are ..” | This is an artifact of printing to pdf. Not sure how to fix. |
| 54 | 3.4.13 |  | Te | We should include a way to provide the location than an external OPM.  For a network of SSA sensor that will not be practical and may prevent users from using TDMs. | J.M.Lozano/ESA-GMV | Consider adding location as another System Configuration parameter and/or data record like PRESSURE, RHUMIDITY or TEMPERATURE. | Agree it could be beneficial to add “location” as a system status item. This was discussed in prior meetings.  **JM: Add lat, lon, alt to the systems parameters.**  Unsure I understand the comment about weather data, as there are keywords for those.  JM: provided for comparison. No action needed |
| 55 | 3.4.15.2 |  | Te | Why onboard delay cannot be corrected?  It is common practice to correct the onboard delay by ground station or RTS systems as they know the configuration of the tracking campaign. The RTS can command the ranging campaign through different onboard transponders/beacons. | J.M.Lozano/ESA-GMV | Review reason to prohibit correction of onboard delays. | It is currently explained as a “should” statement, reflecting the fact that the station calibrations are typically better known to the measuring entity than the transponder delays. I think it is possible still to convey transponder delays if wanted with the data. This could be reflected with the corresponding ranging correction keyword for the spacecraft participant.  Implemented change. Generalized statement. |
| 67 | 3.5.2.8 |  | Ed | First line. Typo “Metadata” | J.M.Lozano/ESA-GMV | Correct typo. | Corrected already |
| 69 | 3.5.4.1 |  | ge | Angle data can be measured also by optical sensors, or other types of sensors.  Section 3.5.5 covers optical/radar but optical and most radars also provider angles. | J.M.Lozano/ESA-GMV | Consider rewording the first sentence to be more generic. | This was addressed since the draft went out.  Agreed |
| 77 | 3.5.9.8 |  | ge | It may not be clear enough for user how to use the system status. We should clarify that, if used, an initial section may be required and afterward they only need to add a system status section at the right epoch including only the parameters that are changing wrt to the initial set. | J.M.Lozano/ESA-GMV | Consider clarifying the use and, maybe, add more complex example. | Added the following: “It is recommended that an initial system status is populated before the first data point is provided. Subsequent system updates can be provided as system updates occur, or otherwise on a regular cadence.”  Agreed |
| 80 | Table 3-8 |  | Ge | Shouldn’t we use upper case for parameter names and examples? (See sec 4.2.6) | J.M.Lozano/ESA-GMV | Consider update. | Do the same as with comment 47  **DONE** |
| 81 | Table 3-8 |  | Te | Range\_Calibration  If a new range calibration is executed, the range correction may change. Can we handle it in a single segment? | J.M.Lozano/ESA-GMV | Check if the scenario is possible and if we need to include a new field for the new range calibration value. | I believe this is already addressed via the CORRECTIONS\_n keyword that may be updated in the data section. A calibration could also potentially be conducted without implementing a correction to the data (e.g. the data is not corrected)  No action |
| 86 | 4.4 |  | ge | Units are not only defined in table 3-6. | J.M.Lozano/ESA-GMV | Consider updating the section adding other sections where units are defined or adding a clarification saying that we refer to data section units. In the second case we should also add table 3-7, as it contains the same info in different order. | Agree. Added a reference to section 3.5 instead. Also did the same for 5.3.9.  Implemented |
| 89 | 5 |  | te | References to sanaregistry shall be updated to navsanaregistry for interagency review. Not sure if it is done by secretariat later. | J.M.Lozano/ESA-GMV | Review links in this section.  We should align with the last XMLNDM published before the review. | Ask David  David: if we use the real name, there is a chance that the link becomes broken.  Keep links as is for now. |
| 91 | 5.3.3.6.2 |  | ed | Version should be 3.0. | J.M.Lozano/ESA-GMV | Update section. | Should we start updating all instances to 3.0?  **Yes, change.**  **Updated** |
| 92 | 5.3.6.2 &  5.3.7.3 |  | te | We are adding the System Config and System Status data structure in metadata and data section.  We may need to add a subsection in each section explaining how extend XML to support them.  We may want to do something similar to 5.3.8.2. | J.M.Lozano/ESA-GMV | Consider adding the explanation for both data structures. | **Agree. Need to add these.**  **Added 5.3.6.3 and 5.3.6.4 for system config; and 5.3.8.5 and 5.3.8.6 for system status.** |
| 121 | F5 |  | ed | When this page is printed black and white the figure is not readable. | J.M.Lozano/ESA-GMV | Consider changing the color selection to improve readability. | The table was updated and color is not used. |
| 121 | F5 |  | ed | Last line. Lack of blanks. | J.M.Lozano/ESA-GMV | Consider adding blanks before and after =, as in the example before the figure. | Agreed. Implemented. |
| 143 | Fig G-21 |  | Ed | This example is difficult to read. It would be better if we add blank line before/after START/STOP keywords. | J.M.Lozano/ESA-GMV | Consider adding blank lines. | Agreed. Implemented. |
| 143 | Fig G-21 |  | te | DATA\_TYPES shall be a comma-separated list.  As angular data is always a pair, it may useful to include an example in table 3-3. | J.M.Lozano/ESA-GMV | Consider correcting example and table 3-3. | Agreed. Implemented. |
| 145 | Fig G-23 |  | te | This is an example of the use of TRACK\_ID, but it only contains a segment and does not show how the explanation in sec 3.3.1.12 can be used. | J.M.Lozano/ESA-GMV | Update the example to have, at least, two segment showing the option provided on 3.3.1.12. | That is one use case of TRACK\_ID. The one corresponding to real-time tracking is figure g-25  No action |