

Comment Template for: Draft Profile of Responsible Use of Positioning, Navigation, and Timing

| Comment # | Organization Name | Submitted By (Name/Email) | Page # | Line # | Section | Comment (Include rationale for comment) | Suggested Change | Type of Comment (General/Editorial/Technical) |
|------------------|--------------------------|--|---------------|---------------|----------------|--|---|---|
| 1 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | ii | 97 | Abstract | <p>Sentence of concern: "Applicability of this Profile to various sectors and sub-sectors is assumed, however sector specific concerns are not formally addressed."</p> <p>The draft document states an "assumption" (per sentence of concern above) but not who it was assumed by, or for what purpose that this assumption is made or needed.</p> <p>The document states that this profile is assumed to apply to various sectors, but it is not clear if this profile has any legal regulatory authority. That should be clearly stated in the abstract.</p> <p>Also indicate that the Profile guidance is tailorable commensurate with the acceptable and responsible levels of risk associated with disruption and/or manipulation of PNT data.</p> | <p>Change from: "Applicability of this Profile to various sectors and sub-sectors is assumed, however sector specific concerns are not formally addressed."</p> <p>Change to: "Applicability of this Profile to various sectors and sub-sectors is assumed by the developers of this document, however sector specific concerns are not formally addressed. Nor addressed is the role that this Profile may take (if any) in Federal regulations associated with the approval of PNT systems used in the various sectors and sub-sectors. The intended purpose of the Profile, when used as part of a risk management program, is to help organizations manage cybersecurity risks to systems, networks, and assets that use PNT services commensurate with the acceptable and responsible levels of risk resulting from the disruption and/or manipulation of PNT data."</p> | Technical |
| 2 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | ii | 94 | Abstract | <p>Sentence of concern: "The PNT serves as the foundation for the broad and varied stakeholder community using PNT services." This statement as currently written is meaningless and confusing. I recommend that this sentence is deleted (preferred), or at a minimum changed to something that is meaningful. Perhaps there is a missing word in the sentence (e.g., change "The PNT serves" to "The PNT Profile serves").</p> | <p>Either: 1) Delete the sentence: "The PNT serves as the foundation for the broad and varied stakeholder community using PNT services." or 2) Change the sentence to "The PNT Profile serves ..." (i.e., added the word "Profile").</p> | General |
| 3 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 1 | 245 to 246 | 1.2 | Editorial: "and" misplaced in bullet list. | Move the "and" to the second to last bullet. The "and" is currently in the third to last bullet. | Editorial |
| 4 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 1 | 259 | 1.2 | Technical: The scope for the responsible use of PNT is not sufficient. It should not only include "loss" (i.e., "disruption") of PNT data, but it should also include the "manipulation" of PNT data. Thus, one needs to assess both loss (disruption) and manipulation. The text here only mentions loss of PNT. | <p>Line 259: Change from: "... the loss of PNT data ..." Change to: "... the disruption or manipulation of PNT data ..."</p> | Technical |
| 5 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 1 | 226 to 227 | 1 | Editorial: The EO number is written three times in the first sentence. | Delete the third listing for the EO number i.e., delete "[EO 13905]" at the end of the sentence. Retain the first two instances at the beginning of the sentence. | Editorial |

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| 6 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 1 | 233 | 1.1 | I would recommend that the stated purpose is an "intended" purpose of the Profile. Organizations have been developing and managing the risks to their systems (associated with PNT and many other systems) for many decades. Other techniques to manage the cybersecurity risks are also appropriate. Also, clearly state that the desired outcomes are commensurate with the acceptable and responsible level of risk. | Change Lines 233 to 238 to the following: "The intended purpose of the PNT Profile, is to be used as part of a risk management program, to help organizations manage cybersecurity risks to systems, networks, and assets that use PNT services. The Profile provides guidance for establishing risk management approaches to achieve the desired outcomes commensurate with the acceptable and responsible levels of risk resulting from the disruption and/or manipulation of PNT data. The Profile is not intended to serve as a solution or compliance checklist that would guarantee the responsible use of PNT services." | Technical |
| 7 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 5 | 348 | 3.2 | Regarding the Line "The Framework Core^1." This line should be deleted, since it adds confusion. The footnote reference should be added to the previous line (after "Cybersecurity Framework"). With this change, the document will flow from Line 347 stating that the Cybersecurity Framework consists of three main components, and then there will be a three item list of the three components. | Delete the line 348 (i.e., "The Framework Core.") and move the footnote reference #1 to line 347 (where the footnote is on the text "The Cybersecurity Framework"). | General |
| 8 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 39 | 531 | 4.2.5 | Editorial: "IN" on Line 531 should be "In". | Change "IN" to "In" on Line 531. | Editorial |
| 9 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 40 | 533 | 4.2.5 | Editorial: In Table 12, "MA.2" should be "MA-2" for consistency with all the other tables for how subcategories are listed (including to be consistent within the Table 12 with MA-1). | In Table 12, change "MA.2" to "MA-2". | Editorial |
| 10 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 42 | 541 | 4.2.6 | Table 13, row PT-4: Referring to the paragraph: "As needed, consider transport security for networks that distribute PNT data. However, careful thought and validation are needed for higher precision timing applications since cryptographic algorithms and implementations can lead to time synchronization performance degradation." My concern is with regard to using a statement like "careful thought". How can we objectively measure that we have satisfied "careful thought" guidance? Recommend that this is reworded to more accurately reflect the intent as per the suggested change. | Change Paragraph to the following: "As needed, consider transport security for networks that distribute PNT data. As part of these considerations, it has been identified that implementing some transport security measures (e.g., use of cryptographic algorithms and implementations) can lead to time synchronization performance degradation that may be problematic especially for high precision timing applications." | Technical |
| 11 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 49 | 572 | 4.4.1 | Editorial: Period needed at the end of the sentence. | Add period at the end of the sentence on Line 572. | Editorial |
| 12 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 57 | 607 | 4.5 | Editorial: Extraneous quotation mark (") should be deleted, and probably replaced with a comma. | Delete the extraneous quotation mark ("). Consider replacing it with a comma. | Editorial |
| 13 | Collins Aerospace | Joel Wichgers - Joel.Wichgers@collins.com | 71 | 913 | Adpx. A | CRPA is an acronym known in the industry as typically "Controlled Reception Pattern Antenna". Thus, change "Patterned" to "Pattern". | Change "Patterned" to "Pattern". | Editorial |

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| 14 | Collins Aerospace | James Doty - James.Doty@collins.com | 14 | 457 | 4.1.1 | Because GPS and GNSS receivers are so ubiquitous in electronic devices such as cell phones, tablets, inventory tracking tags and vehicles, it is likely impractical to inventory all devices, especially those owned by employees and contractors. | Any inventory of PNT devices should be focused on those PNT systems specifically purchased for critical business purposes and to support critical infrastructure. PNT devices incidentally included in items purchased for other less-critical purposes do not need to be included in the inventory. Ubiquitous PNT should be addressed as general use cases and classes of operation. For example if a delivery tracking system uses data from vehicle or package mounted GPS, then the general impact of loss of GPS should be assessed for for this class of operations and mitigation plans or equipment should be put in place to address a loss of GPS for this class of operations. There is no need to inventory every vehicle or package tracking tag. | General |
| 15 | Collins Aerospace | James Doty - James.Doty@collins.com | 14 | 457 | 4.1.1 | This component level calibration is rarely required as the GPS signal level and delay can be easily evaluated at the GPS receiver output. | This level of calibration is only required for primary reference receivers such as those that monitor the GPS constellation or act as primary timing references. Very few organizations deal with this type of installation. | General |
| 16 | Collins Aerospace | James Doty - James.Doty@collins.com | 16 | 457 | 4.1.1 | As with AM-1, this is only required when the PNT function is part of critical operations or critical infrastructure. | In most cases such as cell phones, tablets, delivery vehicle navigation systems, and tracking tags, the PNT functionality and software is an incidental function and as long as mitigating procedures and/or hardware are available to address the loss of PNT information or the generation of erroneous PNT information, there is no need to inventory or evaluate the software for these systems. | General |
| 18 | Collins Aerospace | Patrick Morrissey - Patrick.Morrissey@collins.com | 1 | 248 | 1.2 | For Airborne applications organizations should use the framework for cybersecurity risk assessment and resolution provided through the RTCA standards: DO-326A, Airworthiness Security Process Specification, and DO-356A Airworthiness Security Methods and Considerations. These documents provide a means of compliance to address cybersecurity considerations related to safety certification for all airborne systems, including PNT. | Suggest specifying that Airborne systems have their own framework that should be utilized within the Scope section. | General |

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| 19 | Collins Aerospace | Kevin Neigum - Kevin.Neigum@collins.com | 1 | 248 | 1.2 | <p>Relative Cybersecurity and Risk Management Framework (RMF), the DoD and its associated government contractors are provided with guidance relative to these subjects as described in the following:</p> <ol style="list-style-type: none"> 1) DoDI 8500.01, Cybersecurity 2) DoDI 8510.01, Risk management Framework (RMF) for DoD Information Technology (IT) 3) DoD Guidebook, DoD Program Manager's Guidebook for Integrating the Cybersecurity Risk Management Framework (RMF) into the System Acquisition Lifecycle 4) DoDI 5000.02, Operation of the Defense Acquisition System 5) DoDI 8530.01, Cybersecurity Activities Support to DoD Information Network Operations | Suggest specifying that DoD applications have their own frameworks covered by other standards and references. | General |
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