# Time Management Working Group Minutes

May 24, 2021 teleconference

## Attending

* Jon Hamkins
* Sinda Mejri
* Beau Blanding
* Carlyn-Ann Lee
* Marina Ohara
* Michael Petkevich
* Eric Pitts
* Robert (Lee) Pitts
* Yukio Yamamoto

## Agenda:

* Introduction and review of the agenda
* Mission survey outcomes
* Review of action items
* Review of the draft Green book
* Any Other Business
* Conclusion/wrap up

The working group met virtually May 24, 2021, 1-4 pm UTC. Documents related to the meeting are stored in CWE, in the Meet Materials/2021/2021-05-24 Spring Meeting folder.

## Minutes

### Mission survey outcomes

Sinda Mejri reported a survey response from the Gaia mission, which is now in CWE. Some other mission points of contact have not yet responded. Sinda has established a new deadline of June 4 to respond.

NASA has received 11 responses out of a list of 60 missions. Responses are tabulated in the format that is in the Green Book.

The Working Group spent some time discussing the survey questions and how these will map to the table we intend to include in the Annex of the Green Book. The initial draft of the table by Carlyn-Ann Lee includes two tables – one relating to the recent inputs, and one containing information on navigation requirements from the older Conops document. Unfortunately, the survey questions do not relate exactly to what is in either table. After some back and forth, the Working Group agreed to merge the two tables into one as best we can, and to add a new column, “Early operations” to the table, to match what we have in question 8 of the mission survey. Carlyn agreed to take this as an action item, AI\_21\_06.

### Review of action items

AI\_20\_01. Yukio presented time packet format used by JAXA missions. A document was provided and placed in CWE describing the standard of communications and data-handling architecture. NASA, ESA, and DLR are still working the issue to gather material and obtain permission to share with the Working Group.

AI\_20\_02, AI\_20\_03. NASA, ESA, and DLR have reported several mission survey responses. JAXA is working to determine what may be gathered and reported to the Working Group.

AI\_20\_04. Jon Hamkins reports that no progress has been made on providing this introductory section.

AI\_20\_05. Sinda Mejri completed action item AI\_20\_05 by redrawing figures 8 and 9 describing the NTP algorithm and detailed hierarchy. Sinda also updated the wording in section 3.5.4. Jon will merge these inputs into a revised Green Book draft.

AI\_20\_06, AI\_20\_07. Lee Pitts provided the sections on Time Synchronization and DTN, closing these action items. Lee previously completed action item AI\_20\_07, providing updated figure and references, and uploaded to CWE in the draft documents folder. Jon will double-check that this figure 3 has been merged into latest Green Book draft.

AI\_20\_08. Jon Hamkins reported that he has rewritten the beginning of Section 5 to remove any NASA-specific terminology. In its place, more generic language was included to describe the concept of time correlation.

AI\_21\_01. Jon Hamkins reports that there remain missing sections of the Green Book, and it cannot be prepared for WG review yet. With the consent of the Working Group, Jon will edit the overall draft as it exists to renumber all figures and tables, edit for grammar and clarity, and move all references to a single location, with consistent numbering and cross-referencing.

AI\_21\_02. Sinda Mejri reports that Section 4.4 on Beidou is partially written, but some sections are missing . Zhang Cuitao did not attend the meeting. Sinda agreed to contact him for any missing information, or failing that, to complete the section as best as we can.

### Review of the draft Green book

We stepped through the green book and identified missing sections and assigned new action items.

AI\_21\_03. Sinda Mejri agreed to complete Section 3.6, National and International Organizations, to include a description of BIPM, NIST , CCTF, ITU, IERS, CCSDS, and ANSI, as they relate to time management.

AI\_21\_04. Beau Blanding agreed to double-check that the current version of the distributed Green Book draft includes his and Eric Pitts’s latest inputs on Section 4.1 on GPS.

AI\_21\_05. The Working Group discussed the organization for a section on science activities. Rather than a listing of missions and their individual requirements, which would be somewhat duplicative of the mission survey annex, we agreed to categorize broad classes of science activities by type, and to discuss in general terms the nature of their timing requirements, along with examples of missions that had such instruments and any relevant and interesting aspects of those science instruments. Beau Blanding took an action to complete this section.

AI\_21\_06. Carlyn-Ann Lee presented the status of the NASA mission survey results, along with information from the previous Conops paper, in table format. This material will be placed in an annex of the Green Book. After discussion, Carlyn agreed to merge these two tables, placing the Conops information into appropriate columns of the first table. Carlyn will also add a new column to the table, “early operations” to capture information from question 8a of the mission survey.

### Other business

We should start thinking what we want to standardize in a Blue Book. IOAG wants to have a time service. We plan to do this starting after the June 2021 meetings.

### Next meeting

The Working Group tentatively agreed to meet on June 17, 7-9 am PDT (14:00 UTC), provided this is an acceptable time for Christian Stangl, who was not able to attend the May meetings.

## Action items

Open action items are listed in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **AI#** | **Action** | **Assignee** | **Due Date** | **Status** |
| AI\_20\_01 | Each space agency to detail format of time calibration packets used in missions | NASA: Jon; ESA: Sinda; ~~JAXA: Yukio~~  DLR: Christian | Dec 2020: determine what can be released.  May 2021. | Open. Agencies may be limited in what can be released. JAXA: closed |
| AI\_20\_02 | Determine what/whether mission survey data can be publicly released | ~~NASA: Carlyn~~  ~~ESA: Sinda~~  ~~DLR: Christian~~  JAXA: Yukio | ~~Dec. 2020~~ June 2021 | Open  NASA: closed DLR: closed ESA: closed |
| AI\_20\_03 | Complete mission survey | NA~~SA: Carlyn~~  ESA: Sinda JAXA: Yukio | ~~May 2021~~ June 4 2021 | Open NASA: closed DLR: closed |
| AI\_20\_04 | Write section 2.1 | Jon Hamkins | ~~December 2020~~  June 2021 | Open |
| ~~AI\_20\_05~~ | ~~Write 3.5.4~~ | ~~Sinda Mejri~~ | ~~December 2020~~ | ~~Closed~~ |
| ~~AI\_20\_06~~ | ~~Write 3.5.5~~ | ~~Lee Pitts~~ | ~~December 2020~~ | ~~Open~~Closed |
| ~~AI\_20\_07~~ | ~~Write section 6 (time synchronization section)~~ | ~~Lee Pitts~~ | ~~December 2020~~ | ~~Open~~. ~~Update 1/21/2021: To-do: Provide updates on fig 3; upload refs to CWE~~  Closed. |
| ~~AI\_20\_08~~ | ~~Rework the introduction in Section 5 to remove any NASA-specific terminology~~ | ~~Jon Hamkins~~ | ~~December 2020~~ | ~~Open~~  Closed. |
| AI\_21\_01 | Prepare Green Book draft for initial WG review | Jon Hamkins | ~~March 2021~~ August 2021 | Open |
| AI\_21\_02 | Draft section on BEIDOU (section 4.4) | Sinda Mejri | ~~March 2021~~  June 2021 | Open.  Section is partially written. Sinda to contact Zhang Cuitao for some missing information. |
| AI\_21\_03 | Section 3.6 on international organizations | Sinda Mejri | June 2021 | Open. |
| AI\_21\_04 | Double-check wording and references in Section 4.1 (move references to section 1.5) | Beau Blanding | June 2021 | Open. |
| AI\_21\_05 | Section 7.1 science activities | Beau Blanding | June 2021 | Open. |
| AI\_21\_06 | Merge mission survey tables and add “early operations” column | Carlyn-Ann Lee | June 2021 | Open. |