1. **Call to Order – Welcome/Opening Remarks**

James Afarin, CMC Chair, called the meeting to order at 0847h and welcomed everyone to Darmstadt. He thanked Juan Miro, Nestor Peccia, and ESA/ESOC for hosting the meeting and noted the sympathies for the recent terrorist attacks in Paris. J. Miro welcomed everyone to the ESOC facilities and reminded them of a moment of silence at ESOC for the victims in Paris. Jean-Marc Soula thanked everyone for their support and solidarity.

2. **Introduction of Delegates**

Introductions followed. Attendees were:

James Afarin (NASA)  
Dmitri Barannikov (FSA)  
Erik Barkley (NASA)  
Eduardo Bergamini (INPE)  
Gian Paolo Calzolari (ESA)  
Tomaso di Cola (DLR)  
Margherita di Giulio (ESA)  
Marc Blanchet (SANA/Viagenie) via WebEx  
Tom Gannett (Secretariat)  
Yonghui Huang (CNSA)  
Mario Merri (ESA)  
Juan Miro (ESA)  
Nestor Peccia (ESA)  
Osvaldo Peinado (DLR)  
Martin Pilgram (DLR)  
Michael Schmidt (ESA)  
Keith Scott (NASA)  
Peter Shames (NASA)  
Tsutomu Shigeta (JAXA)  
Jean-Marc Soula (CNES)  
Martin Suess (ESA)  
Siamak Tafazoli (CSA)  
Wallace Tai (NASA)  
Nick Tongson (Secretariat)  
Wei Yonggang (CASI, guest)  
Wang Weijia (CASI, guest)

3. **Agenda Review and Approval** ([CMC Agenda Darmstadt - Nov2015v4](#))

The group reviewed and approved the draft agenda.

4. **CESG Area Reports, Summary from Darmstadt** ([d04-CESG-Report-to-CMC-Fall15](#))

4.1 **CESG Chair Introduction (slides 1-16)**

Nestor Peccia provided the CESG report and noted the good meetings of the Working Groups in Darmstadt. He provided the current status of various projects and noted the strong participation of all the agencies that resulted in a record number of participants.

4.2 **SOIS Area (slides 25-38)**

Martin Suess provided his report. J. Afarin asked about CAST using one of the applications and M. Suess indicated that it wasn't a prototype per se but rather using one of the definitions to test it. M. Pilgram also noticed the absence of the Deterministic Networking BoF in the CESG chart online.
There were also questions about the planned end dates for some SOIS projects and M. Suess informed the CMC that he will update these dates.

4.3 SE Area (slides 39-52)
Peter Shames provided his report. J. Afarin asked when CCSDS will run out of spacecraft IDs (SCIDs) and P. Shames said that the need is urgent and SANA is doing two activities to buy some time before some of the proposed solutions are implemented. These two activities are: [1] requested agencies to return SCIDs that they no longer use and [2] taking back simulator IDs (with some agreement from the agency).

Action Item (AI): SANA was requested to circulate a list, by agency, of the SCIDs that should be returned to SANA. CMC member agencies should provide a response to SANA by 31 January 2016. [CMC-A-2015-11-02]

AI: The CMC instructed the SE AD to create a resolution as a result of a CMC poll that would inform the agencies that SANA plans to take back the simulator IDs assigned to them. [CMC-A-2015-11-03]

T. Gannett informed everyone that there are procedures for requesting and returning SCIDS and is documented in a yellow book but that agencies are not following the procedures. P. Shames also provided an update on the coordination work with SC14.

4.4 MOIMS Area (slides 74-85)
Mario Merri provided his report. M. Pilgram asked that the focus of the Green and Blue Books for Mission Planning Services WG and the Telerobotics WG should be clear. M. Merri said that this will be complicated for the Mission Planning Services WG but that the WG will start in a simple way.

4.5 CSS Area (slides 53-73)
E. Barkley provided his report. T. Gannett asked about the technical note and E. Barkley informed him that this will not be published for now.

4.6 SLS Area (slides 86-106)
Gian Paolo Calzolari provided his report. M. Pilgram asked about the charter for the Optical Communication WG. G.P. Calzolari informed the group that two Blue Books are being developed and consensus is still needed. JAXA inquired whether agreement has been made in regard to the use of the Deep Space scenario for Moon missions including wavelength. Response was affirmative. S. Tafazoli asked about COP-1 (for telecommand). G.P. Calzolari said that there are currently no planned changes for COP-1. G.P. Calzolari also explained the difference between COP-1 and COP-P.

4.7 SIS Area (slides 17-24)
Keith Scott provided his report. He noted the good coordination between CCSDS and IETF (Internet Engineering Task Force).

4.8 Summary/Meeting Statistics
See CESG Chair Introduction.

4.9 Items Brought to the Attention of the CMC (slides 107-112)
N. Pecci provided a report from the Darmstadt and CESG meetings. The CMC also discussed the principles for nominating and approving a new Area Directors (and Deputy Area Directors). There was a need to get other CMC agencies involved in the process. More agency participation needed at the initiation of the BoF to capture all the interested stakeholders. J. Miro asked about what mistakes were made in the past and some explanations were put forward for lessons learned and to prevent the same scenario in the future.

The CMC also discussed the pilot test for cloud service for interoperability and how to pay for it.

AI: A pilot test (SDLS WG) for cloud service for interoperability testing was identified and the CMC will be solicited for financial support in paying the one-time $500 fee (good for six months). Any agency willing to pay the fee should notify the Secretariat by 30 March 2016. [CMC-A-2015-11-04]
The CMC also discussed the Orange Book on Correlated Data Generation and the Russian proposal to change it to a Blue Book.

AI: The CMC instructed FSA/Dmitry Barannikov to distribute Correlated Data Generation (Orange Book) amongst the CMC members to determine if there is support for this project to become a Blue Book. Responses should be submitted to the Secretariat by 31 March 2016. [CMC-A-2015-11-11]

The CMC also discussed the Russian proposal on unmanned spacecraft flight safety and collision. It was noted that there is not much benefit for this proposal because most (90%) of potential collisions are with satellites and debris and that there is already a standard on CDM (Conjunction Data Message) for collision avoidance. It was suggested that ISO/TC 20/SC 14 (Space Systems and Operations) might be a better fit for this proposed project.

5. Agency Report on Priorities

5.1 ASI
No report provided.

5.2 CNES (CNES priorities november 2015)
J.-M. Soula provided his report. He indicated that CNES budget discussions are done once a year.

5.3 CNSA
Y. Huang provided an oral report on behalf of R. Zhang. However, he indicated that CNSA will participate more in the future (specifically the Generic File Transfer project) and within SOIS.

5.4 CSA (CMC CSA Report Fall 2015)
S. Tafazoli provided his report. He indicated that Wireless and Telerobotics are potential areas for further participation.

5.5 DLR (CMC DLR Report-Nov-2015-11-18mp-2)
O. Peinado provided his report. He indicated that, like some agencies, DLR has no specific budget for standardization.

5.6 ESA (ESA Priorities CMC Fall 2015 r2)
J. Miro provided his report.

5.7 FSA (FSA CMC Agency Report Darmstadt v2)
D. Barannikov provided his report.

5.8 INPE
E. Bergamini provided an oral report.

5.9 JAXA (JAXA_input_to_Darmstadt_CMC_Nov2015)
T. Shigeta provided his report.

5.10 NASA (NASA News - CMC Agency Report November 2015 Final v2)
J. Afarin provided his report.

5.11 UKSA
No report provided.

6. Online Strategic Plan (Technical Goals, Published/Approved/Draft Projects). Face-to-face Strategic Plan update (as response to CESG action) addressing CMC comments and update on CCSDS Future Strategy/Strategic Roadmap (d04-CESG responses to CMC comments on-line Strategic Plan) (CCSDS_Strategic_Roadmap_151116)
J. Miro provided a brief background presentation. The CMC reviewed the CESG response to the CMC comments on the Strategic Plan. The CMC agreed to assign a number to each project that does not have one (also add this in a future revision of the Procedures Yellow Book). They also agreed to maintain the 5-year periodic review of the CCSDS documents.
The CMC agreed that goals which have already been achieved should have a generic text added indicating that the goal has been achieved and is under maintenance.

The CMC also agreed that some text needs to be added in future projects where two prototypes are coming from the same agency so that everyone is aware. The group also discussed completion dates and projects on and behind schedule. The CMC also discussed WG charter approvals and the process for this approval.

**AI:** DLR/Martin Pilgram requested the Secretariat to explain "on schedule/behind schedule" of the Project Status in the Management Framework and how they are calculated. [CMC-A-2015-11-05]

The CMC also discussed the possibility of having a print version of the online strategic plan.

**AI:** The CMC instructed the Secretariat to add a print function to the online strategic plan. [CMC-A-2015-11-06]

There was a comment that some of the links to WG charters do not work.

**AI:** The CMC instructed the Secretariat to review the links to working group charters because some of them seem to be incorrect. [CMC-A-2015-11-07]

The CMC agreed that a yearly review to changes (if any) to area goals will be presented by the Area Director at a CMC meeting. It was also suggested that a review of the strategic plan every 5 years might be needed for consistency.

**AI:** The CMC instructed the SEA Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01a]

**AI:** The CMC instructed the MOIMS Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01b]

**AI:** The CMC instructed the CSS Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01c]

**AI:** The CMC instructed the SOIS Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01d]

**AI:** The CMC instructed the SLS Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01e]

**AI:** The CMC instructed the SIS Area Director to update the online Strategic Plan area contents and all the associated projects per agreed CMC comments. [CMC-A-2015-11-01f]

All these updates will be completed by end of January 2016.

J. Afarin suggested that updating the CMC portion of the strategic plan will be coordinated by the Secretariat.

*7. Resources Topics* ([CCSDS-Resource-Matrix-7thNov2015](#)) ([d05-CESG Approved and Draft Projects](#))

*7.1 CESG report on resources status (projects with issues)*

N. Peccia provided an updated presentation. He identified the projects with missing resources, especially those that have an immediate need. There was a suggestion to use other resources (like students) to complete the missing prototypes.

*7.2 Roundtable discussion of Resources process*

See agenda item 8 below.

*7.3 Schedule of projects as impacting resources (future work, etc.)*

See agenda item 8 below.
8. **Project Review/Approval – Schedule of projects impacting resources in 2016** (d04-CESG Priorities on Approved and Draft Projects)

The CMC discussed an updated status of approved and draft projects scheduled for 2016 that lack resources for each area. J.-M. Soula mentioned that there seems to be a mismatch between the CESG and IOAG priorities.

Based on the discussions on resources, 78 work-months are missing (8 for approved projects missing prototype 2 and 70 for draft projects starting in 2016). The CMC needs to prioritize between approved and draft projects and 1 vs 2 prototypes for approving new projects. The CMC agreed to review approved projects first for resources and then discussed about starting with draft projects with high priorities for review and approval. N. Peccia revised his presentation on project priorities, taking into account the various priorities.

AI: The Secretariat was instructed to circulate the revised file from Nestor Peccia's presentation of 2016 approved projects lacking prototype 2 (Nav-SMM; MO-XML Encode; MO-TCPIP; Bundle Sec Protocol) to the CMC members to determine if they have additional resources within their agencies and any alternative resources that can help with these projects. Responses should be submitted to the Secretariat by CMC mid-term telecon. [CMC-A-2015-11-08]

AI: The Secretariat was instructed to circulate to the CMC members the projects that lack resources/prototypes (Nav-ADM; Nav-NHM; Nav-PRM; MO-Data Distribution; Tel-Blue Book) due for completion in 2017 in order to determine if they are able to provide resources. The Secretariat should be informed by CMC Spring 2016 meeting. [CMC-A-2015-11-09]

The CMC discussed the advantages and disadvantages between 1 and 2 prototypes and each agency was asked their opinion on whether 1 or 2 prototypes are needed at CMC approval.

*Resolution 2015-11-01*

The CMC agrees to require two prototypes for approving future new Blue Book projects with some exceptions, when appropriate.

The CMC also discussed the accessibility of the CWE but no decision was reached on which areas/links should be open to the public and which should be kept private.

9. **IOAG Presentation and ICPA Update** (slides 113-114 of the CESG Report to the CMC)

N. Peccia and Michael Schmidt provided an IOAG and ICPA update.

AI: The CESG chair was instructed to clarify the Time Transfer, Clock Correlation, and Time Synchronization projects from the ICPA/IOAG presentation. [CMC-A-2015-11-10]

10. **SANA and Registries Report** (201511xx_darmstadt_sana_ssg)

M. Blanchet provided his report. He informed the group that the registries will be interlinked instead of being a stand-alone. He also explained the meaning of the colors in the ID number assignments matrix.

11. **Procedures and Organization YB – Proposed Updates**

T. Gannett provided a brief summary of the proposed changes to the Procedures and Organization Yellow Book.

The following five proposed changes were identified:

1. Adding text for prototypes in Orange Books (prototypes will be in an annex).
2. Text about new process for requesting nominations for chairs and deputy chairs (agencies given 30 days).
3. Requirement for requesting a document number for approved projects.
4. Standardizing resource estimates to staff months.
5. Additional text in the testing Yellow Book to clarify the independence of prototyping.

T. Gannett will introduce these changes as a corrigendum.

12. **Secretariat Report**
N. Tongson informed the group that the draft minutes from the September 2015 midterm telecon are being reviewed and will be placed on CMC poll shortly. [Secretariat Note: The draft minutes from the September 2015 telecon were approved.]

12.1 Action Items Status (Open Action Items - CMC - Sep2015v1)
The CMC reviewed the open Action Items. The following decisions were reached on these items:
- CMC-A-2012-10-01 will be re-opened for other agencies and re-designated as CMC-A-2015-11-15 with a deadline of Spring 2016 CMC meeting.
- CMC-A-2014-11-01 due date changed to Spring 2016 CMC meeting.

12.2 Document Status Report (CCSDS Document Status and Document Editor Queue)
The CMC reviewed the report as provided by T. Gannett. N. Peccia also explained the status of the various projects that are currently being edited by T. Gannett.

12.3 Resolution Report
The Secretariat will request T. Gannett to provide the report for the next CMC meeting.

Secretariat provided the reports, as submitted by B. Oliver. N. Peccia provided some background information on some projects with long delays.

12.5 IT Project Status (CCSDS Secretariat IT Development Project Priorities - Updated 11_15_2015)
B. Oliver provided a report on the status of certain IT projects including the IT priority list, including how much is completed per project and the estimated completion date. His presence was requested for the CESG meeting in Cleveland for Spring 2016.

13. Meeting Planning
The CMC discussed the advantages and disadvantages of 4 or 5 technical meeting days and N. Peccia informed the CMC that he will also get the feedback of the Area Directors regarding this topic, keeping in mind that the original decision was for the host to decide on the number of days for the technical meetings.

13.1 Spring 2016 Tech Plenary (NASA/USA-Cleveland)
J. Afarin informed the CMC that NASA has finalized the meeting location in Cleveland (Westin Hotel) from 4-8 April 2016 with the CESG meeting on 11 April 2016. A block of rooms with a special rate has been arranged with the hotel.

13.2 Spring 2016 CMC (INPE/Brazil) (LOGISTICS-Sao Jose dos Campos V.16 Nov.15.1)
The CMC confirmed the meeting dates of 26-28 April 2016 in Brazil at the INPE facilities in São Jose dos Campos. E. Bergamini provided additional details on the planning logistics. Secretariat will forward to E. Bergamini a sample Letter of Invitation so that he can generate an appropriate letter for the individuals that need one. A technical site visit might also be arranged. A formal ISO/TC 20/SC 13 meeting will be held.

13.3 Fall 2016 Tech Plenary & CMC (ASI/Italy)
The CMC confirmed the meeting dates of 31 October – 4 November 2016 for the technical meetings and 7-10 November 2016 for the management meetings. The technical meetings will be 5 days with the CESG meeting on Monday, 7 November. It was also agreed that the SC13 meeting (afternoon) will be held in parallel with the CESG meeting on Monday, 7 November (a separate room will be needed from the host/ASI).

13.4 Spring 2017 Tech Plenary (NASA/USA-Houston)
J. Afarin informed the CMC that NASA is tentatively planning to hold the 2017 technical meetings in Washington, DC because of some issues with Houston hosting the meeting.

13.5 Spring 2017 CMC (FSA/Russia)
D. Barannikov informed the CMC that more information will be provided at the Spring 2016 CMC meeting in Brazil. He added that the meeting is being planned for Moscow.

13.6 Schedule for next CMC mid-term telecon
The CMC tentatively agreed to hold the midterm telecon on 23 February 2016 (starting at 0800h ET, USA).

14. Agency Report on Other Activities
The CMC agreed to report agency news only during the spring meetings.

14.1 ASI
No report provided.

14.2 CNES
J.-M. Soula provided his report (CNES report to the CMC_ Darmstadt November 2015). There was also a discussion on the action items for spacecraft ID. He informed the CMC that he preferred IDs being returned by the agencies to SANA rather than SANA taking away the simulator IDs from the agencies.

14.3 CNSA
No report provided.

14.4 CSA
S. Tafazoli provided his report (CMC CSA Report_Fall 2015). D. Barannikov asked how CSA identifies experts to participate in CCSDS. S. Tafazoli informed him that he does this on his own and talks to their managers as well.

14.5 DLR
O. Peinado provided his report (CMC DLR Report-Nov-2015-11-18mp-2). J. Afarin suggested that the agency priority charts created by each agency should be placed in one folder in the CWE. The file should be in Excel format with the following color convention: green = high, yellow = medium, blue = low, white = no interest, and red = against.

AI: The CMC instructed DLR/Osvaldo Peinado to collect CMC priority input (on both the approved and draft projects) on the Excel resources file developed by Nestor Peccia (based on a standardized color scheme). N. Peccia will revise the file and the Secretariat will circulate to CMC members. Completed files should be submitted to O. Peinado with a copy to the Secretariat by the deadline (31 January 2016). [CMC-A-2015-11-12]

Consolidation of the information from the above action item needs to be done, together with a review of the approved projects that lack resources.

14.6 ESA
J. Miro provided his report (ESA Agency Report CMC Fall 2015r2). It was suggested that a small working group within IOAG should be established to discuss and coordinate lunar and Mars missions in the early 2020s.

AI: The CMC instructed the CCSDS liaison to the IOAG to propose a small working group within the IOAG to discuss and coordinate lunar and Mars missions in the early 2020s. [CMC-A-2015-11-13]

14.7 FSA
D. Barannikov, on behalf of V. Zaichko, provided his report (FSA CMC Agency Report Darmstadt v2). He reminded the CMC that he will have more details about the Spring 2017 CMC meeting in Moscow when the CMC meets in Brazil next year.

14.8 INPE

14.9 JAXA
T. Shigeta provided his report (JAXA_input_to_Darmstadt_CMC_Nov2015).

14.10 NASA

14.11 UK Space Agency
No report provided.

CMC-R-2016-11-02
The CMC thanks ESA/ESOC for hosting the Fall 2015 technical plenary and management meetings in Darmstadt.

AI: The Secretariat was instructed to provide letters of thanks to ESA/ESOC for hosting the technical and management meetings in Darmstadt, Germany. [CMC-A-2015-11-14]

15. Overflow Topics
No overflow items were identified.

16. CMC Review of Resolutions and Action Items (Action Items - DarmstadtCMC - Nov2015v1)
The CMC reviewed the resolutions and action items and approved them with revisions.

AI: As a follow-up to past action items to develop a letter thanking agencies for past participation and encourage future participation, the Secretariat was instructed to draft a similar letter for the CMC members to send to new agency leadership. [CMC-A-2015-11-15]

17. Adjourn
There being no other business, the meeting was adjourned at 15:25h on 18 November 2015.