**7th Meeting of the CEOS Land Surface Imaging Virtual Constellation (LSI-VC)**

**14 – 15 February 2019**

**Hosted by VAST-VNSC**

**Hanoi, Vietnam**

The seventh meeting of the LSI-VC marks a milestone for the CEOS Analysis Ready Data for Land (CARD4L) work in particular. This meeting will see the final pieces of the framework completed, allowing CARD4L assessments to begin. The CARD4L Product Family Specification (PFS) portfolio is also expected to be updated and expand to cover more specific Synthetic Aperture Radar (SAR) products. In addition, further LSI-VC work threads will be discussed (e.g., Moderate Resolution Interoperability, MRI; global data flows) and possibly revived (e.g., requirements and gap analyses).

The formal objectives of LSI-VC-7 are as follows:

1. **CARD4L Product Family Specifications (PFS)**
	1. Review the overall status and outlook for the PFS.
	2. Endorse any proposed updates to the existing PFS (Surface Reflectance, Land Surface Temperature, SAR Backscatter).
	3. Present the latest on the new Synthetic Aperture Radar PFS for discussion.
	4. Review the latest on the broader CEOS ARD strategy being championed by the SIT Vice Chair and confer on the inputs from our side ahead of SIT-34 (ref: **CEOS-32-06**).
2. **CARD4L Product Assessments**
	1. Confirm POCs for the self-assessment peer review process with WGCV.
	2. Confirm a self-assessment template/approach and initiate trial runs with WGCV (following up and closing action **LSI-VC-6-08**).
	3. Define a target portfolio of CARD4L datasets and discuss actions and milestones necessary to have this in place by the end of 2019. This should include a discussion about what we need to do to encourage dataset producers to do the self-assessments.
	4. Continue the discussions around: engaging external groups in the self-assessments; CARD4L and standards, requirements versus guidelines, compliance/stamp of approval, etc.
3. **CEOS ARD Pilots & Promotion**
	1. Review our efforts around CEOS ARD promotion and revisit our strategy for achieving broad awareness and uptake of the CARD4L concept – including our engagement with groups working on parallel ARD efforts.
	2. Review the CARD4L pilot activities, including those of the 2019 VAST-VNSC CEOS Chair Initiative, SDCG, GEOGLAM, and Open Data Cube. Review lessons learned, feedback on the PFS, and actions to be taken to advance CARD4L pilot activities.
4. **Global Data Flows**
	1. Drawing on the experience of the CARD4L pilots and other ‘big data’ efforts, assess the current state of global data flows for large satellite EO datasets.
	2. Discuss the trends around putting data and analytics together in the cloud.
5. **Requirements and Gap Analyses**
	1. Continue the discussions around rebooting the requirements and gap analysis work thread of LSI-VC.
	2. Demonstrate the MIM Database API and other CEOS information systems’ tools for gap analysis, and discuss further needs and work.
	3. Discuss possible LSI-VC applications of CEOS information system tools (e.g., for annual reports; web portal; LSI toolkit supporting gap analyses, ref: **JM-05**; etc.).
	4. Discuss what communities would need to be consulted in the development of any pre-compiled/automated analyses, tools, and reports.
6. **Moderate Resolution Interoperability (MRI)**
	1. Continue the discussion around defining the interoperability spectrum.
	2. Review the existing MRI activities currently underway (e.g., USGS-ESA Landsat/Sentinel-2) and determine any additional MRI-related activities to be pursued (e.g., GEOGLAM and/or SDCG for GFOI case studies, GEO-LEO case study).
	3. Decide whether there are any CEOS-level tasks needed on this topic. This should include consideration of the resources available for MRI, potential participation, targets, and the identification of a lead for any future MRI-related CEOS Work Plan Tasks/Deliverables.
7. **Other Matters**
	1. Present agency updates focused on ARD-related matters.
	2. Review and discuss LSI-VC’s draft response to **CEOS-32-13** – a plan forward for the proposed merger of SDCG for GFOI and the CEOS *Ad Hoc* Working Group on GEOGLAM into LSI-VC – which is due for presentation at SIT-34 in April 2019. This could include revised terms of reference.
	3. Review LSI-VC team status and participating agencies.
	4. Prepare for LSI-VC-8.

**Agenda**

**Thursday 14 February**

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| **Session 1: Welcome and Introductions** |
| **09:00** | Welcome and Introductions* Review of meeting objectives
* Roundtable of introductions
 | LSI-VC Leads |
| **09:20** | Action Review [[action record](https://docs.google.com/document/d/1IbYA3wPPENDRVONgxPTVife-FAp4BQsbN6GF0WflF-k/edit?usp=sharing)]* LSI-VC-6
* 2018 Joint Meeting
 | M. Steventon |
| **Session 2: CARD4L Product Family Specifications (PFS)**  |
| **09:40** | Overall PFS Status [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/2-1_CARD4L_PFS.pptx)] | A. Siqueira |
| **09:50** | Updates to Existing PFS [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/2-1_CARD4L_PFS.pptx)]* Presentation *(15 mins)*
* Discussion & Endorsement *(15 mins)*
 | A. Siqueira |
| **10:20** | New Synthetic Aperture Radar PFS [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/2-3_SAR_PFS_Status.pptx)]* Presentation *(20 mins)*
* Discussion *(20 mins)*
 | T. Tadono,A. Rosenqvist |
| **11:00** | Broader CEOS ARD Strategy [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/2-4_CEOS_ARD_Strategy.pptx)]* Latest from SIT Vice Chair
* CARD4Atmosphere, CARD4Oceans, CARD4ML (Machine Learning), CARD4Coasts
* Inputs from LSI-VC
 | S. Ward |
| **11:25 – Break (20 mins)** |
| **Session 3: CARD4L Product Assessments** |
| **11:45** | ALOS Mosaics Self-Assessment Review [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/3-1_JAXA_Self_Assessment.ppt)] | T. Tadono,A. Rosenqvist |
| **12:00** | Geoscience Australia SR Self-Assessment Outcomes [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/3-2_GA_CARD4L_Self_Assessment.pptx)] | M. Thankappan |
| **12:15** | CARD4L Product Assessment Process [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/2-1_CARD4L_PFS.pptx)]* Review pilot self-assessment outcomes.
* Confirm POCs for the self-assessment peer review process with WGCV.
* Endorse the self-assessment approach.
* Initiate trial runs of the peer review process with WGCV.
 | A. Siqueira |
| **12:45** | Discussion Topics:* Define a target portfolio of CARD4L datasets and discuss actions and milestones necessary to have this in place by the end of 2019.
* How to encourage CEOS dataset producers to do self-assessments.
* Engaging external (non-CEOS) groups in the self-assessments.
* Should we recognise datasets that have been self-assessed? (Adam)
* What do we need / want to communicate at each point in the assessment process and how do we do it? (Adam)
* CARD4L and standards.
* Requirements versus guidelines.
* Compliance/stamp of approval.
 | Moderator:A. Rosenqvist |
| **13:30 – Lunch (60 mins)** |
| **Session 4: CEOS ARD Pilots & Promotion** |
| **14:30** | 2019 VAST-VNSC CEOS Chair Initiative [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/4-1_VAST-VNSC_CEOS_Chair_Initiative.pptx)]* Overview
* ARD lessons learned
* Feedback on CARD4L and PFS
 | P. Nga |
| **14:45** | Open Data Cube [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/4-2_Open_Data_Cube.pptx)]* Overview of activities and use of ARD
* ARD lessons learned
* Feedback on CARD4L and PFS
 | B. Killough |
| **15:00** | ODC Conference and Partners’ Forum Outcomes | S. Ward |
| **15:05** | CARD4L Dataset Register and Infographic [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/4-4_CARD4L_Register_Slide.pptx)]  | M. Steventon |
| **15:15** | Discussion:* Direction from LSI-VC on CEOS ARD pilots (i.e., benefits to be shown, other objectives).
* Further pilot activities (e.g., with SDCG for GFOI, GEOGLAM).
* Further efforts around CEOS ARD promotion.
* Revisit strategy for achieving broad awareness and uptake of the CARD4L concept.
* Coverage from big data hosts/aggregators.
* Status of, and engagement with, groups working on parallel ARD efforts (Planet, AWS SAR, JPL SAR).
 | Moderator: |
| **15:55 – Break (15 mins)** |
| **Session 5: Requirements and Gap Analyses** |
| **16:10** | MIM Database API Demonstration [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/5-1_MIM_DB_API.pptx)] [[Mockup](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/5-1_MIM_DB_API_Portal_Mockup.png)] | M. Steventon |
| **16:25** | Other CEOS Information System Tools for Gap Analysis [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/5-2_CEOS_Information_System_Tools_for_Gap_Analysis.pptx)] | B. Killough |
| **16:40** | Discussion:* What information does CEOS need regarding gaps, and in what format?
* Possible LSI-VC applications of CEOS information system tools (e.g., for annual reports; web portal; LSI toolkit supporting gap analyses).
* Additional tool needs?
* Communities to consult in the development of any pre-compiled/automated analyses, tools, and reports.
* CEOS Work Plan Task VC-37 way forward.
* Confirmation of next steps.
 | Moderator:  |
| **17:30 – Adjourn** |

**Friday 15 February**

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| **Session 6: LSI-VC and CEOS Organisational Matters** |
| **09:00** | Plan for the proposed merger of SDCG for GFOI and the CEOS Ad Hoc Working Group on GEOGLAM into LSI-VC [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/6-1_LSI-VC_Proposed_Merger.pptx)] | J. Lacey |
| **09:20** | Discussion:* Plan for the proposed merger.
* SDCG update [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/6-2_SDCG_Update.pptx)]
* Draft revised terms of reference (if available).
* SIT-34 preparation.
* LSI-VC team status and participating agencies.
 | Moderator: |
| **10:30 – Break (20 mins)** |
| **Session 7: Moderate Resolution Interoperability (MRI)** |
| **10:50** | Landsat – Sentinel-2 Interoperability Progress* NASA HLS (D. Jarrett / J. Masek) *(15 min)* [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/7-1a_HLS_Update.pptx)]
* Landsat-S2 ARD Interoperability Working Group (S. Labahn, USGS; F. Gascon, ESA) *(15 min)* [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/7-1b_MRI_ESA-USGS_WG_Debrief.pptx)]
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| **11:20** | Discussion:* Confirm the CEOS-level tasks needed on this topic, and finalise the associated CEOS Work Plan Tasks/Deliverables. This should include consideration of the resources available for MRI, potential participation, targets, and the identification of task leads.
* Defining the interoperability spectrum and related terms.
 | Moderator:Z. Szantoi |
| **Session 8: Agency Reports** |
| **12:20** | Agency Updates *(on mission planning, ARD provision, FDAs, etc.; 5-10 mins each):** ESA (F. Gascon) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-1_ESA.pptx)]
* EC (Z. Szantoi) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-2_EC.pptx)]
* JAXA (T. Tadono/A. Rosenqvist) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-3_JAXA.pdf)]
* GA (M. Thankappan) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-4_GA.pptx)]
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| **13:00 – Lunch (60 mins)** |
| **14:00** | Agency Updates *(on mission planning, ARD provision, FDAs, etc.; 5-10 mins each):** CSA (Y. Crevier) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-5_CSA.pptx)]
* UKSA (A. Syriou) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-6_UK.pdf)]
* USGS (S. Labahn) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-7_USGS.pptx)]
* NOAA (C. Wooldridge) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-8_NOAA.pptx)]
* GISTDA (S. Tanarat) [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/8-9_GISTDA.ppt)]
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| **Session 9: Global Data Flows** |
| **14:50** | Discussion [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/9-1_Global_Data_Flows.pptx)]* Current state of global data flows for large satellite EO datasets.
* Trends around putting data and analytics together in the cloud.
 | Moderator: S. Ward |
| **15:50 – Break (20 mins)** |
| **Session 10: Closing** |
| **16:10** | Review of actions | M. Steventon |
| **16:30** | CEOS Work Plan Review [[presentation](http://ceos.org/document_management/Virtual_Constellations/LSI/Meetings/LSI-VC-7/presentations/10-2_CEOS_2019-2021_Work_Plan.pptx)]* Next steps
* Assignments
* LSI-VC lead on GEOGLAM deliverable to CEOS Work Plan?
 | S. Hosford / M. Steventon |
| **17:00** | Discussion: LSI-VC-8 and the next joint meeting. | Moderator: |
| **17:20** | Wrap-up | LSI-VC Leads |
| **17:30 – Adjourn** |