**Minutes v1.0**

**LSI-VC-9 Teleconference #2: Industry & CEOS ARD**

Tuesday 28 April 2020

**Participants**

**CSA:** Paul Briand

**ESA:** Ferran Gascon, Ivan Petiteville

**EC/JRC:** Zoltan Szantoi

**GA:** Adam Lewis (Chair), Andreia Siqueira, Medhavy Thankappan

**Labsphere:** Chris Durell, Brandon Russell

**JAXA:** Takeo Tadono, Ake Rosenqvist

**KARI:** Chiho Kang, Daehoon Yoo

**LSI-VC Sec:** Matt Steventon

**NOAA:** Kevin Gallo

**SIT Chair Team:** Stephen Ward, George Dyke

**SEO:** Brian Killough

**UK Catapult for UKSA:** Electra Panagoulia

**USGS:** Steve Labahn, Jenn Lacey, Tim Stryker

**WGCV:** Cindy Ong, Nigel Fox

**WGISS:** Rob Woodcock

*The presentation slides compiled for this meeting are attached in Appendix A.*

**Introduction**

* Adam Lewis (GA, LSI-VC Co-Lead) welcomed everyone to the call. Matt Steventon (LSI-VC Sec) presented some background slides.
* Ivan Petiteville (ESA) asked whether we are considering value-adding service providers in our definition of industry. They are a critical piece of the landscape and should be included. Adam confirmed they are key and are being considered.
* Paul Briand (CSA) asked about software solution providers like PCI Geomatics and whether they are considered. Zoltan Szantoi (EC/JRC, LSI-VC Co-Lead) confirmed that the Leads have already discussed CEOS ARD with PCI in one of the exploratory consultation calls. Paul suggested that there are other similar companies that should be consulted (e.g., Gamma, ENVI). Paul will send a list of suggestions to Zoltan.

**Industry Consultation Findings**

* Adam presented some outcomes from the exploratory calls with select industry contacts (slides 6-8).
* Chris Durell (Labsphere) asked how realistic it is for 30m GSD data to be effectively transferred to less than 5m GSD without geometric and BRDF and other radiometric error transfer? Adam noted the alternative of aggregating the 5m data to a 10m or 30m level. This is probably more realistic, but industry can decide the best approach on an individual basis.

**VH-RODA Outcomes Related to CEOS ARD and Industry**

* Medhavy Thankappan (GA) presented select relevant outcomes from the 2019 VH-RODA workshop (slides 9-10).
* Ferran Gascon (ESA) questioned whether the proposed IVOS session on CEOS ARD will have the scope we are interested in as LSI-VC with regard to industry engagement. Nigel Fox (WGCV IVOS Lead) responded that cal/val is the focus, both radiometric and geometric. The focus is about understanding how IVOS could be an intermediary to look at the few elements that the commercial sector is looking to address and to communicate those as potential evolutions of the CARD4L PFS.
* Steve Labahn (USGS, LSI-VC Co-Lead) can see a role for IVOS working on moving products along the continuum towards higher levels of interoperability.

**IVOS-32 Outcomes Related to CEOS ARD and Industry**

* Steve Labahn (USGS, LSI-VC Co-Lead) reported relevant outcomes from IVOS-32 (slides 11-14).
* Nigel Fox reported that some of the industry representatives he has engaged with have shown interest in committing time and effort into tailoring the PFS to meet the standards or classifications that are applicable to their specific applications. He noted Maxar as an example.
* Nigel clarified that ESA's Earthnet Data Assessment Pilot (EDAP) is being worked on by some people that are also engaged in IVOS, but it is not strictly an IVOS activity (it is an NPL activity for ESA).
* Steve noted that IVOS has an existing dialogue with the commercial sector regarding CEOS ARD. This will be revisited later in the call.
* Nigel Fox emphasised that the maturity matrix type method for evaluation and representation of sensor data quality is a joint activity with WGISS and also in collaboration with VH-RODA and JACIE going forward (at least in the context of evaluation with NASA and USGS as to its viability as a common process). The aim is to evaluate how this can be used for ARD representation as well.

**JACIE**

* Steve Labahn reported on The Joint Agency Commercial Imagery Evaluation (JACIE) initiative (slides 15-16). JACIE presents another opportunity/forum for commercial engagement. Steve noted the [JACIE 2020 workshop](https://www.usgs.gov/land-resources/eros/calval/upcoming-jacie-workshop) as one opportunity in particular.
* Kevin Gallo (NOAA) noted that there might still be room for additional JACIE 2020 topics if there is something we would like to raise related to CEOS ARD.
* Steve confirmed that there is overlap with participants in CEOS (e.g., Medhavy Thankappan of GA, Valentina Boccia of ESA).
* Jenn Lacey (USGS) added that JACIE is also an excellent forum for engaging with governmental users of commercial imagery.
* Tim Stryker (USGS) suggested that JACIE is a good forum for intermediary activities in support of CEOS ARD. It is a long-standing and useful activity that is gaining increased recognition in the community.
* Steve sees JACIE as a US counterpart to the European VH-RODA effort. One thing to be explored going forward is whether there is the possibility of bringing the JACIE and Planet ARD workshops closer together.

**Paper: CEOS Analysis Ready Data – Involving the Private Sector**

* Adam Lewis presented on the discussion [paper](https://www.google.com/url?q=https://drive.google.com/file/d/1c-ZT2h2CXV5Cbcj_dDcHU8NrjqlIqFvU/view&sa=D&ust=1588152357317000) submitted as a first draft to SIT-35 for CEOS review and feedback (slides 18-23).
* Adam asked whether we need to consider adding ‘Advisory Notes’ as a fourth component of the CARD4L Framework to address data policy, data formats, interoperability, etc. This is an open question to the group.
* Zoltan Szantoi (EC/JRC, LSI-VC Co-Lead) agreed that it is a good idea to add these to the CARD4L Framework. Data policy has been a topic of discussion recently for both Landsat and Sentinel.
* Ake Rosenqvist (JAXA) noted that data formats have been an ongoing point of discussion in the CARD4L SAR subgroup. From their perspective, it is very useful to have specifications for the metadata at least to allow machine-to-machine automation. This remains an option for now.
* We will make a decision on expanding the CARD4L Framework in this manner on our May 13 LSI-VC-9 wrap-up teleconference.
* Electra Panagoulia (UK Catapult / UKSA) suggested that there should be something about the increased uptake of CEOS ARD by value-add companies, not just the increased production of CEOS ARD-compliant data. Adam agreed and will reflect this in the paper, along with Chris’ point about education. Ake and Ivan also agreed. It would be useful to collect feedback from the value-add industry on the CARD4L PFS.

**High Resolution Datasets and CARD4L**

* Steve Labahn presented some of the issues that need to be navigated when applying the CARD4L PFS to high-resolution datasets, such as the geometric accuracy requirement that calls for half-pixel accuracy (slide 26). He noted that as part of our commercial engagement, it seems that we may need some concentrated effort on ensuring the PFS are applicable to sub-10m products. This will also future-proof the PFS for higher resolution CEOS missions.
* Adam Lewis suggested that if the geometric specification is not reasonable for high-resolution datasets, we could look at what it is we are trying to achieve, and decide whether we need to insist on 'sub-pixel alignment'.
* Nigel Fox suggested this is perhaps something that can be done in conjunction with IVOS. He added that there are organisations suggesting that the PFS need to be extended to larger GIFOV sensors (i.e., at the 300m scale where again it appears that the PFS are too restrictive). Steve noted that lower resolution will be revisited in a later teleconference.
* Adam noted that there is clearly a need to revisit the specifications in this regard, but both himself and Steve don’t see this being a major departure from what has been established, rather a small tweak to what we already have. The PFS have, to date, been resolution agnostic and we wouldn’t wish to move away from that approach.
* Ferran Gascon (ESA) encouraged LSI to find some way to accommodate lower and higher resolution datasets under the existing PFS, rather than having resolution-specific sets of PFS. Adam agreed.

**Discussion / Questions**

* Electra Panagoulia asked whether there is a definition of what we consider ‘industry’. From the workshops that have been run so far, this has mainly included EO data providers and/or resellers. She asked if there has been any mention of involving the value-add industry, which represents the main driver for growth in the UK. These are companies/people that are not necessarily EO experts, but use EO data to offer value-add services.
* Adam Lewis confirmed that ‘industry’ covers the full spectrum from upstream to downstream (data hosts, data users, data producers, value adders, etc.).
* Electra asked if there are plans to gather requirements from value-add companies. Adam would like to involve them; the workshop would be a good opportunity. Electra noted the very broad industry of value-add companies in the UK and that the Satellite Applications Catapult, on behalf of UKSA, are happy to support the inclusion of such companies in upcoming industry-focused workshops.
* Chris Durell noted that Planet is prioritising connecting with value-add organisations/users through its ARD workshops. He also suggested that educational outreach should be considered a vital part of outreach to industry.
* It was agreed that we should make sure we have a seat at the table for all existing fora: LSI-VC should be directly involved in JACIE, VH-RODA, and IVOS, among others. VH-RODA is a good ongoing option for European engagement and Ferran Gascon confirmed it is intended to be a long-term activity. Nigel Fox (WGCV) noted that VH-RODA is nominally held every second year (more frequent if needed).
* The intention is to leverage these existing meetings as much as possible for CEOS ARD industry engagement. To do so, we need to understand the potential for increasing their scope.

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| **LSI-VC-9-01** | Ferran Gascon to follow up VH-RODA organiser Valentina Boccia of ESA to check whether there is the possibility of including more CEOS ARD related topics in support of industry engagement and also whether the meetings might be held more frequently going forward. | **ASAP** |

* Steve Labahn noted that there is a need to streamline CEOS engagement with industry related to CEOS ARD. There are currently multiple avenues, which may be confusing (IVOS, JACIE, LSI-VC, VH-RODA, etc.). It was suggested that this would be a good role for the SIT Chair Team, given their prioritisation of CEOS ARD for their 2020-2021 term.

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| **LSI-VC-9-02** | LSI-VC Leads to ask the SIT Chair Team for their assistance providing oversight and coordination of CEOS engagement with industry regarding ARD. | **ASAP** |

* Electra suggested that there needs to be good documentation to accompany CEOS ARD so that all levels of users can understand what data they are working with. Steve noted that there have been initial discussions with WGCapD around potential capacity building support; perhaps we could leverage them.

**CEOS-Industry ARD Workshop**

* Zoltan Szantoi introduced the background of the workshop (slides 32-35) and noted the [draft prospectus](https://docs.google.com/document/d/1oG0FRU7jIX8ZFixHS8XYOYGEkQMdQ50jsmLijnGSBUA/edit?usp=sharing), which includes some preliminary objectives.
* Adam noted the need to have a clear roadmap for industry so they can engage and invest with confidence. Adam also noted that we need to be aware there may be competition between agencies and the commercial sector regarding production of ARD.
* It was agreed that while we may not be able to achieve what we wanted with a face-to-face workshop, webinars should be conducted sooner rather than later to maintain momentum. The webinars should be lightweight and invite significant Q&A and discussion at the end. It was felt that a specially-tailored virtual event could be very effective.
* It was agreed that we will target mid-late June for an initial webinar, approximately one hour in duration. Two more webinars will be targeted over the months following.
* While the original focus for the workshop was European industry, with the meeting moving online we will broaden participation.

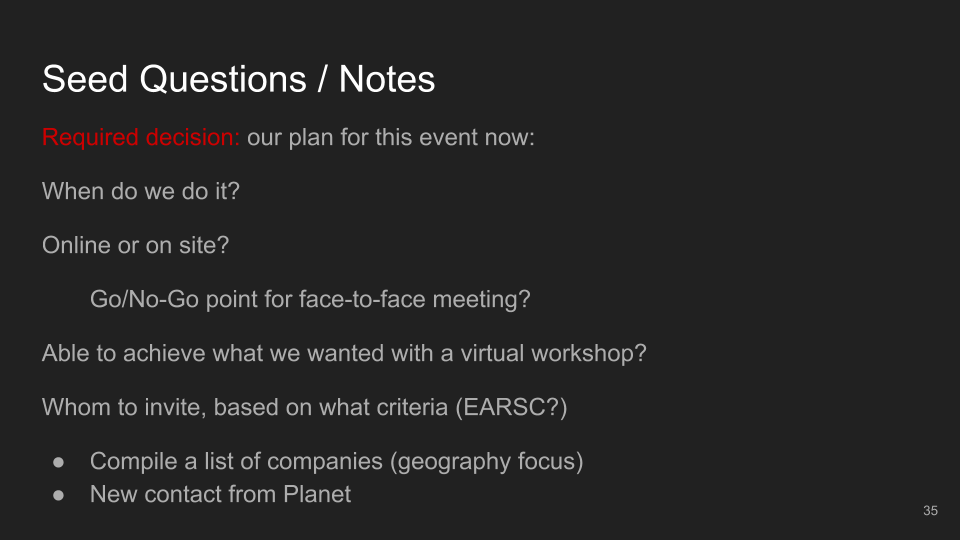
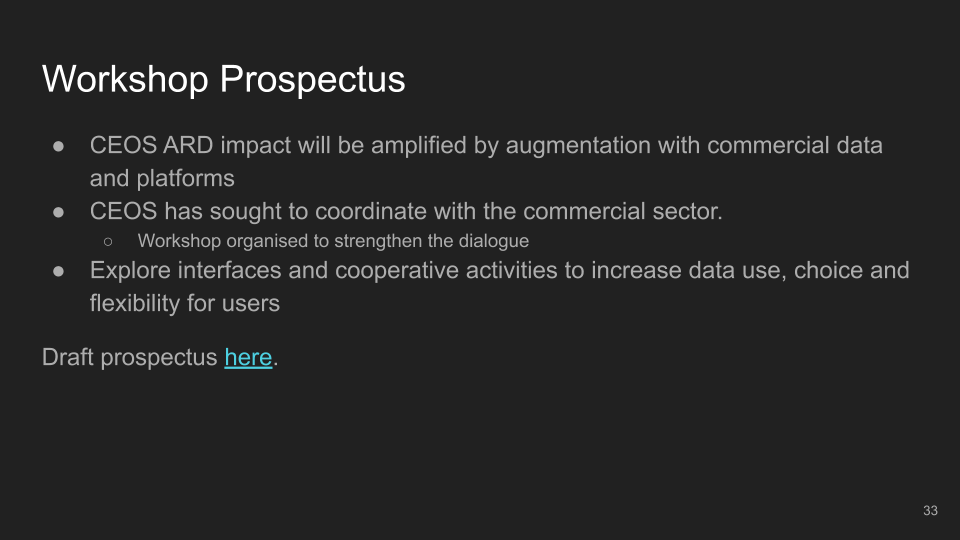
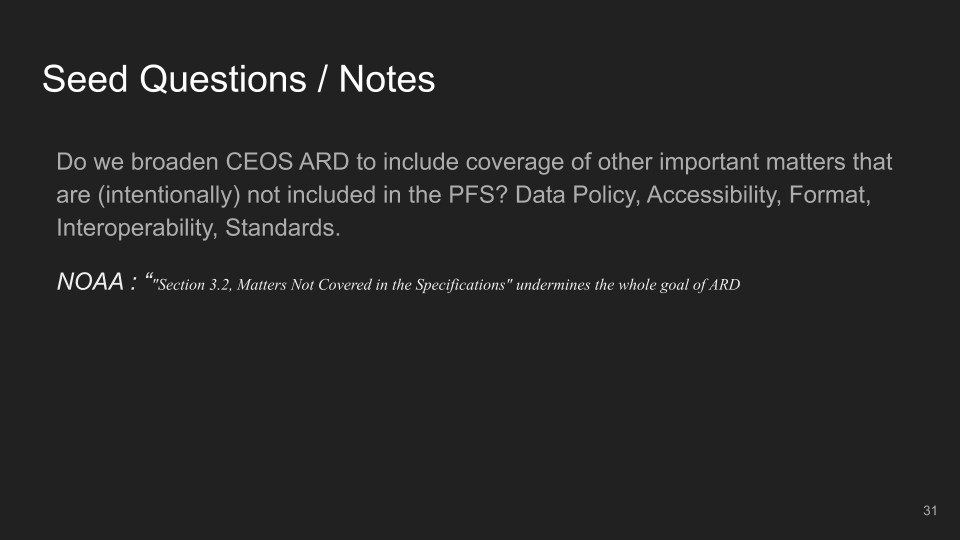
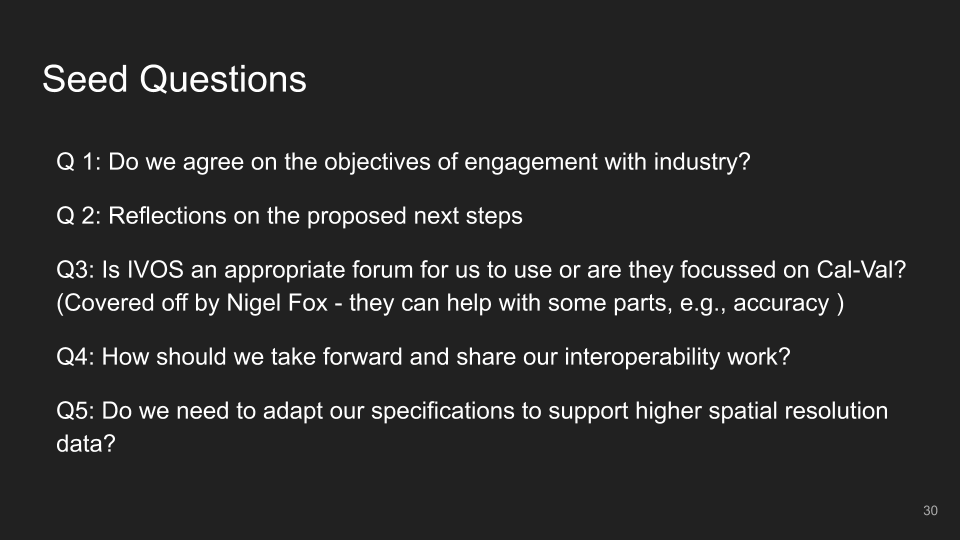
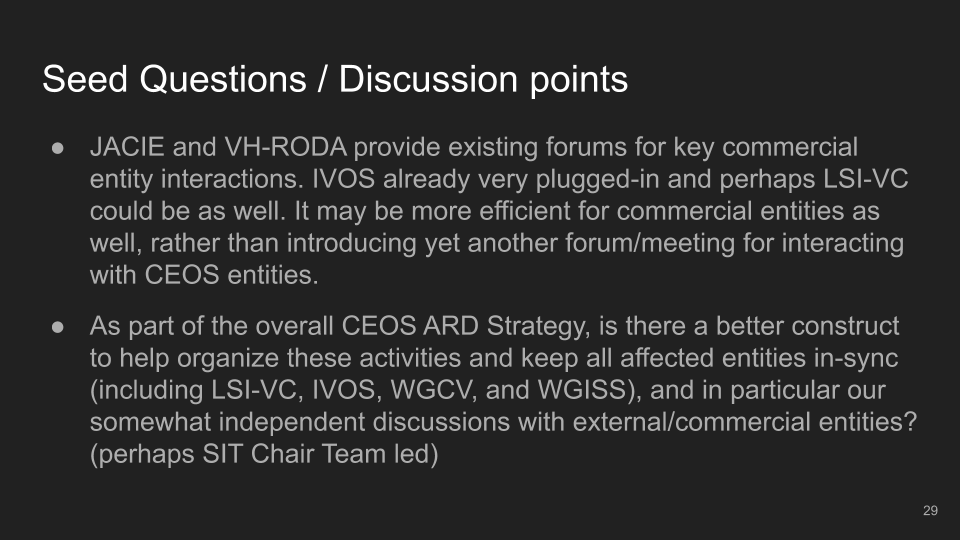
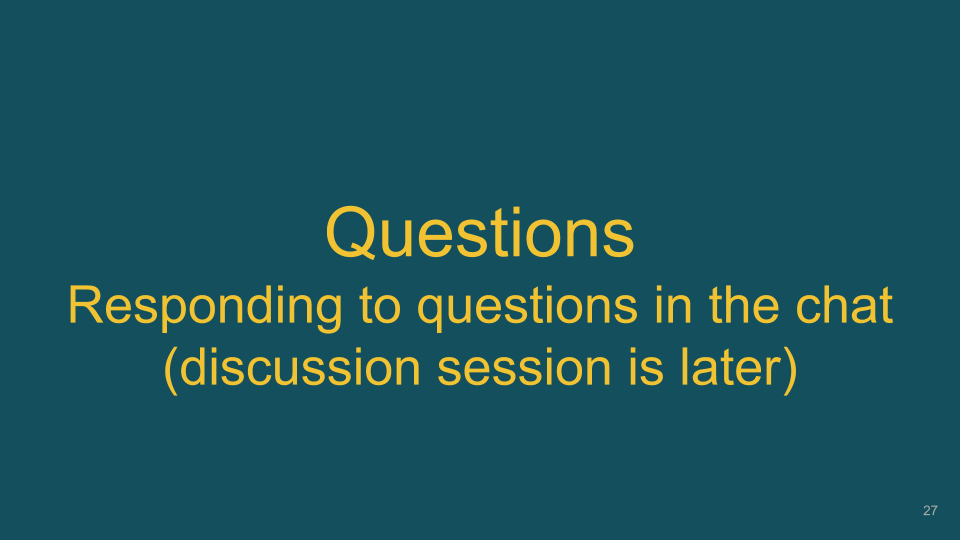
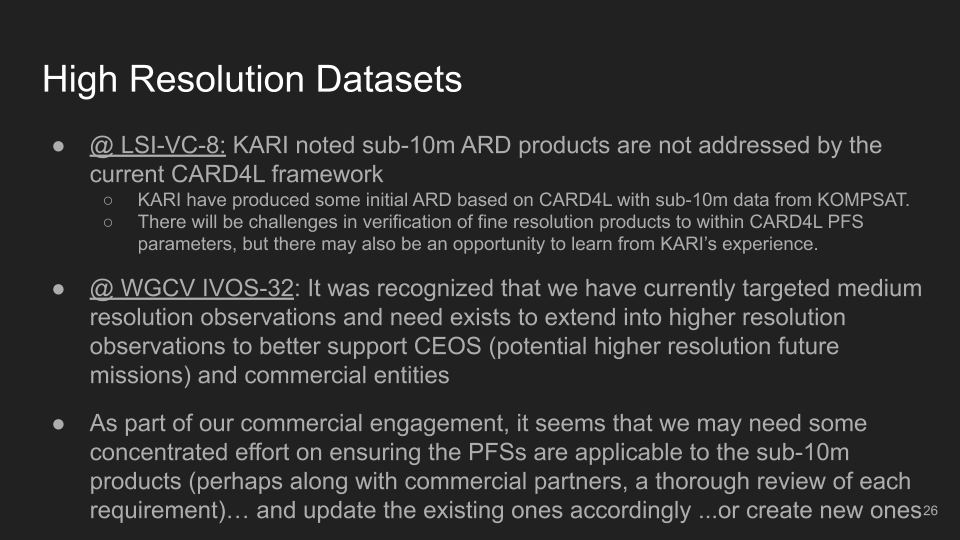
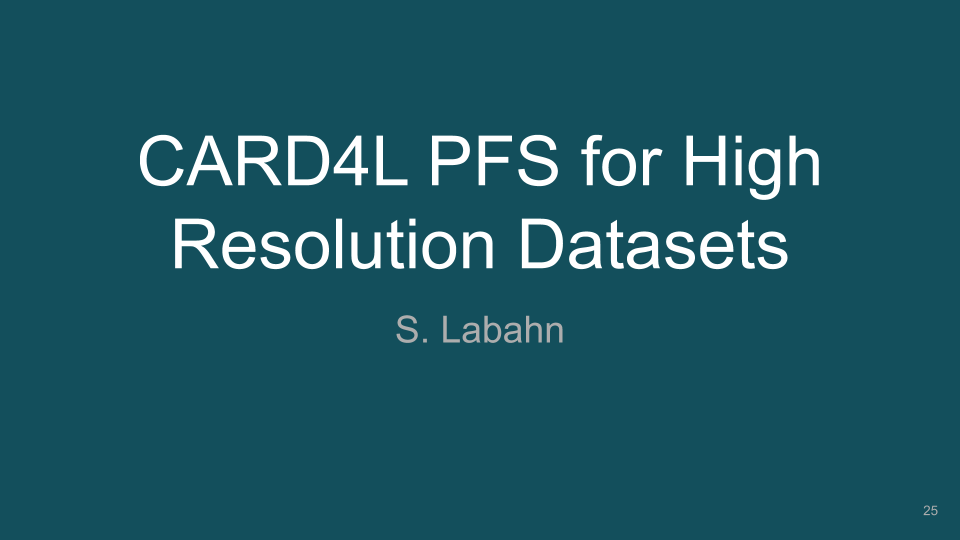
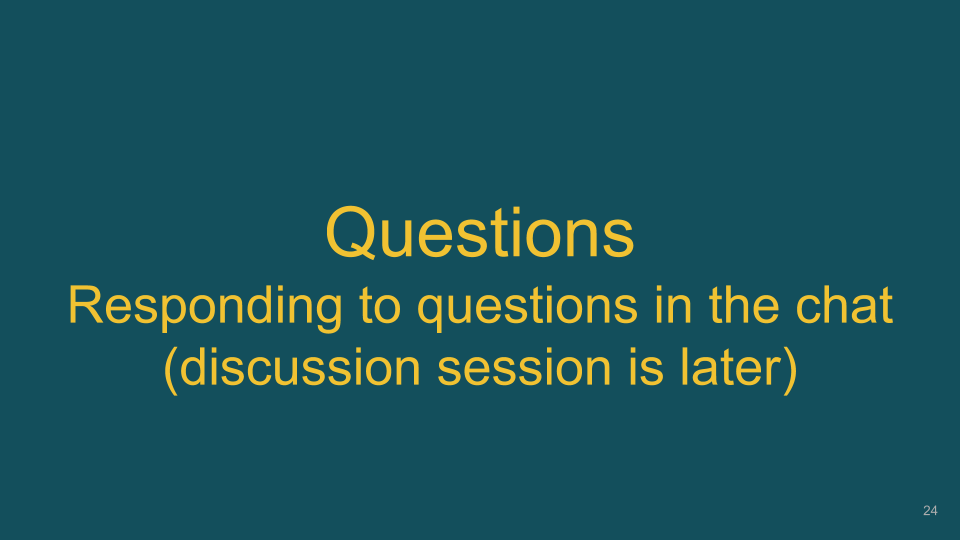
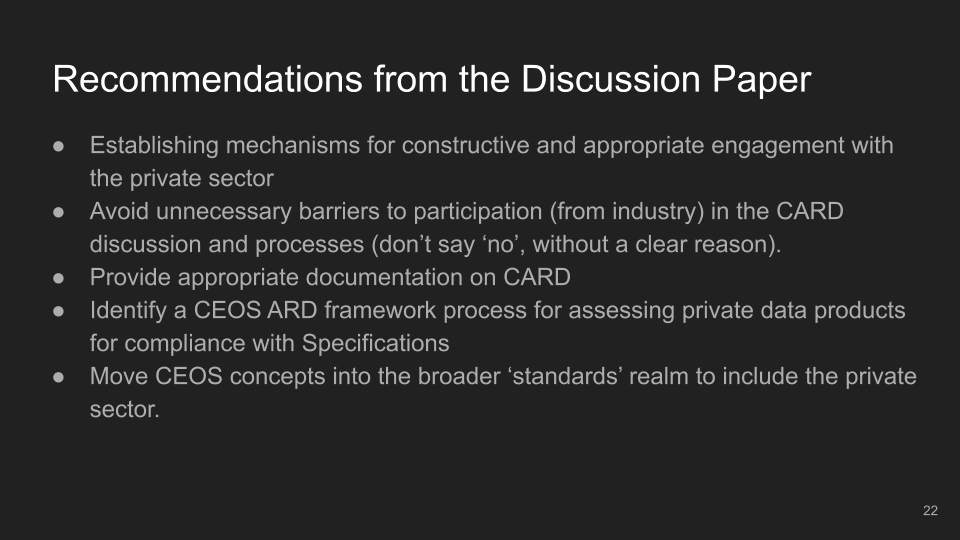
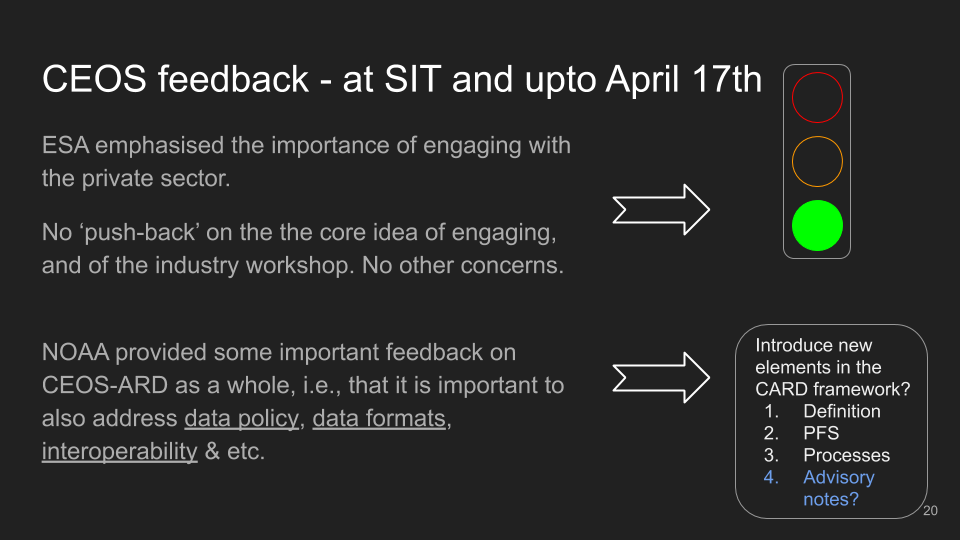
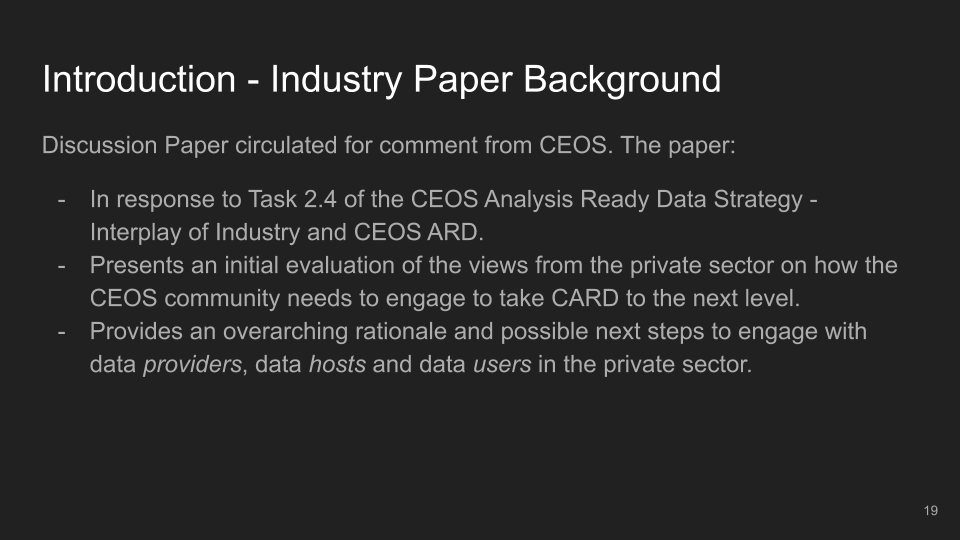
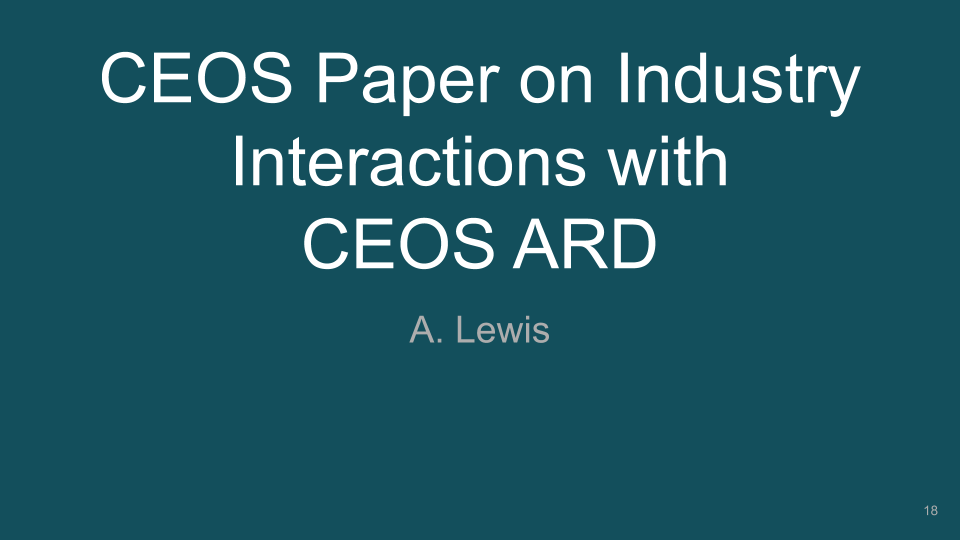
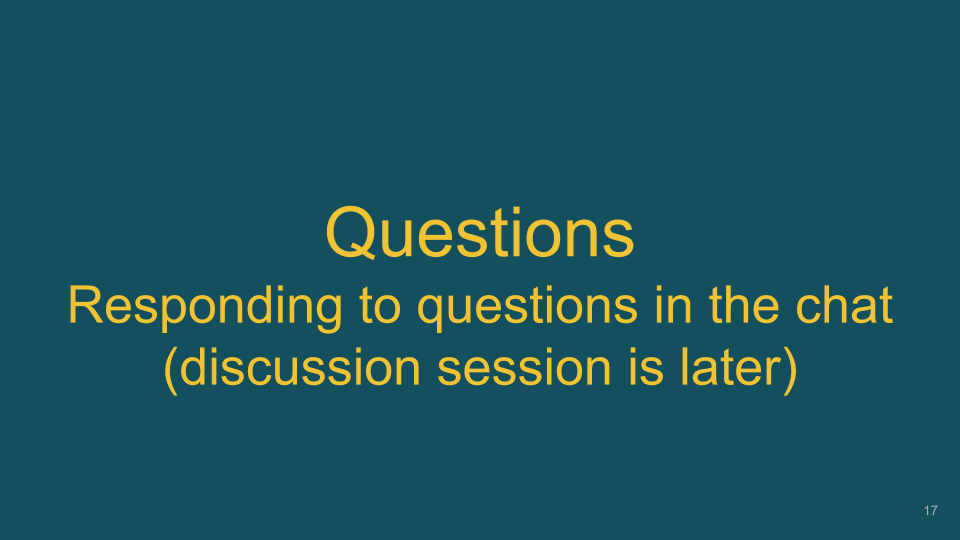
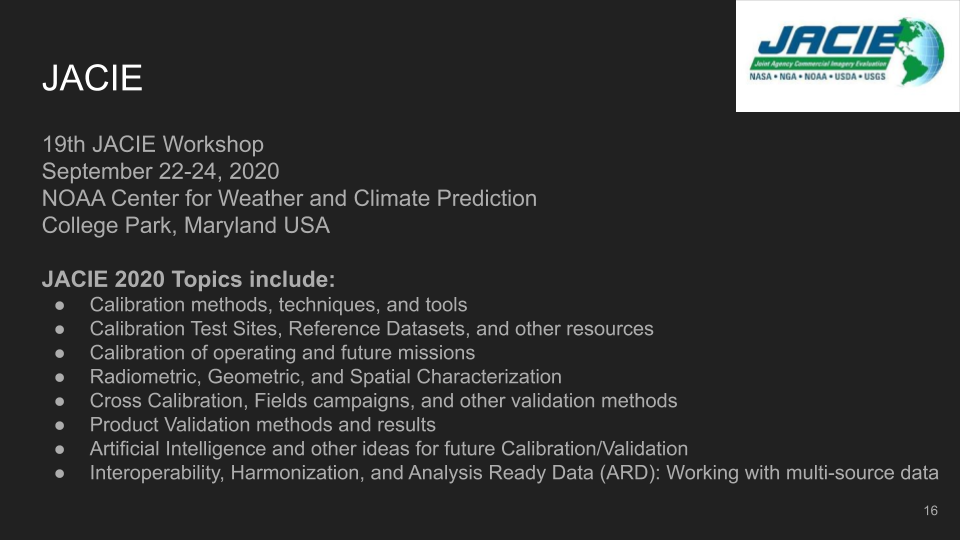
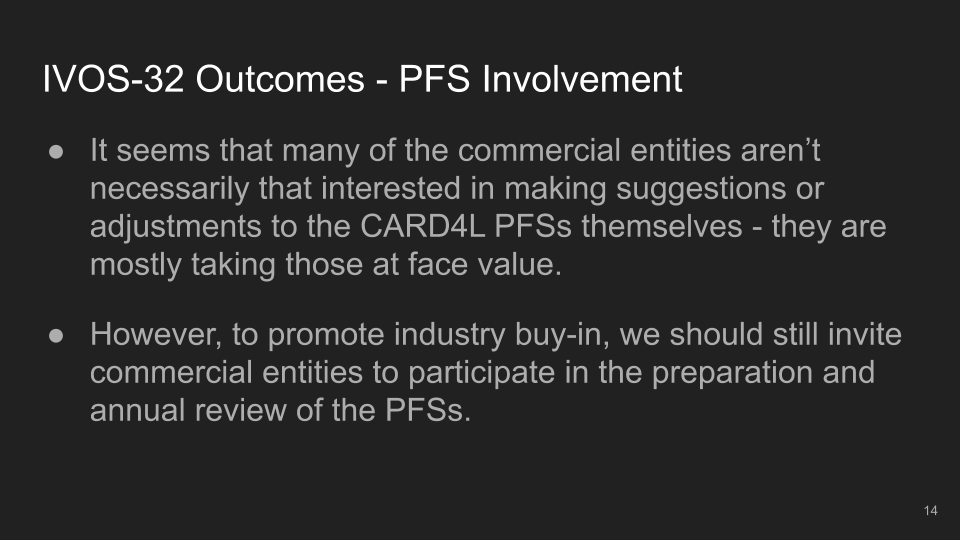
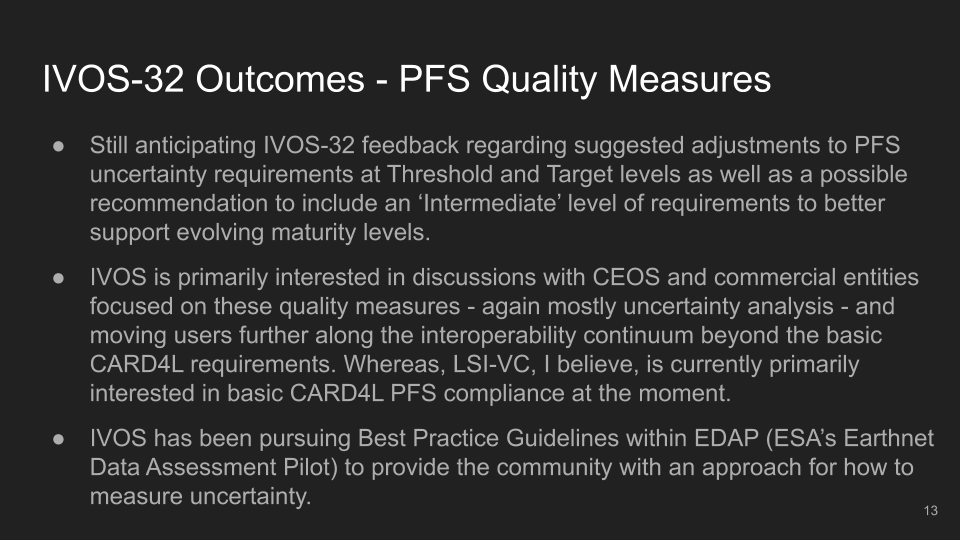
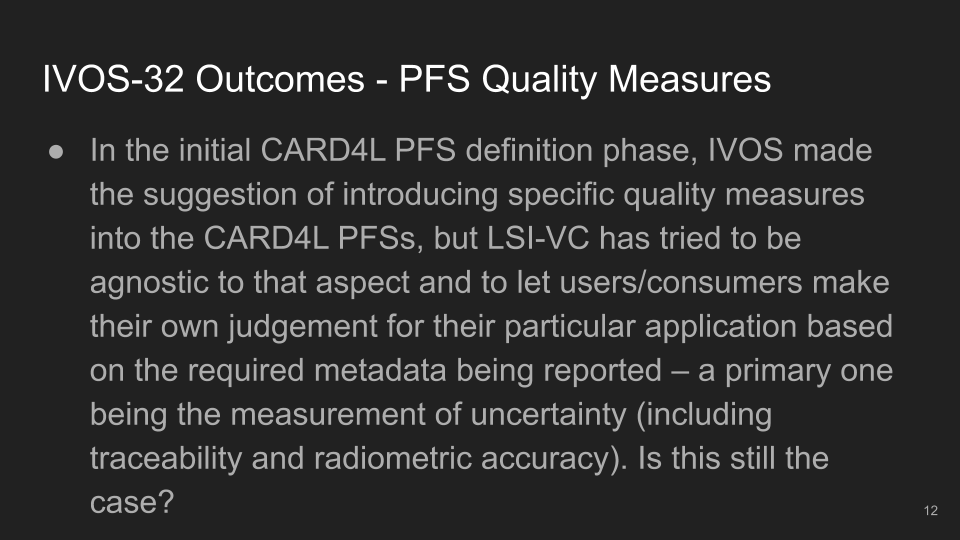
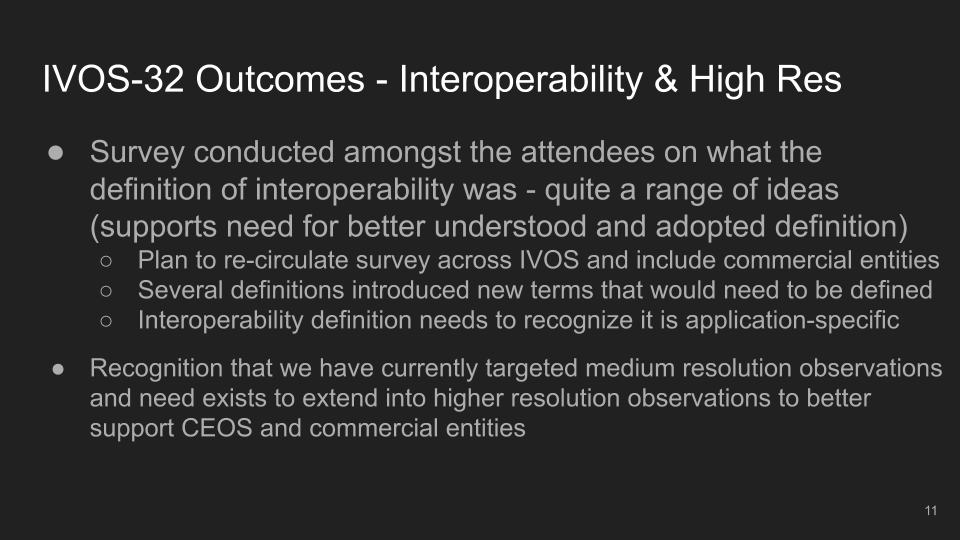
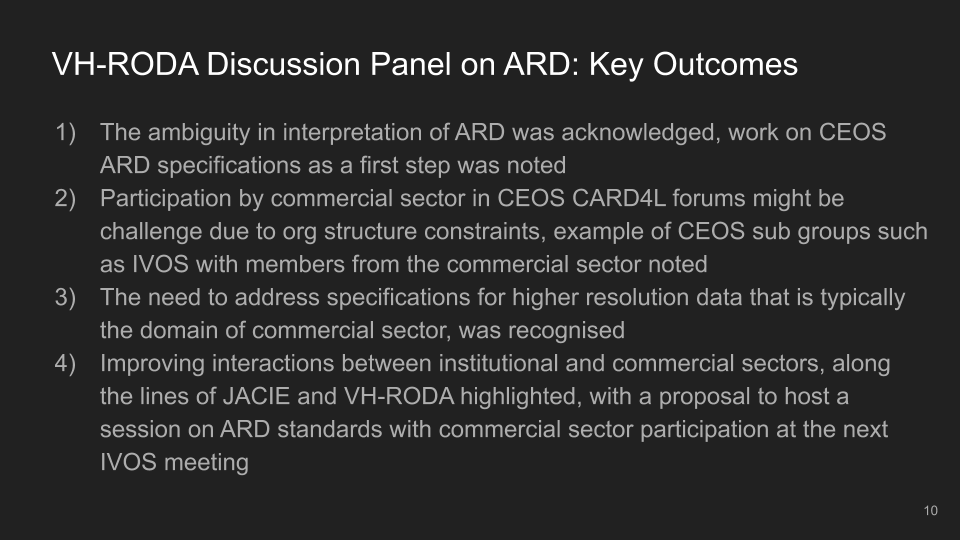
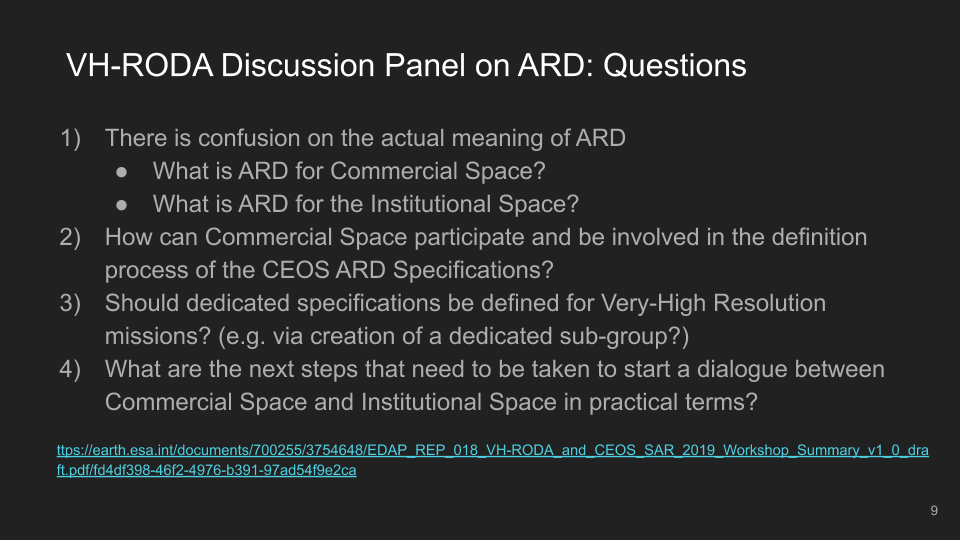
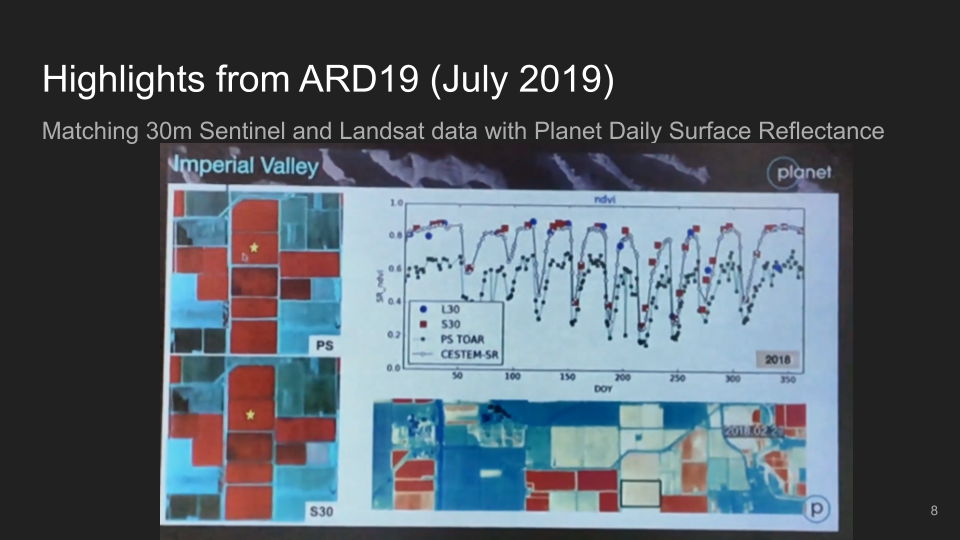
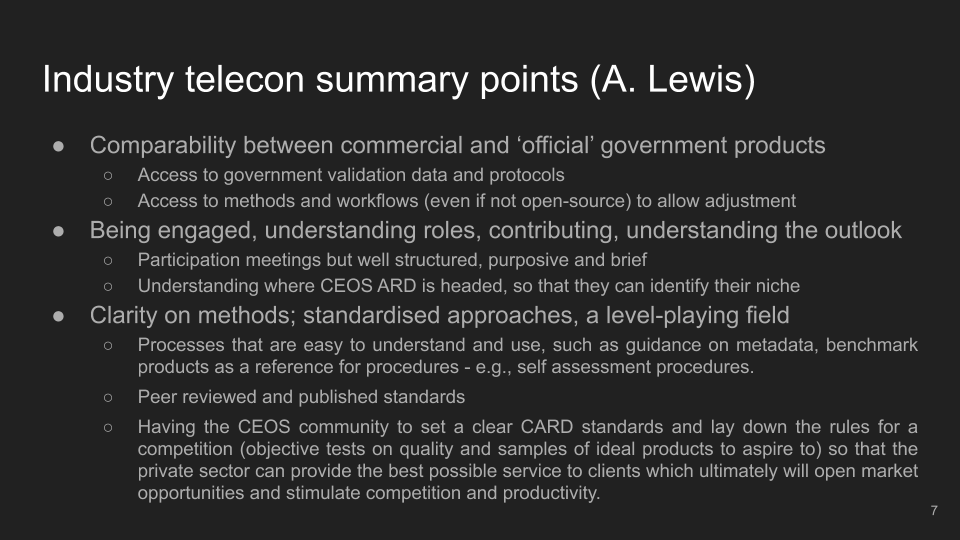
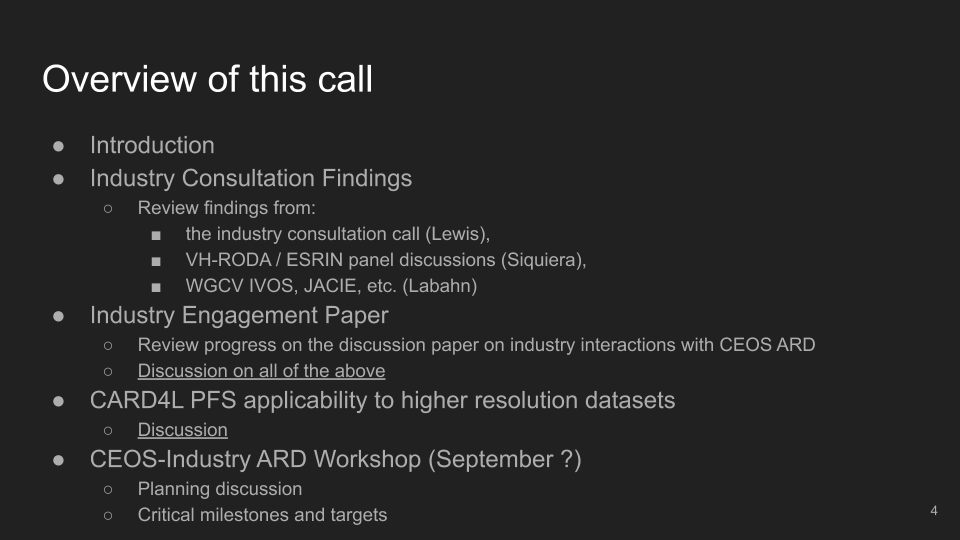
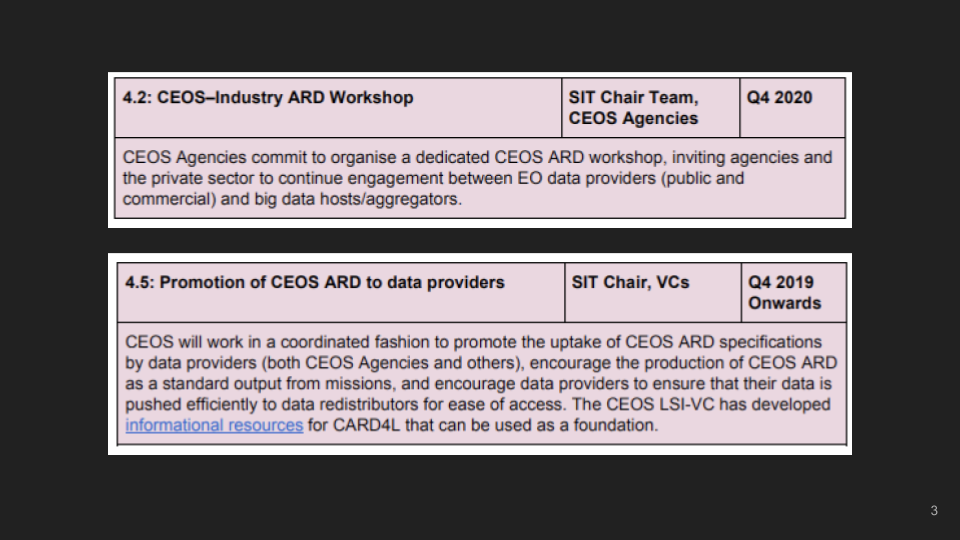
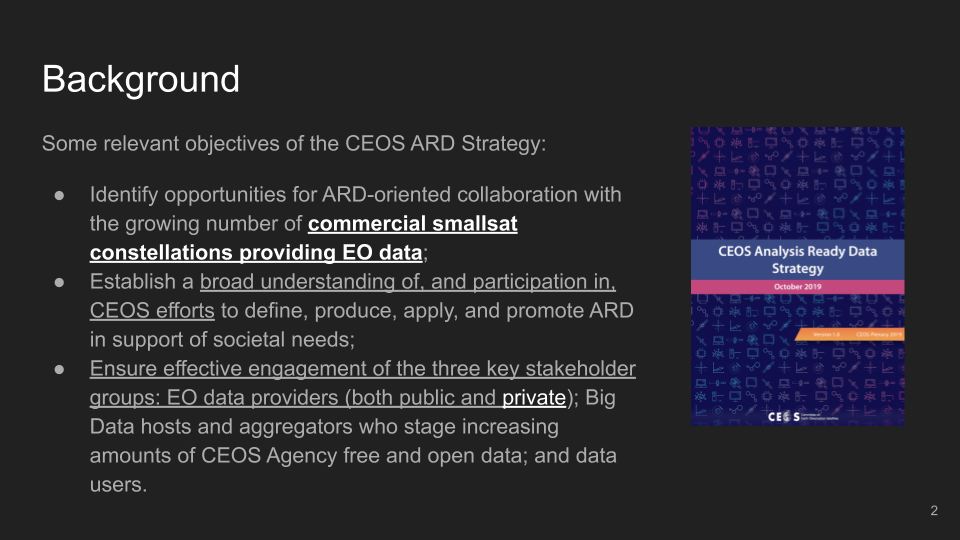
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| **LSI-VC-9-03** | Matt to initiate planning for an initial CEOS-Industry ARD webinar, building on the original plan for the workshop and tailoring content to fit the format. This will include preparing presentation materials, compiling a list of invitees, an informational page on the website for advertisement, etc. | **ASAP** |

* Steve Labahn suggested enlisting WGCapD for assistance.
* Chris Durell and Electra Panagoulia offered help on outreach to industry contacts for the webinar.
* Ivan Petiteville (ESA) suggested going directly to specific contacts in the target companies rather than through the European Association of Remote Sensing Companies (EARSC) – the participants of which might not be who we are after / be able to direct our invite appropriately.

**Closing**

* Adam Lewis thanked everyone for their attendance and contributions to the discussions. He noted the strong agreement on the way forward on CEOS ARD industry engagement. Steve and Zolti thanked everyone for their inputs, in particular the help confirming the plan for the industry engagement webinar.
* LSI-VC-9 Teleconference #3: CARD4L and the Product Family Specifications (PFS) will be held on May 12, 07:00 – 10:00 US East ([other local times](https://www.timeanddate.com/worldclock/fixedtime.html?iso=20200512T07&p1=263)) [[Presentation](https://docs.google.com/presentation/d/1zPqRspMGokcLikTlH2KyN8Y8TipdEYQN0EritElTdYE/edit?usp=sharing)].

**Appendix A: Meeting Presentation Slides**

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