Data sharing with Mareano
Proposals from Equinor

Meeting between Mareano and Equinor
12.06.2023

Agenda

1. Introduction of participants
2. Proposal from Equinor on how the data sharing will be done – practicalities
3. Questions and feedback from Mareano
4. Feedback from Kartverket – previous sharing with Equinor
5. Actions and way forward

Contract - status

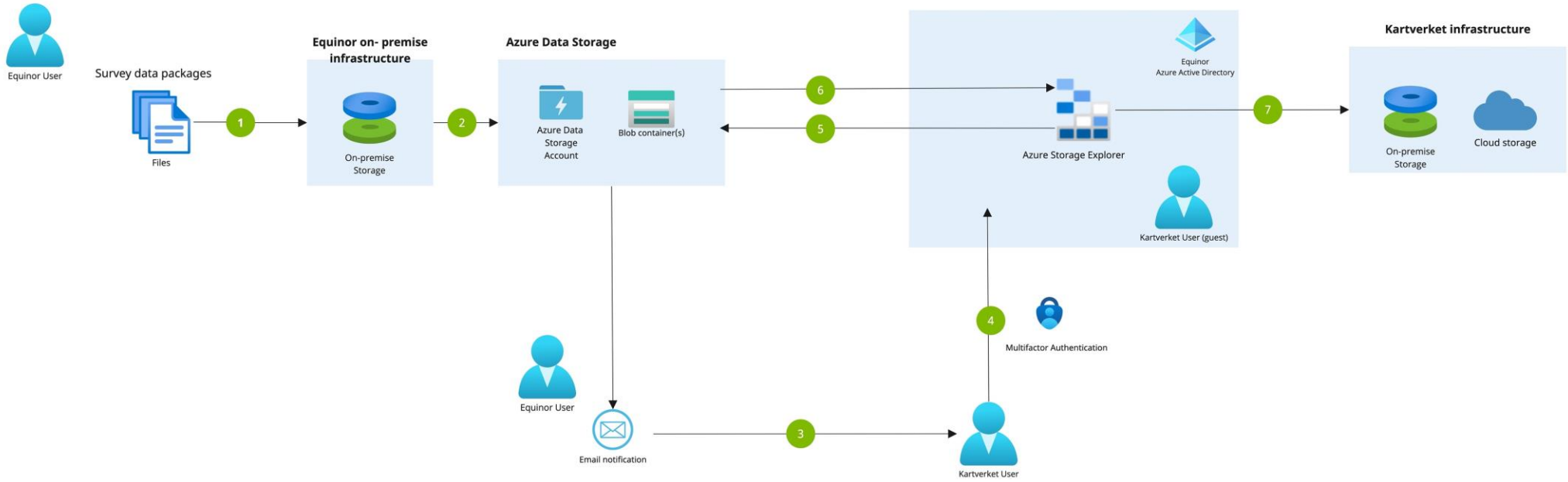
- Equinor will issue the contracts based on the template developed by Offshore Norge
  - One contract between Equinor and each of the three Mareano partners
  - Contract template has previously been reviewed by the Mareano partners and has been supported
  - Important that content is known among Mareano scientists working with the data
  - Goal to have contract signed in June

- Equinor would like to expand the contract with Kartverket to cover issues related to sensitive data near infrastructure
  - Initial sharing with project leader in Kartverket
  - Sensitive data will be generalized or removed by Kartverket before distribution to the other Mareano partners

Sharing guidelines and contract templates

https://offshorenorge.no/retningslinjer/arkiv/juridisk/149---anbefalte-retningslinjer/

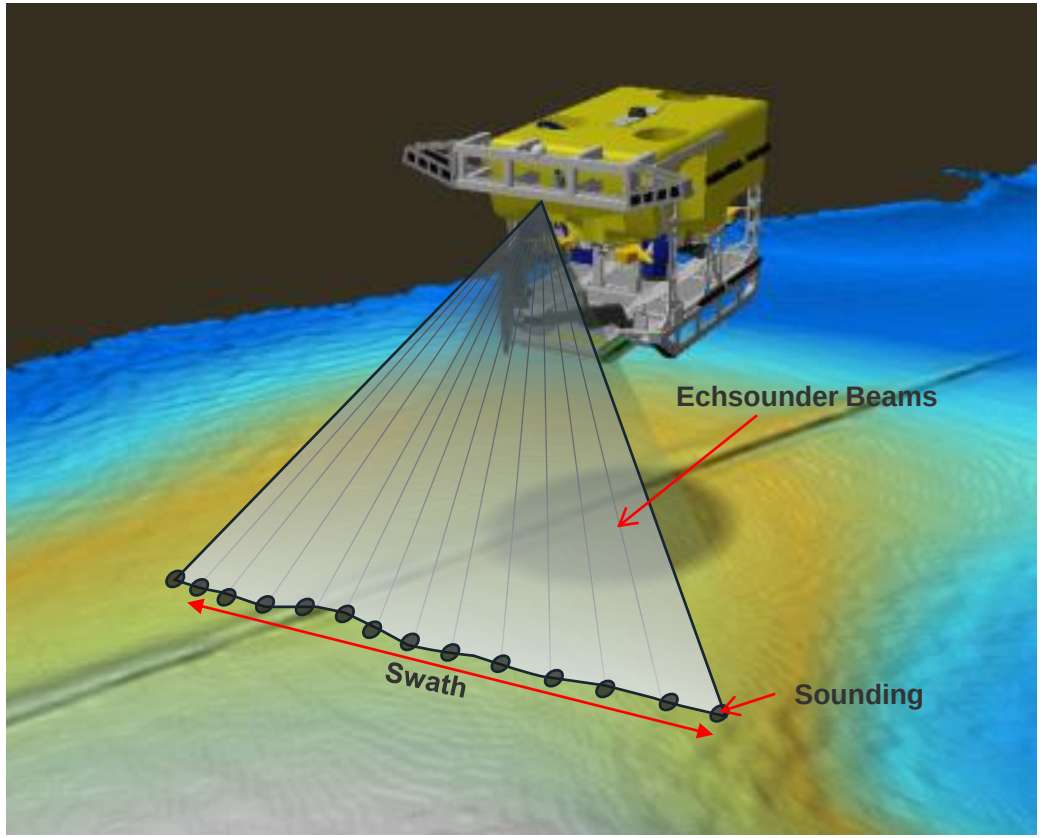
Data Sharing Workflow



1. Survey data packages are received, prepared and stored in Equinor internal on-premise infrastructure
2. Survey data is copied to Azure BLOB container, in a storage account belonging to the Equinor Survey department
3. Equinor notifies the Kartverket point of contact by email about the new deliveries
4. Kartverket point of contact using Azure Storage Explorer connects to the Equinor storage account using a multi-factor authentication
5. Kartverket point of contact using Azure Storage Explorer finds and selects the data for download
6. Kartverket point of contact using Azure Storage Explorer downloads the select data
7. Data is downloaded to Kartverket's data storage

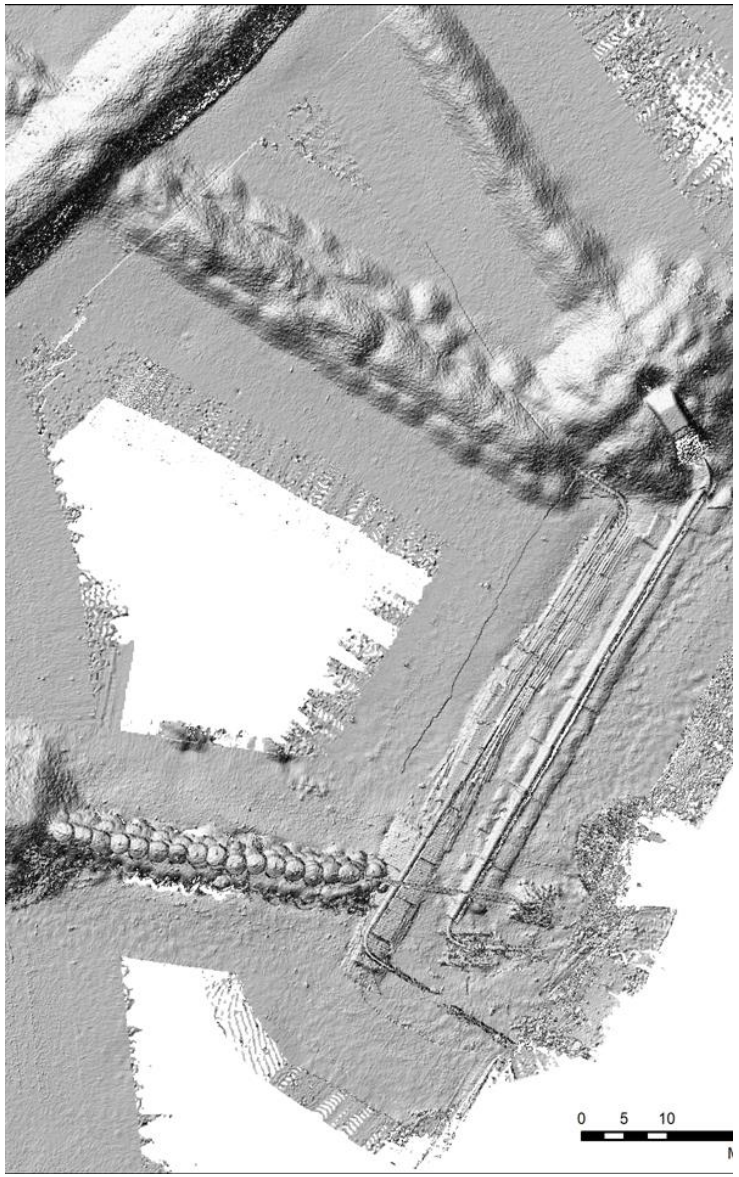
ROV Multibeam Echosounder System (MBES)

- Multibeam echosounders (MBES), also known as Swathe or Swath echosounders, is used to map large areas of the seabed
- MBES systems measure multiple depths (soundings) along a swath fanning out from the transducer array.
- Systems on the market today can measure up to 1024 depths in one swath and acquire up to 50 swaths per second.
- MBES data from ROV or Vessel in shallow water can be visualized with a horizontal resolution down to 10cm
- Water column data not standard delivery (leak detection)



Simplified sketch, not to scale

Bathy data as georeferenced raster files (> 123 000 files)



Coverage of high resolution bathy data

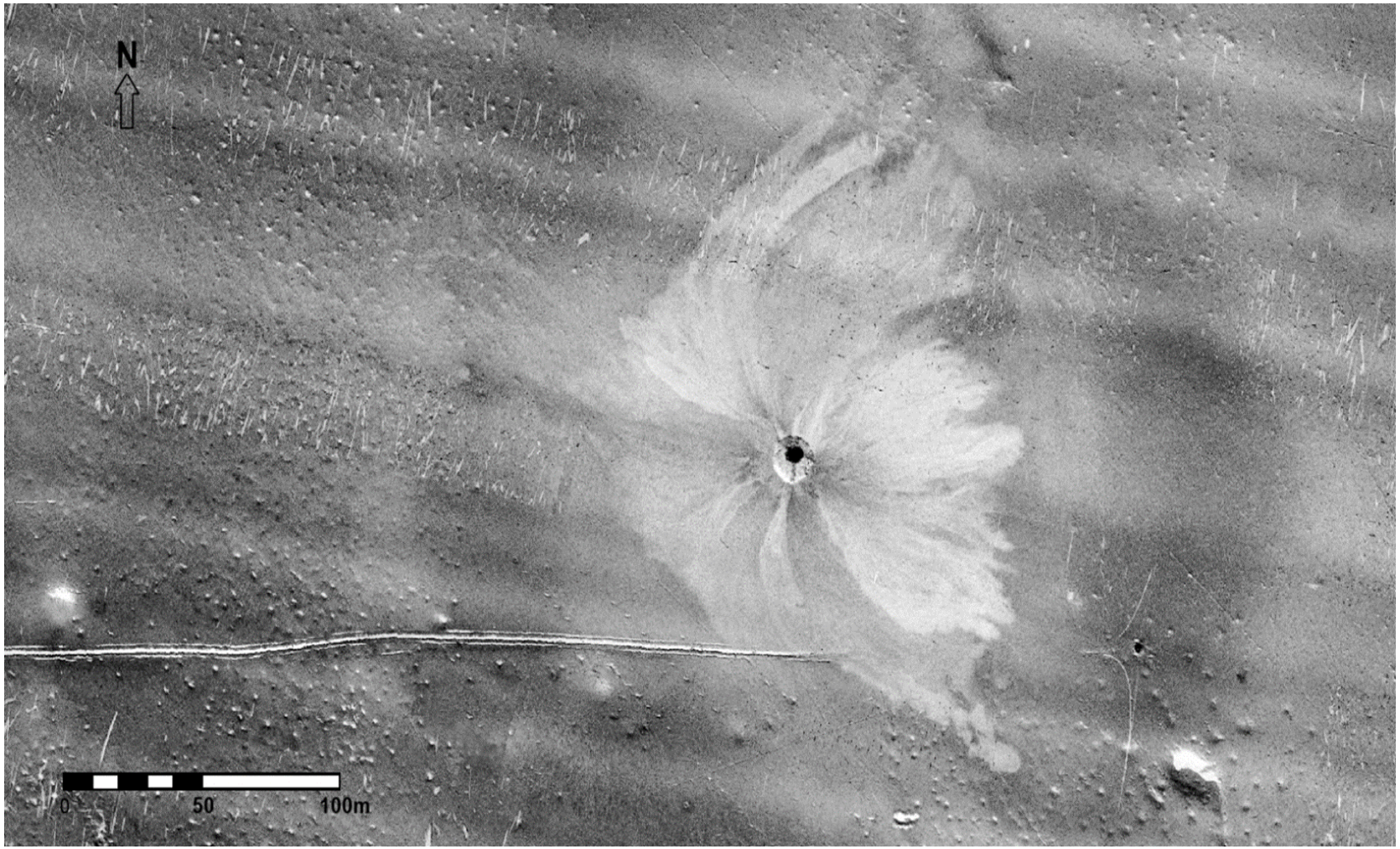
YEAR	RESOLUTION	FILES	FILE SIZE (GB)
2022	<=1m	6 838	67.28
2022	>1m	34	0.89
2021	<=1m	5 307	56.24
2021	>1m	49	1.24
2020	<=1m	11 895	54.07
2020	>1m	20	0.29
2019	<=1m	6 054	27.76
2019	>1m	52	0.46
2018	<=1m	5764	45.94
2018	>1m	73	0.49
2017	<=1m	4 592	30.72
2017	>1m	42	6.195
2016	<=1m	5 313	32.4
2016	>1m	20	0.70
2015	<=1m	4 970	31.97
2015	>1m	13	0.82
2014	<=1m	7 152	34.35
2014	>1m	25	0.25
2013	<=1m	10 746	86.91
2013	>1m	128	7.95
2012	<=1m	13 280	209.6
2012	>1m	138	0.794
Before 2012	<=1m	39 127	1 592.65
Before 2012	>1m	2 277	16.37
SUM		123 909	2 306.34

Side Scan Sonar data

Now SSS data is delivered in .xtf format (raw) or as georeferenced raster files

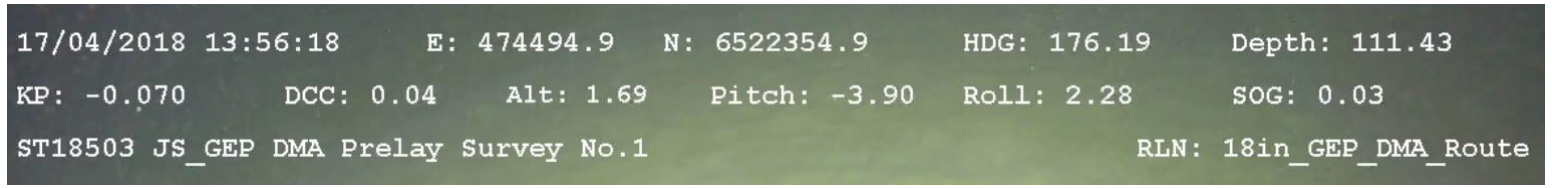
SSS data in georeferenced raster format.

YEAR	FILES	FILE SIZE (GB)
2022	38	897.7
2021	56	16 457.9
2020	46	8 411.3
2019	43	236.3
2018	34	2 496.6
2017	44	1 932.3
2016	27	180.0
2015	32	69.9
2014	45	246.3
2013	54	852.8
2012	43	814.7



Video

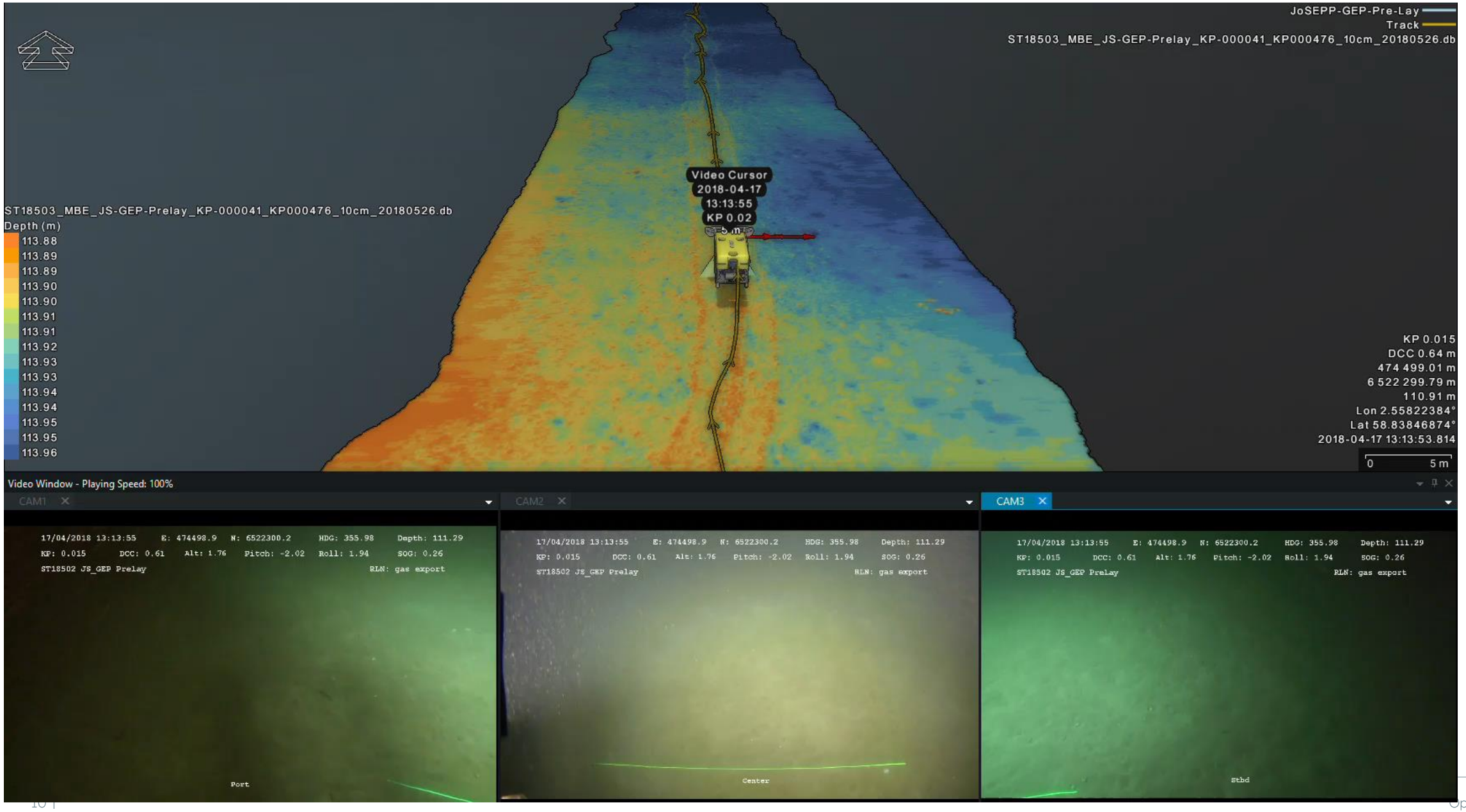
- All video files has an overlay showing position of the video (ROV)



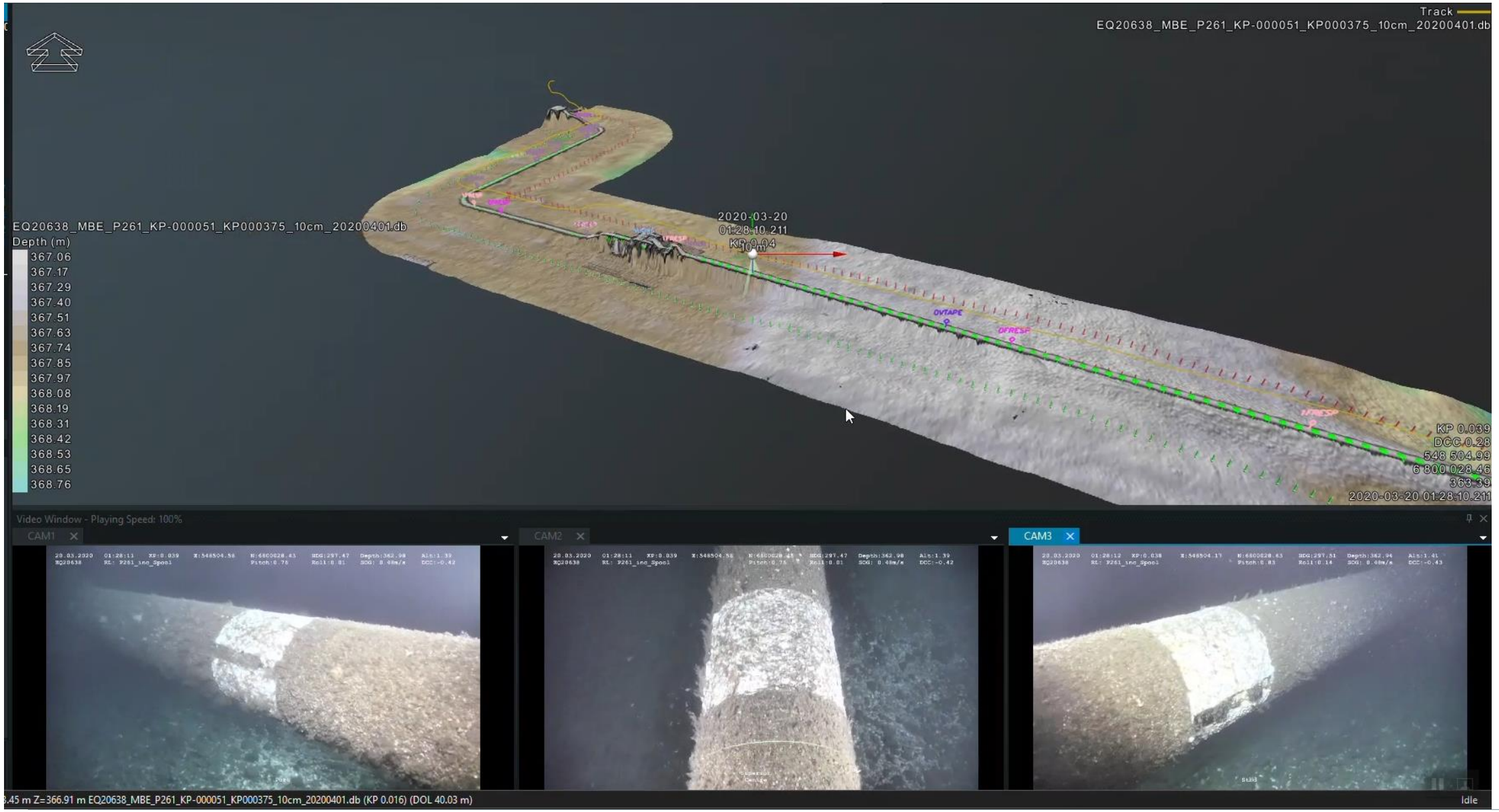
- In Equinor we collect video for different purposes
  - Environmental surveys (Corals)
  - Pipeline/Cable pre-lay surveys performed along a planned pipeline/cable route prior to the commencement of pipe/cable lay operation.
    - For pre-lays surveys there are no product (pipe/cable) , hence the video will not disclose product position
  - Pipeline/Cable as-laid, as-built, inspection surveys are performed along a pipeline route prior to the commencement of pipe lay operations.
    - Video from these types of surveys will show the installed product, hence product position

- We have more than 77 000 hours of digital video (from 2007, before 2007 VHS)

Digital video and bathymetry from a pre-lay survey



Digital video and bathymetry from external pipeline inspection



Video files (digital formats mpg2 or mpg4)

Pipeline/Cable inspection

YEAR	FILES	FILE SIZE (GB)
2022	8 208	4 161
2021	5 783	2 854
2020	18 449	9 227
2019	5 596	2 700
2018	10 967	5 496
2017	3 357	1 633
2016	6 284	3 080
2015	6 555	4 095
2014	11 500	7 005
2013	8 612	5 200
2012	15 147	8 561
< 2012	222 623	145 179
SUM	**323 081**	**199 191**

Other (Seabed mapping)

YEAR	FILES	FILE SIZE (GB)
2022	60 674	25 876
2021	52 000	20 493
2020	64 896	30 090
2019	39 001	15 261
2018	97 297	35 486
2017	33 080	16 200
2016	33 540	13 134
2015	4 674	3 294
2014	1 682	483
2013	12 390	7 284
2012	5 869	2 416
< 2012	8 774	3 785
SUM	**413 877**	**173 802**

Practicalities

- Initial sharing effort should concentrate on historic data that will be shared with Mareano
- Mareano (project leader) should drive the process – Equinor will respond to requests
- Equinor will nominate a main point of contact for the sharing process
- Data will be shared with Kartverket (project leader) and will be available for exclusive download by the project leader in a limited time period
    - Sensitive data will be shared, not directly available for the other Mareano institutions
- Routines will be developed in Equinor (fall 2023) for sharing new aquired data on a routine basis