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Copernicus Sentinels mission and data management : Sentinel-2 insight and perspective



EOF-CSC: Operational Robustness and Strategic Continuity



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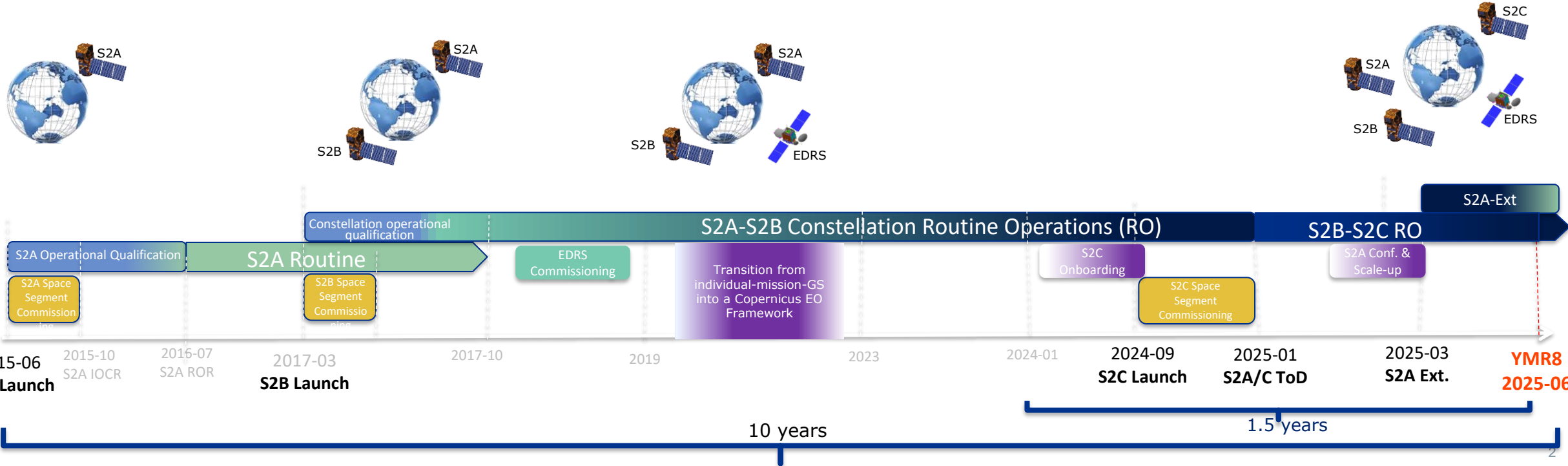


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“A decade of trust, performance, and impact across the planet”

- 10 years of uninterrupted and reliable mission and data management
- 8,5 years with dual-satellite constellation management ensuring continuity and resilience
- 7.5 years delivering global systematic coverage of the Earth’s land surfaces



EOF-CSC: Operational Robustness and Strategic Continuity



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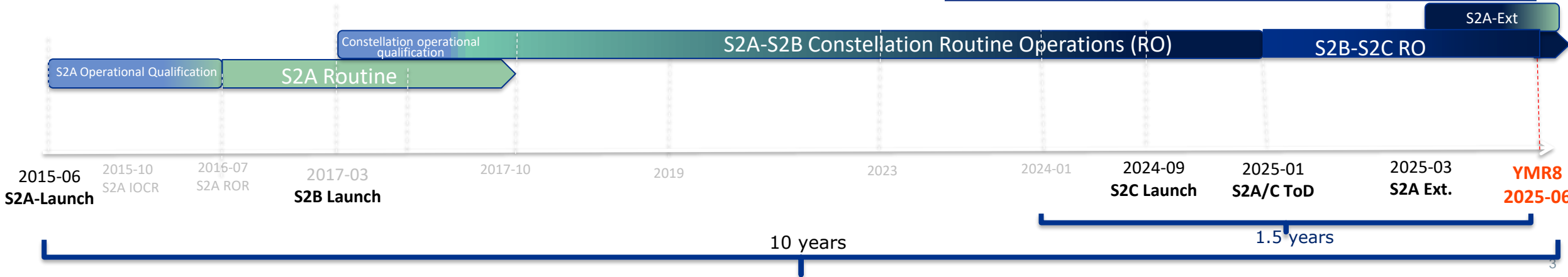
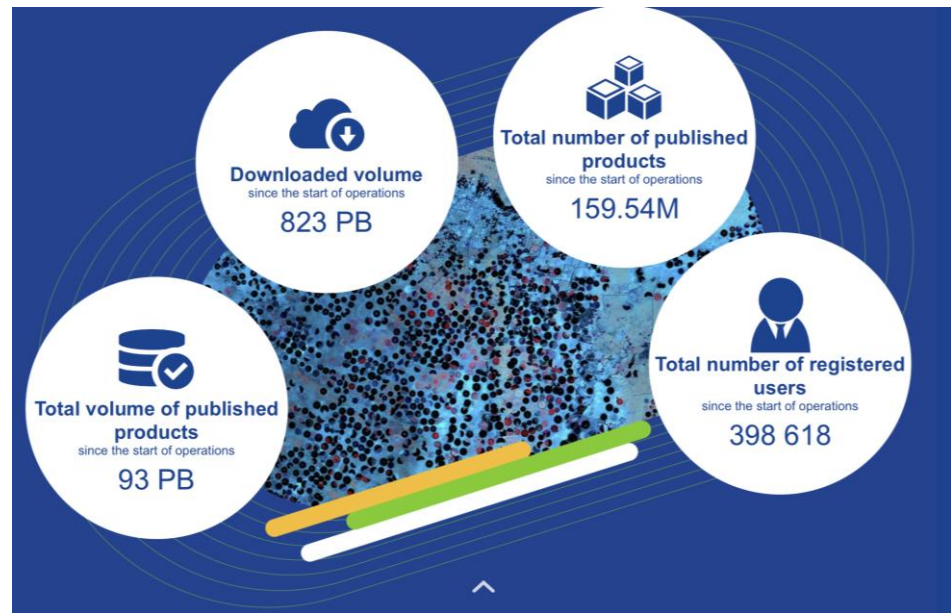


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“Ensuring the continuous and reliable availability of high data quality”

- Over **50%** of all data published on the Copernicus Data Space Ecosystem originates from **Sentinel-2**
- **50.89 petabytes** of Sentinel-2 data immediately available to users
- Over **102 million products** available to the global community



EOF-CSC: Highlights over the last 12 months



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- Continuous evolution of the CDSE services available to users:
 - *Julia language support added to the CDSE JupyterLab environment, expanding analytical flexibility*
 - *New custom scripts released for Sentinel-2 in Copernicus Browser and Sentinel Hub API*
 - *New notebooks on the Sentinel-2 Statistical API added to the CDSE JupyterHub sample repository*
 - *New STAC catalogue released on CDSE, enhancing discoverability and interoperability of data*
- L1B products made available to expert users for advanced exploitation and validation
- Launch of CDSE Sentinel-2 On-Demand Production, enabling targeted product generation based on user needs
- Collection-1 reprocessing campaign completed, achieving full harmonisation of the Sentinel-2 mission data
- Deployment of Processing Baseline 05.11, introducing: S2C compatibility, refined geometry and geolocation accuracy improvement, L2A metadata updates.

Continuous EOF-CSC Services enhancement

2-satellites Constellation Routine Operations (RO)

S2A-Ext

2024-06
YMR-2024

2024-09
S2C Launch

2025-01
S2A/C ToD

2025-03
S2A Ext

YMR8
2025-06



EOF-CSC: Highlights over the last 6 months



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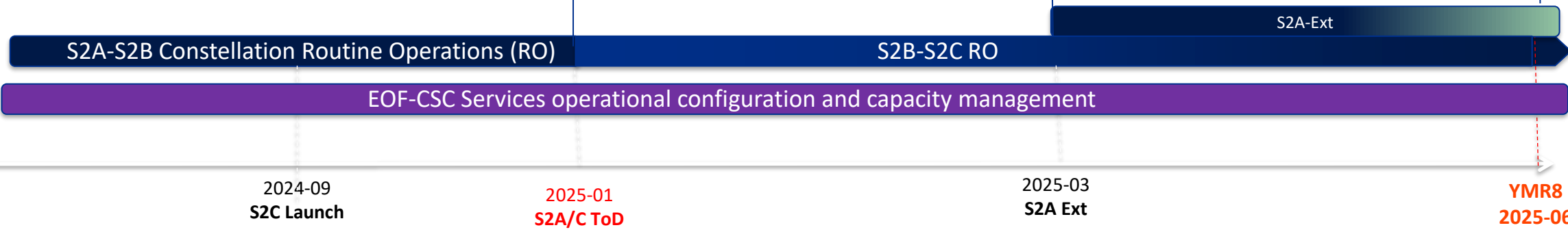
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Switch to X-Band/EDRS combined scenario for all S2 units

Successful transfer of duty from Sentinel-2A to Sentinel-2C managed in between 2 orbits, ensuring operational continuity of the constellation

Start of the Sentinel-2A extension campaign, operational configuration of EOF services and scaling up of operational capacity



EOF-CSC: The first-of-a-kind operational switch between recurrent Sentinel units



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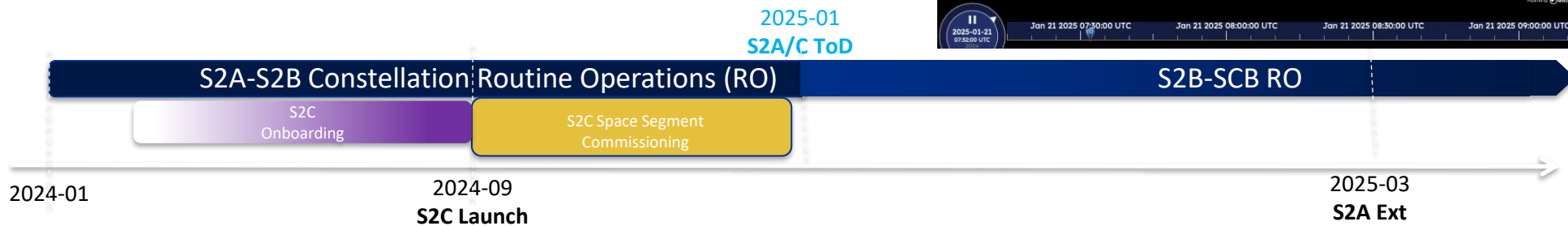
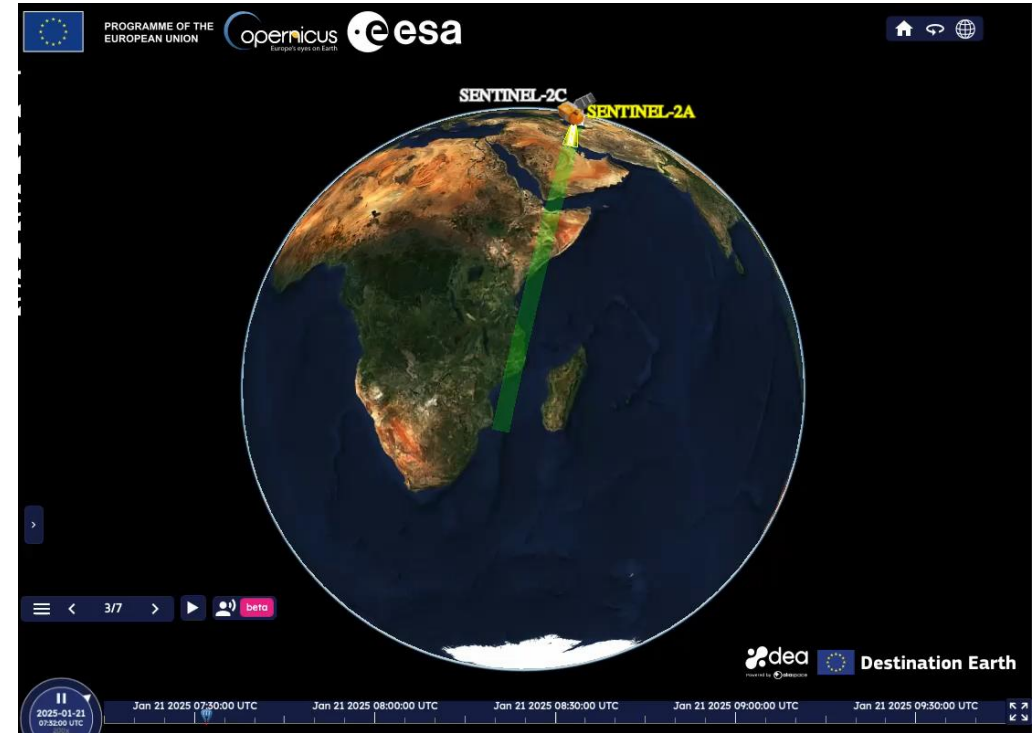


“An efficient onboarding and completely seamless switch between units, reinforcing operational continuity within the Sentinel-2 mission and the robustness of the Copernicus operational service Framework.”

Sentinel-2C successfully on-boarded and EOF-CSC services configured and scaled up to operationally manage the new Sentinel-2C unit as from the launch on 5th September:

- Satellite IOC based on operational EOF-CSC services (first time for Sentinel-2 mission)
- Seamless operational continuation at the end of the satellite commissioning
- Commissioning phase data available on CDSE with restricted access to the Commissioning Team

Sentinel-2A data available to users transparently replaced by Sentinel-2C between 2 consecutive orbits in January 2025:



EOF-CSC: The first-of-a-kind Sentinel units

“An efficient on
continuity within
service Framework

Sentinel-2C successful
and scaled up to opera
launch on 5th Septemb

- Satellite IC
for Sentinel
- Seamless
commissio
- Commissi
access to

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copernicus Europe's eyes on Earth

esa

SENTINEL-2C

SENTINEL-2A

2024-01-21 07:32:00 UTC

2025-01-21 07:30:00 UTC

Jan 21 2025 07:30:00 UTC

Jan 21 2025 08:00:00 UTC

Jan 21 2025 08:30:00 UTC

Jan 21 2025 09:00:00 UTC

Jan 21 2025 09:30:00 UTC

dea Destination Earth

S2C Launch

S2A Ext

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EOF-CSC: Sentinel-2A Extended Campaign



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“A strategic enhancement to strengthen mission capability and continuity.”

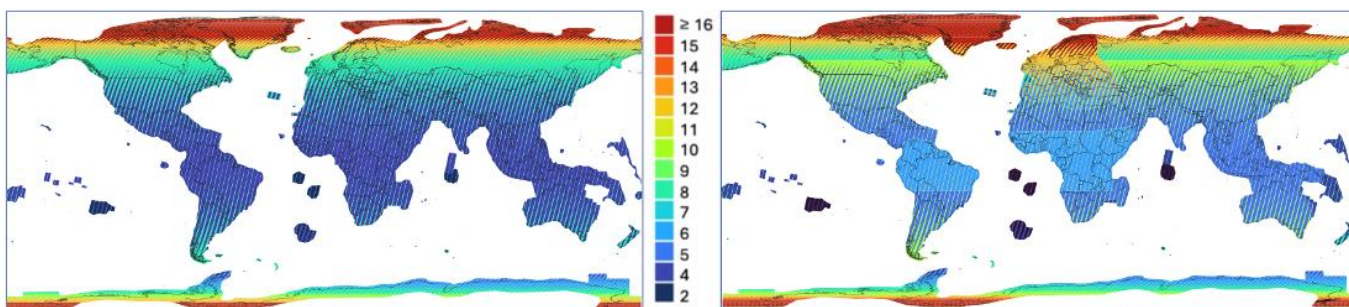
Copernicus continues to demonstrate its responsiveness to the needs and demands of the user community and the flexibility, scalability and performance of the Copernicus Operational Framework managed by ESA, with the exceptional and temporary extension of the Sentinel-2A data availability for one year following endorsement by the European Commission

Start of 1-year Sentinel-2A extended campaign March 2025

EOF-CSC services configured and scaled up to manage a 3rd Sentinel-2 unit and an 8th Sentinel satellite

Baseline Scenario (S2B+S2C)

Extended Scenario (S2B+S2C+S2A)



Number of acquisitions over 20-day period for baseline (left) and extended scenarios (right).



YMR8
2025-06



EOF-CSC: Sentinel

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Copernicus co
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Numb



SENTINEL-2A

SENTINEL-2B



Destination Earth

3 2025 14:45:00.000 Mar 13 2025 14:50:00.000 Mar 13 2025 14:55:00.000 Mar 13 2025 15:00:00.000 Mar 13 2025 15:05:00.000

2024-01

2024-09
S2C Launch

2025-01
S2A/C ToD

2025-03
S2A Ext

YMR8
2025-06



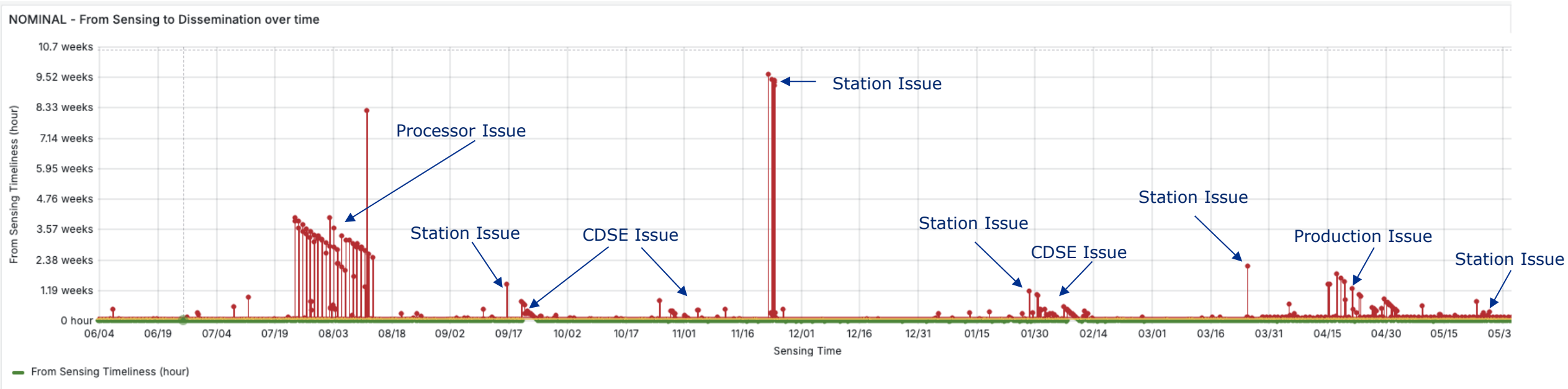
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exibility,
emporary

ampaign March 2025
o manage a 3rd

- **Data Processing Completeness** consistently above **99.5%**
- **99%** of Sentinel-2 products available on CDSE **within 24 hours** from sensing
- **98%** available **within 12 hours**



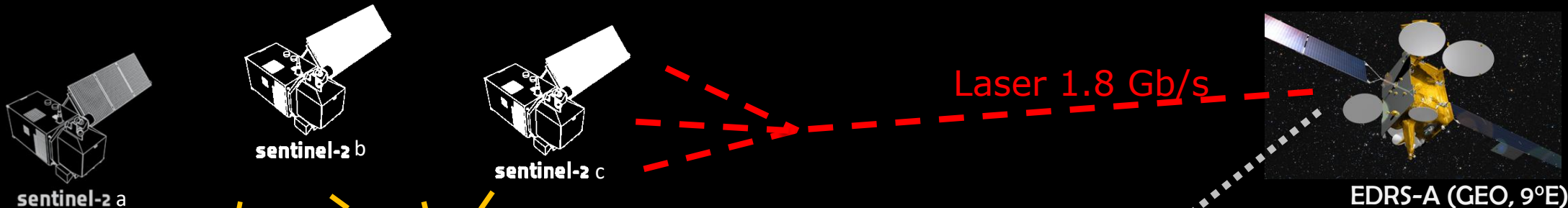
A consolidated, performant and resilient Data Acquisition network



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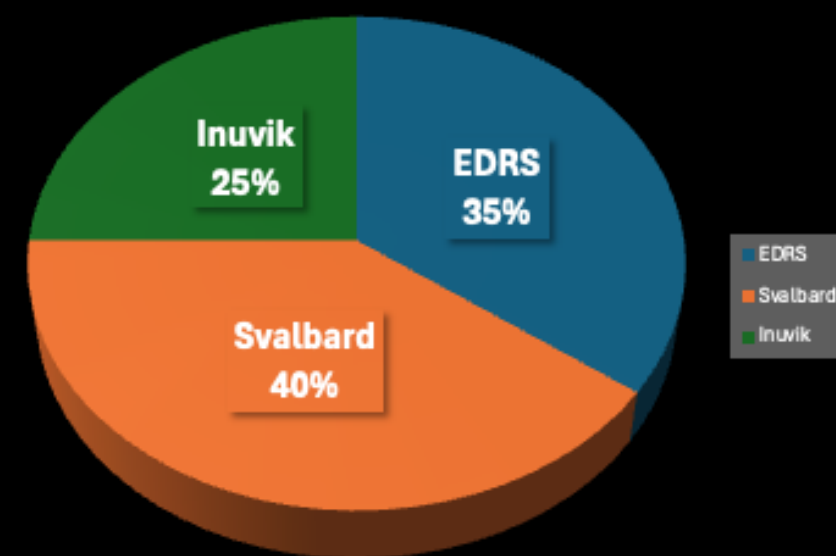
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X-Band
560 Mb/s

Ka-Band

Average Downlink Share per Sentinel unit (nominal observation scenario)



Avg x Day (May 25)	links	mn	Vol GB
EDRS	10	115	451
Svalbard	14	140	611
Inuvik	10	80	341

Inuvik

Svalbard

Kiruna

Weilheim

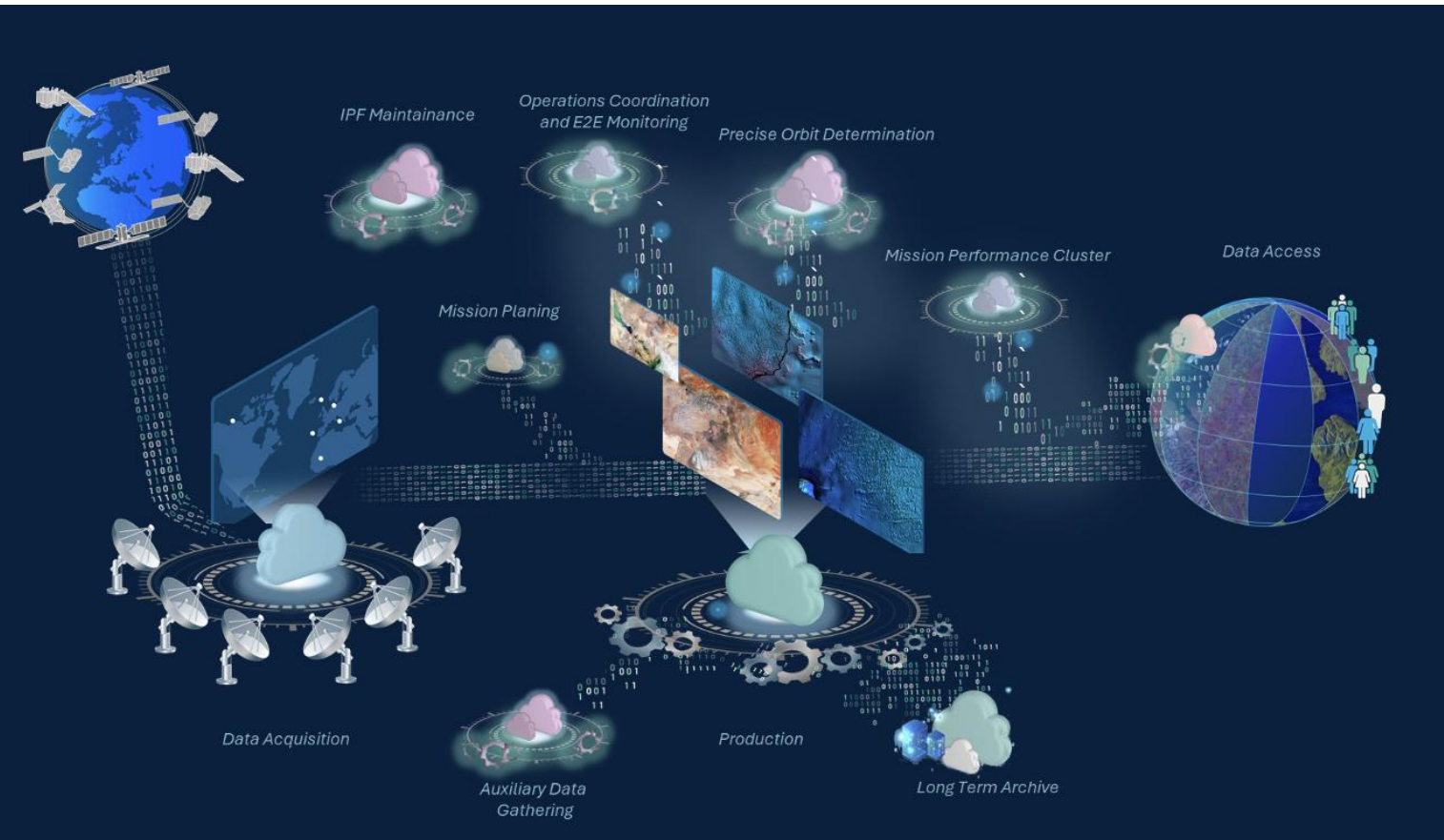
Matera

Punta Arenas

Mas Palomas

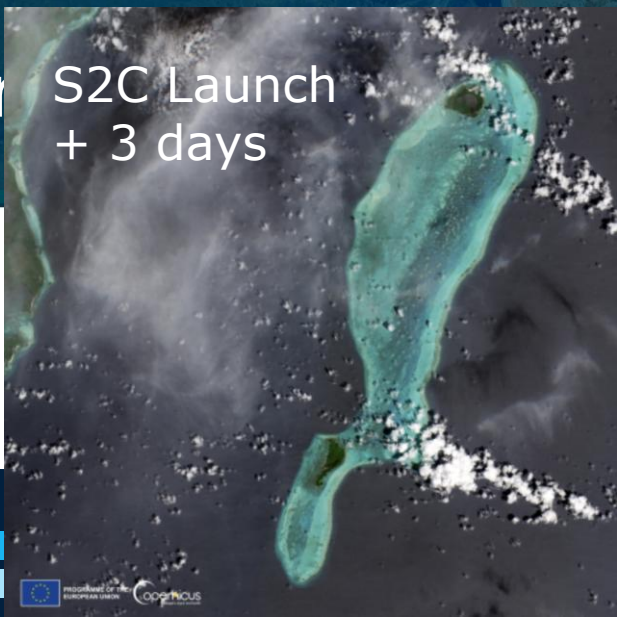
From satellites to a unified Copernicus Sentinels Missions, Data and Services ecosystem

ESA EO Framework – CSC (EOF-CSC) Missions and data management

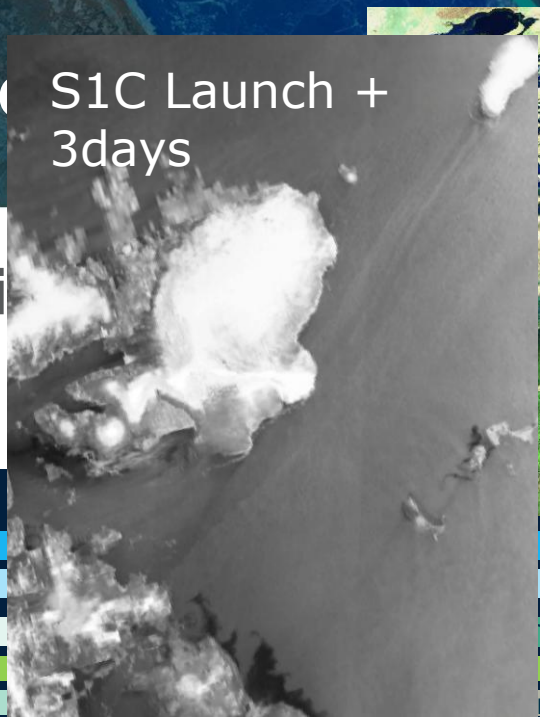


‘Plug-and-play’ capabilities and flexibility for mission-specific elements introduction, operational services configuration, and resources capacity scale-up

Ser S2C Launch + 3 days



a S1C Launch + 3days



1st S2 taking from S

S1C start of open data access

S3B
S3A

S2C Satellite Commissioning

S2B
S2A

S1C Onboarding in the EOF-CSC

S1C Satellite Commissioning

S2A

S1C

S1A



5th Sep.
S2C Launch

5th Dec.
S1C Launch

21. Jan
Switch from S2A to S2C in between two consecutive orbits
S2A data availability to users replaced by S2C data

13 Mar
Start of S2A data availability from the extended campaign
Sentinel-2A in the new orbital position and operations configured for the extended scenario

27 Mar
Opening of regular S1C data to users, with extended observation scenario

Oct
S1D Onboarding



These achievements have been made possible thanks to the strength, reliability and dedication of all industrial services involved in the CSC missions and data management.



- Coordinated effort across all ESA teams and all EOF-CSC industrial services teams
- Shared commitment to operational excellence and innovation under the Copernicus Programme



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Copernicus Sentinel-2: 2020-2024

**contains modified Copernicus Sentinel data, processed by ESA*

<https://dataspace.copernicus.eu>





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Thank You!

"The future of Sentinel-2 lies not only in better quality or additional products — but in smarter data delivery, AI-enabled interaction, and a user-driven approach to value extraction."



SOCIAL MEDIA CHANNELS



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@sentinelonline.bsky.social



@sentinelonline_

<https://dea.destine.eu/web/stories/viewer/680fada7796e1d677c8309c6>

<https://operations.dashboard.copernicus.eu/index.html>

