

ECMWF Seminar on Destination Earth

8th April 2021

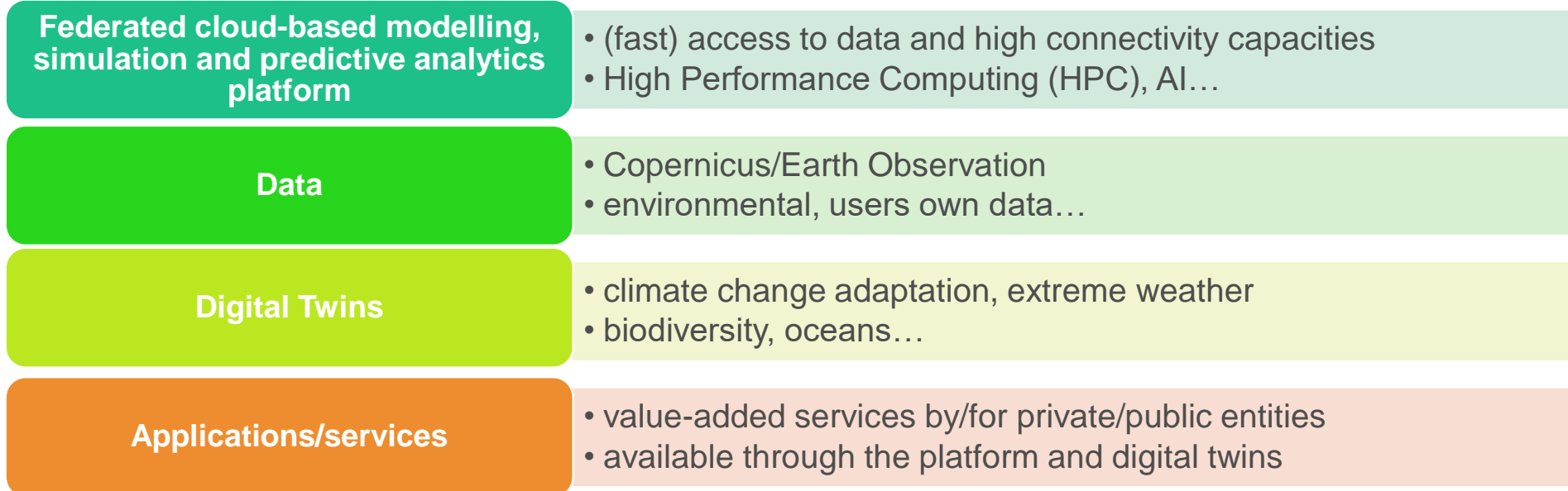
Lothar Wolf, EUMETSAT



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Destination Earth - core elements



EUMETSAT Mandate as approved by Council

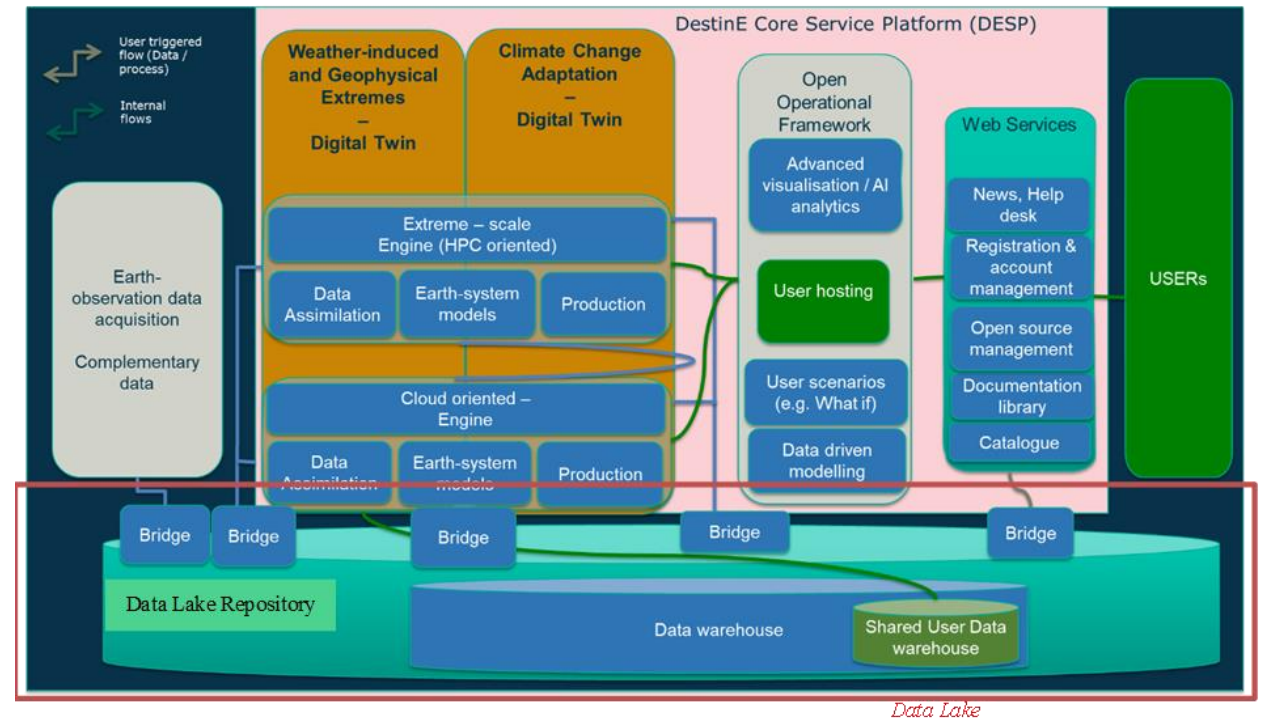
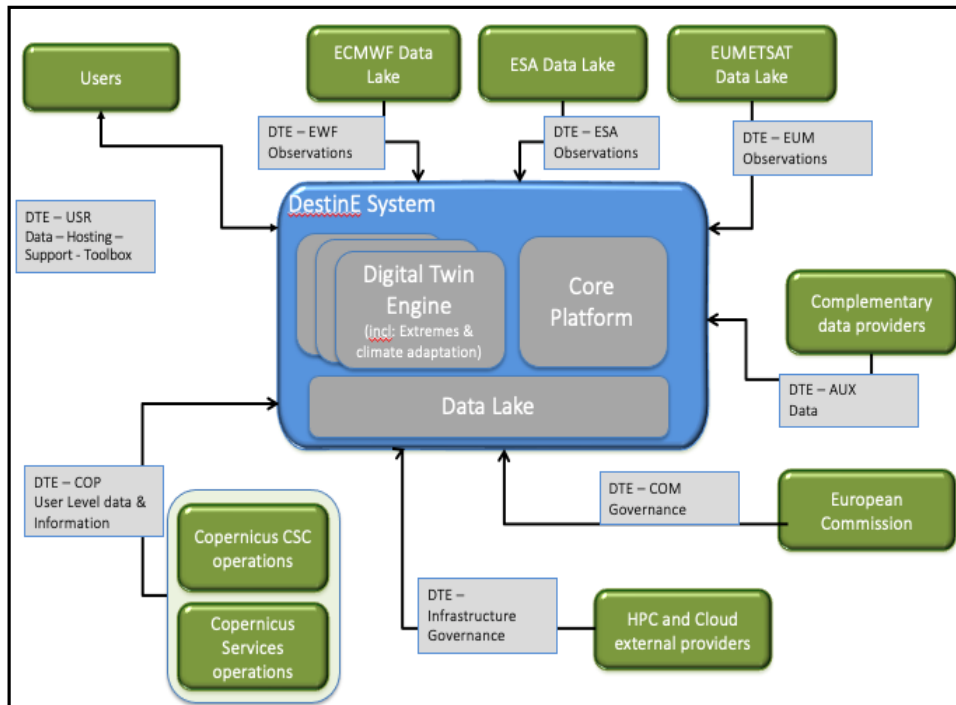
- Provision of **High Value Data Sets**;
- Design and exploitation of **elements** of the distributed and federative **operational infrastructure** of DE;
- Contribution to the **development** of “thematic” Digital **Twins** of the Earth in support to thematic lead entities;
- Contribution to the **exploitation** of “thematic” Digital **Twins** of the Earth in support to thematic lead entities;
- Contribution to DE-relevant collaborative **research** projects funded by the Horizon Europe programme in support to thematic lead entities.

EUMETSAT core contributing competencies

- Provision of High Value and high volume Data Sets;
- Design and exploitation of elements of the distributed and federative operational infrastructures;
- EUMETSAT Big Data Services in particular as Data Lake operator including SAF contributions;
- EUMETSAT experiences with harmonised data access services (using standardised APIs and distributed data adaptors) to interconnect distributed data spaces and data lakes;
- EUMETSAT operational experiences also with regards to establish cloud & data federations with suitable governance concepts such as WEkEO DIAS and European Weather Cloud;
- User community management;

Key aspects of DestinE

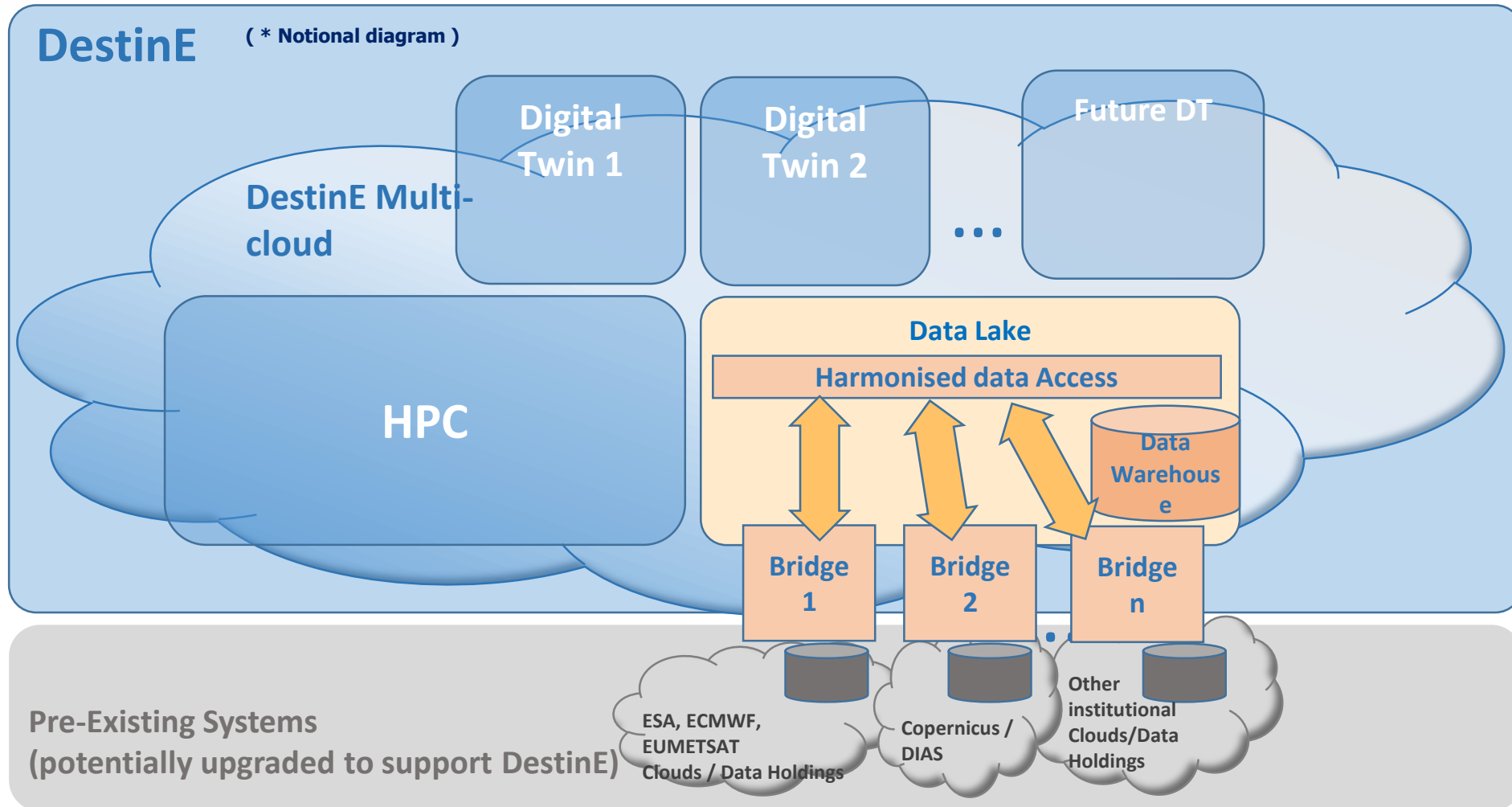
- Building on existing data assets (e.g. Copernicus but also other European assets, including EUMETSAT, ECMWF);
- Federation of cloud infrastructures and usage of Harmonised Data Access for the Data Lake;
- Usage of HPC for the Digital Twins / Engine;
- **Phase 1:** development of 30 months, possibly until summer 2024 resulting in a first operational version
- **Phase 2:** Operations & ramp-up (2024 & 2025)
- **Phase 3:** Stabilisation and sustainability preparation (2026 & 2027)



EUMETSAT's role within DestinE

EUMETSAT's main responsibilities will be to:

- Design and development of the Data Lake followed by its end-to-end deployment, testing and operation;
- Implementing, testing and operating the interfaces to the partners' data repositories, in particular integration of Copernicus interface and access to all related data;
- Implementing, testing and operating the interfaces to the DestinE Core Platform;
- Implementing, testing and operating the interfaces to the Digital Twin Engine for accessing the generated output and ensure its operational support to the Digital Twins;
- Providing the online inventory of all the data available through DestinE data Lake.
- Establish the corresponding industrial procurements in support to above points



Definitions

The DestinE Data Lake

is the self-standing system component, built from geographically distributed physical elements, that references and provides access to all user data being available from external sources (i.e. data holdings or data stores) or generated by the DestinE Digital Twins. The DestinE Data Lake holds the pool of data, building on the federation of distributed data holdings (see harmonised data access) and the Data Warehouse. The Data Lake makes available the complete set of source data and derived data, which are necessary to be used within the boundaries of a DT. The DestinE Data Lake is hence built on the federated interconnection of all relevant data holdings and constitutes the primary interface to the DestinE Digital Twins and provides stable services towards end users.

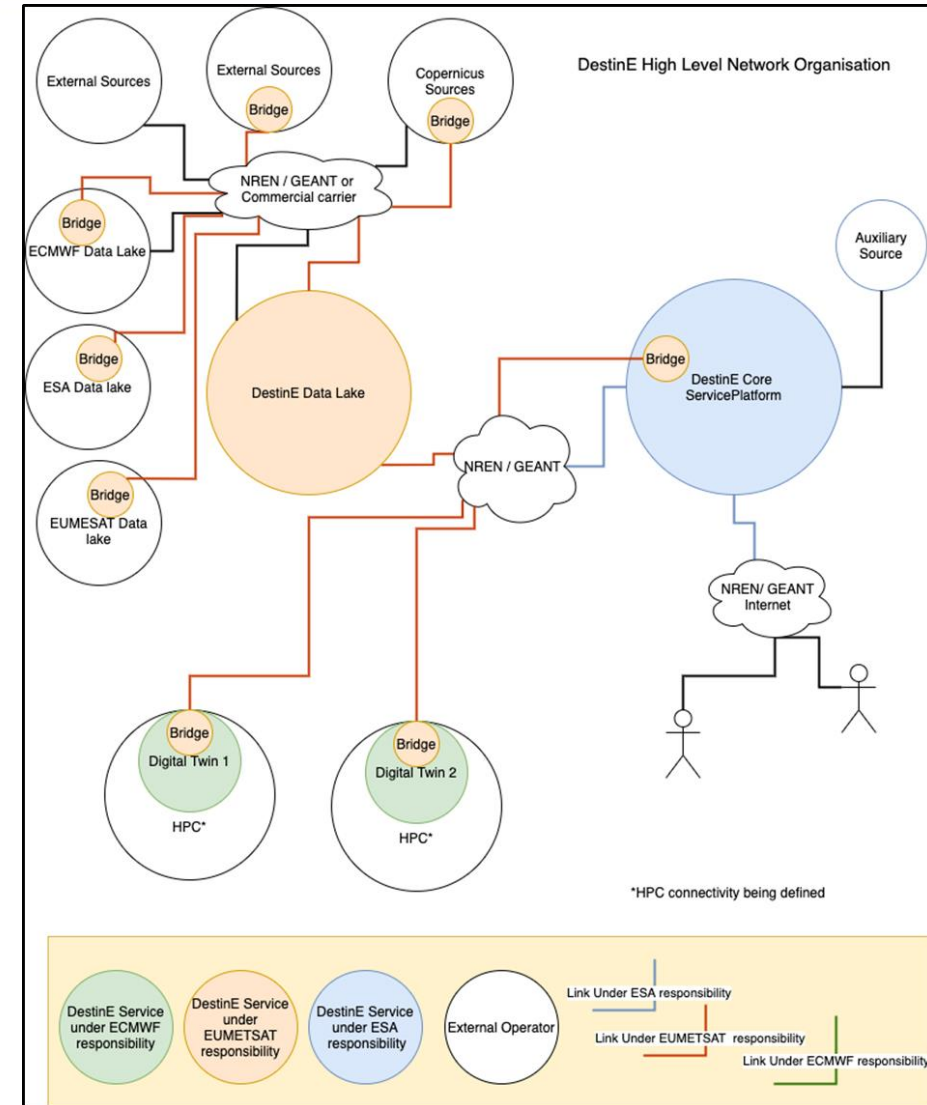
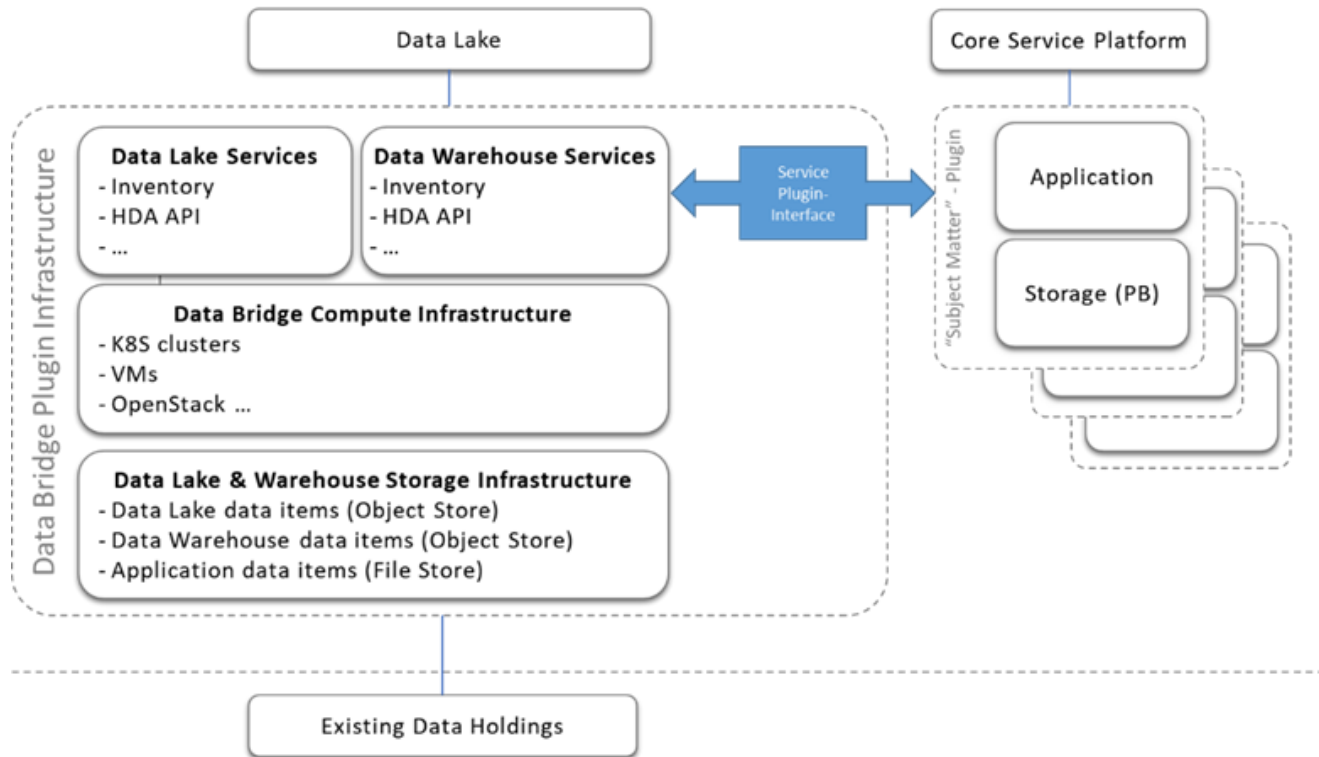
The DestinE Data Warehouse

is the part of the DestinE Data Lake that contains and provides access to structured data, ready to be used in the frame of a Digital Twin, and / or being output from a Digital Twin referenced and available for user retrieval.

Harmonised Data Access

is the logical function utilised by the Data Lake to represent a unified API and harmonised access to distributed data to the users. Data adaptors are the essential element in the provision of a harmonised interface for the user to data since they facilitate such data access to federated, distributed, diverse and heterogeneous data holdings. The harmonised data access is the core function building the data lake and data warehouse.

High Level Data Lake & Data Warehouse concept



Status of formal approval

- December 2020 EUMETSAT Council gave a mandate to EUMETSAT
- May 2021 EUMETSAT Council is expected to approve the start of a formal negotiation with EUMETSAT participation in DestinE
- July 2021 EUMETSAT Council is expected to approve the participation of EUMETSAT in DestinE – with identified tasks for Phase 1