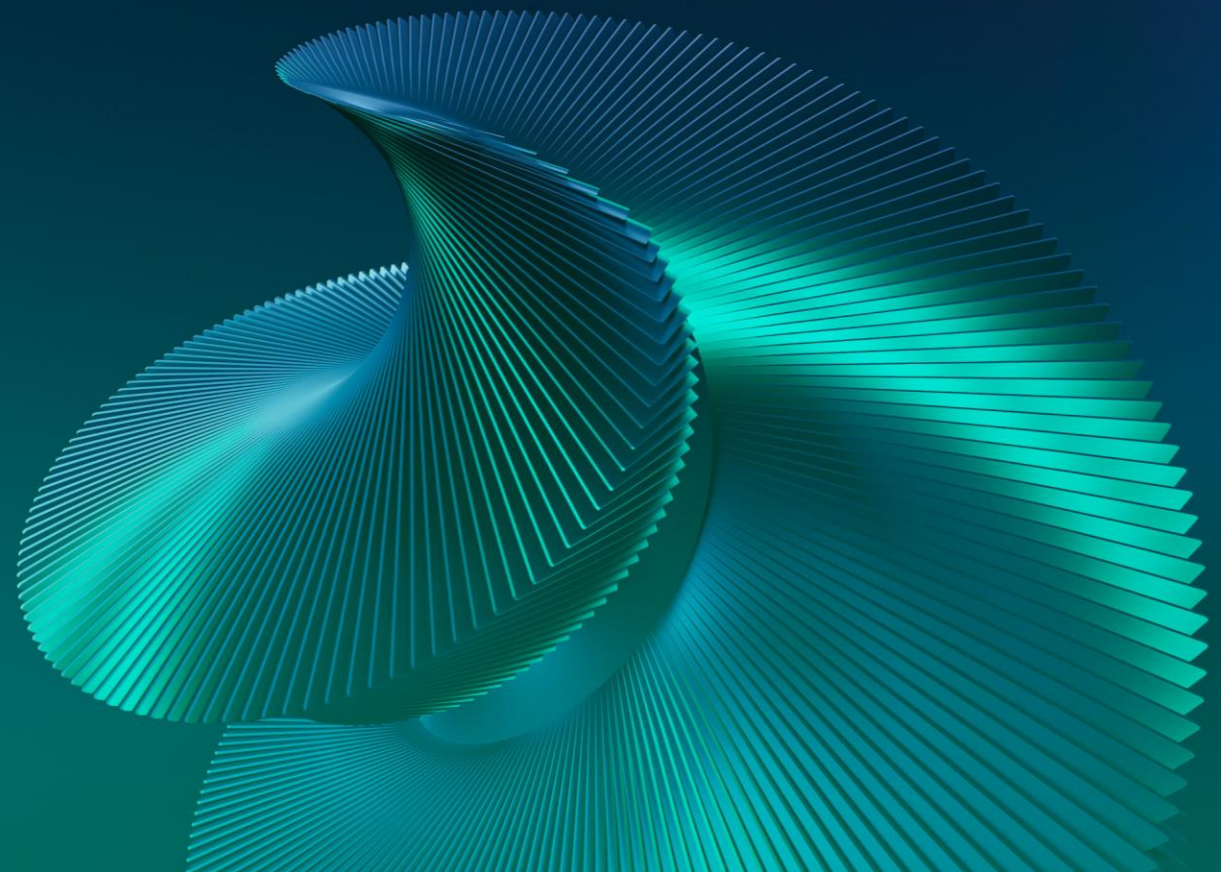# The Provision of Open Access to Public Meteorological Data

Mikko Rauhala

European Weather Cloud User Workshop 26th September

RODEO Project

RODEO Project DIGITAL-2022-CLOUD-AI-02-OPEN-AI

- Three-year project funded by the EU Digital Europe Programme (DIGITAL) and EUMETNET (consortium of 31 European meteorological services)

- HVD requirements are implemented by following the EUMETNET strategy and compatible with the World Meteorological Organization's (WMO) WIS2.0 requirements

- A user interface and APIs developed for accessing open meteorological datasets of surface weather observations, climate data, weather warnings, weather radar data and AI datasets

- Engagement through the project External Advisory Board and a user group ensuring to meet the user needs

- RODEO website: https://rodeo-project.eu/

Co-funded by the European Union

EUMETNET

Open Data Directive (EU) 2019/1024

- [Directive on open data and the re-use of public sector information](#) applies to data produced with public funds and published in digital form
    - A cross-governmental general directive alongside the sectoral regulation INSPIRE (EY) 2007/2
    - Replaces the [Public Sector Information (PSI) Directive](#) (EY) 2003/98
- [The Implementing Regulation (EU) 2023/138](#) for High Value Datasets (HVDs), published in December 2022 under the Open Data Directive
    - The regulation defines six HVD categories and their technical requirements
    - Meteorological data one of the categories
    - General requirements for data distribution:
        - Available under an open licence;
        - In machine-readable format using Application Programming Interfaces (APIs)
        - Via bulk downloads, except for NWP data;
        - Shared free of charge;
        - Following FAIR principles (usability, accessibility, interoperability and reusability)
    - The regulation will apply from 9 June 2024

Meteorological High Value Datasets (HVD)

Implementing Regulation (EU) 2023/138

Datasets	Observation data measured by weather stations	Climate data: validated observations	Weather alerts	Radar data	NWP model data
RODEO	WP3	WP5	WP4	WP6	Not covered by RODEO
Granularity	Per weather station, full temporal resolution	Per weather station, full temporal resolution	Alerts, 48hrs or more ahead	Per radar station in the MS and national composite	Minimum 48hrs ahead in 1hr steps, national, at 2.5km/best available grid
Key attributes	All observation variables measured	All validated measured observation variables; daily average per variable		Reflectivity, Backscatter, polarization. Precipitation, wind, and echotops	Deterministic and/or ensembles if available, for meteorologically relevant parameters and levels

Publication and re-use of meteorological HVDs
Implementing Regulation (EU) 2023/138

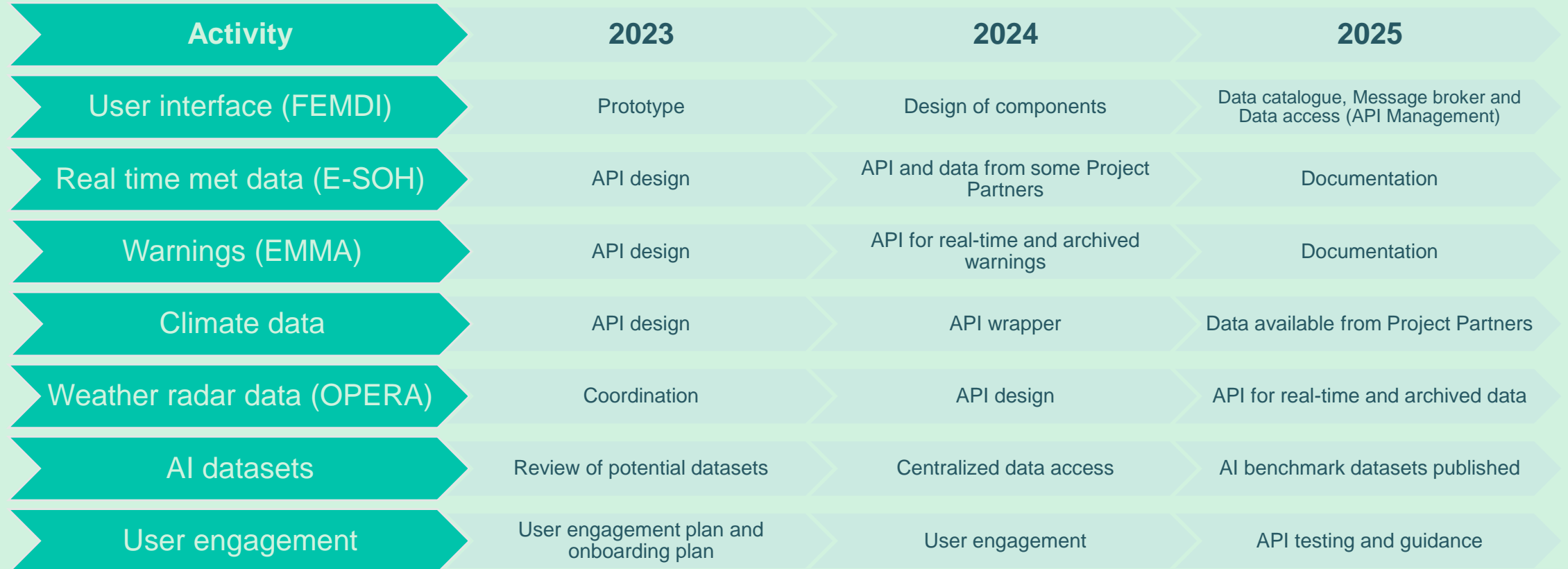| Datasets	Observation data measured by weather stations	Climate data: validated observations	Weather alerts	Radar data	NWP model data
Format	BUFR, NetCDF, ASCII,CSV, JSON	NetCDF, JSON, CSV	XML (Cap or RSS / Atom), JSON	HDF5, BUFR	GRIB (or NetCDF)
Update frequency and timeliness	Every 5-10 minutes in real time for automated stations, hourly unvalidated for all stations, for the last 24 hrs	Daily validated hourly (and better temporal resolution) and daily average observations data; all digitised historical Data	As issued or hourly	Near real time in 5 minute intervals (or available shortest interval)	Every 6 hrs, or better temporal resolution, from the last 24 hrs.

Project Work Packages

Number	Work Package name	Lead Project Member
WP1	Project Management and coordination	FMI
WP2	User interface (FEMDI)	EUMETNET
WP3	Real-time Met Data (E-SOH)	Met Norway
WP4	Warnings (EMMA)	GeoSpehere Austria
WP5	Climate Met data	KNMI
WP6	High-volume Met data (OPERA)	FMI
WP7	User and Provider Engagement and Support	EUMETNET

Project timeline

Activity	2023	2024	2025
User interface (FEMDI)	Prototype	Design of components	Data catalogue, Message broker and Data access (API Management)
Real time met data (E-SOH)	API design	API and data from some Project Partners	Documentation
Warnings (EMMA)	API design	API for real-time and archived warnings	Documentation
Climate data	API design	API wrapper	Data available from Project Partners
Weather radar data (OPERA)	Coordination	API design	API for real-time and archived data
AI datasets	Review of potential datasets	Centralized data access	AI benchmark datasets published
User engagement	User engagement plan and onboarding plan	User engagement	API testing and guidance

Project Partners
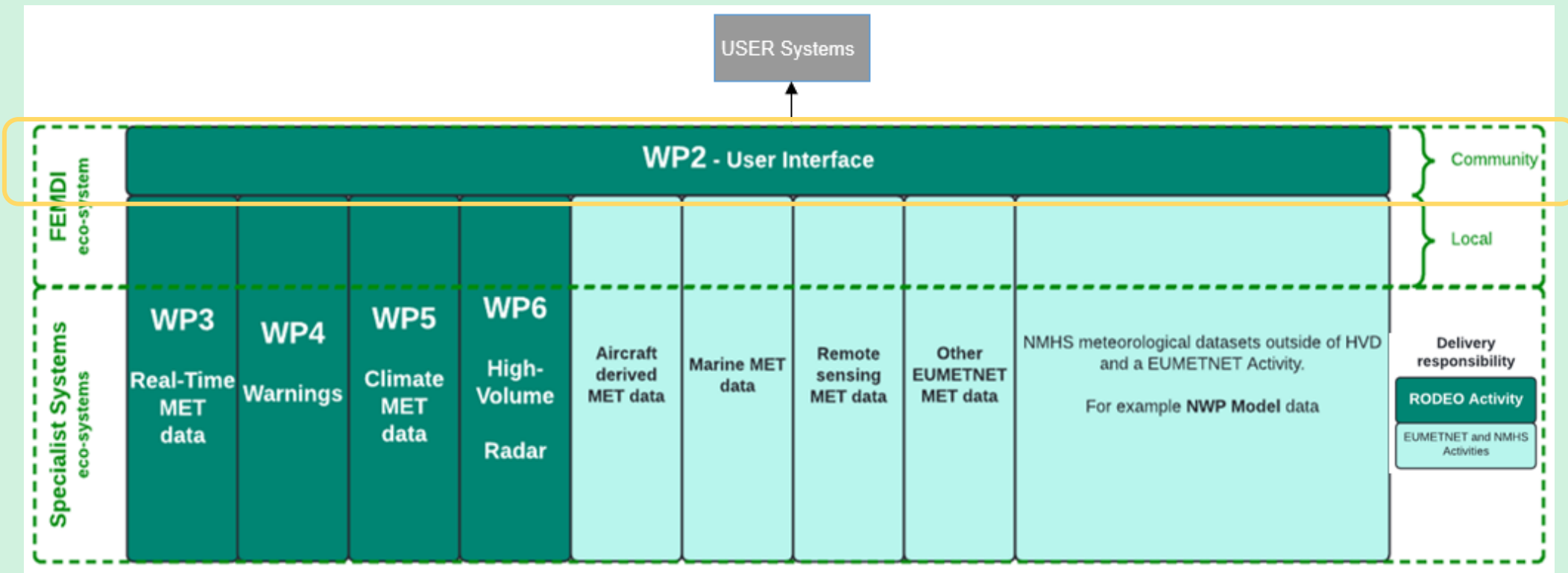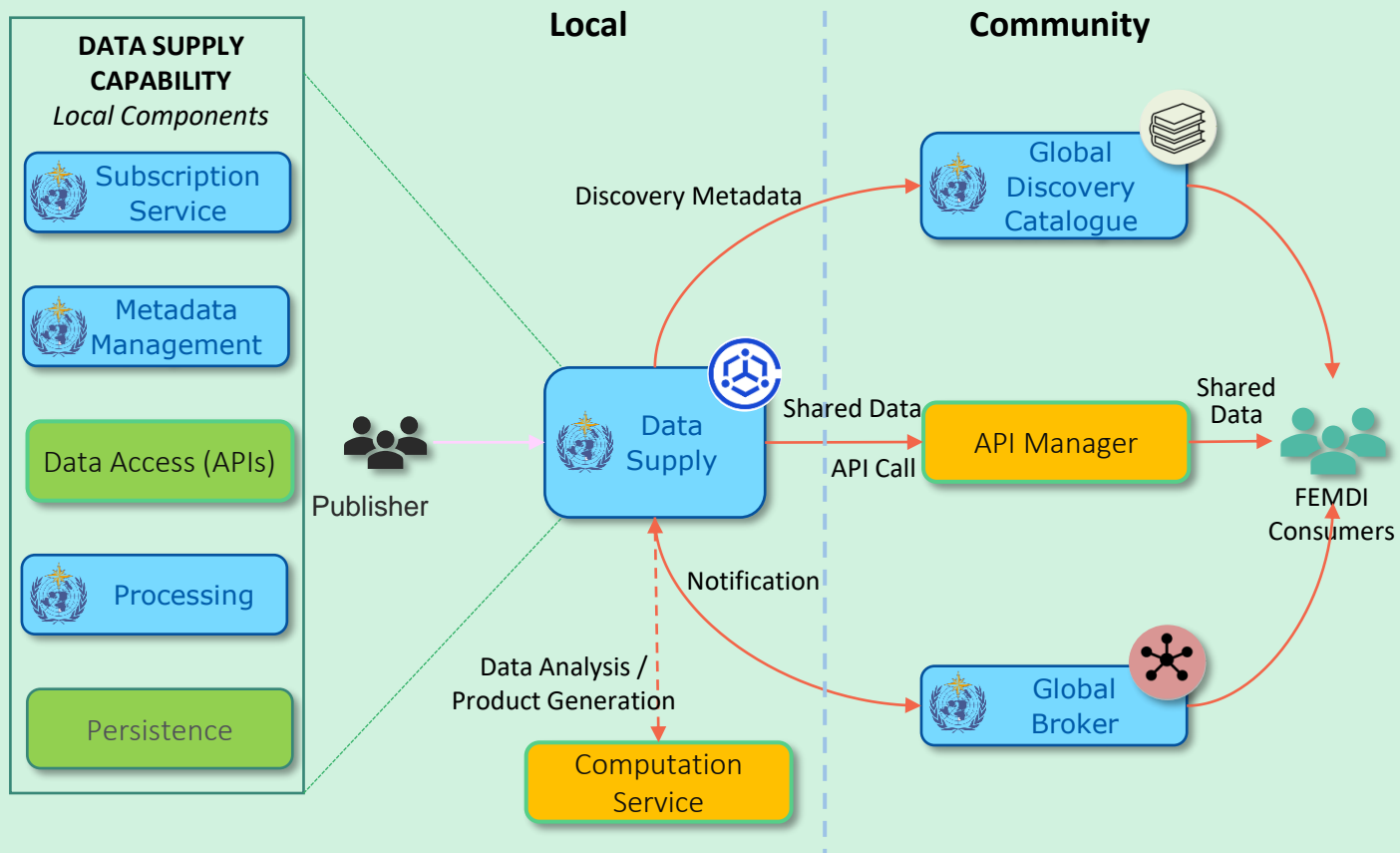
RODEO Activities

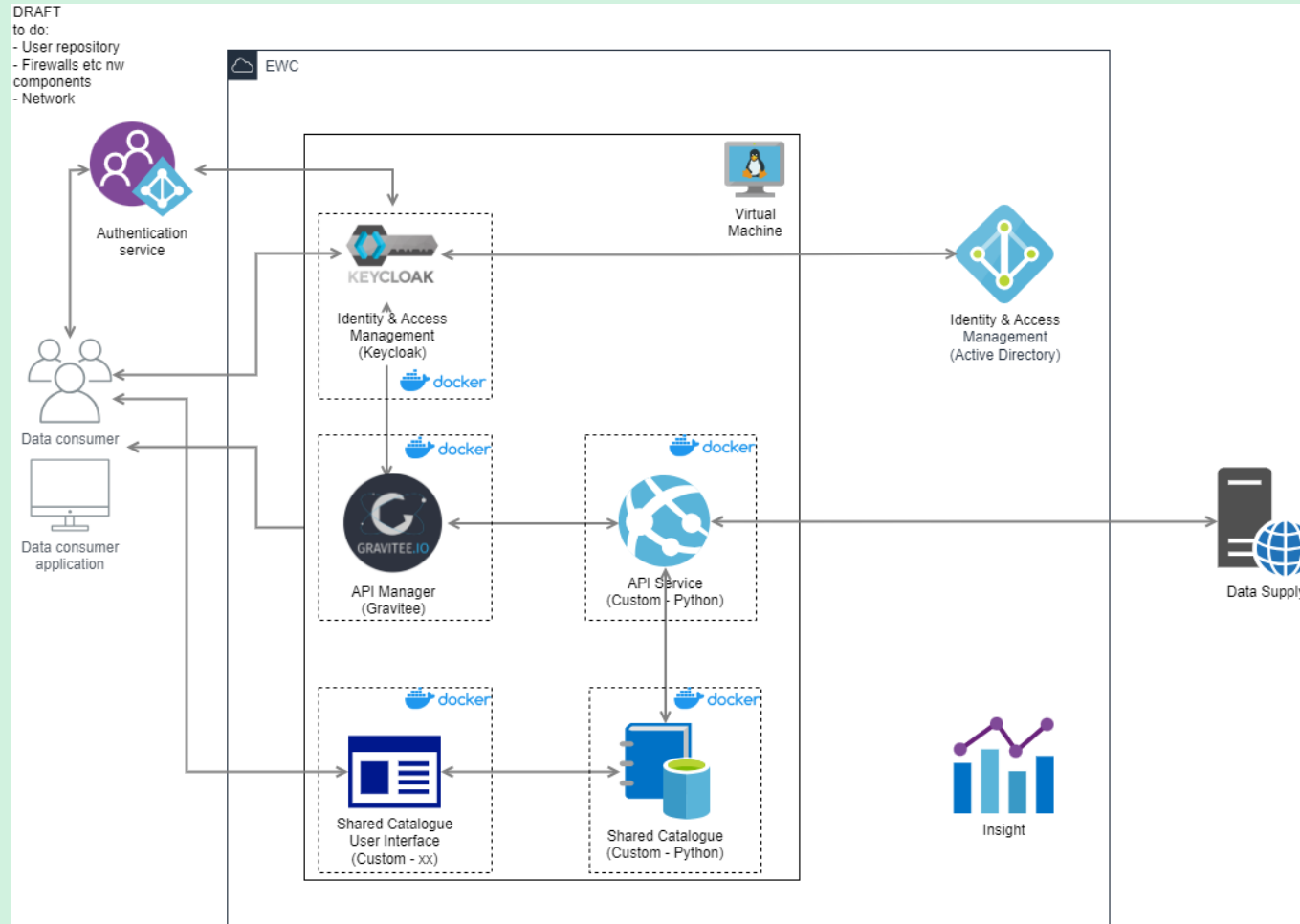# Federated European Meteorological Data Infrastructure - FEMDI

- Shared componets with WMO WIS 2.0
- Community componets: API Manager and User interface for discovery and preview, later computation service
- Data provider local componets interfaces with FEMDI with notifications (discovery and data), OGC API Records and OGC API EDR
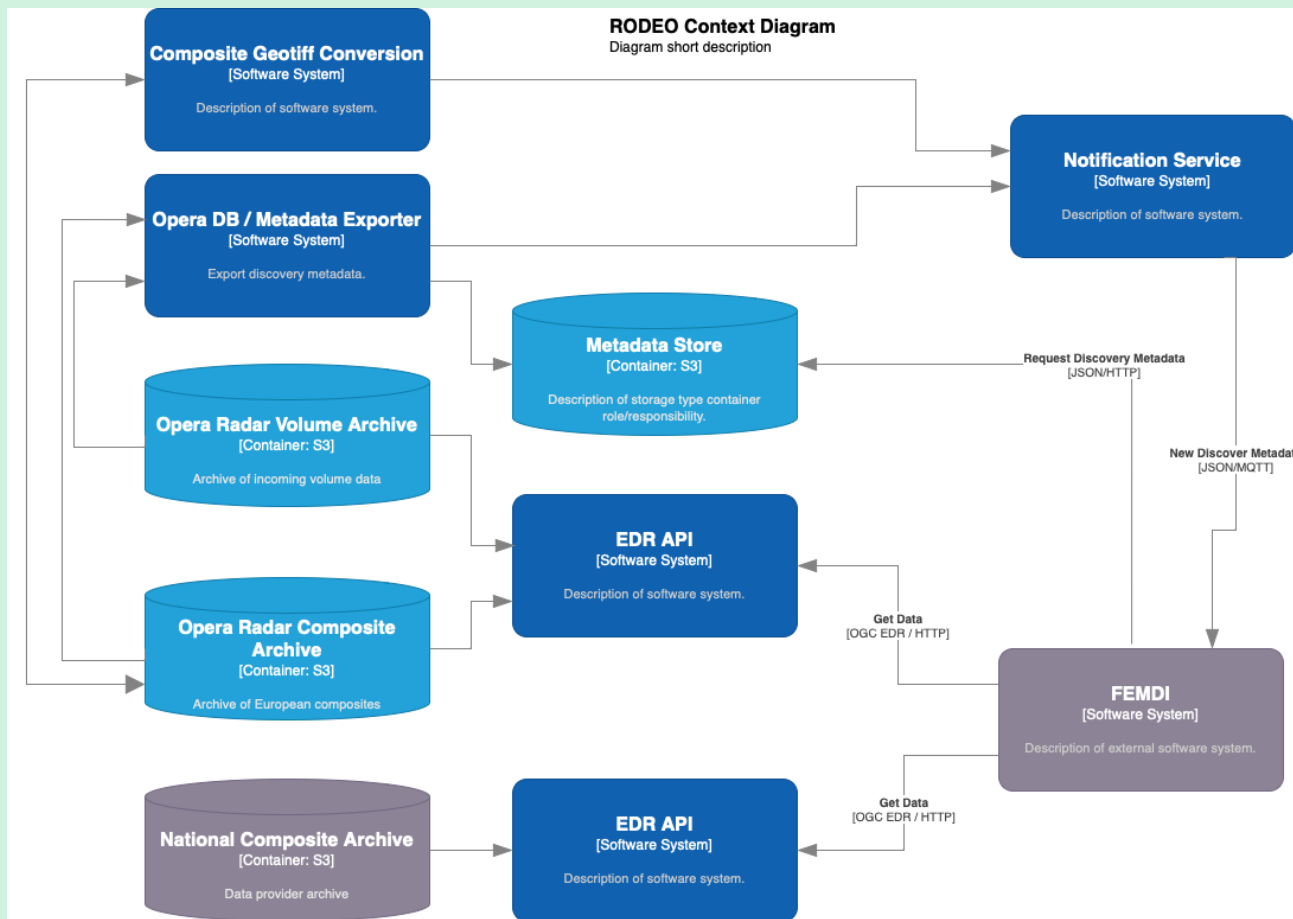
EWC FEMDI Prototype

- Hosted in EWC
- Gravitee for API manager
- Keycloak as idendity manager

RODEO – OPERA Radar
Example of local data supply

Planned EWC activities

- FEMDI Prototype

- FEMDI API Gateway and User interface

- E-SOH 24 hours observation data sharing central component, can be installed for data supplier locally

- OPERA Radar composite and individual radar volume archive and EDR API for radar data

Thank you!

Minna Huuskonen
Project Lead, FMI Innovations and Projects
+358 50 380 3094, minna.huuskonen@fmi.fi

Mikko Rauhala
Chief Architect, FMI
+358 40 719 1680, mikko.rauhala@fmi.fi

RODEO project: rodeoproject@fmi.fi

Website: https://rodeo-project.eu/

Co-funded by
the European Union

EUMETNET