European Weather Cloud
-
Towards an Operational Service

European Weather Cloud User Workshop

November 10-11, 2021

Umberto Modigliani (ECMWF) , Jörg Schulz (EUMETSAT)

EUROPEAN WEATHER CLOUD
CLOUD COMPUTING-BASED INFRASTRUCTURE, FOCUSED ON THE NEEDS OF THE METEOROLOGICAL COMMUNITY

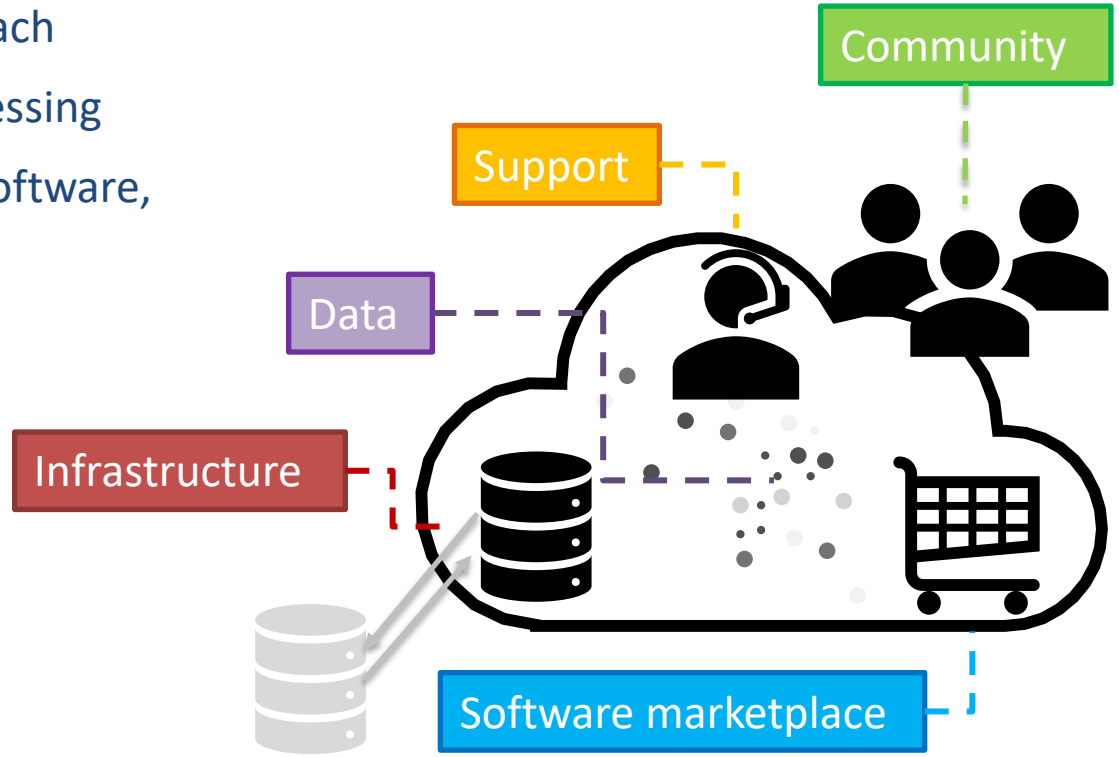
ECMWF EUMETSAT

Background

- The European Weather Cloud has been established by connecting cloud infrastructures and cloud-based services from both ECMWF and EUMETSAT into a larger entity, providing seamless access to online data, functions and services from both organisations;
- The European Weather Cloud will be operated in a coherent manner through an overarching layer of joint governance and management;
- The cloud infrastructures contributing to the European Weather Cloud being owned and operated by either ECMWF or EUMETSAT, several aspects related to these infrastructures are governed and managed by each organisation using their respective, well-established processes;
- The European Weather Cloud offers the possibility to federate with existing infrastructures in Member States.

EWC benefits to users, data providers and federees

- Users:
  - Access to resources that may be outside their normal reach
  - Rich and fast data availability, with data locality for processing
  - Community support: knowledge, discussion platfotrm, software, infrastructure setups...
- Data providers
  - Easier to provide data
  - Greater use of their datasets
  - Easier combination with other datasets
- Federees
  - Closer access to the systems
  - Data federation may make it easier to bring data to their own cloud-federated systems
  - Opening themselves to a wider range of users



EUROPEAN WEATHER CLOUD
CLOUD COMPUTING-BASED INFRASTRUCTURE, FOCUSED ON THE NEEDS OF THE METEOROLOGICAL COMMUNITY

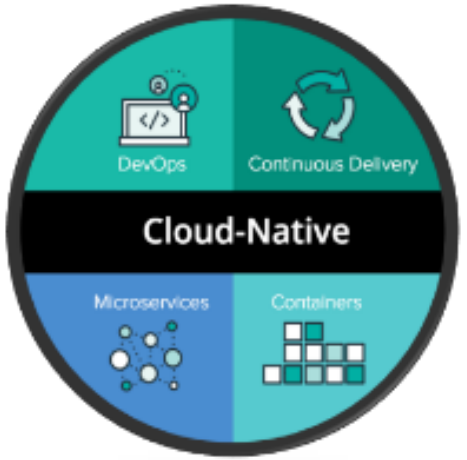
ECMWF EUMETSAT

EWC helps optimising the undifferentiated domain specific effort and focus on key competences

1. New landscape in data ecosystem

2. New technical capabilities offered by the cloud
   - **Scaling horizontally** as needed/abstracting **away the computer's OS** / installation / request (or **data**) **driven/ geo-redundancy**

3. Cloud native code needs changes of approach for greatest benefit
   - Containers, object storage, stateless code, triggering / notifications, ..
   - Most of EO user community isn't far along this path
   - Existing code and systems are major investments – **legacy matters**!



The change is required but is a huge task for individual organizations → **Community is required!**

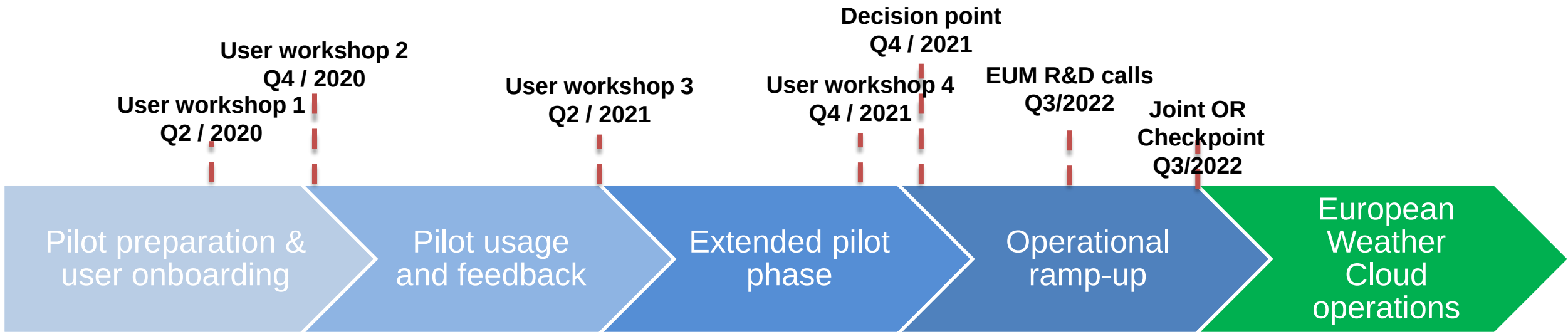
EWC is an efficient way to focus on the key competences of NMHSs

EUROPEAN WEATHER CLOUD
CLOUD COMPUTING-BASED INFRASTRUCTURE, FOCUSED ON THE NEEDS OF THE METEOROLOGICAL COMMUNITY

ECMWF EUMETSAT

European Weather Cloud - Broad Timeline

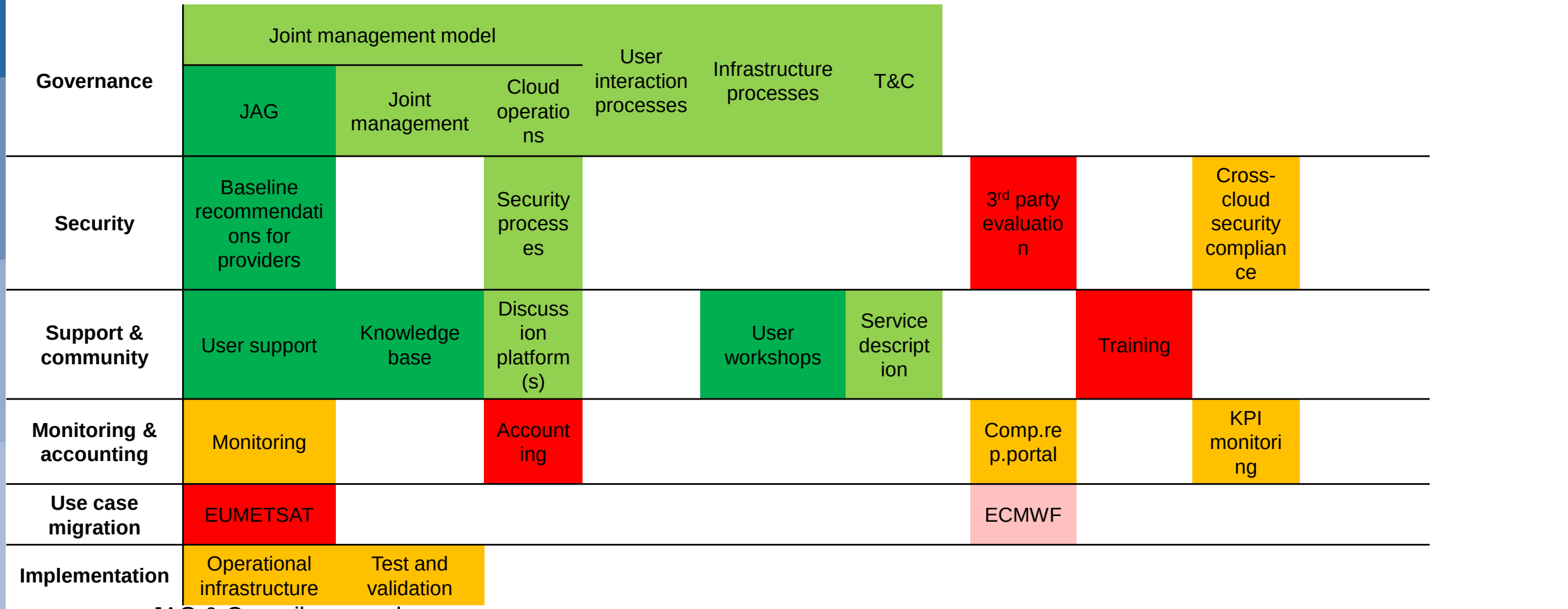
- Pilot phase will run until Q4 2021
- Procurements for operational infrastructure at EUMETSAT and ECMWF are underway
- Autumn Councils approval needed for ramping up to Operations
- Joint E&E operations checkpoint in autumn 2022 to mark start of routine services
- Member States appropriate their share of the system
- User Workshops continue
- R&D calls at EUMETSAT in 2nd half 2022, participation in special projects at ECMWF as usual



Conditions to start operations

- The conditions for declaring the readiness of EWC for entering the full operations phase typically includes an assessment of the following main aspects:
  - Readiness of EWC infrastructure at both EUMETSAT and ECMWF sites;
  - Availability of contracted support for the provision and maintenance of the EWC infrastructure and services;
  - Successful end to end populated system test;
  - Readiness of the EWC governance and management functions (joint and organisation's specific);
  - Readiness of operations procedures.

Transition to operations



What will be allocated to Member States ?

- Each Member State will receive a share of the infrastructure
  - Equal basic allocation for all MS + additional allocation pro-rata to contribution. EUMETSAT example agreed at a 50/50% split between basic and pro-rata
  - ECMWF will use the same allocation model as on the HPC: 35% of resources equally distributed and 65% pro-rata to contribution
- This is the starting point subject to periodic review.

EUMETSAT Model

Member state	Base allocation (CRUs)	Pro-rata allocation (CRUs)	Total (CRUs)
Austria	2.50	1.63	4
Belgium	2.50	1.94	4
Bulgaria	2.50	0.25	3
Croatia	2.50	0.19	3
Czech Republic	2.50	0.81	3
Denmark	2.50	1.31	4
Estonia	2.50	0.13	3
Finland	2.50	1.00	4
France	2.50	10.25	13
Germany	2.50	14.56	17
Greece	2.50	0.81	3
Hungary	2.50	0.50	3
Iceland	2.50	0.06	3
Ireland	2.50	1.06	4
Italy	2.50	7.63	10
Latvia	2.50	0.13	3
Lithuania	2.50	0.19	3
Luxembourg	2.50	0.19	3
Netherlands	2.50	3.25	6
Norway	2.50	1.63	4
Poland	2.50	1.94	4
Portugal	2.50	0.81	3
Romania	2.50	0.81	3
Slovakia	2.50	0.38	3
Slovenia	2.50	0.19	3
Spain	2.50	5.06	8
Sweden	2.50	2.13	5
Switzerland	2.50	2.63	5
Turkey	2.50	3.25	6
United Kingdom	2.50	10.38	13

Indicative proposal in EUM/C/97/21/DOC/06 to be finalised this Autumn
1 CPU = 16 cores; 128GB RAM; 1 GPU; storage: 4TB block, 8TB object, 4TB filestore

EUROPEAN WEATHER CLOUD
CLOUD COMPUTING-BASED INFRASTRUCTURE, FOCUSED ON THE NEEDS OF THE METEOROLOGICAL COMMUNITY

ECMWF EUMETSAT

EWC Usage Policy Agreed by both Councils

- By Member States of ECMWF and EUMETSAT for the purpose of their official duties
- By Co-operating States of ECMWF for official duty (Noting that EUMETSAT currently does not have Cooperating States);
- By ECMWF and EUMETSAT, in line with the purpose, objectives and activities outlined in their respective Conventions;
- By EUMETNET and ECOMET;

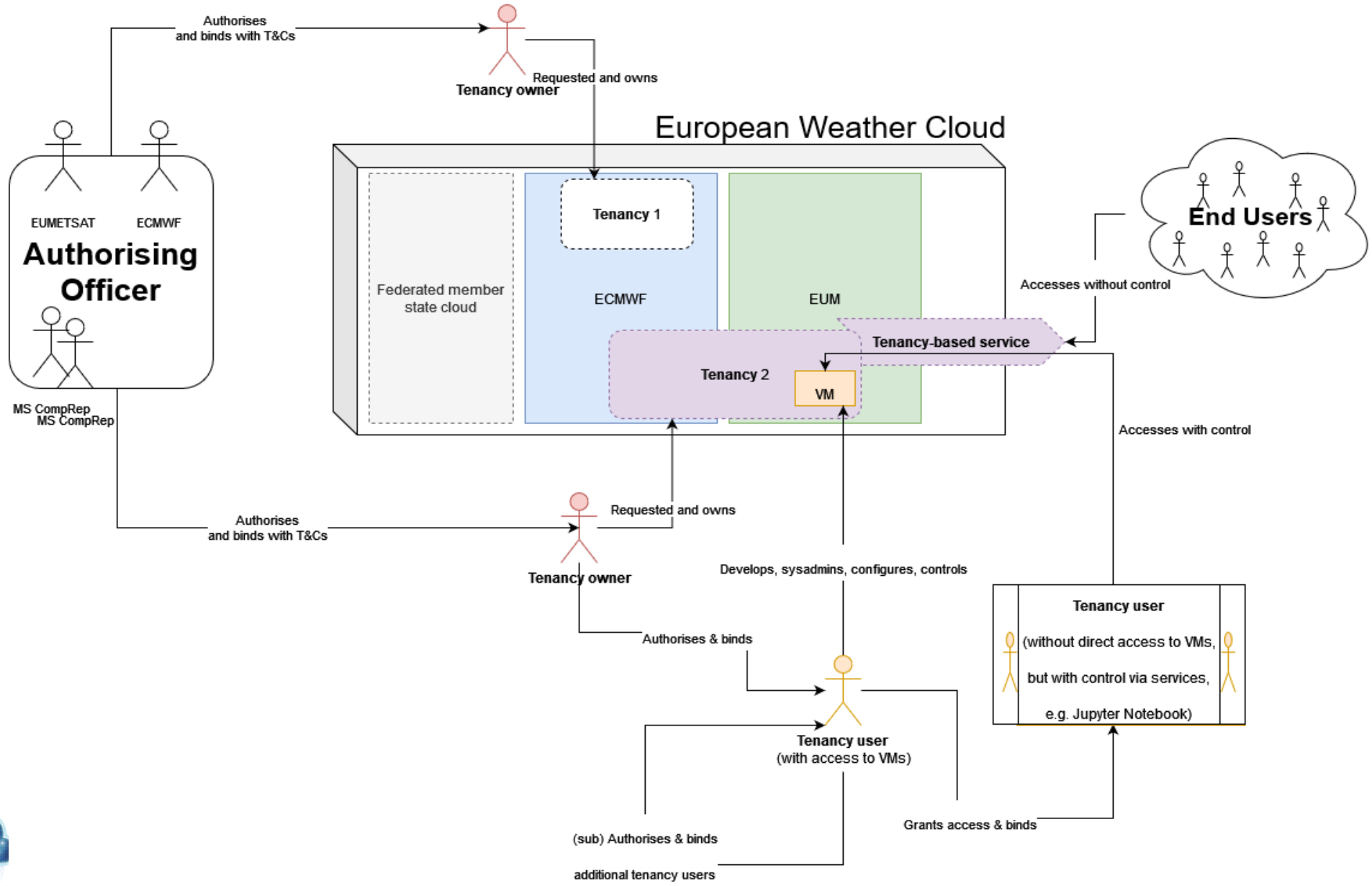
ECMWF and EUMETSAT Councils have also agreed some additional use that is specific to the two organisations and that will in case require additional decision of Councils:

  - For Research proposed by Member States (Special projects at ECMWF, Dedicated Research Call at EUMETSAT)
  - For Third Party Activities/Programmes and Optional Programmes,
  - By NMHSs of WMO and research organisations for activities aligned with ECMWF's mission (usually within the context of Third Party activities requiring separate Council approval) (only ECMWF but could be included above for EUMETSAT)

Terms and Conditions for the Operational Phase

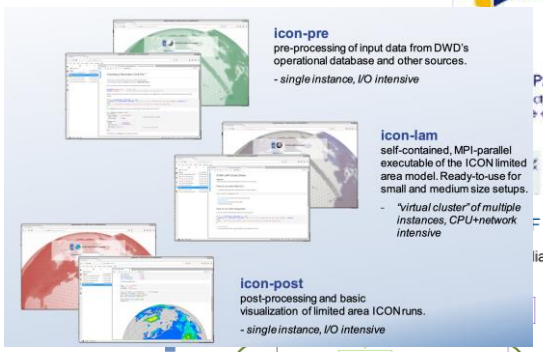
- T&Cs further developed based on T&C of the Pilot Phase
- The T&Cs:
  - Define essential terms, such as “Authorizing Officer” “EWC Partners”, “EWC Services”, “tenancy” and different categories of users
  - Regulate the right to access of the users and conditions of use as well as obligations for those providing access (technical and security requirements, responsibility for the accounts, ensuring use and data storage only for the agreed purpose)
  - Data policies of EUM and ECMWF will apply use of their data
  - Users retain ownership of the items they provide
  - The EWC Partners reserve the right to monitor activity deemed to be incompliant
  - No liability for ECMWF and EUMETSAT except for willful misconduct and gross negligence

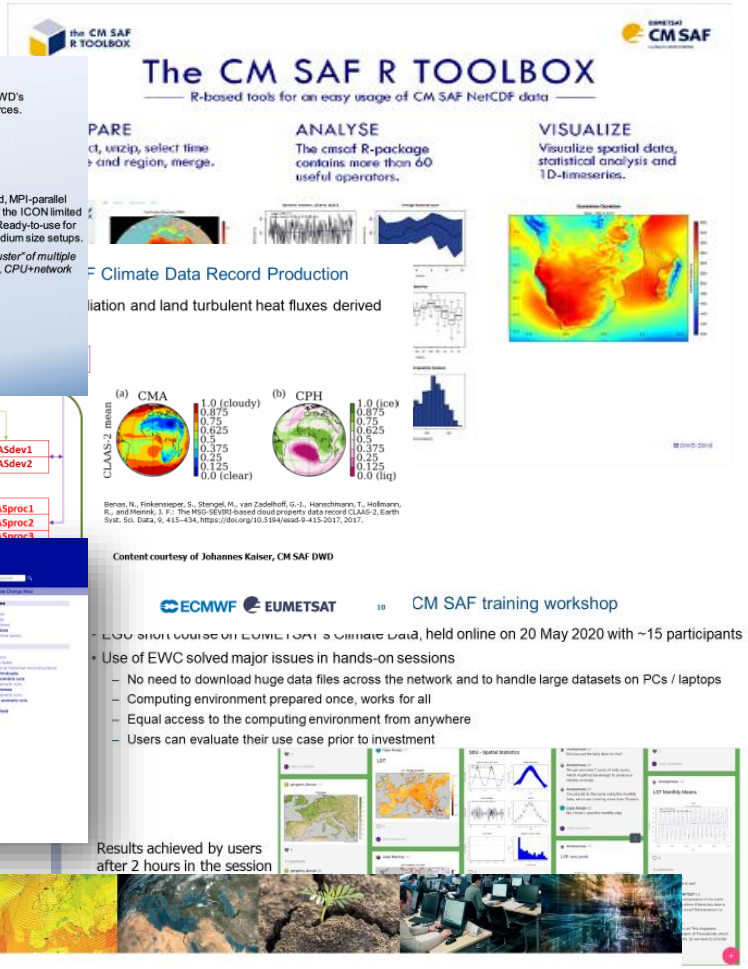
Terms and Conditions for the Operational Phase

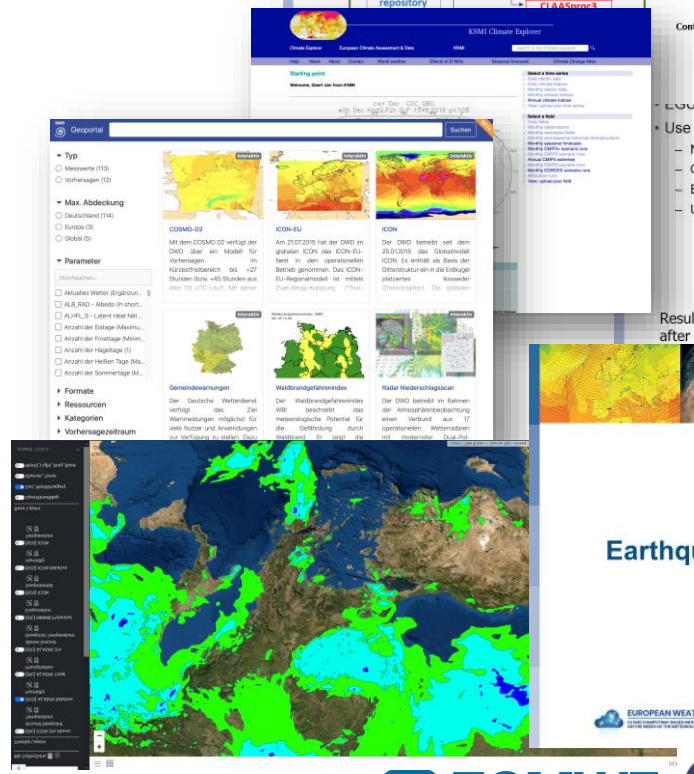


Thank You!

We are looking forward the operational phase







EUROPEAN WEATHER CLOUD
CLOUD COMPUTING-BASED INFRASTRUCTURE, FOCUSED ON THE NEEDS OF THE METEOROLOGICAL COMMUNITY

ECMWF EUMETSAT