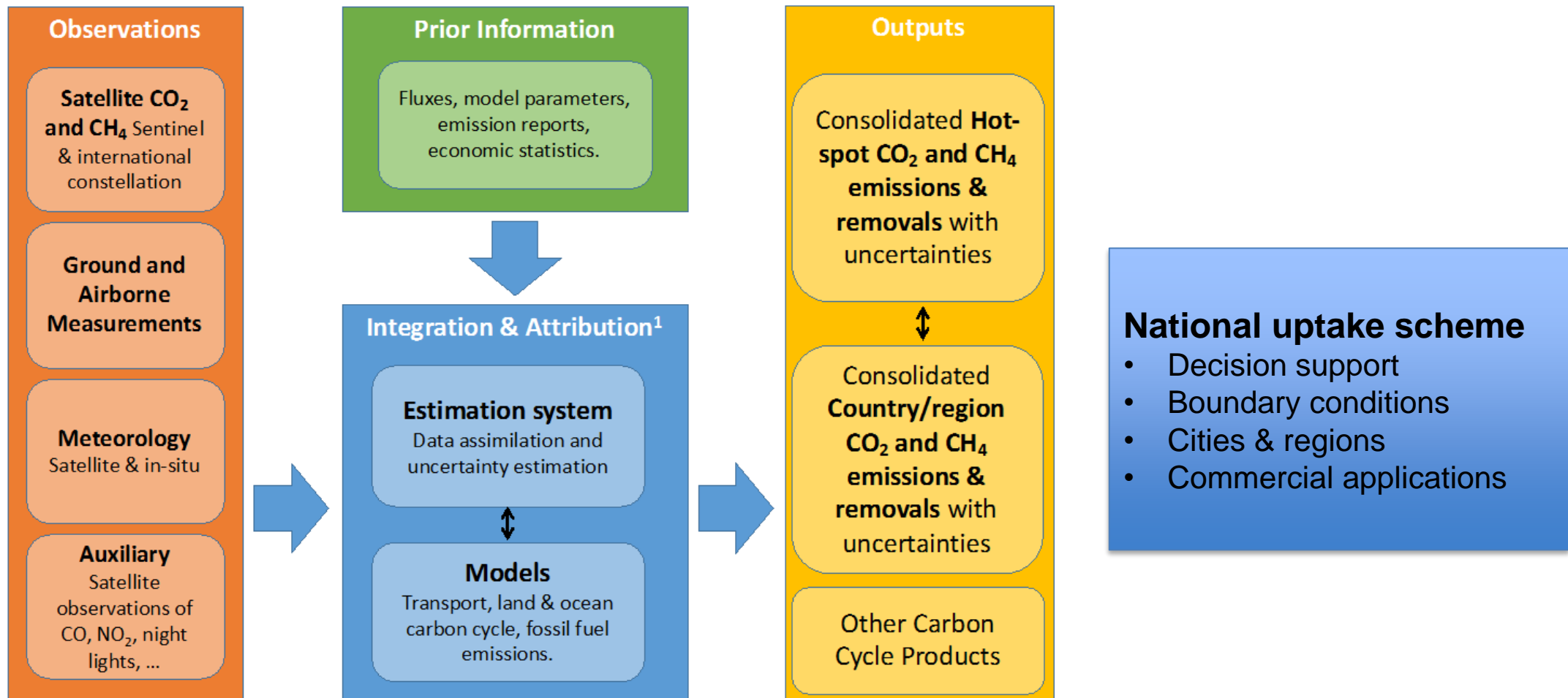


Operational perspectives

A view on the (near-) future

Richard Engelen & Anna Agusti-Panareda

The End-to-End System: Core elements of the functional architecture

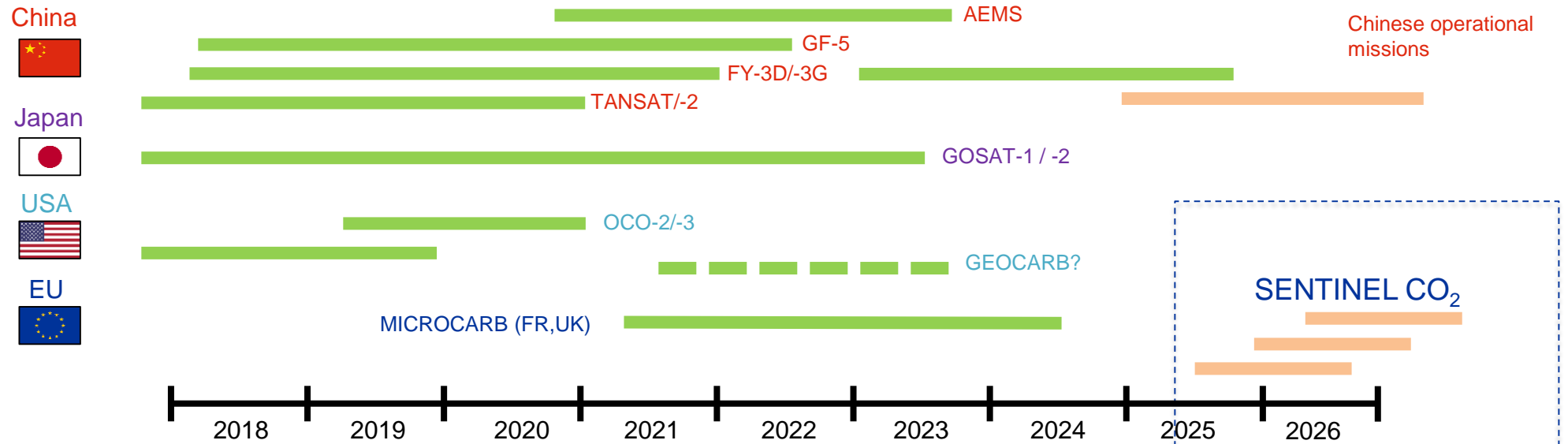


1: Between biogenic and anthropogenic sources

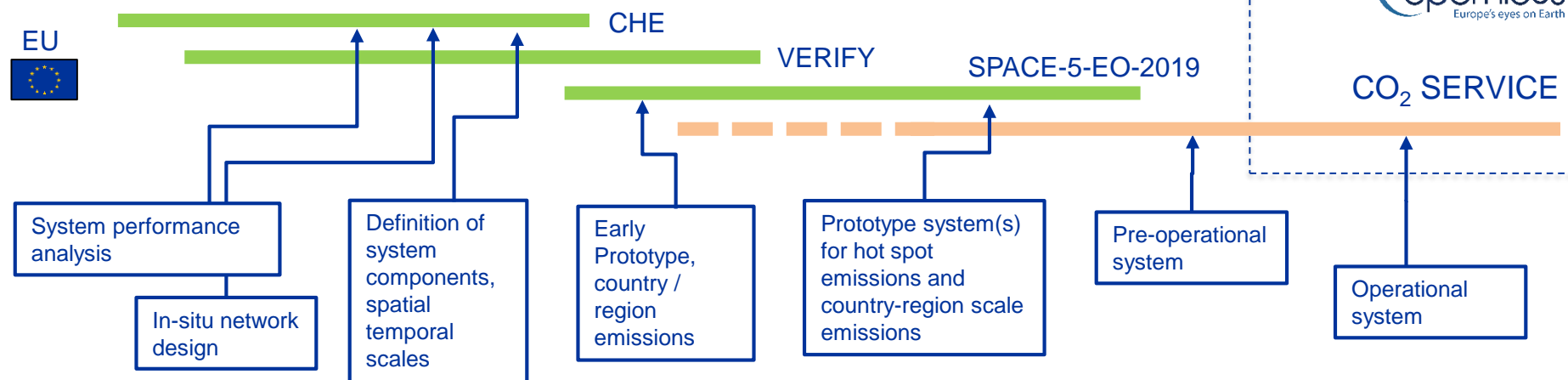
ROADMAP FOR AN OPERATIONAL CO₂ EMISSIONS MONITORING SERVICE

RESEARCH OPERATIONS

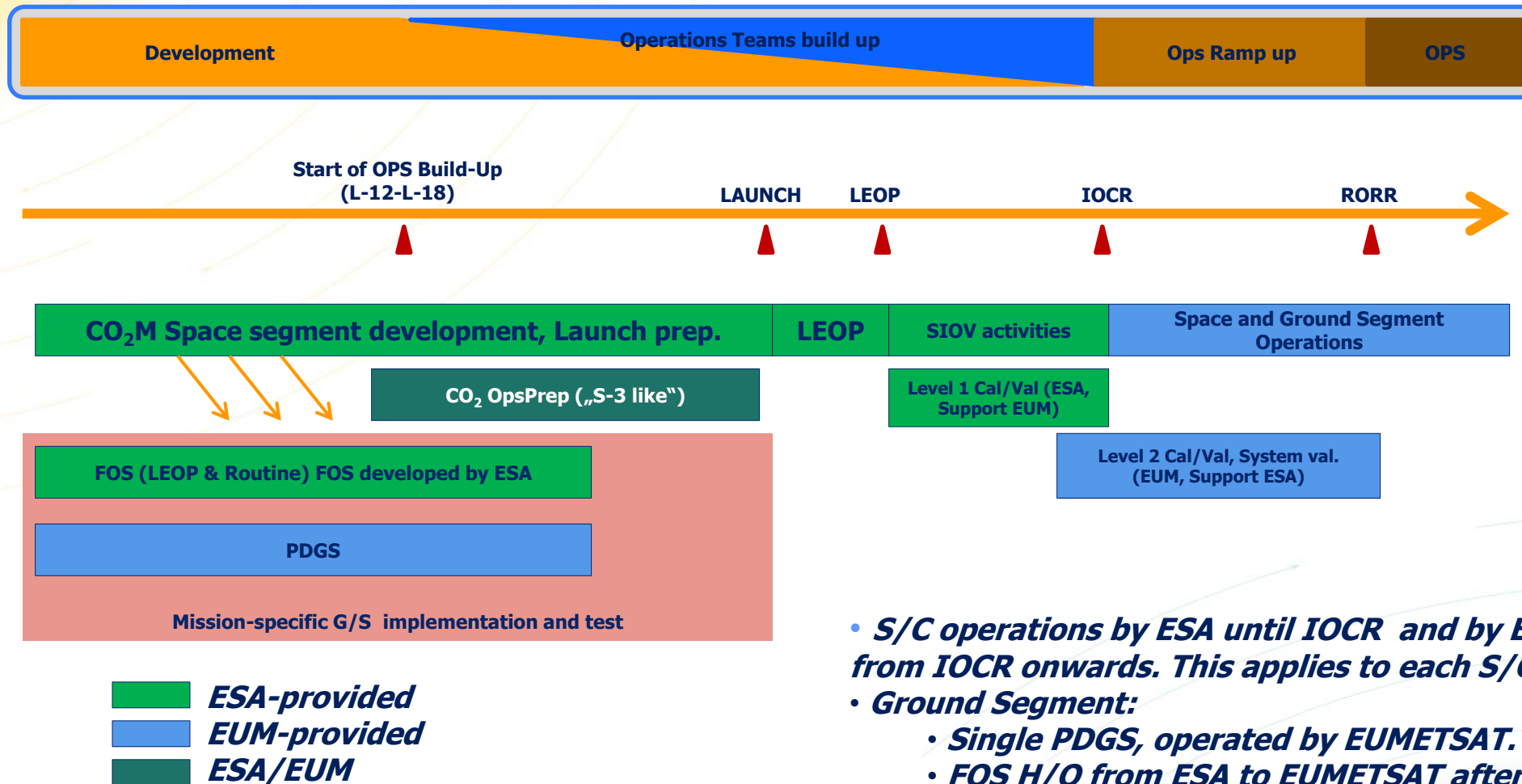
SPACE COMPONENT



SERVICE COMPONENT



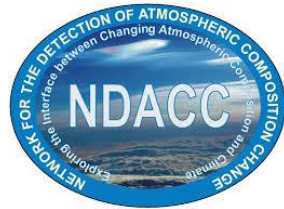
Coordination and planning between ESA and EUMETSAT on CO₂ Sentinel



- *S/C operations by ESA until IOCR and by EUM from IOCR onwards. This applies to each S/C.*
- *Ground Segment:*
 - *Single PDGS, operated by EUMETSAT.*
 - *FOS H/O from ESA to EUMETSAT after IOCR*

In-situ infrastructure

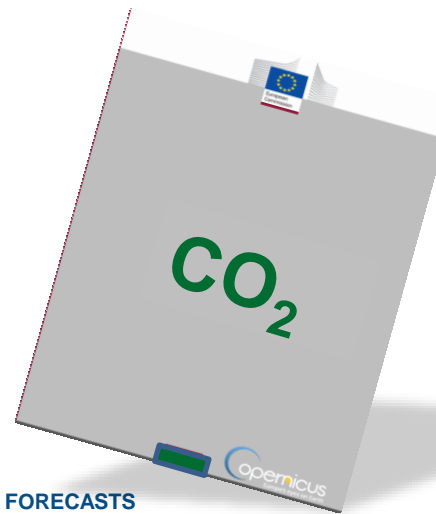
Elements



Global Greenhouse Gas
Reference Network

AirCore

COCCON



Coordination



In-situ infrastructure

Elements

Coordination



Global Greenhouse
Reference Network

Wealth of in situ information available

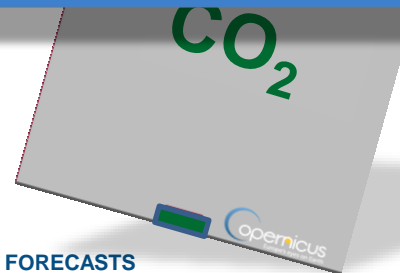
Work to be done to :

- optimally benefit from in situ observations
- further coordinate on international level
- adapt to operational needs
- ensure sustainability
- extend and optimize networks where needed



AirCore

COCCON



Benefitting from existing infrastructure and working practices

CAMS concept can be used to combine European expertise and development with operational service infrastructure.



Data acquisition and
pre-processing systems

HPC infrastructure

Climate Data Store

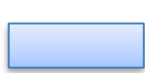
DIAS



Integrated Forecasting System (IFS)

- ✓ Global high-resolution Earth system model (atmosphere, land and ocean)
- ✓ CAMS global forecasts and reanalyses
- ✓ C3S global reanalysis
- ✓ C3S seasonal forecasts





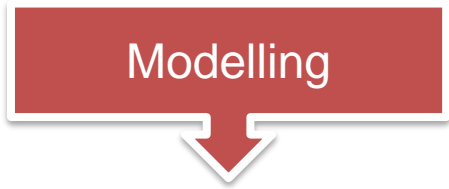
Global operational



Local/regional operational



Continuous research & development



Modelling



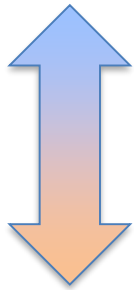
Data assimilation



Observations



Global MVS (ECMWF Integrated Forecasting System)



General R&D (e.g., Community Inversion Framework, inventory data, new observation types)



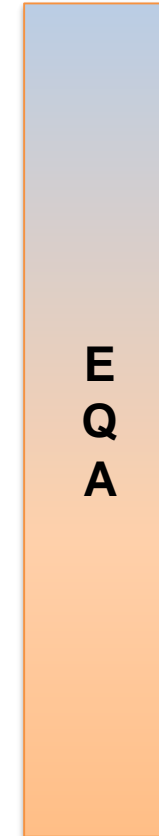
Prior information



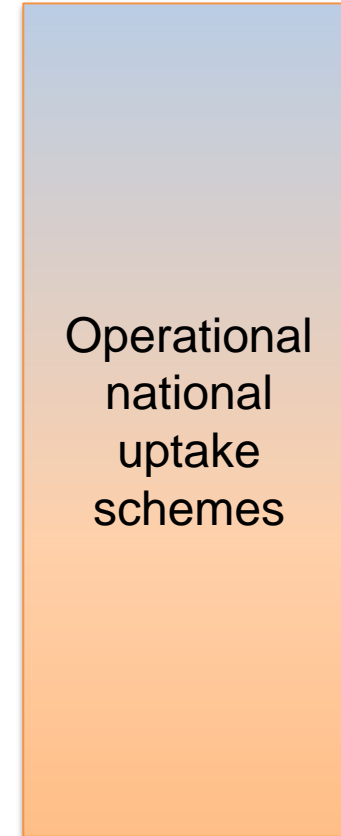
Local benchmarking inversion models (in situ based)



Plume inversion models (satellite based)



EQA



Operational national uptake schemes

Enjoy your dinner
with this
food for thought