

WIGOS Vision 2040 update - implications and expectations for CGMS space agency members

Presented to CGMS-52 plenary session

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Executive summary

The WIGOS 2040 Vision document adopted by the World Meteorological Congress in 2019 has been an influential document for space agencies, providing an architecture for collective planning, the framing of the WMO gap analysis, and the framing of the WMO definition of core and recommended data from space for NWP. It has also been criticized for being too constraining for evolving space agency responses to requirements. At its 3rd session, the WMO's Infrastructure Commission (INFCOM-3, 15-19 April 2024) requested an update to the WMO 2040 Vision, to be considered by INFCOM-4 in late 2026 and for adoption by the 20th World Meteorological Congress in 2027. A Task Team will be formed in INFCOM (under SC-ON) to first consider the scope of the update and then to propose changes, including particularly to the expression of the space component. The CGMS member agencies are invited to suggest members to support the work of this Task Team, which will involve a wide range of stakeholders including in particular the NWP community.

WIGOS Requirements

Rolling Review of Requirements

- application area-driven
- technology-free but technology-aware
- impacts defined in “threshold” “breakthrough” “goal”
- gap analyses against OSCAR/Space and OSCAR/Surface



The screenshot shows the top navigation bar of the OSCAR website. On the left is the WMO logo, followed by the text 'OSCAR Observing Systems Capability Analysis and Review Tool'. On the right is a 'Login' button. Below this is a horizontal navigation menu with tabs for 'Home', 'Observation Requirements', 'Space-based Capabilities', 'Surface-based Capabilities', and 'Analysis'. A search bar labeled 'Quick Search...' is on the far right. Below the navigation menu is a sub-menu for 'Observation Requirements' with links for 'Overview', 'Variables', 'Requirements', 'Layers', 'Themes', and 'Application Areas'.



User requirements for observation (OSCAR/Requirements)

The purpose of the Rolling Review of Requirements (RRR) process is to provide a systematic and transparent process to support the high-level design and evolution of WIGOS. The RRR process

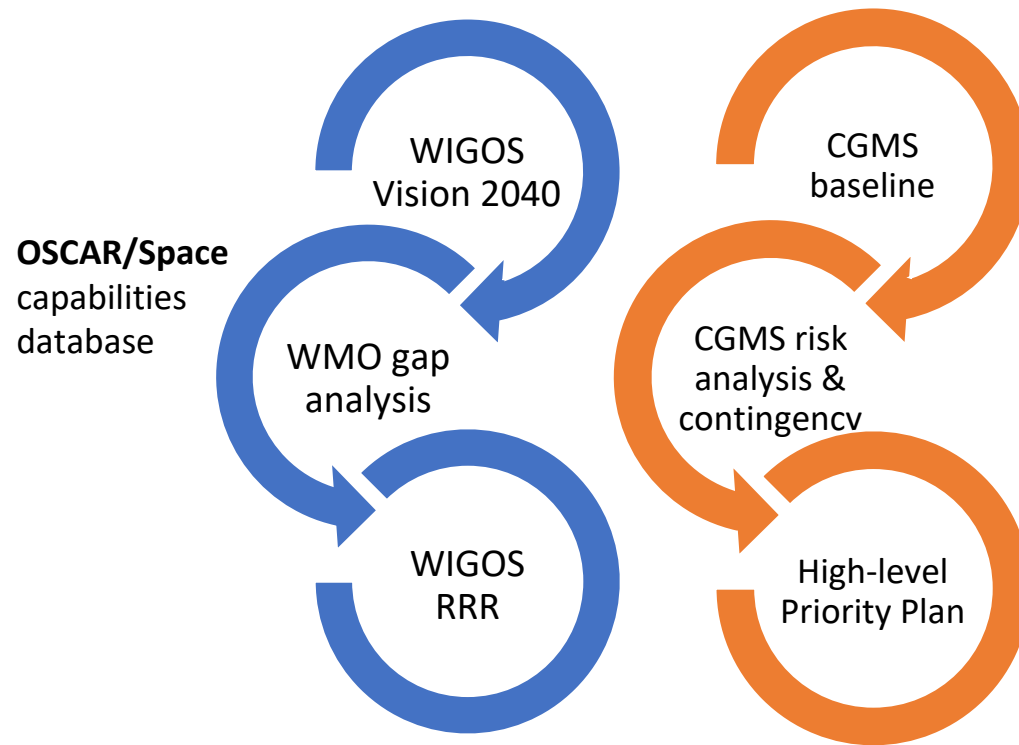
Using the database

Space-based and surface-based

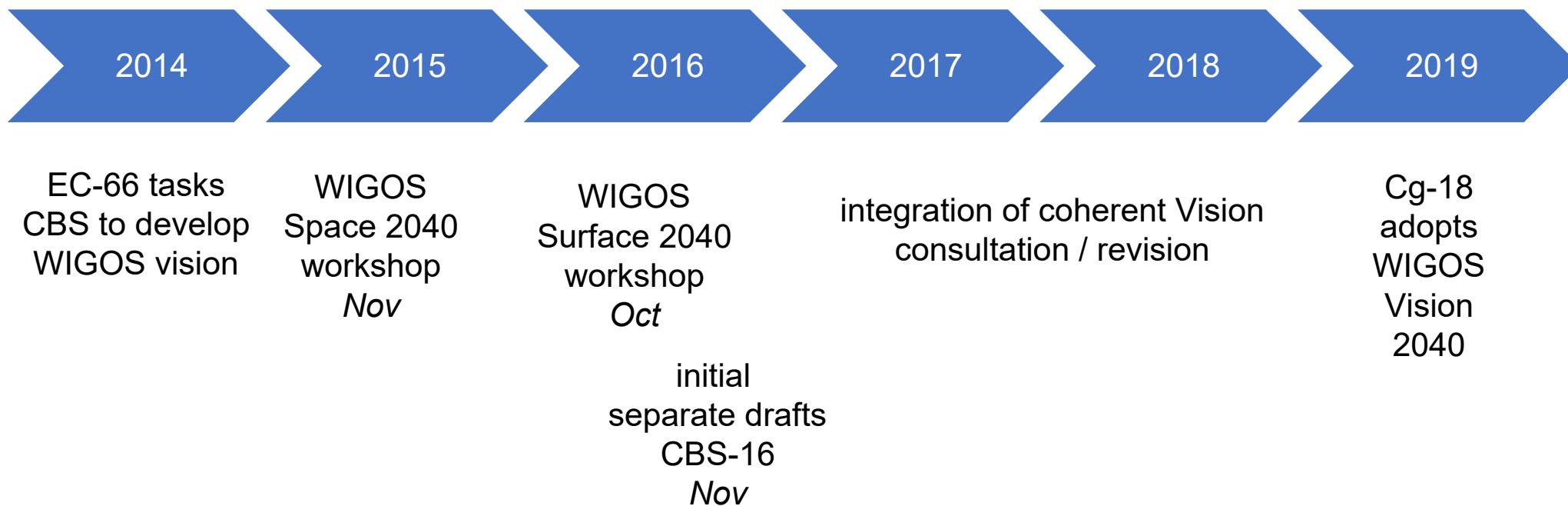
and the design of WIGOS networks

- Essential differences in **number of actors**, Member responsibility and capability, **planning timelines**
- **Separate design processes**
- Integration points were emphasized at CM-15
- *Vision update will have to revisit this gap*

Dance of WIGOS and CGMS processes



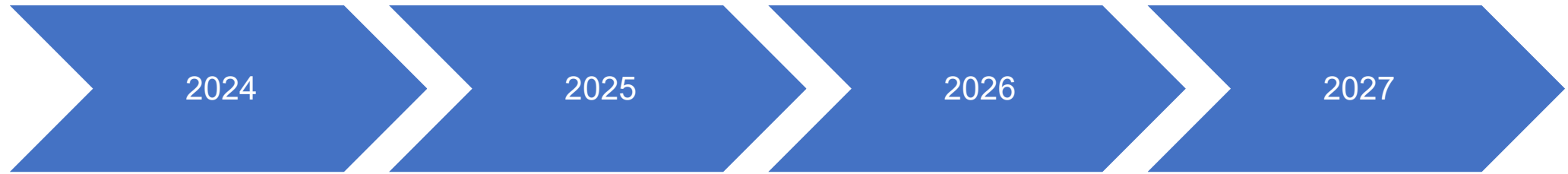
WIGOS Vision 2040 genesis



WIGOS Vision 2040 influence and criticism

- Space-based “architecture” described (observing system components) has been influential in mission planning for numerous agencies
- Provided the framework for describing core/recommended space data for NWP
- Too prescribed
 - doesn’t allow for flexible responses to user requirements – a more hybrid architecture
- Core 2040 mission plans in many cases complete, space agencies looking further in time and at complementary observations

Refresh cycle – “Vision 2050”



INFCOM-3 decided to initiate update tasks SC-ON
Apr 2024

Standing Committee on Earth System Observing Systems and Networks (SC-ON) to form a **task team** to

1. scope change
2. develop drafts for consultation with wide stakeholder consultation

INFCOM-4 endorses “Vision 2050”

Cg-20 adopts WIGOS “Vision 2050”


CGMS-52


CGMS-53


CGMS-54


CGMS-55

opportunities for consultation on evolution of Vision

Key issues of relevance to CGMS:

- The update of the WIGOS 2040 Vision has a touchpoint with the hybrid space infrastructure work under the CGMS future directions 2022+ project (WGIII-led), as well as the International Science Working Groups under WGII (and others)
- WMO-led work on impacts of observations on NWP and coupled earth prediction skill show that “defining requirements” is complex:
 - observing systems and data assimilation/prediction systems evolve together, changing how much information can be exploited for predictive skill
- The WIGOS space component will have to remain in a format that allows a gap analysis against planned missions while being more flexible.
- The TT will first **scope changes**, then change formulation in the coming 2 years to propose changes in consultation with stakeholders.

To be considered by CGMS:

- Space agencies requested through CGMS to nominate participants of a Task Team to scope the needed updates to the WIGOS 2040 Vision (joining other stakeholders).

