WIS2 Introduction

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Evolution of WMO data exchange

1963
World Weather Watch

1970s
Global Telecommunication System (GTS)

2007
WMO Information System (WIS)

2019
WMO Reform (Earth System Approach)

2021
WMO Unified Data Policy (Core, Recommended)

WIS 2.0

… collaborative system of systems using Web-architecture and open standards to provide simple, timely and seamless sharing of trusted data and information …

- Open Standards (OGC, W3C, IETF, …)
- Free and Open Source tooling
- Data sharing through Web and real-time notifications with publication/subscription (pub/sub) protocols
- Cloud ready (turn-key solutions)
- Web services and APIs (Application Programming Interface)

OGC® Making location count.
Findable Accessible Interoperable Reusable
W3C®
API
IETF®

WMO Unified data policy

WMO Unified Data Policy, Resolution 1 (Cg-Ext(2021))

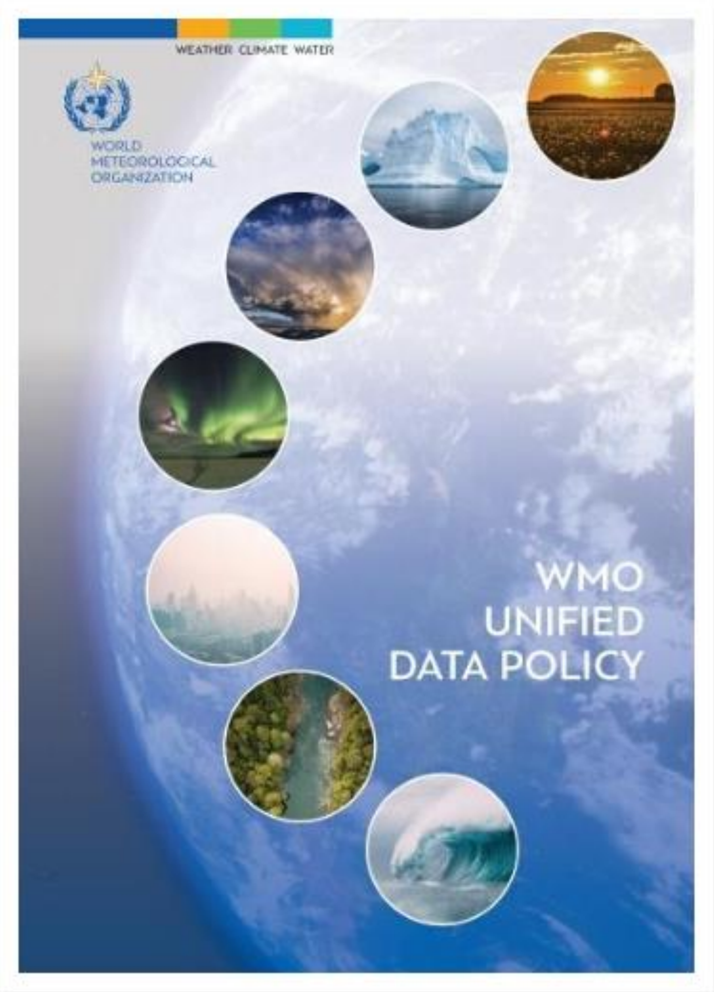
Adopted in 2021, this unified policy for the international exchange of Earth system data reaffirms WMO's commitment to free and unrestricted exchange of Earth system data necessary for the provision of services in support of the protection of life a property and for the well-being of all nations.

International provision and exchange of Earth system data shall follow a 2-tier approac

(1) Members **shall** provide on a free and unrestricted basis **Core** data that is necessary provision of safety critical services
(2) Members **should** provide the **Recommended** data that are required to support Eart system monitoring and prediction

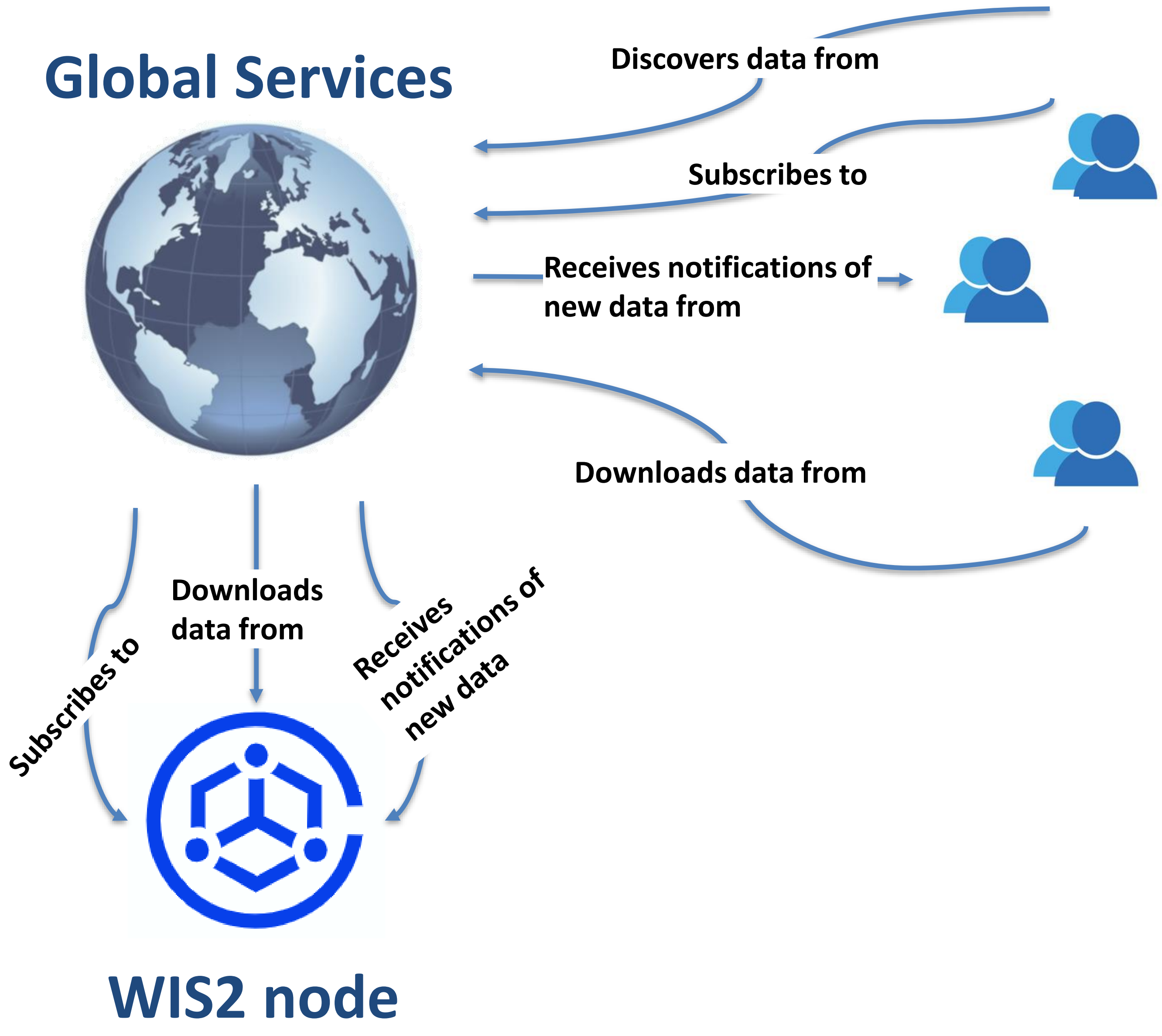
Members **should** provide **Recommended** data without charge to public research and educational communities for non-commercial use

Encourages all users of Earth system data to **attribute** the source of data wherever possible

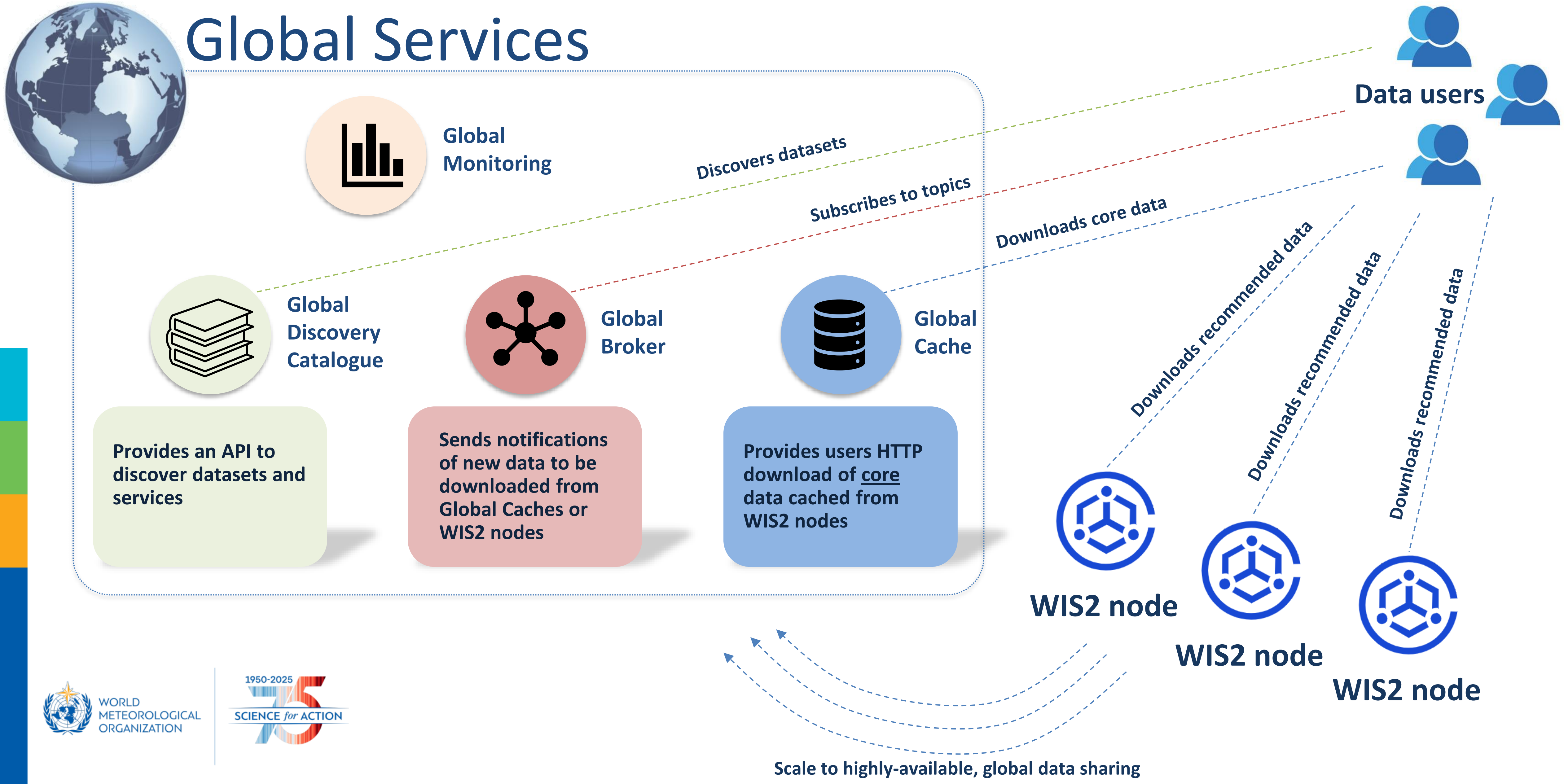


WIS2 node and Global Services

- Each WMO Member shall implement at least one WIS2 node to share data in WIS2
- A WIS2 node replaces the GTS Message Switching System
- Data and metadata are shared through a WIS2 node
- A WIS2 Node shares data via an HTTPS service and sends notifications to MQTT subscribers
- A WIS2 node shares notifications with Global Broker



WIS2 Components: Global Services



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WIS2 Global Service instances

Global Broker

Brazil
France
China
USA

Global Discovery Catalogue

Canada
China
Germany

Global Cache

China
Germany
Japan
Republic of Korea
Saudia Arabia
USA/UK

Global Monitoring

China
Morocco

WIS 2.0 Regulatory material

[Manual on WIS Volume II WMO Information System 2.0]

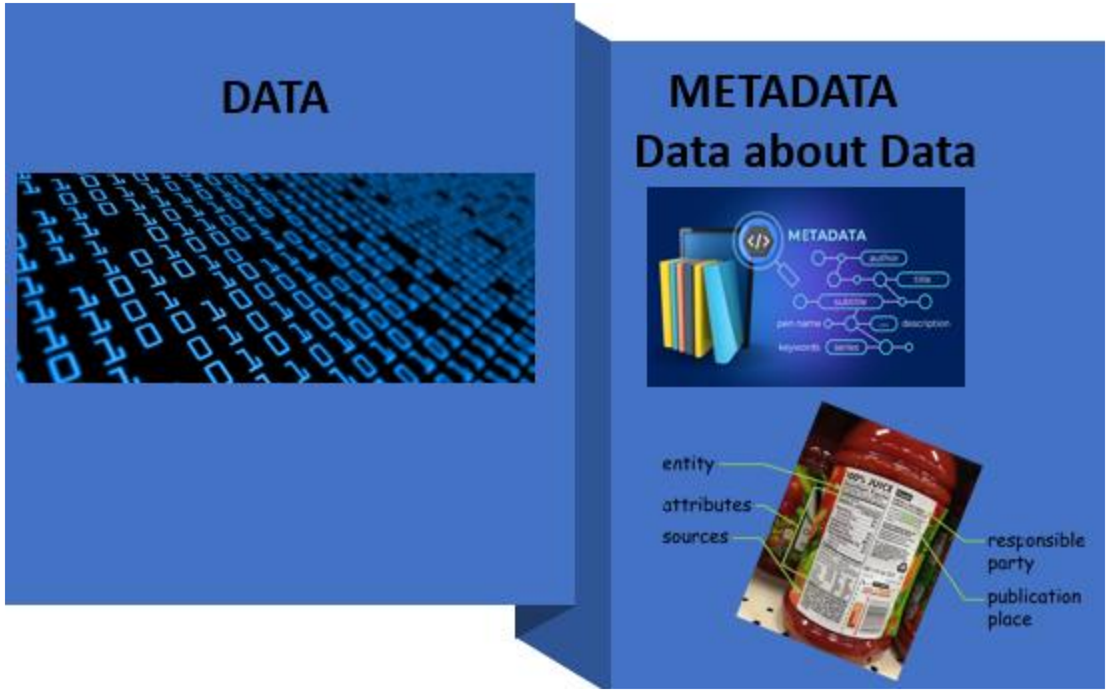
The Manual On The WIS Metadata

Amendments to the Manual on WIS

Addition of

WMO Core Metadata Profile 2.0 (WCMP2)– *New standard for WIS Metadata*

- Discovery metadata describes a given dataset or collection
- Aligning with the WIS 2.0 Principles, discovery metadata will be published to the Global Discovery Catalogue
- WCMP2 is an extension of the International Standard OGC API - Records



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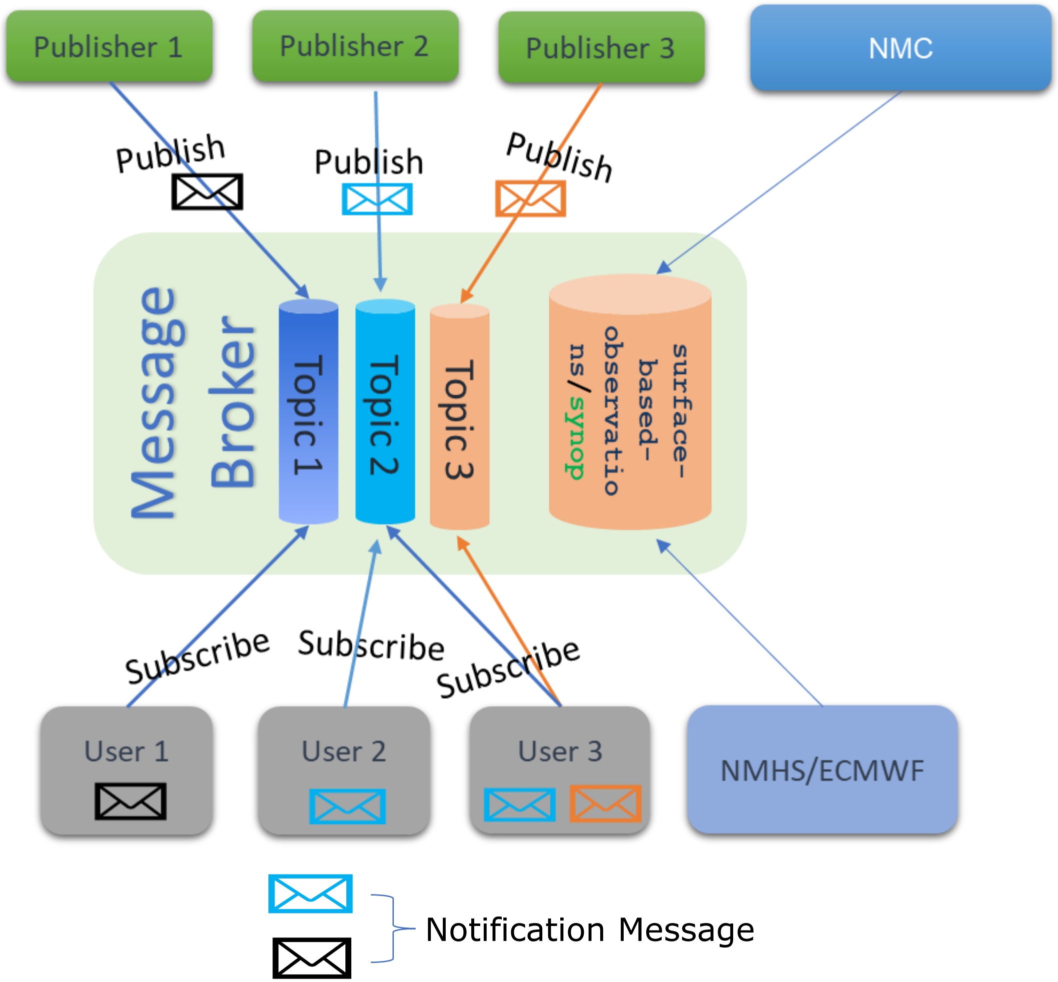
The Manual On The WIS
Topic Hierarchy and Notification Message

WIS2 Topic Hierarchy – *"Backbone" of the notification architecture where the messages will be available*

WIS2 Notification Message – *Format of the Notification Messages*



Example:

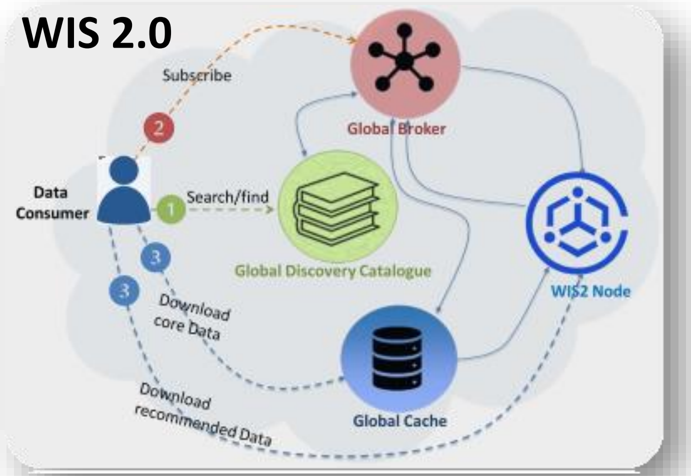
origin/a/wis2/ca-eccc-msc/data/core/weather/ surface-based-observations/synop

cache/a/wis2/int-ecmwf/data/core/weather/prediction/forecast/medium-range/deterministic/global

Guide to the WIS Volume II

- WIS2 Architecture
- Specifications of WIS2
- Implementation and operation of a WIS2 Node
- WIS2 Node reference implementation: wis2box
- Implementation and operation of a Global Service
- Procedure for registration of a new Global Service

- Information management
- Security
- Competencies



- How to subscribe to notifications about the availability of new data
- How to use a notification message to decide whether to download data
- How to download data
- How to use data
- How to provide data to WIS2

Interoperability with external systems

WHOS
Hydrology data sharing

OpenCDMS
Data management and data sharing for climate

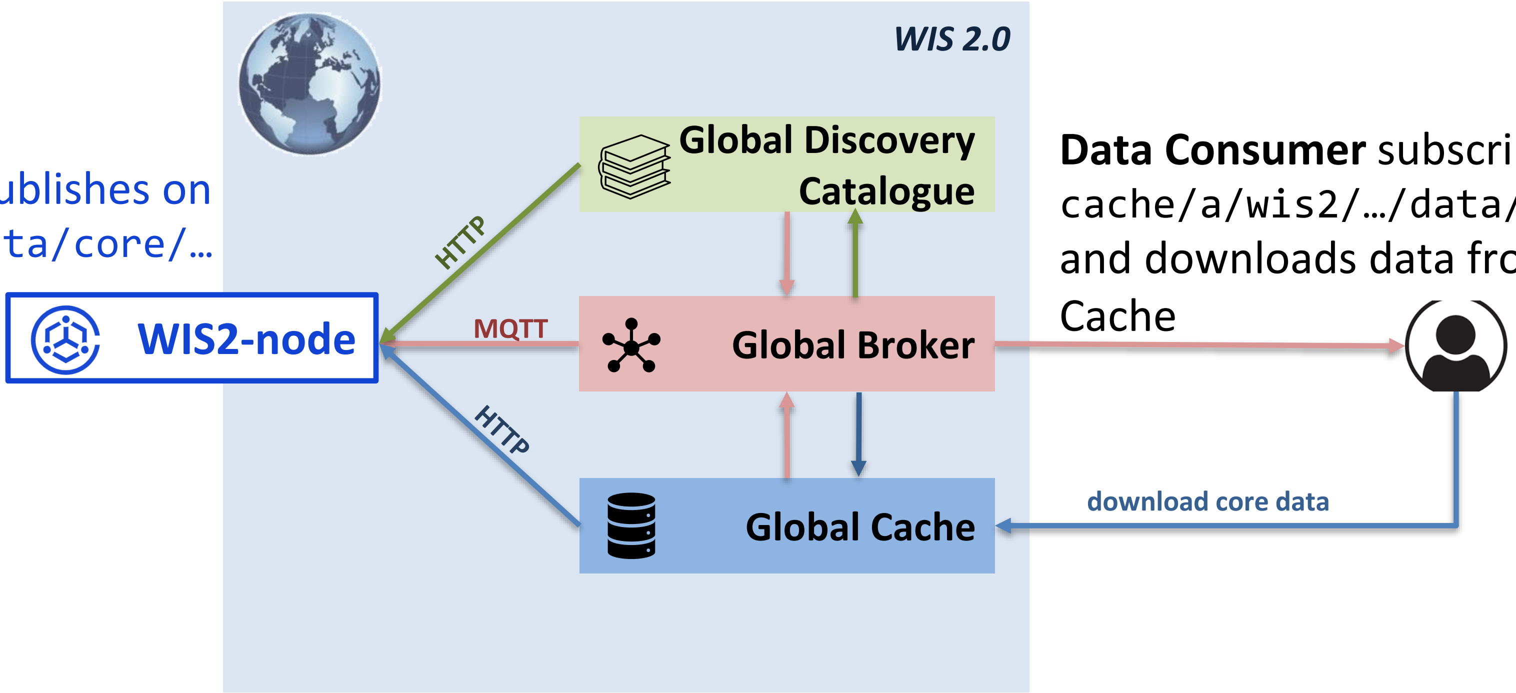
Cryosphere
Data sharing for the cryosphere community

Weather Ocean
Data sharing for the weather and ocean

WIS 2.0 supporting core data exchange

WMO core data (free and unrestricted) can be downloaded from a Global Cache

WIS2-Node publishes on
`origin/a/wis2/…/data/core/…`



Data Consumer subscribes to
`cache/a/wis2/…/data/core/…`
and downloads data from Global Cache

Global Cache subscribes to
`origin/a/wis2/…/data/core/…`
downloads data from WIS2-Node
and publishes new notification on
`cache/a/wis2/…/data/core/…`

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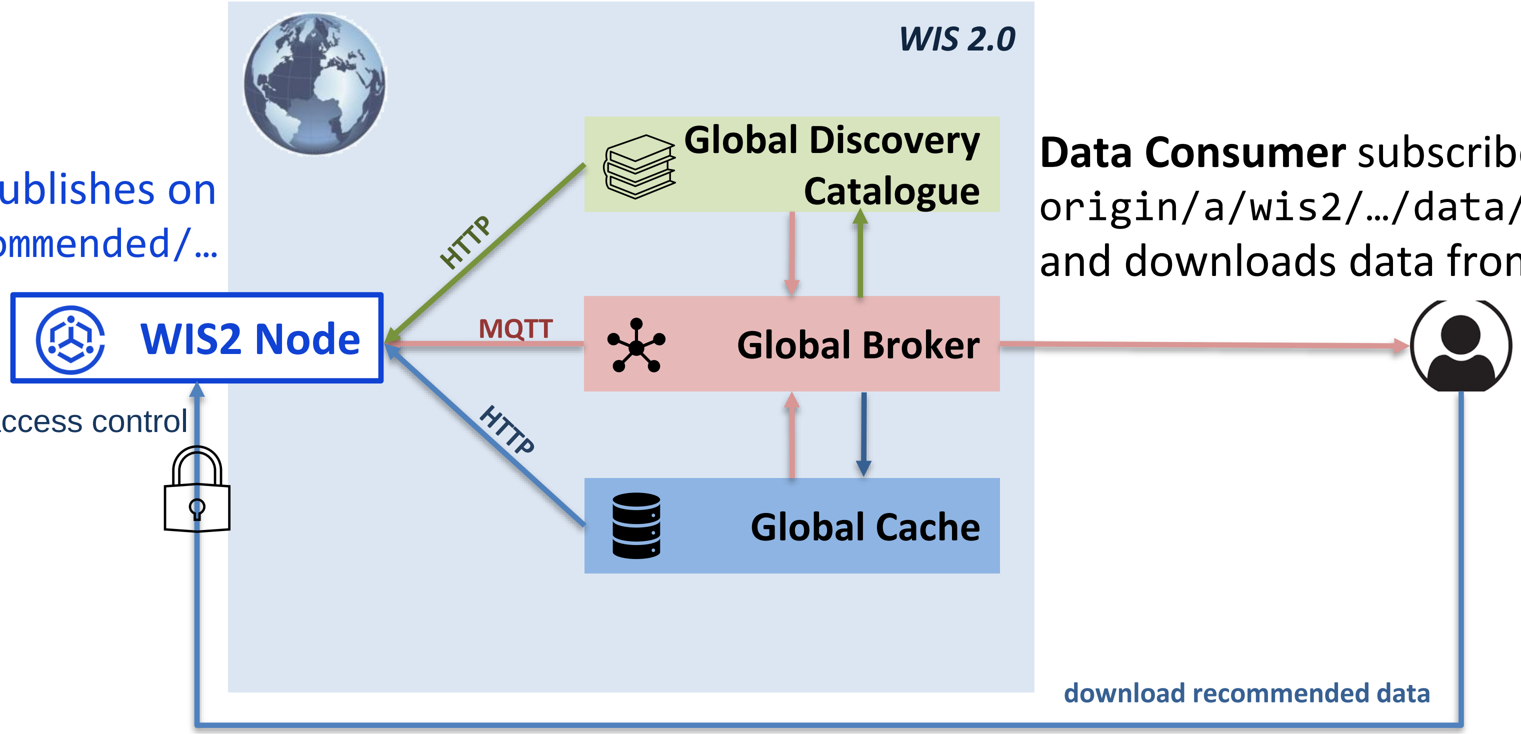
WIS 2.0 supporting recommended data and national needs

WMO recommended data shall be downloaded directly from the WIS2 Node, access can be open or restricted

WIS2-Node publishes on
`origin/a/wis2/…/data/recommended/…`



Data Consumer subscribes to
`origin/a/wis2/…/data/recommended/…`
and downloads data from WIS2-Node

Thank you

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