



# World Meteorological Organization

Working together in weather, climate and water

Fifth SOT Session, Geneva, 18-22 May 2009

Integration of marine meteorological and other appropriate oceanographic observations into the WMO Integrated Global Observing Systems (WIGOS Pilot Project for JCOMM)

(item I-5.3)

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# WMO Integrated Global Observing Systems (WIGOS)

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Promoted by WMO Cg XV (2007)

- Comprehensive, multi-disciplinary, coordinated, and sustainable system of observing systems
- Contributes to GEOSS
- Serving all WMO Programmes and co-sponsored Programmes
- Ensuring interoperability between sub-systems and data availability
- Ensuring data quality standards
- Facilitate archiving and technological innovations

**WIGOS is Expected Result 4 of WMO strategic plan**

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# Broad objectives of WIGOS

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- Address following domains:
    - Atmospheric
    - Oceanic
    - Terrestrial, including hydrological
  - Ensure broader governance frameworks
    - Inter-agency co-sponsorship of systems
  - Address requirements through Rolling Review
  - Increase interoperability between various systems
    - Standardization of data produced
    - Data discovery and exchange
    - Complementarity space-based & *in-situ* components
  - Ownership of partner organizations respected
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# WIGOS benefits

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- **TECO-WIGOS Statement**
    - Reduced financial demands on Members, and more efficient use of resources
    - Increased availability of required information
    - Improved access to multi-disciplinary data (ocean, climate, hydrology)
    - Higher data quality standards
      - Documented processes
      - Access to quality information
    - ⇒ Better & timelier data of known quality obtained through consistent, coherent, and traceable instrumentation meeting agreed upon standards
    - Archiving
    - Technical innovations
  - **Derived Benefits**
    - Better products and services that serve the end users better (weather forecasts, marine services, marine climatology, climate monitoring and prediction)
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# WIGOS activities

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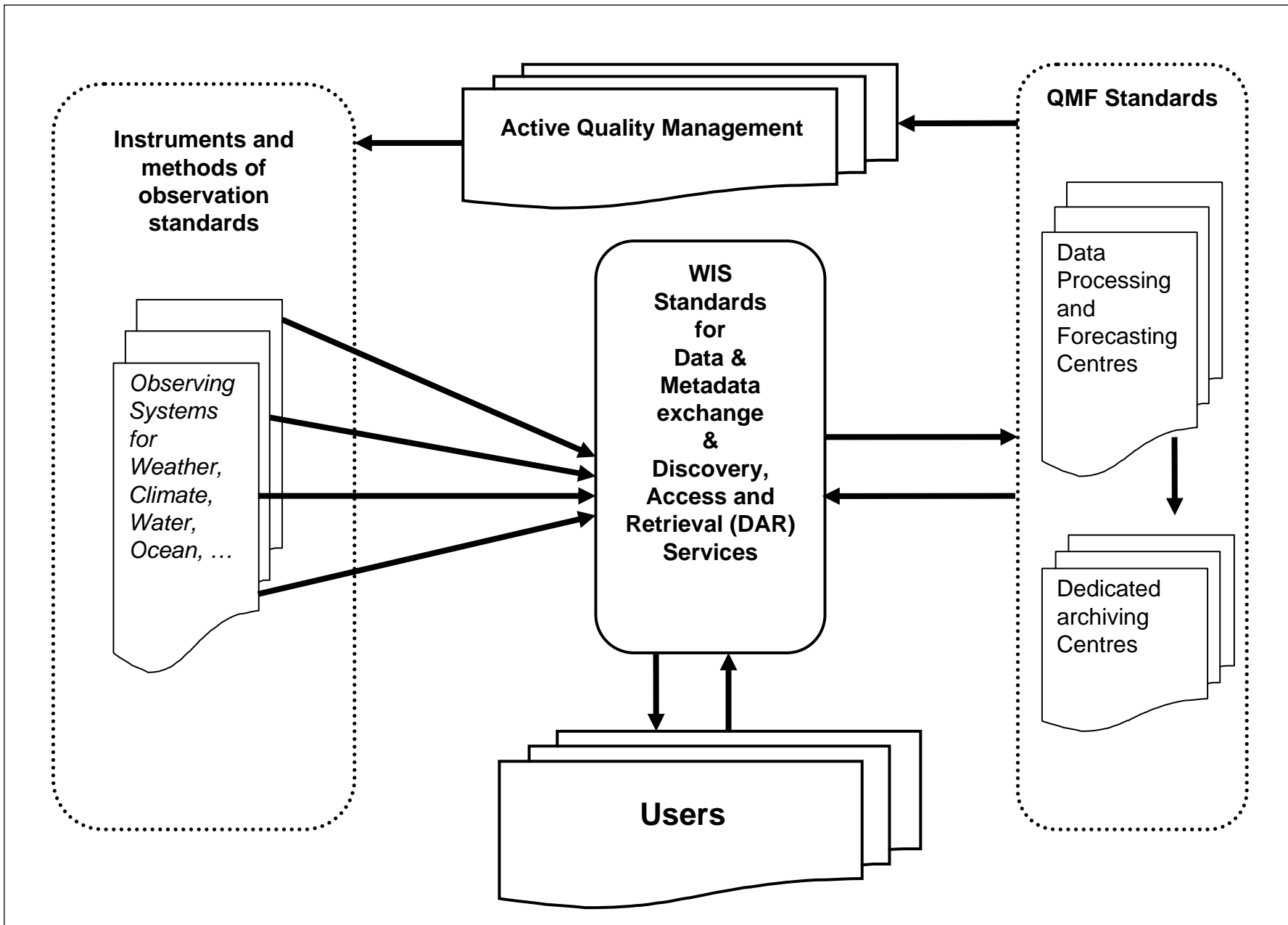
- Working Group on WIGOS-WIS (established by EC LIX, 2007)
  - Sub-Group of EC WG
  - Pilot Projects
    - I: Global Atmosphere Watch (GAW)
    - II: Hydrological observations
    - III: AMDAR (aircraft obs.)
    - IV: Instruments and Methods of Observation (cross-cutting)
    - **V: Marine Meteorological and other appropriate Oceanic Observations**
    - VI: Global Space-based Inter-Calibration System PP for WIGOS (GSICS)
    - VII: Implementation of the GCOS Reference Upper-air Network (GRUAN PP)
  - Demonstration Projects in all six WMO Regions
    - Kenya, Namibia; Korea; Brazil; USA; Australia; Russian Federation, Morocco
  - TECO-WIGOS, Dubrovnik, Croatia, 23-24 March 2009
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# WIGOS Pilot Project for JCOMM

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- Integrating marine and other appropriate oceanographic observations into WIGOS
  - 3 levels of integration/standardization/interoperability:
    - Best practices (instrument level)
    - Interoperability with WIS (obs. data level)
    - Quality Management (products level)
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# Scope

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- Guidance from EC WG WIGOS-WIS, and Sub-Group
  - Joint IODE-JCOMM Steering Group
  - Coordination with WMO programmes (MMOP, IMOP, WWW, WIS) and Technical Commissions (CBS, CIMO)
  - Coordination within JCOMM
    - Observations Programme Area (OPA)
    - Data Management Programme Area (DMPA)
    - Services Programme Area (SPA)
  - Coordination with IOC and IODE
    - **IOC has ownership**
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# Approach

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- **Cooperation with the ocean community is key**
    - Easier to exchange data via the WIS
    - Connection between Ocean Data Portal (ODP) and WIS for historical and recent data
    - Integrate new sources of data (Argo, OceanSITES, GHRSSST, XBT, Ocean carbon, sea level stations, satellite data...)
    - Specific data systems yet to be developed by the ocean community
    - Develop common standards
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# Deliverables

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- Documenting & integrating **best practices** and standards
    - Consistent and better quality data in models
  - **Interoperability** of marine data systems with WIS
    - Multi-disciplinary approach
    - Documented and standardized data
  - **Quality Management**
    - Cost effective QMS for better, more timely data and products minimizing duplication (compliant with QMF)
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# Present situation in terms of data distribution

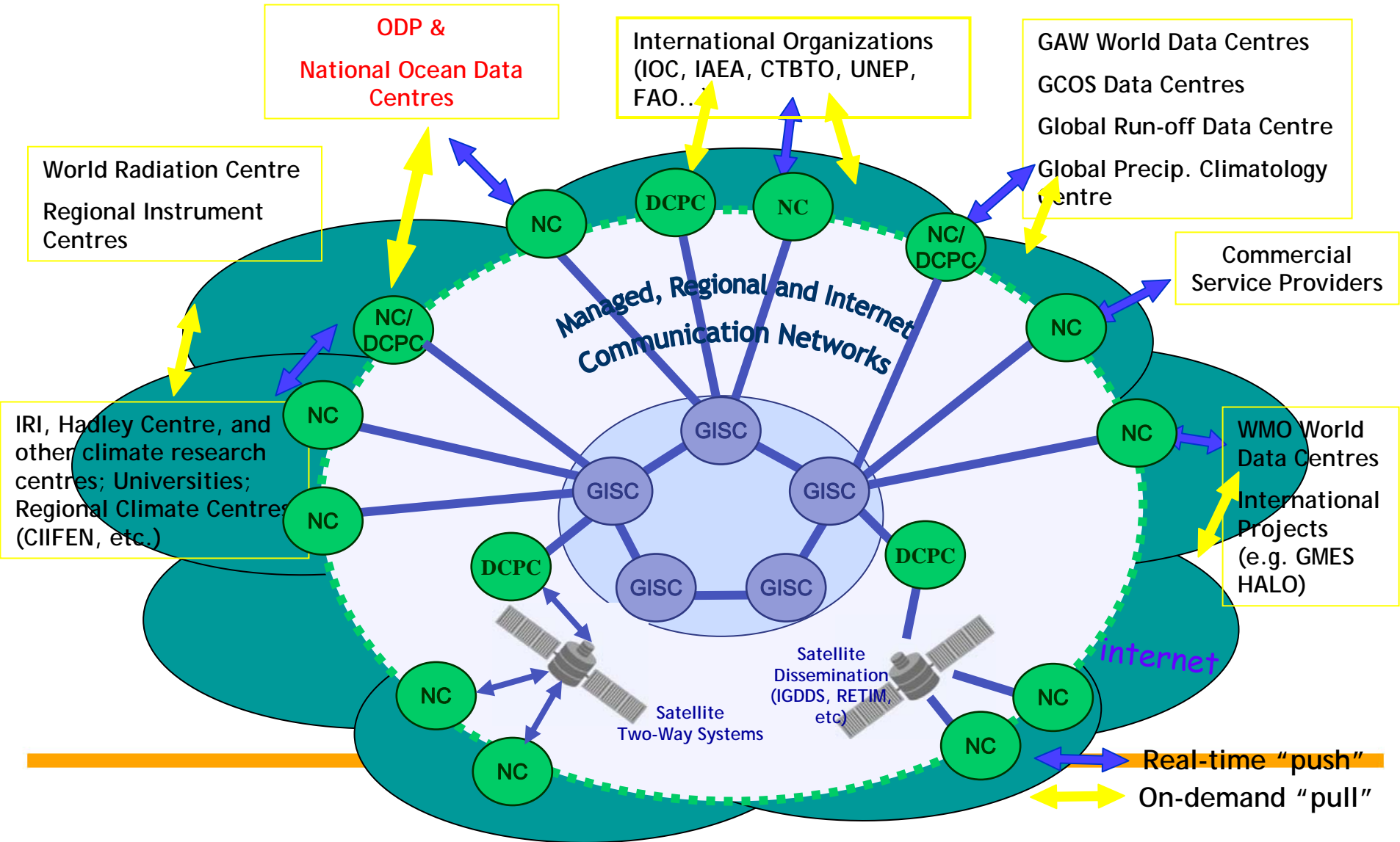
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- IOC data policy and WMO Res. 40 to follow
    - Most of the data on GTS
    - Difficult for ocean centres to access GTS data
    - Some delayed mode data available
  - Some parallel data distribution systems in place
    - e.g. Argo, Tropical moorings, GOSUD, OceanSITES, GHRSSST
    - These systems provide for better quality data
    - Ocean data collection often funded by research
  - Ocean community developed E2E technology
    - NODC, Obninsk proposed as WIS DCPC
    - Ocean Data Portal being developed by IODE in 2008
  - Other interoperability initiatives
    - e.g. SeaDataNET, DMAC
  - WMO Information System (WIS)
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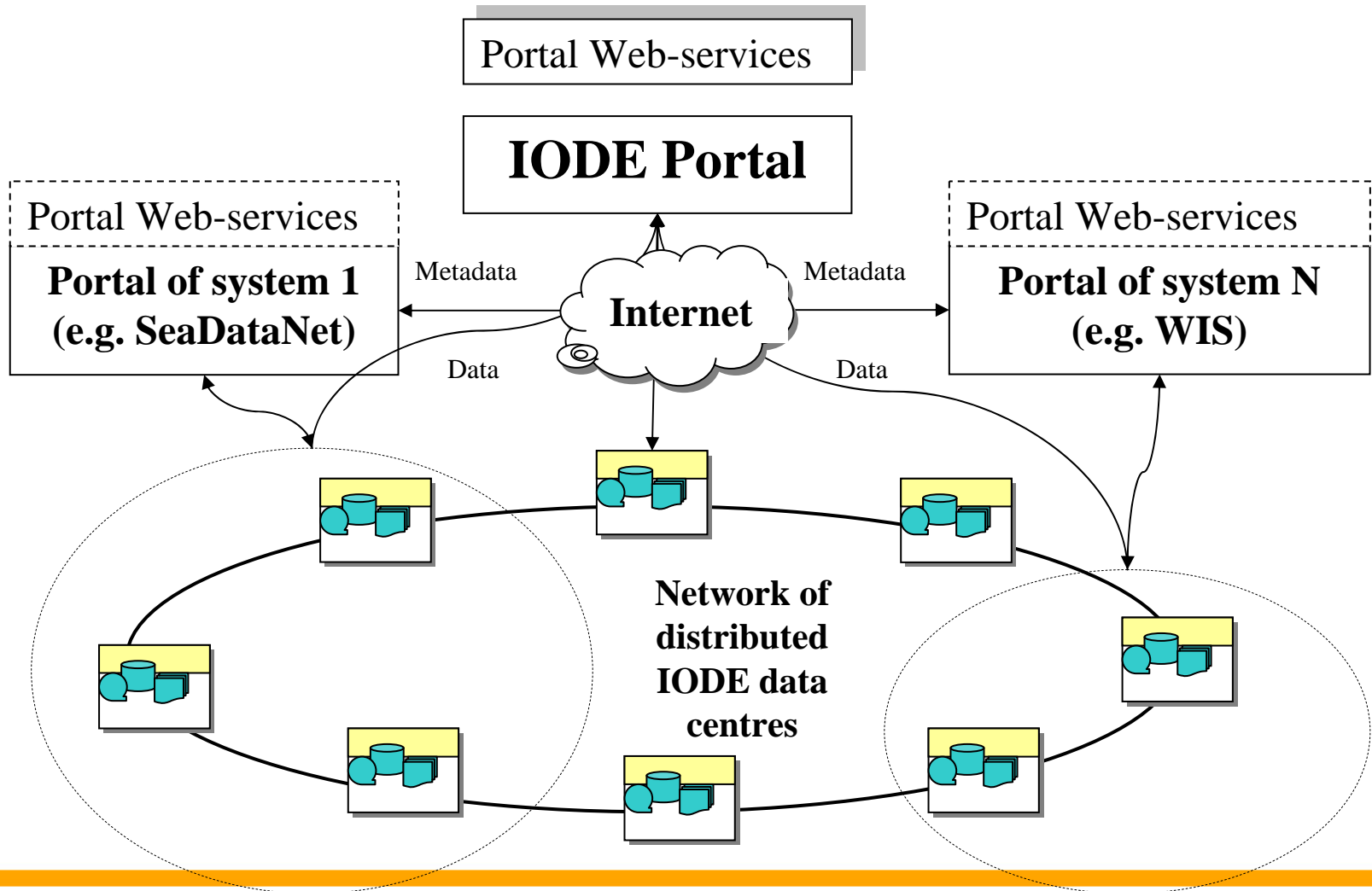
# WMO Information System (WIS)

- Multi disciplinary
- Real time and delayed mode
- Push & Pull (DAR)





# IODE Ocean Data Portal





# JCOMM Pilot Project for WIGOS

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- JCOMM/IODE Standards forum, Ostend, January 2008
    - Defined & Proposed a Standards process

<http://www.oceandatastandards.org/>
  - Planning meeting for the WIGOS PP for JCOMM, Ostend, 29 March 2008
  - Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM, Geneva, Switzerland, 18-19 September 2008
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# Joint Steering Group (membership)

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- **CIMO expert (co-Chair): Rainer Dombrowsky**
  - **IODE expert (co-Chair) : Greg Reed**
  - JCOMM OCG Chair: Candyce Clark
  - JCOMM DMCG Chair: Bob Keeley
  - ETDMP Chair: Nick Mikhailov
  - IOOS, DMAC (USA): Jack Harlan
  - NODC (USA): Ken Casey
  - WIS expert(s): Eliot Christian
  - MCSS & GCCs: Nicola Scott
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# Joint Steering Group for the IODE Ocean Data Portal and the WIGOS PP for JCOMM

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- Produced:
    - Project Plan
    - Implementation Plan
  - Recommended:
    - Developing Business Plan
    - Enhancing cooperation with CIMO & HMEI
    - Updating WMO Guide No. 8
    - Establishing Regional Marine Instrument Centres (RMIC)
      - Calibration, training, intercomparisons
    - Integrated approach for instrument intercomparisons
  - Identified 13 key data-sets to be connected to WIS
  - Proposed approach to Quality Management
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# Potential Partners/Participants

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- World Ocean Atlas
  - World Ocean Database
  - SeaDataNET
  - Argo Data System
  - Surface currents from HF radars
  - Sea level data
  - VOS Delayed mode data (GCCs)
  - Marine Climatology, ICOADS
  - XBT Data
  - GHRSSST
  - Virtual Constellation of SVW
  - Instrument/Platform Metadata (e.g. META-T, ODAS)
  - **RNODC for Drifting Buoys**
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# Resources

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- Implementation costs met by Members
  - Project management:
    - 3/4 meetings of the Steering Team until 2011
    - Experts visiting data centres (making the case, explaining requirements, assisting in implementation)
    - Consultancy
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# WIGOS and the SOT

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- Instrument Best Practices
    - SOT Task Team on Instrument Standards
      - Developed Instrument Standards Guidelines
      - Provided input to WMO No. 8
      - Working on High quality best practices for the VOS (for JCOMM TR)
      - E-logbook intercomparison
      - ISO 10596 – Marine wind vane & anemometer
    - JCOMM Catalogue of Best Practices
    - NDBC offered to implement Regional Marine Instrument Centre
    - Develop links with HMEI
      - Association of Hydro-Meteorological Equipment Industry
  - Interoperability with WIS
    - Data disseminated on GTS feed into WIS
    - GCCs developing interoperability
  - Quality Management
    - Need to document procedures
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Thank you!

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