- TT-IM
  - WMO #788
    - TOR
      - Collaborate with technical commissions to review available information management practices and develop and document appropriate standards and practices in information management
      - Recommend procedures for the long term maintenance and development of standards and best practices related to information management
      - Replace the Guide on World Weather Watch Data Management (WMO No. 788) with a new guide on best practices for information management across all WMO Programmes
      - Propose updates to incorporate standards and practices for information management under WIS Part C in the Manual on WIS (WMO No. 1060) and Guide to the WIS (WMO No. 1061)
      - Recommend updates to the WIS competencies related to information management and associated training and learning guides
      - Identify how WMO can maintain awareness of emerging challenges and issues relating to ICT technology and data and produce technology review notes on these
      - Maintain awareness of emerging information management and technology issues and if required, establish briefing notes to raise awareness on issues.
    - TT-WDP input
      - high level diagram showing how different elements fit together
      - interoperability with other forms of data
      - cultural shift around security and data stewardship
      - separate function and techniques
      - data licensing
      - data policy
      - different quality in data
      - make sure that systems can work with differing qualities of data
      - open data
      - is it different
      - change management processes
      - traceability of management system
      - provenance
      - diversity of members
      - metadata
      - initial guide
      - identifying priorities
      - single authoritative source
  - steve forman
    - information maturity index
      - example from IT
        - rows
          - process A
          - Process B
          - process C
        - columns
          - maturity level
            - repeatability
            - as progress through levels
            - increasing maturity
      - advantage
        - gets you to think about the main aspects that you need to worry about
      - NCEI Index
        - get slide
        - follow up
        - maturity scale (across)
          - Level 1
            - Ad hoc, not managed
          - Level 2
            - Minimal managed, limited
          - Level 3
            - Intermediate managed
            - defined, partially implemented
          - Level 4
            - Advanced managed
            - well defined, fully implemented
          - Level 5
            - Optimal, Level 4 +
            - measured, controlled, audit
        - Key component (down)
        - aspects are missing
          - index designed about data sets that they are managed
          - assuming maturity of underpinning IT
          - does not really take into account
      - core climat
        - more about dataset maturity
  - Summary from presentations
    - from Omar Baddour
      - missing WIS 2
      - general
        - peer reviewed methodologies
        - traceability
        - timeliness
        - easy access
          - includes easy to find
      - WG 1 working principles
        - rigor
        - traceability
        - transparancy
        - peer review
        - consistent treatment of uncertainties
      - from JCOMM joint WMO IOC Strategy
        - outcome 1
          - promoting data sharing
        - outcome 2
          - data collection
        - outcome 3
          - data integration, access, rescue, preservation
        - outcome 4
          - data dissemination
        - outcome 5
          - data discovery
        - outcome 6
          - capacity development
    - from M Waongo (Nigeria)
      - needs
        - data access
          - can't easily share
        - enhance infrastructure
        - make effective the MOU on data sharing
        - optimise regional climate observation network
        - improve data quality control at regional level
        - enhance NMHS capacity
          - data collection
          - storage
          - analysis
          - dissemination
    - from Bill Wright
      - A need for high quality data
        - provide authoritative climate assessment
        - ensure integrity of climate data
    - from H Bjornsson (Iceland)
      - need to understand just what data is needed for specific purposes
        - what is measured does not meet their needs
          - measured tide differences
          - trends
          - needed
        - sea level data
        - measured below area of avalanches
        - snow level data
      - typical problem
        - data often not shared
      - must be open
        - data formats standards
      - risk reduction depends on good data
    - from J Lawrimore (USA)
      - 6 tiers data stewardship
        - 6. National Services and International Leadership
        - 5. Authoritative Records
        - 4. Derived Products
          - new products
        - 3. Scientific Improvements
          - data quality
        - 2. Enhanced access and basic quality assurance
        - 1. long term preservation
    - from Silvano Pecora (Italy)
      - WMO Hydrological Information System
        - components
          - Data
          - format
            - OGC Hydrological Domain Working Group
          - services
          - mediator
          - broker
        - different people, different communities, different languages, same need
        - UI who has web data online
        - federated global data services
        - training!
          - on hydrological data sharing
    - from R Dunn (UK)
      - provenance from grid back to obs
      - mirroring data externally for DR purposes
      - controlled vocabularies
      - use of DOI
    - from Bruce Bannerman
      - need consistent (WMO) community agreed data policy
        - rather than disparate NMHS data policies
      - we need
        - to support global analysis
        - consistent semantics
        - formal community agreed data definitions
        - consistent data policies
      - basic climate data management capabilities need to be addressed in many NMHS
      - understand our user requirements
  - BB thoughts
    - what needs to be addressed
      - info management strategy
        - provide solid foundation
          - to address rapidly changing technologies
      - governance
        - regulatory framework
          - community agreed?
        - peer reviewed methodologies
        - rigor
        - consistent treatment of uncertainties
        - promoting data sharing
        - make effective MOU on data sharing
        - 6 tiers data stewardship
          - 6. National Services and International Leadership
          - 5. Authoritative Records
          - 4. Derived Products
            - new products
          - 3. Scientific Improvements
            - data quality
          - 2. Enhanced access and basic quality assurance
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        - mirroring data externally for DR purposes
        - controlled vocabularies
        - use of DOI
        - need consistent (WMO) community agreed data policy
          - rather than disparate NMHS data policies
        - to support global analysis
          - we need
            - formal community agreed data definitions
              - consistent semantics
            - consisten data policies
        - consistent with Spatial Data Infrastructure requirements
          - to facilitate interoperability within a 'system of systems'
        - information life cycle
        - information maturity index
      - what is metadata
        - contextual information
          - Discovery
          - Observations
          - Data Provenance
            - traceability
            - provenance from grid back to obs
          - Intellectual property
          - other
      - what is our data
        - who are our users
          - what are their requirements
          - what do we need from our end users
          - we need to include them in our formal data modelling activities
        - GCOS ECV are widely used
          - but we need formal data definitions to support consistent global analysis
            - and automated processes
        - need to understand just what data is needed for specific purposes
          - just what data do we really need to support our analysis of the climate system
          - we need formal data definitions
            - with community agreed
              - logical data models
              - consistent semantic definitions
      - access to data
        - easy to find
          - data discovery
        - easy access
        - interoperability
          - within an SDI
        - timeliness of access to data
        - transparancy
        - data integration, access, rescue, preservation
        - interoperability
        - data preservation
        - data dissemination
        - can't easily share
        - data formats standards
          - must be open
        - risk reduction depends on good data
        - WMO Hydrological Information System
          - components
            - different people, different communities, different languages, same need
            - UI who has web data online
            - Data
            - format
              - OGC Hydrological Domain Working Group
            - services
            - mediator
            - broker
          - federated global data services
          - training!
            - on hydrological data sharing
      - capacity development
        - e.g.
          - ET-CDMS Survey
          - t0 year CLIMAT analysis
        - enhance infrastructure
          - hardware
          - software
          - internet
          - human capacity
        - optimise regional climate observation network
        - improve data quality control at regional level
        - enhance NMHS capacity
          - data collection
          - storage
          - analysis
          - dissemination
        - A need for high quality data
          - provide authoritative climate assessment
          - ensure integrity of climate data
        - basic climate data management capabilities need to be addressed in many NMHS
        - data rescue
          - recover historical data
      - communication plan
        - why are we doing this
        - what are our expectations
        - manage WMO community expectations
        - manual
          - aimed at PR
        - guide
          - aimed at section manager
          - assessed using a maturity matrix
        - non-regulatory material
          - those actually doing the work
  - workshop categories (Information Management)
    - Cross Cutting
      - Security
      - Integrity
    - requirements
    - group 1
      - Documentation
        - Metadata
      - Governance
        - Policy
      - ICT Operations
      - Preservation
        - Retension Policy
        - raw obs mgmt
      - Competence
    - Data Policy Management
      - e.g.
        - What do we have
          - CDMS Spec
            - starting point
        - WMO Community agreed vs NMHS discretion
        - need examples policies
        - Science domain specific data policies
        - minimum level of policies required
        - Intellectual Property
          - data licensing
        - retention period
        - sustainability
          - custodian / data steward
          - cost recovery
          - ensuring ongoing funding
          - DR
          - backups
          - controlled access to data
            - authorised write access
        - data access
          - data categorisation
            - e.g
              - UK
                - open
                  - res 25
                  - res 40
                  - res 60
                - shared / commercial
                  - license conditions
                - internal
                  - not available
          - how to deal with 3rd party data
          - how to deal with derived data
            - also derived data of mixed source
          - interoperability standards
        - what data do we manage
        - sensitivity
          - access constraints
          - who can access
        - what quality of data do we share
          - all data
            - dynamic
          - only high quality
    - group 2
      - Quality Management
        - includes
          - QC
          - QA
          - Uncertainty
        - dependent on data type and use
          - important for
            - climate
            - hydrology
            - all observations
              - and WIGOS (Observations) Metadata
          - perhaps not important for other data types
            - e.g.
              - citizen volunteered snow reports
        - dependant on what you can afford to do
        - we need a statement of how you define quality
          - if working in broader / global community
            - define and use the same quality measures
      - Access and Sharing
        - who are your users
          - what do they need?
          - do you need
            - authentication
            - authorisation
        - how are you sharing data
          - data service standards
          - for
            - user
            - machine
          - bulk download
          - data formats
            - where appropriate multiple formats
            - what formats will I use
              - you shall use open data formats
              - a community needs to agree what formats they want to use
                - mandatory
        - consider W3C Best Practices
        - defined in policies
          - what data are you sharing
            - is it authoritative
            - what quality of data
              - raw 'obs'
                - vs high quality
          - interoperability
            - policy
              - within an SDI
                - and system of systems
              - via consistent semantic data models
      - Discovery
        - data well documented
          - manage and maintain rich 'metadata'
          - harvest and provide by multiple formats
        - easy to find
          - possibly multiple standards
          - also human readable
          - bot crawlable
        - aspects required
          - what is the data
            - description content
            - description of data structure
            - quality of data
            - what is its intended use
          - data license and IP constraints
          - how do I get it
            - where
              - URI / URL
          - where do I go for help
      - Change Management
        - Traceability
        - provenance

/TT-IM/steve forman/information maturity index/NCEI Index

https://wiswiki.wmo.int/tiki-download_file.php?fileId=3602