Metadata technology in WMO Information System (WIS)

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Topics of the day

- Metadata format
- User interface
- Inter-organisational metadata exchange
- Next step

What's WIS?

- WIS: WMO Information System
  - WMO: World Meteorological Organisation
- Continues & enhances GTS
  - Realtime network for operational meteorology
  - Legacy long before Internet
- Infrastructure for all WMO programs
  - Now efforts concentrates on data catalogue

Organisational structure

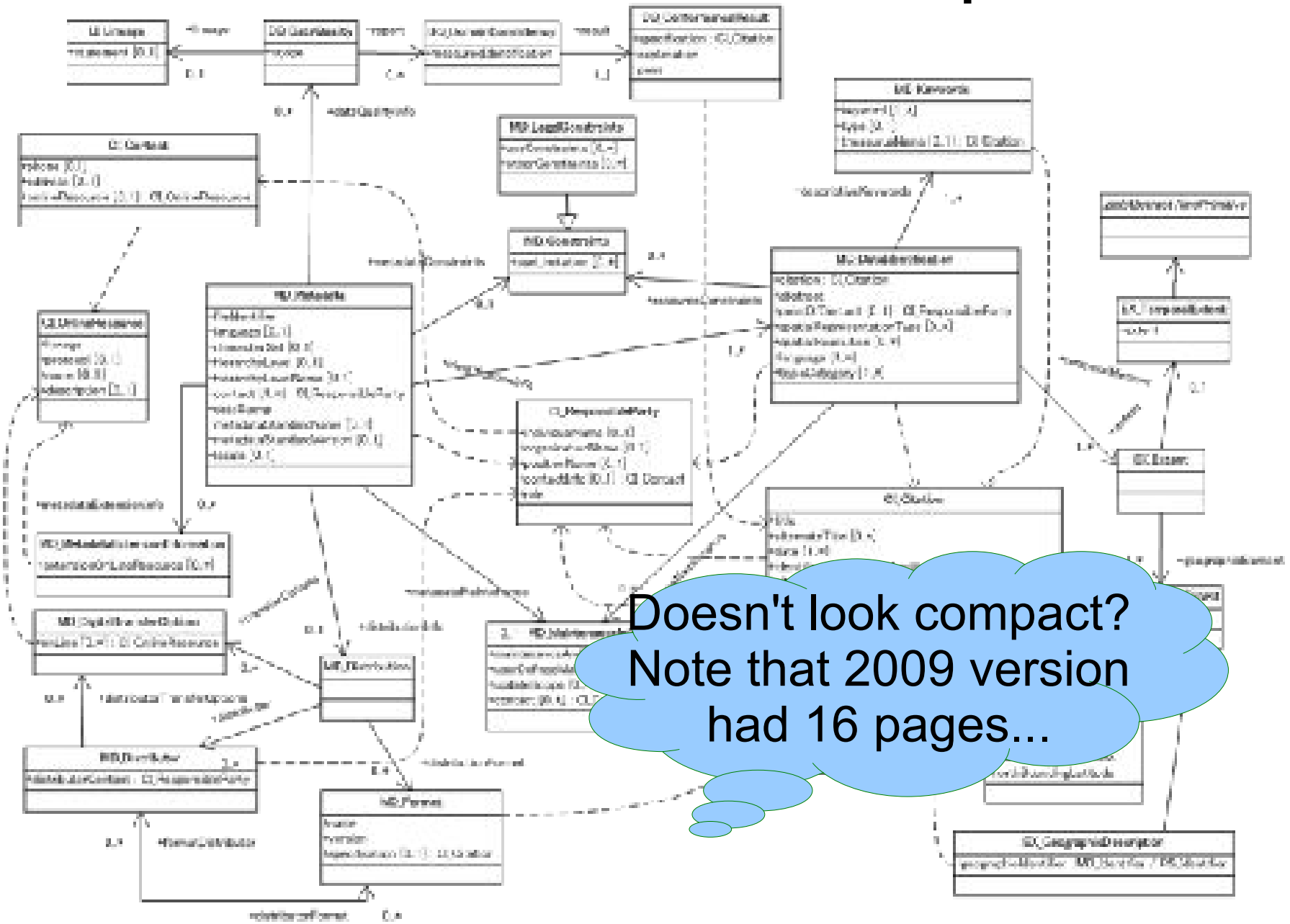
- GISC: global information system centre
  - information catalogue of entire WIS
  - global distribution information on web
  - network management
- DCPC: data collection & product centre
  - regional or programme-wide activities
- NC: national centre
  - national activities

Catalgue is
key feature of
central WIS centres

Finally metadata structure discussed

- WMO adopts ISO 19115 (2003)
  - Firstly extensions to ISO was discussed
  - Goal is complete description of data ...
- WMO Core Metadata Profile v1.1 (2009)
  - All extensions thrown away
    - Cannot validate against XML Schema
    - Cannot understood by people out of community
- Current efforts on narrowing-down
  - What is "core elements" which everybody must fill?

Look! Now it's so compact!



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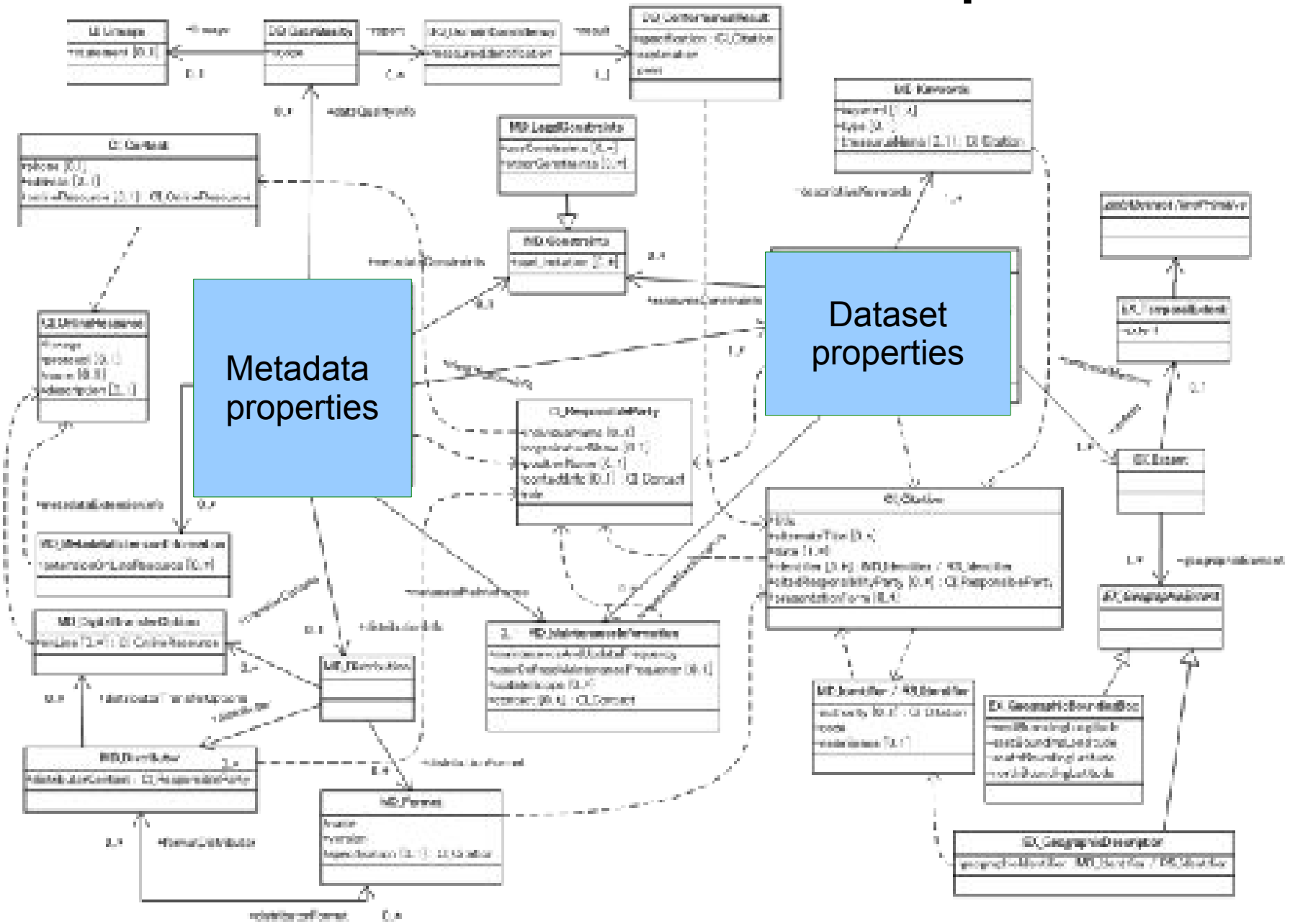
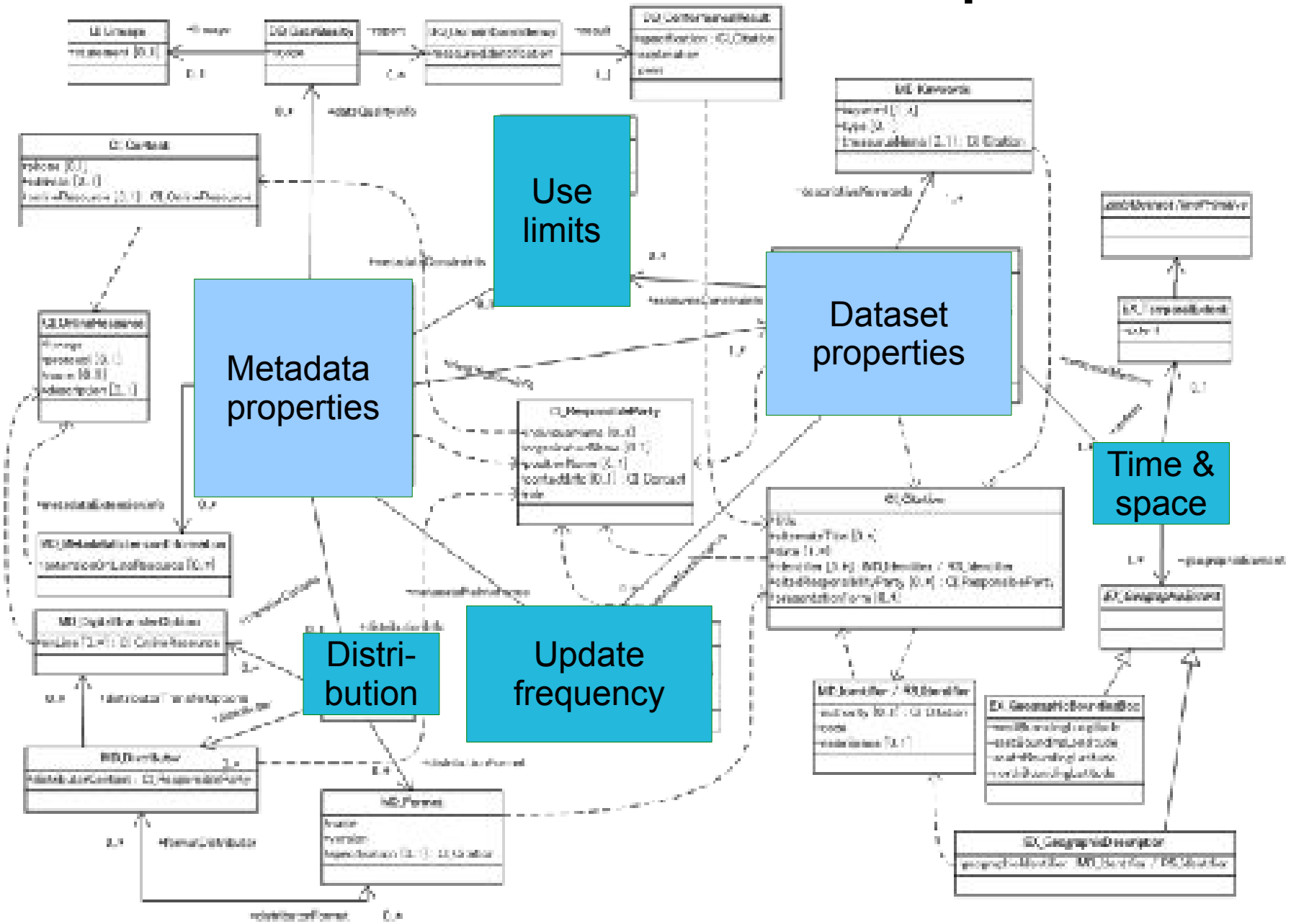


Look! Now it's so compact!



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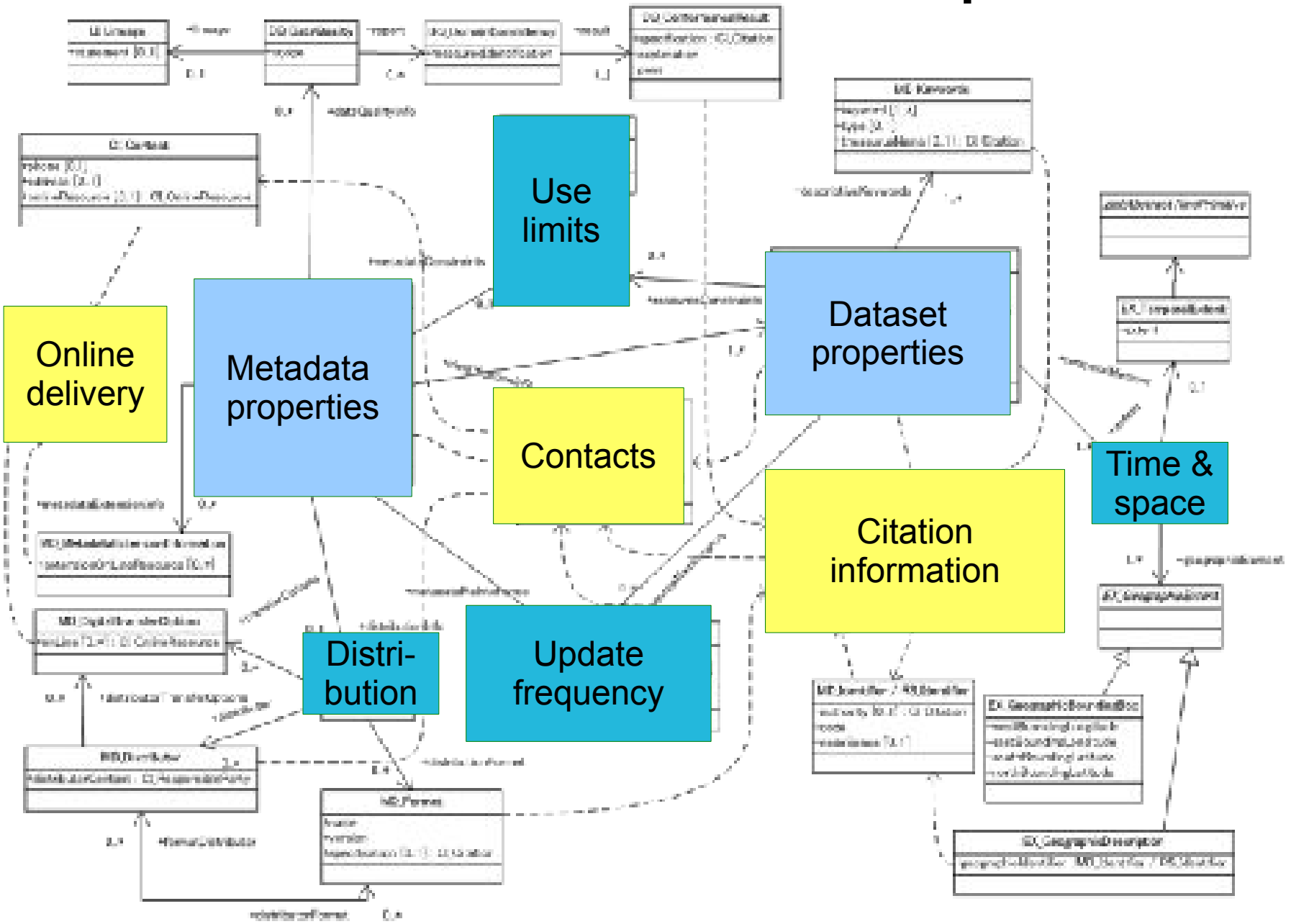


Size of record schema

- WMO Profile gets compact, but still has 280 simple-typed elements
  - Who can remember all?
  - But only 14 are mandatory
- Practical record schema cannot exceed 30 elements
  - Typical legacy catalogues: 10 ~ 30 example

Efficient input toolig

- Online editor on web
- MS Excel
  - We did validation by VBA macros before
  - But stopped
    - Computer-friendly format will help automated submission

User interface

SRU protocol

- Developed in librarian community
  - Aim: to replace ISO 23950 = ANSI Z39.50
- Technical feature similar to OGC WMS
  - Request: CGI-like query (or SOAP)
  - Result: XML including metadata records

SRU good for mashup

- Mashup: third-party use of web service, to create added-value site
  - E.g. twitter API, Google search box
- SRU result is XML: easy to use
  - Caveat: JavaScript XSS issue

SRU Index

- Like "title" in <<title = "temperature">>
- Parallel search requires standardised index
- WMO trying to start mapping between "19115 to SRU index"

SRU indices in (draft) WMO manual

STRING

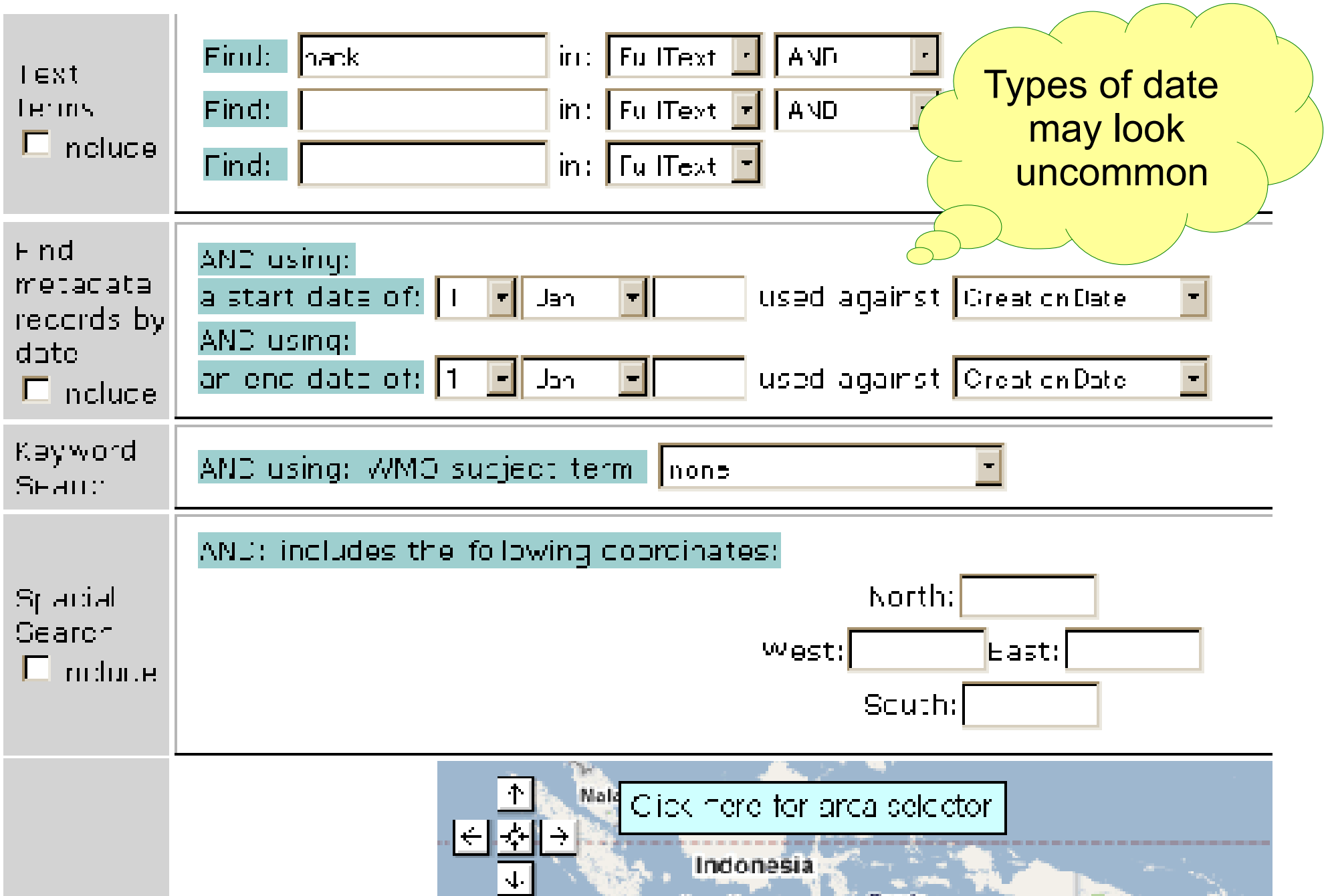
- author
- title
- abstract
- identifier
- keyword
- type
- crs

- TIME
- creationDate
- modificationDate
- publicationDate
- beginningDate
- endingDate

LOCATION

- bounds

Search form at WMO web site



Inter-organisational metadata exchange

OAI-PMH protocol

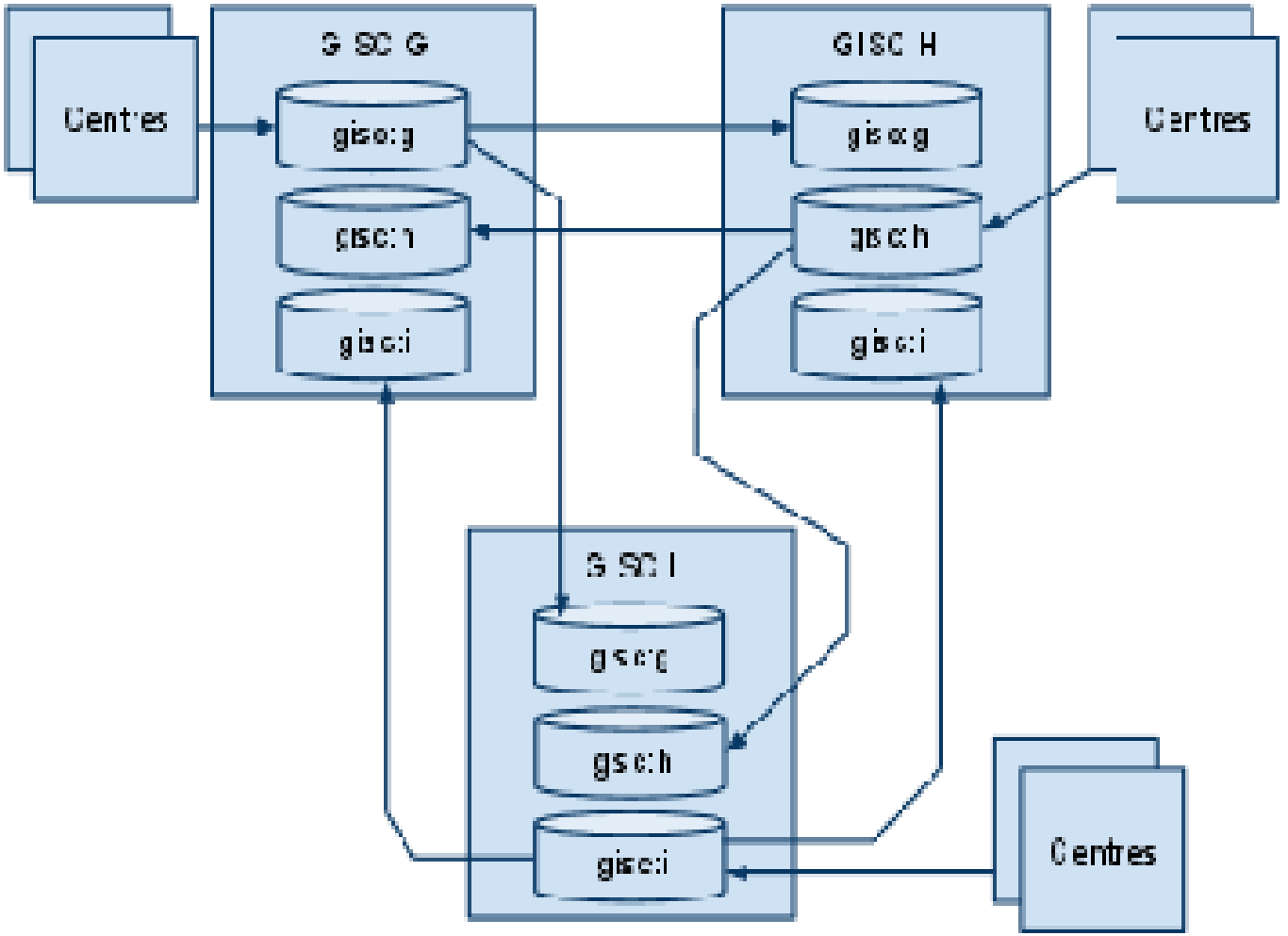
- Developed in library community
  - Update notice like in RSS
  - Time range specification (to avoid overflow)
- Technical features similar to SRU
  - Request: CGI-like parameters
  - Response: XML including metadata records

OAI-PMH in cyclic topology

- GISCs harvests each other's metadata
- Originally OAI-PMH is designed for non-cyclic network
  - An identifier might be inserted by any GISC
  - Whichever looks new copies to another
  - Copied record must have further newer timestamp
    - That is mandatory to avoid missing record
- Hence any update loops!

Convention to avoid cyclic harvesting

- Records divided in sets, only one harvested



OAI-PMH interoperability test in WIS

- Many implementations
  - jOAI-based ones
  - Geonetwork
  - Scratch-up
- Monitoring, finding & solving problems
  - Compatiblity of GML namespace
  - status="deleted" not supported by Geonetwork

GML namespace issue

- Geographical metadata standard ISO 19139 uses GML (ISO 19136)
- Text refers to ISO 19136
  - xmlns:gml="http://www.opengis.net/gml/3.2"
- But XML schema (published in 2007) had used draft ISO 19136
  - xmlns:gml="http://www.opengis.net/gml"
- Former one agreed standard
- JMA provides online conversion service

Next step

Efforts to maintain catalogue

- Many systems left unupdated
- Existing catalogue activities must be
  - Use
  - Take over
  - Improve

GTS bulletin catalogue

- CSV format
  - 12 columns: some have obscure meaning
- Use: now metadata is made from
- Take over: someday
- Improve: table made from metadata could have clearer definition
  - Many properties could be extracted from self-describing file formats
  - Manual input needed only for title, abst, use limits

Thank you

Pre-operational at www.gisc.kishou.go.jp