Report of ICA / EuroSDR NMA Symposium 2013

“Designing MRDB and multi-scale DCMs: sharing experience between governmental mapping agencies”

21-22 March 2013, Barcelona, hosted by the Institut Cartografic de Catalunya

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GENESIS AND OBJECTIVE OF THE SYMPOSIUM

- Generalisation workshop in Istanbul, September 2012

  => many NMAs working on building MRDBs and using them to produce multi-scale DCMs

  => interest of several NMAs for a meeting to share experience

- Previous meetings of the same kind hosted by the ITC (2005) and Swisstopo (2010)

- Invitation through classical ICA and EuroSDR channels

- The meeting took place in Barcelona, hosted by the ICC (Catalonia)


INSTITUT CARTOGRÀFIC DE CATALUNYA
GRAN PREMIO

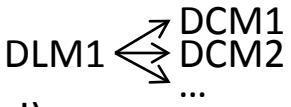
ORGANISATION OF THE SYMPOSIUM

- 23 people from 12 NMAs attended the symposium
  - Represented NMAs (country/region):
    - IGN-B (Belgium)
    - ICC (Catalonia)
    - GST (Denmark)
    - NLS (Finland)
    - IGN-F (France)
    - AdV (German regions)
    - OSGB (Great Britain)
    - OSI (Ireland)
    - Kadaster NL (Netherlands)
    - IGN-S (Spain)
    - Swisstopo (Switzerland)
    - USGS (USA-visioconference)

ORGANISATION OF THE SYMPOSIUM

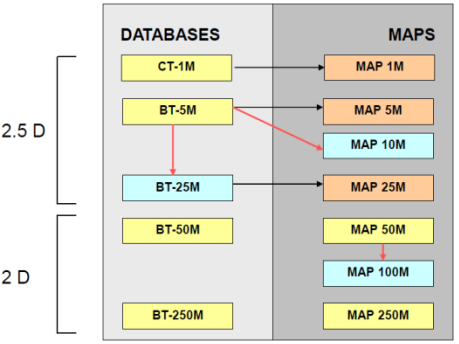
- 1.5 day meeting
  - Each NMA made a presentation
  - Breakout discussions

- Content of presentations:
  - Include a « derivation scheme » (operational/planned):
  - Describe whole production architecture (operational/planned)
  - And/or focus on particular aspect(s):
    - building an MRDB
    - workflow for a particular DCM
    - delivery on the web, etc.

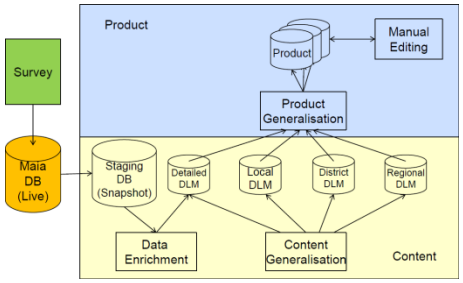


Different approaches & focuses in NMAs (1/4)

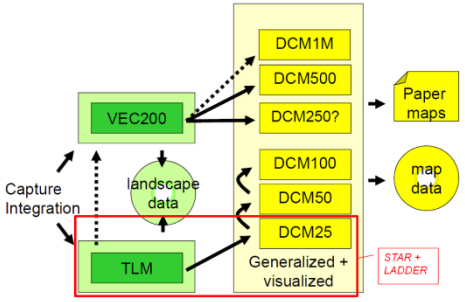
« Derivation schemes » presented by NMAs



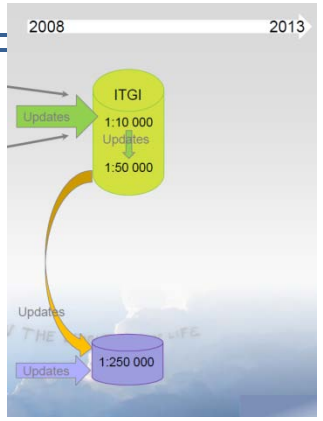
ICC (Catalonia)



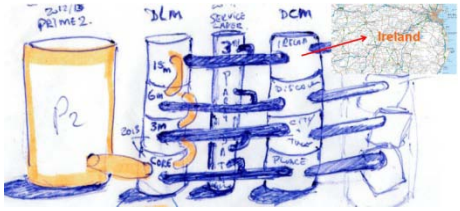
OSGB (Great Britain)



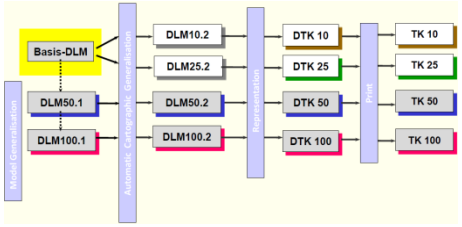
Swisstopo (Switzerland)



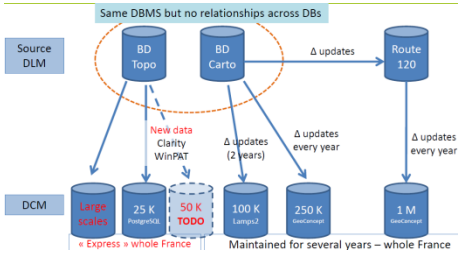
IGN-B (Belgium)



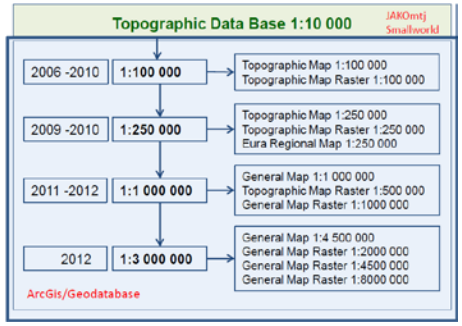
OSI (Ireland)



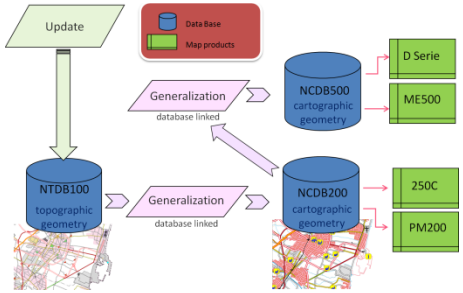
AdV (German regions)



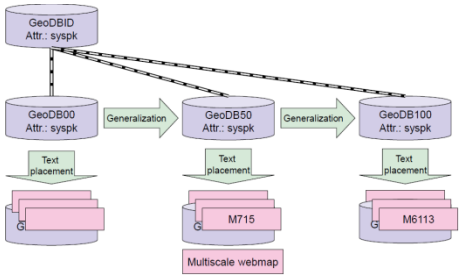
IGN-F (France)



NLS (Finland)



IGN-S (Spain)



GST (Denmark)

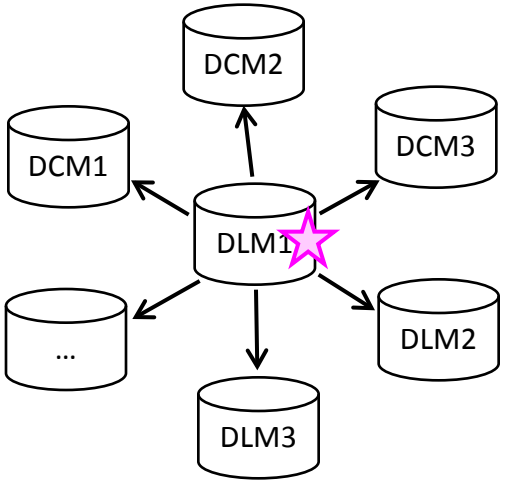
Different approaches & focuses in NMAs (1/4)

- Derivation schemes: star vs ladder?

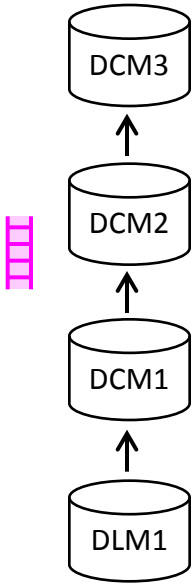
STAR VS LADDER?

[EuroGeographics, 2005]

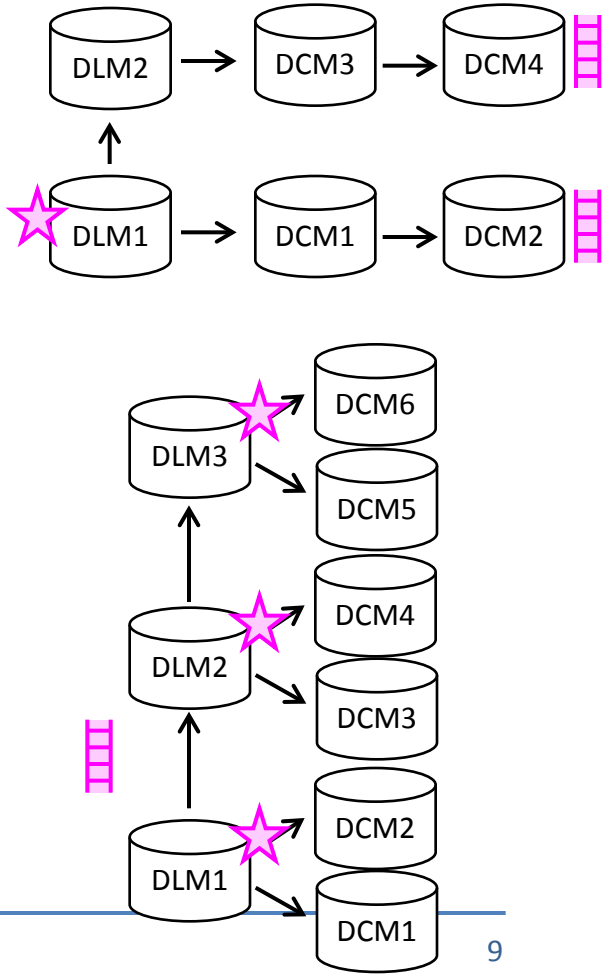
« Star » approach



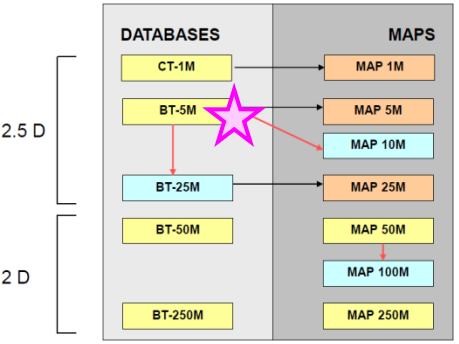
« Ladder » approach



Mixed approaches



« Derivation schemes » presented by NMAs



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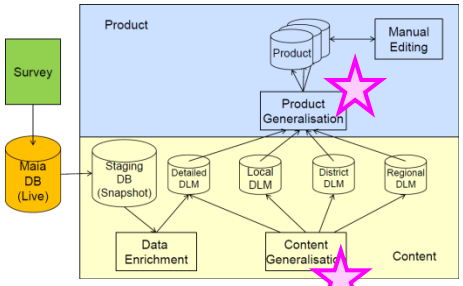
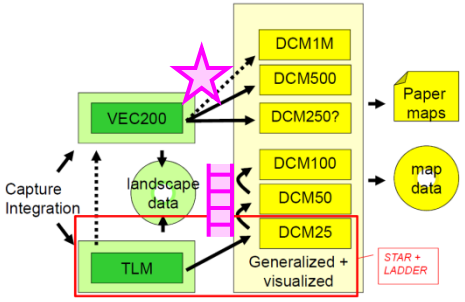
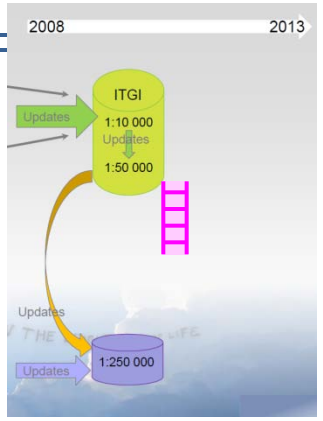


OSGB (Great Britain)



Swisstopo (Switzerland)



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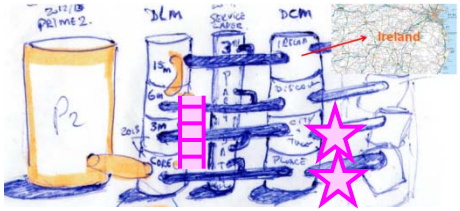

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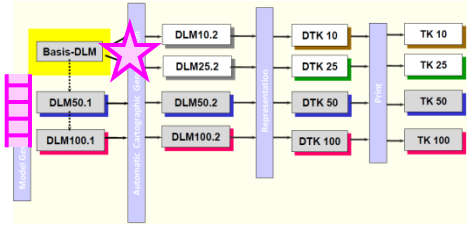
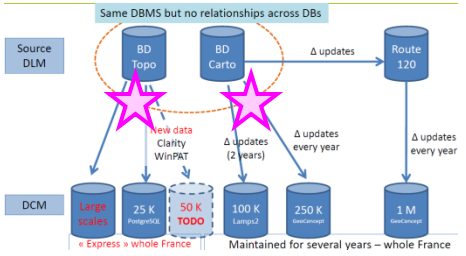


AdV (German regions)



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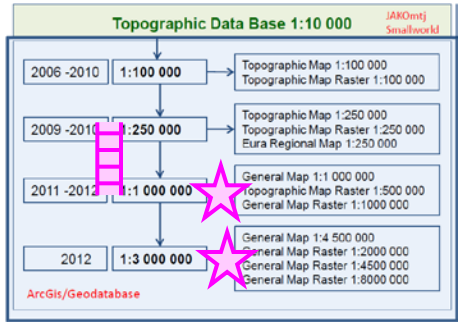
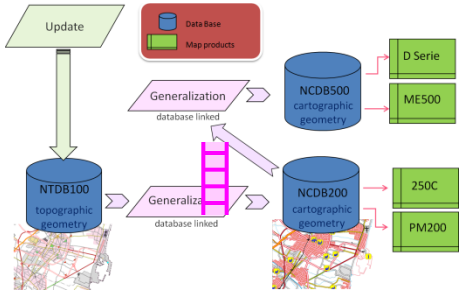


NLS (Finland)



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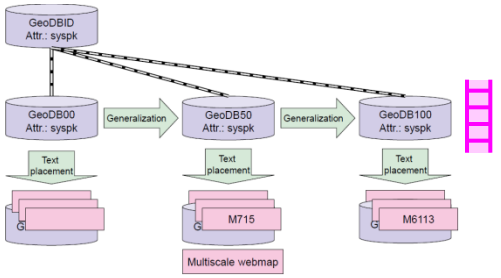


GST (Denmark)

Different approaches & focuses in NMAs (1/4)

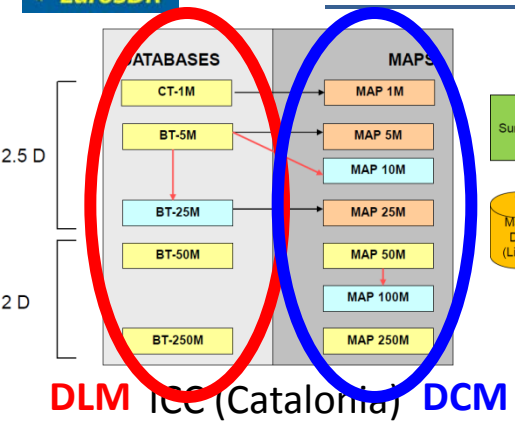
- Derivation schemes: star vs ladder?
  - Most NMAs have a mixed approach (confirms survey by [Foerster et al. 2010])

Different approaches & focuses in NMAs (1/4)

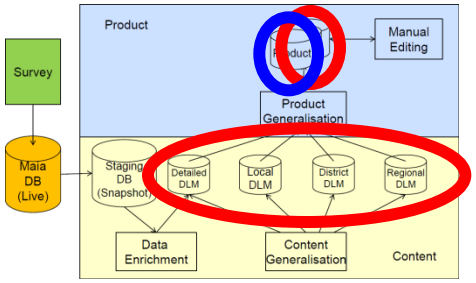
- Derivation schemes: star vs ladder?

- Distinguish DLMs and DCMs? (and model vs cartographic generalisation)
  - Some NMAs do, some others don't

« Derivation schemes » presented by NMAs



DLM ICC (Catalonia) DCM



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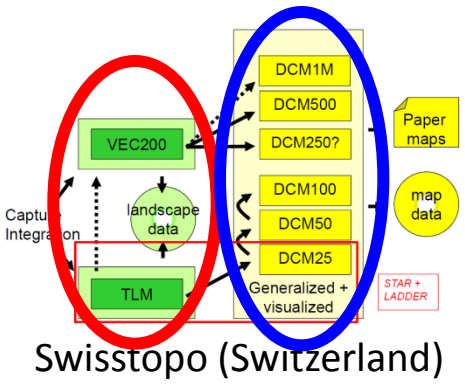

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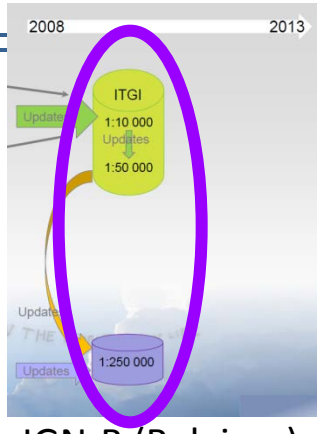

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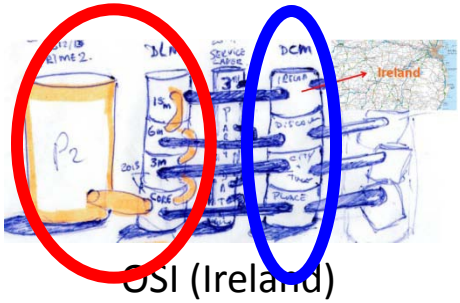

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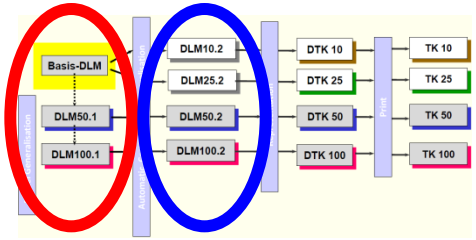

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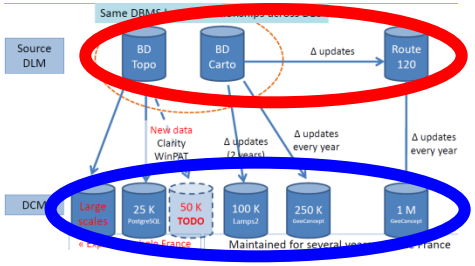

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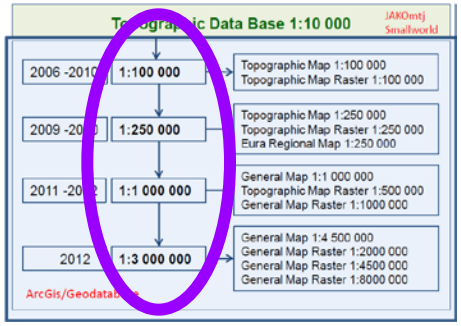

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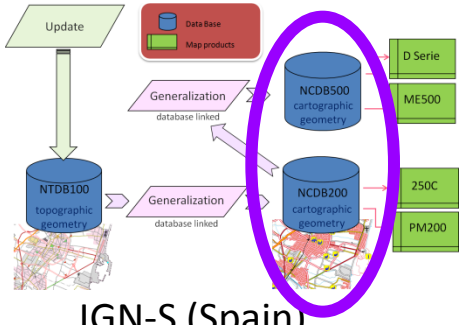
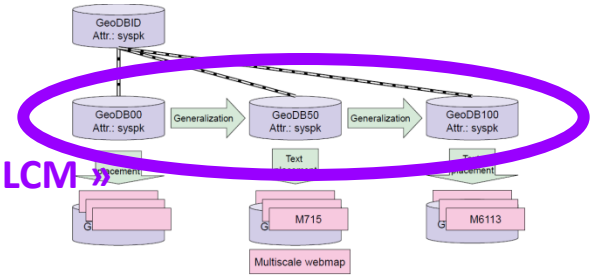


IGN-S (Spain)

« DLCM »



GST (Denmark)

Different approaches & focuses in NMAs (1/4)

- Derivation schemes: star vs ladder?
- Distinguish DLMs and DCMs? (and model vs cartographic generalisation)
- Used tools?
  - Always commercial software + ad hoc developments
  - Developments: home made most of the time, sometimes outsourced to software providers

Different approaches & focuses in NMAs (1/4)

- Derivation schemes: star vs ladder?
- Distinguish DLMs and DCMs? (and model vs cartographic generalisation)
- Used tools?
- Degree of automation
  - Semi-automatic (scripts chained manually) (e.g. NLS-Finland, all lods)
  - Automatic stage + manual edits (e.g. Swisstopo, IGN-F 10k => classical 25k)
  - **Fully automatic (e.g. OSGB 1.25-10k => light 25k; IGN-F 10k => light 25k; KNL 10k=>50k;)**

DEGREE OF AUTOMATION

Automated + manual edits

Swisstopo 1:25k

Fully automated

OSGB

Ordnance Survey © Crown Copyright

Source data (2.5-10k)

OS VectorMap® District Beta (light 1:25k)

IGN-France

« Scan express » (light 1:25k)

Kadaster NL

Source data (10k)

50k DCM

Different approaches & focuses in NMAs (2/4)

- Degree of automation and cartographic quality expectations
  - Cartographic quality expectations have changed in some NMAs...

    Idea: the users might prefer more up to date information with lowest graphical quality

    ⇒ Compromises are made regarding
    - the level of refinement
    - acceptance rate of graphical errors remaining on the map
  - ... but not in all NMAs/not for all products

    other strategies exist with higher amount of manual corrections to improve graphical quality
  - Challenge to find the right balance to satisfy user requirements

Different approaches & focuses in NMAs (3/4)

- MRDB management (links btw lods)
  - Several NMAs have begun to manage MRDBs and believe in incremental updating
  - But some issues related to the management of unique IDs
    - Lack of tools e.g. to manage unique IDs not internal to the sofware
    - Other identified problems: cf. presentation of IGN-Belgium + breakout session report
  - To date, in prduction:
    - Some automated tools to detect relevant changes
    - Propagation of updates is not automated

- Incremental updating vs full re-derivation
  - Both approaches exist even in a same NMA
  - Depends notably on degree of automation, expected data stability over time for users

Different approaches & focuses in NMAs (4/4)

- Maps for delivery on the web
  - All NMAs now deliver both paper and web maps, and have geoportals

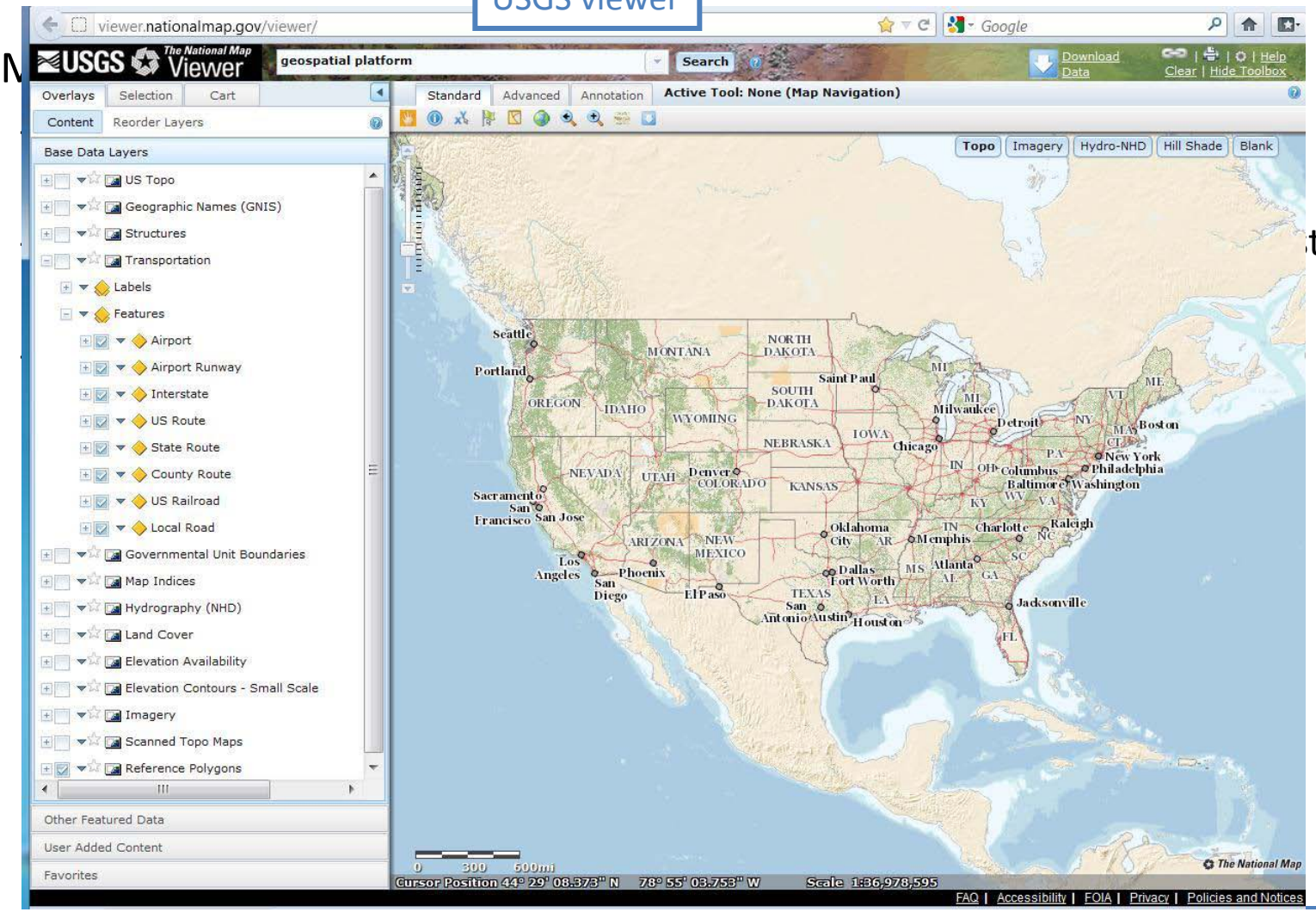
    Although considered map scales are still mainly « traditional » (paper) scales
  - Some NMAs concentrated on web delivery first, others on automation first

    => more or less sophisticated viewers/geoportals
  - Topics studied in several NMAs:
    - homogeneizing symbols across scales for web maps
    - producing dedicated content & symbols for backdrop maps
    - services to enable online customisation

Different approaches & focuses in NMAs (4/4)

- M

USGS viewer



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MAJOR RECENT ACHIEVEMENTS

- Survey by [Foerster et al. 2010]:
  - "full automated generalisation processes do not exist"
  - only 5 out of the 11 considered NMAs had made major steps towards automation
- Today
  - 11 out of the 12 NMAs present in Barcelona have automated generalisation in production
  - Automated generalisation is good enough to provide acceptable products without or with minor manual edits

⇒ Full/almost full automation is partly enabled by changing view on the problem : solutions do not need to be perfect but "good enough"

⇒ But also: gap btw research and production partly filled, thanks to

- Maturity in research
- Investment of NMAs in development
- Progress made by commercial software
- Collaboration between researchers/NMAs/software vendors [e.g. this workshops series, EuroSDR project]

BREAKOUT SESSIONS IN BARCELONA

Six topics discussed

- Incremental updates (and need for keeping links between lods)
- Cartographic quality vs up-to-dateness
- Sharing experience on generalisation tools
- On-demand mapping: how far can we go?
- Future challenges for NMAs
- Possible further collaborations between NMAs

BREAKOUT SESSIONS IN BARCELONA

Six topics discussed

- Incremental updates (and need for keeping links between lods)
- Cartographic quality vs up-to-dateness
- Sharing experience on generalisation tools
- On-demand mapping: how far can we go?
- Future challenges for NMAs
- Possible further collaborations between NMAs

Identified future challenges for NMAs (1/3)

- Technical challenges
  - On-demand mapping: exploiting MRDB for specific requirements
    - + on-the-fly generalisation would increase flexibility
  - Incremental automatic update
  - Supporting “analytical products” (especially at smaller scales):
    - analytical products = product mixing NMA data (backdrop) + user/third party data
  - Management of 3D data

Identified future challenges for NMAs (2/3)

- Challenges regarding resources and business models
  - Resources
    - pressure about more products in shorter time with less resources
    - how to minimize cost to capture data, maintain data
  - Responsibility
    - Some NMA have outsourced part of their work → risk that know how gets lost
  - Business models
    - debate about free data (should NMA give their data free)
    - OSM, Google, etc. => it seems data have less value – How to cope with that?

      ⇒ services on top of the data?

      ⇒ better cartographic quality?

      ⇒ how to convince (especially young) people that good cartographic products enable better decision making?

Identified future challenges for NMAs (3/3)

- Challenges regarding user requirements
  - Is there a high value in high quality cartographic data ?
    - assumption: quality cartographic products enable better decision making
    - does lower cartographic quality satisfy user requirements as well?
  - Need to invest more time to understand user requirements

CONCLUSION / FUTURE

- All participants found the meeting useful
  and are interested in having this kind of meetings regularly

- Also a means of doing benchmarking for the community

- Material available
  - Presentations available on generalisation.icaci.org, « Previous events » section
  - Reports from breakout sessions not yet published, expected soon
  - No written report (yet), but…
  - …a chapter of the new ICA book on generalisation is about generalisation within NMAs (chapter 11)
    - Contains written contributions from 7 NMAs present in Barcelona + JRC
    - Contains a section summarising main achievements and future challenges. Input: written contributions + presentations and discussions in Barcelona

Thank you!
Questions?

DEGREE OF AUTOMATION

Automated + manual edits

Swisstopo 1:25k

Full automation possible depending on:

–considered scales,

–used/developed tools,

–level of exigence in cartographic quality,

–density of buildings kept in urban zones

Fully automated

OSGB

Source data (2.5-10k)

OS VectorMap® District Beta (light 1:25k)

IGN-France

« Scan express » (light 1:25k)

Kadaster NL

Source data (10k)

50k DCM