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# *Status of the Standardization of Geographical Information in Africa*

Antony Cooper
CSIR, South Africa
acooper@csir.co.za

# *Status of the Standardization of Geographical Information in Africa*

- Characteristics of standards
- Standards generating bodies
- Participation in standards development
- Data content standards

# Characteristics of standards

- Open standards (ISO, IEC, etc)
  - All participants are on an equal footing
  - Developed by consensus
  - Voluntary
  - Market-driven
- Industry standards groups
  - Closed
  - Dominated by the major financial contributors
- De facto standards
  - Proprietary
  - Locked-in technology

# Characteristics of standards

- Abstract standards
  - Overall concepts
  - Standards about standards
- Concrete standards/Implementation specifications
  - Directly implementable
  - Profiles of abstract standards
- Many standards for geographical information are embedded in commercial GISs
  - Transparent to the user
- Some impact directly on the GIS user

# *Standards generating bodies*

- International standards generating bodies
  - International Organization for Standardization (ISO)
    - ISO/TC 211, Geographic information/Geomatics
      - ISO 19100 series of standards
    - ISO/TC 154, Processes, data elements and documents in commerce, industry and administration
      - ISO 11180 (postal addressing)
      - ISO 8601 (date and time)
  - Open Geospatial Consortium (OGC)
    - Implementation specifications
  - *etc*

# *Other standards generating bodies*

- Federal Geographic Data Committee (FGDC)
  - Established in 1990 to promote the coordinated use, sharing and dissemination of geospatial data across the USA
  - Developed standards that have been widely used
  - Pre-cursors to some ISO 19100 standards
    - Content Standard for Digital Geospatial Metadata
    - ISO 19115, Geographic information – Metadata

# *African standards generating bodies*

- African Regional Organization for Standardization (ARSO)
  - Not active in geographical information
- Southern African Development Community Cooperation in Standardization (SADCSTAN)
  - In April 2004 agreed to adopt standards for geographical information
  - Starting with the relevant South African standards
- National standards bodies

# South African standards

- Standards South Africa (StanSA)
  - Administrative support for standards development
  - Community develops the standards
- "Overprint" ISO standards
  - SANS 19115, *Geographic information – Metadata*
- Develop South African standards
  - SANS 1878, *South African spatial metadata standard*
- Work done within Technical Committees
  - TC 169, Applications of statistical methods
  - TC 71: Information technology
    - SC 71E: Geographical information

# South African standards

- SANS 1876, Feature instance identification standard
  - Committee Draft being balloted
  - Unique identifiers of feature instances in core data sets
- SANS 1877, A Standard land-cover classification scheme for remote sensing applications in South Africa
  - Published 2004
  - Implementation of Africover
- SANS 1878, South African spatial metadata standard
  - Committee Draft being revised
  - Profile of ISO 19115
- SANS 1880, South African Geospatial Data Dictionary (SAGDaD) and Its Application
  - Committee Draft being revised
  - Implementation of ISO 19110

# *Participation in standards development*

- Local standards need massive investment to support their implementation
  - Small market for the standard
  - Vendors have limited resources
- However:
  - Local profiles/implementations of international standards are quite feasible
  - Makes the international standard easier to use
  - Caters for local conditions

# *Participation in standards development*

- Influencing international standards to meet one's needs ensures commercial GISs support one's needs off the shelf
  - Participate in ISO through national bodies, liaisons, etc
    - Participation can be done successfully via email
    - ICA, ISPRS, FIG, IAG, ISCGM, etc
    - AARSE ??? AOCRS ??? CODI Geo ???
  - Participation requires effort
    - High barrier of entry in complexity of standards
    - Time to read drafts and comment on them
    - Resources to attend meetings

# Data content standards

- "Guidelines for data content standards for Africa"
  - Funded by:
    - US AID
  - Sponsored by:
    - US Geological Survey
    - EIS Africa
  - Executed by:
    - The CSIR
- Such standards tend to be more accessible

# Data content standards

- Documentation specifying the information in a data set:
  - Metadata
    - Including data quality
  - Reference models
    - Scope of standardization activity and the context
  - Data dictionaries, feature catalogues and classification
    - Feature types, attribute types, attribute domain, feature relationships
  - Feature instances
    - Unique, definitive versions of features
  - Data organization
    - eg: XML, GML
- Formal description of a model, eg: using UML
  - Hopefully embedded in the data content standards

# Data content standards

- Documentation specifying the information in a data set:
  - Metadata (including data quality) ⇦ *Many projects*
  - Reference models
  - Data dictionaries, feature catalogues and classification
    - (feature types, attribute types, attribute domain, feature relationships)
  - Feature instances (unique, definitive versions of features)
  - Data organization (eg: XML, GML)
- Formal description of a model, for example using UML
  - Hopefully embedded in the data content standards

# Data content standards

- 160+ standards being assessed
  - ISO/TC 211, OGC, FGDC, South Africa, Zimbabwe, etc

| Name | Source | ID | Date Publish | Status | Data Content? | Metadata ? | Relevant ? | Publicly Accessible? |
|---|---|---|---|---|---|---|---|---|
| *Feature Instance Identification Standard* | *Stan SA* | *SABS 1876* | | *draft* | *Yes* | *No* | *Yes* | *Cost* |
| *Land Cover Classification Scheme for Remote Sensing Applications in South Africa* | *Stan SA* | *SABS 1877* | *2003* | *published* | *Yes* | *No* | *No* | *Cost* |
| *South African Spatial Metadata Standard* | *Stan SA* | *SABS 1878* | | *draft* | *Yes* | *Yes* | *No* | *Cost* |
| *South African Geospatial Data Dictionary (SAGDaD) and Its Application* | *Stan SA* | *SANS 1880* | | *draft* | *Yes* | *No* | *Yes* | *Cost* |

# Data content standards

- Existing data content standards and current practices
- User requirements
- Evaluation of existing standards
- Data content components for each theme
- Consult with specialists
- Draft document on guidelines and best practices
- Circulate guidelines for feedback
- Analyse comments and revise guidelines
- List server for the project
  - http://www.gsdi.org/

# *Thank you!*

Antony Cooper
CSIR, Pretoria, South Africa
Telephone: +27 12 841 4121
Facsimile: +27 12 841 3037
acooper@csir.co.za