

**FIG Working Week 2005 and GSDI-8  
From Pharaohs to Geoinformatics**  
Intercontinental Semiramis, Cairo, Egypt, 16-21 April 2005

**'Roadmap' as a Further Impulse for  
Standardisation in Africa by Geoinformation-  
Standards-ISO-Workshop in Nairobi 2004**

**Hans Knoop, Germany**  
Technical University of Braunschweig  
**ISO/TC211 and CEN/TC287: Co-Chair, Advisory Groups on Outreach**  
Head of German Delegations of DIN • German Institute for Standardization  
Representative of ISPRS to ISO/TC211

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



**Agenda**

- **Standardization - Strategy**
- **Standardization of GIS**
- **Development in Africa**
- **Geoinformation-Standards-ISO-Workshop**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



**Agenda**

**Standardisation-Strategy**

- ISO
- Other Organisations (DIN...)
- Benefits of Standardisation

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005




**International Organization  
for Standardization**

**www.iso.org**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



**ISO Strategic Plan 2005-2010 (1)**

**FOLLOWING A BROAD CONSULTATION OF  
MEMBERS AND STAKEHOLDERS**

**ADOPTION OF SEVEN KEY OBJECTIVES**

1. Developing a consistent multi-sector collection of globally relevant International Standards
2. Ensuring the involvement of stakeholders
3. Being open to partnerships for the efficient development of International Standards

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



**ISO Strategic Plan 2005-2010 (2)**

4. Raising awareness and capacity in developing countries
5. Promoting the use of International Standards as a substitute or support to technical regulations
6. Being the neutral provider of a complete range of IS and guides for conformity assessment
7. Providing efficient procedures and tools for the development of a coherent and complete range of deliverables

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005




**The German Standardization Strategy starts with a vision:**

**Standardization in Germany helps business and society strengthen, develop and open up regional and global markets**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**German Standardization Strategy**

**Goal 1: Standardization secures Germany's position as a leading industrial nation (1)**

- Increase awareness among decision-makers in business, politics and society
- Establish and develop networks between standards bodies, business, associations and politics
- Establish priority sectors with the highest development and growth potential for the German economy

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**German Standardization Strategy**

**Goal 1: Standardization secures Germany's position as a leading industrial nation (2)**

- Integrate standardization in research and development
- Promote the European model for adopting International Standards
- Work to establish the European standardization system emerging economies and new and future EU member states

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**German Standardization Strategy**

**Goal 2: Standardization as a strategic instrument supports a successful society and economy**

- Increase targeted marketing
- Create networks for public relations and information activities
- Improve the flow of information on standardization in companies
- Intensify education and training in standardization

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**German Standardization Strategy**

**Goal 3: Standardization is an instrument of deregulation**

- Seek dialogue with political decision-makers
- Make a clear distinction between standardization and legislation
- Improve the implementation of the New Approach
- Expand into new sectors

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**German Standardization Strategy**

**Goal 4: Standardization and standards bodies promote technological convergence**

- Develop standards for systems
- Identify scope for action in converging technologies
- Optimize structures
- Transfer to European and international levels

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## German Standardization Strategy

### Goal 5: Standards bodies provide efficient procedures and tools

- Actively market the specification process
- Encourage use of specifications
- Assess market relevance of new standards projects
- Optimize processes
- Maintain quality of German standardization

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### Benefits of Standardization

- Reports and Examples
- Factors Contributing to Economic Growth
- Summary of Results

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Standardization Benefits

### Economic Benefits of Standardization - Summary of results -

#### Final report and practical examples (April 2000)

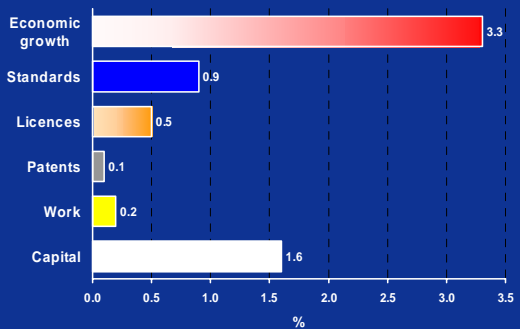
The joint research project on the „Economic benefits of Standardization“ was initiated by DIN, the German Institute for Standardization, and the German Federal Ministry of Economic Affairs and Technology (BMW) in 1997 and completed in May 2000.

The study have been undertaken by the Technical University Dresden (TUD) and Fraunhofer Institute of Systems and Innovations (ISI).

The following organizations and companies also contributed to the financing of the project: DaimlerChrysler, Siemens AG, Hans L. Merkle Stiftung, ThyssenKrupp AG, German Electrical Commission in DIN and VDE (DKE), the Austrian Standardization Institute (ON) and the Swiss Standard Association.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Factors Contributing to Economic Growth



Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Standardization Benefits

### Economic Benefits of Standardisation - Summary of results -

- The benefit to the national economy amounts to more than US \$ 15 bn per year
- Standards contribute more to economic growth than patents and licences
- Companies that participate actively in standards work have a head start on their competitors in adapting to market demands and new technologies.
- Transaction costs are lower when European and International Standards are used.
- Research risks and development costs are reduced for companies contributing to the standardization process.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### Standardisation of GIS

- General Aspects and Definitions
- ISO/TC 211
- Other Organisations
- Implementation: Geobasisdata and GSDI

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Standards

### Worldwide Need for Clarification

### Definitions

German	English/Internationally
Norm	Standard
Standard	"Defacto"-Standard

### Authorized Standardization Bodies

DIN, ... — CEN — ISO

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Standardization Pyramid

The pyramid is divided into four horizontal layers, each with a corresponding label to its right:

- Top Layer (Red):** International Standards (ISO, IEC)
- Second Layer (Green):** European Standards (CEN, CENELEC, ETSI)
- Third Layer (Blue):** National Standards (DIN, AFNOR, BSI, SNV, ANSI ...)
- Bottom Layer (Purple):** „Defacto“-Standards (Inhouse-Standards)

On the left side, a vertical axis labeled 'Importance' indicates the following characteristics for each level:

- Top:** Problem-oriented generic solutions requiring general acceptance
- Second:** Consensus-oriented
- Third:** Closest approximation to the state of the art
- Bottom:** Binding within the company

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## User Communities

- CEOS, Committee on Earth Observation Satellites
- DGIWG, Digital Geographic Information Working Group
- EPSG, European Petroleum Survey Group
- FIG, International Federation of Surveyors
- GSDI, Global Spatial Data Infrastructure
- IAG, International Association of Geodesy
- ICA, International Cartographic Association
- ICAO, International Civil Aviation Organization
- IEEE, Geoscience and Remote Sensing Society
- IHB, International Hydrographic Bureau
- ISCGM, International Steering Committee for Global Mapping
- ISPRS, International Society for Photogrammetry and Remote Sensing
- JRC, Joint Research Centre, European Commission
- OGC, Open GIS Consortium

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## User Communities

- PCGIAP, Permanent Committee on GIS Infrastructure for Asia and the Pacific
- UNECE Economic Commission for Europe, Statistical Division
- UNFAO Food and Agriculture Organization
- UNGEGN, United Nations Group of Experts on Geographic Names
- UNGIWG, United Nations Geographic Information Working Group
- WMO, World Meteorological Organization
- PCIDEA, Permanent Committee on Spatial Data Infrastructure for the Americas
- SCAR, Scientific Committee on Antarctic Research
- CEN/TC 287, Geographic information
- ...

*All these enumerated user communities are the external liaison organizations to ISO/TC 211 Geographic information / Geomatics*

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Standards & Spatial Data Infrastructure

### National - Regional - Global

The diagram shows two main components:

- Standards Infrastructure** (left)
- Spatial Data Infrastructures** (right)

Arrows indicate a bidirectional relationship between these two components. Below 'Standards Infrastructure', the text 'Standards' is written. Below 'Spatial Data Infrastructures', the text 'Standards Technology Data Policy Institutional Framework' is written.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

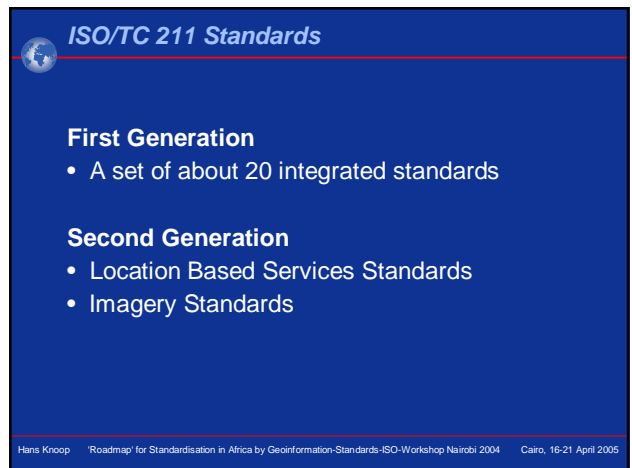
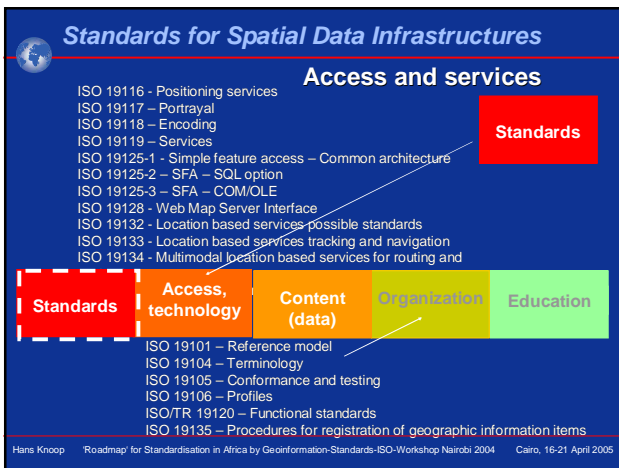
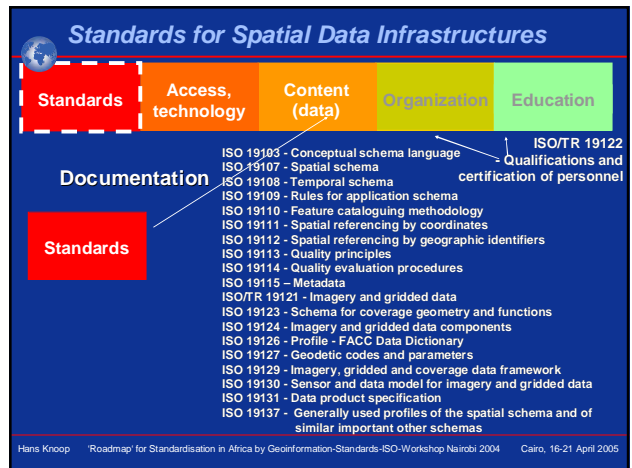
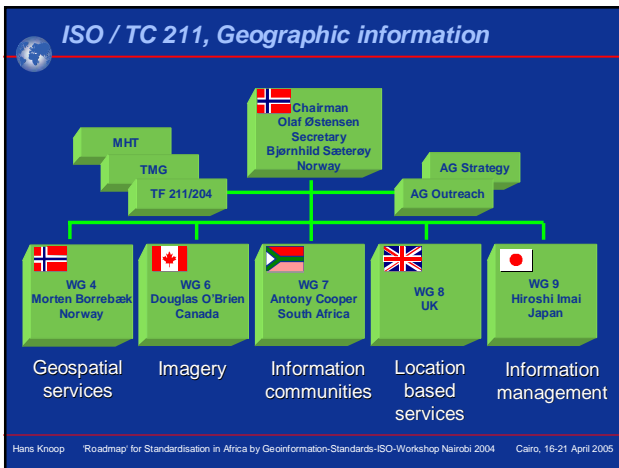
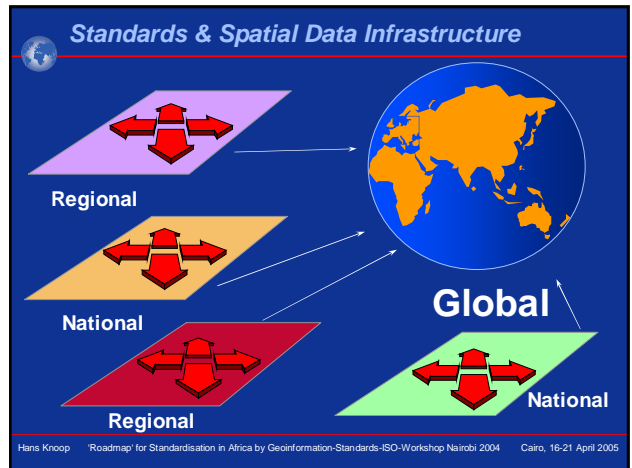
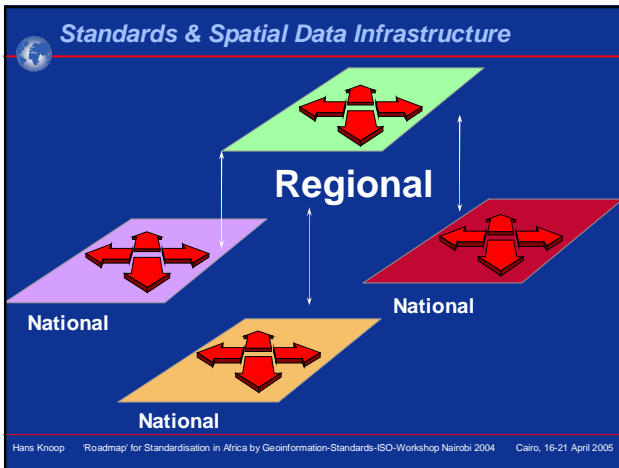
## Standards & Spatial Data Infrastructure

The diagram illustrates a multi-level governance structure with four horizontal layers, each containing a red cross-shaped icon with four arrows pointing outwards:

- Top Layer:** Federal Government
- Second Layer:** State
- Third Layer:** County
- Bottom Layer:** City

Arrows indicate interactions between these levels. A large 'National' label is positioned to the right of the State, County, and City layers.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



**Location based services standards**

**ISO 19132 – Location based services possible standards (Review Summary)**

**ISO 19133 – Location based services tracking and navigation**

**ISO 19134 – Multimodal location based services for routing and navigation**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**ISO/TC 211 Imagery**

**Review Summary 19124 - recommended several TC211 standards to address Imagery and Gridded data**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**ISO/TC 211 Advisory Group on Outreach**

**Mission**

Promote the awareness, adoption, and advocacy of ISO/TC 211 standards in user communities.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**ISO/TC 211 Advisory Group on Outreach**

**Tasks**

- Create awareness
- Enable education and training
- Facilitate adoption and implementation
- Capture user requirements and feedback
- Generate outreach resources
- Maintain the ISO/TC 211 Business Plan

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**ISO/TC 211 & OGC**

- ISO/TC 211 - de jure formal standards technical committee
- OGC - de facto industry technical specifications
- 1999 - OGC - ISO/TC 211 Class A Liaison status
- ISO/TC 211 & OGC Joint Advisory Group (JAG)
- ISO standardization of OGC specifications: Simple Features Access, Web Mapping Server Interface
- Jointly develop the Imagery & gridded data Reference Model, Framework, and the OGC Sensor Markup Language
- Geography Markup Language (GML)

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**Open Geospatial Consortium (OGC)**

**OGC Mission**

*“Our core mission is to deliver interface specifications that are openly available for global use”*

OGC is an international industry consortium of companies, government agencies and universities participating in a consensus process to develop publicly available geoprocessing specifications.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**ISO Metadata Registry**

**Cross – reference to other ISO Metadata Profiles e.g.,**

- UN Geographic Information Working Group (UNGIWG)
- **UNFAO GeoNetwork**
- other non-governmental organizations

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**UNFAO - UN/Food and Agricultural Organisation**

**LCCS**  
**Land Cover Classification System**

**GLCN**  
**Global Land Cover Network**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**Adoption of ISO Standards**

**Asia Pacific Region**

Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP)

International Steering Committee for Global Mapping (ISCGM)

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**Regional Activities**


**European New Activities**

- **INSPIRE**
- **EUROGEOGRAPHICS**
- **CEN/TC 287**  
reestablished  
10./11. November 2003 Plenary  
1 Working Group  
Advisory Group on Outreach

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**Implications of Standards**

**Initial International Interoperability**



**INSPIRE**  
**IN**frastructure for **SP**atial  
**IN**fo**R**mation in **E**urope

European Spatial Data Infrastructure

ISO/TC 211 & Open Geospatial Consortium standards & specifications


Europe - initial interoperability testing ground

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

**History CEN/TC 287**

**CEN/TC 287 first period 1992-1999**

- **Secretariat** (France, AFNOR, chair François Salgé)
- **became dormant in 1999-2003**  
under secretariat of SNV,  
Schweizerische  
Normen-Vereinigung



Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## History CEN/TC 287

### CEN/TC 287 first period results

- **8 ENVs:**
- Reference Model, Spatial Schema, Quality, Metadata, Transfer, Geographic Identifiers, Position, Rules for Application Schema
- **4 reports:**
- Query and Update: Spatial Aspects, Overview, Vocabulary, Conceptual Schema Language

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## CEN/TC 287 - Continuation

- **Proposal JRC of EU** (November 2002)
- **CEN enquiry spring 2003**
- **Result**
  - CEN/TC 287 revived
  - Secretariat **NEN**, the Netherlands
- **First meeting of revived CEN/TC287 in Delft, the Netherlands, on 10-11 November 2003**
  - Chair: Prof. In. Henri Aalders
  - Updated scope
  - Revised business plan
  - Enquiry for WG1, Spatial Data Infrastructures
  - Co-chair Advisory Group on Outreach: Prof. Dr. Hans Knoop
  - Withdrawal of CEN/TC 287 ENVs and other Resolutions

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## ISO/TC 211 - CEN/TC 287

### Differences ISO - CEN



- P and O members
- DIS → FDIS → IS
- Voluntary standards
- Conflicting national standards possible
- All member bodies voting obligation
- Enquiry → Formal Vote → EN
- Compulsory standards
- Withdrawal of conflicting national standards

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### Implementation: Geobasisdata and GSDI

- Example: Development in Germany

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Traditional Land Records

### Real Estate Cadastre

- Inventory of all real estate, valuation
- Geometric (illustrative) data, boundaries, descriptive data, land use, data on ownership, topographic features ... in ALB parcel-related
- in ALK layer-structured

### State Survey

- Data on the whole state territory
- with topographic items and information on terrain
- in ATKIS object-related: settlements, traffic, waters, vegetation, areas, land forms

© Adv

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Paradigm Shift



### Since 1997: Concept of AdV for

Modelling of Geoinformation of the Official Surveying and Mapping"

- Integration of Cadastre Map and Register (ALK and ALB)
- Harmonisation of Cadastre and Topographic Mapping (ALKIS-ATKIS)

### Cornerstones

- Integrated maintenance of graphic data and descriptive data
- Constant object view
- Data maintenance without redundancies
- User profile according to data protection legislation
- Focus on customers
- Economicalness of the concept



Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005





**AFIS**

**ALKIS**

**ATKIS**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

### Target System

**Uniform geospatial base datasets for Germany**

Only one data model for

- Spatial Reference System → **AFIS**
- Real Estate Cadastre → **ALKIS**
- Topography → **ATKIS**

3A - base schema, one 3A - application schema

**NAS** = standard-based data exchange format

Co-ordinated data capture, maintenance and supply/delivery


Geospatial Base Data Information Management (GIM)

Implementation (stage-wise realisation)

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

### 3A - Framework

- Project of the AdV
- Involvement of GIS industry (Workshops)
- Integration of customers interests
- Use of draft ISO-standards and OGC-specifications
- Use of GI-Systems available on the market
- System-independent data exchange format for AFIS/ALKIS/ATKIS: **NAS**



Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

### Derivation of the NAS encoding rules

19109	NAS (XML-Schema)	Feature Catalogue (HTML, RTF)	19110
	GML 3.0	Feature Catalogue (XML)	
	19118 Level 1		
ALKIS Application Schema (UML)			
19107 - 19111 19112 - 19115			
19103			

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

### ISO 19100 - Using

- 19103 Conceptual schema language
- 19107 Spatial schema
- 19109 Rules for application schema
- 19110 Feature cataloguing methodology
- 19111 Spatial referencing by coordinates
- 19112 Spatial referencing by geographic identifiers
- 19113 Quality principles
- 19114 Quality evaluation procedures
- 19115 Metadata
- 19118 Encoding
- 19123 Schema for coverage geometry and functions

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

### ISO 19100 - Using

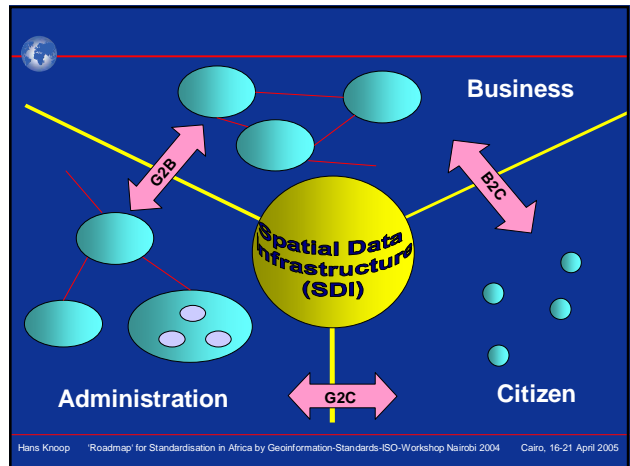
- 10105 Conformance and testing
- 19108 Temporal schema
- 19127 Geodetic codes and parameters
- 19135 Registry
- 19136 GML
- 19138 Data quality measures
- 19139 Metadata implementation

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## ISO 19100 – using in future

- 19117 Portrayal
- 19121 Imagery and gridded data
- 19124 Imagery and gridded data components

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## New Requirements

**Use of Modern Communication Structures**

- Internet services
- E-Commerce
- E-Government

**Digital World**

- Data models
- Object catalogues
- Data exchange formats

**Networking**

- Nation-wide, uniform structure
- Integrated approach
- Federal Government - States - Local Authorities
- Administration - Business

**Coordination/Standards**

- Coordinating bodies
- Standards
- Industry Standards

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Geodata Management

Relief from Digital Terrain Models

Buildings from Real Estate Maps (ALK)

Topography from Digital Landscape Models

Additional cartographic information

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### Development in Africa

- African Standards generating Bodies
- South African Standards
- Other Activities

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## 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

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## 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

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## 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

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Other Activities

- CSIR**  
Guidelines for Data Content Standards in Africa  
Authors: Antony K Cooper and Bongani Majeke

**Prepared by:**  
CSIR  
Centre for Logistics and Decision Support (CLDS)  
Satellite Applications Centre  
Unit of Water, Environment and Forestry Technology (Environmentek)

**Initiated by:**  
United States Agency for International Development (US AID)  
Eros Data Center (EDC) of the United States  
Geological Survey (USGS)  
EIS-Africa

**March 2005**

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### ISO-Workshops on GIS at AARSE in Nairobi 17<sup>th</sup> – 22<sup>nd</sup> October 2004

- Geoinformation-Standards-ISO-Workshop
- Spatial Data Standards and Specifications ISO/EIS-Africa/ECA/USGS/RCMRD
- Resolutions and Recommendations

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## 5TH AFRICAN ASSOCIATION OF REMOTE SENSING OF ENVIRONMENT CONFERENCE (AARSE 2004)

UNEP Headquarters, 17<sup>th</sup> – 22<sup>nd</sup> October 2004 NAIROBI, KENYA  
REGIONAL CENTRE FOR MAPPING OF RESOURCES FOR DEVELOPMENT (RCMRD)

# Geoinformation-Standards-ISO-Workshop

**Convenor**  
**Hans Knoop, Germany**  
ISO/TC211 Geographic Information/Geomatics  
Co-Chair, Advisory Group on Outreach, Head of German Delegation (DIN)  
Representative of ISPRS to ISO/TC211  
Technical University of Braunschweig

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda



### Geoinformation-Standards-ISO-Workshop

17th October 2004, NAIROBI

Moderator: Hans Knoop, Co-Chair ISO/TC 211 Advisory Group on Outreach

Registration		08.30 – 09.00
Opening Remarks	Wilber Ottichilo	09.00 – 09.05
Status of ISO Standardisation	Hans Knoop	09.05 – 09.35
Status of Standardisation of Geographic Information in Africa	Antony Cooper	09.35 – 10.00
Coffee Break		10.00 – 10.30
Land Cover Classification System (LCCS) Introduction	John Latham	10.30 – 11.15
Land Cover Classification System (LCCS) Technical Overview	Antonio Di Gregorio	11.15 – 12.00
Lunch Break		12.00 – 13.30
African Standardisation Roadmap: Action Plan & The Way forward for GI	Panel	13.30 – 14.30
Coffee Break		14.30 – 15.00
Discussion and Results		15.00 – 16.00

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005


**5TH AFRICAN ASSOCIATION OF REMOTE SENSING OF ENVIRONMENT CONFERENCE (AARSE 2004)**  
 UNEP Headquarters, 17<sup>th</sup> – 22<sup>nd</sup> October 2004 NAIROBI, KENYA  
 REGIONAL CENTRE FOR MAPPING OF RESOURCES FOR DEVELOPMENT (RCMRD)
 

## Spatial Data Standards and Specifications

### ISO/EIS-Africa/ECA/USGS/RCMRD

**Convener**  
**Hans Knoop, Germany**  
 ISO/TC211 Geographic Information/Geomatics  
 Co-Chair, Advisory Group on Outreach, Head of German Delegation (DIN)  
 Representative of ISPRS to ISO/TC211  
 Technical University of Braunschweig

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Agenda

### Spatial Data Standards and Specifications


21<sup>th</sup> October 2004, NAIROBI, 15.30 -17.00 h

**Chair:** Jide Kufoniyi, Executive Director RECTAS  
**Moderator:** Hans Knoop, Co-Chair ISO/TC 211 Advisory Group on Outreach Open

Opening Remarks	Jide Kufoniyi
Status of Global Standardisation (ISO/TC211)	Hans Knoop
Status of Standardisation of Geographic Information in Africa	Antony Cooper
Land Cover Classification System (LCCS)	John Latham
African Standardisation Roadmap: Action Plan & The Way forward for GI	Hans Knoop
Discussion and Results	Panel

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Resolutions and Recommendations



 of the Geoinformation-Standards-ISO-Workshop  
 of 17<sup>th</sup> October 2004, held during 5<sup>th</sup> AARSE Conference at RCMRD, Nairobi

Realising the importance of standards in geospatial data infrastructure initiatives at national and regional levels, the ECA and other international organisations, such as ICA, ISPRS, FIG, GSDI have put in a lot of efforts towards ensuring the development and implementation of geospatial standards in Africa. Such initiatives include the ECA & ICA -organised workshop on standards in Durban, August 2003.

In furtherance of the above, ISO/TC211 Advisory Group on Outreach in collaboration with AARSE organised a Pre-conference Workshop on Geoinformation Standards on 17<sup>th</sup> October 2004, hosted by RCMRD. The workshop attracted over 50 participants from many African countries as well as other interested geoinformation practitioners from outside Africa.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Resolutions and Recommendations



 of the Geoinformation-Standards-ISO-Workshop  
 of 17<sup>th</sup> October 2004, held during 5<sup>th</sup> AARSE Conference at RCMRD, Nairobi

Recognising the need for geospatial standards in Africa, this forum (workshop) called for the establishment of a dedicated Working Group. However the forum noted that the Executive Working Group of CODI-GEO has a working group on Geospatial data standards, which is being coordinated by EIS-AFRICA and therefore resolved to work closely to support this WG in achieving its objectives.

The forum consequently recommended to the WG that the TOR should include the following issues while ensuring that the development of Geospatial Standards on the continent should be demand driven:

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005


## Resolutions and Recommendations


 of the Geoinformation-Standards-ISO-Workshop  
 of 17<sup>th</sup> October 2004, held during 5<sup>th</sup> AARSE Conference at RCMRD, Nairobi

- a. Access to funding
- b. Building critical mass of human and institutional capacities
- c. Standards should not be limited to data alone.
- d. Recognise standards of supporting technologies (ICT etc.)
- e. Identify and encourage pilot projects
- f. Education and awareness
- g. ISO Geo-information Standards as component in GIS/EIS tertiary syllabus must be considered. (Education in Geoinformation Science must include the fundamentals and not just the application of Geographic Information Systems!)

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005

## Resolutions and Recommendations


 of the Geoinformation-Standards-ISO-Workshop  
 of 17<sup>th</sup> October 2004, held during 5<sup>th</sup> AARSE Conference at RCMRD, Nairobi

- h. Recognition of the Global Land Cover Network (GLCN) of UNFAO as a facilitating mechanism to support capacity development
- i. Adoption and Implementation of Land Cover (LC) mapping standards at national and regional levels in Africa
- j. Recognition of LCCS as an evolving ISO -Standard and common tool for LC harmonisation in Africa which can also be used as an example for improving the situation in Standardisation and other GIS related fields
- k. LC as a core layer of the development of SDI globally
- l. Workshops combining LCCS/GLCN and Geo-information Standards (such as ISO/TC211) are an optimal method for introducing these concepts.

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



## Resolutions and Recommendations

of the Geoinformation-Standards-ISO-Workshop  
of 17<sup>th</sup> October 2004, held during 5<sup>th</sup> AARSE Conference at RCMRD, Nairobi

This WG is encouraged to report back at GSDI 8 2005 Conference  
in Egypt, Africa GIS 2005 in South Africa, etc.

The WG is further encouraged to apply for Class-A Liaison status  
to ISO/TC211.

Finally the forum expressed its gratitude to ISO/TC 211, AARSE,  
RCMRD, UNFAO and other partners for facilitating and hosting  
this ISO/TC211 – Outreach Workshop (convened by Prof. Hans  
Knoop, Co-chair of ISO/TC211 Advisory Group on Outreach).

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005



## Thank you!

### Questions & Discussion

#### Hans Knoop

[hans.knoop@gmx.de](mailto:hans.knoop@gmx.de)  
[hans.knoop@t-online.de](mailto:hans.knoop@t-online.de)

+49 - 511 - 57 19 73 Tel.  
+49 - 511 - 161 21 30 Fax  
+49 - 179 - 231 20 27 Mobile

Hans Knoop 'Roadmap' for Standardisation in Africa by Geoinformation-Standards-ISO-Workshop Nairobi 2004 Cairo, 16-21 April 2005