

ISO/TC211: standardisation of Geographic Information and Geo-Informatics

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Outline

- Introduction
- Spatial Data Infrastructures (SDIs)
- GI standardization and interoperability
- ISO/TC211 and remote sensing imagery
- Summary and conclusions

Introduction

- Standards
 - documented agreements
 - containing technical specifications
 - to be used consistently as rules, guidelines, or definitions of characteristics,
 - to ensure that materials, products, processes and services are fit for their purpose

Introduction

- Why using ISO standards and not some other ad-hoc standards coming up?
- ISO standards are developed according to the following principles:
 - Consensus - manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineering professions and research organizations.
 - Industry-wide - Global solutions to satisfy industries and customers worldwide.
 - Voluntary - International standardization is market-driven and therefore based on voluntary involvement of all interests in the market-place.
- ISO is an accepted and established authority for standards

Introduction

- Why is so much effort going on in standardising geographic information and geomatics?
- Strong economical driving forces
 - The traditional GIS market
 - business support systems
 - personal productivity
- Visibility of GI in government practices is increasing
- Spatial Data Infrastructures (SDIs) are being put in place to help to make available GI to the benefit of all

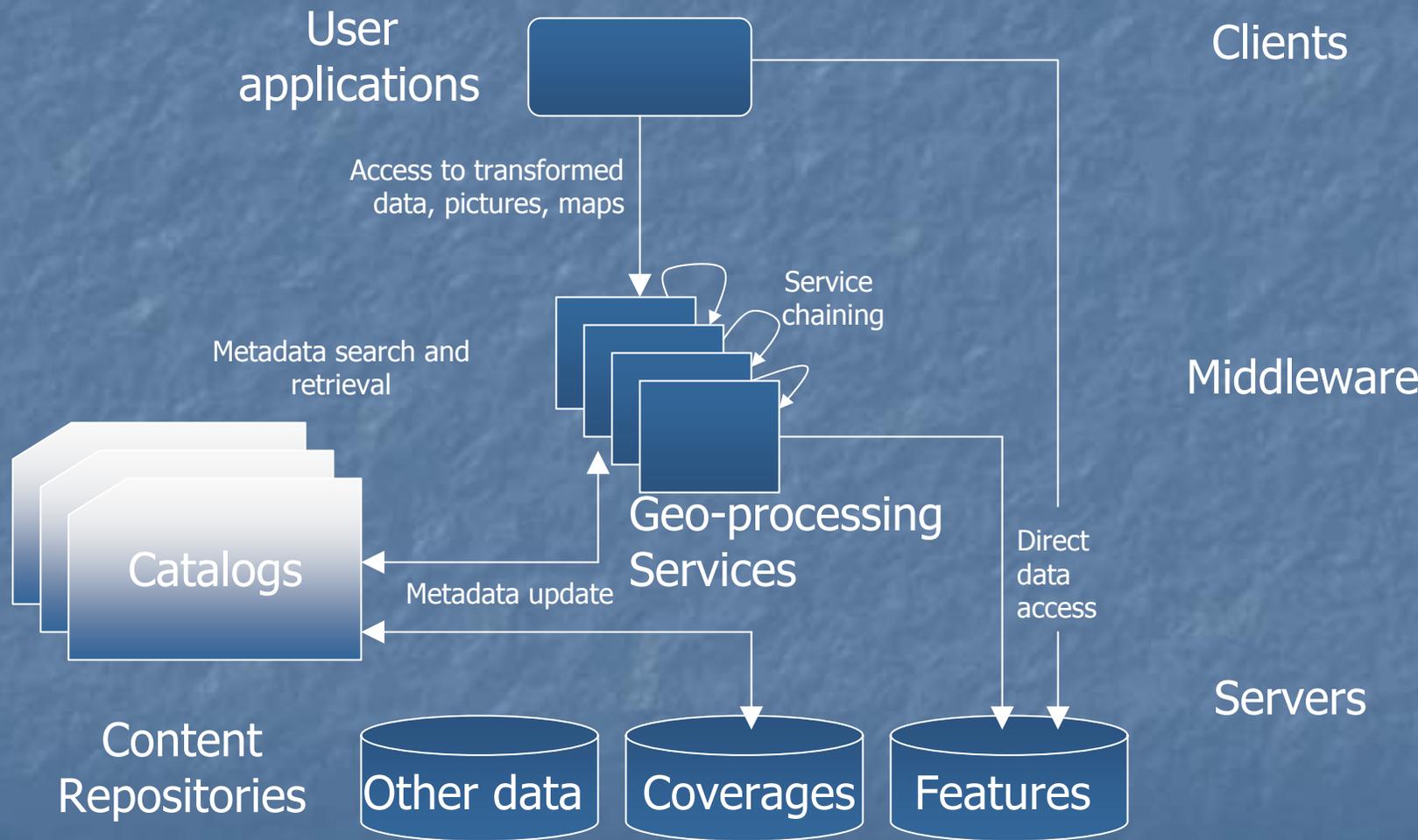
Spatial Data Infrastructures

- What is an SDI?
 - Denotes the relevant base collection of technologies, policies and institutional arrangements that facilitate the availability of and access to spatial data
 - Provides basis for spatial data discovery, evaluation, and application for users and providers
 - government
 - commercial
 - non-profit
 - academia
 - citizens in general

Spatial Data Infrastructures

- Spatial Data Infrastructure initiatives
 - National (e.g., US-NSDI, Canada, The Netherlands-RAVI)
 - Global Spatial Data Infrastructure (GSDI)
 - Infrastructure for Spatial Information in Europe (INSPIRE)
 - Digital Earth

Spatial Data Infrastructures



GI standardization and interoperability

- Interoperability
 - Geospatial interoperability is based on shared agreements governing essential geospatial concepts and their embodiment in communication protocols, software interfaces, and data formats
 - Very much like the way pdf maintains layout

GI standardization and interoperability

- Two types of process characterize standardization
 - Formal process
 - High in consensus
 - Good at creating a legally acceptable standards
 - Slow and time consuming
 - Relies both upon the fundamental altruism and knowledge of all participants
 - *De facto* standards
 - Recognition by the market that a singular product has hegemony
 - Not always desirable...

GI standardization and interoperability

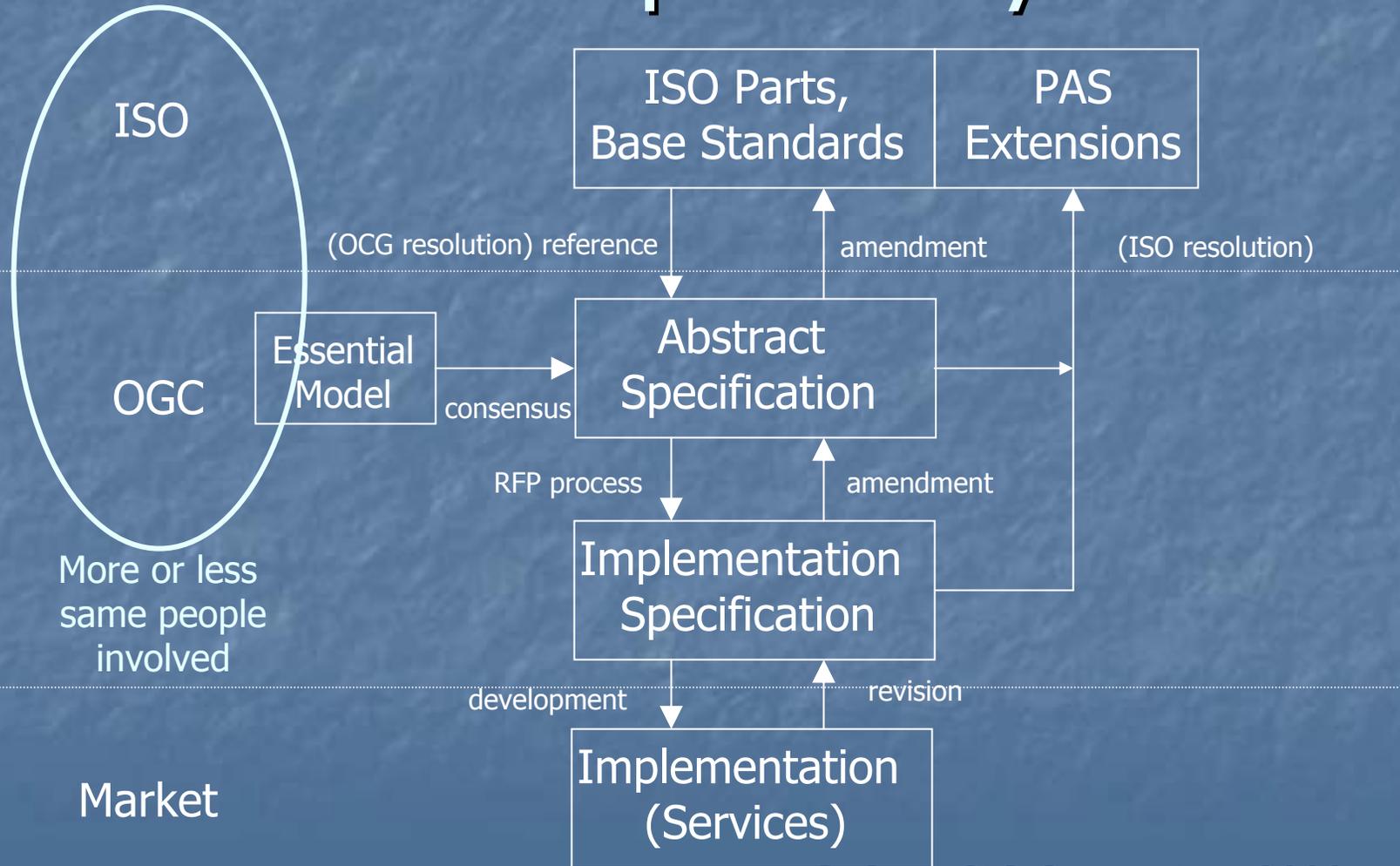
Open GIS Consortium

Spatial connectivity

for a changing world.



GI standardization and interoperability

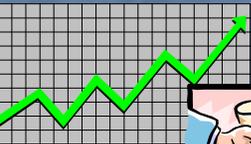


ISO/TC 211

■ Scope

- Establish structured set of standards for information concerning objects or phenomena that are directly or indirectly associated with a location relative to the Earth
- These standards may specify, for geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring such data in digital/electronic form between different users, systems and locations

ISO/TC 211



- increase the understanding and usage of geographic information
- increase the availability, access, integration, and sharing of geographic information
- promote the efficient, effective, and economic use of digital geographic information and associated hardware and software systems
- contribute to a unified approach to addressing global ecological and humanitarian problems



ISO/TC211 work programme (status May 2002)

- ISO 19101 - Reference model
- ISO 19102 - Overview
- ISO 19103 - Conceptual schema language
- ISO 19104 - Terminology
- ISO 19105 - Conformance and testing
- ISO 19106 - Profiles
- ISO 19107 - Spatial schema
- ISO 19108 - Temporal schema
- ISO 19109 - Rules for application schema
- ISO 19110 - Feature cataloguing methodology
- ISO 19111 - Spatial referencing by coordinates
- ISO 19112 - Spatial referencing by geographic identifiers
- ISO 19113 - Quality principles
- ISO 19114 - Quality evaluation procedures
- ISO 19115 - Metadata
- ISO 19116 - Positioning services
- ISO 19117 - Portrayal
- ISO 19118 - Encoding
- ISO 19119 - Services
- ISO/TR 19120 - Functional standards
- ISO/TR 19121 Imagery and gridded data
- ISO/TR 19122 - Qualifications and certification of personnel

ISO/TC211 work programme (status May 2002)

- ISO 19123 - Schema for coverage geometry and functions
- ISO 19124 - Imagery and gridded data components
- ISO 19125 - Simple feature access – Common architecture
- ISO 19125 - Simple feature access - SQL option
- ISO 19125 - Simple feature access – COM/OLE option
- ISO 19126 - Profile - FACC Data Dictionary
- ISO 19127 - Geodetic codes and parameters
- ISO 19128 - Web Map Server Interface
- ISO 19129 – Imagery, gridded data framework
- ISO 19130 – Sensor and data models for imagery and gridded data
- ISO 19131 - Data product specification
- ISO 19132 - Location based services possible standards
- ISO 19133 - Location based services tracking and navigation
- ISO 19134 - Multimodal location based services for routing and navigation
- ISO 19135 - Procedures for registration of geographic information items

ISO/TC211 and remote sensing

- *Project ISO 19121 Geographic information - Imagery and gridded data*
 - report addressing manner by which TC 211 should handle imagery and gridded data in context of of Geographic information/Geomatics
 - It identifies aspects of imagery that have been standardized or are being standardized in other ISO committees and external organizations

ISO/TC211 and remote sensing

- Project ISO *19123 Geographic information - Schema for coverage geometry and functions*
 - conducted in collaboration with OGC
 - definition of a standard conceptual schema for describing the spatial characteristics of coverages

ISO/TC211 and remote sensing

- Project ISO 19124 (17754) Geographic information - Imagery and gridded data components
 - standardise concepts for the description and representation of imagery and gridded data
 - includes new work on various aspects of such data, like the rules for application schemas, quality principles and quality evaluation procedures, spatial reference systems, visualisation, and exploitation services

Summary and conclusions

- ISO/TC211 documents
 - View first the index on ISO/TC211 home page, <http://www.isotc211.org/>
 - Contact Prof. Roger King for electronic copy of document
 - See also the data fusion web page:
 - <http://www.dfc-grss.org>
 - And follow the link to "Standards"

Summary and conclusions

- Technologies to advance the field of remote sensing to be benefit of all exist
 - still some urgent work to be done
- standards to remove technological barriers will be put in place soon
- ball is now played back to the data providers, who will have to develop data policies that allow a real break-through of the field of remote sensing