

Implementing Norwegian funded projects with the State Geodetic Administration in Croatia

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PMM?

- **Project Management and Mapping AS (PMM) is carrying out international consultancy services and production related to mapping, cadastre and registers.**
- **PMM has been contracted for work in 14 countries since the foundation in 2000.**
- **PMM generates 99 % of its turn-over outside Norway.**



Key Activities for PMM

- **Business Planning, Process Analyses**
- **Quality Assurance, Quality Control**
ISO 9001, 10005/006, 19113/114/115
- **Procurement Documentation, Product Specifications**
- **Database Design (Modelling), Implementation and Migration, Web Portal Development, GIS etc.**
- **Field work related to**
Cadastre Reconstruction/Reambulation and
Building Cadastre Construction
- **International Bid Preparation (WB/EU) for external clients**



Norwegian Support to Croatia

- Norwegian Ministry of Foreign Affairs has since 2002 supported Croatia with build-up of a National Spatial Data Infrastructure in the CRONO GIP projects (Croatian Norwegian GeoInformation Projects)
- Statens kartverk (Norwegian Mapping Authority) has been responsible for procurement and control of the projects through the Centre for Property Rights and Development.
- The projects has been tendered internationally.
- PMM has won some of the CRONO GIP projects.



Key information for Croatia

- Land Area: 56,400 Km² (Slovakia 49,000, Norway 307,400 km²)
- Population: 4.5 Mill.
- Parcels: 14.4 Mill. (3.2 per inhabitant)
- Croatia declared its independence from Yugoslavia in 1991.



Key figures for Croatia

- Thereafter 4 years of war against Serbia.
- Last Serbian enclaves in east returned 1998.
- Joined NATO in 2009.
- Candidate for eventual EU accession.



CRONO GIP Objectives

- **Establish a capacity within the State Geodetic Administration (SGA) to scan and vectorise existing paper maps.**
- **Develop and implement a database within the State Geodetic Administration (SGA) for the storage and use of data resulting from the on-going production of new topographic maps in scale 1:25,000.**
- **Establish a capacity within the Croatian Geodetic Institute (CGI, subordinate to SGA) to control the quality of geographic data produced for the Government by private companies.**

CRONO GIP I (2002-2003)

- **With State Geodetic Administration (SGA)**
 - Technical Specifications for orthofoto (DOP 5), TK25
 - Data acquisition based on CROTIS standard
 - Design and implementation of a Geografic database for storage of topographic data
- **With Croatian Geodetic Institute (CGI)**
 - Establish QC routines for checking of CROTIS data, orthophoto og TK25 maps
- **Entries**
 - ISO 19113/114
 - FME (Safe SW), Oracle, GeoMedia, GML



CRONO GIP II (2003-2004)

- **With State Geodetic Administration (SGA)**
 - Support within Procurement of Orthophoto for the Kornati GIS
 - Implementation of the Kornati GIS (GIS for administering the Kornati National Park)
 - Development of Orthophoto Product Specifications for the Maritime Domain Project
- **With Croatian Geodetic Institute (CGI)**
 - General Support within QC of GeoInformation
 - Support within Cyclic Aerial Photography
 - Support within QC of Scanned and Vectorised Cadastral Maps
- **Entries**
 - ISO 19113/114
 - FME (Safe SW), GeoMedia



CRONO GIP II (2003-2004)

The "Maritime Domain Project", Component for Analyses and Methodology:

- **With State Geodetic Administration (SGA) and Zadar County**
 - Development of an Analysis and Methodology Manual with legal discussions and technical specifications for creation of Maritime Domain parcels, including procedures and practical results.
 - Develop and implement a Concession register for Zadar County office.
 - Develop and implement IT-communication between Cadastre and County offices.
 - Describe and develop the procedures for export of Maritime Domain parcels to Zadar County office with copy to the Central Cadastral Database maintained by SGA in Zagreb.



CRONO GIP II (2003-2004)

As a subcontractor to ProCaptura (Kongsberg Scanners),
main client State Geodetic Administration (SGA)

- Prepare Process Descriptions and Describe Standard Work Procedures for Vectorisation of Cadastral Maps (VoCM)
- Develop Bid Documents and Draft Contracts for VoCM
- Develop Quality Assurance System for VoCM
- Develop an Exchange Format for Transfer of Cadastre Data
- Design, develop and implement a Database Solution and Web portal in SGA for Storage and Retrieval of VoCM
- Undertake upload and retrieval of Digital Cadastre Data
- Entries
 - ISO 19113/114
 - FME (Safe SW), Oracle, GML, MapServer, OpenLayers



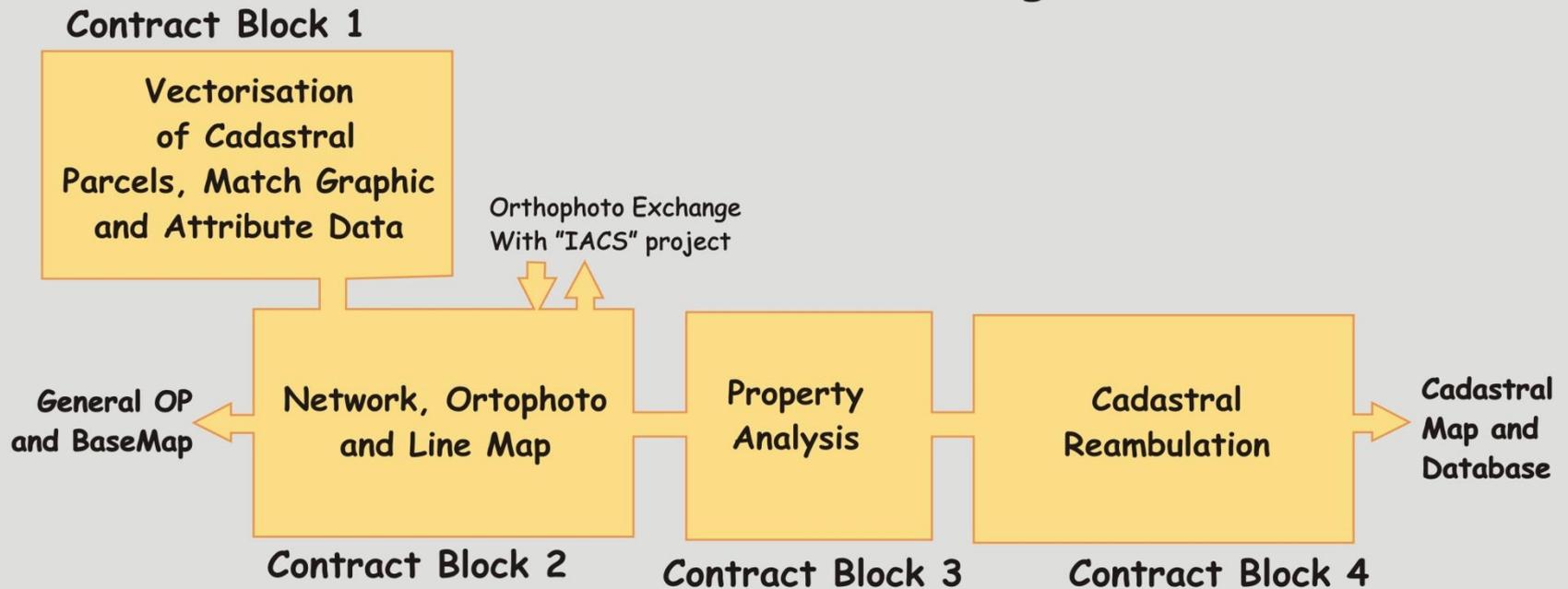
CRONO GIP III (2007-2008)

- **With State Geodetic Administration (SGA)**
 - Redesign and preparation of Product Specifications for "reambulation"
 - Procurement Support
 - Development of a new Cadastre Datamodel
 - Implementation of the Central Cadastral Database (CCDB), Web Portal, Exchange formats
- **Private sector**
 - Training in the new Product Specifications
 - Use and development of Quality Plans
- **Entries**
 - ISO 9001, 10005/006, 19113/114/115
 - FME, Oracle, GML, GeoServer, OpenLayers

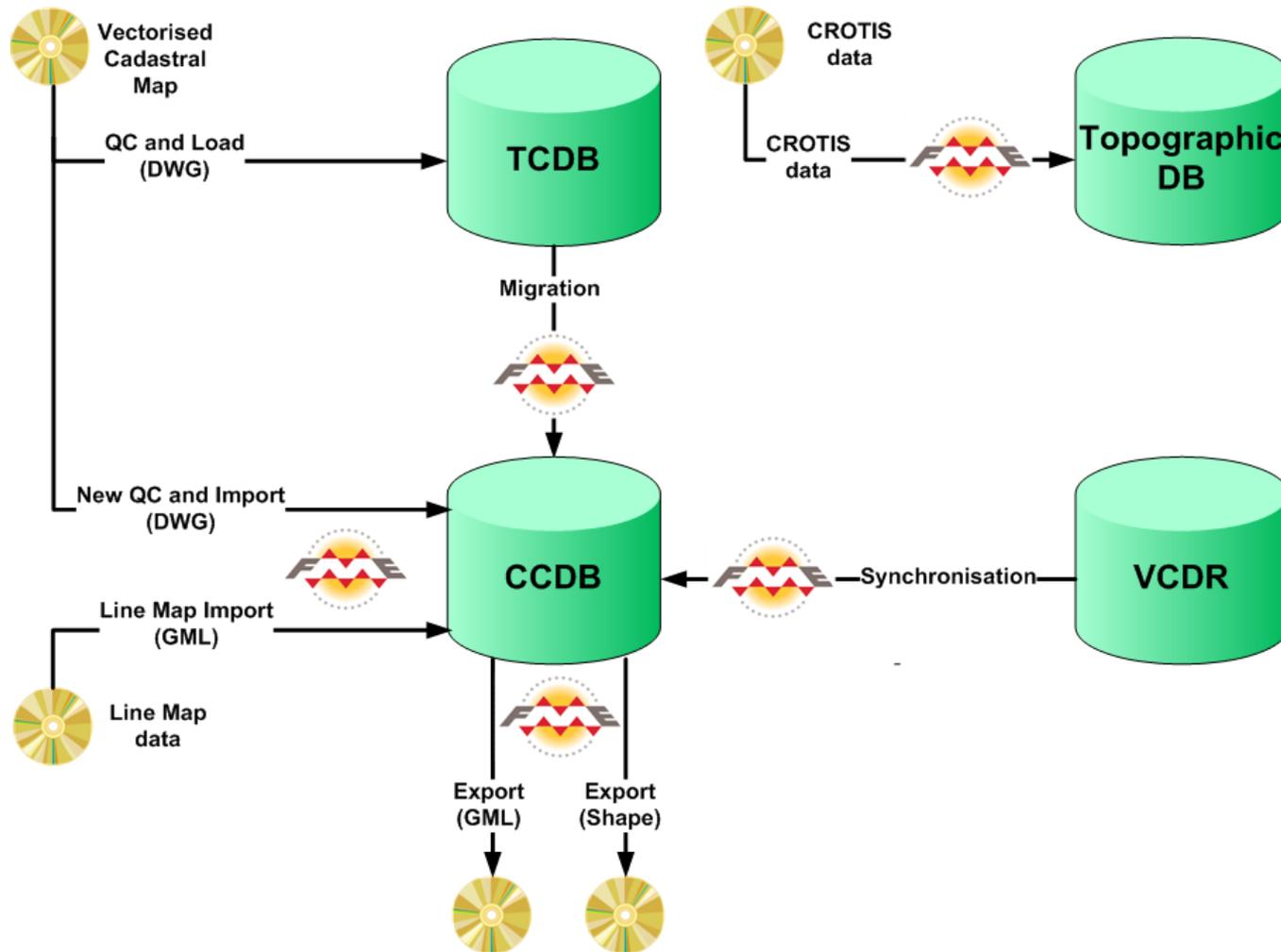


Reorganisation of the Procurement

Overall Arrangement of Contracts



DB Overview and Data Flow in SGA



LPIS Support Project (2008-2009)

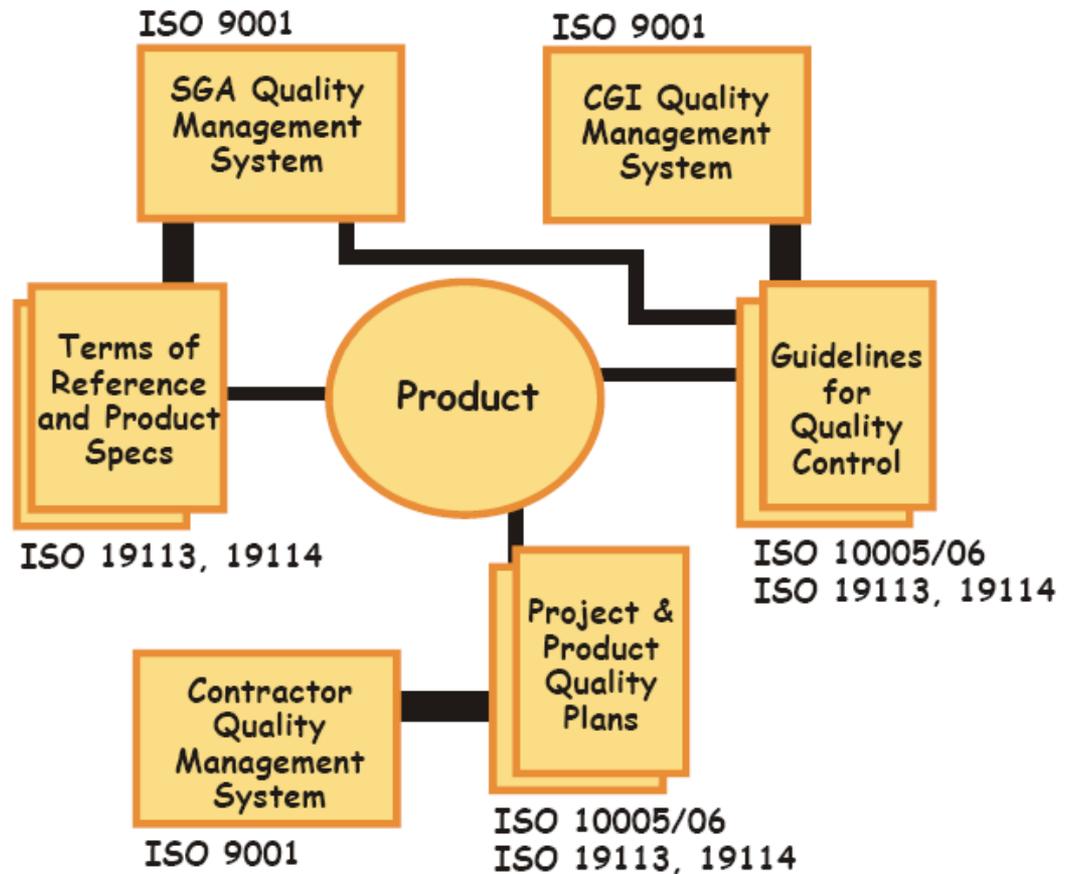
- **LPIS (Land Parcel Identification System) shall establish agricultural cadastre maps and orthophotos for IACS (Integrated Agricultural Identification System)**
 - **Must be implemented prior to entering EU (i.e. before any agricultural subsidies are given from EU)**
 - **Remaining paper based cadastre maps must be vectorised**
 - **25 % yearly revision of orthophotos (based on max. 5 years old images)**

LPIS Support Project (2008-2009)

- **With State Geodetic Administration (SGA)**
 - Preparation of ToR for Orthophoto (DOP 5) in line with EU regulations (INSPIRE)
- **With Croatian Geodetic Institute (CGI)**
 - Establish routines for QC (new staff)
- **Private sector**
 - Training in new product specifications
 - Preparation of Quality Plans

ISO Standards Used in LPIS Project

ISO 9001
ISO 10005/006
ISO 19113/114



Summary for PMM's Work in Croatia 2002 - 2009

- **SGA**

- Three Databases Implemented
- Three Web Portals Implemented
- Redesign of the reambulation process resulting in new arrangement of contracts
- Product Specifications
 - TK25
 - Vectorised Cadastral Maps
 - DOP 1/2/5
 - Line Mapping
 - Analyses and Reambulation
 - Establishment of Maritime Domain Parcels
- Procurement support



Summary for PMM's Work in Croatia 2002 - 2009

- **CGI**

- **Training in QA and QC related to**

- **Organisational Development**
 - **Geographic Information in general**
 - **Sampling**
 - **Detailed procedures and reports (Excel sheets) established for previously mentioned products**
 - **Procedures for acceptance of Project and Product Quality Plans**