AGENCY FOR REAL ESTATE CADASTRE  
REPUBLIC OF NORTH MACEDONIA

*Digitally development of the Agency for Real Estate Cadastre, challenge and benefit for the society*

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Vrdnik, Serbia, 18-20 September 2019

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What is needed for digital development - organizational point

- Good vision/idea
- Team-employers for real implementation
- Skills/knowledge
- Financial support
- Good organization
What is needed for digital development - technical point

- Digital data (raster/vector)
- HW&SW
- Production of web services (wms/wfs/atom)
- Publication of web services
- Users

AREC geospatial data

- Cadastre
  - Parcels
  - Buildings
  - Building courts
  - Infrastructure objects
  - Rights
  - Right holders
  - Cadastre (cadastre and land register) as one institution with one harmonized central DB for cadastral and land registry data

- Cartography
  - Topographic maps
  - Orthophotos
  - DTMs
  - Aerial images

- Geodesy
  - MAKPOS – Active permanent GNSS network (CORS network)
  - MAREP – Passive GNSS network
  - High-precision leveling network
  - Gravimetric network
  - Geodetic points
AREC digital topographic maps
(scale 1:25,000, 1:50,000, 1:100,000, 1:250,000)

Aerial-photo images in scale of 1:40,000
- Analogue
- Digital (scanned)

Orto-photo maps in scale of 1:25,000
- Raster

Topographic maps in scale of 1:25,000
- Vector
- Raster

Topographic maps in scale of 1:50,000, 1:100,000 and 1:250,000
- Raster

Digital Terrain Model
Laser scanning

AREC cadastral maps, digitalization and integration of graphical and alphanumerical data
(scale 1:1000 and 1:2500)

Digitalization of cadastral maps

<table>
<thead>
<tr>
<th>Year</th>
<th>Realization</th>
</tr>
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<tbody>
<tr>
<td>1996</td>
<td>0 %</td>
</tr>
<tr>
<td>2009</td>
<td>31 %</td>
</tr>
<tr>
<td>2016</td>
<td>83 %</td>
</tr>
<tr>
<td>2017</td>
<td>98 %</td>
</tr>
<tr>
<td>2018</td>
<td>99 %</td>
</tr>
</tbody>
</table>

Area under work (maps)
Completed area (maps)
Electronic cadastre system

- Centralized system
- Using by AREC employers which work on cadastral area (cca.700 AREC users)
- Harmonized Alphanumeric and Graphical data
- Management of all applications related to maintenance of REC data
- Web services for data dissemination
- E-front desk for professional users

E-front desk for professional users

contract for the use of the services from the e-front desk
Number of e-front desk users

<table>
<thead>
<tr>
<th>Year</th>
<th>Notary</th>
<th>Banks</th>
<th>Municipalities</th>
<th>Private Surveyors</th>
<th>Enforcement Agents</th>
<th>Lawyers</th>
<th>Appraisers</th>
<th>Property/Legal Affairs Office</th>
<th>Other Legal Entities</th>
<th>Total Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td>787</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1242</td>
<td></td>
</tr>
</tbody>
</table>

Digital surveying report

- Preparation of surveying report (xml/gml)
  - Parcels
  - Buildings/houses
  - Infrastructure objects
- Purpose
  - Registration
  - Legalization
  - Urbanization
  - Transaction (sale/purchase)
  - Leases, ...

Conference: "Digitally Enabled Development for a Sustainable Future in Eastern Europe"
18 - 20 September, 2019, Vrdnik, Republic of Serbia
Cadastral data - time issued

- Property list
- Property list for infrastructure objects
- List for conditional registration building
- List for conditional registration infrastructure objects
- Evidence list
- Evidence list for infrastructure objects
- Certificate of historical overview of performed registrations.
- Certificate of historical overview of performed registrations of the property value.
- Certificate that the person is not registered in the real estate cadastre.
- List of cadastral parcel indications
- Copies of the document from original cadastral folder
- Copy from Cadastre map
- Copy from the plan of infrastructure objects
- Data for the property value
- Other data resulting from the real estate cadastre

Relationship between E-application & paper application

E-front desk

Physical front desk
E-кат front desk
Issuing property list by notary

Property list for utility infrastructure
Number of received application in REC

- **2018**
  - **Received**: 699,594
  - **Solved**: 686,355
  - **Unsolved**: 364,001
  - **Refused**: 851,416

**29 Branch REC office**
- **Total number**: 1,063,595

**Skopje REC office**
- **Total number**: 1,079,771

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AREC One Stop Shop Portal (OSSP)

- **Data**: cadastral, geodetic point, administration borders, topographic maps, orto-photo
- **Searching** data by attributes/selection from graphic
- **Type of media** on line web service and digital data by order: paper from
- **Way of distribution**: on line download digital data or sent by post
- **Users**: all (natural person, companies, state ....)
OSSP searching

OSSP: on line e-property list
On line e-excerpt of cadastral map

OSSP: Number of issued data 2017 & 2018
OSSP: Issued data H1 2018 & H1 2019

National Spatial Data Infrastructure
NSDI Geo-portal services

AREC
- Administrative units - WMS, WFS, ATOM
- State border
- Local Government Units
- Populated places
- Elevation terrain model – WMS, WFS, ATOM
  - Elevation grid points
  - Grid raster elevation
  - Contour lines
- Geographic names - WMS, WFS
- Hydrographical network – WMS, WFS, ATOM
  (All by national and INSPIRE standards)

Center for crises management
- Map with dryness of the forest ,WMS
- Map index of fires, WMS

Ministry of agriculture
- Soil Map of the Republic of Macedonia, WMS

State geological institute
- Geological formations of Macedonia, WMS

Ministry of environment
- National Parks - WMS

State statistic office
- Demographic data - WMS

Agency for spatial planning
- General Plan of the Republic of Macedonia

NSDI - Next steps

- Redesign
- Better functionality (administrative and user aspects)
- Standardization and harmonization with INSPIRE
- Increasing number of data set
- Increase knowledge through training, workshops e.t.c.

20+ subjects
72+ metadata
35+ dataset
22+ WMS
15+ WFS

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Other digital development

**Enterprise Resource Planning**
- Human resources
- Financial and accounting
- Fixed assets
- Personal evidence
- Working time attendance
- Measuring efficiency of the employers

**Document management system (DMS)**
- work-flow of input output documents

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Connection between different systems

- **interoperability**
- **share data**
  - E-cadastre
  - E-logbook
  - OSSP
  - DMS
  - ERP
  - Inventory
  - Evidence

- **avoid duplicate data**
- **memory saved**
Benefits

AREC
• Increased work efficiency
• Reduced the time for solve the application/transaction
• Better working conditions

USERS
• On line data on the portals (OSSP,NSDI)
• Save the time for travel to the cadastral office
• Obtain the AREC data on many offices: notary, private surveyors, lawyer ...
• Secure property transactions

Next steps

• Following the new trends in digital area
• Improvement quality of cadastral data
• Establish the scan center (old data)
• Develop a new register for sale of confiscated property
• Introduces a new digital techniques for data acquisition and processing
• ...
Thank you for your attention

- http://makpos.katastar.gov.mk/