

Reporting System of Secretariat

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Provincial Secretariat for Agriculture, Water Management
and Forestry



About Provincial Secretariat for Agriculture, Water Management and Forestry (PSAWF)

- Provincial Secretariat for Agriculture, Water Management and Forestry as a part of Provincial Government of Autonomous Province of Vojvodina, performs duties of the Provincial Administration in the field of agriculture, water management, forestry, hunting, cattle breeding, aquaculture, apiculture and veterinary medicine.
- PSAWF receives and processes documentation for granting subsidies and other financial resources from the Budget of the AP Vojvodina, in the field of agriculture, forestry, hunting, water management and cattle breeding.
- PSAWF also monitors, supervises and assists the work of public companies and public services, founded by the AP Vojvodina.



Agricultural Holdings and Land Fund in AP Vojvodina

Agricultural holdings by utilized agricultural area

Region	Total		Without land	≤ 1 ha			> 1 – ≤ 2 ha		> 2 – ≤ 5 ha		> 5 – ≤ 10 ha	
	AH	ha		AH	%	ha	AH	ha	AH	ha	AH	ha
REPUBLIC OF SERBIA	631 552	3 437 423	10 107	174 567	27,64	91 837	123 719	181 785	182 489	596 052	89 083	617 281
Region Vojvodine	147 624	1 608 896	6 054	47 514	32,18	17 968	21 169	30 462	28 269	92 689	18 959	134 766

Available land of agricultural holdings

Region	AH, total	Available land											
		AH	ha	agricultural land				other land					
				utilized		non-utilized		forests		other land		of which: fishponds	
				AH	ha	AH	ha	AH	ha	AH	ha	AH	ha
REPUBLIC OF SERBIA	631 552	630 742	5 346 597	621 445	3 437 423	153 976	424 054	337 804	1 023 036	607 670	462 084	670	7 667,6
Region Vojvodine	147 624	147 211	2 049 241	141 570	1 608 896	5 489	72 313	5 569	146 393	140 444	221 638	157	7 416,0

Requirements Analysis – Activities of PSAWF

- Since most activities PSAWF performs are related to field work, such as :
 - soil sampling,
 - monitoring of crop pests and diseases,
 - control of agricultural extension services,
 - control and transparency of financial resources that the Secretariat placed through competitions,
 - control of inspection services,it is obvious that one of the most important factors in performing these activities is availability of data collected at the field.
- Gathering the required information in a short span of time is a major challenge.



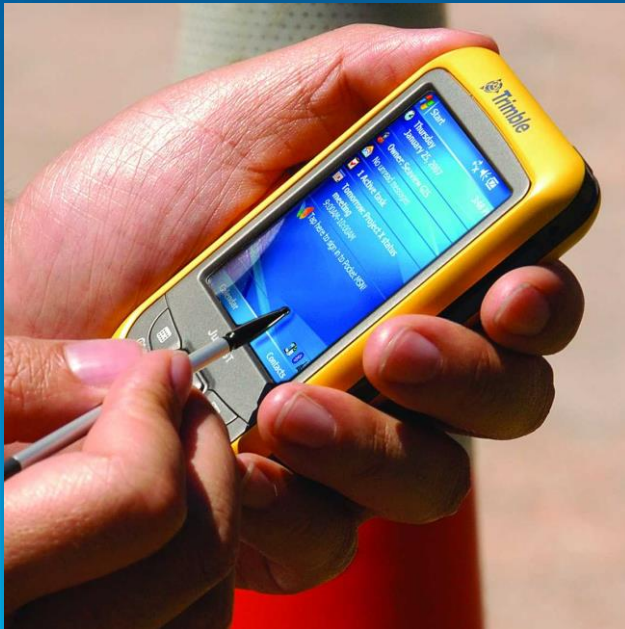
Requirements Analysis – Workflows

- Field work activities are almost always conducted in open areas
- It is required for acquired data to have specific accuracy
- The level of expertise of field operators is low
- There were 12 agricultural extension services with about 90 advisers operated in the field
- There were 2 inspection services with 11 inspectors operated in the field
- **Changes in type and structure of data are frequent**



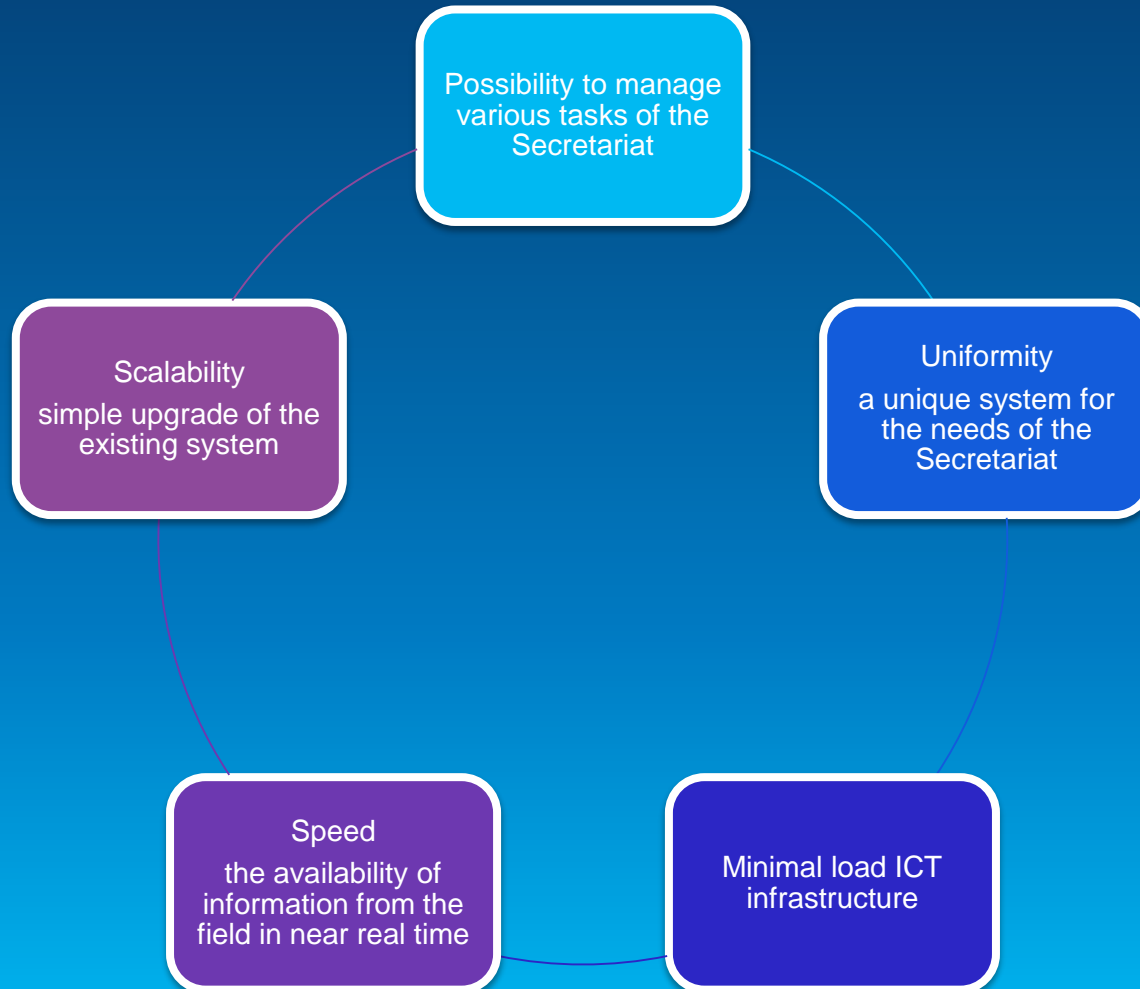
Requirements Analysis – IT Infrastructure

- There were 28 GPS Trimble Juno SC devices available in PSAWF
- There was Esri ArcGIS platform in PSAWF with ArcGIS for Desktop and ArcGIS for Server licenses.



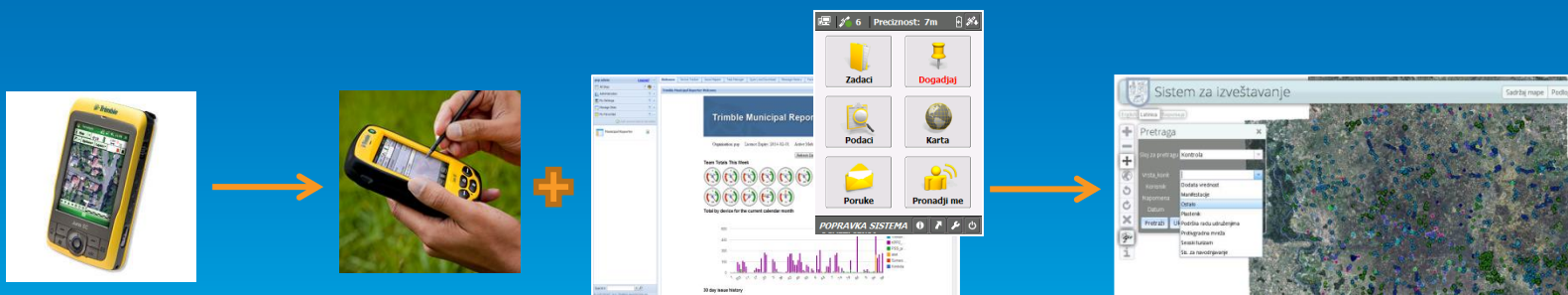
Requirements Analysis - Criteria

Regarding data sharing and presenting, several criteria were set during the selection of proper solution:



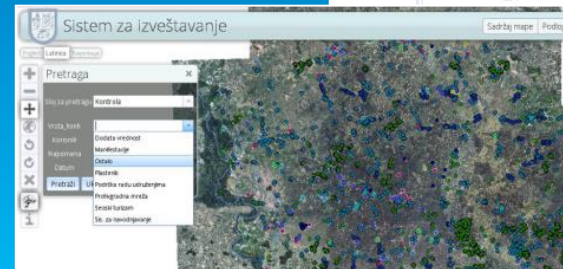
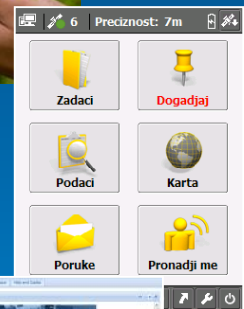
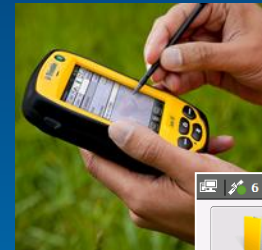
Implementation Process – Upgrade

- Upgrade
 - 78 GPS devices Juno 3D + MR field software
 - 2 Administrator license for MR internet service
 - Training for 107 users
 - Upgrade of Esri platform to 10.1 version



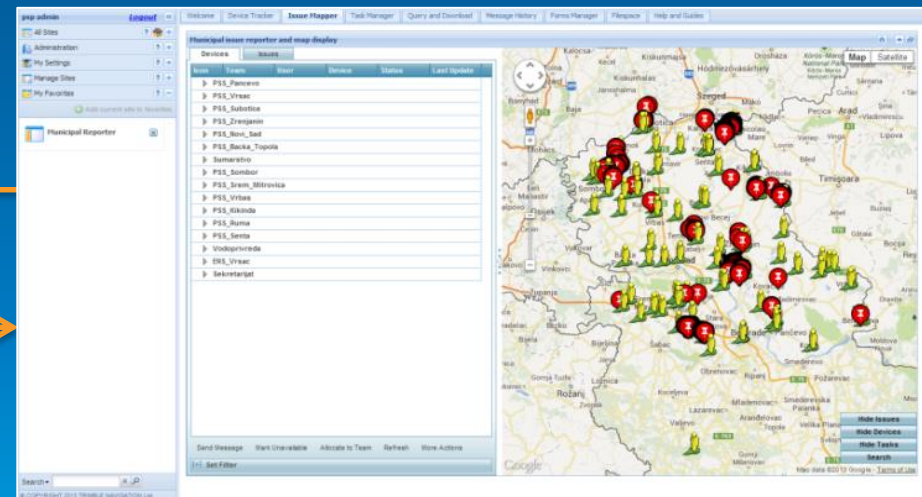
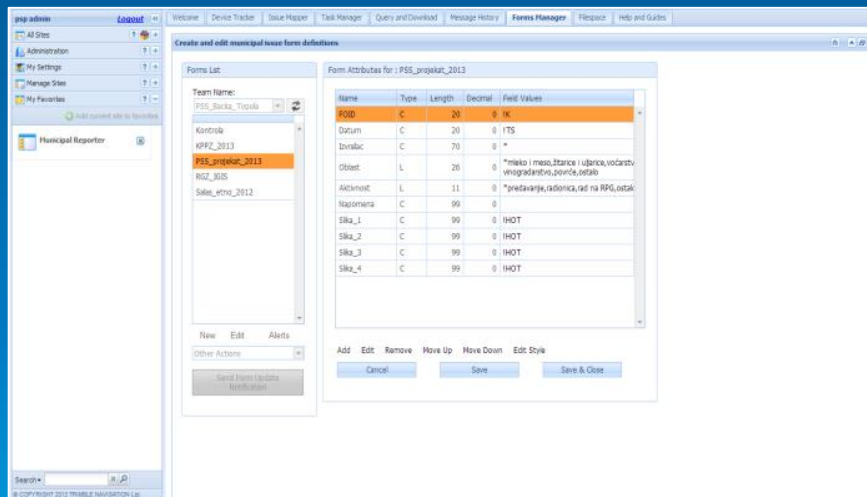
Reporting System - Components

1. Trimble GPS data collectors Juno 3D ana Juno SC
2. Trimble Municipal Reporter field software
3. Trimble Municipal Reporter WEB service
4. ArcGIS platform
5. GDi LOCALIS Visios



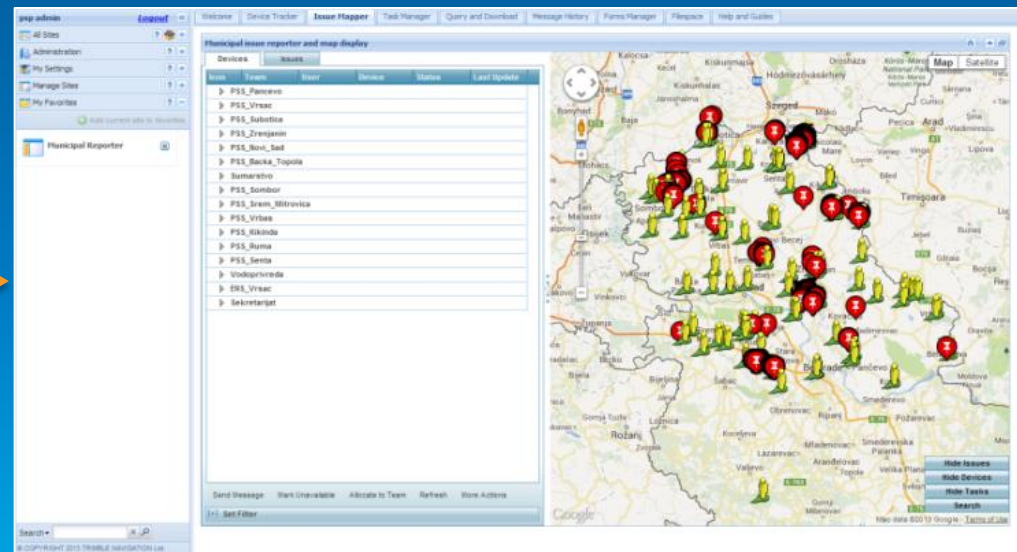
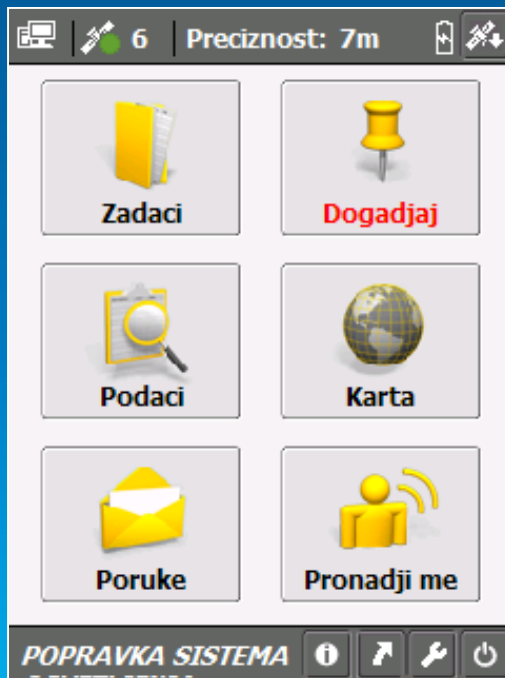
Reporting System - Workflow

1. Administrator creates specific data entry web form for each work group in the field.
2. Synchronization of Trimble MR field software with Trimble MR internet service makes a form available on field operator's GPS device for data entry.



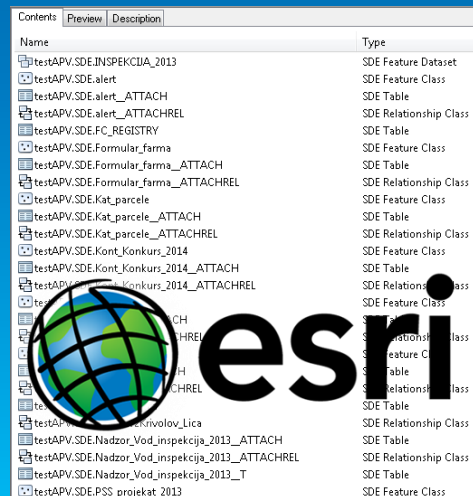
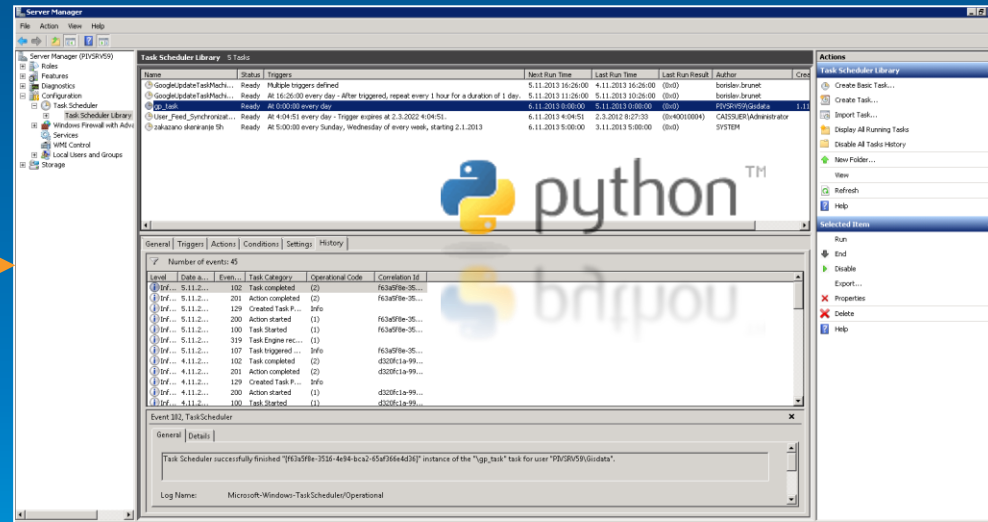
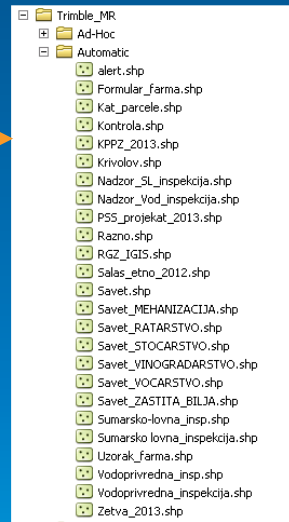
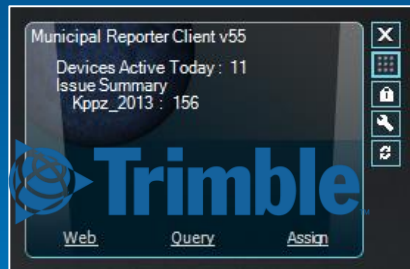
Reporting System - Workflow

3. An operator collects data about geographic position of the specific feature, fills the web form with attribute data and captures the photo of the feature.
4. These data become available to administrator via Trimble MR web service in real time.



Reporting System - Workflow

4. Data are automatically downloaded from Trimble MR web service in .shp format.
5. Python scripts perform conversion and storing data in Esri ArcSDE enterprise geodatabase. Each form created using MR web service becomes a feature class in geodatabase.



Reporting System - Workflow

6. Data are automatically published as Esri map service using python scripts. Using customized web GIS application GDi LOCALIS Visios, map service is published for public use or to be used by authorized users

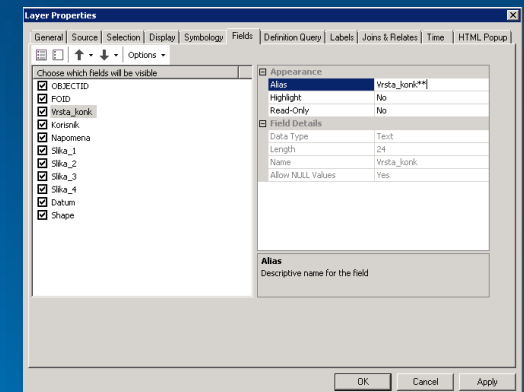


Reporting System – System Configuration

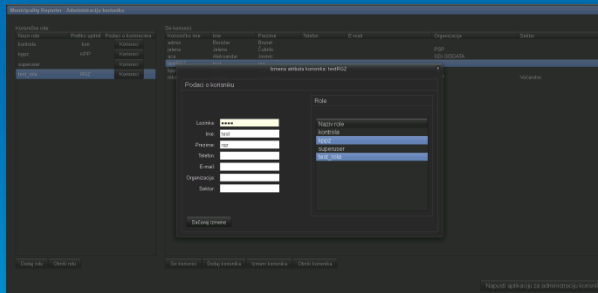
It is possible to define how data is searchable and displayed in the Reporting System.

It is possible to define:

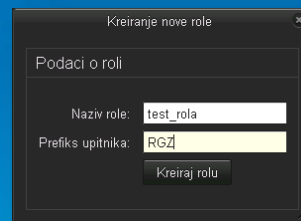
- User roles and privileges
- Search by unique values (domain field)
- Search by range (range field)
- Search by date (date field)
- A set of fields that are not intended to search
- A set of fields that are not shown in the search results
- A set of fields that are not shown in the identification of objects



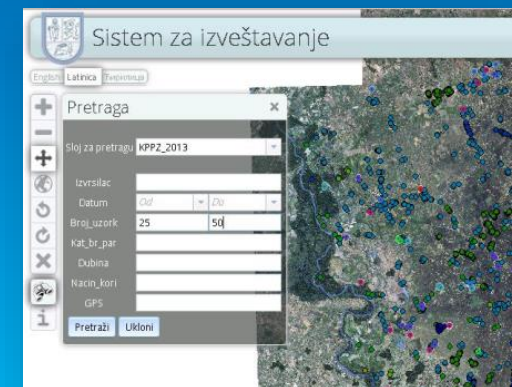
The Suffix is added to the Alias field



Users management application



Roles for data access privileges



Search form in web application

Examples

Example 1: Control of agricultural Extension services

The screenshot displays a web-based GIS application titled "Reporting system". The main view is an aerial photograph of a rural area with a river, overlaid with several orange circles and colored points (green, pink, yellow). The interface includes several panels and toolbars:

- Top Bar:** Contains navigation and utility links: "Table of content", "Base maps", "Measure", "Paint", "Spatial selection", "Print", "Support", "User's manual", "About", and "Logout".
- Search Panel (Left):** A search layer is set to "RS_Ratar_2014". It features a list of search criteria with dropdown menus and "From" to "To" date pickers:
 - PSS
 - Datum
 - Izvršilac
 - Na tački
 - Udaljen (m)
 - Udaljen (smjer)
 - Nagib (stepen)
 - Klasa
 - Podklasa
 - Posejlanost
 - Nicanje
 - Nicanje (cm)
 - Nagli porast
 - Završen porast
 - Visina bilj (cm)
 - Suvi listovi (%)
 - Biomasa
 - Prinos (kg/m²)
 - Navodnjavanje
 - Zemljište
 - Napomena
 - GPS
- Table of Content Panel (Right):** Lists the following layers:
 - Slojevi
 - KPPZ (2013)
 - PSS projekat (2013)
 - RGZ-IGIS (2013)
 - Salaš-etno (2012)
 - Krivolov
 - Zetva_2013
 - Uzorak_farma
 - RS_Ratar_2014
 - RS_Vocar_2014
 - RS_Ostalo_2014
 - PSU tačka
 - PSU krug
 - PSS ADU
- Basemaps Panel (Bottom Right):** Shows four map thumbnails for different basemap styles.
- Toolbars (Top Right):** Includes "Coordinates", "Length", "Freehand length", "Area", "Freehand area", "Go to XY", "Shape" (set to Point), "Color" (set to Yellow), "Draw", "Within", "Intersects", "Layers" (set to RS_Ratar_2014), and "Polygon" / "Freehand polygon".



Examples

Example 2: Control of fertility of arable land

Reporting system

Table of content | Base maps | Measure | Paint | Spatial selection | Print | Support | User's manual | About | Logout

English | Slovenian | Croatian | Serbian

Coordinates | Length | Freehand length | Area | Freehand area | Go to XY

Shape Point | Color Yellow | Draw

Layers: KPPZ (2013) | Polygon | Freehand polygon

Search

Search layer: KPPZ (2013)

Datum: 13.08.2013

Izvršilac:

Broj uzorka: From To

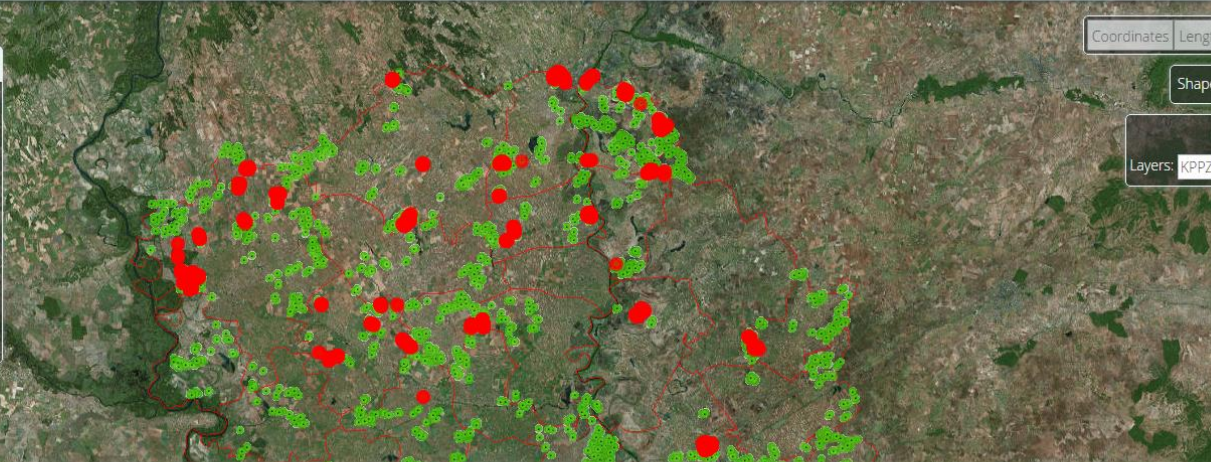
Kat. br. parcele:

Dubina:

Način korišćenja:

GPS:

Search Clear



Results

Results	Datum	Izvršilac	Broj uzorka	Kat. br. parcele	Dubina	Način korišćenja	GPS
	23/10/2013	PSS_KI_3	1		0-30	Oranica	1.2/7/1/10.42
	23/10/2013	PSS_KI_3	2		0-30	Oranica	1.0/9/2/3.19
	23/10/2013	PSS_ZR_10	1		0-30	Oranica	
	24/10/2013	PSS_VRS_5	23	655	0-30	Oranica	3.4/4/1/17.03
	24/10/2013	PSS_VRS_5	2545	fds	0-30	Oranica	2.8/5/1/18.08
	24/10/2013	PSS_SM_1	1		0-30	Oranica	PEN
	23/10/2013	PSS_VRS_6	1		0-30	Oranica	1.4/8/2/2.67
	23/10/2013	PSS_VRS_6	2		0-30	Oranica	1.2/9/1/5.92
	23/10/2013	PSS_VRS_6	3		0-30	Oranica	1.2/9/2/3.33
	24/10/2013	PSS_SM_1	2		0-30	Oranica	1.2/7/2/3.49

1 - 10 of 2000 results

Table of content

- Salas-etno (2012)
- Krivolov
- Zetva_2013
- Uzorak_farma
- RS_Ratar_2014
- RS_Vocar_2014
- RS_Ostalo_2014
- PSU tačka
- PSU krug
- PSS APV
- Naselja (Corine)
- Navigacija
- Katastarske opštine
- Politicke opštine

Scale 1:155581



Examples

Example 3: Control and transparency of financial resources that the Secretariat placed through competition

Tenders

English Latinnica Српски

Search

Search layer: Konkursi (2014)

PSS: _____ Datum: From To: _____ Vreme: _____ Izvršilac: _____ Korisnik: _____ BPG: _____ Kat. parcela: _____ Konkurs: Protivgradna mreža Aktivnost: _____ Nulta kontrola: _____ Vrsta projekta: _____ Faza projekta: _____ Proiz. funkcija: _____ Napomena: _____ Odebrano: _____

Results

Results	PSS	Datum	Vreme	Izvršilac	Korisnik	BPG	Kat. parcela	Konkurs	Aktivnost	Nulta kontrola	Vrsta projekta	Faza projekta	Proiz. funkcija	Napomena	Odobreno	Iznos	GPS
	PSS_SU_6	09/04/2014	09:55:15	Nikola Ostrogonač	Mirjana Nimcevic	0		Protivgradna mreža	Mreža sa naslonom	Da	Izgradnja	Nisu započeti radovi	Da				0,8/9/1/5,85
	PSS_SM_5	10/04/2014	10:59:40	Senka Miskovic	Milan Zivkovic	80416900000	12083/1 i 12083/3	Protivgradna mreža	Mreža sa naslonom	Da							1,4/8/1/6,74
	PSS_VS_7	11/04/2014	12:11:34	Katarina Radonic	Sergej Vujcic	0		Protivgradna mreža	Mreža sa naslonom	Da							3,8/5/1/16,79
	PSS_RU_5	14/04/2014	08:44:02	Ugljesa Trkulja	Donnera	80363401000	8156	Protivgradna mreža	Mreža sa naslonom	Ne	Oprema	Završetak radova	Da	završena investicija			1,6/6/1/9,29
	PSS_SM_2	14/04/2014	12:14:55	VLADIMIR MARIC	MANOJLOVIC BRANKO	0		Protivgradna mreža	Mreža sa naslonom	Da	Oprema	Nisu započeti radovi	Da				1,2/8/2/3,05
	PSS_SM_1	14/04/2014	14:24:45	Mirjana Tojagic	carubdzic brantlav	80416000000		Protivgradna mreža	Mreža sa naslonom	Ne	Oprema	Započeti radovi	Da	Protivgradna mreža			0,8/10/1/7,71
	PSS_NS_11	12/04/2014	13:44:35	Tatomir	RELJA KURJACKI	0	2469 2470,2468,24	Protivgradna mreža	Mreža sa naslonom	Da	Izgradnja	Započeti radovi	Da	NOSECI STUBOVI			1,0/8/1/7,18
	PSS_NS_12	15/04/2014	09:29:33	Goran Jurina	Milka Princip	80468101000	7922	Protivgradna mreža	Mreža sa naslonom	Da	Oprema	Kontrola u toku radova	Da	Podignuti stubovi			1,0/8/2/2,70

1 - 10 of 140 results

Scale: 1:577791

Photos (1 out of 4)

Table of content

- [x] Konkursi
 - + [x] Konkursi (2014)
 - + [] Konkursi (2013)
 - + [] Salaš-etno (2012)
- + [] Administrativne-jedinice
- + [] Satelit Rapid Eye, 5m (2013)
- + [] Satelit SPOT 5, 2.5m (2011)
- + [x] Satelit Esri ArcGIS Online
- + [] Ulična mreža Esri ArcGIS Online



Examples

Example 4: Control of inspection services - Water Management

The screenshot displays a GIS application interface for water management inspection services. The main map area shows an aerial view of a river system with several inspection points marked by green dots and labeled with IDs: D.09, D18.04, D18.05, and D.10. A pop-up window titled "Vodoprivredna inspekcija 2014" is open, showing a photo of a pipe installation with the text "(2 out of 3)". The interface includes a top toolbar with various icons, a left sidebar with navigation tools, and a right sidebar with a "Layers" panel and a "Table of content" panel. The "Table of content" panel lists several layers, including "Inspekcija", "Administrativne-jednice", "Hidrologija-VodeVojvodine", "Lovišta", "Satelit Rapid Eye, 5m (2013)", "Satelit SPOT 5, 2.5m (2011)", "Satelit Esri ArcGIS Online", and "Ulična mreža Esri". The scale is indicated as 1:18056.

Inspection

English Latinica Cyrillica

Layers: All

Vodoprivredna inspekcija 2014

Results

Photos

(2 out of 3)

Table of content

- Inspekcija
 - + Vodoprivredna inspekcija
 - + Šumarsko-lovna inspekcija
- + Administrativne-jednice
- + Hidrologija-VodeVojvodine
- + Lovišta
- Satelit Rapid Eye, 5m (2013)
- Satelit SPOT 5, 2.5m (2011)
- + Satelit Esri ArcGIS Online
- + Ulična mreža Esri

Scale: 1:18056



Examples

Example 5: Control of inspection services - Forestry & Hunting

The screenshot displays a GIS web application interface. At the top, a header bar contains the word "Inspection" and a logo on the left. The main area is a satellite map of a rural landscape with a river and agricultural fields. Numerous green circular markers are scattered across the map, indicating inspection points. A central pop-up window titled "Šumarsko-lovna inspekcija 2013" is open, showing a "Results" tab with a photograph of a forest scene and the text "(1 out of 3)". On the right side, a "Table of content" panel is visible, listing various layers and their visibility status:

- Inspekcija
 - Vodoprivredna inspekcija
 - Šumarsko-lovna inspekcija
 - Šumarsko-lovna inspekcija 2014
 - Šumarsko-lovna inspekcija 2013
- Administrativne-jedinice
- Hidrologija-VodeVajvodine
- Lovišta
- Satelit Rapid Eye, 5m (2013)
- Satelit SPOT 5, 2.5m (2011)

The bottom right corner shows a scale of 1:144448 and a link icon.



Examples

Example 6: Hunting grounds on the territory of APV

Hunting grounds in Autonomous Province of Vojvodina

Search

Search layer: Lovišta

Naziv lovišta
Broj lovišta
Oznaka lovišta
Namena lovišta (vrsta)
Tip lovišta
Ukupna površina lovišta (ha): from to
Korisnik
Opština
Vrsta korisnika
Naziv
Mesto
Adresa korisnika (ulica i k.br.)
Poštanski broj
Ovlašćeno lice
Matični broj
Poreski identifikacioni broj PIB

Search Clear

Shape: Point Color: Yellow Draw

Layers: Lovišta

Table of content

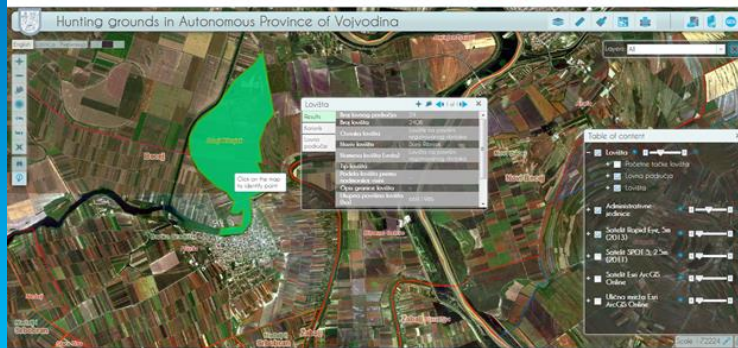
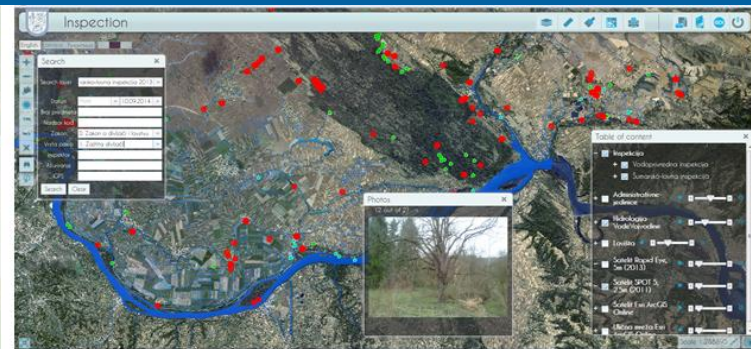
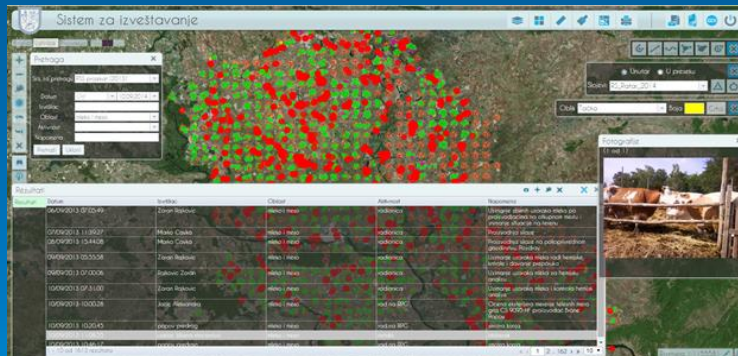
- Lovišta
 - + Početne tačke lovišta
 - + Lovna područja
 - + Lovišta
- + Administrativne-jednice
- + Satelit Rapid Eye, 5m (2013)
- + Satelit SPOT 5, 2.5m (2011)
- + Satelit Esri ArcGIS Online
- + Ulična mreža Esri ArcGIS Online

Scale: 1:115558



Benefits

- System enables sharing of information not only internally but also between government and consumer
- The implementation of the system solved the problem of unavailability of up-to-date data from the field
- Enhanced control of extended services and inspection services.
- Data are available in near real time, which helps incident detection and timely reaction to changes





Than you for your attention!

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