GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Ministry of Agriculture and Environmental Protection of the Republic of Serbia

Food and Agriculture Organization of the United Nations

Contribution of Sustainable Forest Management to a Low Emission and Resilient Development (GCP/SRB/003/GFF)

Forest Information System Development

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FIS will contain detailed information

- for about 35% of the area of the Republic of Serbia.
- not exclusively related to forests and forestry because of multifunctional character of forests

Forest is not simply a group of trees, it is a complex ecosystem.

Current status of FI management in the forest sector of Serbia

The listed sources of information are used in the overall process of planning and forest management:

- National forest inventory (NFI)
- Stand inventory, Stand description
- Stand level plan (for “Management units” for 10 year period)
- Annual planning (at stand level)
- Actual implementation of annual plans
- Controlling/evaluation of measures from the previous period

Current results and shortcomings:

- Large data sets of diverse information on forests.
- Different databases, dedicated applications, use/non-use of GIS, GPS...
- Some data are standardized in to regular level
- Various rules and code books have been established
- Data & information are not consolidated in centralized FIS at national level
- Information on non forestry-related activities is insufficient
- Forest information is not sufficiently available to the public

GEF/SRB/002/GFF – Project outcome 1.1

Expected effects of an Integrated Forest Information System (FIS)

1. Consolidated information in one central Forest Information System.

2. Broader set of available information, specifically in relation to multifunctionality of forests
   (biodiversity, climate changes, carbon sequestration, land use, soil, water ..).

3. Availability of tailored information for
   - the forest sector (for decision makers, operational management and control)
   - other sectors and institutions (eg. Nature protection, statistic, ..)
   - the public (aggregated information on forests)

4. Fulfillment of legal obligation for establishing FIS.

Existing data gaps from a Biodiversity and Climate Change Mitigation point of view

Requirements for the information

MCPFE C&I, "Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems", requires the following indicators:

- Tree species composition
- Regeneration
- Naturalness
- Introduced tree species
- Deadwood
- Genetic resources
- Landscape pattern
- Threatened forest species
- Protected forests

Needs for improvement of existing information

- Extend code book(lists) for biodiversity, threatened, rare, indicatory, invasive and other species.
- The presence of dead wood in forests.
- Carbon sequestration potentials.
- Non-wood forest products.
- Important habitats for wildlife.
- The impact of climate change on forest ecosystems (new indicators)

Information could be provided through:

- *National forest inventory*
- *Stand inventory*
- *Preparation of annual plans*
- *Regular and temporary monitoring*

stored within the central database

Subsystem forest protection

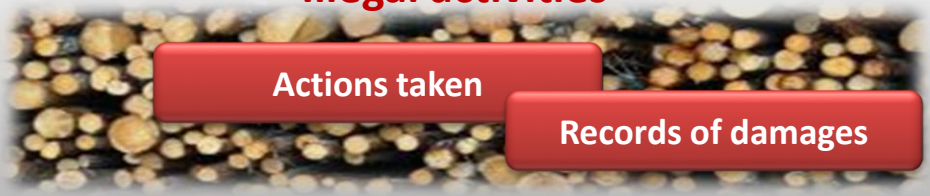
Forest fires

- Infrastructure
- Forecast
- Field activities in case of fire
- Rehabilitation of burned area

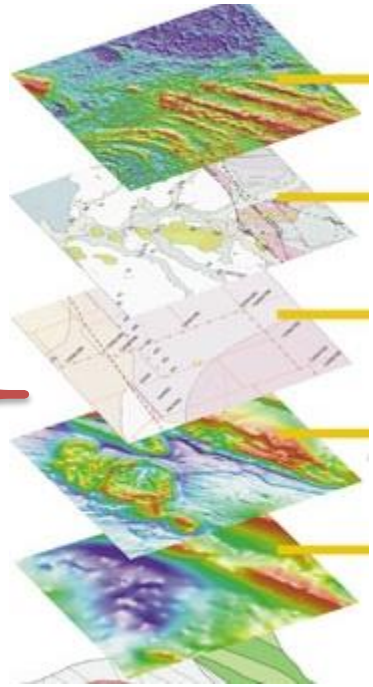
Forest disease

- Service for prognosis
- Repressive measures

Illegal activities



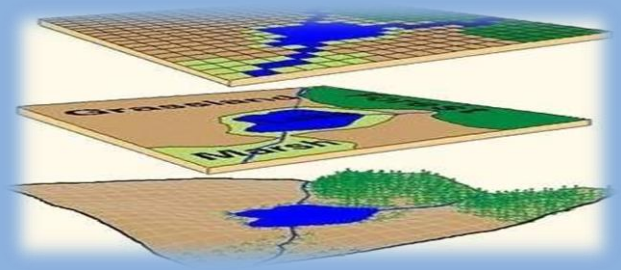
- Actions taken
- Records of damages



Subsystem of forest seed and seedlings production

Forest Seed and seedlings material

Regions of provinces



Seed stands

Fructifications

Seed collection

Distribution

- Requested by Law

Nurseries

Production health control

Seedlings market

Needs for afforestation

Publicly available information for the needs of state and private sectors.

Subsystem Funding from budget of RS

Subsidies from the forestry budget
Information to the public

Tenders
For the public

Contracting
For internal use

Acceptance of works
Published list of recipient of subsidies

Reports
Internal
For public

Remote sensing information as auxiliary tool

Detection of logging activities and clearcutting,
Mapping of burnt forest areas, monitoring of Forest disease

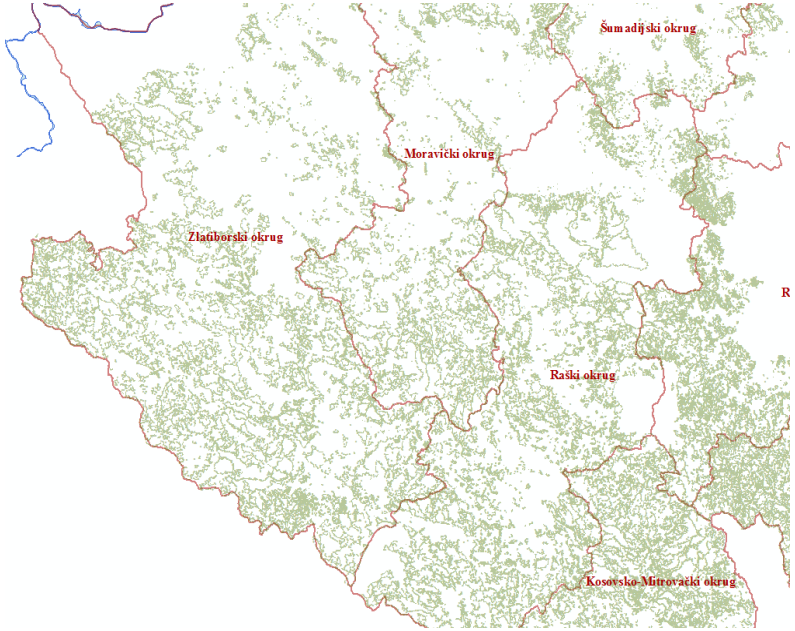
Forestry sector has lack technological capacities and expertise for generating such information in an operational manner.

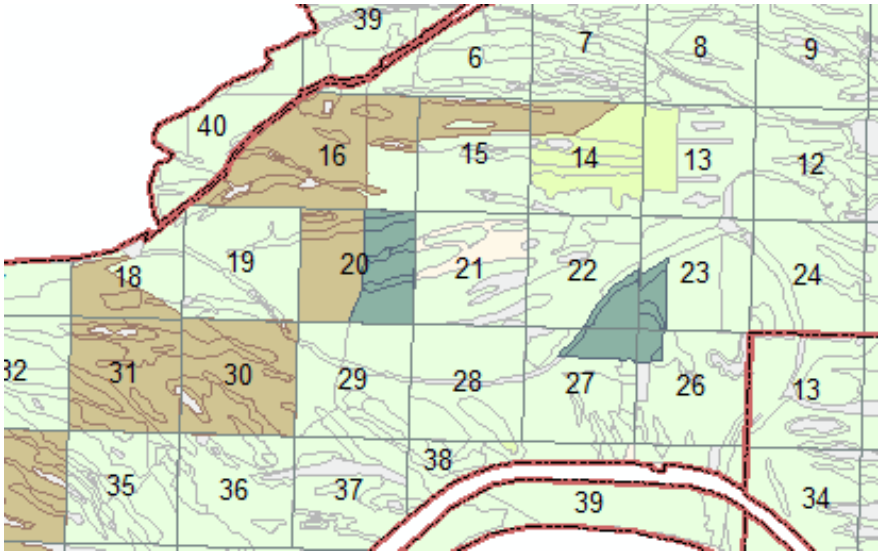
The solution can be in establishing cooperation with some state institutions that possess knowledge and infrastructure to operationally provides the data products to the FIS.

The example is OSGL laboratory at the Faculty of civil-engineering in Belgrade that has already built the capacities through the EU funded APOLLO project aimed at providing farmers information derived from satellite data.

Spatial (GIS) information from forestry sector - FIS GeoDatabase

Forestry GIS, in responsibility of Forest administration
Maps of stands, forest types, thematic, inventory, NFI, biodiversity maps…

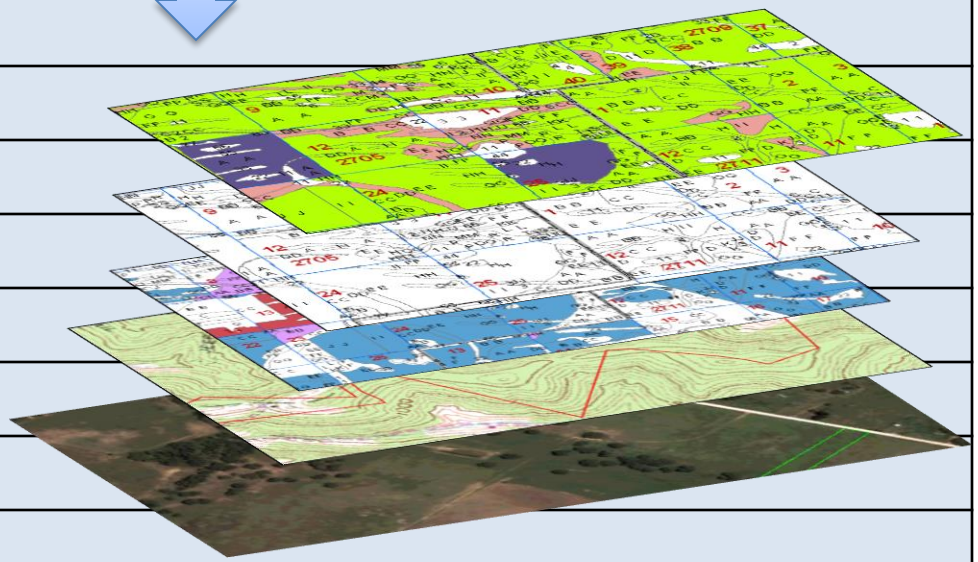




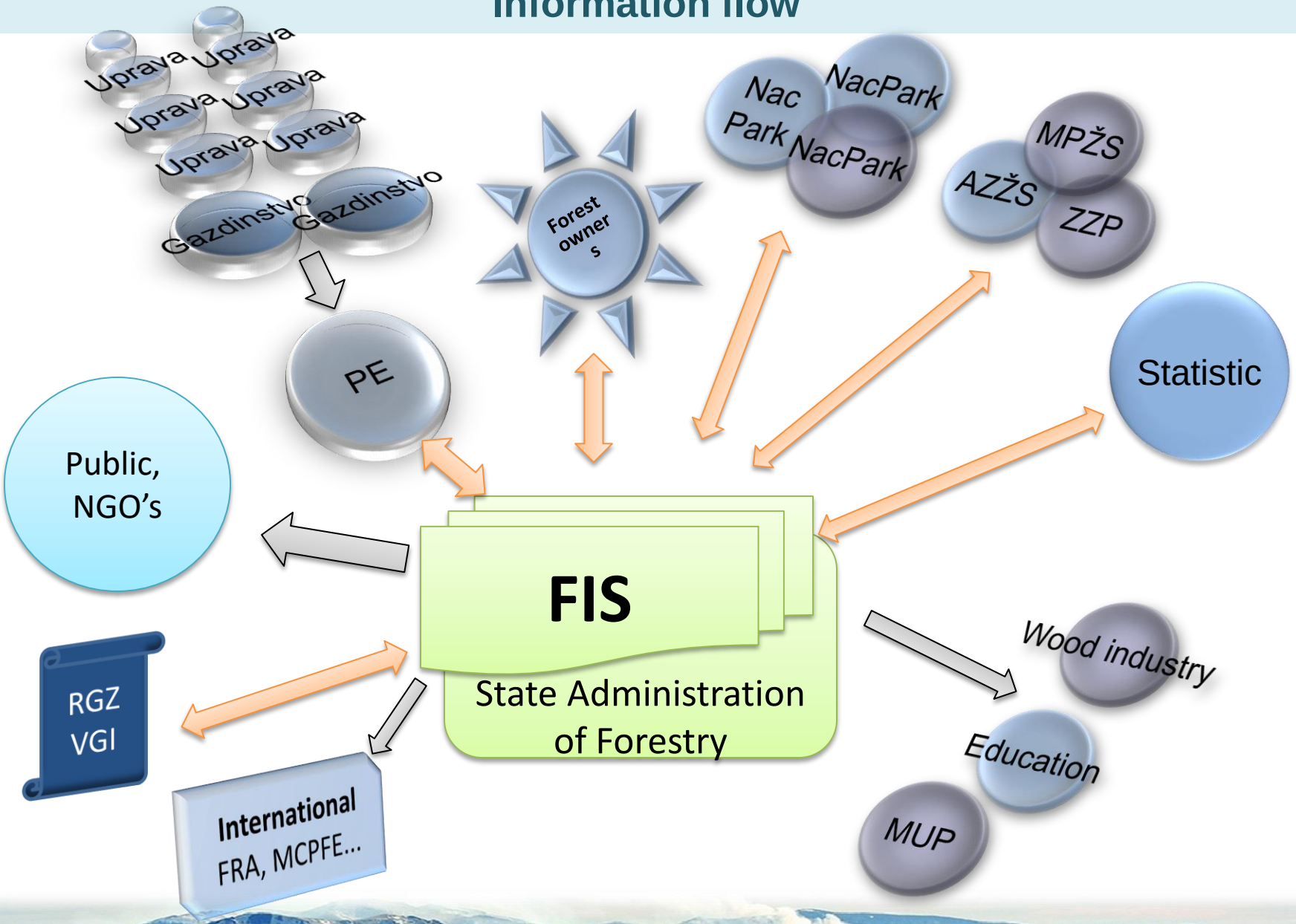
Spatial data from other sources

Register of forest lands							
Detailed data for forest parcels							
Documentation of property							
Lease of land							

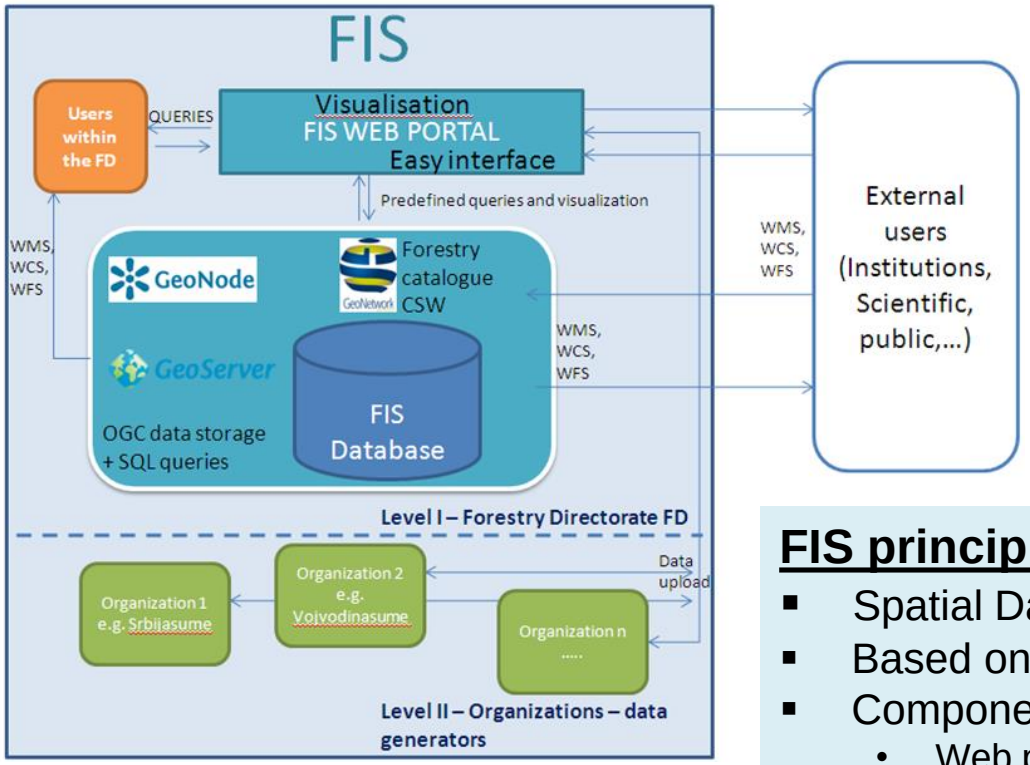
Topographical maps
Spatial plans
Orto-foto
Satellite images
Pedological an geo.maps
Vegetation maps
Water resources
Digital cadastral plans (maps)



Information flow



FIS design



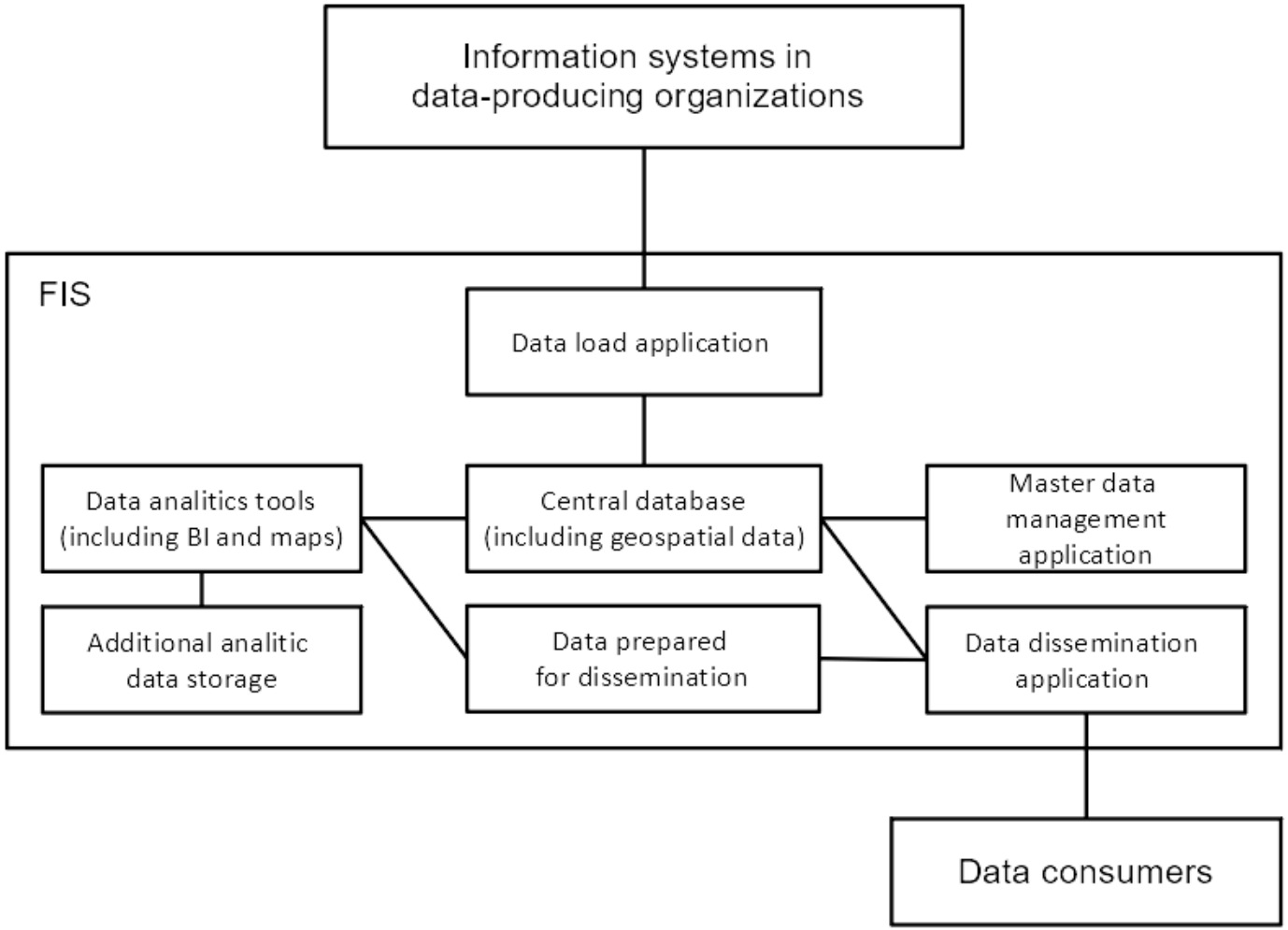
Organization of FIS

- Level I – Forestry directorate
- Level II – Institutions as data generators (i.e. Srbijasume, Vojvodinasume, etc.)
- External users/data providers

FIS principles

- Spatial Data Infrastructure (SDI) Platform
- Based on INSPIRE principles
- Components:
  - Web portal;
  - Catalogue (metadata);
  - Services (data processing, data delivery,..);
  - Repository (database)
- Agreed standards
- Open Source technology – recommended

The general architecture of FIS



The general architecture of FIS

- Each institution develops and maintains their information system and uploads contributed data sets to the central FIS
- Data load application offers web user interface and/or web services interface for upload/entry/update of appropriate data in prescribed formats
- All loaded data are stored in the central database
- Master data management application is used by the Forest Administration to manage master data set (a common data set that is referenced from other data sets including GIS data on spatial entities)
- Data analytic tools (BI tools with data visualisation on maps) are used to analyse data and to prepare data for dissemination
- Data dissemination application enables all relevant parties appropriate level of access to data through a web user interface

“Ultimately forestry is not about trees,
it is about people;
it is about what people want from forest”
(Westoby, 1987)

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