



# LIFEDATA - POLICY BRIEF

## KNOWLEDGE BASED DATA SERVICES - IMPROVING THE LIFE CYCLE AND ACCESSIBILITY OF ENVIRONMENTAL DATA PROVIDED FOR PUBLIC INTEREST

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*The Natural Resources Institute (Luke) as well as the Finnish Environment Institute (SYKE) are focused on producing essential environmental information that is openly accessible, easy to use and easily to be combined with new datasets. In order to meet this goal, the LifeData project has focused on offering our data easily via appropriate user interfaces. The LifeData-project (2011-2015 LIFE10 ENV/FI/000063) has rationalized the use of the collected data to bridge the gap between data/ information producers and users. As a result we have implemented several knowledge-based data services and improved the life cycle and accessibility of environmental data. The services are described in the following in greater detail. This policy brief lists the main findings of the project.*

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### CUSTOMER NEEDS

The results of the LifeData project are based on a customer analysis carried out at the very beginning of the project. Our customers need reliable data and summarized information, quickly and flexibly to use. This served as our guiding principle when services were developed and implemented.

## DATA ARCHITECTURE AND MODELLING

The description of the data architecture gave the overall picture of the data sources and the data managing processes. Databases were developed to be easily combined by the interfaces. This allowed us to develop the data sources as a one functional system.

## DATA SEARCHING SYSTEM

The aim was to simplify the finding and usage of open environmental data repositories, which has been now accomplished. The metadata portal with appropriate key words using the ontology approach turned to be effective combination for data searching activities.

- A sufficient data searching system requires proper metadata descriptions such that the data is easy to find and use. A metadata service will likely be the first information about the dataset for a data user. Properly described data allows the data users to use the digitalized information even after several decades.
- Research Data Descriptions should include research data descriptions, which define the title of the data set, summary, purpose, keywords etc. It is also important to provide the descriptions of the temporal and geographic data coverage. In addition to these, the contact information of a data set guides the data user to the source of the data itself.
- The service needs to be easy to use when publishing and updating the data descriptions. The service then takes care of the maintenance and retrieval of the data descriptions.
- It is important that the system can compile the data between the organizations by the interface. The data sets of Luke and the geographic information, remote sensing datasets and information system descriptions of SYKE are available in a standard form by one mutual service.
- Data recycling enables us to use the existing data sources to increase research capacity. Research data is highly valuable for re-use; recycling of research data creates a cost-effective impact to already collected and once used data.
- Using the ontologies as a basis for the search interface, we create new possibilities to present information for the users.

## THE DATA BASES AND THEIR USER INTERFACES

The research data and observations need a proper and data sensitive data base, which can be developed further for future purposes. The data needs high quality maintaining in the data bases by the data managing experts. The data can be conducted easily to the user interfaces or to the other data managing systems by operational interfaces between the data bases.

**DataPuu, Forest Data Service** enables efficient using, storing, and reusing of large long term data sets that can be flexibly utilized in the research.

- DataPuu automates manual working routines. It enables saving the data so that it is consistently available for various research purposes. The service also enables collecting and transferring data from the field computers into the database and runs automatically the calculation work.

- The system should allow the integration between the database and various analyzing tools. By the DataPuu the user can search specific topics and view the data with the help of different graphs and download data found for further study with other analysis systems e.g. R and SAS. Data of DataPuu can be used by the MOTTI -simulation system, which enables future predictions of stand development. Similar integrations and data transfers can be made according to different needs. All these integrated tools and functionality make DataPuu a comprehensive system for forest research that is not comparable to anything else that has been in place previously.
- With the help of the service it is much easier to combine data sets that have been collected for various purposes, and easily complement them with new measurements.
- Researchers are able to set novel research questions, and get answers to those quickly, as the data sets are readily available.
- The service is internally available for the researchers in Luke. With help of this system, researchers can produce more efficiently new services for customers. The working methods of the research tasks will be changed and simplified in terms of the data processing.

**The internet service Riistakolmiot.fi** has substantially reshaped the monitoring of forest game species. Voluntary game experts i.e. hunters and skilled outdoors people can now record their observations via an internet online service directly to the data base. In the past while the data were transferred via ordinary mail and then the reports were calculated by the more manual manner for the data users. Since 2014 internet service possibilities have been open to everyone to rapidly collect and offer the game observations and other information for customer use.

- The citizen science approach offer efficient data collecting method and allows the data users to take apart to the data gathering process and affect to the data repertoire of the service. This motivates the data collectors to use and develop further the service to be even more effective.
- The internet service speeds up the collection of observations, simplifies the storing of data and assists in the creation, computing and delivering of the reports. Game experts can follow the updates of the counting procedure during the field-work period and search for information of their own triangle and past results. In addition, everyone can keep track of the progress of the ongoing counts via internet.
- The system needs to offer quickly the online data from forests to the end users. The novel riistakolmiot.fi website has been greeted to operate smoothly and rapidly. Approximately 80% of the observations during the late-summer 2015 were sent via internet. Based on the feedback, about 90% of respondents (120 altogether) shared the opinion that the service works very easily or easily.

**The Value tool** delineates catchments for any river segment or lake in the river network on a map. The tool demonstrates the benefits of data sharing, and gives added value to environmental and natural resource datasets.

- There is a clear need of map applications and other tools for experts and researchers to view different datasets with each other.
- Catchment land cover/land use statistics answers versatile questions concerning environment and natural resources.
- Opening new map services adds the use and usability of tools like Value

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*On-line services produced in LifeData:*

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[RIISTAKOLMIOT.FI](#) TO SERVE INFORMATION TO GAME ADMINISTRATION, HUNTERS AND WIDER PUBLIC

[VALUE](#) TO DELINEATE CATCHMENTS

[SYKE METADATA PORTAL](#), THE METADATA SERVICE OF SYKE

[RADAR](#) TO DESCRIBE RESEARCH DATA

[DATAPUU](#) TO STORE RESEARCH DATA AND ENLARGE ITS REUSE FOR RESEARCH USE IN THE LUKE

