



From Geoportal to Spatial Data Service Platform

Jani Kylmäaho

National Land Survey of Finland

Development Centre

3.9.2012



NATIONAL LAND SURVEY OF FINLAND

Introduction

- **National Land Survey of Finland - 1900 employees**
- **Development Centre - 120 employees**
- **SDI Team - 8 employees**
- **Authors**
 - *Jani Kylmäaho, Product Owner, SD Service Platform*
 - *Antti Rainio, Team Leader, SDI team*



Finnish Reference Architecture for SDI Services

- Description of how to achieve interoperability of Geographic Information systems, services and content
- Based on European INSPIRE legislation and international standards



Finnish public sector reference architecture for SDI services

Geographical Information Systems

Portals and clients

Interoperable components / Mashups

APPLICATION LAYER

Spatial data service bus

**Spatial Data
Service Platforms**

Federation security

AUTHENTICATION &

Rights management

AUTHORISATION LAYERS

Support
services

Licence
services

Metadata
Services

CSW

Content
Services

WMS
WMTS
WFS
WCS

Trans-
formation
services

Analysis
services

WPS

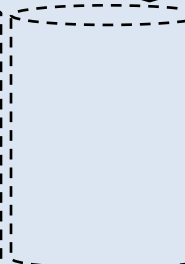
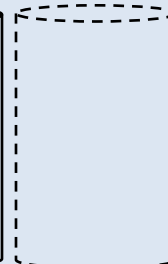
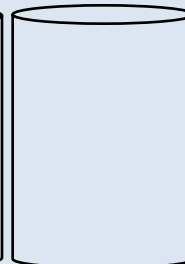
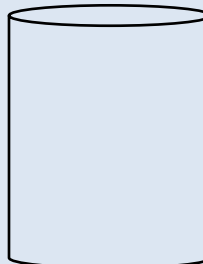
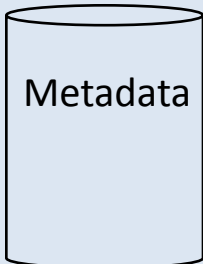
Portrayal
services

Storage
services

Software
services

SaaS

SERVICE LAYER



DATA LAYER

Finnish Reference Architecture for SDI Services

- Consists of five main layers:
 - *Content layer*
 - *Service layer*
 - *Authorisation layer*
 - *Authentication layer*
 - *Application layer*
- The SD Service Platform binds the five layers together
 - *Enables users to publish content through **standardised services** securely into any web applications or portals*



Finnish Reference Architecture for SDI Services

Individual datasets and systems



Spatial Data Infrastructure **SDI**

(**Inspire** services and content made available)

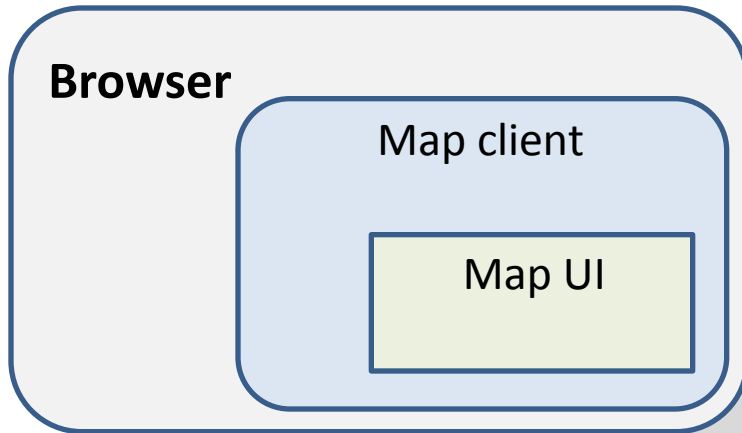


Spatial Data and Services **Ecosystem**

public sector provides basic infrastructure,
infrastructure is complemented and extended by
private sector and collaboration



Layers of SDS platform functionality



VaaS, Visualisation as a Service

AaaS, Analysis as a Service

DaaS, Data as a Service

SaaS, Software as a Service

PaaS, Platform as a Service

IaaS, Infrastructure as a Service



Spatial Data Service Platforms

- Spatial Data Service Platforms...
 - ...enable efficient browser-based utilisation
 - ...of spatial data and services
 - ...through the web
 - ...as cloud services

 Google maps

**Portal for ArcGIS
/ ArcGIS Online**

 GeoNode

opengeoportal



National geoportal

About 3000 daily users, about 5000 registered users
Embedded maps / Service platform , My places -beta
> 20 data providers, > 200 map layers

The screenshot displays the National Geoportal interface. At the top, there are navigation links for 'Suomeksi | på Svenska | in English' and 'Antti Rainio | Sign Out'. The main header features the logo 'Paikkatietoikkuna' and a search bar. Below the header, there are navigation tabs: 'FRONTPAGE', 'GEODATA SEARCH', 'MAP WINDOW' (which is active), 'EMBEDDED MAPS', and 'SDI IN FINLAND'.

The central part of the interface is a map of Finland, showing a topographic map with various layers. A red location pin is placed on the map. To the left of the map is a 'MAP LAYERS' panel with a search bar containing 'geo'. It lists several categories of layers: 'Elevation (2)', 'Energy resources (1)', 'Geology (17)', and 'Selected map layers'. The 'Selected map layers' section includes 'Topographic map' (set to 30%), 'Shaded relief' (set to 35%), and 'Superficial deposit...' (set to 100%).

To the right of the map is a search results table. The search bar contains 'lahti'. The table has columns for 'Name', 'Municipality', and 'Type'. The results are as follows:

Name	Municipality	Type
Lahti	Lahti	Municip...
Lahti	Evijärvi	Village,
Lahti	Kuortane	Village,
Lahti	Seinäjoki	Village,
Lahti	Somero	Village,
Lahti	Somero	Village,
Lahti	Utajärvi	Village,
Lahti	Uusikaupunki	Village,
Lahti	Vihti	Village,
Lahti	Lahti	Railway
Lahti	Alajärvi	House
Lahti	Alajärvi	House
Lahti	Alavus	House
Lahti	Alavus	House
Lahti	Alavus	House

At the bottom of the interface, there is a 'Legend' section and a 'My places BETA' section. The page number is 'Page 1 of 17'.

Open Source Geoportal



Open source code libraries

OpenLayers

jQuery, RightJS

Liferay

GeoNetwork

GeoServer, GeoWebCache

PostgreSQL, PostGIS

Linux, Apache, Tomcat



Suomeksi | på Svenska | in English Register | Sign in

Paikkatiellokuna Search...

FRONTPAGE GEODATA SEARCH MAP WINDOW EMBEDDED MAPS SDI IN FINLAND

Paikkatiellokuna – Finnish Geoportal

Paikkatiellokuna is a national portal that, with words and map pictures, presents the spatial data produced and exploited in the Finnish society.

Map window offers a possibility to browse dozens of map levels, produced by different organizations, on different themes, such as terrain, soil and land use as well as traffic network.

Paikkatiellokuna is based on open source software. You may download the source code [here](#).

Browse and combine maps in Finnish geoportal Paikkatiellokuna

Browse and combine maps in map window or make your own embedded map from various mapdata.

Welcome to Finnish geoportal!

NLS opens topographic datasets for free use (27.12.2011)

The National Land Survey will open its topographic datasets to the public on 1 May 2012 to be used freely and free of charge.

[Read more...](#)

Cartography & Geoinformatics in Finland

Posiio ICC 2011 Special Issue reports some of the progress made in Finland in the geoinformation field and gives an insight into development of spatial data infrastructure in Finland.

[Posiio ICC 2011 Special Issue \(pdf\)](#)

Open Source Map Application Framework



Haku

[Kirjaudu sisään](#) | [Asetukset](#) | [Ohjeet](#) | [Tietoja Tracista](#) | [Register](#) | [Forgot your password?](#)

Wiki

Aikajana

Tavoitteet

Näytä liput

Haku

wiki: [WikiStart](#)

[Aloitussivu](#) | [Luettelo](#) | [Historia](#)
Viimeksi muokattu 21 tuntia sitten

Developer Web Site for Oskari Map Application Framework

Oskari.org is a web site to support the development of Oskari Open Source JavaScript Map Application Framework. The Map Application framework is implemented as a collection of reusable bundles.

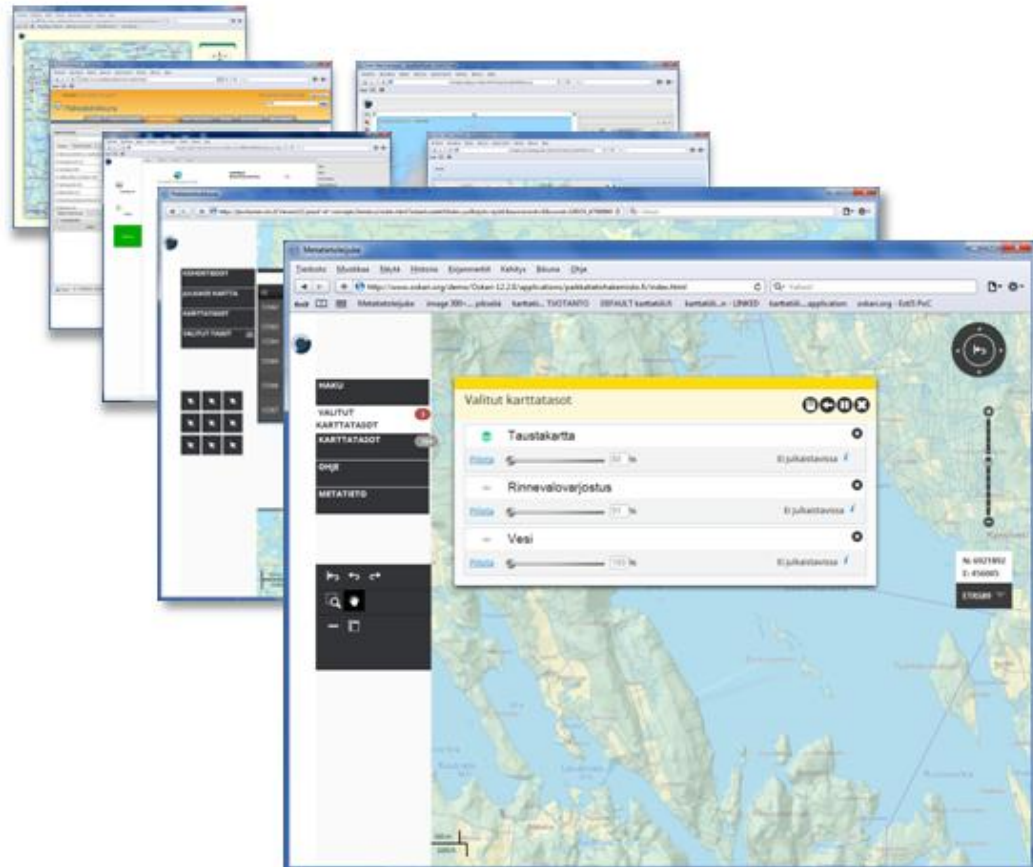
Bundles are used as uniform containers to ship and share new functionality to the application setups. Additions to existing functionality are implemented as Plugins shipped within the bundles.

Oskari version 12 provides applications with loose coupling and inter-bundle messaging with Requests and Events, configuration, application state and localization support. Loose coupling enables reusing bundles in different application setups.

Map functionality is implemented with [OpenLayers](#). The user interface components are based on [jQuery](#), [YUILibrary](#), [DOJO Toolkit](#), [RightJS](#), see Open Source JavaScript libraries for a more complete list of libraries used and to be used.

Getting started

- [Download](#)
- [Quick start](#)
- [Documentation](#)



Open Source Spatial Data Service Platform

- OSKARI



- OSKARI = **O**pen **S**ource **K**arttaikkuna (stands for Open Source map window)
 - *...but OSKARI is more than just a map window in a Geoportaal...*
- **OSKARI is the core of an Open Source based Spatial Data Service Platform – key principals:**
 - *Reuse existing OS components: e.g. OpenLayers, jQuery*
 - *All developed code is released under OS licenses (MIT/ EUPL)*
 - *Flexible architecture allows for adding functionality both on the server and client side*

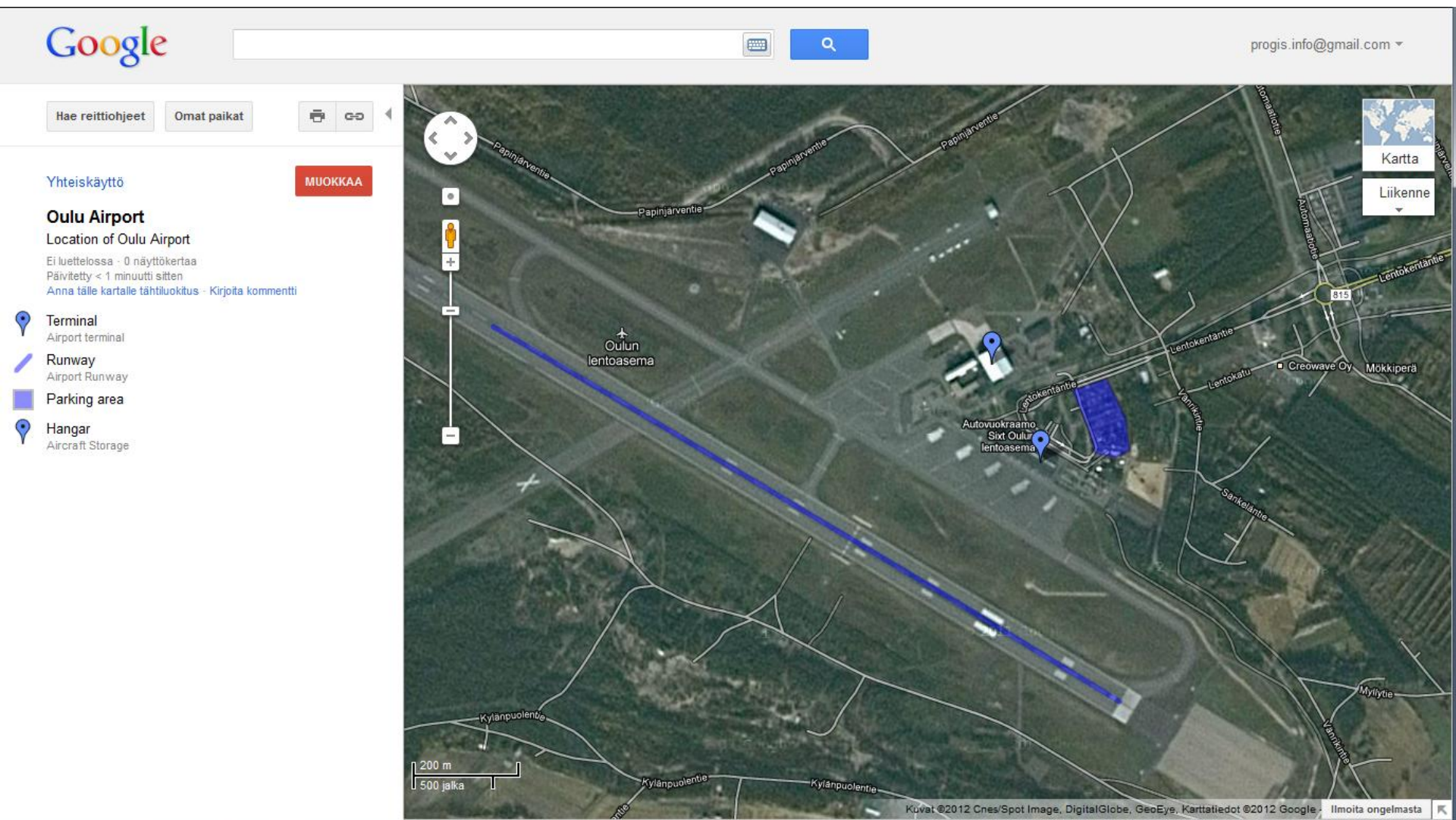


OSKARI first phase @ geoportal.fi

- Users can publish an embedded map into any common web content management system (CMS), utilizing the rich content from the Finnish SDI
- The embeddable map client has basic functionality
 - *Zooming, panning, index map*
 - *Selection of background map*
 - *Address and gazetteer search...etc.*
 - *WMS GetFeatureInfo*
- All data consumed by the map client is provided through standard INSPIRE-approved OGC interfaces (WMS/WMTS, WFS)



Google maps



ArcGIS Online

ArcGIS Oulu Airport

New Map My Content Help Sign Out

Details Add Edit Basemap Save Share Print Measure Bookmarks Find address or place



Oulu Airport

Location of the Oulu City Airport
Web Map by Janikyl
Last Modified: May 4, 2012
☆☆☆☆☆ (0 ratings, 0 comments, 2 views)

More Details...

Open this map in:
[ArcGIS Explorer Online](#)

Make your own map
[Add to this map](#)
[Make a new map](#)



SDI Service Platform

Starting points:

INSPIRE-directive

International standards (OGC, ISO)

Spatial Data Infrastructure

An Open Source Solution



OSKARI SD Service Platform @ Geoportal.fi

Suomeksi | på Svenska | in English

Jani Koo | Sign Out

A+ A-



Search...

SEARCH

FRONTPAGE

GEODATA SEARCH

MAP WINDOW

EMBEDDED MAPS

SDI IN FINLAND

Frontpage / Embedded maps

1. Select background maps

2. Select a map

3. Define map settings

4. Completed map

3. Define map settings

Preview of the map you want to define

Web site domain name (required, see Help)

geoportal.fi

Map name (required)

Oulu Airport map

Select map interface language:

in English

Map size

- Small (375x300)
- Medium (500x400)
- Large (640x512)
- Define custom size

Width

1000

Height

600

Select map interface tools

- Scale bar
- Index map
- Zoombar
- Address and place name search
- Map center marker

Map position and scale

North: 7201522 East: 423069 Scale: 9




Terms of Use

OSKARI SDI Service Platform

- The Clue:
being able to define and publish a map UI on a web page without having to write code
- Defining a simple map UI is possible **within a few minutes**;
defining a more complex map UI can take tens of minutes or hours
=> multifold increase in productivity as compared to traditional ways of publishing a map UI
- **Rich Inspire data content available for publishing**



Example: City of Tampere voting districts

Tampereen kaupunkiTekstiversio | In EnglishHae

Tarkennettu haku >

Etusivu Palveluhakemisto Yhteystiedot Tampere-info RSS

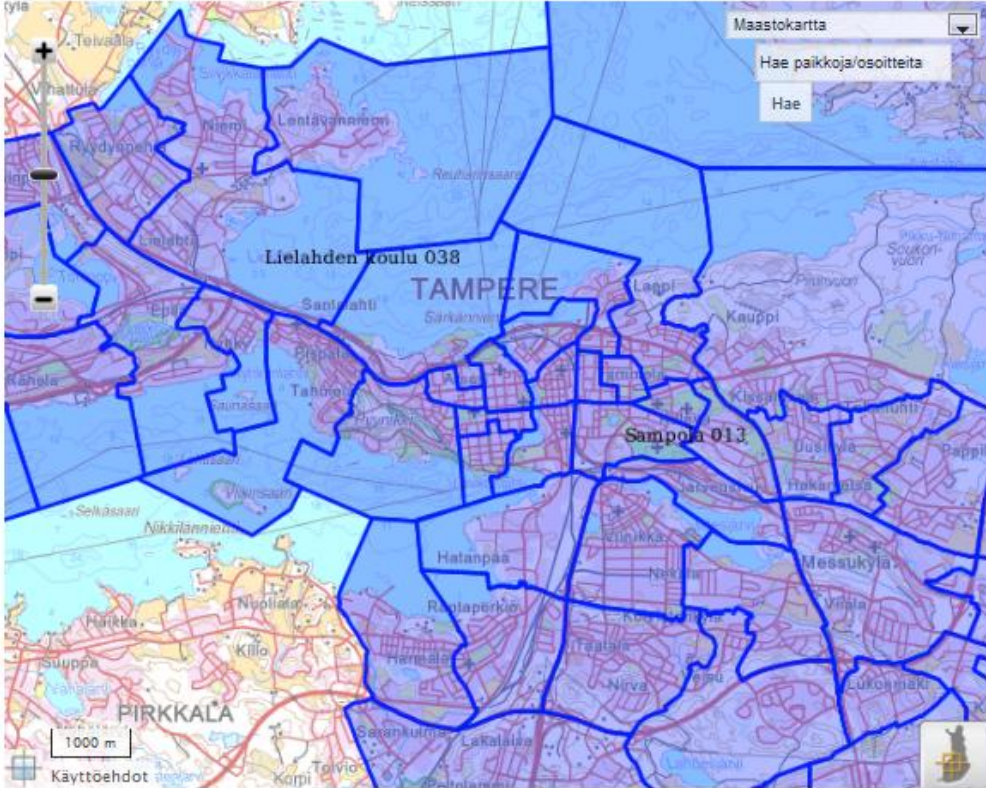
www.tampere.fi > Tampere-info > Osallistuminen > Vaalit > Äänestysalueet kartalla

- ▼ Etusivu
- ▼ Tampere-info
- ▼ Osallistuminen
- ▼ Vaalit
- ▼ Äänestysalueet kartalla

Äänestysalueet kartalla

Tampereen äänestysalueet löytyvät Maanmittauslaitoksen ylläpitämästä Paikkatietoikkuna-portaalista. Niihin voi tutustua alla olevan karttanäkymän kautta.

Alueen päällä klikkaamalla saat näkyviin ikkunan, jonka nimi-sarakkeessa on kyseisen alueen äänestyspaikka.





One Company

Closed Source



Community
Open Source

Why OSKARI?

- Open Source – collaboration
- Support for OGC standards and INSPIRE
- Architecture considerations
 - *Modularity – flexibility, adaptability, performance*
 - *OSKARI is an organized way of writing JavaScript*
 - *Possibility to exchange e.g. UI libraries*
 - *Avoiding lock-up situations with software components or technologies*
- Localization needs



OSKARI further development

- Geospatial web applications

- Functionality of the source code and the platform to be extended using same code base to cover more use cases, e.g.
 - *Building permit web services for municipalities*
 - the Finnish Ministry of Environment
 - *Web-based e-Conveyance of real estates*
 - NLS FI
 - *Statistical evaluation of basic services, such as health care and safety services*
 - the Regional State Admin Agencies
 - *Candidate technology for European Location Framework (E.L.F) platform*
 - EuroGeographics project application

Project Started

Project Started

Project Starting

In Negotiation



 Search

logged in as jani | [Logout](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#)

[Wiki](#) | [Timeline](#) | [Roadmap](#) | [View Tickets](#) | [New Ticket](#) | [Search](#) | [Admin](#)

wiki: [WikiStart](#)

[Start Page](#) | [Index](#) | [History](#)

Last modified 19 hours ago

Developer Web Site for Oskari Map Application Framework

Oskari.org is a web site to support the development of Oskari Open Source JavaScript Map Application Framework. The Map Application framework is implemented as a collection of reusable bundles.

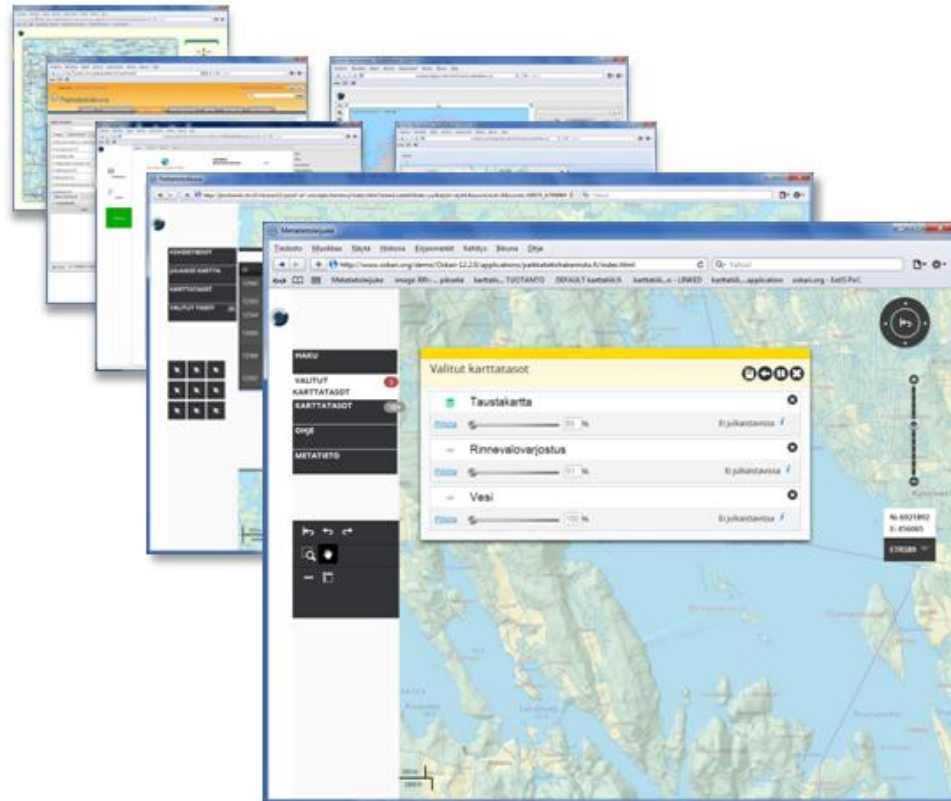
Bundles are used as uniform containers to ship and share new functionality to the application setups. Additions to existing functionality are implemented as Plugins shipped within the bundles.

Oskari version 12 provides applications with loose coupling and inter-bundle messaging with Requests and Events, configuration, application state and localization support. Loose coupling enables reusing bundles in different application setups.

Map functionality is implemented with [OpenLayers](#). The user interface components are based on [jQuery](#), [YUILibrary](#), [DOJO Toolkit](#), [RightJS](#), see Open Source JavaScript libraries for a more complete list of libraries used and to be used.

Getting started

- [Download](#)
- [Quick start](#)
- [Documentation](#)



OSKARI GitHub repository

<https://github.com/nls-oskari>

github Explore Gist Blog Help nls-oskari

nls-oskari / oskari Pull Request Watch Star 0 Fork 2

Code Network Pull Requests 0 Issues 1 Wiki Graphs Admin

Oskari Map Application Framework — [Read more](#)

Clone in Windows ZIP HTTP SSH Git Read-Only Read+Write access

branch: master Files Commits Branches 2 Tags 1 Downloads

Latest commit to the **master** branch

[PORTTISK-836] ...cleanup...
mord authored 6 days ago commit 9c3cf613eF

oskari /

name	age	message	history
applications	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
bundles	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
libraries	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
packages	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
resources	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
sources	6 days ago	[PORTTISK-836] ...cleanup... [mord]	
README.md	6 days ago	[PORTTISK-836] README [mord]	

NLS FI Open topographic data 1.5.2012

Topographic maps 1:25.000 ... (raster)



Background maps 1:10.000 ... 1:8 M (raster)



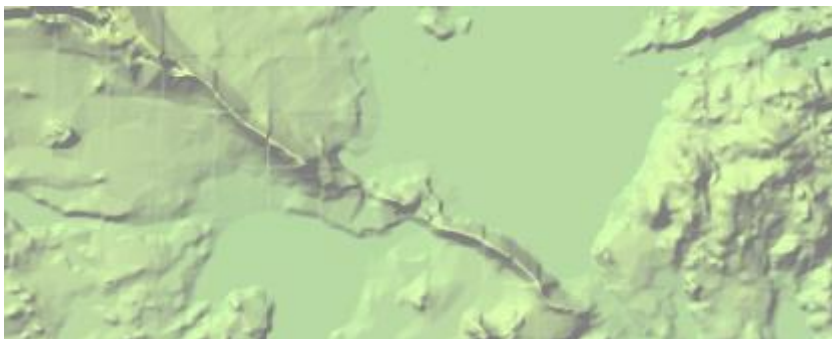
Topographic Database (vector)



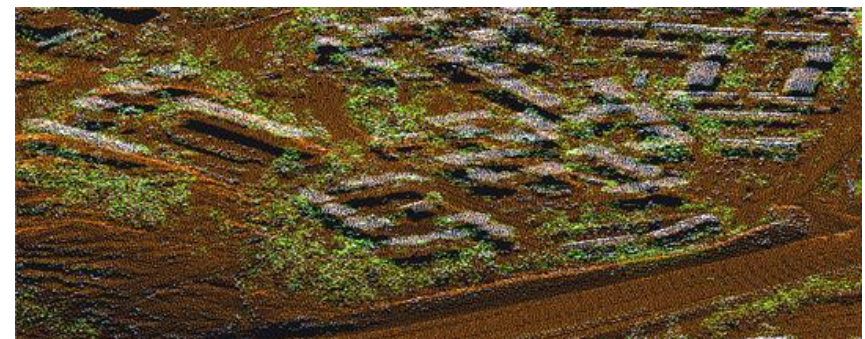
Ortophotos (0,5 m)



Elevation model 2m, 10m ... (grid)



Laser scanning data (LAS)



Terms of use

The data made available on 1 May 2012 are granted permanent and free right of use.

Free right of use means that available topographic data products can without charge be:

- used within the organisation
 - published as desired
 - distributed freely to others
 - further processed to new products
 - sold ...or used in any other way
- mention the name of the Licensor, the name of the dataset(s) and the time when the National Land Survey has delivered the dataset(s)
 - provide a copy of this licence or a link to it, as well as
 - require third parties to provide the same information when granting rights ...



Be smart ...

→ Be open minded!

Open standards

Open source code

Open data

Open services



More information

 skari.org

<http://www.oskari.org>

<http://www.geoportal.fi>

Thank You! Questions?



MAANMITTAUSLAITOS MAANMITTAUSLAITOS.FI

200
1812-2012

TIETOA MAASTA
LUOTETTAVASTI VERKOSSA
JA LÄHELLÄSI
FAKTA OM LANDET
TILLFÖRLITLIGT PÅ WEBBEN
OCH NÄRA DIG

LANTMÄTERIVERKET LANTMATERIVERKET.FI

