

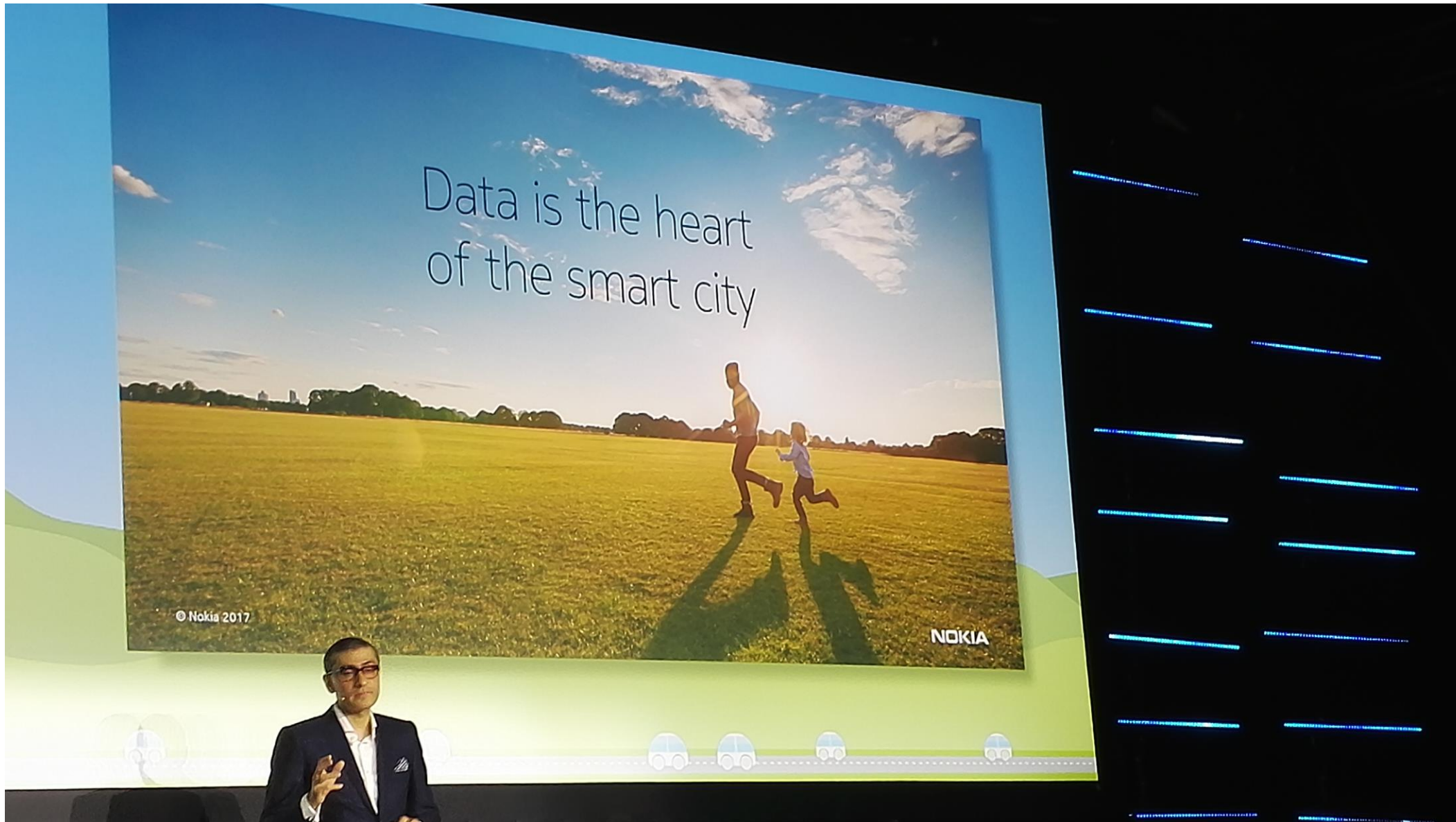
# The way to a spatially enabled Smart City

## Case: City of Helsinki

**Jaana Mäkelä**

**Kartdagar 2018**  
**20.3.2018**





- Spatial data was produced and managed independently in subdivisions
- Several copies of the same dataset
- Spatial data was not easily available for other subdivisions – they even had to pay for the data
- Top management did not understand the benefits of enhanced use of spatial data
- The employees did not have competences to use spatial data and technologies



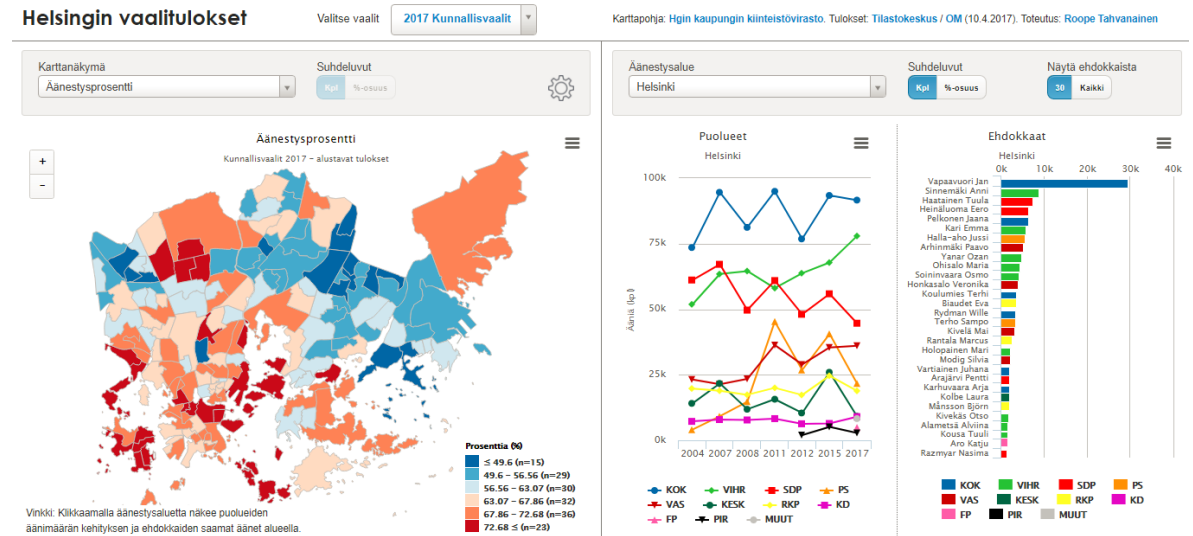
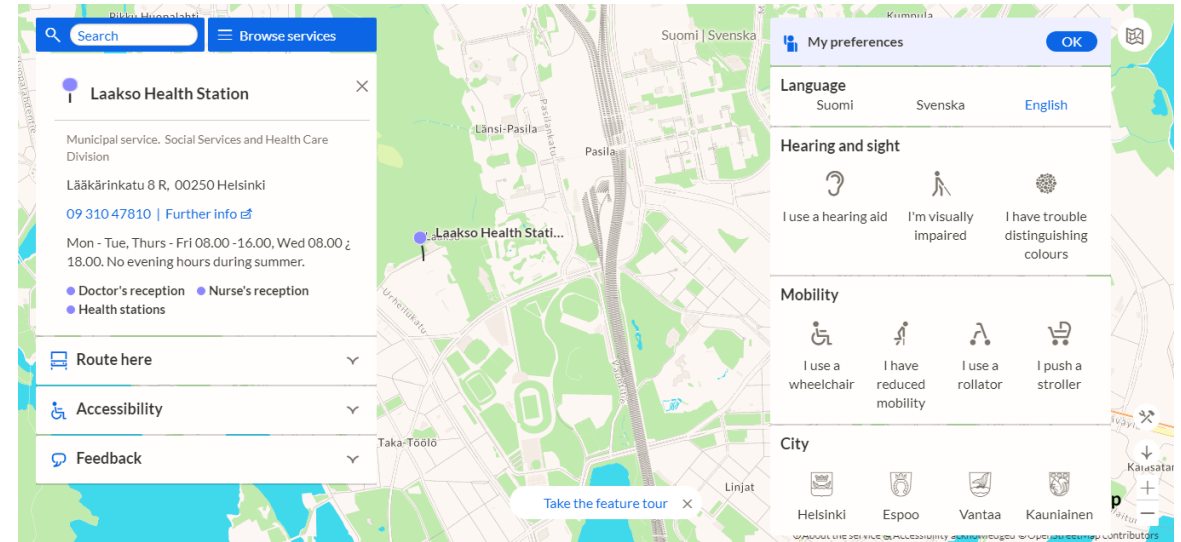
- **Mission:**
  - The city should use spatial data to serve effectively its citizens, businesses and other actors
- **Vision:**
  - By 2015 Helsinki has a coherent, high quality and effective spatial data infrastructure that supports the achievement of the goals of the strategy
- **Strategy:**
  - The city proceeds from the diversified spatial data management and use to a new level where the management and extensive use is based on common enterprise architecture. The development is led at city level.

- Define spatial data policy
- Harmonize spatial data content
- Develop spatial data infrastructure
- Increase employees' competence to use spatial data
- Simplify operational structures

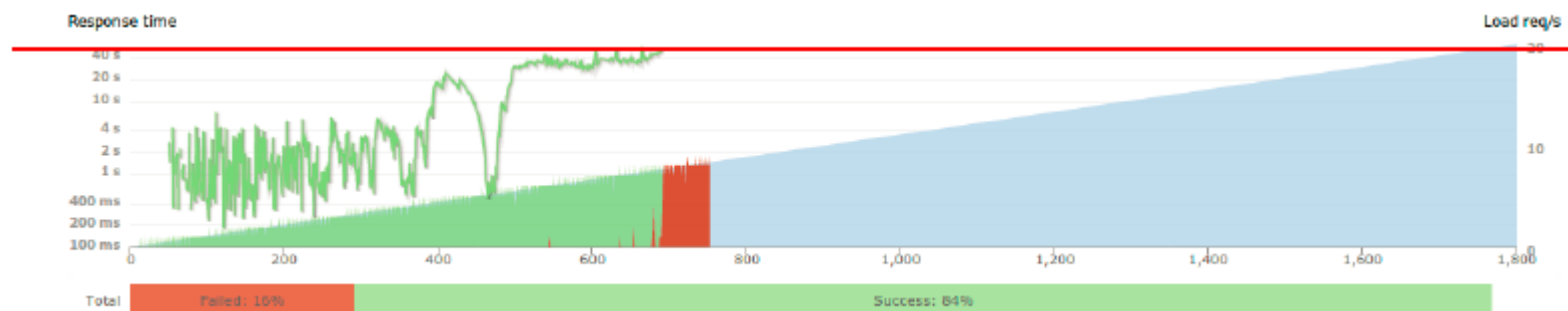


# HELSINKI STARTED TO OPEN SPATIAL DATA IN 2011

- Make spatial data easily available as a self service
- Have as wide user community as possible: decision makers, employees of the city, citizens ja private companies
- Promote the use of spatial data in eServices and mobile applications



- In 2014 Helsinki changed the technical platform of their spatial web services and wanted to ensure the capacity of services
- Spatineo did as a consulting project performance testing of the services with Spatineo Performance and compared the test results to those from 2013 (same services on the old platform)



# HELSINKI HAS ENSURED THE QUALITY AND ANALYSED THE USE OF SPATIAL WEB SERVICES Spatineo

## Spatineo Monitor

Helsinki

### Helsinki External - GeoServer WMS 1.3.0

helsinki:Ajantasa-asemakaava (EPSG:3879, 256x256px, image/png, Get...)  
helsinki:Kantakartta (EPSG:3879, 256x256px, image/png, Get...)  
helsinki:Ortoilmakuva\_2014 (EPSG:3879, 256x256px, image/png, Get...)  
helsinki:Ortoilmakuva\_2015 (EPSG:3879, 256x256px, image/png, Get...)

### Helsinki\_WMS WMS 1.3.0

Kantakartta (EPSG:3067, 256x256px, image/png, Get...)  
Kantakartta\_harmaa (EPSG:3067, 256x256px, image/png, Get...)  
Kantakartta\_paakohteet (EPSG:3067, 256x256px, image/png, Get...)  
Kantakartta\_pohja (EPSG:3067, 256x256px, image/png, Get...)  
Kantakartta\_valkoinen (EPSG:3067, 256x256px, image/png, Get...)  
Kantakartta\_varillinen (EPSG:3067, 256x256px, image/png, Get...)  
Kiinteistokartan\_maastoriedot (EPSG:3067, 256x256px, image/png, Get...)  
Kiinteistokartta (EPSG:3067, 256x256px, image/png, Get...)  
Kiinteistokartta\_pohja (EPSG:3067, 256x256px, image/png, Get...)  
Kuvakartta (EPSG:3067, 256x256px, image/png, Get...)  
Opaskartta\_Helsinki (EPSG:3879, 256x256px, image/png, Get...)

### Service: Helsinki External - GeoServer #29180

https://kartta.hel.fi/ws/geoserver/ows Service not visible in Spatineo Directory

Assigned to service groups: Helsinki Edit groups

Stop following service

Service info Standards compliance Usage analytics **Meters & alerts** Sharing

Meter helsinki:Ajantasa-asemakaava (EPSG:3879, 256x256px, image/png, Get...)

Response time (ms) average



Period 6/16/2017 - 7/17/2017 Download

Zoom out

Last day Last week Last month

## Spatineo Monitor

Helsinki

### Helsinki External - GeoServer WMS 1.3.0

helsinki:Ajantasa-asemakaava (EPSG:3879, 256x256px, image/png, Get...)  
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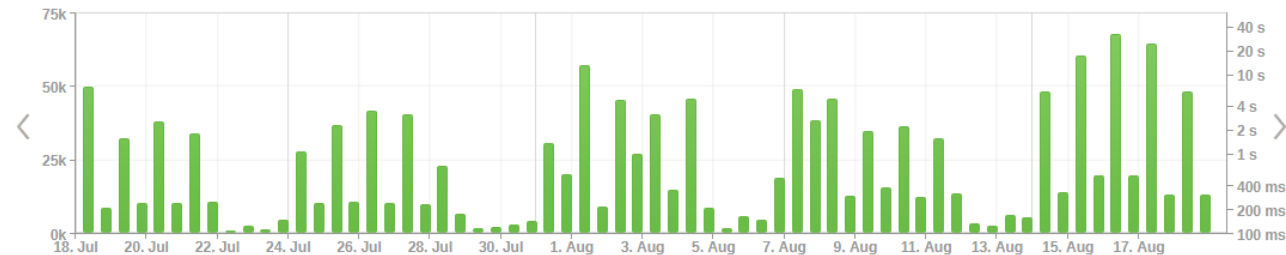
Assigned to service groups: Helsinki Edit groups

Stop following service

Service info Standards compliance **Usage analytics** Meters & alerts Sharing

Number of requests in total Include monitoring by Spatineo

Response time (ms) average



Period 7/18/2017 - 8/18/2017

Zoom out

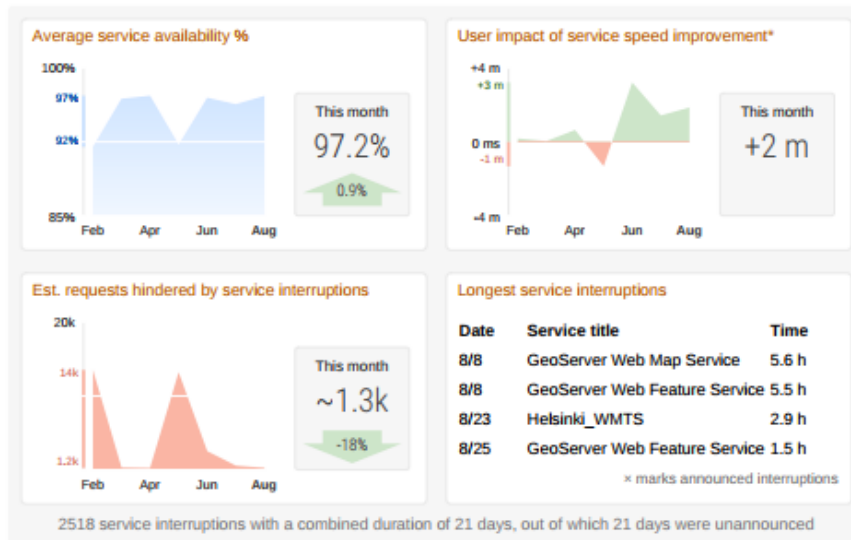
Last day Last week Last month



**Spatineo** Executive report August 2016  
20 services included in the report, 13 with missing data

**Spatineo** Executive report August 2017  
20 services included in the report, 11 with missing data

## Quality of Service and network traffic

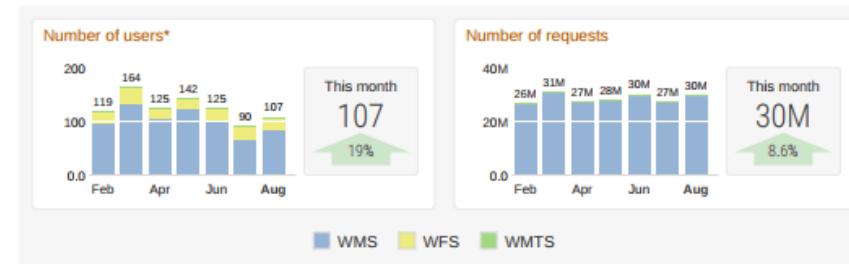


\*) Difference from the latest six-month average response time multiplied by the monthly request count for all included services

### Most used services

Service title	Requests	Users	Transfer	Type	Service ID
Helsinki Internal - GeoServer	25M	146	594 GiB	WMS	#29179
Helsinki External - GeoServer	883k	3	73 GiB	WMS	#29180
Helsinki_WFS	9.8k	2	176 MiB	WFS	#30966

## Users and service usage

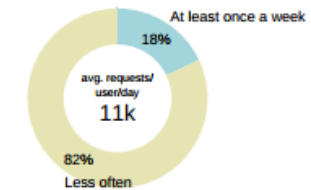


### Usage compared to previous years

Yearly totals January - August

Year	Users	Requests
2017	1.0k (-26%)	226M (+32%)
2016	1.4k (+165%)	171M (+245%)
2015	514	50M
2014	0.0	0.0
2013	6	4.6k

### User visit frequency



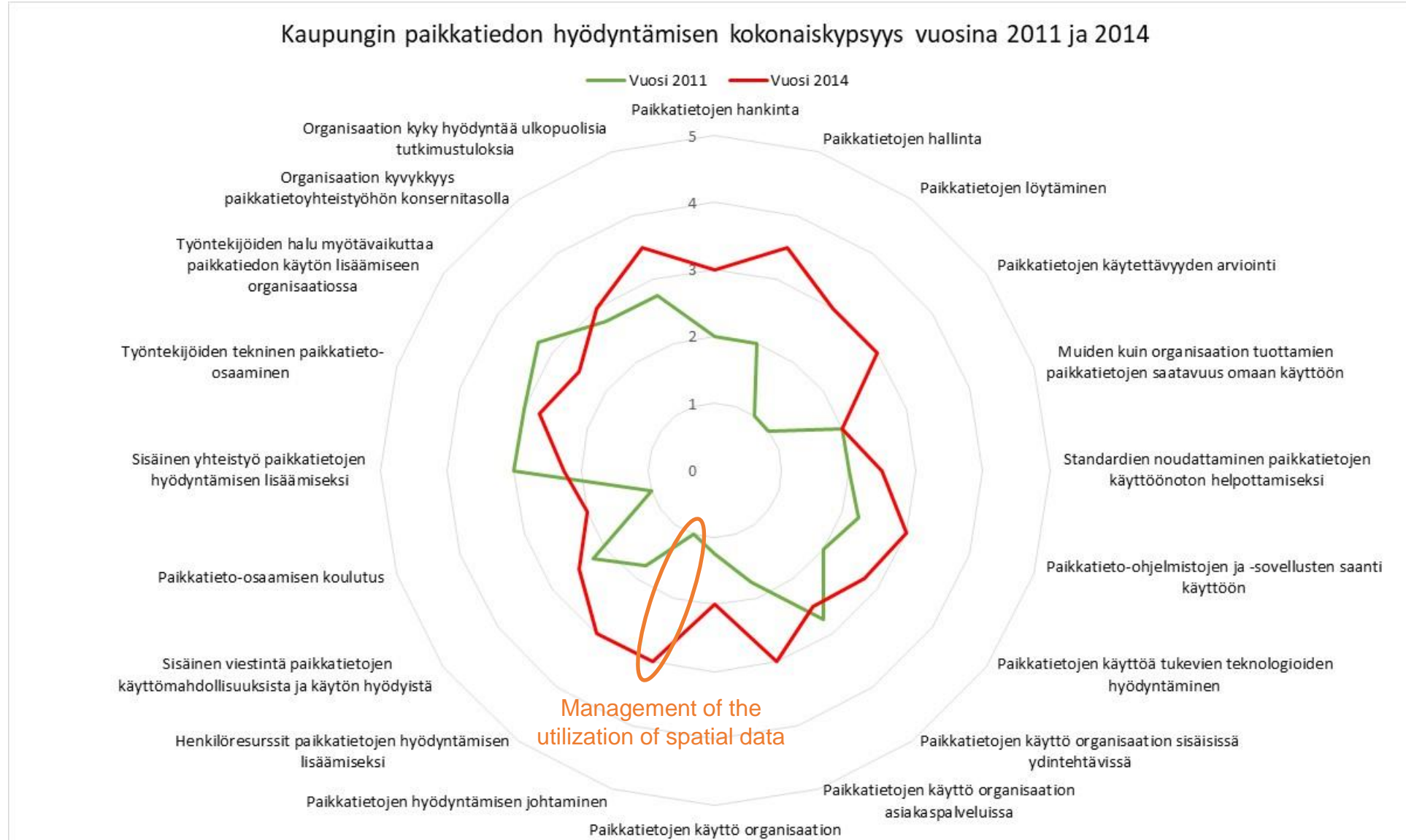
### Most popular data sets

Name	Requests	Users	Service Type	Service ID
Kantakartta	3.9M	37	WMS	#29179
hel:Opaskartta_tekstii	3.1M	6	WMS	#29179
hel:Kantakartta_pohja	3.0M	7	WMS	#29179

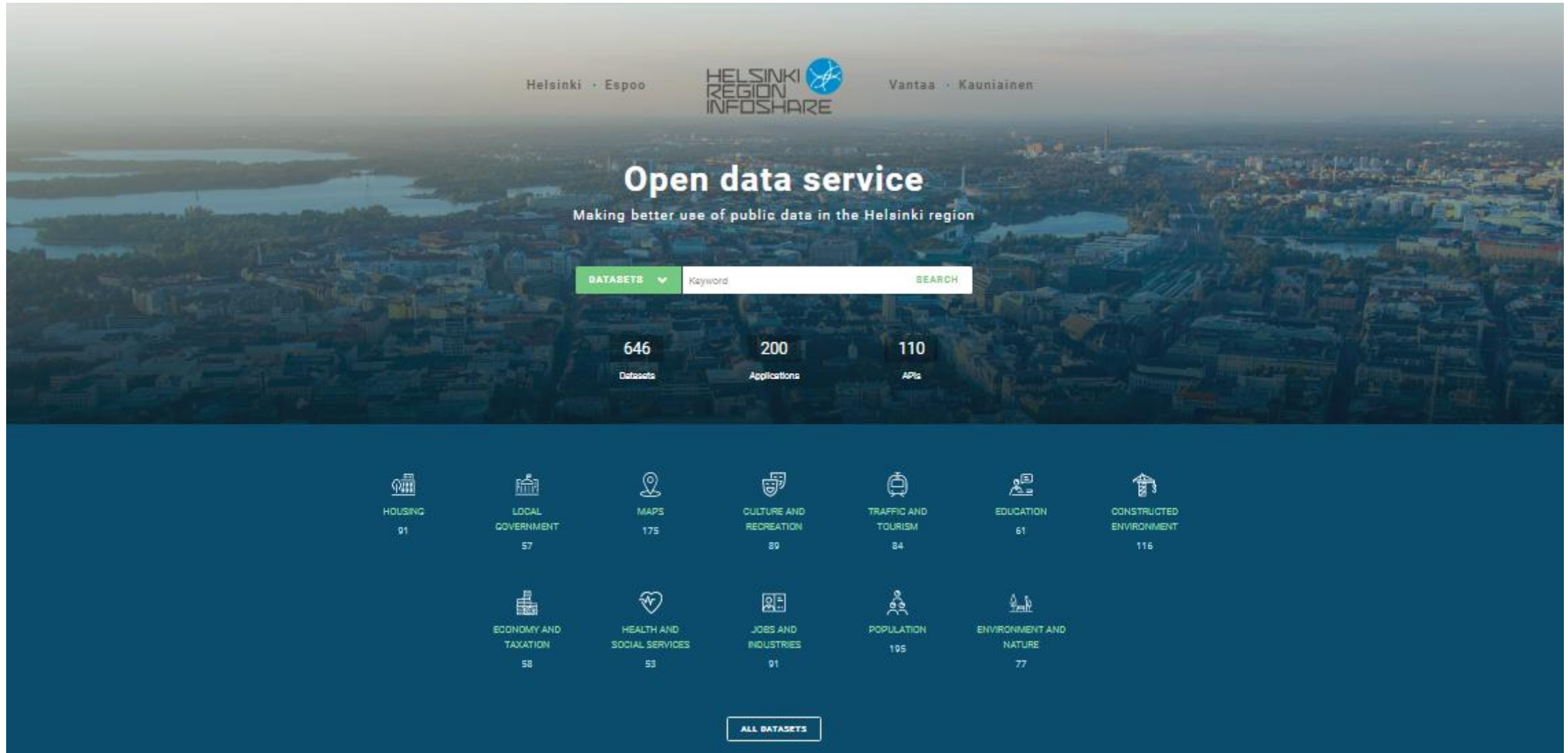
### Trending data sets

Biggest consecutive increase in user base in last three months, by layer name / feature type

Name	Users	change	Requests	Service Type	Service ID
hel:Maanomistus_sisainen	4	+300%	26	WMS	#29179
hel:Yleiskartta_8m	5	+150%	462k	WMS	#29179
hel:Kiinteistokartta_pohja_2016	8	+100%	900	WMS	#29179



- **Helsinki is the world's leading city in opening up and utilizing public data.**
- Helsinki aims to be the city in the world that makes the best use of digitalization.
- Faster decision making and better capacity to predict and react
- Find solutions to significant global challenges
  - Prevention of climate change
    - Energy efficiency of buildings, reduction of traffic emissions
- Helsinki serves as a testing platform in the commercialization of new smart mobility solutions enabled by current transport legislation (incl. the Mobility as a Service model)



Helsinki · Espoo HELSINKI REGION INFOSHARE Vantaa · Kauniainen

## Open data service

Making better use of public data in the Helsinki region

DATASETS Keyword SEARCH

646 Datasets 200 Applications 110 APIs

HOUSING 91	LOCAL GOVERNMENT 57	MAPS 175	CULTURE AND RECREATION 89	TRAFFIC AND TOURISM 84	EDUCATION 61	CONSTRUCTED ENVIRONMENT 116
ECONOMY AND TAXATION 58	HEALTH AND SOCIAL SERVICES 53	JOB AND INDUSTRIES 91	POPULATION 195	ENVIRONMENT AND NATURE 77		

ALL DATASETS



## HELSINKI – A ROLE MODEL FOR OTHER CITIES

HELSINKI'S USE OF 3D VISUALISATION TECHNOLOGIES HAS TURNED IT INTO A SMART CITY – AND HELPED TO ENGAGE CITIZENS. AIDAN MERCER REPORTS

A smart city is a visionary statement for urban development that aims to leverage digital technologies to better manage a city's assets, improve services and ultimately improve the quality of life for all. The smart city concept is not new, yet it does seem to be making a resurgence thanks to the topic's being systematically addressed once again. As rapid urban expansion threatens to put further strain on the physical infrastructure and the assets that comprise a city and the demand for improved city services increases, the causal link, all that budgets are diminishing. This dichotomy is the crux of smart cities: to deliver new services, streamline processes, improve services, provide better value, make data assets available, improve public perception, adopt innovative technologies – all at a reduced cost.

The approach to a fully-fledged smart city is to have a strategy for going digital – that is, to digitalize processes and systems across the variety of disciplines to have a greater breadth of communication with other digital systems. For some organisations, this digital journey has begun, and the strategy for delivering against smart city goals is well under way.

Going digital is a phrase that will resonate with both the AEC industry and asset owners in 2017 as a heightened level of focus is placed on engineering as the means to deliver the promised strategy. The enablement of a digital strategy is being realised as infrastructure professionals can take advantage of software that has, for example, a Microsoft Azure provisioned connected data environment that digitally connects and converges people, processes, data and technology to yield significant results.

The transformation will have a profound effect on the realisation of a smart city – a term that has yet to achieve its full potential. The burgeoning use of digital engineering models, the models created by engineers, will act as visual operators and connected infrastructure asset performance as they take advantage of cloud computing, the industrial Internet of Things, Big Data and operational data from a variety of sources. These models will be referenced throughout the full lifecycle of a project, adding longevity and performance improvements as a result.

cooperation units that help to develop the two models beyond their intended use.

### Making data open and available

This 3D reality mesh was made available for the public last December in an open format for anyone to view and access. But rather than just being a visually compelling medium, the reality mesh has far greater use as it can also reference other geospatial data sources. By connecting other data sources to this model, Helsinki has made this model even more intelligent.

As a result, the city is currently working on no fewer than 12 pilot projects. One highlight is a City GML/Inframodel/IFC collaboration that



ContextCapture delivered a high-quality reality mesh for the City of Helsinki

- 5D (+time and cost) project management tool for city development
- Citizen interaction platform for city planning



**Helsinki** Energia- ja ilmastoatlas  
Energy and Climate Atlas

Search Content Help Settings

**Lämmitystapa** : Vesikeskuslämmitys (Kauko- tai aluelämpö)

**Korjaustietoja**

**Julkisivumuutos** : Muutoksien rakennuslupa (Rakennuslupa: 08-3781-D 14)

**Rakennusluvan viimeinen voimassaolopäivä** : 2014-01-03 (Luvan lainvoimaisuuspäivä: 2009-01-03, luvan saapumispäivä: 2008-11-26)

**Laskennallinen kulutus (kWh/bm<sup>2</sup>/vuosi)**

**Lämmitys yhteensä** : 138  
(Tilojen lämmitys : 130, veden lämmitys : 8)

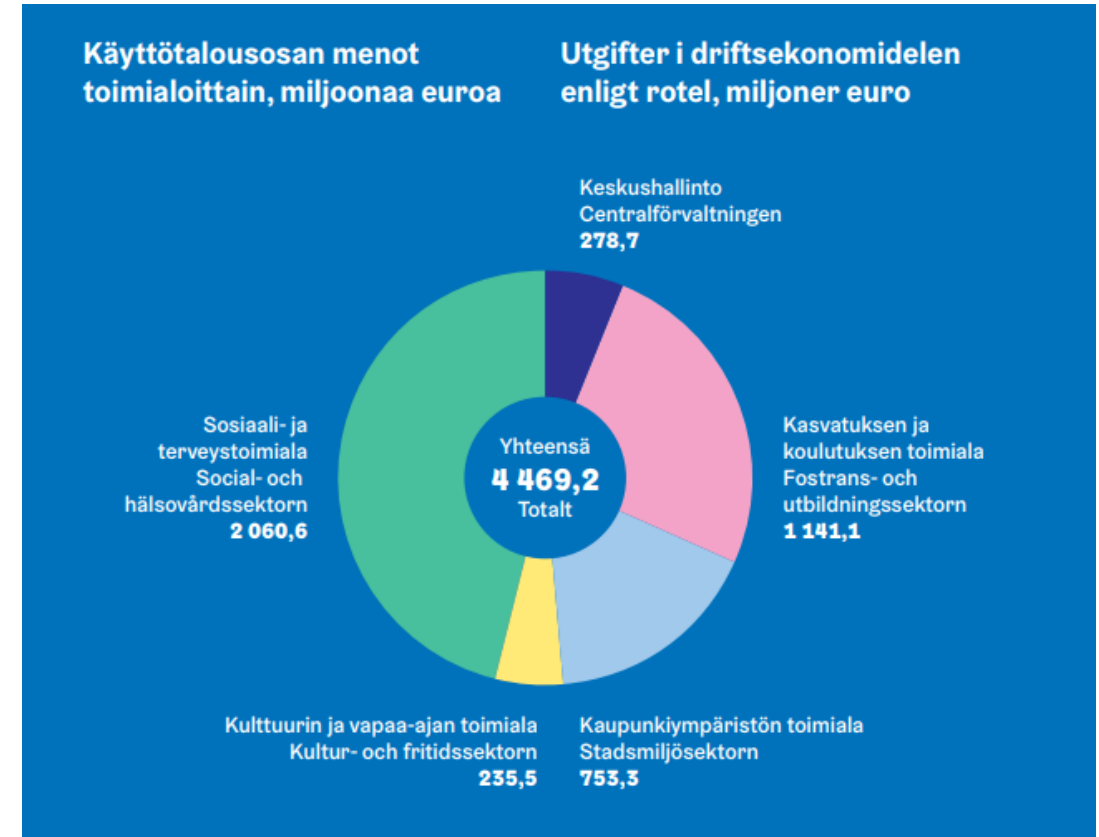
**Kiinteistösähkö** : 26

**Käyttäjäsähkö** : 53

GESIUM Contact | Privacy

<https://kartta.hel.fi/3d/atlas/#/>

- The city has estimated that just opening up the data has resulted in **1–2 percent budget savings**, because projects are now undertaken with more background knowledge.



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