

Statistics Estonia: Data collection for effective decision-making

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Director General of Statistics Estonia

Brief history (1)

1 March 1921 State Statistical Central Bureau established

1922 Statutes of State Statistical Central Bureau

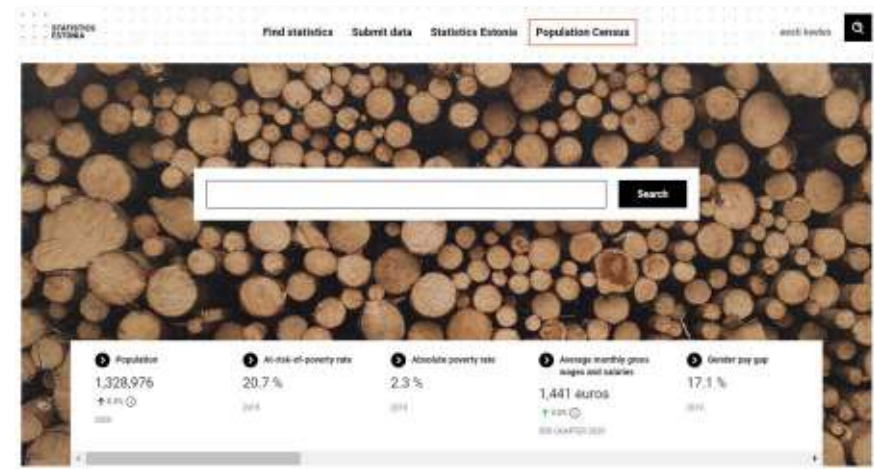
1938 Act on State Statistical Central Bureau

1940–1992 Statistical Administration of the Estonian S.S.R.

1990 Statistics Act

1997 Official Statistics Act (amended 2010, 2018)

2004 Estonia joins the European Union and Statistics Estonia is part of the European Statistical System



Brief history (2)

- 2006 electronic data transmission channel eSTAT
- 2010 Official Statistics Act
- 2012 Population and Housing Census is carried out to participate in online
- 2015 Statistics Estonia is awarded the Green Office of the Year award
- 2017 Statistics Estonia chairs the Council Working Party on Statistics during the Estonian Presidency of the Council of the European Union
- 2019 Statistics Estonia presents first interactive visualisation applications Foreign trade and the Tree of Truth, measuring important national indicators.
- 2020 Statistics Estonia publishes interactive tools Wages and salaries and Dashboards,

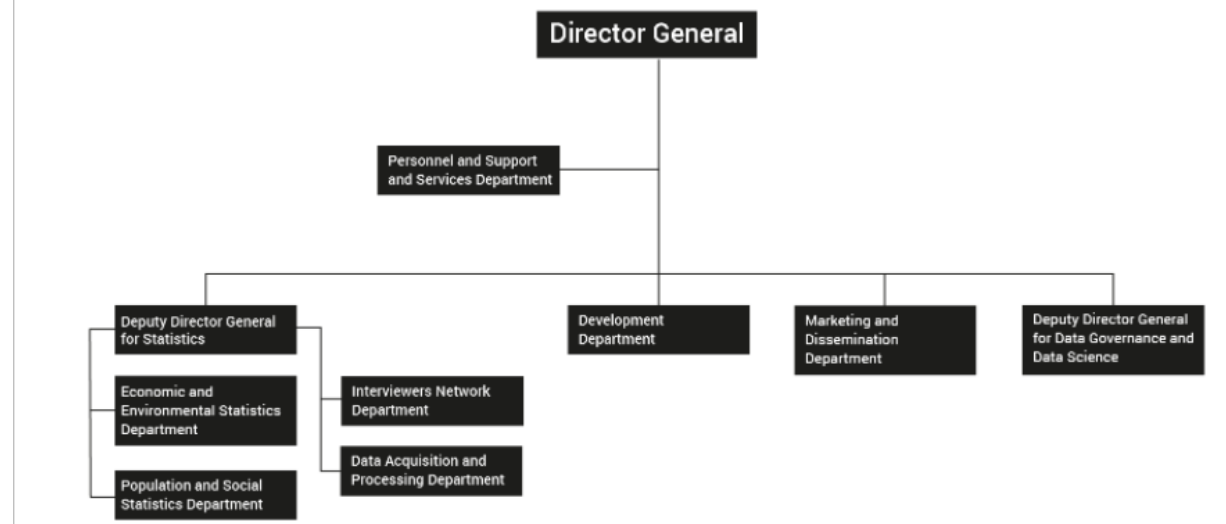
Statistics Estonia (SE)

- A state agency in the area of government of the Ministry of Finance
- Offices in Tallinn, Tartu and Viljandi



- 373 active employees
- 81.77% women, 18.23% men
- Average age: 48.71 years
- Average length of service: 9y 10m 4d

Structure



Data as at 11/2020. Structure from 10/2021

Our mission

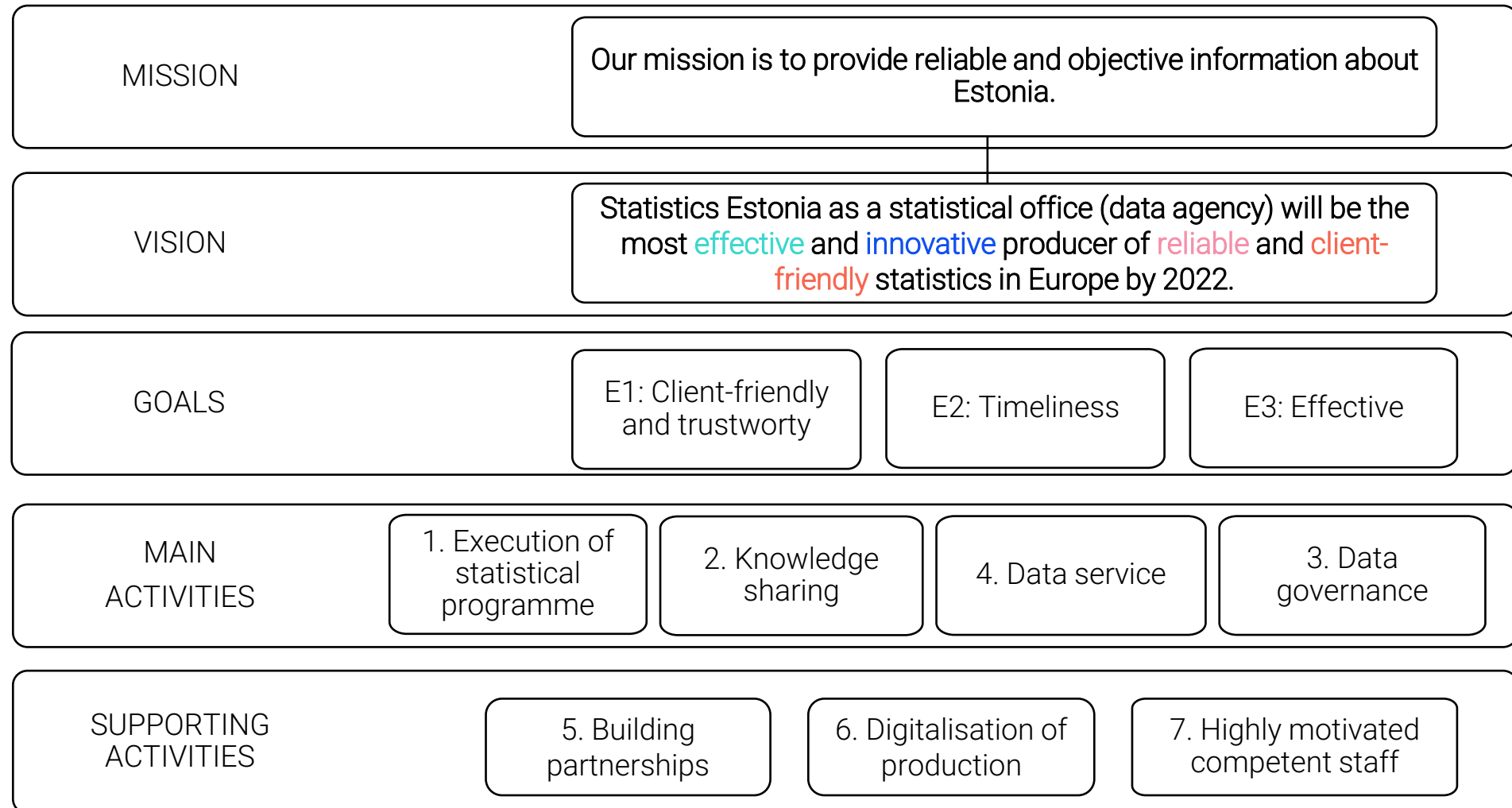
The purpose of official statistics is to reflect the situation of and changes in the society and to provide the society with information relevant to the demographic, social, economic and environmental development, including for preparing development plans and forecasts, developing different policies, conducting scientific and applied research, and making knowledge-based decisions.

Official Statistics Act § 1.2

European Statistics Code of Practice

- The European Statistics Code of Practice is based on 15 principles covering the institutional environment, the statistical production processes and the output of statistics.
- The quality criteria for European Statistics are defined in the European Statistical Law.
- Statistical authorities, comprising the Commission (Eurostat), national statistical institutes and other national authorities responsible for the development, production and dissemination of European statistics, commit themselves to adhere to the Code.
- All EU Member States, the EFTA/EEA countries and Eurostat are subject to a Peer Review.

Strategy map



Goals for 2022



Reliable information

Implement the official statistical programme, incl. Census 2021, indicators of sustainable development and other international and development plan indicators in the domains of population, social life, environment and economy.



User-friendly information

Visualise and offer important information in as personalised format as possible, through governance dashboards and development of statistical literacy, thereby contributing to knowledge-based decisions.



Low administrative burden

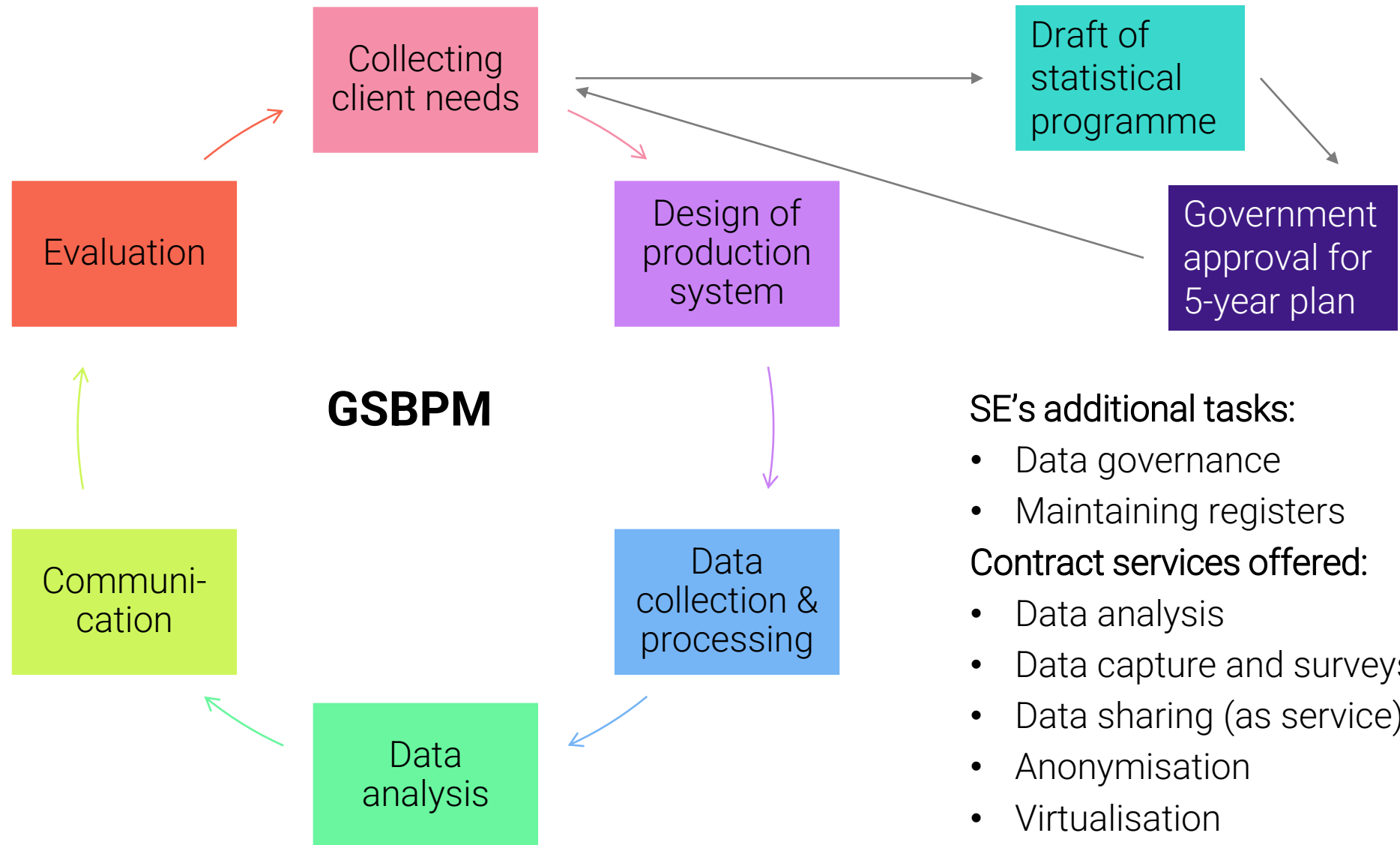
Realise automatic data collection in Reporting 3.0, adopt additional data sources for big data and administrative data and ensure the implementation of the once-only principle.



Rapid real-time data mining

Establish and offer real-time data mining related to important social phenomena and for quick and relevant decision-making, establish a basis for twice-used data use.

GSBPM and statistical programme



e-Estonia timeline



e-cabinet



e-tax
board



m-parking



X-Road®



e-school



digital
signature



id-card



eesti.ee



id bus
ticket

2000

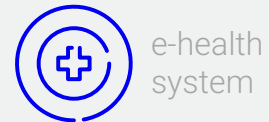
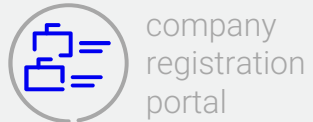
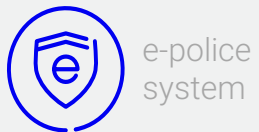
2001

2002

2003

2004

e-Estonia timeline



2005

2006

2007

2008

2010

e-Estonia timeline



visualised
business
register



smart grid



ev quick
charging
network



public services
green paper



e-service of the
Estonian Road
Administration



e-residency



e-receipt

2011

2012

2013

2014

2015

e-Estonia timeline



NIIS
X-Road®
consortium



data
embassy



kick-off:
proactive
government



crossborder
e-prescription



AI strategy



reporting
3.0



50 public
sector AI
use cases



7 invisible
services

2017

2018

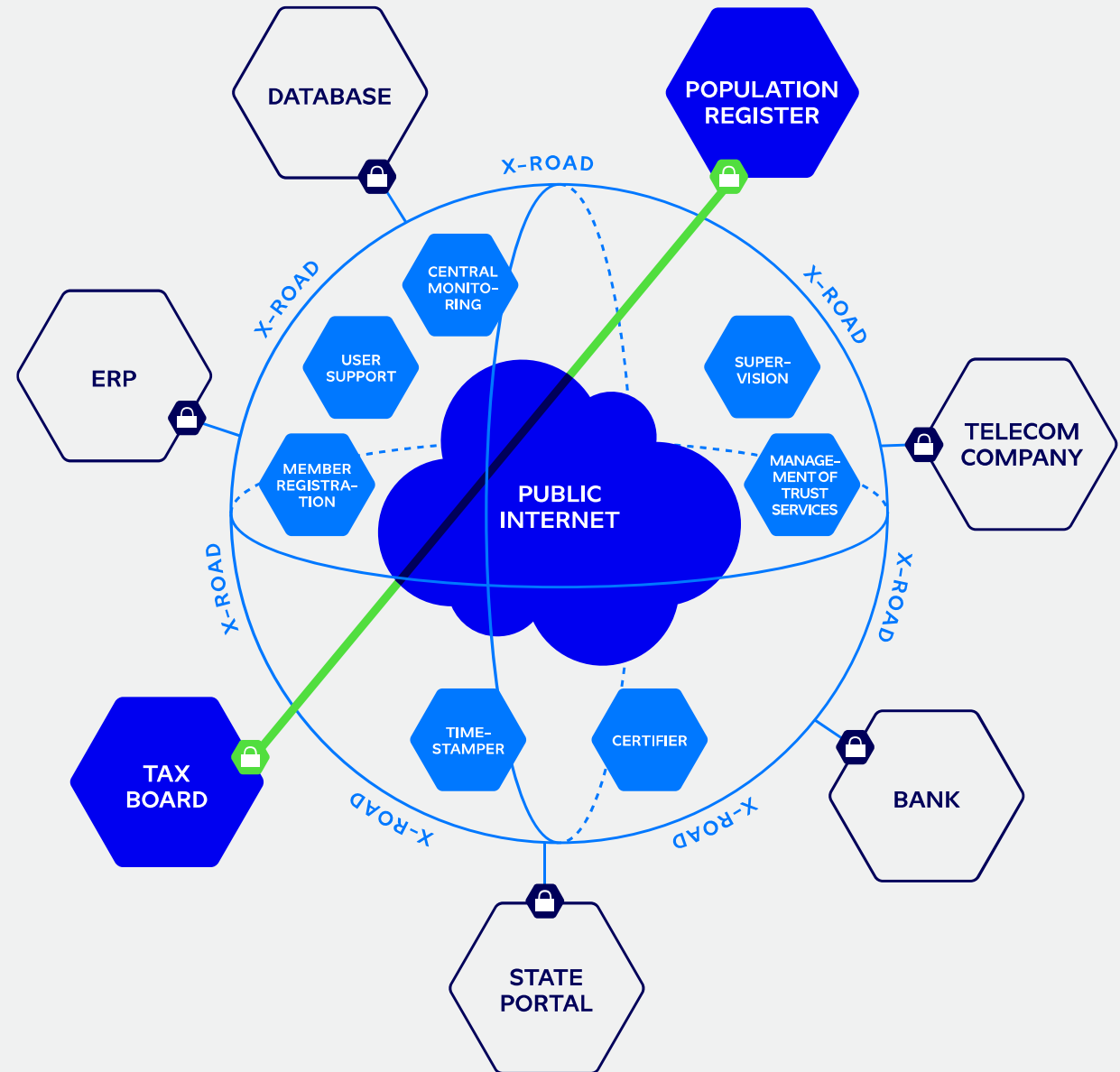
2019

2020

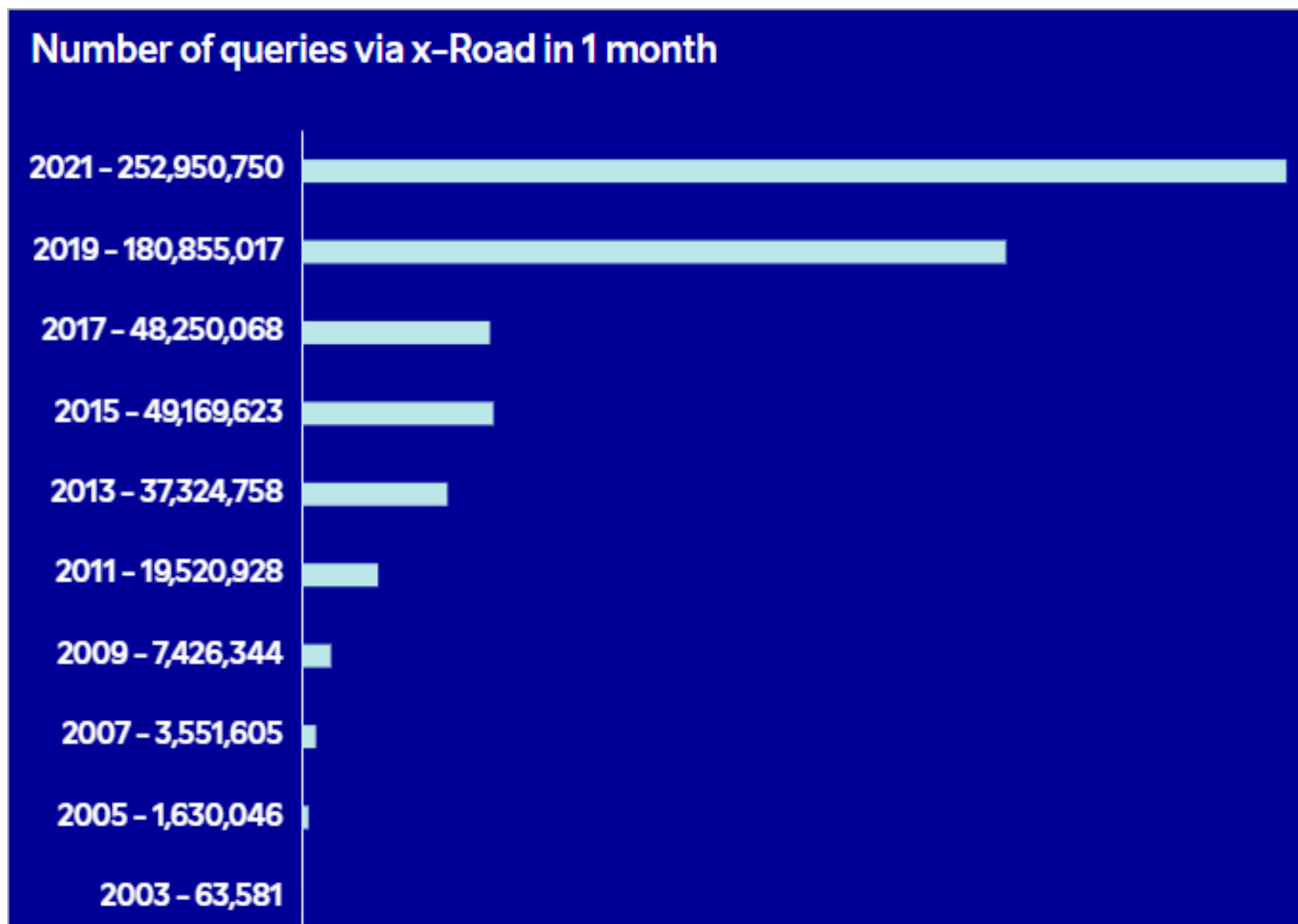
X-road

the busiest highway since 2001

- + **X-Road – the free and open-source data exchange layer software**
 - + modular, easy-to-use, secure data exchange solution
 - + decentralised and distributed network
 - + expert community of almost a thousand people from over 60 countries
 - + operational in Azerbaijan, Argentina, Cambodia, Colombia, El Salvador, Estonia, Faroe Islands, Finland, Germany, Iceland, Japan, Kyrgyzstan, Palestine, Vietnam
- + **X-tee – the Estonian X-Road ecosystem since 2001**
 - + saving 3 million working hours annually
 - + over 3,000 different services
 - + over 1,3 billion transactions per year



Number of queries via X-Road



Data Governance

From data to information

Summary of main challenges for the next decade

Strong data governance
Multiple-source data



Real-time information
Faster and simpler information



Globalisation and Big Data
More in-depth information



Low administrative burden
Once-only principle in collection



High quality of statistics
High-quality indicators with metadata



Reliable information
Quality data for media



User-friendly dissemination
Personalised view of information

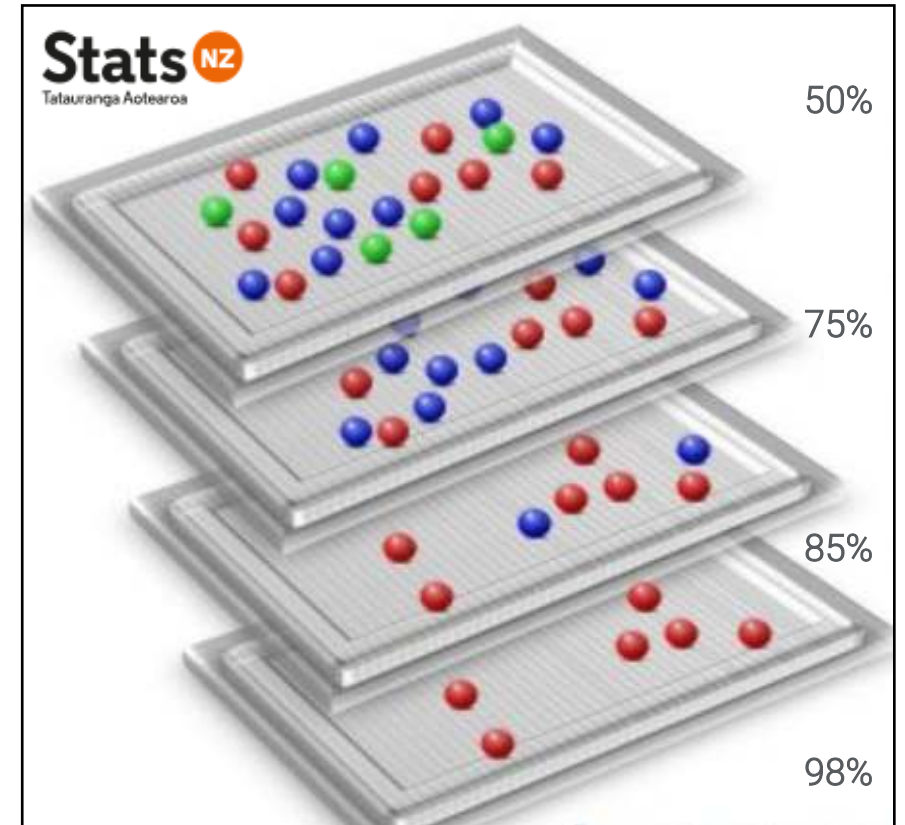


Real-time data mining
Quick and quality decision-making

Prerequisites: data accessibility and quality

Four steps to ensure that data for decision-making is correct and relevant in terms of time and content:

1. Understand where and how data appear (metadata)
2. Establish data governance principles, data standards and data quality control
3. Administered data processing and anonymised sharing
4. Visualisation of indicators and dissemination with meta-information

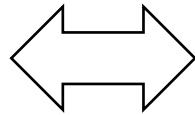


Digital Agenda 2020 for Estonia (EIS)

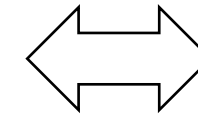
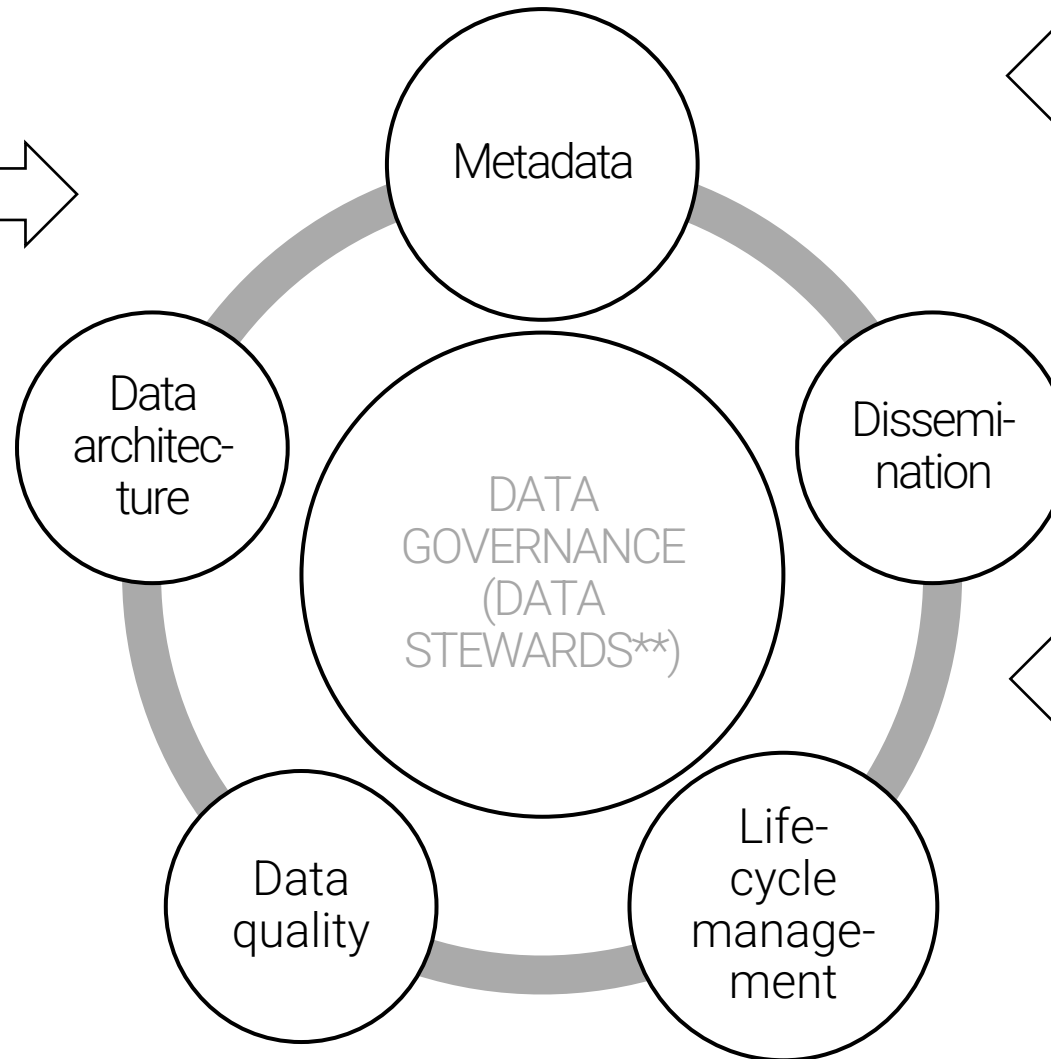
- Set by the Estonian government in 2013, reviewed 1 November 2018
- Sub-objective: ICT solutions are used to enhance the functioning and management of public authorities by improving public sector capacity to use data analytics and data science, incl. respective awareness and skills.
- Activity: **Statistics Estonia** will be transformed into public-sector **competence centre for data governance and data science**, which would support data-driven decision-making in the country, taking into account the systems supporting the state information system.

Data governance – new role for NSOs

State
Information
System
Authority

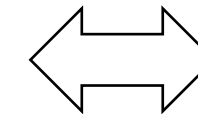


- Architecture of state information systems
- State data and document exchange layers
- State cyber security
- State infrastructure



Data Protection
Inspectorate

- Personal data protection
- Access to public data
- Restricted information protection



National
Archives, etc.

- Data archive
- Source data of surveys

State Information System management (RIHA)



RIIGI INFOSÜSTEEMI
HALDUSSÜSTEEM

home page

[RIHA Directory](#)

RIHA Homes

Help Center

Q Otsi

Information systems

Otsi kataloogist

Q search

Refine your search

Found in 2206 information system

THE OWNER ↕	SHORT NAME ↕	INFORMATION SYSTEM NAME ↕	STATUS ▲	COORDINATION ↕	KEYWORDS ↕	
Saaremaa Rural Municipality Government	SOCIAL EDUCATION	Saaremaa Rural Education Register	when establishing	establishment of the coordinated	HOBBY EDUCATION PRE-SCHOOL EDUCATION GENERAL EDUCATION	20
Mikitamäe Rural Municipality Government	75024610-data-file services	Data Services Services	when establishing	not coordinated	X-ROAD SUBSYSTEM	20
Estonian Student Union Association	khs	My School card management system	when establishing	not coordinated	EDUCATION, TRAINING, YOUTH WORK	20

Data Collection

From classical production to big data

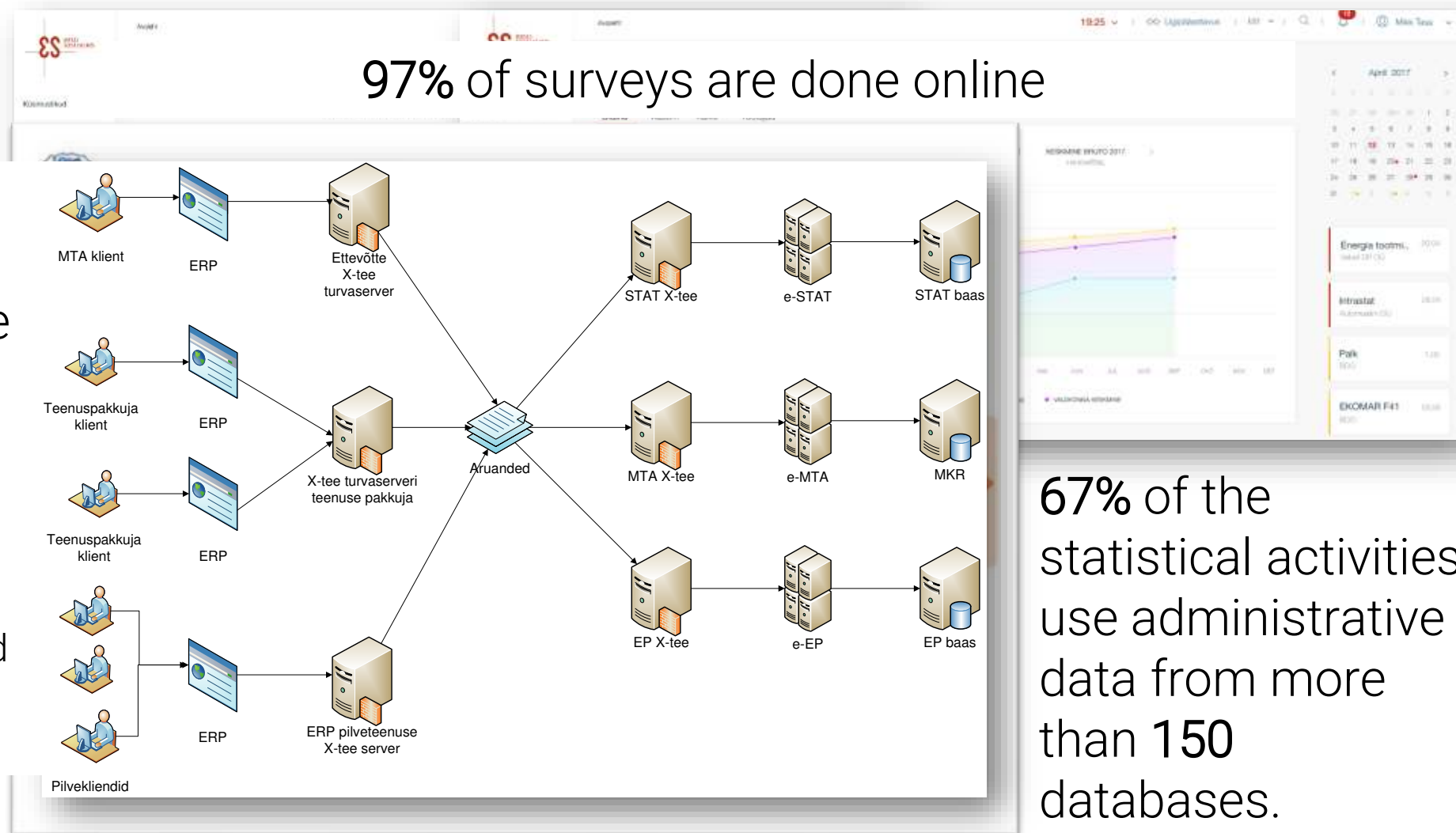
From classical surveys to machine-to-machine solutions

Voluntary
Reporting 3.0
based on state
ontology
XBRL

Cooperation
between:
Estonian Tax Board
Bank of Estonia
Statistics Estonia

STATISTICS
ESTONIA

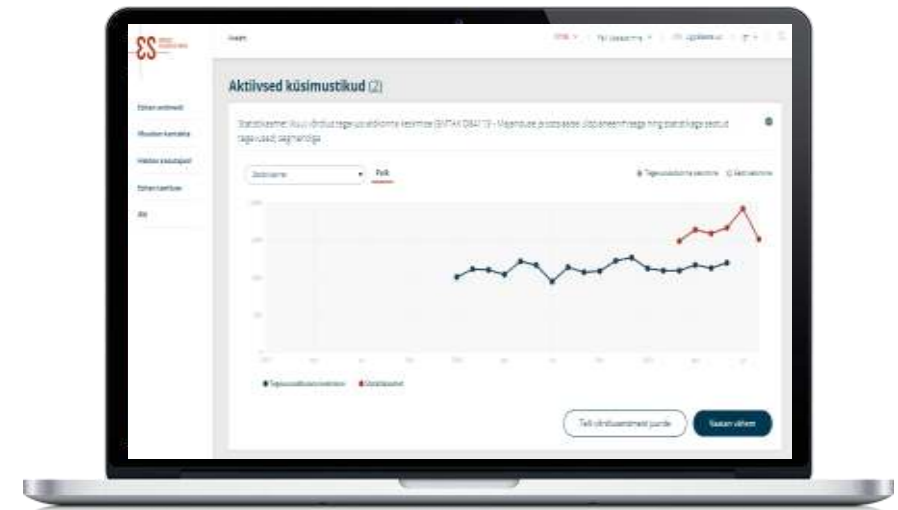
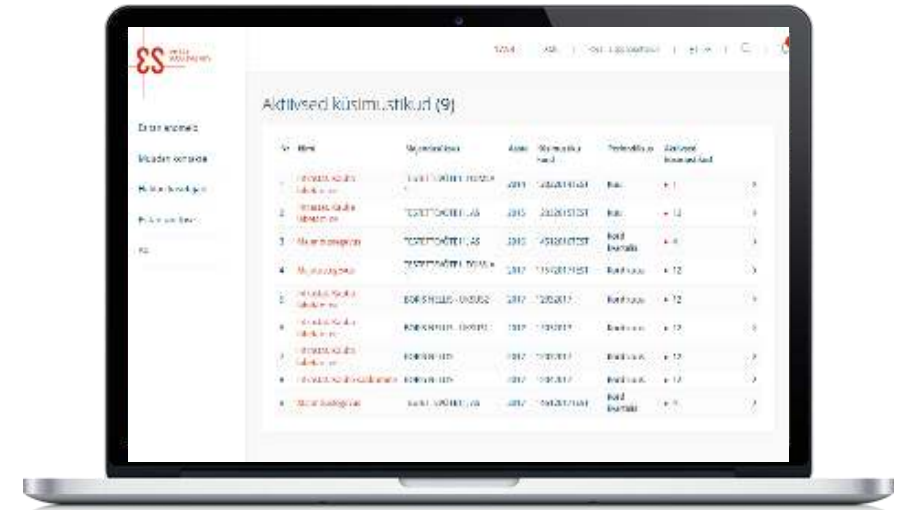
97% of surveys are done online



67% of the
statistical activities
use administrative
data from more
than **150**
databases.

New collection tool: eSTAT

- New visual
- More intuitive movement in the system and questionnaires
- More logical and clearer error messages
- Questionnaires to be submitted are indicated more explicitly
- Contact information easier to manage
- Messages and reminders displayed in the system
- Immediate feedback to respondents



Obligation to use administrative data

- /.../ a producer of official statistics shall primarily use data collected in administrative records, data generated in the course of the activities of state and local government authorities and legal persons or collected by them, if such data allow the production of official statistics complying with the quality criteria of official statistics (OSA § 29(1))
- A producer of official statistics has the right to make proposals for amending the composition of data and the classifications used in the administrative records and databases /.../ (OSA § 29(2))
- A producer of official statistics has the right to link micro-data collected from respondents and administrative records and databases by using characteristics that allow direct or indirect identification of statistical units (OSA § 30(3))
- At the request of a producer of official statistics, chief processors of databases shall submit the data collected in the administrative records and databases (OSA § 28(4))

Supported by Public Information Act

- A database is established by an Act or legislation issued on the basis thereof. (§43³(1))
- Before the establishment of a database or changing the composition of the data collected in a database, introducing a database or terminating a database, the technical documentation of the database shall be approved by the Estonian Information System's Authority, the Data Protection Inspectorate and the Statistics Estonia. (§43³(3))
- Administration system for the state information system (RIHA) serves as a catalogue for the state's information system
<https://www.ria.ee/administration-system-of-the-state-information-system>

Examples

Statistical activity	Administrative data source
Forest resources	Estonian Environment Agency: area of forest and other wooded land and area of stands
Annual statistics of livestock farming	Estonian Agricultural Registers and Information Board (ARIB): number of cattle, sheep and goats by age-class
Construction of dwellings and non-residential buildings	Register of Construction Works: granted building permits (number and floor area of dwellings by county)
Social benefits	Ministry of Social Affairs: total funds used for subsistence benefits and for the provision and development of social benefits and services, etc.

Annual financial statements

- Annual financial statements (AR) — the primary administrative source for annual business statistics. According to the Estonian Commercial Code all Estonian enterprises (excl. sole proprietors) are obliged to submit their annual financial statements to the Commercial Register 6 months after the end of the accounting year.
- Starting from 1 January 2010, commercial undertakings, non-profit associations and foundations are obliged to provide their annual financial statements only electronically.
- Starting from May 2010, Statistics Estonia started to receive annual financial statements data in XBRL format via X-Road (an environment that facilitates making queries to main state databases in Estonia).

Data Dissemination

From database to data science

Client segments and solutions

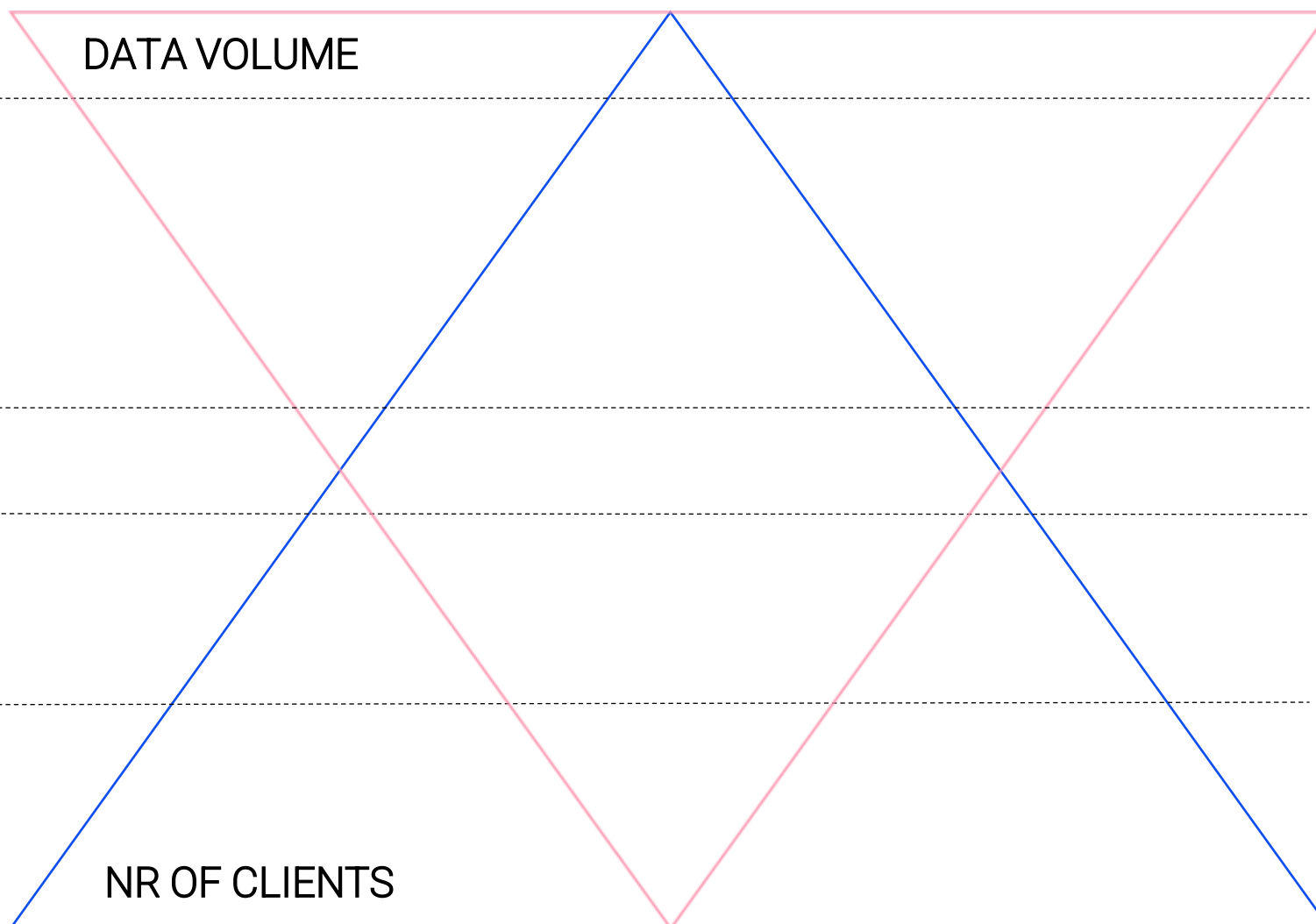
Researchers
(VIP users)

Key users (main
representatives of
public interest)

Media

Main users
(entrepreneurs,
students)

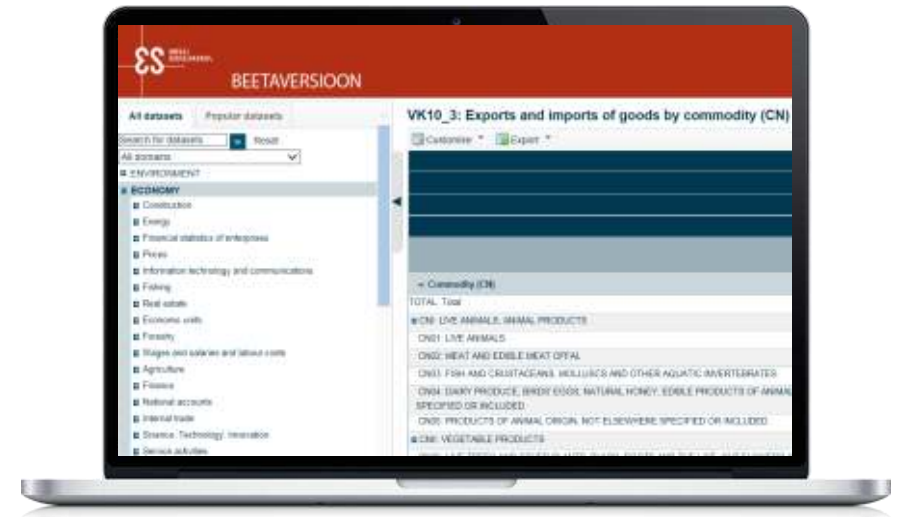
Infrequent users



- Researchers' solution
- .Stat database, GeoStat
- Self-service dashboards
- Dashboards
- Open data
- Press releases
- Datasets
- Publications
- Web applications
- Infographics
- Social media

Publishing

- The results of the statistical activities of Statistics Estonia are published in the Statistical Database.
- Statistical data of interest to the public are announced in press releases.
- All news and releases are subject to 0h principle: no stakeholders get information before the official release.
- Currently 2 synchronised dissemination platforms:
 - PX-Web (since April 2001) – primary
 - .STAT (since November 2017) – beta



POPULATION - Population indicators and composition, events

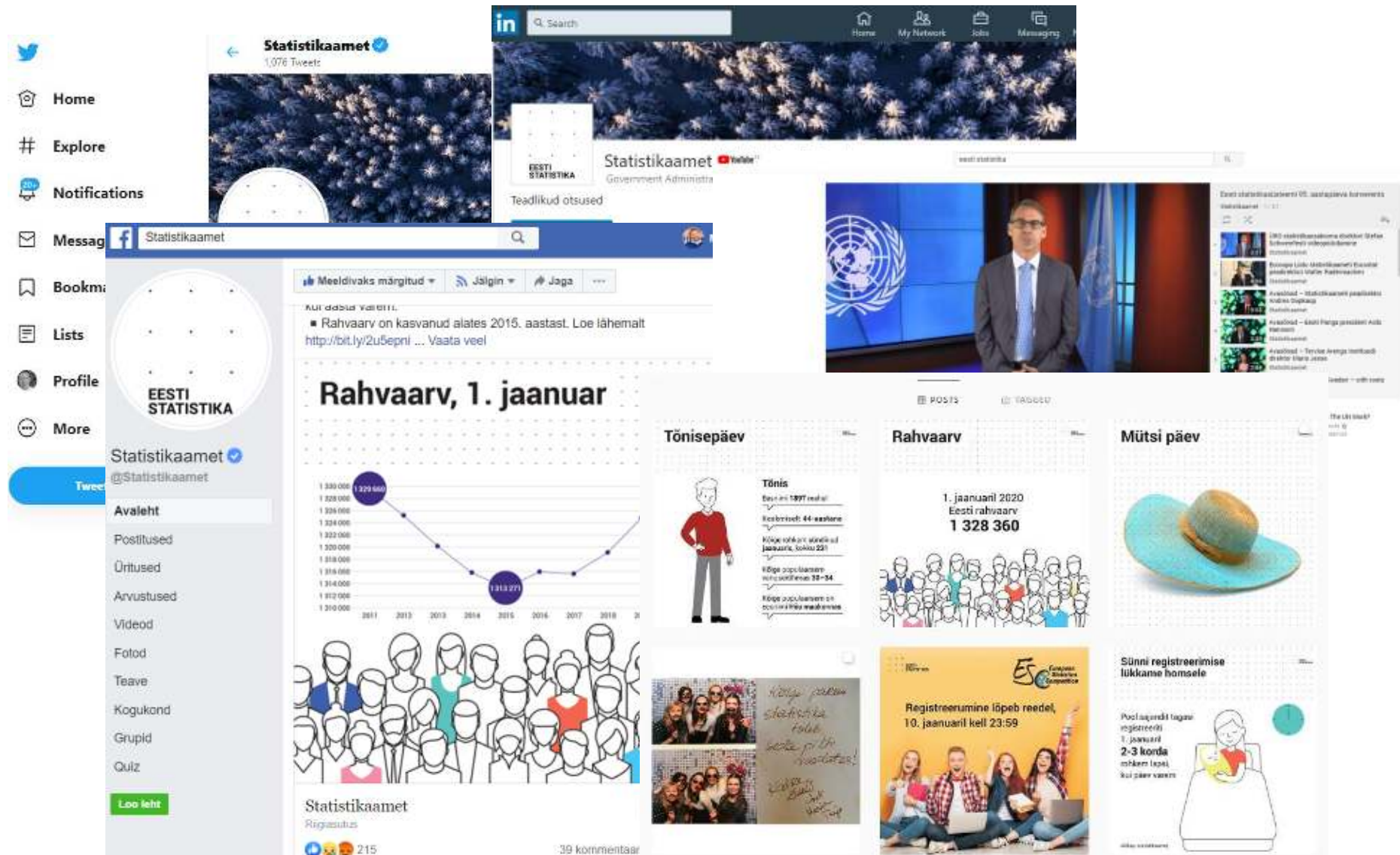
SOCIAL LIFE - Culture, education, households, labour market, work-life quality, etc.

ECONOMY - Agriculture, construction, energy, finance, foreign trade, national accounts, wages and salaries and labour costs, etc.

ENVIRONMENT - Natural resources and their use, environmental accounts, state of environment, agri-environmental indicators, etc.

MULTIDOMAIN STATISTICS - Integration, sustainable development, youth monitoring

Social media (all major channels)



Automated requests and orders for information

- Request for information provides data on published official statistics. The request for information is answered by e-mail, phone or chat.
- Machine-learning chatbot (called Iti) gives answers based on the official statistical database.
- Requests have doubled since the introduction of Iti, while only the number of e-mail requests has decreased.



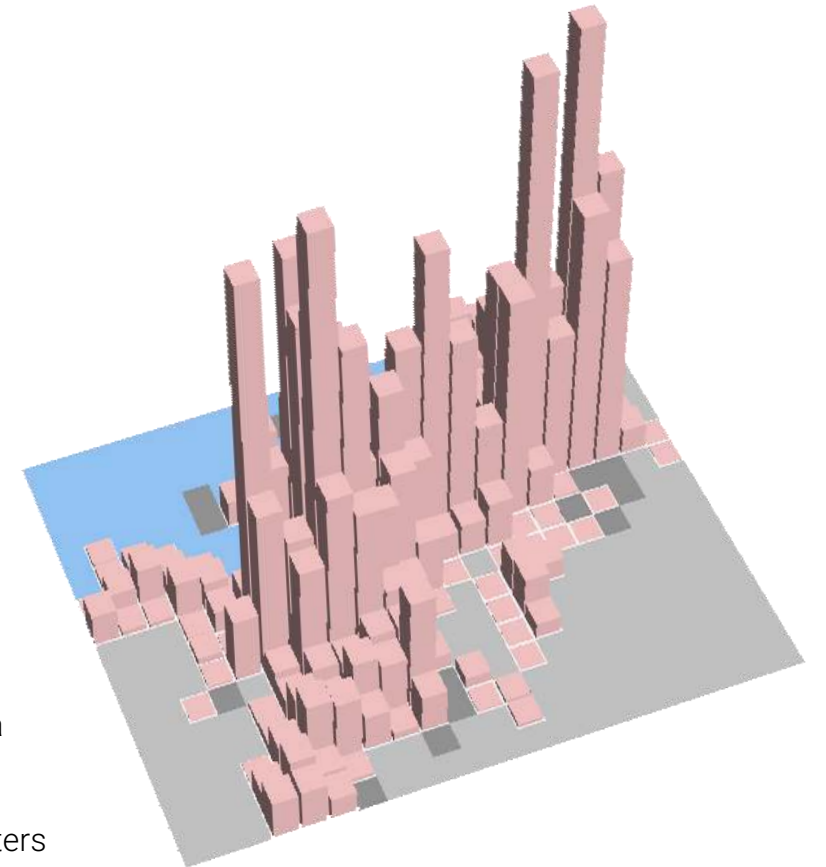
Data visualisation and data science



Tallinn

New area of experimental statistics:

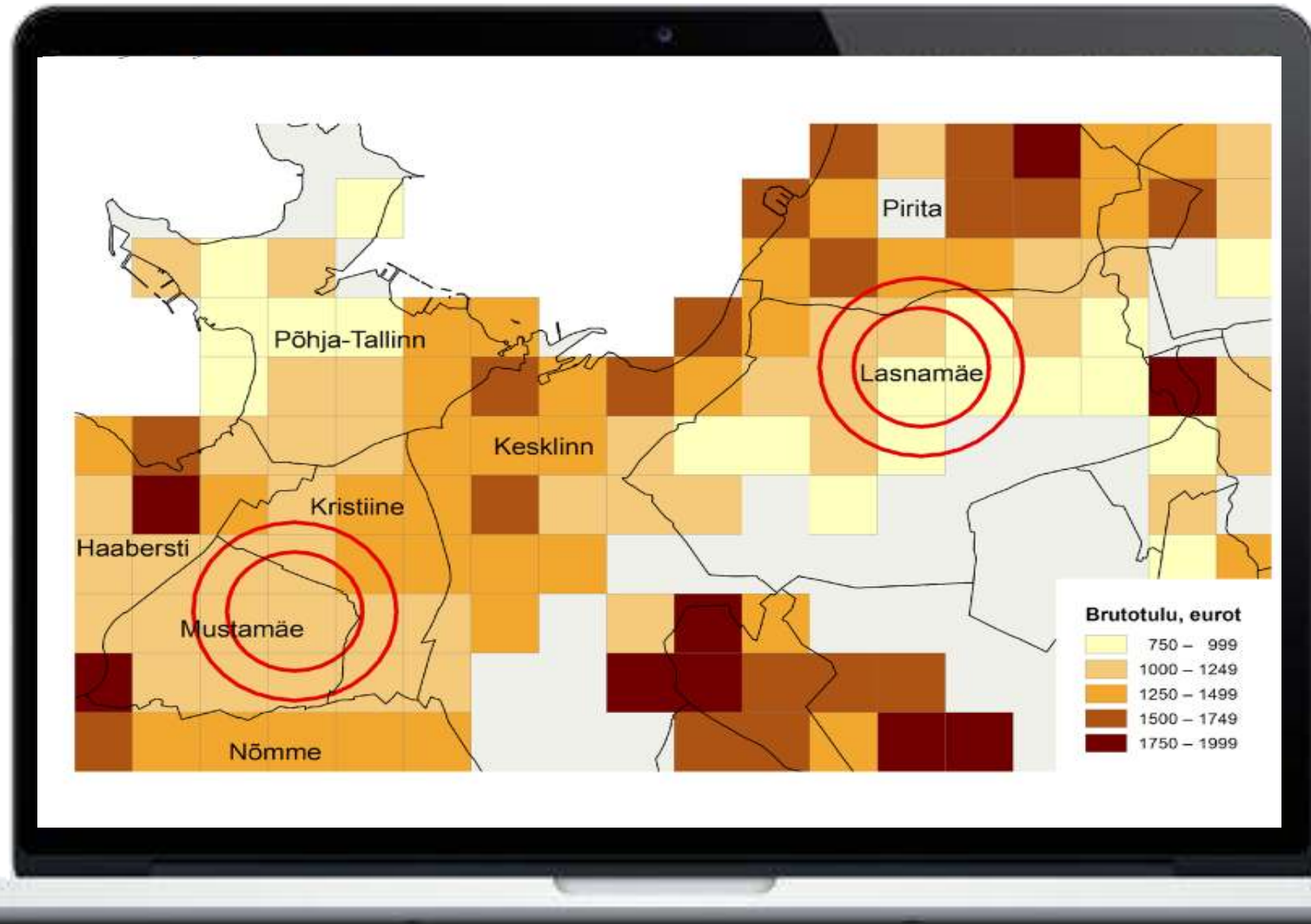
- More real-time to spot critical areas
- More community-centred to provide better life for citizens
- More interlinked with public services
- More visual and GIS-based
- Developed in closer cooperation with universities, research organisations and communities



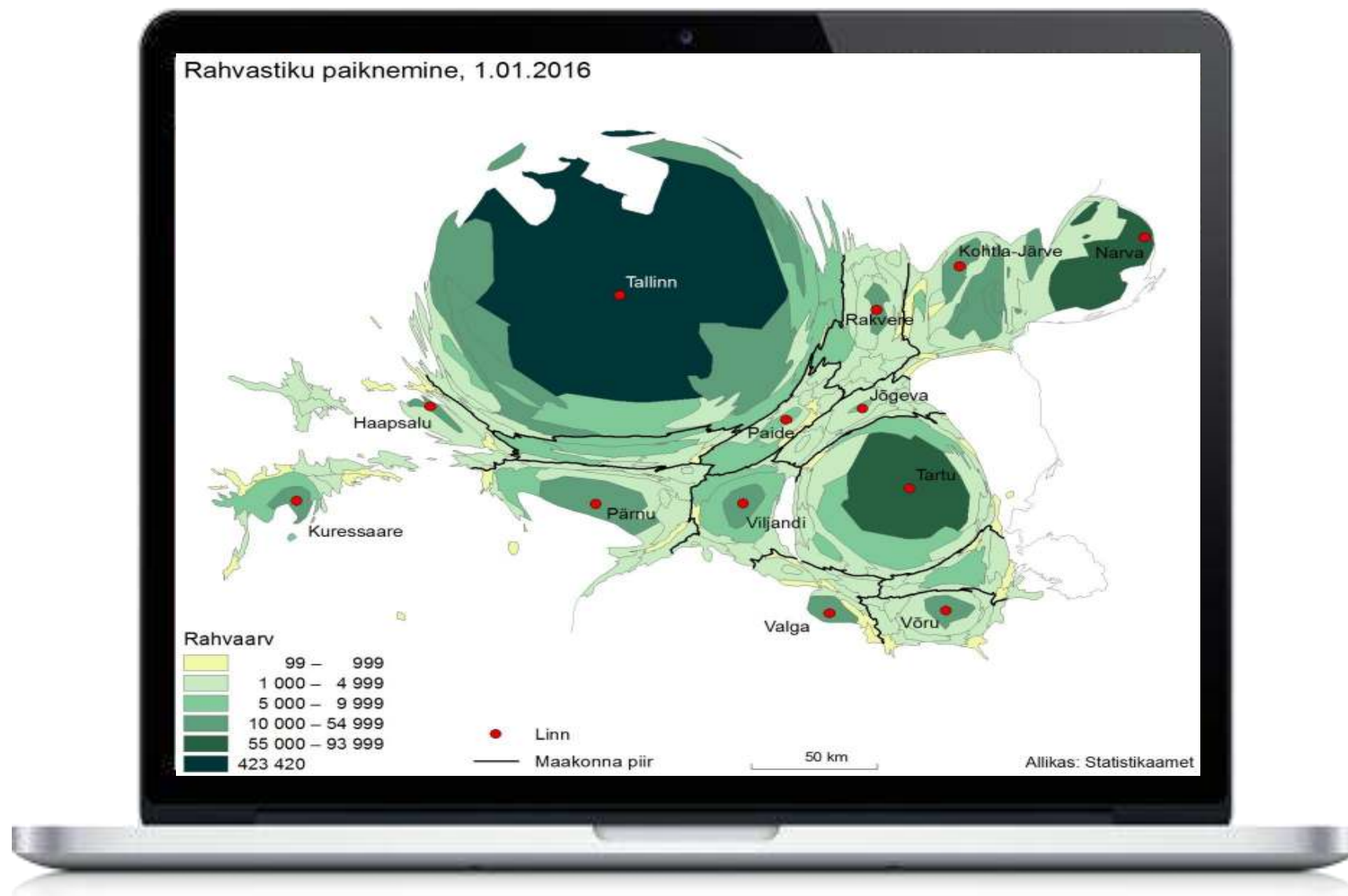
Sources:

Electricity metre data
Population register
Employment register
+ over 20 other registers

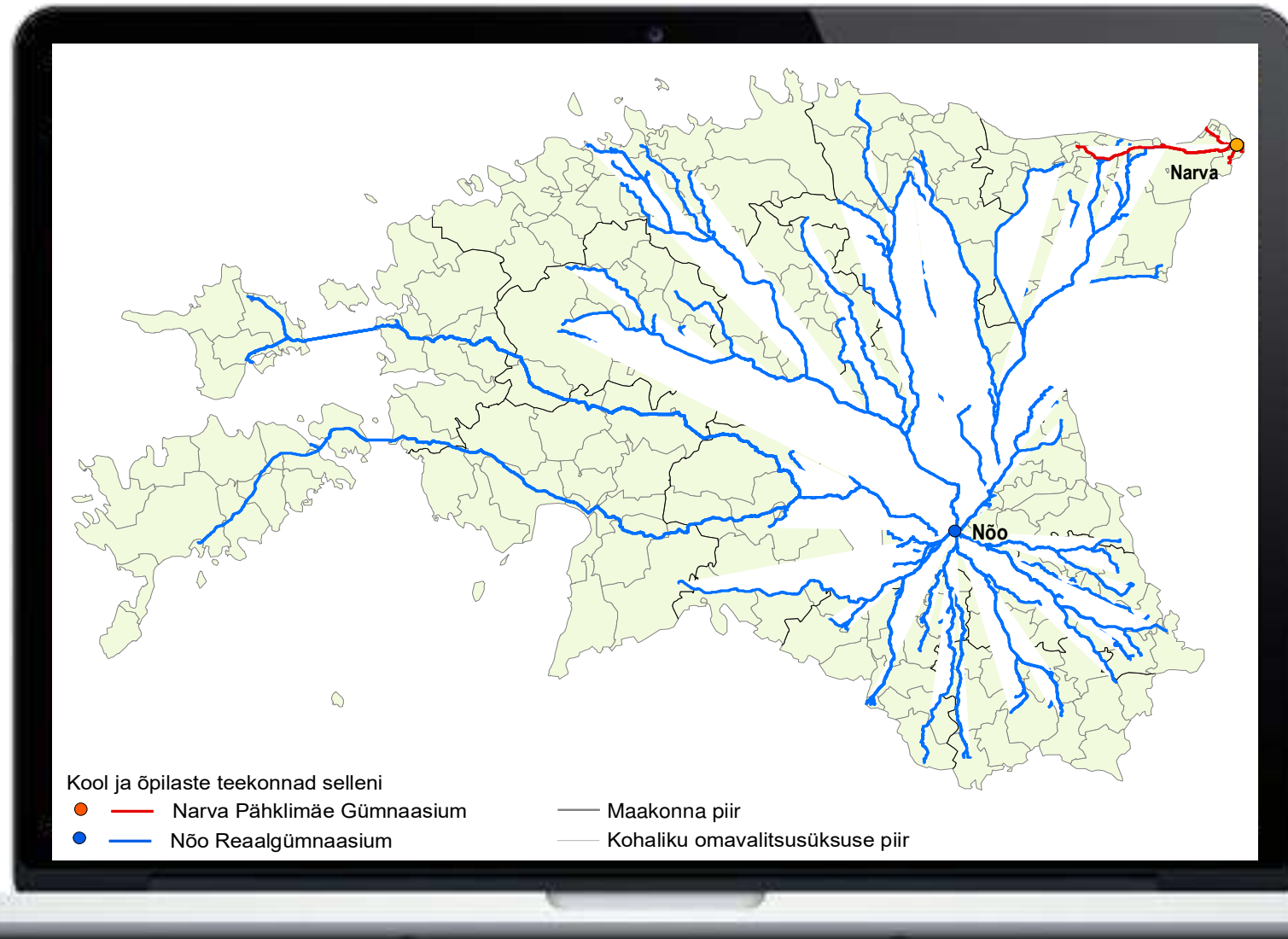
Example: Population and average income



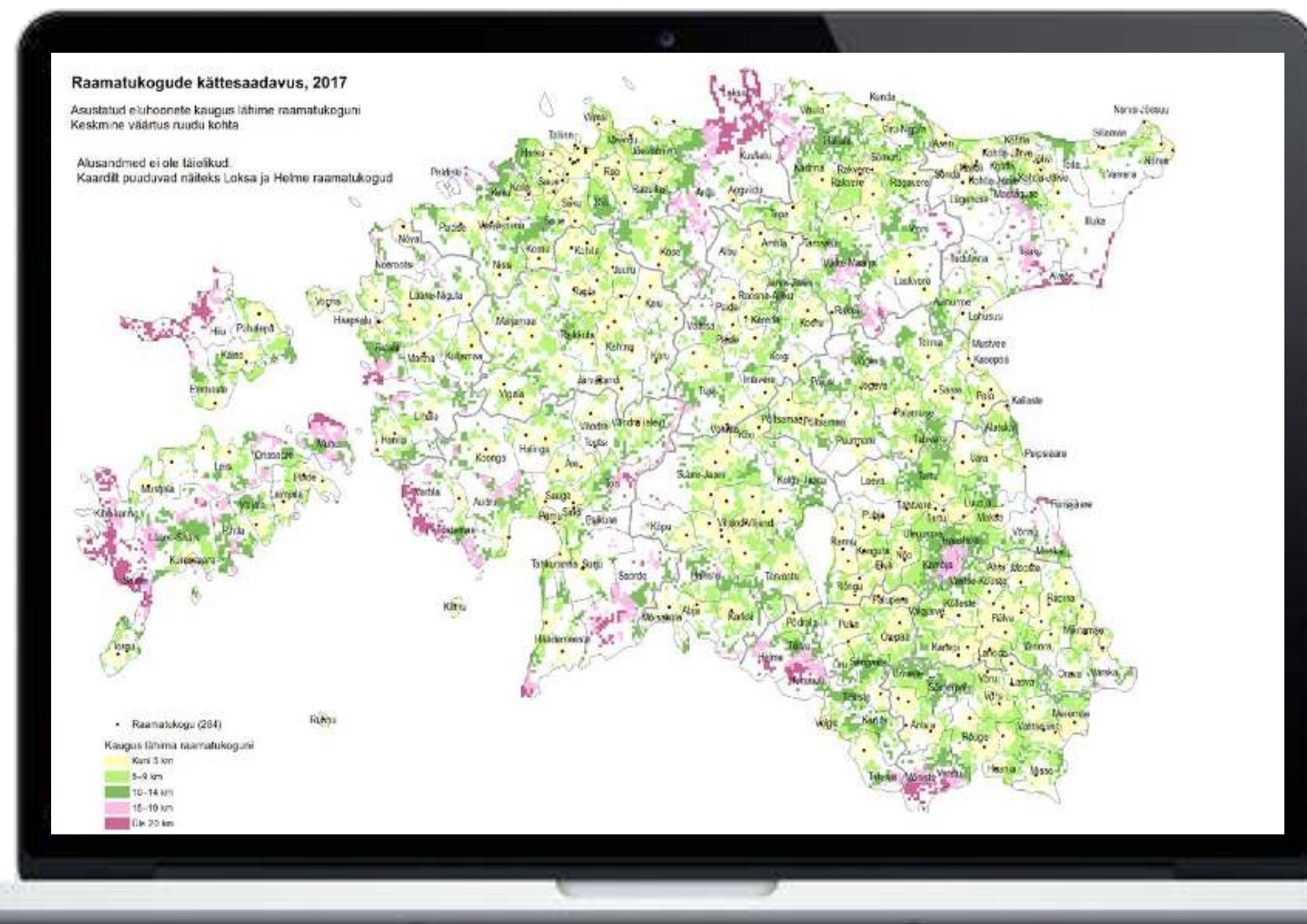
Population: Gastner-Newman method (ArcGIS)



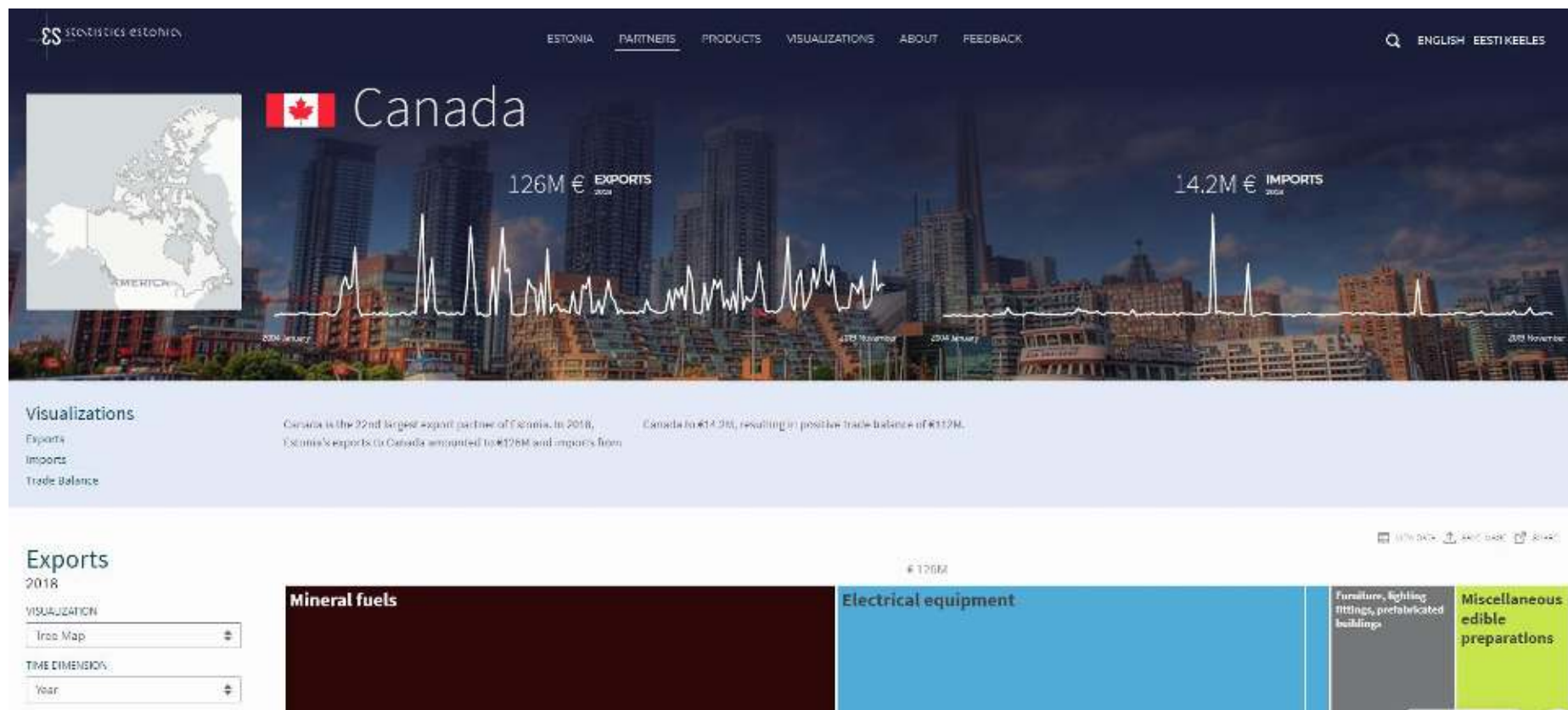
Movement of secondary school students, 2016



Availability of public libraries, 2017

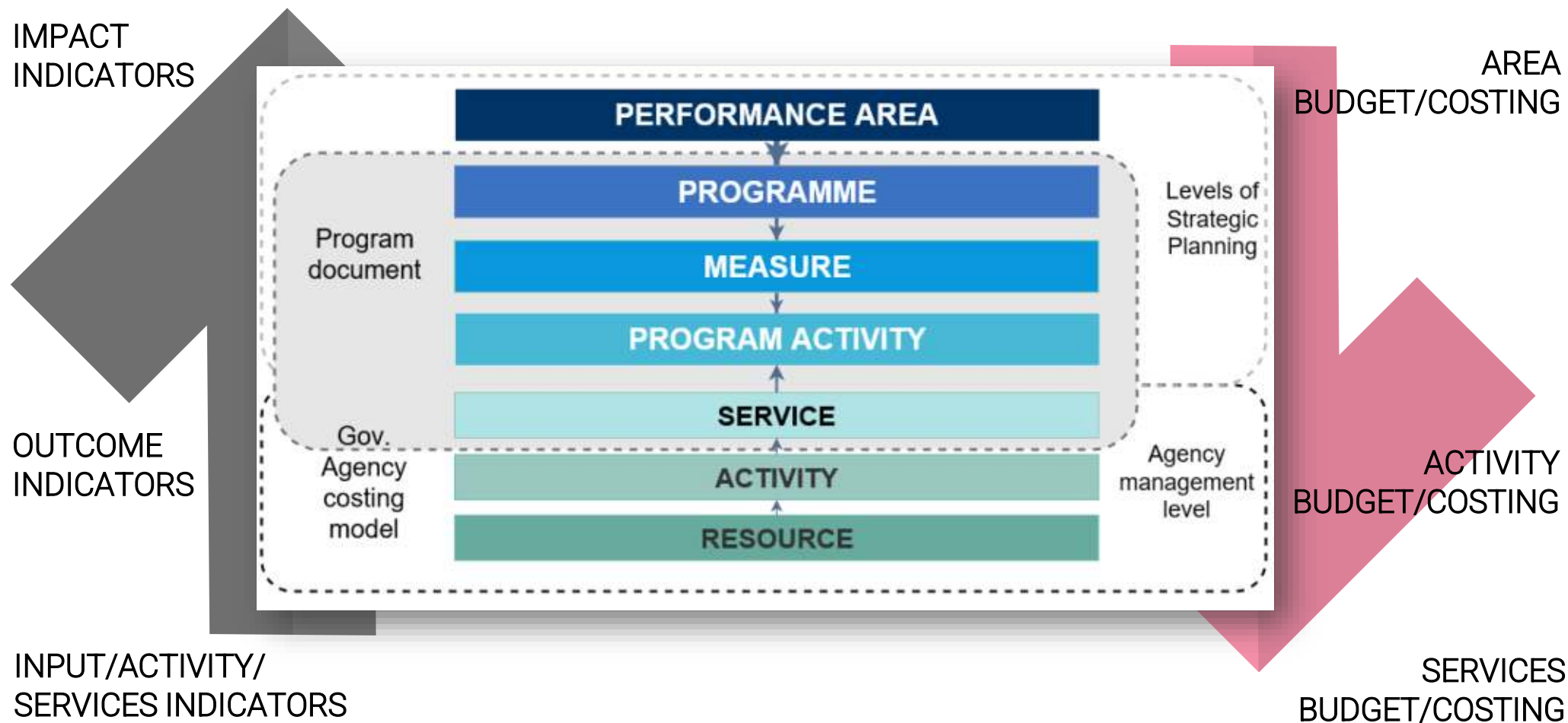


Foreign trade visualization app <https://data.stat.ee/>

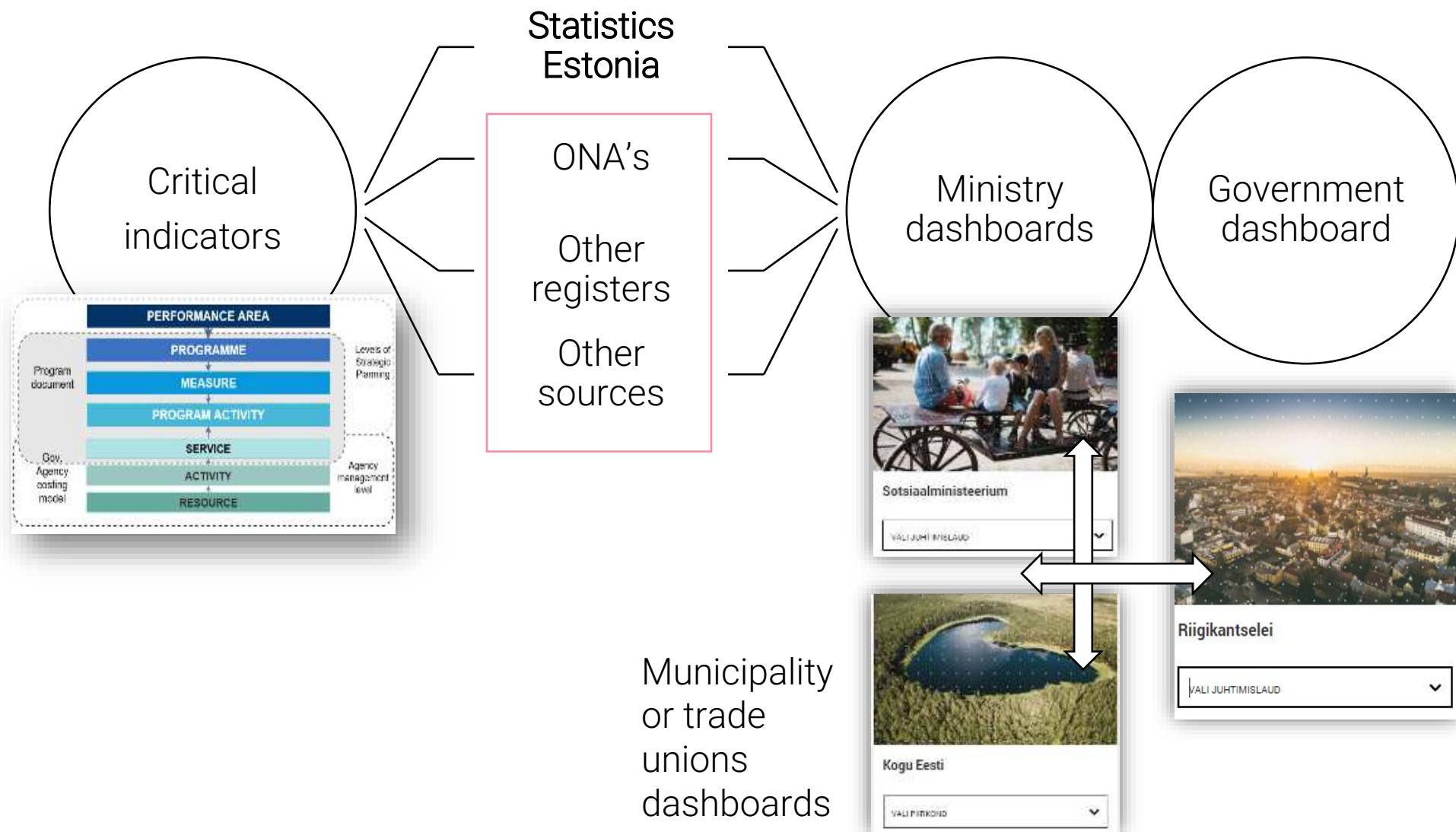


* Max 90 days from the end of period to visual dissemination (monthly data)

Strategic actions and performance-based budgeting



Same information in a personalised format



Dashboards <https://juhtimislauad.stat.ee/>

Key clients

Central government

Local government

Trade unions

Indicators:

incl. short
explanation, source
of information

Build your own
dashboard

Dashboards

Business



Accountancy

CHOOSE REGION



Commerce

CHOOSE REGION



Information and communication technology

CHOOSE REGION



Tourism industry

CHOOSE REGION

View all

Local Government



Whole country

CHOOSE REGION



HARJU COUNTY

CHOOSE REGION



HIIGU COUNTY

CHOOSE REGION



IDA-VIRU COUNTY

CHOOSE REGION

View all

Central government



Government Office

CHOOSE REGION



Ministry of Education and Research

CHOOSE REGION



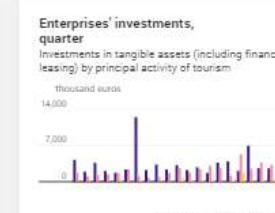
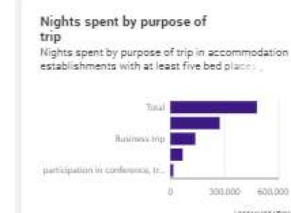
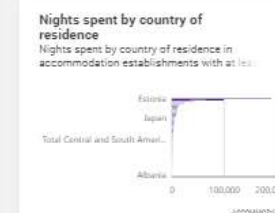
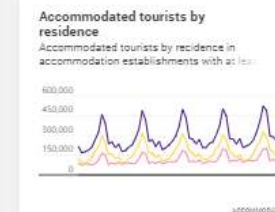
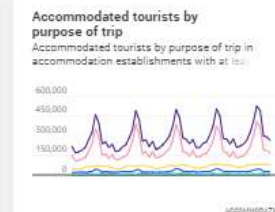
Ministry of Social Affairs

CHOOSE REGION



Ministry of Culture

CHOOSE REGION



The Tree of Truth

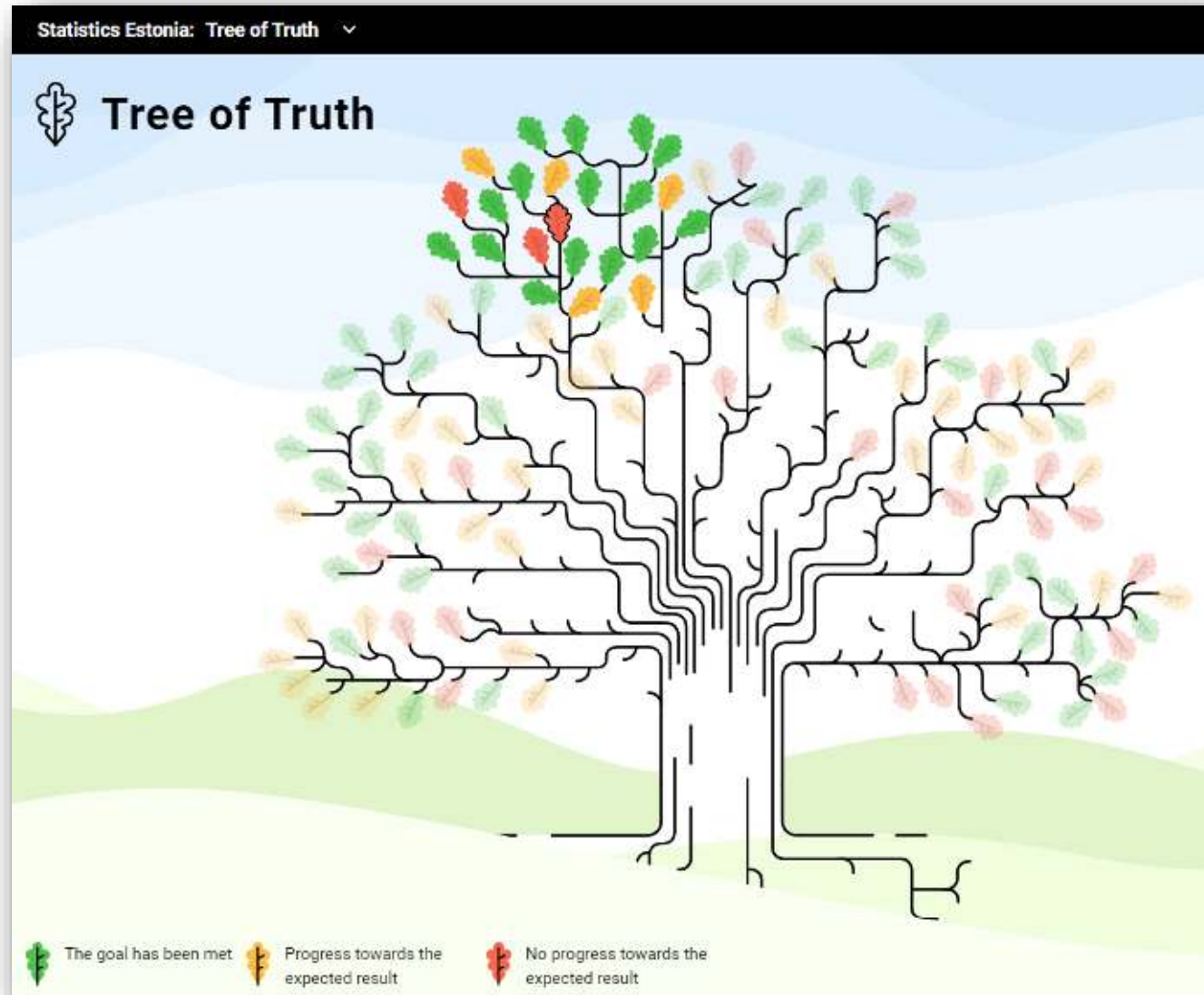
OPTIMIST / CREATIVE

<https://tamm.stat.ee/>

Layers:
strategic plans

Branches:
performance areas

Leaves:
135 indicators
incl. short
explanation, current
and target state
with source of
information



Statistics Day: celebrated every year on 20.10.2020

- Major event of the period; opening speech was made by President of the Republic of Estonia
- 19,600 webpage visits during the first month
- Chancellor of Justice presented Statistics Estonia with the national Clear Message Award 2020
- Regular use at schools and by the media
- Refreshed look of the Tree of Truth revealed at the beginning of this year (4 January)

The Tree of Truth shows how Estonia is doing

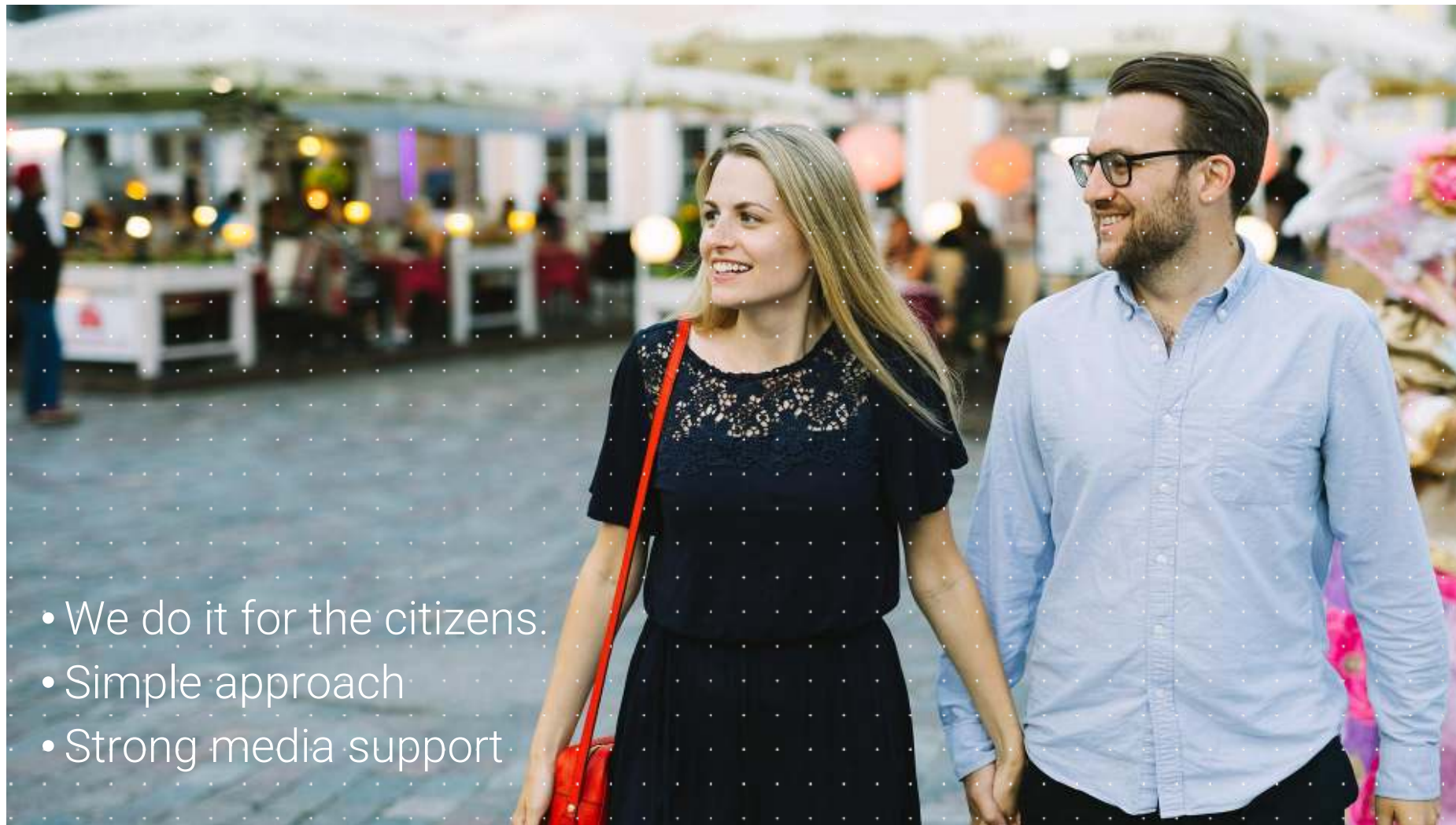
NEWS Posted on 17. October 2019 11:00

Today, Statistics Estonia and the Government Office presented a new web application called the Tree of Truth. It is a gauge of important national indicators, giving a simple, honest and objective picture of how the country is doing.



President of Estonia, Kersti Kaljulaid

Empowering



- We do it for the citizens.
- Simple approach
- Strong media support

Thank you!

Questions?