

# Artificial Intelligence and Big Data analysis in e-governance

Mihkel Solvak

[mihkel.solvak@ut.ee](mailto:mihkel.solvak@ut.ee)

Center of IT Impact Studies (CITIS)

Tallinn e-Governance Conference

May 29-30, 2018



UNIVERSITY OF TARTU



REPUBLIC OF ESTONIA  
TAX AND CUSTOMS BOARD



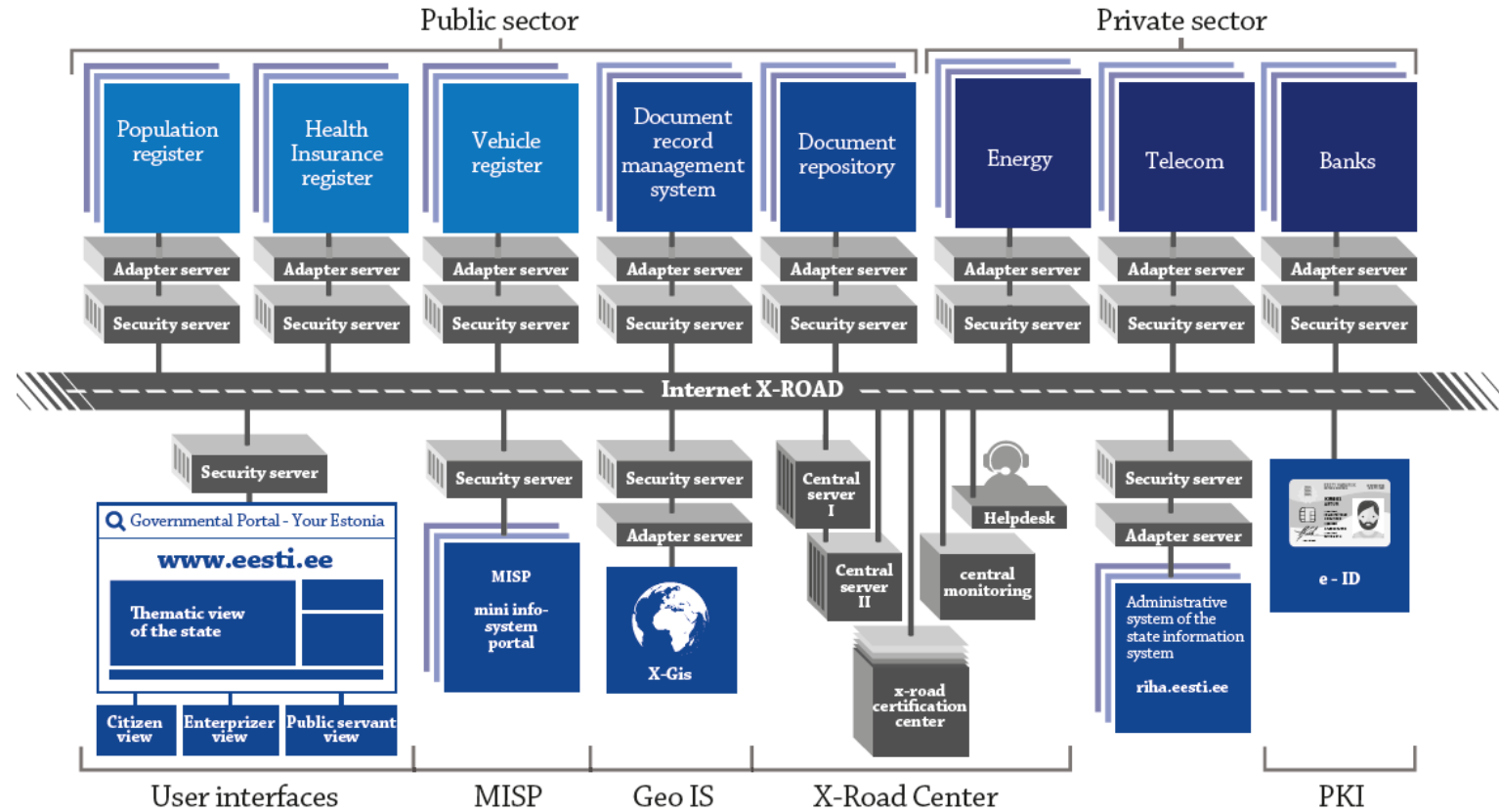
European Union  
European Social Fund



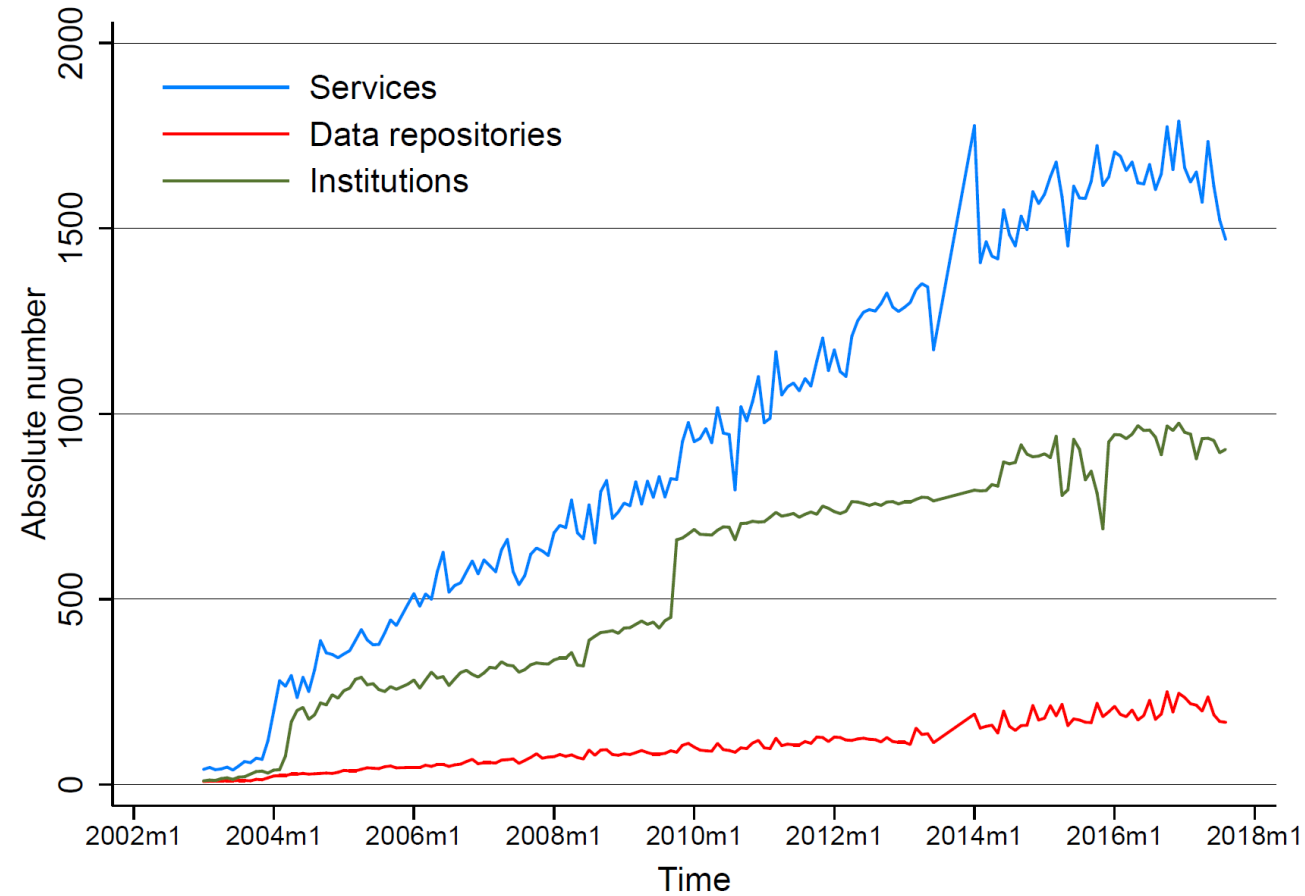
Investing  
in your future

A LOT OF DATA

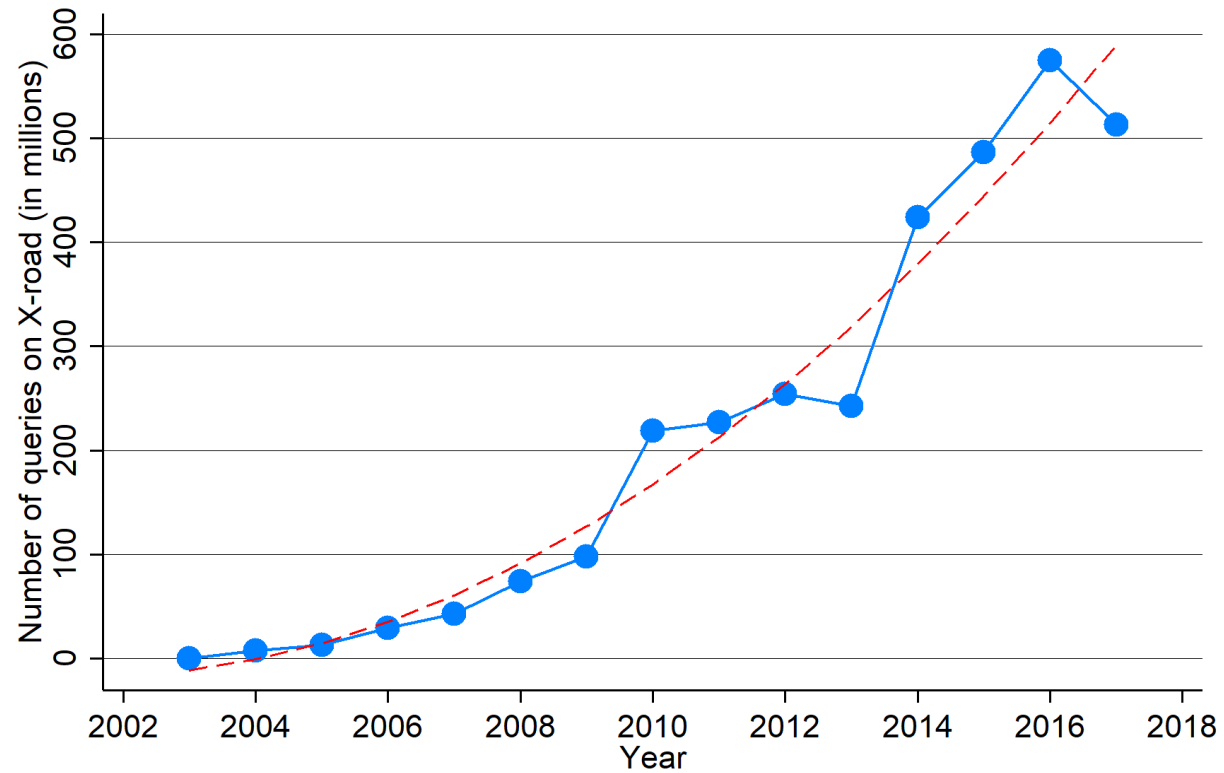
# Infrastructure



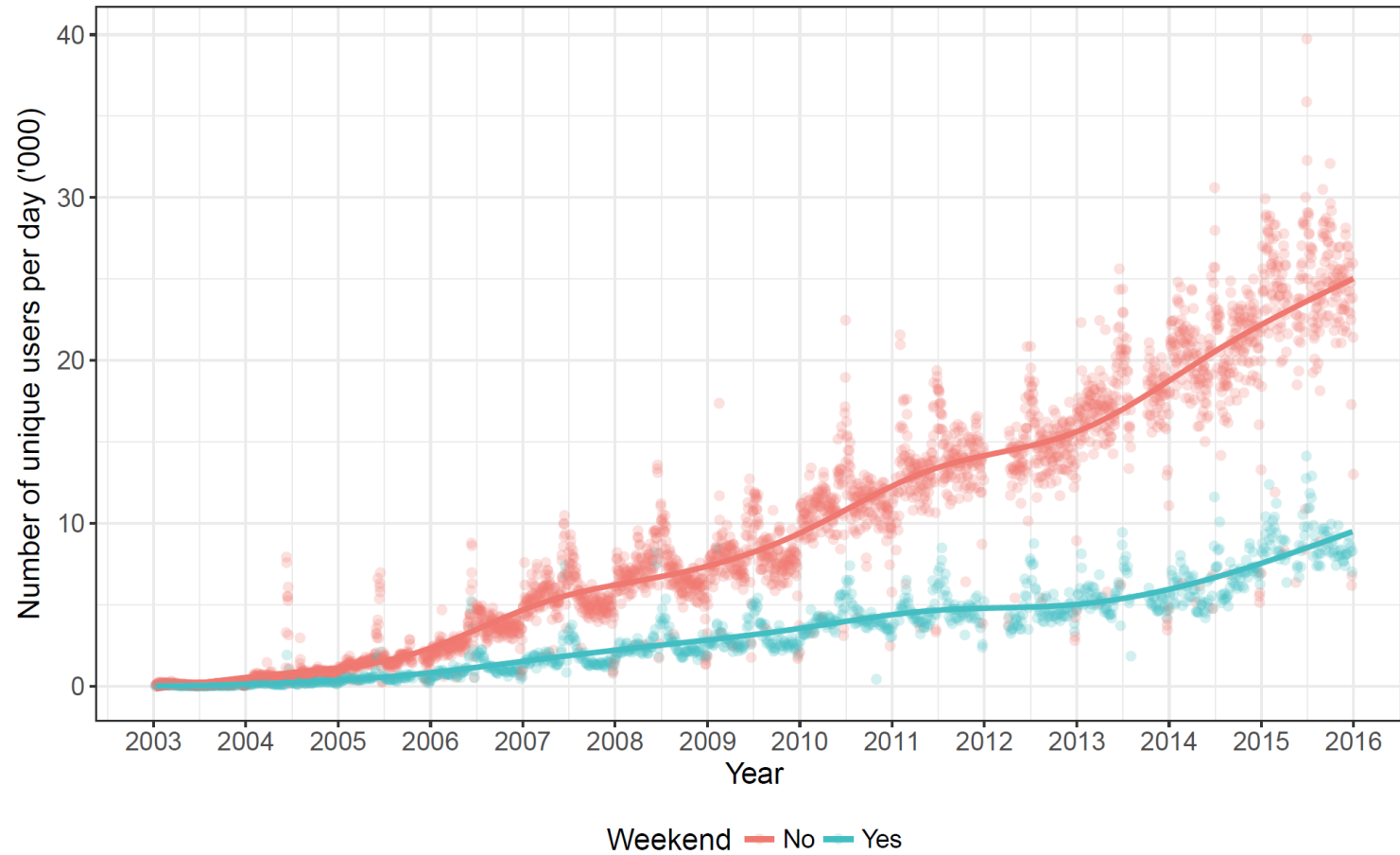
# Number of e-services on X-Road



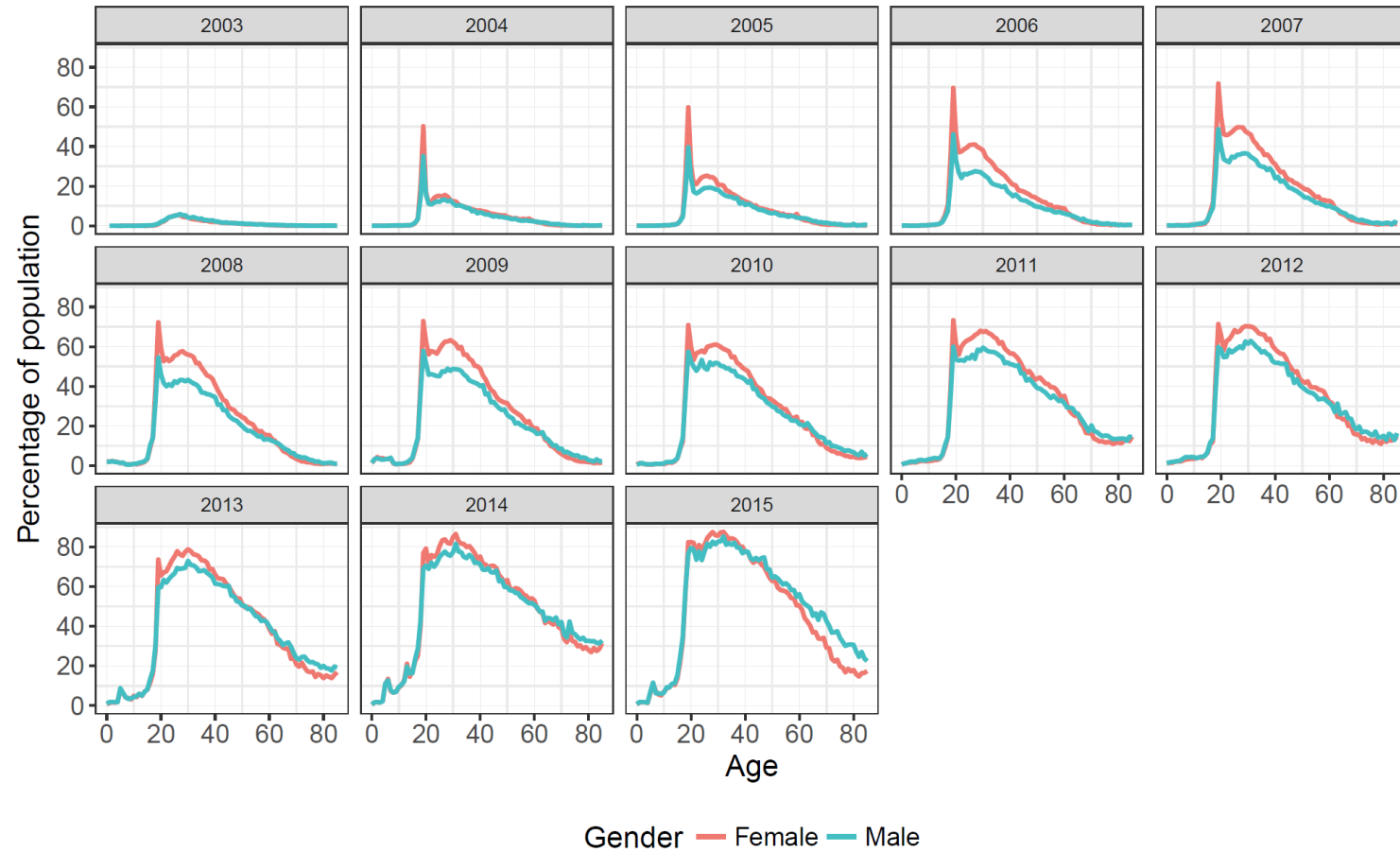
# Number of queries on X-Road



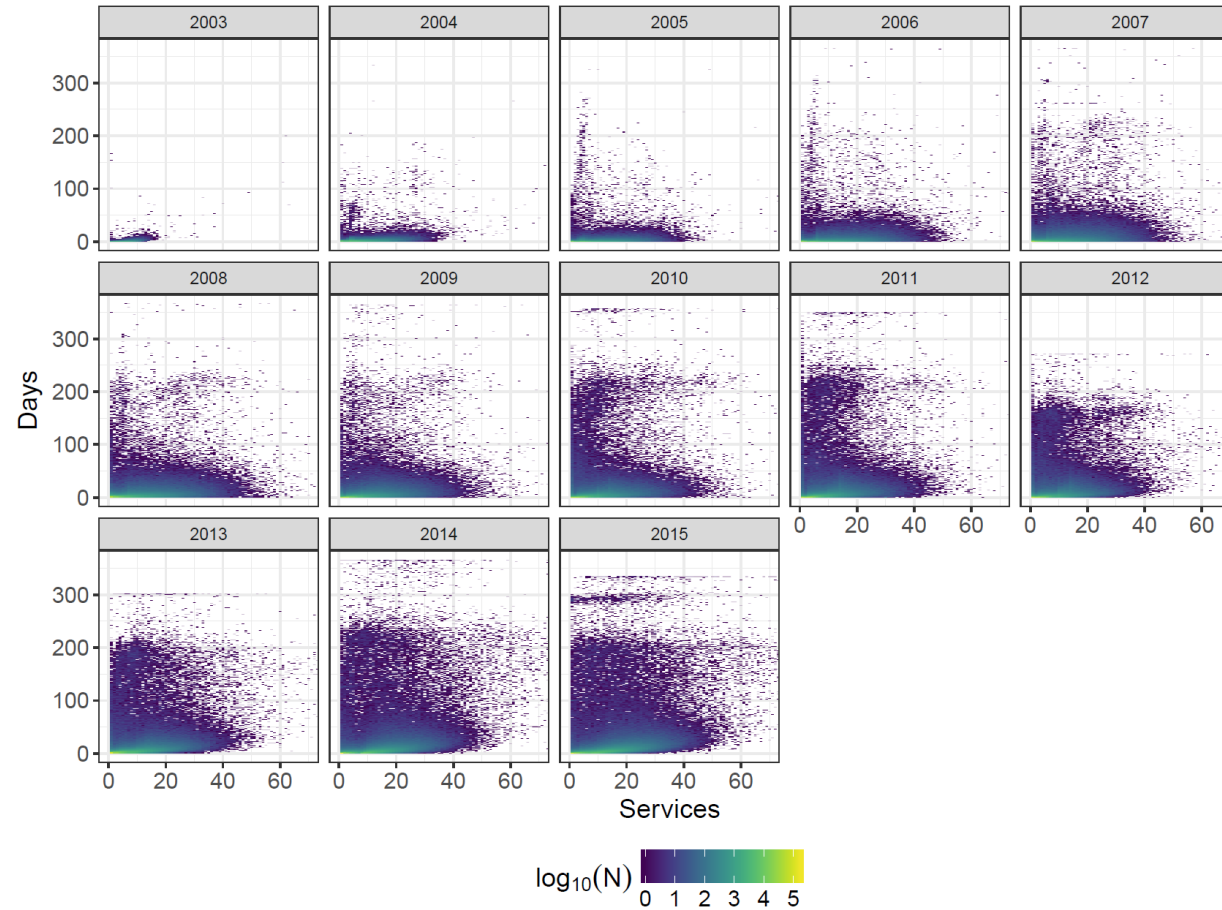
# Number of people on X-Road



# Number of people on X-Road



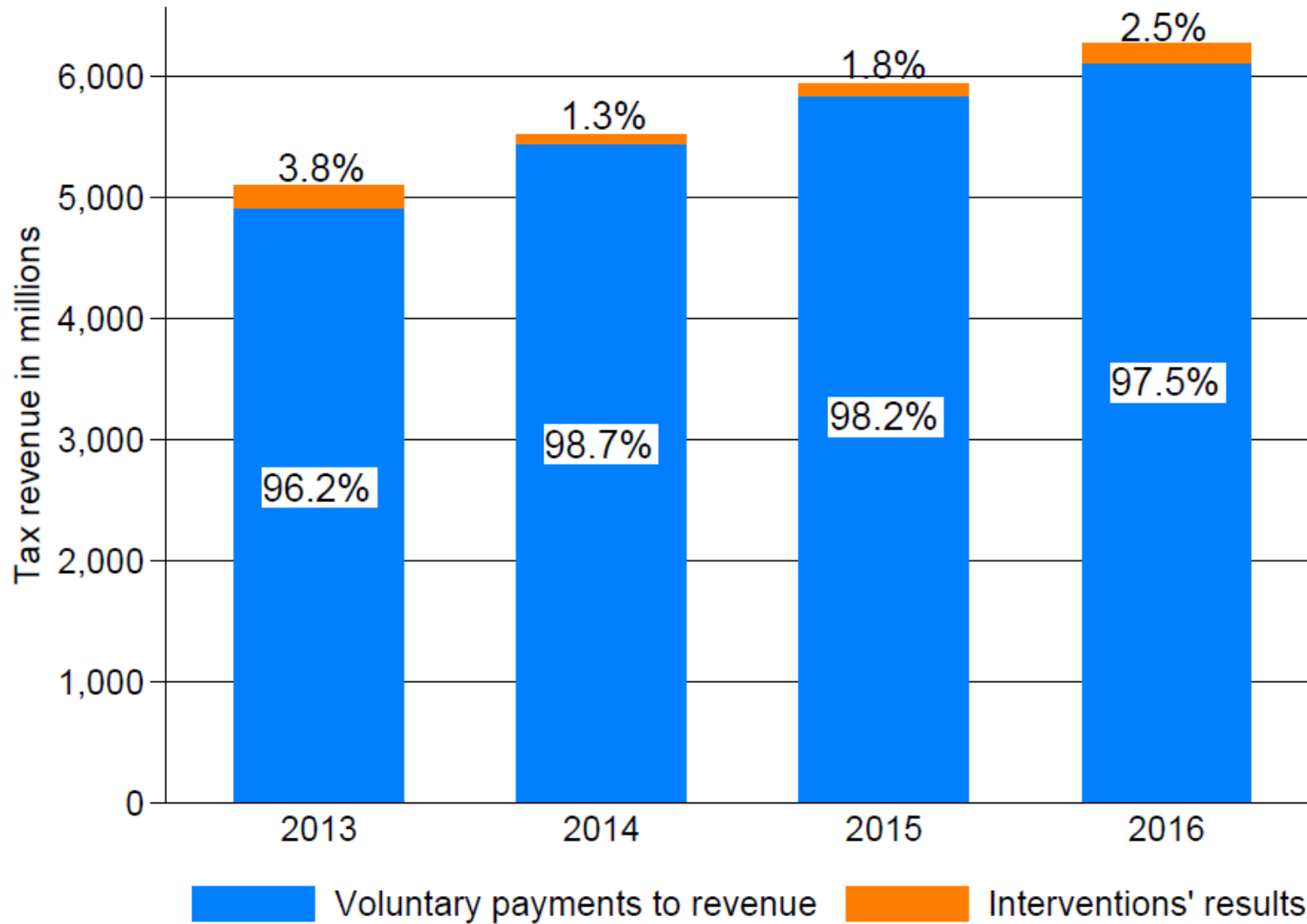
# Services used on X-Road





ADDING VALUE TO DATA

# Tax revenue in Estonia



# Real-time economy

- Declaration data
  - ~ 166 000 monthly declarations
  - Comparable time-series from 2002-2016, i.e. 16 years
- Goals:
  - Monitor
  - Provide input for probability based decisions
  - Forecast for planning

# Real-time economy

- Data:
  - VAT and VAT INF declarations
  - Social and Labor Tax declarations
  - Business registry
  - VAT subject registry
  - Estonian Institute of Economic Research (EIER)
  - Eurostat




# Real-time economy

- The apps:
  - Always up to date toolbox, role based access to views
  - Non-intrusive - no need to collect additional data and no need to collect data in new formats for the parties involved
  - Future - fast needs based prototyping and development of new apps
- Let us look at two apps for example

# Forecasting tool

**Vali tase**

KOKKU

 Lae CSV

**Vali uuritav tunnus**

Kogumyyk\_maksuvaba\_kalbega

**Proгноosi pikkus kuudes**

1

6

12

**Minimaalne kuude arv treeninguks**


36


120

**Aegrea alguskuupäev**

2010-1

Kalvita

 Uuenda väliseid tunnuseid



Kombinatsioon

Komponendid

Kaalud

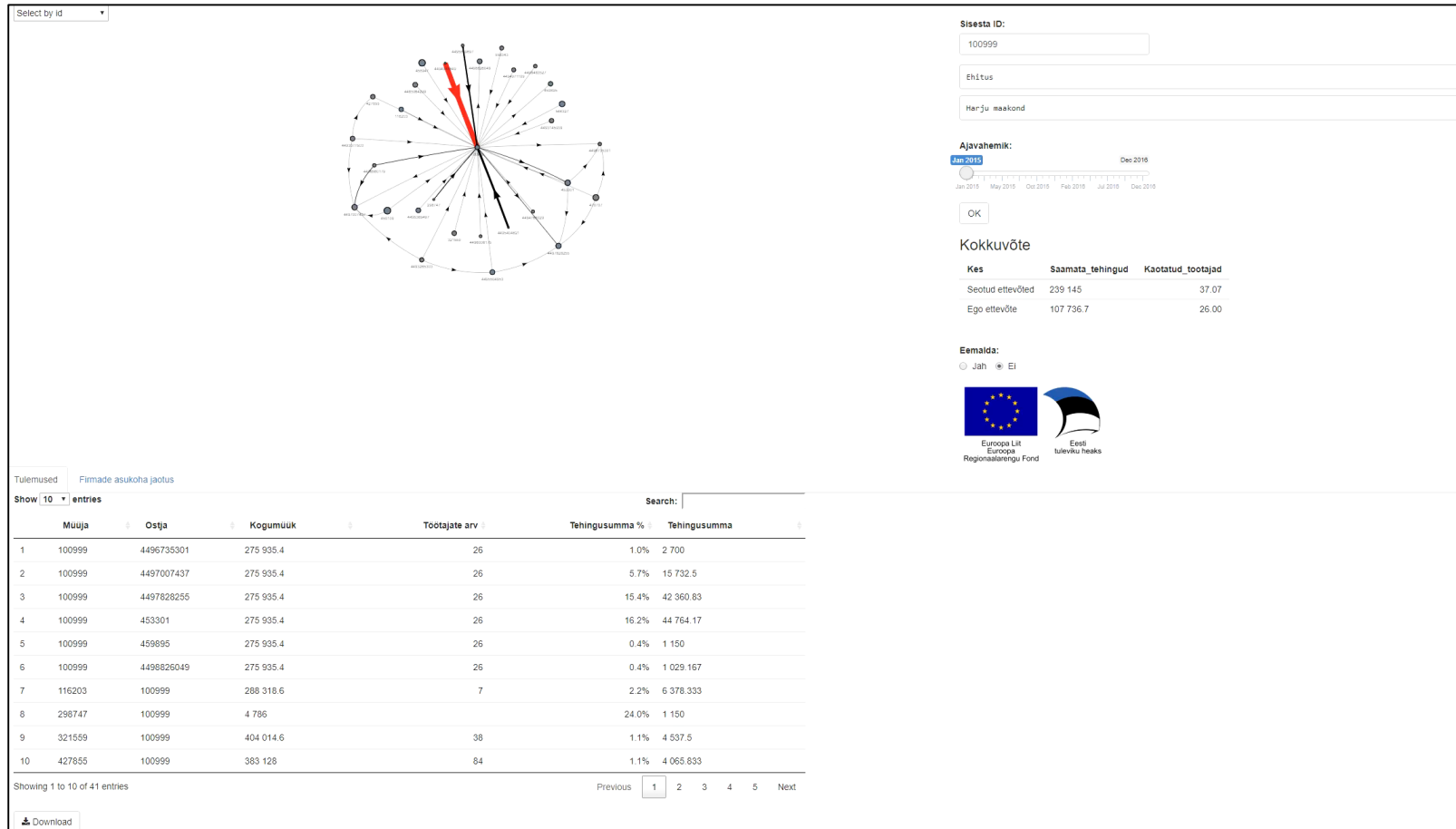
Diagnostika

Ülevaade

Andmed

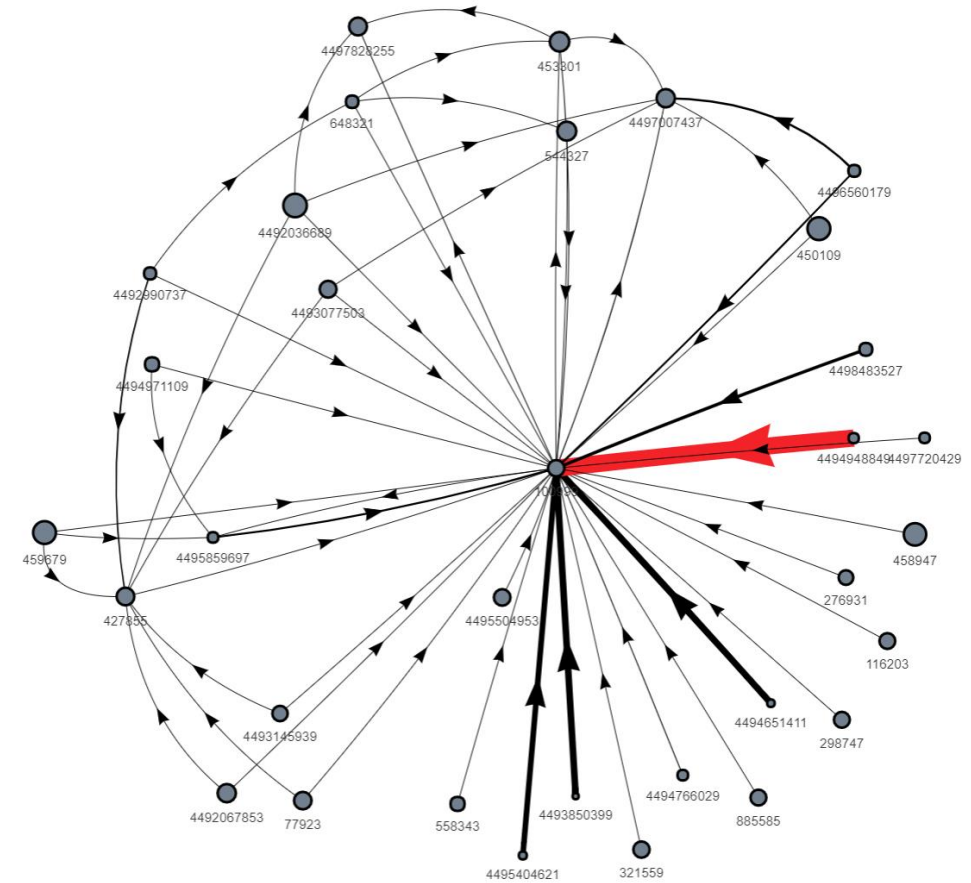
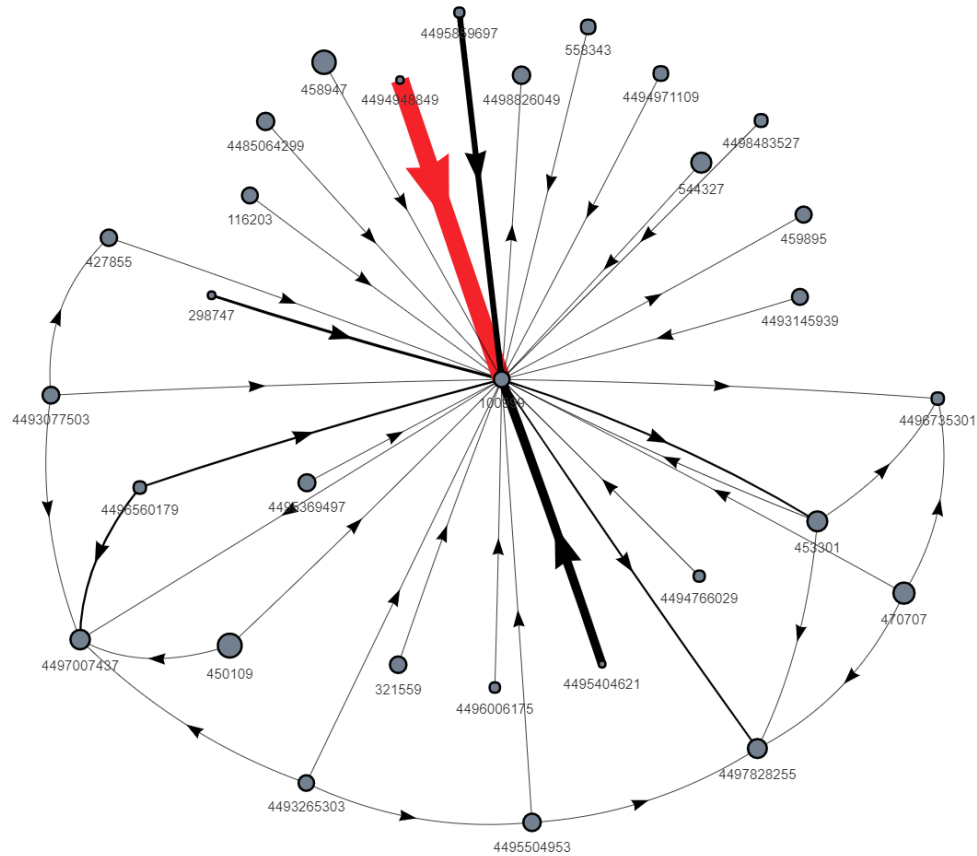
Seaded

# Network negative shock

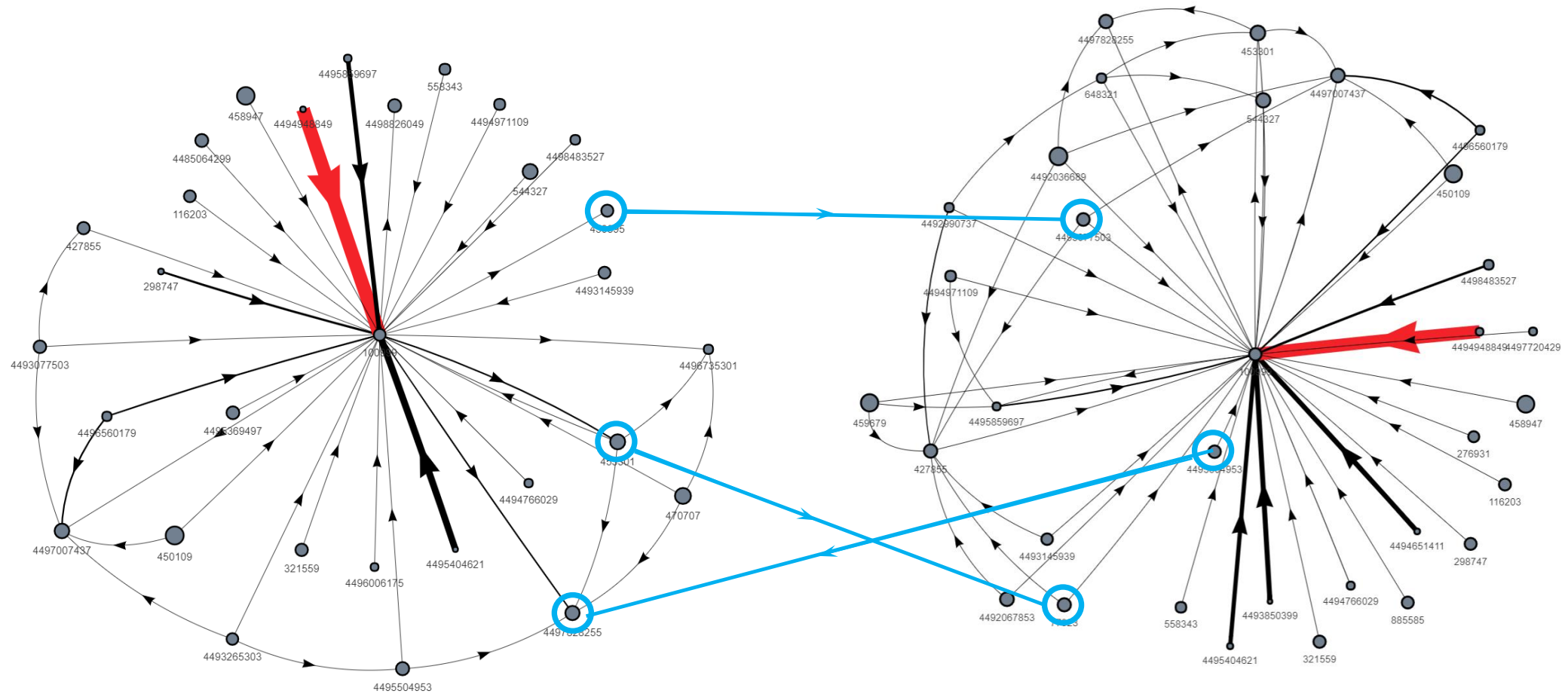




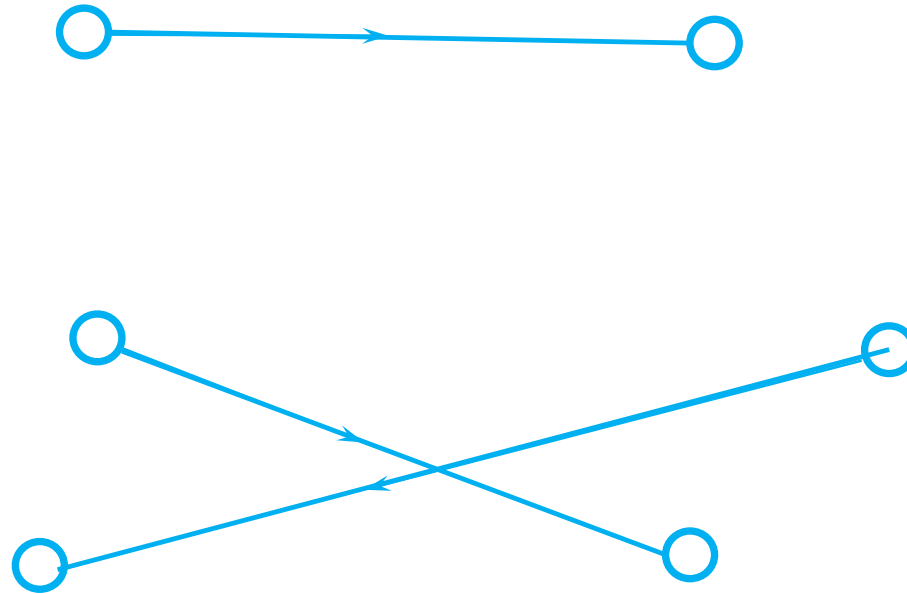
# Real-time economy – future outlook



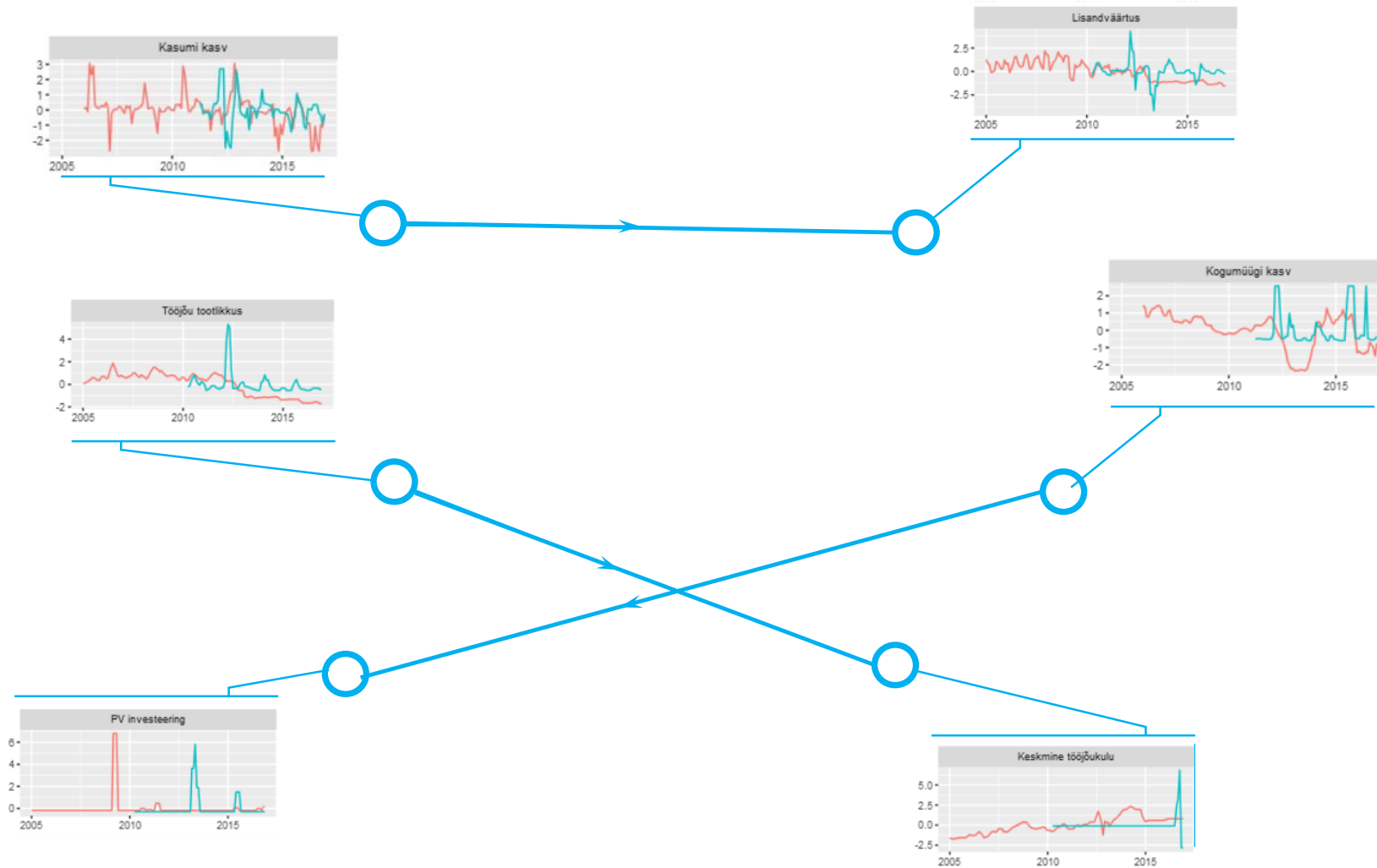
# Real-time economy – future outlook



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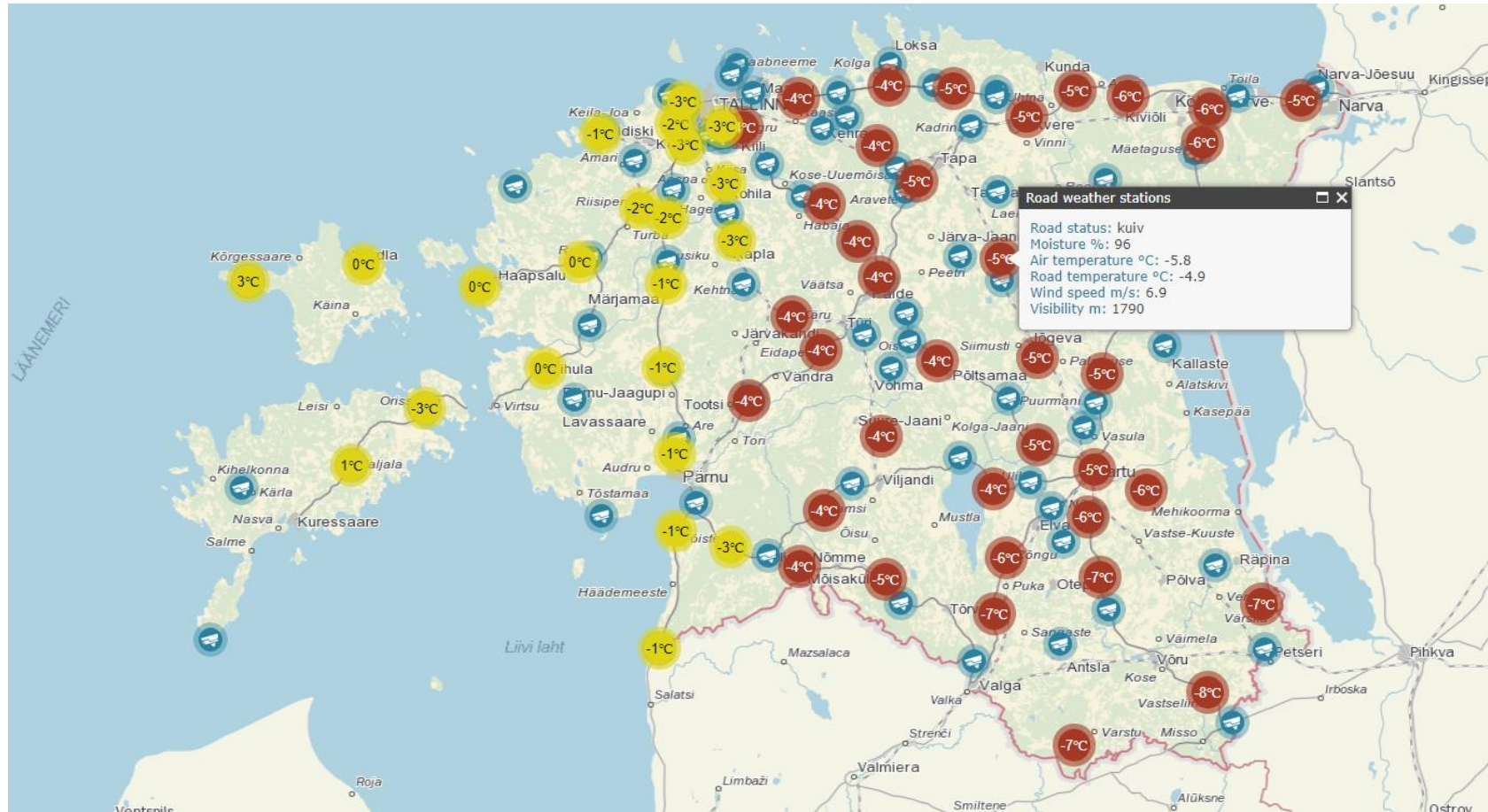


# Real-time economy – future outlook



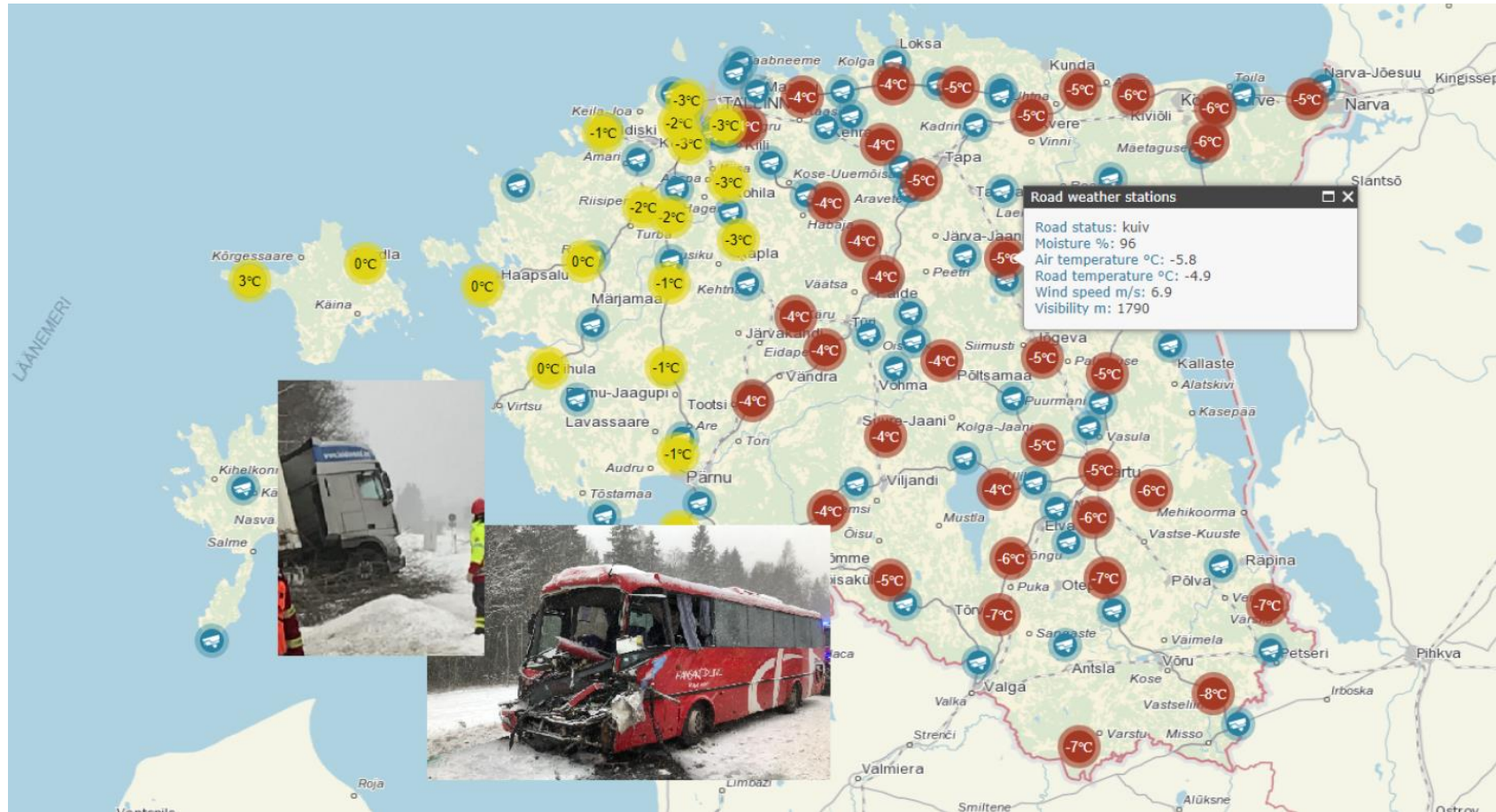
# PREDICTIVE SERVICES USING AI & MACHINE LEARNING

# Real-time accident prediction

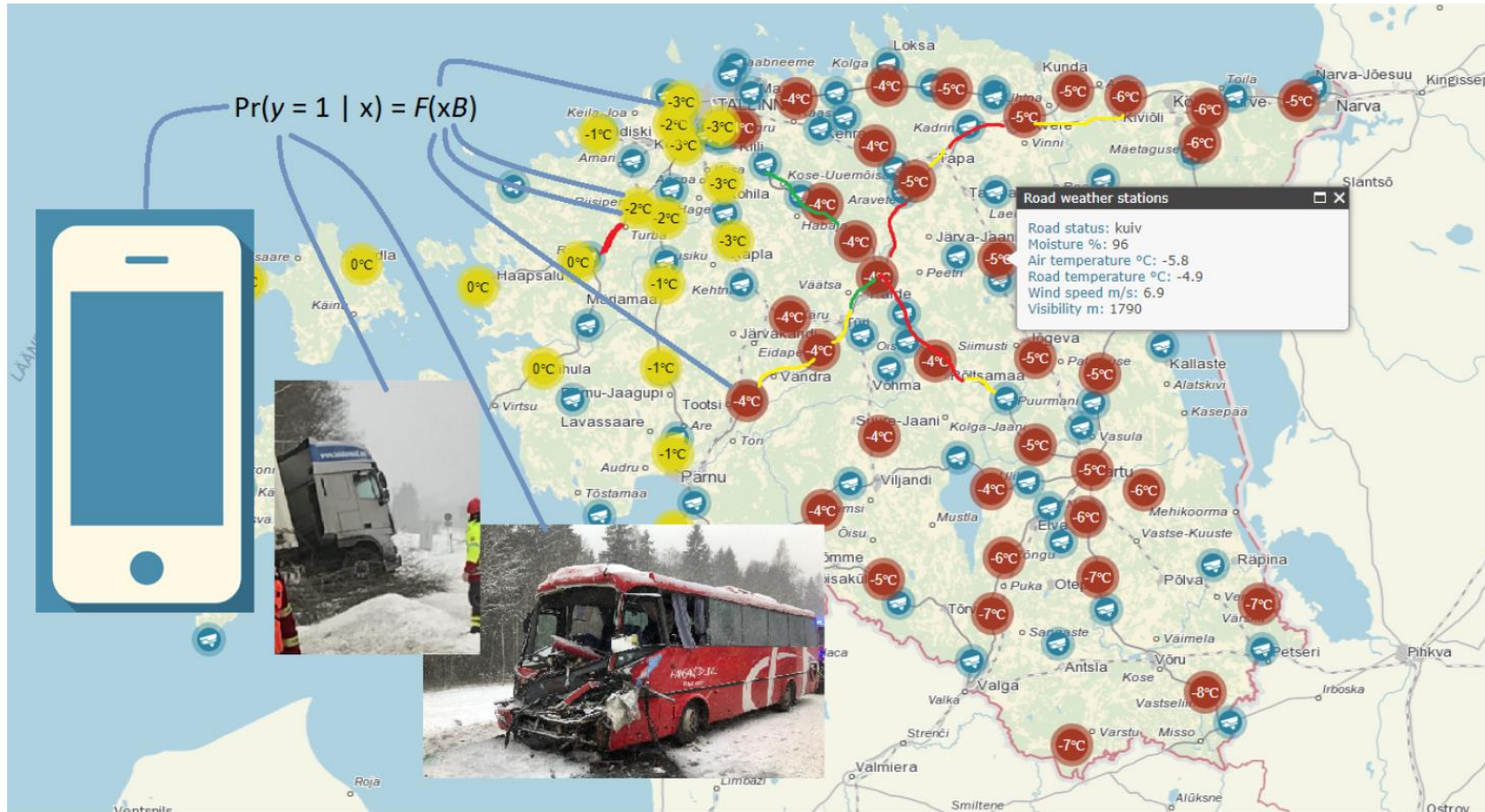




# Real-time accident prediction

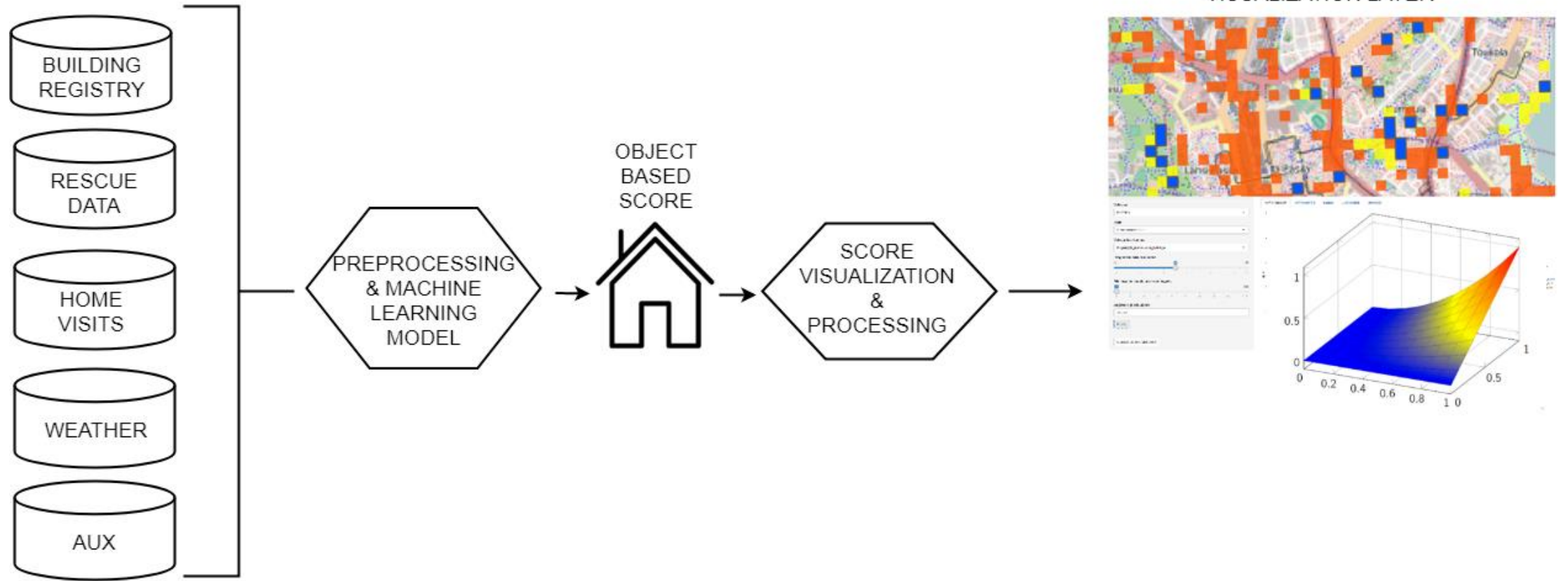


# Real-time accident prediction





# Real-time fire hazard scoring



Thank you!