City of Tallinn’s Roadmap to Process Automation and e-Services

Martin Männil
CIO of the City of Tallinn
City of Tallinn

- Area: 159 m²
- City administration: 1,500 employees
- ICT department: 35 employees
- Population: 441,245
- 21,000 employees in total
- Budget: 787 ml €
The most advanced digital society in the world

Source: CNBC

- 100% services described in online catalogue
- 35 information systems
- Almost 100% paperless
Development principles

• Service design and process analysis
• Legal groundwork, GDPR and open data
• Interoperability
• Minimal data from the end-users
• Secure authentication
• GIS component
• User interface guidelines - UIG
Social transport service information system

• Open 24/7, comfortable and swift channel for people with disabilities to organize their everyday need for transport more efficiently.

• Faster and better planning system for city officials and logistic companies to offer improved service.

• System can be taken into use by all local governments in Estonia.
Service design and process analysis

Process analysis and customer research is the first and most important step

Social transport IS:

- Described customer journeys
- Service process as-is and to-be
- Minimized input from client
- 100% digitalized
Legal groundwork

• RIHA – state and local information systems’ catalogue
• Information system statute with detailed system description
• GDPR
• Data security is provided by using compulsory ISKE standards
ID – card

• State issued digital identity

• The chip on the card carries embedded files, and using 2048-bit public key encryption, it can be used as definitive proof of ID in electronic environment

• Mobile-ID allows people to utilize a mobile phone as a form of secure digital ID
Interoperability

• Most of the e-services are provided by using some data from the state systems: e.g Population Register, E-Business Register, Land Register etc

• Local information systems make necessary real-time queries to state systems through X-road

• The city information systems only collect and store a minimum amount of data from the state systems
X-road

- Technological and organizational environment enabling a secure Internet-based data exchange between information systems
  - authentication,
  - high-level system for processing logs,
  - data traffic that is encrypted and signed
- Over 1000 organizations and enterprises in Estonia use X-road daily
Data Exchange partners

- Social Transport Information system
- Social Insurance Board
- Estonian Unemployment Insurance Fund
- Estonian Address Data System
- Estonian Education Information System
- Population register
- Disabilities data
- Employment data
- Transportation support
- Address data
- Studying data
- Personal data

X – road
What e-service really means
Minimum data from the end-users

- Data from *Population Register, Education Register, Address Register* etc.
- Prefilled application
- The city information systems only collect and store minimum data from the state systems
Process is 100% digital, whole process and documentation within the same system

Citizen → Social services specialist → Logistic → Taxi or bus driver

Digital application → Service application and acceptance → Route planning → Actual service provided
GIS component
# Open data

**Tallinn**

## Tallinna avandmed

### Available lists
- Records from the database are available in XML format. The link to Tallinn's database is provided.
- Records in database format are available in XML format. The link to Tallinn's database is provided.

### Lithuanian
- Database of the Lithuanian State archive. The link to the database is provided.

### Pärnamägi trail
- File format PDF. The URL is provided.

### Raekoja
- Kinds of acts.
- XML format. The link is provided.

### Services
- Tallinn Public Service Database. The link to the database is provided.

### Sports
- Records from the sport, available in XML format. The link is provided.
User interface guidelines (1)

### Nuppude efektid

**Primaarse**  Sekundaarse  Kontrastne  Tertsiaarse

**Hover**

**Primaarse**  Sekundaarse  Kontrastne  Tertsiaarse

**Active**

**Primaarse**  Sekundaarse  Kontrastne  Tertsiaarse

**Disabled**

**Primaarse**  Sekundaarse  Kontrastne  Tertsiaarse
User interface guidelines (2)
Tallinnovations for future

- zero-bureaucracy - invisible services
- cross-border digital governance
- focus on cyber security for cities
- real-time economy and predictive analytics
- AI Strategy and 5G action plan
Thank you!

Martin Männil
martin.mannil@tallinnlv.ee
MOSCOW DIGITAL CITY

2 500 km²
area

2 000
public institutions

80%
use smartphones

73%
use online services

61%
making online payments everyday

99% of territory covered by 4G at 7+ mbs

330 km
Free Wi-Fi in metro

15.5 km²
Free Wi-Fi in city center

1 100
Free public hotspots

12,5 mln
citizens

25 000
area

1 000
public institutions

80%
use smartphones

73%
use online services

61%
making online payments everyday

99% of territory covered by 4G at 7+ mbs

330 km
Free Wi-Fi in metro

15.5 km²
Free Wi-Fi in city center

1 100
Free public hotspots

12,5 mln
citizens
DIGITAL GOVERNMENT

- City, street
- Residential complexes
- Citizens
- Artificial Intelligence
- Government
- Business
HUMAN AND SOCIAL CAPITAL

Moscow electronic school and Uniform medical information and analytical system (EMIAS)

RESULTS

15% increase of schools performance

$38 mln UMIAS saves annually

FACTS

35,000 lessons scenarios online

100% of schools equipped by gadgets

500 mln appointments to the doctor

9 mln online medical records
URBAN ENVIRONMENT

E-services for online interaction between citizens and city government authorities – Active Citizen, E-government, portal “My city”

RESULTS

- 100 mln hours of citizens personal time saved
- 95% of online services users are satisfied by service quality

FACTS

- 260 online services
- 10 mobile apps
- 8,5 mln users
- 30 000 services every hour
Intelligent video surveillance systems

**SAFETY**

- Crimes were detected by camera footage
- Time of response to incidents reduces by 25%

**RESULTS**

- 160,000 cameras
- 3,500 police officers
- 24/7 control over city

**FACTS**
DIGITAL MOBILITY

Intelligent transport system (ITS) – system of fixed and telescopic traffic cameras, mobile surveillance stations and road network sensors

RESULTS

16% increase in the average traffic speed
59% reduction in traffic accidents
34% reduction in road fatalities

FACTS

<table>
<thead>
<tr>
<th>40 000 traffic lights</th>
<th>2 060 CCTV cameras</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 700 detectors</td>
<td>1 950 photo &amp; video recorders</td>
</tr>
</tbody>
</table>
ACHIEVEMENTS

1st place
- eastern European cities of the future

1st place
- integrated development of transport system (UITP)

1st place
- organization of paid parking space (TOMTOM)

1st place
- organization of urban transport system (Sustainable transport Award)

1st place
- UN E-government survey

special award
- provision of state services in electronic form (WeGo)

TOP-5
- attractive European cities for the investors (Financial Times)

TOP-5
- city ready for future technologies (PwC)
FUTURE OF SMART MOSCOW

5G technologies
Internet of things
Neural interface
VR, mixed and augmented reality

Artificial Intelligence
3D printing
Blockchain
Big Data and predictive analytics
5G TECHNOLOGIES IN MOSCOW

- High data rate: 10-20 Gbit / s
- Minimum signal delay: 1-5 Milliseconds
- High network capacity: Up to 1 mln devices per km²
5G TECHNOLOGIES IN MOSCOW

- **High data rate**: 10-20 Gbit / s
- **Minimum signal delay**: 1-5 Milliseconds
- **High network capacity**: Up to 1 mln devices per km²

**Russia’s first pilot 5G zone**
Live broadcast of the FIFA 2018 Football World Cup in VR format

**Telemedicine**
Technologies of remote ultrasound and genetic analysis in 5G network