

estonian smart city sector

india value proposition

august 2017



index

introduction

company profiles

contact us

introduction



introduction

- ▶ capital: Tallinn
- ▶ population: 1.3 million
- ▶ area: 45,339 km²
- ▶ currency: Euro
- ▶ member of: EU, NATO, WTO, OECD, Digital 5
- ▶ ICT sector: 7% of GDP



rankings

#1

OECD
Tax Competitiveness

#1

WORLD
ECONOMIC FORUM
Entrepreneurship

#1

BARCLAYS 2016
Digital Development
Index

#12

WORLD BANK
Global Ease of Doing
Business ranking

e-Estonia



1997
e-Governance

All legal procedures except for marriage, divorce, and property trade can be completed online



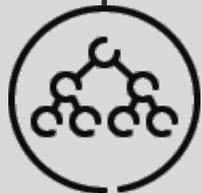
2001
X-Road

Centralized citizen database that saves the country 800 years worth of redundant work time every year



2005
i-Voting

30% of election voting is done online in just 3 minutes



2008
Blockchain

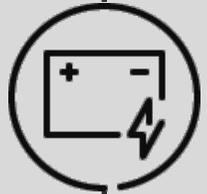
Estonian cyber security systems, based on KSI blockchain technology, are also used by NATO and the U.S. Department of Defense

e-Estonia



2011
Smart Grid

97% of Estonia is covered with smart electric meters that can be controlled remotely using a mobile app



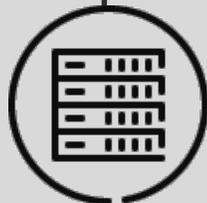
2012
EV Charging

Nationwide electric car charging stations that are at most 60km apart from each other, and that charge cars in 30 minutes flat



2014
e-Residency

Enables global citizens to set up business in Estonia and access the EU market, all without ever setting foot in Europe



2018
Data Embassy

All Estonian data will be stored in a data center in Luxembourg that will operate in the same way as a sovereign embassy

company profiles



sector overview

core competencies

mobility and
logistics

internet of things

energy

effective
governance

macros

- ▶ Estonian smart city companies have developed technology that is widely used across Estonia
- ▶ They have extensive experience working in the EU, US, and some emerging markets in Asia
- ▶ They have the capability and desire to work in India

key challenge

Estonian companies represented in this deck do not have large operations in India. They are seeking reliable business partners to help them implement their solutions in the Indian market.

company name*

* *indicates that a supplementary introductory presentation with more details is available (and perhaps necessary).*

Reach out to Ankit Bahl at ankit.bahl@eas.ee to request for any decks you might be interested in.

mobility and logistics

positium*

Mobility // Analytics



Uses mobile phone data to provide insights into population mobility, traffic, and disease spread.

product details

- ▶ Analytics service that gives population related insights to its clients which can be used to make data-based business decisions.
- ▶ Successfully used in Northern Tallinn in the early stages of new city development.

unique factor

Analyzing mobile data gives information about cities over an extended period of time which is otherwise not possible.

current market presence

Estonia, Brazil, Oman, Indonesia

company data

- ▶ No. of Employees: ~10
- ▶ Revenue: €300K (2016)

business model

- ▶ In Estonia: fee payment to mobile operators in exchange for data
- ▶ Abroad: revenue share model with mobile operators

positium*

Mobility // Analytics



target customers

- ▶ Statistical agencies
- ▶ City governments
- ▶ Private players such as retail and dining chains
- ▶ Infrastructure development companies

ideal business partners

- ▶ Telecom companies who can share mobile data
- ▶ Government organizations like TRAI who can influence telcos for access to anonymous user data

potential use cases

- ▶ Retailers can identify where maximum traffic moves and plan their stores accordingly
- ▶ Cities can use insights to plan urban development and expansion

contact

Siim Esko
Head of International Sales

Website:
www.positium.com

autlo

Mobility // Parking



Auto und Location

Automated, hands-free, car parking technology.

product details

- ▶ Technology enables users to enter a parking 'zone' (think: open parking, street, or basement) and pay in the backend without physically paying anything.
- ▶ Relies on phone and car Bluetooth capabilities and is used as a complement to existing mobile payments.
- ▶ Developing tech for CCTVs to recognize number plates and charge users based on time spent in parking lot.

unique factor

Only company in the world to have a solution in the automatic parking payment space.

current market presence

- ▶ All paid parking in Estonia
- ▶ Latvia, Germany, Nordic countries

company data

- ▶ No. of Employees: 5
- ▶ Revenue: €65K (2016)

business model

- ▶ Parking ticket revenue share with cities
- ▶ Fees from car owners for the usage of app

autlo

Mobility // Parking



Auto und Location

target customers

- Municipalities that have a central parking payment system in place.
- Private parking payment collectors that have a large network of parking spots in a city.

ideal business partners

- Parking equipment providers
- Parking payment providers

potential use cases

- Works best at a large scale when residents have this service in most parking spots in a municipality.

contact

Kristjan Konks
CEO

Website:
www.autlo.com

bikeep*

Mobility // Bike Security



Premium bike locking station with card and barcode based locking system.

product details

- ▶ Bike locking station as an alternative to traditional parking spots where people lock the bike with a U-lock.
- ▶ Completely electronic (or solar powered) system that can be accessed via a mobile app, RFID code, magnetic 'city-card', or call-to-unlock system.
- ▶ Maximum bike security as both the front wheel and frame are locked — 0 thefts to date.

unique factor

Luxury service for companies to offer their customers/visitors to support the use of non-motorized transport.

current market presence

USA, Estonia, Ukraine, Hungary

company data

- ▶ No. of Employees: 11
- ▶ Revenue: €250K (2016)

business model

- ▶ Initial cost of locking stations
- ▶ Recurring maintenance fee

bikeep*

Mobility // Bike Security



target customers

- Gyms (think: FitnessFirst)
- Municipalities
- Malls
- Universities
- Corporate houses

ideal business partners

- Small infrastructure companies that can install the parking stations at the client location.

potential use cases

- Part of smart cities mission to promote the usage of personal NMT
- As a premium service offered by companies or gyms to promote the use of bikes and attract customers

contact

Kristjan Lind
CEO

Mart Laul
Director, BD

Website:
www.bikeep.com

ridango*

Mobility // Public Transport Ticketing



RIDANGO

Account-based public transport ticketing solutions including smart cards and ticket validators.

product details

- ▶ Manual and automatic ticket validation devices that can be used with a smart card or QR code.
- ▶ Account-based system where every user is mapped to an account in the cloud.
- ▶ Software service with ticket usage analytics, bus tracking information, and real time passenger information.

unique factor

Operates on the uncommon account-based (opposed to cash-based) system with a much lower price point than its competitors.

current market presence

- ▶ Total 3000 buses and trams
- ▶ Present in UK, Sweden, Finland, Estonia, Latvia, Lithuania, Poland, Greenland

company data

- ▶ No. of Employees: 50
- ▶ Revenue: €8M (2016)

business model

- ▶ Initial hardware price
- ▶ SaaS model for service and maintenance
- ▶ Development fee for software

ridango*

Mobility // Public Transport Ticketing



RIDANGO

target customers

- ▶ Bus and tram companies
- ▶ Municipalities
- ▶ Central transportation authorities
- ▶ Indian Railways

ideal business partners

- ▶ Other smart transportation service providers who can help provide a larger packaged deal
- ▶ Large players who can assist in local implementation and customer support

potential use cases

- ▶ In smart cities mission to unify all public transport payment systems and reduce commuter hassle
- ▶ In cities with upcoming metro or bus systems for first time payment solution

contact

Sven Rosenberg
Sales Manager

Website:
www.ridango.com

t solutions*

Mobility // Public Transport Ticketing



Frontend and backend bus ticketing platform and hands-free bus ticketing solution (Jiffi).

product details

- Ticket booking and seat reservation for travelers, and analytics and route management for bus operators.
- Similar to RedBus in India, but doesn't only serve as an aggregator; can provide technology to single players.
- Jiffi is a Be-In-Be-Out (BiBo) bus ticketing solution based on low frequency Bluetooth; it identifies and charges passengers when they get on and off a bus.

unique factor

Sole developer of completely hands-free technology for short distance bus ticketing.

current market presence

- T Solutions platform sells 6 million tickets per year across 9 countries
- Jiffi is currently only in Estonia

company data

- No. of Employees: 50
- Revenue: -

business model

- Initial set up fee
- Monthly license fee that depends on total number of ticket sales

t solutions*

Mobility // Public Transport Ticketing



target customers

- Bus and tram companies
- Municipalities
- Central transportation authorities
- Indian Railways

ideal business partners

- Local IT partners who can take care of data migration and servicing on site

potential use cases

- T Solutions platform for inter-city bus companies upgrading their services
- Jiffi for already digitized smart cities looking to adopt cutting edge ticketing technology to complement existing systems

contact

Andres Birnbaum
CEO

Website:

www.tsolutions.co

www.jiffiapp.com

go swift*

Logistics // Queue Management

GoSwift
QUEUE MANAGEMENT SERVICE

Queue management solutions for bottleneck situations in ports and borders.

product details

- ▶ Software and physical research to moderate and organize traffic flow at ports and borders.
- ▶ GoSwift works with clients to provide a custom solution based on factors such as location, type of transportation, available space, etc.

unique factor

Only player in border queue management space.

current market presence

Estonia, Finland, Lithuania, Russia

company data

- ▶ No. of Employees: 30
- ▶ Revenue: €2mil. (2016)

business model

- ▶ Contract based model

go swift*

Logistics // Queue Management

GoSwift
QUEUE MANAGEMENT SERVICE

target customers

- Borders
- Port operators like Adani
- Municipalities interested in reducing congestion

ideal business partners

- Local logistics companies
- Established players who have prior experience with borders and ports

potential use cases

- Optimizing the loading and off-loading of cargo on ships by ensuring there is a regular flow of trucks on land.
- Reducing congestions at ports and borders by regulating the flow of vehicles.

contact

Madis Sassiad
Sales Director

Website:
www.goswift.eu

reach-u

Logistics // City Mapping



Mobile mapping technology to map and analyze city infrastructure.

product details

- ▶ Reach-U drives around the city and gathers information on the entire city road system using LIDAR scanner.
- ▶ Provides an analysis and recommendation to clients based on information collected.

unique factor

Advanced data processing and cost saving capabilities; very easy to operate in a new market.

current market presence

Estonia, Latvia, Lithuania, Vietnam

company data

- ▶ No. of Employees: 50
- ▶ Revenue: €200K (2016)

business model

- ▶ One time project fee, or
- ▶ Monthly fee to access data, or
- ▶ Partner model with local company

reach-u

Logistics // City Mapping



target customers

- Infrastructure companies
- Road development companies
- IT development companies
- Mapping companies like Google Maps
- Municipalities pursuing infrastructure projects

ideal business partners

- Local players with experience in navigating local roads

potential use cases

- City planning phase before making decisions on where to build roads and how to prioritize infrastructure projects.
- Budgeting for infrastructure projects.
- Mapping new areas with details about the roads and their surroundings.

contact

Gaspar Anton
Team Leader, Street-U

Website:
www.reach-u.com

internet of things

thinnect*

IoT // Communication

THINNECT
creating the Mist

Edge of network service provider for all types of IoT devices.

product details

- ▶ Communication solution implemented inside IoT devices to enable device-to-device and device-to-server data exchange.
- ▶ Self diagnostic and automatic network management which drastically eases installation and maintenance.
- ▶ Mesh-based system with military-grade security.

unique factor

Only service provider to offer automatic network management capabilities. Compare to Zigbee.

current market presence

- ▶ Street lighting use case: 8 countries
- ▶ Border patrol use case: 20 countries

company data

- ▶ No. of Employees: 3 (management team)
- ▶ Revenue: ~€1M (2017 projected)

business model

- ▶ Software license fee
- ▶ Recurring management fee

thinnect*

IoT // Communication

THINNECT
creating the Mist

target customers

- ▶ OEM manufacturers of IoT devices who can implement Thinnect software in the devices.
- ▶ Think: ABB, Cisco, Panasonic, Philips Lighting, Foxconn, United Technologies

ideal business partners

- ▶ Large system integrators who can identify the best use cases for mesh technology

potential use cases

- ▶ Smart street lighting devices
- ▶ Commercial lighting
- ▶ Border patrol surveillance systems
- ▶ All building applications including security, occupancy, navigation, HVAC, lighting, and smoke detection
- ▶ Cell phone operators last-leg connectivity

contact

Jurgo Preden
CEO

Jim Benefer
SVP, BD

Website:
www.thinnect.com

eliko*

IoT // Sensors and Lighting



R&D company with a focus on customizing technology for various applications.

product details

- ▶ Indoor object tracking technology with real time object location information; based on IoT tags on objects.
- ▶ Street light control systems that can be installed at the street level or at a luminaire level.
- ▶ Environmental sensors and smart parking software that identifies empty parking spots using a regular CCTV.

unique factor

Plug and play, easy to use solutions in comparison to all its competitors.

current market presence

- ▶ 60,000 controlled lights in Tallinn (Estonia)
- ▶ Object tracking technology with 27 customers in EU and North America

company data

- ▶ No. of Employees: 27
- ▶ Revenue: €1mil. (2016)

business model

- ▶ One-time fee for software and hardware
- ▶ Additional maintenance cost for lighting solution

eliko*

IoT // Sensors and Lighting



target customers

- Factories
- Municipalities
- Lighting companies

ideal business partners

- Manufacturers who can roll out indoor sensors at large scale
- System integrators who can compile the results from environmental sensors

potential use cases

- Tagging drilling machines in an automotive factory to make sure it has screwed in all necessary screws.
- Smart parking technology without any additional infrastructure or sensors.
- Smart street poles in cities outfitted with lighting control and environmental sensors (www.eliko.ee/smartcity/)

contact

Indrek Ruiso
CEO

Website:
www.eliko.ee

velmenni*

IoT // Communication



Developer of Li-Fi technology that enables the high-speed transmission of data using light.

product details

- ▶ High speed bidirectional data transmission system using visible light (widely known as Li-Fi).
- ▶ Indoor and outdoor communication solutions that allow for a wide variety of use cases.
- ▶ Exclusive products developed for the lighting, telecommunication, and aviation sectors.

unique factor

Functional Li-Fi solution and the first player in this space with operations in India.

current market presence

- ▶ Partnered with Airbus in Germany
- ▶ England, France

company data

- ▶ No. of Employees: 14
- ▶ Revenue: -

business model

- ▶ Corporate collaborations to do POC
- ▶ Revenue from licensing of IP

velmenni*

IoT // Communication



target customers

- ▶ Lighting Companies
- ▶ Aircraft Manufacturers
- ▶ IFE Providers
- ▶ Telecom operators
- ▶ Networking companies

ideal business partners

- ▶ Airbus
- ▶ Panasonic Avionics
- ▶ Thales
- ▶ OSRAM
- ▶ Feilo Sylvania

potential use cases

- ▶ Wireless InFlight Entertainment
- ▶ Secured Internet within Office Spaces
- ▶ Indoor Positioning
- ▶ Small Backhaul Connectivity

contact

Deepak Solanki
CEO

Website:
www.velmenni.com

energy

skeleton technologies*

Energy // Ultracapacitors



Breakthrough graphene ultracapacitors with automotive, industrial, and renewables applications.

product details

- ▶ Energy storage device that doesn't involve chemical reactions; stores less energy than a battery, but charges and discharges much faster than one.
- ▶ Provides high power, very quickly, for a few seconds, so as to bridge the gap between 0 and full power supply.
- ▶ Products range from smaller cells and modules, all the way to larger energy systems.

unique factor

Only European manufacturer of this cutting edge ultracapacitor technology.

current market presence

- ▶ 12 countries in the Baltic, Nordic, and Western Europe regions

company data

- ▶ No. of Employees: 90
- ▶ Revenue: NA

business model

- ▶ Sale of ultracapcitor is the only revenue source.

skeleton technologies*

Energy // Ultracapacitors



target customers

- Car and truck companies like Mahindra and Eicher
- Railway
- Indian Space and Research Organization
- Industrial equipment
- Factories

ideal business partners

- Trusted local distributors who can uphold patent protection

potential use cases

- In any car to absorb and discharge maximum energy from regenerative braking.
- As a supplement to truck batteries to guarantee no faults while restarting the engine.
- As a supplement to generators at large power plants to provide instant backup (10ms) during power outages until the regular generator kicks in.

contact

Michael Liedtke
SVP, BD

Website:

www.skeletontech.com

elcogen*

Energy // Fuel Cells



Specialist in solid oxide fuel cell technology.

product details

- ▶ Fuel cell is a device that converts any type of primary energy (biogas, petrol, hydrogen) into electricity without any combustion.
- ▶ Cells are a component of larger energy producing units that are used for various applications.
- ▶ Works efficiently up to 2MW and is an alternative to off-grid solar energy.

unique factor

Cells operate at 200 degrees Celsius lower temperature, and are made of 30x cheaper materials, than global competitors.

current market presence

Europe, Japan, USA

company data

- ▶ No. of Employees: 28
- ▶ Revenue: €400K (2016)

business model

- ▶ Sale of fuel cells is the only revenue source.

elcogen*

Energy // Fuel Cells



target customers

- ▶ Energy players like gas or utility companies who are willing to adopt fuel cell based energy systems
- ▶ Large companies like GE and Panasonic who make energy systems for various purposes

ideal business partners

- ▶ Specialized local distributors with niche access

potential use cases

- ▶ Main application in distributed energy to power individual houses and get them off the grid
- ▶ Most efficient storage mechanism for solar energy during day time for night time use.

contact

Enn Ôunpui
CEO

Website:
www.elcogen.com

enefit*

Energy // Smart Grid



Estonian national energy company with smart grid capabilities.

product details

- ▶ Specialize in the digitization of energy services with strong capabilities in legislation, business consulting, project management, and implementation.
- ▶ Smart electricity metering system (smart grid) with customer and company facing applications to monitor and control the usage of electricity.

unique factor

Implemented nationwide smart grid network in Estonia with 97% coverage.

current market presence

Estonia, Latvia, Lithuania, Finland, Jordan, USA

company data

- ▶ No. of Employees: 5700
- ▶ Revenue: €742mil. (2016)

business model

- ▶ Different fees based on the extent of services used.

enefit*

Energy // Smart Grid



target customers

- Electricity distribution system operators
- Energy suppliers
- Transmission system operators

ideal business partners

- Large electricity or energy companies
- City or state governments interested in digitizing their region's electricity supply

potential use cases

- Optimal planning and implementation of smart metering system
- Digitization of business process and advanced big data analytics
- Central hub for all consumption data that can be used to reduce transmission loss due to theft

contact

Karla Agan
Head of Retail Business

Website:
www.energia.ee

effective governance

gaurdtime*

Effective Governance // Cybersecurity



World's biggest blockchain-based cyber security system.

product details

- ▶ What differentiates Gaurdtime from other cyber security providers is the invention of the KSI (Keyless Signature Infrastructure).
- ▶ KSI technology works on the pillars of scalability and swiftness. These characteristics have made Gaurdtime a crucial player in providing cybersecurity solution.
- ▶ Currently used to safeguard all Estonian cyber systems.

unique factor

Productized the KSI Blockchain technology stack, from underlying infrastructure components to end-customer solutions.

current market presence

Estonia, The Netherlands, United Kingdom, Singapore, USA (Department of Defence)

company data

- ▶ No. of Employees: >250
- ▶ Revenue: €25 mil. (2016)

business model

- ▶ Different fees based on the extent of services used.

gaurdtime*

Effective Governance // Cybersecurity

guardtime

target customers

- Users of mission critical for the functioning of day to day operations in the city/ state.

ideal business partners

- Large telecommunication companies, defense and aerospace companies.
- City or state governments interested in safeguarding their digital records.

potential use cases

- KSI[®] makes it impossible for insiders or outsiders to manipulate government networks, allowing complete transparency, accountability and attribution.
- Data-centric security is one the key opportunities that the telecom operators can take advantage of to differentiate their service offering.

contact

Martin Ruubel
President

Website:
<https://guardtime.com/en>

contact us

Let's bring our digital societies closer

Ankit Bahl
Advisor- Trade & Investment

Embassy of Republic of Estonia
C15 Malcha Marg, Chanakyapuri, New Delhi
Mob: +91 9999 345 727
Tel: 011 49488657
ankit.bahl@eas.ee



EMBASSY OF ESTONIA
IN NEW DELHI



Smart City Lab