

Where Stuff Happens First

White Paper on Estonia's Digital Ideology

Daniel Vaarik/BDA/Think tank of the President of Estonia

Introduction

Estonia became a free country again in 1991. The country was rebuilt with the help of digital technologies. Estonia was first in the world to adopt complicated e-solutions such as internet voting and digital signature.

Technology was often developed with low budgets and limited human resources but by the beginning of the new century IT had become an integral part of Estonia's culture, economy and international reputation.

The following is an English language summary of the white paper in three parts:

- Estonian IT in context
- Interviews with influential thinkers across the world
- Way ahead. Recommendations

List of Estonia's “digital firsts”

2000 World's first e-government with paperless e-cabinet sessions

2000 World's first mobile parking system

2001 Introduction of X-Road, the de-centralized backbone to all public e-services

2002 Introduction of mobile payments

2005 World's first internet voting in official elections

2009 Electronic registration of companies (up and running in 15 minutes)

2013 Estonia becomes a pilot country in computer based math education

2014 99% of banking transactions are done electronically in Estonia

2014 Estonia launches the world's first e-residency in beta

Global startups from Estonia

2003 Skype (founders from Scandinavia, engineers from Estonia)

2007 Fortumo (founders and engineers from Estonia)

2007 Guardtime (founders and engineers from Estonia)

2008 ZeroTurnaround (founders and engineers from Estonia)

2009 GrabCAD (founders and engineers from Estonia)

2011 Transferwise (founders and engineers from Estonia)

Estonia's goals for 2020

20% of economically active population in the EU are using digital signatures *

100 000 Estonian e-residents worldwide **

Estonia has data embassies around the world *

Information society and e-governance think tank in Estonia*

* Source: Digital Agenda 2020 for Estonia, Ministry of Economy and Communication (in Estonian), https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf

** Interview with Taavi Kotka, the "CIO" of Estonia

Estonia's core values for e-services

Estonia claims its e-services are built around democratic values including:

Decentralization *

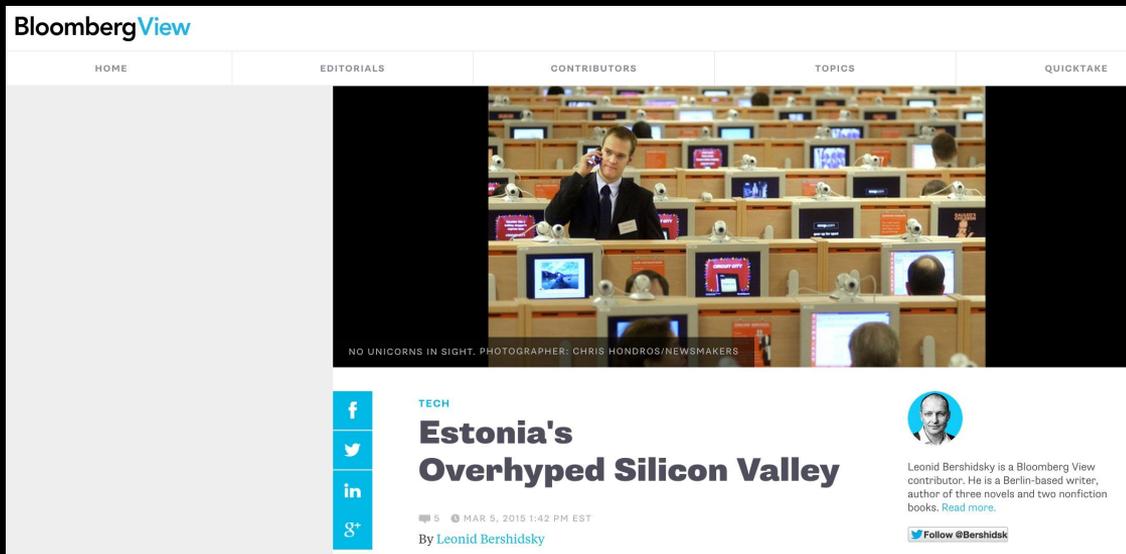
Interoperability *

Open platform *

Open-ended process*

Criticism: no scalability?

While Estonia has a decent reputation among technology pioneers the scalability of its services remains to be proven.



The image shows a screenshot of a Bloomberg View article. At the top, the Bloomberg View logo is visible. Below it is a navigation bar with links for HOME, EDITORIALS, CONTRIBUTORS, TOPICS, and QUICKTAKE. The main content area features a large photograph of a man in a suit talking on a mobile phone in a room filled with computer workstations. Below the photo is the text "NO UNICORNS IN SIGHT. PHOTOGRAPHER: CHRIS HONDROS/NEWSMAKERS". The article title is "Estonia's Overhyped Silicon Valley" in a large, bold font, with "TECH" in smaller letters above it. To the left of the title are social media sharing icons for Facebook, Twitter, LinkedIn, and Google+. Below the title, it says "By Leonid Bershidsky" and "MAR 5, 2015 1:42 PM EST". To the right of the title is a circular profile picture of Leonid Bershidsky, followed by a short bio: "Leonid Bershidsky is a Bloomberg View contributor. He is a Berlin-based writer, author of three novels and two nonfiction books. Read more." and a "Follow @Bershidsk" button.

* Bloomberg View <http://www.bloombergview.com/articles/2015-03-05/estonia-s-overhyped-silicon-valley>

Criticism: rankings OK, but not great

Table 1.1. World e-government leaders (Very High EGDI) in 2014

| Country | Region | 2014 EGDI | 2014 Rank | 2012 Rank | Change in Rank (2012–2014) |
|--------------------------|----------|-----------|-----------|-----------|----------------------------|
| Republic of Korea | Asia | 0.9462 | 1 | 1 | - |
| Australia | Oceania | 0.9103 | 2 | 12 | ↑ 10 |
| Singapore | Asia | 0.9076 | 3 | 10 | ↑ 7 |
| France | Europe | 0.8938 | 4 | 6 | ↑ 2 |
| Netherlands | Europe | 0.8897 | 5 | 2 | ↓ 3 |
| Japan | Asia | 0.8874 | 6 | 18 | ↑ 12 |
| United States of America | Americas | 0.8748 | 7 | 5 | ↓ 2 |
| United Kingdom | Europe | 0.8695 | 8 | 3 | ↓ 5 |
| New Zealand | Oceania | 0.8644 | 9 | 13 | ↑ 4 |
| Finland | Europe | 0.8449 | 10 | 9 | ↓ 1 |
| Canada | Americas | 0.8418 | 11 | 11 | - |
| Spain | Europe | 0.8410 | 12 | 23 | ↑ 11 |
| Norway | Europe | 0.8357 | 13 | 8 | ↓ 5 |
| Sweden | Europe | 0.8225 | 14 | 7 | ↓ 7 |
| <u>Estonia</u> | Europe | 0.8180 | 15 | 20 | ↑ 5 |
| Denmark | Europe | 0.8162 | 16 | 4 | ↓ 12 |
| Israel | Asia | 0.8162 | 17 | 16 | ↓ 1 |

Criticism: outdated systems

Out of 600 digital services on X-road, many are not working because of outdated systems.

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Государственный портал eesti.ee

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*Screenshot: Eesti.ee

Criticism: “E-Narnia”

“E-Narnia” is a tendency to over-mythologize technology by visionaries, politicians and public servants. “E-Narnia” can look thrilling to outsiders, but it is not rational nor scalable.

"When I look at a nuclear explosion, and the explosion (cyber attacks) that happened in our country in May, I see the same thing."

Ene Ergma, speaker of the Parliament of Estonia in 2007, <http://www.wired.com/2007/08/cyber-war-and-e/>

Interviews

In order to plan the way forward for digital Estonia we had conversations with 11 international thinkers:

Tim Berners-Lee (computer scientist)

Tyler Brûlé (editor in chief of Monocle magazine)

Maria Galina (Russian science fiction writer)

Ben Horowitz (US venture capitalist)

Garri Kasparov (Grand Master in chess, activist)

Mikko Kosonen (head of the SITRA think tank in Finland)

Neelie Kroes (European Commissioner for Digital Agenda 2010-2014)

Klaus Dieter-Lehmann (president of the Goethe Institut)

Jakob von Uexküll (writer, activist, founder of the World Future Council)

Conrad Wolfram (British thinker and businessman)

Ton Zijlstra (Dutch data scientist)

General: states are changing

“Network is the Leviathan as opposed to the state. The new state would be a network, not a geography. When you have a potential to opt into the country that you want be part of as opposed to it being the function of where you live.”
(Ben Horowitz)

“So the idea of national borders and systems, the old idea of fixed equipment, these things will become less and less relevant.” (Neelie Kroes)

General: debate appears broken

“Issue to issue you are getting influenced by the people who have a very strong interest.” (Ben Horowitz)

“...unless we can fix the current democratic system, we will not have chance. Because all the problems we are facing now in Europe and in Finland with structural changes are almost like impossible to carry out with the current democratic structure and governance models. They are too short-sighted and rigid.” (Mikko Kosonen)

General... especially for the young

“.. the government is going to seem massively broken to young people.” (Ben Horowitz)

“People just leaving, mainly young, talented, and they go somewhere.” (Garry Kasparov)

“I think, if you look at the recent Scottish referendum, and if you look at how the focus was distributed, that the younger generation were in majority for the independence, /---/ they were completely disconnected from the system or political structures as they are, they don't recognize anything in that.” (Ton Zijlstra)

General: companies get more power

“... the scale of the voice that Silicon Valley has: anything that is proclaimed by the companies with such big market caps, I would say occasionally very unjustified market capitalizations as well, is what is driving a lot of decisions both in the private sector and in the public sector.” (Tyler Brûlé)

General: way ahead for the small?

“UK may be slightly too big of an entity in the modern world.” (Conrad Wolfram)

“I just think that most people already find that their governments are too far away. Their national governments are far away, Brussels is far away. The tendency is actually in the opposite direction – people want to have some kind of controls over their lives. To vote for governments they can understand, where the rules are set, and they expect technology to adapt to these rules.”
(Jakob von Uexküll)

“...smaller size is actually an advantage in government modernization... Singapore is very focused on that.” (Ben Horowitz)

General: rise of value-focused groups

“I need a local point, where I can, you know, grow roots, that is like a counter-balance, so, I've become more local and more regional because I have also become more mobile, more international.” (Ton Zijlstra)

““I am Scottish, I am very Scottish, as opposed to British!” Smaller grouping, it feels tighter. I think this is becoming more important.” (Conrad Wolfram)

“It is frightening to see how terrorist groups, currently the so called IS, use social media in the same way as peaceful protesters do in Hongkong. But they do not use them to incite peaceful progress.” (Klaus Dieter Lehmann)

General: asymmetrical power of data

“But now, on the wave of data and all the bandwidth that is available, all of the sudden you see a much more dark type of usage of this stuff (big data).” (Ton Zijlstra)

“Governments are not going far enough to make their data usable, to create computable data layers.” (Conrad Wolfram)

General: new type of debate needed

“I am convinced, though, that in a generation from now and possibly much earlier, the way we vote today will no longer be standard.” (Klaus Dieter Lehmann)

“...unless we can fix the current democratic system, we will not have chance. Because all the problems we are facing now in Europe and in Finland with structural changes are almost like impossible to carry out with the current democratic structure and governance models. They are too short-sighted and rigid.” (Mikko Kosonen)

Estonia: citizen as the driver

“In a way (*in e-Estonia*) the government and the public sector is serving you and you are on the driver's seat. Or more so than in other societies. The citizen is a subject and not an object of government. That change of philosophy, I think that you are the only country where this is being implemented.” (Mikko Kosonen)

Estonia: establish trusted brand

“Look, I think that in the end one thing that becomes important is the brand. In a bizarre way. So, it is like all these questions about data security. In the end you've got to trust somebody...” (Conrad Wolfram)

Estonia: role model in data usage

“One of the things Estonia could do, is to say: we have seen the outcry behind the certain reports and we realized that there need to be some rules and there need to be some solid foundations, so, in Estonia, anybody who is connected to Estonia and to the greater Estonia, the e-residents, we will respect your data. Estonian police will not have access to it, except through this very well defined way and we are going to create an Estonian data oversight committee which is a group of people with very strong investigative power to investigate the police themselves. And they will report directly to the Estonia and to the world. They can go in and look into the logs.” (Tim Berners-Lee)

Estonia: open by design

“Estonia might actually be very well positioned in comparison to others to be one of the first who is actually able to provide detailed insight to their citizens about what they have about them.” (Ton Zijlstra)

“...that takes that we design data protection and openness into information processes, into IT infrastructures, into database structure design right from the start. Currently all this transparency and protection debate is done at the end of the process...” (Ton Zijlstra)

Estonia: tech and ideology

“In many ways Estonia has established itself as a pioneer on the technical level, it is time to fill it with content.” (Jakob von Uexküll)

Estonia: embrace sceptics

“I am close to couple of people who actually torpedoed the electronic voting and that was for very good reasons because there simply was no viable audit trail to detect whether anything was going wrong. ... So we were back to paper and pencil. We just had a new advisory group to the ministry of the interior, but they included the people who torpedoed it the last time...” (Ton Zijlstra)

Estonia: prove scalability

“I think that (Estonia becomes a frontrunner) if the exporting of that technology actually occurs and there is like the Estonian standard. Here is the Estonian standard for e-democracy, then I think that it would be the result that people can say that what Estonia did take the world into the future, they took the governments into the future.” (Ben Horowitz)

Estonia: ...where stuff happens...

“But I have this general feeling about Estonia, that it is where stuff happens first, people are smart, there is kind of a low threshold of admin to get things done. And I sometimes describe Estonia: you've got Scandinavian level of organization with entrepreneurial zeal that perhaps is lacking from some of the Scandinavian countries and some British irreverence.” (Conrad Wolfram)

More takes from the conversations

- There is no single country who is the thought leader in e-democracy
- Estonia has some credibility in e-democracy among tech/political elites worldwide, but it is a niche player until it scales its tech
- Skype and e-residency are two powerful ideas from Estonia that have broken out of the niche
- Values matter in technology (e.g. Nordic values lend trust to Nordic tech)

Recommendations

Based upon the analysis of existing documents, media coverage and conversations with thinkers we came up with 13 recommendations for Estonia.

1. Position Estonia as a pathfinder

Estonia's e-society belongs to the avantgarde of humankind

We see the opportunities and learn from shortcomings

We share our experience with the rest of the world

Example: Functioning democratic e-society is our “man on the moon”

Pathfinder focuses

Estonia needs to specify the subfields where it takes the lead:

E-government

E-democracy

Cyber security

Startup incubator

Pathfinder in action

Estonia's e-society solutions need to spread in other parts of the world.

Example 1: X-road in Finland

Example 2: Cleanup campaign “Let's do it World!” in more than 100 countries

Pathfinder vs e-Narnia

| e-Narnia | Pathfinder |
|-------------------------------------|-------------------------------------|
| Just a nice place | Has a goal (functional e-democracy) |
| Mystical | Learning |
| These things are possible only here | Scalable |
| Nordic | Nordic |

Pathfinder's linguistic framework

Inventor

Innovator

Test pilot

Guide

Incubator

etc...

2. Nordic values

Establish clear e-democracy values for Estonia (similar to Asimov's Laws of Robotics).

To this end launch an internal debate about Nordic values in technology.

Examples of values to be discussed:

Transparency (less “dark” secrets, more open data)

Freedom (protection of human rights and fundamental freedoms, net neutrality, etc)

Responsibility (civil duties, footprint, protecting the weak)

Trustworthiness (predictability, keeping promises)

Egalitarianism (equal opportunities)

Inclusion and cooperation (access, inclusive politics, communities)

Innovation (striving for the better, economic development)

3. Openness by design

Follow core values on all levels, starting from the level of IT architecture

Review public procurement practices and require openness by design everywhere

Give citizens control over the use of their data

Example 1: Citizens can check who, when and why has checked their personal data in state databases (not yet fully implemented today)

Example 2: Create simple and meaningful EULA-s for e-residents

Framework for strategic secrets

Government can have secrets but the moment they become unnecessary, they need to be eliminated.

| Dark secrets | Strategic secrets |
|---------------------------------|---|
| Nobody even knows they exist | Government admits having them |
| Related parties fear disclosure | Secrets are disclosed when no more needed |
| Disclosure would destroy trust | Disclosure increases trust |

4. Estonia as information society think tank

Establish an information society and e-governance think tank in Estonia

Monthly high-level seminars with world's thinkers and local opinion leaders

5. Learn the language of beta testing

The government needs to learn to communicate the launch of new services as beta services

This way the early users become contributors

Example: “Dear e-resident, please test our product and let us know of any bugs...”

6. Learn to talk to sceptics

Sceptics are allies

Involve sceptics in development

Example: Organize a seminar for e-voting sceptics in Tallinn

7. Turn experience into knowledge

More social science research to understand the impact of the use of ICT-solutions in Estonia

More cooperation with the world's top universities

8. Keep pushing the envelope

To avoid locking itself into old technologies Estonia needs to continue digital innovation, in particular:

To promote political innovation

To encourage civic innovation

To develop citizen-centred solutions

To promote the use of open data

To foster active startup community (#estonianmafia)

Examples: machine readable laws, computable data formats, etc

9. Connect physical and virtual

The relationships between the physical and virtual communities need to be shown.

Example 1: Estonia will not reduce the number of physical embassies worldwide, but will create more services for e-residents instead

Example 2: "Let's do it world!" communities across the world will continue to clean up the physical planet.

A castle built from Bitcoins rises in Estonia

By Marija Odineca, September 01, 2014, [Leave a Comment](#)



We know Estonia as a progressive and tech savvy country. Skype, #estonianmafia, favourable tax policy for startups, electronic ID, and internet declared as human right. What other tech news could possibly make us wonder? Well, there's a 600 years old castle in North Estonia called Malla Manor that is set up to become a Bitcoin innovation centre, according to Finnish silver investor and Bitcoin entrepreneur Risto Pietilä.

Example: Wealth that is gathered in virtual space recreates the physical space.*

* <http://www.arcticstartup.com/2014/09/01/estonian-bitcoin-castle>

10. Target groups

Expand international audience beyond IT and political circles

Entrepreneurs

Academics

Creative circles

Example: Discuss e-residency perspectives with sci-fi writers, academics, etc

11. Target countries

1. Primary (constant cooperation)

- Estonia itself
- Core countries of the EU
- USA
- Nordics
- East-Europe

2. Secondary (cooperation on selected projects)

- Japan, South Korea, Singapore
- China, India
- Arab countries

3. Pilot projects, experimental

- Africa

12. Channels

In pathfinder categories aim at the largest (CNN, NYT, Guardian, etc)

Support traditional channels with:

- social media
- national media
- trade media
- events
- celebrities
- films
- books
- etc.

13. Community that is bigger than Estonia

Estonia's community will be larger than the country and nationalities living in it. What responsibilities will we have for that community?

Example: If we have x thousand e-residents, how should we represent them internationally?

Appendix: Pathfinder stories

1. Test-pilot
2. Efficiency
3. Cyber security
4. Story of our IT-architecture
5. Where sh*t happens first
6. Lessons learned

Story of a test pilot

1. In 1991, Estonia's young government had to rebuild the country.
2. We could do it best with IT
3. Today we have a lot of pioneering solutions (e-voting, e-residency, digital signature, etc)
4. What if the same technologies would be used in other countries?

Story of efficiency

1. Estonia has never had big internal market, nor enough money nor natural resources
2. Therefore Estonians need to look for efficiency everywhere
3. Today we have an efficient e-government

4. Obama in 2014: ““I should have called Estonians when we were setting up our health care website””*

Story of cyber attacks

1. In 2007 Estonia was attacked by cyber terrorists
2. This brought home several e-society risks
3. Today Estonia hosts the NATO's Cooperative Cyber Defence Centre of Excellence

4. What does not break you, makes you stronger.

Story of our IT-architecture

1. Centralized ICT systems are expensive
2. Estonia's software engineers prefer to create distributed systems
3. So Skype, X-road, Transferwise and several other projects were born
4. Tell us of a problem and we will return with a distributed system to tackle it.

Story of being first

1. Politics is broken, democracy needs reforms
2. Estonia wants to translate democratic values into the new society
3. We have expertise in actually running an e-society

4. Come, work and learn in Estonia, because here the sh*t happens first!

Story of failures

1. Rapid IT reforms can go wrong
 2. It is important to learn from them
 3. Estonia shares its lessons with the world
-
4. We dare to admit mistakes and we also learn from them constantly

About Daniel Vaarik

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Member of the board of public policy think tank Praxis.

Previous positions: CEO Hill and Knowlton Tallinn, Head of the Communication office of the Government of Estonia

Author of the Messaging Handbook (In Estonian, “Sõnumiseadja käsiraamat”).

In 2010 co-authored a political drama project (United Estonia). <http://edgeryders.eu/en/the-edgeryders-guide-to-the-baltic/united-estonia-and-political-change-in-estonia>

