IT Infrastructure for Public services

Egons Spalāns

Deputy director, ICT issues

Ventspils City council

History of ICT development in Ventspils

- 2000. development of ICT strategy of Ventspils

- 2001. – 2003. implementation of e-Ventspils project

- 2003. – ... many consecutive projects strengthening ICT area

- 2014. – 2020. development and implementation of Ventspils ICT sector development strategy and action plan

Future of ICT development in Ventspils

- Development and implementation of Ventspils ICT sector development strategy and action plan:

  - provision of access to the ICT for everyone;

  - development of necessary ICT infrastructure;

  - development of human resources in ICT;

  - support entrepreneurship;

  - facilitation of science and research development.

- Development of shared IoT infrastructure and serving as a testbed for the development of new products and services

Part 1 - future development of shared ICT infrastructure for municipalities

- Provision of access to the data centre services and shared ICT infrastructure linked into nation-wide governmental ICT grid that is not available from commercial service providers

- Development of necessary procedures for municipalities to comply with data security requirements

- Provision of access to the mandatory e-address services

- Development of computerized public services support system adopting "one-stop-agency" principle in public governance

- Support and consultations in ICT related questions

Provision of access to the mandatory e-address services
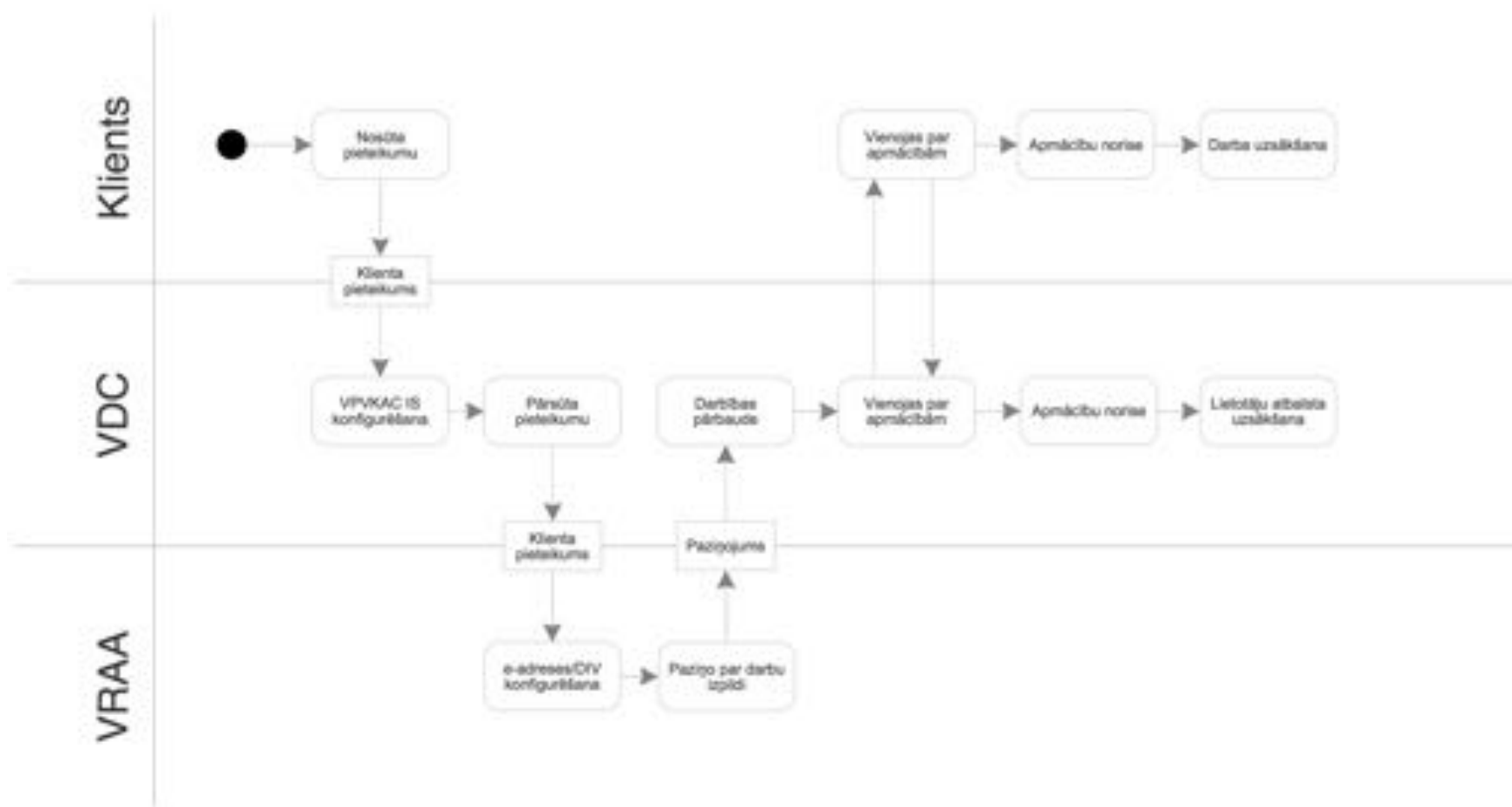
Timeline of e-address implementation

- Survey of needs and wants (now!)

- Agreements on e-address use (03.2018.)

- Configuration of state owned document integration infrastructure (04.2018. – 06.2018.)

- Implementation of e-address access system, including teaching and configuration for customers (04.2018. – 06.2018.)

- Start of end user support (ongoing from 03.2018.)

Future look of "one-stop-agency" principle in public governance

Future look of contact and knowledge management

Timeline of public services support system

- Survey of needs and wants (ongoing)

- Agreement on implementation of the project with CFLA (12.2018.)

- Integration with state owned user authentication and authorization infrastructure (04.2018. – end of project, depends on VRAA and VARAM projects)

- Implementation of additions and improvements to to public services (rolling releases fro 04.2018. to end of project, depends on VRAA and VARAM projects)

Timeline of shared ICT infrastructure development

- Survey of needs and wants (ongoing)

- Implementation of the basic shared ICT infrastructure and start of colocation services (online from 06.2018.)

- Implementation of the self–service based shared ICT infrastructure and start of virtual server provision services (online from 06.2019.)

- Development of necessary procedures for municipalities to comply with data security requirements (first version released 08.2018.)

- Agreements on shared ICT infrastructure use (ongoing from 06.2018.)

- Start of the end user support (ongoing from 06.2018.)

Part 2 - How we do ICT

- Single Point of Contact (SPOC) – all IT issues, service requests, problems and incidents are first directed to the level 1 service desk to be logged in the ticketing system, and then either resolved at level 1 or dispatched to another source of support where the ticket can be resolved

- Support of both common of-the-shelf and proprietary applications

- Data centre, hardware and networking

- Metropolitan optical network

- Management and benchmarking of outsourced services and service providers

Our customers

- All 872 public libraries in Latvia

- 53 municipalities in Latvia

- State e-governnance portal www.latvija.lv

- State Revenue Service

- State Social Insurance Agency

- Private companies

Green IT Infrastructure for Public services

- Product & technology longevity

- Power management

- Materials recycling

- Software optimization

- Cloud computing

- Telecommuting & teleworking

Product & technology longevity

- Less parts = longer usable life

- Modular design

- Track your costs

- Adhere to open standards, avoid vendor & technology lock-in

- Invest in knowledge management

- Keep it simple, stupid!

Power management

- Avoid uncontrolled deployment of virtual machines

- Increase rack power density

- Split storage from CPU power

- Monitor CPU/Memory/System power usage, and group VM to meet both availability and power management requirements

Materials recycling

- Use old hardware to:

  - teach kids computer internals

  - create an artwork
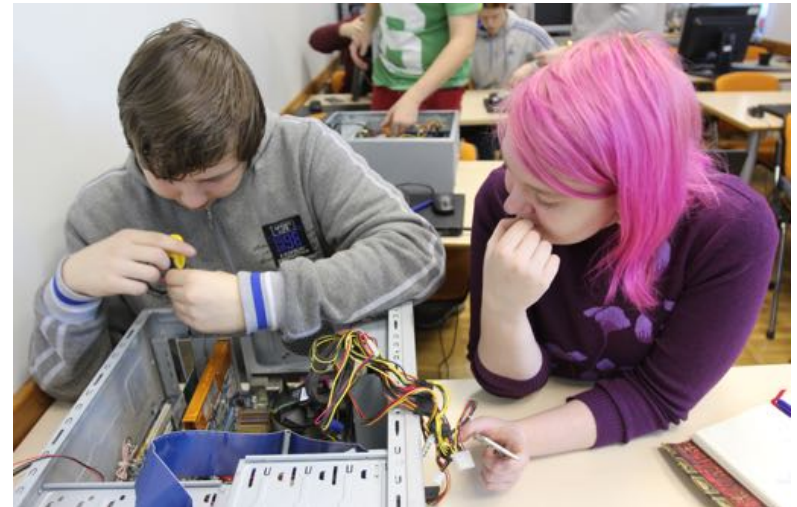
Software optimization

- Avoid keeping multiple components with similar functions – many databases, data warehousing, content management systems,...

- Develop technical standards for new systems and stick to them

- Balance in-house with outsourced services wisely

Cloud computing

- Advanced planning is necessary

- Increasing challenge to stay in control with all the treats and opportunities

- Do you even know all the service providers involved in services you have subscribed?

Telecommuting & Teleworking

- Start with *your* personnel

- Develop standards and be prepared for long adoption period

- Think telecommuting & teleworking don't matter? Think Again!

So, what do we do about data centres?

Iron Mountain Room 48 vs …

… vs Bitcoin miner

What is wrong with Tier 3 /4 Data Centre?

Hurricane Sandy: Generator Fail

At 75 Broad Street in Lower Manhattan, home of Peer 1 hosting, it was a disaster recovery planner's nightmare. There were backup generators ready to go well above the water line on the building's 18th floor. But the same storm surge that poured into the building's lobby and filled its basement, knocked out the emergency generator fuel pumping system located there. Once under water, its electrical circuits no longer worked.

Fire In Iowa

When the fire alarm sounded at 3 p.m., the data center lost power, smoke invaded the building, and the staff had to evacuate. The alarm triggered the data center's gas-powered FM-200 fire suppression system, and the fire was contained to the inside of a wall-mounted, transient voltage suppression box (pictured above). The unit, which controlled the flow of power into the data center, had overheated and melted down.

If something can go wrong, it will

Rackspace Managed Hosting suffered a rare data center outage Monday night after a traffic accident damaged a nearby utility transformer, knocking out power to the company's Dallas facility. The Rackspace data center switched over to generator power, but two chillers failed to start back up again, compromising the cooling system and forcing Rackspace to take customer servers offline to protect the equipment.

At Saturday May 27 2017 all flights operations of British Airways at both London Heathrow and Gatwick airport halted because of an IT problem ultimately stranding 75.000 passengers in 170 airports across 70 countries.

This resulted in a lot of attention by the British press. Times reported on June 2 that a contractor on error switched off the UPS.

From the incident report posted on the Azure status page:

During a routine periodic fire suppression system maintenance, an unexpected release of inert fire suppression agent occurred. When suppression was triggered, it initiated the automatic shutdown of Air Handler Units (AHU) as designed for containment and safety. While conditions in the data center were being reaffirmed and AHUs were being restarted, the ambient temperature in isolated areas of the impacted suppression zone rose above normal operational parameters. Some systems in the impacted zone performed auto shutdowns or reboots triggered by internal thermal health monitoring to prevent overheating of those systems.

Facebook way

In 2014, Parikh decided Project Storm was ready for a real-world test: The team would take down an actual data center during a normal working day and see if they could orchestrate the traffic shift smoothly.

Other Facebook leaders didn't think he'd actually do it, Parikh recalls. "I was having coffee with a colleague just before the first drill. He said, 'You're not going to go through with it; you've done all the prep work, so you're done, right?' I told him, 'There's only one way to find out'" if it works.
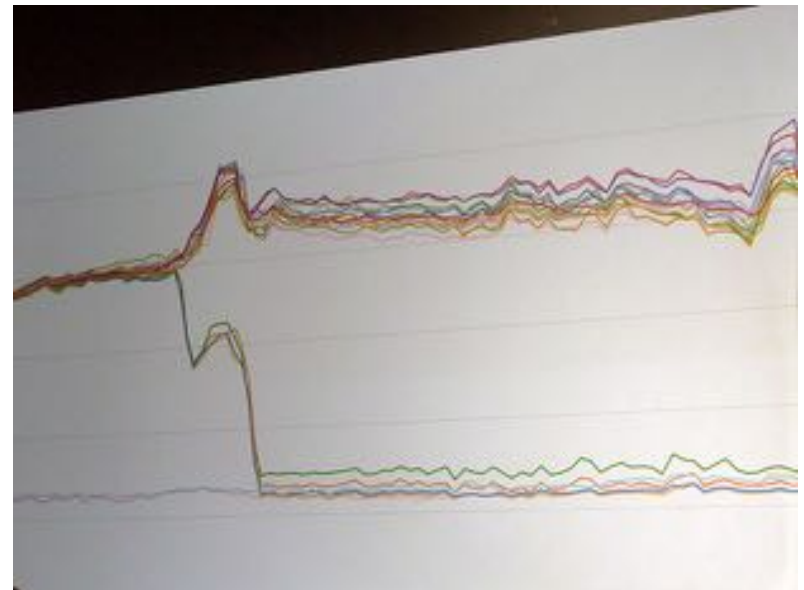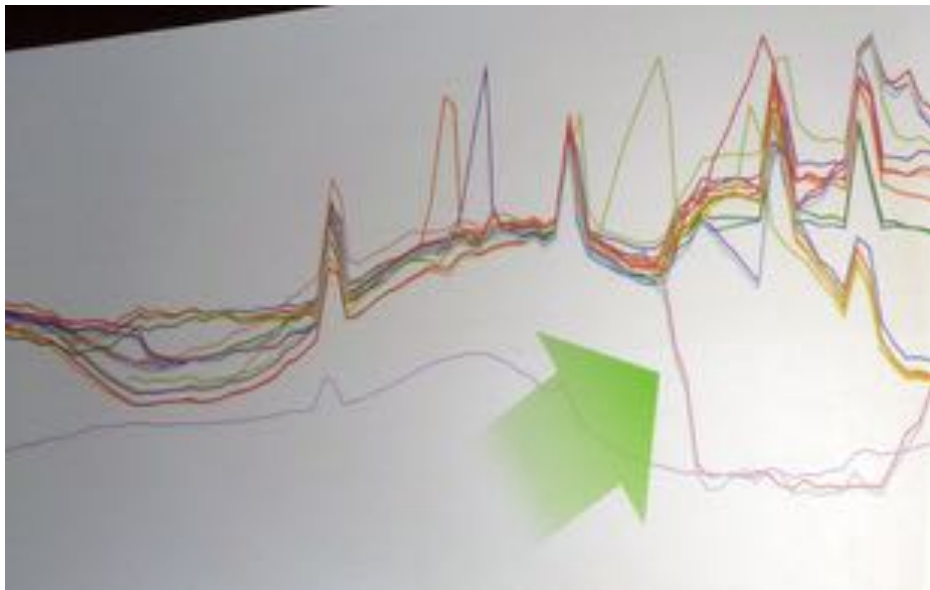
In Our Own Way

Redundant Array of Inexpensive Data Centres

- 4 or more geographically dispersed data centres, each run at 75% of its capacity

- Resilient network system based on 40GbE optical network

- Data is everything – storage implemented as a resilient system based on Distributed Replicated Glusterfs and Geo-Replication run on dedicated hardware, using off-the-shelf components

- CPU power is designed to be non persistent

How it looks

Green by design

- No system is fault tolerant. Design systems to fail gracefully, transparently and make them fail reasonably often!

- **It is green by design: takes less resources, leads to less dramatic impact in case of failure, allow software optimization and enforces good product, technology and power management**

Thank you!

Ventspils Digital centre

Akmenu street 3
Ventspils
LV 3601
Latvia

E-mail: vdc@ventspils.lv
Phone: +371- 63607607