DG DIGIT

Unit.D2 (Interoperability Unit)

Open Source Software Country Intelligence Report

Estonia

2020

ISA²

This research was carried out for the ISA2 Programme by Wavestone's European Services team. This report is based on publicly available information that was gathered through desk research.

Authors

Federico Chiarelli (federico.chiarelli@wavestone.com)

Vivien Devenyi (vivien.devenyi@wavestone.com)

Debora Di Giacomo (debora.digiacomo@wavestone.com)

Follow us

https://joinup.ec.europa.eu/collection/open-source-observatory-osor

@OSOReu

Disclaimer

The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the European Commission. This study has been carried out for information and consultation purposes only. It has not been adopted and should not be regarded as representative of the views of Commission staff. Neither the European Commission nor any person acting on the European Commission's behalf may be held responsible for the use which may be made of the information contained therein.

Updated in April 2020

Table of Contents

Estonia

Executive Summary

Estonia is a highly digitalised country, with many government agencies working to advance the state's information and communication technologies. The State Information System Authority (RIA) is a state agency operating under the Ministry of Economic Affairs and Communications. Amongst other things, it facilitates secure data exchange between institutions as part of the X-Road initiative and oversees state information systems and databases. Many of its projects are partially based on open source software (OSS).

Additional RIA projects include, for example, Estonia's eVoting system and eID card. Though these projects handle highly sensitive data, there have been no successful hacking attempts at accessing the data, thus highlighting the security of the two systems.[1] The government often co-develops its eGovernment projects with the private sector, as is the case of eID. The software used for digitally signing documents and checking the validity of signatures under the eID project, DigiDoc, is used in various countries over the world. The source codes for all of these aforementioned projects are available on GitHub and are regularly updated.

OSS is an important part of the Estonian interoperability framework. The Interoperability of State Information System: Software Framework of 2012 outlines the necessity of the public sector to consider alternatives to proprietary software. OSS is favoured, but not mandated. Additionally, OSS must be taken into account during public procurement processes, thus keeping in line with the principles of openness that are currently applied to public procurement.

Actors

This section presents the policy makers who are active in digitalisation efforts and influence the status of open source in public sector, as well as the main strategic players that work together with the government at all levels to raise awareness on OSS. It must be noted, however, that there appears to be no independent governmental body that is responsible for OSS policies in Estonia.

Policy makers

- The Ministry of Economic Affairs and Communications (*Majandus- ja Kommunikatsiooniministeerium* – MKM)[2] is responsible for the development of public services,

[1] https://www.president.ee/et/ametitegevus/koned/14614-vabariigi-president-konverentsil-world-knowledge-forum/index.html
[2] https://www.mkm.ee/et

standardisation and establishment o fa user-friendly service environment. Within the Ministry, the Information Society Services (ITAO) are active on GitHub[3].

- The State Information System Authority (*Riigi Infosüsteemi Amet* – RIA)[4] is a state agency of the Ministry of Economic Affairs and Communications. RIA coordinates the development and management of the state information system, organises information security activities, and handles security incidents in Estonian computer networks. The RIA consults and monitors public service providers on how to properly manage their information systems. Though OSS does not explicitly fall under its mandate, it oversees the eID, DigiDoc, eVoting, X-Road, and the state authentication service, all of which are partially or fully based on OSS.[5]
- The State Information System Management System (*Riigi infosüsteemi haldussüsteem* – RIHA) was established with the aim of gathering a comprehensive overview of the state's IT resources. They provide a public catalogue of all information systems, as well as a repository of documentation and metadata.

Strategic player

- Alvatal[6] is a free and OSS association which unites Estonian companies, non-profit associations, and volunteers with the aim of ensuring transparency in software and hardware solutions. Several government bodies have partnered with Alvatal to support their activities. Alvatal is active in the educational sector and has implemented various pilots on cloud computing, desktop migration, and the use of different OSS solutions.

Policy and legal framework

This section recapitulates the main OSS related policies and legal acts of the last ten years, including the first known milestone in this domain. The list is presented in a chronological order, starting from the most recent milestone.

- The Digital Agenda 2020[7] document outlines interoperable solutions earmarked for further development in order to ensure that they function securely both nationally and across borders. The Estonian eID, partially based on OSS and shared on GitHub[8], will be further developed, and it is thought that it is the most widely used OSS platform in Estonia. There are no further mentions of OSS in the document.
- In 2012, the Ministry of Economic Affairs and Communications published the Interoperability of the State Information System: Software Framework[9]. The Framework outlines the principles of

[3] https://github.com/MKM-ITAO
[4] https://www.ria.ee/
[5] Read more about these initiatives in the Open source software initiatives section of this report.
[6] http://alvatal.ee/
[7] https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf
[8] https://github.com/open-eid
[9] https://www.mkm.ee/sites/default/files/tarkvara_raamistik.pdf

procurement, management, and development of public sector software. It covers both proprietary and OSS, and though it favours OSS, it does not impose any restrictions on the development and use of proprietary software. OSS is not widely used in government and there are various challenges, such as lack of experience, hesitancy, and lack of management knowledge. Nevertheless, the public sector is called upon to increase efforts to raise the profile of OSS and reap its benefits by using and further developing it.

- Published in 2011 by the Ministry of Economic Affairs and Communications, the National Interoperability Framework of the State Information System[10] outlines the rules for compliance when public sector institutions are developing information systems. A chapter in the document is dedicated to software and specifications on interoperability and OSS. In the context of the Framework, the public sector must take into consideration alternatives such as open specifications, standards and software: "Public sector institutions *should* follow the principles of openness when developing the architecture of their information systems and procuring software." If a decision is taken to use proprietary software, it must be suitably justified. Furthermore, when procuring software, OSS alternatives must be taken into account.
- The earliest recommendations on OSS in Estonia date back to 2003, with the Estonian Informatics Centre recommending the use of OSS in the public sector[11]. The recommendations include, for instance, standardising document formats across the public sector, organising trainings to introduce OSS, installing Linux on workstations, and using OSS components when possible.

Open source software initiatives

This section presents an overview of the main OSS related initiatives in Estonia. The list is presented in a chronological order, starting from the most recent initiative.

- Government repository, 2019[12]: The first version of the government repository platform, *Koodivaramu*, was launched in 2019. OSS solutions developed for the government are made public and are freely available.
- eVoting, 2017[13]: The Estonian government has developed an eVoting system. It has published the source code for the electronic voting software, the control application, the mixing application, and the audit application. The latest updates are released on GitHub[14].

[10] https://www.mkm.ee/en/objectives-activities/information-society/state-information-system
[11] https://webzone.ee/zeroconf/materjalid/avatud_lahtekoodi_kasutamisest_eesti_avalikus_sektoris.pdf
[12] https://koodivaramu.eesti.ee/
[13] https://www.valimised.ee/et
[14] https://github.com/vvk-ehk/ivxv

- X-Road and NIIS, 2017[15,16]: X-Road, the data exchange layer for information systems used by Estonia and Finland, is a technological and organisational environment enabling a secure Internet-based data exchange between information systems. In 2017, the two countries established the Nordic Institute for Interoperability Solutions (NIIS) in order to deepen their cooperation in a more formal manner and jointly manage the development of X-Road.[17] The entire X-Road source code is publicly available for anyone to use. The X-Road technology is used nationwide in the Estonian public administration and in the Suomi.fi Data Exchange Layer service.
- Open Tartu, 2016[18]: The Smart and Open City of Tartu project began in 2016. The team scrapes information from the Tartu City document registry and presents it in a user-friendly manner for citizens and city officials. Citizens are given the opportunity to participate in the decision-making process, by commenting on documents and attending meetings in order to give feedback.
- Software Freedom Day, 2014[19]: In 2014, Alvatal and the State Information Systems Board organised a Software Freedom Day at the National Library of Estonia. Several presentations at this event focused on the use of OSS in education and in public administrations.
- VOLIS, 2010[20]: VOLIS is a local government internet-based information system that follows best practices in eGovernment and helps local governments in Estonia. The software can be used in all Estonian municipalities. The information system service is based on OSS and the owner of the user licence is the state, represented by the Ministry of the Interior.
- eGovernment building blocks[21]: OSS solutions developed by various Estonian government agencies are available on GitHub. The repositories include:
    - A document exchange protocol using X-Road which enables Estonian public sector document management systems to exchange documents on a distributed or decentralised basis[22];
    - A Personal Data Usage Monitor which offers the citizen a clear overview of the operations performed with his or her data by displaying a comprehensive overview on the eesti.ee portal[23];

[15] https://e-estonia.com/solutions/interoperability-services/x-road/
[16] https://www.niis.org/
[17] https://www.niis.org/history
[18] https://github.com/infoaed/opentartu
[19] http://alvatal.ee/
[20] http://kov.riik.ee/volis/
[21] https://github.com/e-gov
[22] https://github.com/e-gov/DHX
[23] https://github.com/e-gov/AJ

- The state authentication service TARA, a centrally provided service with which an institution can authenticate an ID card, mobile ID, smart ID, and also a foreign user in its eService[24];
- The RIHA-Browser, a software application that allows users to browse description and approval decisions[25];
- A consent service developed by the State Information System Board which enables the data subject to give consent to a third party for the use of his or her personal data[26].

- ID card and mobile ID[27]: In 2001, the Estonian government, together with the private sector (banks and telecom companies) launched the development of the ID card and mobile-ID which provides secure online identification and authentication. The architecture of the ID software was released for international usage and can be found on GitHub[28]. It is also used for digital signatures, for which the underlying software, DigiDoc, is also available on GitHub.[29] DigiDoc is used all over the world. It was developed by RIA and it allows users to open digitally signed documents, check the validity of signatures, digitally sign, and encrypt data.
- EUPL[30]: The source code of various government-financed IT systems is based on EUPL. This includes systems such as eHealth, ePolice, eJustice, citizen and business portals, eProcurement and eInvoicing, document exchange, and digital culture portals.
- CitizenOS[31]: CitizenOS is a space where citizens can exchange knowledge and ideas about e-democracy and collectively overcome challenges while making use of innovative technologies. The Citizen OS OSS code was used to set up the citizen initiatives platform[32], where petitions can be started, and votes can be collected and sent to the Estonian Parliament.
- Estonian Open Data Portal[33]: Through the Estonian state open data portal, everyone has access to unrestricted access to public sector data, together with the right to re-use and redistribute it. The Estonian portal uses CKAN, the open source data management system.
- TAAT[34]: TAAT is the Estonian Academic Authentication and Authorisation Infrastructure (*Eesti haridus- ja teadusasutusevahelise autentimise ja autoriseerimise taristu*). It enables electronic identities (user accounts) issued by education or research institutions to be used to access

[24] https://github.com/e-gov/TARA-Doku
[25] https://github.com/e-gov/RIHA-Browser
[26] https://github.com/e-gov/NT
[27] https://www.id.ee/?lang=et
[28] http://open-eid.github.io/
[29] https://github.com/open-eid
[30] https://joinup.ec.europa.eu/sites/default/files/news/attachment/estonia_sikkut_22may2013.pdf
[31] https://citizenos.com/
[32] https://rahvaalgatus.ee/
[33] https://opendata.riik.ee/
[34] https://taat.edu.ee/main/about/

several web-based services. Users do not need a separate user account for each service, and can instead use their existing account and authentication system of their home institution.