NATIONAL INTEROPERABILITY FRAMEWORK OBSERVATORY

Analytical Model

ESTONIA

The content of this Analytical Model reflects the status as collected in 2016.

DIGIT

Directorate-General for Informatics

ISA² Programme

ec.europa.eu/isa2

ISA²

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EUROPEAN COMMISSION

Directorate-General for Informatics

Directorate B — Interoperability Solutions for public administrations, businesses and citizens

Unit B6 — ISA ^{2} Programme

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Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

EIF Element - Reference - Category *See reference: the European Interoperability Framework v2* *See definitions listed in the ISA EIF brochure*	NIF-EIF Alignment			NIF implementation			NIF monitoring	
	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully aligned 1: partially aligned 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Subsidiarity and proportionality Ref: EIF, Chapter 2, Underlying principles Category: Principles	Does the NIF contain the 'subsidiarity and proportionality' principle?	Subsidiarity and proportionality - National information related political decisions SHOULD be enforced only if they are more efficient than the ones made in public sector institutions. - Instead of centralizing information systems, they SHOULD be mutually linked through services. - Before a decision is made to merge the systems that support the operation of institutions with different objectives, a risk and profitability analysis MUST be conducted. Corresponding decisions must be harmonized with the institution coordinating state information systems. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.1. National information related political decisions SHOULD be enforced only if they are more efficient than the ones made in public sector institutions. 2.2. Instead of centralizing information systems, they SHOULD be mutually linked through services. 2.3. Before a decision is made to merge the systems that support the operation of institutions with different objectives, a risk and profitability analysis MUST be conducted. Corresponding decisions must be harmonized with the institution coordinating state information systems.	2	X-road and Estonian PKI infrastructure The X-road data exchange layer allows officials to use the services intended for them (for instance document exchange centre) in the information systems of their own institutions. This facilitates the officials' work, since it avoids the labour-consuming processing of paper documents, large-scale data entry and data verification. For the latter, the PKI or the public key infrastructure enables secure digital authentication and signing. See: https://www.ria.ee/x-road/ Administration system for the state information system RIHA. RIHA serves as a catalogue for the state's information system. At the same time, it is a procedural and administrative environment via which the comprehensive and balanced development of the state's information system is ensured. RIHA guarantees the transparency of the administration of the state's information system and helps to plan the state's information management. RIHA is mandatory for state and local government agencies. https://riha.eesti.ee/riha/main https://www.ria.ee/administration-system-of-the-state-information-system/	*[describe project here]*	2	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
User-centricity EIF, Chapter 2, Underlying principles Category: Principles	Does the NIF contain the 'user-centricity' principle?	User-Centricity - Institution based approach MUST be replaced with a user based approach. Institutions MUST provide information at their own initiative. - To make services more comfortable for citizens to use, public sector institutions create a network of portals, the connecting link of which is information portal eesti.ee. - Evidential value and private information MUST be provided through personalized portals. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.4. Institution based approach MUST be replaced with a user based approach. Institutions MUST provide information at their own initiative. 2.5. To make services more comfortable for citizens to use, public sector institutions create a network of portals, the connecting link of which is information portal eesti.ee. 2.6. Evidential value and private information MUST be provided through personalized portals.	2	*[describe project here]*	Network of portals for citizens - www.eesti.ee 'https://www.ria.ee/government-portal/	1	Monitoring is done by Estonian Information System's Authority. Measuring indicators such as: - non-internet users: the proportion of 16 to 74-year-old Estonian population Beginner: 18% (2013) → target level of 5% (2020) - Satisfaction with the quality of public services: a. 16-74 year-olds in Beginner: 67% (2012) → target: 85% (2020) -among entrepreneurs Beginner: 76% (2012) → target: 90% (2020) As well as the number of unique visitors of portal eesti.ee. See: https://e-estonia.com/wp-content/uploads/2014/04/Digital-Agenda-2020_Estonia_ENG.pdf Statistics on the usage of Single Access point www.eesti.ee from 2014: https://www.eesti.ee/eng/topics/business/riigiportaali_abi/partnerile_1/portal_in_numbers	2

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	NIF-EIF Alignment			NIF implementation			NIF monitoring	
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Inclusion and accessibility EIF, Chapter 2, Underlying principles Recommendation 2 Category: Principles	Does the NIF contain the 'inclusion and accessibility' principle?	Inclusion and accessibility - The user SHOULD be able to choose an agreeable duty type of a service: service bureau, post, telephone, e-mail (including the use of @eesti.ee mail address), and other Internet channels. - A person identified with an ID card MUST be able to apply for any electronic public service. - Citizens MUST have the right and opportunity to participate in making decisions, concerning them and society, through electronic environments. - Information MUST be available and e-services usable through most widespread, supported by the private sector or communities, software systems (operation systems, browsers). - Public sector institutions MUST provide information in open formats. Citizens do not have to make extra expenses to use information (for example, obtain own software). - People with special needs and the elderly SHOULD be guaranteed access to services on the same level with other population groups. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.7. The user SHOULD be able to choose an agreeable duty type of a service: service bureau, post, telephone, e-mail (including the use of @eesti.ee mail address), and other Internet channels. 2.8. A person identified with an ID card MUST be able to apply for any electronic public service. 2.2.9. Citizens MUST have the right and opportunity to participate in making decisions, concerning them and society, through electronic environments. 2.10. Information MUST be available and e-services usable through most widespread, supported by the private sector or communities, software systems (operation systems, browsers). 2.11. Public sector institutions MUST provide information in open formats. Citizens do not have to make extra expenses to use information (for example, obtain own software). 2.12. People with special needs and the elderly SHOULD be guaranteed access to services on the same level with other population groups. 2.17. The interfaces of information systems MUST comply with WCAG (Web Content Accessibility Guidelines) standards, which guarantees their usability through Estonian language speech synthesisers.	2	Inclusion and accessibility is compulsory for all governmental sites.	For example the following websites specific settings for the visually impaired: - https://www.eesti.ee/eng/ - https://www.ria.ee/ 'https://www.ria.ee/government-portal/	2	Special monitoring by Ministry of Economic Affairs and Communications The proportion of Internet users who have used e-inclusion opportunities Beginner: 25% (2012) → target: 45% (2020) (Source: Ministry of Economic Affairs and Communications, on-demand survey) See: https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf	1
Security and privacy EIF, Chapter 2, Underlying principles Recommendation 3 Category: Principles	Does the NIF contain the 'Security and privacy' principle?	Security and privacy - The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. - Citizens MUST be guaranteed services through which can check and, if necessary, correct the data, collected about them by the public sector. - Citizens MUST be guaranteed services, through which they find out who, and for what purposes, has used the data collected about them in the public sector. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 2.14. Citizens MUST be guaranteed services through which can check and, if necessary, correct the data, collected about them by the public sector. 2.15. Citizens MUST be guaranteed services, through which they find out who, and for what purposes, has used the data collected about them in the public sector.	2	Security and privacy are ensured by the Estonian PKI and eID card. See: https://www.ria.ee/en/?id=27307 and https://www.ria.ee/x-road/	See: https://www.ria.ee/public-key-infrastructure/ See: https://www.ria.ee/id-card/	2	Monitoring is done by Estonian Information System's Authority. Measuring indicators such as: The use of a secure electronic identity - secure electronic identity card (ID card, mobile ID, digital ID, etc.) of people using The proportion of the population owning eID-s 46 Beginner: 37% (2013) → target: 65% (2020) - issued by non-residents of existing eID-s Beginner: 15 47 (2013) → target: 5000 (2020) - The proportion of persons who rate their computer skills sufficient for their own use and protection of personal data on the Internet Beginner: 68% (2013) → target: a 10 percentage points higher than the EU average by 2020. A (2020) See: https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf	2

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Multilingualism EIF, Chapter 2, Underlying principles Recommendation 4 Category: Principles	Does the NIF contain the 'Multilingualism' principle?	Multilingualism - In the user interfaces of information systems created for residents of Estonia, the default language MUST be Estonian. - The interfaces of information systems MUST comply with WCAG (Web Content Accessibility Guidelines) standards, which guarantees their usability through Estonian language speech synthesisers. - The user interfaces of pan-European services and relevant information on services SHOULD be provided besides Estonian, also in English, and if necessary, in Russian, or in any other languages relevant for the users. The user interfaces of information systems and content must be usable with the help of translation services (e.g. Google Translate, Yahoo Babelfish). - The user interfaces of information systems MUST be easily adaptable to other languages with the help of translation files. - The architecture, data structures and software of information systems SHOULD be linguistically neutral: functionality of an information system should ensure its easy realization in another language. - Information systems SHOULD support multilingual and international semantic assets. - The state supports estoniazation of free widespread software relevant to citizens. - Information systems and software products meant for the public SHOULD contain the support of language technological means of the Estonian language. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): '2.16. In the user interfaces of information systems created for residents of Estonia, the default language MUST be Estonian. 2.17. The interfaces of information systems MUST comply with WCAG (Web Content Accessibility Guidelines) standards, which guarantees their usability through Estonian language speech synthesisers . 2.18. The user interfaces of pan-European services and relevant information on services SHOULD be provided besides Estonian, also in English, and if necessary, in Russian, or in any other languages relevant for the users. The user interfaces of information systems and content must be usable with the help of translation services (e.g. Google Translate, Yahoo Babelfish) . 2.19. The user interfaces of information systems MUST be easily adaptable to other languages with the help of translation files. 2.20. The architecture, data structures and software of information systems SHOULD be linguistically neutral: functionality of an information system should ensure its easy realization in another language. 2.21. Information systems SHOULD support multilingual and international semantic assets. 2.22. The state supports estoniazation of free widespread software relevant to citizens. 2.23. Information systems and software products meant for the public SHOULD contain the support of language technological means of the Estonian language. 2.24. When the documentation of databases is	2	The default language is Estonian in Estonian information systems, but the user interfaces of pan-European services are provided, also in English and in Russian. https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	For example - https://www.eesti.ee/eng/ (Russian and English) - https://www.ria.ee/ (English) Ministry of Economic Affairs and Communications has conducted public sector websites accessibility rules assessment against the WCAG 2.0 standard in 2010 (https://www.mkm.ee/sites/default/files/veebideuuring_aruanne_final.pdf), 2013 (https://www.mkm.ee/sites/default/files/wcag_uuring_2013.pdf) and 2015 (https://www.mkm.ee/sites/default/files/wcag_aruanne_2015.pdf).	2		0
Administrative simplification EIF, Chapter 2, Underlying principles Category: Principles	Does the NIF contain the 'Administrative simplification' principle?	Administrative simplification - When the documentation of databases is coordinated in the Management System of state Information System (RIHA), the purposefulness of data collection and compliance with the principle of single request for data are checked. - Everybody has the right to use public services simply and comfortably. Public services are provided so that service users do not get held up by technical details. Public sector institutions do not burden citizens and businesses with unjustified claims. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): '2.24. When the documentation of databases is coordinated in the Management System of state Information System (RIHA), the purposefulness of data collection and compliance with the principle of single request for data are checked. 2.25. Everybody has the right to use public services simply and comfortably. Public services are provided so that service users do not get held up by technical details. Public sector institutions do not burden citizens and businesses with unjustified claims.	2	RIHA provides a procedural and administrative environment via which the comprehensive and balanced development of the state information system's is ensured. Best practices for citizens: •Citizen can give applications over the Internet •Citizen does not give data, which the IS knows anyway about the citizen •Citizen does not fill long application documents and run from door to door •A good example how the state has simplified the payment system Best practices for civil servants: •Civil servant is free from revising mountains of paper documents (7) •Civil servant is free from inputting the data from paper documents •Civil servant is free from checking data in different databases •Civil servant can start the process by inputting only the personal code of client •There does not exist any paper applications at all See: https://www.ria.ee/public/x_tee/eGovernment_in_Estonia.ppt+F13	*[describe project here]*	2	RIHA serves as the procedural and administrative environment for the following actions: - The use of information systems and databases. - The registration of services, - the connection with the X-road, - the administration of reusable components. RIHA monitors the number of information systems which meet all standards. See: https://www.ria.ee/administration-system-of-the-state-information-system/	2
Transparency EIF, Chapter 2, Underlying principles Category: Principles	Does the NIF contain the 'Transparency' principle?	In Estonia, the principle of transparency is implemented according to the following rules: - Every person should have an easy opportunity to find out how far the processing of his/her request is. - Public information on the management of affairs of the public sector is published in the document register of the institution. - Procedure of requests related to private life should be sent to a citizen's personal portal or his/her @eesti.ee e-mail address. - Public sector should create mechanisms for each service, where a user can express his/her opinion about the quality of the service. Information on the quality of the services is made public. See Estonian Interoperability Framework (version 3.0), Chapter 2, Underlying Principles of Interoperability http://www.riso.ee/sites/default/files/koosvoime/interoperability-framework.odt Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): '2.26. Every person SHOULD have an easy opportunity to find out how far the processing of his/her request is. 2.27. Public information on the management of affairs of the the public sector is published in the document register of the institution. 2.28. Procedure of requests related to private life SHOULD be sent to a citizen's personal portal or his/her @eesti.ee e-mail address. 2.29. Public sector SHOULD create mechanisms for each service, where a user can express his/her opinion about the quality of the service. Information on the quality of the services is made public.	2	Every citizen has his/her @eest.ee e-mail address where he/she receives requested information from public sector.	For example, the Estonian Tax and Customs Board also provides a feedback form: http://www.emta.ee/?id=28277	2		0

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Preservation of information EIF, Chapter 2, Underlying principles, Recommendation 5 Category: Principles	Does the NIF contain the 'Preservation of information' principle?	Preservation of information - Public sector institutions are responsible for archiving digital documents which emerged or were created as part of their activity. - Each document of the architecture of an information system's interoperability SHOULD describe the rules of archiving digital documents of that system and the mechanisms that guarantee their observance. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.30. Public sector institutions are responsible for archiving digital documents which emerged or were created as part of their activity. 2.31. Each document of the architecture of an information system's interoperability SHOULD describe the rules of archiving digital documents of that system and the mechanisms that guarantee their observance.	2	The document exchange centre (DEC) is an information system providing a common central document exchange service for various document management systems (DMS) as well as other information systems that handle documents. See: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system See: https://www.ria.ee/dec/	*[describe project here]*	2		0
Openness EIF, Chapter 2, Underlying principles, Recommendation 6 Category: Principles	Does the NIF contain the 'Openness' principle?	Openness In the context of the Estonian NIF, openness means that public sector takes into consideration the alternatives of 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. - The decision to use closed standards and specifications must be justified. See http://www.riso.ee/sites/default/files/koosvoime/interoperability-framework.odt Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.32. Public sector institutions SHOULD follow the principles of openness when developing the architecture of their information systems and procuring software. 2.33. The decision to use closed standards and specifications MUST be justified. 5.1.Estonian public sector MUST be an active member of IT communities as well as communities of standardization of information and document management, taking upon itself organization of activities of the corresponding communities. 5.2.Estonian public sector SHOULD support participation of Estonian experts in international standardization organizations.	2	RIHA serves as a catalogue for the state's information system. RIHA gives information on the following subjects: - Which are the information systems and databases that make up the state's information system; - Which data are collected and processed and in which information systems; - Which services, incl. X-Road services, are provided and who is using them; - Who are the responsible and authorised processors of the information systems and databases, and who are the contact persons; - On which legal basis are the databases operated and the data processed; - The reusable components that ensure the interoperability of information systems (XML assets, classifications, dictionaries and ontologies. See: https://www.ria.ee/administration-system-of-the-state-information-system/ See: http://opendata.riik.ee	*[describe project here]*	2	RIHA serves as the procedural and administrative environment for the following actions: - The use of information systems and databases. - The registration of services, - the connection with the X-road, - the administration of reusable components. RIHA monitors the number of information systems which meet all standards, the number of information registers published in by public sector, the number of services provided by X-road and the number of data sets joined with X-road. See: https://www.ria.ee/administration-system-of-the-state-information-system/	2
Reusability EIF, Chapter 2, Underlying principles, Recommendation 7 Category: Principles	Does the NIF contain the 'Reusability' principle?	Reusability - Reuse of public sector information SHOULD NOT be restricted. Restrictions SHOULD NOT discriminate anybody or hinder competition. - Public sector information is meant to be reused by all the market operators and providers of added value. - When creating their own information systems, public sector institutions, if possible, use solutions made by other institutions and their experience. - When creating free software, public sector institutions use the European Union Public Licence (EUPL) and as a development environment OSOR.eu (Open Source Observatory and Repository, OSOR). Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.34. Reuse of public sector information SHOULD NOT be restricted. Restrictions SHOULD NOT discriminate anybody or hinder competition. 2.35. Public sector information is meant to be reused by all the market operators and providers of added value. 2.36. When creating their own information systems, public sector institutions, if possible, use solutions made by other institutions and their experience. 2.37. When creating free software, public sector institutions use the European Union Public Licence (EUPL) and as a development environment OSOR.eu (Open Source Observatory and Repository, OSOR). 6.1. When founding information systems and in public procurements' tender offers, alongside proprietary solutions, free software alternatives MUST be taken into consideration. Decision MAY be made in favour of free software, commercial software or a combined solution, but in case other conditions are equal, software with a source code is preferred. Each case is decided on an individual basis. 6.2. In solutions ensuring mutual communication of information systems, joint projects and jointly used information systems, but also in information systems that are being founded for the first time or that are being refunded, only open standards and products and services that support specifications SHOULD be used. 6.3. In information systems dependence on company based products and services SHOULD be avoided. 6.4. When ordering information systems, it is RECOMMENDED to procure a software code or adaptations added to a commercial product. Procured software SHOULD be registered in the EU repository with a free software licence (e.g. EUPL). 6.5. When ordering software, state and local government institutions are guided by the principle that the ordered software and adaptations are usable, without restrictions, in other public administration institutions (the principle cannot be applied in the case of standard software, whose proprietary rights are owned by the software producer). If several institutions have similar needs, it is RECOMMENDED to order software jointly. 6.6. The solutions obtained as a result of the development work ordered by the public sector MAY be used by the contractor in business activities outside the public sector, if it does nor infringe upon the interests of the party that ordered the work.	2	Estonian PKI infrastructure and X-road are reusable. RIHA is responsible for the reusable components that ensure the interoperability of information systems (for example XML assets, classifications, dictionaries and ontologies). The Information Society Strategy 2020 OPERATIONAL PLAN 2014-2015 mentions as an action: To avoid duplication and increase the cost-effectiveness of technologies and promotes data reuse of common and promotes the sharing of ICT infrastructure in the public sector, thereby taking advantage of cloud technology options See: https://www.mkm.ee/sites/default/files/infoyk_rak_plaan_012015.xlsx	*[describe project here]*	2		0

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Technological neutrality and adaptability EIF, Chapter 2, Underlying principles, Recommendation 8 Category: Principles	Does the NIF contain the 'Technological neutrality and adaptability' principle?	Technology neutrality and adaptability - When developing functionality of information systems, technological decisions SHOULD be made as late as possible. - When procuring software, free software alternatives MUST be taken into account. - In order to guarantee equal treatment of solutions, public sector is RECOMMENDED when it orders functionality, also to order necessary infrastructure changes, needed to realize it. - Information systems interfaces MUST be created in a technology neutral way, using open standards, prescribed in the interoperability framework (XML, WSDL, SOAP etc.). Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.38. When developing functionality of information systems, technological decisions SHOULD be made as late as possible. 2.39. When procuring software, free software alternatives MUST be taken into account. 2.40. In order to guarantee equal treatment of solutions, public sector is RECOMMENDED when it orders functionality, also to order necessary infrastructure changes, needed to realize it. 2.41. Information systems interfaces MUST be created in a technology neutral way, using open standards, prescribed in the interoperability framework (XML, WSDL, SOAP etc.). 6.1. When founding information systems and in public procurements' tender offers, alongside proprietary solutions, free software alternatives MUST be taken into consideration. Decision MAY be made in favour of free software, commercial software or a combined solution, but in case other conditions are equal, software with a source code is preferred. Each case is decided on an individual basis. 6.9. When choosing software, transparent procedures SHOULD be used. As a choice, RISO ordered guideline MAY be used.	2	*[describe project here]*	Free and open software alternatives are taken into account, for example development of libreoffice.ee portal, which supports LibreOffice users. See: http://www.libreoffice.ee/ See: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	1		0
Effectiveness and efficiency EIF, Chapter 2, Underlying principles Category: Principles	Does the NIF contain the 'Effectiveness and efficiency' principle?	Effectiveness and efficiency - With regard to procuring development work of the functionality of information systems, public sector MUST take into consideration as much as possible other factors of productivity and efficiency. Estonian Interoperability Framework (version 3.0), chapter 2, Principles; https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.42. With regard to procuring development work of the functionality of information systems, public sector MUST take into consideration as much as possible other factors of productivity and efficiency.	2	Administration system for the state information system RIHA is responsible for information systems effectiveness and efficiency. On 19th of November 2009 the European eGovernment Awards Consortium announced Document Exchange Centre as a good service and strategic initiative practice. The 4th edition of the prestigious European eGovernment Awards aimed at promoting best practices and the most innovative electronic solutions that public authorities in Europe have developed to facilitate citizens' and business' access to public services, reduce the administrative burden and increase public administrations' efficiency. See: https://www.ria.ee/document-exchange-centre-receives-good-practice-label-2009/ ; https://www.ria.ee/administration-system-of-the-state-information-system/	*[describe project here]*	2	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
Conceptual model EIF, Chapter 3 Category: Conceptual model	Does the NIF contain a conceptual model?	Conceptual model - The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. - With regard to coupling information systems, their rigid integration MUST be avoided. Information systems MUST be coupled as loosely as possible through joint agreed X-Road and DVK agreed XML schemes and protocols. Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 3.1. Public sector SHOULD be the initiator of developing a joint service room. 3.2. Public sector institutions SHOULD review their activities and make them service centred. 3.3. Information systems of the public and private sector SHOULD follow the rules of service oriented architecture. 3.4. Information systems of service providers of the public and private sector SHOULD be separated from the information systems of service intermediaries (the so-called separation requirement of front-end and back-end systems). 3.5. Information systems SHOULD communicate only through services. 3.6. Public sector and private sector are RECOMMENDED to use a joint service room. 3.7. Public sector SHOULD provide personal services through data exchange layer X-Road. 3.8. To use services with evidential value, the front-end system is authenticated on the basis of an X-Road certificate and with an end user's qualified certificate in the front-end system. 3.9. Services with evidential value are authorized on two levels: the front-end system is authorized by the back-end system and a physical person is authorized by the front-end system. 3.10. Back-end systems SHOULD NOT engage in end user's authentication and authorization. 3.11. Network services of back-end systems SHOULD be available for an end user only through front-end systems. 3.3.12. Front-end systems MUST guarantee end user's authorization. For authorization the MISP component of X-Road MAY be used either directly or as integrated into the front-end system. 3.13. Systems for general use MAY intermediate services without access restrictions or services whose access rights are calculable or can be found in registers according to certain characteristics. 3.14. Systems for general use MUST use qualified certificates for authentication (logging in). Systems for general use SHOULD NOT contain components of access management.	2	- The data exchange layer X-Road is a technical and organisational environment, which enables secure Internet-based data exchange between the state's information systems. See: https://www.ria.ee/x-road/ - Administration system for the state information system RIHA. It serves as a catalogue for the state's information system. See: https://www.ria.ee/administration-system-of-the-state-information-system/	*[describe project here]*	2	Continuous improvement of X-road and its services. Monitoring the number of requests for information and monitoring the number of participants on X-road. See: https://www.ria.ee/x-road/ (bottom of the page for the monitoring)	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

	NIF-EIF Alignment			NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	NIF element present - Reference - (Text in English)	NIF-EIF alignment scoring *2: fully aligned 1: partially aligned 0: not aligned*	Large scale implementation *[describe if and how implementation of the element is a common practice]*	Only implementation examples *[describe an implementation example specific to each element]*	Implementation scoring *2: Common practice 1: some examples 0: not observed*	NIF monitoring	Monitoring scoring *2: Monitored 1: Partially monitored 0: not observed*
Public administrations should develop a component-based service model, allowing the establishment of (European) public services by reusing, as much as possible, existing service components. EIF, Recommendation 9 Category: Conceptual model	Is the conceptual model a component-based service model? (e.g. SOA)	- Services Interoperability Architecture / Service Oriented Architecture - The state IT architecture will be developed for a service oriented architecture Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 3.1. Public sector SHOULD be the initiator of developing a joint service room. 3.2. Public sector institutions SHOULD review their activities and make them service centred. 3.3. Information systems of the public and private sector SHOULD follow the rules of service oriented architecture. 3.4. Information systems of service providers of the public and private sector SHOULD be separated from the information systems of service intermediaries (the so-called separation requirement of front-end and back-end systems). 3.5. Information systems SHOULD communicate only through services. 3.6. Public sector and private sector are RECOMMENDED to use a joint service room. 3.7. Public sector SHOULD provide personal services through data exchange layer X-Road. 3.8. To use services with evidential value, the front-end system is authenticated on the basis of an X-Road certificate and with an end user's qualified certificate in the front-end system. 3.9. Services with evidential value are authorized on two levels: the front-end system is authorized by the back-end system and a physical person is authorized by the front-end system. 3.10. Back-end systems SHOULD NOT engage in end user's authentication and authorization. 3.11. Network services of back-end systems SHOULD be available for an end user only through front-end systems. 3.3.12. Front-end systems MUST guarantee end user's authorization. For authorization the MISP component of X-Road MAY be used either directly or as integrated into the front-end system. 3.13. Systems for general use MAY intermediate services without access restrictions or services whose access rights are calculable or can be found in registers according to certain characteristics. 3.14. Systems for general use MUST use qualified certificates for authentication (logging in). Systems for general use SHOULD NOT contain components of access management. 7.1. Use of support systems for the maintenance of the state information system is mandatory pursuant to Public Information Act §43.9 upon maintenance of all state and local government databases.	2	Implemented in the X-road. See for example the X-road service protocol described in "Protocol for Data Exchange Between Databases and Information Systems Requirements for Information Systems and Adapter Servers" Estonia has implemented the Core Public Service Vocabulary and describes its services according to it. See https://www.mkm.ee/en/service-search		2	This is monitored through the monitoring of the Estonian Digital agenda: Measure 2: Development of a common service space for the public and the private sector Number of enterprises having joined the X-Road Starting point: 179 (2013) → target level: 240 (2020)[Source: RIHA statistics] See: https://www.mkm.ee/sites/default/files/digital_agenda_2020_estonia_engf.pdf	2
Public administrations should agree on a common scheme to interconnect loosely coupled service components and put in place the necessary infrastructure when establishing (European) public services. EIF, Recommendation 10 Category: Conceptual model	Does the NIF encourage the use of common schemes to interconnect loosely coupled service components?	- The X-Road data exchange layer can be regarded as the realization of services. Information systems need to be linked as loosely agreed in a common X-road and agreed XML schemes and protocols. Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model http://riso.ee/en/estonian-interoperability-framework Estonian Interoperability Framework (version 3.0), Chapter 3, conceptual model https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 3.23. The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. 3.24. With regard to coupling information systems, their rigid integration MUST be avoided. Information systems MUST be coupled as loosely as possible through joint agreed X-Road and DVK agreed XML schemes and protocols. 7.1. Use of support systems for the maintenance of the state information system is mandatory pursuant to Public Information Act §43.9 upon maintenance of all state and local government databases.	2	X-road and Document Exchange Centre (DEC). See: https://www.ria.ee/x-road/ See: https://www.ria.ee/dec/	*[describe project here]*	2	Continuous improvement of X-road and its services. Monitoring the number of requests for information and monitoring the number of participants on X-road. See: https://www.ria.ee/x-road/ (bottom of het page for the monitoring)	2
Interconnection of service components. EIF, Recommendation 10 Category: Conceptual model	Does the NIF encourage to put in place the infrastructure to interconnect loosely coupled service components?	Common infrastructure services can be used as building blocks to realize their own information system architecture, or a toolkit for realizing the functionality. The main infrastructure components are: - Backbone main road - eID infrastructure. - Secure data exchange layer X-Road. - Document Exchange Environment DEC. - Information Gateway. - Civil personalized information system. - Service Registry and Information Systems RIHA. . - Infrastructure for Spatial Information. Estonian Interoperability Framework (version 3.0), chapter 7, Common infrastructure. https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 3.23. The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. 3.24. With regard to coupling information systems, their rigid integration MUST be avoided. Information systems MUST be coupled as loosely as possible through joint agreed X-Road and DVK agreed XML schemes and protocols. 7.1. Use of support systems for the maintenance of the state information system is mandatory pursuant to Public Information Act §43.9 upon maintenance of all state and local government databases. NIF Element in English (with reference of section):	2	X-road, eID infrastructure, Document Exchange Centre, most common joint infrastructure services. RIHA contains the state information databases, information systems, and other constituents. RIHA handles the creation of information systems and databases, joining the X-Road, classifications and management of XML schemas, etc.. RIHA is mandatory for state and local government agencies. See https://riha.eesti.ee/riha/main	*[describe project here]*	2		0

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

	NIF-EIF Alignment			NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully aligned 1: partially aligned 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Public administrations should make their authentic sources of information available to others while implementing access and control mechanisms to ensure security and privacy in accordance with the relevant legislation. EIF, Recommendation 11 Category: Conceptual model	Does the NIF encourage to make the authentic sources of information available to others?	Information is stored only once and accessible through a data exchange layer: X-Road. - X-road uses an authentication certificate for the end-user to be used when accessing services at the frond end. - Authorization is at two levels: the front end and the back end of the system. Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model, 2.13, 3.8–3.14, 3.21, 3.22, 3.23, https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 3.22. Service provider MUST ensure functionality, operating reliability and efficiency of the service, according to the description of the service in RIHA. 3.23. The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. 4.17. In the case of new initiatives, public sector institutions MUST put the interests of the state and its population above the interests of the organization. 4.18, All Interinstitutional links operate on the basis of multilateral agreements, bilateral agreements, if possible, are avoided. Service level agreements (SLA) must be published in RIHA. 4.19. Private sector institutions and non-governmental organizations are the owners of the information and data created or collected by them. The owner of the data of the state information system is the state. The structure and content of the data is the responsibility of a particular data administering organization, as a responsible and/or authorized processor. 4.20. With regard to data exchange, restrictions imposed by law and opportunities of organizations are followed. 4.21. Each document of interoperability architecture of an information system SHOULD contain a part dealing with semantic interoperability. 4.22. Each owner of an information asset publishes in RIHA the semantic descriptions of its information asset. The owner of an information asset is free to decide on the internal architecture of its information system as well as the principles of interoperability, but with regard to interlinking the information systems, it is compulsory to follow the principles of the framework.	2	Every citizen has ID card with passwords. The eID card provides the end user's authentication and therefore ensures security and privacy. The X-Road allows institutions/people to securely exchange data as well as to ensure people's access to the data maintained and processed in state databases. DEC is an infrastructure for the transmission of documents (i.e. a mediation layer for document exchange services of information systems) relying on the X-Road as a transport-level infrastructure. The treatment of the term "document and document exchange systems" should go beyond the correspondence between institutions and their document management systems. Documents are messages with described semantics and structure. These can be letters, draft legislations, financial documents (including e-invoices and payment orders), electronic forms, documents related to public procurement procedures etc. Systems exchange documents can be, in addition to document management systems, accounting information systems or information systems specific to an organisation's main activities. X-road and Document Exchange Centre (DEC). See: https://www.ria.ee/x-road/ See: https://www.ria.ee/dec/	*[describe project here]*	2	Number of unique persons which have used digital signature.	1
Access control EIF, Recommendation 11 Category: Conceptual model	Does the NIF encourage access and control mechanisms to ensure compliance to security and privacy legislation?	Authentication for data exchange is issued by X-road (systems security certificate server). Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 3.22. Service provider MUST ensure functionality, operating reliability and efficiency of the service, according to the description of the service in RIHA. 3.23. The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. 4.17. In the case of new initiatives, public sector institutions MUST put the interests of the state and its population above the interests of the organization. 4.18, All Interinstitutional links operate on the basis of multilateral agreements, bilateral agreements, if possible, are avoided. Service level agreements (SLA) must be published in RIHA. 4.19. Private sector institutions and non-governmental organizations are the owners of the information and data created or collected by them. The owner of the data of the state information system is the state. The structure and content of the data is the responsibility of a particular data administering organization, as a responsible and/or authorized processor. 4.20. With regard to data exchange, restrictions imposed by law and opportunities of organizations are followed. 4.21. Each document of interoperability architecture of an information system SHOULD contain a part dealing with semantic interoperability. 4.22. Each owner of an information asset publishes in RIHA the semantic descriptions of its information asset. The owner of an information asset is free to decide on the internal architecture of its information system as well as the principles of interoperability, but with regard to interlinking the information systems, it is compulsory to follow the principles of the framework.	2	The data exchange layer X-Road is a technical and organisational environment, which enables secure Internet-based data exchange between the state's information systems. PKI or the public key infrastructure enables secure digital authentication and signing. The infrastructure also allows forwarding data by using an encrypting key pair: a public encryption key and a private decryption key. In Estonia, this technology is used in relation with electronic identity (ID card, mobile ID, digital ID). https://www.ria.ee/x-road/	*[describe project here]*	2	Monitoring is done by Estonian Information System's Authority. Measuring indicators such as: The use of a secure electronic identity - secure electronic identity card (ID card, mobile ID, digital ID, etc.) of people using The proportion of the population owning eID-s 46 Beginner: 37% (2013) → target: 65% (2020) - issued by non-residents of existing eID-s Beginner: 15 47 (2013) → target: 5000 (2020) - The proportion of persons who rate their computer skills sufficient for their own use and protection of personal data on the Internet Beginner: 68% (2013) → target: a 10 percentage points higher than the EU average by 2020. A (2020) See: http://mkm.ee/public/Infoyhiskonna_arenguk ava_2020_f.pdf	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

EIF Element - Reference - Category	NIF-EIF Alignment: Measurement	NIF-EIF Alignment: NIF element present - Reference - (Text in English)	NIF-EIF Alignment: NIF-EIF alignment scoring *2: fully 1: partially 0: not aligned*	NIF implementation: Large scale implementation *[describe if and how implementation of the element is a common practice]*	NIF implementation: Only implementation examples *[describe an implementation example specific to each element]*	NIF implementation: Implementation scoring *2: Common practice 1: some examples 0: not observed*	NIF monitoring: NIF monitoring	NIF monitoring: Monitoring scoring *2: Monitored 1: Partially monitored 0: not observed*
Public administrations, when working to establish (European) public services, should develop interfaces to authentic sources and align them at semantic and technical level. EIF, Recommendation 12 Category: Conceptual model	Does the NIF encourage the development of interfaces to authentic sources that are aligned at semantic and technical level?	The semantic layer makes a split between semantic syntaxis (via a semantic gateway) and semantic assets. Information is stored only once and accessible through a data exchange layer: X-Road. Estonian Interoperability Framework (version 3.0), chapter 3, Conceptual model https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 3.21. Information on services provided in public interests MUST besides service intermediaries' portals, also be published in information portal eesti.ee, network services MUST be described in RIHA. 3.22. Service provider MUST ensure functionality, operating reliability and efficiency of the service, according to the description of the service in RIHA. 3.23. The Estonian model of services is data exchange layer X-Road, which can be viewed as a realization of the European model of services. X-Road MUST be used in the case of services needing an evidential value. 4.17. In the case of new initiatives, public sector institutions MUST put the interests of the state and its population above the interests of the organization. 4.18, All interinstitutional links operate on the basis of multilateral agreements, bilateral agreements, if possible, are avoided. Service level agreements (SLA) must be published in RIHA. 4.19. Private sector institutions and non-governmental organizations are the owners of the information and data created or collected by them. The owner of the data of the state information system is the state. The structure and content of the data is the responsibility of a particular data administering organization, as a responsible and/or authorized processor. 4.20. With regard to data exchange, restrictions imposed by law and opportunities of organizations are followed. 4.21. Each document of interoperability architecture of an information system SHOULD contain a part dealing with semantic interoperability. 4.22. Each owner of an information asset publishes in RIHA the semantic descriptions of its information asset. The owner of an information asset is free to decide on the internal architecture of its information system as well as the principles of interoperability, but with regard to interlinking the information systems, it is compulsory to follow the principles of the framework.	2	The data exchange layer X-Road is a technical and organisational environment, which enables secure Internet-based data exchange between the state's information systems. See: https://www.ria.ee/x-road/	*[describe project here]*	2	Administration system for the state information system (RIHA) is monitoring x-Road.	2
Interoperability levels EIF, Chapter 4 Category: Interoperability levels	Does the NIF describe the four levels of interoperability?	- Legal interoperability - Organisational Interoperability - Semantic Interoperability - Technical Interoperability Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 4.1. The most important document of each information system of the public sector is the description of its interoperability architecture, where the technical architecture of the information system, semantics, legal system and political context are provided. Without such a document, no coordination and registration procedure of the information system is started in RIHA. NIF includes all interoperability levels: legal, semantic, technical and organisational - see pages 19 to 28 from https://www.mkm.ee/sites/default/files/riigi_it_koosvoime_raamistik.pdf. Semantic interoperability has also an extended document https://www.mkm.ee/sites/default/files/riigi_infosusteemide_semantilise_koosvoime_raamistik.pdf	2	*[describe project here]*	The semantic level of interoperability has been one of the principles of our interoperability framework:https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	1	Monitoring is done by Estonian State Information Systems Authority	2
Legal interoperability: Public administrations should carefully consider all relevant legislation relating to data exchange, including data protection legislation, when seeking to establish a European public service. EIF, Chapter 4 Recommendation 14 Category: Interoperability levels, legal artefacts	Does the NIF impose to consider all relevant legislation related to data exchange?	State information systems are coordinated with legal acts, interoperability is regulated with various agreements, standards or recommendations. All the relevant legal acts, extend to information systems. Legal acts that directly regulate digital information, include: - Public Information Act - State Information Management System - System of Security Measures of the Information System - Digital Signatures Act - Electronic Communications Act - Archives Act - Official Statistics Act - Personal Data Protection Act - Public Procurement Act - Data Exchange Layer of Information Systems - System of Classificators - State Secrets and Classified information of Foreign States Act - Spatial Data Act See http://www.riso.ee/sites/default/files/koosvoime/interoperability-framework.odt Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels http://riso.ee/en/estonian-interoperability-framework NIF Element in English (with reference of section): 2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 4.11. A document of interoperability architecture of a public sector information system MUST contain a part, handling legal interoperability. 4.12. An information system architecture document MUST contain: a list of operational processes of an organization; short descriptions of the principles of the management of services and changes; description of the mutual interoperability of operational processes and interoperability with external operational processes.	2	A dedicated act for information systems data exchanges includes specific provisions for the X-road https://www.ria.ee/x-road/	*[describe project here]*	2	Monitoring is done by Estonian State Information Systems Authority	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

EIF Element - Reference - Category	NIF-EIF Alignment: Measurement	NIF-EIF Alignment: NIF element present - Reference - (Text in English)	NIF-EIF Alignment: NIF-EIF alignment scoring *2: fully aligned 1: partially aligned 0: not aligned*	NIF implementation: Large scale implementation *[describe if and how implementation of the element is a common practice]*	NIF implementation: Only implementation examples *[describe an implementation example specific to each element]*	NIF implementation: Implementation scoring *2: Common practice 1: some examples 0: not observed*	NIF monitoring: NIF monitoring	NIF monitoring: Monitoring scoring *2: Monitored 1: Partially monitored 0: not observed*
Organisational interoperability - business process alignment. Public administrations should document their business processes and agree on how these processes will interact to deliver a (European) public service. EIF, Chapter 4 Recommendation 15 Category: Interoperability levels, organisational artefacts	Does the NIF describe that the business processes are documented in an agreed way in order for other administrations to understand the overall business process?	- Processes should be documented in a unified way so that administrations can work together. Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels 4.12-4.16 http://riso.ee/en/estonian-interoperability-framework NIF Element in English (with reference of section): 4.12. An information system architecture document MUST contain: a list of operational processes of an organization; short descriptions of the principles of the management of services and changes; description of the mutual interoperability of operational processes and interoperability with external operational processes. 4.13. Public sector institutions MUST consider practicality of developing a public service and examine agreements of providing a public service. 4.14. Projects of information systems pivotal for the country and projects whose cost exceeds 200 000 euros, are examined by the chief architect of the state IT. The duties of the chief architect of the state IT are fulfilled by the Department of State Information Systems of the Ministry of Economic Affairs and Communications. 4.15. Each institution MUST determine the role and duties of its chief information officer and appoint a person to fulfil them. 4.16. Each institution MUST determine the role and duties of its chief information security officer and appoint a person to fulfil them.	2	See: https://www.riigiteataja.ee/akt/119012011015	*[describe project here]*	2	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main). It is recommended to provide descriptions of processes	2
Inter-governmental coordination. EIF, Chapter 4 Recommendation 15 Category: Interoperability levels, organisational artefacts	Does the NIF encourage to agree on how these processes will interact among the different levels of public administrations?	- All information systems architecture documents should clarify the processes they cover and how the processes collaborate with other (external) processes. Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels 4.12-4.16 https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 4.12. An information system architecture document MUST contain: a list of operational processes of an organization; short descriptions of the principles of the management of services and changes; description of the mutual interoperability of operational processes and interoperability with external operational processes. 4.13. Public sector institutions MUST consider practicality of developing a public service and examine agreements of providing a public service. 4.14. Projects of information systems pivotal for the country and projects whose cost exceeds 200 000 euros, are examined by the chief architect of the state IT. The duties of the chief architect of the state IT are fulfilled by the Department of State Information Systems of the Ministry of Economic Affairs and Communications. 4.15. Each institution MUST determine the role and duties of its chief information officer and appoint a person to fulfil them. 4.16. Each institution MUST determine the role and duties of its chief information security officer and appoint a person to fulfil them.	2	Estonian Interoperability Framework describes how these processes will interact among the different levels and this document has legal status in Estonia. See: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	*[describe project here]*	0	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main)	0
Organisational interoperability - organisational relationships. Public administrations should clarify their organisational relationships as part of the establishment of a (European) public service. EIF, Chapter 4 Recommendation 16 Category: Interoperability levels, organisational artefacts.	Does the NIF encourage public administrations to clarify their organisational relationships as part of the establishment of a (European) public service?	- Information system architecture document must contain an overview of the different organizational relationships involved in the service delivery. - The service provider must ensure that the functionality, the reliability and the efficiency of the service is according to the description in the RIHAs (service agreement). Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels 4.12, 4.17-4.20, 3.22 https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 4.12. An information system architecture document MUST contain: a list of operational processes of an organization; short descriptions of the principles of the management of services and changes; description of the mutual interoperability of operational processes and interoperability with external operational processes. 4.17. In the case of new initiatives, public sector institutions MUST put the interests of the state and its population above the interests of the organization. 4.18, All Interinstitutional links operate on the basis of multilateral agreements, bilateral agreements, if possible, are avoided. Service level agreements (SLA) must be published in RIHA. 4.19. Private sector institutions and non-governmental organizations are the owners of the information and data created or collected by them. The owner of the data of the state information system is the state. The structure and content of the data is the responsibility of a particular data administering organization, as a responsible and/or authorized processor. 4.20. With regard to data exchange, restrictions imposed by law and opportunities of organizations are followed.	2	Estonian Interoperability Framework describes organisational relationships as part of the establishment of a public service and this document has legal status in Estonia. See: http://riso.ee/en	*[describe project here]*	0	Monitoring is done by Estonian State Information Systems Authority	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

	NIF-EIF Alignment			NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully aligned 1: partially aligned 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Organisational interoperability - change management. Public administrations working together to provide (European) public services should agree on change management processes to ensure continuous service delivery. EIF, Chapter 4 Recommendation 17 Category: Interoperability levels, organisational artefacts	Does the NIF encourage public administrations to agree on change management processes to ensure continuous service delivery?	The Estonian operation level documentation contains descriptions, instructions, rules, service level agreements, descriptions of procedures to support change management. An information system architecture document must contain a short description of the principles of the management of services and changes. https://www.riigiteataja.ee/akt/13147268 http://www.riso.ee/sites/default/files/koosvoime/interoperability-framework.odt Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels http://riso.ee/en/estonian-interoperability-framework NIF Element in English (with reference of section): 4.12. An information system architecture document MUST contain: - a list of operational processes of an organization; - short descriptions of the principles of the management of services and changes; - description of the mutual interoperability of operational processes and interoperability with external operational processes.	2		Change Management is for example part of the Information Security. As mentioned in the IT Architecture framework "Each case should be dealt with information security management, which typically involves several activities including change management". See: https://www.mkm.ee/sites/default/files/riigi_it_arhitektuur.pdf	1	Change Management is for example part of the Information Security. As mentioned in the IT Architecture framework "Institution's information services, should be monitored by the Government of the Republic Regulation "Information Systems security system "and ISKE methodology, COBIT framework and information security standards, such as EVS-ISO/IEC 17799:2003. Information security policy and budget planning documents should be considered in addition to the "Information Policy Fundamentals for the years 2004 to 2006. "," Information Policy Action Plan 2005 "," state IT architecture and Interoperability Framework "," The National Information Infrastructure-centered service concept. "It makes sense has to take into account the agency information security policies and agency information systems business continuity and disaster recovery plans of conflicting recommendations. Databases should follow the Databases Act, Government Regulation "Information systems security system" and ISKE methodology, as well as the Government of the Republic Regulation "The implementation of information systems data exchange," and the relevant standards• When it comes to personal data, it should be monitored in addition to the Personal Data Protection Law and Data Protection FSA demands on the availability, integrity and confidentiality of personal data processing" See: http://riso.ee/sites/default/files/koosvoime/RITA1_01.pdf Monitoring should be performed or is actually	1
Semantic interoperability. Public administrations, when working together to establish (European) public services, should use a common taxonomy of basic public services. EIF, Chapter 4 Recommendation 13 Category: Interoperability levels, semantic artefacts.	Does the NIF encourage the usage of a common taxonomy of basic public service?	The Semantic Interoperability Framework (https://www.mkm.ee/sites/default/files/riigi_infosusteemide_semantilise_koosvoime_raamistik.pdf) is a set of multilateral agreements and rules, which would facilitate the linkage between systems at the semantic level. The following types of semantic assets are included: - dictionaries - thesauri - code lists and classifications, - taxonomies, - conversion table (mapping tables), - ontologies, - service register. https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels NIF Element in English (with reference of section): '2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 3.1. Public sector SHOULD be the initiator of developing a joint service room. 3.2. Public sector institutions SHOULD review their activities and make them service centred. 3.3. Information systems of the public and private sector SHOULD follow the rules of service oriented architecture. 3.4. Information systems of service providers of the public and private sector SHOULD be separated from the information systems of service intermediaries (the so-called separation requirement of front-end and back-end systems). 3.5. Information systems SHOULD communicate only through services. 3.6. Public sector and private sector are RECOMMENDED to use a joint service room. 3.7. Public sector SHOULD provide personal services through data exchange layer X-Road. 3.8. To use services with evidential value, the front-end system is authenticated on the basis of an X-Road certificate and with an end user's qualified certificate in the front-end system. 3.9. Services with evidential value are authorized on two levels: the front-end system is authorized by the back-end system and a physical person is authorized by the front-end system. 3.10. Back-end systems SHOULD NOT engage in end user's authentication and authorization. 3.11. Network services of back-end systems SHOULD be available for an end user only through front-end systems. 3.3.12. Front-end systems MUST guarantee end user's authorization. For authorization the MISP component of X-Road MAY be used either directly or as integrated into the front-end system.	2	*[describe project here]*	A detailed description of semantic interoperability has been provided in a separate document of the interoperability framework "Semantic Interoperability Framework". https://www.mkm.ee/en/objectives-activities/information-society/state-information-system https://www.mkm.ee/sites/default/files/riigi_infosusteemide_semantilise_koosvoime_raamistik.pdf	1	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

NIF-EIF Alignment				NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully aligned 1: partially aligned 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Public administrations should support the establishment of sector specific and cross-sectoral communities that aim to facilitate semantic interoperability and should encourage the communities to share results on national and European platforms. EIF, Recommendation 18 Category: Interoperability levels, semantic artefacts	Does the NIF encourage public administrations to support the establishment of sector specific and cross-sectoral communities that aim to facilitate semantic interoperability and that share results on national and European platforms?	The Semantic Interoperability framework recommends private companies and associations to participate in the creation, publishing and implementation of semantic assets. Estonian Interoperability Framework (version 3.0), chapter 4, Interoperability levels https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 4.21. Each document of interoperability architecture of an information system SHOULD contain a part dealing with semantic interoperability. 4.22. Each owner of an information asset publishes in RIHA the semantic descriptions of its information asset. The owner of an information asset is free to decide on the internal architecture of its information system as well as the principles of interoperability, but with regard to interlinking the information systems, it is compulsory to follow the principles of the framework. 4.23 The parties are free to choose which tools and standards they use when creating semantic assets and enriching information assets semantically. Semantic assets and annotated information assets MUST be published in RIHA according to the requirements of the semantic guideline. 4.24. Human-readable and machine-readable semantic assets of the state information system and annotated information assets are available for everybody free of charge, including representatives of the public and private sector and residents of the European Union. 4.25.The framework RECCOMENDS private businesses and their associations to participate in creation, publication and implementation of semantic assets.	2	*[describe project here]*	Example: Place Name register The Place Names Register (PNR) is a national register which is aimed to collect and register Estonian geographical place names for preserving these as national heritage as well as for using them in different information systems. http://www.maaamet.ee/index.php?lang_id=2&page_id=514&no_cache=1402386847	1	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
Technical interoperability. Public administrations should agree on the formalised specifications to ensure technical interoperability when establishing European public services. EIF, Recommendation 19 Category: Interoperability levels, technical artefacts.	Does the NIF encourage public administrations to agree on the formalised specification to ensure technical interoperability when establishing European public services.	The Estonian NIF specifies the following sub-frameworks / formal specifications to ensure technical interoperability: - Interoperability architecture - Semantic interoperability - Open standards - Software framework - Document management - Security framework - Internet framework (aka Web Framework or Framework of Websites) https://www.mkm.ee/sites/default/files/riigi_it_koosvoime_raamistik.pdf https://www.mkm.ee/sites/default/files/riigi_infosusteemide_semantilise_koosvoime_raamistik.pdf NIF Element in English (with reference of section): 4.5. Information systems and public services MUST be created proceeding from a real need, and they have to be endorsed with political decisions. For creation of a service and information system, there MUST be a legal base. 5.1.Estonian public sector MUST be an active member of IT communities as well as communities of standardization of information and document management, taking upon itself organization of activities of the corresponding communities. 5.2.Estonian public sector SHOULD support participation of Estonian experts in international standardization organizations. 5.3. In the Estonian public sector, there is an agreed minimum set of open standards which the public sector MUST follow. The choice and assessment of the standards is public and balanced. 5.4. The framework RECOMMENDS public sector organizations to follow the interoperability framework document “Open Standards”, when they create their own information systems. http://www.riso.ee/et/koosvoime/RITA1_01.pdf (version 1.01) http://www.riso.ee/wiki/Semantika_raamistik (working draft of version 0.9) http://www.riso.ee/wiki/Avatud-standardid (version 0.1) http://www.riso.ee/et/koosvoime/software-framework.odt and http://www.riso.ee/et/koosvoime/tarkvara-raamistik.odt (version 2) http://www.riso.ee/wiki/Dokumendihaldus (working version 1.0) http://www.riso.ee/et/files/infoturve-raamistik-v1.1.odt (version 1.1) http://www.riso.ee/et/koosvoime/web-framework.odt and http://www.riso.ee/et/koosvoime/veebide-raamistik.odt (version 1.0)	2		The objective of the interoperability framework is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. There is a list of the most relevant open standards, which institutions should use when communicating with one another or the public, on web sites and in public registers. With regard to in-house communication, institutions are allowed, although it is not recommended, to use other formats. See Chapter 5: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	1	Monitoring is done by Estonian State Information Systems Authority	2

Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

	NIF-EIF Alignment			NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully 1: partially 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Public administrations, when establishing (European) public services, should base interoperability agreements on existing formalised specifications, or, if they do not exist, cooperate with communities working in the same areas. EIF, Recommendation 20 Category: Interoperability agreements.	Does the NIF encourage: - Interoperability agreements to be based on existing formalised specifications? Or - if they do not exist, to cooperate with communities working in the same areas.	The NIF consists out of various sub-frameworks describing the formal specifications: - The IT architecture framework describes the State's IT architecture and support strategies for selected public IT systems. - The open standards framework specifies the Estonian public policy on open standards. - The Semantic Interoperability Framework is a set of multilateral agreements and rules, which would facilitate the linkage between systems at the semantic level. - The security interoperability framework specifies the key aspects of information security, which must be considered by deploying and maintaining information system at all public administration levels. - The internet interoperability framework (or Web Framework or Framework of Websites) deals with state and local government agencies web interoperability. - The document management framework describes the key aspects for the governance of document management systems. - The Software framework describes mechanisms and methods for evaluating and selecting software to be procured. https://www.mkm.ee/sites/default/files/riigi_it_koosvoime_raamistik.pdf NIF Element in English (with reference of section): 5.1.Estonian public sector MUST be an active member of IT communities as well as communities of standardization of information and document management, taking upon itself organization of activities of the corresponding communities. 5.2.Estonian public sector SHOULD support participation of Estonian experts in international standardization organizations. 5.3. In the Estonian public sector, there is an agreed minimum set of open standards which the public sector MUST follow. The choice and assessment of the standards is public and balanced. 5.4. The framework RECOMMENDS public sector organizations to follow the interoperability framework document “Open Standards”, when they create their own information systems.	2	The objective of the Estonian interoperability framework is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. The more concrete objectives of the framework are: To contribute to the development of a service oriented society, where people can communicate with the state without knowing anything about the hierarchic structure of the public sector or the division of roles in it. To bring more transparency into information related political decisions of the information system. To support co-development of the state information system. To create conditions for free competition, following the agreed framework. To reduce public sector IT costs. https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	For example: Estonian x-road, national eID, eHealth, see - https://www.ria.ee/en/	0	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
Public administrations should use a structured, transparent and objective approach to assessing and selecting formalised specifications. EIF, Recommendation 21 Category: Interoperability agreements.	Does the NIF encourage Public administrations to use a structured, transparent and objective approach to assess and select formalised specifications?	Frameworks undergo a consultation period during which state and local government agencies, private sector, third sector bodies and individuals can submit their own proposals. The Software Interoperability Framework contains guidelines for the Assessment of specifications. https://www.mkm.ee/sites/default/files/software-framework_2012.doc NIF Element in English (with reference of section): 5.3. In the Estonian public sector, there is an agreed minimum set of open standards which the public sector MUST follow. The choice and assessment of the standards is public and balanced. 6.9. When choosing software, transparent procedures SHOULD be used. As a choice, RISO ordered guideline MAY be used1	2	Software framework is a part of a state interoperability framework providing principles of software procurement, management and development in the public sector. The framework provides methods and mechanisms of software evaluation and selection, which are common to the public sector. 'Software framework should support distribution of a good practice in the public sector. Therefore its direct purpose is to increase : number of alternative options of the public sector interoperability of the information systems information systems' sustainability and continuity . See: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	*[describe project here]*	0	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
When establishing (European) public services, public administrations should prefer open specifications, taking due account of the coverage of functional needs, maturity and market support. EIF, Recommendation 22 Category: Interoperability agreements.	Does the NIF encourage public administrations to prefer open specifications, taking due account of the coverage of functional needs, maturity and market support?	Estonia's criteria for open standards: eligibility, potential, openness, market value. - Eligibility expresses eligibility with the public sector "business needs" (in addition: accessibility, security, privacy, multilingualism, etc.) - Potential expresses non-functional features such as scalability, maturity, stability and manageability - Openness: availability of technical specifications, market capacity for implementation, etc. - Market value reflects compliance with the standard "good practice" (with usability, availability of competing applications, application rate, the existence of support, etc.) The Estonian NIF contains an open standards framework, a software framework and guidelines for the assessment of specifications. Estonian Interoperability Framework (version 3.0), chapter 5, Open standards http://riso.ee/en/estonian-interoperability-framework Reference: https://www.mkm.ee/sites/default/files/software-framework_2012.doc	2	The Ministry of Economic Affairs and Communications organizes the mapping of IT related standard needs of public administration, promotes implementation of standards and disseminates standardization related information. The objective of the interoperability framework is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. There is a list of the most relevant open standards, which institutions should use when communicating with one another or the public, on web sites and in public registers. With regard to in-house communication, institutions are allowed, although it is not recommended, to use other formats. See Chapter 5: https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc	*[describe project here]*	2	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2
Contribution to the standardisation process Public administrations should lead or actively participate in standardisation work relevant to their needs. EIF, Chapter 5, Recommendation 23 Category: Interoperability agreements.	Does the NIF encourage public administrations to lead or actively participate in standardisation work relevant to their needs?	Estonian public sector has an open standards working group (including other interested (external) parties) which defines a minimum set of open standards and monitors the application of the standards. Estonian Interoperability Framework (version 3.0), chapter 5, Open standards https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 5.1.Estonian public sector MUST be an active member of IT communities as well as communities of standardization of information and document management, taking upon itself organization of activities of the corresponding communities. 5.2.Estonian public sector SHOULD support participation of Estonian experts in international standardization organizations.	2	The Ministry of Economic Affairs and Communications organizes the mapping of IT related standard needs of public administration, promotes implementation of standards and disseminates standardization related information. Estonian public sector MUST be an active member of IT communities as well as communities of standardization of information and document management, taking upon itself organization of activities of the corresponding communities. See https://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwiB6-H07L7QAhWFnRoKHccmCClQFggyMAI&url=https%3A%2F%2Fwww.ria.ee%2Friigiarhitektuur%2Fwiki%2Flib%2Fexe%2Ffetch.php%3Fmedia%3Dria%3Ainteroperability-framework.odt&usg=AFQjCNFx-nXk3W0jluVteQ6WmLkB2ICi0Q, page 32	*[describe project here]*	2	Interoperability framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2

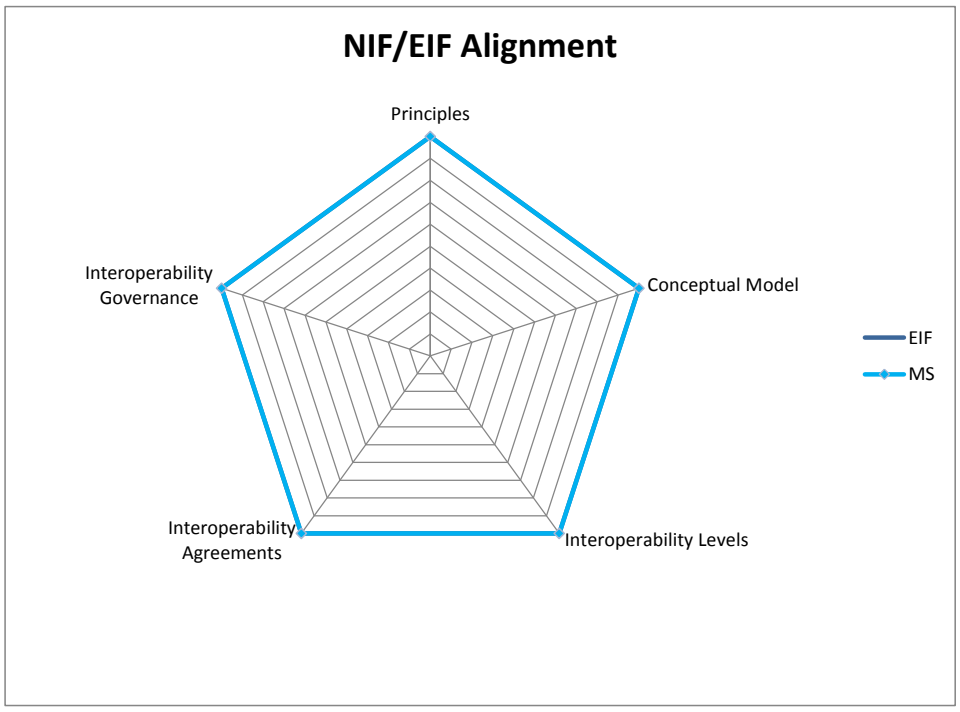
Analysis of the NIFs

See Alignment Examples in NIFO toolbox

See implementation and monitoring examples in NIFO Toolbox

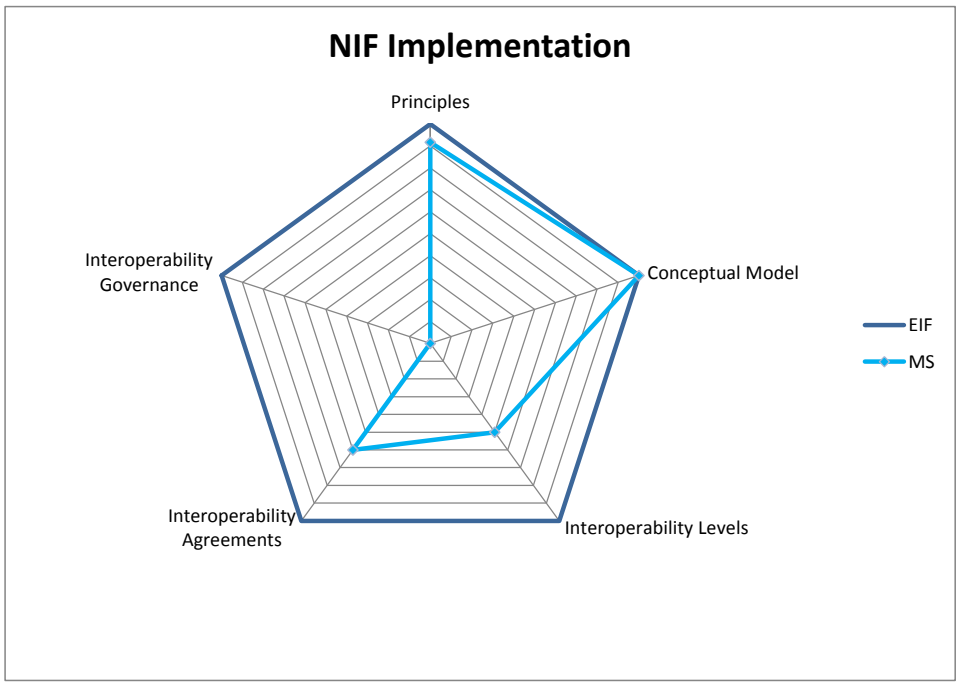
	NIF-EIF Alignment			NIF implementation			NIF monitoring	
EIF Element - Reference - Category	Measurement	**NIF element present** - Reference - (Text in English)	**NIF-EIF alignment scoring** *2: fully aligned 1: partially aligned 0: not aligned*	**Large scale implementation** *[describe if and how implementation of the element is a common practice]*	Only implementation **examples** *[describe an implementation example specific to each element]*	**Implementation scoring** *2: Common practice 1: some examples 0: not observed*	**NIF monitoring**	**Monitoring scoring** *2: Monitored 1: Partially monitored 0: not observed*
Public administrations, when working together to establish (European) public services, should agree on minimum service requirements for secure data exchange. EIF, Recommendation 13 Category: Interoperability agreements.	Does the NIF encourage public administrations to agree on minimum service requirements for secure data exchange?	The service directory includes quality characteristics of the individual services (functionality, reliability and efficiency). Reliability and efficiency indicators describe hindrance resistance, frequency allowed for hindrances, integrity, utility load calculated for a service and resource use, the time spent on providing the service. Service providers are required to ensure quality of a service, constantly engage in procedures necessary for a service to comply with established requirements. Service user is entitled to demand from a service provider a service that meets quality requirements. Estonian Interoperability Framework (version 3.0), chapter 3, RIHA and services directory https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 2.13. The solutions used in the state information system MUST be secure, in other words, they MUST guarantee confidentiality, authenticity, availability and provability of data and services. 3.1. Public sector SHOULD be the initiator of developing a joint service room. 3.2. Public sector institutions SHOULD review their activities and make them service centred. 3.3. Information systems of the public and private sector SHOULD follow the rules of service oriented architecture. 3.4. Information systems of service providers of the public and private sector SHOULD be separated from the information systems of service intermediaries (the so-called separation requirement of front-end and back-end systems). 3.5. Information systems SHOULD communicate only through services. 3.6. Public sector and private sector are RECOMMENDED to use a joint service room. 3.7. Public sector SHOULD provide personal services through data exchange layer X-Road. 3.8. To use services with evidential value, the front-end system is authenticated on the basis of an X-Road certificate and with an end user's qualified certificate in the front-end system. 3.9. Services with evidential value are authorized on two levels: the front-end system is authorized by the back-end system and a physical person is authorized by the front-end system. 3.10. Back-end systems SHOULD NOT engage in end user's authentication and authorization. 3.11. Network services of back-end systems SHOULD be available for an end user only through front-end systems. 3.3.12. Front-end systems MUST guarantee end user's authorization. For authorization the MISP component of X-Road MAY be used either directly or as integrated into the front-end system. 3.13. Systems for general use MAY intermediate services without access restrictions or services whose access rights are calculable or can be found in registers according to certain characteristics. 3.14. Systems for general use MUST use qualified certificates for authentication (logging in). Systems for general use SHOULD NOT contain components of access management. 3.21. Information on services provided in public interests MUST besides service intermediaries' portals, also be published in information portal eesti.ee, network services MUST be described in RIHA.	2	The IT Architecture Framework describes Information security policies such as "Each case should be dealt with information security management, which typically involves the following activities: • Information security policies. • Information Security organizational structure of the building, including the delineation of roles and responsibilities organization. • Risk management, including the delineation and evaluation of the following elements: protecting the assets belonging to, the risks weaknesses, effects, risks, security measures, residual risks, limitations. • If necessary, the concept of information security plan containing the required security level designation a description of the current security situation, etalonmeetmete choice, if necessary, additional choice according to the results of the risk assessment, and all actions connected with the assessment of the effects, turbekulude assessment and planning, the residual risk evaluation and validation. • Configuration. • Change Management. • The operational continuity planning and disaster recovery planning. • Selection and execution of security measures. • Information security training, staff awareness of information security issues. • Follow-up activities, including maintenance, security auditing, monitoring, review, incident handling. • Security reports for management" See: https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	*[describe project here]*	2	The IT Architecture Framework describes Information security policies such as "Institution's information services, should be monitored by the Government of the Republic Regulation "Information Systems security system "and ISKE methodology, COBIT framework and information security standards, such as EVS-ISO/IEC 17799:2003. Information security policy and budget planning documents should be considered in addition to the "Information Policy Fundamentals for the years 2004 to 2006. "," Information Policy Action Plan 2005 "," state IT architecture and Interoperability Framework "," The National Information Infrastructure-centered service concept. "It makes sense has to take into account the agency information security policies and agency information systems business continuity and disaster recovery plans of conflicting recommendations. Databases should follow the Databases Act, Government Regulation "Information systems security system" and ISKE methodology, as well as the Government of the Republic Regulation "The implementation of information systems data exchange," and the relevant standards• When it comes to personal data, it should be monitored in addition to the Personal Data Protection Law and Data Protection FSA demands on the availability, integrity and confidentiality of personal data processing" See: http://riso.ee/sites/default/files/koosvoime/RITA1_01.pdf	2
Governance Public administrations should establish a framework for the governance of their interoperability activities across administrative levels. EIF, Recommendation 25 Category: Interoperability Governance	A governance framework exists to control the interoperability activities across administrative levels.	- The Information System Authority (governmental organisation established in 2011, it is operating in the administrative area of the Ministry of Economic Affairs and Communications) manages the Architecture Committee (AC) that discusses topical issues and problems in relation to interoperability. In addition to the AC, there are four sub-committees: eID, X-Road, basic infrastructure and e-services (attended by service owners). See https://www.ria.ee/riigiarhitektuur/wiki/doku.php?id=an:an. ' - The Department of Economic Affairs and Communications coordinates the initiatives of IT systems and must ensure compliance with the Interoperability framework at all times. - All public sector bodies are required to align their information systems with the technical architecture framework, the semantics standards, the regulatory environment and to the policy. - IT architectures must be harmonised with the Interoperability framework. A questionnaire to evaluate compliance with the requirements has been prepared. Estonian Interoperability Framework (version 3.0), chapter 8, governance https://www.mkm.ee/sites/default/files/interoperability-framework_2011.doc NIF Element in English (with reference of section): 8.1. The Ministry of Economic Affairs and Communications coordinates the initiatives relating to the interoperability of the state information system and MUST ensure modernity of the interoperability frameworks of the state information system. 8.2.The interoperability of services and information systems is administered during their whole life cycle in RIHA. 8.3. The creation and development of joint infrastructure components that support services is organized, during their whole life cycle, by the Ministry of Economic Affairs and Communications. 8.4. In their framework of interoperability architecture, public sector institutions MUST provide a description of the principles of the technical architecture of the information system, semantics, legal system and political context. 8.5. A public sector institution's framework of interoperability architecture is published in RIHA, and it is kept up-to-date during its whole life cycle. 8.6. An institution's framework of interoperability architecture MUST be harmonized with the interoperability frameworks of the Estonian information system. For harmonization, the most suitable tool is a questionnaire prepared for that purpose1. - Resolution of the Government of the Republic"Management System of State Information System" https://www.riigiteataja.ee/akt/13147268	2	The interoperability frameworks of the state information system handle information systems from the point of view of the state as a whole. The frameworks have been harmonized with the European frameworks and should ensure interoperability of Estonian information systems with those of other member states as well as with Europe centred information systems. See https://www.mkm.ee/en/objectives-activities/information-society/state-information-system	*[describe project here]*	0	Interoperabilty framework requirements will be verified by the RISO (holders of information are required to get agreement for changing IT legislation from RISO). All changes in public sector information systems and their services are required to register in administration system for the state information system RIHA (https://www.ria.ee/administration-system-of-the-state-information-system/ and https://riha.eesti.ee/riha/main).	2

Category	EIF	MS
Principles	100%	100,0%
Conceptual Model	100%	100,0%
Interoperability Levels	100%	100,0%
Interoperability Agreements	100%	100,0%
Interoperability Governance	100%	100,0%



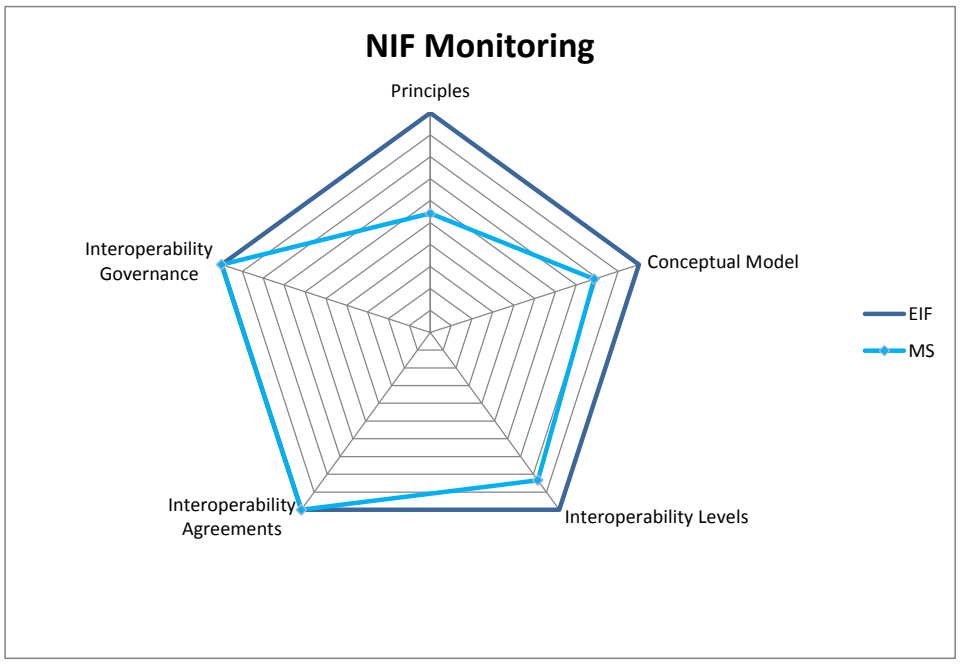
Category	EIF Element	Scoring	
		Max	MS
Principles	Subsidiarity and proportionality	2	2
	User-centricity	2	2
	Inclusion and accessibility	2	2
	Security and privacy	2	2
	Multilingualism	2	2
	Administrative simplification	2	2
	Transparency	2	2
	Preservation of information	2	2
	Openness	2	2
	Reusability	2	2
	Technological neutrality and adaptability	2	2
	Effectiveness and efficiency	2	2
	Total	**24**	**24**
Conceptual Model	Does the NIF contain a conceptual model?	2	2
	Is the conceptual model a component-based service model? (e.g. SOA)	2	2
	Does the NIF encourage the use of common schemes to interconnect loosely coupled service components.	2	2
	Does the NIF encourage to put in place the infrastructure to interconnect loosely coupled service components?	2	2
	Does the NIF encourage to make the authentic sources of information available to others?	2	2
	Does the NIF encourage access and control mechanisms to ensure compliance to security and privacy legislation?	2	2
	Does the NIF encourage the development of interfaces to authentic sources that are aligned at semantic and technical level?	2	2
	Total	**14**	**14**
Interoperability Levels	Does the NIF describe the four levels of interoperability?	2	2
	Does the NIF impose to consider all relevant legislation related to data exchange?	2	2
	Does the NIF describe that the business processes are documented in an agreed way in order for other administrations to understand the overall business process?	2	2
	Does the NIF encourage to agree on how these processes will interact among the different levels of public administrations?	2	2
	Does the NIF encourage public administrations to clarify their organisational relationships as part of the establishment of a (European) public service?	2	2
	Does the NIF encourage public administrations to agree on change management processes to ensure continuous service delivery.	2	2
	Does the NIF encourage the usage of a common taxonomy of basic public service?	2	2
	Does the NIF encourage public administrations to support the establishment of sectorspecific and cross-sectoral communities that aim to facilitate semantic interoperability and that share results on national and European platforms.	2	2
	Does the NIF encourage public administrations to agree on the formalised specification to ensure technical interoperability when establishing European public services.	2	2
	Total	**18**	**18**
Interoperability Agreements	Does the NIF encourage: - Interoperability agreements to be based on existing formalised specifications? Or - if they do not exist, to cooperate with communities working in the same areas.	2	2
	Does the NIF encourage Public administrations to use a structured, transparent and objective approach to assess and select formalised specifications?	2	2
	Does the NIF encourage public administrations to prefer open specifications, taking due account of the coverage of functional needs, maturity and market support?	2	2
	Does the NIF encourages public administrations to lead or actively participate in standardisation work relevant to their needs?	2	2
	Does the NIF encourage public administrations to agree on minimum service requirements for secure data exchange?	2	2
	Total	**10**	**10**
Interoperability Governance	A governance framework exists to control the interoperability activities across administrative levels.	2	2
	Total	**2**	**2**

Category	EIF	MS
Principles	100%	91,7%
Conceptual Model	100%	100,0%
Interoperability Levels	100%	50,0%
Interoperability Agreements	100%	60,0%
Interoperability Governance	100%	0,0%



Category	EIF Element	Scoring	
		Max	MS
Principles	Subsidiarity and proportionality	2	2
	User-centricity	2	1
	Inclusion and accessibility	2	2
	Security and privacy	2	2
	Multilingualism	2	2
	Administrative simplification	2	2
	Transparency	2	2
	Preservation of information	2	2
	Openness	2	2
	Reusability	2	2
	Technological neutrality and adaptability	2	1
	Effectiveness and efficiency	2	2
	Total	**24**	**22**
Conceptual Model	Does the NIF contain a conceptual model?	2	2
	Is the conceptual model a component-based service model? (e.g. SOA)	2	2
	Does the NIF encourage the use of common schemes to interconnect loosely coupled service components.	2	2
	Does the NIF encourage to put in place the infrastructure to interconnect loosely coupled service components?	2	2
	Does the NIF encourage to make the authentic sources of information available to others?	2	2
	Does the NIF encourage access and control mechanisms to ensure compliance to security and privacy legislation?	2	2
	Does the NIF encourage the development of interfaces to authentic sources that are aligned at semantic and technical level?	2	2
	Total	**14**	**14**
Interoperability Levels	Does the NIF describe the four levels of interoperability?	2	1
	Does the NIF impose to consider all relevant legislation related to data exchange?	2	2
	Does the NIF describe that the business processes are documented in an agreed way in order for other administrations to understand the overall business process?	2	2
	Does the NIF encourage to agree on how these processes will interact among the different levels of public administrations?	2	0
	Does the NIF encourage public administrations to clarify their organisational relationships as part of the establishment of a (European) public service?	2	0
	Does the NIF encourage public administrations to agree on change management processes to ensure continuous service delivery.	2	1
	Does the NIF encourage the usage of a common taxonomy of basic public service?	2	1
	Does the NIF encourage public administrations to support the establishment of sectorspecific and cross-sectoral communities that aim to facilitate semantic interoperability and that share results on national and European platforms.	2	1
	Does the NIF encourage public administrations to agree on the formalised specification to ensure technical interoperability when establishing European public services.	2	1
	Total	**18**	**9**
Interoperability Agreements	Does the NIF encourage: - Interoperability agreements to be based on existing formalised specifications? Or - if they do not exist, to cooperate with communities working in the same areas.	2	0
	Does the NIF encourage Public administrations to use a structured, transparent and objective approach to assess and select formalised specifications?	2	0
	Does the NIF encourage public administrations to prefer open specifications, taking due account of the coverage of functional needs, maturity and market support?	2	2
	Does the NIF encourages public administrations to lead or actively participate in standardisation work relevant to their needs?	2	2
	Does the NIF encourage public administrations to agree on minimum service requirements for secure data exchange?	2	2
	Total	**10**	**6**
Interoperability Governance	A governance framework exists to control the interoperability activities across administrative levels.	2	0
	Total	**2**	**0**

Category	EIF	MS
Principles	100%	54,2%
Conceptual Model	100%	78,6%
Interoperability Levels	100%	83,3%
Interoperability Agreements	100%	100,0%
Interoperability Governance	100%	100,0%



Category	EIF Element	Scoring	
		Max	MS
Principles	Subsidiarity and proportionality	2	2
	User-centricity	2	2
	Inclusion and accessibility	2	1
	Security and privacy	2	2
	Multilingualism	2	0
	Administrative simplification	2	2
	Transparency	2	0
	Preservation of information	2	0
	Openness	2	2
	Reusability	2	0
	Technological neutrality and adaptability	2	0
	Effectiveness and efficiency	2	2
	Total	**24**	**13**
Conceptual Model	Does the NIF contain a conceptual model?	2	2
	Is the conceptual model a component-based service model? (e.g. SOA)	2	2
	Does the NIF encourage the use of common schemes to interconnect loosely coupled service components.	2	2
	Does the NIF encourage to put in place the infrastructure to interconnect loosely coupled service components?	2	0
	Does the NIF encourage to make the authentic sources of information available to others?	2	1
	Does the NIF encourage access and control mechanisms to ensure compliance to security and privacy legislation?	2	2
	Does the NIF encourage the development of interfaces to authentic sources that are aligned at semantic and technical level?	2	2
	Total	**14**	**11**
Interoperability Levels	Does the NIF describe the four levels of interoperability?	2	2
	Does the NIF impose to consider all relevant legislation related to data exchange?	2	2
	Does the NIF describe that the business processes are documented in an agreed way in order for other administrations to understand the overall business process?	2	2
	Does the NIF encourage to agree on how these processes will interact among the different levels of public administrations?	2	0
	Does the NIF encourage public administrations to clarify their organisational relationships as part of the establishment of a (European) public service?	2	2
	Does the NIF encourage public administrations to agree on change management processes to ensure continuous service delivery.	2	1
	Does the NIF encourage the usage of a common taxonomy of basic public service?	2	2
	Does the NIF encourage public administrations to support the establishment of sectorspecific and cross-sectoral communities that aim to facilitate semantic interoperability and that share results on national and European platforms.	2	2
	Does the NIF encourage public administrations to agree on the formalised specification to ensure technical interoperability when establishing European public services.	2	2
	Total	**18**	**15**
Interoperability Agreements	Does the NIF encourage: - Interoperability agreements to be based on existing formalised specifications? Or - if they do not exist, to cooperate with communities working in the same areas.	2	2
	Does the NIF encourage Public administrations to use a structured, transparent and objective approach to assess and select formalised specifications?	2	2
	Does the NIF encourage public administrations to prefer open specifications, taking due account of the coverage of functional needs, maturity and market support?	2	2
	Does the NIF encourages public administrations to lead or actively participate in standardisation work relevant to their needs?	2	2
	Does the NIF encourage public administrations to agree on minimum service requirements for secure data exchange?	2	2
	Total	**10**	**10**
Interoperability Governance	A governance framework exists to control the interoperability activities across administrative levels.	2	2
	Total	**2**	**2**