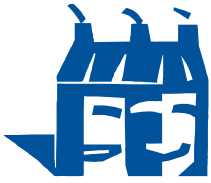# SUOMI.FI-E-AUTHORIZATIONS

Internal evaluation, November 2019.

DOCUMENT MANAGEMENT

Owner	Mr. Mika King, Development Manager / Business Owner: Suomi.fi-e-Authorizations
Prepared by	Mr. Jani Ruuskanen, Chief Senior Specialist
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VERSION CONTROL

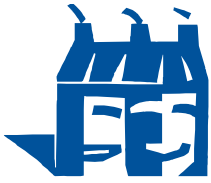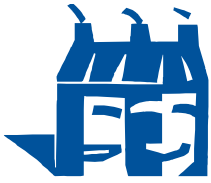| version no.	what has been done	date/person
0.1	Table of contest, ideas.	30.10.2019 / JR
0.2.	1. and 2. chapter draft.	31.10.2019 / JR
0.3.	3. and 4. chapter draft.	4.11.2019 / JR
0.4	5. chapter draft.	6.11.2019 / JR
0.5	6. chapter draft.	7.11.2019 / JR
0.6	Details, statistics, comments by specialists.	11.11.2019 / JR
0.7	Comments and more details.	13.11.2019 / JR
1.0	Comments by Mika King, Mikael Kiviniemi and Mikko Pitkänen.	25.11.2019 / JR, MK, MK, MP

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SUOMI.FI-E-AUTHORIZATIONS

1 Executive summary

The ability to act on behalf of another legal entity in digital services does not only increase digital productivity, but also enables to bring those who are not able to use the digital services by themselves to the helm of digital services. Therefore, we introduce Suomi.fi-e-Authorizations, a service that enables Finnish government to provide digital services to all citizen's and avoid societal exclusion in digital society. Suomi.fi-e-authorizations is free to use for both public and private sector service providers and end-users (citizens) in Finland, thus bridging the public-private gap in provisioning and governance of citizens' services.

Suomi.fi-e-Authorizations is highly used by citizens and creates both financial and social benefits for service providers as well as citizens themselves. The service is also built and shared as an open-source and can be utilized by other countries and organisations to provide similar e-Authorization-services.

2 Introduction

Suomi.fi e-Authorizations is a service for reliable verification of a person's or organization's authorization, mandate or right to use digital services on behalf of another person or organization regardless of time or place. The service provides mandates for all possible business cases and scenarios as well as their use cases, depending on which services the mandate is being used for.

Different use cases include:

- Person to person mandates.

- Person to company/organization mandates.

- Company/organization to person mandates.

- Company/organization to company/organization mandates.

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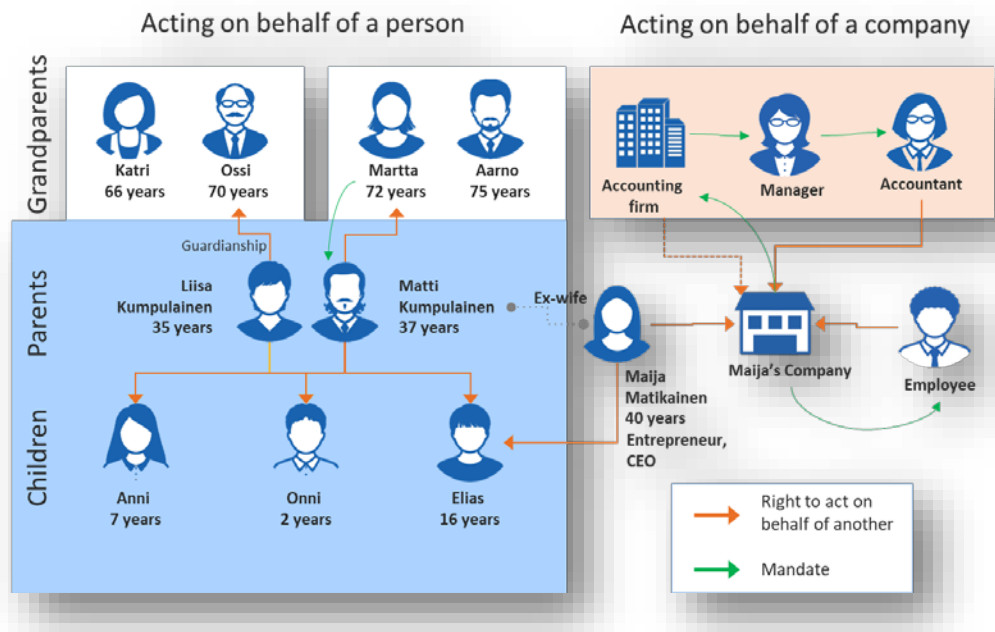
Picture: different e-authorization use cases.

The service consists of three main components:

1. Registry-based checking of a person's authority to make transactions on behalf of other persons or organizations (for service providers).

2. Requesting and/or creating digital authorizations / mandates (for end-users).

3. The rule-engine for more detailed rules and restrictions per digital service.
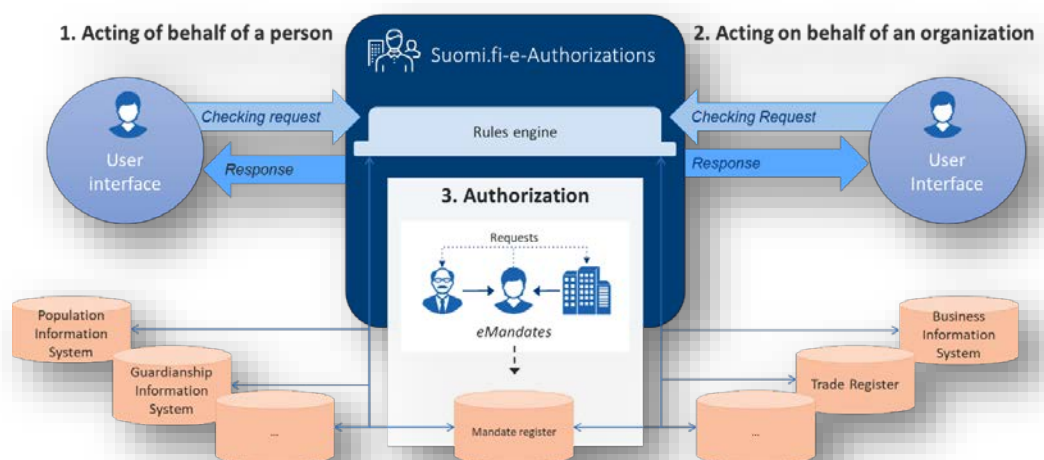
Picture: conceptual model of Suomi.fi-e-Authorizations.
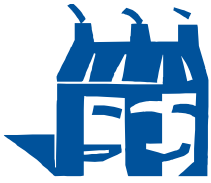
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In Finland, the Suomi.fi-e-Authorizations service is run centrally by the Population Register Centre (from the 1st of January 2020, called *Digital and Population Data Services Agency*) and the service is freely available for public and private sector organizations and end-users (citizens).

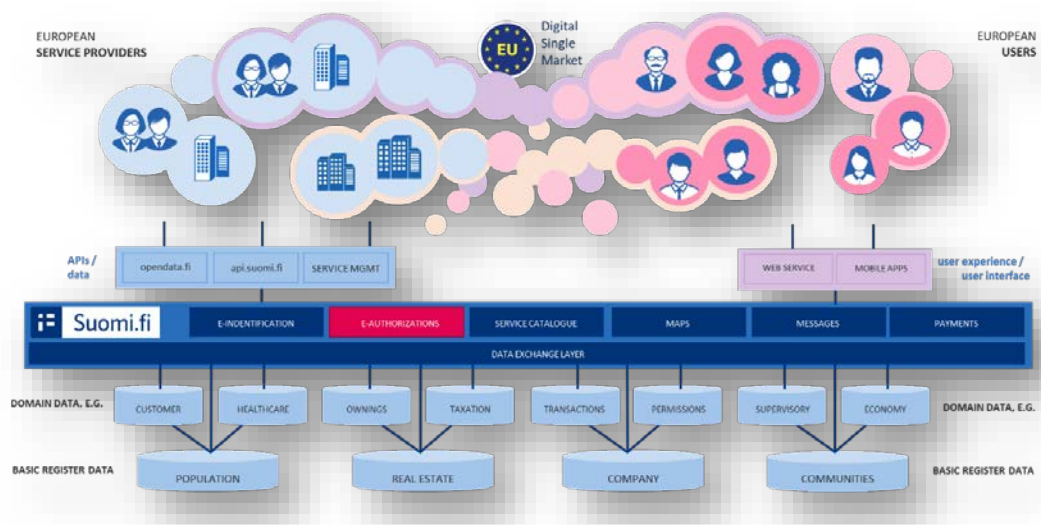Suomi.fi-e-Authorizations is one of the services creating the national infrastructure for digital services in Finland. The use of Suomi.fi-services is mandatory in Finland for public sector organization by law (The law on common administrative e-service support services 571/2016: https://www.finlex.fi/fi/laki/ajantasa/2016/20160571).

Picture: Suomi.fi-services platform.

Suomi.fi e-Authorizations -service is fully open source and available at GitHub (https://github.com/vrk-kpa). The service is constantly developed, and the latest source code is frequently published to GitHub.

3 Benefits

3.1 Citizens and entrepreneurs

Suomi.fi-e-Authorizations enables citizens to act on behalf of other persons or organizations in digital services and authorize others to act on their behalf. The service can be used for free in any digital service (public or private) in Finland.

Examples of the benefits for citizens and entrepreneurs:

- When a parent acts on **behalf of his or her under-aged child** in different public or private **digital** service:

    o *For example, accesses the medical information or renews prescriptions of under-aged child in national online https://www.kanta.fi/en/citizens -service (health data and prescriptions).*

- When a parent acts on **behalf of his or her under-aged child** in different public or private **physical** services:

  - *For example, pharmacy customers can pick up their under-aged child's prescription medicines in any pharmacy in Finland simply by showing their ID-card.*

- When a citizen wants to **authorize any other citizen to act on behalf of them** in digital or physical services:

 - *For example, citizen can create a digital mandate for other citizen in Suomi.fi-service for taking care of his/her taxation duties online in https://www.vero.fi/en/e-file/mytax/ -service, or pick up his/her prescription medicines in any pharmacy in Finland simply by showing their ID-card.*

- When a person who is **authorized to sign for a company, acts on behalf of that company and / or authorizes other companies and persons** to act on behalf of the company:

  - *For example, accounting firms in Finland are been authorized by their clients to act on behalf of their clients on taxation duties in https://www.vero.fi/en/e-file/mytax/ -service and real-time incomes register https://www.vero.fi/en/incomes-register/ -service.*

3.2 Service providers (public, private and non-commercial)

The Suomi.fi e-Authorizations service offers the possibility to verify the legal right of a person to act on behalf of another person or a company. The information on the users' role / mandate is sent directly from existing base registers, including e-authorizations mandate register, to the service provider's services. The service providers can use e-Authorizations through APIs (using *National Data Exchange Layer* based on X-road-technology [more about X-road can be found from: https://www.niis.org/]) or web-API which provides also the user interface for end-users to change their role / mandate.

The key benefits for service providers include:

- A better service experience and fluent self-service for customers.

- Use of electronic services and processes saves great deal of money by allowing users to move to digital self-service.

- No need for building, running and maintaining a service provider specific authorization service.

- A trusted, 24/7/365 service that can be easily and free of charge integrated to the service provider's own service.

- Administering of the authorizations and mandates is not required.

- An automatic, real-time and reliable verification of authorizations and mandates whenever they are used based on national registries.
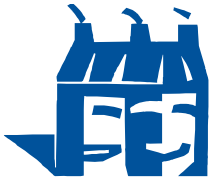
- Reduced risk of misuse.

3.3 Environment

Suomi.fi-e-Authorizations provides new ways for public and private sector to provide digital services also for situations which previously required travelling to service locations, thus cutting down the unnecessary use of cars, especially in the Finnish countryside where distances are far. Possibility to create digital person-to-person mandates have turned out to be especially useful inside families and friends.

- *For example, elderly parents can now authorize their children, friends or other trusted persons to pick-up the prescription medicines from any Finnish pharmacy instead of having to travel themselves to pharmacies.*

The e-authorizations service has also been implemented into the national digital -message service (called Suomi.fi-messages: https://www.suomi.fi/messages), thus making it now possible to receive all paper post on behalf of the company, children or other persons (if mandated) only in digital form. This cuts down the amount of public mail, which creates major impacts on environment especially when delivering the mail in the countryside.

4 Design

4.1 Architecture

At a logical level Suomi.fi e-Authorizations -service consists of the following elements:

- Registry-based checking of a person's authority to make transactions on behalf of other persons is based on the use of personal data obtained through the Population Information System as well as the information in the National Mandate Register.

- Registry-based checking of a person's authority to make transactions on behalf of organizations is based not only on the utilization of personal data obtained through the Population Information System, but also on the use of organization information obtained through the business registers of the Finnish Patent and Registration Office as well as the information in the National Mandate Register and the registers of Legal Register Centre (*bankruptcies and bans on business operations*).

- Suomi.fi web service that provides a functional user interface for requesting and/or creating digital authorizations / mandates for acting on behalf of both persons and organizations.

- Suomi.fi e-Authorizations rule-engine that allows the service provider to set detailed rules and restrictions per digital service for acting on behalf of both persons and organizations.

- A digital service that utilizes the Suomi.fi e-Authorizations -service. The digital service is responsible for the semantic content and correctness of the service-specific restrictions on acting on behalf as well as for the service-specific operational use of the Suomi.fi e-Authorizations -service.

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Suomi.fi e-Authorizations is available free for both public and private sector organizations. Each service provider must, however, approve the Suomi.fi e-Authorizations terms of usage and apply for a separate usage license for each of their digital services that will use the Suomi.fi e-Authorizations -service. For each service, the service provider must also provide the Population Register Centre a statement on the protection of personal data. All needed application forms and terms of usages are available at https://esuomi.fi/palveluntarjoajille/valtuudet/tietolupa/.

4.2 Technology

Suomi.fi-e-Authorizations is designed ground-up to support sharing and reuse, and its design and implementation benefit any public or private sector organization. The design follows a microservice-architecture model (build on open source Java and Docker and REST-APIs) and therefore does not follow a monolithic application model. In this approach, each of the identified issues in the architecture of the service is modeled as an independent element of the architecture. The application model is therefore based on the so-called *separation of concerns - thinking* and closely follows the microservice-architecture model.

Technological framework

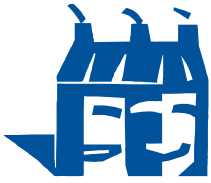| Key components |
| --- |
| *Runtime environment:* |
| • Java, Tomcat (Apache), Docker, Redis, Nginx (load balancing), Logstash / Elasticsearch, Kibana, Skos (descriptions of mandate codes), oauth. |
| *Backend* |
| • Spring-boot, Spring framework, Spring security (SAML), Hibernate/JPA, Jersey, JAX-WS, Apache CXF. |
| *User-interfaces* |
| • HTML, CSS, Bootstrap, ReactJS. |
| • Built on common and open Suomi.fi-Design System and ReactJS based library, which is used in all Suomi.fi-services (https://designsystem.suomi.fi/fi/). |
| *Packaging and deployment* |
| • Maven, Docker, Ansible, SASS, NPM, Browserfy. |

The chosen architecture and the use of open source combined with the scalable lean development method makes it quick and easy to develop and deploy new features or integrate the solution with other existing services (e.g. base registers).

4.3 Scalability and extendibility

4.3.1 Scalability

Suomi.fi e-Authorizations consists mainly of non-spatial service components that can be scaled horizontally as per need. The environment has been duplicated including the load balancing mechanism. The following service elements have been duplicated:

- Suomi.fi Data Exchange Layer interfaces: SOAP and REST protocol processing.

- The instance of the rule engine (including the acting on behalf restrictions).

- Processing the Mandate Register and the rule engine database.

- Base register checking services.

The databases of the Suomi.fi e-Authorizations -service have been implemented with PostgreSQL. The databases are either clustered or duplicated to ensure fault tolerance. To achieve scalability in a structurally static operating environment, all components of the service are run as Docker packets, except those databases the scaling of which is primarily managed by clustering.

Registry-based checking can handle approximately **30 000 hourly** requests with less than 5-second individual response time. Currently, approximately **2 000 000 requests** are performed per month. There have been only a few peak hours with a load of 20 000 queries. It is estimated that with the current setup, the system can handle at least a double query load compared with the present load. This is expected to be enough for several years to come.

There are no limitations on how many digital mandates can be stored in the Mandate Register. At the end of October 2019, **4 million mandates were being stored** in the Mandate Register. This number is expected to grow strongly towards the end of 2019 an especially during 2020.
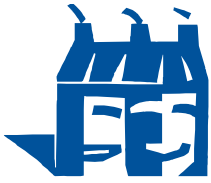
There are no limitations on how many base registers can be integrated with the solution architecture. Currently, the Suomi.fi e-Authorizations -service utilizes 4 base registers but more are being integrated (*the new base register of Associations to be integrated in Q1/2020*).

There are no limitations on how many digital services can be integrated with the system. Currently, more than 80 different services are already integrated with the Suomi.fi e-Authorizations -service. Currently three to ten (3-10) new digital services are integrated into e-authorizations every month.

4.3.2 Extendibility

The service consists mainly of non-spatial services that can be scaled horizontally as needed. The internal API-based architecture makes it easier to integrate with outsourced solutions when there is no business-case to develop the feature in-house (e.g. existing and new base registers). The chosen architecture and the use of open source combined with the scalable lean development method makes it quick and easy to develop and deploy new features or integrate the solution with other existing services.

Suomi.fi-e-Authorizations – as well as all the other Suomi.fi-services are provided for the end-users in three languages: Finnish, Swedish and English. The documentations are mainly available

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in English for other countries to utilize the open source solutions that Finland has built (https://github.com/vrk-kpa) and also to be able to replicate the model when building federation to or from the Finnish e-authorizations service.

4.4 Conformance

4.4.1 Information security

Population Register Centre producers all its services based on Information Security Certificate (granted by *Inspecta Certification*), which covers the activities and premises of the office in Helsinki as well as in Kokkola. The certificate renewal requires regular audits at least once a year.

The Population Register Centre's Information Security Certificate complies with the **ISO/IEC 27001:13 standard**. It covers issues such as information security policy, organisation of information security management, classification and control of assets protected, personnel security, physical information security, communications and operations management, access control, systems development and maintenance, business continuity management and compliance. The standard defines the high standard of information security that is implemented using the protection mechanisms chosen by the organisation.
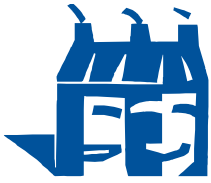
Additionally, Suomi.fi-e-Authorizations service is being developed based on Finnish Government information security guidelines (https://www.vahtiohje.fi/web/guest/home), which define the common procedures and guidelines for continuous development of information security in all digital public services in Finland.

4.4.2 Accessibility and disabled users

The user interfaces for creating and handling mandates by citizens are done in https://www.suomi.fi/frontpage -national portal, which has been developed based on Web Content Accessibility Guidelines (WCAG) 2.1 (A+AA levels, https://www.w3.org/TR/WCAG21/), thus making the use of e-Authorizations possible for different kind of disabled users (e.g. blind users using screen-readers or users with cognitive problems). The requirements are based on the European Directive (*2016/2102*) on the accessibility of the websites and mobile applications of public sector bodies (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.327.01.0001.01.ENG&toc=OJ:L:2016:327:TOC).

The Suomi.fi-e-Authorizations service provides also key functions for public sector bodies in Finland to provide accessible digital services. Digital mandates can be granted in 2020 also by non-digital users in different service locations which makes it possible to widen the use on digital service to citizens who do not have access or knowledge to use digital services themselves at all.

- *For example, elderly parents can visit the office of Digital and Population Data Services Agency with their adult children, and official can create digital mandates on behalf of them thus allowing children to use digital service on behalf of their parents who themselves may not even have computer or internet access.*

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5 Governance

5.1 Development and maintenance

5.1.1 Lean, user-centric development

Suomi.fi e-Authorizations, as along with all the other Suomi.fi-services, is developed with scalable agile methods (based on Population Register Centres Lean Digitalization Framework: https://www.youtube.com/watch?v=eyhy2nDm-QA) and **adapting the principles of user-centric design.** New features are handled on the portfolio level and are developed by service design and agile development teams based on the needs of service providers, API-users as well as the end-users. A new version of the Suomi.fi e-Authorizations is released approximately every two to three weeks.
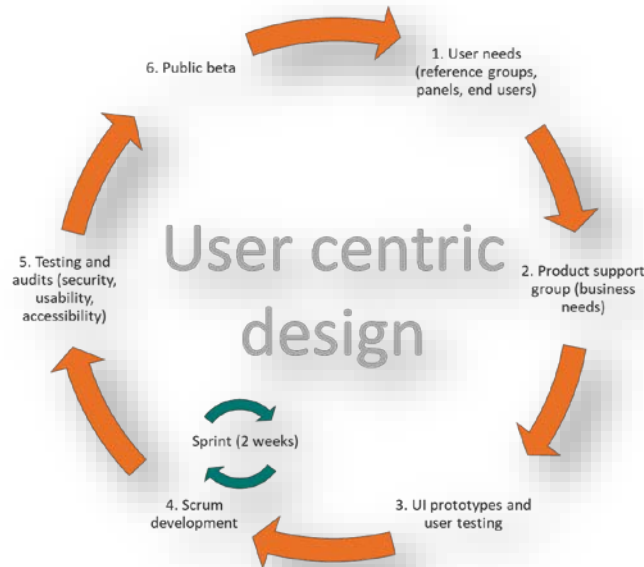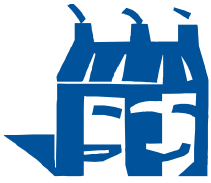

Picture: development model.

Suomi.fi-e-Authorizations has a Business Owner who oversees the development and deployment roadmap and a Product Owner who leads the agile development team(s). All development work is managed in the Population Register Centre's portfolio and prioritized within the development of the whole Suomi.fi-platform (*altogether 9 different Suomi.fi-services*). Prioritizing of new features (*Business Outcomes*) is done quarterly and jointly with all Suomi.fi services business owners.

5.1.2 Maintenance

The service is maintained by the government ICT Centre Valtori that provides sector-independent ICT services for the Finnish central government as well as information and data communications technology services and integration services that meet the requirements of high preparedness and security (https://valtori.fi/en/frontpage). The development team in Population Register Centre develops and deploys new version based on DevOps-model and co-operates with Valtori in running the service in production.

5.1.3 Feedback

Suomi.fi-services have multiple levels of collecting feedback from both content providers and actual end-users (citizens):

- Online https://www.suomifikayttaja.fi -community for citizens to provide feedback and development ideas (~300 citizens in all age groups and different roles nationwide).

- The general feedback from the citizens is also collected through national Public Service Info (https://kansalaisneuvonta.fi/en-US) that provides end-user support for all Suomi.fi-services.

- Feedback on the service descriptions is also collected from end users through national Suomi.fi-portal.

- Stakeholder workshops where the largest user organizations can give directions and provide opinions on the development roadmap are organized regularly.

- The governing ministry (Ministry of Finance) provides guidance in the quarterly management team meetings (*Suomi.fi strategic steering group*).

5.1.4 Support

National Public Service Info (https://kansalaisneuvonta.fi/en-US) provides end-user support for all Suomi.fi-services (tier-1 support). Additionally, the customer services of digital services integrated to Suomi.fi e-Authorizations provide end-user support.

Tier-2 support is provided by the Population Register Centre's technical customer service for e-service's administrators, while Tier-3 support is handled by dedicated resources in the Suomi.fi e-Authorizations development team.

5.2 Financing

Based on the law, Suomi.fi e-Authorizations has permanent financing for the production and development from the Ministry of Finance, Finland as a part of the annual budget for the Population Register Centre.

5.3 The use of service and deployment by service providers

The Mandate Register is based on so called Mandate themes (currently approximately 200 different themes available), which are defined nationwide jointly with the service providers of different areas (*for example, Health sector*). The mandate themes create the national interoperable vocabulary of matters in which the assignee can act on behalf of assignor, thus making it simpler for end-user to be able to grant mandates on matters regardless of service provider and the digital service itself (*mandate themes are not connected to a single digital service*). The development of the mandate themes is on-going national process.
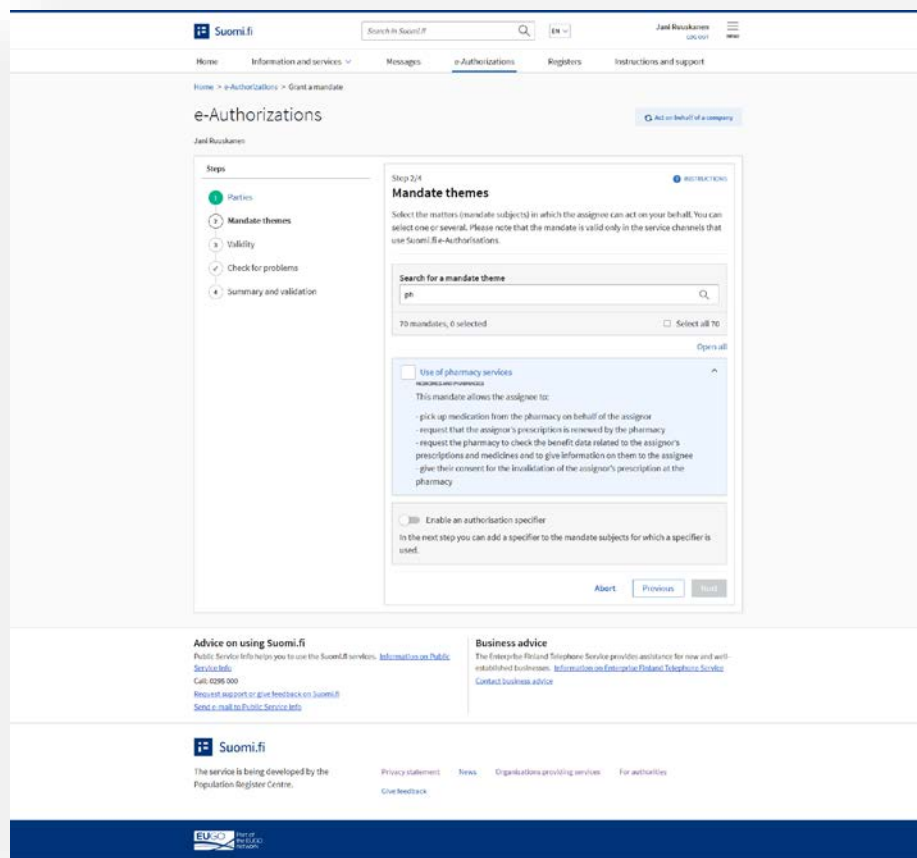
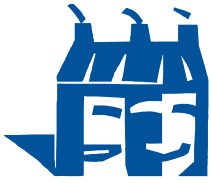*Picture: user-interface for filtering and choosing one or several mandate themes.*

The latest lists of mandate themes can be found on https://www.suomi.fi/frontpage -portal:

- Mandate themes as a person: https://www.suomi.fi/instructions-and-support/information-on-eauthorizations/mandate-themes-as-a-person.

- Mandate themes as a company (A-O): https://www.suomi.fi/instructions-and-support/information-on-eauthorizations/mandate-themes-as-a-company-a-o.

- Mandate themes as a company (P-Ö): https://www.suomi.fi/instructions-and-support/information-on-eauthorizations/mandate-themes-as-a-company-po.

- **In Q1/2020** all themes and the services and service channels they are in use, will be listed on upcoming new search page: https://www.suomi.fi/e-authorizations/mandate-themes.

In terms of service architecture, there are three different categories of user interfaces included in the Suomi.fi e-Authorizations service:

- User interfaces provided by digital services that are using Suomi.fi e-Authorizations service.

- User interface provided by the Mandate Register to enable the authorization.

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- Administration interface that is used by the system administrators of e-services to manage and maintain their own service configurations (e.g. rules / restrictions engine).

The digital services using the Suomi.fi e-Authorizations authorization checking, are responsible for implementing their own user interfaces. This ensures that the acting on behalf-functionality is aligned with service providers user interfaces and that the user experience is sufficiently consistent for the user. In this case, the digital service uses the Suomi.fi e-Authorizations authorization checking only through the open interfaces (APIs) that the Suomi.fi e-Authorizations service provides. Suomi.fi-e-Authorizations provide also possibility to use Web-API for changing mandate from digital service for easy deployment.
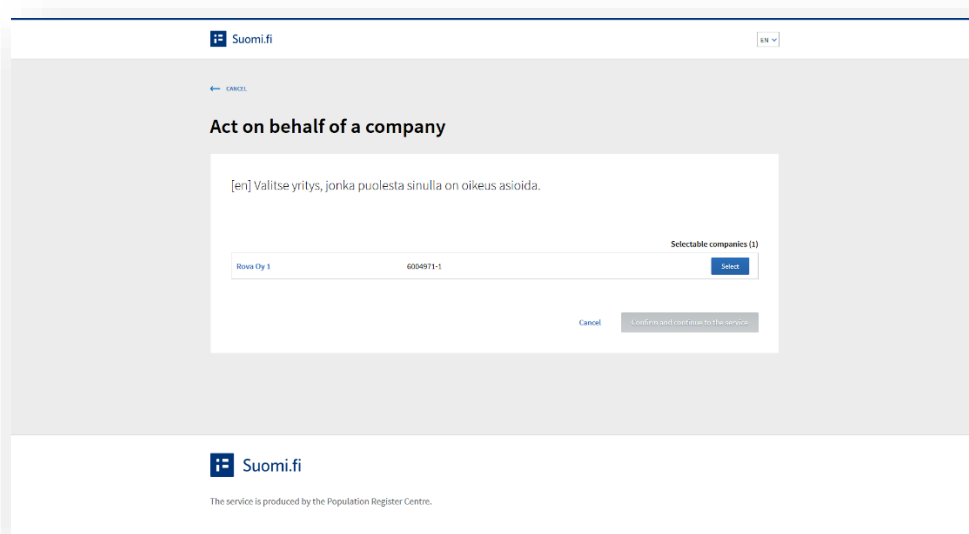

Picture: user-interface for changing the role to company through Web-API (this picture is from test-environment).

The user interfaces required by the Mandate Register for granting authority have been implemented as part of the https://www.suomi.fi/frontpage/ -national portal. This is because Suomi.fi provides citizens with a common user experience. For that reason, the user interface for the Suomi.fi e-Authorizations Mandate Register is standardized as well, i.e. it does not have a structural dependency on the user's characteristics or identity.

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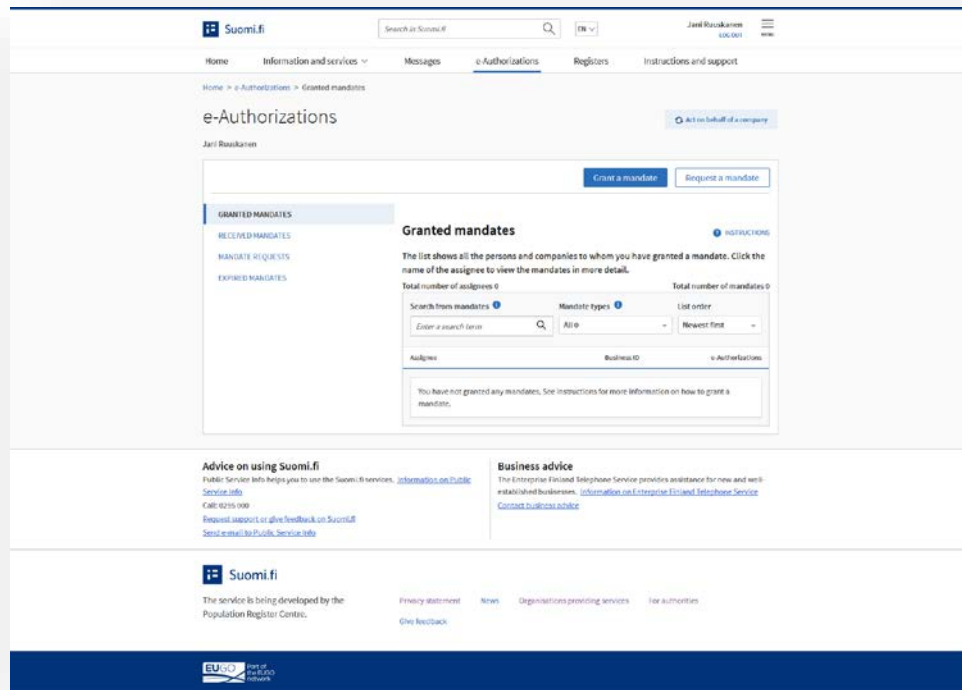
Picture: user-interface of e-Authorizations in national Suomi.fi-portal.

The administration user interface of the Suomi.fi e-Authorizations is recognized as a standalone user interface that can only be accessed by designated system administrators. The separate administration user interface ensures that the operational functions required by the Suomi.fi e-Authorizations can be handled appropriately, reliably, and securely.

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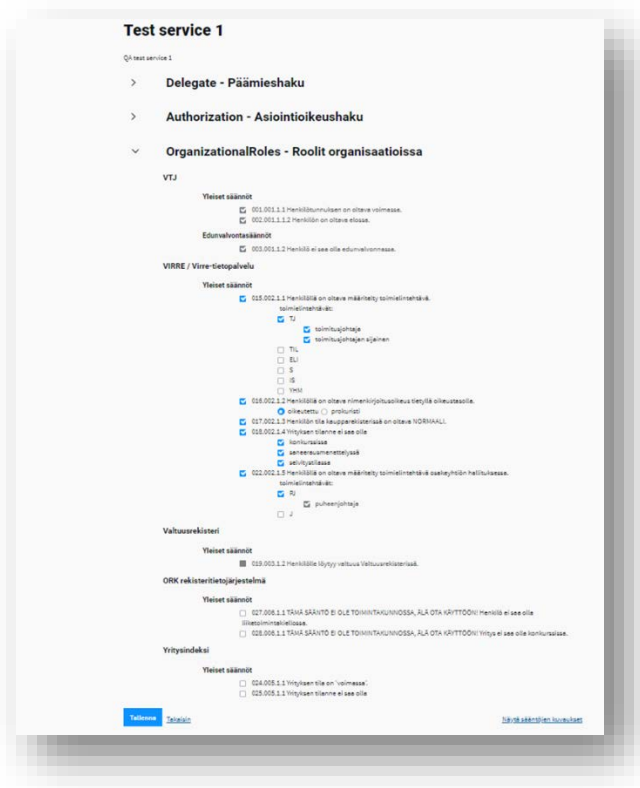
Picture: a part of the admin-interface of e-Authorizations for handling different rules and restrictions (in Finnish).

6 Impacts

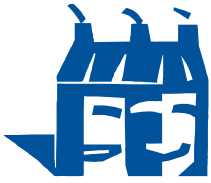### 6.1 Citizens

During 2019 (January-November), nearly 1,8 million new digital mandates have been made by citizens with the e-Authorization service in https://www.suomi.fi/frontpage/ -portal, summing the total amount of existing digital mandates already **to 3,9 million mandates**.
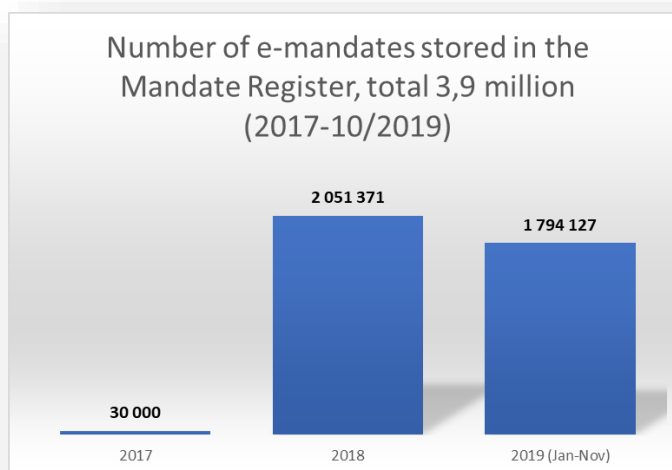
Picture: number of e-mandates stored in the Mandate Register (2017-2019).

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The latest list of organizations and their services using Suomi.fi-e-Authorizations can be found on national Suomi.fi-portal: https://www.suomi.fi/instructions-and-support/information-on-eau-thorizations/services-using-suomifi-eauthorizations .

The end-users benefit quickly from the fast-growing number of digital services allowing them to mandate other citizens to use digital services on behalf of them.

Suomi.fi-e-Authorizations is one of the key services enabling the Finnish entrepreneurs to be able to use all public services digitally by 2023, as drawn in current policy statement by Finnish Government.

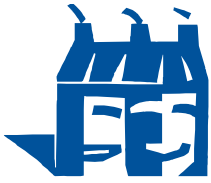## 6.2 Service providers (public, private and non-commercial)

During 2019 (January-November), nearly 16 million authorization checks have been made with the e-Authorization service, meaning the same number of users using digital service instead of other service channels (*phone, paper post, service locations*). Service usage has increased approximately 5 % per month during last 12 months and predictions show the same growth rate also in year 2020.
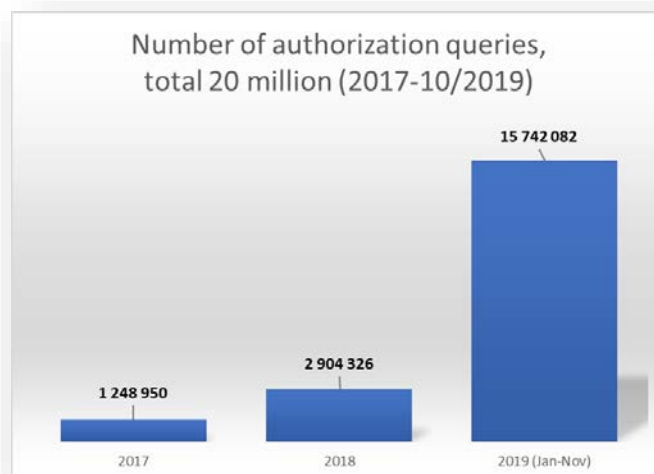
Picture: number of authorization queries (2017-2019).

Using the Suomi.fi-e-Authorization service translates to significant cost savings for the service providers. The biggest savings are generated by the digitalization of the authority authentication process, which speeds up the verification of mandates, reduces the need for telephone calls and other manual work related to validating the authorizations. For example, The Social Insurance Institution of Finland (KELA) has estimated that getting citizens to mandate others to use their digital services instead of visiting service locations saves up to 6-8 euros / visit, thus creating major savings just by allowing the end-users to move to digital services also when the end-users cannot use digital services themselves.

Nationally, the e-Authorizations service speeds up the digitalization of the whole country by being allowed to be freely used by the private and non-commercial organizations.

6.3 Finnish public sector and digitalization

Since the Suomi.fi-services platform has been developed (2014 – on-going) the Finnish public sector has taken fast leaps forward in digitisation. The common Suomi.fi-services, including especially e-Authorization service has been noticed both in National and European level as an important part of digitalization infrastructure in Finland.

2019 Finland took the first place in the European Digital Economy and Society Index (DESI): https://ec.europa.eu/digital-single-market/en/desi and excels especially on digital public services (https://ec.europa.eu/digital-single-market/en/scoreboard/finland). With the creation and successful deployment of Suomi.fi-e-Authorizations Finland became "*the first country in the world to allow people to electronically authorize another person to make important decisions for them*".
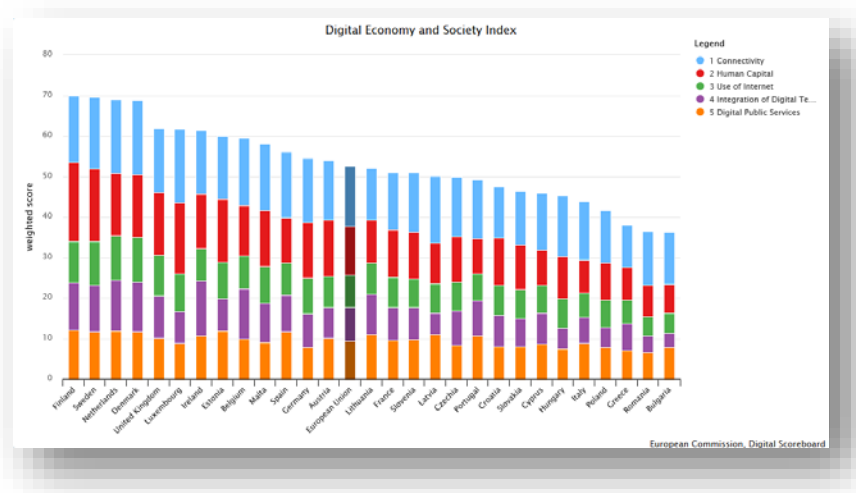
Picture: Finland in the top of European Digital Economy and Society Index (DESI), 2019.
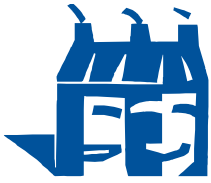
Nationally, Suomi.fi-e-Authorizations was awarded in Blue Arrow Awards 2019 for the best service with biggest impact on society: https://bluearrowawards.com/blog/blue-arrow-awards-2019-results/ (in Finnish).

In June 2019, Suomi.fi-e-Authorizations picked up a Certificate of excellence in European Union's Sharing and Reuse Awards 2019 (Shared IT services, commonly developed or shared, with the biggest impact on citizens or businesses): https://joinup.ec.europa.eu/collection/sharing-and-reuse-it-solutions/sharing-reuse-awards-2019-results#shared-impact.

6.4 Cross-border development and European Single Digital Market

European Union's new Single Digital Gateway -act (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.295.01.0001.01.ENG) requires member states to create a set of cross-border digital services fully digital by 2023. These services include for example changing address, ordering a birth certificate or establishing a company in another member state.

One key enabler for delivering cross-border digital services in European Union is the possibility to act on behalf of a company and other citizens. Suomi.fi-e-Authorizations is the only European solution that has been nationally developed and deployed to full-fill all different mandate scenarios. During 2019, Population Register Centre has been involved in a joint pilot-project with

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European Commission and few other member states to define a common model and vocabulary for representation of mandates and powers (*Representation Powers and Mandates Ontology*: https://github.com/everis-rpam/RPaM-Ontology). This work will eventually lead to a new interoperable European level vocabulary (*Core Vocabulary of Powers and Mandates*) and conceptual model for creating federation between different European e-authorization services.

- *For example, currently Finland and Estonia are already exchange digital e-recipes cross-border, making it possible for Finns to pick up their medicines from Estonia and vice versa. In the future, also the mandates could be delivered in a common cross-border way, making it possible for Finns to pick up their children's or mandators medicines in Estonia and vice versa.*

Suomi.fi-e-Authorizations is being promoted as one of the re-usable building blocks for other member states to use and can be found in European Union's Joinup-platform: https://joinup.ec.europa.eu/solution/suomifi-e-authorizations/about.
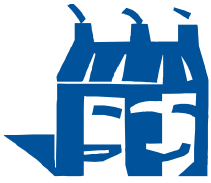
7 Conclusions and preliminary plans for 2020-2023

Suomi.fi-e-Authorizations has accelerated the digitization of multiple public and private sector organizations and their services in Finland and proven to provide benefits for its citizens. E-authorizations is a unique solution in Europe (and even globally) both conceptually and within the legal framework and the use of centralized government funded service for both public and private sector in order to provide better digital services for Finnish citizens.

The cost-benefits are yet to be shown in more detailed level when most of the public sector organizations start using e-authorizations in upcoming years. National legislation (*comes to effect in 1st of January 2020*) will make it mandatory to include a-authorizations to all public sector digital services where citizens could benefit from the possibility to mandate other citizens to act on behalf of them.

Suomi.fi-e-Authorizations will have some major improvements planned in 2020-2021:

- In Q1/2020 Suomi.fi-e-Authorizations will be connected to a new base-register for Associations by Finnish Patent and Registration office. This will make it possible to provide users the capability to act on behalf of any association in Finland.

- During Q1-Q2/2020 Suomi.fi-e-Authorizations will be available for foreign companies and foreign citizens (integration to eIDAS-federation and a new eID-service for users outside Europe).

- During 2020, Suomi.fi-e-Authorizations will provide functionalities for officials to create mandates on behalf of citizens. This means that citizens who do not own a computer or internet-connection themselves, can still go to a service location and mandate another person to act on behalf of them in chosen digital services.

- During 2020-2021 Suomi.fi-e-Authorizations aims to start providing cross-border mandates for first pilot services. This will probably start between Finland and Estonia which already are connected also with X-road based National Data Exchange Layer for automatic data exchange.

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- Between 2020-2021 Digital and Population Data Services Agency aims to build a comprehensive new base register for public and private trustees that can be connected to Suomi.fi-e-Authorizations. This will make it possible for trustees to act fully digital on behalf of their clients.

- The quality of Suomi.fi-services will be developed using ISO 9001 quality standard as well as to get ISO 9001 quality certificate for some or all services.