Tekoäly ammattilaisen apurina SOTE-palveluissa

PROFIT-hanke

Jouni Kaartinen
DigiFinland AI-aamu 28.5.2025

Project Profile

PROFIT

Optimising workflows to enable smart hospitals

To optimise workflows and reduce staff burden in healthcare environments, the ITEA project PROFIT (PRocedure optimisation and data-driven Operational eFficiency in healthcare environmenTs) will enable smart hospitals via a facilitated and safe deployment of AI and the introduction of innovative solutions for asset management, alarm responses, operational efficiency, and clinical assistance and support to healthcare personnel.

Addressing the challenge

Chronic diseases affect a third of adults worldwide and are rising through rapid urbanisation, unhealthy lifestyles and ageing populations. Meanwhile, healthcare systems are under pressure: expenditures cost 10% of the average EU GDP, while a global shortfall of 13 million nurses is expected by 2030. This calls for smart hospitals, which connect people, data and technologies for better end-to-end care experiences and seamless transitions across care settings. The first challenge on this path is to increase operational efficiency to free up time for patient care.

Proposed solutions

To streamline tasks, improve patient outcomes and reduce human error, PROFIT will introduce novel solutions that optimise and simplify workflows across different areas. For smart asset management, technologies like edge intelligence, IoT and cloud computing will be combined to design smart, real-time location systems and AI to optimise hospital processes. For smart alarm responses and context-aware information management, context-driven information and communication nursing tools will improve resource utilisation, work processes and patient care according to end-user needs. For clinical procedure assistance and workflow efficiency, PROFIT will design a healthcare compute platform and a QA framework facilitating the deployment of AI-based medical algorithms while

respecting requirements and regulations. Crucially, these innovations will be interconnected within and beyond the hospital to address entire patient journeys. This will include the integration

holistic solution that can be integrated within the existing healthcare system and with the existing products' portfolio of the industry partners. Its final goal, however, is firmly on improving quality of care, patient and practitioner experiences, and contributing to the sustainability of the healthcare systems. PROFIT's market value chain is also relatively short as the industrial partners have existing sales channels to healthcare providers, enabling them to swiftly exploit new products and expand

^ PROFIT: technologies for optimising hospital processes and enhancing quality of care

of healthcare, social services and long-term care in a holistic and person-centric approach. Technological innovations will be introduced in various areas and clinical use cases and demonstrators will be built to exemplify and validate how the PROFIT solutions will be used in practice and how they complement each other in the clinical workflow.
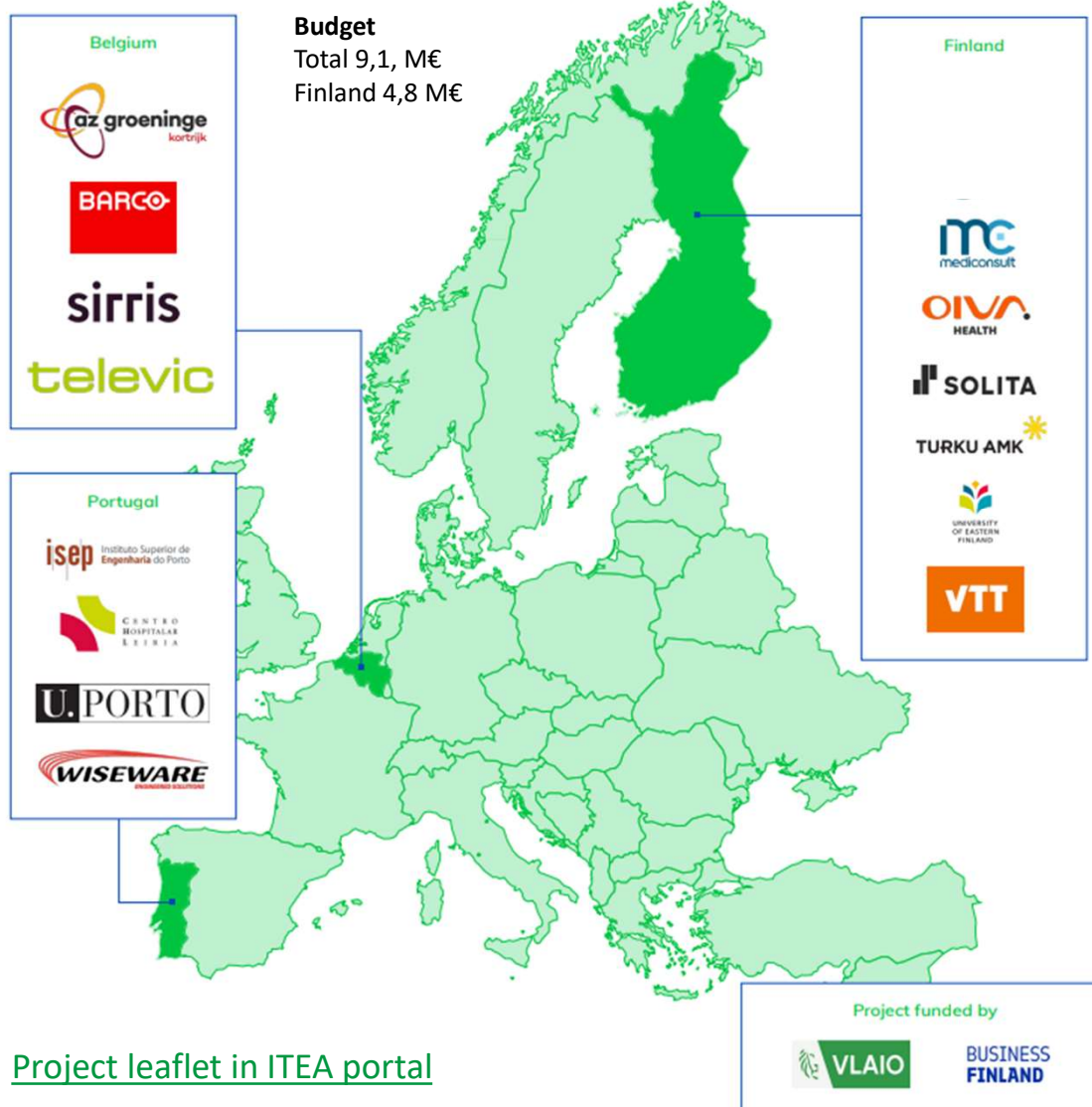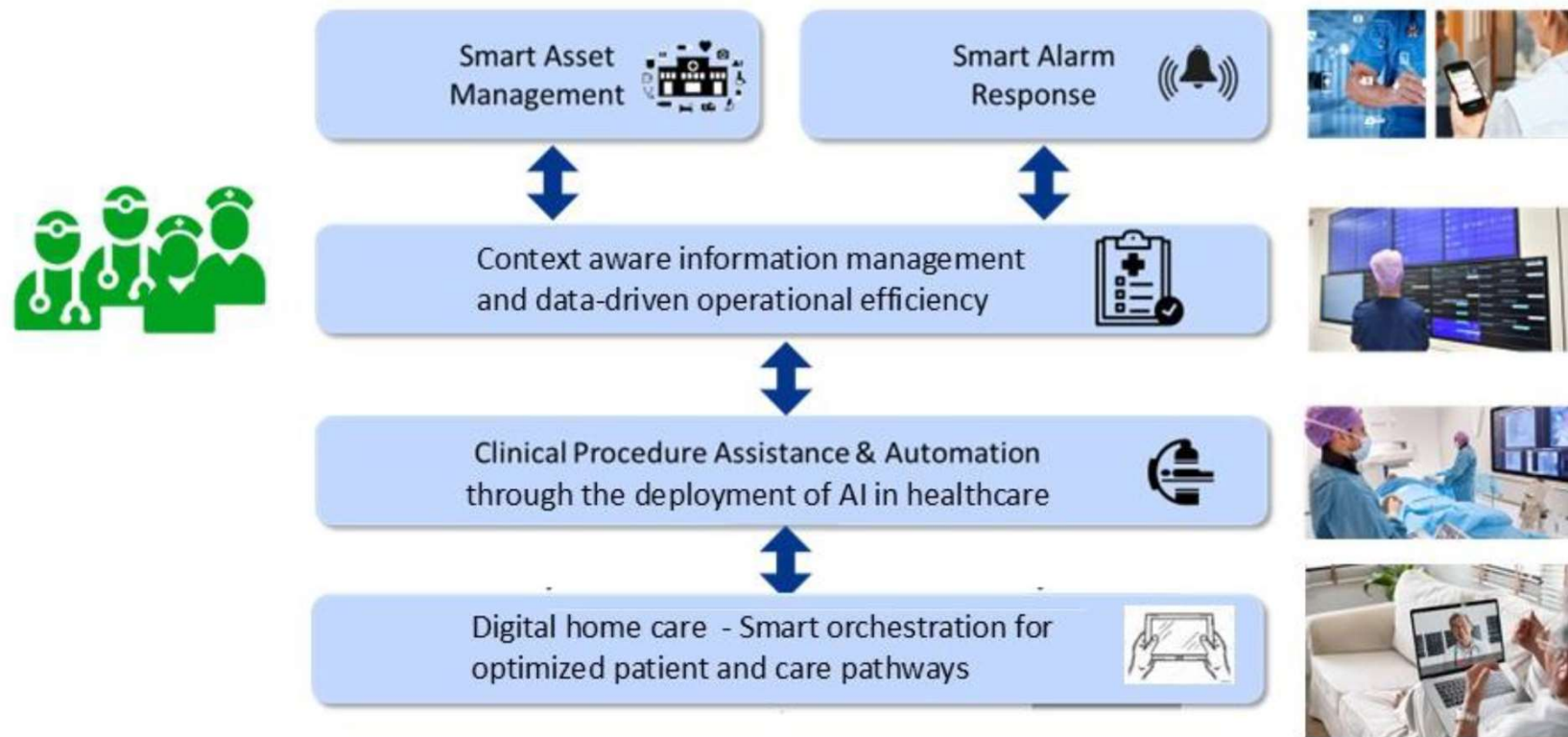
Projected results and impact

PROFIT's primary outcome will be a

to new markets. The market potential is very promising; the global healthcare AI market, for instance, will reach US$ 148 billion by 2029 at a 48% compounded annual growth rate. Additionally, the project will investigate new business models and develop integrated demonstrators and proof-of-concept systems for pre-clinical validation. This makes PROFIT a comprehensive first step towards truly smart hospitals.

Project partners

Budget
Total 9,1, M€
Finland 4,8 M€

Belgium
az groeninge kortrijk
BARCO
sirris
televic

Portugal
isep Instituto Superior de Engenharia do Porto
Centro Hospitalar Entre
U.PORTO
WISEWARE

Finland
mc mediconsult
OIVA HEALTH
SOLITA
TURKU AMK
UNIVERSITY OF EASTERN FINLAND
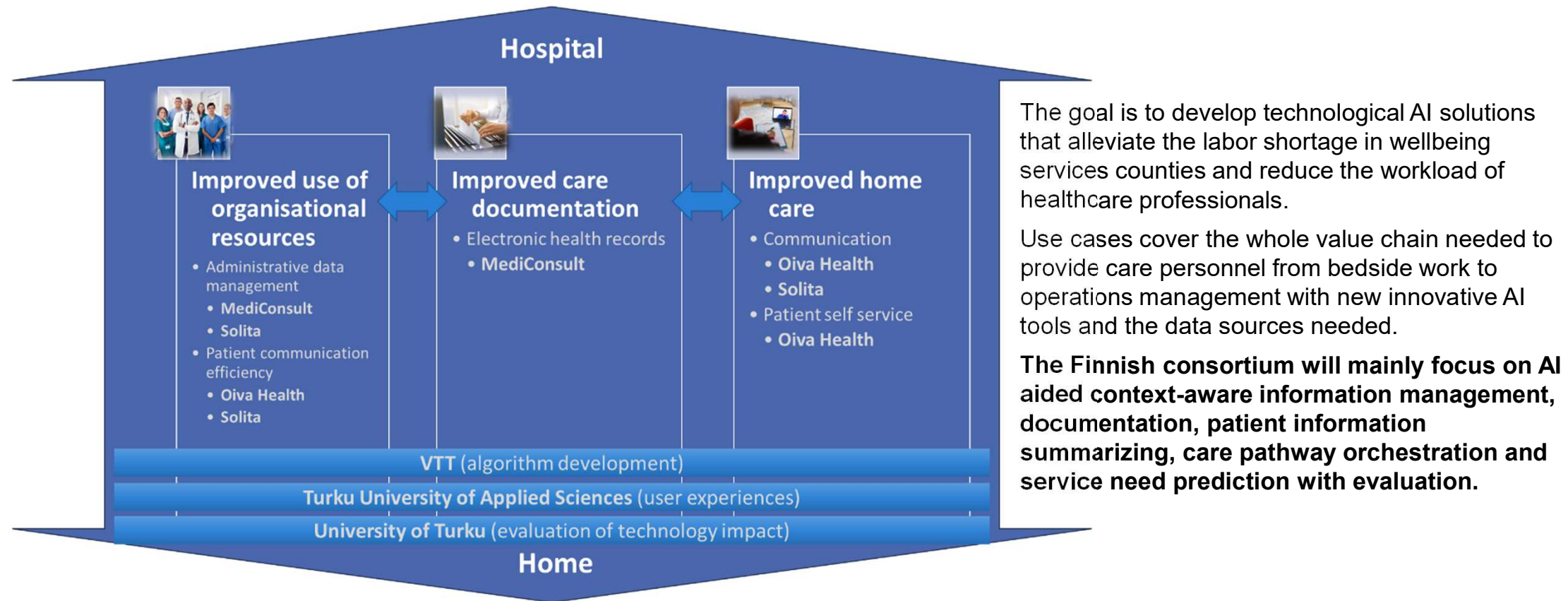VTT

Project funded by
VLAIO
BUSINESS FINLAND

Project leaflet in ITEA portal

PROFIT approach towards operational efficiency and staff well-being

Key tasks and Finnish actors involved in project

Hospital

Improved use of organisational resources
- Administrative data management
  - MediConsult
  - Solita
- Patient communication efficiency
  - Oiva Health
  - Solita

Improved care documentation
- Electronic health records
  - MediConsult

Improved home care
- Communication
  - Oiva Health
  - Solita
- Patient self service
  - Oiva Health

VTT (algorithm development)

Turku University of Applied Sciences (user experiences)

University of Turku (evaluation of technology impact)

Home

The goal is to develop technological AI solutions that alleviate the labor shortage in wellbeing services counties and reduce the workload of healthcare professionals.

Use cases cover the whole value chain needed to provide care personnel from bedside work to operations management with new innovative AI tools and the data sources needed.

The Finnish consortium will mainly focus on AI aided context-aware information management, documentation, patient information summarizing, care pathway orchestration and service need prediction with evaluation.

ITEA4 Σ

GenAI in nursing, TLGG, Thomas Hagemeijer

Research Topics

AI supported healthcare documentation - Mediconsult

Potilas
kotiutui eilen
– voi hyvin.

"AI ei korvaa ammattilaista – vaan vahvistaa hänen vaikutustaan asiakastyössä."

📝 Kirjausapuri
Auttaa ammattilaisia tuottamaan laadukasta dokumentaatiota nopeammin.
Esitäytöt, rakenteiset kirjaukset, NLP-pohjainen muotoiluapu.

📄 Yhteenveto-apuri
Tiivistää laajoja potilas- tai asiakastietoja, esim. A-todistukset tai lausunnot.
Nopeuttaa päätöksentekoa ja säästää aikaa.

🧠 Sosiaalihuollon apurit
Lastensuojeluilmoitusten esikäsittely ja luokittelu.
Palvelutarpeen arvioinnin koostaminen hajanaisesta aineistosta.

Contacts: petri.alhainen.ext@mediconsult.fi

Accelerating Patient Journey Orchestration – Co-Creation in Action with Collab Health AI

Collab Health AI in Patient Journey Orchestration

Helps **simulate and test optimal care pathways** for different patient groups, using AI-powered scenarios.

Supports **modelling of seamless service flows** (e.g., emergency care, appointment scheduling, home care).

Enables **data-driven analysis of touchpoints**, improving self-service channels and automating processes.

Facilitates **scenario building and decision support**, guiding smarter resource allocation and strategic choices.

Collab Health AI also supports the co-design of the Patient Journey Orchestration data model, enabling shared understanding, validation and iteration between experts and AI from day one.
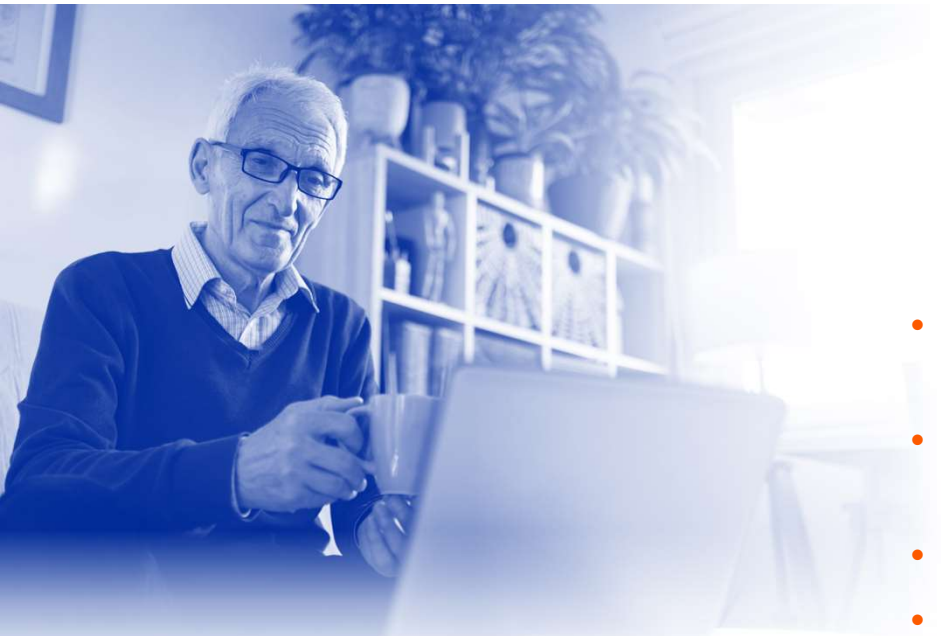

What is Collab Health AI?

A **co-creation model** combining people and AI in real time, in a same room.

Designed specifically to support **strategic planning and digital service development** in social and health care.

Enables **agile pilots and process simulations in real-world contexts**.

Contacts: sari.kaari@solita.fi

ITEA4 | Σ

Digital Home Care

- Public home care service providers have offered digital home care for over ten years

- Digital home care has gained a stable position as an integral part of home care services

- Millions of digital home care visits are conducted yearly

- National-level goals support the expansion of digital home care services

- The Oiva Health platform serves as the technical foundation for the service concept

- As the volume of digital home care continues to grow, service providers have identified the need for new features to be developed on the platform

Scan to explore Digital Home Care

VTT's Architecture Plan

VTT CareNavigator - Context-aware customer/patient dashboard

| GUI/Speech UI | Data summaries | AI supported documentation | AI based decision support functions |

Local data and contextual information

Data from national services

| ERP | Patient/customer information system (**MediConsult Saga**) |

| Patient data repository | Data repository for social services | Personal Health Record |

Local information systems*

Kanta services*

* Synthesized data can be used in development phase for demonstration and testing

VTT demo solutions

VTT

Patient list / Health Information

Patient list | **Health Information**

🎤

Matti Meikäläinen
10101940-XXXX

Current status: The patient has been diagnosed [Neurologists] with a mild memory Disorder. The patient's possible memory disorder is monitored [AD riski]

The patient's cardiac situation is stabilized [CVD riski] [Cardiologist] and the treatment guidelines followed [treatment plan]

Contact details:
Meikäläisenkatu 1
70210 Kuopio
P: 054 555 5555
E: matti@meikalainen.ai

Treatment recommendation: Based on xxx and yyy... (Generated by AI)
Recipe recommendation: Prescribe xxx and yyy ... (Generated by AI)
Confirmation: Licentiate of General Practice, Jussi Juonio

Edit

Edit

Accept

| Health Information | Visits and treatments(3) | Laboratory results (3) | Risk factors and predictions (2) | Medication (2) |

2022 **2.2.2022**   **1.6.2023** **2023**   **2024**   **1.4.2024**

Neurologists | GP | Cardiologist

Lab 1 + 2 | Lab 2 | ECG
Care instructions vx | Medication xyz | CVD risk
AD risk | | Meidication vxz
Medication abc | | Care instrutinons xy

🎤 Recording and retrieving data with voice.

Basic information about the patient:
The patient's name, age, gender, and contact information are displayed.

Health information: Includes the patient's medical history, current diagnoses, medications, and allergies in aggregate.

Laboratory results
Showing the latest lab results, such as blood tests and other tests.

Visits and treatments
A list of the patient's most recent visits to the health care system and the treatments given is listed.
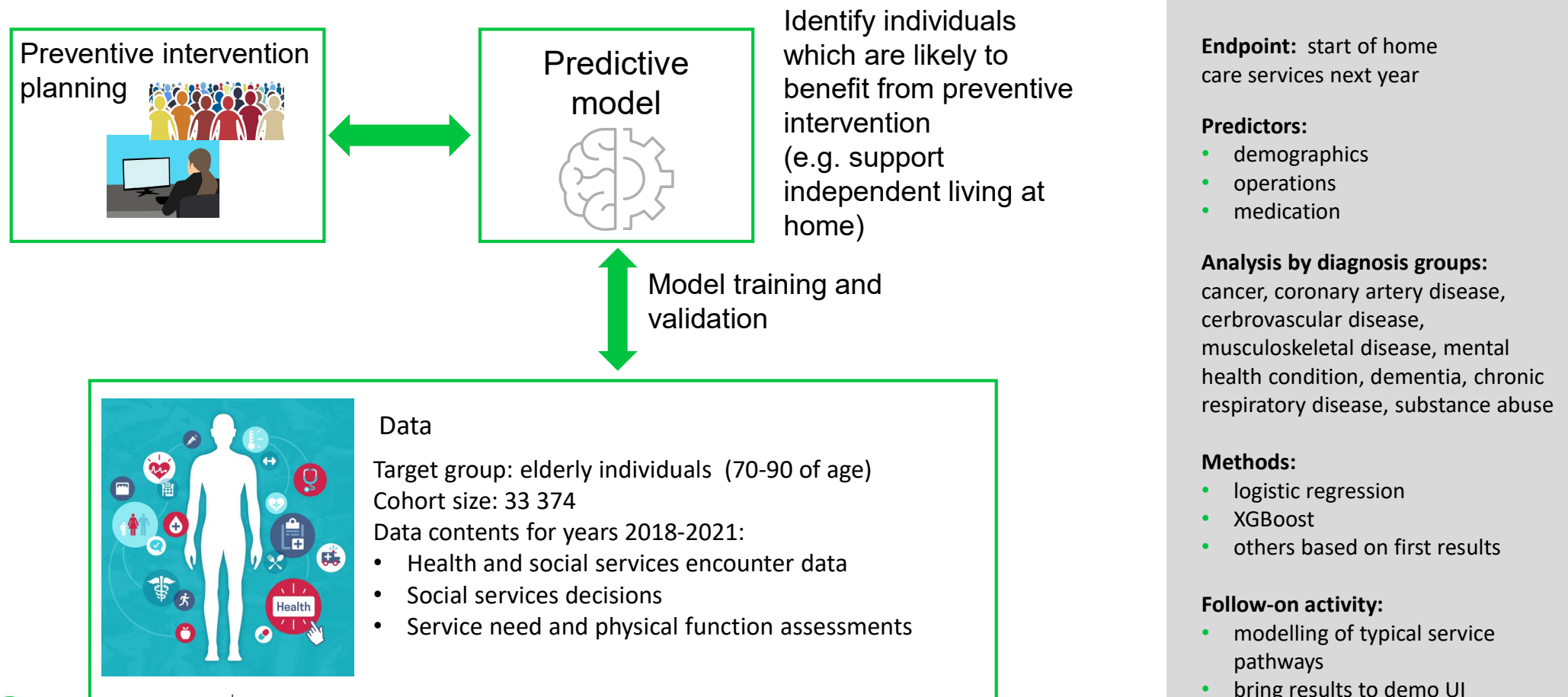
Risk factors and predictions
Patient risk factors and predictions calculated using prediction models are displayed.

Medication
Showing prescriptions and prescriptions issued to the patient

Automatic treatment recommendations and prescriptions based on the patient's background information and doctor/nurse entries

ITEA4 Σ

Demo UI

VTT - beyond the obvious

Data driven identification of target groups for preventive interventions

Preventive intervention planning

Predictive model

Identify individuals which are likely to benefit from preventive intervention (e.g. support independent living at home)

Model training and validation

Data

Target group: elderly individuals (70-90 of age)
Cohort size: 33 374
Data contents for years 2018-2021:
- Health and social services encounter data
- Social services decisions
- Service need and physical function assessments

Study setting

Endpoint: start of home care services next year

Predictors:
- demographics
- operations
- medication

Analysis by diagnosis groups:
cancer, coronary artery disease, cerbrovascular disease, musculoskeletal disease, mental health condition, dementia, chronic respiratory disease, substance abuse

Methods:
- logistic regression
- XGBoost
- others based on first results

Follow-on activity:
- modelling of typical service pathways
- bring results to demo UI

ITEA4 | Σ

North Savo Healthcare Data for PROFIT

Data Description

- Healthcare data derived from electronic health records of the Wellbeing Services County of North Savo
- Dataset contains information on approximately 27,000 individuals aged over 65, who have used healthcare services between 2012 and 2020
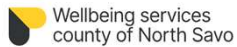
Secure Processing Environment
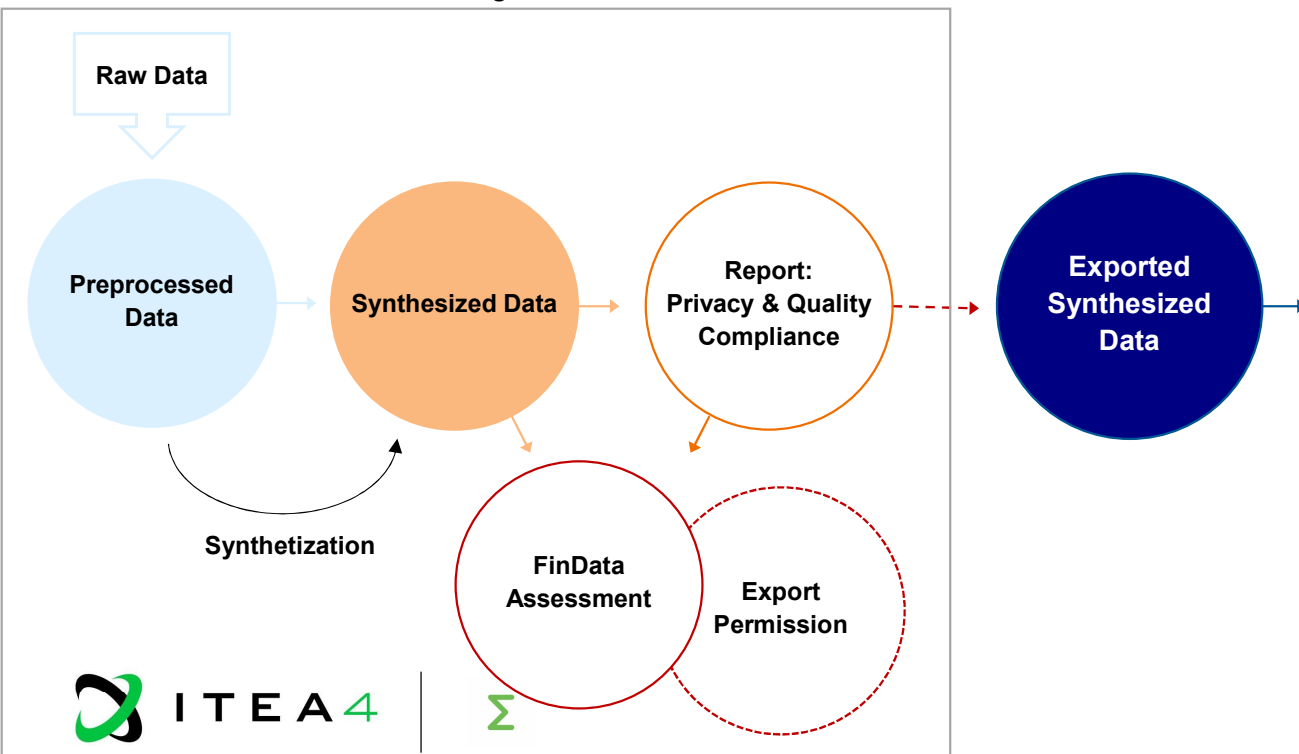
Data Usage in PROFIT

- Synthetic data generation within a secure processing environment
- Enables broader experimentation, e.g. use as demonstration material, model validation, and facilitates integration of LLMs in data analysis
- Steps of synthetic data generation described on the left

From needs to AI impact

In collaboration:

Care pathways

- Mapping pathways
- Clinical lab testing
- Clinical evaluation

Digital home care and health promotion

- Describing digital homecare service solutions
- Clinical evaluation

AI support for clinical documentation and information use

- Exploring ambient listening, structuring and summarisation technologies
- Clinical lab testing
- Clinical evaluation

Asset tracking and intelligent workflows

- Asset management, nurse call and workflow practice mapping
- Clinical system evaluation

Needs assessment

Evaluation

Implementation guideline

varha
The wellbeing services county of Southwest Finland

Wellbeing services county of North Savo

ITEA4 Σ

Contacts: laura-maria.peltonen@uef.fi

Hoitotyön teknologian hyväksymismallin kehittäminen

- **Pohjalla vakiintuneita teknologian hyväksymismalleja**

- **Hyväksymismallit auttavat ymmärtämään yksilötason tekijöitä**
  - Aikomus käyttää teknologiaa
  - Teknologian käyttö sen käyttöönoton jälkeen

- **Lisätään tunnekokemukseen liittyviä subjektiivisia kyselyjä ja psykofysiologisia mittareita**

- **Testataan kehitettävää mallia ja teknologiaa sairaanhoitajaopiskelijoilla sekä ammattilaisilla**

Lisätietoa: paula.savolainen@turkuamk.fi

ITEA4

Σ

Thank you for your attention!
Any questions?

For more information: Jouni Kaartinen, jouni.kaartinen@vtt.fi, https://www.linkedin.com/in/jouni-kaartinen-1b608311/

Profit-project: https://www.linkedin.com/groups/9897273/

ITEA4 | Σ