SINTEF involvement in improving elderly care in Norway

Joe Gorman,
Senior Researcher,
SINTEF ICT,
Norway

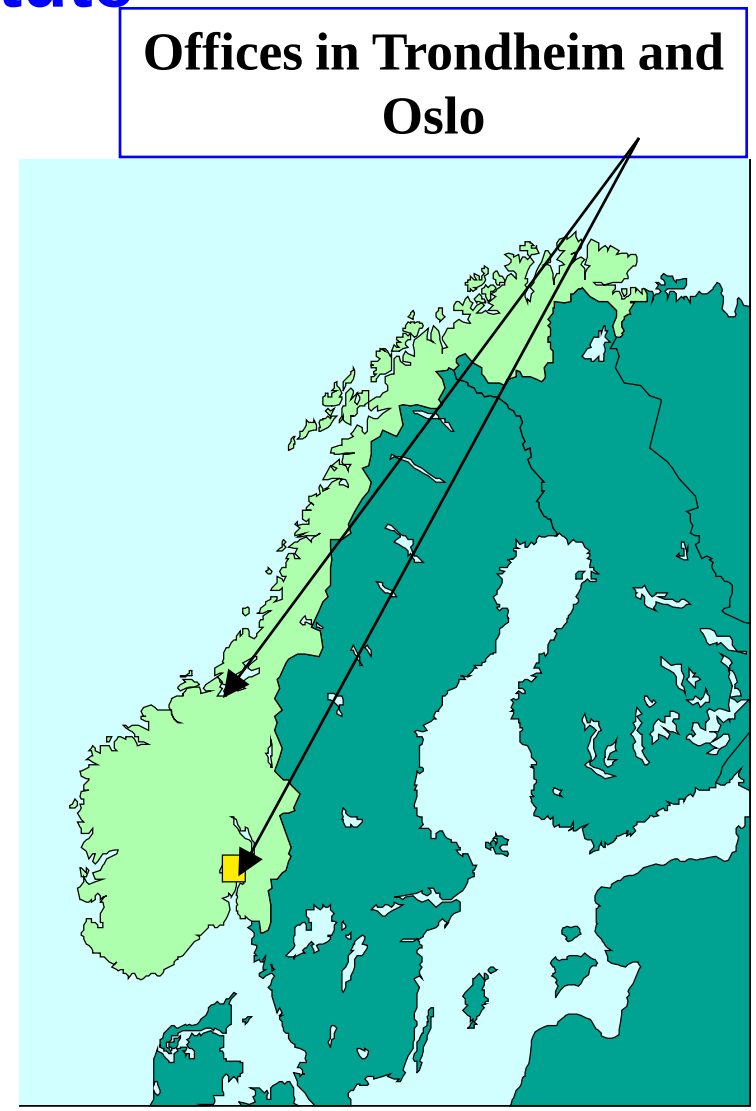
SINTEF: Who are we?

AN INDEPENDENT, NOT-FOR-PROFIT RESEARCH INSTITUTE

SINTEF

SINTEF: An independent, not-for-profit Research Institute

- Approx. 2000 employees, in most scientific areas.
- About 150 in SINTEF ICT (Information and Communications Technology)
- About 5% of income from government grant; remainder from contract research in Norway and abroad
- Good record in EU projects– important source of funding



Societal mission and vision

SINTEF develops society through research and innovation

- We create value and develop solutions to challenges faced by society
- We actively and boldly communicate our knowledge, solutions and recommendations

Our vision: **Technology for a better society**

SINTEF

Scandinavia's largest independent research organization

NOK 3,2 billion
Revenues

NOK 500 MILL
International sales

SINTEF

We are among Europe's largest contract research organisations

Fraunhofer

VTT

SINTEF

SP

TNO

DANISH TECHNOLOGICAL INSTITUTE

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

CEA

tecnalia

Applied research, technology and innovation

Expertise from ocean space to outer space:

Renewable energy

Ocean space

Industry

Buildings and infrastructure

Materials

Microtechnology and nanotechnology

Climate and environment

Oil and gass

Health and welfare

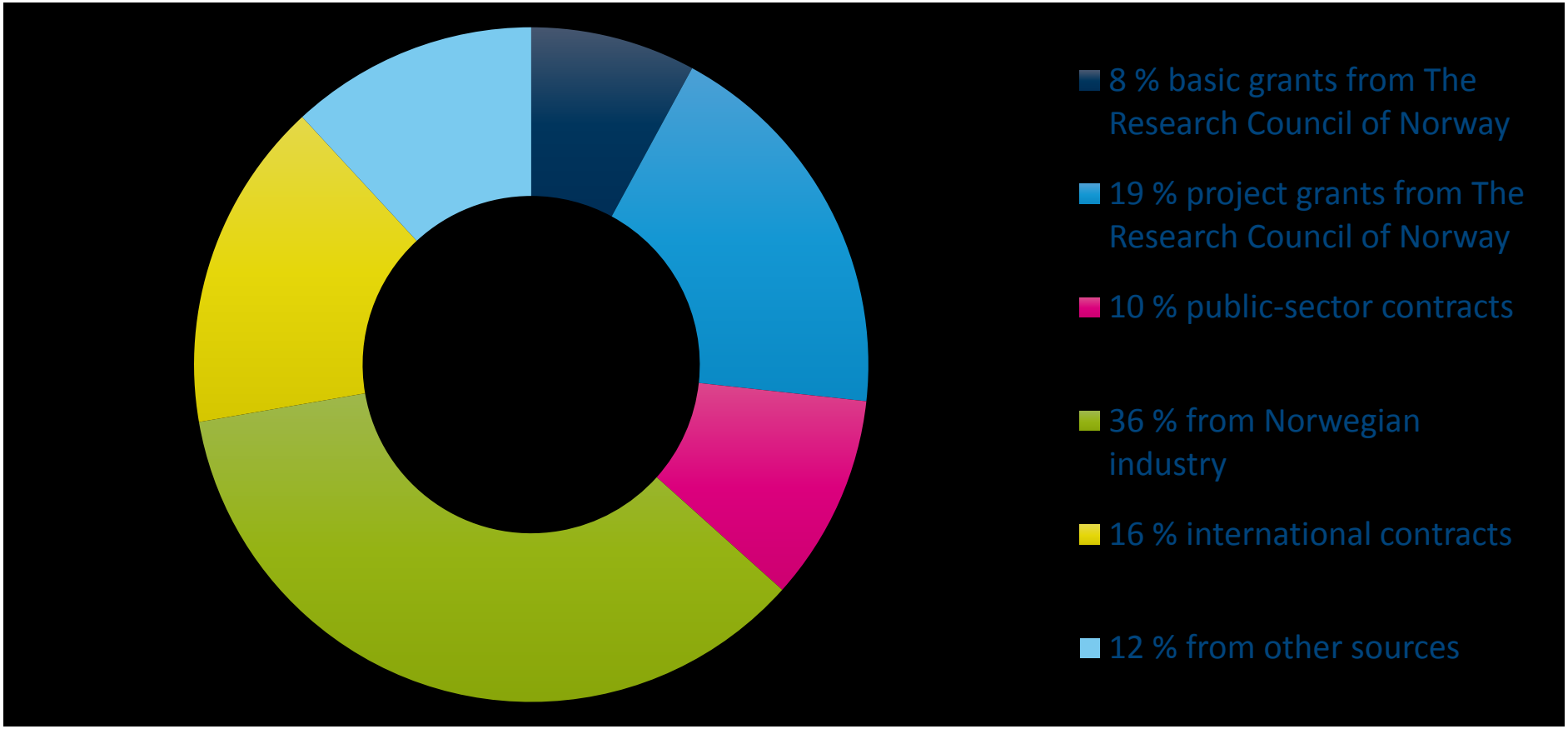
Society

ICT

Biotechnology

SINTEF

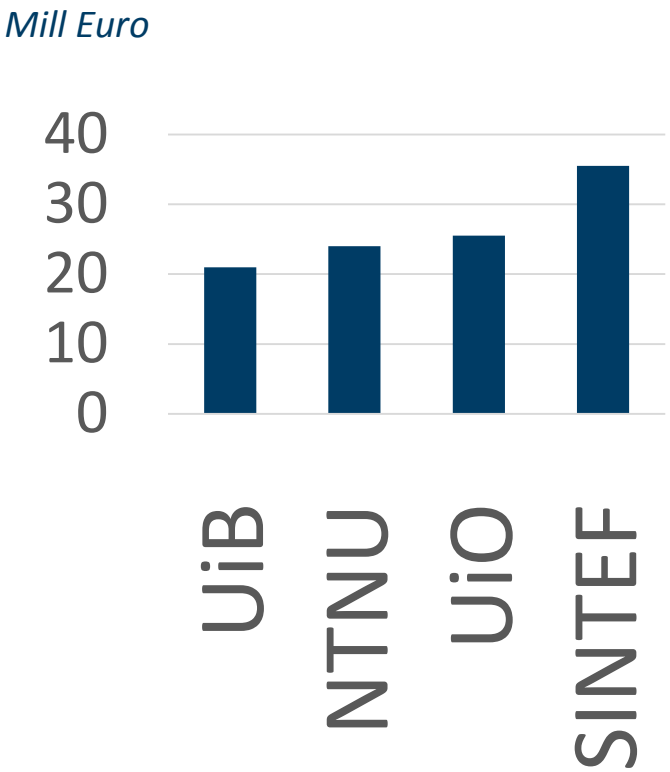
More than 90 percent of our income comes from contracts won in open competition



Sources of income 2010: Percentages of gross operating revenues

SINTEF

Major participant in EU research programs

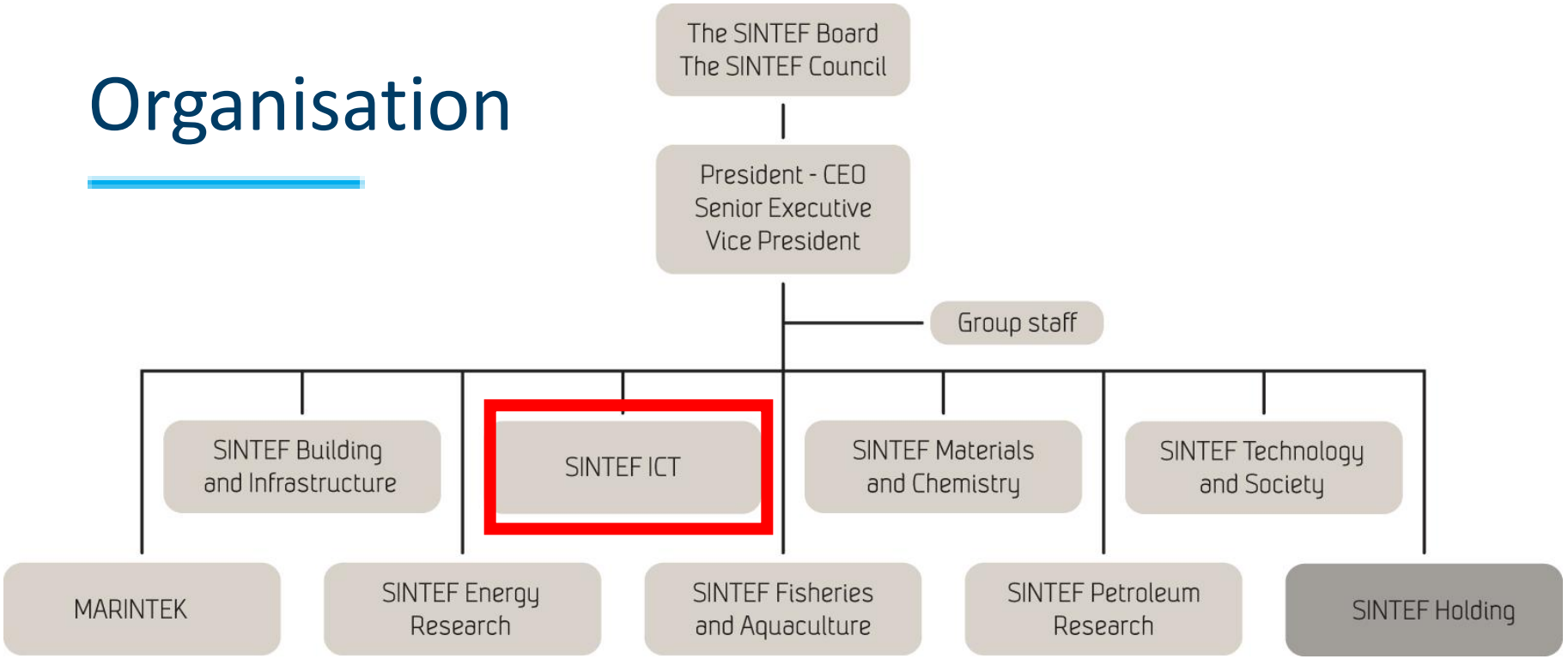


- Participate in 259 projects, with a project volume of € 269 mill.
- Coordinate 55 projects with a project volume of € 93 mill.
- SINTEF research funding from EU: € 35,6 mill.

Participation in Horizon 2020, as of March 2016. Source: RCN, EU's contract data base, March 2016

SINTEF

Organisation



SINTEF

Part of my department:

Social Inclusion Technologies Group

www.sintef.no/sit







Presentation Overview

- Role of technology in elderly care: “AAL”
- Some examples:
  - Better social contacts
  - Localization
  - Fall Detection
  - Help at home
  - Helping the developers
- Experiences from technology introduction

What is “AAL”?

What is "AAL"?

AAL = Ambient Assisted Living

"Velferdsteknologi" = Technology for well-being

ICT for ageing well

AHA = Active and Healthy Ageing

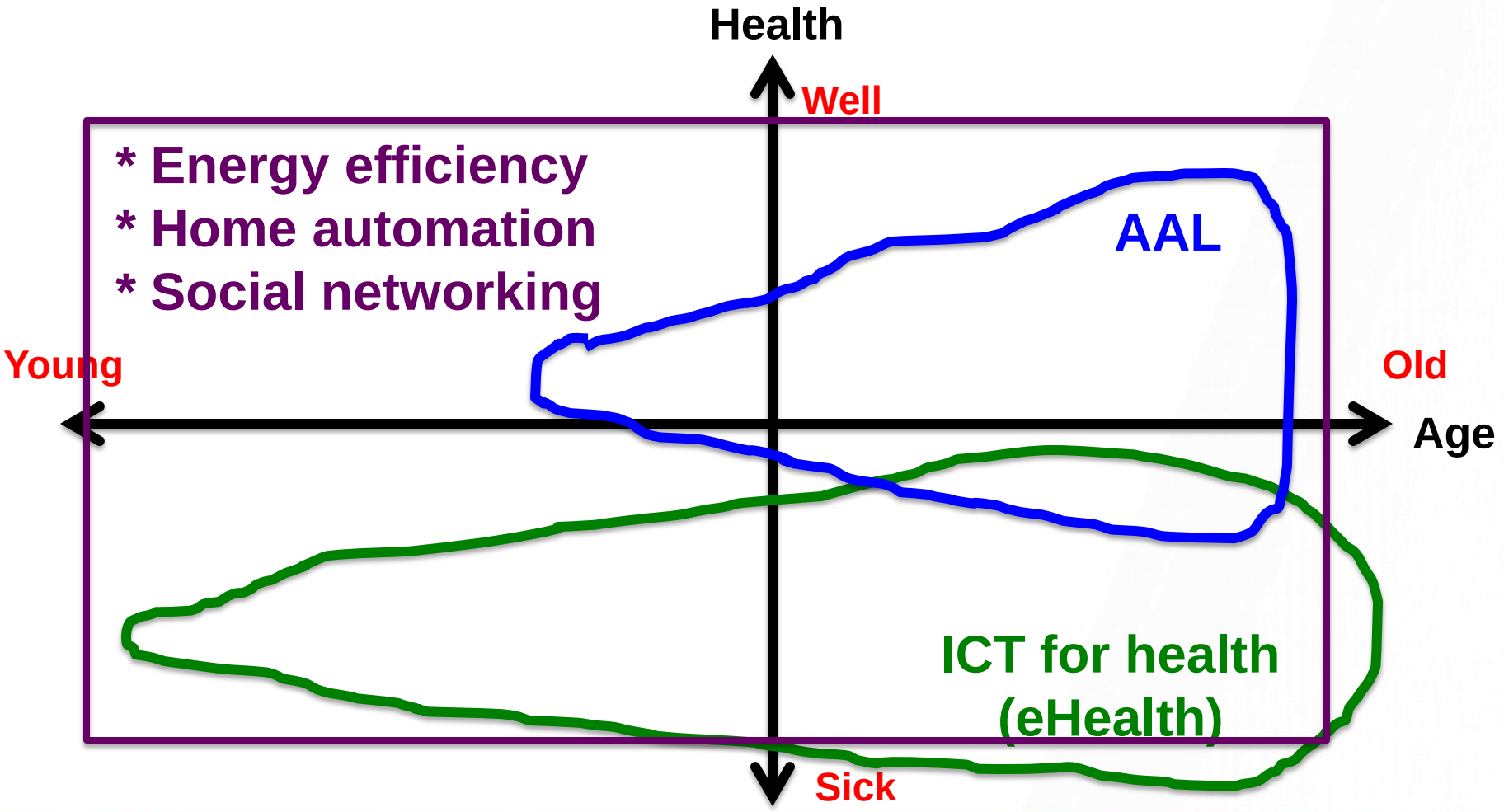
Successful aging means independence

1. *"Being in good health*
2. *Having the ability to do things for myself*
3. *Having friends and family there for me*
4. *Feeling safe and secure"*

AARP Healthy@Home 2008 survey ranking by 907 65+ individuals

Image Source: http://aginginplace.com/2010/05/just-what-is-successful-aging-anyhow/

AAL/the self-serve society: not to be viewed in isolation



Help 1:
Better Social Contact

Co-Living –EU project med testing in Trondheim and Netherlands

Social inclusion of elderly:

- Context-aware events calendar
- Motivational apps for social activities

Cooperation with Hornemansgården at Trondheim municipality

TRONDHEIM KOMMUNE

Co-Living Project – Trondheim Experience

“Facebook light”

- Social Media app with simplified interface
- Makes it easier for elderly, family and professional care-givers to keep in touch
- In co-operation with municipality of Drammen

“Communication improves health”

Help 2:
Localization

Foto: Henning Tunsli

"It is an increasing trend that elderly people are reported missing. We know that more people are diagnosed with dementia. This will be an increasing problem."

- The police in Asker and Bærum

Trygge spor
Velferdsteknologi

REGIONALE FORSKNINGSFOND
OSLOFJORDFONDET

Development of a GPS solution and accompanying support system for physical activity for people with dementia


Effect study

Support services


Product development

A user directed innovation project in the public sector

DRAMMEN KOMMUNE
BÆRUM KOMMUNE
TRONDHEIM KOMMUNE
Åfjord kommune
Bjugn kommune

60 Persons with dementia

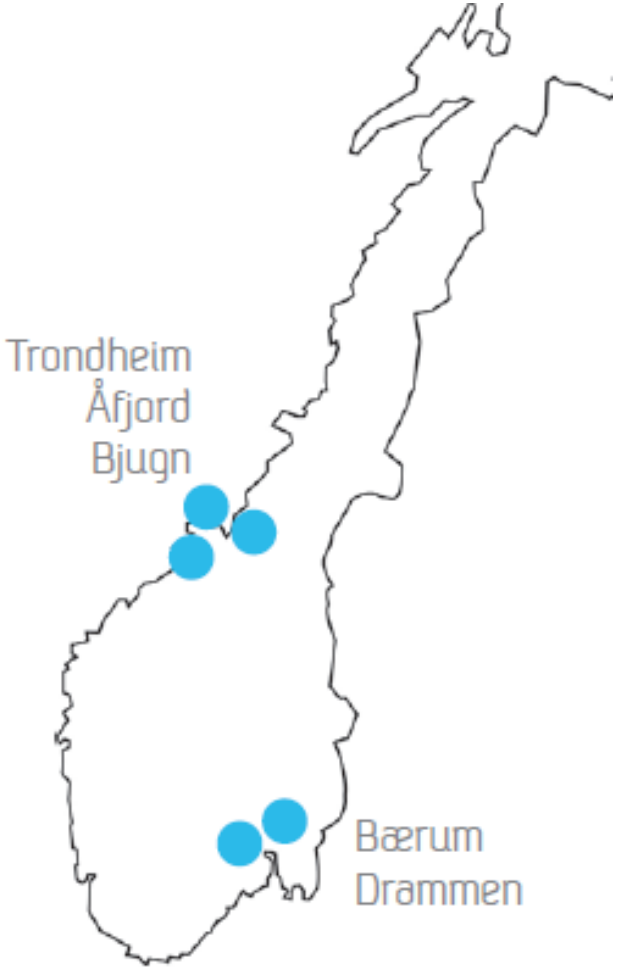
50 Next of kin

500 Professional caregivers

10 Researchers

4 Companies

10 students



Trygge spor
Velferdsteknologi

SINTEF

Objectives

- To explore the use of GPS technology and services for locating persons with dementia (PWD)
- Assess the impact of using GPS for locating PWD with respect to
  - PWD (persons with dementia)
  - Family caregivers
  - Professional caregivers

The Stakeholders

- 5 Municipalities (Drammen, Bærum, Trondheim, Bjugn, Åfjord)
- 55 Persons with dementia or reduced cognitive function
- 50 Family Caregivers
- 500 Professional Caregivers
- 10 Researchers
- 10 Students
- 4 Companies

- Project periode 2010-2012

GPS – Global Positioning System

- Safety Alarm
- Change battery
- Electronic fence/Geo-fence
- Localisation from
  - web Page
  - sms
- Alarm - low battery
- Phone

Foto: Trondheim kommune


Foto: Trondheim kommune

Results

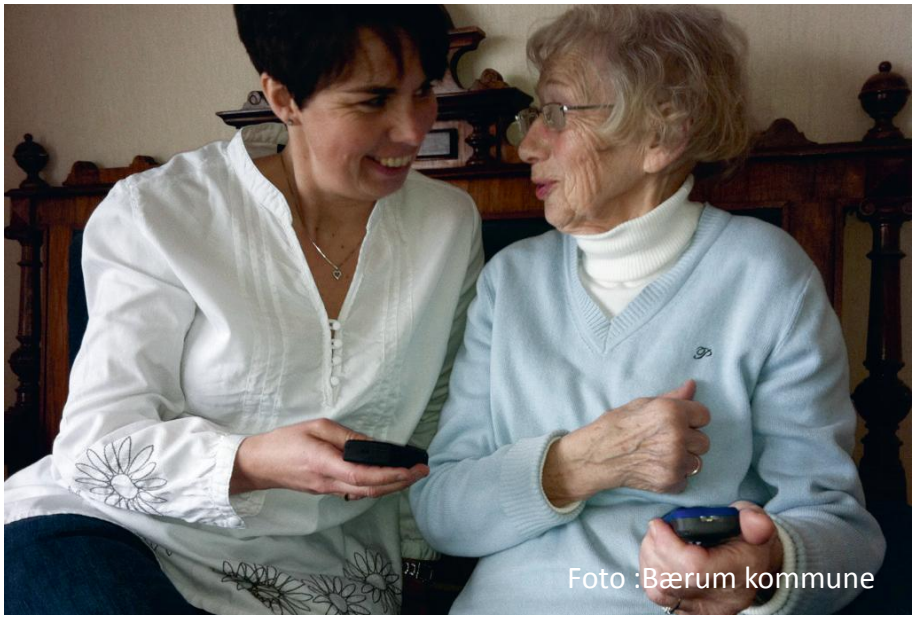
- Safety
- **Reduced anxiety**
- Freedom
- **Independence**
- Quality of life
- Continue outdoor activities
- No reported being monitored/kept under surveillance
- Early intervention


Foto: Ingrid Svagård


Foto: Henning Tunsli

Results

- **Improved quality of services**
- Reduced restraint
- Awareness of physical activity
- **Transfer to institutional care might be postponed**
- Avoid rescue operations
- Collaboration between family and profesional caregivers



Samspill

REGIONALE FORSKNINGSFOND

"Work together"

Cooperation and service development using localization technology in elderly care

Oslo kommune Helseetaten

DRAMMEN KOMMUNE

SKIEN KOMMUNE

KRISTIANSAND KOMMUNE

Aldring og helse Nasjonal kompetansetjeneste

SINTEF

Help 3:
Fall Detection

Trondheim:
A laboratory for falls technologies

Elderly falls

- 50% of people over age of 80 fall at least once a year
- 10 000 hip fractures each year in Norway
  - The most common single cause of hospitalization
- 40-60% of falls results in clinical intervention.
  - Personal and economic costs are huge

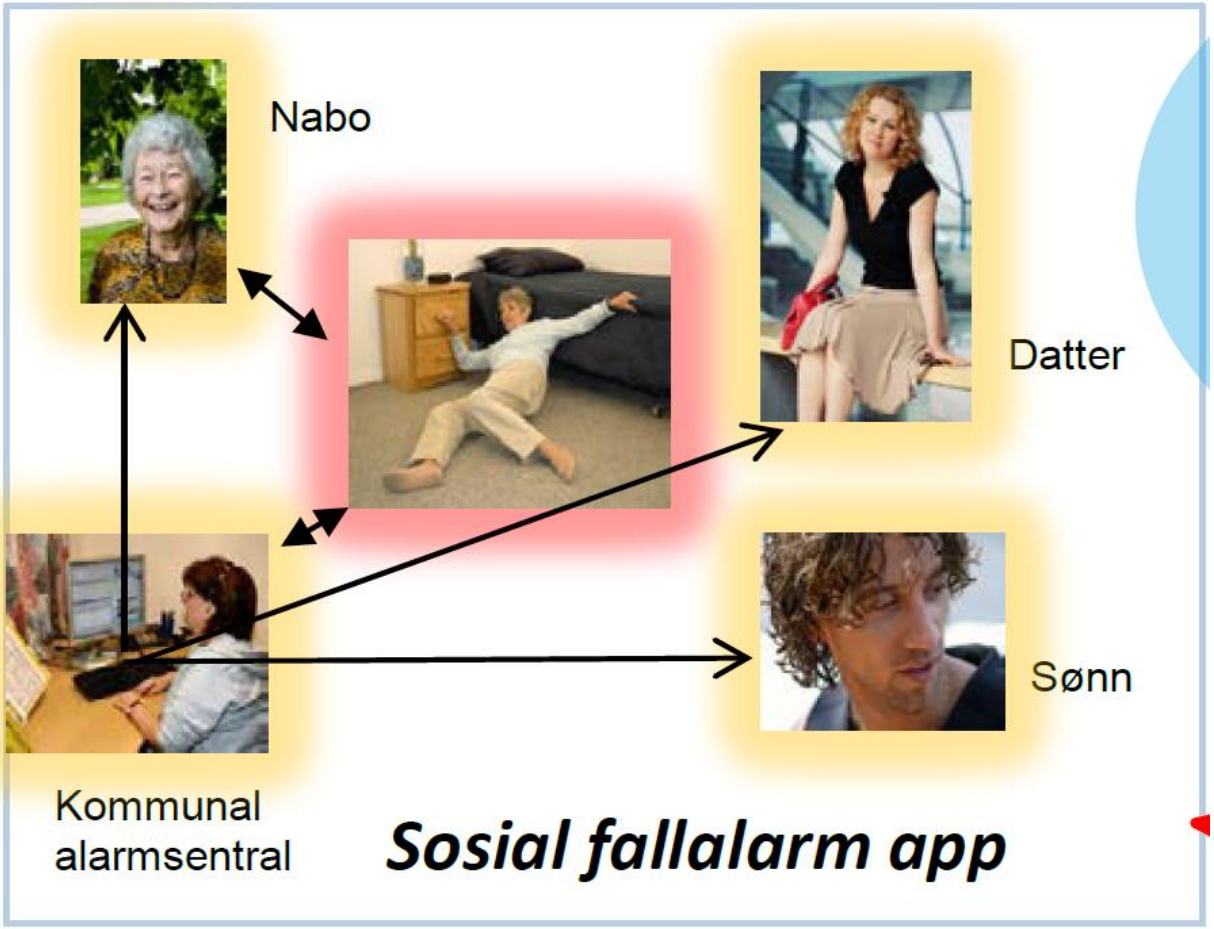
Costs related to falls in Norway

"Simple" fall without fracture	5 000 NOK
Non-hip fracture	49 000 NOK
"Simple" hip fracture	297 000 NOK
Hip fracture (complicated)	828 000 NOK

Approx. costs, from Hektoen LF, Aas E, Lurås H,
Cost-effectiveness in falls prevention for older women.
Scand J Publ Health 2009;37:584-589

Social fall detection

- New service models using social and collaborative media
- Reduce time to help injured elderly
- Collect data from real falls



The emergence of technology

- Technologies for risk assessment, falls prevention and detection
- European cooperation for creating world leading applications

FARSEEING

COOPERATION

FARSEEING

- Holistic elderly fall management through **three services only one of which is technology based**:
  - **Fall detection**: sensor-based alarm service involving family and friends. "Social fall detection".
  - **Fall risk assessment**: exchange of information with elder person about fall risks.
  - **Exercise counselling**: personalized exercises to prevent falls

Trondheim a pioneer

- NTNU and St. Olav in early NFR projects
- EU projects and networks of excellence

Olav Sletvold, Jorunn Helbostad (St.Olav, NTNU)

ProFouND
Prevention of Falls Network for Dissemination

ProFaNE
Prevention of Falls Network Europe

TRONDHEIM KOMMUNE

Collaboration with "Helsevakta"

Trondheim as a laboratory: First steps

Ladesletta helse- og velferdssenter

Bergheim Omsorgsboliger

Helsevakta

TRONDHEIM KOMMUNE

Help 4:
Help at home

Home Safety Kit

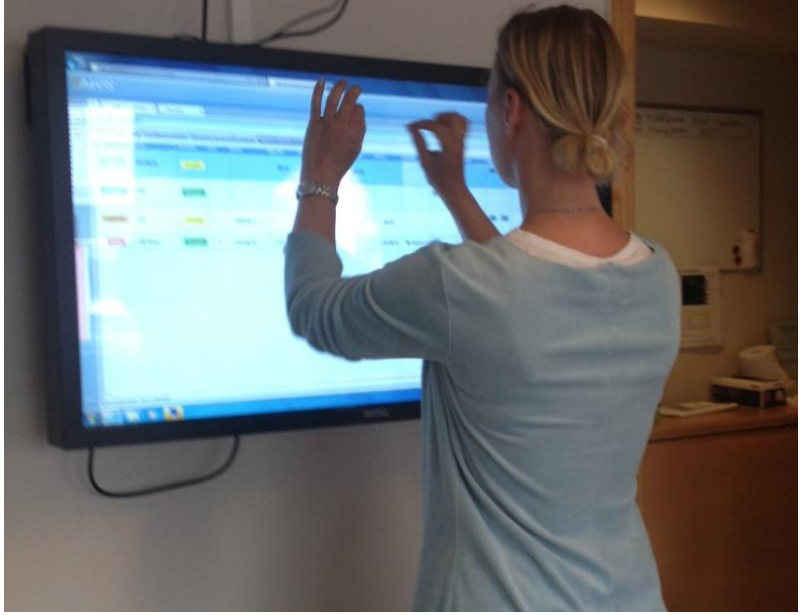
Trygghetspakken
Velferdsteknologi

"I want to live at home as long as possible"

What should be the content of such a kit?

How to integrate the safety kit as part of public home care services?

Project Pilots

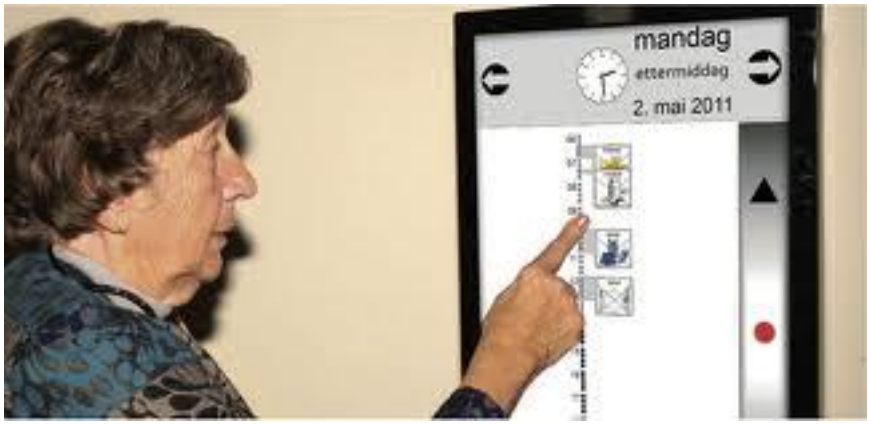


Whiteboards for collaborative support and real-time task management (IMATIS)

Movement monitoring and alarm system (Curatec)

Automatic medicine dispenser (Dignio)

GPS-based safety alarm (Moreto)



Cognitive support with smart calendars (Abilia)

Pilot user in Bærum with Abilia Memoplanner

Help 5:
Helping the developers

Main Objective

To make it technically possible and economically feasible to design and deploy innovative AAL services

- Providing an **open and scalable technological platform** that facilitates the development and deployment of a broad range of AAL services
- Carrying out support activities promoting **widespread acceptance and adoption** of the platform.

Approach: Consolidate & extend work of earlier projects

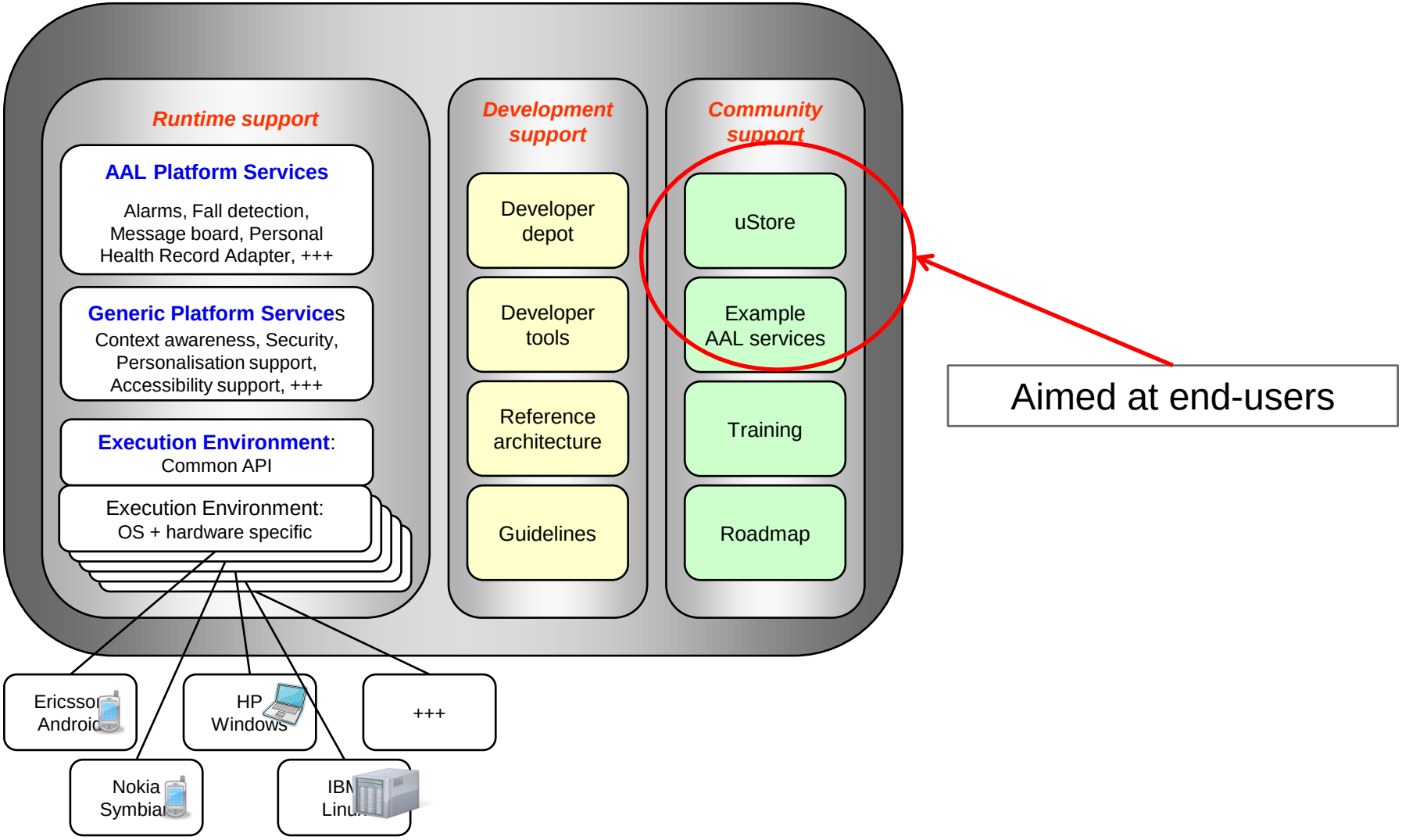
*** Duration: 48 months** *** Start: February 2010**
*** Budget: 14 M€** *** EU Funding: 11 M€**

Types of users

Primary Users

End-Users

Main technical result: universAAL platform



Experiences from introducing technology in elderly care?

“SINTEF is probably the player in Norway with the highest activity and the community with the most expertise related to welfare technology"

The Norwegian Directorate of Health, 2012

SINTEF

SINTEF shall be the leading research actor on development, implementation and evaluation of welfare technology

Vision 2016

SINTEF

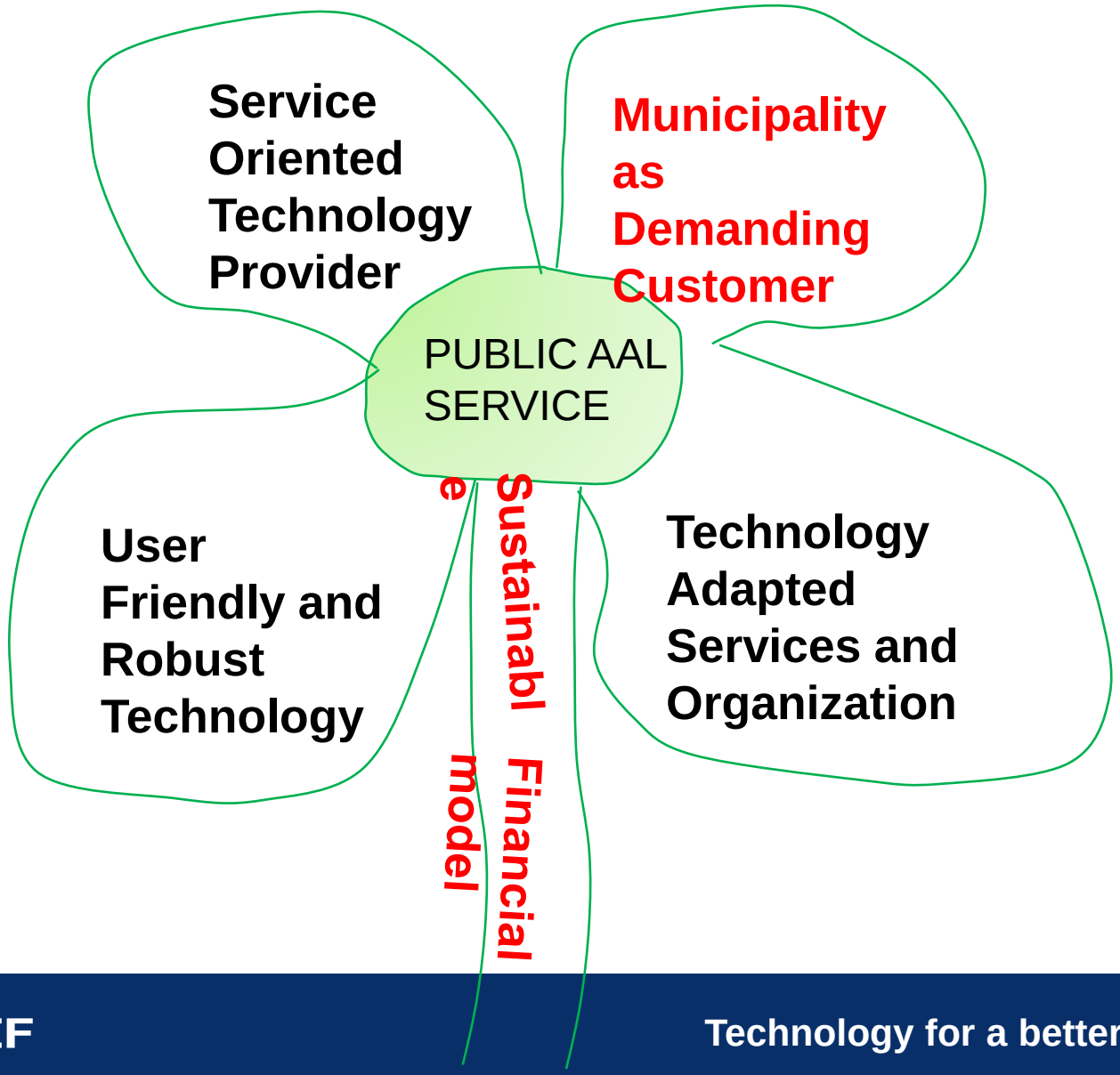
Preconditions for successful implementation (Localization)

- Individual assessment
- Ethical dilemmas
  - Privacy and dignity
- Select the least intrusive intervention
- Traffic Safety
- **Clarify responsibilities**
- Be aware of technical limitations and false safety
- **Training of caregivers**


Foto: Henning Tunsli

Criteria for successful uptake of AAL technologies.

Svagård et.al, Phealth 2013



Roadmap for implementation of AAL technologies in Norwegian municipalities