

# SAAM: Supporting Active Ageing – Use Cases and User-Side Architecture

Andrej Hrovat, Martin Žnidaršič, Bernard Ženko, Matevž Vučnik, Mihael Mohorčič  
Jožef Stefan Institute, Ljubljana, Slovenia  
[andrej.hrovat@ijs.si](mailto:andrej.hrovat@ijs.si)

## motivation

With the use of ICT technologies it is possible to **prolong the period of life the ageing population can live safely at home**, preserving physical, cognitive, mental, and social well-being. Most existing solutions are costly and obtrusive, thus reserved for economically privileged and/or technology inclined users.

In SAAM project, we focus on innovative, **unobtrusive technology-enabled approaches**, with a novel and practical emphasis on **ambient sensing** and **learning of user needs and preferences**, and **effective coaching** by leveraging the **user's social support networks**.

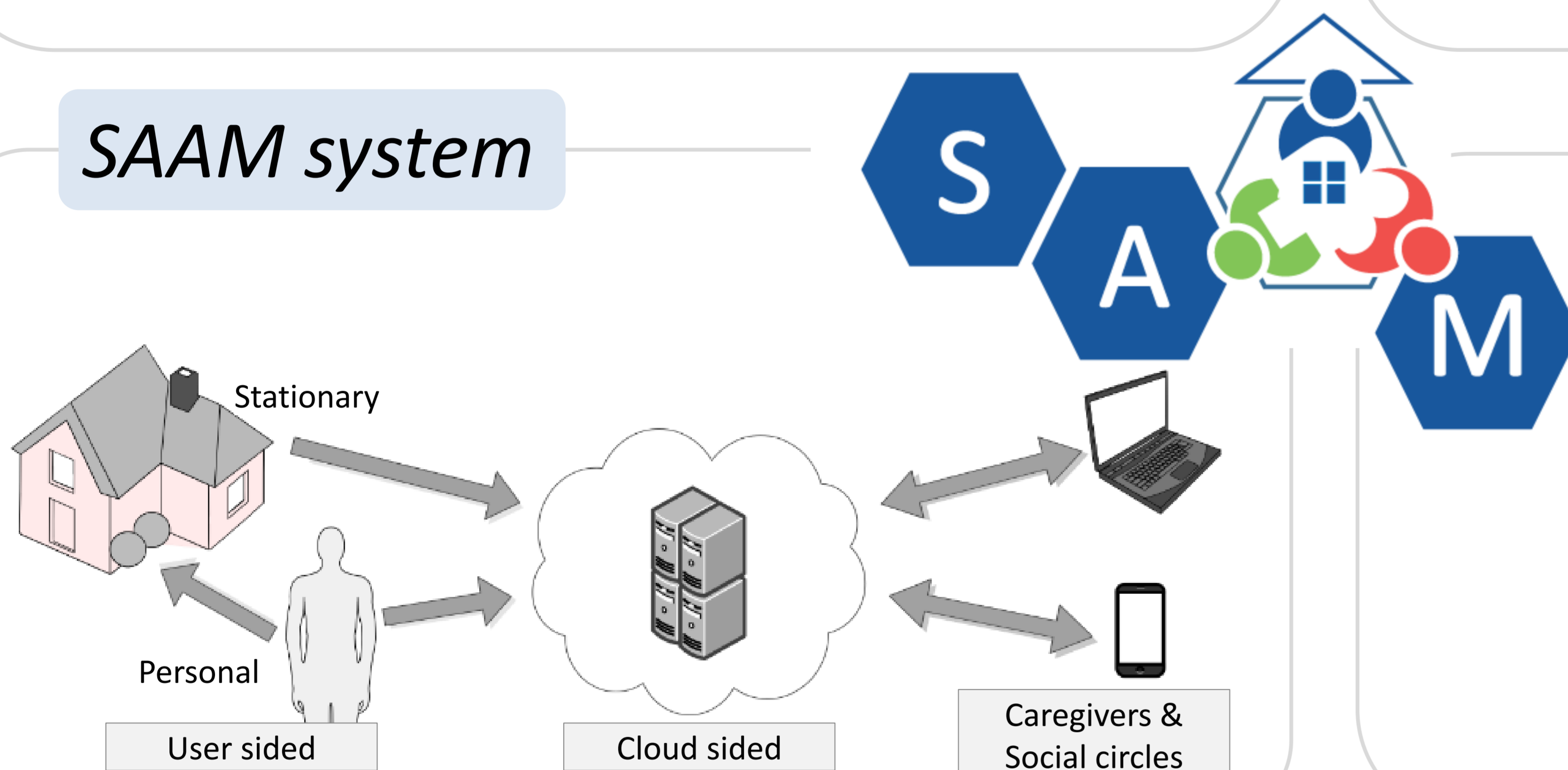
## use cases / scenarios

**Monitoring and supporting elderly** in various scenarios:

- **Mobility** – ability to perform activities including their frequency and timeliness
- **Activity** – quantity, not quality or ability to be active
- **Sleep** – duration and quality as indicators of wellbeing
- **Social activity** – estimating the degree of loneliness

Requiring **reliable and secure connectivity** between locally deployed and remote **devices and machines**, typically in existing living environments, as well as **people** constituting social circles, elderly care represents one of important **5G application** areas.

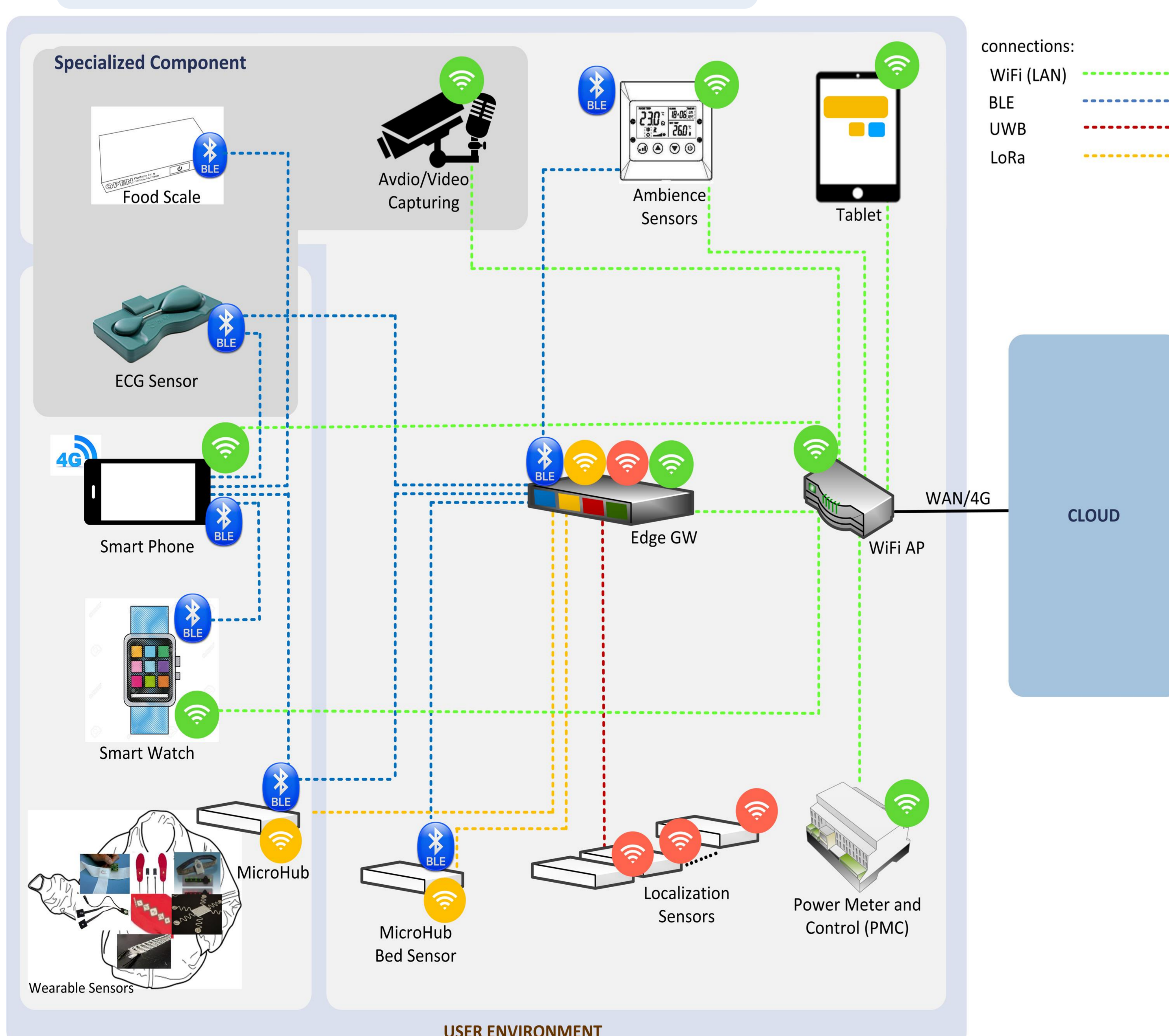
## SAAM system



## leveraging social circles



## SAAM user side architecture



- ❖ **Edge GW** with limited processing power and storage capabilities for
  - **multiprotocol connectivity** (WiFi, BLE, UWB, LoRa, ...)
  - local **management** of connected devices, data and users
  - data collection, processing, fusion, feature extraction
- ❖ **Unobtrusive monitoring of context and activities** with
  - **PMC device** for detailed power line measurement and **nonintrusive load monitoring**
  - **UWB based coarse radio localization/ movement detection**
  - existing off-the-shelf ambience sensors
- ❖ **Personal and wearable devices**
  - smart phones / smart watches
  - **smart textiles** with **embedded sensors** and a **micro hub** device supporting BLE/LoRa
- ❖ **Advanced and specialized components**
  - multifunction body ECG sensor
  - video and audio capture for assessment of physical and cognitive well-being / decline
  - nutrition & dietary support module