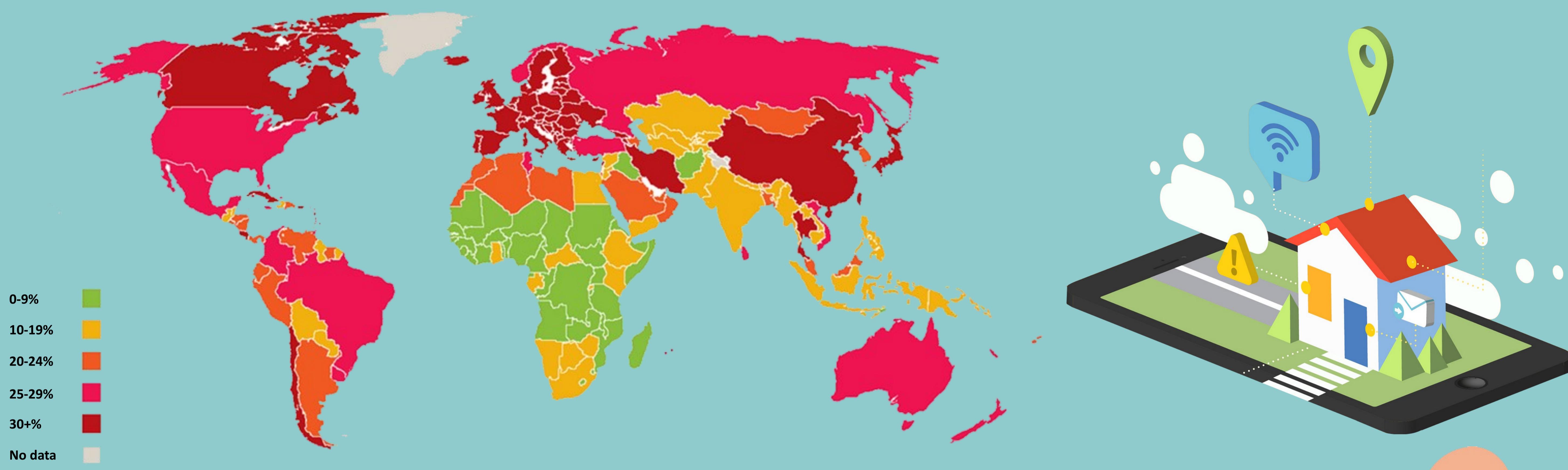


SMART HOMES FOR ELDERLY TO PROMOTE THEIR HEALTH AND WELLBEING FOR INDEPENDENT LIVING

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WHY IS THIS IMPORTANT

- The percentage of UK society aged 65 or above is projected to have an increase of 20.7% by 2027^[2].
- Growing old results in reduced capabilities and age-related diseases such as dementia.
- This increase creates concern for their safety and wellbeing.
- Need for services rise^[3], increasing cost^[4].
- Increasing pressure on NHS and private health care system^[4].
- Continuous monitoring or assistance is required so critical situations or mishaps can be avoided.
- Systems depend on users to manually call for help such as pressing buttons; This may risk human life if someone forgets to wear sensors or is unable call for help.
- Despite the development and availability of several assistive technologies tailored to support the elderly population, the rate of adoption is still low^[5,6].
- Current research in this area is lab-based and does not account for real-world variability in human activities and behavior^[7], also social isolation problems are generally ignored.

\uparrow Aged Population \cong \uparrow health issues

\uparrow health issues \propto \uparrow health care services \forall \uparrow Labour \cong \uparrow Cost

WHAT IS THE RESEARCH AIM?

A system bound for:

Safety, protecting dignity, ensuring independence,
Easy to incorporate in an existing home,
Unobtrusive technology & Promotes Quality of Life



REASONS FOR LOW ADOPTION AND ACCEPTANCE

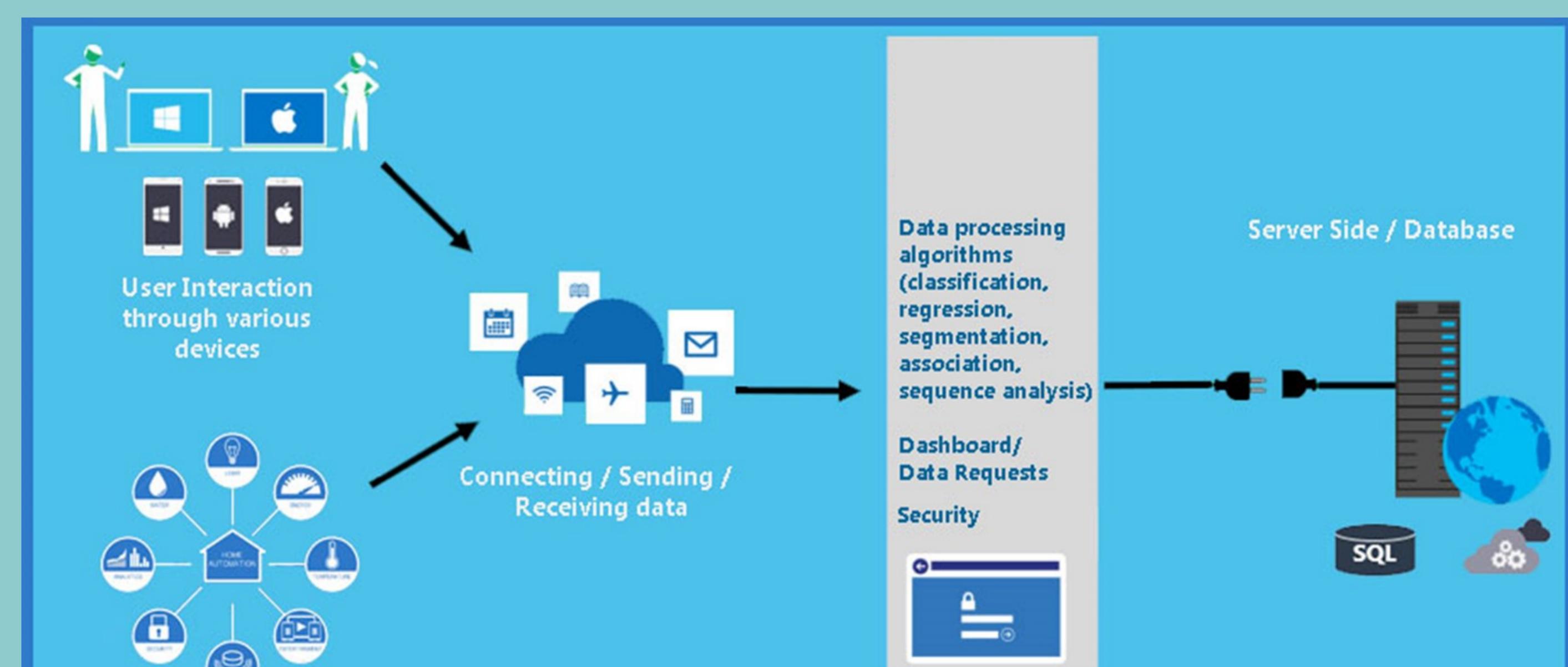
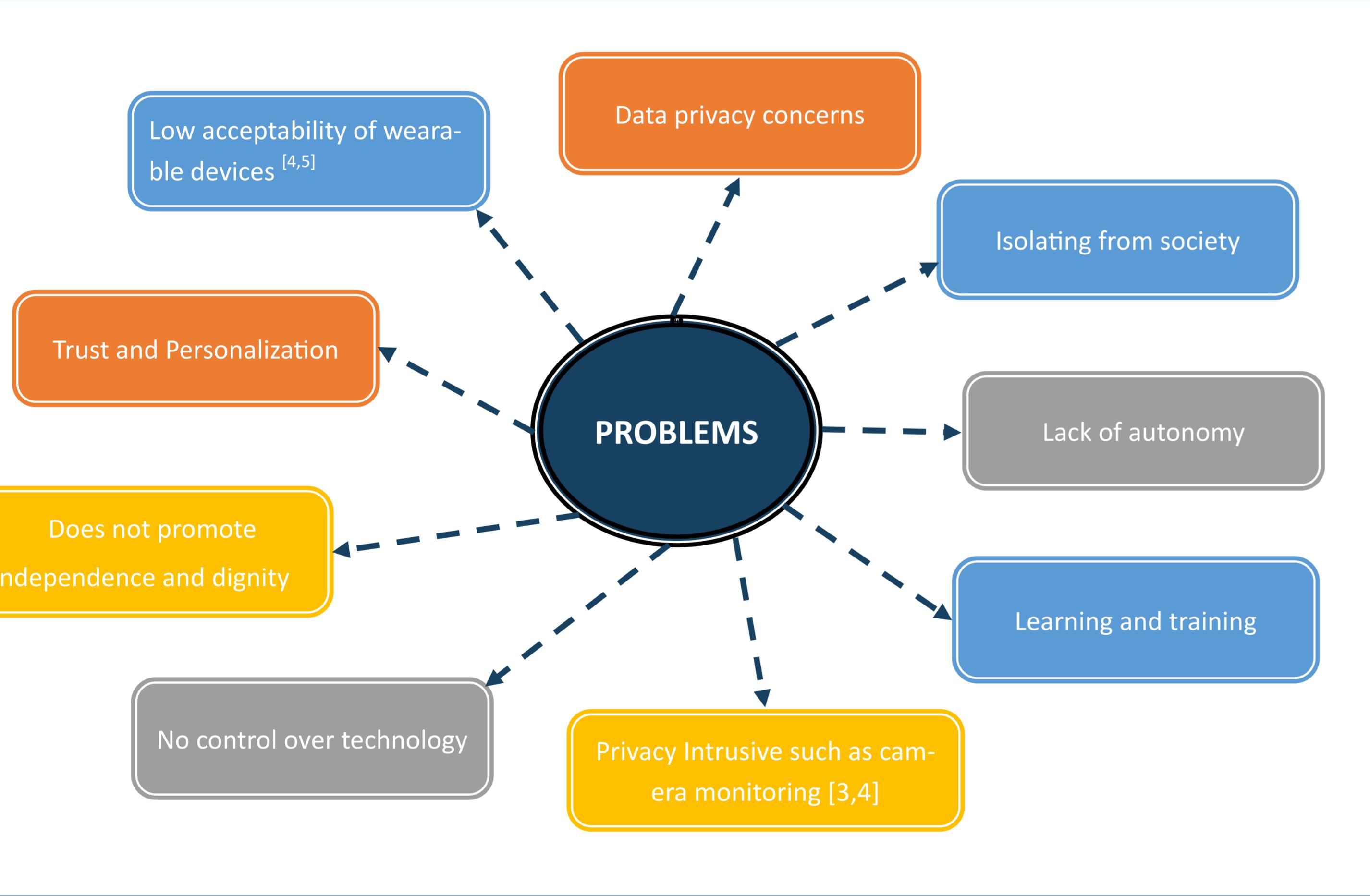


Fig. 2 - Hypothetical Architecture of the System^[8]

Fig. 2 displays the architecture of the system where combination of sensors are installed in the house collecting data of activities and vital signs of the elderly people. The raw data generated by the sensors is sent to the server via Hub/connecting service. This data collected by server is classified and segmented into their most suitable class which is later stored in the data base for further processing.^[8]

CHALLENGES

01 How can the system be trained to personalize individual needs?

Human behavior is not constant; Hence a system needs to be able to understand individuals behavior in order to personalize and predict anomalies.

02 How can the system be evaluated to measure quality of life?

Quality of life is an abstract term and varies for every individual. How can the experiments be designed in order to measure the change in quality of life.

03 How can smart home technology be designed to reduce social isolation?

Generally, the social and entertainment needs have been ignored when designing a smart home. This leads to mental health problems but how can a system be designed to effectively solve this problem.

04 How about multiple individuals living together?

How will system identify accurately if an elderly couple is living together i.e. separating their activities and reporting accurately or identifying complex ADL where individuals are collaborating.

05 What design parameters should be considered to make the system adaptable to a different home setting?

Applying the same model with minimal changes to a different architecture of a home is challenging.



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