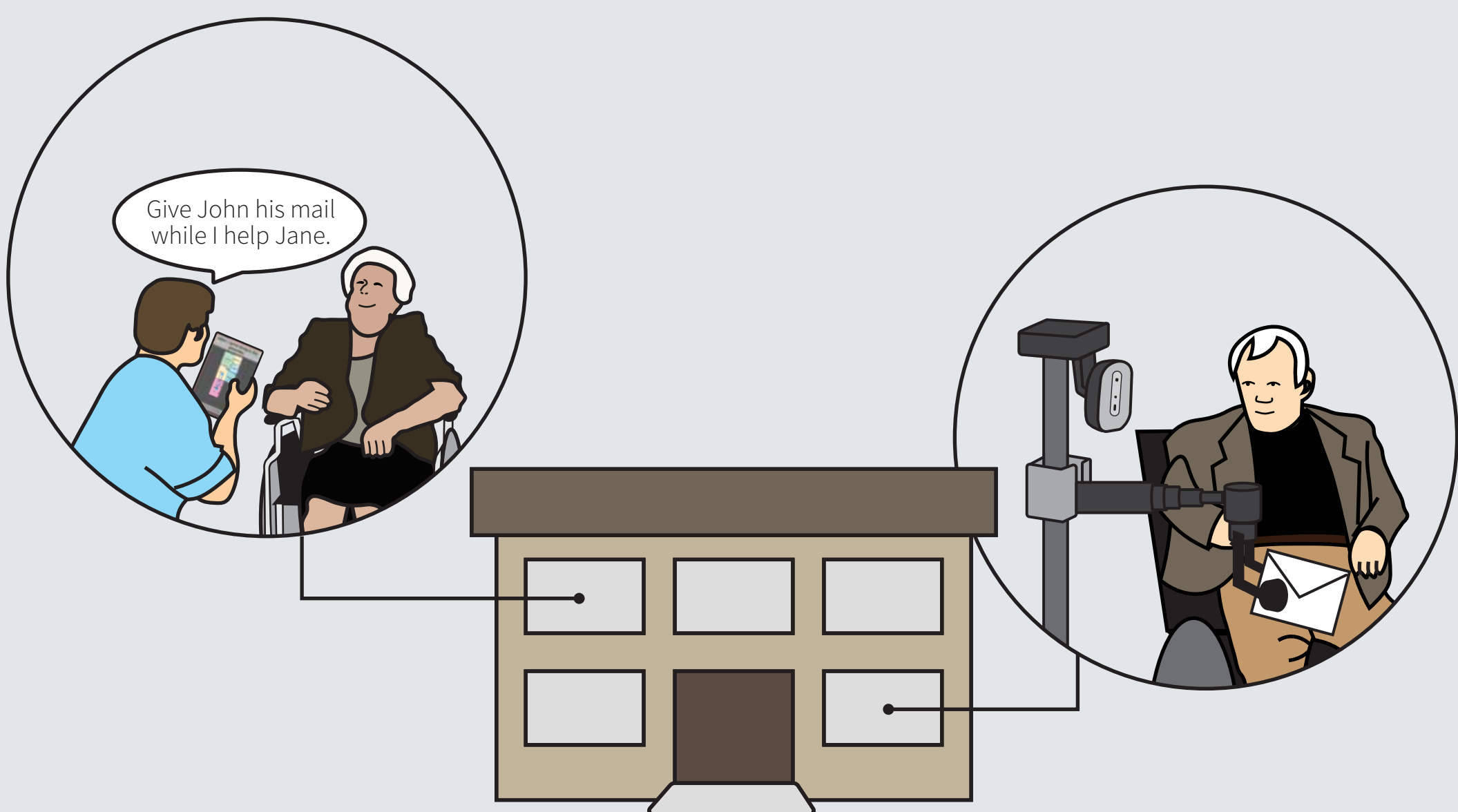


End-User Development for Personalized Care Robots



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My goal is to design, develop, and evaluate **end-user development (EUD) solutions** that support **personalized robots** in the **care ecosystem**.

Understanding the Care Ecosystem

Working directly with **older adults and caregivers** of a local assisted living facility, we conducted a series of **design studies** to **understand** each stakeholders’ needs and **envision** what systems are necessary to successfully integrate a robot into **existing workflows and habits**.



Key Findings:

1 Based on **existing caregiver workflows**, the system needs to **support quick, on-the-fly inputs**, and it must also guarantee safe and appropriate robot actions.

2 Both the caregivers and older adults indicated the robot should **learn and incorporate individual preferences**, without requiring repeated specification.

3 To accommodate a variety of **physical and cognitive abilities of older adults**, daily interactions with the robot should **support simple, natural inputs**.

4 Because **care environments can change rapidly**, the robot must exhibit **context awareness to act appropriately**, even if it must modify the originally specified task.

Future Work: Building & Evaluating Solutions

Based on my foundational work, I propose that **end-user development (EUD)** could be a tool to give stakeholders the necessary control to **personalize a care robot’s behaviors and actions**. These tools will use a combination of **interfaces, AI, and formal methods**. This work will build on our previous research on sketching robot programs:

Step #1 Users provide a recording of both **speech and touch input** via a tablet interface.

Step #2 The recording is then **processed** into a command and a sketch using the robot’s domain.

Step #3 A trace is **created** considering one iteration of the loop expressed in the sketch.

Step #4 The trace is **assembled** into a full program and **displayed** on the tablet for the user to see.