Lois

- 81 years old
- Shares a home with her husband
- Spends most of her time in the bedroom, kitchen, and family room.
- Pretty independent with daily activities - only requiring assistance to run errands outside the home

- Talks on phone everyday
- Uses email everyday
- Occasionally relies on notes and others for reminders
- Medical history includes arthritis, congestive heart failure, high blood pressure, stroke, and incontinence
- Sees more than 5 doctors
- Takes more than a dozen different medications
Loisí Care Routine

Currently

• Driving assistance and fall prevention provided by husband and sometimes daughter

Future

• Increased vigilance for high risk fall activities
• More frequent need for reminders and task instructions
• Limitations in range of motion will lead to increased assistance with ADLs
• Will need continuous monitoring of vital signs by health professional
Accommodation & Adaptation

Heterogeneous Population
- One size doesn’t fit all
- Automated care systems will have to accommodate a wide variety of needs and abilities

Continuous Development
- Both disease and age progression are different in each individual
- Automated care systems will have to adapt to continuously match human development
  - Prevent obsolescence in weeks or months
  - Minimize burden of updates on users
Accommodation & Adaptation
The Stove’s been left on for 46.3 minutes!

I’ve fallen, and I can’t get up!

It’s time to take your medicine!

Linda’s calling.

You need more milk.

You need more milk.
The Stove’s been left on for 46.3 minutes!

I’ve fallen, and I can’t get up!

Lois, are you all right?

You need more milk.

Fridge - we’ll take care of the milk later.

Phone - disconnect Linda and call caregiver!! I’ll talk when you connect.

Reminders - be quiet for now.

Stove - turn yourself off.

It’s time to take your medicine!

Linda’s calling.
It’s time to take your medicine!

Caregiver

Lois is doing fine. I’ll check on her again this afternoon.

Lois ate breakfast in the kitchen at 8:20.

Lois is fine.

Lois is in the living room.

Mom’s having a good day!

10:00 A.M.

Time for medicine

Honeywell e-services Applications

Wende Dewing, Panel at Human Factors and Ergonomics Society Annual Meeting
11 October 2001
Adaptation Approach

Machine Learning
- To build a model of normal behavior based on sensor data

Task Tracking
- To determine whether a particular observation matches the model

Adaptive User Interactions
- To dynamically form system interactions appropriate to current circumstances

Diagram:
- Eating
  - Have Breakfast
    - Make Toast
      - Fridge
      - Drawer
      - Cupboard
      - Counter