



An Elder Profile

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



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



Collection of Smart Devices

The Stove's been left on for 46.3 minutes!

It's time to take your medicine!

Linda's calling.



I've fallen, and I can't get up!

You need more milk.





Integrated System



The Stove's been left on for 46.3 minutes!

ILSA Stove - turn yourself off.

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.

It's time to take your medicine!

Reminders - be quiet for now.

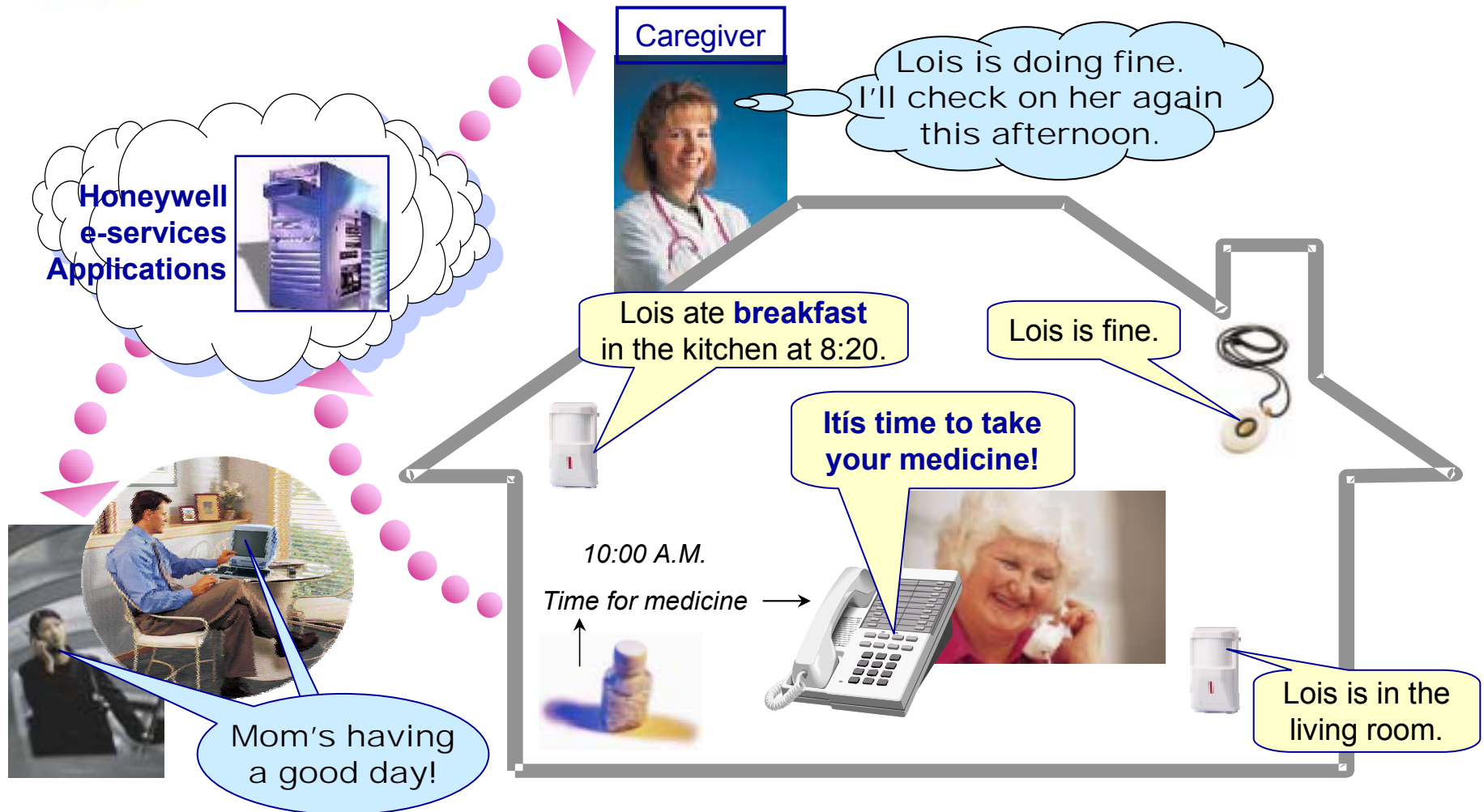
Linda's calling.

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





Independent LifeStyle Assistant



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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

