

Honeywell



Independent LifeStyle Assistant

Transforms the home into a supportive environment.



Panel Session:
High and Low Technology
for Safety, Security and Functioning:
What's Possible Now and into the Future

Leveraging Technology
for Independent Living:
Independent LifeStyle Assistant (ILSA)

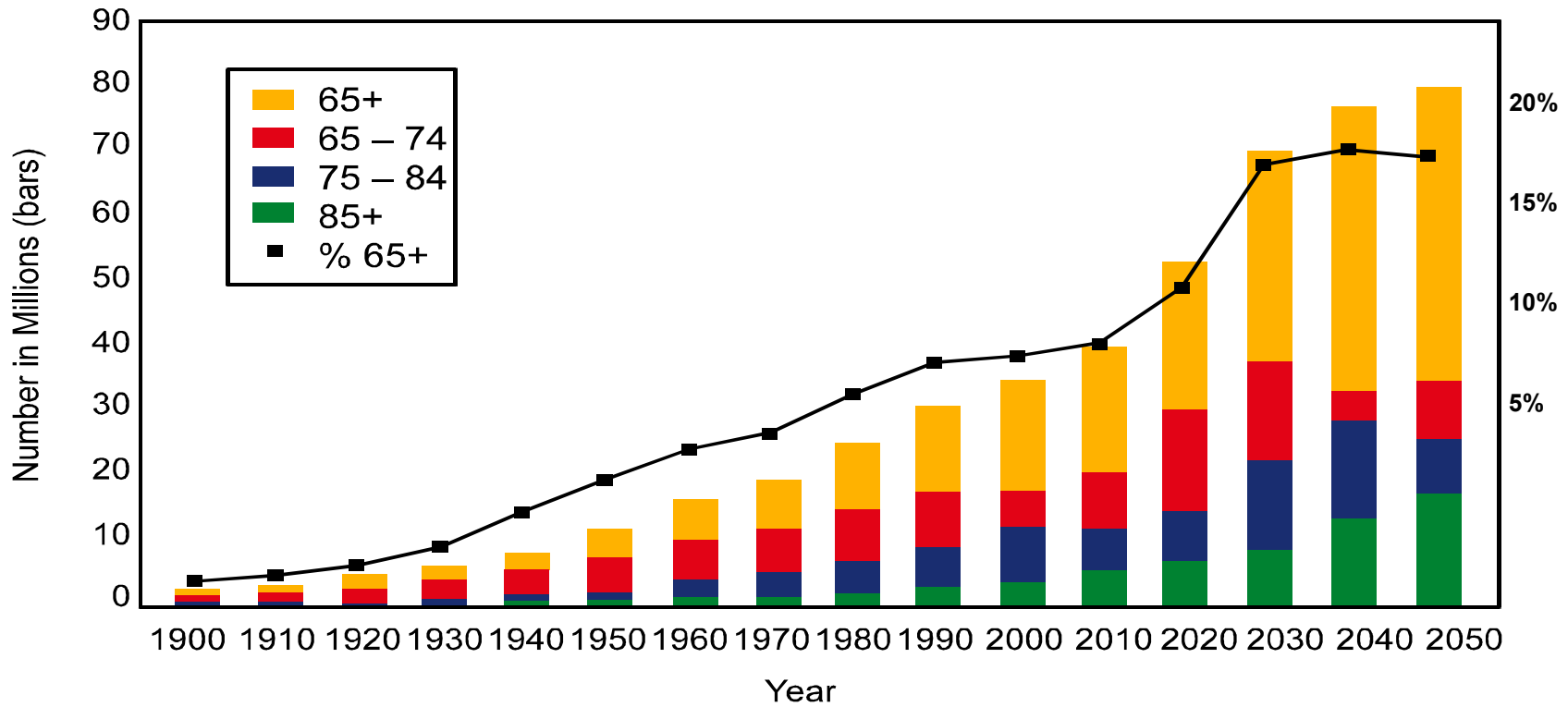
Rand Whillock and Rose Mae Richardson



Honeywell Laboratories



The Elder Boom



Growth of the 65+ Population by Age Group: 1900 to 2050





Independent Living Issues

Quality of life

- Desire to maintain independence
- Limitations
 - ◆ Arthritis (49%)
 - ◆ Hypertension (35%)
 - ◆ Heart Disease (31%)
 - ◆ Hearing (31%)
 - ◆ Activities of daily living
 - ◆ Falling
 - ◆ Fraud



Support systems (Caregivers)

- Institutions are costly
- Remote families
- Decreased availability (aging population)

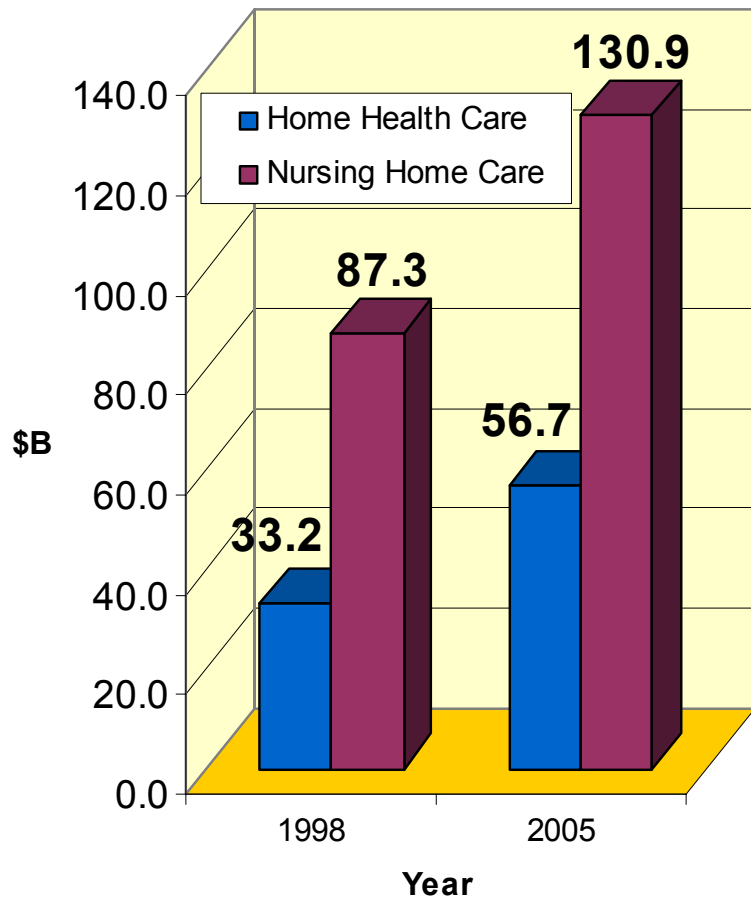
Technology developments

- Widespread, diverse products and services
- Lack overall, integrated infrastructure
- Resistance to new technology





U.S. Financial Statistics



ï Federal government pays 57% of nursing home and home health care costs (primarily Medicaid)

ï 43% of those over 65 will enter a nursing home

ï Average nursing home cost per patient is \$47K

ï 1.6 million home care patients in 1996 will increase to 2.0 million in 2005

ï 7 million Americans provide remote care to an elder (12 hours per week or more)





Elder motivation

Thursday
APRIL 8, 1999

Woman, 89, says relocation violates her rights

She sues her nephew and Hennepin County in an effort to remain in her home in Minneapolis rather than be moved to a nursing home in Wisconsin.

*By Warren Wolfe
Star Tribune Staff Writer*

Emotionally-laden issue
for both the elder and
the family



Honeywell Laboratories



ILSA in a Nutshell

Program Objective

Develop an intelligent home automation system with situation awareness and decision-making capability that can be easily integrated with a diverse set of sensors, medical devices and "smart" appliances to enable elderly and infirm users to live and function safely at home.

Programmatics:

- ï ILSA is a \$5.3M NIST ATP Program
 - ñ ATP programs are high risk research
 - ñ Honeywell 60%; NIST 40%
- ï November 2000 through April 2002

Activities:

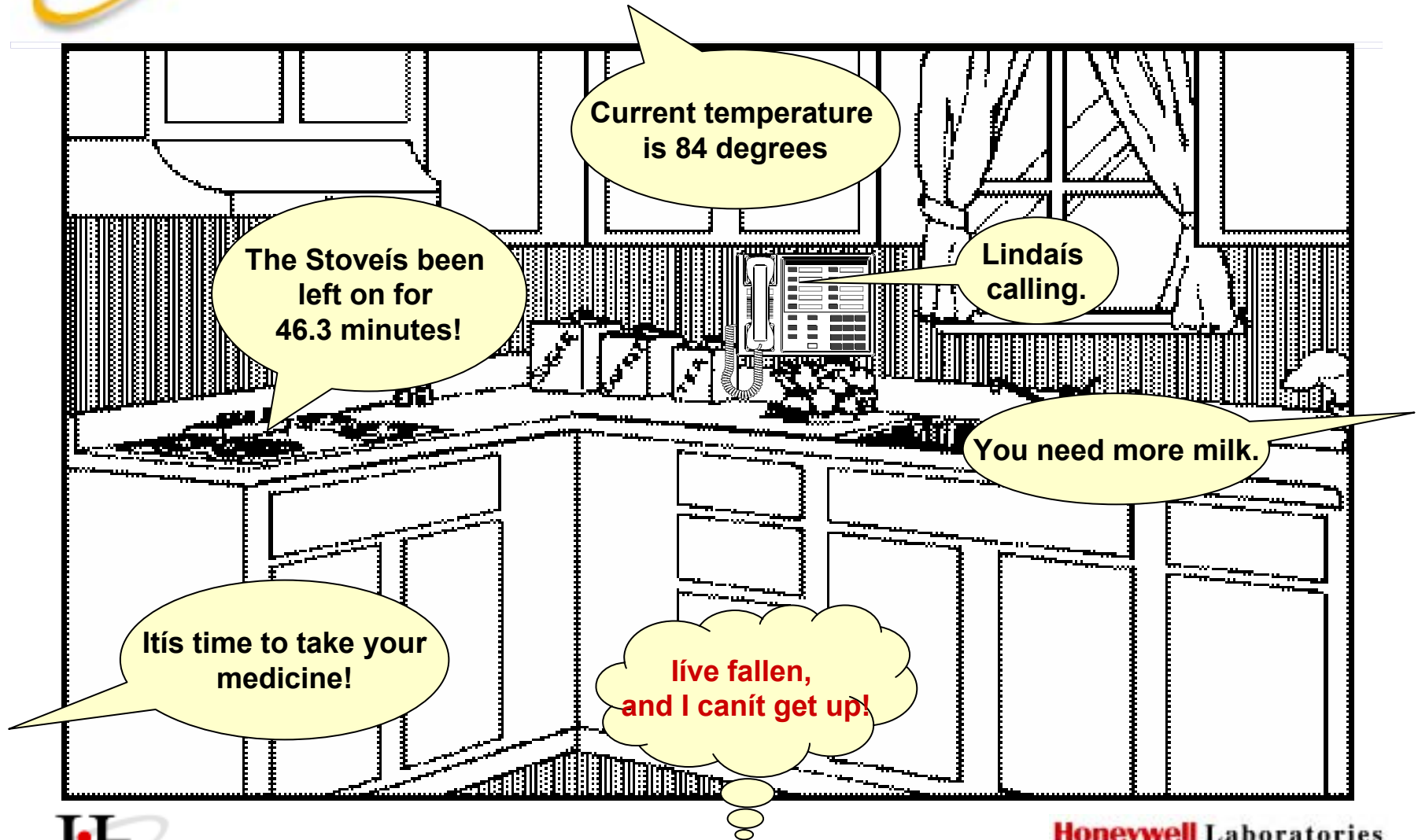
- ï Year 1: infrastructure and smart architecture development
- ï Year 2: Configuration and learning
- ï Year 3: Usability evaluation and tuning



Honeywell Laboratories



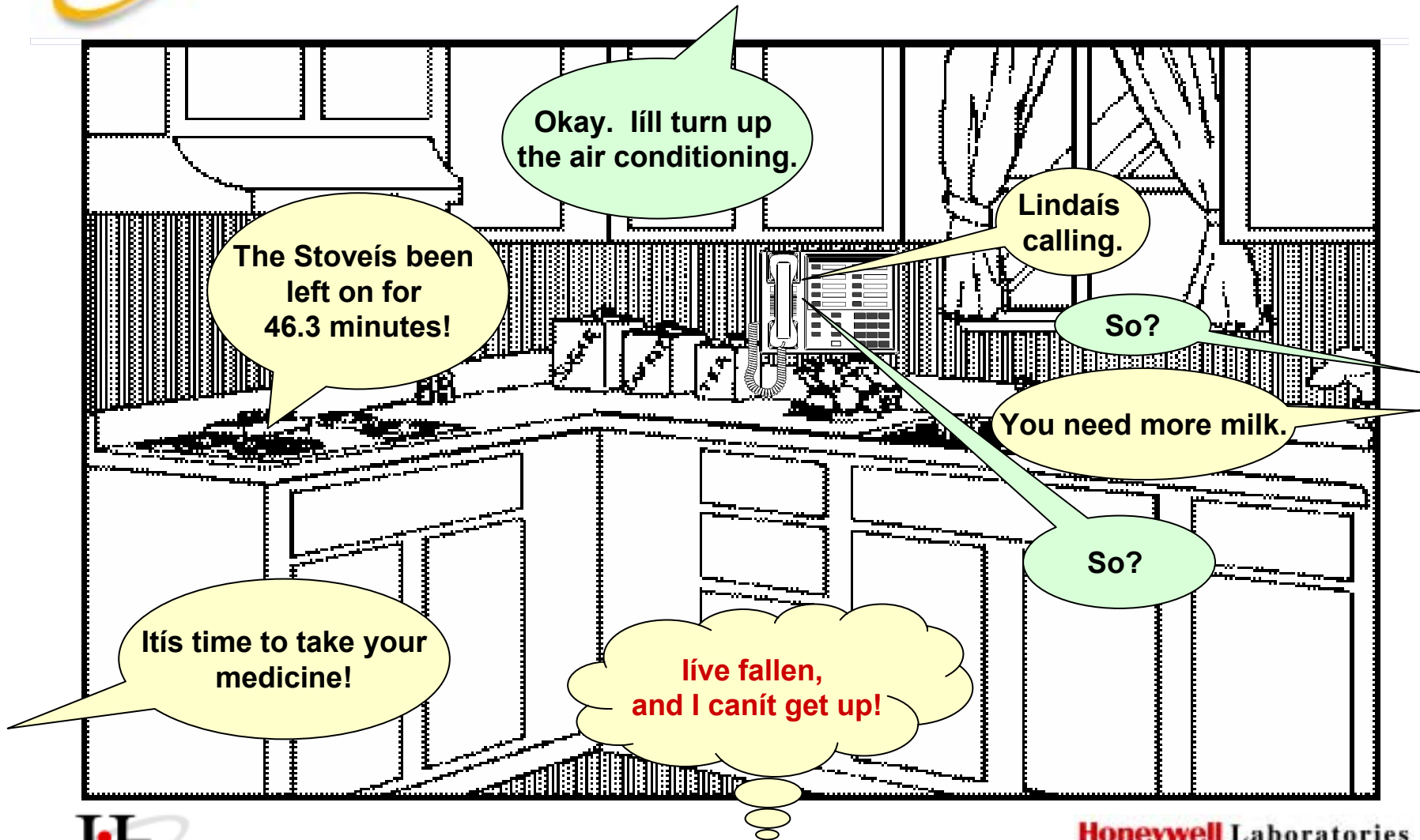
Smart Devices



Honeywell Laboratories



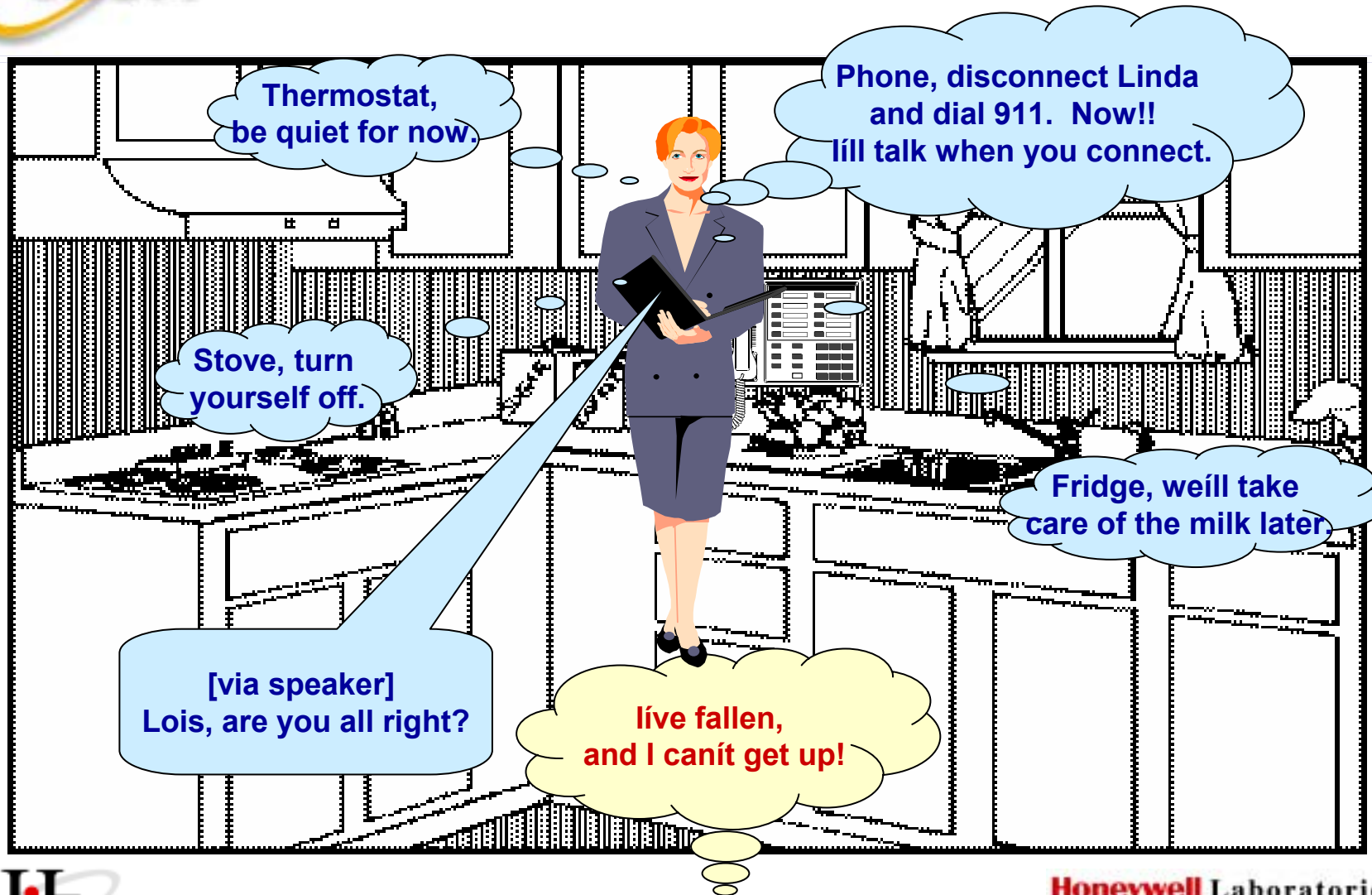
Networked Smart Devices



Honeywell Laboratories



ILSA Assistance



Honeywell Laboratories



ILSA Hurdles

User Acceptance



- i Will it do what I need?
- i Will it be hard to learn?
- i What if it doesn't work?
- i Will it violate my privacy?

- ï Design to meet perceived needs, including privacy
- ï Keep the interface simple and unobtrusive
- ï Build trust through a robust, reliable system





ILSA Hurdles

Multiple users with differing needs and goals

- i Elder client
- i Adult children/family members
- i Caregivers





Configuration Management

Initial installation

- i Each client is unique and has specific needs
- i Each home is different

Ongoing configuration

- i Configuration parameters can be expected to change over time both for the client and the home
 - ñ user entered changes
 - ñ dynamic adaptations based on living patterns





Key Technology Nuggets

Human Centered Design

- i Knowledge acquisition, surveys, ride-alongs

Integration Layer

- i Common open communication infrastructure

Reasoning Layer

- i Can make higher level inferences





More Key Technology Nuggets

Machine Learning / Adaptation

- i System can adapt and learn over time

Configuration Management Tools

- i Help install and maintain system

Data Encryption

- i Ensure privacy and only authorized access





The Promise...

Technical advances offer the promise of an improved **quality of life** for elders desiring to **live independently** in their own homes, increased **peace of mind** for their families and friends, and potential **cost savings** for caregiver agencies.

