

Honeywell



Independent LifeStyle Assistant

Transforms the home into a supportive environment.



Independent LifeStyle Assistant (ILSA)

A NIST ATP Program

Dr. Christopher A. Miller
SMARt Information Flow Technologies



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Chris Miller, International Association of Gerontology, 1-6 July 2001
Honeywell and ILSA 5-21-01



Independent LifeStyle Assistant

An advanced technology **research** program

- i Sponsored by National Institute for Standards and Technologyñ Advanced Technology Program
- i 2.5 years
- i 5 million dollars (60% Honeywell/40% NIST)
- i Honeywell, U of M, Evercare, SIFT

Objectives

- i enable elderly to live and function safely at home
- i provide peace-of-mind to caregivers and family
- i cost savings for Medicare/Medicaid and industry
- i market growth for in-home product producers



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ILSA Motivators

Elder Preferences

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 Wells
Star Tribune Staff Writer

30% of elders prefer to remain in home until death

- i *Health Care Financing Administration*

Decreasing number of caregivers

- i families are more distributed
- i families are smaller

Nursing home capacity limited

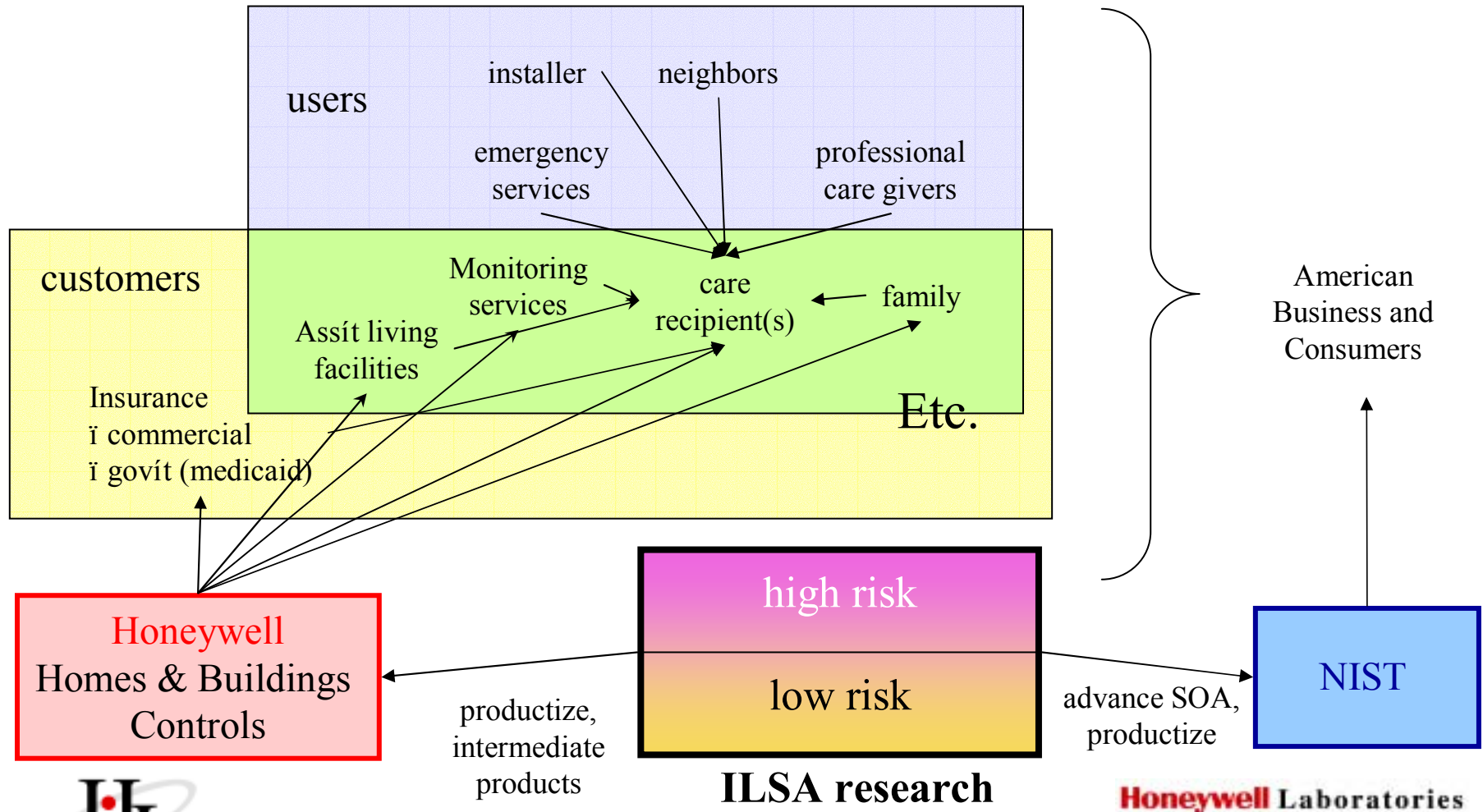
- i 43% of those over 65 enter a nursing home



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ILSA's "Customers"





ILSA Vision

What will ILSA do

- ï ì listenî to the home and ì talkî to devices
- ï understand what activities are going on
- ï look for unusual events
- ï interact with elder
 - ñ alert
 - ñ query
 - ñ instruct
 - ñ guide

What will ILSA look like

- ï invisible network of sensors and devices
- ï no central computer workstation needed
- ï use existing devices to communicate with elders
- ï remote access for caregivers

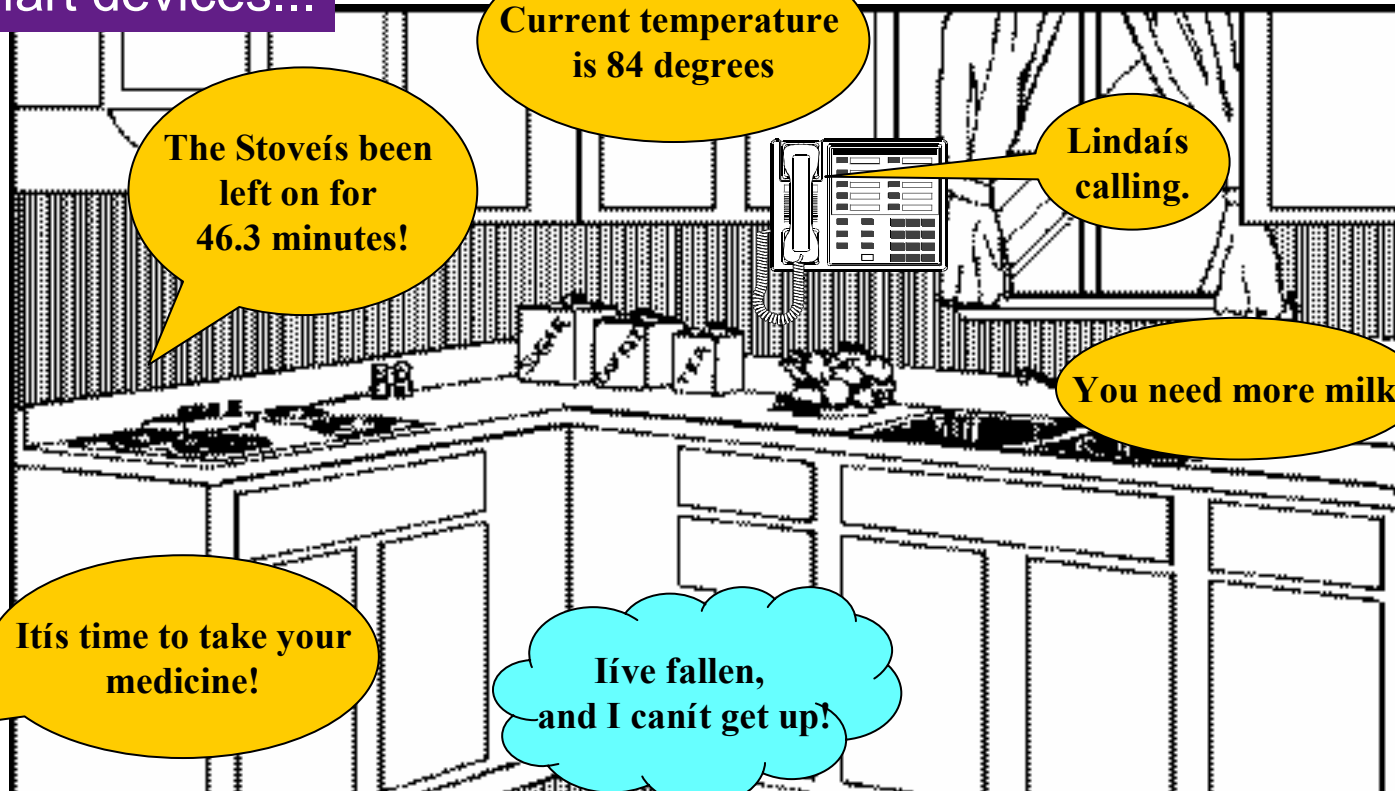




ILSA Vision

Current State: Smart Devices

Smart devices...



...that don't talk to each other

Ö and can behave inappropriately



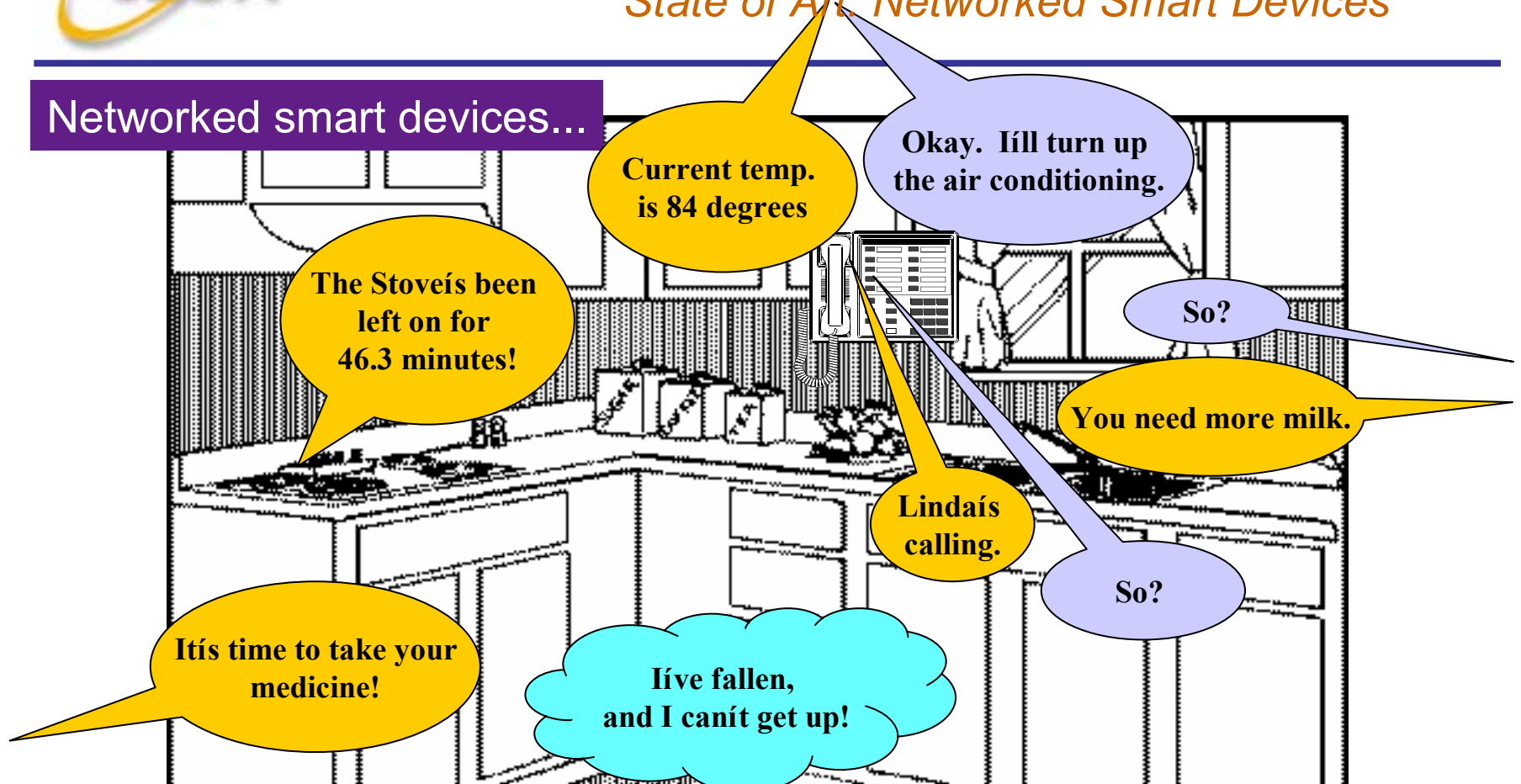
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ILSA Vision

State of Art: Networked Smart Devices

Networked smart devices...



...that don't understand each other

Ö and can behave inappropriately

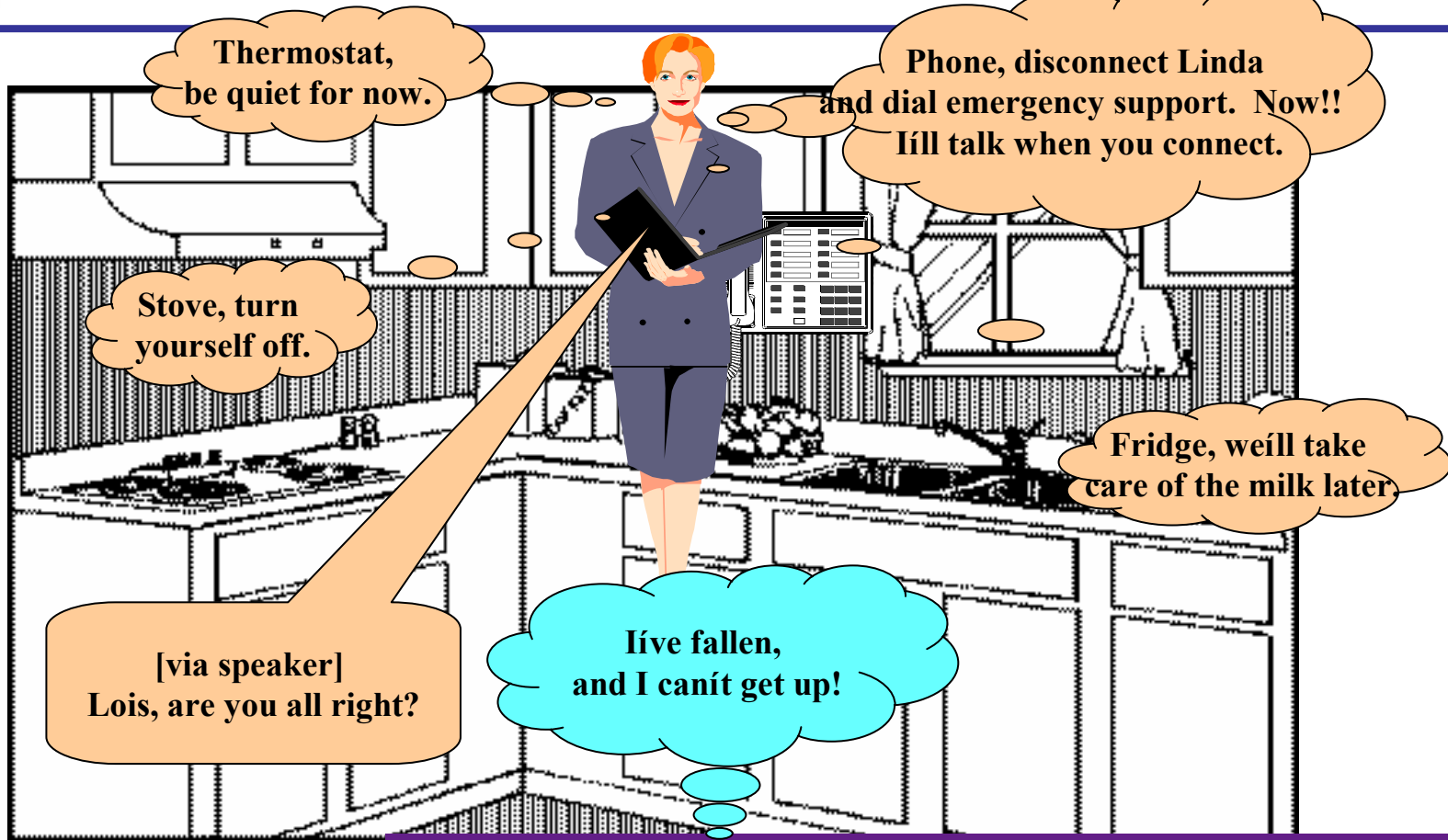


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ILSA Vision

Intelligent Integration and Assistance



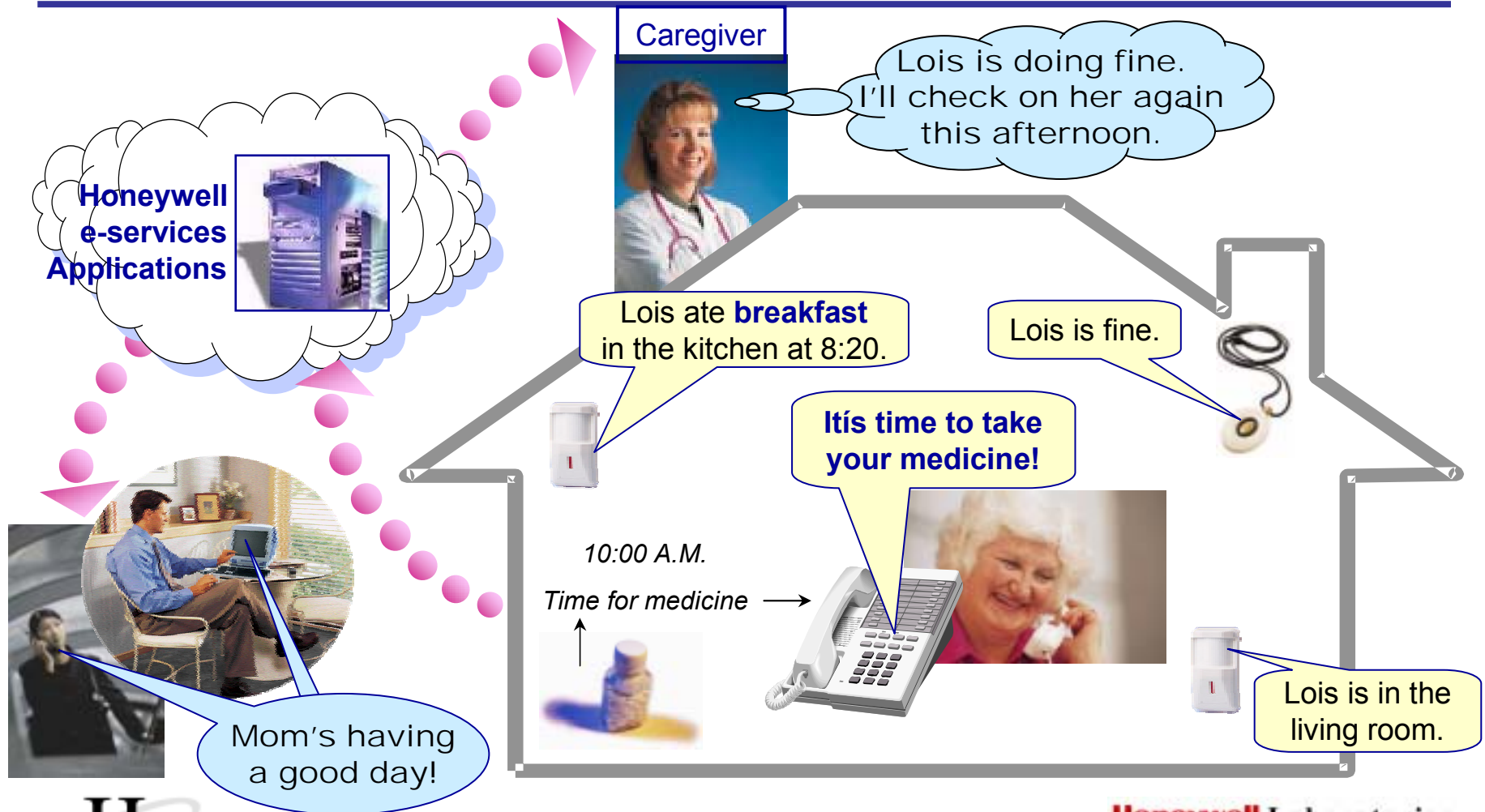
Ö for appropriate, coordinated behavior in context



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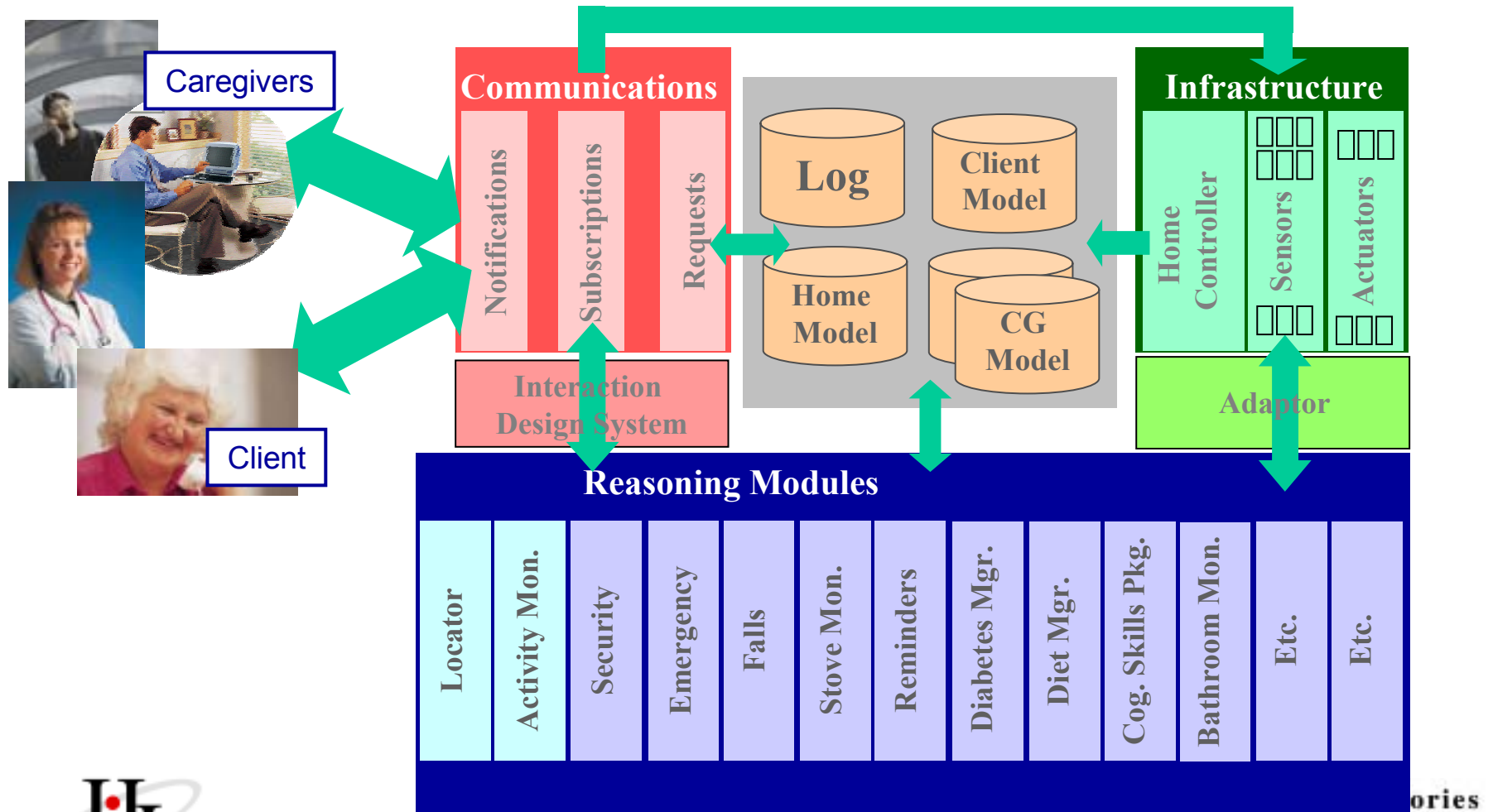
Integrated Communicating System



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Tentative Architecture





ILSA User Studies

Identified precipitating factors for elder institutionalization

- i literature reviews
- i interviews with caregivers
- i discussions with geriatric and gerontology specialists

Identified assistance needs

- i what activities do elders and their caregivers need assistance with

Identified technology opportunities

- i how might ILSA assist with these activities





Assistance Needs

Level 1

Medication Management
Eating (incl. Food Prep.
and Diet Mgmt.)
Mobility (incl. Falls)
Cognitive Disorders
Safety (incl. Fire &
Burglary)
Caregiver Burnout
Isolation
Transportation
Money Management

Level 2 & 3

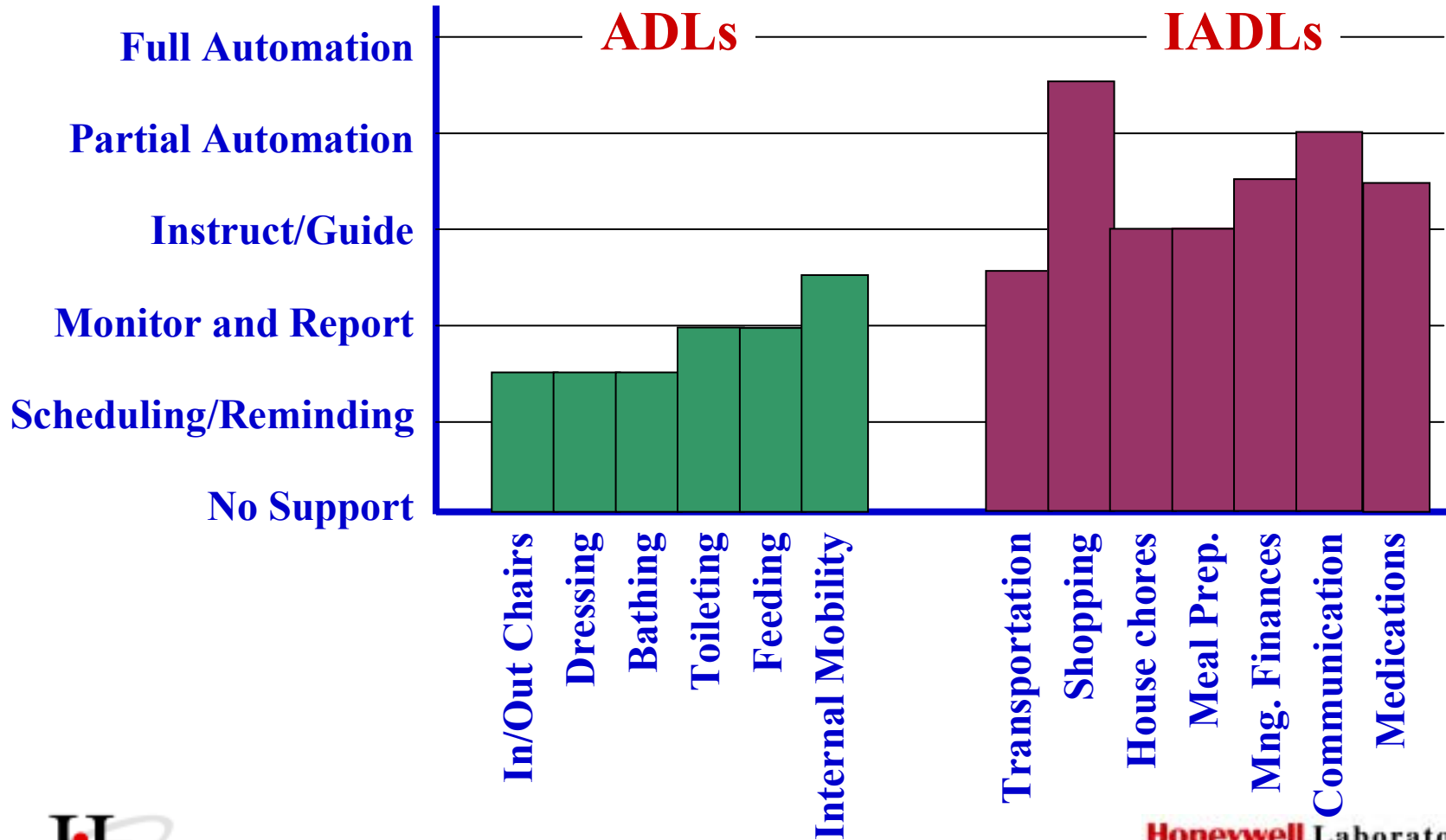
Incontinence
Housework and Laundry
Shopping
Remote Control Usage
Pressure Sore Prevention
Alcohol Abuse
Wandering
Hallucinations and
Delusions



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Assistance Opportunities



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Smart Homes: 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.



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Smart Homes: The Challenge?

- ï Vastly diverse needs, capabilities, contexts
- ï Good Cost/Benefit Ratio
- ï Population can't always be relied on to correct technology mistakes
- ï Enhance independence and Quality of Life

Versatility

Affordability

Reliability

Usefulness



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Home Comfort Solutions

Electro-Mechanical Thermostats

- i The Round^Æ

Electronic Thermostats

- i Non-programmable
- i Programmable
 - ñ Good
 - ñ Better
 - ñ Best

Zone Control Solutions

- i Trol-A-Temp^ô Systems
- i Network Zoning ñ featuring low-cost communications
- i Telephone Access Module



Outdoor Temp
& Frost Control

Temperature



Humidity

Ventilation

IAQ



The Most Comprehensive Comfort Solution Portfolio



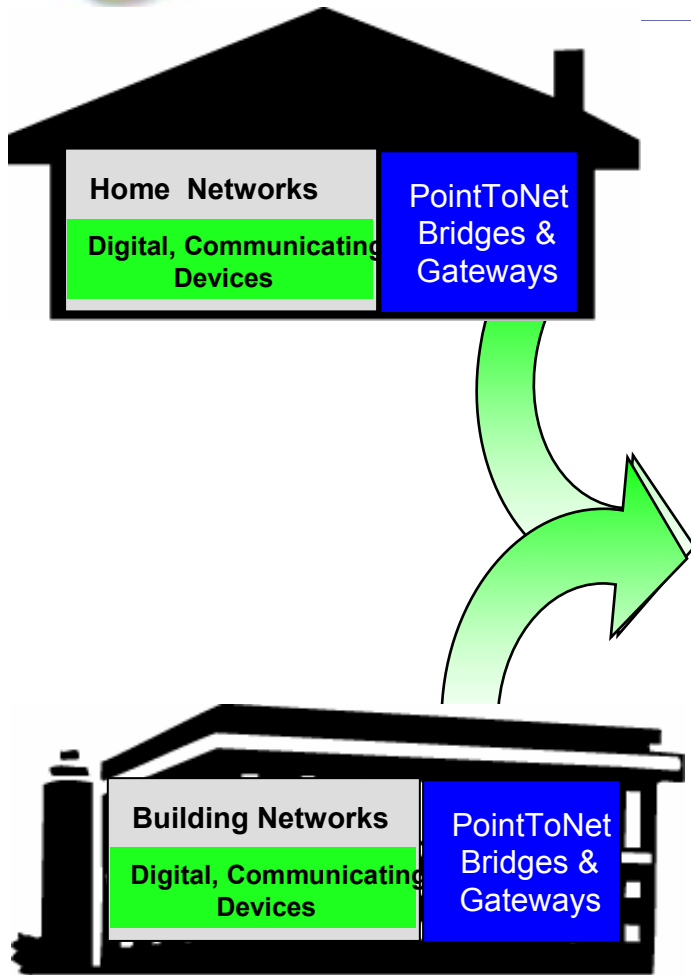
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Home Systems Solutions

Service Provider Partners

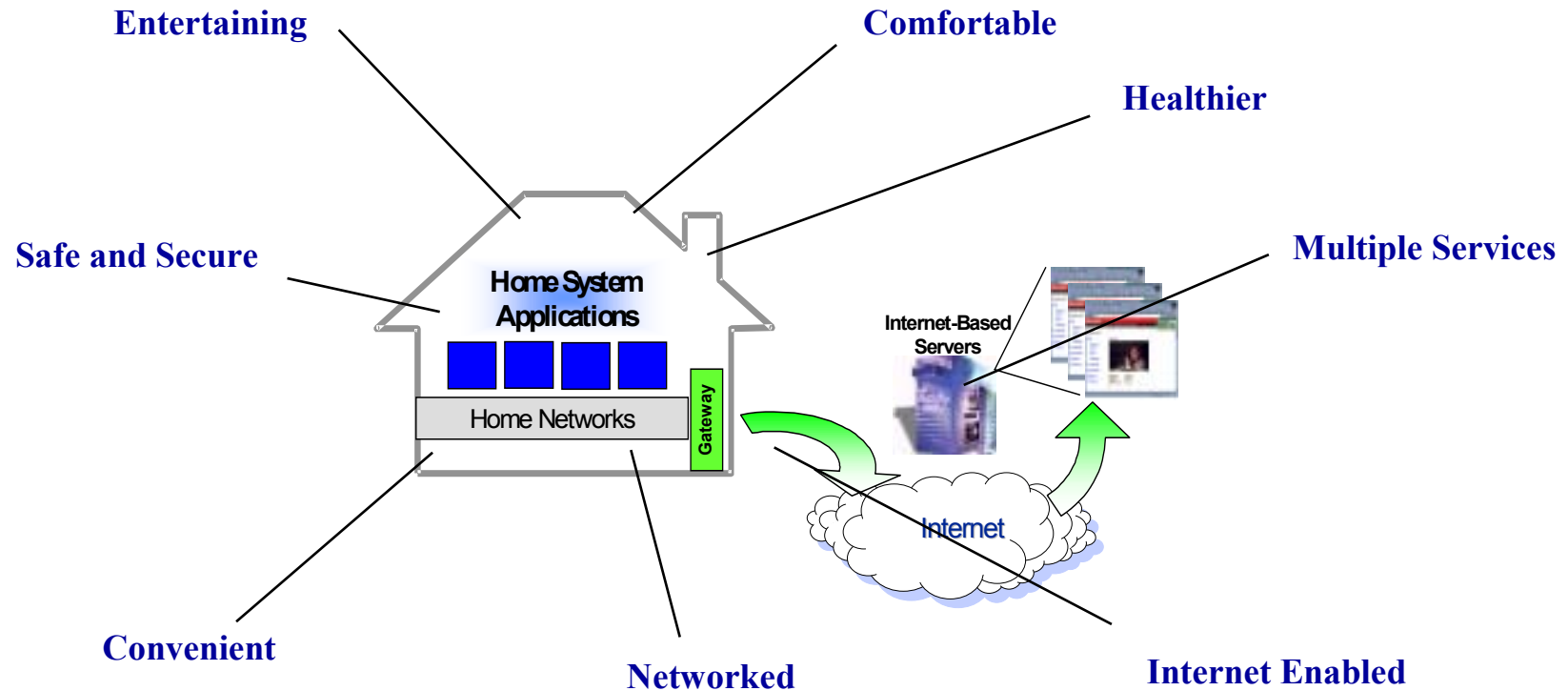
Energy Service Providers
HVAC Servicing Co.
Appliance Servicing Co.
Health Care Providers



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A Look at the Home of the Future



Integrated Connected Solutions



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ILSA User Studies

Elders
Informal caregivers
Formal caregivers
Formal care institutions
Insurance companies
Government agencies
NIST
Honeywell
et al



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