



SUSTAINABLE RESIDENTIAL ENVIRONMENT MANAGEMENT

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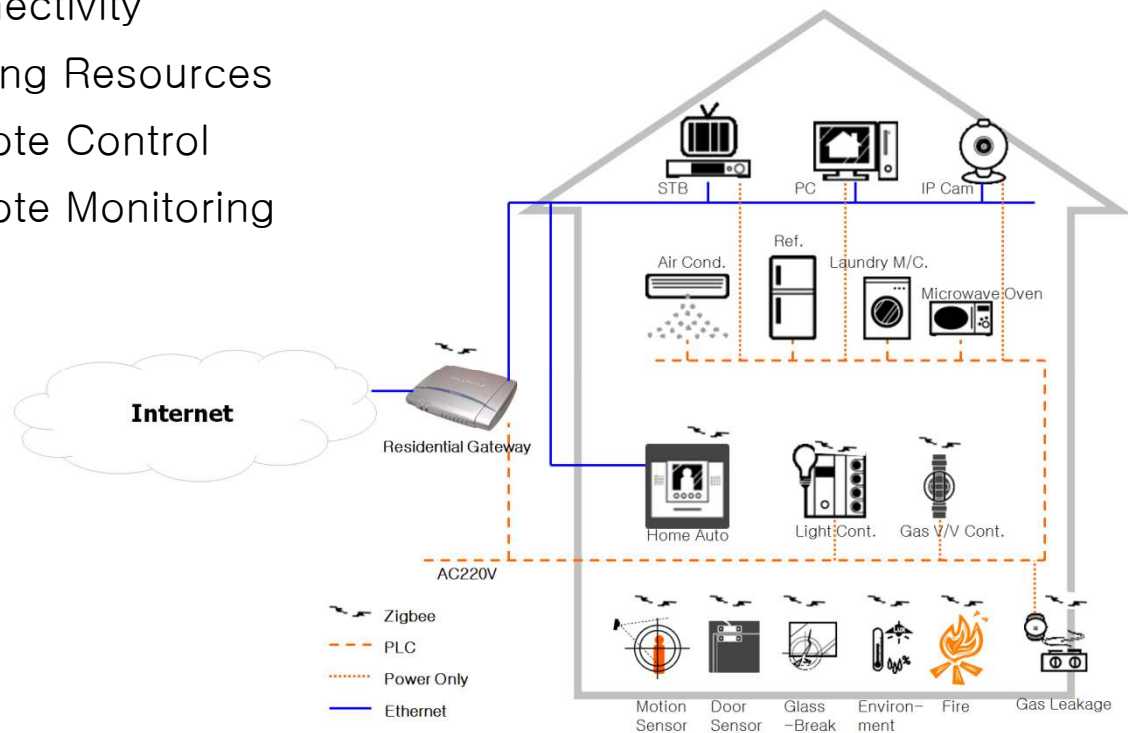
CONTENTS

- Home Network, As Is
- Home Network, To Be
- Proposal

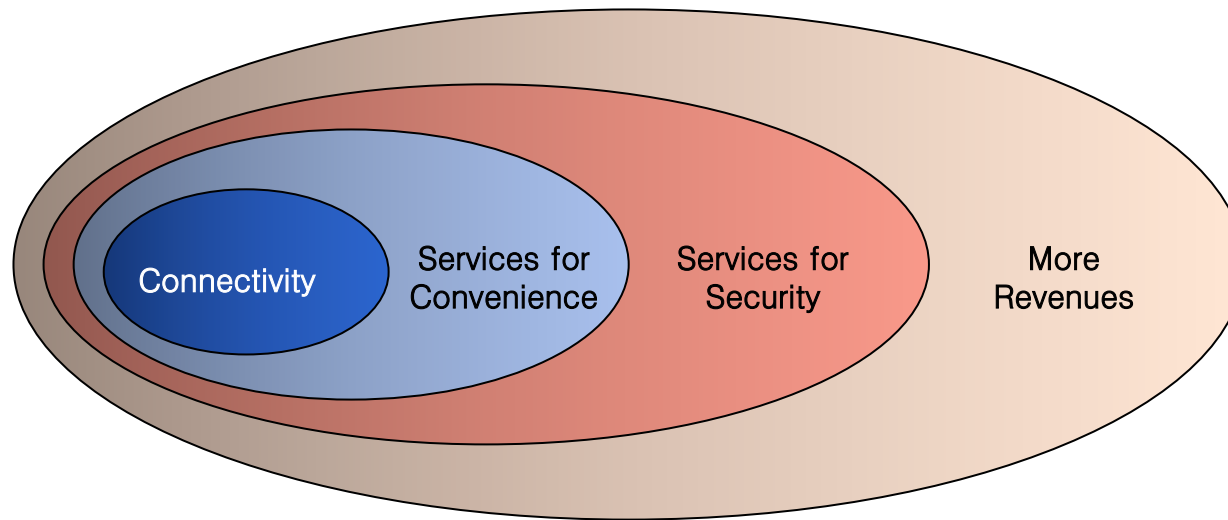


HOME NETWORK

- Sharing Internet
- Connectivity
- Sharing Resources
- Remote Control
- Remote Monitoring
- etc.



HOME NETWORK INTEREST SHIFT




- Internet Sharing
- Resource Sharing
- Connectivity

- Remote Control
- Sensors

- Remote Monitoring
- Alert to Mobile

- IPTV
- Pet Care
- Health Care


Here we are!

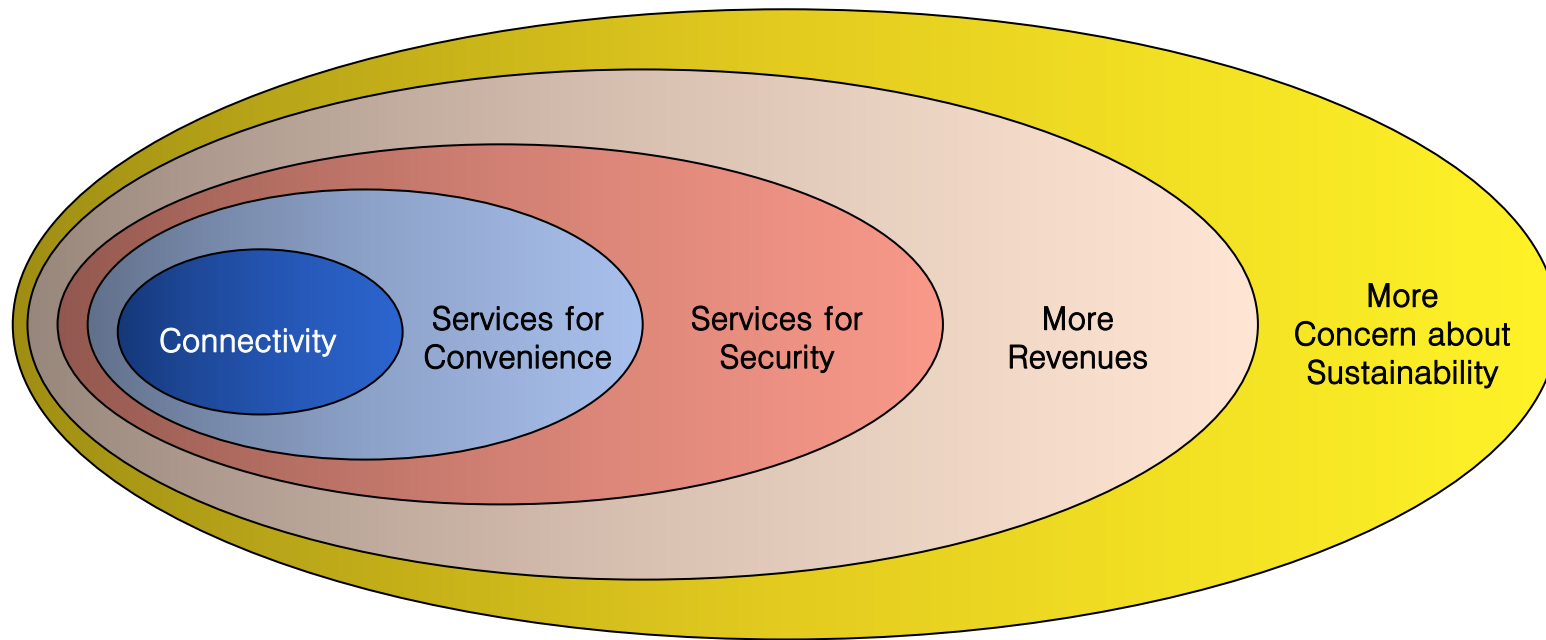


DOES HOME NETWORK MAKE ENOUGH VALUES?

- In Korea,
 - Most Home Networks have been Deployed for New (or Remodeled) Houses
 - ➔ 1. Technology Barrier Exists in Installation
 - 2. Hard to obtain enough ROI
 - HN mostly focused on Internet Sharing, Security & Remote Management
 - ➔ They have been still seeking for Killer Applications.
- Research has been mostly focused on
 - Adopting New Connectivity: HPNA, IEE1394, Zigbee, Bluetooth, UWB, PLC, etc.
 - ➔ Is it possible to be free from evolution of network technology?
 - Home Network Management Environment
 - ➔ Middleware, QoS, Service Deployment, etc.



HOME NETWORK INTEREST SHIFT (CONT.)



- Internet Sharing
- Resource Sharing
- Connectivity

- Remote Control
- Sensors

- Remote Monitoring
- Alert to Mobile

- IPTV
- Pet Care
- Health Care

- Energy-Aware
- CO2-Aware
- Environment-Aware

↑
New Issues



EXAMPLE: ENERGY IN HOME NETWORK

- Prerequisites for a Home Network
 - Anytime, Anywhere, Any device, etc.
 - ➔ Requires Always on Connectivity
- Additional Energy Consumption due to Home Network
 - Additional 50~100W for a house
 - ➔ Additional 500MW~1,000MW for 10Million Houses in the Future
(in Korea only)

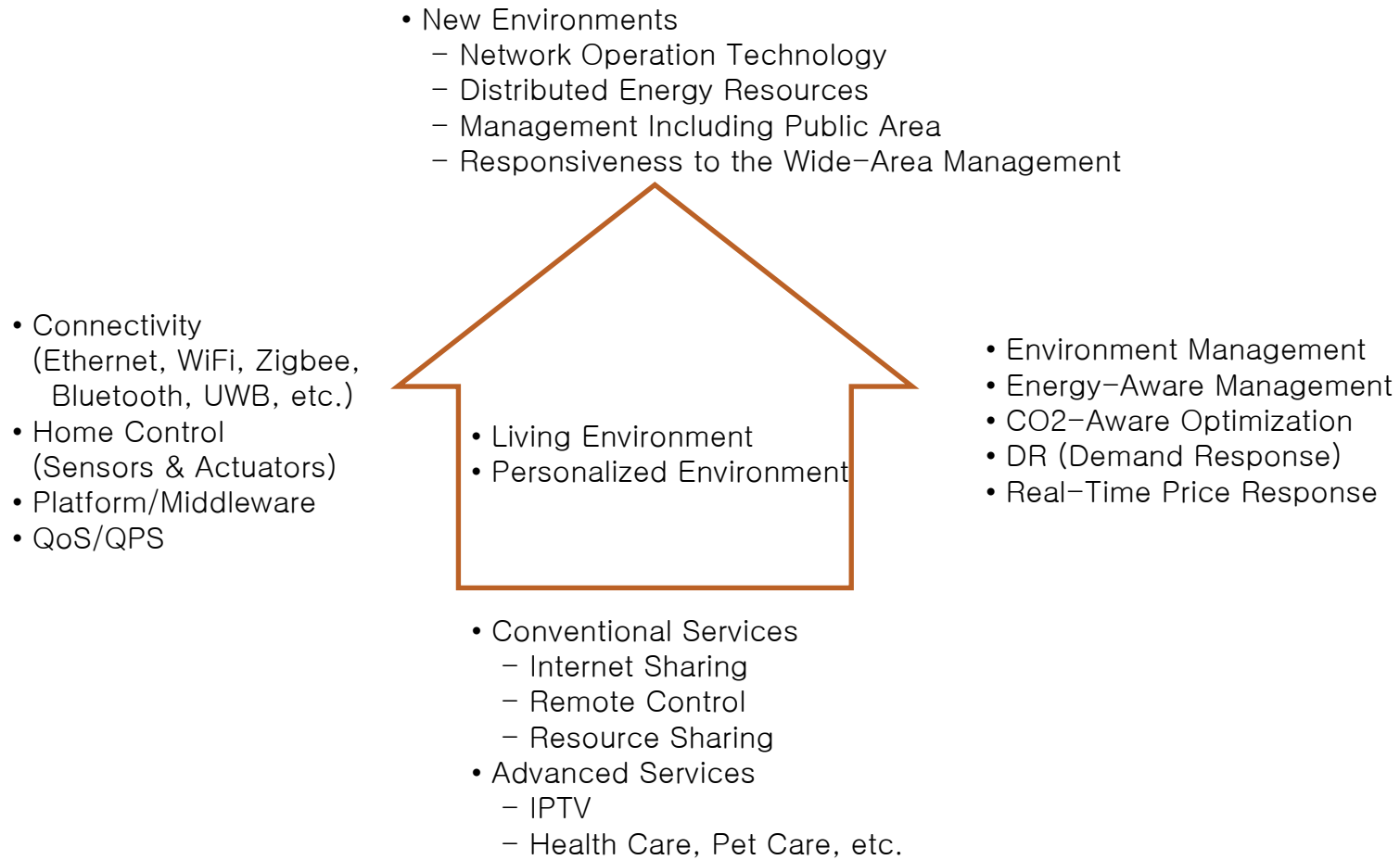


EXAMPLE: ENERGY IN HOME NETWORK

- Minimize (Electric) Energy used by Home Network
 - Trade-off between Always-On and Energy Saving
 - Reducing Power Consumptions without harming Service Quality (Function)
- Minimize Energy Usage with Home Network
 - Minimize overall Energy Consumption without loosing Life Quality
 - Example
 - Various Controls are available to achieve a Goal :
 - ex) Humidity Control
 - Dehydrate with an Air Conditioner
 - Reduce relative humidity with Heating
 - Ventilation

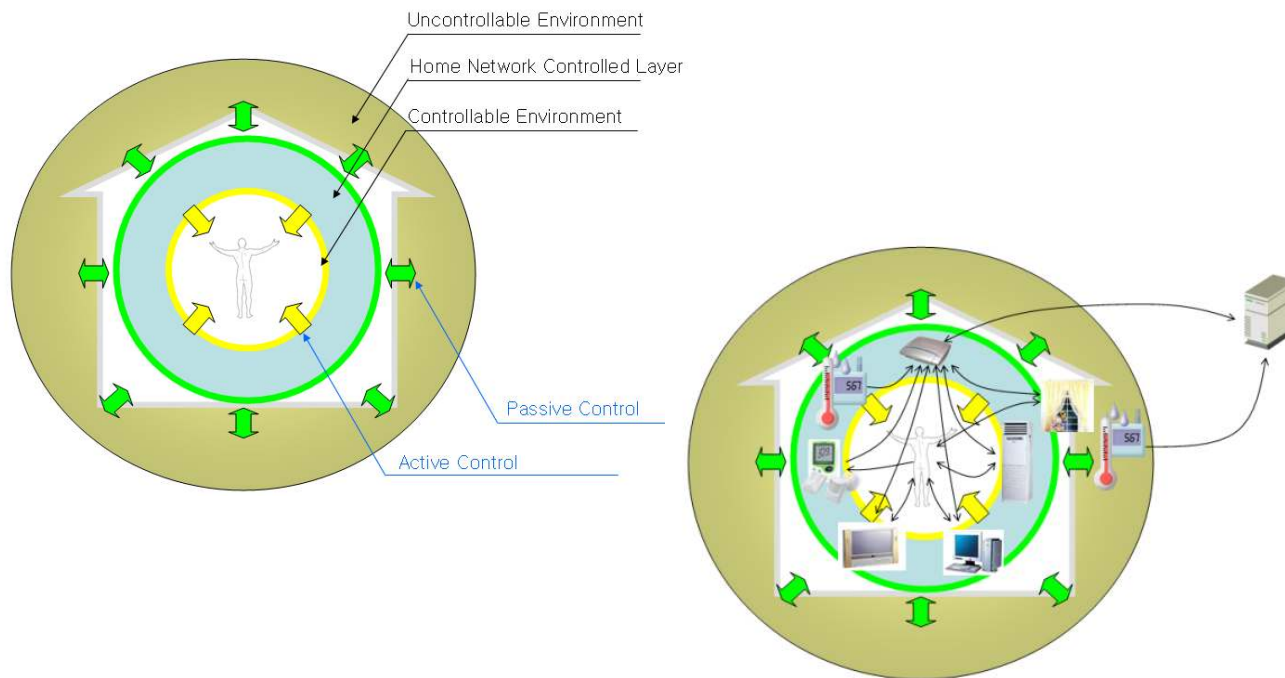


MORE COMPLEX RESIDENTIAL ENVIRONMENT



RESIDENTIAL ENVIRONMENT MANAGEMENT

- Many environment variables and controls have complicated relations.
- Some variables cannot be controlled directly.
- There are multi-objectives in environment management.
- There can be more than one way to achieve a control objective.



COMPARISON WITH IBS

- No Professional Operators
 - Limitations in response & control
- Not Enough Sensors & Actuators
 - Less information & control
- Difficult to obtain enough ROI
 - No intensive effort is



Small but Many



PROPOSAL

- Design an analytical relation model to describe new residential environment
- Develop a virtual platform for real-time estimation
- Develop algorithms & technologies for more sustainable residential environment management

