USEM

Ubiquitous Smart Energy Management

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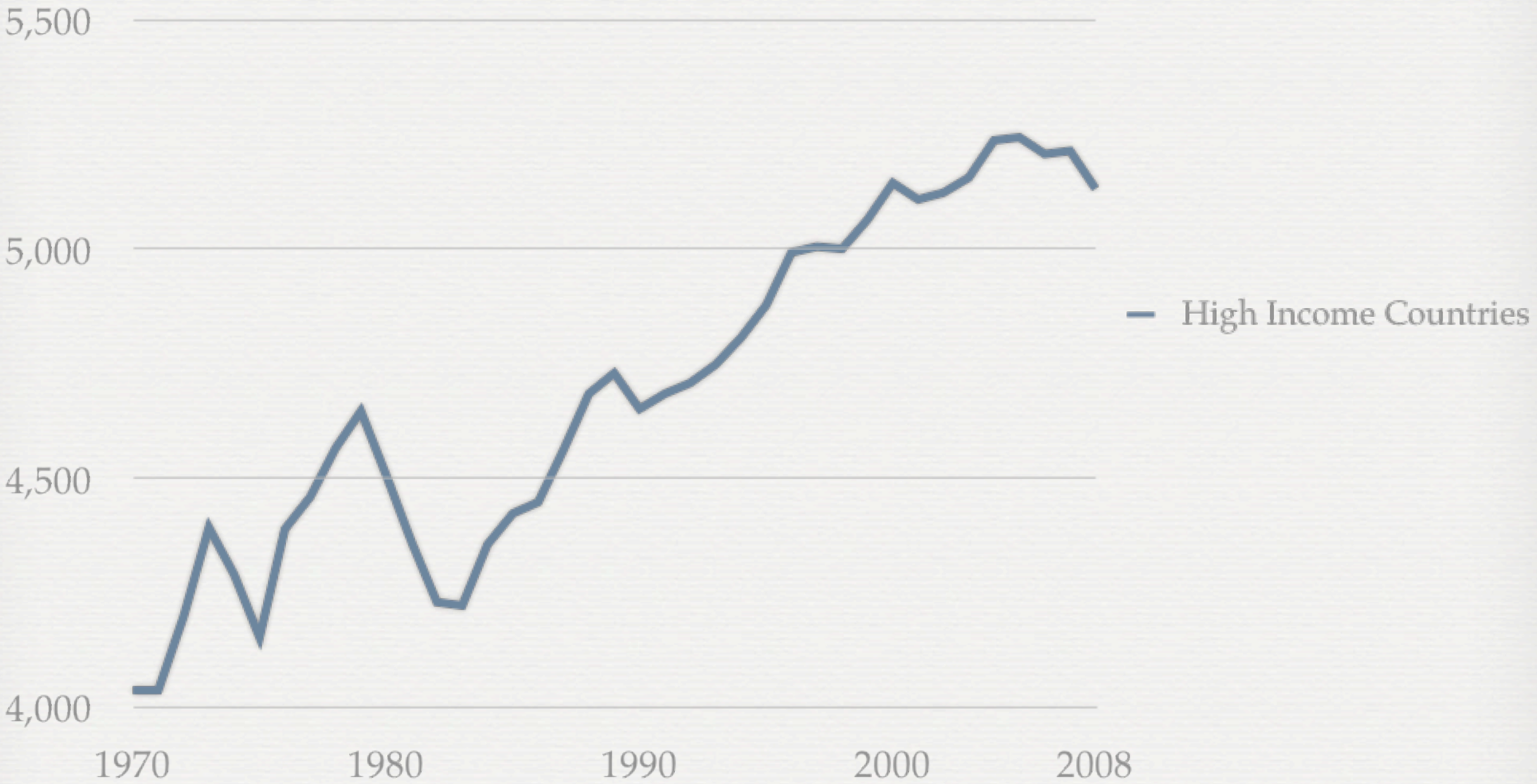
25 November 2011, IT4SE Workshop, Augsburg, Germany

ENERGY CONSUMPTION PER CAPITA



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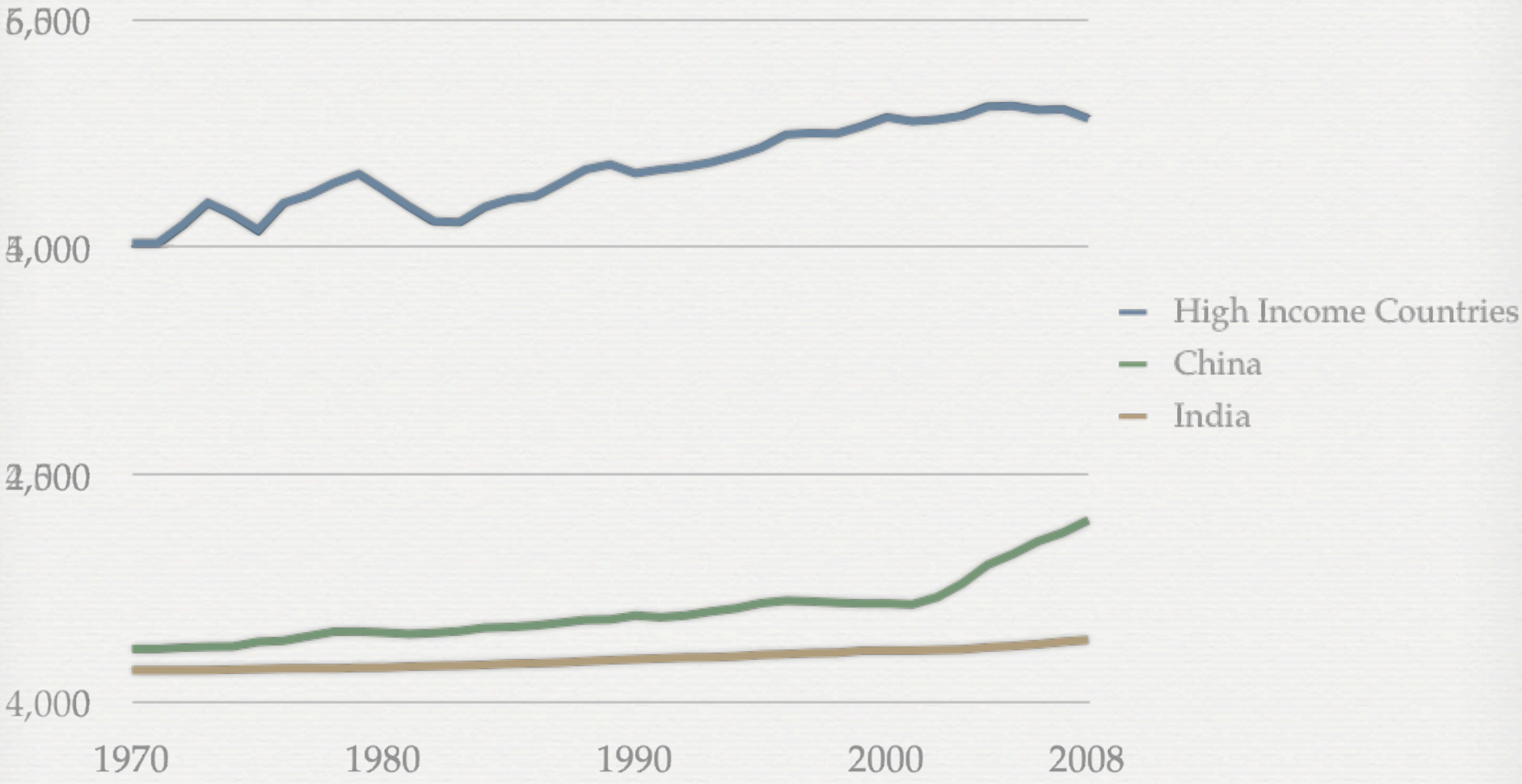

CHALLENGES

“Use Energy More Efficiently”

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"Use Energy More Efficiently"

- Use energy when it is available
- Use energy when it is cheap
- Avoid energy wasting
- Avoid usage peaks

HOW CAN USEM HELP?

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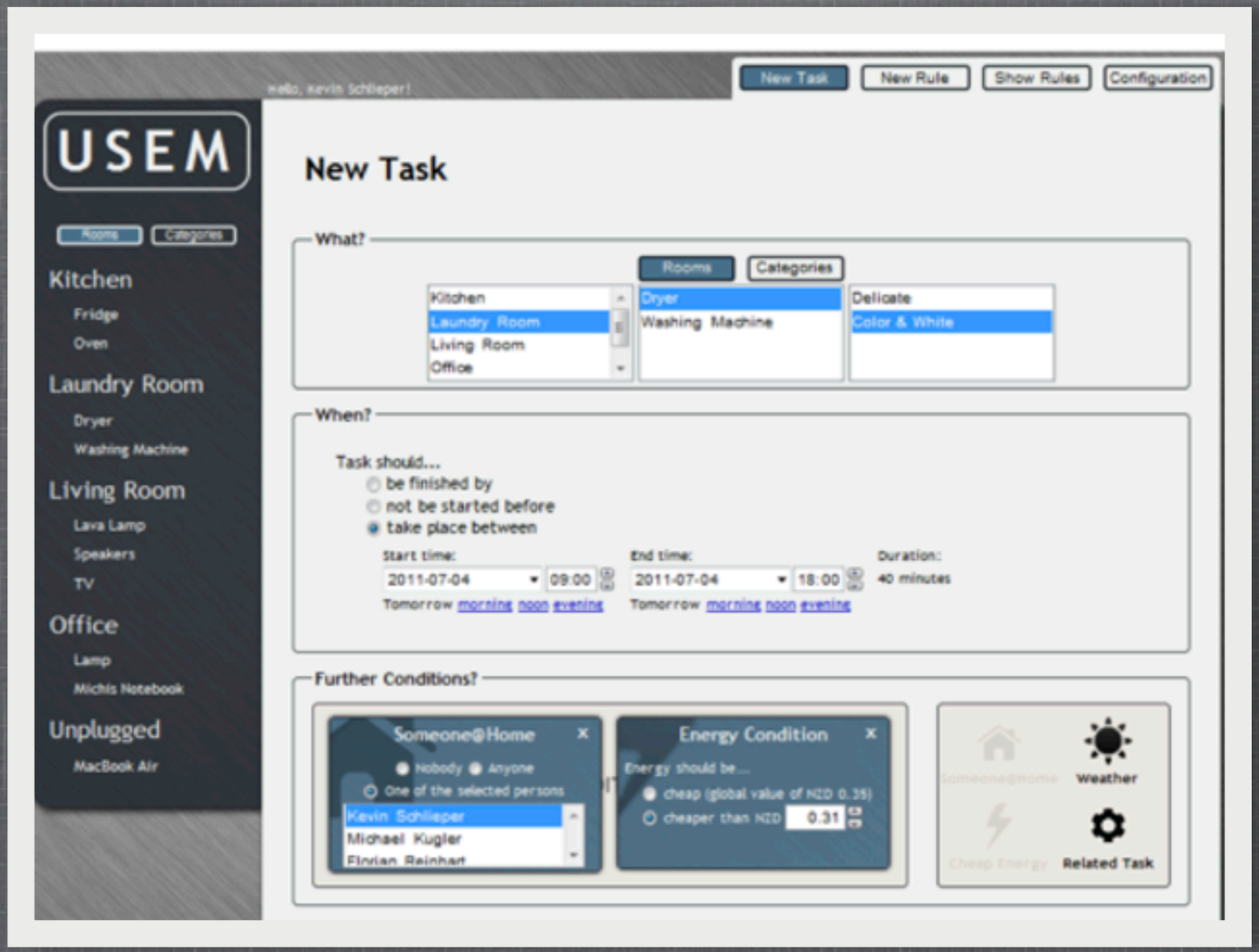
"USEM helps to smartly manage your energy usage and to analyze your energy consumption."

OUR SOLUTION

- Intelligent scheduling of energy consuming tasks
- Advanced energy monitoring
- Combination of already existing systems
- Modular software architecture

USEM WEB INTERFACE

“Designing a Control Interface for a Ubiquitous Smart Energy Environment”



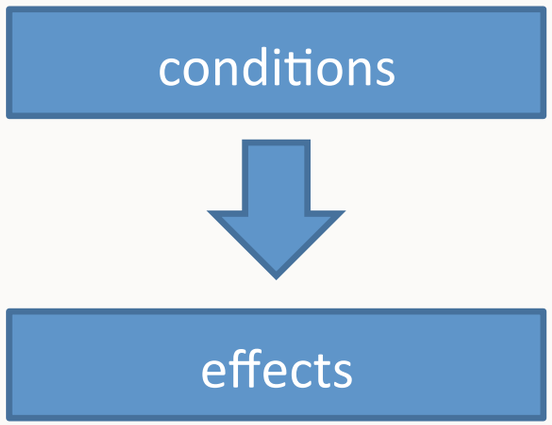
FEATURES

- Configure USEM settings
- Browse devices
- View planned schedule
- Create tasks and rules

RULES VS. TASKS

Rules

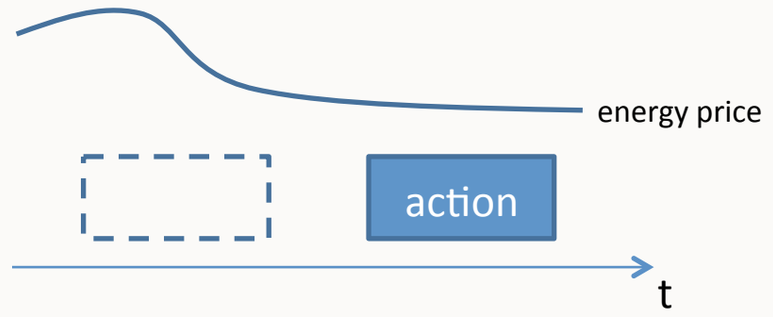
“Switch off printer when all computers are off”



- Conditions always checked in background
- No time conditions

Tasks

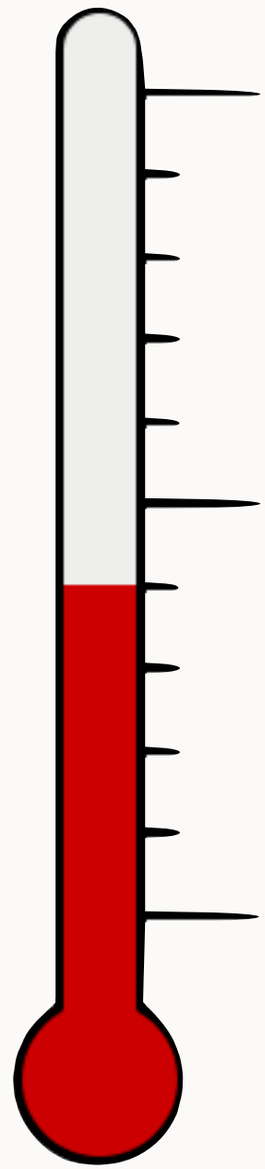
“Do the laundry until tomorrow 6pm, but only if someone is at home”



- Schedule device start
- Time boundaries
- Environmental conditions

CONTINUOUSLY RUNNING DEVICES

- No tasks or rules
- Standard level
- Special levels for timespans and/or conditions
- Examples: water heater, air conditioning, etc.



USEM IPHONE APP

"Designing a Mobile Application for a Ubiquitous Smart Energy Environment"

IDEA

- USEM **supports** the user in saving energy
- USEM needs the user to...
  - configure device/socket connections,
  - create tasks,
  - and make decisions.

FEATURES

- Installing new devices
- Controlling of devices remotely
- Direct device interaction
- Task creation
- Notifications and notification handling

USEM IPAD APP

"Designing a Tablet Interface for Effective Energy Usage Feedback Using Persuasive Technologies"

IDEA

- USEM automatically uses energy efficiently
- But: People can still waste energy (often without knowing it)
- How can we change people's behavior?

FEATURES

- Overall status of the system:
  - Active devices
    - Current power usage
- Historical power usage
- Saving goal
- Saving advices

PERSUASION TECHNIQUES

- Reduction
- Tailoring
- Suggestion
- Self-Monitoring
- Surveillance

USER STUDY

STUDY PARTICIPANTS

- 13 participants
- 12 male, 1 female
- 11 students, 2 researchers
- 7 participants had multi-touch experience
- 4 participants owned a smartphone, 3 a tablet device
- All participants were using a PC daily

FINDINGS

- Willingness to adapt daily routine to save energy
- USEM is helpful in regard to efficient energy usage
- Notifications are good, but only on important events
- Appliances with integrated USEM interface preferred
- Participants liked visualisations on iPad