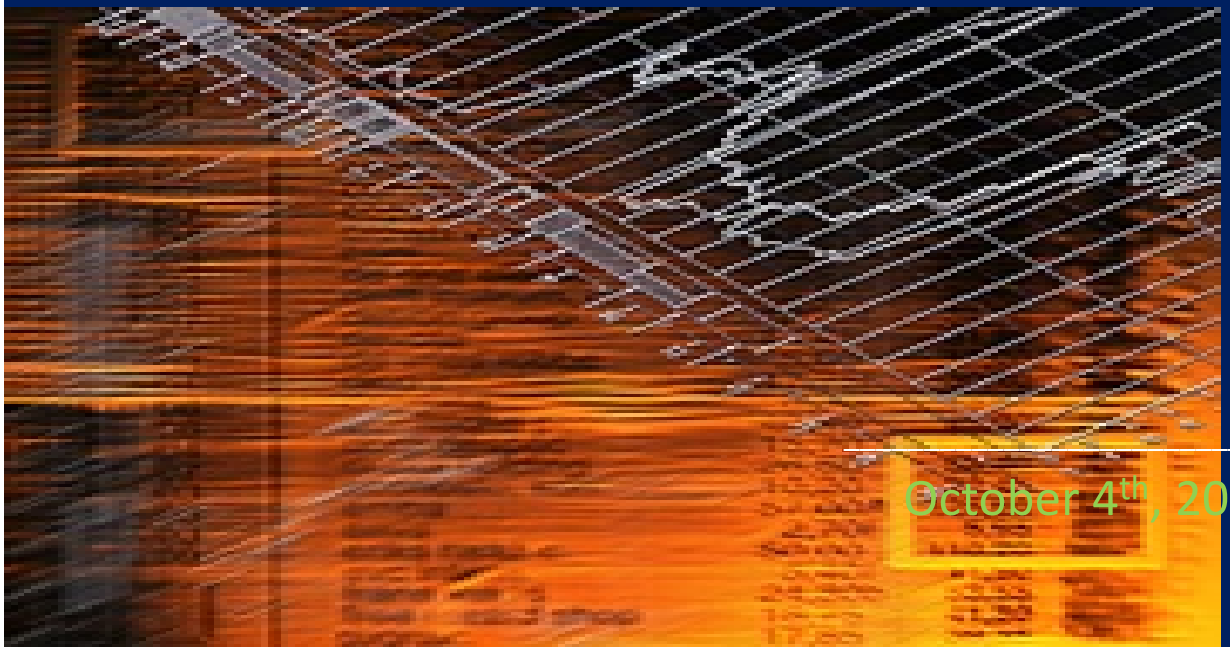
ETCC 2012

Demand Response for Everyone



Presentation By:

Michel Kohanim

CEO

Universal Devices, Inc.

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Devices Respond to the Grid

- Direct relationship between demand, load on the grid, green house gases, and the likelihood of blackouts
- Just like any other supply/demand scenarios, the higher the load, the higher the price
- Consumers can use load and/or price information to not only curb demand but also save money and promote energy conservation

Signaling

- Flex Alert ***(CA Only)*** – the most basic tool providing Active/Inactive states
- OpenADR – a complete / standards based set of load, price, and energy consumption signals through the Internet
- AMI – a complete / standards based set of load, price, and energy consumption signals through the Smart Meter (SEP)

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Why now?

- Historically – and due to cost – most demand response solutions focused on medium/large commercial venues
- Proliferation of inexpensive and off the shelf communicating devices
- Level of maturity of Demand Response standards
- We do not have much time:
  i. EISA 2007: Zero-Net by 2020 for all new constructions
  ii. CA/AB32 : Reduce green house gas levels to 1990 levels by 2020

ESI

- ESI (Energy Service Interface), at a high level, is an energy management system (EMS) with known interfaces to AMI
- It's analogous to routers but for energy-aware resources
- It facilitates communications between AMI, the consumer and his/her preferences, and end devices
- It is a necessary component of standards based energy-aware-internetworks

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Characteristics Of A Good ESI

- **Inexpensive and commercially available**
  - Off the shelf and support for off the shelf communicating protocols
- **Standards based and secure**
  - Abstraction: OpenADR and SEP
  - Cyber-security tested and certified
- **Automation**
  - Easily configurable user scenarios based on important events such as price, climate conditions, occupancy, time of day, etc.
  - May learn and suggest energy saving modes based on environmental and user taken actions
- **Autonomous**
  - Losing connectivity should have very limited impact on the correct operations of the system
- **Remotely accessible**
  - Mobile device support

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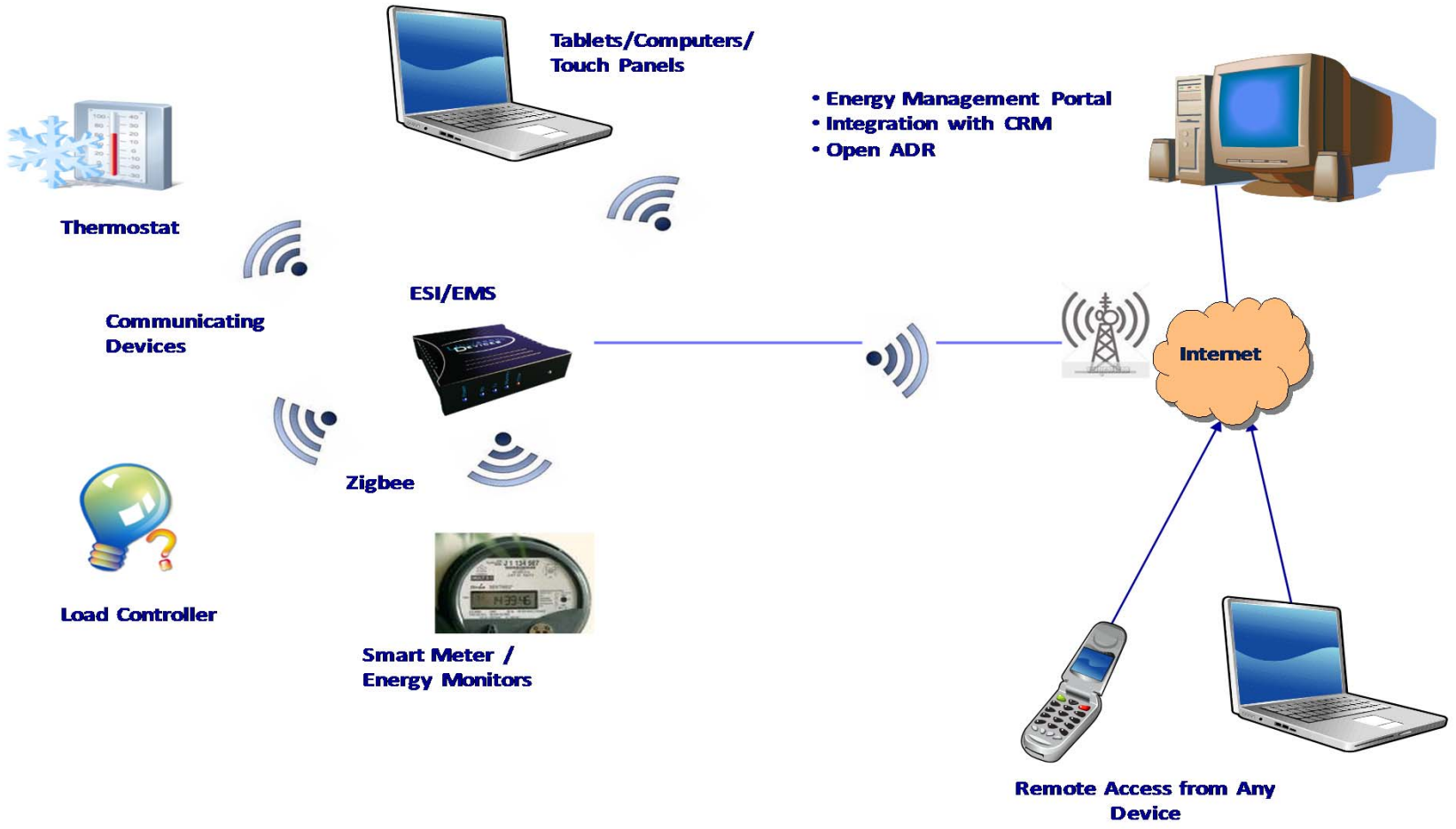
TOPOLOGY


Tablets/Computers/
Touch Panels
• Energy Management Portal
• Integration with CRM
• Open ADR
Thermostat
Communicating
Devices
ESI/EMS
Internet
Zigbee
Load Controller
Smart Meter /
Energy Monitors
Remote Access from Any
Device

Questions?

Contact Information

Michel Kohanim
Universal Devices, Inc.
michel@universal-devices.com
(818) 631 - 0333