IoT for Home Automation Trends

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Agenda

Evolution
IoT from the Consumer POV
IoT from the Vendor POV
Conclusion and prediction of future innovation
Evolution

Collection of many devices not connected to anything

New concept appeared where devices were to be connected to the internet and broadcast status

Silo solutions appear in the market from single device solutions to automated homes.

Current Issues

*High vendor implementation costs
*Bad customer experience impossible to manage all devices
*Unclear use cases
*Security Challenges
*Lack of standardization prevents the creation of an interoperable solutions

Future State:
*Standardize technology
*Improve Customer experience
*Reduce vendor costs

Vendor:
*Standardize on technology to allow plug & play experience and communication protocols
*Create new revenue streams by gathering usage data and automate user workflows

Consumer:
*Build a single management console for all device.
*Automate maintenance and warranty policies
*Simplify the management of all devices

Marketplace:
*Connect existing solutions to IoT devices to increase revenue and improve device experience
*Introduce a single place for acquiring parts and services for ALL devices
Internet Usage and Population Statistics

- World Population
  - 2003: 6.3 Billion
  - 2010: 6.8 Billion
  - 2015: 7.2 Billion
  - 2020: 7.6 Billion

- Connected Devices
  - 2003: 500 Million
  - 2010: 12.5 Billion
  - 2015: 25 Billion
  - 2020: 50 Billion

- Connected Devices Per Person
  - 2003: 0.08
  - 2010: 1.84
  - 2015: 3.47
  - 2020: 6.58

Source: Cisco IBSG, April 2011
Internet Usage and Population Statistics

2020

- 4 BILLION Connected People
- $4 TRILLION Revenue Opportunity
- 25+ MILLION Apps
- 25+ BILLION Embedded and Intelligent Systems
- 50 TRILLION GBs of Data

Source: Mario Morales, IDC
Consumer IoT Challenges
Consumer IoT Challenges (cont.)

- Consumer IoT pain points and challenges
  - **Number of apps** increases as IoT adoption progresses
  - Learn **multiple User Interfaces** / Apps.
  - Set up **security** for each device individually
  - Manage **billing/credit card** for each service
  - Devices run in **isolation**, can’t communicate with each other
  - Multiple **Analytics & Dashboards**

- Highly Competitive, Fragmented and Overlapped market
  - Gartner estimates that **2.9 billion connected** things will be in use in the consumer sector in 2015 and will reach over 13 billion in 2020
  - Consumer IoT forecast to be ~**40%** of market in 2020.
Consumer IoT Innovation

- Single Application Interface for IOT devices

Discover -> Configure -> Manage -> Analyze -> Maintain

Images - courtesy Google
Non-Users Frequently Exhibit Behaviors That Indicate Latent Demand for Connected Solutions.

- **51%** accidentally leave lights on.
- **41%** accidentally leave televisions/appliances on.
- **36%** wonder what’s happening at home while away.
- **35%** leave a/c running (even when it’s comfortable).
- **31%** can’t remember if they locked doors/windows.

*Percent of non-users who exhibit behavior at least once a week.

Vendor IOT Projection

9 settings gave us a cross-sector view of a total potential impact of $3.9 trillion–11.1 trillion per year in 2025:

- **Vehicles**: Autonomous vehicles and condition-based maintenance
  - $210B–740B
- **Cities**: Public health and transportation
  - $930B–1.7T
- **Outside**: Logistics and navigation
  - $560B–550B
- **Home**: Chore automation and security
  - $200B–350B
- **Offices**: Security and energy
  - $70B–150B
- **Factories**: Operations and equipment optimization
  - $1.2T–3.7T
- **Retail environments**: Automated checkout
  - $410B–1.2T
- **Human**: Health and fitness
  - $170B–1.6T
- **Worksites**: Operations optimization/
  - $160B–930B
  - Health and safety

Types of opportunities:

- **Transform business processes**: Predictive maintenance, better asset utilization, higher productivity
- **Enable new business models**: For example, remote monitoring enables anything-as-a-service

McKinsey Global Institute June 2015
Where is the value potential?

- Interoperability required to capture 40% of total value
- <1% of data currently used, mostly for alarms or real-time control; more can be used for optimization and prediction
- 2X more value from B2B applications than consumer
- Developing: 40%
- Developed: 60%

McKinsey Global Institute - Unlocking the potential of IOT June 2015
Enablers and Barriers

Interoperability

Two or more IOT applications that need vertical or horizontal integration - blocking 40% of potential value

Full security across entire signal path

Integrity of data must be assured - government regulations

Privacy and confidentiality

Consumer opt in / opt out - government regulations

Technology

ipV6 rollout - still ongoing vs Mesh networks

Cost effectiveness and lower power: sensors, RFID tags, MCUs
Next Phases in IOT

Software Integrators
  Bridge interoperability gaps for Complex IOT solutions
End to end platform frameworks
  AWS, Verizon
Shift to software analytics solutions from hardware connectivity Phase
  Most IOT sensor data collected today is not being used
  Offshore oil rigs < 1% - 30K sensors
Remote monitoring plus marketplace: Anything as a Service
Future adjacent business models based on technology needs
  Like Google Search, Yahoo publisher sites created during Internet Wave.
Innovation in the Marketplace

- A single place(s) where both services and parts can be searched and acquired.
- Majority of orders would be automated (e.g., using standard APIs).
- Future marketplace would facilitate the order of a required service or replacement part from an IoT device.

Future Marketplace = [Angie's list + a] × Automation
IoT - Business Model

• **Consumer Subscription** fees for Home Automation
  – Discover, Manage, Configure devices
  – Analytics Dashboard
  – Best Maintenance Offers

• **Vendors**
  – Charge for Bandwidth, SDK and Consumer Analytics
  – Data analysis for marketing and sales

• **Marketplace**
  – Vendors pay per transaction fees
  – Advertising
Summary

Companies adapting to the evolving IoT business models presented during the different phases of IOT evolution will generate significant savings, increase productivity and dominate their industry during the next 10 years.