IoT Hands on Workshop

Introduction / Welcome

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Welcome

Thank You for attending the IoT Hands on Workshop

Agenda for the day

- 1:00pm - 2:00pm   Intro & Welcome: UPnP Forum and ZTE

- 2:00pm - 3:00pm   VidiPath Presentation

- 3:00pm - 3:30pm   Coffee Break

- 3:30pm - 4:30pm   OIC Presentation and Demo

- 4:30pm - 5:30pm   UPnP Presentation
  UPnP & HIT University Demo

- 5:30pm - 6:15pm   Q&A

- 6:30pm - 9:00pm   Evening Reception
  drinks, hors d'oeuvres, demos
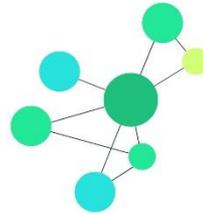
And all of you for attending!

- PCs and home networking were in their early years, proprietary solutions and lack of standards were the way of life
  - 27% of US households still did not own a PC [2]
    - Poor usability & complexity were listed in the top 5 barriers to adoption, Historical problem areas still bad: e.g. Connecting to the Internet
  - At that time, New product areas presented even more complex problems - wireless home networking, mobile phone/PDA integration, consumer electronics integration, etc.

[1] Intel internal research report. Non-PC Owners Survey. 2000

[2] Jupiter Consumer Survey Report: Technology in the Home, June 2003

- Corporate purchase cycles had lengthened to between 3 to 6 years [3]
  - Purchase price is not the key purchase barrier—total cost of ownership was
- Returns and post-sales call costs for PC OEMs were staggering
  - Approximately $1.48 billion or $95 per PC sold [4]
  - Based on the 40.1 million PCs shipped on the year year
- "No Defect Found" return rate runs as high as 90%+ (depending on product category)
- Consumer electronic returns costs are estimated at $10B annually [5]

[3] Desktop Refresh Cycles: Three Years Is the Standard, But Not the Reality, Forrester Research, 2003

[4] Ease of Use / PC Quality Roundtable Research on Returns and "No-Defect-Found" rates in the PC industry. 2003

[5] eBrain Research conducted October, 2002 for Consumer Electronics Association (CEA)

What were the effects in 2001

- Retail return rates holding at 8% to 15% for past three years
  - Plateau reached after steady decline during last decade
  - Average of 13% for notebook PCs and 11% for desktop PCs
  - Only 2-5% of returns are found to be defective
  - 85% of people who return PCs within the first 8-9 days take the exact same model as a replacement
- High OEM NDF rates indicates HW/SW configuration issues
  - OEM1: 33% of all returns are perception based
  - OEM2: approximately 30% NDF rate on system returns
  - OEM3: 76% NDF on desktop returns, 67% on laptop returns

Consumers were frustrated – The Industry was frustrated – Cost of Ownership was high –Profits were tight

[7] Ease-of-Use Roundtable: OEM & Retailers data collection, 2003

The Response

- Companies world wide were slow to react but eventually it was understood that vertical solutions would not allow the market to grow at a quick pace
  - Interoperability issues
  - Customer frustration
  - High support costs

The Result

- The industry turned to Standards
  - To allow for interoperability across brands
  - To drive down support costs
- UPnP
  - Started to allow for all devices on the home network to be able to automatically discover and control each other
- DLNA
  - To ensure content could be moved from device to device within the home network
- Many other standards efforts

The Home Networking / Content sharing ecosystem now has billions of connected devices working together!!

Key learning

- It takes time to define and implement standards to assist with market growth – early identification of needs and efficient execution are vital

SIG	Initial Development	First Product	Initial Market Adoption	Years from Initial development to Initial Market adoption
MPEG2	1988	1993	1998	10
802.11	1990	2000	2002	12*
USB	1994	1998	2003	9 – limited complexity
MPEG4 – (Baseline of MPEG2)	1995	2001	2007	12
Bluetooth	1998	1999	2002	4

As you can see – it can take years to go from standardization start to mass market adoption

Now – Let's Fast forward to today and IoT

- IoT is in the exact same situation
  - Many players – everyone wants a piece of the market
  - Fast growing market
  - Fragmented implementations
  - Interoperability is at a minimum
  - Consumer confusion on how to implement interoperable solutions
  - Multiple Verticals (e.g. healthcare, transportation, smart home, etc.)

Forecasts for the IoT

Global shipment volume of Wi-Fi (Wireless-Fidelity) connected devices reached around 2.27 billion units in 2014, up 18% year-on-year.
Source: Market Intelligence & Consulting Institute, MIC, April 2015

As demand grows and prices fall, [Business Insider] anticipates that connected home device shipments will quadruple over the next five years, to hit 1.8 billion units shipped in 2019.
Source: Business Insider, Mar 2015

Between 2014 and 2019, sensor shipments will surge with a CAGR of 11.4 percent, culminating in a total of 19.1 billion sensors by 2019. Revenues will rise 6 percent annually as a result.
Source: IC Insights, April 2015

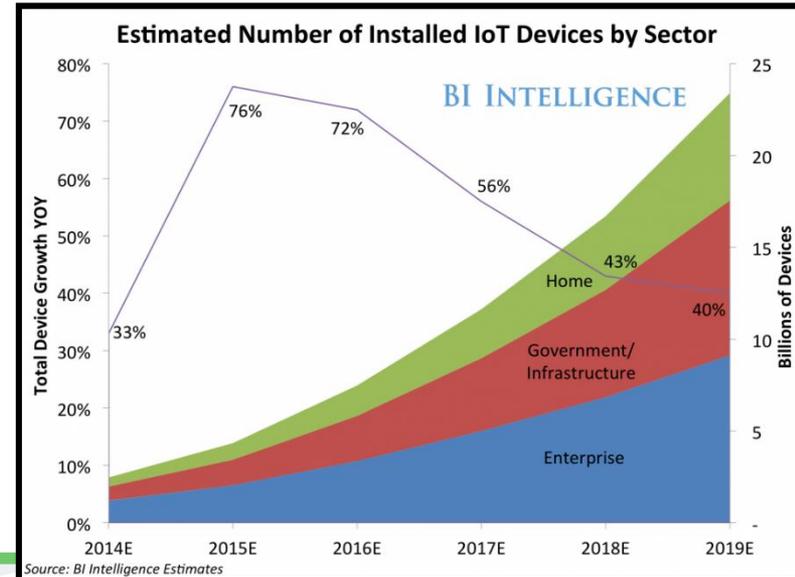"IoT (Internet of Things) market in China expected to grow at a CAGR of 32.15% over the period 2014-2019"
Source: TechNavio, March 2015

It is projected that by the end of 2025, there will be in excess of 95 billion IoT connected devices and that annual shipments will have reached 14.5 billion devices per annum.
Source: CABA, June 2015

Global Revenue from Shipments of Residential Internet of Things Devices is Expected to Reach Nearly $70 Billion in 2025
Source: Navigant Research, June 2015

"The expectations for the Internet of Things are impressive. According to Cisco, the Internet of "Everything" is a $19 trillion opportunity, while companies like GE see markets like healthcare garnering an extra $63 billion in incremental value over the next 15 years."
Source: UPnP Forum whitepaper, April 2015

Estimated Number of Installed IoT Devices by Sector

BI INTELLIGENCE

76%
72%
56%
43%
Home
40%
33%
Government/Infrastructure
Enterprise

Total Device Growth YOY
Billions of Devices

2014E 2015E 2016E 2017E 2018E 2019E
Source: BI Intelligence Estimates

The Challenge

- It is 2015 – the market in 2020 is forecasted to be 20 billion devices with 1.8 billion being shipped a year

- It takes about 8 years to take standards from start to mass market implementation

We are already late – We need to come together as an Industry to lessen fragmentation and enable standardization to ensure maximum market growth and interoperability

In The Meeting Today

- You will hear from industry (and consortia) experts working together to solve the IoT interoperability issues
  - UPnP
    - Device discovery and control
      - Beyond the home network
  - DLNA
    - Display and content interoperability
  - OIC
    - IoT connectivity interoperability

These groups (and others) all have liaisons to work together for a holistic standards approach to IoT interoperability!!

Enjoy the Sessions and the Demonstrations!!