Wi-Fi CERTIFIED™ makes it Wi-Fi

Wi-Fi® Connectivity Options for Smart Grid

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Wi-Fi today - An unrivaled success

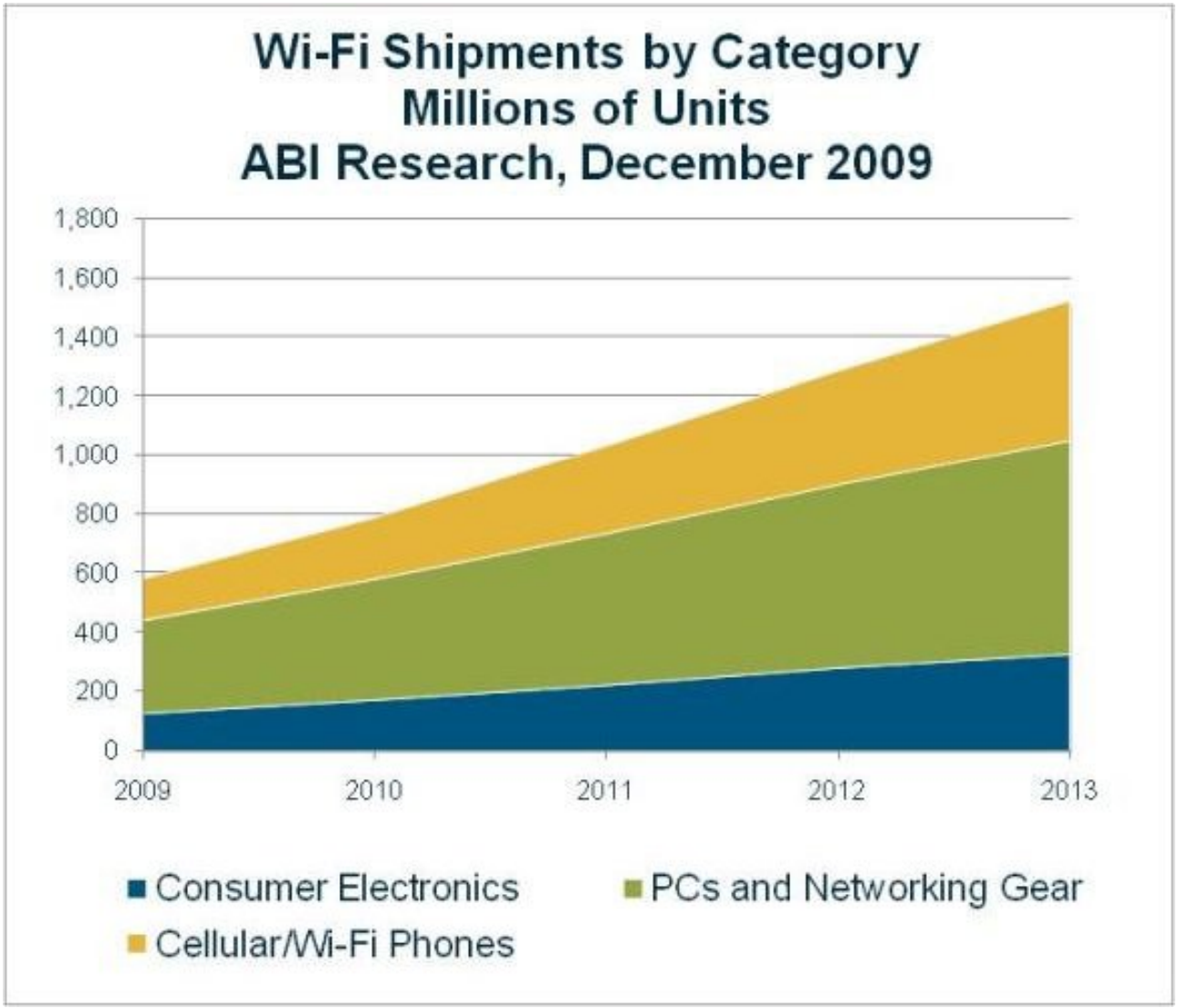
- 10% of the world's population uses Wi-Fi
- About two billion cumulative shipments to date
- Double-digit growth year over year … strong momentum continues
- Wi-Fi is now ubiquitous in home, enterprise, industry, education and government environments
- Consumers love Wi-Fi*:
  - 7 out of 10 users would give up chocolate before Wi-Fi (Kelton Research, 2008)
  - 73% of university students say Wi-Fi helps them get better grades (Wakefield Research, 2008)

Wi-Fi Alliance snapshot

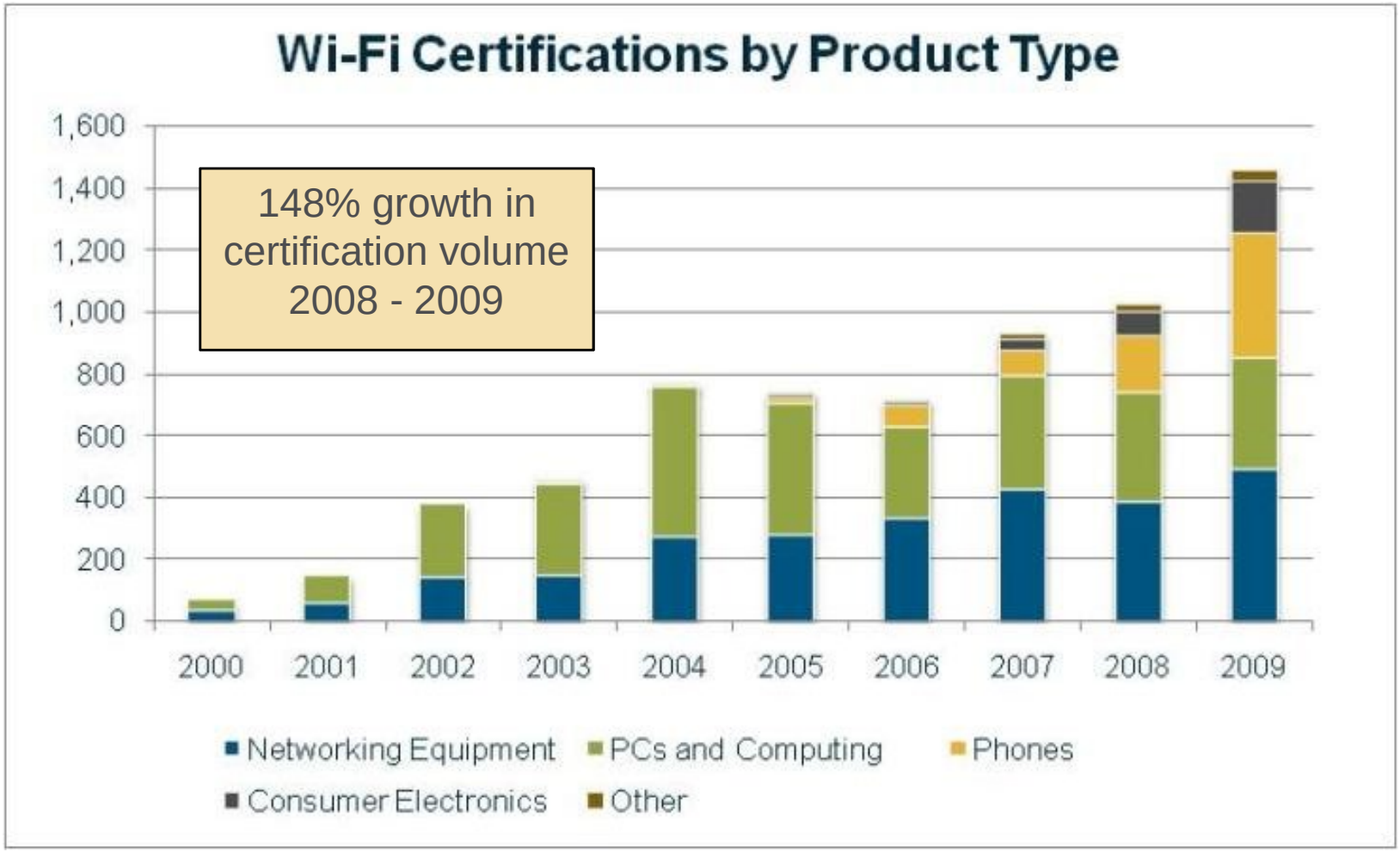
- Founded in 1999, global reach
- International trade association of 350+ member companies across the ecosystem (service providers, device makers, silicon, software)
- Enabling Wi-Fi adoption through testing, market building, and regulatory programs
- Wi-Fi CERTIFIED™ products deliver the best user experience and the latest security protections

Full list of member companies at www.wi-fi.org

More than half a billion Wi-Fi devices were shipped in 2009; 16% growth expected for this year

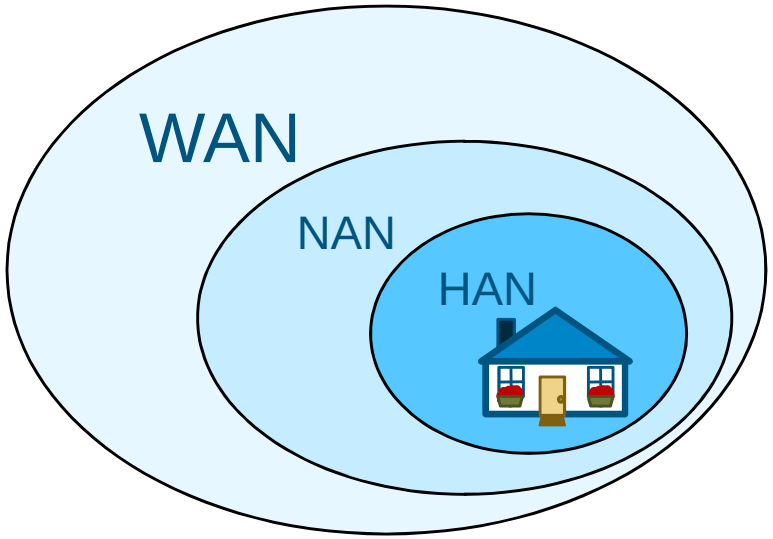


2009 brought record levels of certification activity



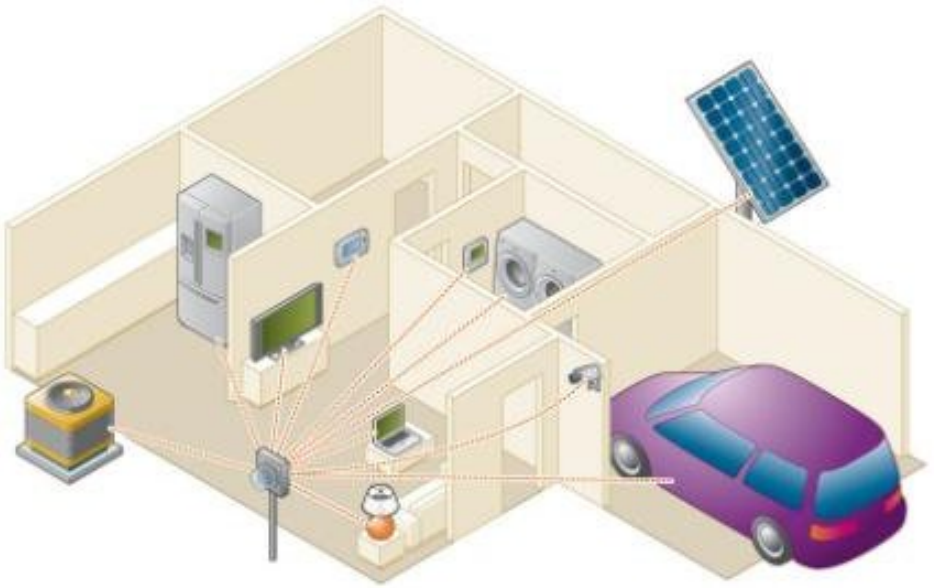
Wi-Fi Today: Essential technology for Smart Grid applications

- Mature technology with an established worldwide certification network
- Economies of scale in established production ecosystem drive cost effectiveness
- Government-grade WPA2® security
- Portfolio includes low bandwidth/low power designs, high-gain/high performance systems and points in between – all can interoperate
- Advanced mechanisms for reliability, robustness and manageability
- Continued technology innovation now and in the future, leveraging an interoperable set of baseline standards



Wi-Fi: The world's preferred HAN technology

- Loved by consumers and specified by broadband service providers
- Wi-Fi is at the heart of the smart home, connecting computers, entertainment devices, appliances, and Smart Grid devices on a single technology
- Whole-home coverage and industry-supported easy setup protocols
- Versatile technology: multiple interoperable versions ranging from low-power to high-performance
- Resilient to many types of interference
- Coexists well with other technologies
- Government-grade security mechanisms required for certification of all devices



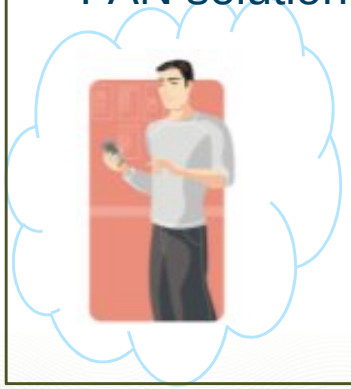
Wi-Fi CERTIFIED Wi-Fi Direct™:
Connect devices, even without a Wi-Fi network

- Wi-Fi peer-to-peer technology will enable users to connect Wi-Fi CERTIFIED Wi-Fi Direct devices to each other anywhere - *with or without a Wi-Fi network, hotspot or internet connection available*
- Connect two or more devices, quickly and easily, to enable applications such as:
  - ***Print*** a picture directly from your camera
  - ***Share*** music directly with a friend
  - ***Synchronize*** contacts, music, etc.
  - ***Display*** pictures directly from your mobile phone on a television

- Specification now complete and to be published soon
- First **Wi-Fi CERTIFIED Wi-Fi Direct** products to be introduced later this year

Wi-Fi Direct: Wi-Fi throughput and range revolutionize the Personal Area Network

Traditional
PAN solution



Wi-Fi throughput and range revolutionize the Personal Area Network

Wi-Fi brings proven, industry-standard security protections to Smart Grid

- Privacy and access control are fundamental pillars of Smart Grid technology – to protect utilities, consumers, and third parties
- WPA2® security technology is the latest generation of Wi-Fi CERTIFIED security protections:
  - Uses Advanced Encryption Standard
  - Variety of authentication mechanisms supported to protect privacy
- WPA2 is based on IEEE WLAN security standard –
  - Has withstood sustained international scrutiny
  - Standards enable competition among all vendors
- WPA2 is specified by governments and deployed by enterprises worldwide
- Every Wi-Fi CERTIFIED device must now support WPA2
  - Interoperable security protocols across the entire home network;
  - More than 3,500 products have been certified for WPA2
- Learn more about WPA2: http://www.wi-fi.org/security.php

Wi-Fi Protected Setup

- Wi-Fi Protected Setup™ is an optional certification program that is designed to ease the task of setting up and configuring security
- Introduced by the Wi-Fi Alliance in early 2007
- Enables typical users who possess little understanding of traditional configuration and security settings to automatically configure new wireless networks, add new devices and enable security
- More than 1,500 products have been Wi-Fi CERTIFIED™ for Wi-Fi Protected Setup

Wi-Fi is well suited for use in basic smart energy tools and appliances …

Utility
AMI
Network

… and it also unlocks a much bigger opportunity for smart energy…

Wi-Fi brings more: Two-way connectivity and IP-based technology for application development

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Internet

Smart Energy Profile 2.0

- **ZIGBEE AND WI-FI ALLIANCES TO COLLABORATE ON SMART GRID WIRELESS NETWORKING**
- *Joint effort will extend the opportunity for interoperable wireless technology in the smart home*
- **San Ramon, Calif. and Austin, TX – March 22, 2010 –** The ZigBee® Alliance and the Wi-Fi Alliance® announced today an agreement to collaborate on wireless home area networks (HAN) for Smart Grid applications. The initial focus of the collaboration will be ZigBee Smart Energy Profile 2.0, which is the next-generation energy management protocol for Smart Grid-enabled homes based on today's successful ZigBee Smart Energy Profile. The ZigBee Smart Energy Profile 2.0 is expected to be extended to operate over Wi-Fi technology as a result of the collaboration.

Wi-Fi in the Smart Grid: Features

Flexibility	HAN, NAN, WAN. Option to use existing home network. Use AP or Wi-Fi Direct.
Ubiquity	> 1 billion devices. Home, enterprise, metro networks. Wide range of device types.
Range	Whole house coverage. Kilometer outdoor point-to-point. 802.11n MIMO.
Bandwidth	Interoperable, auto-rate capability from megabit to 600 megabit
Low Power Consumption	WMM Power Save. New low-power chips supporting >10 year battery life.
Application Scope	SEP 2.0. Native IP support. Wide range of interoperable power/performance profiles. Huge commercial investment in Wi-Fi application development .
Coexistence	Designed for unlicensed operation. Carrier sense incorporates interference mitigation. Intelligent channel selection.
Frequency Options	Multichannel 2.4 + 5 GHz. Rebanding potential in other unlicensed or licensed bands.

The Wi-Fi Smart Energy Home

Utility
AMI
Network

Internet

Wi-Fi