



# ZigBee Alliance

## *Standards for the wireless IoT*

**DOE Connected Lighting Workshop  
16 November 2015  
Roy Harvey, OSRAM SYLVANIA**



**ZigBee®**

Control your world

# ZigBee in brief

- ZigBee Alliance was founded in 2002
- Focus is on low-power wireless networking specifications, application standards, and certification programs for the Internet of Things
- Specifies all layers, from Application to Physical
- Addresses consumer, commercial, and industrial markets
- Broad application space ranging from point-to-point controls for consumer electronics to city-wide mesh networks
- Comprehensive compliance testing program
- 430 members; 1400 certified products

# WHAT WE DO:



The ZigBee Alliance creates, maintains and delivers specifications, standards and solutions for the wireless Internet of Things

CERTIFICATION PROGRAMS  
MODELED AFTER  
**ISO/IEC  
GUIDE 65  
AND 67**



TECHNICAL  
WORKING GROUP  
**MEETINGS**  
A MONTH

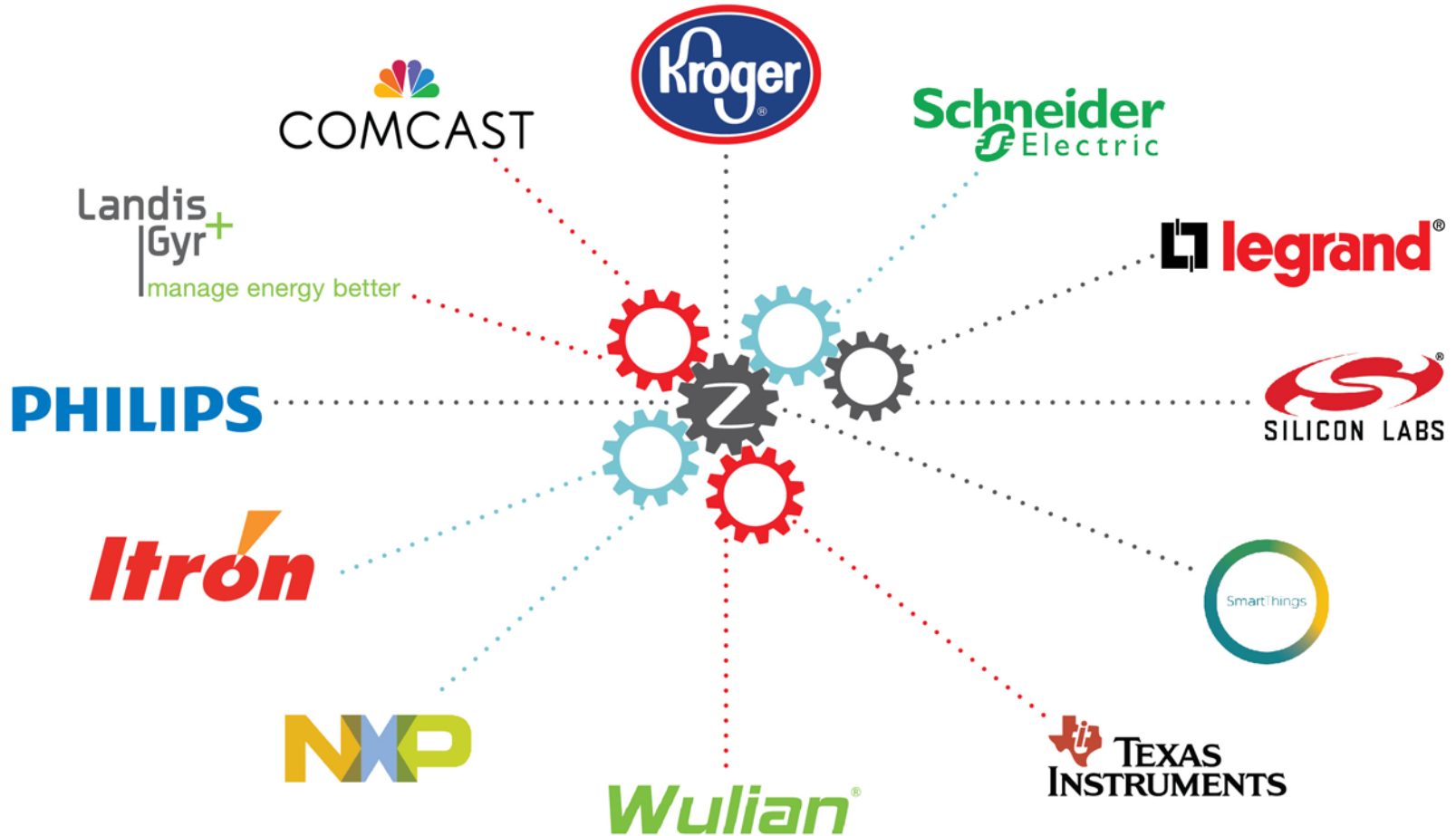
# CURRENT ZigBee Alliance Members



# BOARD OF DIRECTORS



## PROMOTER COMPANIES



# NEW MEMBERS IN 2015



<b>ADOPTER</b>	<b>51</b>
<b>PARTICIPANT</b>	<b>9</b>
<b>PROMOTER</b>	<b>2</b>
<b><i>total</i></b>	<b>62</b>



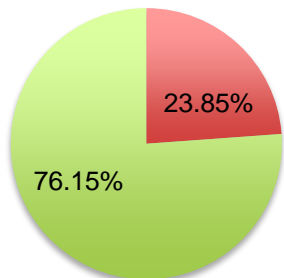
ZigBee®

Control your world

# ZigBee Certified Dashboard

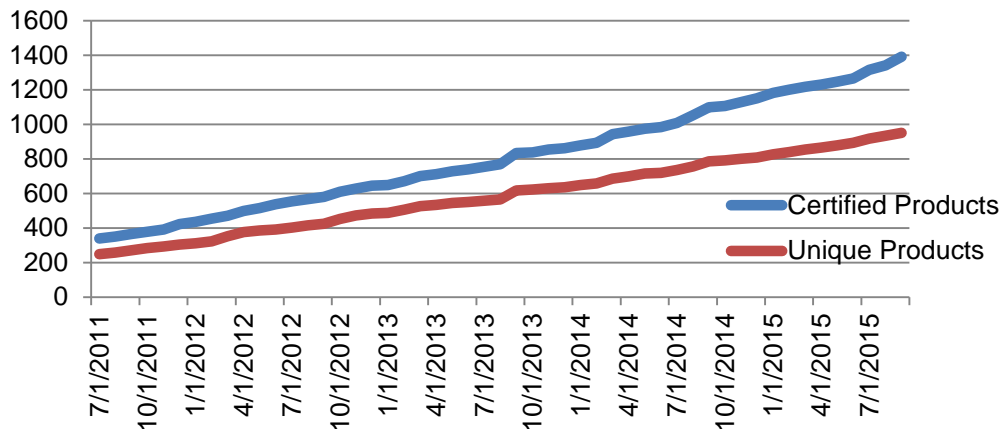
September 30, 2015

Total Certifications: 1392

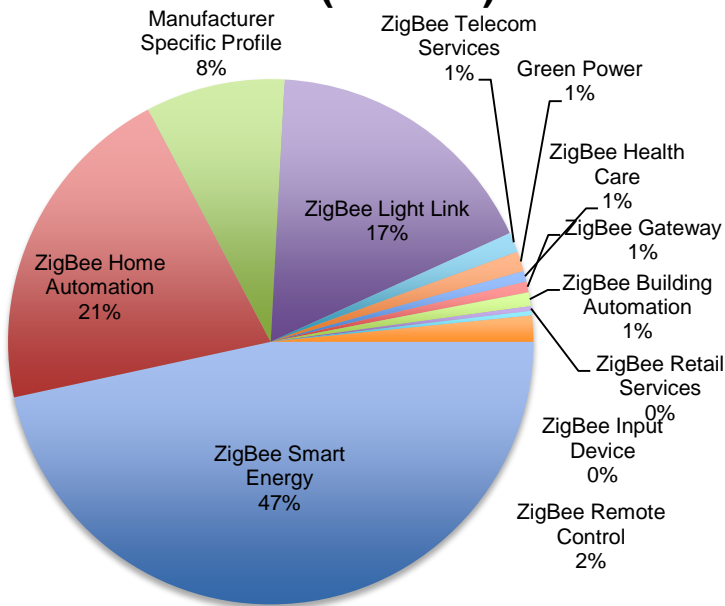


■ ZigBee Certified Platforms  
 ■ ZigBee Certified Products

Monthly Growth: 2.00%  
(12 Month Average)



## End Product Mix (lifetime)



## Top 10 Product Certifiers

- Philips**
- Legrand**
- Schneider Electric**
- Landis+Gyr**
- Itron**
- Osram Sylvania**
- LG Electronics**
- Busch-Jaeger**
- Secure Meters**
- Silver Spring Networks**



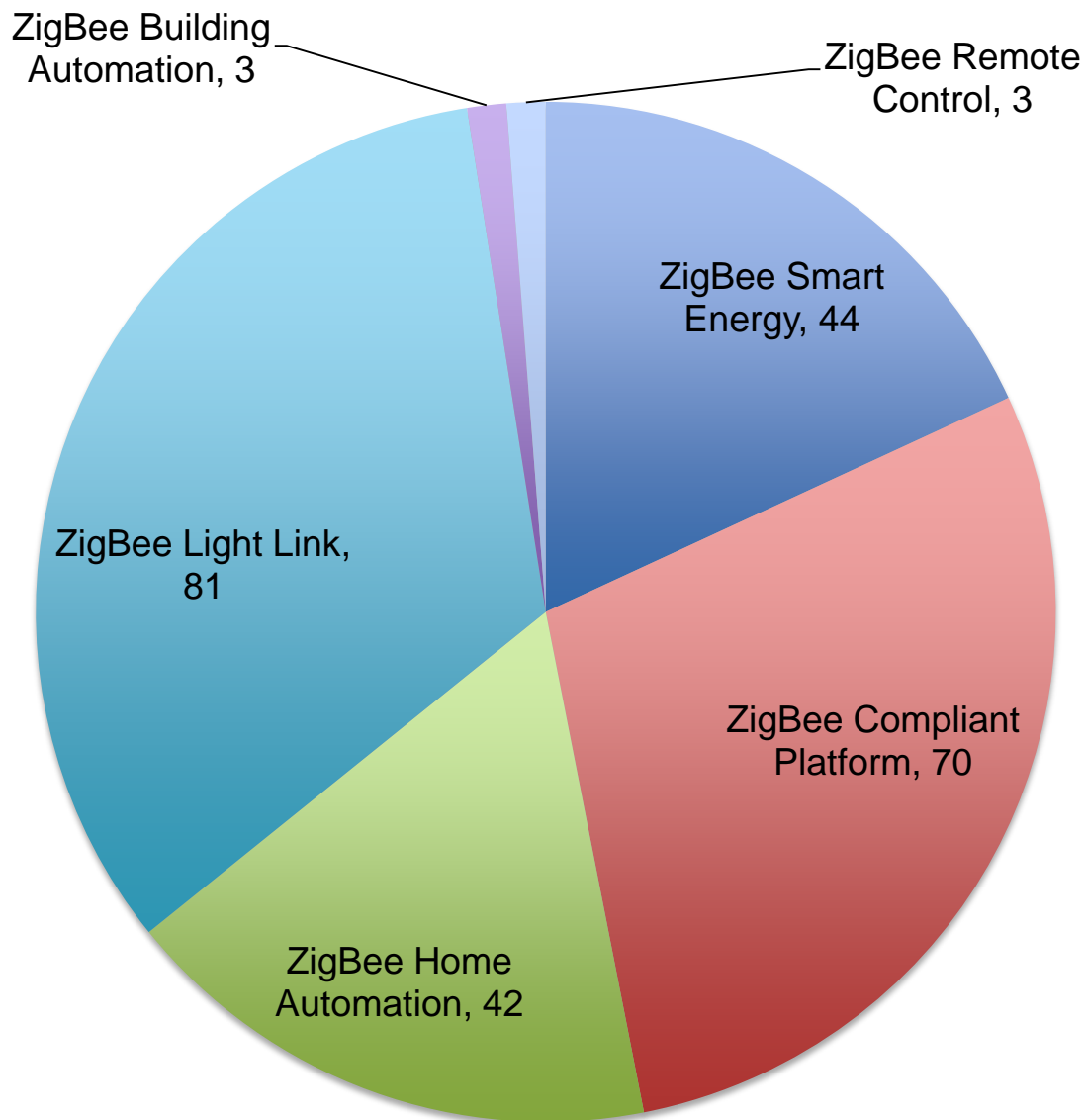
**ZigBee**<sup>®</sup>

Control your world

# ZigBee Certified Products

Last 12-months

(Through 31-August-2015)







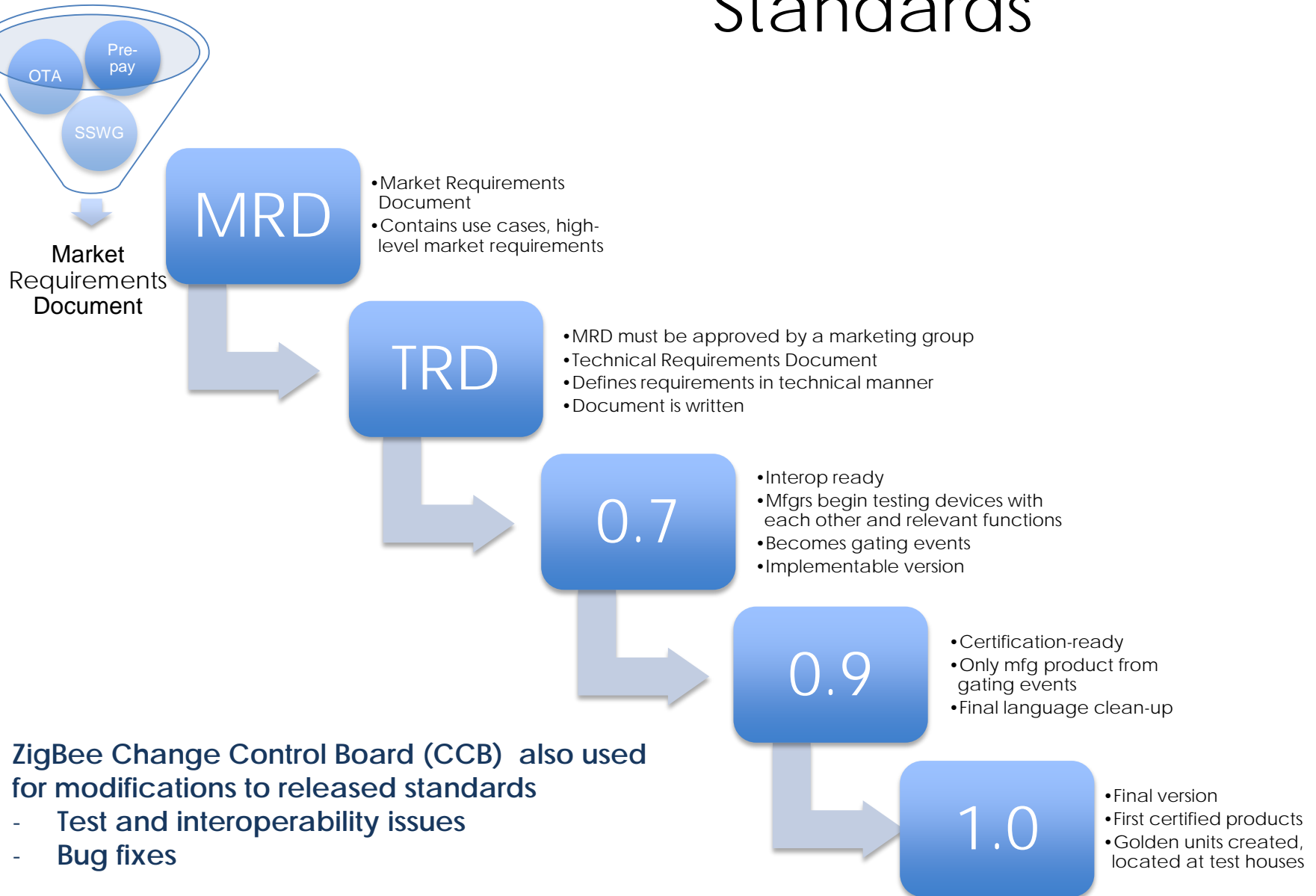
**ZigBee**<sup>®</sup>

Control your world

# Open, Global Standards Grow the Market

- Single product can be deployed globally
- Consumer choice of products
- Product Competition
  - Quality
  - Product Feature Innovation
- Buyer choice of suppliers
  - No vendor lock-in to specific chip manufacturer
  - Multiple sources for interoperable end products

# Creating Requirements-based Standards

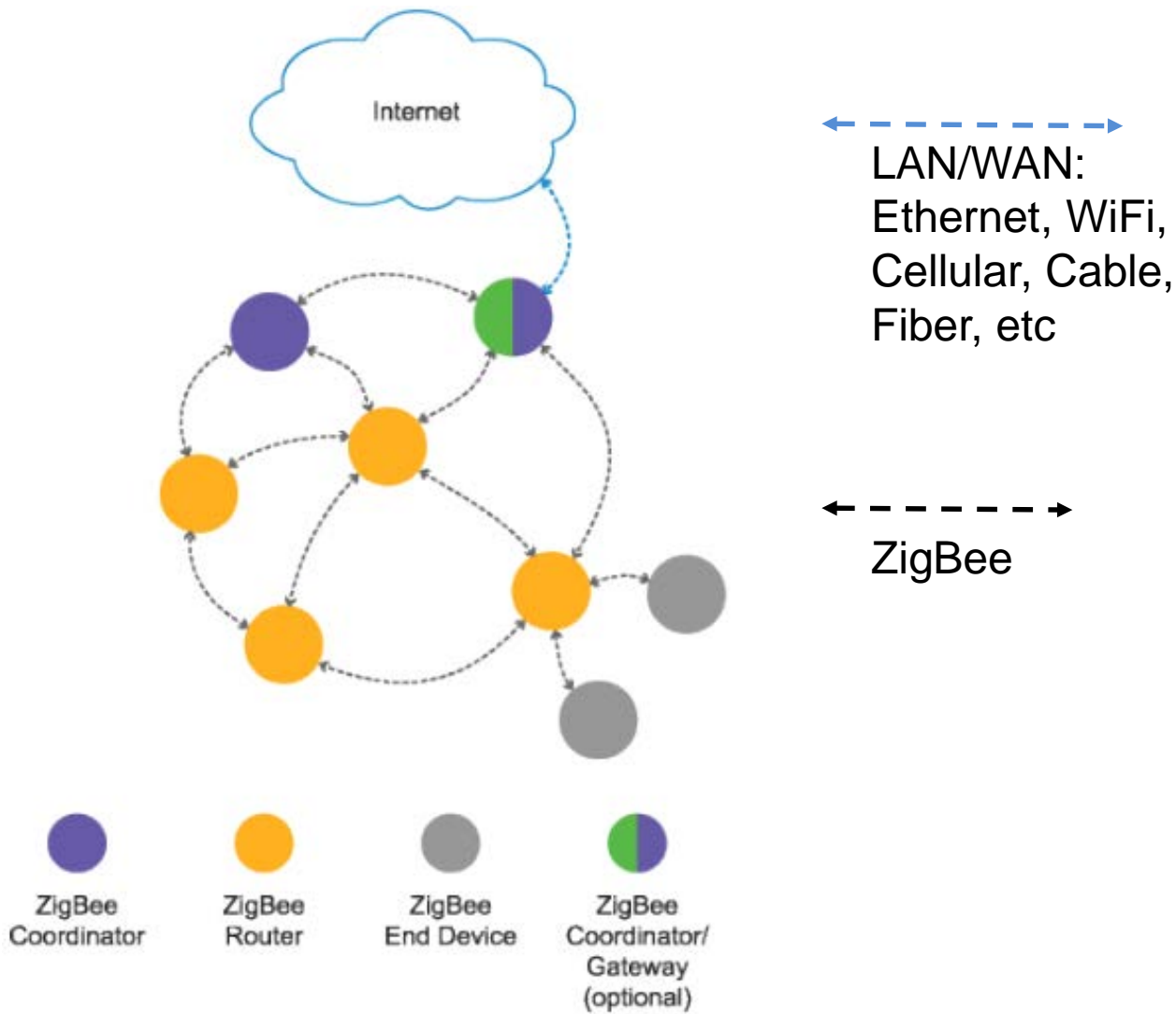




ZigBee®

Control your world

# ZigBee and the Internet





**ZigBee**

Control your world

# ZigBee Standards

	ZigBee RF4CE	ZigBee 3.0							ZigBee IP	ZigBee NAN
Application Standard	ZigBee Remote Control Input Devices	ZigBee Building Automation	ZigBee Health Care	ZigBee Home Automation	ZigBee Light Link	ZigBee Retail Services	ZigBee Smart Energy 1.x	ZigBee Telecom Services	IEEE 2030.5 ECHONET LT	TBD / 3.0
		ZigBee Consolidated Applications Layer								
Network	ZigBee RF4CE	ZigBee PRO with Green Power							ZigBee IP 920IP	ZigBee NAN
MAC	IEEE 802.15.4 – MAC									
PHY	IEEE 802.15.4 – 2.4 GHz 2011							IEEE 802.15.4 2006 2.4GHz and Sub Gig		IEEE 802.15.4G Sub Gig



**ZigBee**

Control your world

# The Standard for Residential Lighting

“The Connected Lighting Alliance announced today its endorsement of ZigBee Light Link as the preferred common open standard for residential connected lighting applications, simplifying choices for both lighting companies and consumers. ...

This decision represents the first time an alliance of leading lighting companies has unanimously endorsed a common open standard for wireless lighting solutions.”

*Press release by The Connected Lighting Alliance, July 15, 2013*



GE Lighting

Lutron Electronics

OSRAM

Panasonic

Royal Philips

Toshiba



Control your world

# ZigBee 3.0: Simpler, More Interoperable

- ZigBee 3.0 is the unification of ZigBee application standards
- The base device specification provides consistent behavior for nodes connecting to a ZigBee network
- Supports a uniform application space as the concept of profiles has been removed
- Provides enhanced security for the network
- A 'base device' defines:
  - Environment required for the base device
  - Initialization procedures of the base device
  - Commissioning procedures of the base device
  - Security procedures of the base device

# Some lighting-related Industry Partners



ZigBee PRO is the only wireless technology specified by BACnet International



ZigBee Light Link is the only wireless technology endorsed by TCLA



ZigBee is the only protocol designated by EMerge in its Occupied Space standard



ZigBee Alliance works closely with IEEE 802.15.4 and uses its MAC/PHY layers



ZigBee Alliance and Thread Group are evaluating under liaison agreement the feasibility of using ZigBee's application layer with Thread's network layer



ZigBee®

Control your world

# ZigBee and the future of lighting

- Lighting is ubiquitous and is the ideal foundation for ZigBee mesh networks and the wireless IoT
- Lighting was the largest category of ZigBee Certified Products in the past year
- ZigBee enables the wide span of lighting applications, from a few lamps in a room to city-wide street-lighting networks
- Lighting has synergy with other systems in smart buildings:
  - occupancy sensors for lighting/HVAC/security
  - lights activated by security system
  - lights controlled by ADR via building automation system

ZigBee standards and products are helping lighting systems move beyond sources of illumination to become sources of information



