

# Building a Differentiated User Experience in the Connected Home

July 10<sup>th</sup> 2013

**Todd Antes, Sy Choudhury and  
Fabrice Hoerner—Qualcomm**

**Tom Kerber—Parks Associates**



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# Presenters



**Todd Antes**  
*Vice President  
of Product  
Management*  
**Qualcomm**



**Fabrice Hoerner,**  
*Sr. Manager  
of Technical  
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**Qualcomm**



**Sy Choudhury**  
*Sr. Director of  
Product  
Management*  
**Qualcomm**



**Tom Kerber,**  
*Director, Research,  
Home Controls  
and Energy*  
**Parks Associates**

# Building a Differentiated User Experience

## Agenda

- Market Drivers and Barriers
- Current State of the Industry – Problems and Opportunities
- Interoperability in the Cloud and the Role of the Gateway
- Home Network Interoperability
- End Device Interoperability

# Market Drivers and Barriers

## Market Drivers

- Adoption of Smart Phones, Broadband
- Major Players Entering Market
- Growing Ecosystem of Products
- Communication Standards
- Cloud Capabilities

## Market Barriers

- Lack of Consumer Awareness
- No Concise Value Proposition
- Initial Cost of Systems
- Recurring Fees
- Interoperability
- Integration of New Products

# Interoperability

## Home Networks



## Gateways



## Cloud



# Interoperability

	Energy	Security	Home Control	Manufacturers
Cloud		<i>APIs</i>	<i>APIs</i>	<i>APIs</i>
Gateway				
Home Network	Consortium for SEP 2 Interoperability	<i>Proprietary</i>	 Control your world  	
Devices	 	 	 	

# Building a Differentiated User Experience



**What is Qualcomm's interest in the connected home?**

**Fabrice Hoerner,**  
*Sr. Manager of*  
*Technical Marketing*  
**Qualcomm**



# Building a Differentiated User Experience

Bringing the Connected Home into the Internet of Everything



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# Building a Differentiated User Experience

Qualcomm is Already Powering & Connecting Many Devices in the Home

Mobile



Computing



Consumer Electronics



Home Appliances/Automation



Networking



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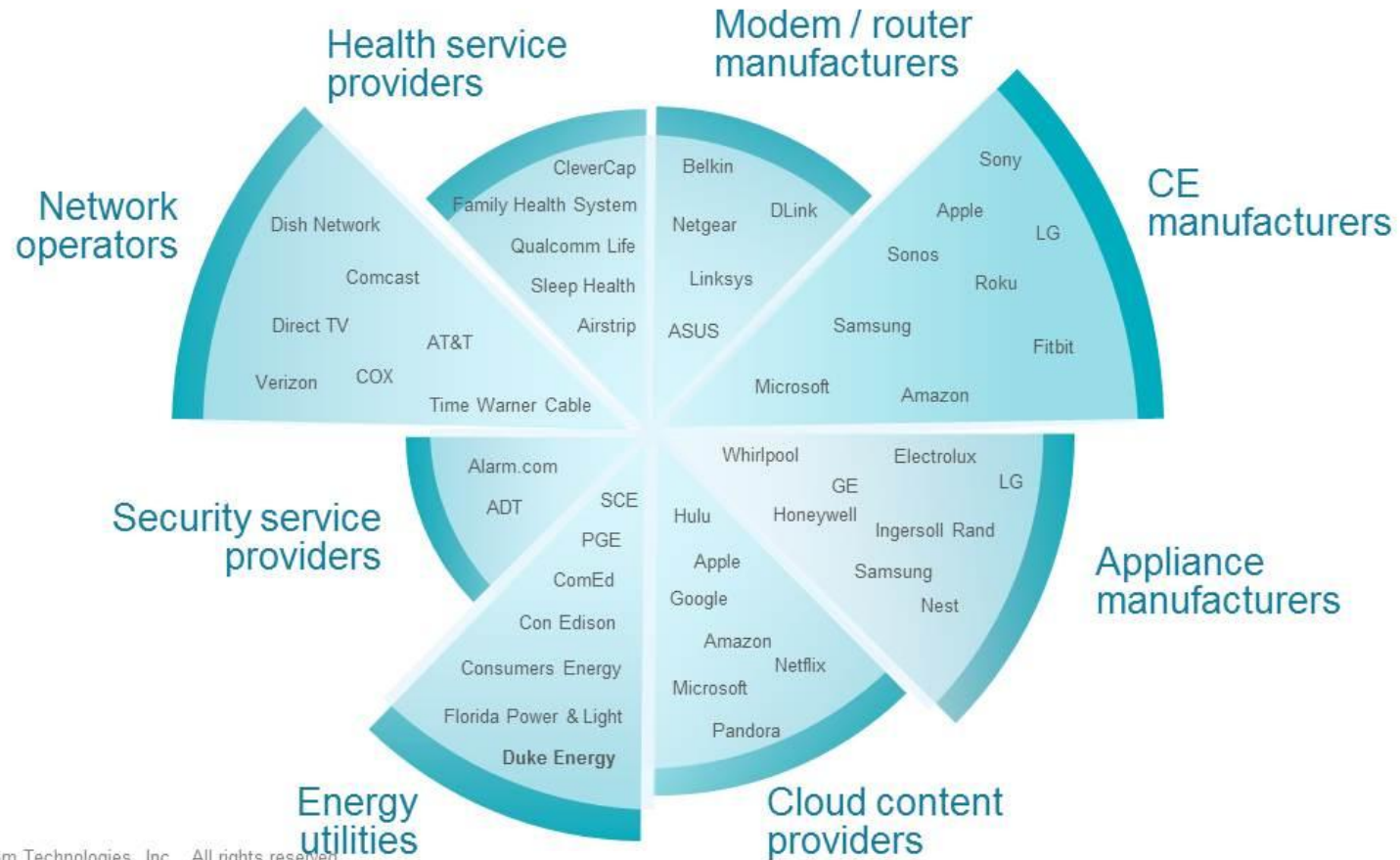


**Fabrice Hoerner,**  
*Sr. Manager of*  
*Technical Marketing*  
**Qualcomm**

**Business issues rather than technologies are often the main obstacle to interoperability. What will it take to accelerate interoperability?**

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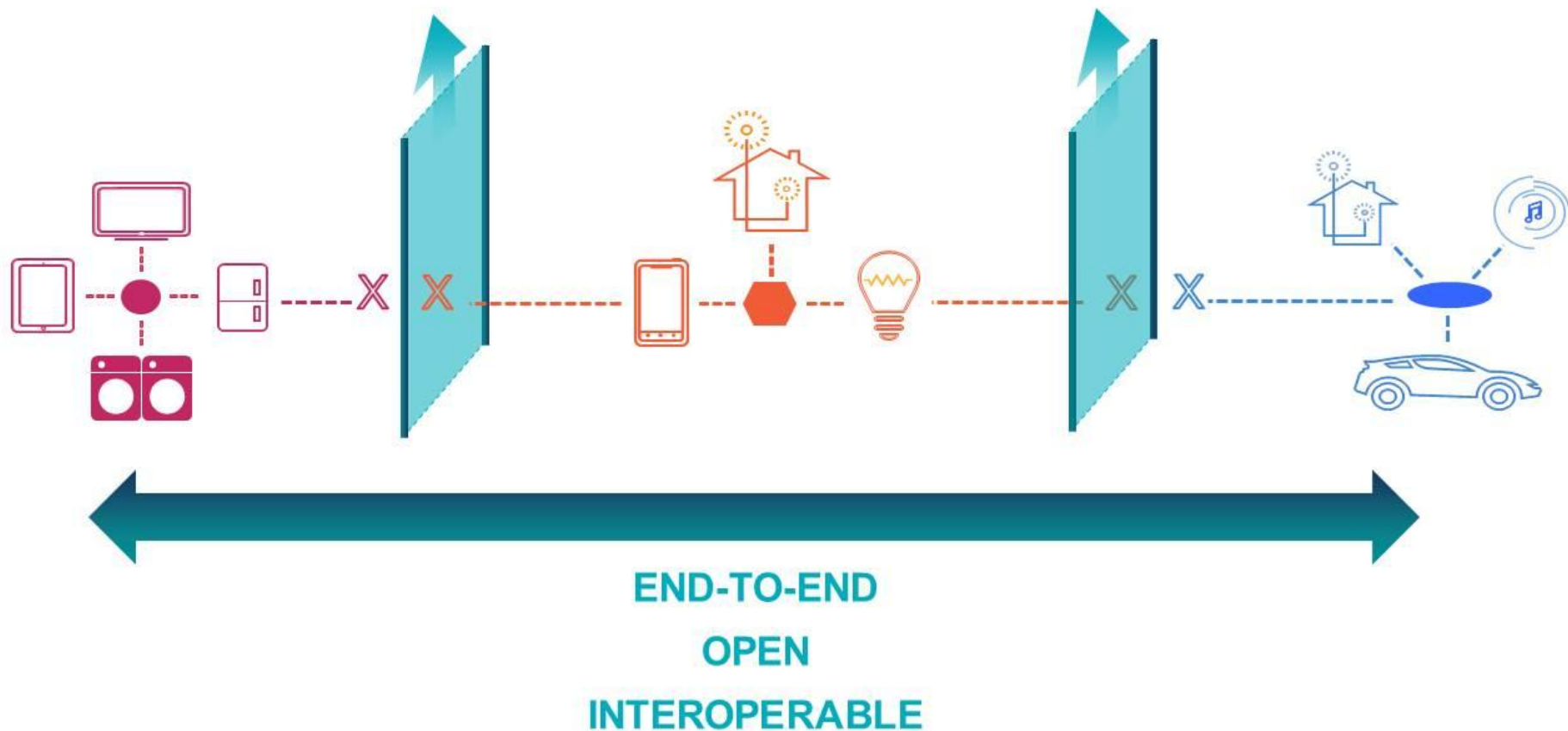
## The Connected Home Ecosystem is Fragmented



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## Walled Gardens Hurt the User Experience



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# Interoperability in the Cloud and the Role of the Gateway



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# Building a Differentiated User Experience

	Energy	Security	Home Control	Manufacturers
Cloud	openADR ALLIANCE	APIs	APIs	APIs
Gateway				
Home Network	Consortium for SEP 2 Interoperability	Proprietary	  	
Devices	 	 	 	

# Building a Differentiated User Experience



**What are the benefits of a home gateway and just how “smart” should it be?**

**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**



# Building a Differentiated User Experience

## Harnessing the Vast Resources of the Public Cloud



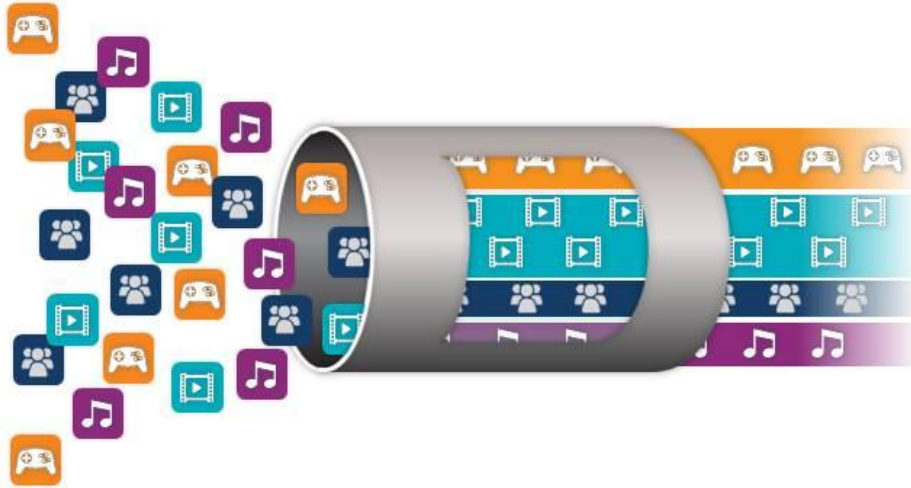
- Remote Communications
- Content Storage
- Computing
- Data Analytics
- Service / Content Delivery



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# Building a Differentiated User Experience

## Optimizing the Use of Bandwidth with StreamBoost™



- **Intelligent traffic** management for a faster, more efficient home network
- **Automatically** gives each app & device the bandwidth it needs for the best experience
- **Simple GUI** lets you see every device & app running on the network
- **Cloud-based updates** continue to optimize network performance

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# Building a Differentiated User Experience

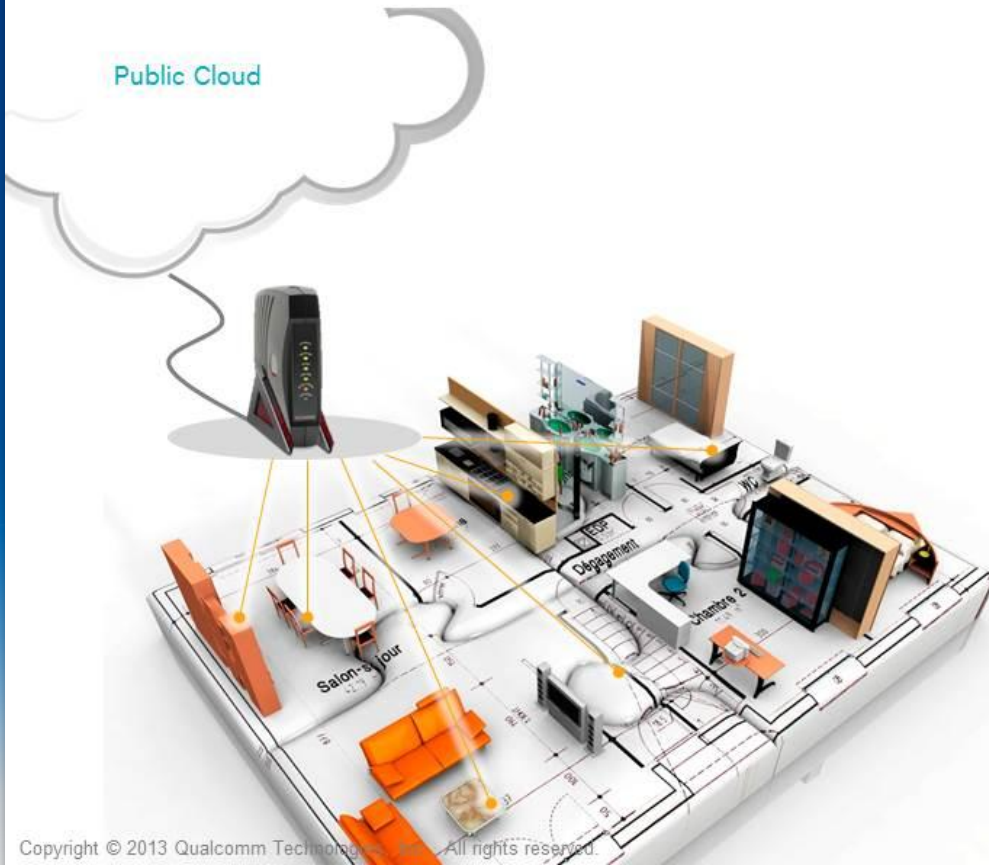


**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**

**Which applications do you envision running on a gateway rather than in the cloud or on the end device?**

# Building a Differentiated User Experience

## Applications Leverage Always-On, Central Position of a Smart Gateway



- The always-on, always-connected smart gateway ensures 24/7 home automation
- Smart gateway apps securely pull/push resources from/to the public cloud
- The central position of the smart gateway makes it ideal for multi-user, multi-devices apps
- Smart gateway apps minimize SW footprint in connected devices and keep their BOM low
- Smart gateway apps offload mobile devices in the home and keep them power efficient.

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# Building a Differentiated User Experience

## Horizontal Smarthome Solutions Platform...

### Cloud

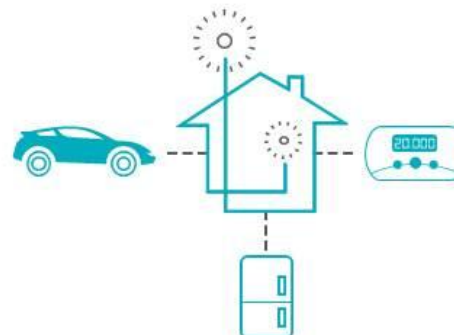
Content, Apps, Services



### Smarthome Gateway



### Smarthome Interconnected devices



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**Will we converge into a single gateway?**

**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**

# Building a Differentiated User Experience

## Specialized Gateways Deliver Vertical Services in the Home

### 3G/LTE

- Energy, Security, Healthcare
- Easy to deploy
- Broad urban coverage
- High throughput
- Average latency of milliseconds
- Wireless reliability
- Managed Network



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# Home Network Interoperability



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**ZigBee®**  
Control your world



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**Which connectivity technology  
meets the needs of the smart home?**

**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**

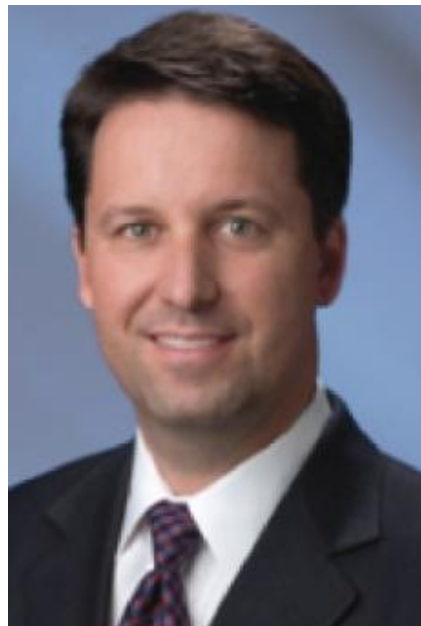
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Multiple PHYs Coexist to Address the Variety of Device Requirements



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# Building a Differentiated User Experience



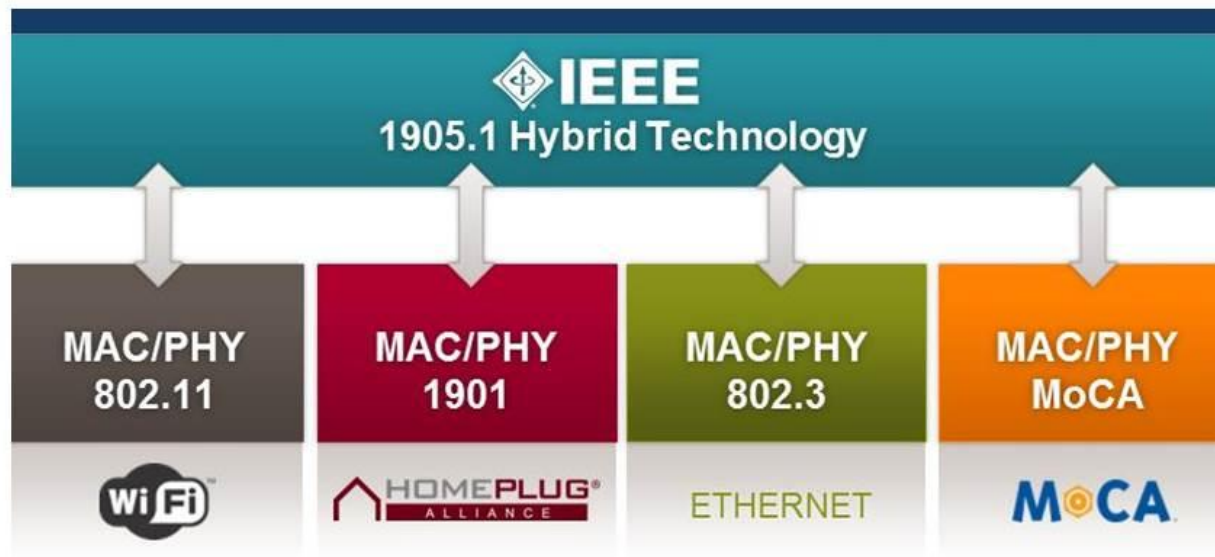
**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**

**What is 1905.1 and why is it important?**

**What is the advantage of aggregating bandwidth from different networks in the home?**

# Building a Differentiated User Experience

## Building a Hybrid Home Network with the IEEE 1905.1 Standard



Backwards Compatibility • Mobility • Advanced Diagnostics • QoS • Load Balancing  
Self Install • Energy Management • Multiple Simultaneous Streams • Fallback

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# Building a Differentiated User Experience

Hy-Fi™ Delivers High-fidelity Networking to Every Room and Device

Full home coverage

Approaching 100 Mbps



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# End Device Interoperability

The background features a dark blue gradient with several light blue technical charts. On the left, there are bar charts with horizontal bars and arrows, some labeled with '50' and '60'. In the center, a large chart with a grid shows a series of horizontal lines, with a white curved shape partially obscuring it. At the bottom, there are more charts, including one with a diagonal line and another with a grid and arrows. The overall aesthetic is technical and data-driven.

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# Building a Differentiated User Experience





# Building a Differentiated User Experience

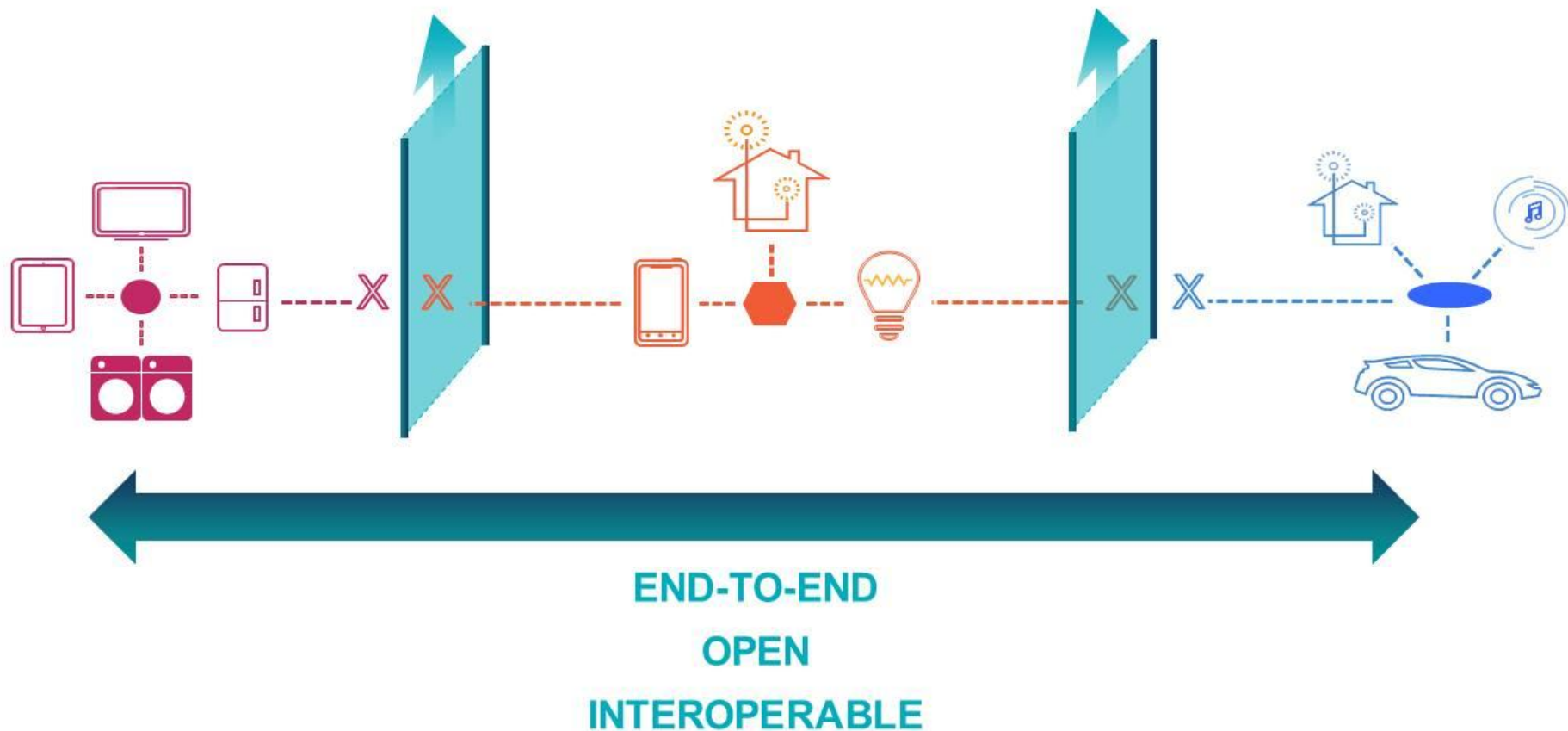


**How can we enable devices to react to each other's presence?**

**Sy Choudhury**  
*Sr. Director of  
Product Management*  
**Qualcomm**

# Building a Differentiated User Experience

## Walled Gardens Hurt the User Experience

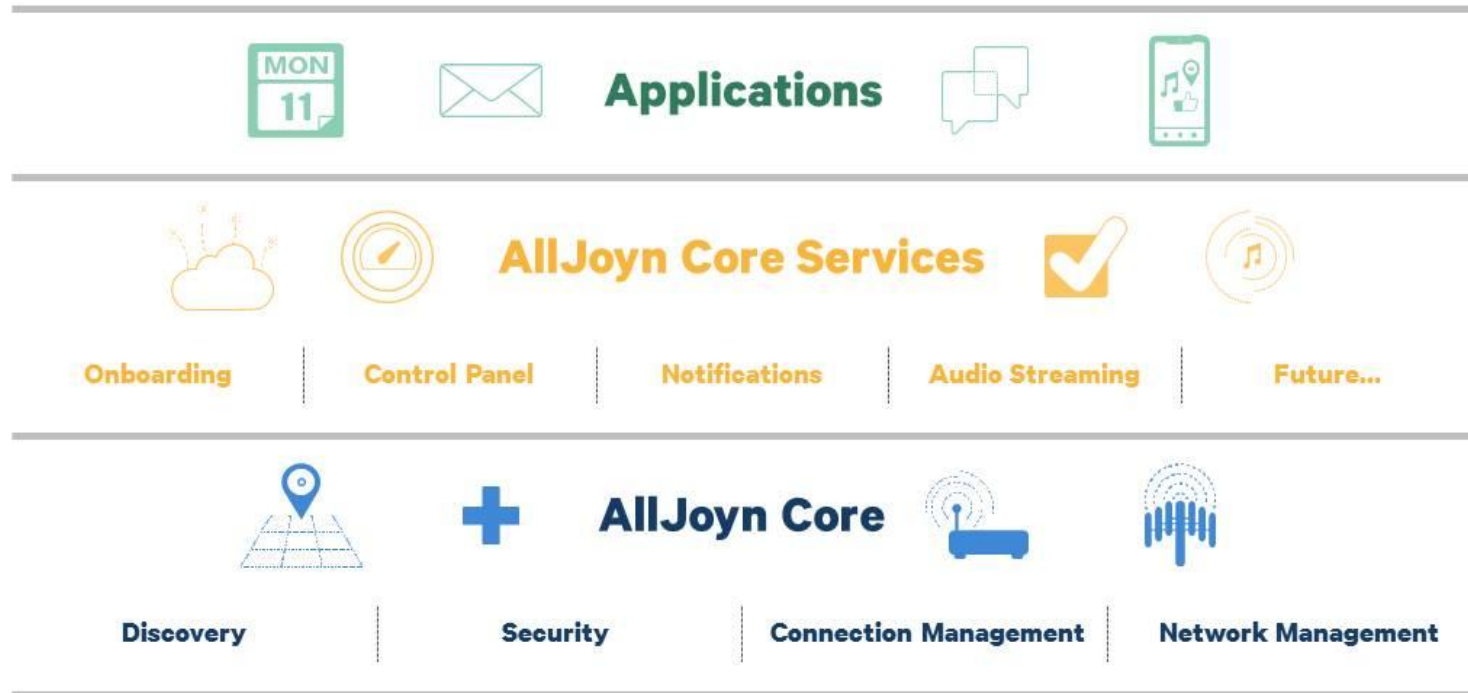


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# Building a Differentiated User Experience

AllJoyn™ is a Free, Open Framework For Discovery & Connectivity

Rich, open interaction across device categories



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# Building a Differentiated User Experience



**Sy Choudhury**  
*Sr. Director of  
Product Management*  
**Qualcomm**

**Where does AllJoyn fit in the OSI 7 layer model?**

**Is the main point to provide discovery and communication to any MAC/PHY?**

# Building a Differentiated User Experience



**Notification is one of the AllJoyn services. How does it work?**

**Sy Choudhury**  
*Sr. Director of  
Product Management*  
**Qualcomm**

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AllJoyn™ Sends Event Notifications Across the Home

With AllJoyn™ Notifications Service



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# Building a Differentiated User Experience



**What other core services are available using AllJoyn?**

**Sy Choudhury**  
*Sr. Director of  
Product Management*  
**Qualcomm**

# Building a Differentiated User Experience

AllJoyn™ Exposes the Capabilities of Devices Around Us

With AllJoyn™ Control Service



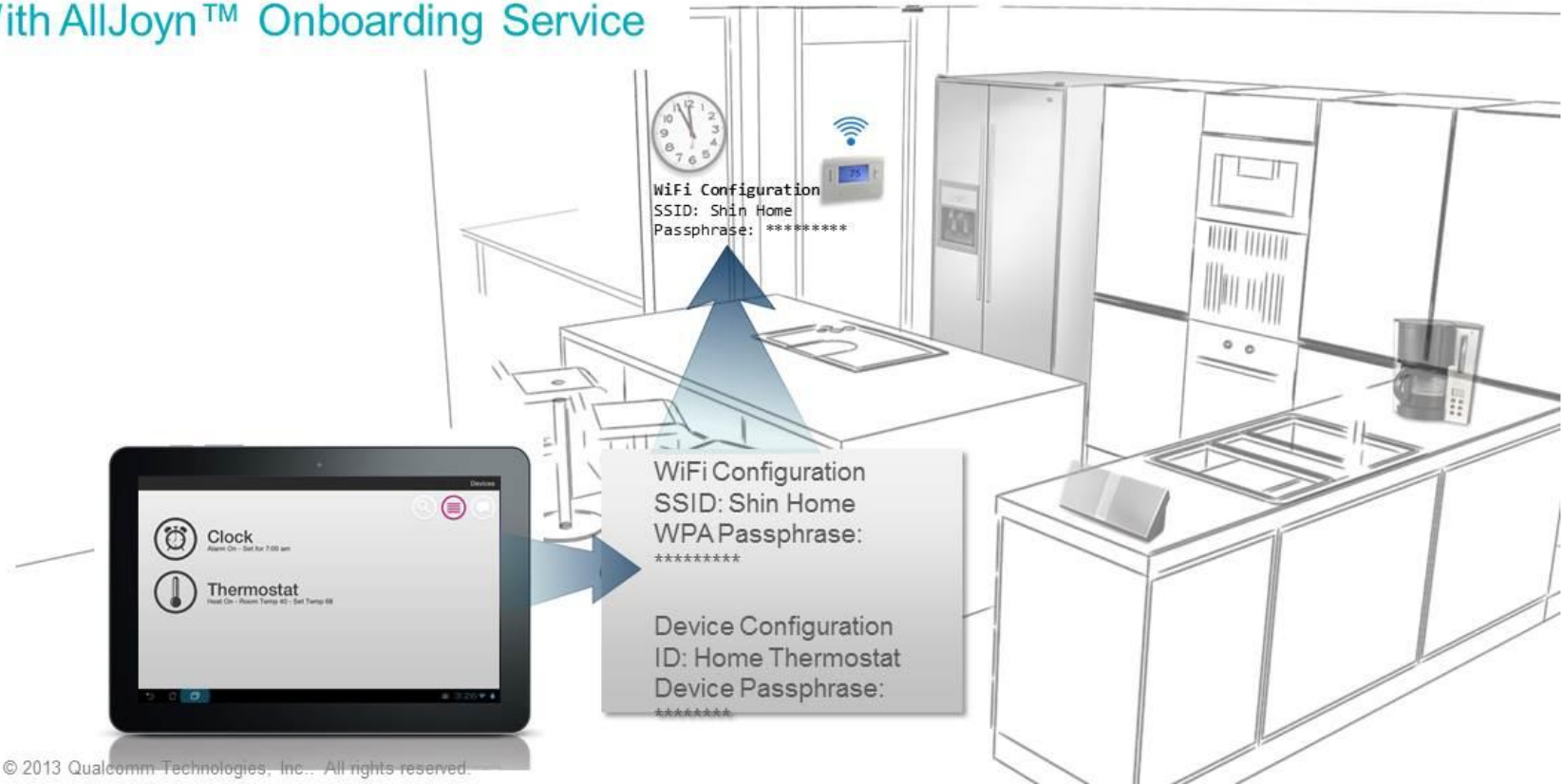
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# Building a Differentiated User Experience

AllJoyn™ Simplifies the Addition of New Devices to the Home Network

With AllJoyn™ Onboarding Service



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# Building a Differentiated User Experience

AllJoyn™ Allows Users to Stream Music to Any Compatible Audio Device

With AllJoyn™ Audio Streaming Service

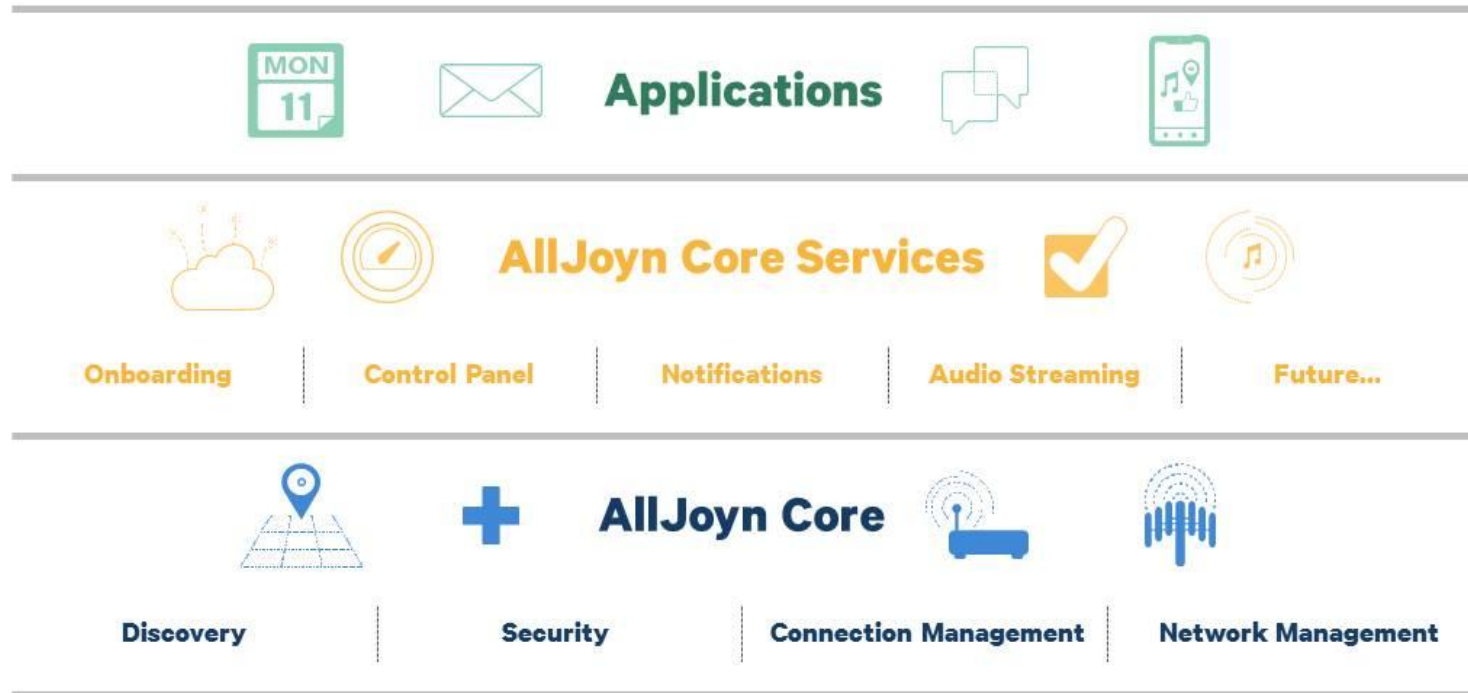


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# Building a Differentiated User Experience



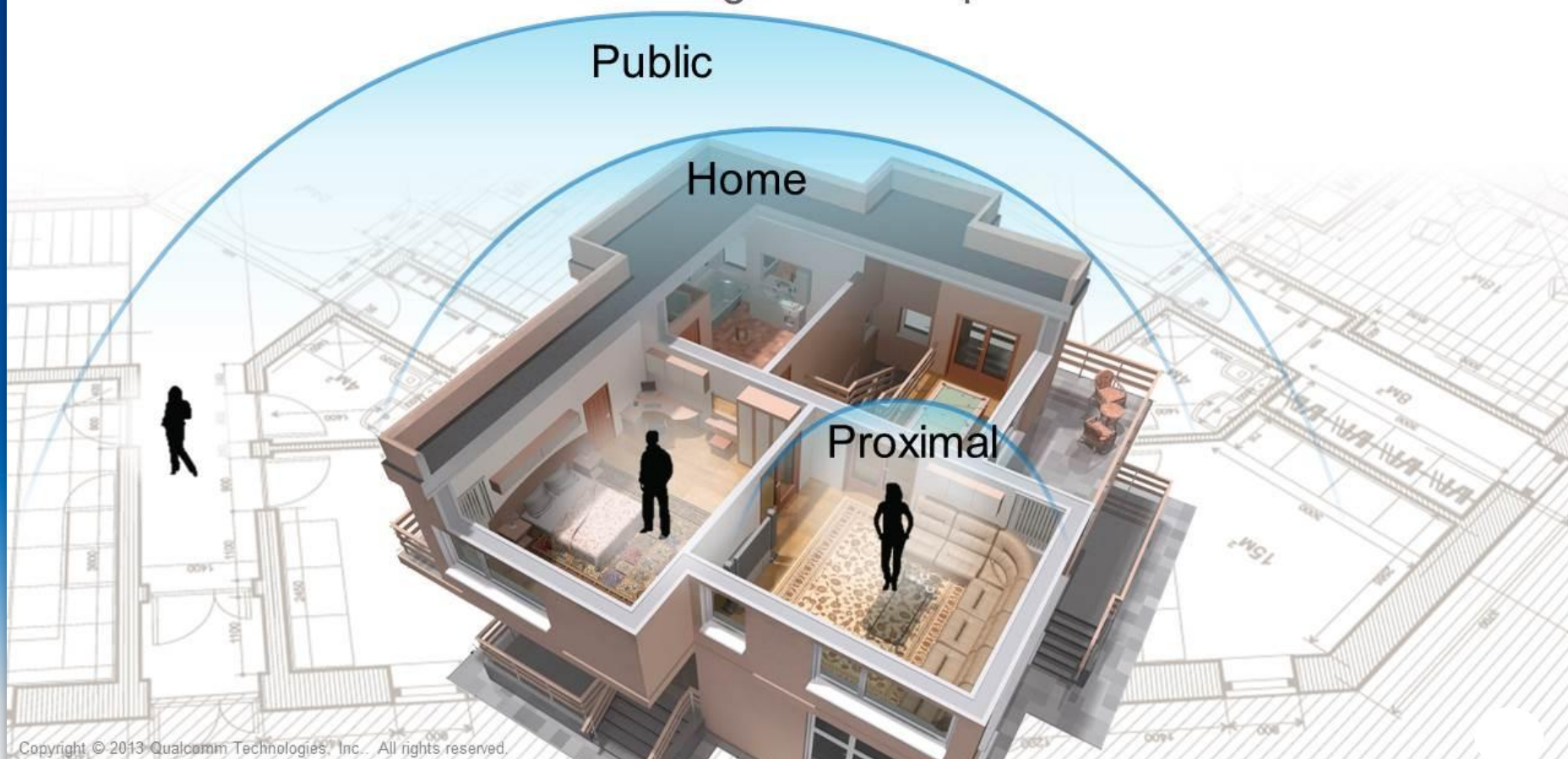
**Fabrice Hoerner,**  
*Sr. Manager of*  
*Technical Marketing*  
**Qualcomm**

**Does a more distributed intelligence model eventually eliminate the need for centralized control?**



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Centralized and Distributed Intelligence Complement Each Other

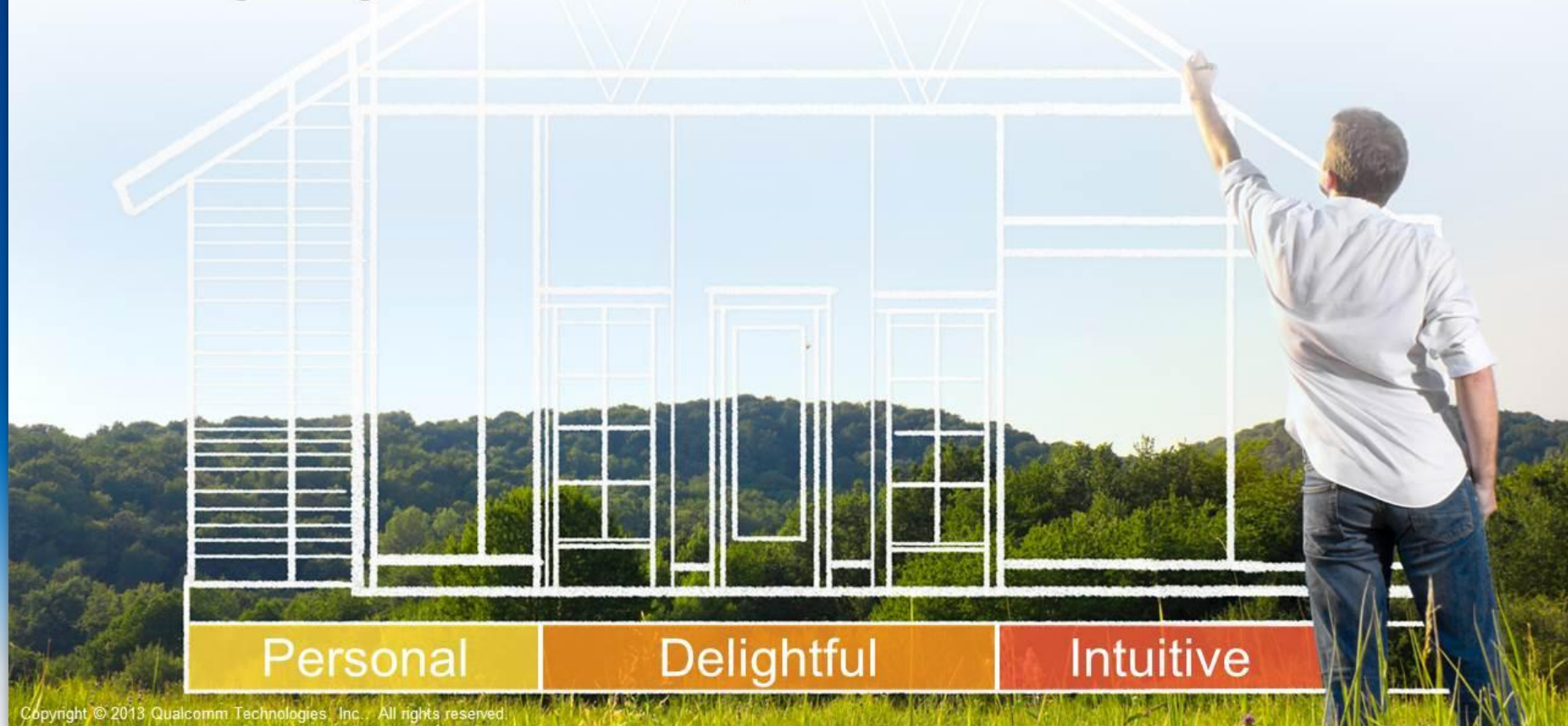


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# Building a Differentiated User Experience

## Reimagining the Home Experience



# Questions?



**Todd Antes**  
*Vice President of  
Product Management*  
**Qualcomm**



**Sy Choudhury**  
*Sr. Director of  
Product Management*  
**Qualcomm**



**Fabrice Hoerner,**  
*Sr. Manager of  
Technical Marketing*  
**Qualcomm**

# Thank You!

**Todd Antes**



*Vice President  
of Product Management*

**Sy Choudhury**



*Sr. Director of  
Product Management*

**Fabrice Hoerner**



*Technical Marketing,  
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