

FUTURE DECODED

6-7 OTT '16 / MILANO

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Customize and Control Connected Devices




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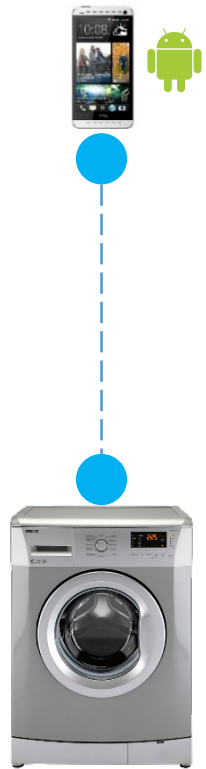
Agenda

- AllSeen and AllJoyn
- AllJoyn Platforms and APIs
- AllJoyn in Windows 10
- Building an AllJoyn Device & App for Windows 10

Manage and control connected devices with AllJoyn, an Open Source project building the framework for the Internet of Things (IoT)

IoT Barrier: Proprietary Solutions

IHV Transport



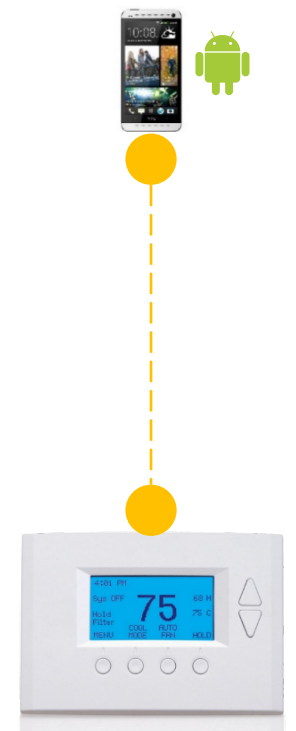
ISV Schema



OS API



Closed System



AllSeen and AllJoyn

- **AllJoyn** is an open source communication framework that enables IoT device and app interoperability.
- The **AllSeen Alliance** is a non-profit consortium that oversees AllJoyn. Stated focus is to enable the “Internet of Everything”.
- The AllSeen Alliance is a cross-platform **Linux Foundation** Collaborative Project.

AllJoyn



The innovative companies that support AllJoyn

Arçelik A.Ş.

Canon

 **Electrolux**

Haier

 **LG**
Life's Good

 **Microsoft**

Panasonic

PHILIPS

 **Qeo**
a technicolor company

QUALCOMM
QUALCOMM CONNECTED
EXPERIENCES, INC.

SHARP

 **Silicon
Image**
A Lattice Semiconductor Company

185 plus member companies committed to developing interoperability standards for devices, applications, and services

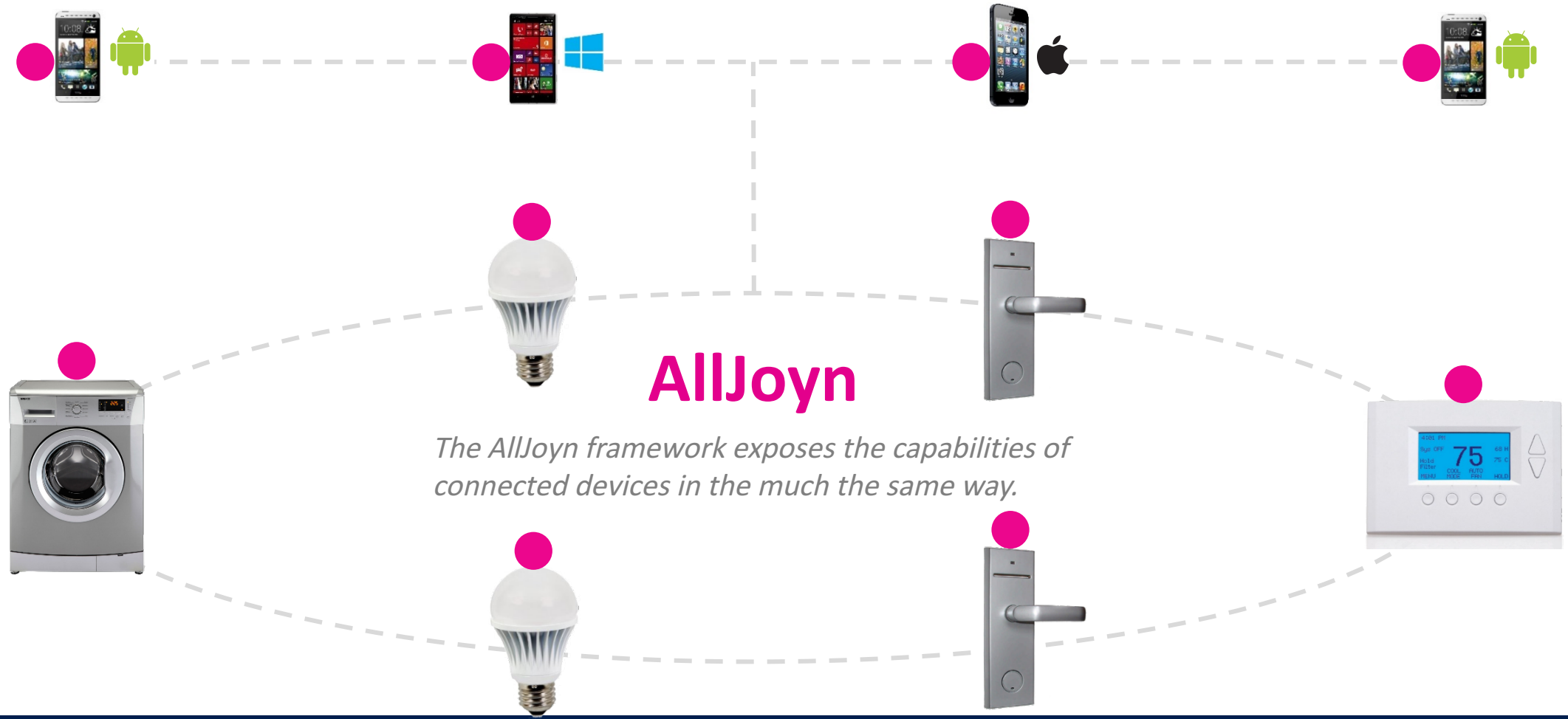
[Members](#)

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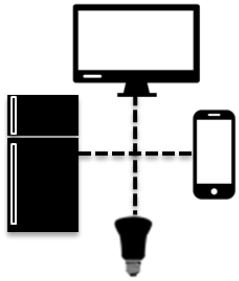
AllJoyn Enables IoT Device Interoperability



AllJoyn overview

- AllJoyn is an open sourced framework to enable proximity based peer to peer mobile networking.
- It provides an abstraction layer with a clean API to the underlying networks stacks (wireless, bluetooth) which is relatively easy to extend with new network implementations.
- AllJoyn provides service advertisement and discovery abstraction, as well as various application to application security mechanisms and a Remote Method Invocation abstraction.

The problems that AllJoyn solves...



DISCOVER
nearby devices



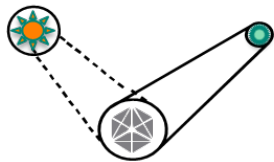
IDENTIFY
services running
on those devices



CONTROL
devices near and far



MANAGE
remote and local



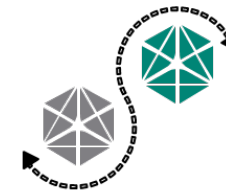
INTEROPERATE
across OS, device
& manufacturer



ADAPT
to devices coming
and going



SPAN
diverse
transports

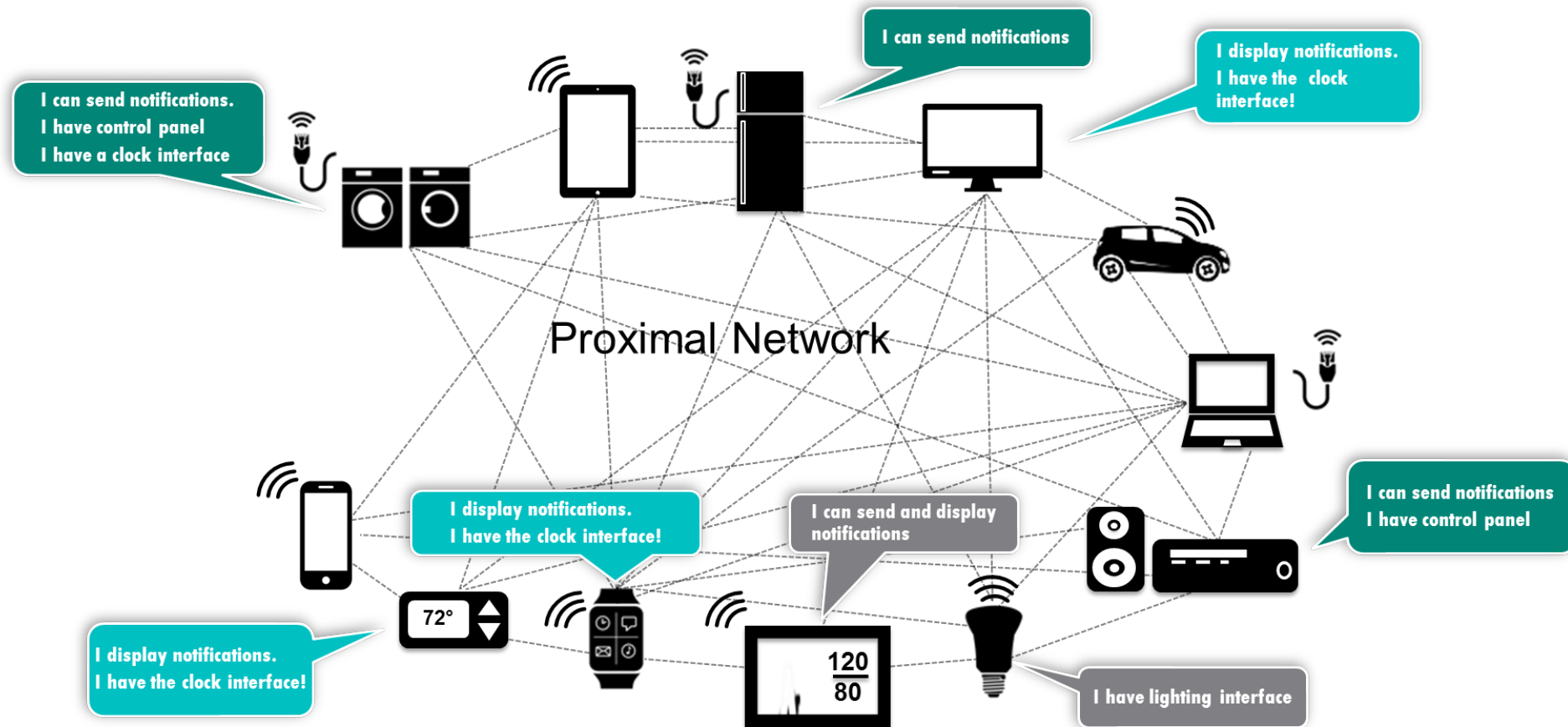


EXCHANGE
information



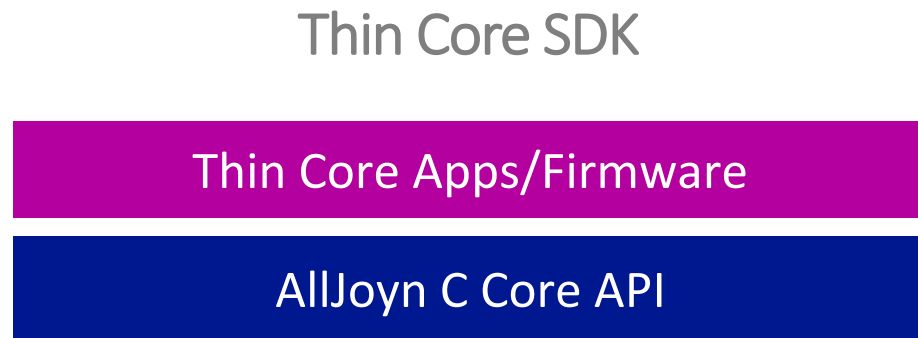
SECURE
against bad
actors

AllJoyn enabled devices describe their capabilities via service interfaces on a virtual bus



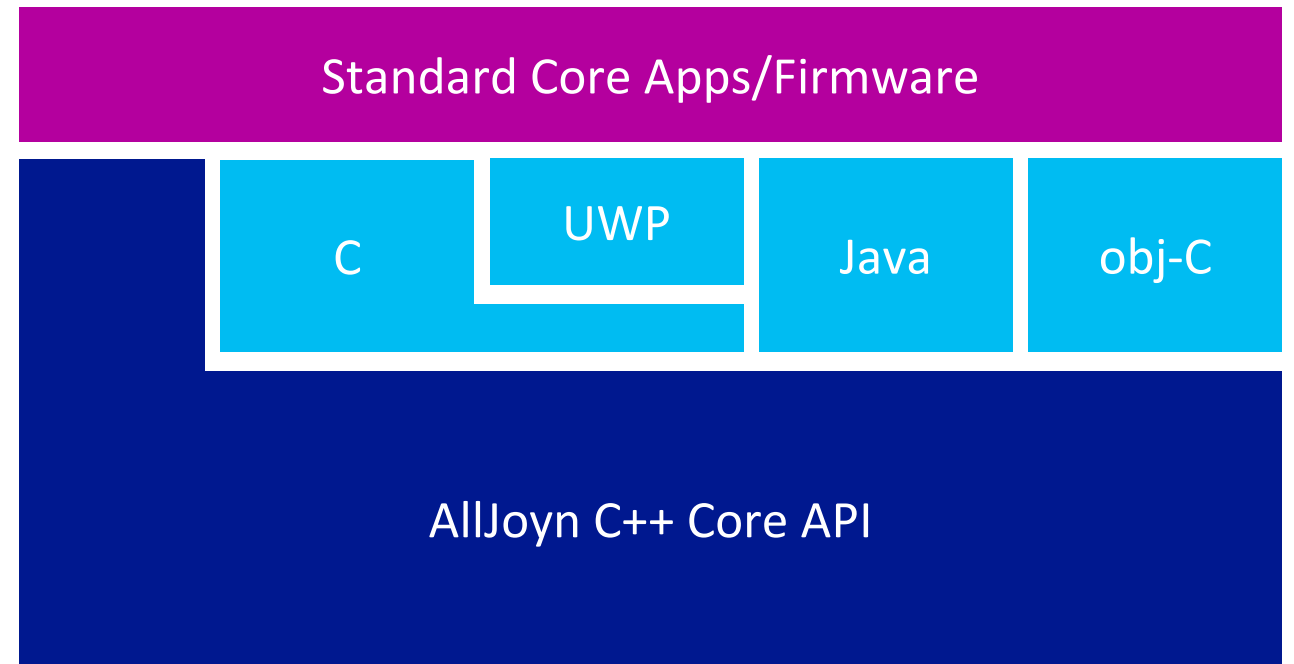
AllJoyn Platforms and APIs

Standard Core SDK



~10K code size

Microcontroller-class device



~1,700K code size

Full-OS class devices

AllJoyn Platforms & Languages Bindings

(15.04 Release)

Platform	Core	Base Services (planned)	Platform Versions	Toolchain/IDE
Windows	X	X	Windows 7 to 10	VS 2012, VS 2013
Android	X	X	JB, KK, LP	Android SDK, NDK r9d
iOS	X	X	iOS 8.1	XCode 6.1
OS X	X		OS X 10.9	XCode 6.1
Linux Ubuntu	X	X	Ubuntu 14.04	
Open WRT	X	X	BB, CC	

Platform	C++	C	Java	Objective-C
Windows	Core, Base	Core	Core	
Android	Core, Base	Core	Core, Base	
iOS	Core			Core, Base
OS X	Core			
Linux Ubuntu	Core, Base	Core	Core, Base	
Open WRT	Core, Base	Core		

AllJoyn Common Service Frameworks

About

Discovery and app/device metadata

Notification

Send and receive device notifications

Onboarding

Get devices onto wireless networks

Configuration

Manage and configure devices

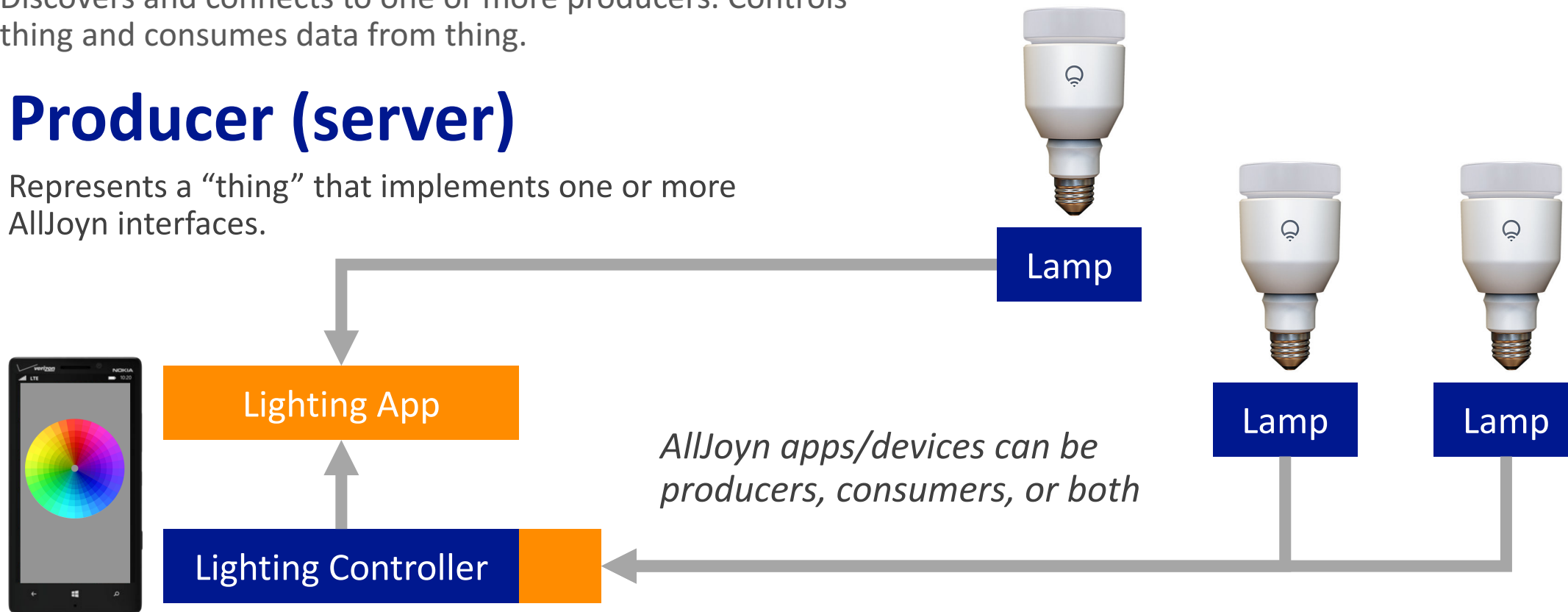
AllJoyn Software Roles

Consumer (client)

Discovers and connects to one or more producers. Controls thing and consumes data from thing.

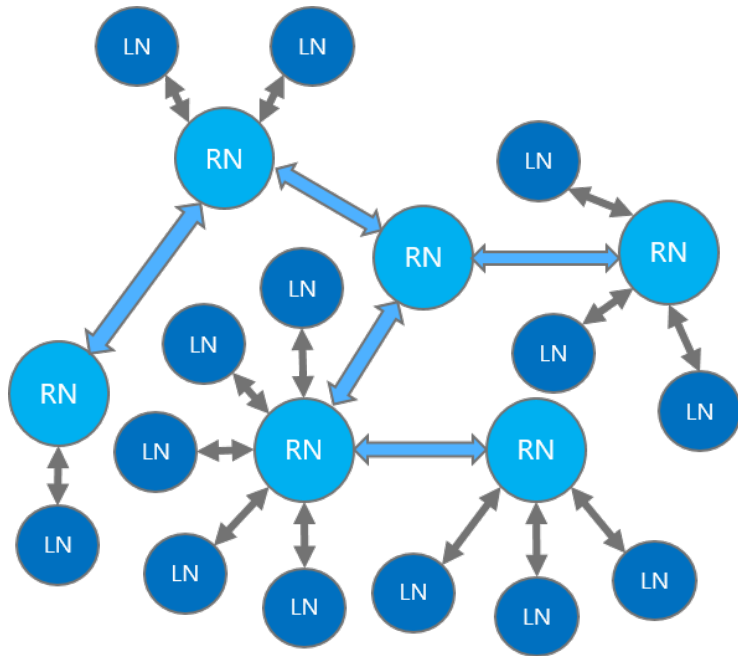
Producer (server)

Represents a “thing” that implements one or more AllJoyn interfaces.



AllJoyn Architecture

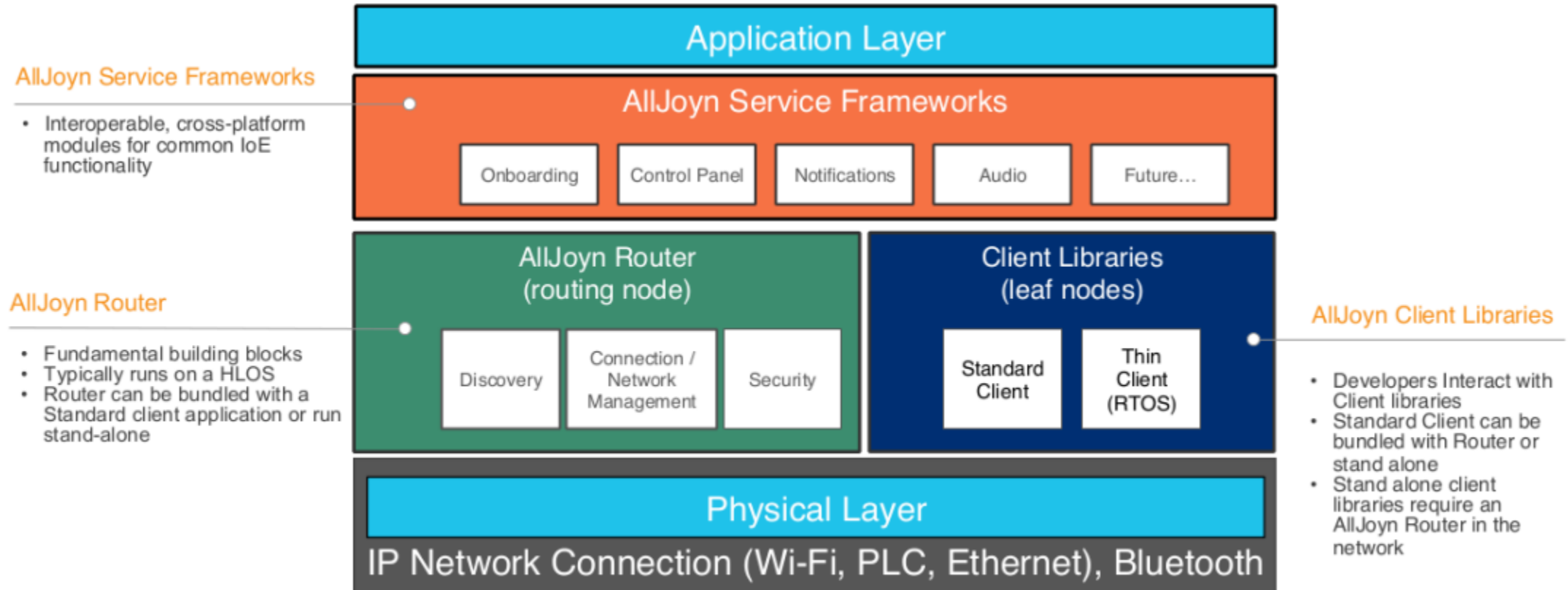
The AllJoyn framework establishes a standard by which devices and apps can advertise and discover each other. AllJoyn devices describe their capabilities via service interfaces on a virtual bus.



Routing Nodes (RN) - Also referred to as “Routers”, they can talk to any node. *(Discovery / advertising, Presence / session-management , Publish / subscribe support)*

Leaf Nodes (LN) - Also referred to as “Applications”, they can talk to routing nodes or other leaf nodes via routing nodes. *(Application code, Authentication and encryption)*

AllJoyn Architecture



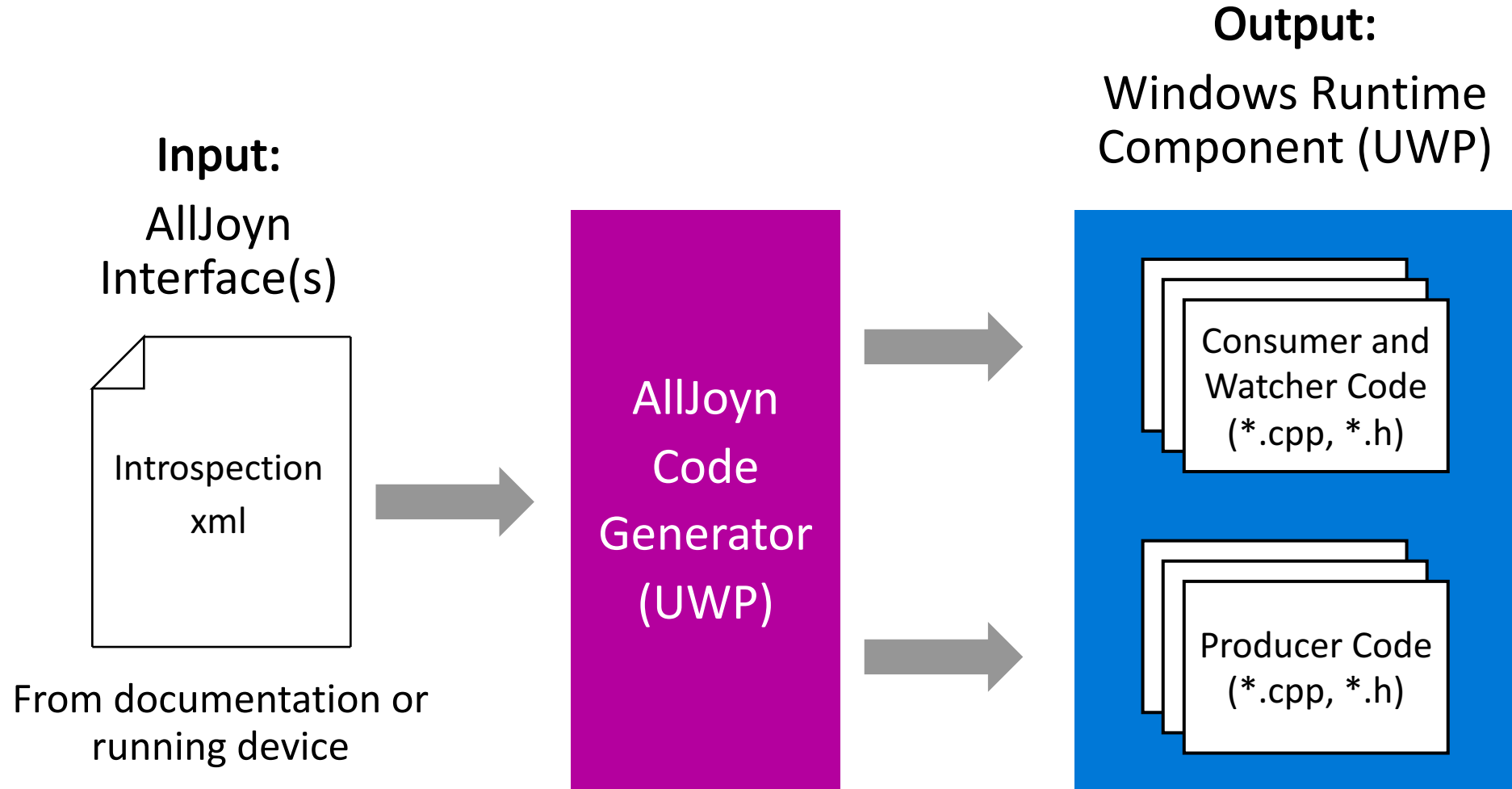
AllJoyn in Windows 10

Integrated AllJoyn Runtime	Servicing, reduced code size
Router Node Service	Optimized performance, full integration
C and UWP APIs	Reduced code size, integrated with Windows SDK
Visual Studio and SDK Integration	Seamless AllJoyn device and app development
Samples	C and UWP Samples

AllJoyn UWP App Development

- Install Windows 10 and SDK/Tools
- Identify and/or Define AllJoyn interfaces
- Generate code
- Implement and hook up AllJoyn functionality
- Build for targets
- Test and Certify

AllJoyn UWP Code Generator



Device System Bridge (DSB) Framework

Non-AllJoyn
Devices

ZigBee Device

Z-Wave Device

...

BACnet Stack

Plugin

Plugin

Plugin

Device System
Bridge
(DSB)

Virtual AllJoyn
Device

Virtual AllJoyn
Device

...

Virtual AllJoyn
Device

AllJoyn
Endpoints

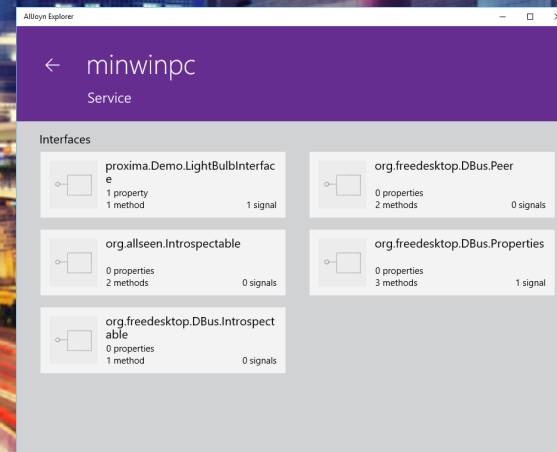
AllJoyn Apps
and Devices

DEMO

Building a WinRT AllJoyn App for Windows 10

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Personalize your home in millions of colors

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A nighttime cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, a multi-lane highway shows long-exposure light trails from cars, with red trails from taillights and white/yellow trails from headlights. A pedestrian bridge with railings and some greenery is visible on the right side of the highway. The sky is dark blue.

Domande?

Materiale su

<http://www.communitydays.it/>

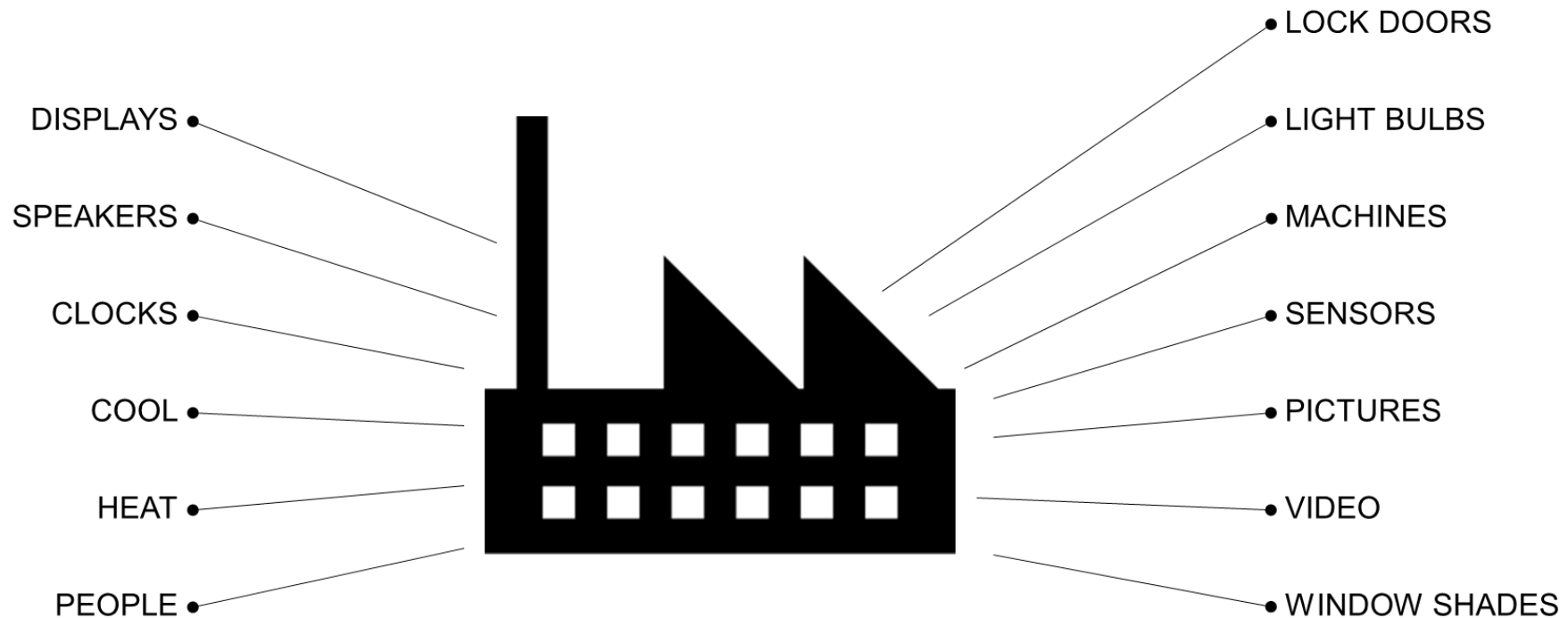
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Recap

A single protocol allowing products and apps to expose their capabilities and interact with other devices and apps.



Links

- [AllJoyn® Framework](#)
- [Windows 10 IoT Core – AllJoyn](#)
- [AllJoyn Explorer](#)
- [Channel 9: Building AllJoyn Apps on Windows 10 \(MSDN\)](#)
- [AllJoyn® Studio](#)
- [Using the AllJoyn® Studio Extension](#)
- [AllJoyn Device System Bridge Template](#)
- [Mapping Bridge Interface Objects to Alljoyn](#)
- [Introspection Data Format](#)

Who I am



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