



**ALLSEEN
ALLIANCE**

Device System Bridge

Torsten Stein, Sr. Program Manager

Artem Zhurid, Principal Development Lead

Microsoft

Scattered Ecosystem Challenge

AllJoyn solves the technical challenge of enabling devices to communicate across platform and transport technologies. Consumers still face the issue that AllJoyn devices will only work within their own ecosystem, creating a barrier for adoption.

- Optimizing the total cost of ownership for customer by utilizing existing devices and enable them for AllJoyn scenarios and
- Resolve dependencies on device makers to provide firmware updates to support AllJoyn

Enabling AllJoyn to work with a wide range of device ecosystems is a key driver for customer acceptance

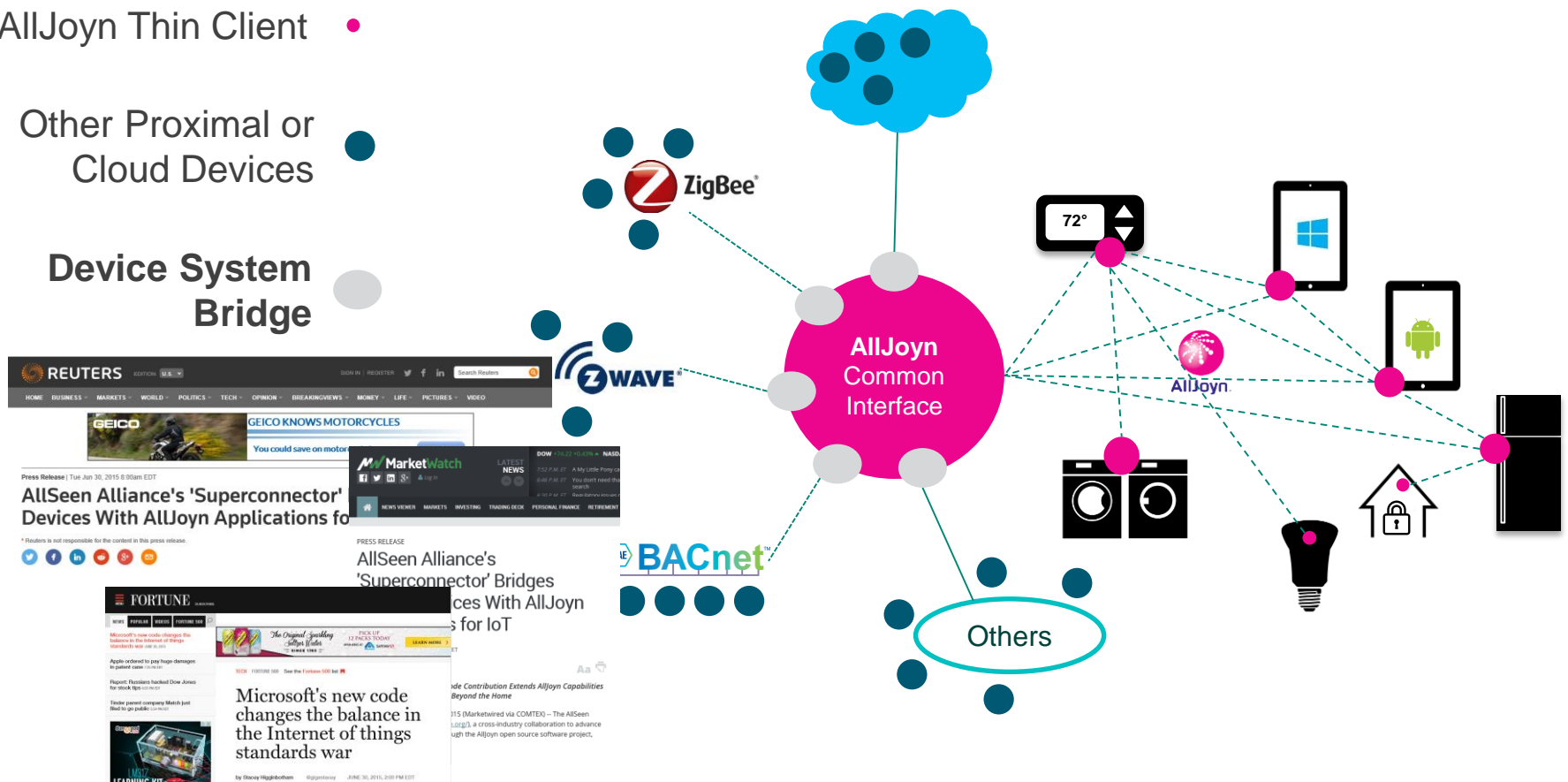
AllJoyn as the Common Language

AllJoyn Node ●

AllJoyn Thin Client ●

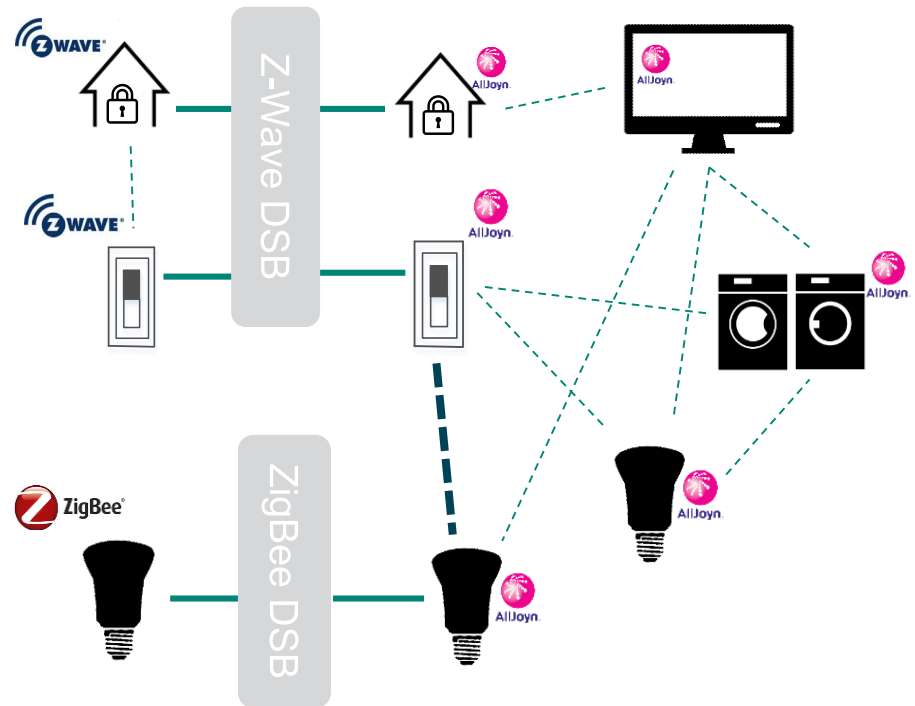
Other Proximal or
Cloud Devices ●

Device System
Bridge ●



Enabling non-AllJoyn devices

- Setup DSBs with access to both the AllJoyn and non-AllJoyn network
- DSB creates virtual devices for each non-AllJoyn device on the AllJoyn bus
- Virtual devices can communicate with any AllJoyn
- Different non-AllJoyn systems can communicate with each other through AllJoyn
- No changes needed in AllJoyn or non-AllJoyn devices



DSB Architecture

OSS Z-Wave example

Bridge

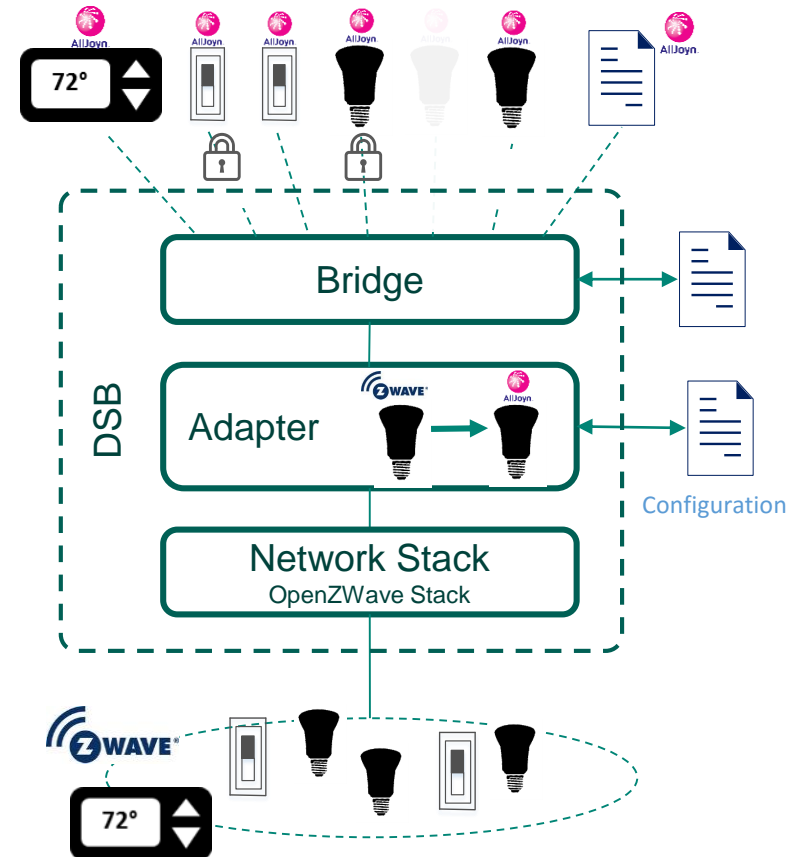
- Represents each internal device object as AllJoyn device, separate bus attachment for each device
- Devices are dynamically added to or removed from the AllJoyn bus
- Configuration manages device visibility and security
- Creates bus attachment for bridge and adapter configuration interface
- Bridge code is agnostic to internal device types and reusable for any type of DSB

Adapter

- Instantiates and manages virtual devices on behalf of each device from the non-AllJoyn network
- Translates device schemas into internal device objects
- Manages network resources, e.g. access keys, credentials
- Configuration file can hold adapter specific information

Network Access Stack

- Access to non-AllJoyn Network specific , e.g. Z-Wave stack



Interfaces

Bus Interfaces

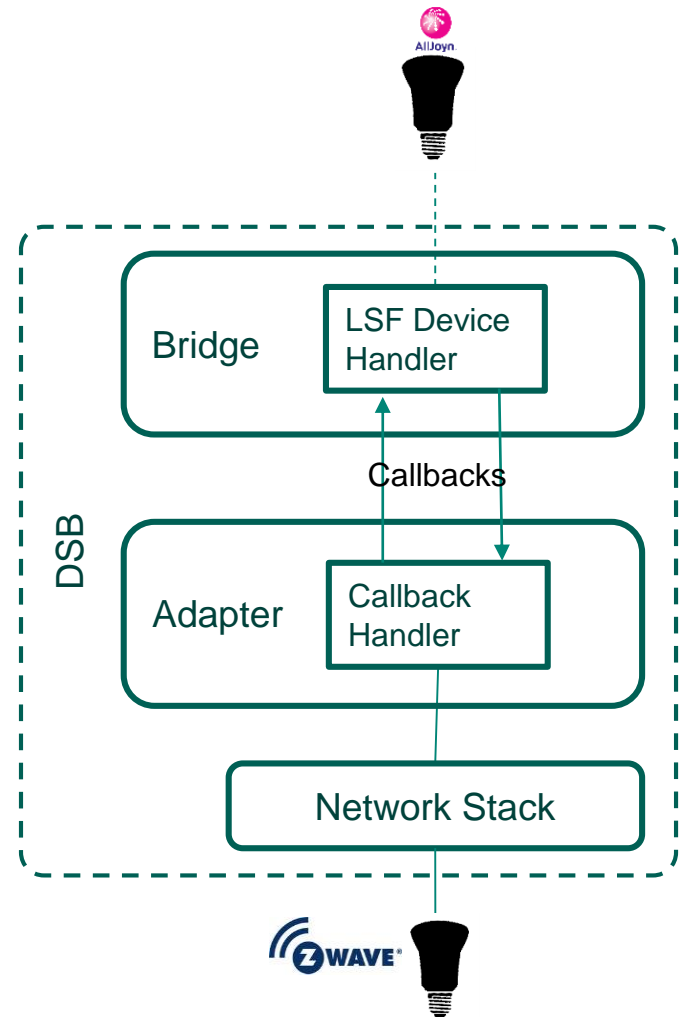
- Each device is a separate bus attachment and therefore has its own **About** and **Icon interface**. The content of both are coming from the Adapter
- Bridge will generate interface for each internal device object by mapping properties, attributes, methods and signals of the internal device object

Interface Names

- The AllJoyn Interface name can be specified in the *InterfaceHint* property in the *IAdapter* interface
 - Dave Thaler’s talk on “*Designing an AllJoyn Interface*”
- If *InterfaceHint* is not specified then Interface names are created automatically from information in the *IAdapter*
 - `<ExposedAdapterPrefix>.<AdapterName>.Interface_1`
e.g. `com.microsoft.ZWaveAdapter.Interface_1`

Special handlers

- AllJoyn specifies several base services and standard interfaces frameworks such as LSF, HAE or Control Panel. DSB can exposes those with special handlers.
- LSF and Control Panel handler code is in the bridge and callbacks are provided for the adapter to handle requests



Extending Device Capabilities

Adding and redefining capabilities to devices

- Creating devices with enriched capabilities, e.g. add location information to a device
- AllJoyn DSB to reflecting existing AllJoyn devices back to the bus with changed capabilities

Merge or separate devices

- Create devices that best reflect their usage, e.g. define multiple light bulbs as one or separate a multi-sensor device into separate sensors on the AllJoyn bus

Resources

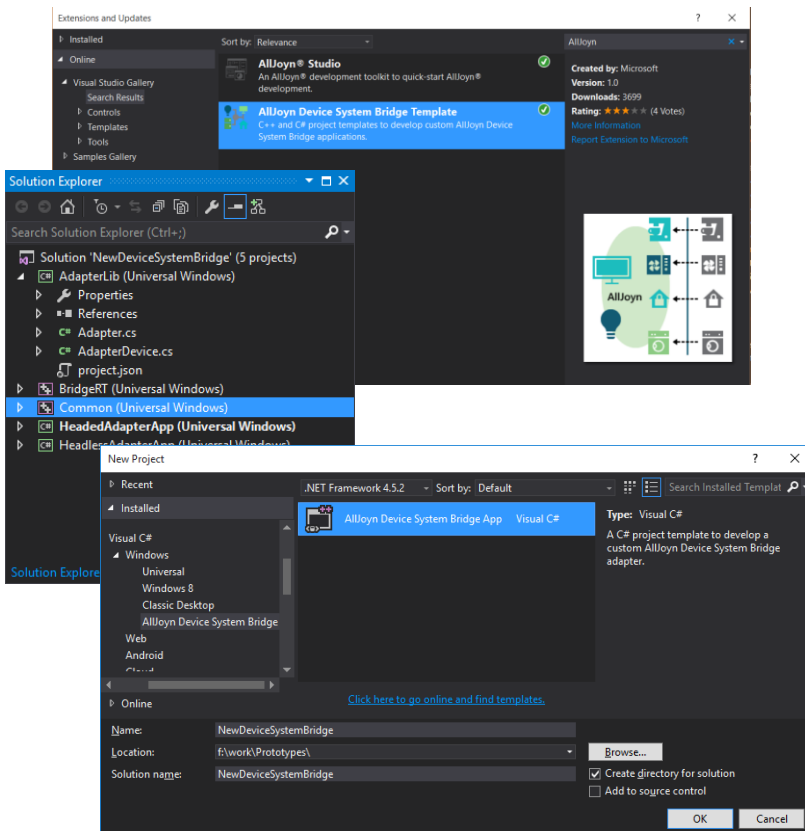
Getting started

- Go to AllSeenAlliance.com and search for “*DSB*” and follow the links to the Wiki page: wiki.allseenalliance.org/gateway/dsb

Repository

- All DSB code is available at git.allseenalliance.org/cgit/dsb.git
- Supported platform: Standard client on Windows 10
- Samples
 - [Mock DSB Tutorial and Sample](#)
 - [Z-Wave DSB Tutorial and Sample](#)
 - ZigBee DSB Tutorial and Sample (soon)
 - Nest DSB Tutorial and Sample (soon)
 - [GPIO DSB Tutorial](#)
 - [BACnet DSB Sample](#)

DSB Visual Studio Template



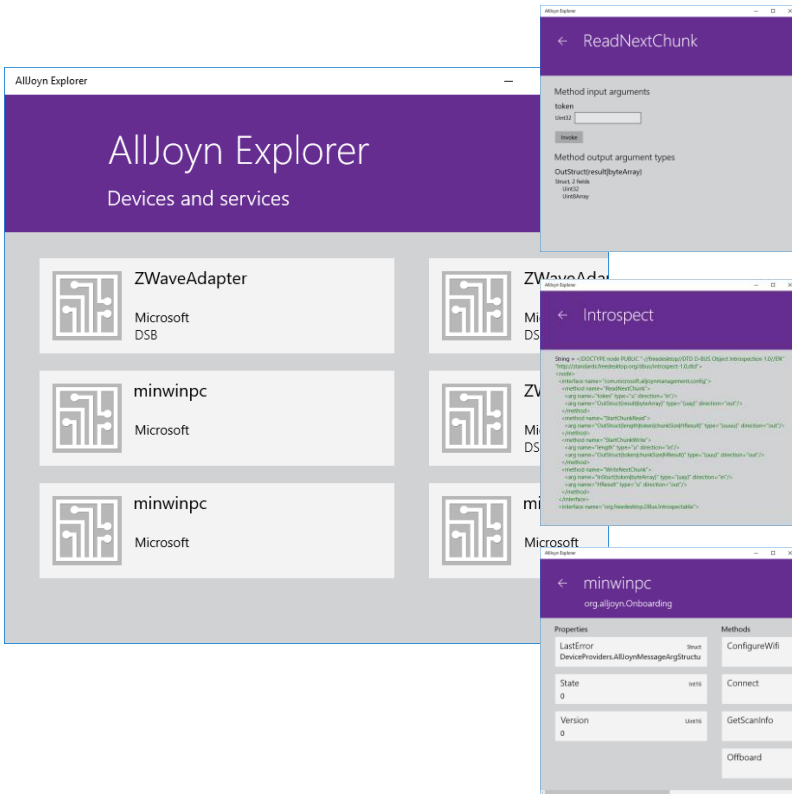
Visual Studio Extension to build Device System Bridge UWP Applications

- Managed (C#) or Native (C++/CX)
- Headed or Headless UWP Application

Go to **Visual Studio Gallery** and search for **DSB**

... or Download [here](#)

AllJoyn Explorer



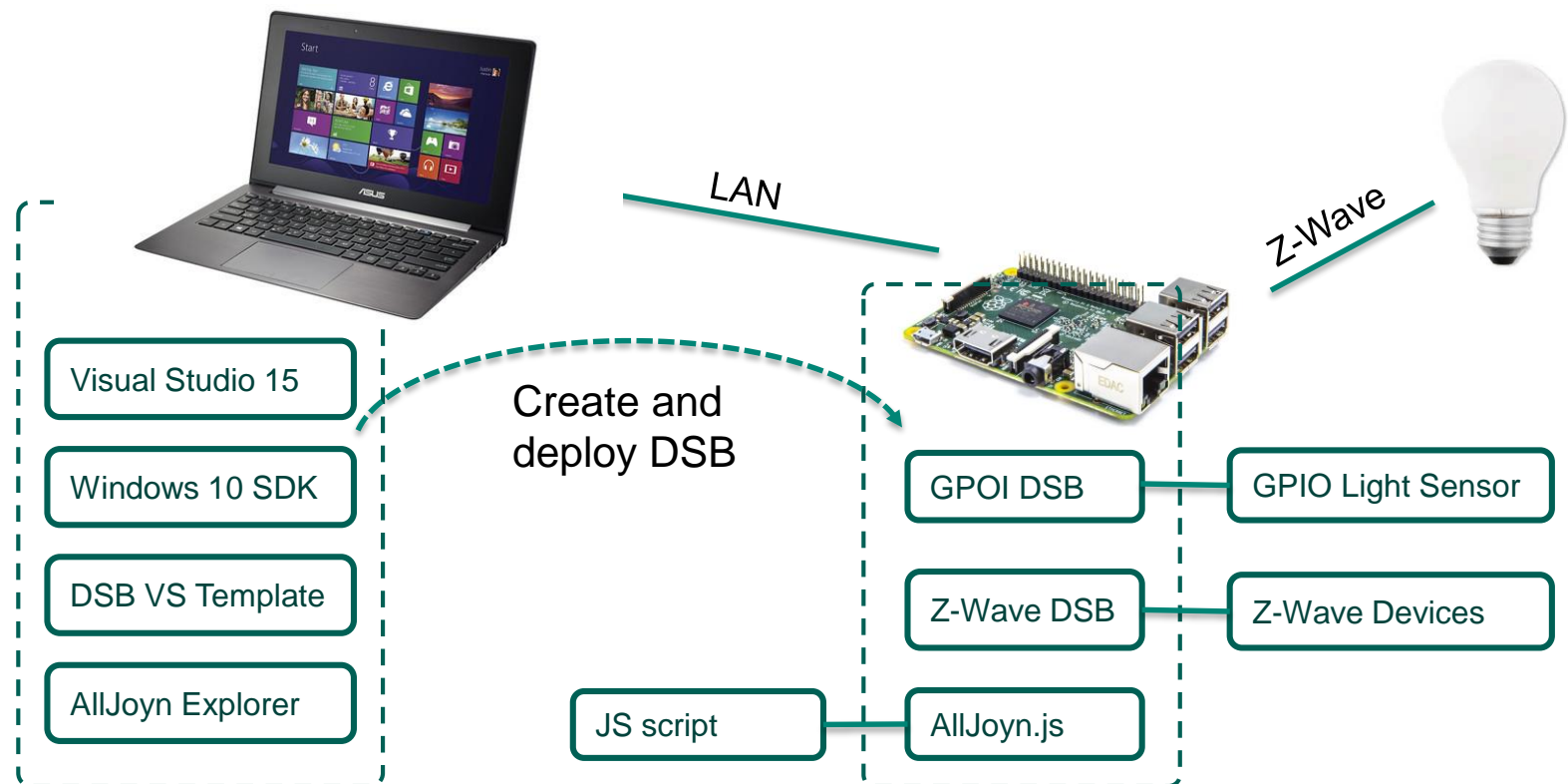
Windows Application to explore and interact with devices on the AllJoyn bus

- Enumerate servers, list interfaces and bus objects
- Read and write properties
- Call methods
- Subscribe to signals

Available in Store -> search for "AJX"


Demo

Create a DSB in 5 min and use the device with other AllJoyn devcies





Thank you

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