

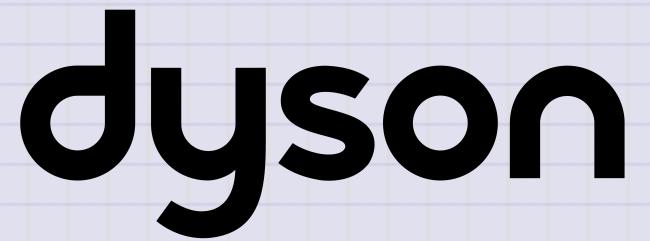
What's the Matter?

The Path to Smart Home Ubiquity

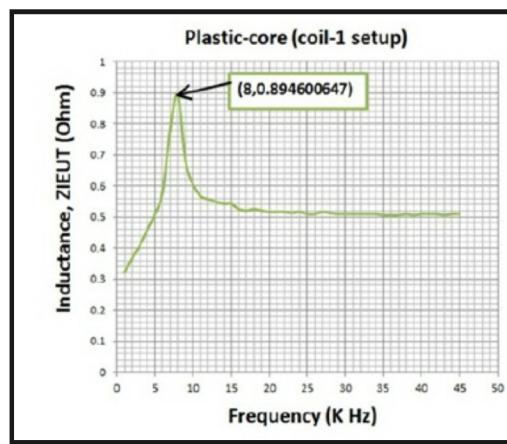
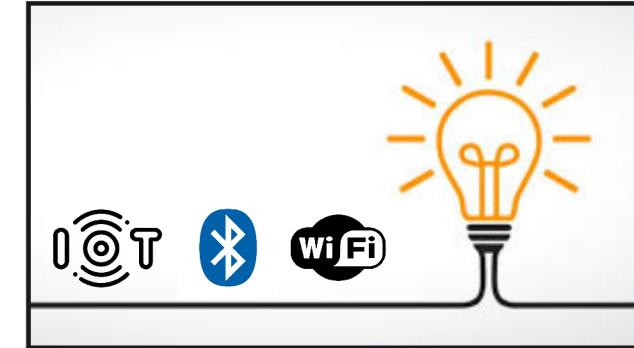
Matt Hazley

Associate Principal Connectivity Engineer

Dyson UK / New Product Innovation Software Team



Matt Hazley



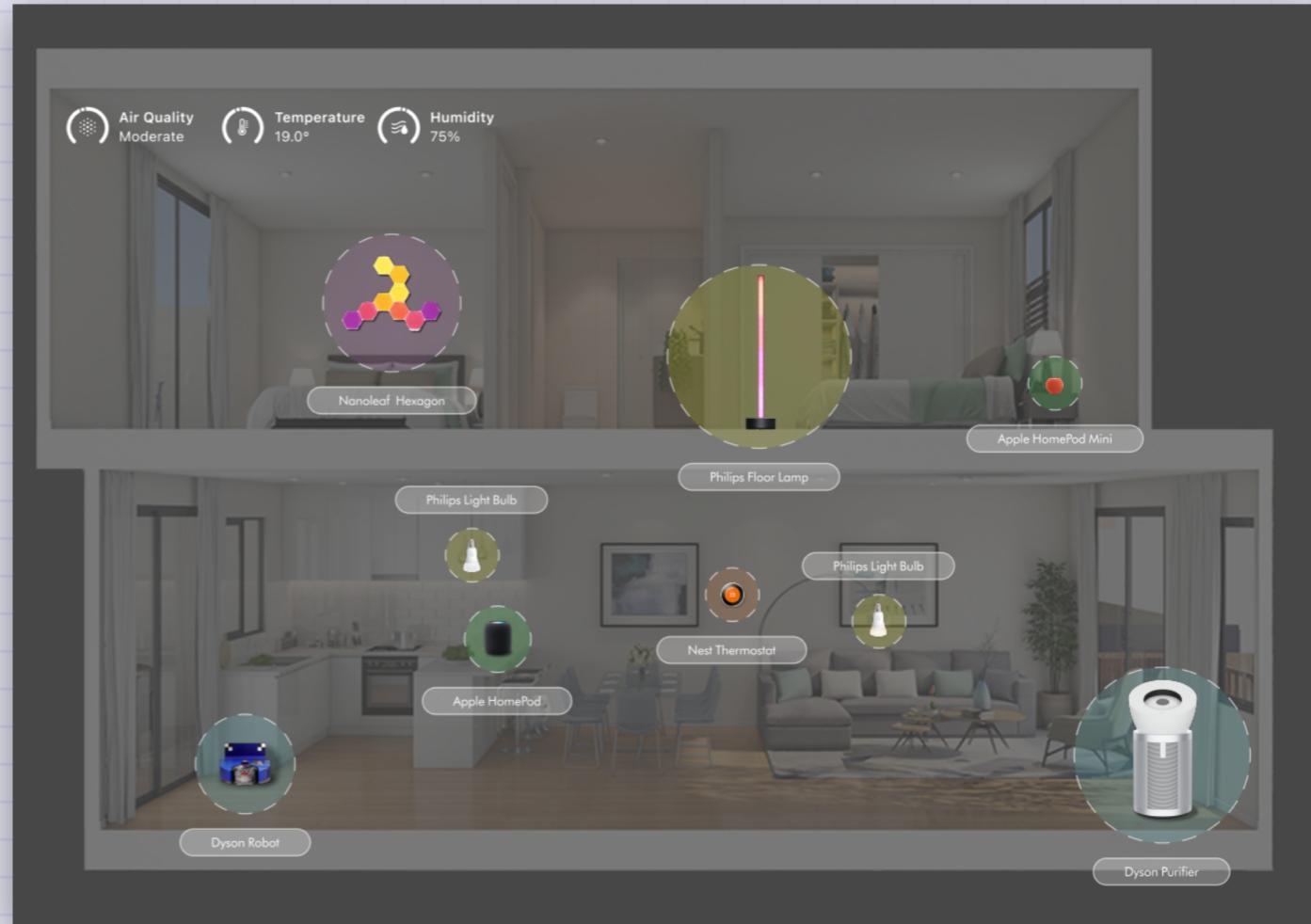
Phase 1: The Path to Smart Home Ubiquity

Phase 2: How to Move Icebergs

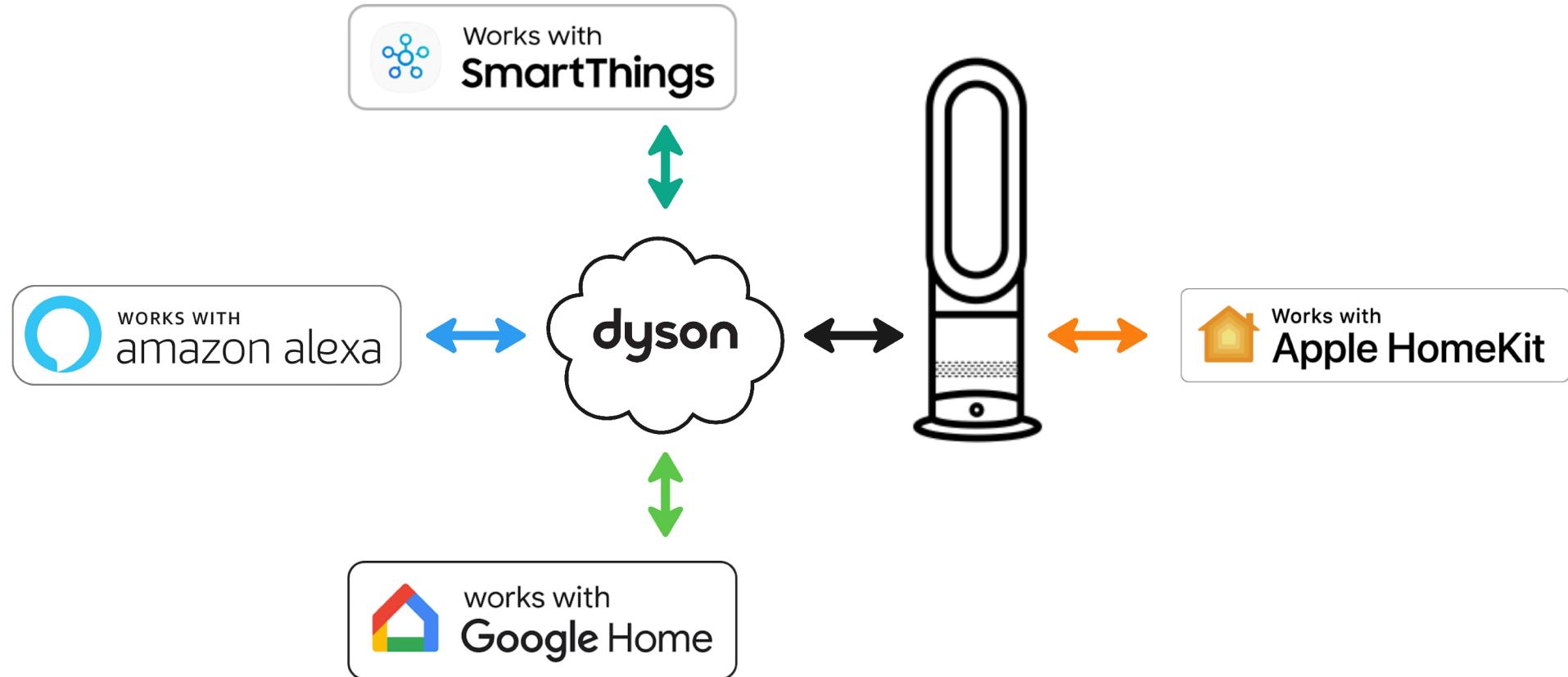
Phase 1: *The Path to Smart Home Ubiquity*

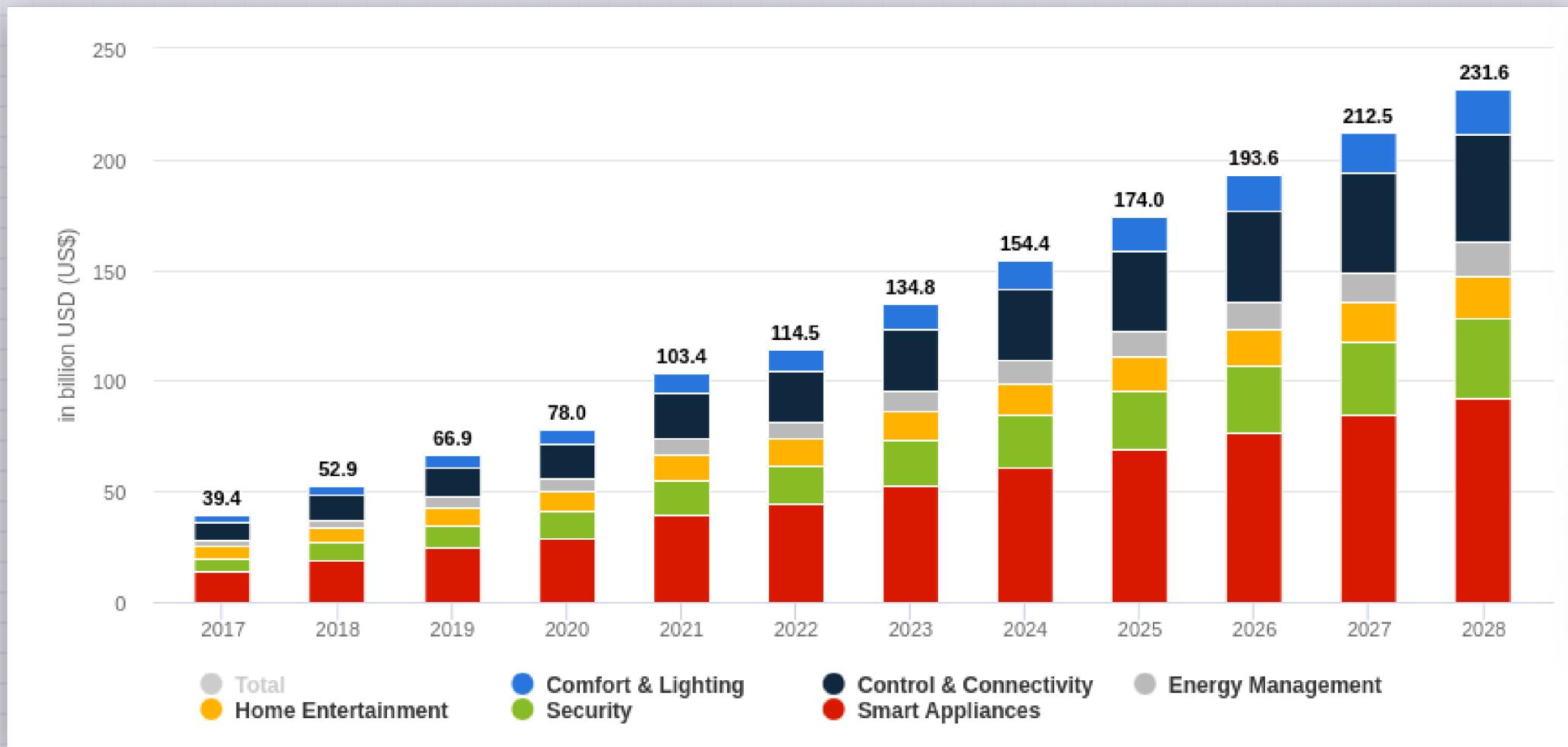
Phase 2: How to Move Icebergs

What is a Smart Home?



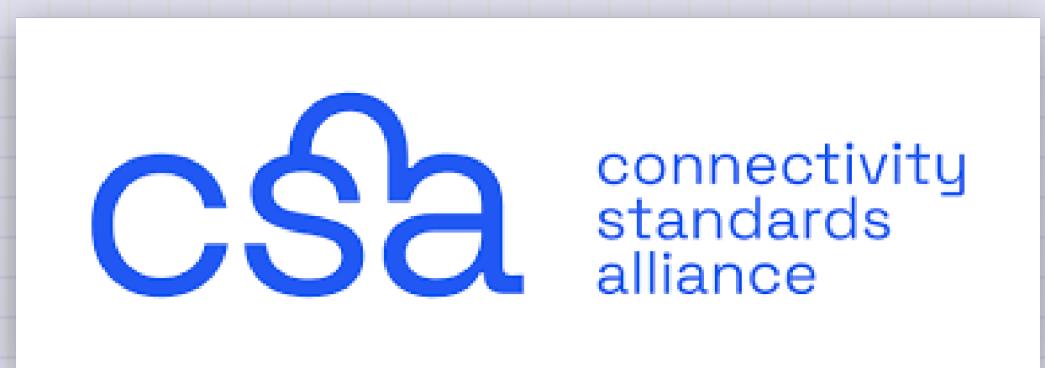
The State of the Smart Home ~2020





Enter Matter

- Announced in early 2020 as **Connected Home over IP (CHIP)**, renamed to **Matter** in 2021.
- Governed by **Connected Standards Alliance, (CSA)**
- Supported by Apple, Google, Samsung and Amazon
- v1.0 released in November 2022

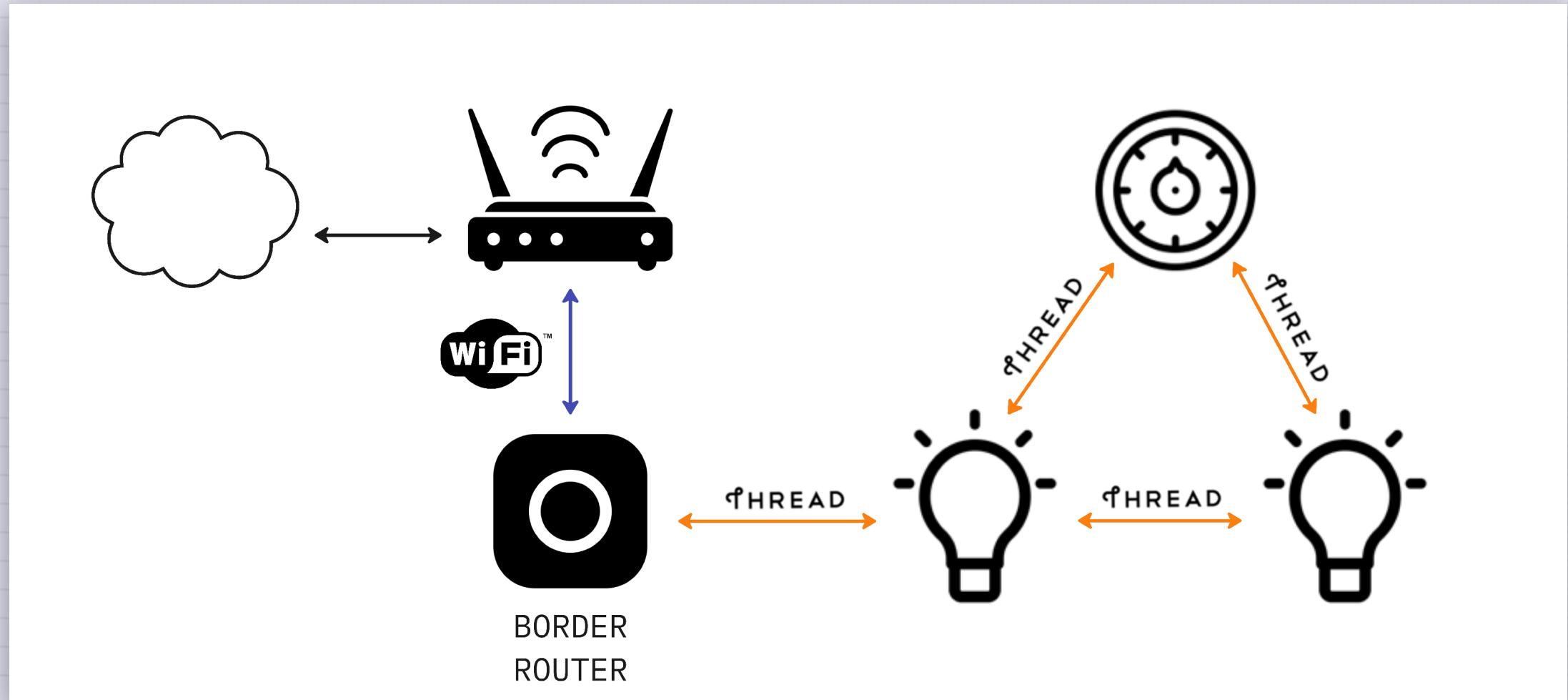


Matter Technologies

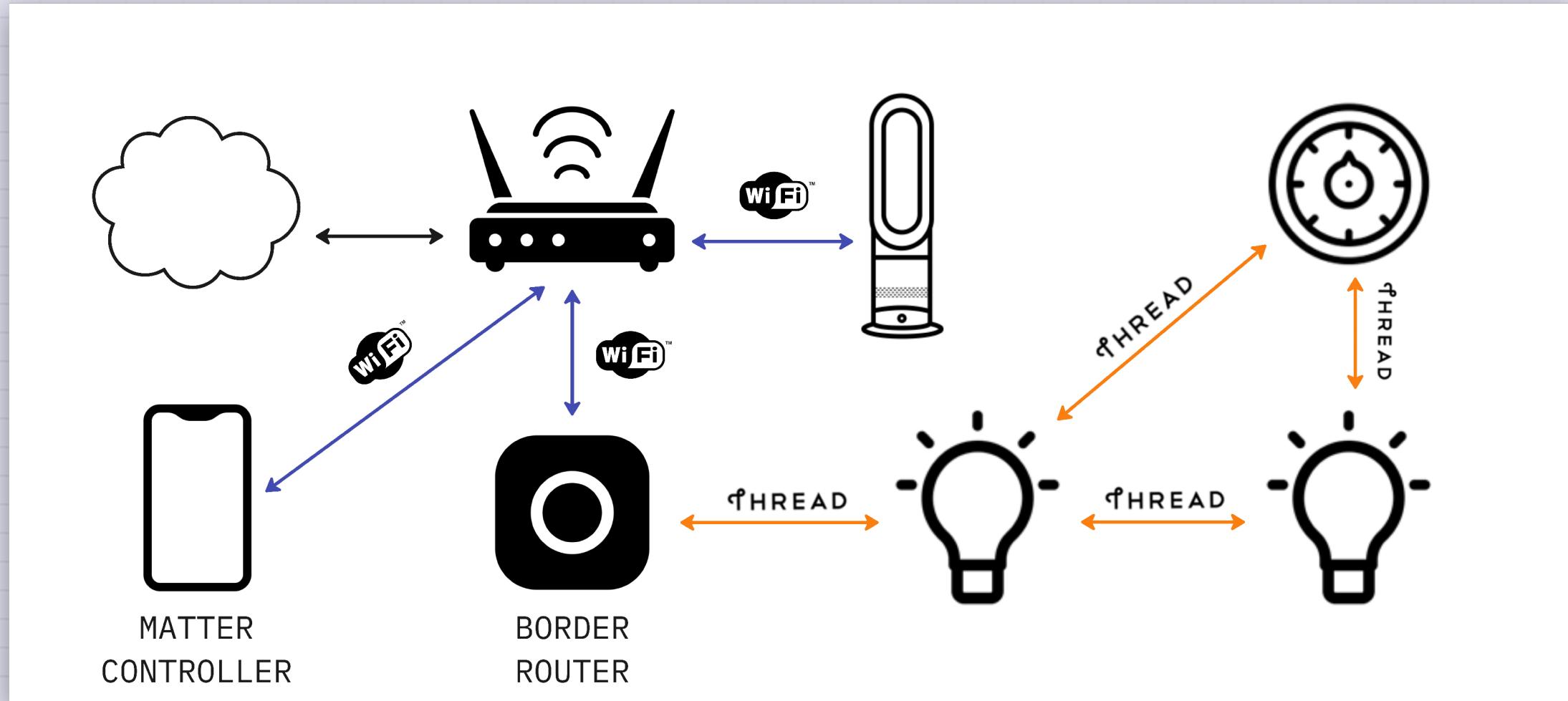
- A software stack (+ supporting code) that runs **on-device**
- Utilises **IPv6 Networks** with the following core technologies
 - **Wi-Fi**
 - **Thread**
 - **Ethernet**
- **Bluetooth Low Energy** is used for device on-boarding



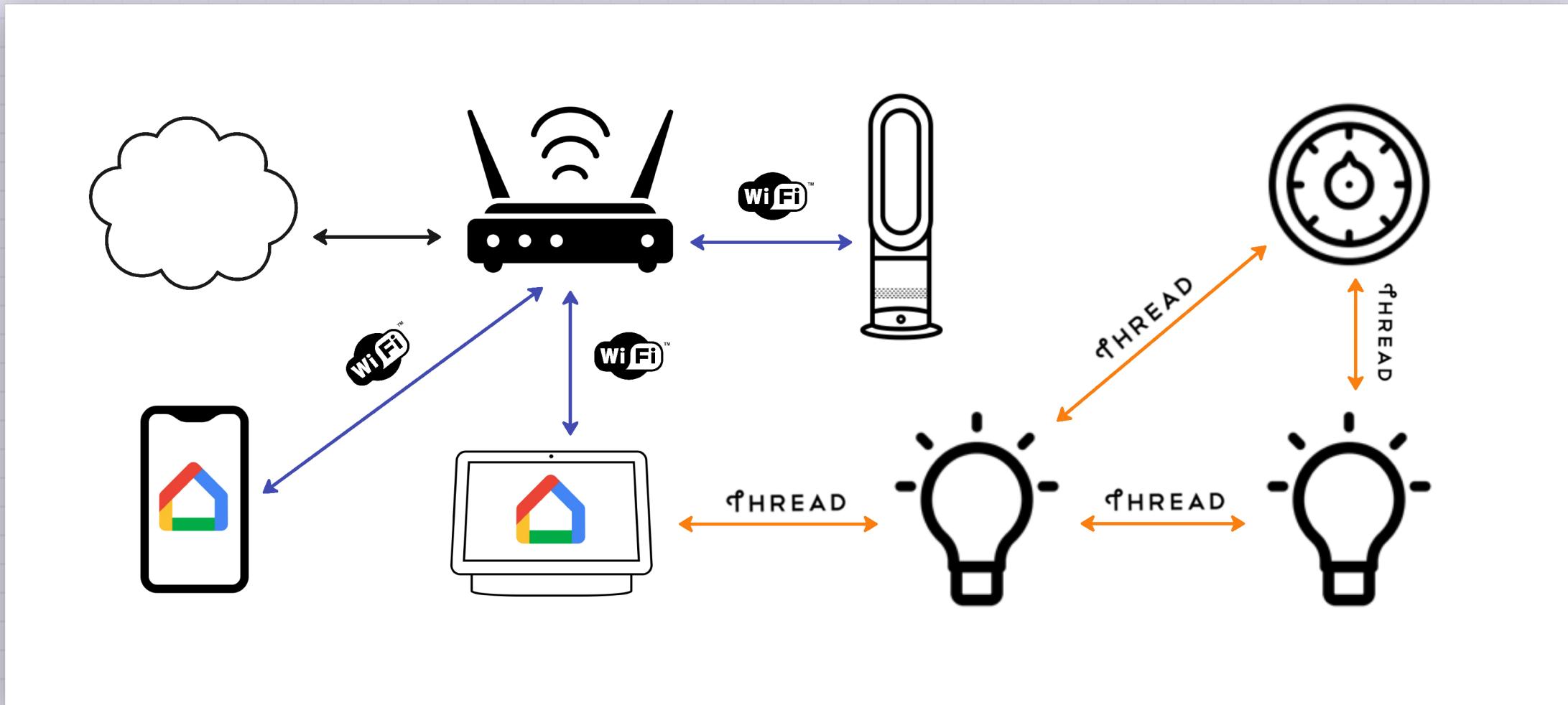
Thread



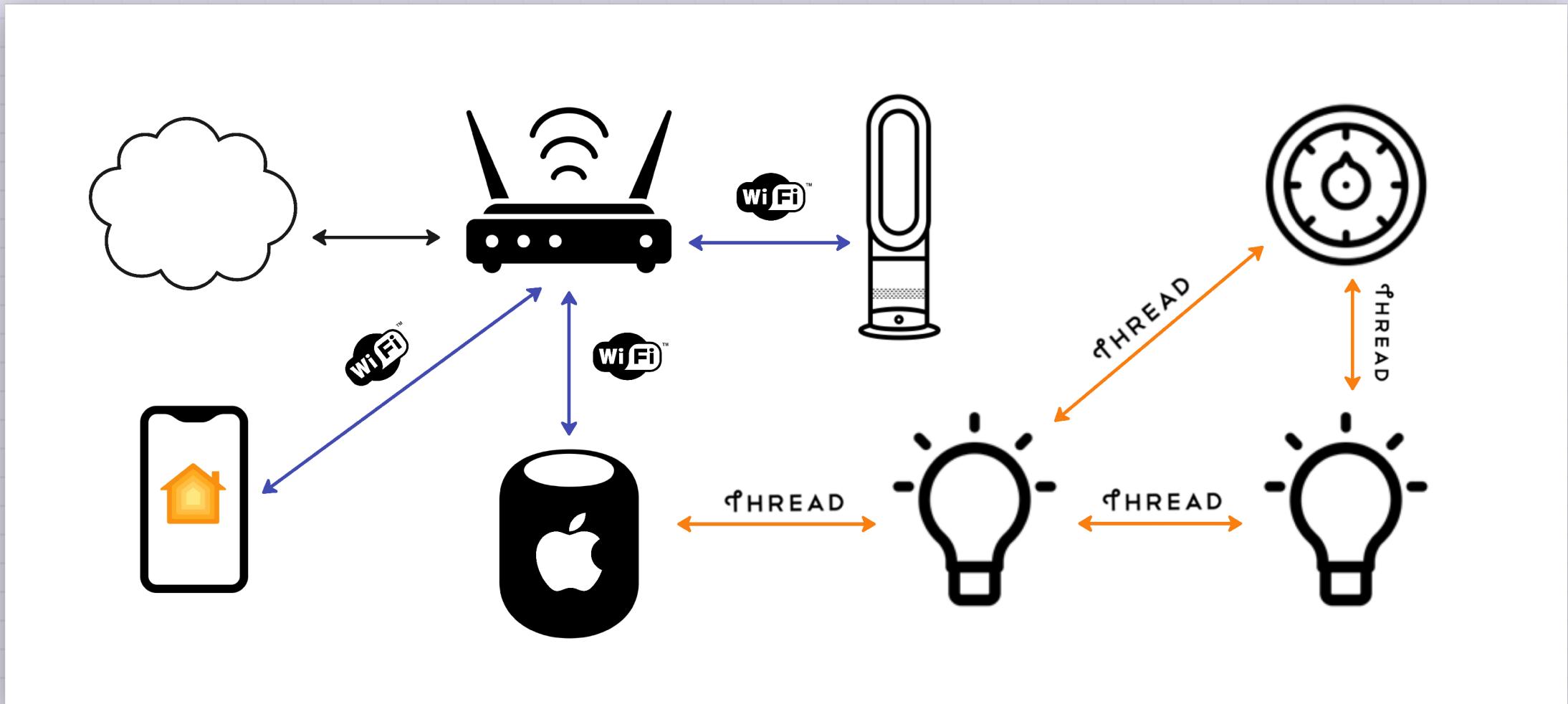
Matter Network



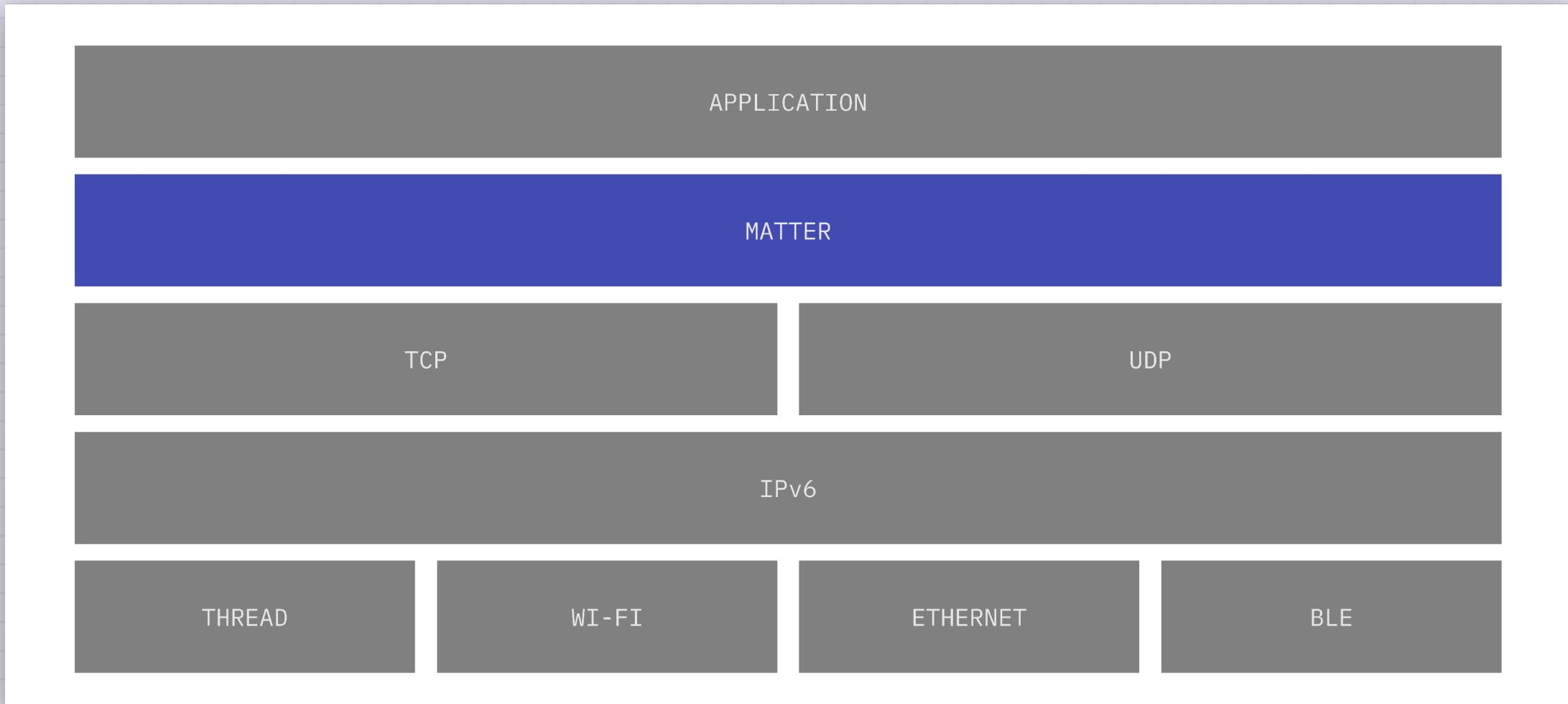
Matter Network



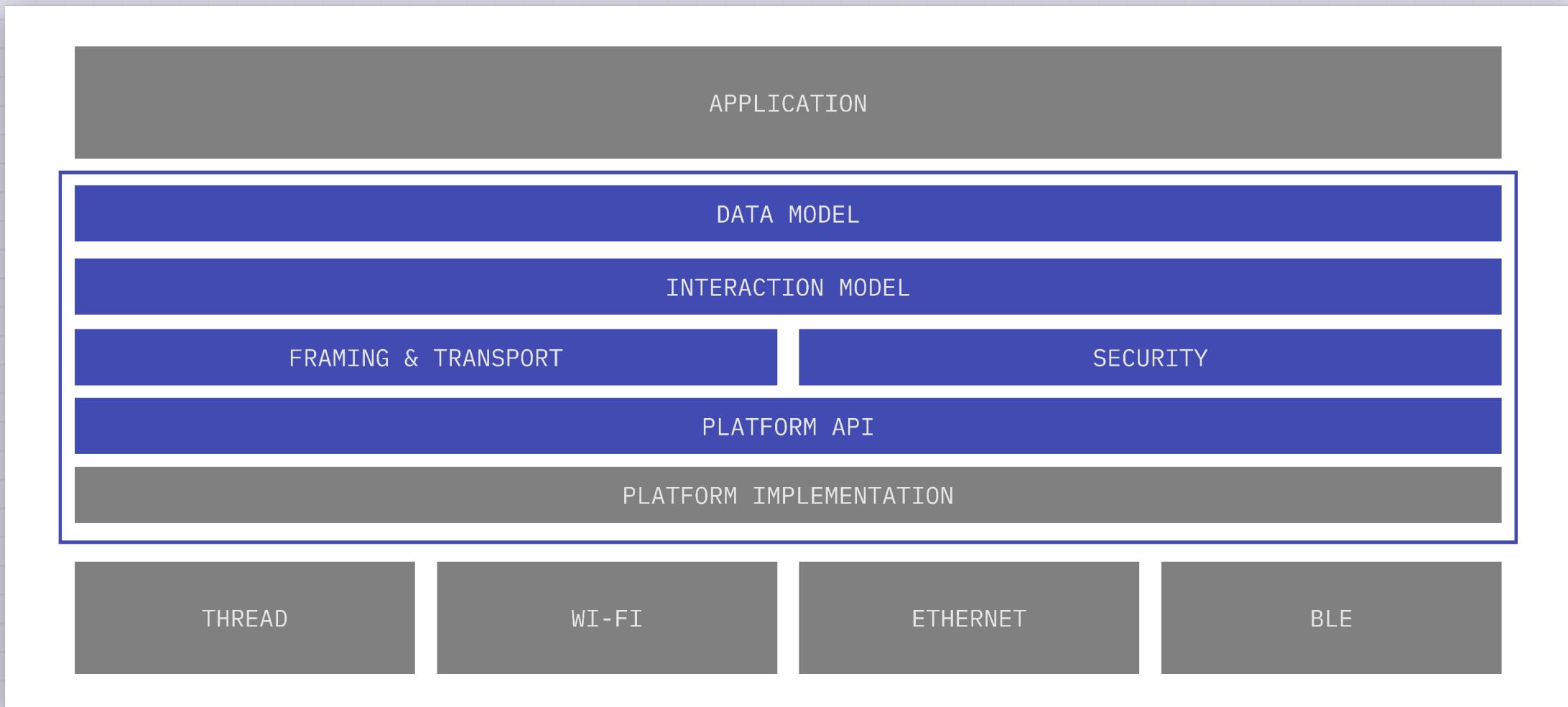
Matter Network



Matter Software Stack



Matter Software Stack



Matter Data Model

DEVICE: 0x1234

CLUSTER: 0x5678

ATTRIBUTES

COMMANDS

EVENTS

CLUSTER: 0x5679

ATTRIBUTES

COMMANDS

EVENTS

CLUSTER: 0x????

ATTRIBUTES

COMMANDS

EVENTS

Matter Data Model

DEVICE: Dimmable Bulb (0x0101)

IDENTIFY: 0x0003

ATTRIBUTES

COMMANDS

EVENTS

ON/OFF: 0x0006

ATTRIBUTES

COMMANDS

EVENTS

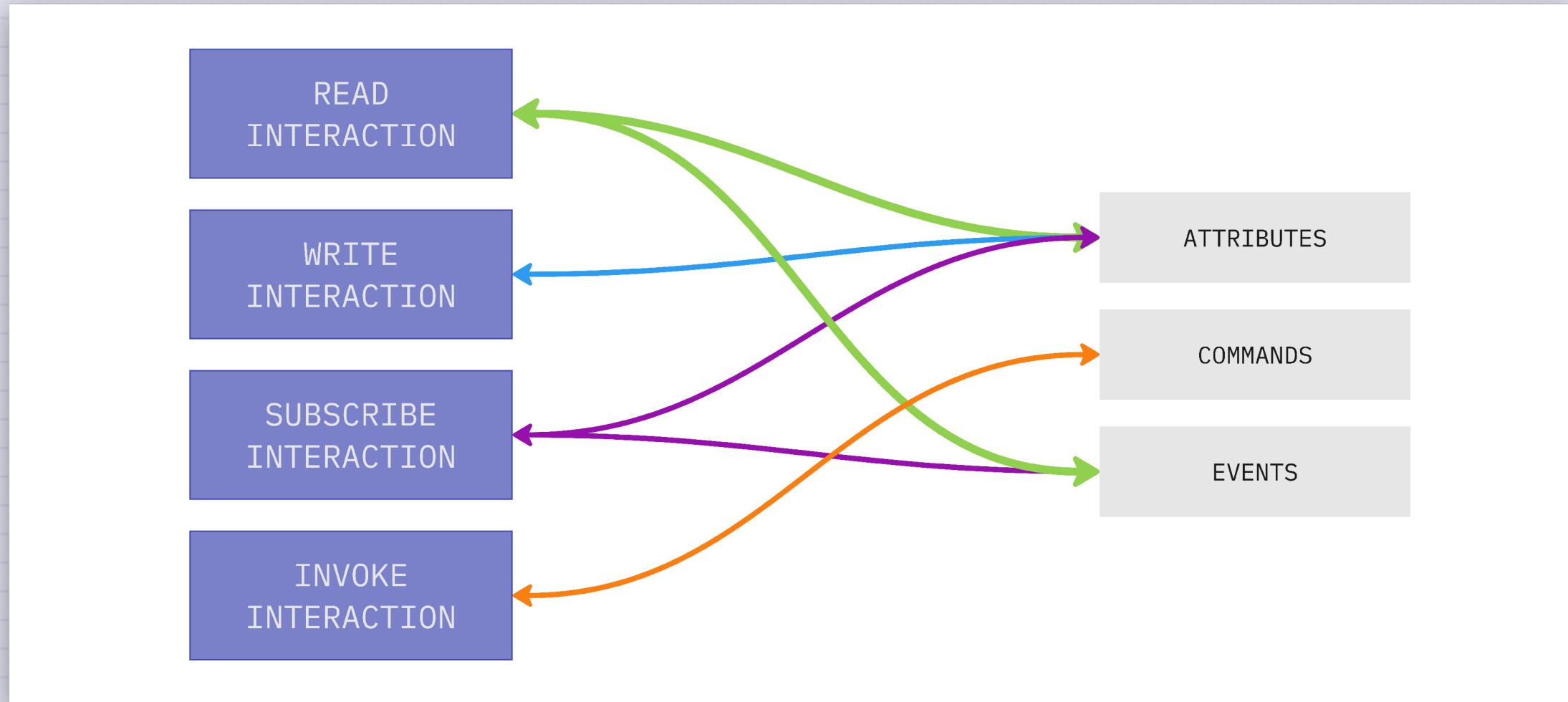
LEVEL: 0x0008

ATTRIBUTES

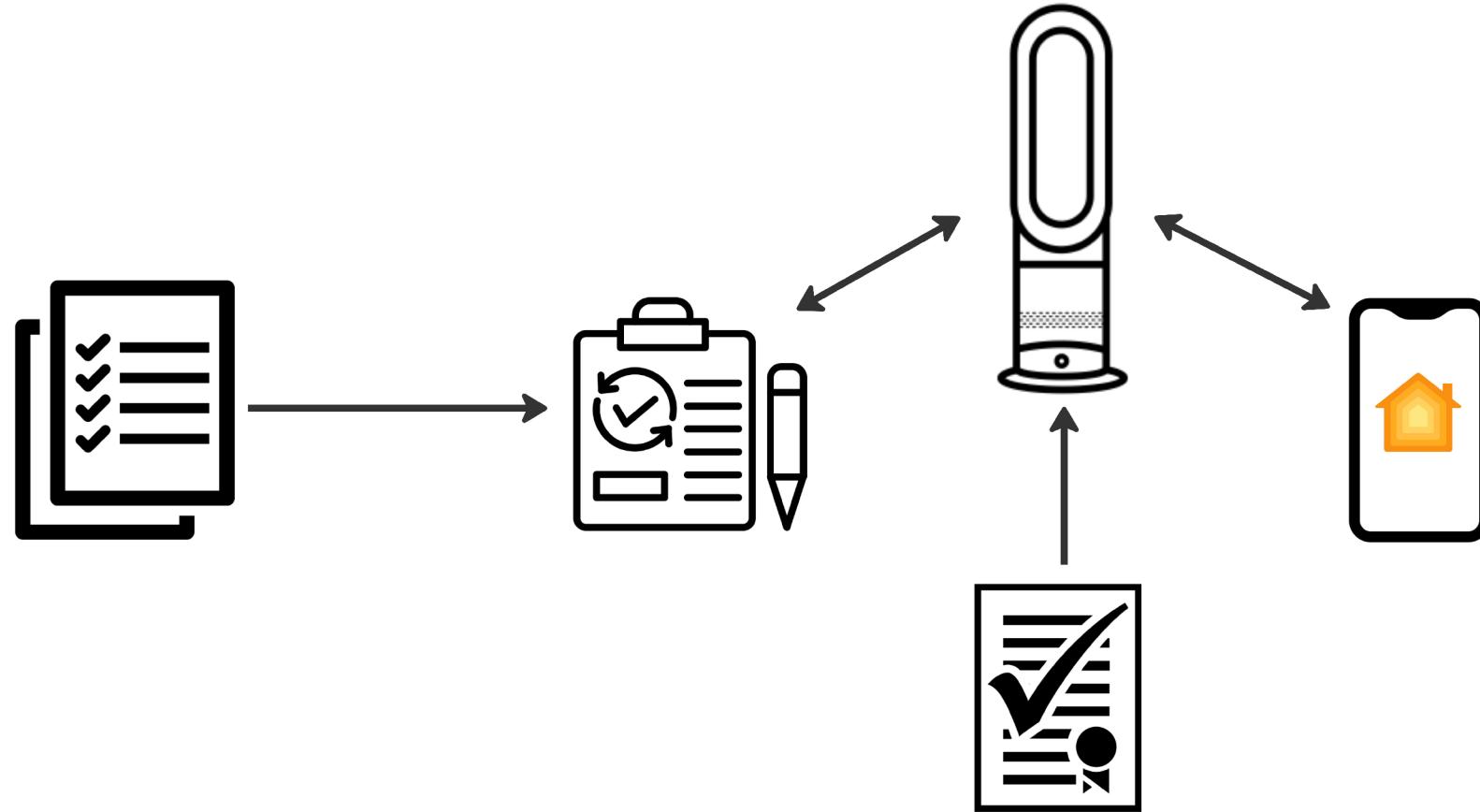
COMMANDS

EVENTS

Matter Interaction Model

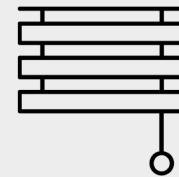
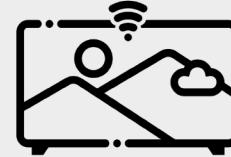
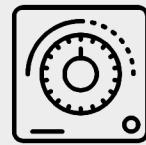
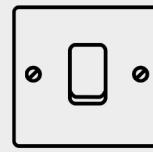


Test, Certify, Attest, Commission



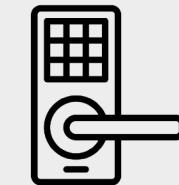
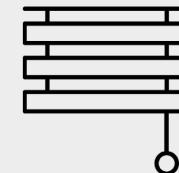
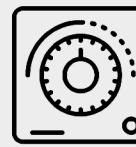
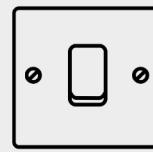
Supported Devices

v1.0

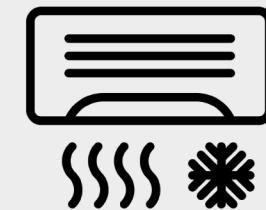
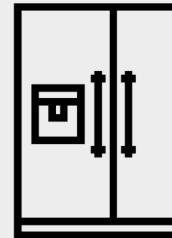
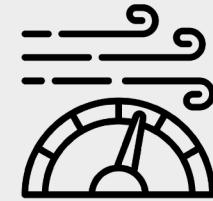


Supported Devices

v1.0

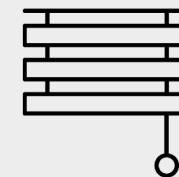
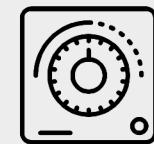
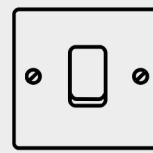


v1.2

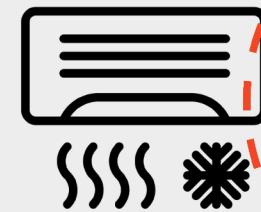
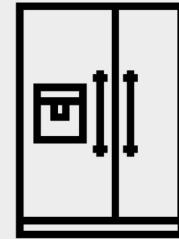
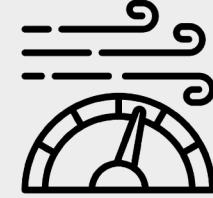


Supported Devices

v1.0



v1.2



Phase 1: The Path to Smart Home Ubiquity

Phase 2: *How to Move Icebergs*

A Note on Icebergs



A Note on ~~Icebergs~~ Companies



A Note on ~~Icebergs~~ Companies

STRONG BRAND
TECHNOLOGY

LARGE MARKET SHARE
GREAT PRODUCTS



A Note on ~~Icebergs~~ Companies



STRONG BRAND

TECHNOLOGY

CONFIDENTIALITY

COMPETING RESOURCES

LARGE MARKET SHARE

GREAT PRODUCTS

HARDWARE PLATFORMS

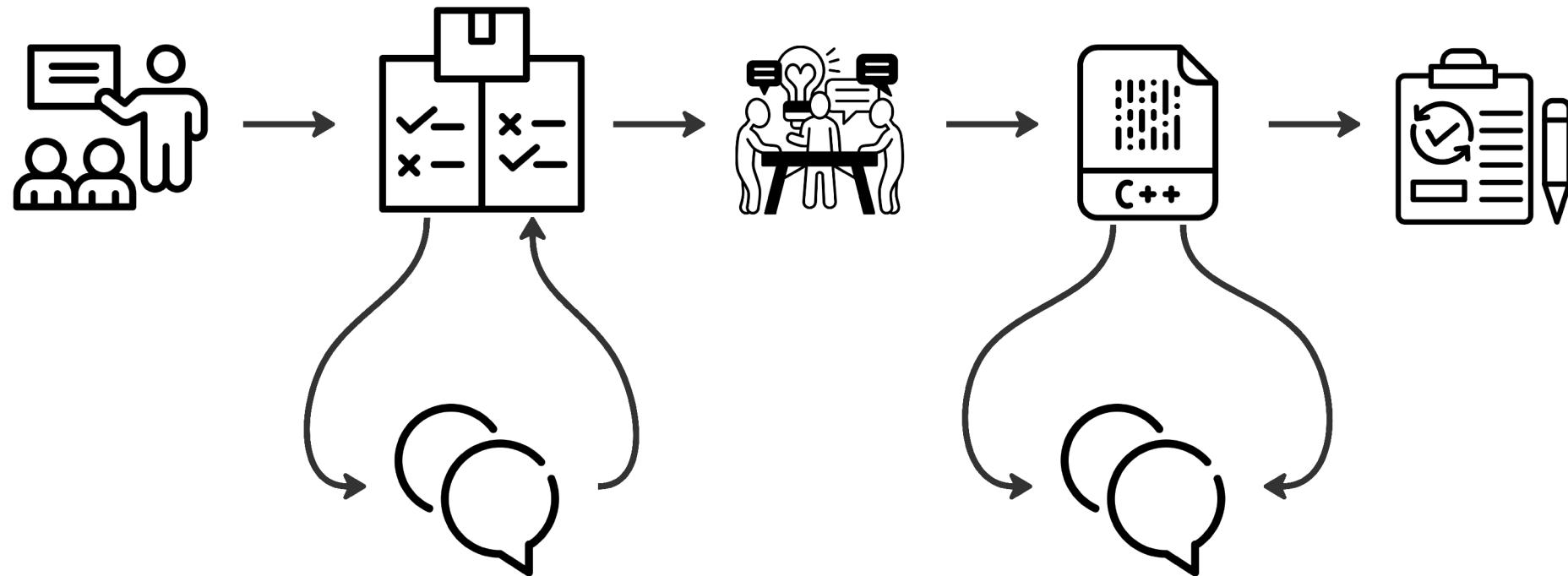
RED TAPE

PROCESSES

Our Mission

- 1. Get Matter ready for Dyson**
- 2. Get Dyson ready for Matter**

Matter Development Cycle



Matter Development Cycle

<input type="checkbox"/> ↗ Add API for Concentration Measurement Clusters ✓ app examples review - approved	#28576 by mhazley was merged on Aug 23 • Approved	⌚ 1	👤 1	💬 46
<input type="checkbox"/> ↗ Add functions to set Parent Endpoint and Composition Type for an Endpoint ✓ app review - approved	#28410 by mhazley was merged on Aug 3 • Approved	⌚ 1	👤 1	💬 12
<input type="checkbox"/> ↗ Adding missing descriptor cluster in air quality devices ✓ air purifiers air quality sensors examples fast track review - pending	#28408 by mhazley was merged on Jul 31 • Approved	⌚ 1	👤 1	💬 1
<input type="checkbox"/> ↗ Add Air Purifier device to chef ✓ examples fast track review - pending	#28336 by mhazley was merged on Jul 27 • Approved	⌚ 1	👤 1	💬 1
<input type="checkbox"/> ↗ Adding fan-stub.cpp to all-clusters-app non-linux platforms platforms ✓ fan control review - approved	#28165 by mhazley was merged on Jul 21 • Approved	⌚ 1	👤 1	💬 1
<input type="checkbox"/> ↗ Update to TC_FAN_3_2, addition of TC_FAN_3_3, TC_FAN_3_4, TC_FAN_3_5, & TC_FAN_3_6 ✓ app appliances examples fan control github review - approved tests workflows	#28106 by mhazley was merged on Jul 21 • Approved	⌚ 1	👤 1	💬 13
<input type="checkbox"/> ↗ Remove Deleted ConcentrationMeasurement Clusters ✓ app controller review - approved tests vscode	#28053 by mhazley was merged on Jul 20 • Approved ⚡ 1.2	⌚ 1	👤 1	💬 1
<input type="checkbox"/> ↗ [FanControl] Adding Delegate to allow application to handle Step command ✘ app examples review - approved tests	#28000 by mhazley was merged on Jul 19 • Approved	⌚ 1	👤 1	💬 5
<input type="checkbox"/> ❌ [FanControl] Refactor to use AttributeAccessInterface and CommandHandlerInterface alongside application delegate ✘ app app-clusters examples fan control review - pending scripts tests v1.2	#27865 by mhazley was closed on Jul 17 • Changes requested ⚡ 1.2	⌚ 1	👤 1	💬 75
<input type="checkbox"/> ↗ Concentration Measurement Editorial Update for Enum Names and Time Window Constraints ✓ app app-clusters controller darwin examples review - approved tests v1.2	#27576 by mhazley was merged on Jul 3 • Approved ⚡ 1.2	⌚ 1	👤 1	💬 4
<input type="checkbox"/> ↗ Fan Control Spec Editorial Alignment ✓ app app-clusters controller darwin examples review - approved scripts tests v1.2	#27434 by mhazley was merged on Jun 28 • Approved ⚡ 1.2	⌚ 1	👤 1	💬 16
<input type="checkbox"/> ↗ Adding Test Scripts for Concentration Measurement Clusters ✓ app controller darwin examples review - approved tests v1.2 yaml	#27215 by mhazley was merged on Jun 16 • Approved	⌚ 1	👤 1	💬 39
<input type="checkbox"/> ↗ Added a CheckConstraint Min and Max function where the expected is a Nullable type ✓ app review - approved testing tests	#27045 by mhazley was merged on Jun 12 • Approved	⌚ 1	👤 1	💬 16
<input type="checkbox"/> ↗ Fan Control Cluster updates for Fall 2023: TE1 ✘ app app-clusters cluster xml for 1.2 controller darwin examples review - approved v1.2	#26296 by mhazley was merged on May 30 • Approved	⌚ 2	👤 1	💬 22

Matter Development Cycle

```
● ● ●

/*
 * This class provides the base implementation for the server side of the Concentration Measurement cluster as well as an API
for
 * setting the values of the attributes.
 *
 * @tparam NumericMeasurementEnabled whether the cluster supports numeric measurement
 * @tparam LevelIndicationEnabled whether the cluster supports level indication
 * @tparam MediumLevelEnabled whether the Level Indication Feature supports medium level
 * @tparam CriticalLevelEnabled whether the Level Indication Feature supports critical level
 * @tparam PeakMeasurementEnabled whether the Numeric Measurement Feature supports peak measurement
 * @tparam AverageMeasurementEnabled whether the Numeric Measurement Feature supports average measurement
*/
template <bool NumericMeasurementEnabled, bool LevelIndicationEnabled, bool MediumLevelEnabled, bool CriticalLevelEnabled,
          bool PeakMeasurementEnabled, bool AverageMeasurementEnabled>
class Instance
    : public AttributeAccessInterface,
      protected std::conditional_t<NumericMeasurementEnabled, Detail::NumericMeasurementMembers,
                                         Detail::DummyNumericMeasurementMembers>,
      protected std::conditional_t<PeakMeasurementEnabled, Detail::PeakMeasurementMembers, Detail::DummyPeakMeasurementMembers>,
      protected std::conditional_t<AverageMeasurementEnabled, Detail::AverageMeasurementMembers,
                                         Detail::DummyAverageMeasurementMembers>,
      protected std::conditional_t<LevelIndicationEnabled, Detail::LevelIndicationMembers, Detail::DummyLevelIndicationMembers>
{
```

Big Company Challenges

- Contributing to Open Source Software
- Work alongside Competitor Companies
- Migrate from a well Established System
- Travel... a lot!

Open Source



Collaboration with Competitors

iRobot[®]

SAMSUNG

Whirlpool
CORPORATION

dyson



BOSCH

 **Midea**[®]

