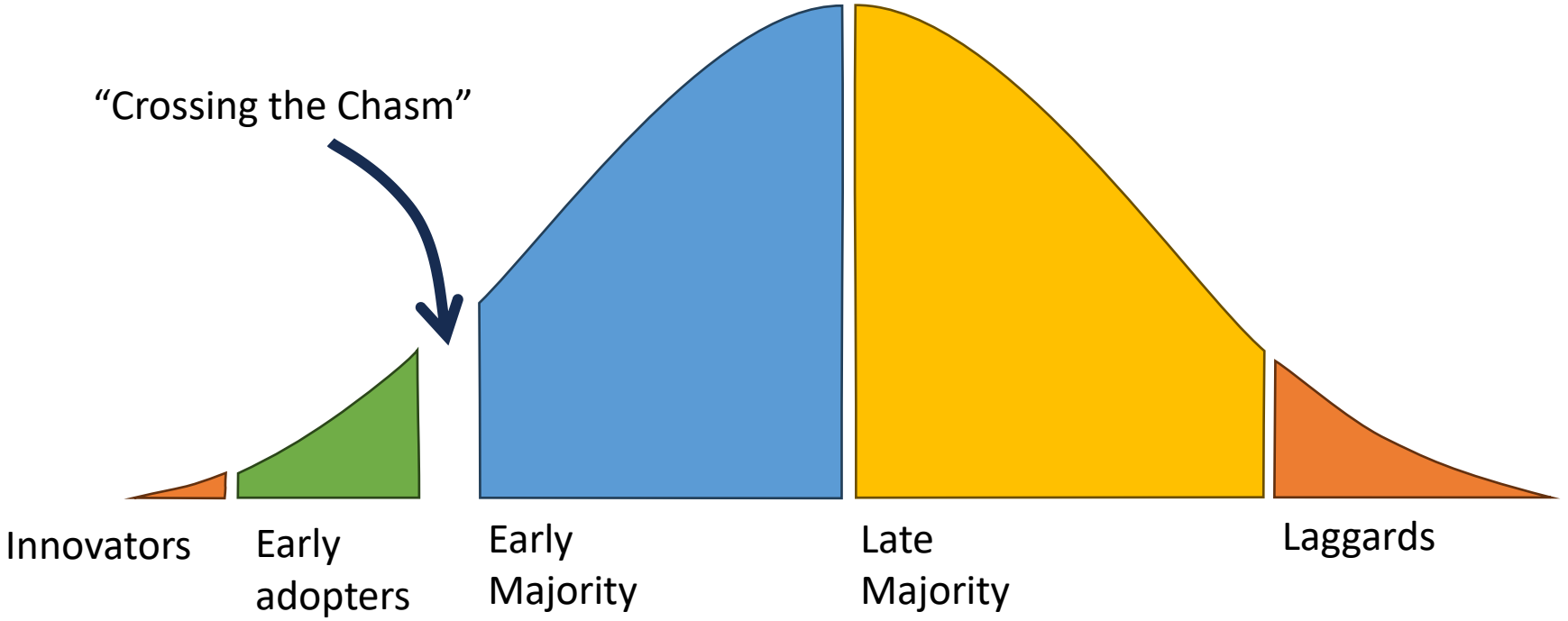

DSR
READY
Making every home flexible
geo

Domestic DSR
needs
mass-market
consumer adoption

Crossing the chasm

Must not have ESAs which are technically ‘capable’ of DSR that consumers don’t bother to sign up (or don’t know how to)



Crossing the Chasm, 3rd Edition:

Marketing and Selling Disruptive Products to Mainstream Customers Geoffrey A. Moore

What drives consumer adoption of Energy Smart Appliances (ESAs)?

Convenience & Ease of use

Saving money on bills

Ability to reduce carbon footprint

Trust & Transparency around Data Privacy

Convenience & Ease of use

matter

- **Started life as ‘Project CHIP’ (Connected Home over IP) in 2019**
  - Working as part of the Zigbee Alliance – rebranded the Connectivity Standards Alliance (CSA)
- **Matter 1.0 launched in November 2022**
  - 2 specification releases per year
- **Over 500+ Matter products certified to date**
- **CSA has over 700+ member companies (and growing)**

matter

- A single, IP-based protocol
- Simplified development for manufacturers
- Increased choice & compatibility for consumers
- Rapid, global adoption & transformative impact
- A seal of approval that devices will work seamlessly and securely together

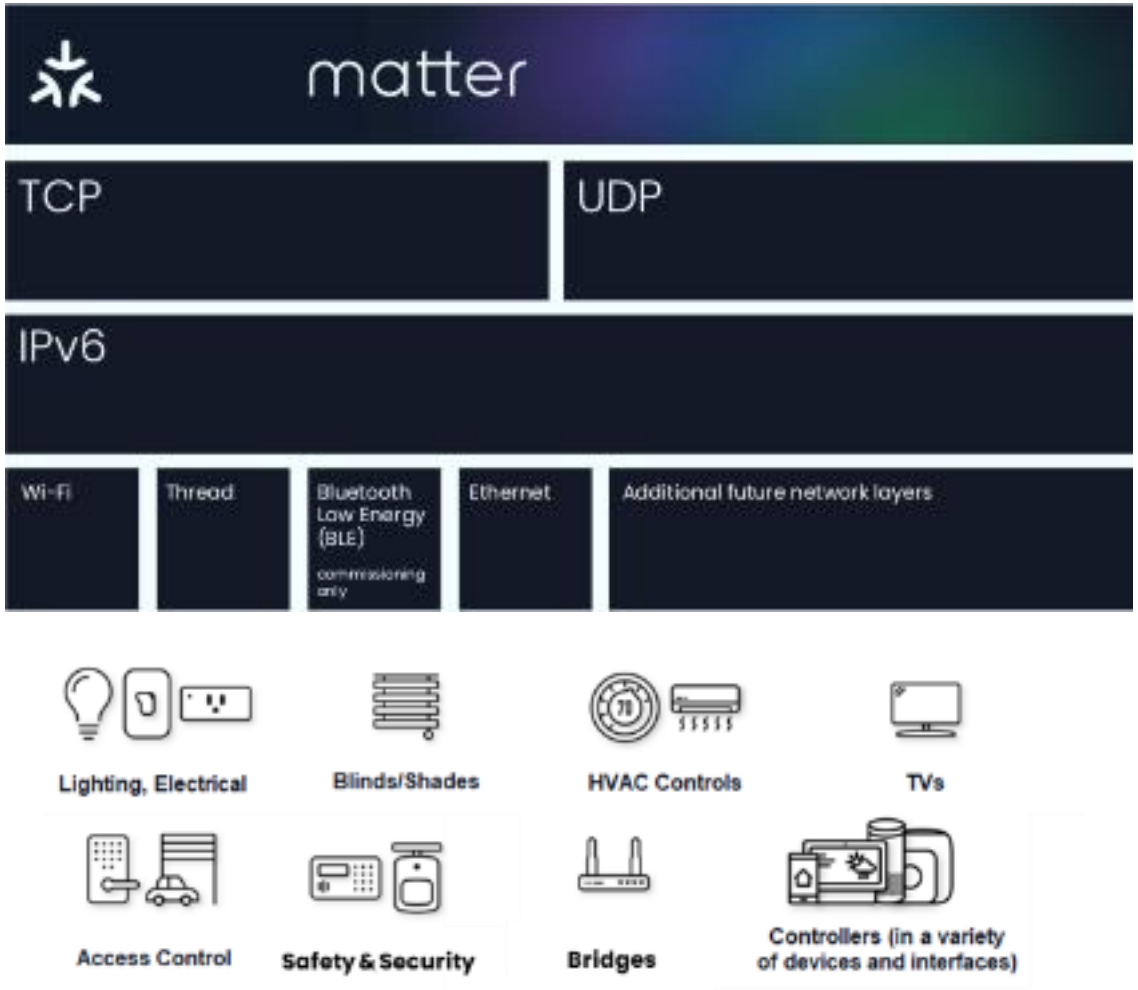
Simple

Interoperable

Reliable

Secure

How Matter Stacks Up



Common application layer
Interoperability, simplified setup & control

IP-based
Convergence layer across all compatible networks

Secure
Comprehensive, Layered, Resilient, Agile
AES-128-CCM encryption with 128-bit AES-CBC

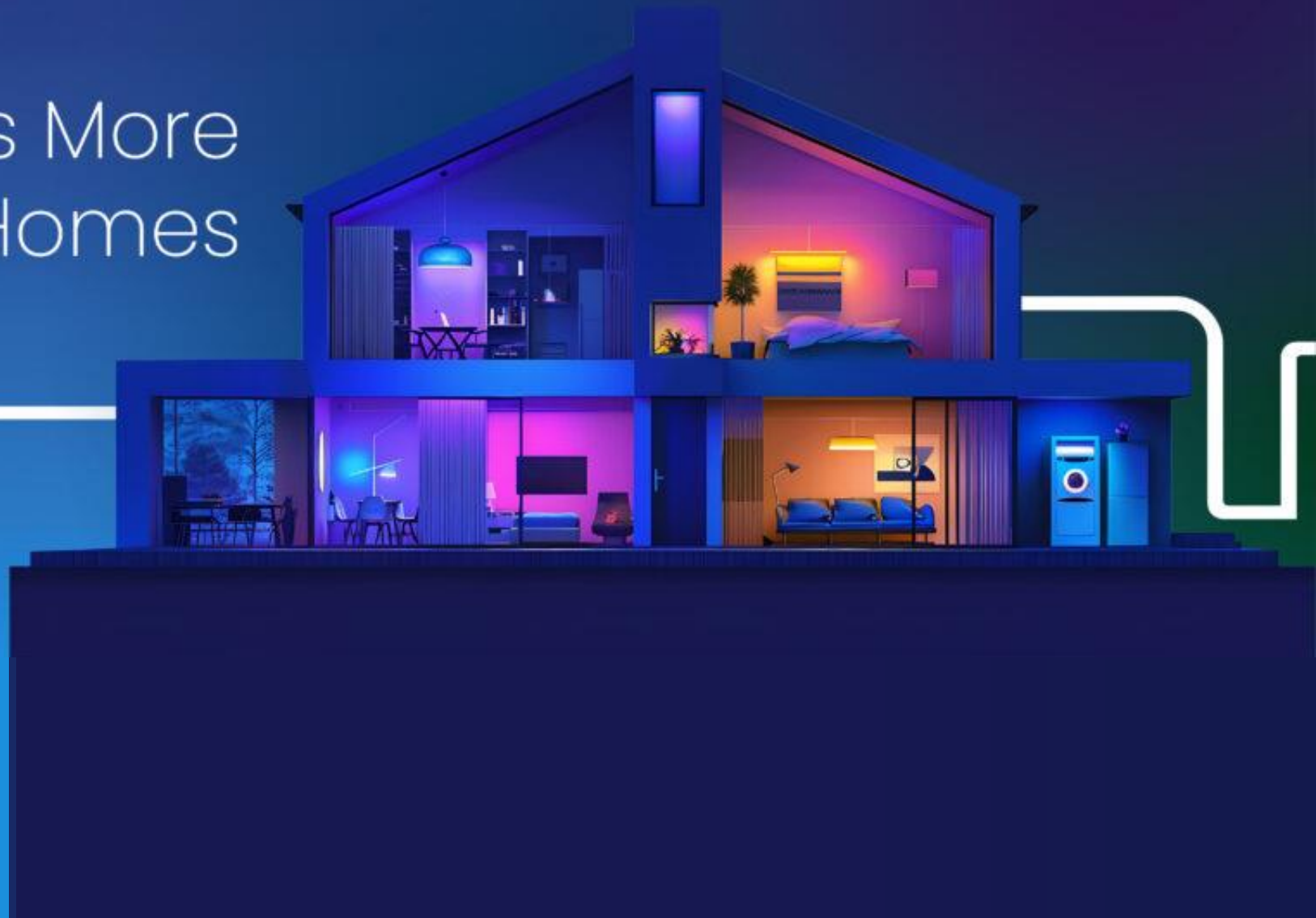
Common protocol across devices
Extendible to cloud

Common data model
Core operational functions, multiple device types

Low overhead
MCU-class compute, <128KB RAM, <1MB Flash

- Consumer focused / Frustration Free Setup
- Built-in Security & Data Privacy
- Smart assistant ready
- Automatic ESA discovery (Asset Registration)
- Enables HEMS optimisation
- CSA Matter Certification programme (ATLs)
- Global adoption
- Ready to use SDK – small footprint for RTOS
- Open Source & Royalty free

Matter 1.4 Enables More Capable Smart Homes



csa connectivity standards alliance | matter

7th Nov 2024

Matter Energy Management (1.3 + 1.4)

Electrical Power Measurement (EPM):

- **Any** device can now report the instantaneous AC or DC Active Power, Voltage, Current, Frequency (and lots more!)
- Measurement accuracy
- Ranges (min/max values in a measurement period)

Electrical Energy Measurement (EEM):

- **Any** device can now report Cumulative or Periodic Energy Imported and/or Exported
- Measurement accuracy
- Also allows the client to know when cumulative counter was reset

EVSE support (1.3) for EV Charging

- Basic status reporting (Enabled/Disabled, Error)
- Control (Enable/Disable) with automatic shut-off (time)
- Current Limit setting (charging rate)
- Randomisation Delay
- Charging Preferences
- Charging session history
- Events

- *Relies on EPM and EEM clusters to report Power and Energy consumption*

- *Can use the DEM to allow forecasting of electrical power profile and modification of charging profiles.*

Device Energy Management (DEM) (1.4)

- **Any** device can share their Power (or State) Forecast
- User opt-out preferences (Grid or Local control)

Allows a Home Energy Management System (HEMS):

- Start Time Adjustment
- Power Adjustment
- Pause / Resume
- Forecast Adjustment

Aligns to SAREF ontology (used by EEBUS and EU CoC)

Matter Energy Management (1.4)

New Device Types:

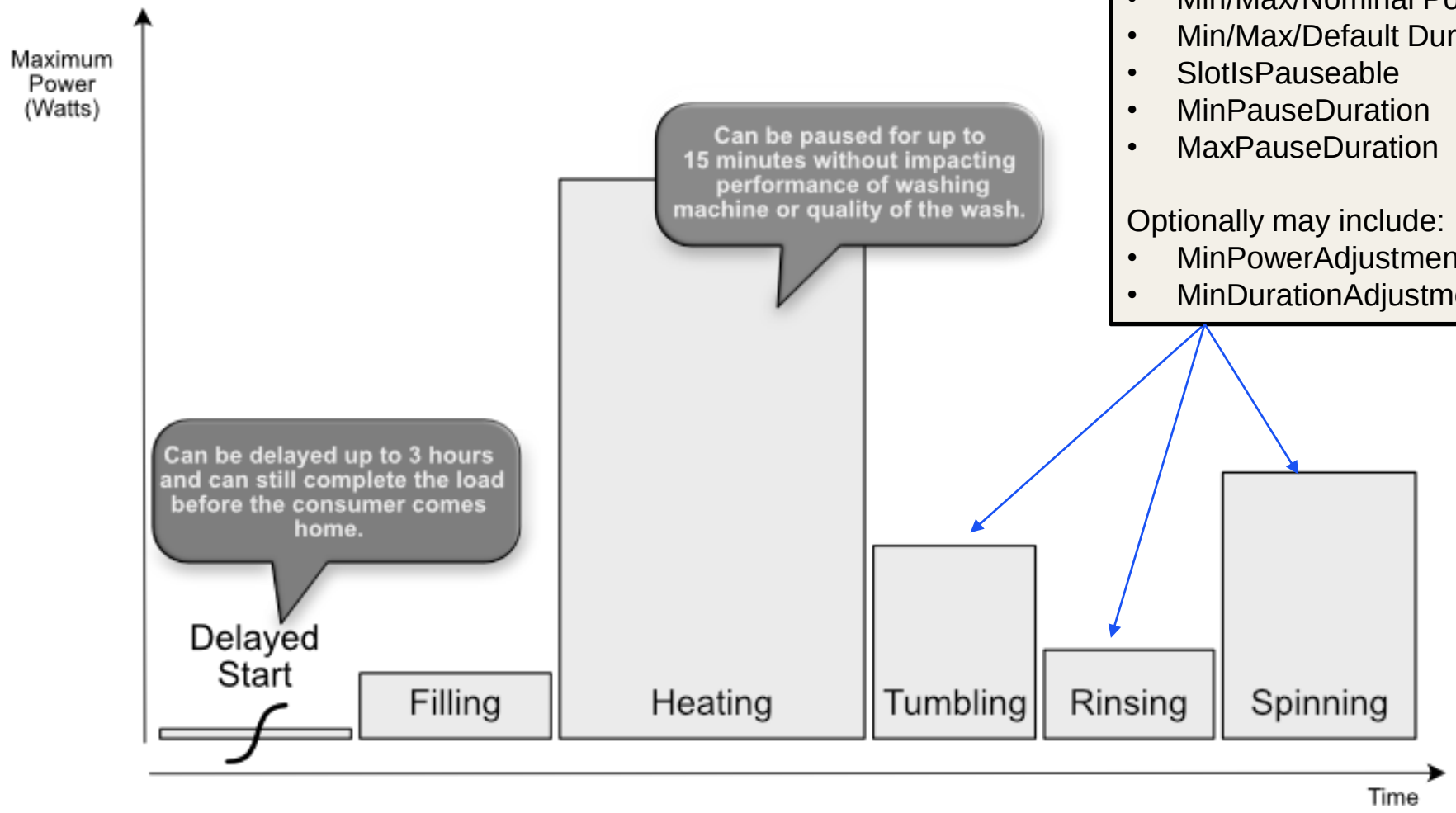
- Device Energy Management
- Solar Power
- Battery Storage
- Water Heater
- Heat Pump

- EVSE updates ready for V2G in future release

Washing Machine example – Power forecast

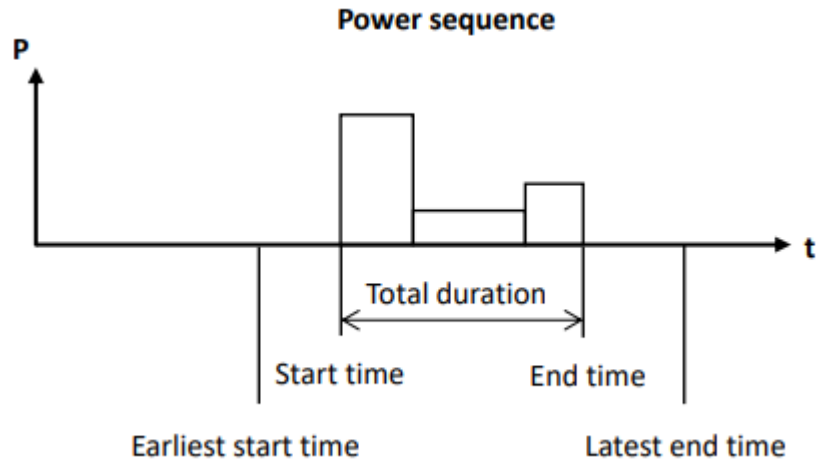
List of up to 10 ‘Slots’
- Min/Max/Nominal Power
- Min/Max/Default Duration
- SlotIsPauseable
- MinPauseDuration
- MaxPauseDuration

Optionally may include:
- MinPowerAdjustment / MaxPowerAdjustment
- MinDurationAdjustment / MaxDurationAdjustment



White goods flexible start

- Flexible Start:
  - ESA describes its intended operation (Power Forecast)
  - includes:
    - Earliest start time
    - Latest end time
    - Expected duration
  - HEMS asks it to adjust its start time within the limits it said it can support
    - DEM command *“StartTimeAdjust”*



EU Code of Conduct Mapping

Matter aligns to SAREF ontology

EU CoC 1.0 use-cases are supported by new Energy Management clusters

Annex 1 - Mapping of use cases to Energy Smart Appliances

	Flexible Start	Monitoring of Power Consumption	Limitation of Power Consumption	Incentive Table based Power Consumption Management	Manual operation
White goods					
• washing machines, tumble driers, washer-driers, dishwashers	M	O	O	n/a	M
Heating, cooling, and ventilation appliances					
• heat pumps (delivering heat/cold through air or water)	O	M	M	O	O
• local space heaters	O	M	M	O	O
• water heaters	O	M	M	O	O
• ventilation	n/a	M	O	O	O

M: mandatory; O: optional, n/a: not applicable

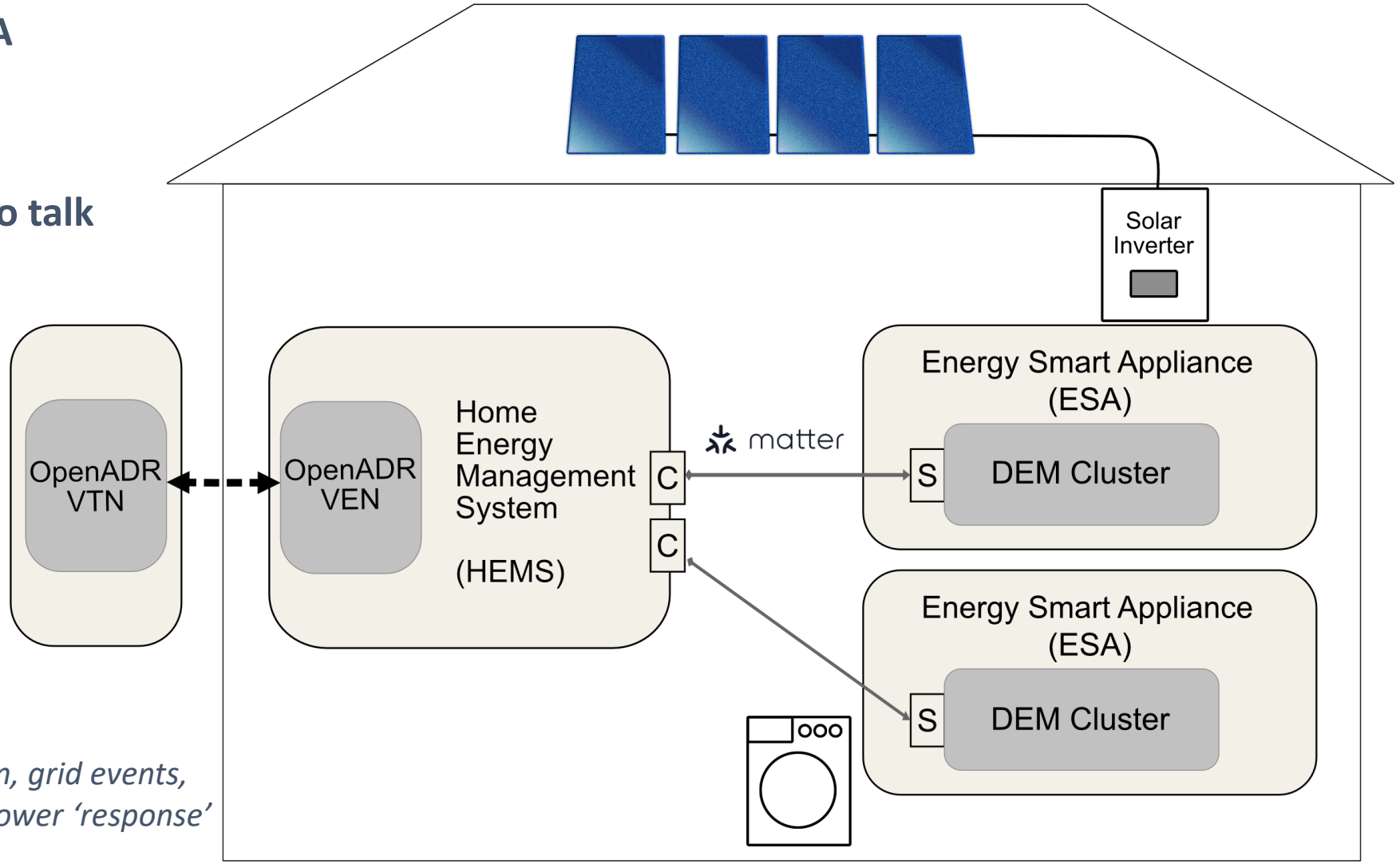
Table A1.1. Mapping of use cases to white goods and heating/cooling/ventilation appliances that have an energy label.


EV schedule
Mon
Tue
40mi by 7:
Wed
40mi by 7:30
Thu
40mi by 7:30
Fri
40mi by 7:30
Sat
80mi by 8:30
Sun
80mi by 8:30

What about OpenADR 3.0?

Matter deals with in-home ESA communication

OpenADR 3.0 allows the grid to talk to the home



OpenADR can share pricing information, grid events, handle ESA 'offers' and report actual power 'response' back for reconciliation

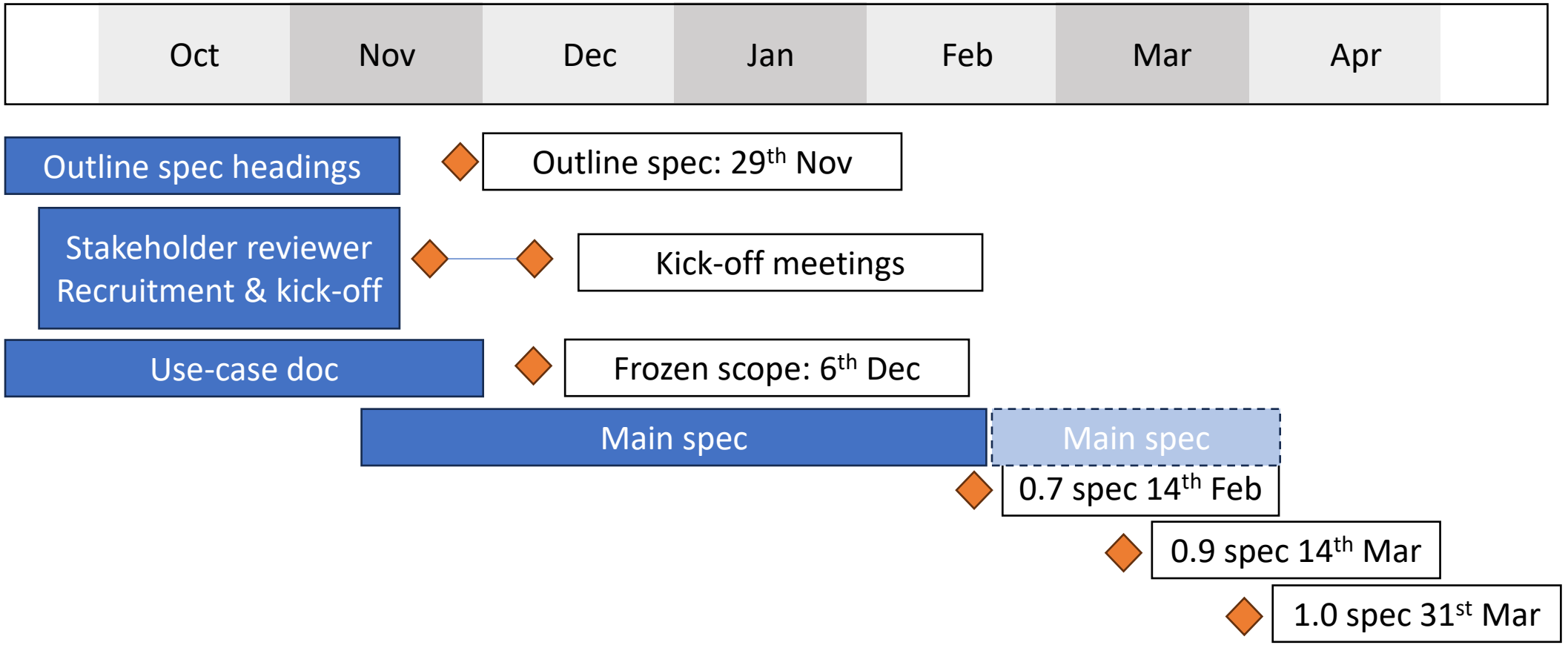
New initiative to link OpenADR 3.0 and Matter

- IDSR programme (DSR Ready project) – 2023/24
  - This has enabled geo to contribute to Matter Energy Management in Matter 1.3 & 1.4
  - Gained some expertise in OpenADR 2.0b and PAS1878

- OpenADR 3.0 to Matter Interworking reference specification
  - Akin to a white paper, but with more technical and detailed content
  - Focus on key use cases
  - Only looking at OpenADR 3.0 (not 2.0b)

Department for Energy Security & Net Zero

OpenADR3.0 to Matter Interworking reference spec - timeline



Matter and OpenADR 3.0

- Open Energy Management standards
  - Matter 1.3 & 1.4 almost complete everything we need
  - OpenADR 3.0 - The obvious standard choice for DSR control into homes

- Matter reduces the burden on ESA manufacturers (and DSRSPs)
  - Single unifying standard – no need to integrate to multiple APIs
  - Product certification programme – ensures interoperability
  - Built-in security controls
  - Data stays in the home – helps with privacy and reduces cloud costs
  - Royalty free and open-source SDK available
    - https://github.com/project-chip/connectedhomeip
    - https://handbook.buildwithmatter.com/

- Speak to your product managers!

Thank you

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