Architectures for Interoperability

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1. Possible Architectures as Interoperability moves through

    ➢   Not Interoperable

    ➢   Protocol Translation

    ➢   Common Protocol

    ➢   Interchangeable

2. Examples

3. Questions

4. Appendix - Interoperability Spectrum
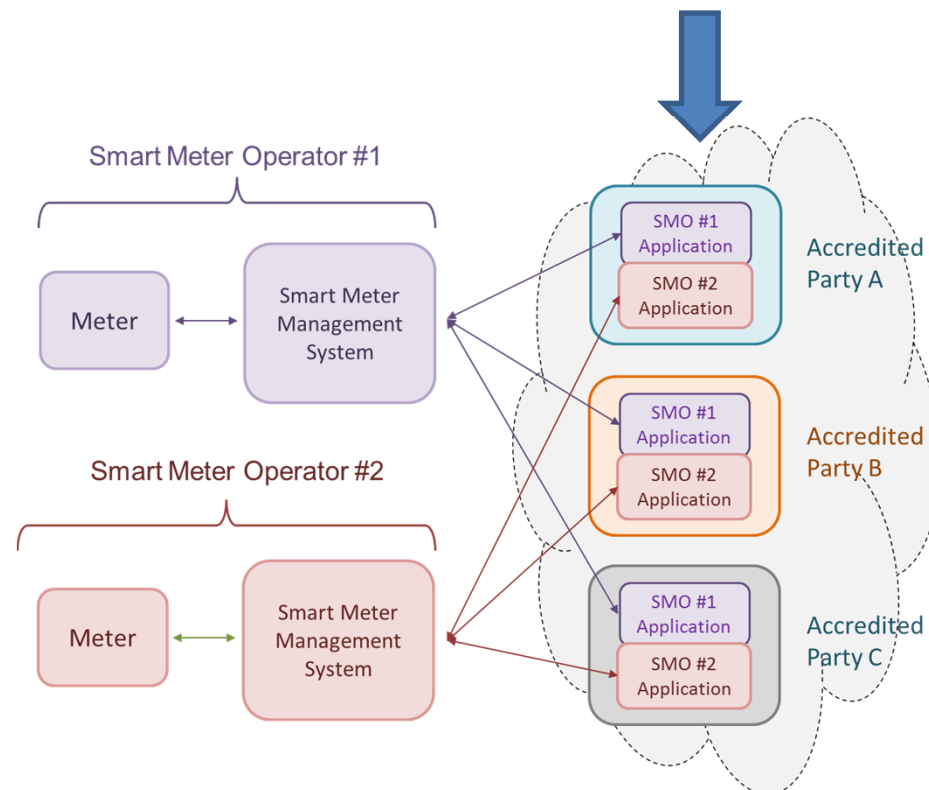
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The Power of Choice

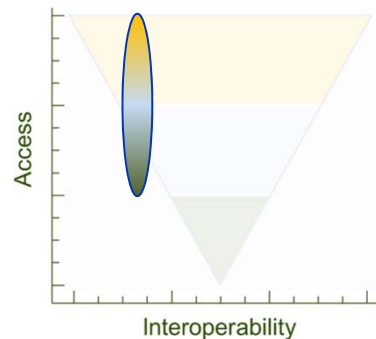What level of Interoperability and Access is required to support the aims of the Power of Choice (PoC)?

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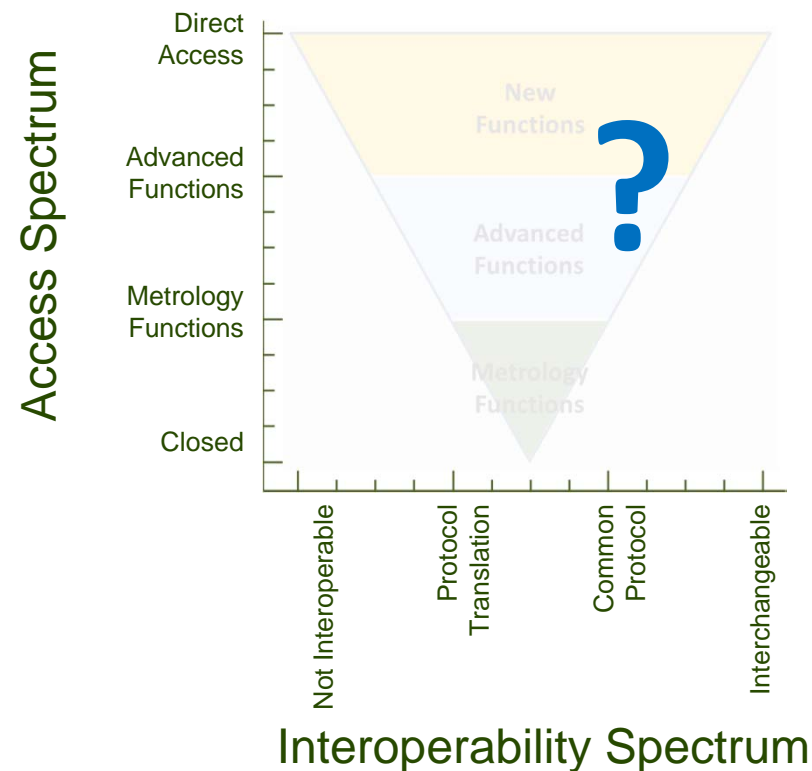
Not Interoperable
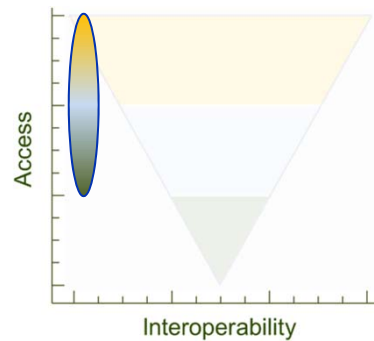
Accredited Parties must develop a custom
Application for each Smart Meter Operator
with which they wish to communicate

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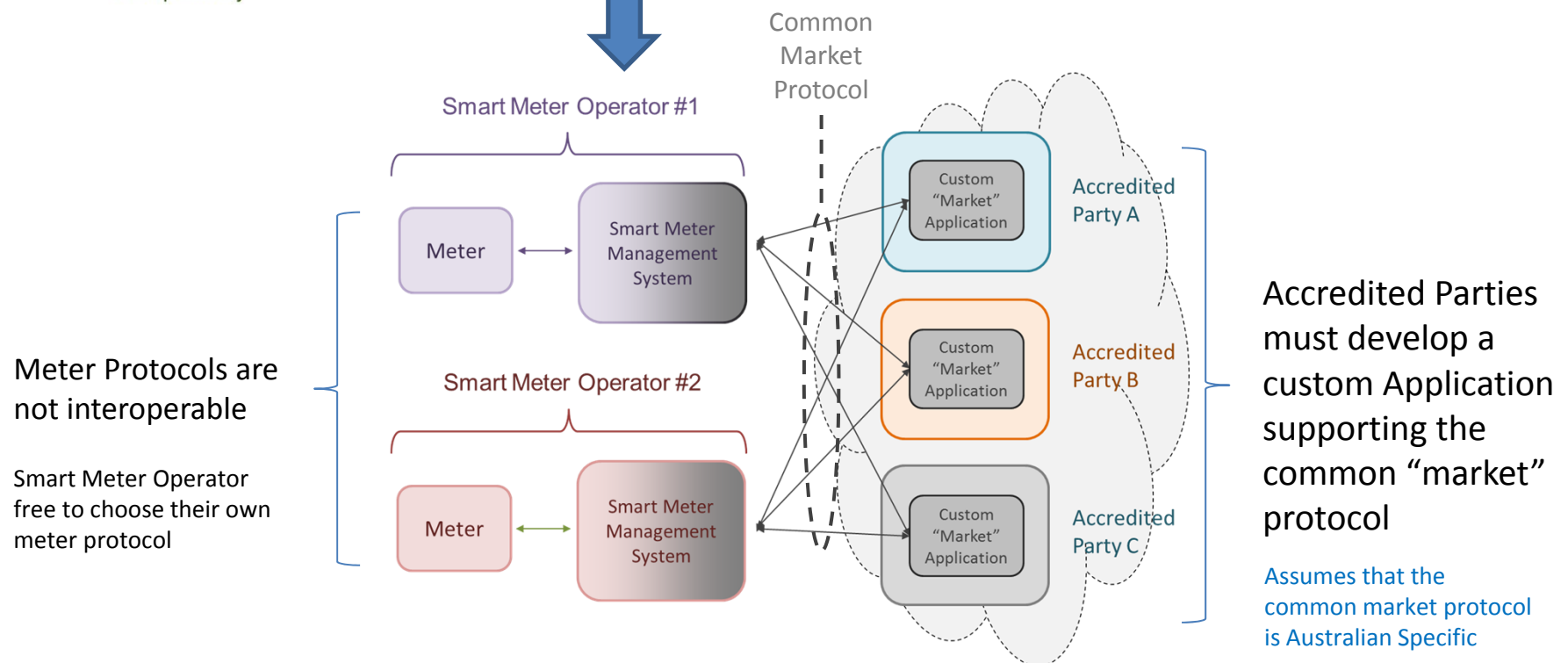
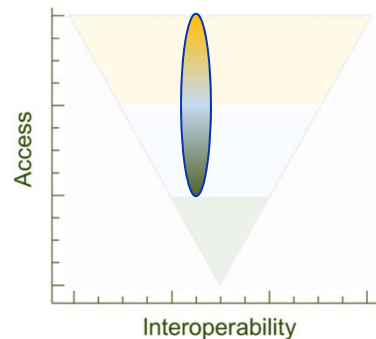# Protocol Translation – No Common <u>Meter</u> Protocol

Access

Interoperability

Smart Meter Operator translates a common "market" protocol to the protocol supported by their meters

Who defines the common "Market" protocol?

Common Market Protocol

Smart Meter Operator #1

Meter ↔ Smart Meter Management System

Custom "Market" Application — Accredited Party A

Custom "Market" Application — Accredited Party B

Custom "Market" Application — Accredited Party C

Meter Protocols are not interoperable

Smart Meter Operator free to choose their own meter protocol

Smart Meter Operator #2

Meter ↔ Smart Meter Management System

Accredited Parties must develop a custom Application supporting the common "market" protocol

Assumes that the common market protocol is Australian Specific

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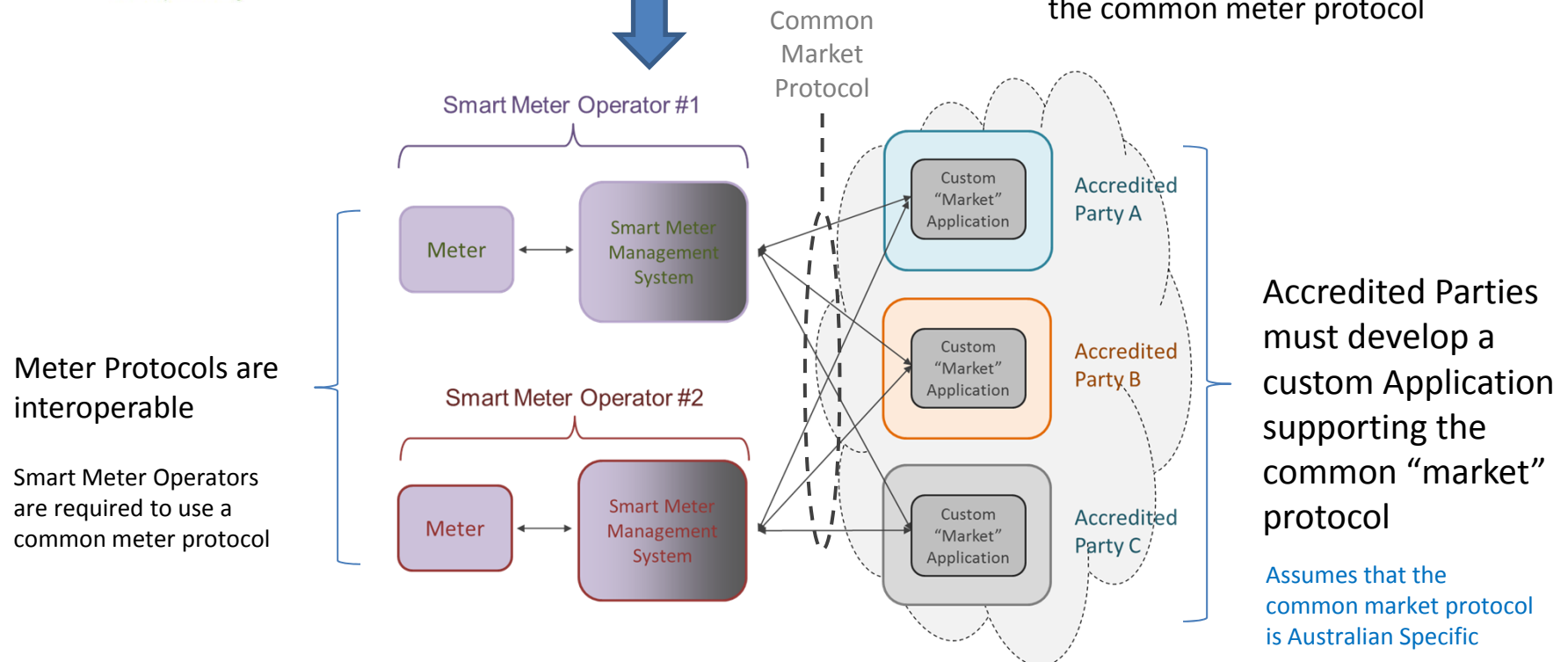# Protocol Translation – Common Meter Protocol

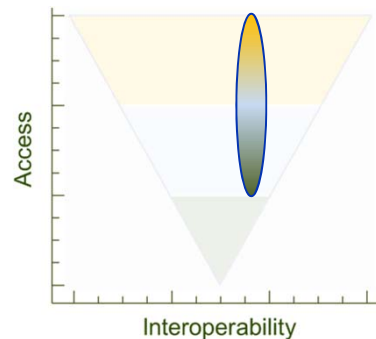Smart Meter Operator translates a common "market" protocol to the common meter protocol

Two protocols
- common meter protocol
- common market protocol

Development of the common market protocol is simplified by the common meter protocol

Common Market Protocol

Smart Meter Operator #1

Meter ↔ Smart Meter Management System

Custom "Market" Application — Accredited Party A

Custom "Market" Application — Accredited Party B

Custom "Market" Application — Accredited Party C

Meter Protocols are interoperable

Smart Meter Operators are required to use a common meter protocol

Smart Meter Operator #2

Meter ↔ Smart Meter Management System

Accredited Parties must develop a custom Application supporting the common "market" protocol

Assumes that the common market protocol is Australian Specific

Architectures for Interoperability v01   6
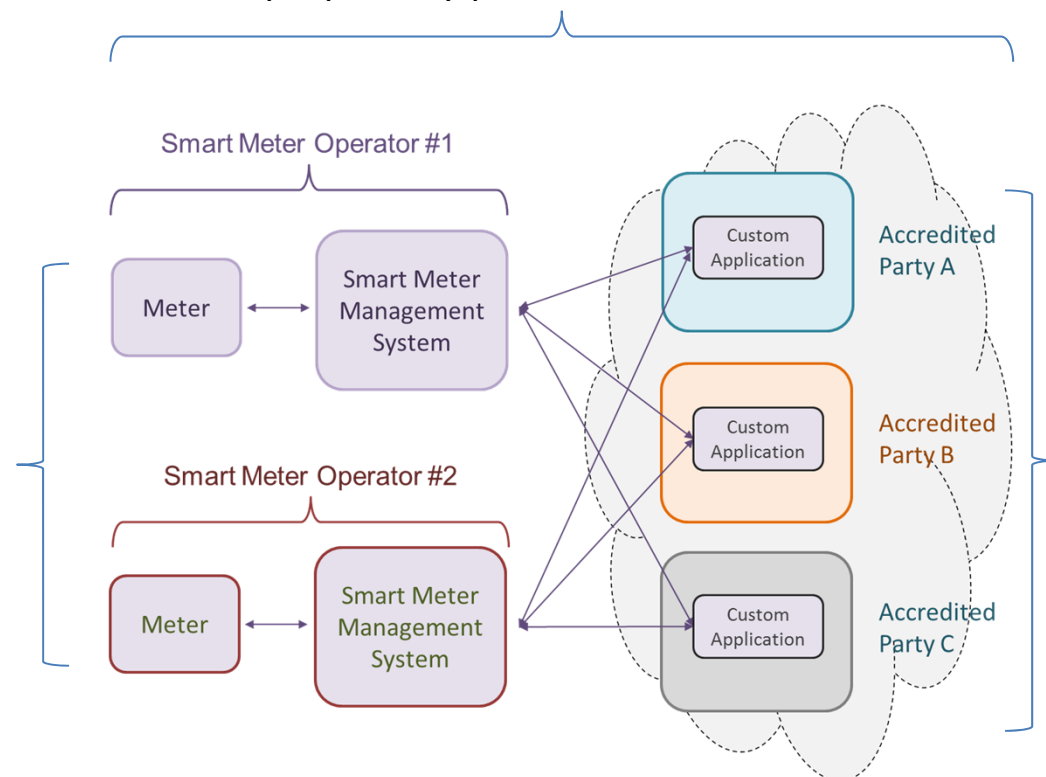
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Common Protocol – End-to-end Proprietary

All participants are limited to those vendors prepared to support the end-to-end proprietary protocol
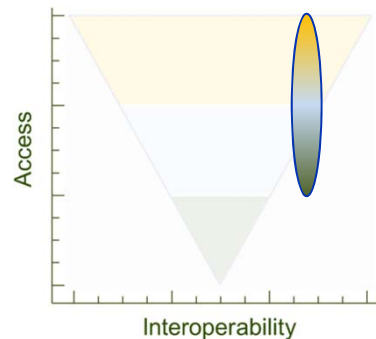
Meter Protocols are interoperable

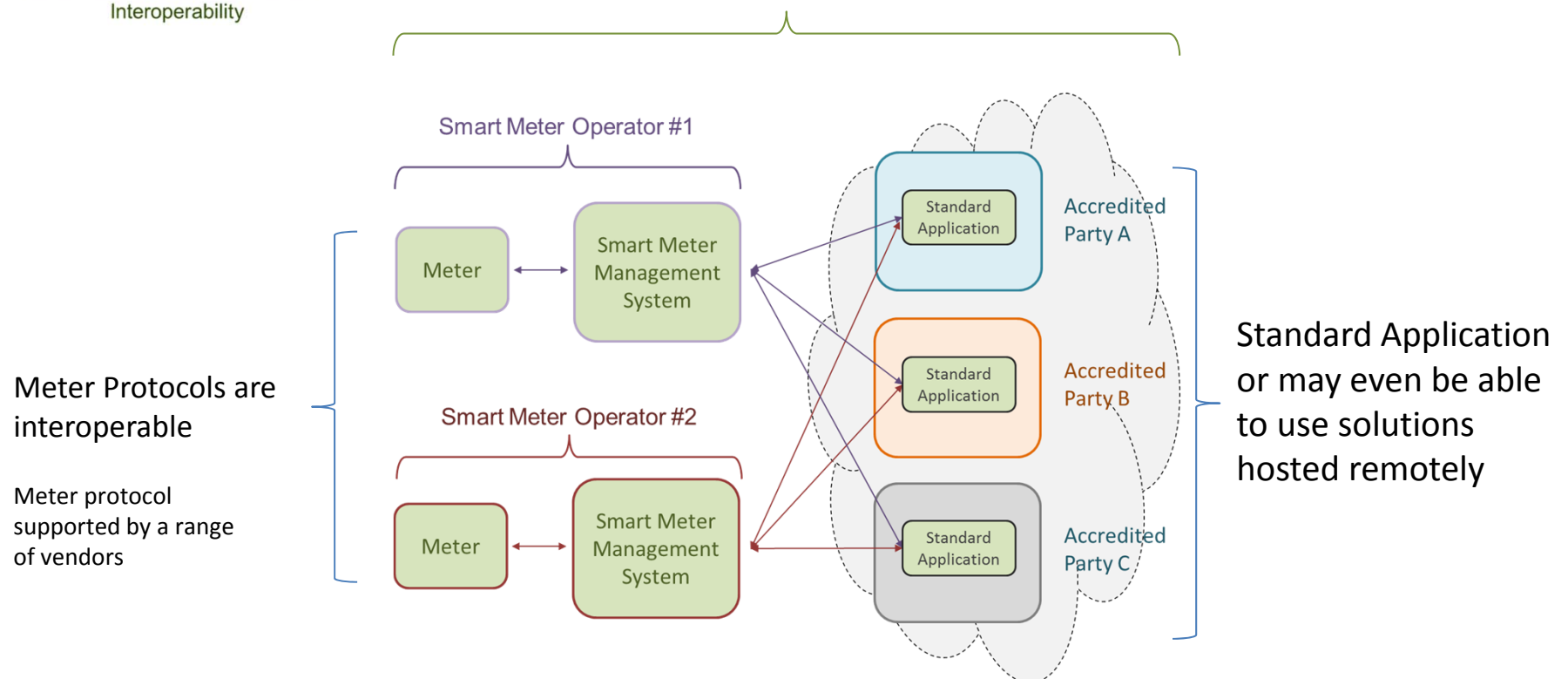Smart Meter Operators are required to use a common meter protocol

Accredited Parties likely to require a custom Application to implement the chosen end-to-end protocol
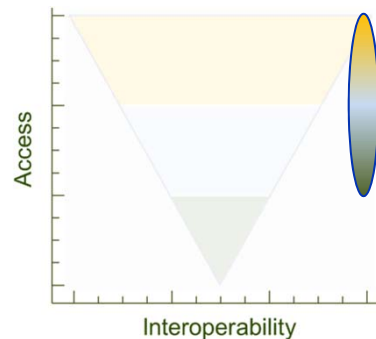
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Common Protocol – End-to-End Open & Non-Proprietary

Standard solutions are available from a range of vendors

Smart Meter Operator #1

Meter Protocols are interoperable

Meter protocol supported by a range of vendors

Meter

Smart Meter Management System

Smart Meter Operator #2

Meter

Smart Meter Management System

Standard Application — Accredited Party A

Standard Application — Accredited Party B

Standard Application — Accredited Party C

Standard Application or may even be able to use solutions hosted remotely

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Interchangeable

To make meters interchangeable there is a requirement to develop a *comprehensive* Companion Specification in addition to the end-to-end protocol

Interchangeable meters are either limited to the same communication technology or support a common hardware interface allowing different communications technologies to be plugged in (e.g. for geographic areas).
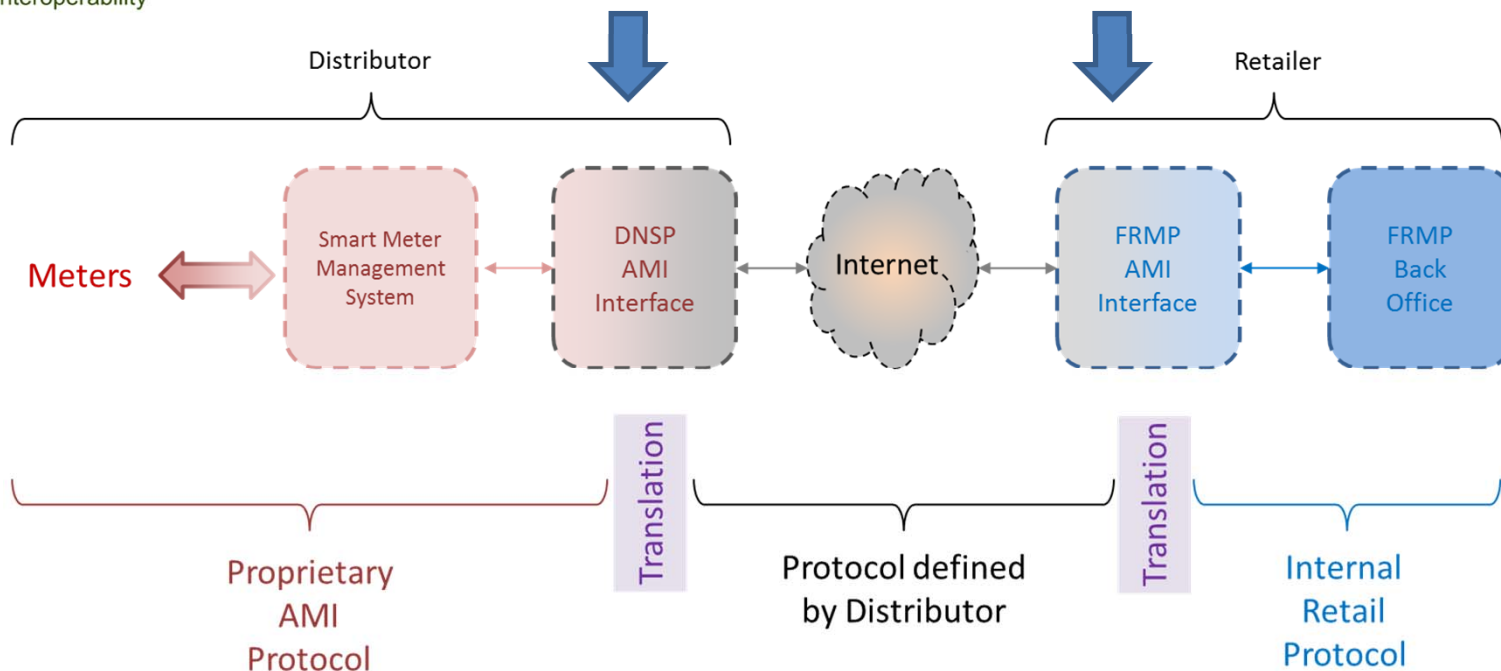Refer SMI FS Function 19 (Work-in-progress)

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Some Examples

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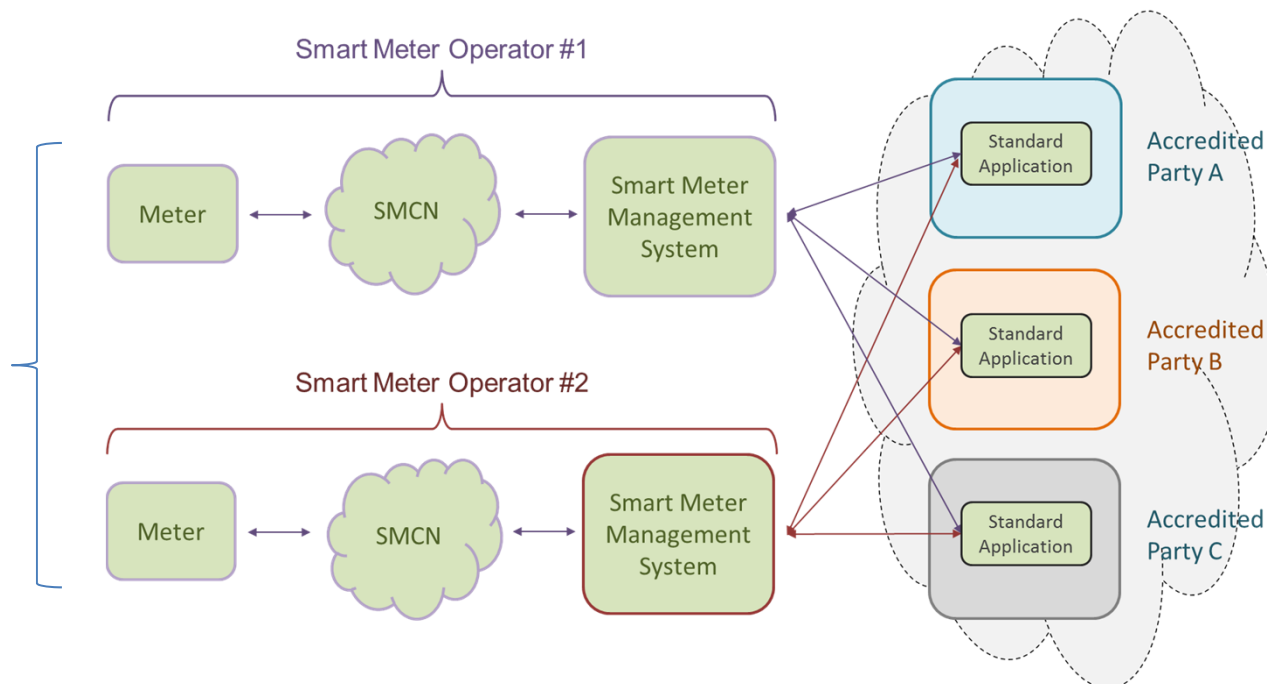
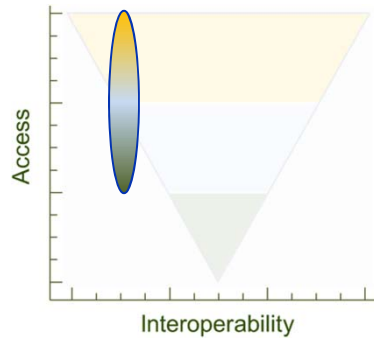# Victoria – Example of Protocol Translation
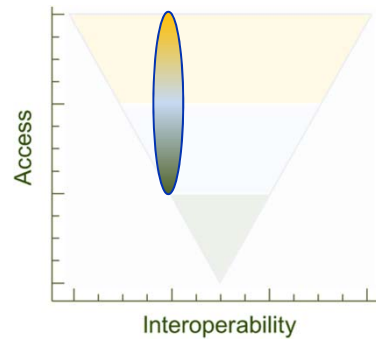
The distributor has offered a protocol to retailers

After accepting the protocol the retailer must develop custom software to support the distributor's protocol
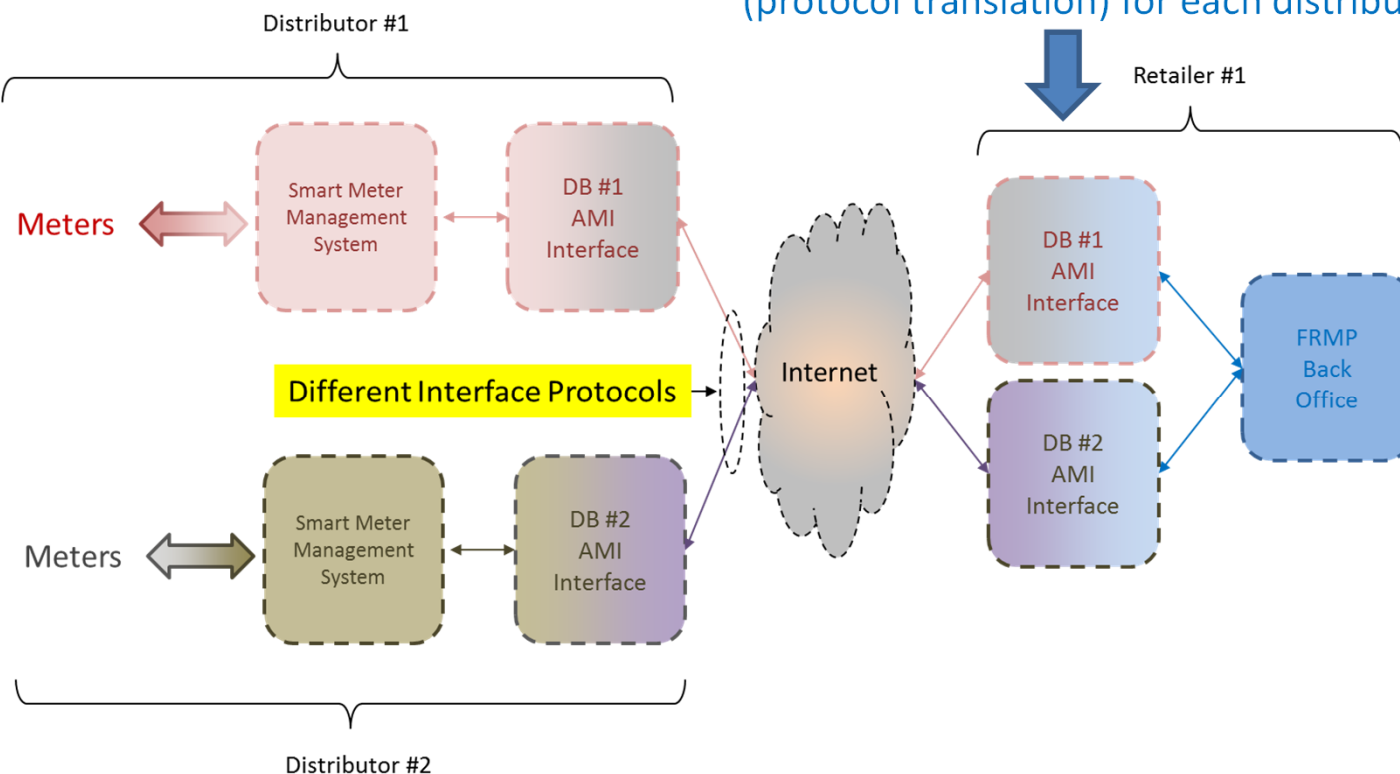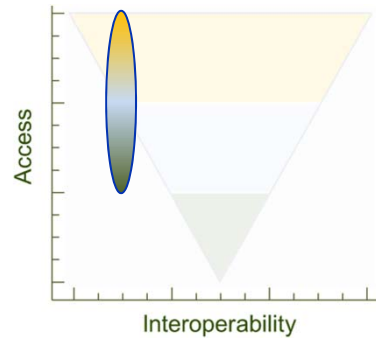
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Victoria (cont)

While Victoria provides an example of protocol translation the lack of a common market protocol results in the end-to-end interaction falling between Not Interoperable and Protocol Translation

Without a market protocol Retailers may have to implement a different interface (protocol translation) for each distributor
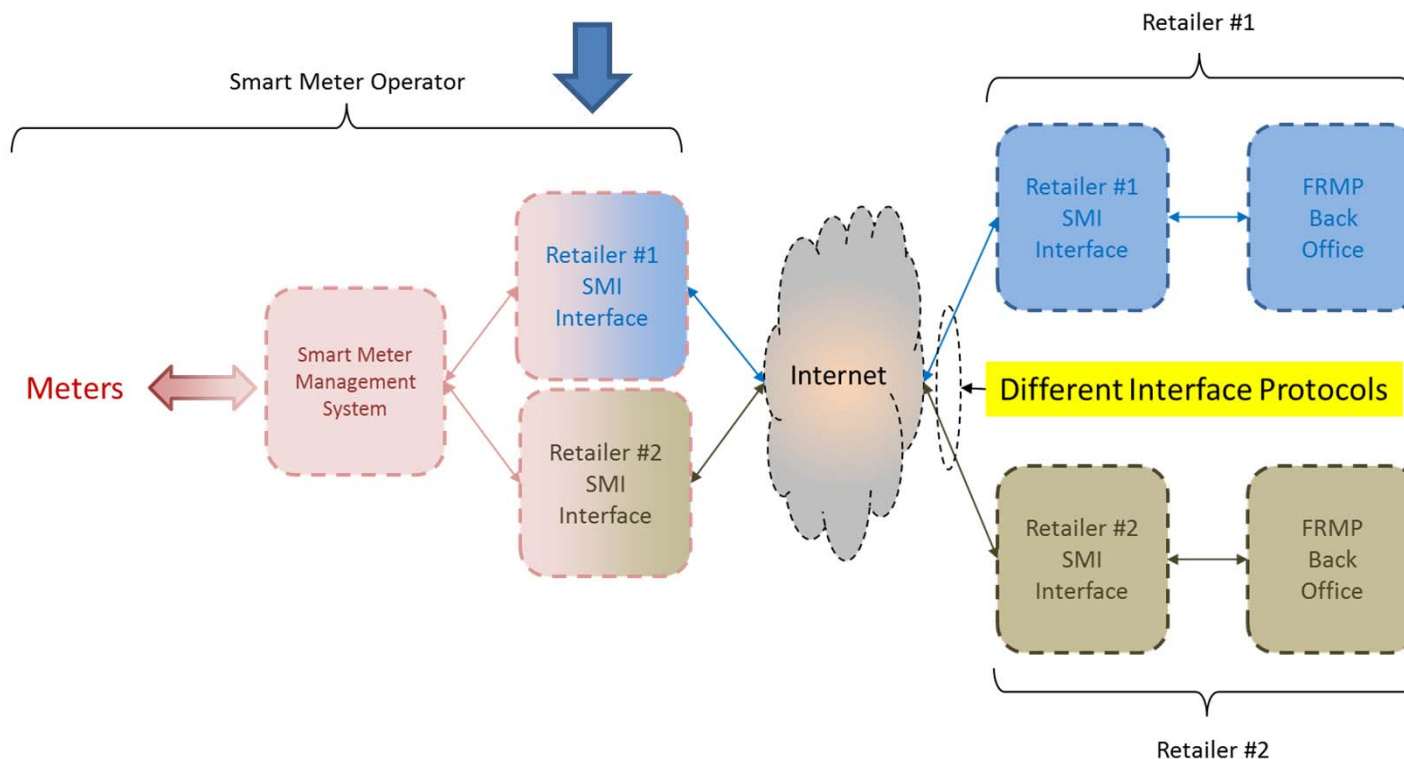
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New Zealand

In New Zealand the Smart Meter Operator must implement suitable protocols for the retailers.

Without a common protocol each smart meter operator may have to implement a different interface (with protocol translation) for each retailer

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Protocol Translation - Steps to add new functionality

FRMP offers a customer a smart meter with **New Functionality** ("set a fixed daily budget")
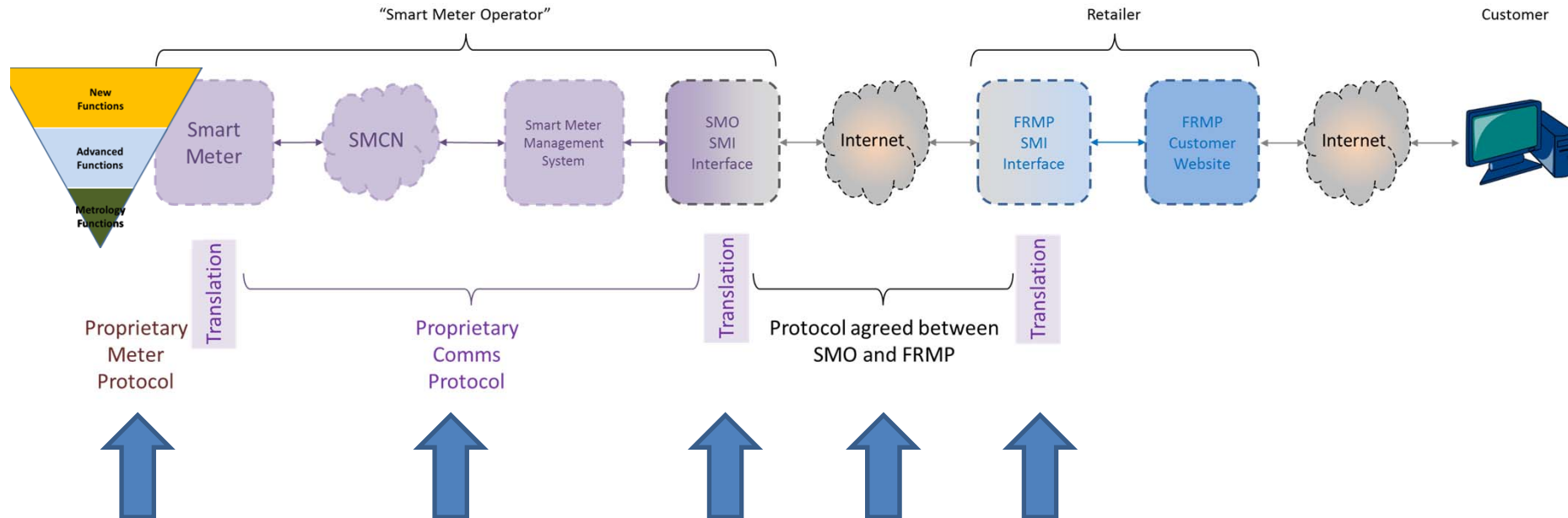
SMO chooses meter vendor with a solution supporting new functionality.
Restriction: must work with the selected SMCN

SMO contracts with the communications vendor to implement changes needed to support new functionality

FRMP and SMO negotiate changes to protocol **to support** new agreed protocol

All of these changes must be undertaken for EACH **new function**

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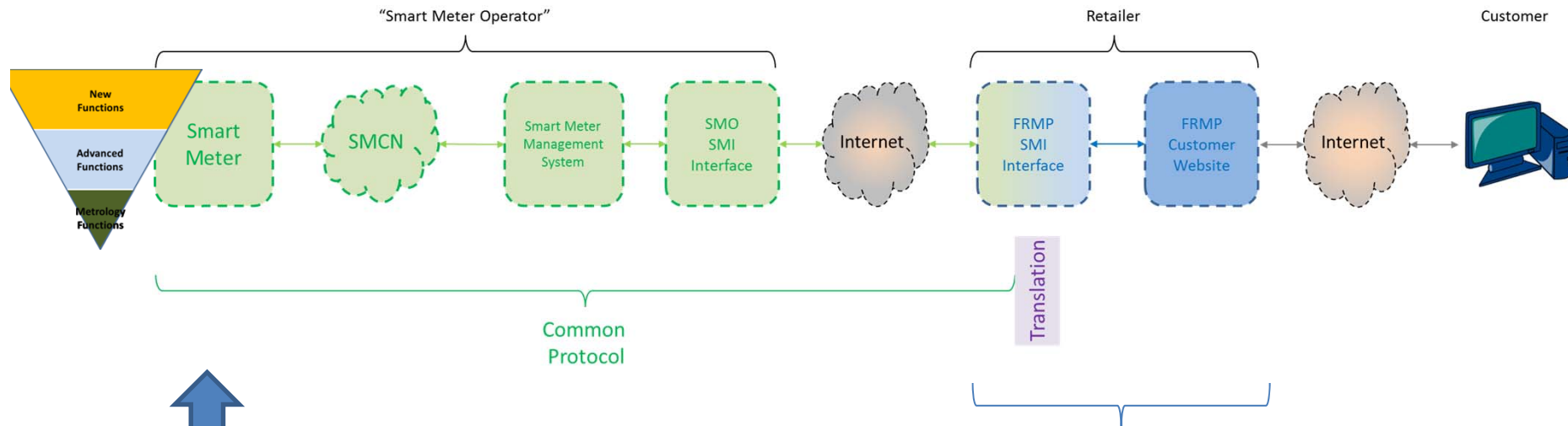
Common Protocol - Adding new functionality

FRMP offers a customer a smart meter with **New Functionality** ("set a fixed daily budget")

SMO finds a meter vendor with a solution supporting new functionality. Restriction: Must support the Common Protocol

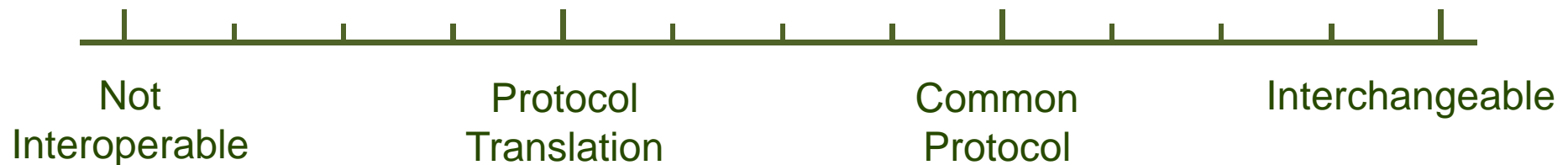FRMP offering the new functionality updates their back office

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Questions

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Appendix

Interoperability Spectrum

Not Interoperable | Protocol Translation | Common Protocol | Interchangeable

- **Not Interoperable**
  - No ability to interact with the meter (e.g. Unpublished proprietary protocol)

- **Protocol Translation**
  - Able to interact with the meter by converting protocols, however there may be some loss of functionality e.g. Itron MV90 is only able to read meter data it cannot alter meter settings

- **Common Protocol**
  - All meters use a common protocol so Accredited Parties are able to interact with all meters without loss of functionality (may offer different functionality)

- **Interchangeable**
  - One meter can be swapped with another with no system impacts. No need to change Head End Systems or communications (also referred to as "Fully Interoperable")

From AEMC Terms of Reference:

"The communication standard specifies the technical requirements of the communication network, in particular the form of the commands sent to the meter and the information conveyed back from the meter."
This is described as the meter protocol

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