

Challenges in Smart Meter Rollout

Utility Perspective



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- Challenges

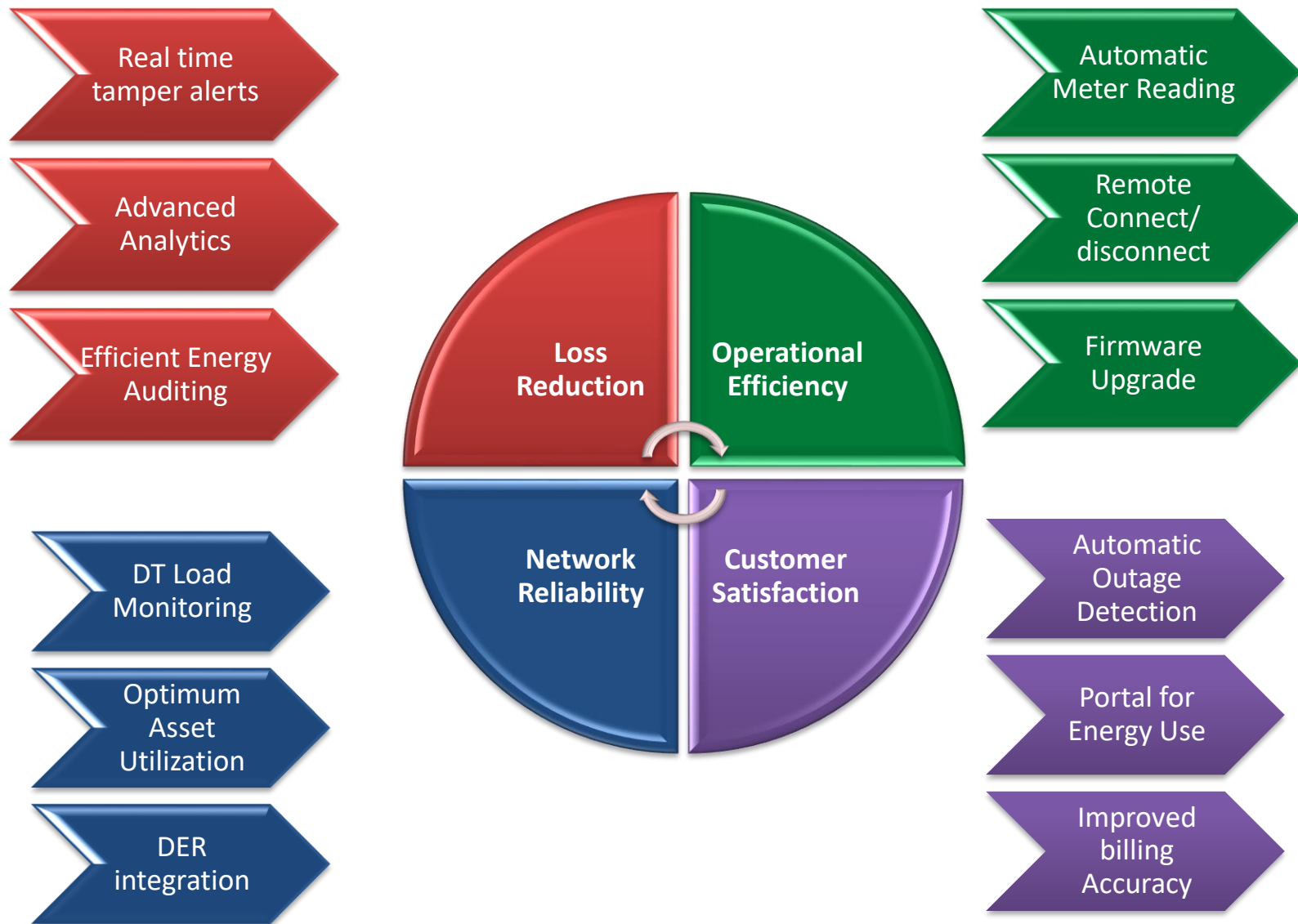
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- Proposed Architecture

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- Rollout Philosophy

AMI Drivers



Challenges

Communication Technology Concerns



Market Maturity Concerns

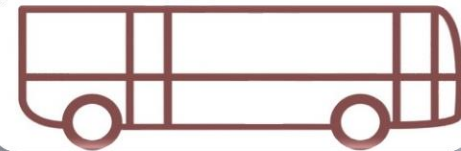


System Integration Concerns

Communication Technology Selection- Public Vs Private



Private Network



Public Network

- Availability
- Survivability
- Coverage
- Latency
- Security
- Life cycle
- Control

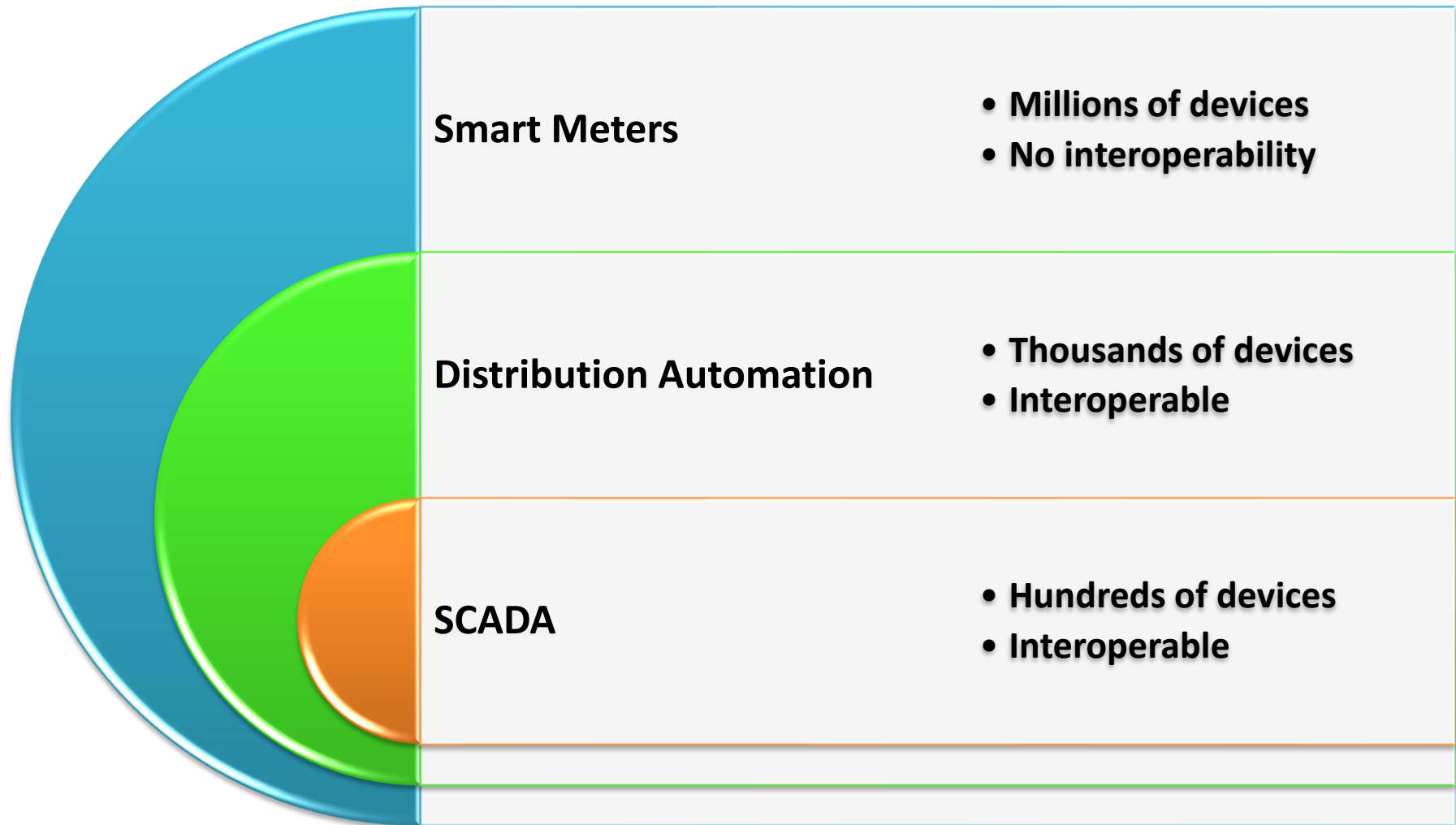
- High
- High
- Cover 100% Nodes
- Low
- High
- High
- high

- High
- Low
- Large population
- Low
- High
- High
- Low

Communication Technology Selection - Qualitative Requirements

Application	Data rate	Latency	Reliability	PLC	RF Mesh	NB IOT	LTE
AMI	10- 100 kbps	5s- hours	99%-99.9%	✓	✓	✓	✓
Demand Reading	>100 kbps	<5 s	>99.0%	✓	✓	✓	✓
Interval Reading	>100 kbps	<4 hour	>99.0%	✓	✓	✓	✓
DR	14- 100 kbps	500 ms- min	>99.0%	✓	✓	✓	✓
DA	>18 kbps	<1 s	99%-99.9%		✓		✓
DER	9.6- 56 kbps	300 ms- 2 s	99%-99.9%		✓		✓

Communication Technology Selection- Interoperability Concerns



Communication Technology Selection- Interoperability Concerns

Device
level

Push Service/
Configuration



Functional Layer

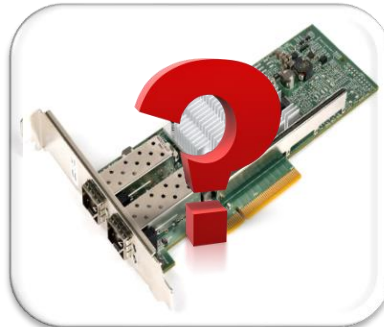


Information
Layer

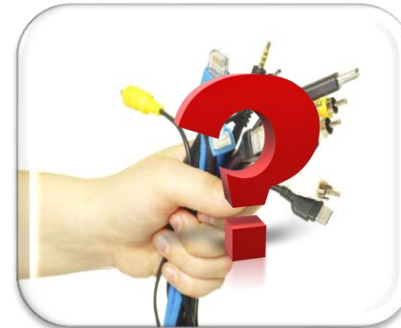
DLMS

Channel
level

Proprietary
Protocols



Communication
Layer



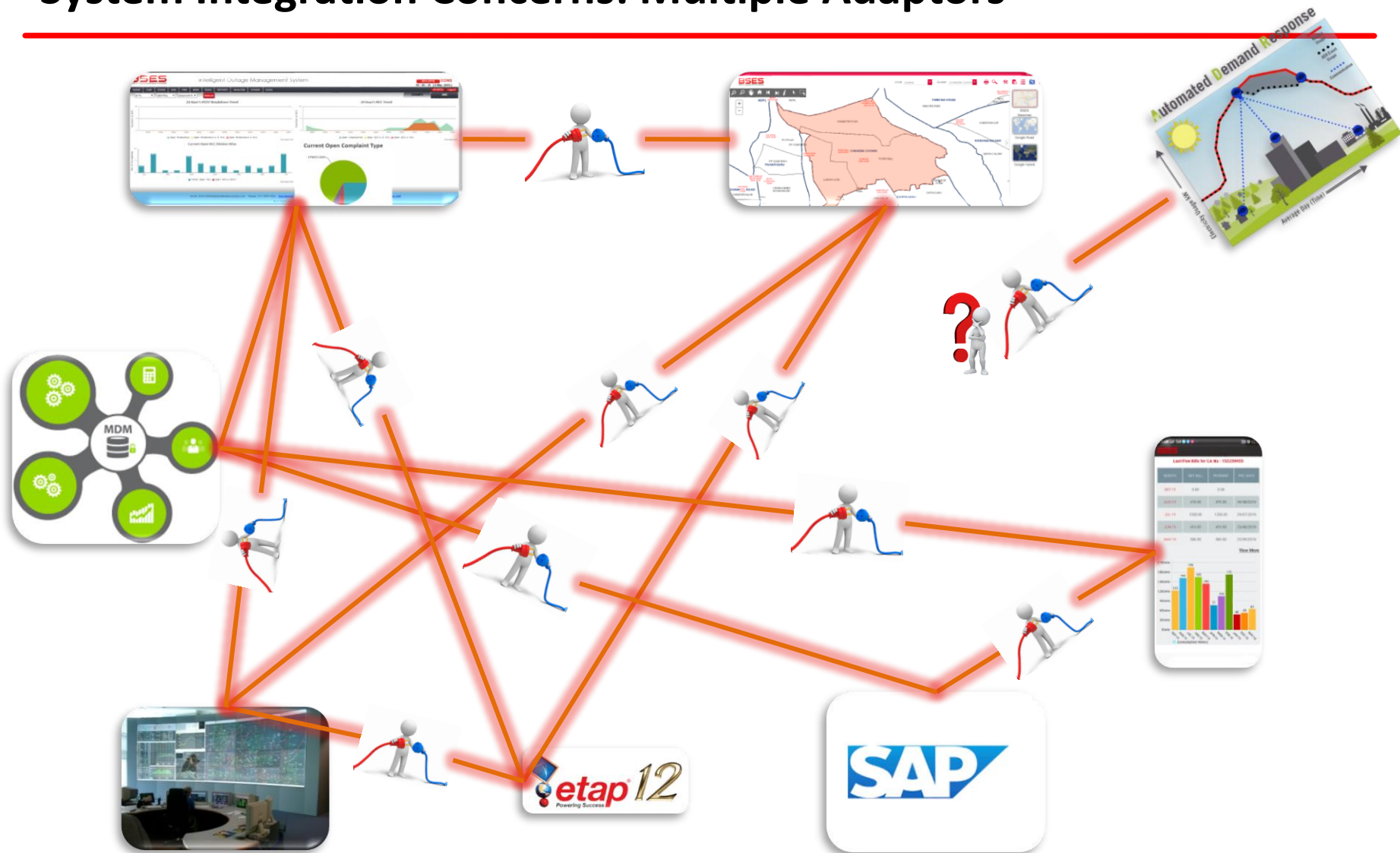
Component
Layer

PIN Out

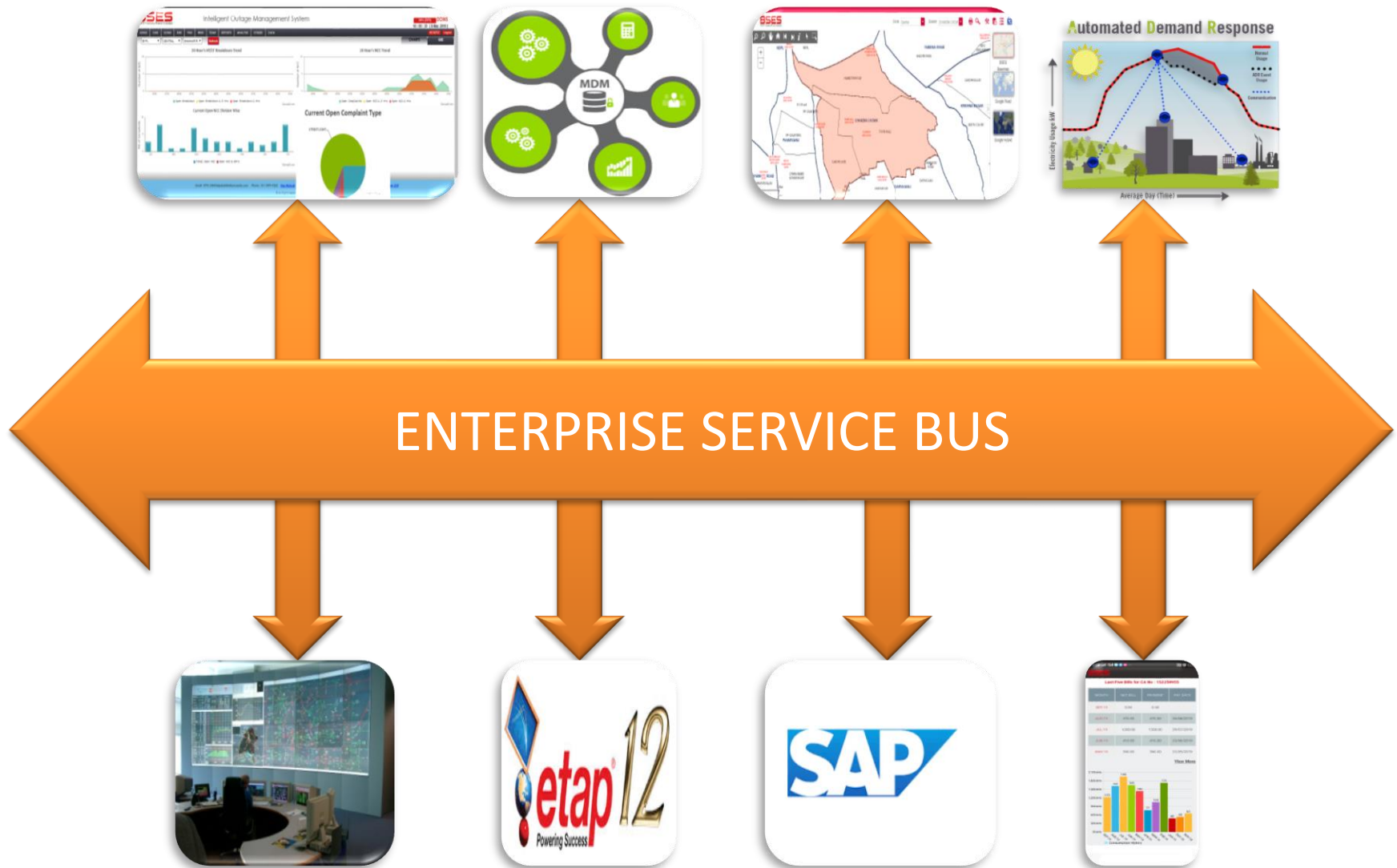
Communication Technology Selection- Interoperability Concerns

	PLC	RF Mesh	NB- IOT	LTE
Communication Layer	X	X	!	✓
Component Layer	X	X	!	✓

System Integration Concerns: Multiple Adaptors



System Integration Concerns – Way Forward



Market Maturity Concerns

Meter

- Integration with Communication
- BIS Certifications
- Manufacturing Capacity

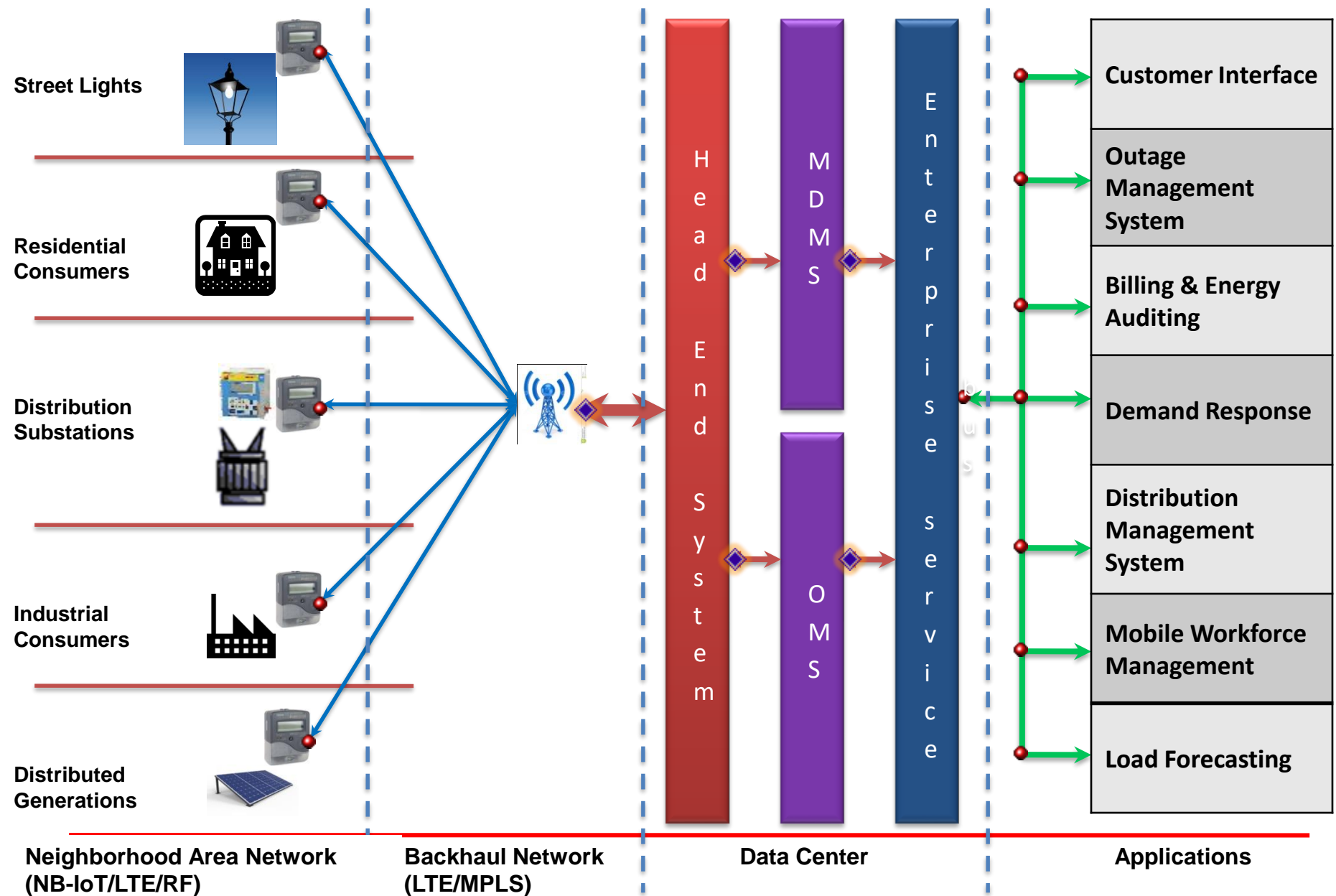
Communication

- Adoption to Indian Conditions
- Integrations with meters

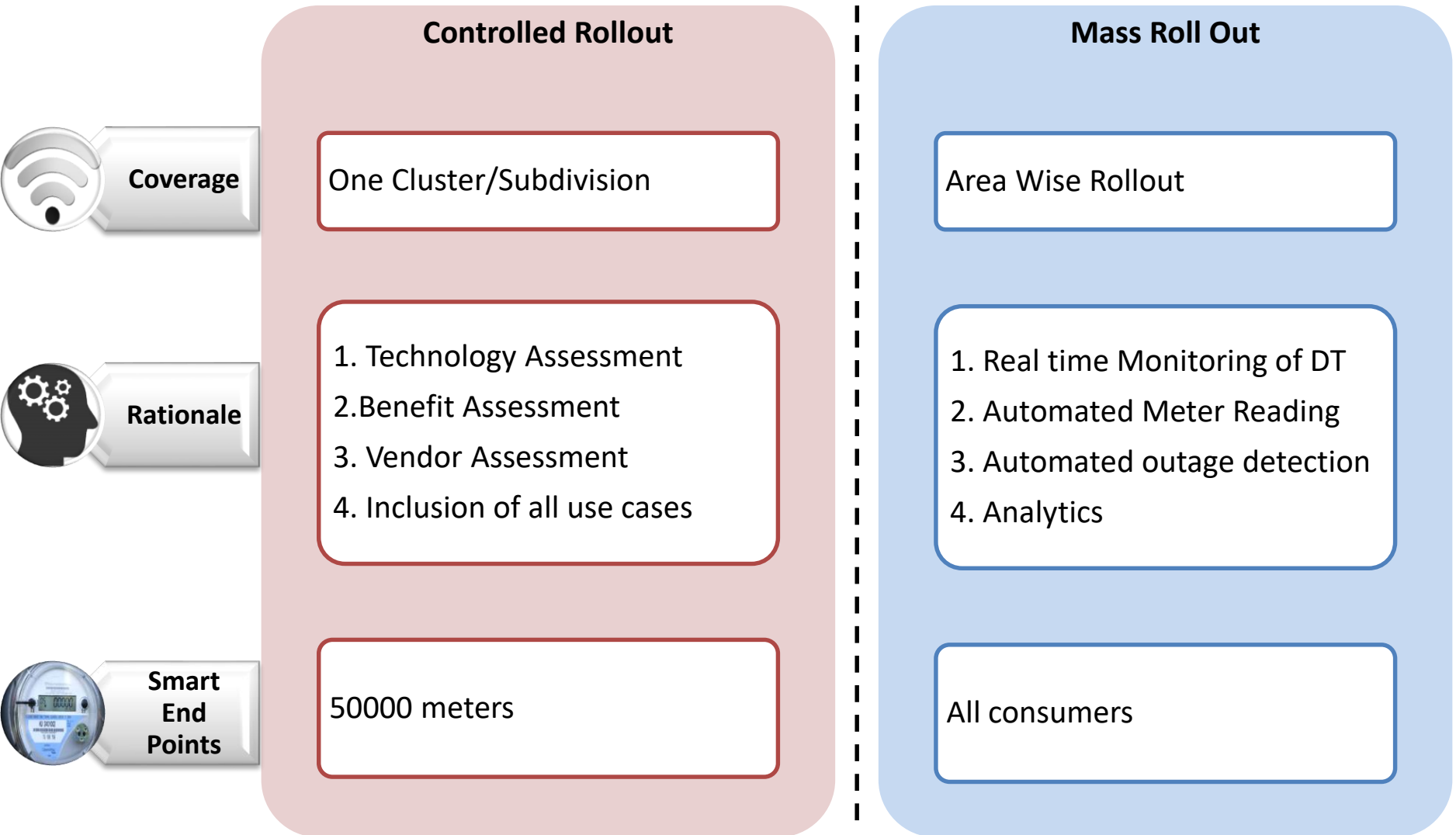
HES and MDM

- Customization as per Utility

AMI Rollout - Architecture



AMI Rollout -Implementation Strategy



Thank You