

THE ULTIMATE GUIDE TO SMART METERING: **EXPAND YOUR EXPERTISE.**



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Capgemini and Smart Metering

Since 2005, Capgemini has successfully delivered 75 AMI smart meter roll out programmes internationally, supporting customers and clients to deliver over 170 million smart meters.

We don't just know what makes a smart metering programme successful, we know how smart meters can be used to help you look beyond the meter; to realise leakage and customer usage reductions, to

optimize abstraction management and understand the best kind of intervention to take in a given part of your network.

We love talking smart metering and are always happy to share our experiences and best practices, so if you're thinking of, or are already delivering a smart metering programme, give us a call.

In this document, you will learn:

Our understanding of the UK AMP8 smart water meter landscape

The comms technologies out there and when to use them

Key questions to ask yourself before starting a smart metering installation programme

Common issues with smart metering programmes

The UK AMP8 smart water meter landscape

With over 10m smart water meters scheduled to be installed in AMP8, it's worth considering the knock on impacts this is likely to have to the existing supply chain and contract resource pool.

10 million meters

AMP8 is already shaping up to be the largest investment in infrastructure by the UK water sector for nearly

20 years which means competition for the best teams and resources is going to be fierce. Couple that with a penalty linked incentive regime for missed smart meter installations and the war for resources is going to be costly.

In this circumstance, being prepared to take a multi-meter vendor and also multi-installer approach throughout the full life of your programme will help you ensure a successful delivery.

However, when you bring in multiple parties, making sure they are incentivized to your outcomes, that they work in an aligned way and that your processes and systems and aligned is going to be key to your success. Strong contract management, clear KPIs and robust risk and governance approaches are going to be the name of the game!

Based on our 75 AMI deployments, at Capgemini we have a RACI playbook of over 250 tasks, each of which we know are essential to the successful management of a smart metering programme

progresses and track each service request to resolution/closure.

1.8 SMOC

Below are the key tasks and the RACI matrix for the SMOC services.

S.N.	Activity	SRP	Capgemini	Iron	Plan Aids	PUK
1	Agreeing contractual change for SMOC service	AC	R			I
2	Overall SMOC Service Delivery	A	R			I
3	Availability of MDMS dashboards for SMOC activity	AC	I	R		
4	Availability of MDMS to JIRA interface (Responsibility lies with Jira Saas vendor)	I	A	I		I
5	Level 1-3 support for incidents, monitoring MDMS alerts and events, resolving incidents based on triaging and assignment to L2 team (Responsibility lies with Field services team)	CI	A		R	I
6	Level 2 support for bug fixes and assignment to resolver groups (Responsibility lies with Resolver team)	CI	A		R	I
7	Consolidating Service Report	AI	R			
8	Reviewing the Service Report	CI	A	I		RI
9	Workload Schedule management	I	A			
10	SMOC Services Issue Escalation	I	AC			I
11	Co-ordination with other teams/vendors for SMOC Services Issue	ACI	R	CI		I
12	Prepare/Agree Service Level Agreements	AC	R			CI
13	Monitoring SLA & assigning actions	ACI	R			I
14	Consolidating & Maintaining RAIDO & A Logs for risk management	ACI	R			I
15	Plan Connectivity (bandwidth issues / communications links / other network requirements)	ACI	R			CI

Do I need LoRaWAN or NB IoT or Satellites or Sim Cards or...

	Penetration and Coverage	Cost	Best for high density areas	Supports high density areas	Suitable for real time communication	Battery life impacts	Reliability of the solution
<p>NARROWBAND IOT (NB-IOT): As a type of Low Power Wide Area Network (LPWAN) technology, NB-IoT offers a wide coverage area and deep penetration capabilities, making it suitable for smart meters, especially in urban areas where signals need to penetrate buildings and underground installations.</p>	Orange	Orange	Orange	Orange	Orange	Green	Green
<p>LORAWAN (LONG RANGE WIDE AREA NETWORK): Similar to NB-IoT, LoRaWAN is a LPWAN protocol designed for long-range communications with low power consumption. It's used in various IoT applications including smart metering, particularly in rural or remote areas where coverage is challenging.</p>	Orange	Green	Red	Red	Red	Green	Orange
<p>WI-SUN (WIRELESS SMART UBIQUITOUS NETWORKS): This is a specification for a wireless mesh network that is used for utility, smart city, and IoT applications. It's designed to be interoperable and scalable, making it suitable for large-scale deployments like smart grids.</p>	Orange	Green	Green	Orange	Green	Green	Green
<p>ETHERNET: In some cases, especially in commercial or industrial settings, smart meters might be connected via Ethernet cables. This provides a reliable and high-speed connection, but the deployment can be more complex due to the need for physical cabling.</p>	Red	Red	Orange	Green	Green	Green	Green
<p>RADIO FREQUENCY (RF) MESH NETWORKS: A common method where smart meters communicate with each other and with a central data collector using radio signals. It's a cost-effective solution that offers robust coverage and is widely used in residential areas.</p>	Green	Red	Green	Green	Green	Red	Green
<p>CELLULAR NETWORKS: Some smart meters use existing cellular networks for communication. This method is straightforward to implement as it leverages existing cellular infrastructure, but it can be more expensive due to ongoing data transmission costs.</p>	Green	Orange	Green	Green	Green	Orange	Green
<p>FIBER OPTIC NETWORKS: In areas with existing fiber optic infrastructure, this can be used for smart meter communication. It offers high-speed and high-capacity communication but can be expensive to deploy where fiber optics are not already present.</p>	Red	Red	Orange	Green	Green	Green	Green
<p>SATELLITE COMMUNICATION: In remote or hard-to-reach areas, satellite communication can be used. It's typically more expensive and used in special circumstances where other forms of communication are not feasible.</p>	Red	Red	Red	Orange	Orange	Red	Orange

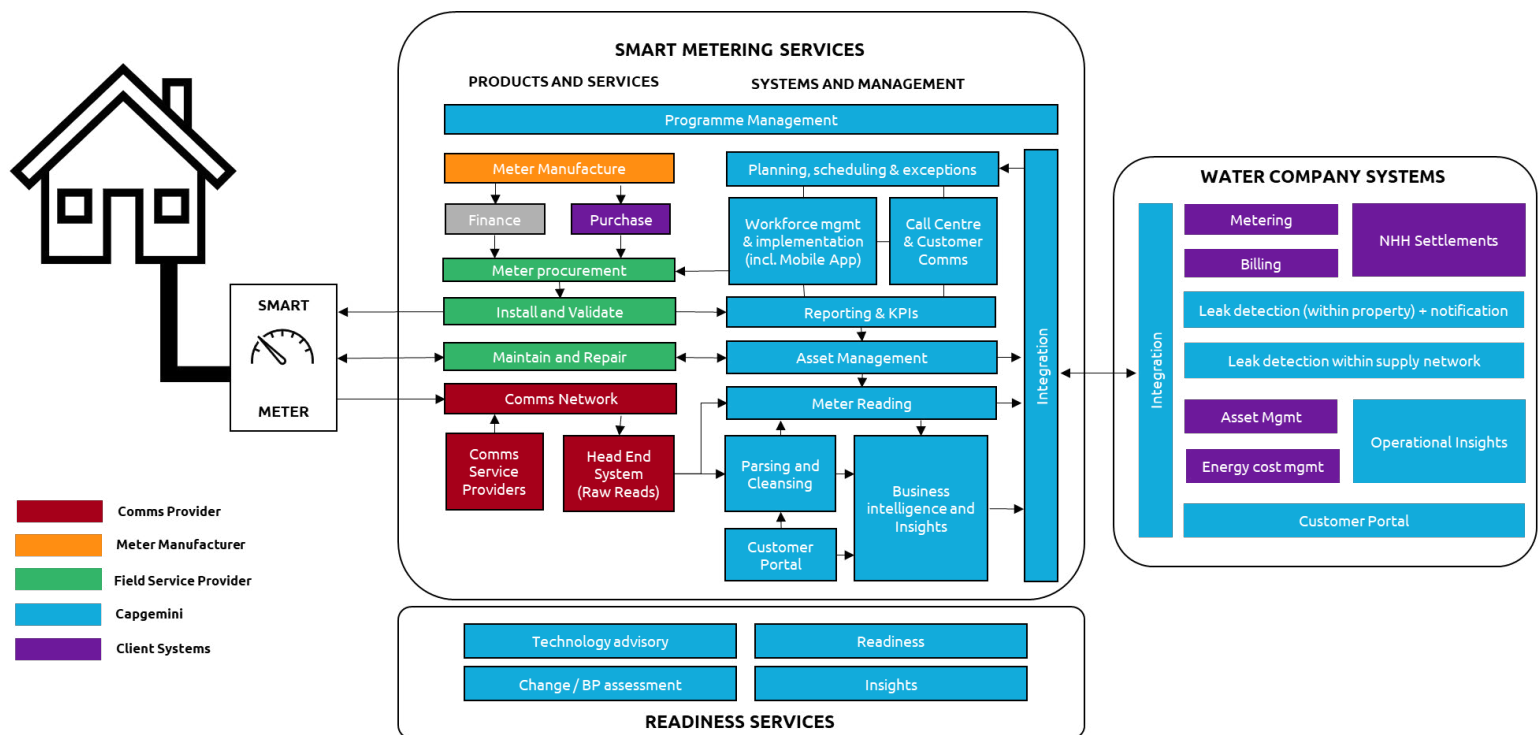
It is highly unlikely that any one technology will give you 95-99% coverage. You need to ensure your partnering strategy and contracts enable you to effectively coordinate with organisations who have the expertise to deploy a combination of the above

technologies to maximize efficiency and coverage. For example, a smart metering system might use RF mesh networking in a residential neighborhood but switch to cellular or satellite communication for more isolated meters.

The value of a smart metering programme isn't in the installation of a meter. It's in how you use the insights the data gives you.

We help partners focus on achieving their outcomes. This diagram represents our high level view of the key components any water utility should consider when undertaking a smart metering programme.

Below it are some of the key questions we have answered with other clients, that you may want to consider.



KEY QUESTIONS TO CONSIDER

Who has decision making authority for each part of the programme (meter selection, installation, roll out planning, system integration, business alignment etc.)? If we've put out an outcomes based project to an installer and we want to change the installation prioritization approach, can we do that?

How do we define and measure the level of commitment from our vendors?

What are the fairest KPIs to use to ensure each partner succeeds in their own business model?

What are the criteria for selecting meters, comms systems and IT solutions with optimal flexibility and longevity?

How can we ensure that our system remains adaptable to future technological advancements?

How do we evaluate the long-term benefits versus the costs of different network connections?

Should the network not perform adequately, does the contract specify the chosen provider to help determine why it isn't working and take remedial action within set SLAs?

Are our senior leaders prepared for the volume of issues the meter data will help us identify? What communication strategies do we use to explain these issues to stakeholders?

What libraries can our partners bring and how can these libraries be customized for our specific operational needs?

How frequently and by what process will the rule libraries be updated to reflect new patterns?

What resources are available from the partners to support continuous learning and training?

What protocols are in place to verify alarms before taking action?

How can we reduce the occurrence of false alarms?

What training is provided to staff to effectively handle and distinguish false alarms?

Are there clear guidelines on the use of shared IP?

What are the specific terms of code ownership and data rights in our contractual agreements with the meter manufacturers, comms provider, installation partner?

How does the IP arrangement affect our long-term usage and modification rights of the developed systems and analytics?

How is IP shared or divided among various stakeholders, and what are our rights and responsibilities?

Smart Meter Demonstrator
High Usage and CSL Detected Properties

Date Range: 1/1/2018 - 1/31/2017

Legend: High Usage + CSL Detected (Green), High Usage (Red), CSL Detected (Blue)

Household 0
View Property Details

LS1
View DMA Details

889 Residential Properties, 42 Commercial Properties, 5 No. Use Street

Household 135
View Property Details

LS2
View DMA Details

Smart Meter Demonstrator
Individual Property Details

Household: 135
Address: Flat 29 William House, Ringiers Road, Bromley

High Usage: 2.18
CSL Daily Volume Estimate (ML): 2664

Table: Daily Summary of Meter Consumption

Read Date	Volume (m ³)	Volume (m ³)	CSL with Volume (m ³)	Flow Rate (m ³ /hr)
1/1/2017	121	422	121	121
12/15/16	295	479	45	15
12/22/16	472	478	0	0
12/29/16	645	383	26	15
1/5/17	827	187	64	27
1/12/17	991	185	87	27
1/19/17	1174	176	0	0
1/26/17	1358	338	4	4
2/2/17	1542	228	34	34
2/9/17	1726	228	42	42

Smart Meter Demonstrator
DMA Details

Total Number of High Usage Properties: 39

Total Number of Suspended CSL Properties: 103

Household ID	Address	Category	CSL	High Usage	High Usage Date
Household 0
Household 1
Household 2
Household 3
Household 4
Household 5
Household 6
Household 7
Household 8
Household 9
Household 10
Household 11
Household 12
Household 13
Household 14
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Household 101
Household 102
Household 103

An example of our rapid leak detection and customer usage demonstrators

Common issues with smart metering programmes – The Checklist

As you embark on your AMP8 smart meter rollout, use this checklist to de-risk your programme and avoid common pitfalls.

Meter Selection

- We understand the amount and type of intelligence, communication, and other functionalities we require from our meters.
- We understand and have considered the implications of each of these functional decisions on the battery's energy budget.
- We know how to tailor a meter procurement strategy to balance among others business benefits, economies of scale, and supply chain stability.

Comms provider Selection

- Our provider, or ecosystem of providers, has the capability, track record and resources to provide a multi-technology solution, ensuring we meet our connectivity targets.

Rollout / Installation

- We can successfully manage a roll-out with multi-sourced installation parties – including our own field technicians and customer teams.
- Our processes and approaches ensure efficient and high-quality installations ensuring a flawless customer journey for the end consumer.
- We have the ability to redesign the rollout profile if objectives change or supply chain chocks arise.
- The vendor provides a contractual commitment to continuous learning and improvement.
- We are clear on the kind of data to be collected (structured and unstructured), and how to identify and handle non-standard installations or errors.

Data

- Evaluation of vendor platform customizability and interoperability to our existing and target architecture undertaken.
- We understand the difference between issues created by the new system versus those merely exposed by it.
- Our Business teams are clear on the type of data and insight they need from the meters and the way they would like it visualized.
- We understand what 'live' data means in the context of our selected meter/architectural solution.

Architecture

- We have a clear understanding of how we are ensuring compliance with data protection regulations as data flows from the meter to the end user and importantly.
- We are clear on the system performance and security considerations for capturing, storing, and provisioning the data.
- We have established thresholds for minimum acceptable reliability and accuracy of the data as it comes into our systems.
- Our vendors are committed to further development of their platforms and dashboards, support, and training and how costs for this will be allotted.
- We know how to build a future-proof architecture ensuring maximum flexibility in the supply chain.
- We have the technical know-how to set up and run the necessary testing infrastructure for the end-to-end metering architecture and know how to resolve issues arising from this effectively and efficiently.

Benefits – Using the data and Insight

- We have an approved business case with specific targets which underpin our investment.
 - Our selected solution comes with established business rules and reference libraries to help distinguish between actual leaks and legitimate usage.
 - We have a meter data use case roadmap drafted and communicated with the business.
 - We understand the actions we want to take and the interactions we want to have, to help reduce customer demand using smart meter data.
 - Our leakage teams are clear on how smart metering will change the way they currently operate and prioritise work in the field.
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- OVERALL:** we know how, and have the capacity, to set-up and run the program organization to manage this complex operational and technology based change programme to effect leakage and demand reduction in a fast-moving multi stakeholder environment.

Get in touch

For more on our smart metering credentials, including client success stories and thought leadership pieces, head to our dedicated [smart meter page](#). Or chat through your smart meter challenge with one of our European experts:



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Capgemini is a global business and technology transformation partner, helping organisations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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