# Factsheet: Success factors for the smart meter rollout

Visionary companies are leveraging the opportunities offered by digitisation to shape the future. Swisscom is also opening up new business areas with numerous innovations. We see it as our mission to help you seize the opportunities offered by digitisation, connecting the best network infrastructure with secure data storage, reliable project management, successful implementation and a great many innovative solutions.

As a Switzerland-based mobile network operator (MNO), Swisscom has extensive experience in the smart meter connectivity market in Switzerland. Many Swiss energy companies have been important customers of Swisscom IoT for years.

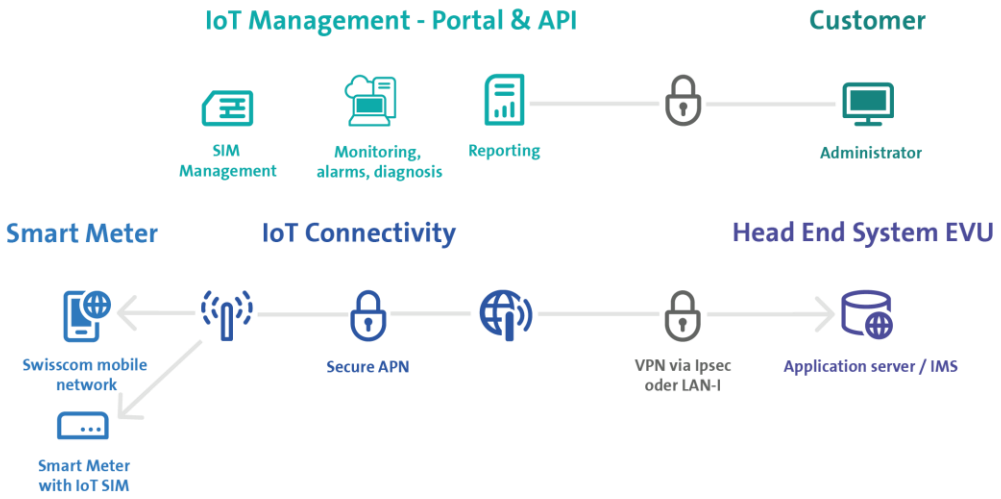
Regulatory requirements mean various smart meter rollouts are currently being planned and implemented. Swisscom is actively participating in a number of these projects.

Swisscom has conducted multiple proofs of concept (PoC) with major customers in the field of smart meters, often relating to the new LTE technologies such as LTE Cat-M1 and NB-IoT, in order to explore the features and constraints specific to mobile communications. Some smart meter projects involving these technologies are already being rolled out.

These have shown that there are several critical aspects to be considered in the planning, rollout and operation of smart meter projects based on point-to-point mobile communications technology. We would like to address these critical points in this document in order to identify risks and opportunities and thus enable reliable planning of the metering project.

## Contents






Disclaimer

The information in this document is intended to help power utility companyiesto plan and review critical aspects associated with the definition of guidelines for the procurement of a smart meter system based on point-to-point mobile technology and to assess the corresponding risks and opportunities.

[1] Mobile Network Operator
[2] Mobile Virtual Network Operator

Swisscom (Switzerland) Ltd
Business Customer
Specialized Sales IoT
Pfingstweidstr. 51
8005 Zurich

## 1. Service level

Where smart metering projects are based on mobile networks, it is important to ensure the appropriate service levels, not only during installation, but also during operation. A significant proportion of the information and services required for such operations can only be provided by the individual network operator.

- Detailed network information (e.g. coverage calculations) is essential for planning the meter installation.
- Roadmaps of the network infrastructure, technology and accompanying features are needed to minimise risks associated with the long service life of smart meter installation.
- 2nd and 3rd level support (such as detailed tracing, analysis of traffic route and patterns) mean that a utility company can be offered the desired service level for its end customers.

Mobile virtual network operators (MVNO) or providers via roaming do not have this information and therefore cannot offer a corresponding service level.

## 2. Data storage

For operating critical infrastructures like electrical networks, it is crucial to look closely at where and how the data is transported and stored. Mobile networks are designed such that data is routed from subscribers to the Internet by a router (APN) via the mobile infrastructure. For sensitive smart meter data, we recommend:

- Physically operating the APN in Switzerland, so that the data does not have to make unnecessary detours abroad.
- Connecting the APN directly to the HES via a dedicated network (e.g. MPLS). The data from meters to the HES are then never on the public Internet. A holistic view of the solution in terms of IT or cyber security is also becoming increasingly important. Close and local cooperation with the chosen connectivity partner is advantageous for this.

With MVNOs or foreign network operators, the APN is often located abroad, which means the data takes a detour from the Swiss network operator to a country outside of Switzerland and then back to Switzerland to the HES. In this case, it is important to check whether this is desirable for data protection reasons (e.g. EU GDPR).

## 3. Risk assessment

Communication technology is essential for a smart metering system, but only constitutes a smaller part of the entire project from a financial perspective (including meters and required IT/OT systems). It is therefore even more important to keep unnecessary risks in the design and operation of the communication system to a minimum by considering the following points:

- Mobile networks are static, but they can change. A close relationship with the local network operator is important to allow the impact of any changes to be assessed in advance. Often, a roaming solution with different providers is mistakenly seen as an advantage for network coverage. In Switzerland, however, this is not necessary, as the basic coverage is very good due to the small area. In operation, the risk is greater if meters have to work with different networks and switch between them dynamically, with the resulting chance that individual meters can no longer be accessed. In studies and test projects in Switzerland, smart meter accessibility of >99% could be achieved in larger coverage areas without additional antennas (NB-IoT and LTE-M).
- A local contractual partner provides security and reduces the risk of service disruptions or outages. This helps contractual partners such as utility companies to offer their Swiss customers a reliable service. In addition, the Swiss Federal Office of Environment, Forests and Landscape, Federal Office of Energy and the Association of Swiss Electricity Companies (VSE) issue regulations on minimum requirements for smart meter applications. These regulations put the utility companies under even greater pressure. In the future, for example, load switching for critical infrastructures is to be implemented in real time in order to establish a smart grid in Switzerland.
- Whilst relatively new technologies such as NB-IoT and LTE-M bring new opportunities, they also bring risks. The meter manufacturer first has to build up experience with these new technologies and ensure that all features are precisely

aligned to the network operator's requirements. This requires contractual partners who are very familiar with communication services and technologies, and who also operate the network itself. This is the only way to ensure optimal alignment with requirements and the continuous further development of the technology.

## 4. Comparison: Swiss versus non-Swiss MNO

The following comparison table provides an overview of the differences in the service of local mobile network operators compared to virtual or non-Swiss operators.

| Evaluation criterion | | MNO in Switzerland | MNO outside Switzerland | MVNO outside Switzerland |
|---|---|---|---|---|
| Technical and operational criteria | TIER1[3] operator in Switzerland | Yes | No | No |
| | Operates own mobile network in Switzerland | Yes | No | No [4] |
| | Local breakouts[5] in Switzerland | Yes | No | No |
| | Swiss connection of data to the customer network | Yes | No | No |
| | Mobile backup/roaming in Switzerland | Yes [6] | Yes [7] | No |
| | Swiss IoT customer support | Yes | No | No |
| | Low latency for critical applications | Yes | No | No |
| Support for rollout planning | Swiss network planning and infrastructure support | Yes [8] | No | No |
| | Swiss support for meter location analyses | Yes [9] | No | No |
| | Swiss support for network optimisation | Yes | No | No |
| | Technology lifecycle information with Swiss MNO | Yes | No | No |
| | Rollout support through intelligent CMP[10] functions | Yes | No | No |
| Legal criteria | Data storage in Switzerland | Yes [11] | No [12] | No |
| | Swiss jurisdiction | Yes | No | No |
| | Mobile payload data only in Switzerland | Yes | No | No |
| | Various SLAs with QoS directly with MNO | Yes [13] | No | No |

## 5. Smart meter ecosystem

In a fast-growing market, a broad-based IoT partner network is the key to success. Swisscom works closely with various smart meter hardware manufacturers, smart meter integrators and smart meter full-service providers to offer solutions scaled from the smallest to biggest supra-regional utility companies.

## 6. Your contact at Swisscom IoT

Any questions? Don't hesitate to contact our Specialized IoT Sales Team today. We are happy to help.

E-mail: SPOC.IoT@swisscom.com

[3] Autonomous system operators who no longer purchase IP transit, but operate their systems solely using other autonomous system peering connections.
[4] A MVNO does not operate its own mobile network in the country of origin either, only individual elements.
[5] Local transitions from the mobile core IP network to the public Internet.
[6] Possible on a selective basis.
[7] But only with breakout outside of Switzerland.
[8] Direct network planning agreements between utility company and mobile network operator; infrastructure sharing also possible.
[9] We offer support with agreements, coverage maps, location coordinate evaluations and network optimisations.
[10] Connectivity management platform that supports a cost and labour-effective smart meter rollout (test-ready mode SIM, efficient assignment of the fixed IP for each device, integrated radius function, trigger and automation, overall analyses, reports etc.)
[11] The utility company is subject to the Swiss Data Protection Act and GDPR Switzerland and not the provisions of the European Union's General Data Protection Regulation, which are more complex to implement.
[12] Possible with own Internet breakout in Switzerland.
[13] Possible as an option.