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Overview of the Latest eSIM Standard

IoT GSMA Standard (SGP.32)

O2 Business Solutions, IoT & Campus Networks – 2026

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Introduction

IoT eSIM: Smarter Connectivity for Smarter Devices

IoT eSIM, based on the GSMA's SGP.32 standard, is designed to **overcome the limitations** of the earlier M2M specification SGP.02 by adapting the flexibility and operational simplicity of the consumer model SGP.22 to fit the specific requirements of IoT deployments.

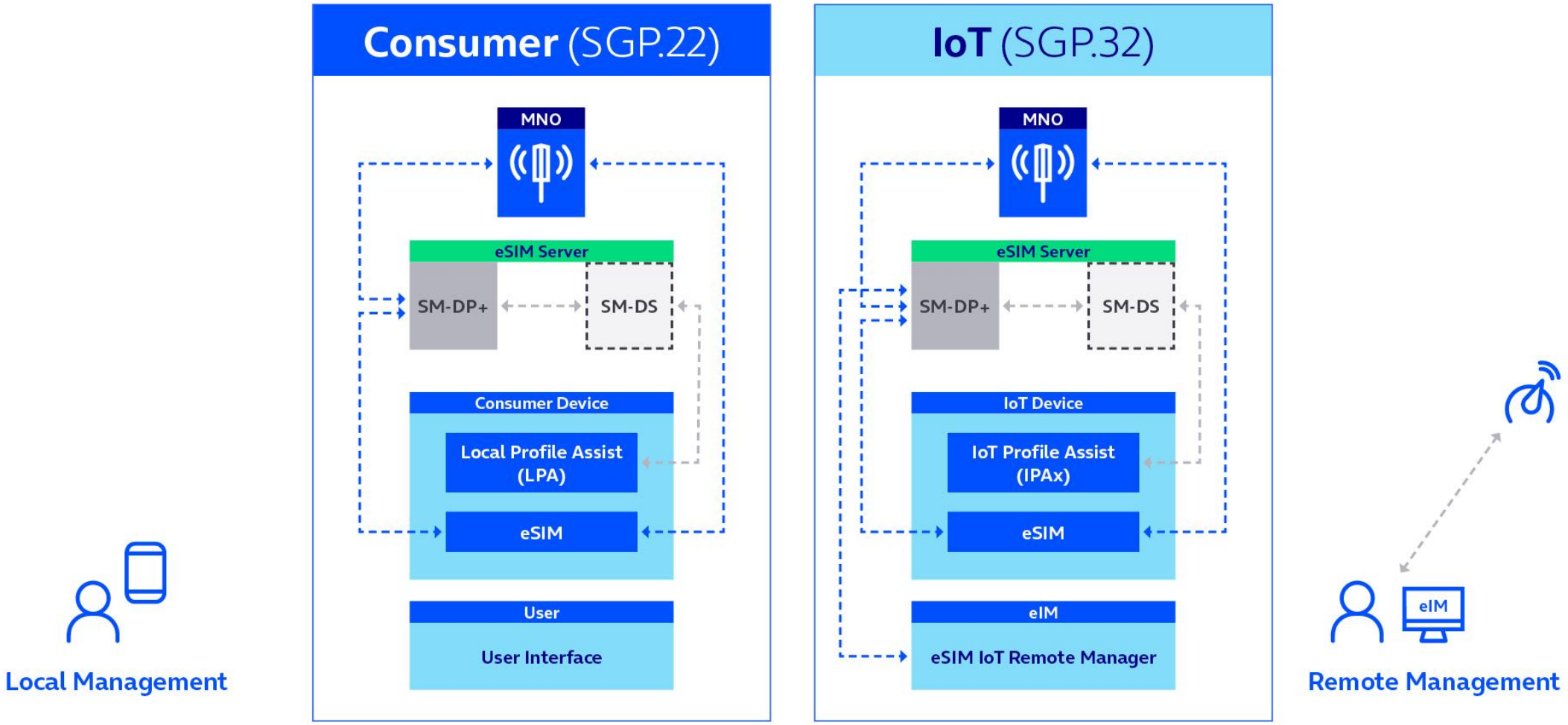
It enables remote SIM provisioning for **lightweight**, **low power devices** without requiring user interaction, making it ideal for scalable and globally distributed IoT solutions. Instead of relying on complex infrastructure or manual configuration, IoT devices can download, activate, and manage connectivity profiles throughout their lifecycle.

This new approach significantly **simplifies connectivity management** for IoT service providers and enterprises.

It reduces operational complexity, improves deployment flexibility, and allows devices to switch connectivity profiles when needed. This is particularly valuable for large scale IoT fleets deployed across multiple countries or networks.

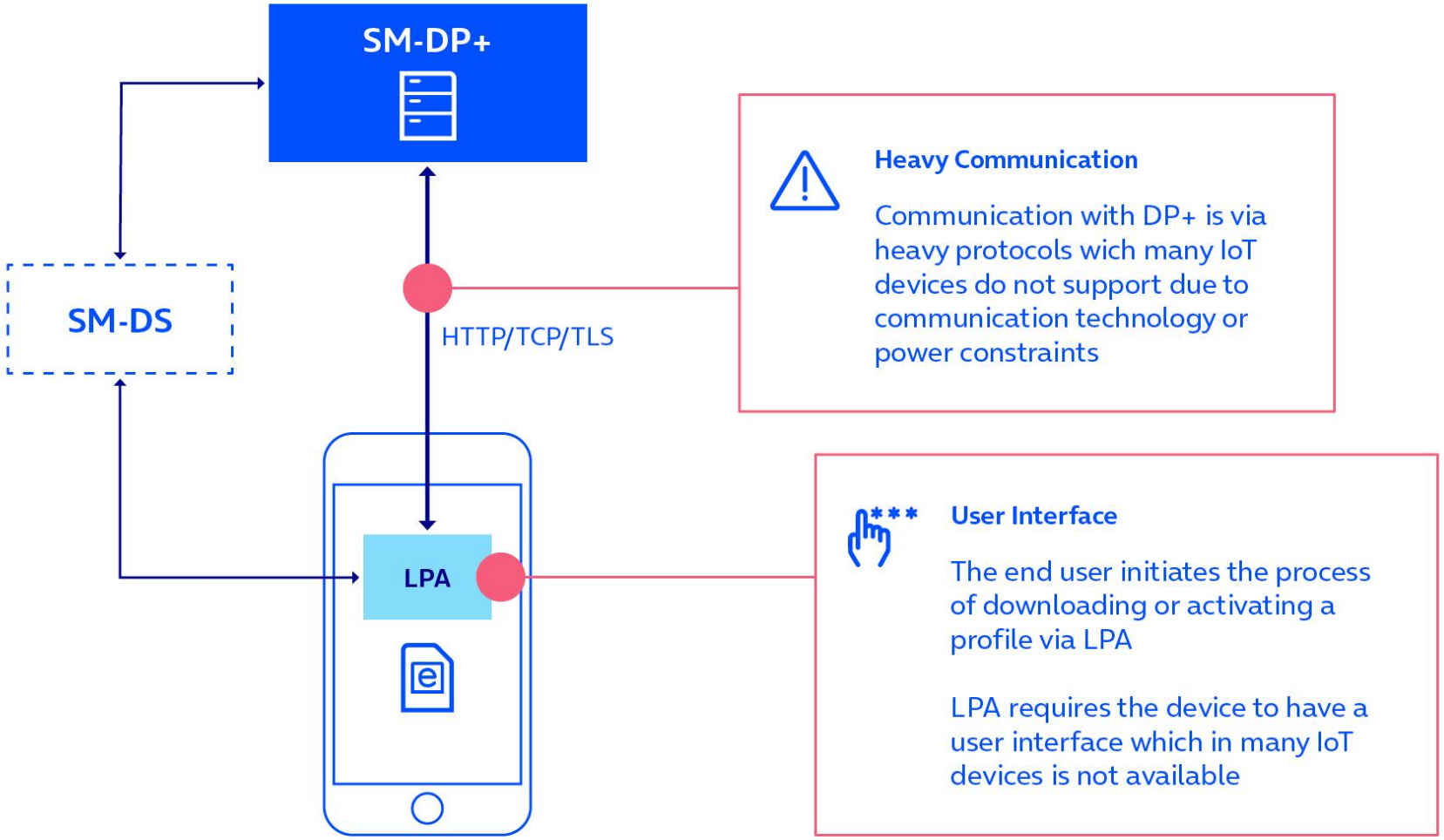
By introducing a **streamlined architecture** optimized for constrained devices, SGP.32 enables efficient profile management while minimizing device resource requirements. As a result, it supports a **wide range of IoT use cases**, from asset tracking and smart metering to connected infrastructure and industrial IoT, helping organizations deploy and manage connected devices more efficiently at scale.

Similarities of Consumer eSIM and IoT eSIM

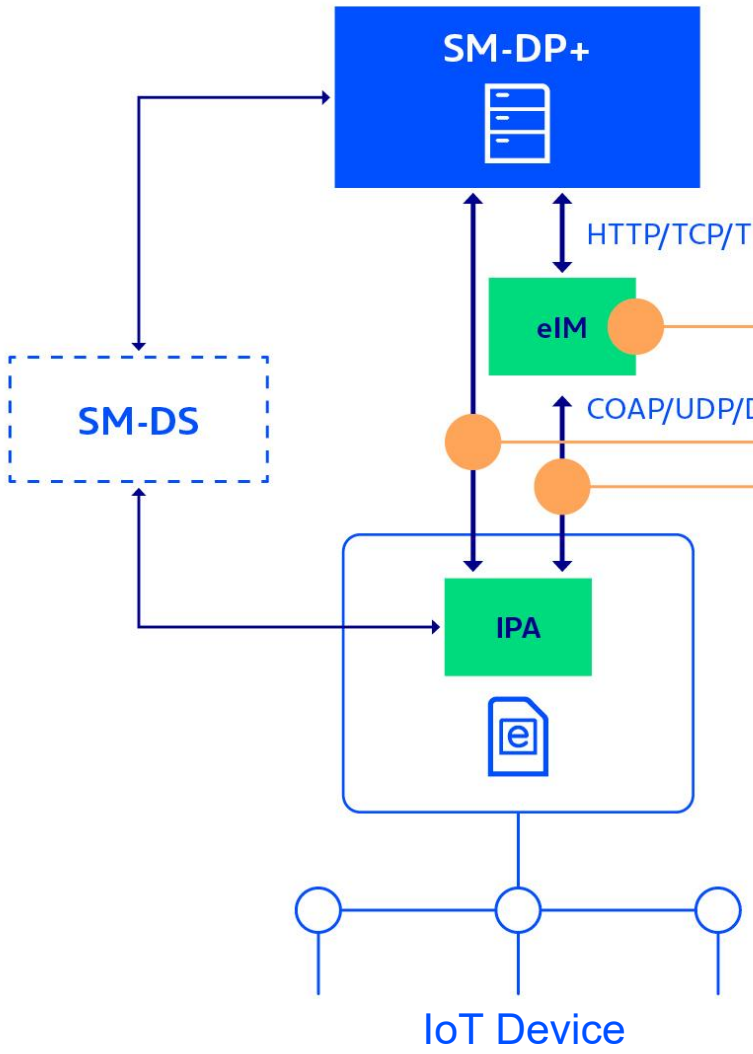


*IPAx = IPAd vs. IPAe - More details on the next slides

Consumer eSIM Standard



IoT eSIM Standard



eIM – Remote Trigger

The eSIM IoT Manager (eIM) is the new element outside of the device that do profile management for the IoT device e.g. initiate a download or activation of a new profile

The ability from consumer standards that IPA can communicate directly with DP+ and initiate the profile download is maintained

Light and Undefined Protocol

The eIM acts as a protocol translator allowing the IoT device (with communication or power restrictions) using a lighter protocol

IoT Profile Assist (IPA) Deployment Options

IPA manages IoT profiles securely and efficiently, enabling seamless connectivity and profile updates for IoT devices.

Comparing Embedded vs Device-Based IPA Solutions

IPAe (Embedded PA): IPAe is **integrated directly into the eUICC**, providing a true plug-and-play solution that works with a broad range of devices. Its architecture keeps the IPA separate from the device itself, making deployment **simpler** and integration across multiple platforms **easier.**

For OEMs looking for a **smooth integration** without altering the device's operating system, IPAe represents an optimal choice. Being housed within the eUICC also allows IPAe to leverage the **strong security features** of the eUICC, ensuring a protected environment for profile management.

IPAd (Device IPA): In contrast, IPAd is installed **on the device's operating system** at the application layer. This approach requires **adaptation** to the specific OS, such as Android or Linux, enabling tighter interaction with the device's internal components.

IPAd allows **more flexibility** for certain use cases and makes it possible to add or **customize functionalities**, including additional Value-Added Services provided by the device manufacturer.

Unlike IPAe, IPAd is better suited for situations where the OEM can control and modify the device's OS environment.

eSIM IoT Manager (eIM)

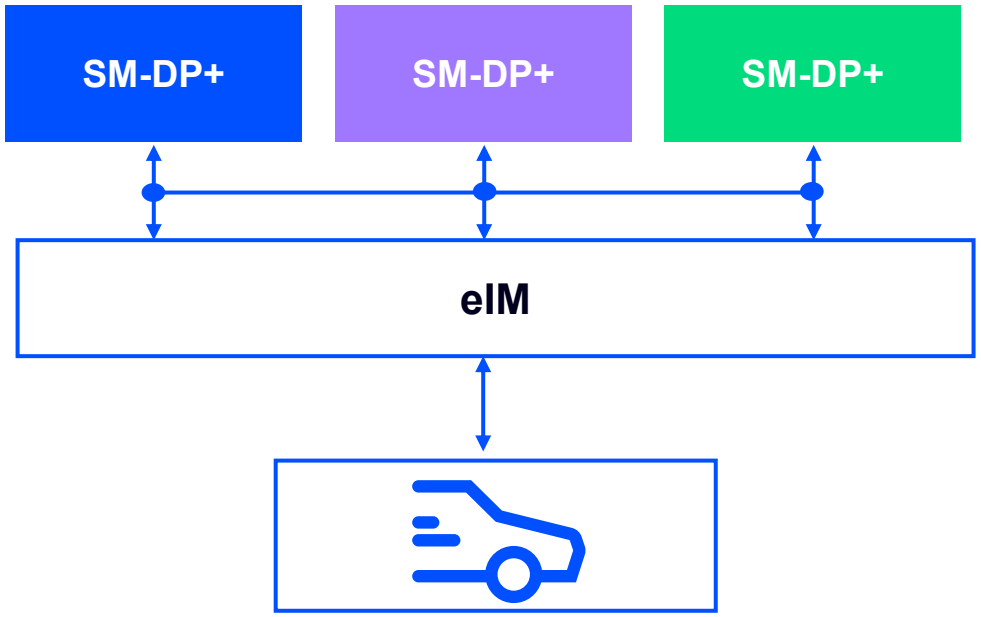
eIM acts as the central manager for IoT eSIMs, managing eSIM profile lifecycle across devices.

Profile Management	eIM Management
• Download Profile	• Add a New eIM
• Enable Profile	• Delete an Existing eIM
• Disable Profile	• Request the List of eIMs
• Delete Profile	• Set Default eIM
• Set Fallback Profile	• Update eIM Parameters

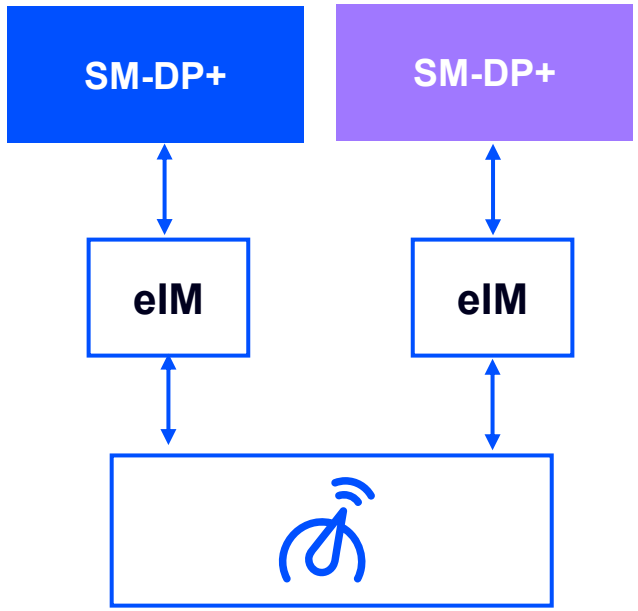
Unlike M2M eSIM, no integration between operators is required!

IoT eSIM Deployment Models

Large enterprises may run their own eIM integrated into their device management platform



Other customers use 3rd party eIM to manage their eUICCs. One eUICC can be managed by multiple eIMs.



Optimized, Interoperable, and Constrained-Device Ready

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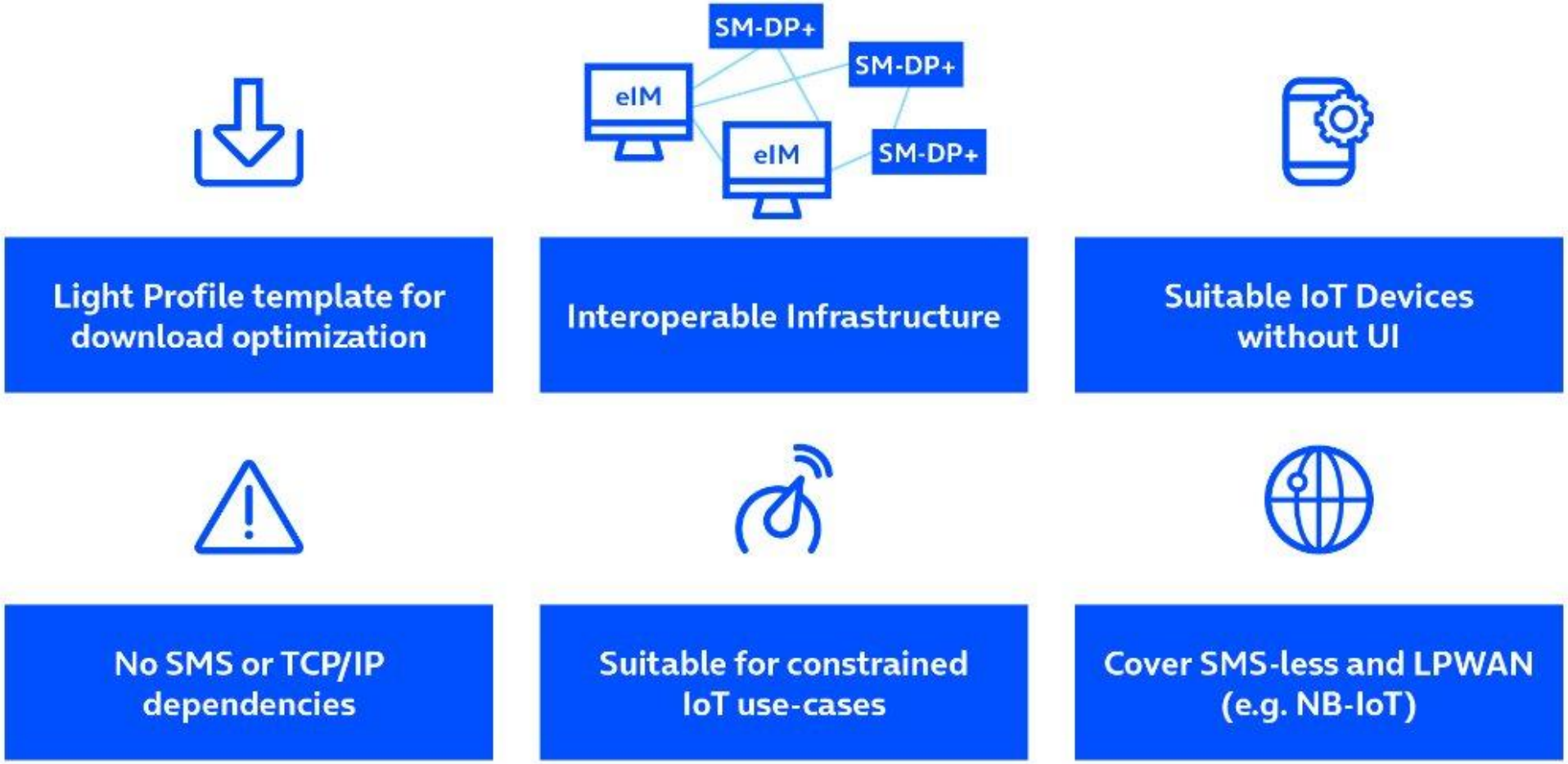


IoT Use Case Examples for the New eSIM Standard

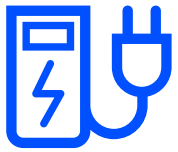
Smart Metering

International Rollouts

Campus Networks

Logistics

Smart City



Industrial IoT

List of Abbreviations and References

- SMDP: Subscription Manager Data Preparation
- SMDP+: Subscription Manager Data Preparation+
- SMSR: Subscription Manager Secure Routing
- eIM: eSIM IoT Manager
- LPA: Local Profile Assistant
- IPA: IoT Profile Assistant

- eSIM for M2M – eSIM
- eSIM Consumer and IoT Specifications – eSIM
- SGP.02 – Remote Provisioning Architecture for Embedded UICC Technical Specification v4.3 – eSIM
- SGP.22 Technical Specification v2.6.1 – eSIM
- SGP.32 v1.1 – eSIM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