



The Digital Transformation of  
Switzerland's Postal Service with  
LoRa Devices and the LoRaWAN Protocol



Swiss Post and Semtech collaborate to create innovative on-demand  
delivery service technology



[semtech.com/LoRa](http://semtech.com/LoRa)



# Swiss Post

## Enhances On-Demand Delivery Service

The national postal service of Switzerland plays a central role in the lives of its citizens with the delivery of seven million letters and five hundred thousand parcels every day.



For the third year in a row, the Swiss Post has been named the world's best postal service by the Universal Postal Union – receiving high marks for innovation, sustainable development and the digitization of services.

The competitive landscape for delivery companies has grown as customers' expectations for services have evolved. Ever increasing requirements for faster delivery times, lower prices and exceptional service quality are driving the

development for new digital and physical solutions. In response, the Swiss Post implemented a four-year "simple yet systematic" business strategy to address this customer-centric on-demand paradigm.

The Swiss Post improved its range of services and increased the level of convenience for its customers by collaborating with leading technology providers to create a novel, battery-operated device that optimizes the postal service ordering process for consumers and businesses

## LoRa® Devices: The De Facto Wireless Platform of IoT

Swiss Post has started rolling out 100,000 SmartButtons incorporating Semtech's LoRa® devices to households in villages where there is no longer an economic justification to have postal office branches. These devices allow people at home to order postal services on demand by one simple click of a button. Some of these on-demand services are ordering pickup of a parcel or registered letter. These devices run on batteries for at least 10 years, and do not need a SIM card as they operate on Swisscom's network in Switzerland utilizing the LoRaWAN® protocol. After several pilots, it has been proven that this is a very convenient way to order services without using a smartphone or a computer. Hence, it is very easy to use for people who are not as familiar with smartphones and ordering products and services online.

With a vision set in place, the Swiss Post worked closely with Miromico, a technology design services company for integrated circuits, electronic systems and IoT, to develop a solution that could meet the requirements of this very innovative project. Today the product is mature and ready for rollout.

Four years ago, Swiss Post assembled a team evenly staffed from the Development & Innovation and the Information & Communications Technology departments. The goal for its members was to leverage the Internet of Things (IoT) to create an innovative device that customers could use to place orders for postal supplies and services in the easiest way possible.



Swiss Post has started rolling out SmartButtons incorporating Semtech's LoRa® devices

100,000



“It’s a miracle!  
Having a device that can reach a distance  
of up to 10 kilometers and run on a battery  
life for up to 10 years was simply not  
possible five years ago.”

**Dr. Thomas Koch,**  
Senior Enterprise Architect, Swiss Post

The first challenge to overcome was connectivity. A list of potential networking options was developed and evaluated. “We started looking into Semtech’s fascinating technology, LoRa. We experimented with our own small testing network of about 10 gateways just to see if all the promises about distance and quality of service were true,” said Dr. Thomas Koch, senior enterprise architect, Swiss Post. “Once we saw the benefits of LoRa for ourselves, we eliminated Wi-Fi or 4G-5G cellular technology as considerations for this use case.”

Low Power Wide Area Networks (LPWANs) are fundamentally changing long range network connectivity. Analyst firm ABI Research estimates that total non-cellular low power wide area (LPWA) network connections in 2026 are expected to reach 1.3 billion with LoRa forecasted to comprise one-fourth share of all LPWA network connections and more than half of all non-cellular LPWA connections. Of all LPWAN technologies, LoRaWAN has emerged as the leading protocol for the broadest range of outdoor and indoor connected applications.

Devices integrated with LoRa and the LoRaWAN protocol are differentiated by an open ecosystem, strong security specifications, bi-directional communication, optimization for mobility, and scalability for capacity. The architecture of the LoRaWAN protocol is a fault tolerant and redundant platform designed to connect hundreds of thousands of low cost, battery-operated sensors over long distances and harsh environments that have been too challenging or cost prohibitive for cellular or local area network (LAN) technologies.

The success of Semtech’s LoRa devices and the LoRaWAN protocol in LPWAN-based IoT applications speaks for itself: IoT networks based on the LoRaWAN specification are deployed in over 140 countries with an ecosystem supported by hundreds of contributing members of the LoRa Alliance®, including Semtech, Swisscom and Miromico.

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## A Collaborative IoT Ecosystem

Swiss Post considered building out its own LoRaWAN network, but opted to collaborate with Swisscom, a national telecom provider. Under a long-term financial agreement, the two companies developed a plan to ensure the expansion of LoRaWAN network coverage. Today, Swisscom has deployed Switzerland's only nationwide LoRaWAN network, called the Low Power Network (LPN). This dense LPN covers 97% of the Swiss population area by using 1,100 LoRaWAN gateways.

Miromico responded to Swiss Post's tender and won the project to build a LoRa-enabled visual code-reading device. "We looked for developers that already knew this kind of technology, and also appreciated that Miromico had a strong experience working with Semtech since the very beginning of LoRa," said Koch.

Miromico has more than 17 years market experience designing hardware and creating tailor-made solutions that meet the requirements of its customers, including IBM, Infineon, Roche, and Coop Group. Miromico initially planned to create a scanner device incorporating Near-field Communication (NFC) technology that could send signals over LoRaWAN. During the development process, one of Miromico's 40 engineers saw his child playing with Tiptoi®, a digital audio learning system. Tiptoi's books and games use a pen that reads optical identification (OID) codes to enable interactive play and engagement. This triggered the idea to create a similar device for Swiss Post

"Combining OID technology with LoRaWAN was a great idea for the device. First of all, OID is very easy to use. Second, as a LoRa-enabled low power device, it can run for up to a decade without recharging or changing a battery."

**Schekeb Fateh,**  
business development manager,  
Miromico

## SmartButton Reader: A New Level of Convenience for Postal Services



The Postal Services Act requires Swiss Post to ensure access to a basic universal postal service to citizens in all areas of the country. The network of the post office and agencies must be within a 20 minute walking distance or accessible by public transport within 20 minutes for 90 percent of the population of a canton (federal state). In some rural "home service" areas, the branch office or agency was extended to be reachable within 30 minutes as long as postal workers provide services, such as selling stamps, delivering empty shipping containers and picking up parcels, directly from a residence's door. Using a certified method, Swiss Post must demonstrate that these requirements are observed at any given moment.

The first pilot of the SmartButton reader was deployed a few years ago to customers in the home service areas<sup>1</sup>. They received a free scanner device and a printed list of codes associated with specific postal services like ordering parcel pickup. Unlike competing order on-demand solutions, like Amazon's Dash Button, the SmartButton Reader does not need to be connected to a household's Wi-Fi nor to be configured. It allows customers to know the price of products and services while ordering.

<sup>1</sup> Area where the next post office is too far away. In these defined areas Swiss Post delivers postal services at home.

“It works so easy and efficiently. The device does not need to be held at a certain distance from the icon like a traditional bar code scanner. Even if your hand is shaking, you can perfectly scan the code. All it takes to register a postal service or place an order is a push of a button.”

**Dominic Bögli,**  
IoT project manager, Swiss Post



When a user receives the SmartButton Reader, it operates instantly without any configuration, password or setup (and continues to function for up to 10 years without changing a battery). A customer places the SmartButton Reader directly touching the product code icon then presses a button to scan the code. A short beep confirms code recognition and a blue light flashes while transmitting the line item orders to the post office. The order is sent to a Swiss Post cloud server for processing via a hidden

built-in antenna and radio module within the scanner device itself that transmits the data through Swisscom's network utilizing the LoRaWAN protocol. All customer and order data are securely transmitted using AES-128 encryption. Within a few seconds, a green light indicates success, or a red light notifies user to repeat the procedure. If ordered before 7:30 a.m., a mail carrier will deliver the requested services on the same day; if ordered after, the carrier will come on the next delivery day.



# Simplify and Digitize Order Processing for Businesses

The SmartButton Reader created by Swiss Post and Miromico has gone through seven iterations to date. This mature technology has not only been expanded beyond rural areas and adopted by any Swiss citizen wanting to augment and optimize its relationship to a local post office but has also been introduced and utilized for new market opportunities.

Businesses are using SmartButton technology to efficiently order items of any kind. The on-demand capability replaces the time-consuming process of compiling and logging information on all items to be ordered and coordinating with suppliers. Orders placed via SmartButtons appear in the application instantly. The web application provides full

transparency and the ability to manage devices used, departments, access rights, supplier relationships, order quantities, and delivery times.

SmartButton Reader key features for businesses include:

- Plug and play installation
- Stand-alone communication network without integration to existing IT systems
- One SmartButton for any number of items
- Feedback function via RGB-LED indicator light
- Maintenance-free operation for several years



Such a solution could make ordering of certain products and services much easier, not only for elderly people, but also consumers who appreciate convenience. First insights by Swiss Post demonstrate that the average age of the user is 35.

Such service could be interesting for B2C applications like ordering pizza from a local pizza courier, or ordering printer supplies or regularly used pharmacy products or medical supplies.

Today, several proof of concepts (PoCs) have been already completed with various enterprises. Each of these companies send a SmartButton Reader and a printed catalog with services and codes to its customers. The end user orders the products or menu items by using the SmartButton Reader to scan

the OID-code almost invisible to the human eye hidden inside a printed symbol icon. The SmartButton Reader can also scan hybrid codes that are a combination of traditional QR codes and OID codes. In addition to offering this technology for a wide range of business use cases, Swiss Post also handles the delivery logistics for several of the B2B customers currently operating the innovative system.

Other possible applications are in B2B environments where easy ordering will increase efficiency of any business process, for instance in production lines or ordering office supplies. The combination of scan devices and/or smart buttons based on batteries that last up to 10 years or longer with LoRa devices is very powerful for such order on-demand solutions.



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## About Semtech

Semtech Corporation is a leading supplier of high performance analog and mixed-signal semiconductors and advanced algorithms for infrastructure, high-end consumer and industrial equipment. Products are designed to benefit the engineering community as well as the global community. The Company is dedicated to reducing the impact it, and its

products, have on the environment. Internal green programs seek to reduce waste through material and manufacturing control, use of green technology and designing for resource reduction. Publicly traded since 1967, Semtech is listed on the NASDAQ Global Select Market under the symbol SMTX. For more information, visit [www.semtech.com](http://www.semtech.com).

## About Swiss Post

Swiss Post is committed to progress, development and digitization. We do our utmost to make everyday life even easier for our customers in the future. Be it in the communication, logistics, retail financial or passenger transport market, Swiss Post offers private and business customers high-quality products and services. By developing innovative dialogue, document and e-business solutions, we connect the physical and digital worlds.

In terms of modern technologies, we are one of the world's leading postal companies. Our commitment to sustainability is embedded into everyday corporate culture at Swiss Post. We operate according to a clear set of principles and take our social, environmental and economic responsibilities seriously. Find out more about Swiss Post and our services on our homepage [www.swisspost.ch](http://www.swisspost.ch).



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