

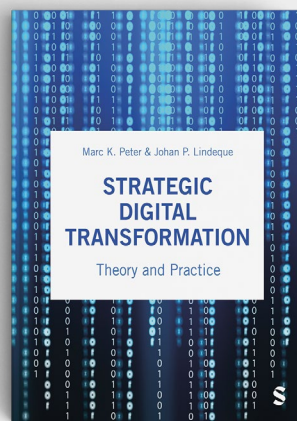
CASE STUDY COLLECTION

BRUGG Lifting and its Industrial Internet of Things (IIoT) asset management solution 'PVS'

BRUGG
Lifting



Marc K. Peter



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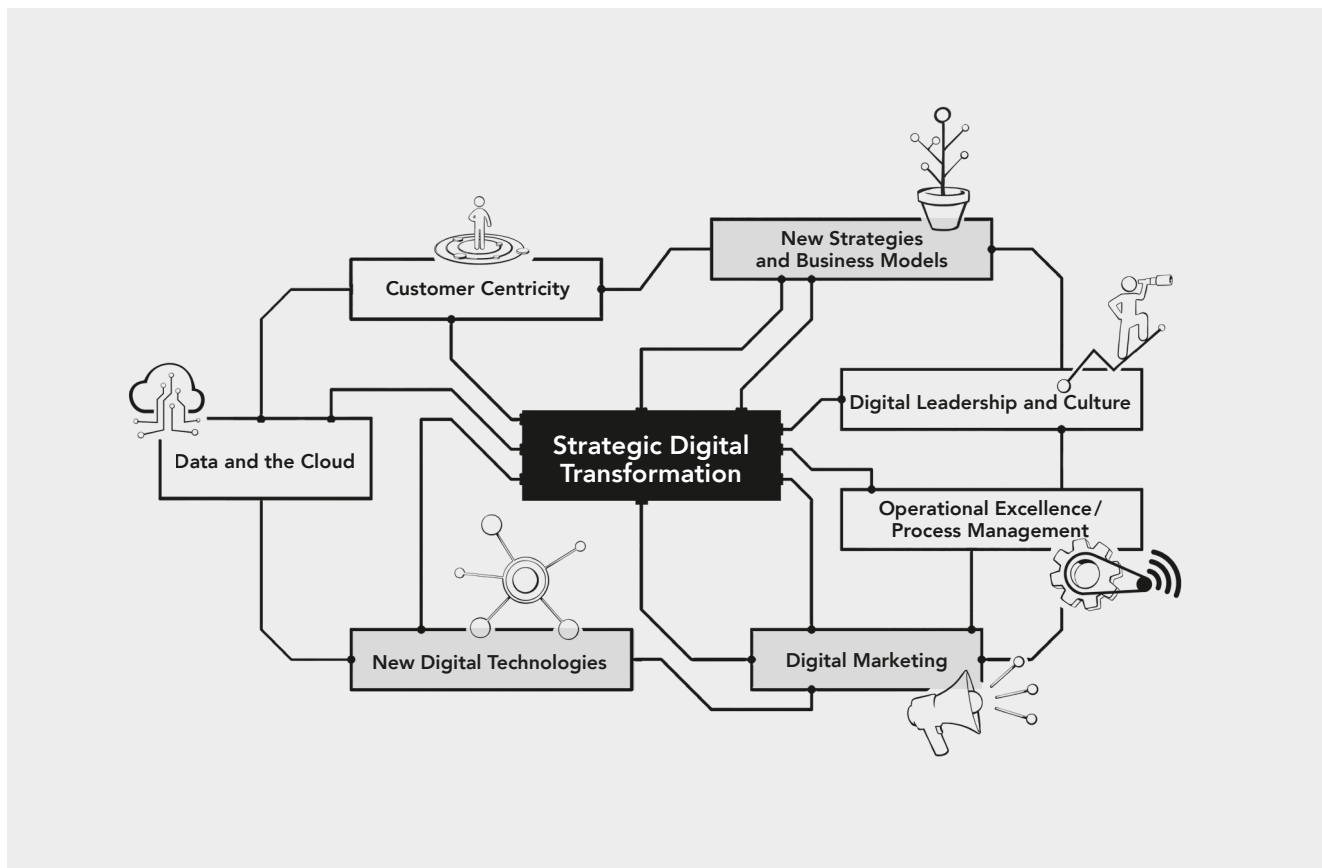
BRUGG LIFTING AND ITS INDUSTRIAL INTERNET OF THINGS (IIOT) ASSET MANAGEMENT SOLUTION 'PVS'

Case organisation profile

- **Organisation name:** BRUGG Lifting
- **Country:** Switzerland
- **Description:** BRUGG Lifting is a global producer of elevator ropes, lifting technology and architectural ropes
- **Number of employees:** 230 (BRUGG Group: 1,800)
- **Website:** www.brugglifting.com/en

Case organisation

BRUGG Lifting is a leading provider of high-quality lifting technology solutions designed to handle demanding loads in various industries. The company operates predominantly in the manufacturing of wire and steel ropes, textile slings and special lifting equipment. Headquartered in Birr, Switzerland, BRUGG Lifting has a strong global presence (with manufacturing sites and offices in China and the USA) and a reputation for reliability, safety and innovation.



The Brugg Lifting case study primarily covers the action fields of 'new digital technologies', 'new strategies and business models' and 'digital marketing'.

Products include:

- **Wire and steel ropes:** renowned for their durability and strength, these ropes are used in different lifting and transportation applications.
- **Textile slings:** these include a wide variety of synthetic slings that provide flexibility and ease of handling for various lifting tasks.
- **Special solutions:** the company also develops custom lifting solutions tailored to specific industry requirements, such as the PVS solution.

The roots of BRUGG Lifting can be traced back to the late nineteenth century (the company was incorporated in 1886), making it an established and experienced player in the lifting technology industry. Over the years, the company has continuously evolved by embracing technological advancements and expanding its product offerings. Today, it stands as a key division within the BRUGG Group, a conglomerate with diverse activities spanning heating technology, natural hazard protection, process control, and more. The BRUGG Group has over 1,800 employees across 35 subsidiaries (Brugg, 2025).

At the core of BRUGG Lifting's success (one of the many subsidiaries) is its commitment to innovation and quality. The company continuously invests in research and development to introduce new, efficient and safe lifting technologies. BRUGG Lifting adheres to stringent quality standards, ensuring that all products meet international safety regulations and customer expectations. One of these initiatives – the PVS solution – is an Industrial Internet of Things (IIoT) solution, driven by LoRaWAN (but also usable with NFC tags), a popular LPWAN (low-power wide-area network) technology.

The screenshot displays the homepage of the PVS product website. At the top, there is a navigation bar with the PVS logo on the left and links for FEATURES, PRICING, SOLUTIONS, and CONTACT in the center. On the right side of the navigation bar, there are links for EN (language) and LOGIN (with a user icon). The main content area features a headline: "Simple management, maintenance, localization and planning" followed by "Manage operating resources smartly and safely". Below this, there are three bullet points with checkmarks: "Secure identification with the smartphone", "All data and information always and everywhere available", and "As a native app or in the web browser" (accompanied by Apple, Android, and laptop icons). There are two buttons: "TEST FOR FREE" and "LEARN MORE". To the right of the text, there is a graphic showing a smartphone displaying the PVS app interface, with icons for a crane, a fire extinguisher, and a laptop. The bottom section of the page has a large heading: "More than 9,000 companies, cities and municipalities manage their resources with PVS". In the bottom left corner, there is a cookie consent icon, and in the bottom right corner, there is a Privacy - Terms link.

PVS product website pvsid.com (BRUGG Lifting, 2025)

The Internet of Things (IoT) and LPWAN technology

Low-power wide-area network (LPWAN) is a wireless communication technology designed for (relative) long-range communication (e.g., within a building or a region) at low bit rates among connected devices, particularly for Internet of Things (IoT) applications.

The Internet of Things (IoT) is a network of interconnected physical devices that collect, share and analyse data across the internet. These devices range from everyday household items, like smart refrigerators and thermostats, to industrial machinery and urban infrastructure. The core idea of IoT is to make objects 'smart' by embedding them with sensors (such as a LPWAN sensor), processors and communication infrastructure, thereby enabling them to interact with each other, with humans and computers. These sensors can collect data from the environment, such as location, temperature, humidity, motion, light, and more.

Applications of IoT are, for instance, smart homes (energy management, home security, automated lighting, etc.); industrial IoT (IIOT) including predictive maintenance, supply-chain management and optimisation, and automation; healthcare (remote monitoring of, for example, smart medical equipment and patients, chronic disease management); smart cities (for example traffic management, public safety and environmental monitoring); and agriculture (for example livestock monitoring and optimised irrigation, fertilisation and pest control).

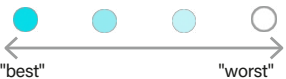
LPWAN has many capabilities, such as its ability to provide connectivity while consuming minimal power, making it ideal for scenarios where devices need to operate on small batteries for extended periods. The primary features of LPWAN are:

- **Long range:** capable of covering distances from a few kilometres in urban areas/cities to over 10 km in rural settings/ in the countryside, and even further under optimal conditions.
- **Low power consumption:** designed to function on minimal power, allowing devices to run for many years on small batteries.
- **Low data rate:** typically supports data rates ranging from 0.3 kbps to 50 kbps.
- **Cost-effective:** infrastructure and operational costs for LPWAN networks are relatively low, making it an interesting investment case, and facilitating large-scale deployments.
- **Scalability:** able to support a vast number of devices on a single network.

There are several competing standards and technologies in the LPWAN space, each with its unique advantages and use cases. One of them is LoRaWAN (long-range wide-area network), a popular LPWAN technology, which uses a proprietary modulation called LoRa (long range) for communication. It is widely adopted for its (relative) long-range capabilities and low power consumption.

For its project, BRUGG Lifting prepared an overview of available LPWAN technologies (including LoRaWAN) (see the following illustration):

						
Worldwide	Good	Very good (thanks to the community network, which can be expanded independently as required)	Unknown: as far as can be seen, currently only private networks can be used	Unknown: as far as can be seen, currently only private networks can be used	Good	Relatively good
Europe			Unknown: as far as can be seen, currently only private networks can be used	Unknown: as far as can be seen, currently only private networks can be used		
Reach	Very large (3-10 km in a city, 30-50 km in the countryside)	Very large (3-10 km in a city, 30-50 km in the countryside)	Large (5 km in a city, 15 km in the countryside)	Medium (approx. 5 km)	Medium (1 km in a city, 10 km in the countryside)	Medium (1 km in a city, 10 km in the countryside)



Overview of LPWAN technologies and their network coverage (BRUGG Lifting, 2023)

LoRaWAN, utilised by PVS, is provided by commercial organisations (e.g. telecommunication providers) and community networks such as LORIoT and The Things Network (see 'Additional information').

For digital transformation, LPWAN is an important technology that addresses the need for long-range and low-power communication in the IoT (and IIoT) landscape. Its ability to support large-scale deployments at a low cost makes it invaluable for various industries and digital transformation initiatives.

The PVS asset management solution

PVS stands for 'Produkte-Verwaltungs-Software' (in English: Product Management Software). PVS was originally developed and used as an internal database at BRUGG Lifting in 2016. Due to the successful operation and the positive response from customers, it was decided to launch PVS as an independent corporate start-up in 2021, offering its product management software to customers outside the BRUGG Lifting network. This meant that companies that use the PVS solution are not obliged to purchase any lifting equipment or other services from BRUGG.

PVS focuses on providing a high-quality and efficient asset management solution and strives to provide customers with maximum flexibility and value. The PVS solution can, for instance, be used to monitor leased resources and devices (e.g. building equipment). In order for customers to take advantage of the opportunities offered by IoT technology, i.e. to track their own products/equipment, BRUGG developed special sensors that can be used to display the GPS position (via LoRaWAN) of all managed devices directly in the PVS solution.

In addition to an implementation of PVS with LoRaWAN sensors (for asset tracking), it can also be used with NFC (near field communication) tags that are based on RFID (radio frequency identification) technology (Apple's AirTag is also an NFC technology solution). Information about assets that have a sensor or tag can also be accessed via a QR (quick response) code attached on the sensor/tag itself. With that, the asset can be identified easily and the relevant documents (e.g. manuals, test protocols or warranties) can be accessed via the PVS website or app.

Since its launch in 2016, it has managed more than 180,000 assets (e.g. wire and steel ropes for lifts or bridges). The main driver for PVS in the market is the (regulatory) need that important equipment (such as steel ropes in lifts) must be periodically audited, maintained, repaired, documented and logged in a quality management system. However, in many organisations, these resources/infrastructures, test data and protocols are still recorded in paper form or in spreadsheet tables. In addition, it takes time for technical experts to read an identification number on a tag and enter it into a system (e.g. an online platform) in order to be able to access the related documents of an asset/equipment.



Mobile identification of an asset (e.g. building equipment) via an NFC tag (BRUGG Lifting, 2023)

The PVS solution and its app revolutionise asset management (or device management) through seamless digital management processes. It provides a quick and unique identification of an asset (for instance, via the NFC tag) and its location (via a LoRaWAN sensor), and all assets can then be managed centrally on the PVS platform or via an app on mobile phones.

The PVS database itself can be hosted locally or in the cloud (on Microsoft Azure Cloud). The presentation layer of the app was developed via KendUI, the application layer was developed via C-Sharp in .Net6.

In 2023, the PVS team redefined the solutions' value proposition:

'The PVS app for automated equipment and machine asset management improves operational efficiency by streamlining equipment administration processes, reducing the machine maintenance costs, and ensuring safety of both the machines and personnel. It automates troublesome manual processes and offers real-time visibility into equipment operations from anywhere at any time.'

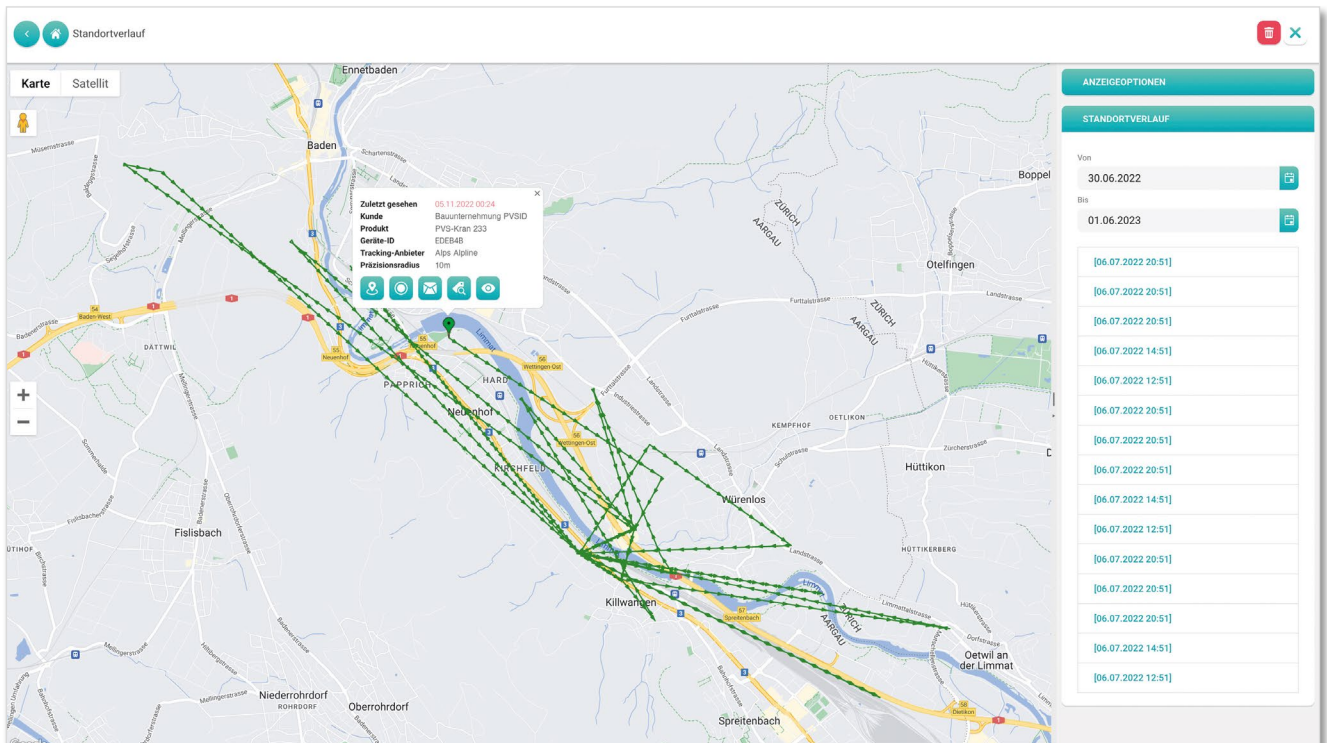
The following key benefits were articulated:

- PVS provides a 'single source of truth' for the management of the complete equipment lifecycle of an organisation.
- It provides real-time visibility from anywhere at any time.
- It is easy to install, configure and use the solution.
- It provides security via a granular rights and access management system.

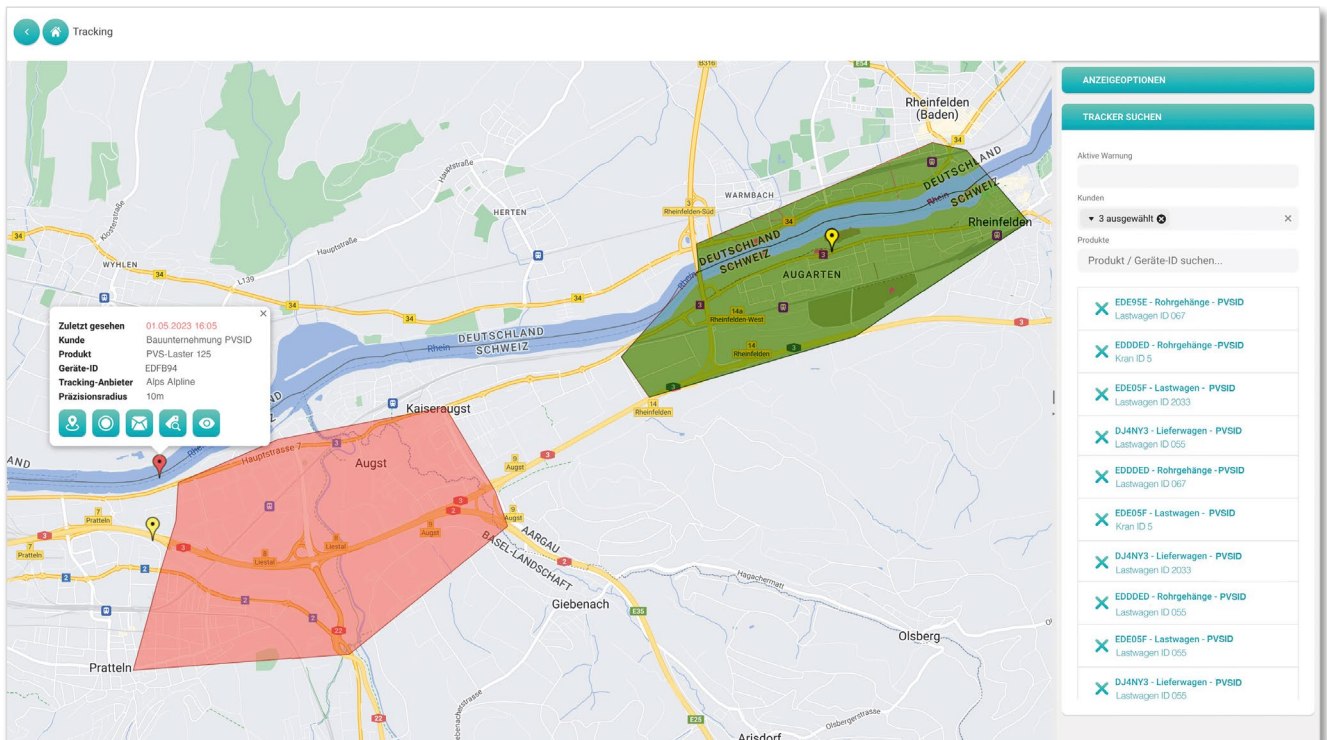
However, while the PVS technology was mature and fulfilled its product value propositions and key benefits, it experienced a challenging and competitive market that would limit its success regarding commercial outcomes.



A PVS NFC tag attached to a steel rope on a construction site (BRUGG Lifting, 2018)



Example of geographical tracking (geotracking) of a device (in this case, a building tool) (BRUGG Lifting, 2020)



Example of geographical tracking (geotracking) based on a defined geofence (a geofence is a virtual geographic boundary that enables software to alert the organisation if an asset/equipment enters or leaves a particular area) (BRUGG Lifting, 2020)

Commercial strategy

BRUGG Lifting invested a couple of million CHF/USD into the project, but only a fraction of it has been recouped to date. However, while the ROI (return on investment) is low, it has enabled BRUGG Lifting to equip all of its products with a PVS NFC tag and thus provide a competitive differentiator, as it allows its customers to track the purchased products/equipment (e.g. wire and steel ropes), but also to more easily access the related documents, including manuals and test protocols. Internally, for BRUGG Lifting, its five technical experts/inspectors review around 600 technical customer installations per year and provide a quality assurance (QA) certificate for each installation in line with legal requirements (Peter, 2024). The PVS solution thus also provides process efficiencies, especially around document management for BRUGG Lifting itself.

In addition to the internal use at BRUGG, today, more than 9,000 organisations, cities and municipalities benefit from the product's value propositions and features, and manage their resources purchased from BRUGG with PVS.

However, it is a market with many solutions from various competitors, including OnTrack by Hilti, One Key by Milwaukee Tool, GuardMe by Bosch, and many others.

In order to commercialise the product, BRUGG initially ran POC (proof of concept) installations with 10 customers from the construction, transportation, fall protection, infrastructure maintenance and public administration industries. These POC customers were important to test the PVS product and improve the solution prior to the official go-to-market launch. They also provided an initial reference (e.g. via case studies) to other organisations that were interested in purchasing the PVS solution.

BRUGG Lifting priced its solution both cost-based ('what is the total cost of the product so we can sell it above that?') and value-based ('how much would a customer be willing to pay given its benefits?') and developed bundles and a tiered pricing model (basic, professional, premium). The go-to-market plan included both a sales and marketing strategy. For sales, the strategy included the definition of target segments, customers and countries with clear objectives. Marketing planning activities included the development of buyer personas,



Overview of PVS product features (PVS, 2022b)

customer journeys, a competitor analysis and marketing collateral. A marketing and sales funnel was defined, including lead nurturing activities as well as a 'CRM quote to order' process, and a 'subscription order to cash' process.

The tiered pricing model from the initial launch in 2021 was later modified, and two subscription models were developed (PVS, 2022b):

- PVS.PLUS for individual business customers, starting at CHF/USD 69 per month.
- PVS.PRO for organisations that want to resell the service to their customers, starting at CHF/USD 299 per month.

Despite the relatively low price point for the solution, its commercial success was limited. In various business review meetings, the PVS team tried to identify the reasons for the challenging financial situation. In 2022, they reported that the team's focus was too heavy on technical aspects, but it lacked a business model and marketing activities that were centred on lead generation. In 2023, in a business review meeting, the team reported that there were some customer complaints from a new release, but that the main issue was that there was 'simply not enough marketing budget and sales resources to push the solution globally'.

At the end of 2023, the BRUGG Lifting's senior management stopped the project due to financial/cost control risks and appointed a new leadership team. Following a strategy workshop in 2024 (Peter, 2024), the PVS go-to-market plan was re-defined. It included new value propositions for each industry/use case, a module-based grouping/structuring of the various features of PVS, a new approach to packages and bundles, and a refined customer segmentation with new priorities (i.e. BRUGG Lifting existing customers).

The BRUGG Lifting case study showcases the challenges of developing new technology-based solutions and using digital technology for new business ventures, in combination with the benefits of streamlined processes (internally) and an improved competitive position (externally).



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A PVS ad in a construction magazine in 2023 (translated from German)

PVS roadmap and outlook

How important is IoT/IIoT technology for BRUGG Lifting?

For BRUGG Lifting, IoT technology is extremely important as it allows us to increase our process efficiencies. We already have an ERP (enterprise source planning) system and automated production processes and, with IoT, these technologies allow us to increase efficiencies and the quality of our products and reduce the overall cost. With the achieved time savings, we can focus more on innovation and customer service, for instance via modified roles (and position descriptions) for our team members that enables them to now spend more time on customer projects, which further drives the customer experience.

How did the market react to the new PVS go-to-market plan in 2024?

The new go-to-market plan puts our existing 3,000+ B2B customers in the centre of our activities as our strategy is now to primarily up-sell the PVS solution to our existing customers. It is also worthwhile to mention that, internally, our teams are now very motivated to focus on our existing customers, and support them with PVS.

Did you identify any market challenges for the successful commercialisation of the PVS solution?

One of the identified market challenges is the PVS brand. The current name is difficult to use in marketing because it lacks a clear unique selling proposition (USP). In addition, PVS is already used as a generic abbreviation/buzzword in many areas, which makes targeted (digital) marketing even more difficult.

What are the PVS priorities in 2025/2026 on the technology roadmap?

Our focus is to stabilise and secure the PVS platform. Based on new cybersecurity requirements (and a new framework) from the BRUGG Group, one of our priorities now is to protect the IT infrastructure and PVS customer data. In addition, we are going to develop a pilot platform which allows new customers to test the PVS solution as part of a free trial for 30 days. As much as possible needs to be automated on the pilot platform. And, finally, the PVS platform requires a self-serve function for customers to manage and purchase additional licences directly on the platform, without the (manual) involvement of our sales teams.

What are the PVS priorities in 2025/2026 on the commercial/GTM roadmap?

One of our four priorities is the development and implementation of a PVS reseller strategy. However, our main priority is to further train our technical and sales teams so they can pitch, demo, sell and implement the PVS solution. We need to achieve a state in which all employees have the same knowledge level. This is important as our business has many touch points: we need to ensure that the customer experience is the same across all channels and teams.

Finally, we will review the PVS brand (as mentioned before) and continue to push the PVS solution via digital marketing activities including blog posts and e-direct mails. But as we are now focusing on existing customers (up-selling the PVS solution) rather than to sell to new markets, our internal sales and customer service teams have become our number one go-to-market priority.

Are there other plans for technology projects at BRUGG Lifting?

At the end of 2024, we updated our digital transformation roadmap which is based on the five pillars of Smart Factory, Smart Customer Experience, Smart Products, Digital Enablement and Global IT. Technology projects worth mentioning are the ERP cloud project (as every production machine will be connected to cloud-based IoT platforms to reduce, for example, production risks and for predictive maintenance) and a new e-commerce customer portal (which will provide product information, but also allows customers to purchase directly via the digital channel).

Digital transformation and new digital technology is also important, as BRUGG Lifting will expand into new geographical regions in the not too distant future.

Interview 1, 2025



Raphael Schifferle
Global Chief Marketing Officer (CMO) at BRUGG Lifting

Student questions

Discuss the following questions in your class, in your group or assignment:

1. What are the challenges when developing solutions/products based on new technologies (i.e. technologies that an organisation previously did not use)?
2. What are the challenges when introducing a new technology in the market?
3. What is the value of a POC (proof of concept) and POC installations on customer sites?
4. Why and how can new (digital) technology support the competitiveness of an organisation with existing products and services?
5. Why is the definition of a business model important for new technology-based solutions/products?
6. Why do organisations need to balance technology versus go-to-market (sales and marketing) investments?

Additional information

Suggested further information can be found at the following:

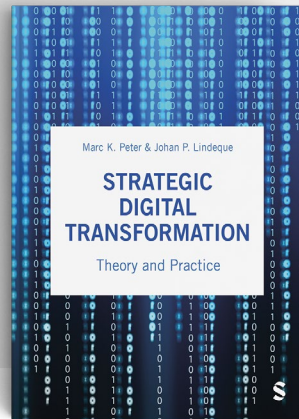
- Brugg Lifting website: www.brugglifting.com/en
- LoRa Alliance: www.lora-alliance.org
- LORIoT: www.loriot.io
- The Things Network: www.thethingsnetwork.org
- PVS marketing video from 2023: www.strategic-digital-transformation.com
- PVS product website: www.pvsid.com/en

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