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IoT

# A Practical Guide

to getting started with IIoT Data

Überreicht durch:



# Introduction

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The *pressure for machine builders to embrace new digital strategies is high*. At every trade event, in every magazine, and in every vendor newsletter, machine builders hear that IIoT can bring them improved *competitiveness, new sales opportunities, and new revenue streams*. However, they are struggling to get started with their projects. Even though these days rapid innovation is essential to maintaining a competitive edge, very few machine builders have moved beyond simply discussing IIoT projects and even fewer have extensive implementations. Unclear ROI, lack of technical expertise, security concerns, and integration challenges act as critical barriers to adopting new digital solutions.

One area where machine builders are successfully implementing new solutions is with remote access. Ewon routers, connected to Ewon's Talk2M industrial cloud, have helped machine builders reduce their operational costs, improve their customer support, and reduce the number of on-site visits. With over 300,000 Ewon routers deployed in over 156 countries, *Ewon solutions have helped machine builders overcome the critical adoption barriers by providing an easy, secure, and scalable way of providing remote connectivity to their equipment*.

But Ewon routers and Talk2M can do much more than remote access. By using an Ewon Flexy as their IIoT gateway connected to Talk2M, *machine builders can have remote access and apply that same easy quality to the development of data applications*. With a host of available data services both at the edge and in the cloud, machine builders can quickly *create new IIoT applications that can reduce their support and service costs and create new business opportunities*. Since many of these data services require *only configuration and no programming, proof of concept projects can be built quickly for rapid customer feedback*. At the same time, the data services are scalable enough to allow a project to seamlessly move from proof of concept to pilot to production.

This whitepaper presents five applications machines builders can implement today using an Ewon Flexy and Talk2M:

1. Local Machine connectivity – Provide customers with easy integration of a machine's data into their MES, ERP, or other business system
2. Machine notifications – Get notified by email or text message for alarming and status reporting
3. Live KPI monitoring – Create a single portal for monitoring the health of all deployed equipment
4. Customer portal – Create a single portal where customers can securely monitor their equipment
5. IoT Data Collection – Easily centralize data from all deployed equipment and integrate with a wide variety of third-party applications for data analysis, visualization, and more.

These five low-barrier-to-entry applications let machine builders explore new business opportunities while providing the flexibility and scalability to support new, more complex applications in the future.

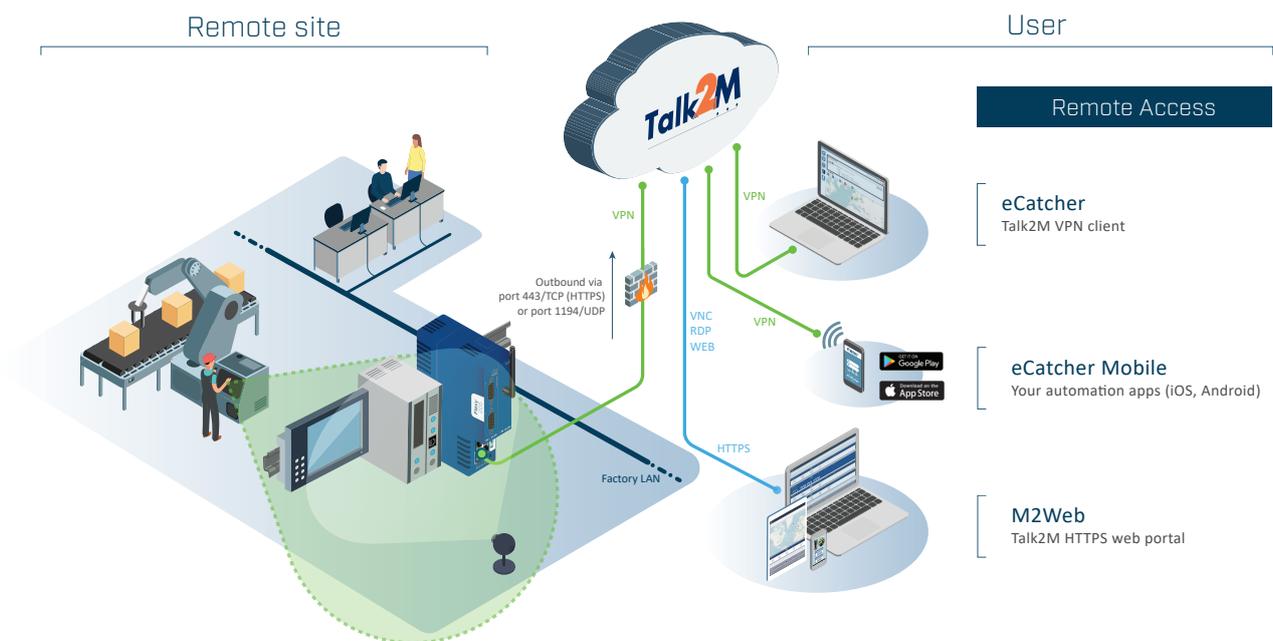
# Machine Connectivity

Just as machine builders are beginning to embrace IIoT, so are their customers. Across all industry sectors, industrial equipment owners are looking to use data to reduce their machine downtime, increase their machine productivity, and reduce overall costs. But integrating the equipment within their facilities with their factory enterprise systems can be a difficult task. Many owners use a combination of third-party solutions, system integrators, and in-house resources at significant expense both in terms of time and financial investment. Machine builders are uniquely positioned to help these owners with this process especially since many owners now consider connectivity when evaluating new equipment.

However at the same time, machine builders are reluctant to grant unfettered access to everything on their machines. *The machine builder's desire to retain control of their intellectual property conflicts with the owners' desire for greater insight into the performance and behavior of the machine.*

*The Ewon Flexy helps resolve that conflict. With support for all major PLC protocols, the Ewon Flexy can gather machine data and then publish the machine data to the owner's factory enterprise systems. The embedded OPC UA Server provides an easy and secure communication channel between the device to the customer's SCADA, MES, ERP or other business system. Since the machine builder can configure which tags are visible to the customer on a tag by tag basis, they can make the appropriate tags accessible while keeping other tags private. *This granularity gives enough machine data to the owner without compromising any intellectual property.**

*Finally, since the Ewon Flexy can communicate with both new equipment and legacy systems, machine builders can create new sales opportunities for those customers who are engaging in digitalization projects but want to reuse legacy systems to retain their investment.*



# Machine Notifications

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For many machine builders, notifications about problems with their equipment come in the form of telephone calls from panicked customers when a machine stops unexpectedly. *Unplanned downtime costs customers real money, and they need a rapid response to prevent further losses.* However, if the machine builder can be proactively notified about conditions that might require a necessary maintenance, they can work with their customer to correct those conditions before they cause problems. Even simple alarming applications can reduce machine builder's response time and improve their customer's overall satisfaction.

*The Ewon Flexy and Talk2M can be used to build both email and SMS notification applications.* Built into the Flexy is an alarm notification system where tags can be configured with multiple alarm thresholds and with logic including activation delays and dead-band values to make sure that important conditions are identified. Throughout the alarm cycle, the Flexy can send alarm notifications as emails or SMS messages via its existing connection with Talk2M. Talk2M includes an email and SMS relay service to allow the Flexy to send emails and SMS messages without the need for access to a local mail server or cellular modem. The recipient list for each tag's notifications can be customized to ensure the right people receive the notification. Some alarms can be sent to the customer's maintenance team while others also go to the machine builder's service team. Similarly, alarm notifications can be sent to the machine builder's sales team to automate spare parts or supplies ordering.

However, notifications are not only limited to alarm conditions. The Flexy includes a task scheduler for sending emails and SMS messages on a periodic basis. For example, one machine builder in the water and wastewater industry uses the Flexy to send daily per-machine status report emails to his customer and his service team. This, in addition to sending notifications when alarm conditions exist, allows the machine owner and the service technician to see the performance of the system and identify potential issues before they lead to equipment failure.



# KPI Monitoring

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The ability to *quickly check the status of machines* is becoming more and more important for machine builders. Being able to easily see a few key performance indicators, or KPIs, for all deployed equipment can help a machine builder get a better understanding of how their machines are being used and how they are performing. For example, seeing the cumulative operating hours or total number of cycles completed for all machines allows the service manager to make more informed decisions when scheduling service visits. Similarly, seeing machine consumption levels can help sales teams quickly identify which customers need to reorder supplies or spare parts. At the same time, many machine builders are not interested in building a complete data management system. *Finding an easy way of presenting their machines' KPIs without an enormous investment in time and resources is critical.* They want access to the current values without having to solve the problems of where and how to store their customers' data.

The *Ewon Flexy and Talk2M's KPI feature allow machine builders to quickly gain access to information about the health and performance of all connected machines.* On the Ewon Flexy, users can identify up to six tags as KPIs. The current values and alarm states of those tags can be displayed in Talk2M's web-based portal, M2Web. M2Web is a free standard service of Talk2M that provides secure browser-based mobile access to remote HMIs, web servers, PCs and panels. With this additional access, if a user identifies a machine through its displayed KPI that needs attention, the user can easily connect through this same interface to the HMI on the machine for further investigation.



# Customer Portal

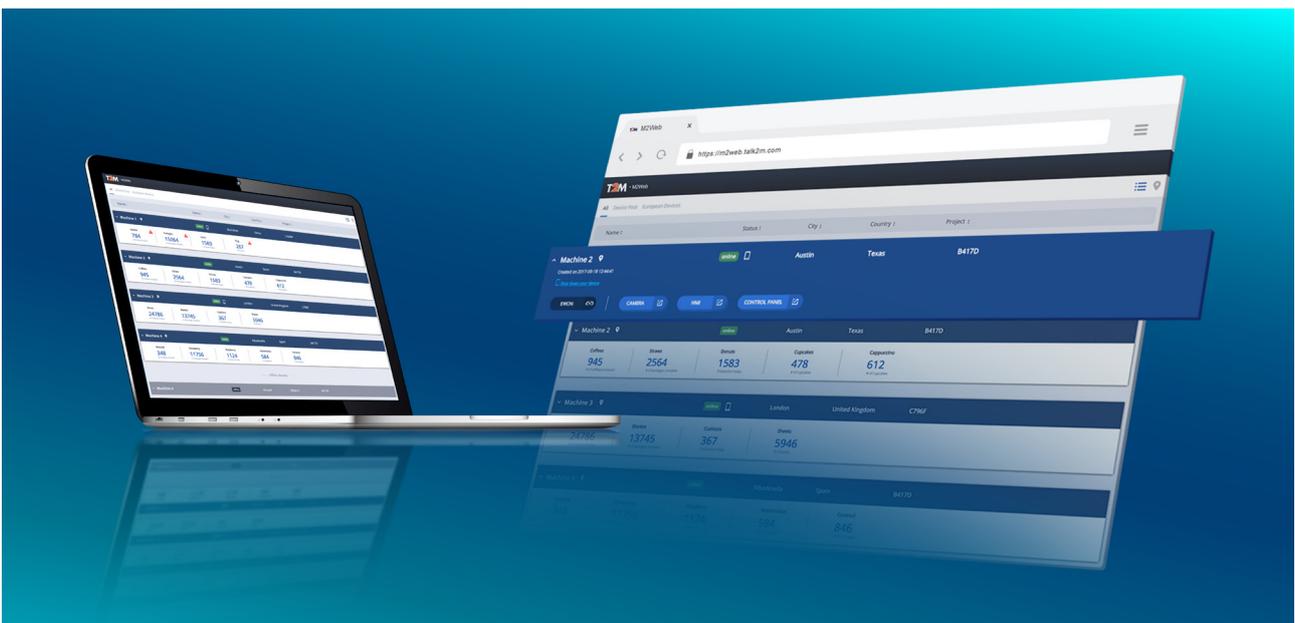
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Machine builders can use the same combination of KPIs and Talk2M to create a web portal for their customers to use. Through Talk2M's Logo Program, the web portal interface can be customized to match a machine builder's brand, and the login form can even be integrated into their own website. The customer stays in a familiar environment and associates the service with the machine builder.

Machine builders are often reluctant to invest significant resources in new services when it is unclear if their customers will be interested. However, now they can quickly build a proof of concept system to begin testing market acceptance with *only minimal financial and time investments*. The combination of the KPI feature and the Logo Program lets machine builders create a remote monitoring service that they can present to their customers in a few hours, rather than the few weeks or months that other remote monitoring solutions require.

At the same time, the solution that works for the proof of concept transitions easily to the final product. *Talk2M accounts support an unlimited number of devices and an unlimited number of users*. By upgrading to a Talk2M Pro account, machine builders can create user access rules to make sure that customers only see their own equipment while also allowing authorized users from the machine builder to access any equipment.

The Ewon solution with Talk2M Pro and the Logo Program has proven to be a powerful combination. One machine builder has embedded the login form into their corporate website and customized the portal to match their corporate branding. When users log in, they can quickly access status information about their systems and connect to the HMI on their machines for additional data. *Not only does the machine builder offer their remote monitoring service as an option for new equipment, but they also sell a preconfigured retrofit package for their existing machines*. This creates a new selling opportunity towards those customers not currently in the market for new machines.



# IoT Data Collection

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Machine builders looking to perform deeper data analysis face obstacles when trying to efficiently gather data from equipment all over the world. Such data analysis could help build statistical models for their equipment to provide predictive maintenance services or internal process improvement. They need a mechanism that both prevents missing data records while also minimizing duplicate records. In addition, if they are using a third-party application for processing the data, they must find a data acquisition mechanism that complies with their customers' network security policies and minimizes the risks to the customers' networks and equipment.

The *Ewon Flexy* supports local data logging and multiple data export protocols and services. One popular data export service provided by Talk2M is DataMailbox. *DataMailbox* is used for temporary storage of Ewon tag and alarm history within the Talk2M industrial cloud. Here's how it works... Data is logged locally on the Flexy. On a scheduled or event driven basis, new historical records are pushed from the Flexy to the DataMailbox through the Flexy's existing Talk2M connection. Since the export occurs through the existing Talk2M connection, the machine builder's customer *does not need to make any additional changes to their firewalls* to allow data export. Once the data is stored in the DataMailbox, the data can be retrieved through an HTTP based API. An application can retrieve all the new historical records for all Flexy on a Talk2M account in a single API call. The application never needs to connect into the customer's network; it only ever needs to query the DataMailbox.

Many third-party applications already support data collection through DataMailbox. For HMS Networks' Solution Partners, DataMailbox is typically a preferred data export service. With applications ranging from gateways to import the data into a machine builder's existing databases to advanced reporting, visualization, and analytics software, *HMS Networks' IIoT Partners offer solutions that let machine builders take advantage of the data from their equipment without needing in-house software development expertise.*

Machine builders with in-house software development resources also like the DataMailbox for *its easy data aggregation*. One machine builder uses the data sent by the Flexy to improve future machines. By using the local data logging on the Flexy along with the data export capabilities, they built their own data management system for tracking a wide range of machine data from all their deployed systems. The knowledge gained from these systems is critical for finding improvements for the future.



# Conclusion

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***Data driven projects can help machine builders improve their business by providing greater insight into the health of their machines and understanding of their customers' usage patterns.***

These insights can lead to *reduced service and support costs, greater customer satisfaction, and new improvements* for their next generation of machines. Data driven applications can also increase revenue by creating new services to offer customers and new ways to drive spare parts and supplies sales.

These benefits must be balanced with the costs of development, time to market, and customer acceptance. With the Ewon solutions, those *costs are low*. Easily configurable data services including an OPC-UA server for sharing data, real-time KPI visualization for remote monitoring, and data export services for data collection projects let the Flexy and Talk2M support a variety of use cases without the need for software development experience.

*By starting with small, concrete applications* using these included services, machine builders can quickly build new applications to evaluate the benefits data brings to their organization while continuing to *take advantage of the remote access that Ewon is known for worldwide.*

