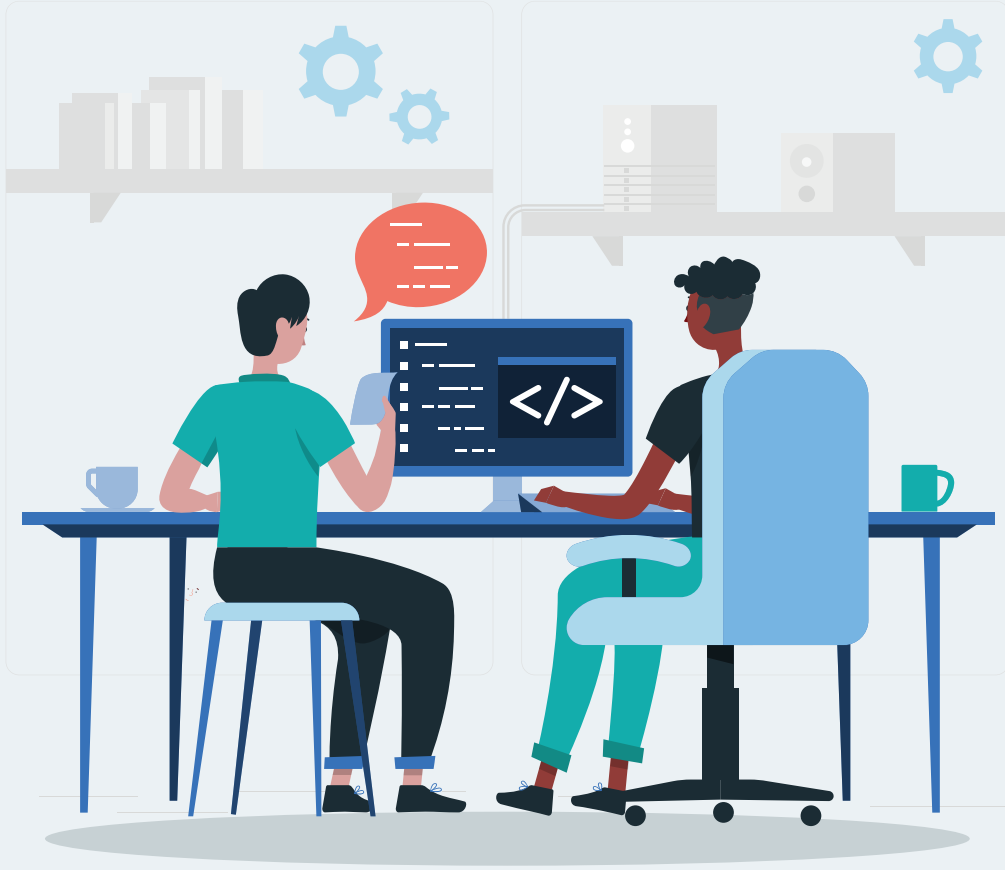
PROMX

Programming without programming skills: **low coding with the Microsoft Power Platform**

WHITE PAPER



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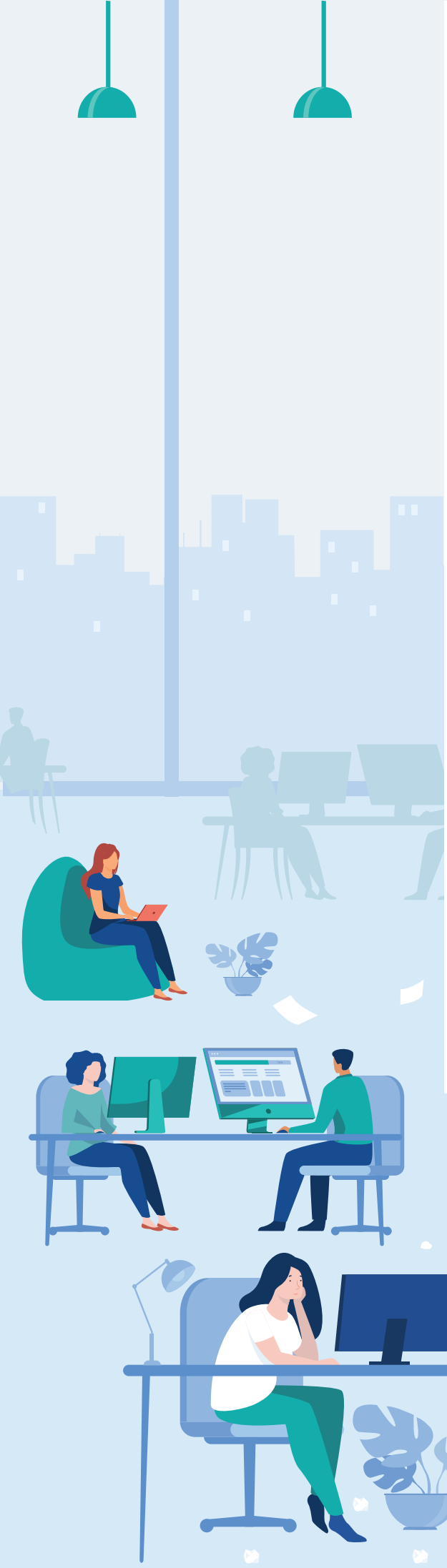


Introduction

Developing applications, building workflows, automating processes: there is a lot to do for developers in companies. Unfortunately, the number of developers on the market is much too low.

Small and medium-sized companies in particular struggle to find professionals for the development of software and mobile applications. At the same time the need for more digitalization increases constantly.

Fortunately, there is software that helps tackling this issue. So-called low coding platforms enable people without any programming skills to drive digital transformation in companies – with applications, data visualization, workflows or chatbots. In this white paper we introduce you to one of these solutions: the Microsoft Power Platform.

What is low coding?

Low coding offers easy access to programming by replacing complicated, text-based programming languages with visual development platforms. That means applications, workflows, dashboards, and more can be built with different components via drag and drop.

The people who use these possibilities to code are called “citizen developers.” They don’t know any programming language or only the very basics, and are yet able to build tools that are relevant for their field of expertise – without assistance from professional developers or the IT department.

Advantages of low coding

This way of developing apps has many benefits:

Accelerated development:

According to estimations, it is five times faster to develop an application with low coding than to program it the traditional way. Why? Because citizen developers understand the requirements that the software needs to fulfill a lot better than professional developers without knowledge of the industry. The latter need to be briefed thoroughly before they can start programming, and depend on external feedback during the entire process. Citizen developers, however, know what the application has to be capable of and how to best implement these requirements due to their role.

Reduced workload for the IT department:

Low coding can also be used to increase the productivity of professional developers or to distribute the work of the IT department better, for example when it comes to developing prototypes. Low coding doesn't replace traditional application development. But it can be used to prepare necessary structures and views, and to determine whether developing an idea further is worthwhile.

Cost savings:

When using low coding for the development of an application, the IT-based optimization of a process or for building a chatbot, there is no need to hire or pay a professional developer. That way companies can save HR costs.

Do you really not need any programming skills for low coding?

There is a difference between low coding and no coding. It is helpful for both concepts, but even more so for the first, to have a basic knowledge of programming. The more you already know, the better. The learning curve for beginners will be steep, and we recommend an introductory course. If they don't get an introduction, beginners should learn some basics first. To start low coding from scratch is hard. Thankfully Microsoft partners such as proMX offer workshops to help you get started.

The Microsoft Power Platform

Large software corporations like Microsoft have recognized low coding as key technology when it comes to digitalization. They offer their own low coding services and platforms to enhance user-centered application development. Microsoft's low coding development platform is named Power Platform, and contains four applications that serve different purposes:

Power BI **Power Apps** **Power Automate** **Power Virtual Agents**

The Power Platform applications help companies or rather their employees to visualize, analyze, automize and process data. The idea behind the Power Platform is to provide employees with possibilities to use existing data, gain insights and improve processes by enabling them to build digital solutions to problems of their day-to-day work – without programming skills. Microsoft refers to the Power Platform as inclusive technology that helps companies tap hidden potential.

The Power Platform allows the people who are most familiar with a certain field of work to:

- Gain new insights
- Modernize apps
- Re-design processes
- Optimize processes manually
- Transform ideas into applications

	Power BI	Power Apps	Power Automate	Power Virtual Agents
Purpose	Merge, analyze and visualize data	Create own business applications for the web or mobile devices without code	Automize regularly recurring tasks	Build and maintain chatbots for various channels
Examples of usage (selection)	✓ Evaluation of data ✓ Creation of diagrams and reports ✓ Integrating data on a web page	✓ Digitalization of internal processes ✓ Development of prototypes	✓ Synchronization of data ✓ Creation of push notifications ✓ Automatic approvals	✓ Customer service bot on website ✓ Facbook-bot
Advantages	✓ Better understanding of data ✓ Data-based decision-making	✓ Democratizing application development ✓ User-centered and accelerated app development	✓ Saving time ✓ Reducing errors	✓ Cost reduction ✓ Minimal IT effort

Power BI, Power Apps, Power Automate and Power Virtual Agents can be used in conjunction with Microsoft 365 (“Office”), Dynamics 365, other Microsoft services and third-party applications.

All Power Platform apps are based on the Microsoft Dataverse, a common data platform that other Microsoft services can access as well. That means that all data used within these systems is stored centrally at the same place.

Power Apps

„The world needs great solutions. Build yours faster.“

Microsoft Power Apps allows users to develop individual business applications for the browser and for mobile devices. Power Apps’ strength is to optimize internal processes that used to entail a lot of paperwork and bureaucracy. Using this service, you can quickly and easily build apps to digitalize tasks like scheduling vacations and work shifts, handling sick notes, creating expense reports or ordering spare parts. You can even extend Microsoft 365 or Dynamics 365 with these apps.

Power Apps doesn’t just accelerate the development of business apps but also solves a fundamental problem of business software in general: many out-of-the-box applications do not meet the individual requirements of companies, or it is hard to integrate them into the existing IT landscape. Power Apps lets you design applications the way you need them to be.

Applications that are developed with Power Apps are no stand-alone apps that can be downloaded in app stores, but they are made available to users on their smartphones or tablets via so-called container apps. That means users install the official Microsoft Power Apps mobile app on their devices which gives them access to all applications they have permission to use.

Developers have the option to add code to the applications built by citizen developers. That might be useful for reporting purposes, to integrate older applications or if it becomes necessary to have some specific user interface.

Canvas vs. model-driven Power Apps

There are two different kinds of applications that you can build with the help of the Power Apps platforms: **canvas apps** and **model-driven apps.** Often, the resulting apps differ only insignificantly.

What makes the difference are user control and the scope of application. In some usage scenarios canvas apps are more suitable in others model-driven apps. Canvas apps allow for more flexibility and user control with simple, goal-oriented applications. Model-driven apps look less appealing but therefore they represent a clearly defined business process that users must follow.

	Canvas apps	Model-driven apps
Explanation	For simple, goal-oriented usage, mainly for mobile apps	Can generate data models and are thus suitable for complex and demanding business applications
Examples of usage (selection)	✓ Not limited to one particular data source ✓ No programming skills needed for creation (Excel skills and experience with web and application interfaces are helpful) ✓ Room for creativity ✓ You can build very flexible applications	✓ Follow a "data first" approach and can generate models based on data ✓ Several functions for developers to customize application to specific user requirements
Design	✓ Full control of each aspect, such as size or format of the single components	✓ Input defines output: app adapts to data, not the other way round ✓ Less control over layout and functionalities ✓ Rigid design in which elements of interface are given and are to be selected based on underlying data ✓ Users can edit single elements ✓ Apps are responsive
Examples	✓ Holiday requests/approvals ✓ Event registration ✓ Ticketing for IT helpdesks ✓ Data acquisition ✓ Photo creation ✓ Checklists	✓ Creation of business processes and workflows ✓ Opportunity management ✓ Customer service management ✓ Event management ✓ All-round solutions

Although there are two types of Power Apps, that doesn't mean you always have to choose between canvas vs. model-driven. Canvas apps can be embedded into model-driven apps. In this scenario the latter serves as the backend for the former. This combination is called embedded app.

Power Apps portals

Besides developing business applications, Power Apps also give you easy and simple access to building website portals. Power Apps portals resemble a website builder à la WordPress. The data basis is the same as for Dynamics 365: Microsoft Dataverse.

Power Apps portals can be used as:

Self-service portals for customers: They offer customers the possibility to look for information in knowledge articles and exchange experiences and insights with other customers. If necessary, they can create a support request that is forwarded directly to Dynamics 365 Customer Service.

Self-service portals for employees: Information is available here for employees anytime. They can access it directly and securely. Furthermore, on the portal they can interact with colleagues and open tickets, e.g. to get IT support.

Embedding technical field service: Power Apps portals allow field service technicians to edit work orders during a job on customer site and to update Dynamics 365 Field Service in real time.

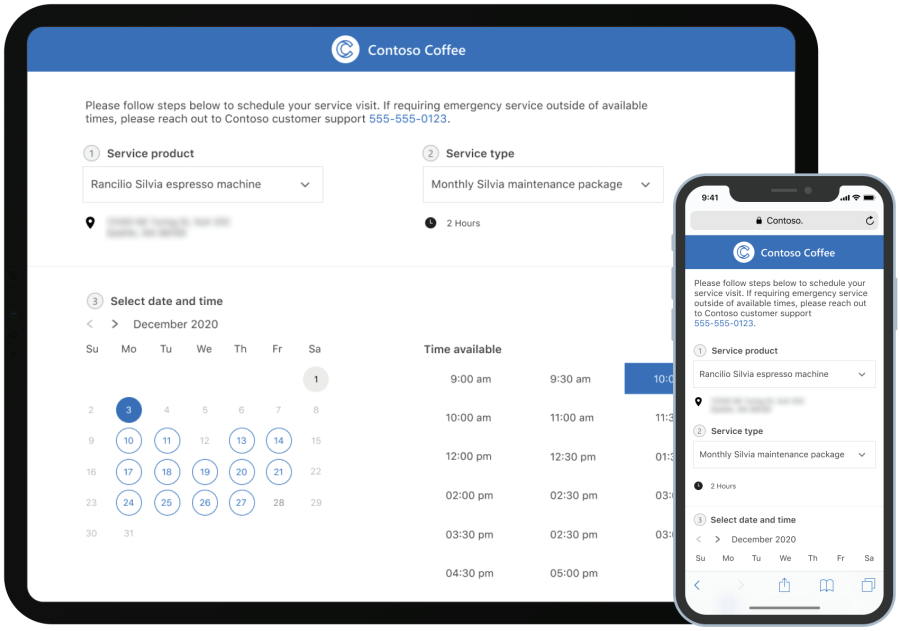
Use case: appointment via portals, time tracking via app

The facility management company BGWH manages and cleans buildings for corporate customers. It takes care of inspection, maintenance and checks as well as winter service, cleaning, and waste disposal.

To better plan ad hoc service jobs, the company has decided to set up a customer portal where customers can conveniently and quickly plan their own cases online. The Power Apps portal is connected to Dynamics 365 field service and automatically creates a service job there.

It took BGWH only a few clicks to adapt the portal to their requirements and corporate identity. The company granted their customers access to the portal via the integrated invitation process. They can register with their accounts from providers like Microsoft, Facebook, Google or LinkedIn.

When a customer logs in they are presented with possible time slots when BGWH can take care of the respective service case and they can select the date and time that fits best. Then, a booking, a work order and a request for the needed resources are created automatically in Dynamics 365. Once the booking is done the customer receives a confirmation via e-mail or SMS.

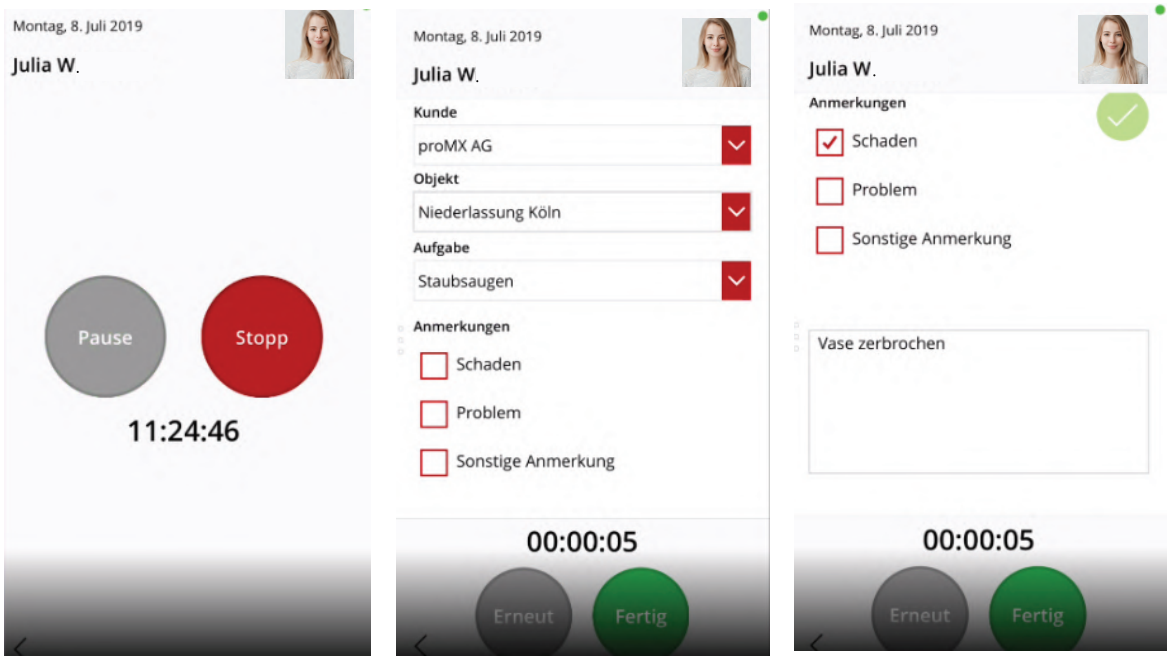


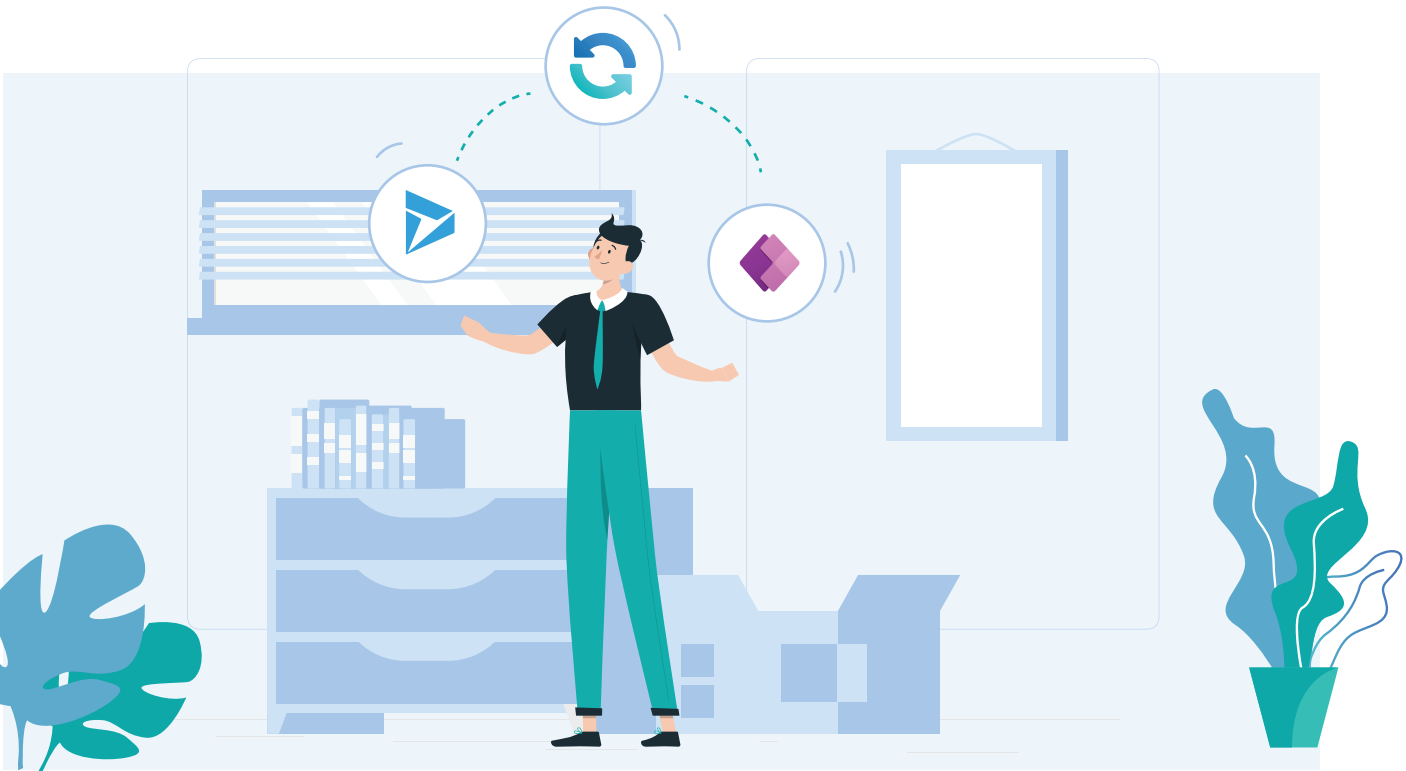
Additionally, the company has developed a simple Power App to track the working hours of their cleaning personnel.

When the cleaning personnel starts their work, they open the Power App on their smartphone and press the “start” button of the integrated stopwatch. A click on the “stop” button stops the recording and automatically creates a new time entry.

Then the cleaning personnel can add details of the job: which customer did they work for, in which building, what exactly was cleaned, etc. There is also the option to take notes and submit photos (for example if an object got broken or was defect from the beginning).

All records can be viewed in the app and are then synchronized into Dynamics 365.





Power Automate

"Take care of what's important. Automate the rest."

Microsoft Power Automate helps you automate recurring tasks and digital processes quickly and easily, which saves you time and reduces errors. Employees won't need to spend their time at work on unproductive routine tasks.

Tasks that can be automated with Power Automate include:

- (Push) notifications
- Synchronization of data (e.g. lists on SharePoint or OneDrive)
- Approvals
- Social media tasks

In Power Automate, so-called "flows" are defined once and then run automatically without having to involve the IT department. A "flow" includes a number of different actions, and can connect a Microsoft service and a third-party app. Certain triggers kick off flows, which are part of the defined process. Triggers can be certain actions, button clicks or specific times.

Examples of flows:

- An e-mail attachment is automatically saved to a certain SharePoint folder.
- An Outlook task is automatically created on a Trello board.
- Tweets with certain hashtags are automatically saved to a SharePoint document.
- Numbers are transferred from one system to another.

Users with any skillset can work with Power Automate – from novices to experienced programmers.

Advantages of Power Automate

IT-independent start

Power Automate particularly suits teams who would like to automate routine tasks to make their daily routine easier, but don't have any programming experience.

Extends Dynamics 365

Power Automate can be connected with other products of the Microsoft Power Platform as well as Dynamics 365 without programming skills, for example with Power Apps and Power BI.

Fit for complex business processes

The learning curve may be steeper, but complex tasks and business processes too can be automated with Power Automate and knowledge of Workflow Definition Language for Azure Logic Apps.

Example: approving holiday requests via SharePoint

The company FunToys GmbH still requests and approves holidays manually – via e-mail. Employees send an e-mail with their holiday requests to their manager who organizes all holidays in an Excel sheet. This is where they check whether another person is absent, or a substitute is available during the requested time. If the holiday request can be approved, the manager forwards the date to human resources which saves it to the system centrally. They send the final approval to the team member. Any cancellation or change requests undergo the same process.

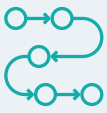
This solution costs managers time and is inefficient and long-winded for FunToys employees, because they can't be sure whether their holiday request will be approved or not. In some cases, they have to wait a long time for any response at all if their managers prioritize other tasks.

Therefore, FunToys decided to automate holiday requests with Power Automate and thus speed up the process. The decision was made to handle all future holiday requests on SharePoint, which the company already uses.

Employees now simply need to add their holiday request to a SharePoint list. This triggers a flow in Power Automate. The app sends an automatic e-mail to the manager, informing them of a pending holiday request. They can now decline or approve the request.

In case the request gets declined, an e-mail automatically informs the employee, and the request is marked as “declined” in the SharePoint list. If the request gets approved, an e-mail also automatically informs the employee, and the request is marked as “approved.” The next step in the flow is to inform human resources.

Step-by-step flow:

01

Employee adds holiday request to SharePoint list.

02

Flow is triggered automatically.

03

Flow sends holiday request to manager to approve or decline.

04

Options:

a. Decline: Flow informs employee via e-mail and updates SharePoint list with “declined”

b. Approval: Flow informs employee via e-mail, updates SharePoint list and sends e-mail to human resources

Power BI

“Achieve powerful results by listening to your data.”

The best-known and most established app within the Power Platform is Microsoft Power BI. This business intelligence solution helps users to merge data, visualize it and thus analyze it more easily. The data processed in Power BI can come from different sources and be visualized easily and quickly even by Power BI beginners. The possibilities are sheer endless. Visualizations can then be shared with other people in the organization or embedded elsewhere.

Power BI can be used to improve the understanding of data and underlying processes, create reports and make fact-based decisions. That means it’s useful for employees, managers and the C level.

Examples where Power BI can be useful:

In sales

to track the developments regarding leads and the sales pipeline at any time.

In human resources

to compare monthly sick leaves.

In accounting

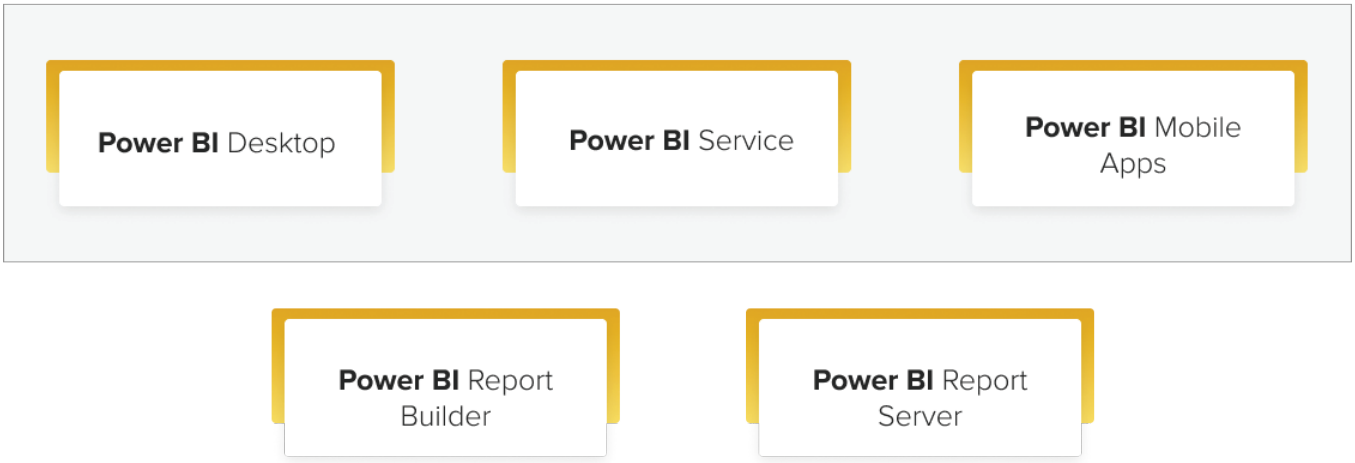
to maintain an overview of overdue bills.

For the C level

to view data from any department at any time.

Although it's just called Power BI, the app includes several connected components which – depending on the demand and user roles in the company – can be used individually or combined.

Power BI Components



	Power BI Desktop	Power BI Service (aka Power BI Online)	Power BI Mobile Apps
What is it?	Free desktop app	Software-as-a-Service (SaaS) app	Mobile app for Windows, iOS and Android devices
Examples of usage (selection)	✓ Connect data ✓ Transform data (to the right format) ✓ Filter and visualize with the help of dynamic requests ✓ Create reports	✓ Create dashboards ✓ Share reports with other people ✓ Data modelling ✓ Create data connections	✓ View dashboards
Whom is it for?	✓ Heads of departments ✓ Data analysts ✓ BI experts	✓ Company employees ✓ Potentially broad audience (e.g. by integrating visualizations on website)	✓ Mobile users

Advantages of Microsoft Power BI

- Easy and quick connecting and usage of data
- Intuitive usage for beginners
- Analysis options from any device at any time
- Alerts when data changes
- Quick start, no IT know-how necessary
- Integrations of other systems possible
- Affordable dive into business intelligence
- Time saver (reports can potentially replace meetings)

Using Power BI speeds up the analysis of Big Data and leads to fewer risks and higher revenues in the long run. It helps companies to see developments in real time.

Example: improved visualization of metrics in Dynamics 365

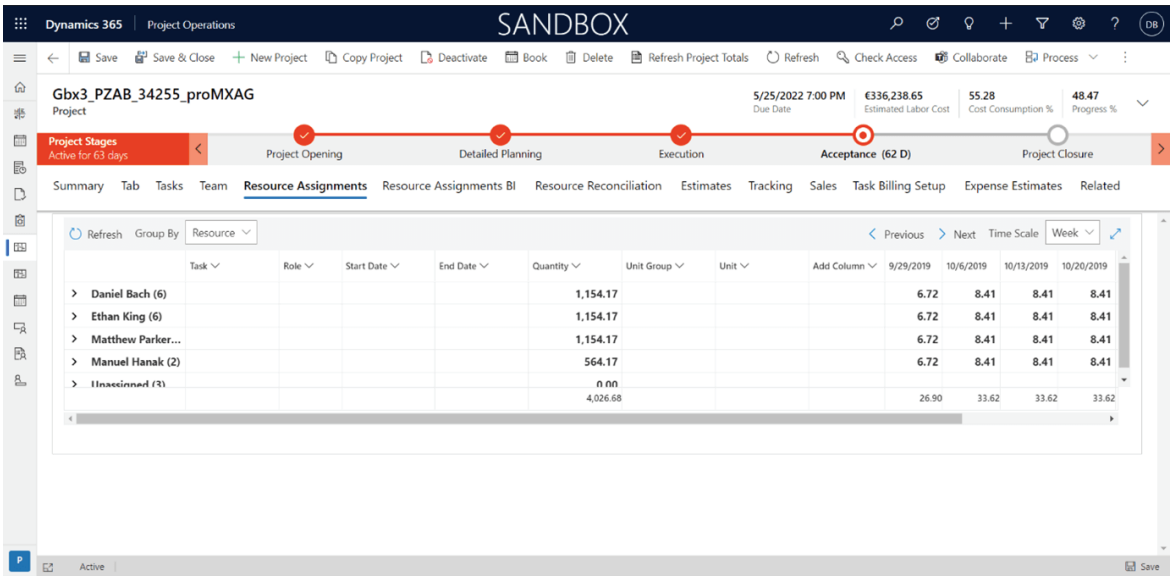
Lean Business AG is a business consultancy that manages its projects in the end-to-end solution Dynamics 365 Project Operations. There, many important metrics related to projects can be viewed, for example progress, milestones, and costs; however, they can only be viewed in a table. Lean Business wishes for a more beautiful display of their KPIs so each and everyone involved can get the gist of all numbers much quicker and better.

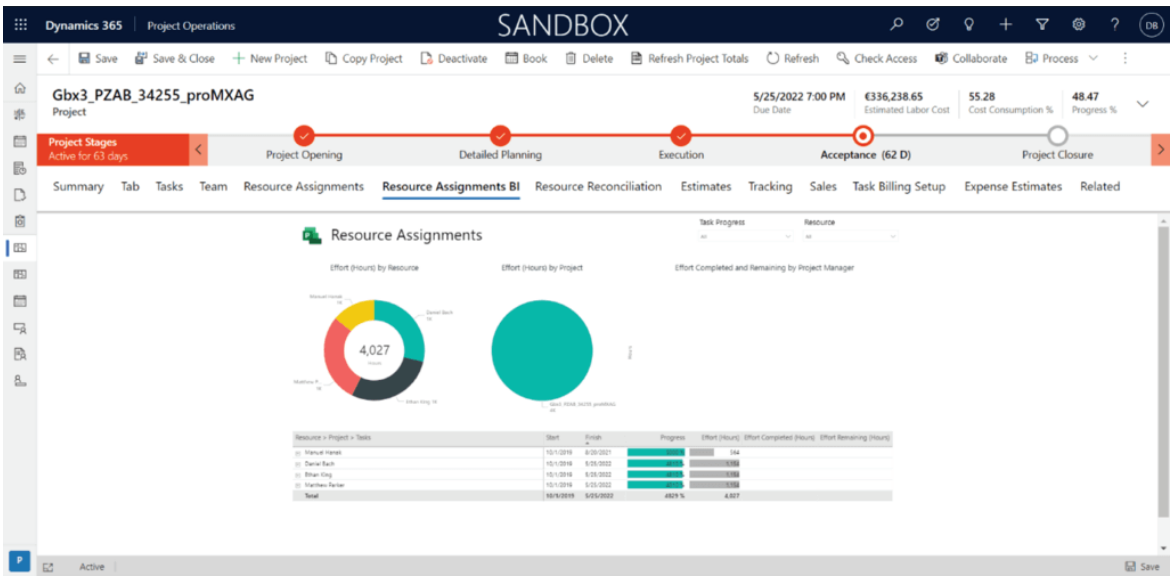
The company already uses Power BI. That is why it decided to integrate it in Project Operations and view all visualized metrics there. To achieve this, live data from Project Operations is processed in Power BI.

At first, Lean Business AG connects a Power BI report with its Project Operations environment and activates a recurring data update. Then the company creates a dashboard in Project Operations that the BI report can be pinned to.

The company also decided to add a report for resource assignment to each project, and creates a new tab in the project entry to pin the respective Power BI visualization.

Before/After





Project managers now have a quick overview of the KPIs they use most directly in the system, and can even access them via smartphone.

Power Virtual Agents

“Create the extra help you need.”

The youngest and least known member of the Microsoft Power Platform is Power Virtual Agents. It’s just as interesting as the other apps, though. Power Virtual Agents makes creating AI chatbots significantly easier by providing a graphics-based no-code canvas.

With bots, common customer challenges or internal matters can be solved automized. Users ask questions to the chatbot, and – ideally – it leads them to the right answer in just a few steps. Similar to communicating with a real person, chatbots can for example make appointments, update orders or execute other tasks. You can embed and use them on many different channels – from your website to social media till Microsoft Teams.

Chatbots can overtake a great deal of work from their human colleagues. In turn, they can save time and use it to deal with more complex inquiries or focus on more productive tasks.

Examples for using Power Virtual Agents:

- Customer service bots
- Facebook bot
- Helpdesk for employees

So far creating and developing chatbots has required the skills of a professional software developer. This made it particularly difficult to keep the bot up to date, because the topics and answers a chatbot should know can change quickly.

Connecting chatbots with backend systems and data hasn't been easy so far either. However, often this is a requirement for the chatbot to be able to answer questions proficiently. A bot that is supposed to handle queries from employees, for example, needs access to information from HR systems.

Benefits of Power Virtual Agents

01

Simple creation:

Power Virtual Agents offers a visual canvas for creating chatbots. These tools are accessible to all users. Instead of waiting for the IT department, changes to the chatbot can be made when they're needed. That helps to keep the chatbot up to date.

02

Low IT effort:

Individual departments don't have to approach IT when the bot needs to be updated.

03

Saving customer service costs:

Employees can dedicate more time to more complex topics that cannot be automated. Basic topics don't have to be covered by additional customer service personnel.

04

Higher customer satisfaction:

Customer satisfaction will be higher by being able to solve problems independently around the clock.

Highlights of Power Virtual Agents

Simplicity:

Created and embedded with just a few clicks. There is no infrastructure or complex systems that need to be maintained.

Natural language:

A Power Virtual Agent can imitate natural language with the help of artificial intelligence and have complex conversations.

Active bots:

A Virtual Agent doesn't just have conversations and answer questions, but can be active too, for example by opening a service ticket.

Dashboard:

On a dashboard, the bot's performance can be tracked and quickly improved if necessary.

Example: customer service bot on the website

Tigerphone GmbH sells smartphones. Their customer service team receives many queries related to how the devices work. There are rarely any problems with a device itself; instead, customers don't use it correctly. Most queries can be answered with standardized replies, self-help articles or simple information such as the opening times of a store. If a product does happen to be faulty, fixing it takes up a lot of time. Unfortunately, the customer service agents at Tigerphone spend a lot of time answering standard questions.

Thus, Tigerphone decided to integrate a chatbot based on Microsoft Power Virtual Agents on their website. This virtual customer agent exists to answer common questions by assessing the problem in a conversation, and then refer to a FAQ article or troubleshooting instructions.

The team starts with creating different topics the chatbot should respond to. So-called trigger phrases send a signal to the bot which topic the query is about, e.g. "I can't connect my headphones" for the topic "audio problems." Step by step the team creates the right answers for these trigger phrases. Among others, it adds multiple choice responses if it's important to know which smartphone model the customer uses. These answers are conditions for the next message from the bot. That way he can choose the right answer for "Model 2" or "Model 3."

In order for customers to receive support, the team decides when a human customer service agent should take over. Tigerphone agrees on the following escalation protocol:

- Customer asks for human help
- Customer wants to return a device

In these cases the employee goes through the complete chat history and can take over without having to ask the customer the same questions again.

Using Power Virtual Agents makes the lives of the customer service team at Tigerphone much easier. At the same time there is no need for the company to hire additional employees to make sure all queries get answered in due time. The insights the bot collects help the team to create FAQ articles and lower the need for human interaction.

Conclusion

Companies strive for optimized processes. The Power Platform by Microsoft helps you create them quickly, easily, and without additional HR costs. The concept of low coding holds much potential for different business areas – use it!

We offer a helping hand in your digital transformation

The ideal digital transformation partner is not only an expert in theory and technology but also in its customer's industry. consultants are familiar with the processes, priorities and challenges of different sectors. Contact us!

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