KOENIG & BAUER

Sucessful Automation

we're on it.

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Contents

Introduction 2

Basics | What to consider 3

Implementation |All set to go, right? 5

Best practice from practice 6

Automation | After that is before it 8

Checklist 9

Successful Automation | A white paper by Emely Übler, Product Manager, Koenig & Bauer Coding, Veitshöchheim

Successful Automation

Digital work is now firmly established in our everyday lives. It is becoming increasingly rare that documents are carried from A to B. Our communication is already digital to a large extent.

This development can also be extended to machine processes. The technology for automating processes in production and industry has become easier and cheaper in recent years. In addition, there is a persistent shortage of skilled workers in all sectors. These are just a few reasons why automation projects can be found in every company.

Automation is not a new topic; and is already well-advanced to the point of being referred to as „digital transformation".

The range of products and services needed for the automation of machines and plants is extensive. The technology has been significantly developed in many fields and is affordable for small and medium-sized enterprises. The configuration is becoming more and more user-friendly.

Due to negative experiences during the implementation of such projects, many people still perceive automation as a complex and elusive topic.

This white paper shows simple strategies and gives advice on how to approach automation projects in the right way. What do you need to consider during implementation? How do you prepare directly for future changes?

Would you like to give us your feedback? Do you have further questions? We look forward to hearing from you:

emely.uebler@koenig-bauer.com

Basics
What to consider

Almost everything can be automated in a process. However, it is clear that not everything should be automated. To narrow it down further, you shouldn't automate everything, and especially not everything at the same time.

When should I decide in favor or automation?

1

Getting Started

It is important that all parties concerned in the process are involved from the very beginning. This is the only way to ensure that everything has been thought of. In the aftermath, it is not necessary to make improvements or continue working with a suboptimal solution or a compromise.

Interface processes should also be taken into consideration.

The processes are usually complex and the procedures complicated. Therefore, the current process section should be visualised from the beginning. Flow-chart programmes or very simple notepads can be used to depict the process at a wall. A visualised process helps to narrow topics down to a minimum which ultimately results in fewer discussions; and also facilitates the decision-making.

2

What's Next

The process to be considered is determined. Now you should think again about what you want to achieve and create a ranking for it. Everyone involved should become aware of the mutual target; creating a ranking can help to focus

Some criteria for automating a process:

- Improve products/services and create added value for the customer
- Avoid mistakes and increase quality
- Improve efficiency, increase capacity or achieve shorter processing times
- Use skilled employees for other tasks
- Gain new insight and understanding about processes and procedures
- Simplify processes
- Cut costs

The individual process steps should then be evaluated according to the possible degree of achievement and the complexity of the changeover.

Here it is advisable to exchange ideas with experts and specialists in order to explore all suitable options for automation.

3

Decision Making

Criteria, weighting, implementation, context: a decision can be quite individual.

In any case, the ROI (return on investment) should be considered. This means in which period and to what extent the implementation of the automation meets the specified criteria.

Handy Hint

It is always better to divide automation projects into multiple phases.
To do so, the overall project is either broken down into individual physical sections or several levels are defined for the degree of digitization. These are then processed one after the other. In between, give the partial implementation, which has meanwhile been finalized, time to establish itself.
Use existing lessons learned to distill your next steps; and adapt if necessary.

What aspects need to be considered so that this step-by-step implementation becomes a success story? How can future, unknown changes be easily integrated and implemented? Find out in the last section of the whitepaper.

Implementation
All set to go, right?

Jumping from mere theory directly into implementing the automation can entail that other decisions literally fall off the wagon: Take the supplier of your choice or solutions provider; or even during start-up procedures. You are suddenly forced to live with ‚rotten compromises'. So, before getting started, analyse the concept carefully with all parties involved.

Digital role play

It is advisable to simulate automation as soon as the theoretical preliminary work has reached a certain degree of maturity. Solution providers for the individual tasks and sub-areas can support you with this.

Specific questions pop up while simulating your newly thought-up process flows? Before making large investments and going into final implementation, these questions must be clarified internally or with suppliers and service providers.

Everything that is discovered and clarified during the simulation does not hinder the daily business during the final roll-out. The implementation of the entire project is not delayed.

Something can always go wrong

The performance of service is crucial.

Depending on how its risk is assessed and classified, appropriate fallback solutions (fallback levels) must be planned.

Main-follow devices (hierarchical arrangement) offer both these options and also the integration of manual processing.

In any case, risk assessment should be an integral part of the planning and part of the new, automated process.

Everyone gets to play

Automation projects mainly take place in the value-adding sections of a company. People from these sections are usually also within the core of the project team. If those are primarily employees with a technical background in mechanical and/or electrical engineering, think about bringing someone from the IT department into the core team.

In automation projects, it is not enough to consult the so-called ‚support processes' just in case of arising questions; or to involve them only in the final stage of the conception.

The IT-department often focuses on parallel projects that have a decisive impact on the implementation of automation; thus, it is essential that these projects are known. You can rarely start from the status quo. And even when looking into the future, important suggestions often come from IT that have to be taken into account during implementation.

Transparency creates trust

Fragile supply chains can, even in the event of the slightest disruptions, affect a (so far) reliable component provision.

This can decisively delay the planned implementation of projects. But it can also lead to failures later on during operation; for instance, if spare parts cannot be procured.

The elaborated fallback solutions are an important module to deal with this risk. But also when selecting components and suppliers, it is recommended not to become dependent. Rather favour a multi-supplier strategy.

If your vendors generally work with standard components and in open platforms, the risk of being affected by a shortage of components is lower and you remain independent with software solutions.

Our customers usually get to understand in its completeness only when the installation is put into operation. Due to the project-related structure and the associated acceptance (FAT) before delivery, we can often carry out the installation of our solutions during a lunch break.

Personally, my favorite moment is when our customers realise how much time, frustration and money has been saved as a result.

Emely Übler

1

92 %

My projects revolve around automation

2

21,6 %

Projected decline in skilled labour by 2040

3

126

Every 126th data record entered manually is incorrect.

Best practice from practice

If you and your team, including your suppliers and system partners, have carefully planned the changes in the process, you are ready for implementation. And when it comes to implementation, a lot can go haywire and (spoiler alert) it will.

Plug & play

Many sub-sections and procedures of the new process can already be set up and tested at the supplier's premises, however, outside the framework of his production line. For this purpose, the process can, for example, be outsourced to the trades or also to sections of individual system partners.

When components are tested, configuarted or programmed in the course of a factory acceptance test (FAT) prior to their integration into the machine (by each person involved in the process), you already have a finalised and in all parts known project section.
This process section can now be merged with both the existing and also the new components.

Handy Hint

FATs can also be carried out by the system partner alone and for a separate part of the system.

Top or flop

With the aforementioned preparation, it can be assumed that the individual components will be ready for u immediate use after being activated in the system.

But depending on how complex the system is set up and how many parties communicate with each other, the project team may have a lot of work to do.

The individual components' system companies and their teams have to exchange signals, detailed processes and handshakes. Even the best preliminary planning and visualisation cannot replace the moment when everything is put together in its entirety. At this point, the entire project can still fail.

Important success factors are that all system partners determine beforehand which parts of the system need to be up and running; and to what extent. This is essential in order to test functionality and processes.

The system partners involved should always put the system into operation together on site and they should always be able to act. This is the only way that necessary changes can be entered and tested directly. and it requires a precise coordination of dates. An open mindset within the entire team for the joint achievement of goals is important in order to find the best solutions quickly.

Handy Hint

When initially activating the system, the processes and process steps can be visualised and discussed in a short meeting directly on site and with the presence of all those who are involved.
Jointly, all general conditions are defined; and it is contemplated if there is still need for clarification or in which sub-steps it is best to proceed together.

After that is before it

The future is constantly redefining the framework conditions.

Nothing is as constant as change

Changing standards and social change, new products, different strategies, availability of raw materials and components, and many other factors have a constant impact on existing processes. Processes have to be regularly reorganised in order to meet the new framework conditions.

Don‘t rush

A new process needs time to establish itself. Therefore, it is advisable not to change it again immediately after implementation. Basically, great care is required before any changeover.

Stay flexible

There are a few things that, if kept in mind, can facilitate any new changeover of a process. After all, nothing is more exhausting and cost-intensive than setting up and implementing a new process.

First, you should pay attention to modularity when opting for any hard or software components. During the changeover, the focus can be on the process itself and the best possible procedure. Costs and workload do not have to be the focus.

It makes sense to rely on components and system partners who work with open and/or common systems. Dependencies are avoided and system partners with the best availability and the best price/performance ratio can be selected.

Handy Hint

If the automation is networked across multiple locations, it makes sense to consider a cloud solution for the data. This saves regular and costly consolidation effort.

Checklist

- All parties involved in the process, should be included from the very beginning ☐
- Visualise processes ☐
- Involve support processes in the evaluation phase ☐
- Bring in professionals for advice ☐
- Rank success criteria ☐
- Implement in several stages ☐
- Simulate processes ☐
- Risk analysis ☐
- Install fallback ☐
- Rely on open source systems ☐
- Consider cloud solution ☐
- FAT at premises of system partner ☐
- Joint activation of system ☐
- Agree on the prerequisites for activation ☐
- Give your processes time to work ☐

Koenig & Bauer Coding GmbH
Benzstraße 11
97209 Veitshöchheim, Germany

T +49 931 9085-0
F +49 931 9085-100
info-coding@koenig-bauer.com

coding.koenig-bauer.com

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