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SUCCESSFULLY DIGITIZING THE PROCESS INDUSTRY

Ten Tips on How New Software Solutions Create Real User Excitement

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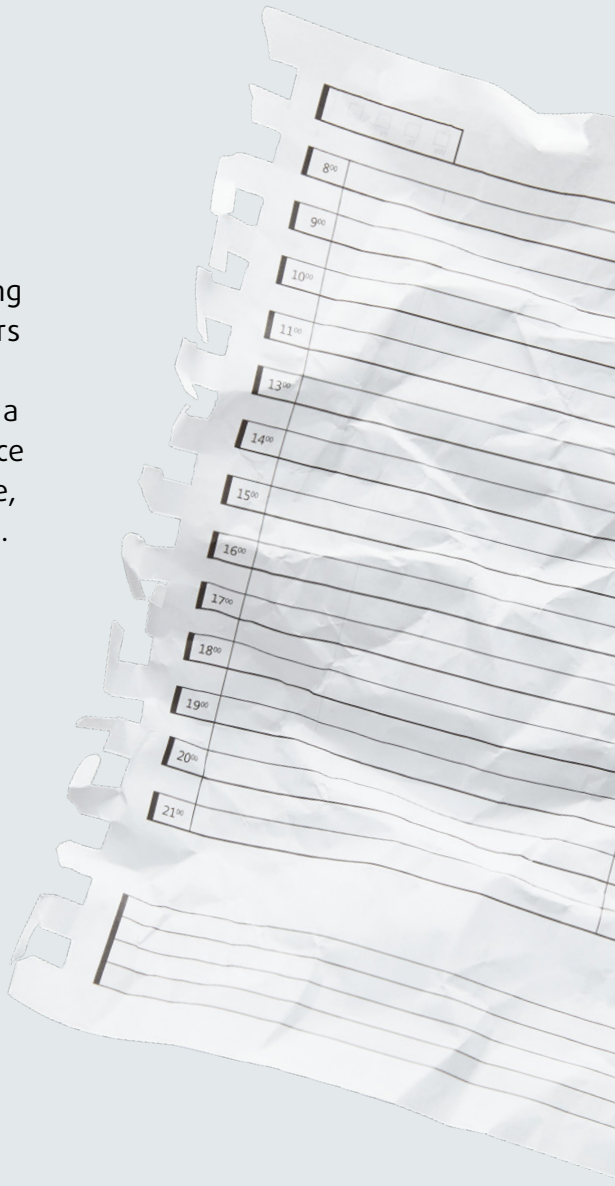
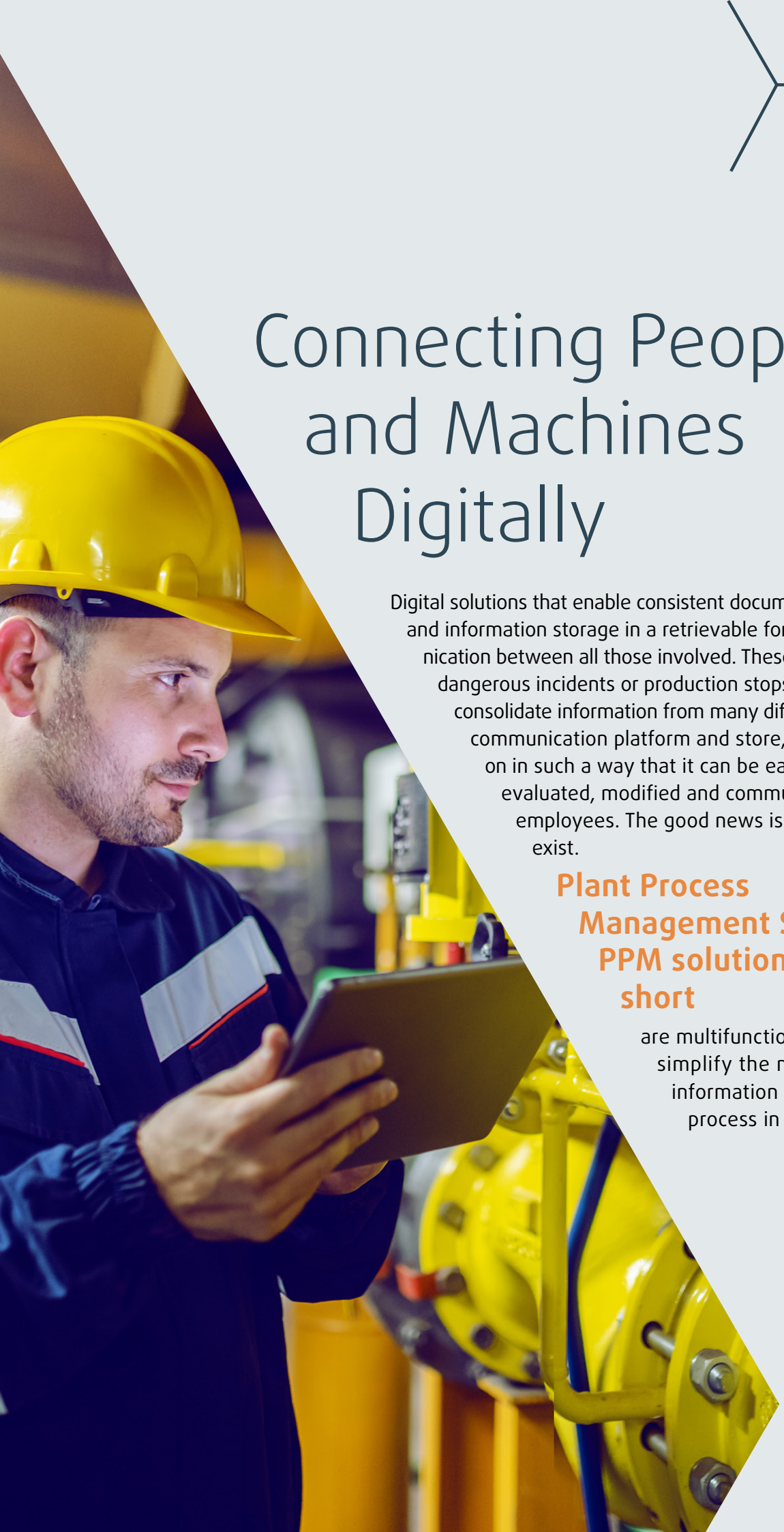
Companies in all industries strive to ensure safe, seamless and cost-efficient production operation. None is more true than when it comes to large-scale complex plant processes in the process industry. To ensure that operations run as smoothly as possible, all players in the system must communicate seamlessly with each other. This applies to the people involved, as well as to the machines used.

The End of Excel, Pad and Pencil

Notepads, ring binders, office software or in-house programming have had their day as documentation tools for shift handovers or inspection rounds. Not only do they leave a large number of potential synergies unused – they also harbor real risks. If a sticky note with an important information disappears or the trace of a safety instruction gets lost in the endless rows of a table, the possible error is lost from view and cannot be eradicated. It's a matter of time until the next serious incident.

Analog tools and isolated digital solutions make collaboration and the flow of information more complex.





Connecting People and Machines Digitally

Digital solutions that enable consistent documentation of processes and information storage in a retrievable form improves communication between all those involved. These solutions help avoid dangerous incidents or production stops. Digital applications consolidate information from many different sources on one communication platform and store, process and pass it on in such a way that it can be easily and intuitively evaluated, modified and communicated further by employees. The good news is that these solutions exist.

Plant Process Management Solutions – PPM solutions for short

are multifunctional platforms that simplify the management of information in the operational process in this way.

The Path to Industry 5.0

Industry 4.0 refers to the smart connection of networks of machines and sensors. Intelligent and networked control rounds turn entire plants into smart factories. In the individual operating areas, relevant, real-time data is exchanged and processes are controlled automatically. This is a huge advance in automation; however, many digitization projects fail because they are approached from a purely technical perspective.[1] A meaningful digital solution for the process industry puts people at the center, offers an intuitive user experience and enables smooth communication. If it meets these criteria, it is highly likely to be accepted and actively used by employees. Digitization must not be an end in itself by management and/or IT. Only when digital tools meet concrete user needs, will people benefit from them and use them.

Often when deploying optimized networks, the users are not considered and adoption fails. Why?

1 The structure of in-process software tends to follow a machine logic that strives for completeness and buries the most important process-relevant information in a wealth of detail.

2 The usability of the software falls far short of what is now widely established in the market. Existing solutions determine what the workforce can expect.

3 Too little attention is paid to the introduction of a digital solution that has been developed for the industry.

The result? The new software flops even before it can reach its actual core target group: Namely, the people who are supposed to work with it every day.

1 See Meisterjahn, C., Krins, C., Koch, J.M. (2019). Befähigung und Begleitung unternehmensinterner Change Enabler als Wegbereiter und Triebfedern der Digitalisierung. In: Bosse, C., Zink, K. (eds) Arbeit 4.0 im Mittelstand. Springer Gabler, Berlin, Heidelberg, Germany.

Ten Tips for PPM Success

The benefits of Plant Process Management (PPM) software remain undisputed. Nevertheless, the road to successful implementation can be rocky. The following ten tips will help you get there faster.

#1
Bringing Together Information from Employees and Machines

PPM software is not a data silo. PPM serves as a knowledge database, data broker and communication hub that accumulates knowledge and facilitates access to it. A production manager or plant operator who has spent years or even decades in the plant has an incredible amount of knowledge and experience. Tactic knowledge has remained unused until now because the solutions used were designed to automate processes and network machines. They were not designed to pick up on the experience of employees, evaluate it intelligently and present it in a way that is easy to find. PPM, on the other hand, is perfectly suited for capturing organizational knowledge.

PPM seamlessly integrates the data volumes from the existing system landscape and eliminates superfluous process data, enabling intuitive use in everyday work.

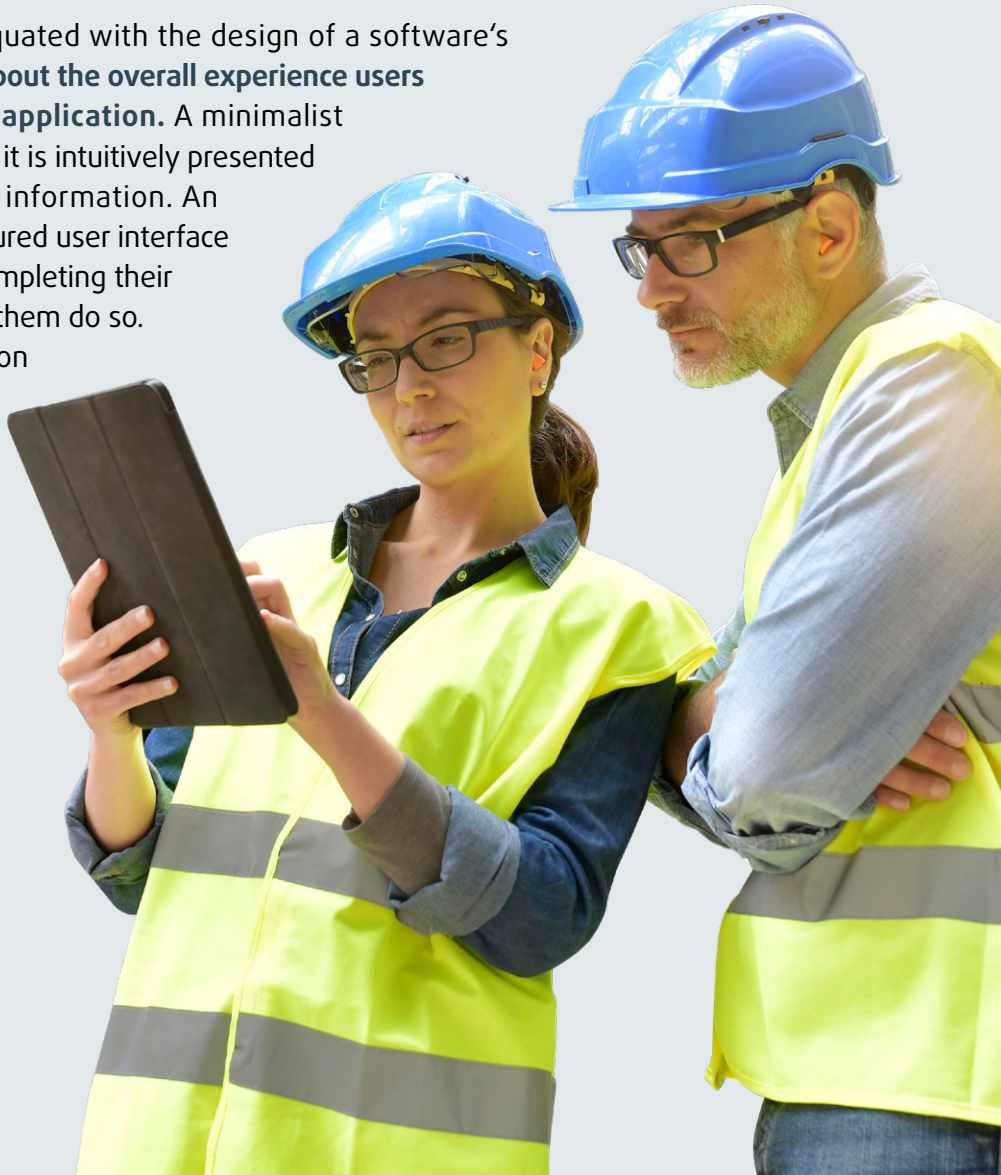
#2
Not One Configuration for All, but the Right One for All

The question of adaptability arises when, for example, implementation in an internationally operating company should consider both global production standards and local needs in the plants.

Plants in the process industry are complex systems with numerous components that interact and communicate with each other in an interlocked manner. New software must cope with this complexity at the back end and provide appropriate interfaces. On the front end, processes must be designed to be as simple as possible. This is because the usability of software depends to a large extent on its interface. **Complex processes should be translated into operating sequences that are as simple and intuitive as possible.**

#3
User Experience – More than just Beautiful Design

User experience (UX) is often equated with the design of a software's interface. **However, UX is more about the overall experience users have when interacting with an application.** A minimalist interface can lead to a good UX if it is intuitively presented and does not show superfluous information. An elaborately designed but unstructured user interface tends to discourage users from completing their tasks rather than actively helping them do so. Because the UX depends heavily on subjective learning and individual impressions, its design is not simple. The most important basis for this is direct feedback from the real world. In addition, understanding the work environment in which the tool is used must be considered.

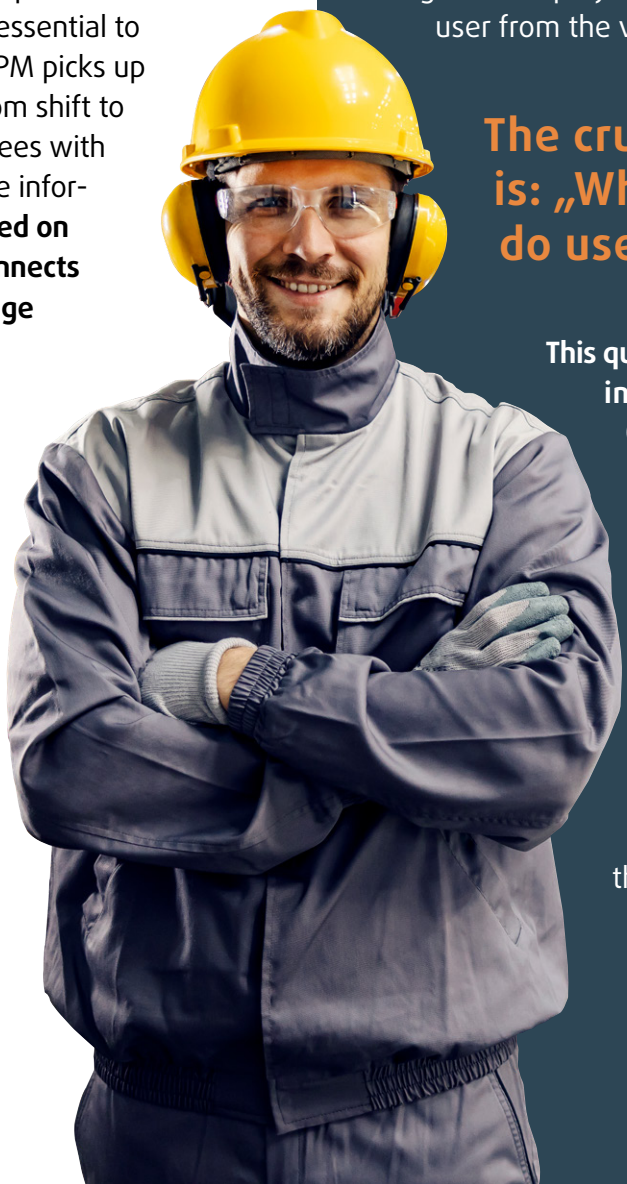


#4
User-Centric Digitization

Even in the age of Industry 4.0, production companies remain social systems in which human interactions are fundamental – mainly due to the knowledge and expertise of employees. Digitization is about more than networking devices, creating autonomous cyber-physical systems and automating production facilities. But for digitalization to be adopted, it's about integrating systems that help workers be smarter and better. This is essential to production operations. A PPM picks up knowledge, networks it from shift to shift, and provides employees with understandable, up-to-date information. **Industry 5.0 is based on adaptive solutions that connects people with their knowledge and skills and simplifies communication.**

#5
Understanding and Solving User Problems

Lack of user acceptance occurs primarily when new applications do not meet users' needs and desires. Crucial mistakes can happen during implementation: Weaknesses in preparation and evaluation, non-transparent and chaotic communication, or ignoring questions and concerns have a negative impact on user acceptance. Digitization projects must focus on the user from the very beginning.



The crucial question is: „What challenges do users face?"

This question must be answered in a prioritized manner. Only then does the development of the technology that helps solve the problem.

In the words of Apple inventor Steve Jobs: "You have to start with the customer experience and work your way backwards to the technology."

#6
Familiarize with New Things, Address Skepticism

One user-centric approach is to involve people proactively and early on in the project, preferably before the kick-off to the project. The requirements of the people on the plant floor must be reflected in the solution. The best way to convince employees is implementing features and functions needed for their everyday work. A long list of theoretical benefits of a solution does not come close to achieving the same effect. If, for example, employees express a desire for better shift documentation that simplifies the documentation of incidents, plant data or malfunctions, this feature should be prioritized.

Individuals resistance to change, as well as lack of communication, trust and motivation are reasons why new software is not adopted.

Resistance to something new is natural and can help with digitalization adoption.

Resistance to new ways is a natural reaction that can bring people's true wants and needs to light. If you take a closer look, you'll find that for some, cost reduction and efficiency are paramount; for others, time savings and a better user interface. In any case, all stakeholders should be able to derive concrete benefits from the introduction of new systems. In addition to communicating these benefits, test and pilot phases help to ensure that they are well received by users. An open error culture also helps to identify hurdles and problems, to drive development forward accordingly and to eliminate annoyances in dealing with the software.

#7
Actively Shaping Transformation

The introduction of a software solution is a change management project and is about acknowledging and overcoming possible fears. Shift workers might worry about whether the new software will be easy to use. Some may also fear being replaced in a more automated operation, causing doubt whether the investment in a digital solution is really paying off.

Concerns must be heard and addressed appropriately. Information that allays fears should be actively communicated. The plant operator, for example, has little to worry about losing his or her position.

More than half of the companies expect the number of employees in factories to increase despite digitization.[1] The manager should learn that

> "people-centric interventions show an increase in productivity and efficiency by 20–30 %"[2]

In addition, an intuitive interface helps avoid errors and simplifies learning the software.[3] Change management that accompanies implementation ensures that a transformation can be seen as an opportunity rather than a threat.

#8
The Software Provider as a Partner Right from the Start

The software provider for PPM should be involved as early as the feasibility analysis and the definition of requirements. With their expertise, they can guide the preparation and implementation and ensure that the interests of all stakeholders are taken into account – especially those of the end users.

In contrast, it is still common practice today to make such decisions top-down. All too often the top management determines what problems the new solution should solve, what features it should have, and how it should be rolled out. In more than

> 40 %
> of the companies surveyed, the subsequent users are not involved in the development or process design.[4]

The users of the software should have a highly weighted say in the process.

1 See Der Mensch wird in der digitalen Fabrik nicht überflüssig, Hyperlink, accessed 10.12.2022.

2 See UX als Schlüssel zum Unternehmenserfolg, Hyperlink, accessed 10.12.2022.

3 See Einheitlich intuitiv – Erfolgsfaktoren fürs HMI, Hyperlink, accessed am 10.12.2022.

4 See The business value of design, Hyperlink, accessed am 10.12.2022.

#9
From the Shopfloor to the CEO

To obtain the most detailed requirements possible, representatives of all stakeholders should be consulted. Whether shift workers, plant assistants, production or operations managers – their opinions form the basis for configuring the solution. Workshops provide an optimal basis for finding the needs of all stakeholders. Demo installations, as well as pilot and test phases, are opportunities to collect and evaluate the employees' requirements.

It is crucial for the success of the project to involve employees at all hierarchical levels in the selection and evaluation process.

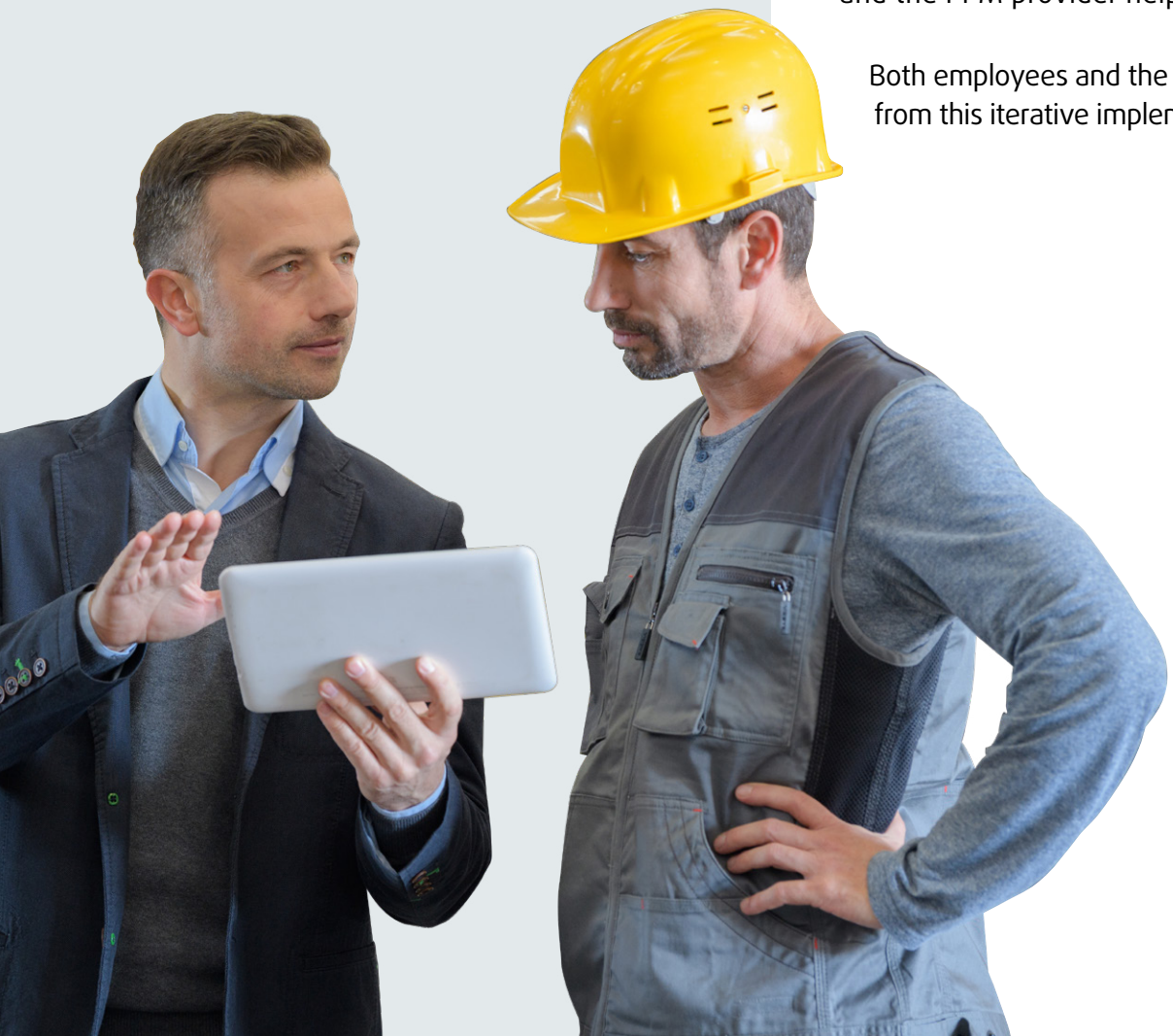
This bottom-up approach in the preparation phase leads to higher acceptance because the users help to define the end product. The application speaks the language of the operations, the terminology of the users, and processes are supported by the digital solution instead of slowing them down.

#10
Implementation as a Lifecycle Service

The implementation does not end with the release of the new application, rather it continues as part of the support phase. Employees are familiarized with the new solution and trained in the use of the software. In the process, key users in the companies can be designated as possible contact persons and training managers. These power users support colleagues in all practical matters. As drivers and ambassadors, they promote the new solution and motivate through their own experience. They can assist with training and education, collaborate on internal how-to documents and are available for questions and suggestions for improvement from the workforce:

- While the software is being used on a day-to-day basis, administrators and users should be able to contact the software provider at any time with questions and requests.
- Only if there is ongoing user feedback about the software, can its functionality be further developed in line with practical requirements.
- Regular status updates between operations and the PPM provider help in this process.

Both employees and the company benefit from this iterative implementation process.



Conclusion

A successful software project focuses on the subsequent users. One of the most important guidelines here:

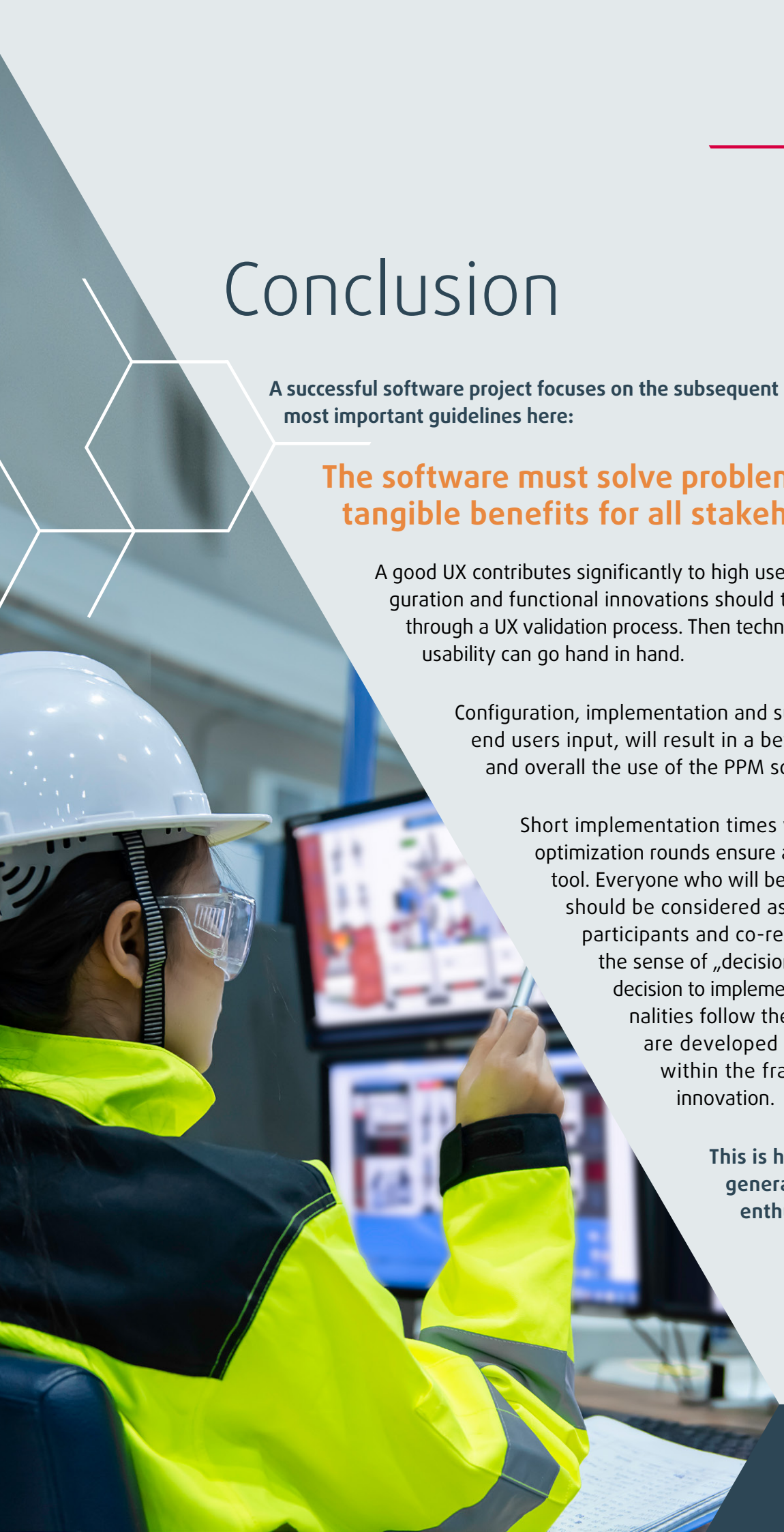
The software must solve problems and have tangible benefits for all stakeholders.

A good UX contributes significantly to high user acceptance. Configuration and functional innovations should therefore always go through a UX validation process. Then technical functionality and usability can go hand in hand.

Configuration, implementation and support that has the end users input, will result in a better user acceptance and overall the use of the PPM solution.

Short implementation times with feedback and optimization rounds ensure a precisely configured tool. Everyone who will be using the application should be considered as co-designers, co-participants and co-responsible parties in the sense of „decision to the edge“ (from decision to implementation). New functionalities follow the needs of users and are developed together with them within the framework of open innovation.

This is how user adoption generates genuine user enthusiasm.



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