

Boosting Production Efficiency with Knowledge Management

Practical Guide

For Production Managers,
or: “The Road to El Dorado”

Best practices from our daily work with manufacturers



Yet Another Knowledge Management System!?

The El Dorado of Efficiency: Opportunities through Knowledge Management

Why you should embark on the knowledge management adventure and read this white paper

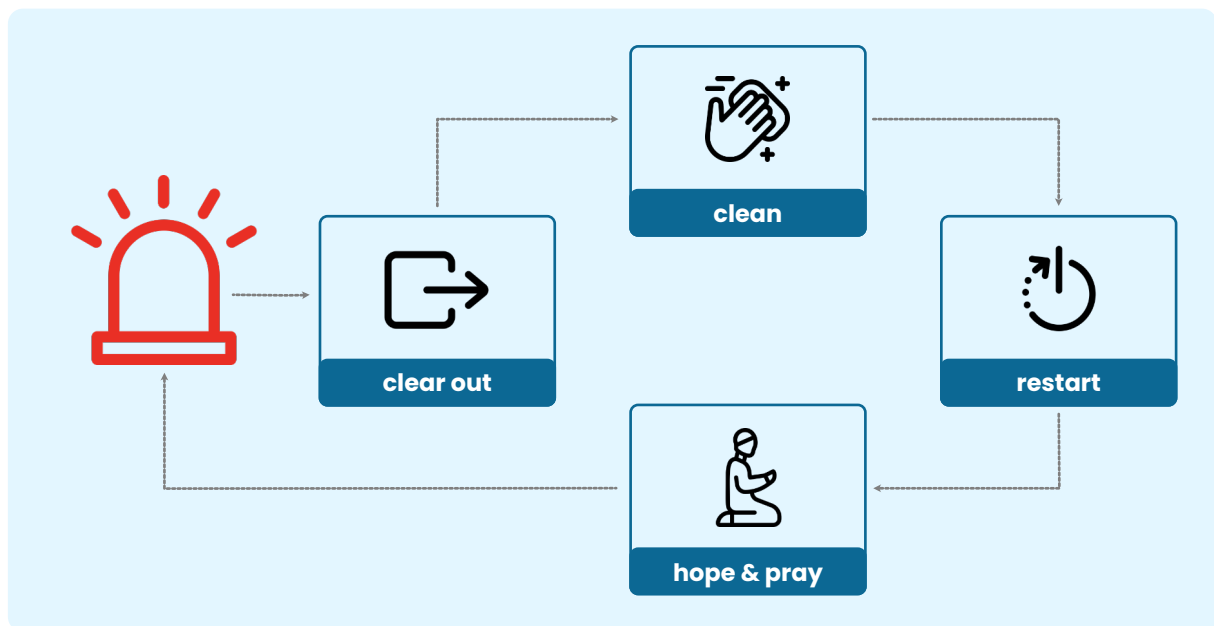


Figure 1: Problem-solving in production by wishful thinking

Does the approach shown in Figure 1 keep frustrating you in day-to-day production? Does your maintenance team often come back from the machines exasperated because they were called out for trivial things like a dirty photoelectric sensor, while all the “firefighting” leaves them hardly any time for their actual work? Or do you not even need to walk out to the machines, because the OEE¹ figures already tell you from your office who’s on shift today?

Stories like these are everyday reality for many production and maintenance managers, but not for all of them! Numerous companies have gotten these problems under control with better knowledge management, including Bayer AG (tablet packaging), Rotkäppchen-Mumm Sektkellereien GmbH (bottling of wine-based beverages), Knauf Bauprodukte GmbH & Co. KG (building materials packaging), and many others.

You might be asking yourself:

Good for them, but what does that have to do with me?

¹ Overall Equipment Effectiveness, see: https://en.wikipedia.org/wiki/Overall_equipment_effectiveness

Through more than 4,000 hours on the production floor, six years of research with psychology experts, and ten years of hands-on experience at Fraunhofer and with our customers, we have learned that there are repeatable patterns that apply across industries. But as with every real adventure, most of them (unfortunately, especially the obvious ones) lead to failure. By now, we can predict fairly reliably when the introduction of a knowledge management system (KMS) is going to fail. Conversely, there are also less obvious paths that are very likely to lead to a working KMS: the El Dorado of efficiency!

Does “El Dorado” sound a bit exaggerated here? Let’s run some quick numbers. People at production machines are not a problem in and of themselves, even if many still believe in the legendary lights-out factory. With the best people, machines often run at more than 90% OEE. In practice, however, we see OEE values of around 60% to 70% at most plants². That’s because “practice” often means skilled labor shortages, high turnover while experienced staff are leaving, insufficient exchange between shifts and sites, and so on. So 20% to 30% of OEE potential depends on the knowledge and skills of the workforce. That truly is the El Dorado of efficiency! Legend has it that El Dorado holds far more gold than any brave adventurer could ever carry home. Production efficiency is no different. But do the math on what it would mean if you could tap just one tenth of that potential: a 2% to 3% increase in OEE! With this white paper, we would like to be your guides on the adventure to get there.

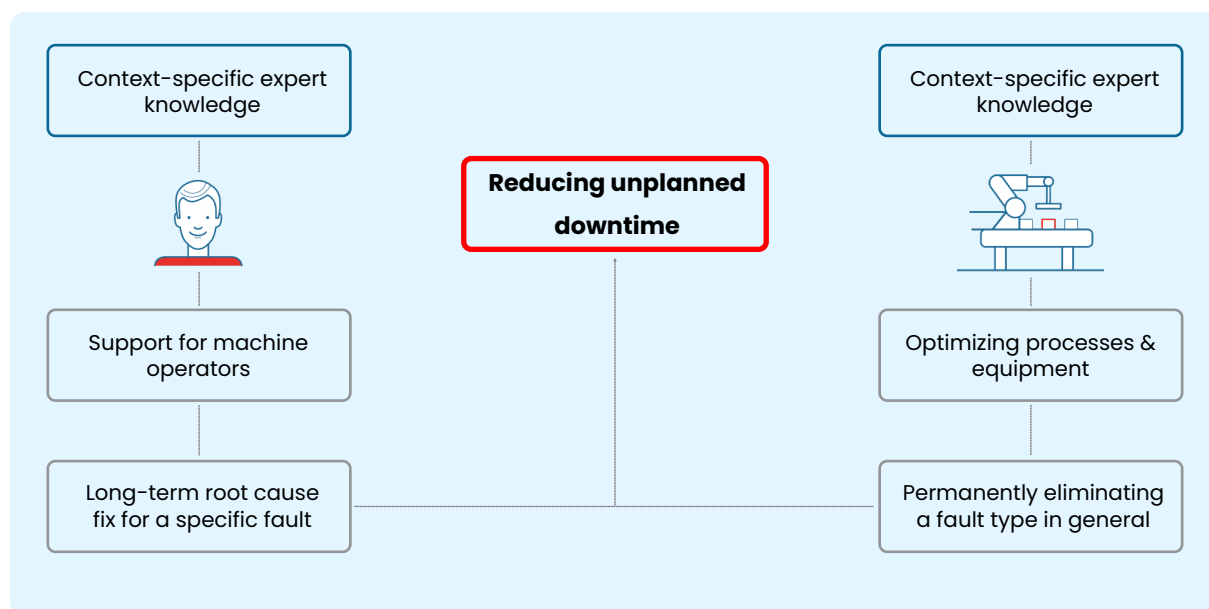


Figure 2: Reducing unplanned production faults with a KMS

Figure 2 illustrates how a KMS leads to greater production efficiency. On the one hand, it’s about providing the right knowledge in the right situation.

²<https://nbn-resolving.org/urn:nbn:de:bsz:14-qucosa2-76336>

On the other hand, it's just as important to pool the knowledge of individuals and gain a statistical overall picture of the true causes of faults. Without that, a frequent machine error message might lead you and your maintenance team to optimize the machine unnecessarily, when all that was missing was statistically analyzable feedback from operators. That feedback might have identified packaging material quality as the most common cause, and better incoming inspections as the effective solution.

When both work together, production faults, the main cause of the efficiency losses described above, can be reduced effectively.

Just a Legend? Why a Knowledge Management System can Work

You might be thinking:

Great, another database nobody cares about. This is all old news and has been around for 100 years! An "El Dorado of efficiency" through knowledge management in production? Those are both just legends: one doesn't exist, and the other never works anyway.

You have probably come to this conclusion for good reason, perhaps because you or your colleagues have introduced a KMS before (or had to; see the expedition log below).

Log of an Abandoned Expedition

"We wanted to set out on an exciting expedition: introducing a knowledge management system in our production. First, we built a digital knowledge database. Only our experts, who have the relevant knowledge, could do that. Getting them to document was exhausting, because it's precisely the experienced people who tend to be the busiest and, at first, benefit the least personally. The content was only used intensively at the beginning, too. As soon as the pressure eased a little, almost nothing was written down anymore. Hardly anyone besides me (the project lead) was really bothered, because by then people rarely looked at the system anyway. It still exists somewhere and may be used for the bare essentials, but there's no real momentum left. The grand goal was never reached, and the expedition team gave up, exhausted."

Now imagine a platform where knowledge can be documented. On top of that:

- managers cannot apply any pressure,
- no bonuses are paid,
- there is no beginner-friendly editor for documenting knowledge,
- and the documentation isn't written for colleagues, but for complete strangers

That could never work, right?! Oh yes, it can! It's called Wikipedia, and it ranks among the top 10 most visited websites in the world. Just an outlier? No. Forums such as Stack Overflow, the go-to knowledge source for software development, YouTube, and many other social platforms grew to their current size on the same principle. So it is possible to establish a KMS that people use gladly and voluntarily, and that therefore builds valuable momentum of its own. But it's by no means easy, especially not in a production environment. At several companies, we met dedicated employees who have run successful KMSs for years, and we were able to learn from their experience. Today, these people are legends on their teams.

Preparing the Expedition: Success Factors for Knowledge Management

All or Nothing: Why Passive Users Matter

What is the second-largest collaborative online encyclopedia after Wikipedia?

With traffic several orders of magnitude lower, all other encyclopedias are effectively nonexistent. This tendency for a single KMS to dominate each domain (stackoverflow.com for software development, allrecipes.com for recipes, and so on) can be seen in many areas, though rarely as pronounced as with Wikipedia.

You might be thinking:

OK, so I need to make sure all employees share their knowledge in the KMS so it reaches that lonely top spot? But that's exactly what I've been trying to do! And looking across my workforce, not even 30% will actively document, no matter how motivated they are...

Not quite. Let's stay with the gold of El Dorado. Why would anyone endure untold hardship to obtain gold they could do very little with on their own? Because everyone else wants that gold! It's the same with experienced employees: they don't document their knowledge for themselves, but for their colleagues. The key motivators here are:

- **Creating value:** "I'm contributing to something I consider worthwhile, for example fault-free production that gives me more time for planned maintenance." and
- **Self-efficacy:** "My documented knowledge reaches people and helps them. It doesn't just gather dust in a drawer."

Monetary incentives are usually not advisable: they rarely work on the right people and are quickly perceived as an attempt at manipulation, which most people react to with rejection.

Wikipedia is an impressive demonstration of how powerful this principle can be. Ask the people around you whether they use this encyclopedia regularly, and how many articles they have written. The bulk of its more than 7 million English-language articles comes from a relatively small core of editors. Since 2006, this phenomenon has been known as the "90-9-1 rule," or the "Nielsen rule" after Jakob Nielsen, who popularized it. It states that only one percent of users in successful online communities actively create content (see Figure 3). Nine percent are reactive, commenting on, editing, and sharing content, while 90 percent remain entirely passive and simply consume it.

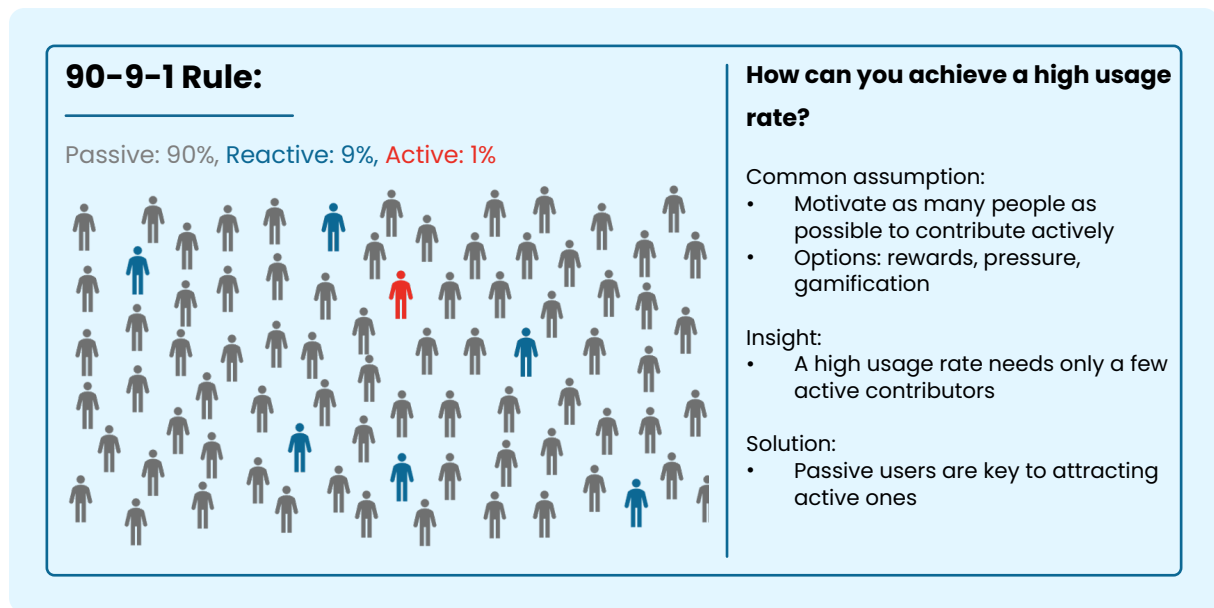


Figure 3: The 90-9-1 rule

In our experience, the numbers in a production environment differ from those in online communities: about five to ten percent of people are active. The basic ratio still holds. However, the key to success lies not in the valuable one (or five) percent who create content, but in the **passive users**.

Treasure Island: The Problems with Keyword Search

In the beginning, Wikipedia's success seemed unimaginable to most people. From a rational point of view, the initiative was doomed to fail. Yet its founders reached their goal. Today, Wikipedia is one of the first places people turn to with all kinds of questions. What motivated people around the world to create more than 65 million articles, especially when documentation in manufacturing plants is so challenging? On closer inspection, the latter is simply the end result of a downward spiral.

People typically come to Wikipedia with a specific search term they want to learn more about, and they usually find it right away. This is exactly where the problem lies, and the big difference from production. The best database in the world is completely useless if you don't know the right keyword in the situation at hand.

Problem: Keyword Search

- Synonyms
- Language barriers
- Spelling
- Not knowing the right term

In production, information is often needed in complex fault situations, and inexperienced staff in particular often lack the right search terms. One reason is the wide range of synonyms (examples: belt, band, transport system, conveyor, carrier). Language or spelling difficulties can also get in the way. Often, though, people simply don't know what a component is called. On top of that come further elements such as the perceived fault, the symptom, the root cause, and the

different locations within a production line where each of these occurs.

Example: while a carton is being sealed, the machine reports the error “overload.” The visible symptom is a deformed carton. The actual cause, however, is a clogged glue nozzle and a carton flap that springs open in the upstream case erector.

Inexperienced staff look for the visible symptoms and error messages, when what they actually need is information about the root cause. That relationship is hard to document in any practical way, because similar symptoms usually have many different causes. Only experienced employees have developed their own complex methods over the years that lead fairly directly to the cause that applies in each case.

And then there is the guiding principle:

Good documentation contains as many photos and videos as possible!

We could not agree more! But keeping it all organized and easy to navigate takes a lot of upkeep through tagging and filing. Most people know the problem from their own personal photo and video library.

So many KMSs fail because of the search problem and end up like the fabled treasure island:

This island and all its treasures can only be found by those who already know where it lies.

The person who documented their knowledge is the best at finding it again and is convinced their documentation works (after all, they came up with the system). Yet that person needs it least of all. The colleagues who do need it don't have the system in their heads and would have to ask where the right entry is (“on page 67” or “under the keyword ‘wear’”). That defeats the whole purpose of the KMS, because they might as well just ask for the solution directly.

Charting the Course: What Makes a KMS Successful

So what actually sets a successful KMS apart?

First of all: a KMS does not work through coercion. The words “voluntary” and “self-motivation” may seem out of place in the demanding reality of production, but they are fundamental.

To work together successfully in a company, binding processes have to be developed, followed, and monitored. That has little to do with being voluntary; it is a basic requirement.

This principle does not apply to documenting experiential knowledge. Whether, how, and to what extent employees document what they know can only be standardized to a very limited degree. That also makes monitoring impractical. Without self-motivation on the part of employees, no KMS can be introduced successfully.

As a result, you have to make sure the KMS is easy to use and promises high personal value. Ease of use is influenced by a range of factors. Basic accessibility and availability in the right situation play a decisive role here, and they depend heavily on requirements that can seem minor but matter a great deal. The level of detail involved becomes clear from a few questions about the devices (tablets, for example). Are the devices...

1. ... always kept in one place, so nobody has to go looking for them?
2. ... available without detours or extra effort?
3. ... usable while wearing personal protective equipment (gloves, for example)?
4. ... always charged and ready to use?
5. ... equipped with the necessary hardware performance?

This same level of detail applies to the software and its user interface, and to the general method for documenting knowledge. People know a simple, uncomplicated way of capturing photos and videos from their private lives, which makes it a basic expectation for users in production.

The biggest challenge, however, is meeting the personal standard people know from everyday life. Employees are used to powerful devices and intuitive software. They unconsciously compare that standard with the hardware and software used at work. Meeting those expectations as closely as possible is therefore essential to achieve any real willingness among interested employees.

What makes a KMS successful?

Documenting knowledge cannot be forced. What matters is creating self-motivation through:

- **maximum personal effectiveness**
- **ease of use**
- **personal value**

Beyond the technical and organizational basics, one factor is decisive: self-efficacy. Even the best software will fail if employees feel that documentation they worked hard on is useless. It is therefore essential to make sure documented knowledge can be found and used as easily as possible. Only then will the product actually be used in daily work, take effect, and give colleagues the sense that it is worthwhile.

These fundamentals apply no matter which product you choose. Microsoft Office (Excel, OneNote, Word) is widespread, familiar, and licensed at many companies, which makes introducing it as a KMS easier. What is problematic is the high degree of

freedom in how documentation is done, the effort of maintaining it (inserting photos and videos, for example), and searching within large documents.

Dedicated KMS tools such as Confluence (Atlassian Corp.), Empolis (Empolis Solutions GmbH), and POKA (Poka Inc.) offer intuitive interfaces and help structure knowledge. The difficulties are keyword-based search, the cost, and training production staff on new software. Traditional methods such as one-point lessons (a quick overview for operating a machine) or posted instructions are easy to implement, but rarely interactive.

In our search, we did not find a single tool that addresses what we consider the most important points, the ones we have described in this chapter. That is why we developed MADDOX ourselves: the software and the rollout process that goes with it. Our research findings and many years of experience analyzing production efficiency went into it. MADDOX has already allowed us to guide many companies on their expedition and finally put their treasure of experiential knowledge to use.

If you would like to see for yourself how exactly we did that, feel free to get in touch. We would be glad to show you MADDOX and talk about the many specific challenges of daily production work.

If you are still looking for a suitable KMS, take a look at the products available (MADDOX among them) and find the one that fits your company best.

[Watch the short MADDOX video](#)



Bigger losses at the packaging machine again compared to last week...

[I would like to book a meeting](#)



CEO / CTO
Consultation
1 hr

What to look out for is what the previous sections were about. As you go on to implement, take advantage of the best practices from our daily work with manufacturers. The tips on the following pages apply no matter which KMS you choose.

Into the Adventure: The First Stages of a KMS Rollout

Introducing a KMS is by no means low-hanging fruit; it comes with plenty of obstacles (see Figure 4). Without clear planning and attention to the possible challenges, the expedition is bound to fail. In the following, we describe the individual stages (1 to 3) along with the challenges they involve and the approaches we have found that work.

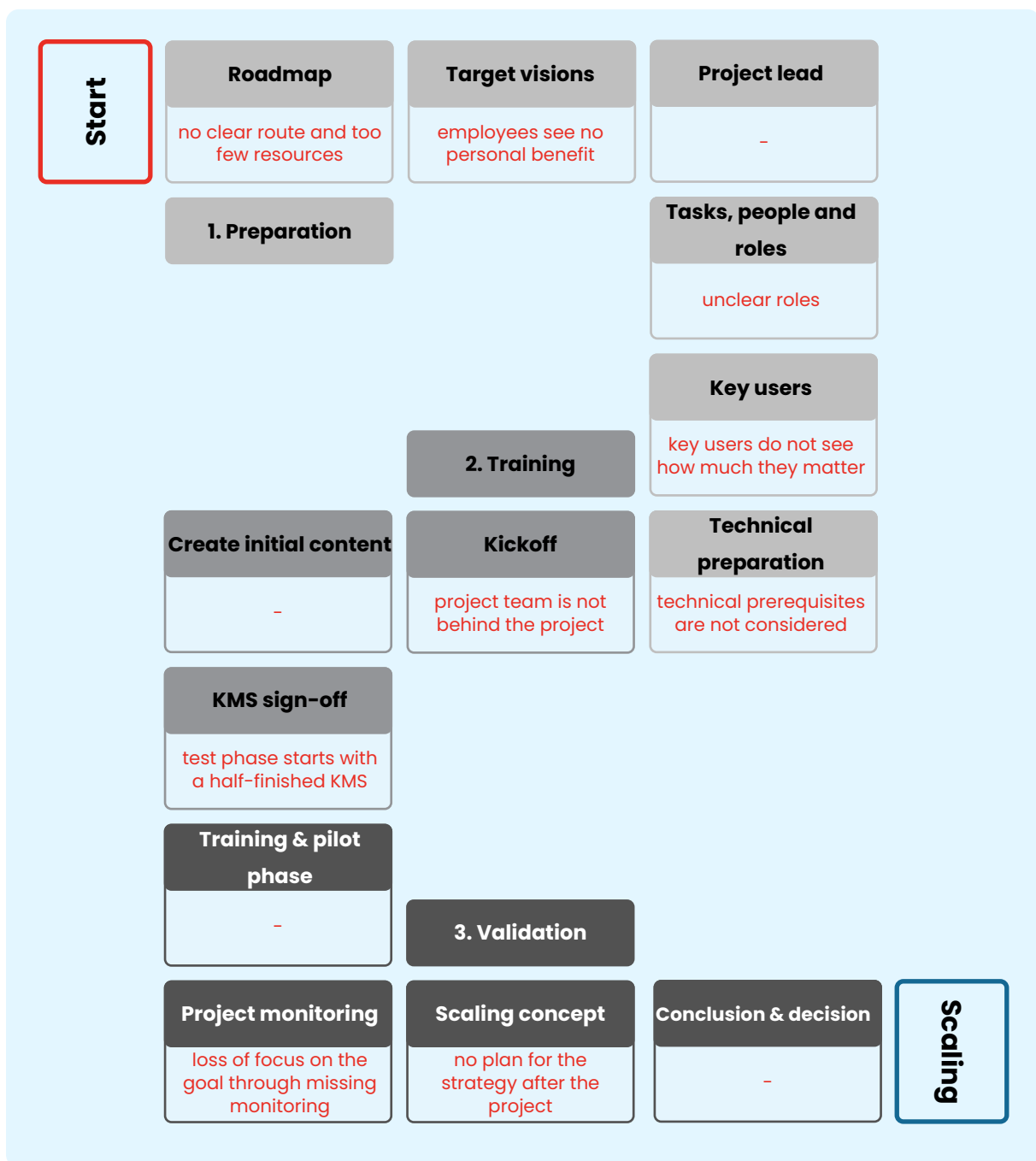


Figure 4: The road to a successful KMS

Stage 1: Preparation

Traveling Light: Resources, Scheduling and Roadmap

Before the treasure can be brought home, it has to be found. That means investing as few resources as possible, but as many as necessary. Nobody wants to starve along the way, or wear themselves out before they even reach the goal. How much food do we need? What equipment is required? How big does the crew have to be?

The goal of the pilot project is to find out where the treasure lies with a minimum of time and resources, not to haul it home. Heading into the jungle without a plan and with half a heart can only end in frustration and failure.

Introducing a KMS breaks down into three stages:

1. Preparation
2. Training
3. Validation

The overarching goal is a sound basis for deciding whether the chosen KMS delivers enough value. From there, you discuss what kind of validation, and at what scope, would be enough to provide that basis. At this point it is not yet about realizing the value at scale, only about proving that and how it is possible. What does it take to answer that question with confidence? The preparation phase is where you plan the validation measures needed for it. Only then can you prepare, plan and create the technical and organizational prerequisites you actually need.

Strict minimalism matters here: what is absolutely necessary to provide that basis for a decision? What is nice-to-have in the pilot phase, and what is only needed later when scaling up? A project kept as small as possible needs far fewer resources, is easier to steer, and has a higher chance of success. The results still have to be representative of everyday production, of course, otherwise they cannot serve as a basis for a decision.

Piloting a KMS outside of production therefore rarely makes sense, just as full integration right away is too much effort measured against the project goal. Connecting external systems and databases is one example. When you later scale up, these are certainly essential. Within the pilot project, though, the effort may not be worth the benefit.

Living with the Treasure: Creating Personal Target Visions

Introducing a KMS is meant to make daily work easier for people in production. Until you get there, though, the road is often demanding. To motivate the workforce, you need a clear target vision, so everyone agrees the effort is worth it.

It is important that this vision brings direct, personal relief. Abstract, higher-level goals such as greater production efficiency rarely resonate.

Even though the good of the company matters to every employee, personal goals often come first, even if only subconsciously. These might be:

- a sense of control by avoiding unplanned downtime
- the feeling of being effective through a successful, productive working day and the recognition that comes with it
- an even spread of mental and physical strain

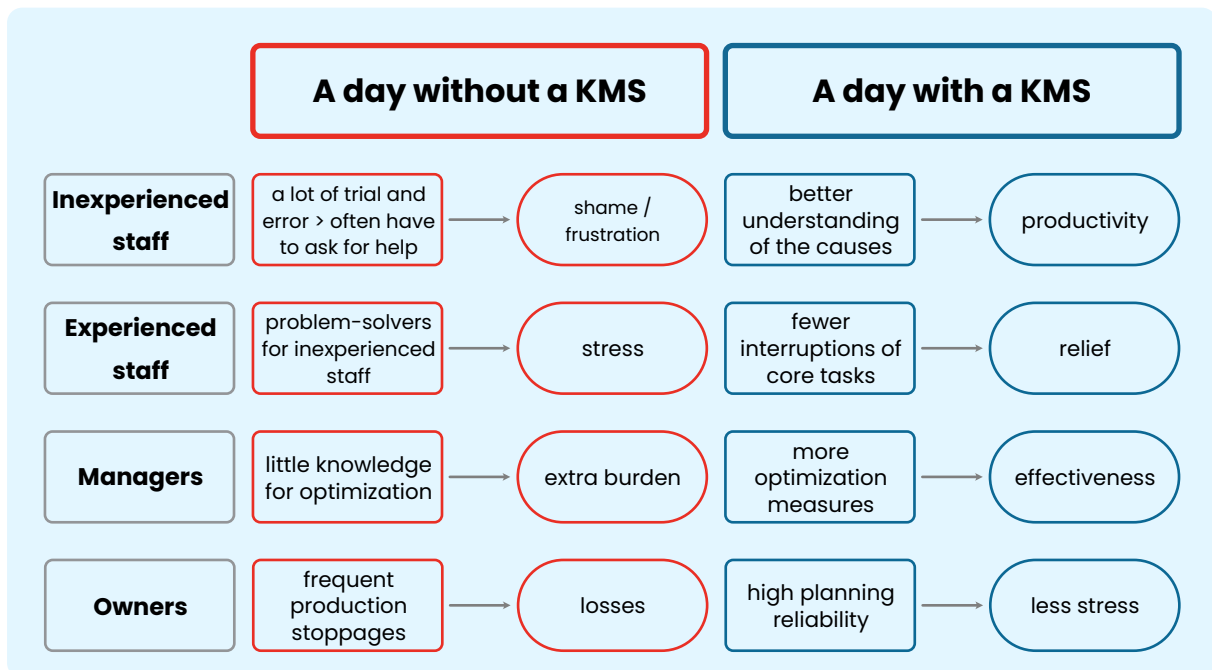


Figure 5: Everyday work without and with a KMS, with examples to support facilitation

A “relaxed working day” is not automatically an unproductive one. It means a minimum of stressful situations that are hard to control. That applies equally to people in production and maintenance and to managers.

That is why we recommend describing everyday work without and with a KMS as concretely as possible for each user group (see Figure 5 for an example). These target visions should be developed together in a workshop, with representatives of the different groups. This builds mutual understanding and strengthens the shared goal.

Leading the Expedition: The Role and Tasks of the Project Lead

Introducing a KMS absolutely requires a project lead. The person given this job should have experience in project and change management, as much authority as possible, and sufficient resources. A number of tasks come with the role (see Figure 6).

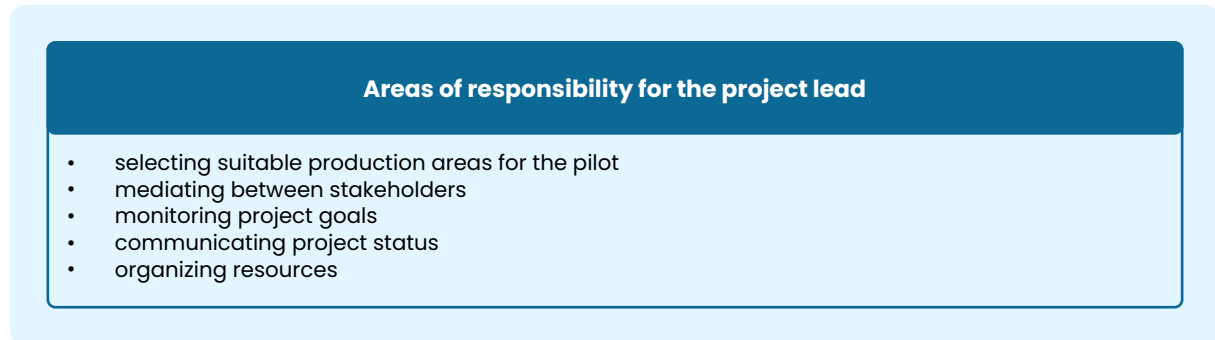


Figure 6: Tasks of the project lead

A Motivated Crew: Tasks, People and Roles

The idea of minimalism runs not only through project planning, but also through how the project team is put together. There are two basic groups:

1. the project team, with clear tasks
2. the stakeholders, with their functions

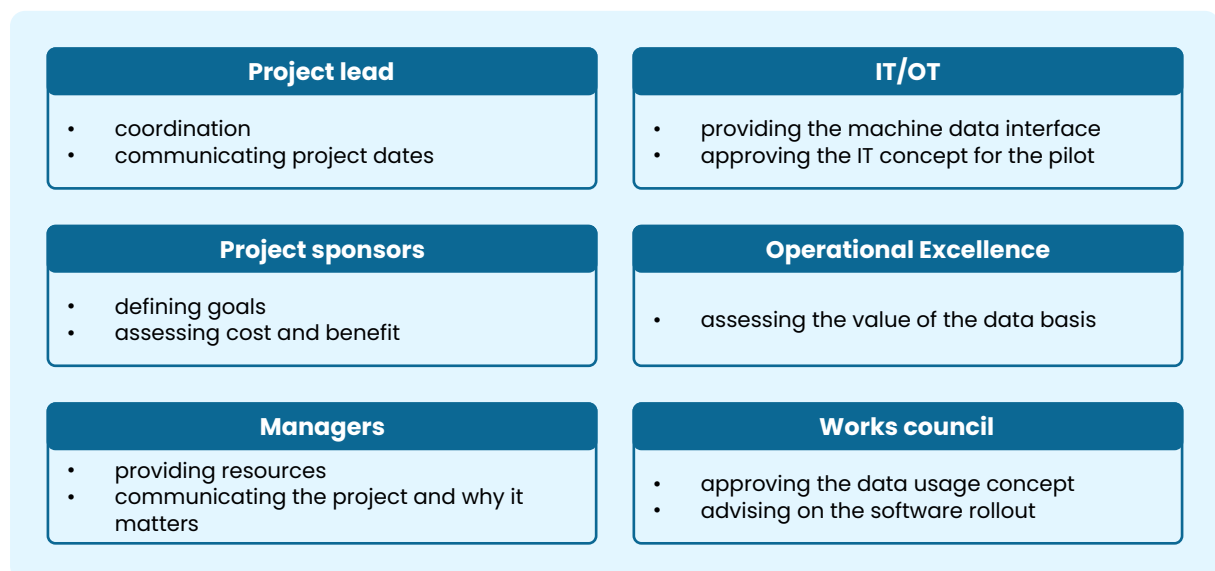


Figure 7: Roles in the project with tasks and characteristics

The project team (see Figure 7) consists of the people actively involved with specific tasks. They can take on several roles and are selected according to their professional and personal fit as well as their motivation. At the start of the project, these tasks and the personal and professional requirements have to be described in detail.

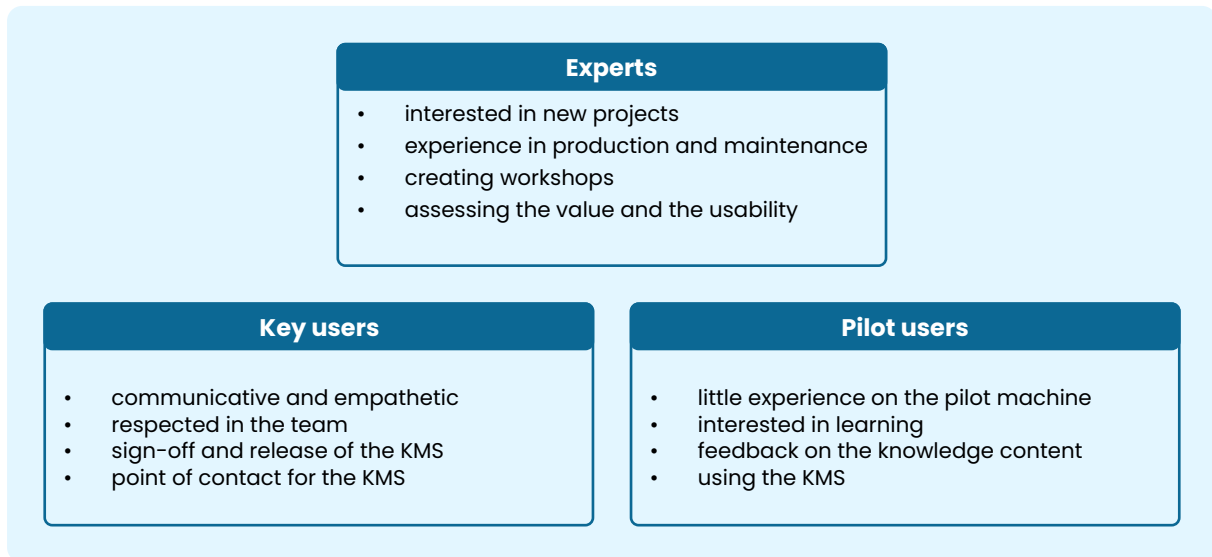


Figure 8: Stakeholders and their tasks

The stakeholders hold certain functions in the company (see Figure 8) and are important in preparing and carrying out the project. As a rule, they cannot be chosen freely.

The Key People: Why Key Users Matter So Much

It is easy to forget that direct contact between the project lead and the pilot users is often limited in daily life. That makes it very hard for the project lead to spot everyday difficulties quickly and respond appropriately. Most problems may look mundane and unimportant at first glance, but they often have a decisive effect on acceptance in the pilot users' daily work. Examples include:

- the devices are not available or not charged
- logging in takes too much effort
- using the KMS with protective equipment is difficult
- logins and passwords are forgotten
- employees are left out of training sessions
- technical problems make use harder

The gap between the project lead and the pilot users is closed by the key users, who are either

part of the pilot users themselves or work closely with them every day. Key users know how much small stumbling blocks in daily work matter, take responsibility for them, and make sure they get fixed.

Spotting and Defusing Traps: Introducing the Key Users

Interestingly, key users themselves are often unaware at first of how important their position is. Following the motto “what could possibly go wrong?”, they end up doing the job half-heartedly, which ultimately leads to failure.

Introducing the key users and stating clearly what is expected of them are therefore central parts of project preparation. In a workshop for key users, the individual steps for using the KMS and the processes around them are worked out in detail. That exercise alone often produces a big “aha” moment. After that, strategies for possible problems are developed together with the key users.

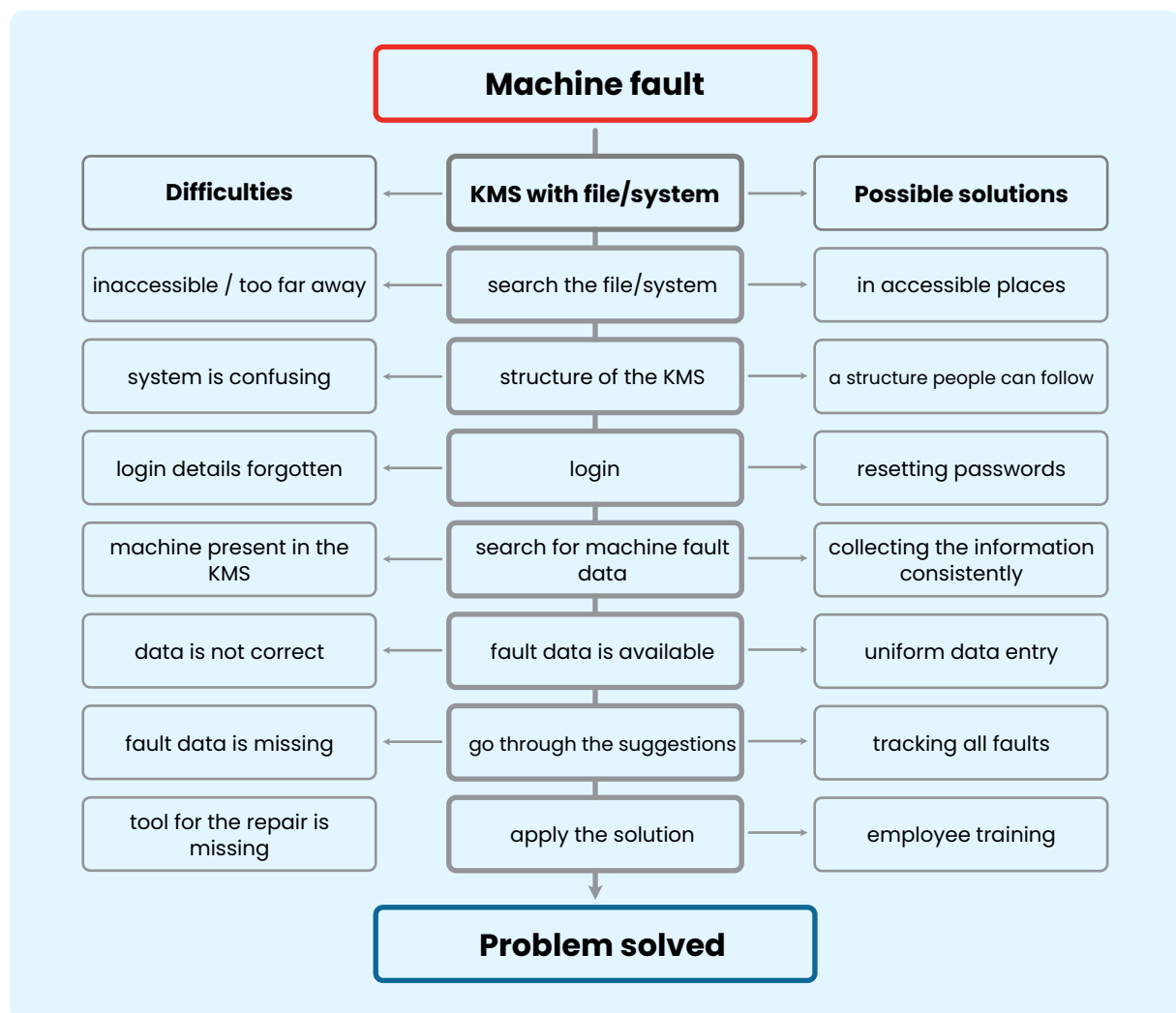


Figure 9: Difficulties and possible solutions in the project, using a machine fault as an example

Importantly, the key users are not the ones ultimately responsible for carrying these fixes out (charging the tablets, training employees, and so on). Their job is to inform the project lead immediately and to look for solutions together, or to delegate the tasks.

Project leads are often unaware of these many small details, or of how much they matter. We have therefore illustrated difficulties and possible solutions in knowledge management in Figure 9, using a machine fault as an example. The figure shows one possible outcome, which should not be prescribed but worked out together in a workshop.

Getting the Gear Ready: Technical Preparation

Before an expedition starts, the right equipment has to be chosen and prepared carefully. Mistakes at this stage will hurt the outcome later on.

Technical preparation for a KMS pilot project centers on several key aspects. Installing and providing the KMS happens in close cooperation with the system provider and with your own stakeholders, such as IT security and IT administration. A time-limited setup is developed specifically for the pilot. Despite its pilot character, high technical availability matters a great deal. Otherwise the pilot users in production get the impression that the KMS is unreliable and unstable, and not at all suited to be an everyday tool. Expectations of software stability have risen for most people in recent years, as digital tools have become part of private life. Even minor glitches in a pilot project can therefore hurt acceptance far more than expected.

Checklist

☐ testing the devices (tablets, for example)

☐ WLAN availability

☐ opening the firewall

☐ suitability of the production environment (protection from dust, water or heat)

☐ theft protection

☐ option for remote maintenance by the provider or system administrator

Figure 10: Checklist for technical preparation

Common pitfalls at the kickoff

- kickoff too late → different levels of information
- kickoff too early → too long until the start
- vacations not taken into account → several dates needed

Ready to Set Off: The Kickoff

Planning the project kickoff involves a few considerations that make the meeting effective and efficient. A carefully planned kickoff also enables a successful start and encourages collaboration across the whole project team. It should not be scheduled too late, so that everyone has the same information. At the same time, it should not take place too early, to avoid stretching the time until the actual departure.

The challenge may be getting everyone involved around one table at the same time, especially because of shift work, vacations and other scheduling constraints. It may be necessary to set up several meetings in quick succession. Allow enough time for the kickoff itself, which works best as a workshop (we recommend about 2 hours). Figure 11 summarizes helpful steps for you.

Do you need support? Feel free to contact us for further materials and digital whiteboard templates.

[I need support](#)

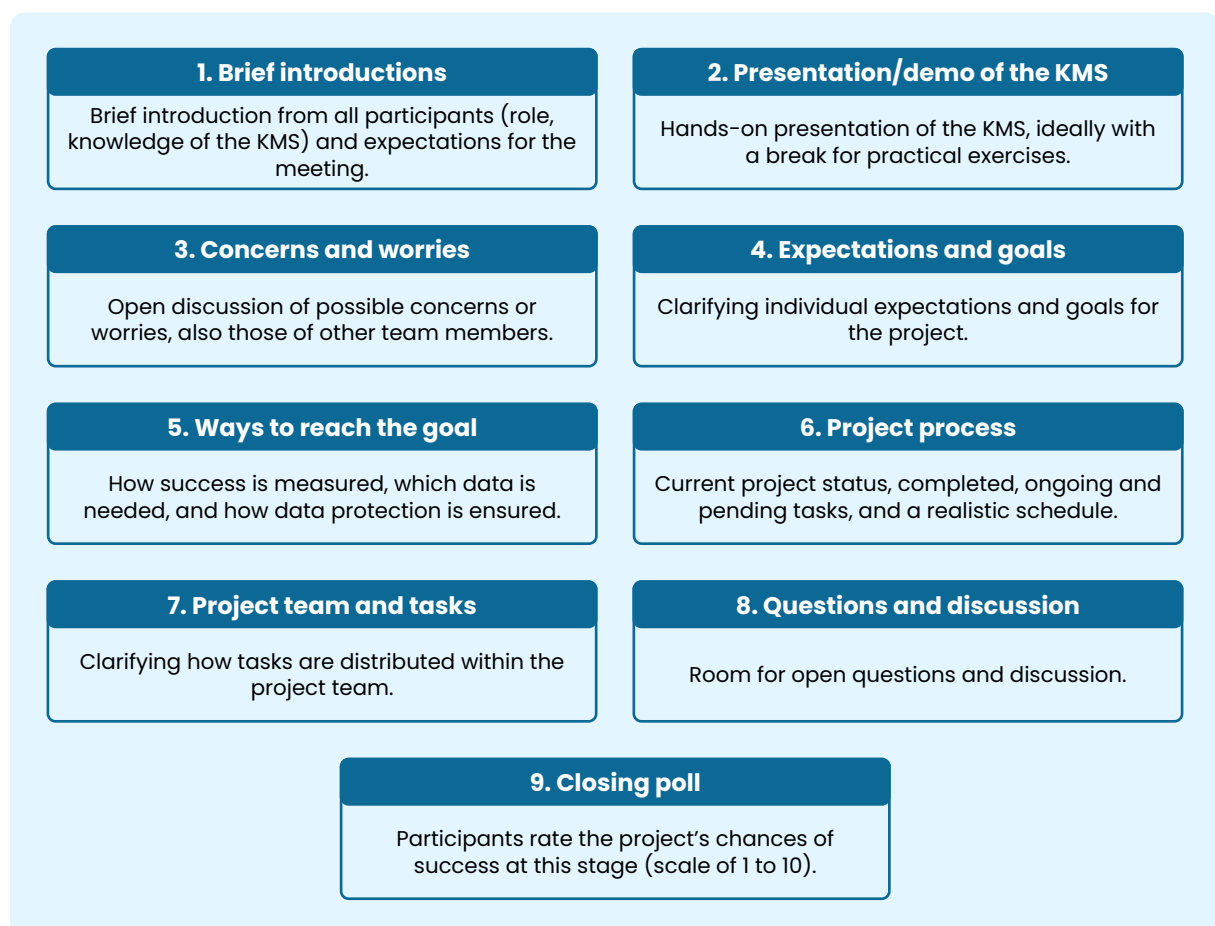


Figure 11: Kickoff agenda

Stage 2: Training

The Vanguard: Creating the Initial Content

A KMS is only as good as its content. At the start, that is a classic chicken-and-egg problem. An initial knowledge base is therefore essential for testing how the system works and whether people accept it. The risk here is losing the pilot users' enthusiasm if too much effort is required for too little benefit.

We therefore recommend limiting the effort to the absolute minimum, so that a noticeable benefit appears quickly. One way to do this: in line with the project goal, you need a sound basis for a decision within the short time frame of the pilot project (see Stage 3). That rules out rare but important faults, which could have high value but occur less often. Instead, focus on frequent faults, the ones that make new staff uncertain and tie up experienced employees who have to spend time helping out. For the proof of concept you are after, that is usually entirely sufficient.

To define the minimum scope of the knowledge base, you can estimate how many of the top faults a new team member has to be able to fix independently, and how many recurring causes typically lie behind those faults. A simple calculation might be: with the top 7 faults and 5 possible causes each, inexperienced employees can help themselves in 80% of the incidents of a normal production day. In that case the knowledge base holds 35 entries.

Tips for creating content

- focus on frequently occurring faults
- bootcamp concept
- identify the top faults
- shared understanding of root cause, test method and solution

Regardless of the method or software used, structuring knowledge is often highly individual. Inadequate documentation is frequently only discovered in everyday use. Writing these entries on your own can be tedious and frustrating. That is why we recommend the bootcamp concept: in two four-hour workshops, the 35 entries are developed together and in individual work, with as few participants as possible (ideally two). This creates strong focus and clear planning, and gets this demanding task done quickly.

A particular challenge is building a shared understanding of fault reports, causes, consequences, diagnoses, and solution strategies. We recommend starting with a non-technical example, such as illnesses (see Figure 12): give the experts the error messages (red) and the categories (possible cause, method & result, solution), then have them assign the unsorted terms (gray) correctly. This creates a shared understanding of the structure.

After that, real technical entries can be developed together by answering questions about possible root causes, test methods, responsibilities, solution concepts, and the use of photos and videos.

One Last Check before the Adventure: The Sign-Off

Full of excitement and impatience, you finally want to get going. But starting on the 80-20 rule³ often means missing important details. That can lead to frustrating delays afterwards, to people turning back, or in the worst case to the expedition failing. However much you look forward to the adventure, one last check before the start is essential.

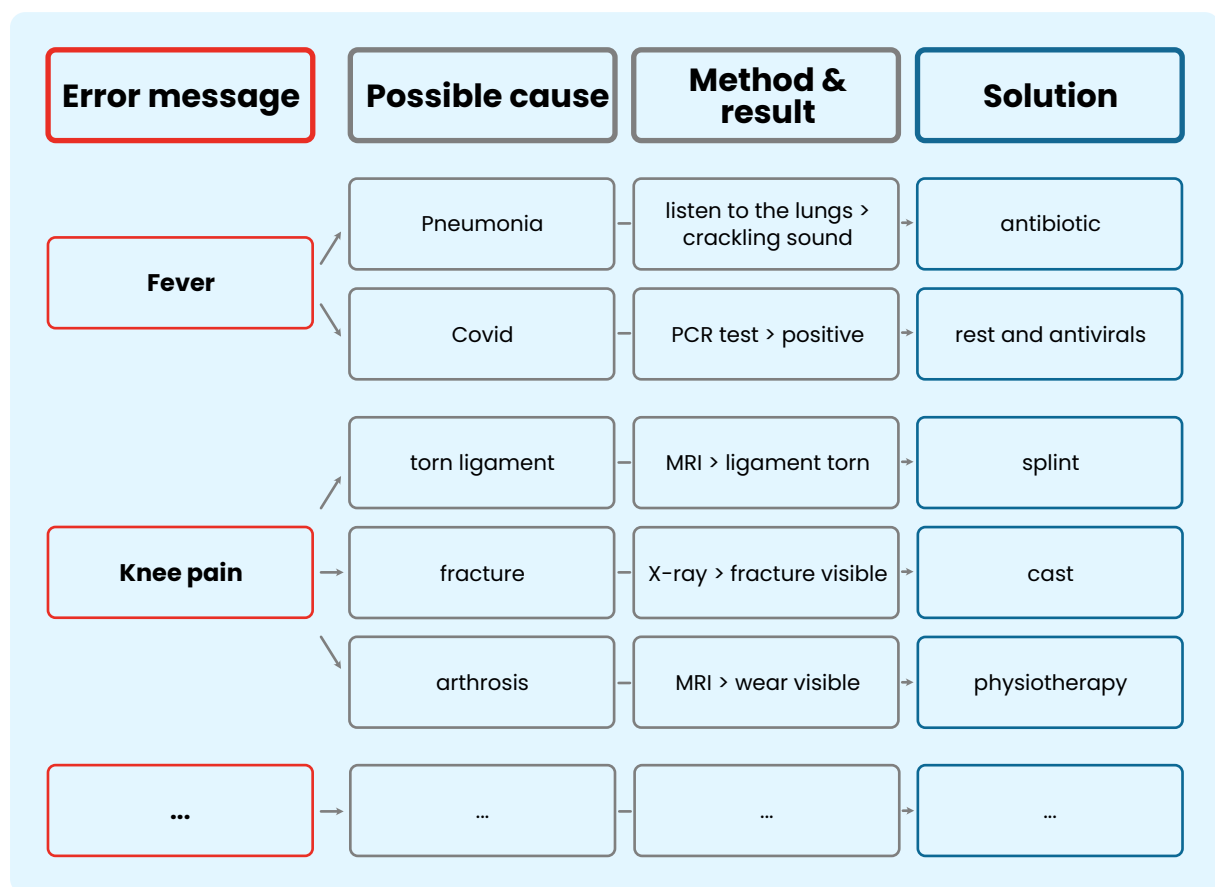


Figure 12: Exercise for distinguishing error message, cause, method and result, and solution

When introducing a KMS, we strongly recommend drawing up a detailed sign-off checklist and having the sign-off done by the key users. Only once the key users are themselves 100% convinced of the technical function and the organizational preparation of the KMS, and every checkpoint has been ticked off, should the start go ahead. This creates not only technical and organizational certainty, but

³ Pareto principle, see: https://en.wikipedia.org/wiki/Pareto_principle

also commitment and appreciation toward the key users in the project. Possible items for the checklist are shown in Figure 13.

After the kickoff, naming and training the key users, and completing the sign-off, an important item is now on the agenda: introducing the pilot users to the KMS.

Sign-off checklist		
	Yes	No
• charging cable available	☐	☐
• keyboard available	☐	☐
• reachable for all employees	☐	☐
• sufficient protection from water, cleaning agents and dust	☐	☐
• hardware works and is available (tablet, mouse, cabling, etc.)	☐	☐
• software is stable and performs well	☐	☐
• contact person named	☐	☐
• user account logins available	☐	☐
• data connections working	☐	☐
• ...	☐	☐

Figure 13: Example checklist for the sign-off

Stage 3: Validation

The Team Moves Up: Training and Pilot Phase

Basic training for the pilot users is essential for a successful project. We recommend a basic session away from production, on a dedicated training system. This lets pilot users try out and test the KMS in peace. When planning it, it is important to clarify the technical prerequisites:

- What does the technical setup look like?
- Are there enough devices for all participants?
- How many participants make sense?

Tips for the basic training

- training with **hands-on practice** away from production on a test system
- **support** on the production system directly afterwards

Plan at least 60 minutes for the training and hands-on practice. That can be a challenge for manufacturers, but it is necessary for the project to succeed: it gives a thorough introduction to the KMS and connects it to everyday production.

A common mistake is assuming that people will use the KMS automatically after the training. The transfer from the training system to the production system is often underestimated. The

trainer should therefore accompany participants in production for at least two more hours after the basic training. Experience shows that questions still come up in this phase.

Keeping the Logbook: Monitoring the Project

Monitoring plays a decisive role in the success of the project. It ensures that the project team and the whole organization can respond continuously to the challenges and reach the project goal. Figure 14 shows one example of how to monitor a project.

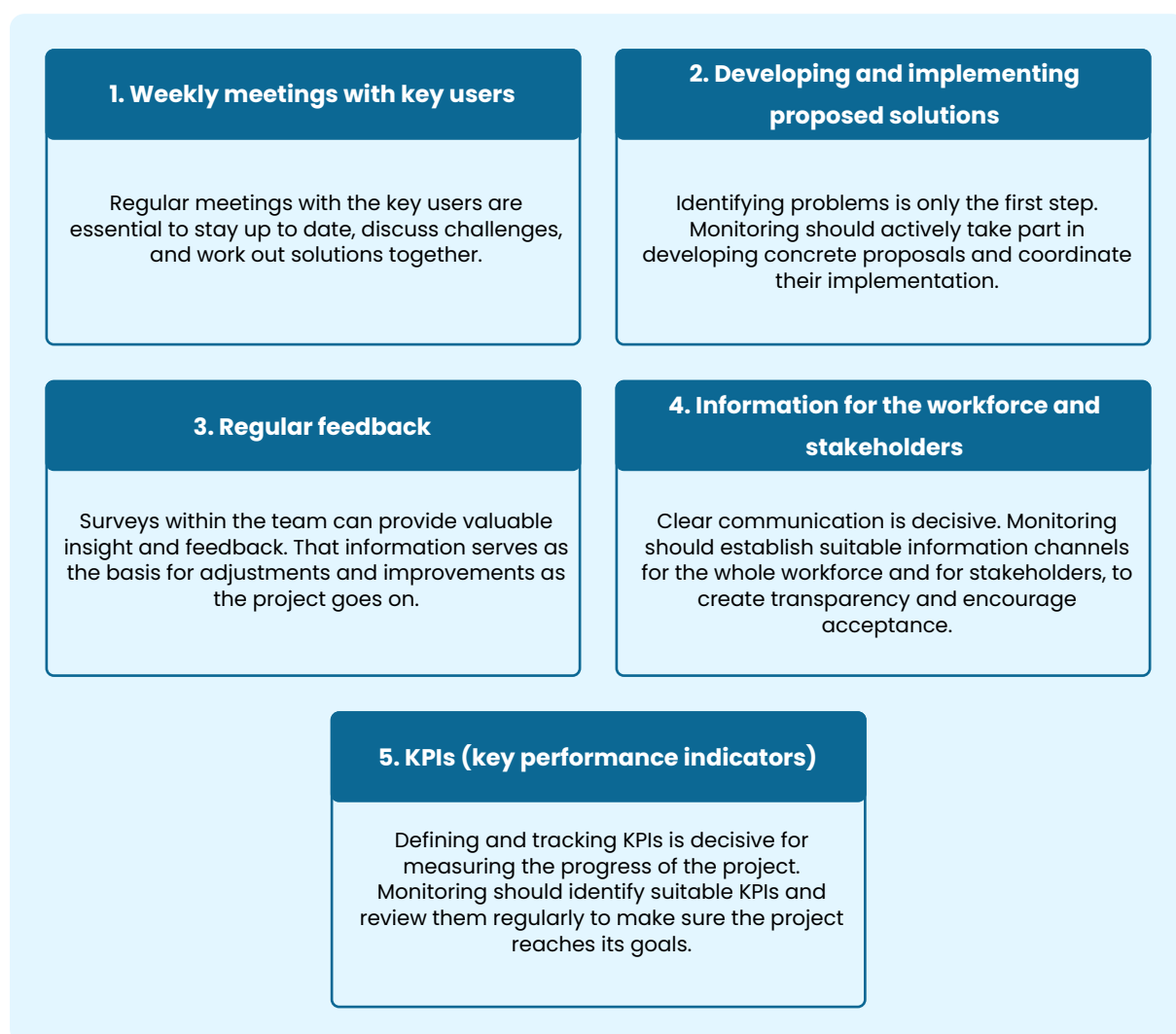


Figure 14: Project monitoring

Planning the Gold Transport: Designing the Scaling Concept

Now we have found the treasure. What next?

At the end of the pilot project, the KPIs⁴ and surveys provide a basis for a decision. It answers the question of whether the KMS works and whether users accept it. It is important to stress, though, that the pilot alone does not settle the many open questions involved in a company-wide rollout. To address those, we recommend a roadmap workshop at the very start of the validation phase. In that workshop, all relevant topics (see Figure 15) are discussed briefly, their importance is defined, and contacts are named.

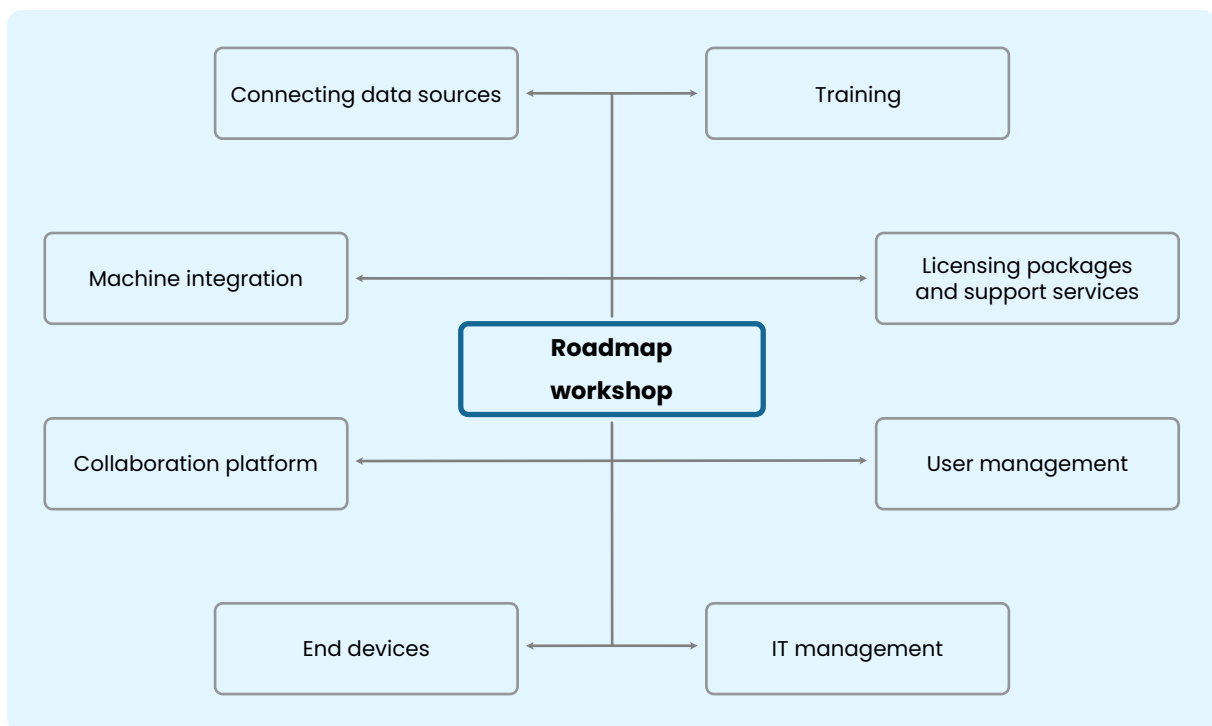


Figure 15: Roadmap workshop

Afterwards, these individual topics should be grouped and discussed in depth in specific workshops with the right people. This structured approach ensures thorough preparation for the scaling ahead and helps identify possible challenges early and develop effective solutions.

⁴ Key Performance Indicator, see: https://en.wikipedia.org/wiki/Performance_indicator

Key Take-Aways & First Steps

Key Take-Aways

- 90-9-1 rule: a handful of enthusiastic participants is enough to set out on the expedition to the treasure
- Change management: inform everyone involved about the expedition you are planning (the technical side is rarely the obstacle)
- Traveling light: start the expedition with a lean project

First Steps

- Start with the enthusiastic expedition members and run the target vision exercise
- If you need guides for your expedition, get in touch with us

Your Guides

Andre Schult – CEO



[I would like to book a meeting](#)



Markus Windisch – CTO



[Customer story: Dr. Quendt \(video\)](#)

