



WHITEPAPER

INDUSTRIAL TUBE: TAKING KNOWLEDGE TRANSFER TO THE NEXT LEVEL

RETAINING EXPERT KNOWLEDGE FOR THE FUTURE
DESPITE RETIREMENTS AND FLUCTUATION

Today, for example, if you want to make process industry plants more efficient, faster and more flexible, you need experts and their valuable knowledge in addition to smart solutions in the company. These competences and, most importantly, the wealth of individual professional experience often developed over the course of many years make each company unique while also contributing significantly to their success. It is particularly important for internationally-active companies that this expert knowledge is available and accessible at all times and that it can be shared with other employees.

This means that knowledge management and knowledge transfer take on a very important meaning when it comes to the competitiveness of a company.

This white paper will explore the challenges that can arise with regard to maintaining expert knowledge in today's business environment and what role videos play in knowledge transfer. The white paper will show which change management processes are important

for capturing, securing and sharing expert knowledge in industry via video.

The knowledge management platform "Industrial Tube" from Bilfinger Digital Next GmbH will be examined in greater detail below and it will be demonstrated how this platform can be used to easily create videos while considering quality assurance and IT security.



Today, companies lose expert knowledge primarily if it cannot be conveyed well, quickly and, above all, efficiently. A key issue for every company is the loss of knowledge when experienced employees leave the organisation.

This happens when these employees retire or accept another job – because they want to develop their careers, for example. The distribution of large amounts of knowledge to an increasingly smaller number of people also plays a decisive role here. Working across national and language borders and new learning styles also offer both opportunities and challenges. Unpredictable situations – such as the current Corona crisis – mean that expert knowledge cannot always be directly conveyed face to face.

Knowledge management and knowledge transfer are therefore imperative: whether from employee to employee or within companies at a global level.

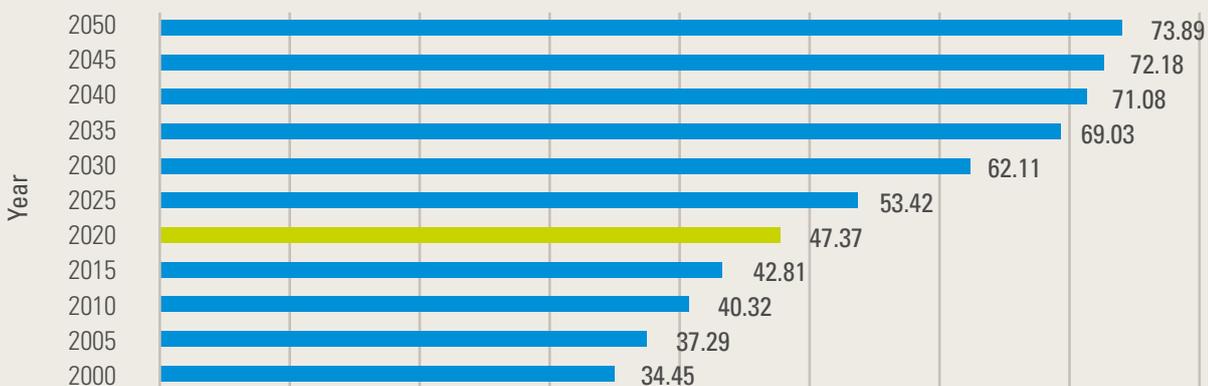
Loss of knowledge resulting from retirement and employee fluctuation

The effects of demographic change are evident: If one takes a look at the development of expected retirements over the course of the next few years, a clear trend is taking shape. Baby boomers – those born in the high-birth years between 1946 and 1964 – will retire by 2031. The consequences are far-reaching: **Current skilled workers are getting older and are leaving the workforce** while at the same time fewer younger skilled workers are following in their footsteps. In 2020, the ratio between pensioners and employed persons remains at 47.37 percent, in 10 years it will be 62.11 percent – with an upward trend.¹

As previously mentioned, this situation will be intensified by the desire for career change on the part of employees. **There is a generally positive attitude toward workplace change especially among skilled workers and executives.**² Here, too, companies can quickly lose valuable employee experience and expert knowledge: Only 13 percent are not willing to change jobs.

Employees retire

Ratio of inactive population to working population in Germany (in%)



Source: <https://de.statista.com/statistik/daten/studie/14177/umfrage/deutschland-anteil-rentner-an-erwerbsbevoelkerung/>

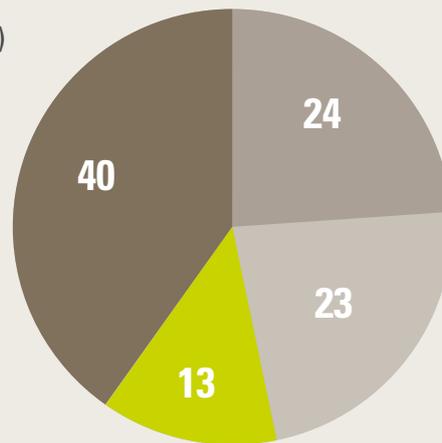
¹ <https://de.statista.com/statistik/daten/studie/14177/umfrage/deutschland-anteil-rentner-an-erwerbsbevoelkerung/>

² <https://ap-verlag.de/fach-und-fuehrungskraefte-gruende-fuer-den-jobwechsel/13435/>

Employees change jobs

Positive attitude toward changing jobs in place? (in %)

- Yes, actively looking for a job
- Yes, generally open to a job change
- Yes, but not urgently looking
- No



Source: <https://ap-verlag.de/fach-und-fuehrungskraefte-gruende-fuer-den-jobwechsel/13435/>

The problem: If expert knowledge about operational work steps suddenly becomes unavailable and complex processes in industrial plants are not always sufficiently documented, this can have negative consequences for the company. Additional problem areas include, for example, time-consuming on-boarding of new employees due to a lack of knowledge transfer and the associated potential for frustration. The conservation of knowledge is therefore extremely important: Explicit knowledge (learned) and implicit knowledge (experience) must be recorded.

Globalisation and knowledge transfer

A further challenge is the globalised working world. National and language barriers continue to lose significance within companies. **Cooperation that goes beyond both borders and locations is increasing. The quick exchange of information is therefore of utmost importance here.**³ New tools are required to make this

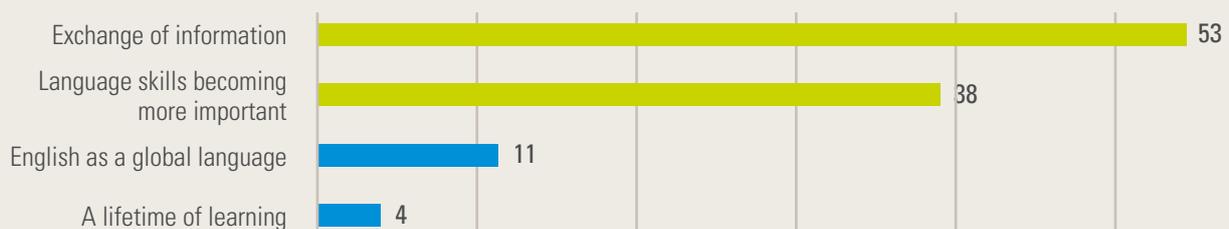
cooperation even more efficient and seamless. The focus here is primarily on securing competitive advantages – the most basic interest of a company.

New learning styles and knowledge management

One promising path forward for companies is to increasingly adapt to **the video-based learning methods** of younger generations in order to allow for “learning from a distance”. New learning styles have now become established and require an alternative form of knowledge transfer. This applies not only to digital natives, but to anyone who uses digital knowledge transfer such as YouTube videos or tutorials. In the B2C sector, video platforms such as YouTube have already proven the potential for efficient knowledge transfer: Who has not yet watched a “how-to video” in their private lives to learn how to solve an everyday problem, repair objects or use so-called “life hacks” to

Key elements of globalisation in knowledge transfer

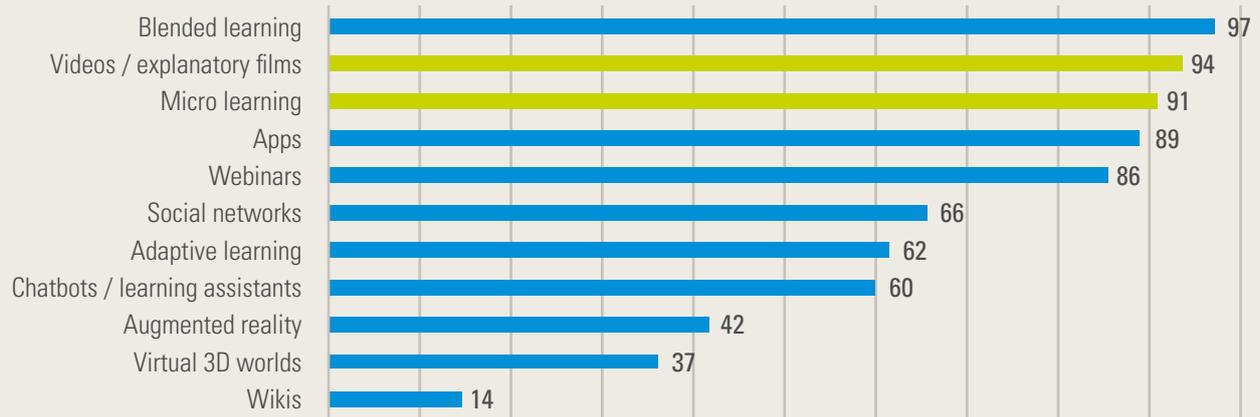
1,000 people were surveyed (absolute figures)



Source: <https://de.statista.com/statistik/daten/studie/786/umfrage/assoziationen-zum-thema-globalisierung---bildung/>

³ <https://de.statista.com/statistik/daten/studie/786/umfrage/assoziationen-zum-thema-globalisierung---bildung/>

The following applications are vitally important as forms of learning, 2018 (in %)



Source: <https://de.statista.com/statistik/daten/studie/203748/umfrage/bedeutung-von-e-learning-anwendungen-in-unternehmen/>

ingeniously simplify things or speed up tedious processes? Knowledge transfer in the B2C area is fast, easy and does not require major effort. This is possible because one can fall back on existing and proven experience of others and thus learn efficiently. MOCs (Mobile Online Courses) have also provided significant advantages, making new knowledge accessible and quickly learnable through various platforms or formats, even on the road. This was not always the case when

reading technical manuals or handbooks in the past. Knowledge transfer through videos (94 percent) and smaller information units (micro learning) is also very important in companies (91 percent).⁴

For companies, this is both an opportunity and a challenge. Unlike YouTube videos, videos for knowledge transfer within the company should not be public and industry and quality standards should be observed.



⁴ <https://de.statista.com/statistik/daten/studie/203748/umfrage/bedeutung-von-e-learning-anwendungen-in-unternehmen/>

The advantages of knowledge transfer through learning and explanatory videos

Successful knowledge management must be set up by experts for experts. It is therefore important that knowledge transfer is not top-down but either bottom-up or peer-to-peer. If companies want to establish comprehensive knowledge documentation and knowledge transfer, they must first implement a positive culture of appreciation, trust, mistakes and learning. This is the foundation for passing on knowledge gained from experience to younger colleagues.⁵ With knowledge transfer, it is also necessary to first consider what knowledge needs to be preserved and what does not:

Knowledge can age and not everything necessarily needs to be preserved. The most obvious procedure is "hands on" knowledge transfer – that is, looking over the shoulder of an experienced colleague in the most literal sense of the word. However, this is only possible until the retirement or departure of the experienced colleague. Companies often motivate employees who are leaving the company to document their extensive knowledge in writing, for example. This can help to considerably shorten the amount of time needed to learn something. For pragmatic reasons, however, it is becoming increasingly important to work with multimedia for knowledge acquisition – images as well as also audio files and, in particular, videos.

The advantages of knowledge transfer through video are as follows:

→ Securing and sharing of expertise is simplified:

Expert knowledge can be efficiently documented, preserved and shared. The loss of internal process know-how is prevented by video documentation of the individual work steps. Knowledge documentation thereby also serves to improve process reliability.

→ Videos support equipment handling and execution quality:

All work steps can be documented in a manner that is easy to understand and follow.

→ Increase in training and employee efficiency through new learning styles:

Younger, upcoming employees in particular are better served by knowledge conveyed in videos using a bottom-up approach.

→ Reducing potential for frustration:

Learning by watching – multimedia content such as videos demonstrate their strength particularly when it comes to the simplification of on-boarding processes for new employees.

→ Motivation through recognition:

A further advantage of the bottom-up approach is the recognition that the expert receives when he or she creates a learning or explanatory video as a knowledge provider.

→ High cost-efficiency of the videos:

Once they have been created, videos – with subtitles or various language versions added – can be used globally over the long term.

→ Videos contribute to change management:

They are ideally suited for motivating employees at the base for new knowledge transfer approaches.

⁵ Interview with Prof. Dr. Michael Müller from the University of Ansbach, in: DATEV Magazine, So That Expertise does not Retire, <https://www.datev-magazin.de/kanzleimanagement/damit-das-know-how-nicht-in-rente-geht-1836>

Successful change management as a foundation for efficient knowledge transfer

Various change management procedures are required for the implementation of knowledge transfer using videos. In the experience of Bilfinger Digital Next, 95 percent of this is due to successful change management, while only 5 percent is due to the establishment of the IT conditions that are needed as a basis. Change management takes place in the "Technologies", "People", "Processes" and "Gamification" areas:

Technologies:

As mentioned in the "how-to videos" example from the B2C sector, knowledge transfer in the B2B environment has to be simple, fast and seamless. Easy handling and access are fundamental in this respect. They should remind users of the already familiar use of apps from their mobile devices.

People:

Implementation requires a project team with clearly defined roles and responsibilities. The objective of video as a means of knowledge management and knowledge transfer must be equally well defined. Company management has to clearly promote this goal if it is to be implemented successfully. At the same time, it is necessary to identify and win first movers for the new way of transferring knowledge using video. These first movers not only need the time resources to create

their first videos, but also specific support from the project team. To be able to carry out change management successfully, the use of internal communication in the company should also be considered. Such communication can specifically promote the new approach with its advantages - bottom-up and from experts for experts - and thus pave the way for successful implementation of knowledge transfer using video.

Processes:

Definition of the communication concept and communication objectives is fundamental here. The right pilot projects are necessary in order to be successful. These must be identified, carefully planned and set up and implemented with the appropriate experts as first movers. Quality assurance of the videos is also essential: They must be flawless in terms of content and meet the defined quality standards. It must be clear to the project team that it is not yet possible for the first videos to be perfect. The support and positive encouragement of the expert in terms of quality management is necessary here. Communication style is of paramount importance. As a video from one expert for other experts, it should also be at "eye level" in terms of tone. To be successful, viewers need to regard it as a positive stimulus to improve work processes and results, not as know-it-all or bossy lecture. Such an approach would not be perceived as bottom-up, but more negatively as a top-down directive. A sense of intuition is definitely required here, so that the first pilot project is successful and subsequent projects can be implemented.



Gamification:

For the success of the new model of knowledge transfer, the motivation and positive attitude of employees is extremely important. The project team should convey that the new way of transferring knowledge is not only useful but can also be a lot of fun. This is also supported by the fact that video creation works well in small teams and encourages interaction – an additional motivating factor.

On the company side, the advantages of knowledge transfer through learning videos mainly relate to a reduction of costs, because simplifying access to knowledge and increasing the motivation of employees also increases productivity. Younger employees not only have a **shorter training period** and less frustration,

the videos are also in line with their already existing digital learning habits. In this context, the importance of video should also be viewed as a means of recognition. The feedback of employees among each other is also of great value for the company. If, for example, an explanatory video helps a new or younger colleague to familiarize himself or herself with his or her new job, the feedback usually goes directly to the expert who has successfully transferred his or her knowledge. Companies and employees both benefit from successful change management in that they are able to quickly and positively encourage on-boarding in new topics and areas through efficient knowledge transfer.

“Industrial Tube” is the knowledge management platform for industry

A good example of a knowledge management platform that combines many of these advantages is Industrial Tube from Bilfinger Digital Next (BDN). **Industrial Tube enables valuable expert knowledge to be stored in explanatory and learning videos and bundled on a single platform.** This means that the knowledge is also accessible to all employees of the company. As a knowledge management platform, Industrial Tube not only enables the workforce to retain expert knowledge in companies, but the important quality and safety of work processes can also be maintained.

Other people's knowledge can be experienced first hand by watching videos about work processes. In the same way, one's own knowledge can be made available through videos. The platform ensures that the video is of high quality and can be filmed with any device. When creating a video, employees themselves take a seat in the director's chair. The biggest advantage of Industrial Tube: No filming, editing or software knowledge is required.

The advantages of Industrial Tube:



Expert knowledge can be quickly shared



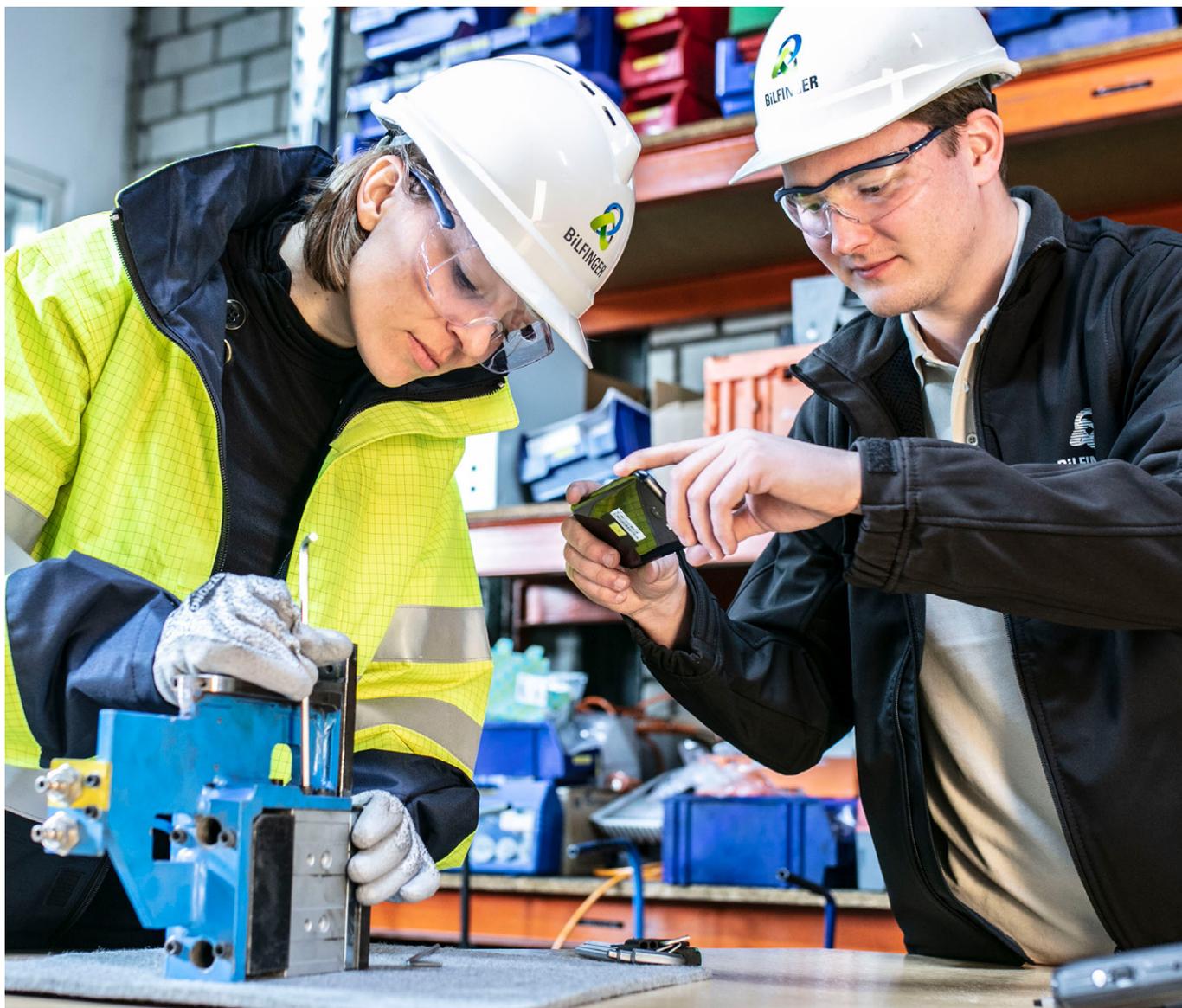
Simple to use – no prior knowledge needed



Quality and safety standards are maintained



Can be used anywhere



How are videos created with Industrial Tube?

Before the video creation process starts, BDN quickly connects Industrial Tube to the user administration - the Identity Provider - of the customer company.

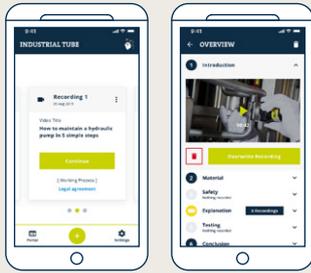
The user then logs on to the Industrial Tube Recording App via the company's identity management. **The Industrial Tube App can be easily and quickly downloaded from public App-Stores for Android and iOS.** Once the recording app is installed on the smartphone, the user can film the steps of an activity in an industrial environment in sequences, for example. **To start a new video, the user opens the app and simply selects a template that guides him through the various steps.** The templates are divided into filming work sequences and complex activities, short explanations and training as well as simple instructions. The user then checks

and approves the various sequences, manages the sequence order and finally ends the video by adding a title and a playlist.

The video is then **uploaded** to the Industrial Tube Web Portal. **An easy-to-understand step-by-step set of instructions makes the process easier.** This also takes into account common provisions such as occupational safety and quality management. Once the video has been approved by the supervisor, the finished product is uploaded.

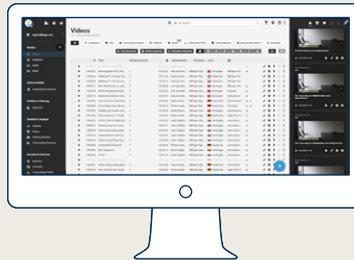
When the complete recording and approval process is complete, the final video clip is created automatically. This is when content management takes place, where **the addition of subtitles in various languages and keywords for content searches** is also possible. This process is performed automatically.

Use of Industrial Tube at a glance:



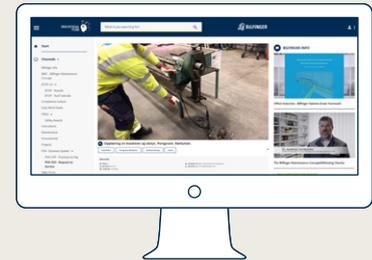
1. Recording Industrial Tube App

- Recording of the video by means of individualised step-by-step instructions.
- Video templates to secure premium recordings with any device, for example a smartphone.



2. Enhancement Content management

- Enhancing videos with automatic keywords and subtitles
- Automatically extracted content-related statements
 - Language to text function
 - Keywords
 - Optical text recognition (OCR) within the video



3. View Enterprise Portal

- Viewing the videos in a closed Industrial Tube Enterprise Portal.
- Access to video library with AI search function for video content and automatic translation.

The video is then saved in the correct category, published and is "on air". The various language versions can break down boundaries within the company: language barriers that previously prevented valuable knowledge from being distributed can be overcome with Industrial Tube Videos.

The safety and quality of work processes can be significantly improved with knowledge transfer through Industrial Tube. Through the use of identity management, **only the company's own authorised employees have access to the videos in the Enterprise Portal:** This is carried out via standard security procedures such as Open ID connect/SAML.

New employees can immediately use videos or create videos themselves; **departing employees, on the other hand, automatically lose their authorisation.** Following successful multi-factor authentication, data transmission is protected by Transport Layer Security (TLS 1.2). All data is hosted on a Microsoft Azure Cloud managed by BDN and protected with 256-bit AES encryption.

All this ensures that valuable expertise does not accidentally fall into the wrong hands.

CONCLUSION:

With Industrial Tube, industrial companies have a knowledge management platform that makes the sharing of expert knowledge and know-how significantly easier through the creation of videos.

It is thus possible to retain both explicit knowledge (learned) and implicit knowledge (experience). Companies can thus counteract such inevitable factors as retirement and employee turnover.

Through the use of a new learning style training and employee efficiency is significantly increased. Additional advantages include strong employee motivation in the spirit of change management, which not only turns employees into active agents and owners of knowledge, but also helps to maintain and increase the company's competitiveness over the long term.



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