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Abstract

A highly developed society naturally believes that it has eliminated its risks. Insurances, traffic information, social systems, legislation, and finally all kinds of regulations weigh us down in a corset of security of our own actions, which can hardly lead to negative consequences. Infrastructure and pipeline security is a valuable asset, on whose functioning we depend day by day. The COVID 19 crisis in particular has made it clear to us that digitization has become an economic necessity.

The number of construction activities in Germany has increased rapidly in recent years and there is no sign of this trend slowing down. The limited space available is increasingly leading to parallel laying of underground infrastructure and bundling of routes. If the price of risk provisioning only becomes apparent at the moment of damage, this is not only too late, but negligent in the case of the requirements of the energy turnaround and a digital "Smart City".

LINE INFORMATION IS MORE THAN JUST INFORMATION

On closer inspection, the overall process of management information is far more complex than the literal sense of the word initially suggests. However, the circle of participants can be clearly divided into two subgroups: those searching and those to be found. What are their tasks? What are their challenges? This understanding helps to understand the process in its entirety and to identify possible improvement potentials through the use of digital solutions.

1ST GROUP OF PARTICIPANTS: THE NETWORK OPERATOR

The operator maintains an underground pipeline system, which is invisible in the ground and functions without interruption as long as there is no external intervention. The operator is obliged by law and regulations to provide information about the location of his pipelines if there is a legitimate interest. He therefore has the duty to make himself known when he is requested. If he is not requested, he is automatically not involved in the process of providing management information.

The event statistics of the German association of the gas and water industry e.V. (DVGW) has named corrosion and external mechanical influences as THE two main causes of damage to the infrastructure of its members since 1920. A damage share of more than 60 % is stated actually due to external mechanical influences, mostly from construction equipment.

These statistics can also be applied to other sectors. From the point of view of the pipeline operators, the construction enquiry process and the information process are thus a highly safety-relevant matter. On the one hand, it is essential for pipeline operators to be informed about all activities along their lines and routes. On the other hand, the operator's documentation department should be able to provide digital infrastructure data at short notice so that this data (together with data from other operators) can be homogenized and used on the construction site and construction equipment.

2ND GROUP OF PARTICIPANTS: THE PIPE-SEARCHING CIVIL ENGINEER

The damage balance sheets like to circulate the dredger driver as the last link in the chain of possible culprits. However, inadequate construction preparation, e.g. due to incomplete documentation on site regarding pipe locations, and monitoring of the construction project are often the reason for the damage event.

The planning of a construction project requires the early investigation of the surrounding area for pipe locations. The building contractor can often prove that he has actually made a request for pipe information. However, this has not reached the damaged pipeline operator. This is often due to ignorance on the part of the requesting party about the existence of the operator. In the past, the local public utility (with the same name) was considered the central contact person who also passed on his information to the neighbouring operators. The meanwhile increased number of operators, other media carriers and the multiple changes of concession and name in all branches of industry keep the established research services on their toes.

This challenge to the construction applicant to make the invisible - the underground infrastructure - visible is thus associated with an enormous research effort without any guarantee of having completely identified "everything underground". How nice it would be to have a centralized, nationwide and cross-divisional portal for construction enquiries in Germany, with which all network operators can be reliably identified and addressed

CHALLENGES FOR THOSE INVOLVED

In Germany, the federal structure of legislation and the large number of industry associations make it extremely difficult to create a legal standard for management information. An agreement process requires a high degree of willingness to compromise on the part of all parties involved, for example, when it comes to agreeing on uniform digital standards for data provision and exchange.

However, the agreement process only includes three essential aspects:

- It should be possible to carry out a standard enquiry process under the initial conditions described above, even if the system requirements of the operators in question differ or are not available.
- The implementing organization should be accepted across all industries and meet the legal requirements and applicable regulations (see next paragraph).
- Its attractiveness should motivate users and possibly urge them to comply with due diligence requirements.

DUTIES OF THE CIVIL ENGINEER

Damage to pipelines constitutes an infringement of property rights within the meaning of German legislation.

According to this jurisdiction, the civil engineer must always obtain a plan information before starting any civil

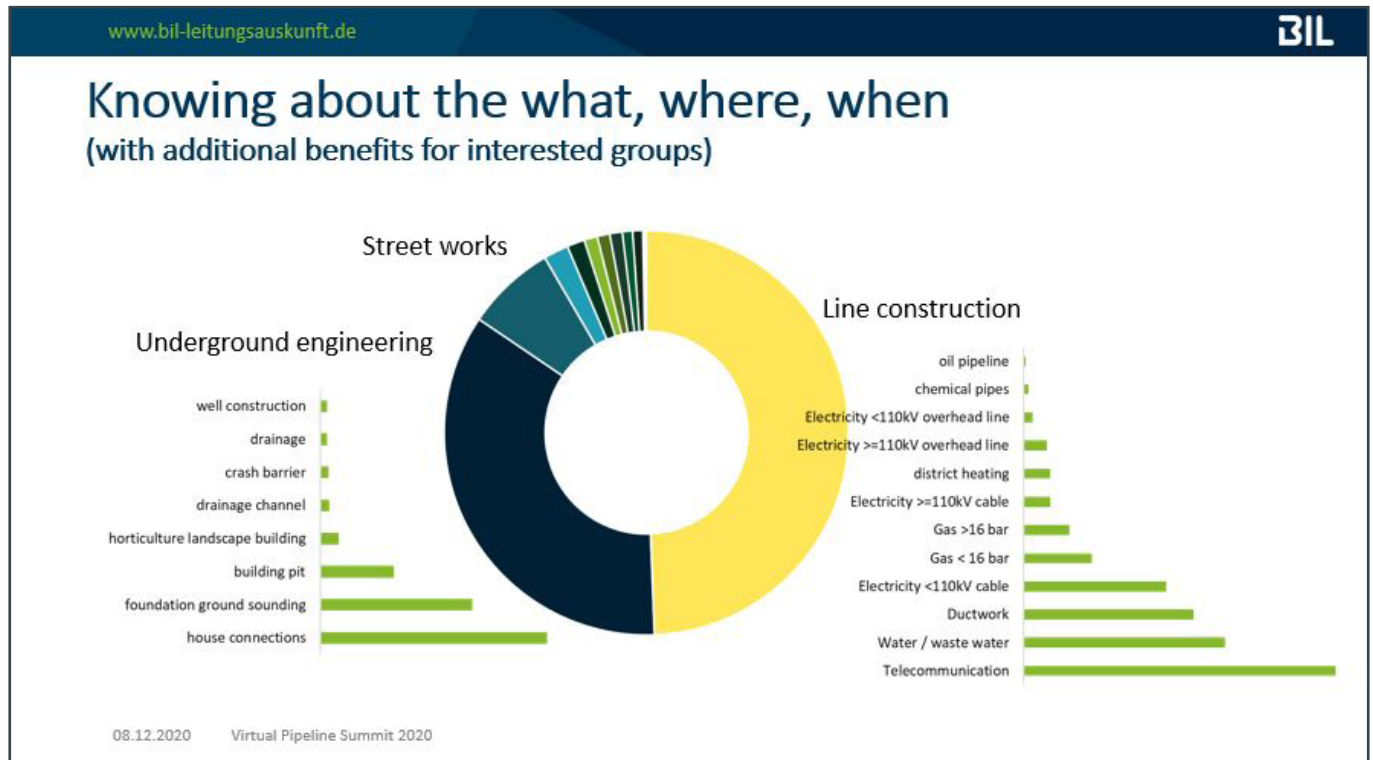


Figure 1: Knowing about the what, where, when

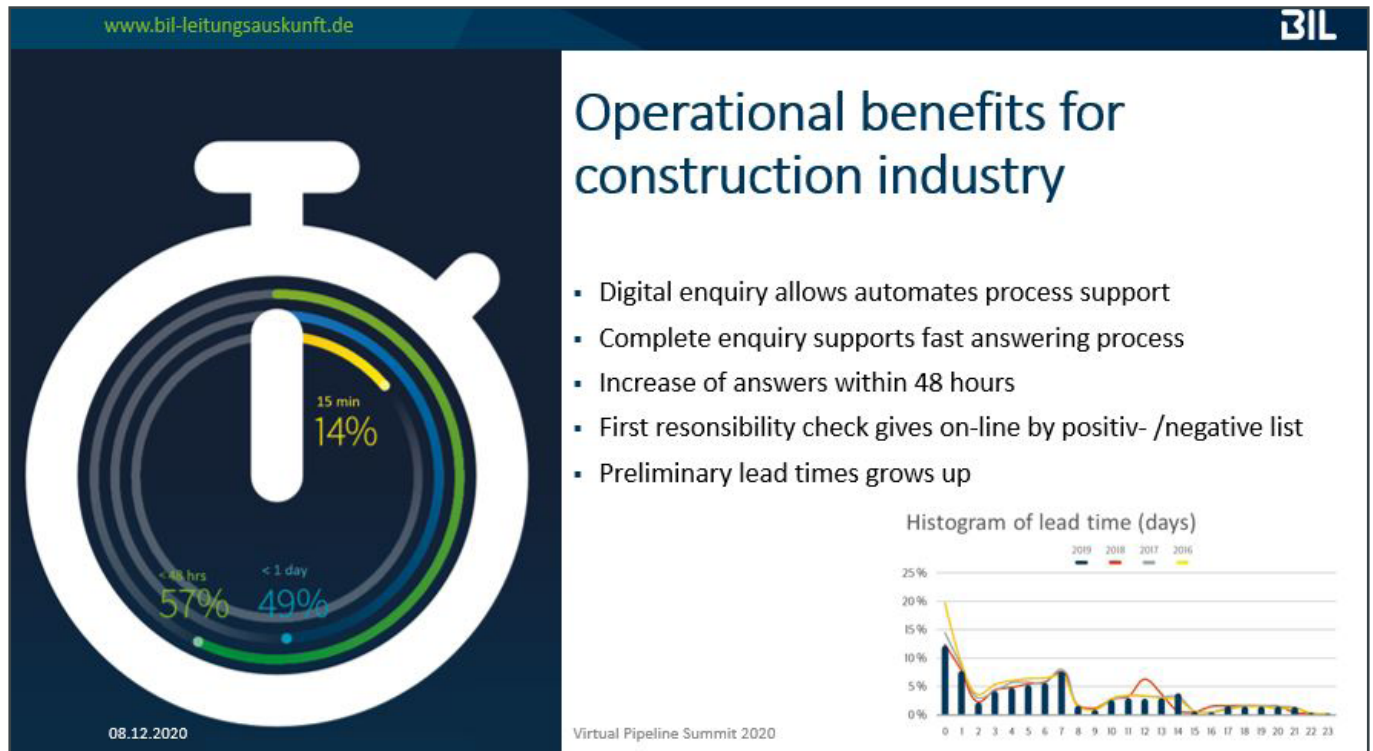


Figure 2: Operational benefits for construction industry

engineering work - this does not only include excavation work, but also any measure with a major impact on the condition of the soil, for example, driving with particularly heavy equipment or compaction. This information must be obtained where reliable documents are available, which is only the case with the network operator himself or with a service provider who has contractually committed himself to provide information to the network operator.

COST BURDEN FOR INFORMATION

In accordance with elementary legal principles, everything speaks in favour of an obligation on the part of the network operator to offer at least one method of providing information free of charge, whereby online planning information is the most practicable method in this respect. As already explained above, line and cable network operators are responsible, as operators of lines as sources of danger, for ensuring that these do not pose any danger to third parties (obligation to maintain safety on the roads). According to general legal principles, the cost burden for prevention measures in connection with traffic safety obligations is always borne by the duty bearers.

BIL AS BEST PRACTICE AS BASIS FOR REGULATIONS AND LAWS?

A good four years after the BIL portal went live, the original 17 over 100 line and network operators of all divisions have become those who process their line information via the BIL portal and have abandoned their own approaches in favour of the joint solution. A full participation of the operators from the sectors high pressure gas and mineral oil can be noted. The registered cooperative was chosen as the legal form, because as an cooperative BIL does not pursue any profit-making intentions and the operating costs of the portal are allocated to the participating companies depending on the length of the pipeline or the size of the supply area.

The portal used generates a reduction of the actual construction requests to be processed by the participating operators due to the automated upstream responsibility check.

10 % up to 80 % and can also achieve considerable increases in effectiveness. In 2019, almost 50% of the inquiries in which responsible network operators were identified could be answered within 24 hours. The standardized and complete recording of inquiries in BIL and the possibility of software-supported processing even allows for largely immediate information in many cases: 14 % of all inquiries were answered within 15 minutes. In addition, it was found that the majority of the inquirers (50 %) obtain information relatively shortly before the planned start of execution (one week before), which shows the expectations of the line seeker (2nd and 3rd group of participants) regarding the

desired processing time. However, in the case of more complex and long-running construction measures (e.g. building construction, approval procedures, power generation), a trend towards longer inquiries (average lead time: between 80 and 160 days) is visible.

Digitization and its potential for simplifying and accelerating business processes with high communication requirements is not an isolated task here, but an opportunity and an obligation for cooperation and can only be solved jointly.

References

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Going ahead for Safety

- Internet-Portal for Construction Enquiries
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