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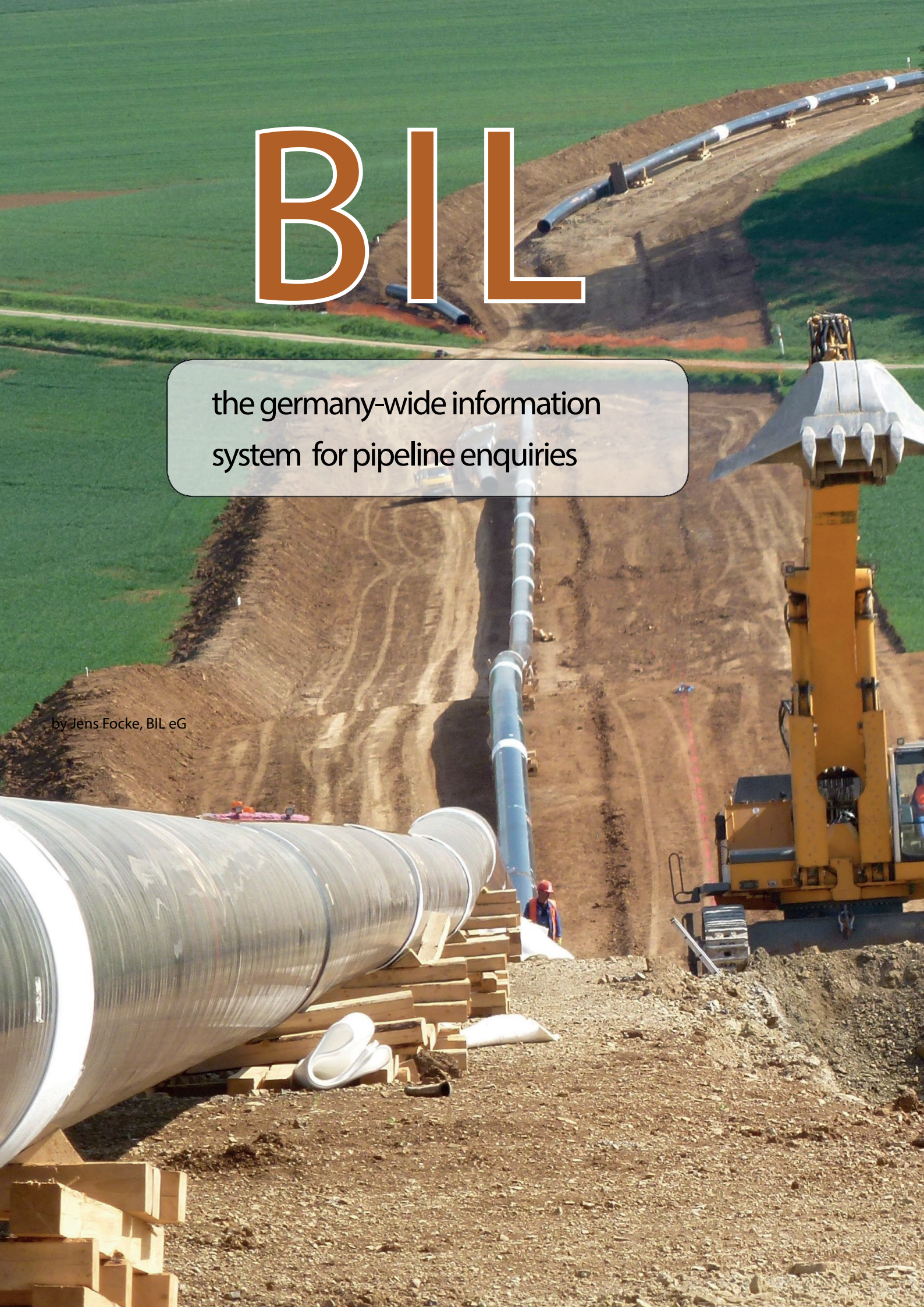


BIL

the germany-wide information system for pipeline enquiries

by Jens Focke, BIL eG

ABSTRACT

The foundation of BIL eG by 17 German pipeline companies from the chemical, high-pressure gas and mineral oil sectors on 15 June 2015 cleared the path for developing the national information system for pipeline enquiries, BIL. With the implementation of an internet portal and a database backend, at the start of 2016 BIL will provide the first cost- free portal for information on pipelines in Germany.

BIL-member companies (as of 03/2016)

- AIR LIQUIDE Deutschland GmbH
- ARG mbH & Co. KG
- BP Europa SE
- Covestro Deutschland AG
- Currenta GmbH & Co.OHG
- Deutsche Transalpine Oelleitung GmbH
- Fluxys TENP GmbH
- GASCADE Gastransport GmbH
- GASUNIE Deutschland Transport GmbH
- GEW Wilhelmshaven GmbH
- GRTgaz Deutschland GmbH
- IVG Kavernenbetriebsführungsgesellschaft mbH
- Mineralölverbundleitung GmbH Schwedt
- Nord-West Kavernengesellschaft mbH
- Nord-West Oelleitung GmbH
- Nowega GmbH
- ONTRAS Gastransport GmbH
- Open Grid Europe GmbH
- Oxea GmbH
- Praxair Deutschland GmbH
- PRG Propylenpipeline Ruhr GmbH & Co. KG
- Rhein-Main-Rohrleitungstransportgesellschaft m.b.H
- Rotterdam-Rijn Pijpleiding N.V.
- Stadtwerk Am See GmbH & Co.KG Friedrichshafen
- Thyssengas GmbH
- Westgas GmbH

MOTIVATION FOR ESTABLISHING BIL

BIL eG is a registered, non-profit cooperative. The organisational form (eG) provides the necessary secure legal framework. In addition, the eG legal form promotes the joint endeavours of all involved parties in making building activities safer and is intended to motivate pipeline, utility and telco companies from all sectors, who can join the cooperative as members, to support this initiative. BIL does not pursue any commercial interests and will collaborate with operating companies and system providers. BIL will provide free information on pipelines and cables to enquirers.

As pipeline operators, the founding members of BIL eG have had particular problems with the constrcution industry's lack of knowledge on the location of pipelines: often they are affected years later if damages to the subterranean pipeline infrastructure are detected during monitoring and inspection measures. In addition, undesirable costs may be incurred if civil protection operations need to be carried out, especially in rural areas, when pipelines have been hit unexpectedly by a building contractor during earthworks. At the same time name changes, organisational changes and unknown boundaries to service zones do not make it particularly easy for the building industry to identify the relevant companies and contact persons. In these times of ever increasing construction activities, it is therefore it is necessary to standardise and simplify information requests on pipeline locations. BIL provides an internet-based – and thus permanently available – process, built on digital processing of location information using IT-based work(force) management systems. BIL aims to incorporate the operators' existing planning information solutions in order to provide a standardised, lean and digital enquiry procedure to the building industry.

FOCUSSING ON THE CORE PROCESS

BIL wants to focus on the core process of the enquiry itself and access the online planning information systems of the operators without interfering with the internal workflow implemented therein. The BIL enquiry platform will enable enquiring building contractors to enter their building request with all technical details and corresponding location information as a geographical building area. The enquiry will be passed on to all pipeline companies available via BIL. By comparing the building area to the service areas of the operators (which are invisible to the enquirer), BIL checks online who is responsible for the pipelines/cables in the area and then sends the enquirer a list of the relevant operator or operators (Figure 1). The operators in charge receive the information from BIL, check whether they are affected and communicate all information via the BIL portal. This way, the task of checking if pipelines/cables are affected remains with the operator and their planning information generates the relevant information for the enquirer.

COMMUNICATION AND INTEGRATION

The main tasks and function of the BIL infrastructure are the digital check of who is responsible for a certain area and communicating this information via the portal. To this end, operators simply need to enter their geographical area of responsibility in BIL, specified as a corridor around a pipeline or as an area surrounding their service area. The data is transferred to BIL in standard graphic data formats. It comprises self-defined area polygons only, no pipeline data and pipeline routes. Operators are responsible for entering and updating their geographical areas of responsibility.

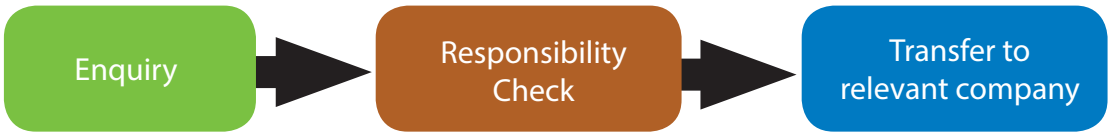


Figure 1: Core of the BIL enquiry process

If, on that basis, BIL identifies that an operator is responsible for a particular area, the operator has several options for incorporating the digital building request by BIL into its processes. The differences lie only in the way in which the system is integrated into their workflow. The operators themselves are responsible for analysing the information in their database as to which, if any, pipelines are affected:

Replying to the enquiry from the system of the pipeline company: the digital enquiry (alphanumeric information and area polygon) can be transferred via a web interface directly to the operator's system where it will be checked if their infrastructure is affected. Once it has been confirmed in the operator's system that none of their pipelines are affected, a "not affected" reply can be sent back to the BIL portal instantly and passed on to the enquirer from there. The information exchange with the enquirer takes place via the BIL portal. This process can also be used by participants who do not have their own infrastructure and where this service is outsourced to an engineer's office or a group company.

Processing the enquiry by the operator directly via the BIL portal without system connection: in this case the participating operator decides if their pipelines or systems are affected based on the coverage area stored in the system. A manually created "not affected" or "affected" reply to the enquirer, possibly with .pdf attachments, can then be entered in the BIL portal. In cases where the operator's infrastructure is affected, additional digital planning information may be sent along with the reply.

In either case BIL does not interfere with the operator's workflow for processing enquiries and checking if their infrastructure is affected. The system offers the added value of allowing the building industry to make individual requests and filter "non-responsibilities" online, and allowing pipeline operators/utilities to make information available in a digital, standardised format.

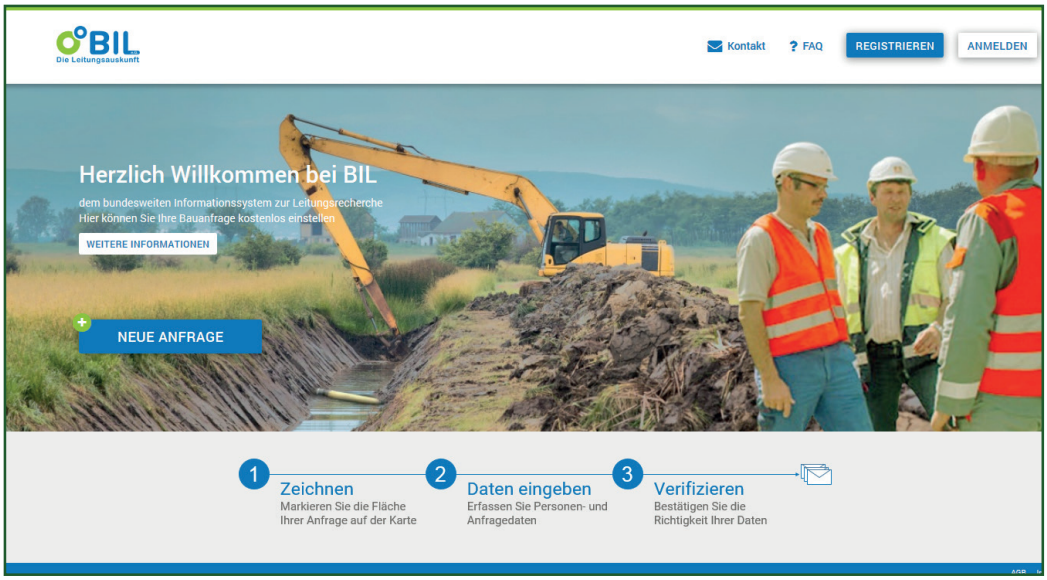
TECHNICAL SCOPE

BIL provides a web-based information solution for enquirers (e.g. building contractors, planners, authorities etc.) and participants (pipeline companies) with the following functionality:

- interface for the building industry or other enquirers to request free information regarding all types of building work,
- communication platform providing the required information and documents,
- database function with geographical reference for integrating the operator's geographical area of responsibility to analyse potential responsibilities as part of a digging request.

The overall system is made up of the following three components:

- portal solution that can be accessed as a web service via the internet,
- database-driven information system for storing the participants' areas of responsibility (geographical situation of grid areas) and related information,
- integrated Web Map Services (WMS) for providing geographical reference data and maps,
- database backend for long-term storage of enquiry and information data from enquirers and operators.
- The solution comprises the workflow between the enquirer and the participants as outlined in figure 1 with the following additional features (examples):



The BIL Portal is accessable via internet: www.bil-leitungsauskunft.de

Geographical context: BIL requires the construction area to be entered as a spatial polygon based on map material including layout plans and official maps. The coordinate system ETRS89 forms the geodesic basis.

Construction site classification: the enquirer must inform operators about the type of construction work via BIL. BIL provides a list of different types of civil engineering work for this purpose. Each type of building work generates a buffer zone of a particular size around the construction site (Figure 2). Therefore the operators' geographical areas of responsibility are affected to different degrees by the various types of construction works. Naturally, larger buffer zones must be observed for extraordinary structures than for local construction work.

Enquiries by the building industry are to be accommodated free of charge and in a technically attractive manner, with the objective of reaching more pipeline companies. Where information on the type of construction work is available from the enquirer and with a digital reply process on the operator's side, the functional aim is to consolidate enquiry and reply information in one digital workflow.

This should help overcome any potential inhibitions with respect to making enquiries at any time and from anywhere. Preventing damages and operational faults adds economic value that may also contribute to increasing the much needed acceptance for necessary infrastructure projects.

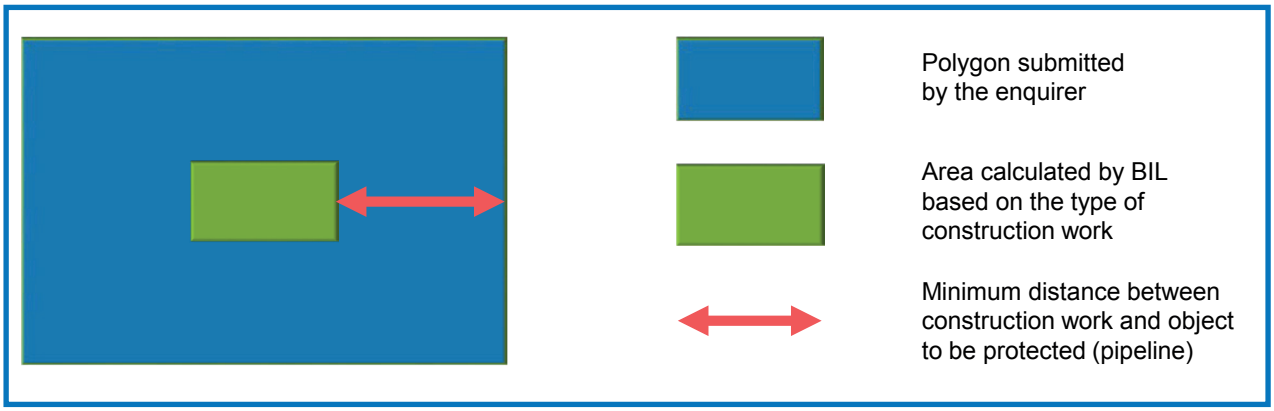


Figure 2: Handling of construction criticality by corridors

This way, operators can keep their areas relatively small without missing a relevant enquiry.

Archiving: all data and documents are archived in line with the relevant legal provisions and kept for reference. Enquirers and operators may carry out research based on the data at a later time. Based on the collected data, statistical analyses in the form of monthly and annual reports can be generated in BIL.

BENEFITS

Increasing safety in civil engineering works is the main motivation of all the founding members of BIL eG and at the same time, it is an economic necessity gladly supported by the building industry.

New „digital" business process
Digital Business Modell: comprehensive digital enquiry of digging request via internet

Cost reduction in existing business tasks
Digital Prozess Support: on-line responsibility-check to reduce communication in case of „non-responsibility"

Cost optimized service
Digital Operating Model: application hosting, WMS-integration, digital communication, external archive

Figure 3: Digital business process support for energy industry

In the age of industrial digitisation, BIL can also help to boost the efficiency of processes that need to be optimised due to increasing construction activity, a decreasing headcount and standardised options for response. Individual operators developing their own planning information portals is a step in the right direction; it requires, however, that enquirers know which operators to address in the first place. BIL wants to solve this problem and pass on the enquiry information to the systems of the relevant operator(s).

OBJECTIVE AND OUTLOOK

It is BIL's ambitious goal to become "the go-to portal" for pipeline/cable information from operators of all sectors. The main motivational factor is to simplify the mandatory enquiry process for the construction industry with the aim of providing "complete" information. The enquiries are free of charge for private individuals, building contractors or operating companies. Implementation, maintenance and expansion of the system will be carried out by the BIL organisation in collaboration with third-party service providers and thus only requires a small set-up. Therefore the foundation of a registered cooperative was identified as the most suitable organisational structure. This way, operators of all types of pipelines and media may participate on a not-for-profit basis. Based on the experience of operators of critical media, initial implementation was carried out which fully covers the requirements for web-based building enquiries. In addition to transmission system operators, BIL wants to reach the operators of local distribution system infrastructures, in particular municipal utilities and telecommunication companies, but also operators of biogas pipelines or other media.

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