



## Bringing together what belongs together – Cross-site transport projects and ECM

- Standardised ECM platform for cross-site transport projects
- Documents and business processes can be accessed from anywhere
- Integrated with SAP and specialist applications
- Documents can be shared with external project partners via the digital project space



## Management summary

# The digital journey towards a powerful infrastructure

It had reached the point where up to 500,000 documents were being exchanged in the course of each transport infrastructure project such as motorways or bridges – including plans, contracts, acceptance documents, invoices, pictorial documentation and special formats such as PDF maps, etc. Coupled with the fact that the organisation was becoming increasingly decentralised, this meant that DEGES was finding it more and more difficult to manage the high volume of documents and associated processes without access to a powerful ECM platform.

Then, in 2012, it opted for Doxis and the Doxis iECM suite, which marked the start of an important journey: the consistent creation and development of a standardised, cross-site solution for managing documents and business processes. To create the digital infrastructure that is required to handle every conceivable aspect of a transport route project, this networked solution brings together numerous features for cross-site collaboration. These include electronic records, digital document sharing via project spaces, an integrated image archive, functions for processing incoming and outgoing post, and invoice processing with SAP integration and workflows.

Paper, CDs and emails are no longer required to get the necessary information from A to B; instead, all documents can be transferred via Doxis. By linking together documents, records, workflows, specialist applications and SAP, the solution combines all the relevant information into one concrete transport project or business transaction and makes it available on a context-specific basis.



## The project at a glance

<b>AREA OF APPLICATION:</b>	Digital infrastructure for networked, cross-site project work
<b>CUSTOMER:</b>	DEGES Deutsche Einheit Fernstraßenplanungs- und -bau GmbH
<b>INDUSTRY:</b>	Publicly owned project management company
<b>EMPLOYEES:</b>	280, all with access to Doxis
<b>Doxis SOLUTIONS:</b>	Doxis iECM suite, including (among other things) archive, DMS, electronic records, integrated image archive, document sharing via project spaces, processing of incoming and outgoing post, invoice processing with integration of SAP & records plus workflows
<b>INTEGRATION:</b>	SAP, "GE/Office seven" land purchase system (specialist application), Microsoft Office
<b>VOLUME OF DOCUMENTS:</b>	1 million documents transferred from legacy systems and file archives, 30,000 images migrated from obsolete image database. Within the space of one year, the volume of documents has doubled thanks to the promotion of the new digital approach. There are now approx. 2 million documents occupying 2 TB of archiving space.
<b>HIGHLIGHT:</b>	Project space so that documents can be shared with – and jointly edited by – hundreds of external project participants

# The ECM strategy at DEGES: Getting things moving

To ensure efficient teamwork and really get things moving, it is essential to have a high-capacity infrastructure in place. That applies as much to the mobility of people and goods as it does to the sharing of information and documents.

With its slogan of "Routes are our destination", DEGES has been playing its part in ensuring that people and goods are efficiently linked via road, rail and water since 1991. In the course of the infrastructure projects overseen by the company, numerous documents, records and pieces of information must be sent on their way so that they are available to the various project participants at exactly the right time. One example of a well-known major project handled by the company is the Leipzig City Tunnel, which was completed at the end of 2013. By the time it had spent a decade working on this project, DEGES had accumulated a collection of approximately 500,000 associated documents.



## The company

As a project management company specialising in complex transport infrastructure projects, DEGES is responsible for planning transport routes – whether in the form of roads, railways or waterways – efficiently, providing cost-effective oversight, accepting the construction work, ensuring proper invoicing, and for handing the finished civil works over to the public contracting authority on time and to the highest standard of quality. With its complex and interlinked systems of project and quality management, DEGES coordinates, optimises and monitors the activities of external planners, land purchasers, construction supervisors, construction companies and other selected service providers. In total, DEGES has taken charge of the expansion/construction of more than 2100 km of federal German highways with a contract value of more than 19 billion euros (data accurate as of end of 2014). In 1991, the founding members and clientèle of the company consisted purely of the Federal German Government and the five new federal states that were reintroduced after German reunification. Over recent years, another seven federal states have joined DEGES and have come to rely on its solution expertise and 280-strong workforce for the realisation of their transport infrastructure projects.



"The flow of documents was constantly increasing and so the pleas for a document management system were getting louder and louder."

Jens Düssel, Departmental Head of IT and Organisation

## New tasks call for new procedures

In the nineties, the work undertaken by DEGES focused initially on the new federal states and on building up the infrastructure following German reunification – in fact this is where the "Deutsche Einheit" part of its name (meaning "German unity") comes from. Since those early days, DEGES has managed to accumulate a high level of solution expertise and, as a result, is still being assigned all kinds of projects



aimed at expanding and maintaining the transport network. Its work now covers a total of 12 federal states and it currently has a total of 280 employees. Some of these are based at its head office in Berlin while others are stationed close to local projects in Bremen, Hamburg, Dusseldorf and Wiesbaden.

As its tasks and activities have increased in scope, it has become increasingly decentralised with an emphasis on putting project teams together in a flexible way. In the past, rigidly defined departments developed their own ways of working and their own information silos, whereas now the company's highly qualified engineers, lawyers, businessmen

and businesswomen are able to work on various projects and share documents across the different sites. "We had to realign our IT and completely reorganise things. What we needed was a standardised storage system so that collaboration could be organised on a cross-departmental basis", explains Jens Düssel, Departmental Head of IT and Organisation, as he tries to explain what initially sparked the introduction of an ECM solution. "The flow of documents was constantly increasing and so the pleas for a document management system were getting louder and louder."



"Integrated enterprise content management – that was the vision we had right from the start."

Jens Düssel

## Company-wide focus on business processes

Right from the start, the focus was far wider than the mere filing, editing and archiving of documents; rather, it also encompassed the mapping of business processes. One of the aims of the company-wide IT infrastructure project was to create a standardised strategic platform for managing and sharing documents and data within the context of an integrated approach to project handling.

### Gradual implementation in stages

DEGES and Doxis tackled the ambitious solution scenario together by implementing it in several stages. The following subprojects are largely complete or are about to go live:

- Documents, images and records available on a single platform – with consolidation of the information silos
- Electronic processing of incoming and outgoing post – with central categorisation, distribution and release
- Project space to enable networked collaboration between internal and external project participants
- Image database with 30,000 images integrated into platform
- Automated invoice processing – with purchase order records and documents linked to SAP objects
- Next steps: Mapping of further business processes



All the relevant information for a certain transport project or some other activity had to be systematically collated and made accessible on a context-specific basis – from the invitation to tender and all correspondence with contracting authorities and service providers right through to invoicing (without any gaps in the documentation or in traceability). Existing IT systems, such as SAP and the "GE/Office seven" land purchase system, also had to be integrated into the new ECM platform. "The information has to be there when I need it. If I am required to make a decision then I want the necessary information to be provided automatically without having to look for it", explains Jens Düssel as he sums up this particular aim of introducing the ECM at DEGES. "That means the information must be consolidated and the various programs interlinked. Integrated enterprise content management – that was the vision we had right from the start."

## Digital infrastructure instead of long detours

It was time to abolish the existing information silos, which were generally specific to a particular site and took the form of file directories and isolated storage systems, and to press ahead with the switch-over to digital, which – by now – had already begun. Ultimately, the quickest

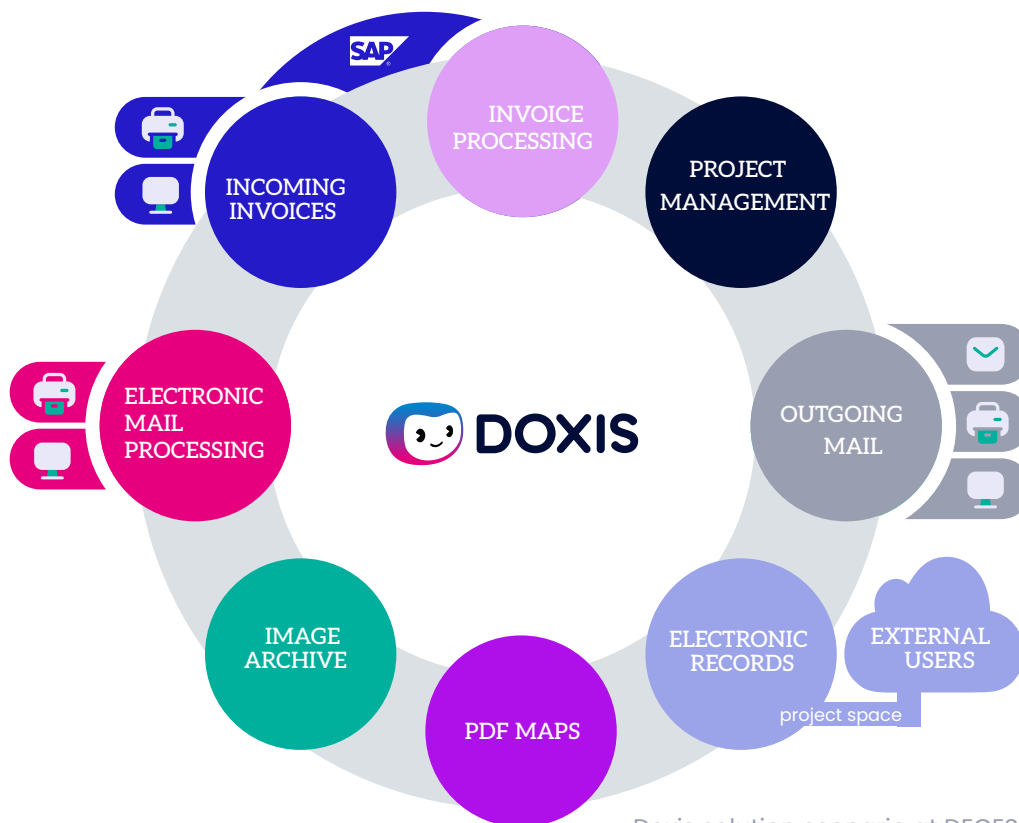
way to share documents is to make them available digitally – via a common platform. Indeed, this was absolutely crucial if the company's increasingly decentralised approach to work was to succeed.

Bits of paper, CDs and emails were no longer to be sent between the head office and local branches or to service providers and contracting authorities. Instead, the involvement of the various project participants was to be sought systematically. The question of who would have access to which areas had to be controllable at various levels, e.g. so that sensitive internal areas such as land purchase and the award of contracts could be reliably secured or so that specific documents could be made available quickly and easily to project participants in the course of day-to-day business.

## Pan-European tendering process hits the mark

DEGES drew up all the technical and functional requirements of the new ECM platform in great detail with assistance from experienced, independent ECM consultants. As far as the pan-European tendering process was concerned, the relevant points were set out in a comprehensive list of criteria. Key issues included the filing and archiving of documents, the mapping of business processes, the processing of invoices and the web project space for the external sharing of documents.

The maximum number of points that a supplier could achieve based on the predefined scoring key was 1,000, with quality representing a major factor in this regard. "The ability to meet our criteria was much more important than the price. At the end of the day, a weighting was applied to both aspects and Doxis emerged as the clear winner – it was a black and white decision", recalls Jens Düssel.



Doxis solution scenario at DEGES

# From information silos to the ECM platform

The first step in creating a standardised ECM platform for an integrated project handling approach at DEGES involved bringing together – and structuring – all the relevant content.

Existing information silos in file systems, two locally used DMS/archive systems and an image database containing 30,000 images were all consolidated and transferred to the Doxis iECM suite. To enable an overview of the extensive collection of documents and provide it with a proper structure, different types of records have been created (e.g. contract records, project records, map records).

Special formats such as CAD or GIS data were also transferred to the collection of documents in Doxis and can now be accessed via integrated viewers. A special viewer/editor has also been incorporated for PDF documents such as environmental overviews, maps or detailed plans. Individual documents can sometimes have a file size of 100 MB or even more. To enable high-performance processing of such documents – including the measurement of distances, routes and areas – the PDFXChange special solution is directly integrated via Doxis.



## Networked image archive

The integrated image archive in Doxis can be used in connection with various areas across the entire company, as well as for documenting projects at both a technical level and in the context of public relations.

### STANDARDISED FILING

- Central repository for all image files
- Eliminates the unnecessary duplicate filing that can occur when various sources and purposes are involved
- Metadata is extracted automatically from digital images (Exif)
- Uniform record structure and standardised assignment of records to project, transport unit, defect documentation concerning a contract, etc.
- Project documentation content and public relations content can be categorised however the company likes

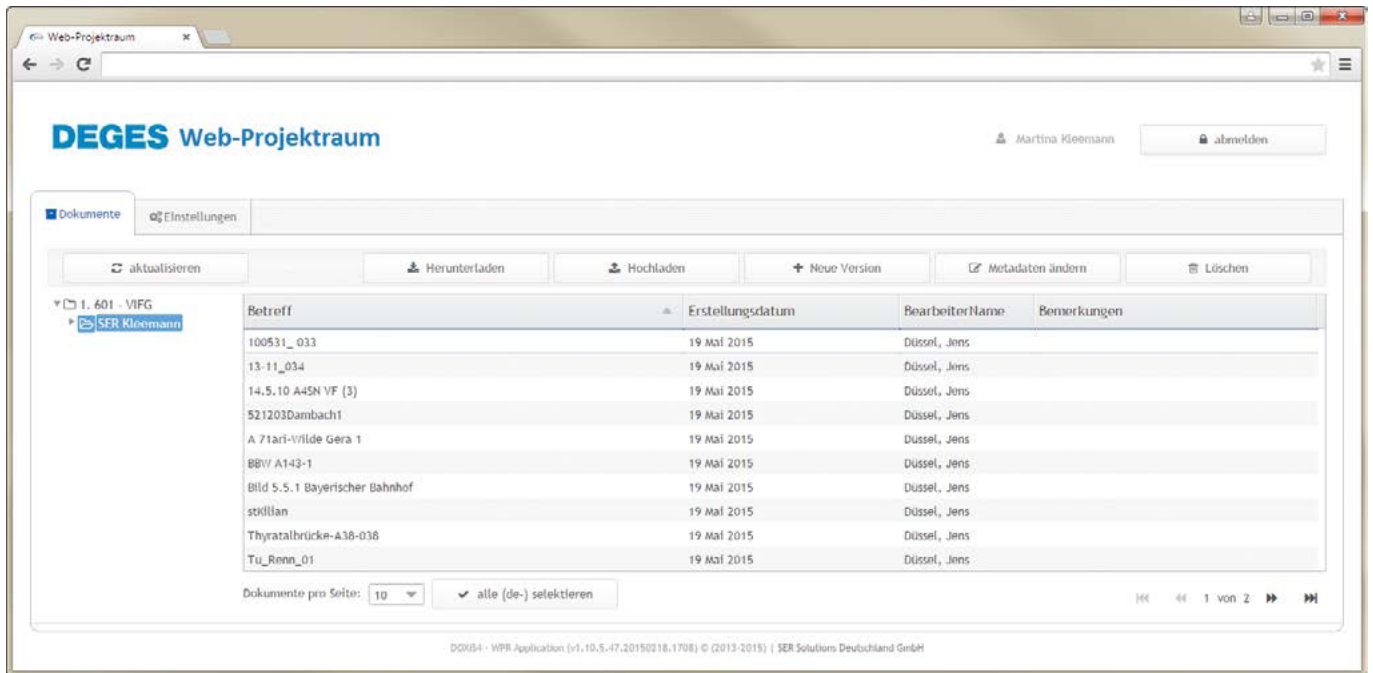
### USAGE CAN BE TAILORED TO REQUIREMENTS

- Search for a category, project or any other type of metadata
- Preview result list with image gallery and overview table
- Users can compile and share their own collections
- Users can display GPS data in Google Maps

The screenshot displays the DEGES BildArchiv interface. On the left, there is a search bar with 'Suche' and 'Vorschau' tabs, and a 'Vorschau-Größe' section with four thumbnail icons. Below this is a grid of image thumbnails. On the right, there is a table with columns for 'Betreff', 'Nummer', and 'Archivierungsdatum Bild-DB'. The table contains 30 rows of data, including project names like 'kreuz3', 'bild002', and 'Luftbilddaufnahmen002'.

	Betreff	Nummer	Archivierungsdatum Bild-DB
1	kreuz3	2818	13.03.2003 16:03:36
2	kreuz2	2818	13.03.2003 16:03:37
3	kreuz1	2818	13.03.2003 16:03:38
4	bild002	4633	14.05.2003 15:17:36
5	bild004	4633	14.05.2003 15:17:40
6	bild005	4633	14.05.2003 15:17:42
7	bild006	4633	14.05.2003 15:17:45
8	bild007	4633	14.05.2003 15:17:47
9	bild008	4633	14.05.2003 15:17:49
10	bild011	4633	14.05.2003 15:17:54
11	bild015	4633	14.05.2003 15:18:04
12	2818_BW14AKRostock_1303_190900	2818	19.05.2003 15:20:06
13	2818_BW14AKRostock_1305_190900	2818	19.05.2003 15:20:07
14	2818_BW14AKRostock_1306_190900	2818	19.05.2003 15:20:09
15	2818_BW14AKRostock_1310_190900	2818	19.05.2003 15:20:10
16	2818_BW14AKRostock_1311_190900	2818	19.05.2003 15:20:11
17	AK_A20A19	2818	20.05.2003 10:04:27
18	AK_A20A19_2	2818	20.05.2003 10:04:28
19	AK_A20A19_3	2818	20.05.2003 10:04:29
20	1813_BW_25_AKU_06_00	1813	21.05.2003 13:45:16
21	2814_BW_19_UFA241_AKWismar_05_00	2814	21.05.2003 14:03:12
22	2818_BW_14_UFA19_AKRostock_05_00	2818	21.05.2003 14:44:24
23	AK_A20A19_1	2818	21.05.2003 15:19:07
24	AKA2_A14	4713	23.05.2003 12:38:00
25	bild002	5318	03.06.2003 17:12:20
26	bild003	5318	03.06.2003 17:12:22
27	bild004	5311	03.06.2003 17:12:23
28	Luftbilddaufnahmen002	5318	03.06.2003 17:34:42
29	Luftbilddaufnahmen003	5318	03.06.2003 17:34:43
30	Luftbilddaufnahmen005	5318	03.06.2003 17:34:46

The DEGES image archive in Doxis currently contains approximately 30,000 images, but searching for images is easy and the previews provide a rapid overview



The web-based project space means that all participants (both internal & external) can collaborate in the project across different sites

## Protected spaces for collaboration and documents

As a project management company, DEGES does not merely use the extensive collection of documents for its own internal purposes, but constantly shares them with contracting authorities and service providers such as surveyors, building contractors and architects. Via the web, these external project participants can access any documents and areas in the Doxis project space for which they have been granted read or write permissions by the project manager – from anywhere and without having to install any software.

Jens Düssel has been thoroughly won over: "The web project space makes project work so much easier for us, because it offers us a digital space where



### DEGES PROJECT MANAGER

- ☒ Can create an external account for online access
- ☒ Can release documents within the project space



### EXTERNAL USERS

- ☒ Can log in via the Internet
- ☒ Can display documents and create new versions or new documents

# Types of records at DEGES



## ELECTRONIC RECORDS

With their standardised and hierarchical structure, the different types of records keep everything clear and well organised during project handling, regardless of whether it is a matter of constructing a small cycle path or the new link road at Hamburg harbour (with a project value of one billion euros and “documents without end”). Because the eRecords have been integrated with third-party systems such as SAP and the land purchase system, relevant data and documents are assigned and retrieved automatically.



## STATE RECORD (CONTRACTING AUTHORITY)

- Contains overarching documents and communications with a contracting authority, such as general regulations, financial plans and the instructions of the federal state concerned
- Brings together the projects that have been commissioned by the federal state and the relevant project records



## PROJECT RECORD

- Automatically assigned to a state record on the basis of the contracting authority
- Contains all project-related documents, such as cost plans and time schedules
- SAP integration: Creates, links and transfers data using a project number
- Brings together the associated transport units that have been used to divide the implementation project up into smaller segments



## VKE RECORD (TRANSPORT RECORD)

- For implementing distinct parts of a project, e.g. a particular construction stage
- Contains all the documents required to plan, implement and invoice for the construction stage
- SAP integration: Creates, links and transfers data using a VKE number



## CONTRACT RECORD

- Provides the basis for implementing individual services; there are often several thousand contracts for each infrastructure project
- Contains all the documents for a contracted service, from the invitation to tender right through to invoicing
- Separate and protected areas for the award of contracts and internal auditing in accordance with legal requirements
- SAP integration: Creates, links and transfers data using a contract number, incl. automatic assignment to a project or transport unit
- Further expansion possible thanks to standardised workflow for contract award processes



## LAND PURCHASE RECORD

- Special area with strict non-disclosure regulations
- GE/Office seven integration: Links to plots and parcels of land etc.
- Further expansion possible thanks to standardised workflow for purchasing land and other subordinate record types



## CONTRACT RECORD TAILORED TO PERSONAL REQUIREMENTS (PURCHASE ORDER RECORD)

- Contains all the documents and information relating to an order process, from the contract and delivery documents right through to payment release and posting
- Comprehensive, directly linked information pool for processing inbound invoices
- SAP integration: Creates, links and transfers data using a purchase order number, inbound invoices are automatically reconciled with purchase order data, record information is updated

we can meet and share documents without having to send any emails or CDs at all". Within just six weeks of the Doxis project space going live, the DEGES employees had already shared documents with several hundred external users and this number is continuing to grow every day.

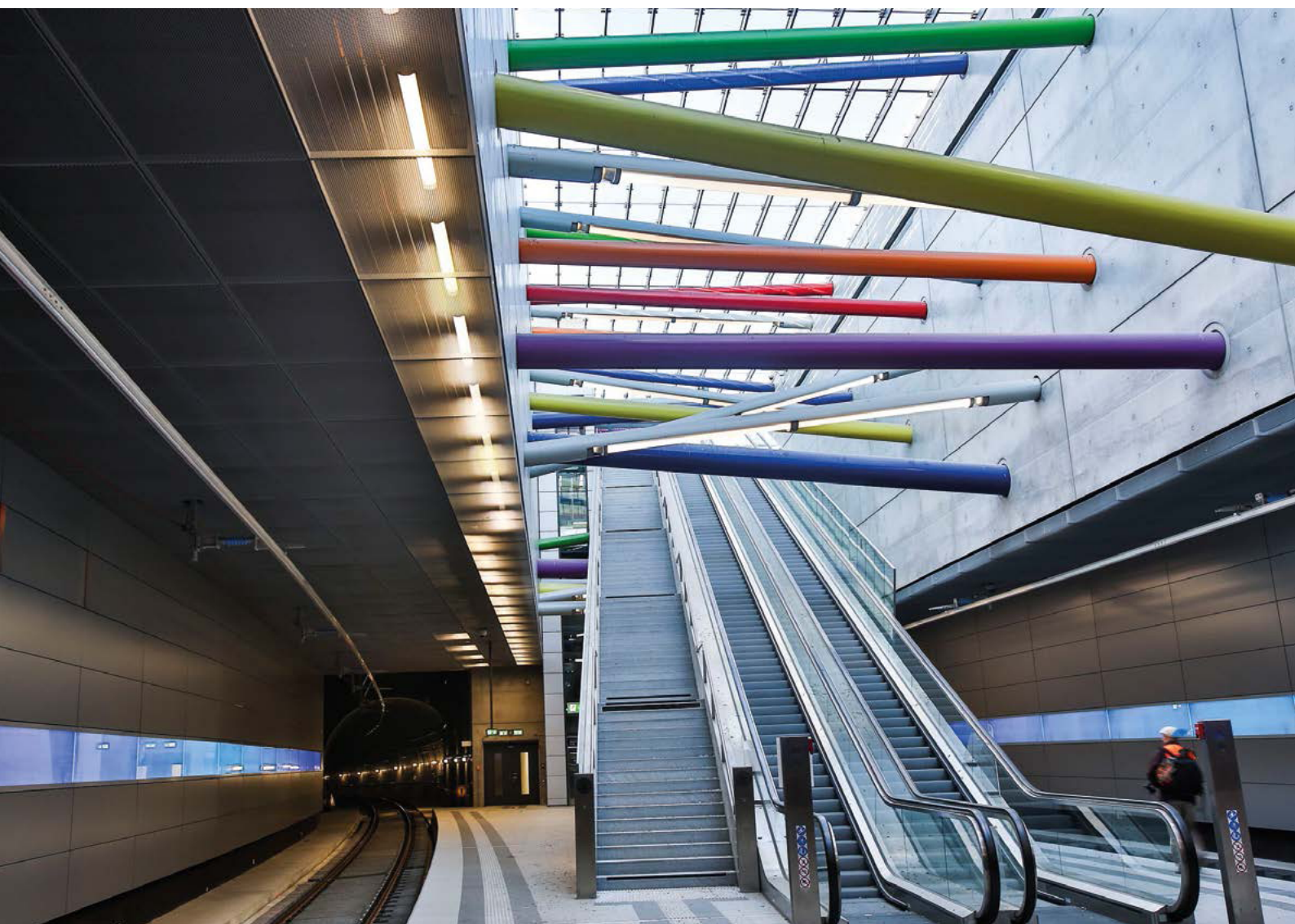
## Central processing of post for a decentralised organisation

The various incoming and outgoing channels of communication (regular post, fax, email) at DEGES have also been centralised and automated on the basis of the crosssite ECM platform for all information objects.

"Previously, the branch offices used to bundle their incoming post into packages, which they would send to the head office in Berlin. The divisional head would then process them here and decide on a course of action before sending the post back", recalls Jens Düssel. Now incoming post is simply scanned at the branches and the head office in Berlin, consolidated in Doxis and distributed across the entire company to a departmental inbox or to the mailboxes of employees (with deadline monitoring via Doxis).

Similarly, DEGES also uses Doxis to process its outgoing post, from release through to automatic archiving. In cases where documents do not require a hand-written signature, they can be created automatically and provided with a scanned signature once the relevant release has been issued.

By processing its incoming and outgoing post electronically, DEGES is – once again – able to avoid long detours and can respond more quickly.





## Transparency throughout the entire invoice workflow

At DEGES, approximately 25,000 incoming invoices are processed annually (data accurate as of 2013). This includes the handling and payment of invoices for transport projects as well as those that concern the buying-in of operating resources for use by DEGES itself.

As part of the incoming post process, the invoices are scanned, categorised and distributed along with the other documents. In order to perform the invoice review, the Doxis InvoiceMaster Read function reads out the invoice data and reconciles it with the purchase order data in SAP. As a result, invoice data can be captured efficiently and verified reliably by electronic means instead of having to rely on a laborious manual process. Invoice review and approval are integrated directly into SAP and are controlled by a workflow in Doxis InvoiceMaster Control. To enable invoice release, employees are provided with all the associated information (such as the contract, delivery note and correspondence) within the purchase order records.

"Verification and transparency are absolutely crucial factors when it comes to the approval workflow", insists Jens Düssel. "As early as the scanning stage, we can ensure that all the data tallies and that all the criteria laid down by the Value Added Tax Act have been met. We can make an objective decision based on solid information every time without having to run over to the filing cabinet or archive."

As far as the invoices for DEGES purchasing activities are concerned, electronic invoice processing has already been implemented during the first phase of the project. As part of the next phase, the remaining invoices for the transport projects overseen by the company will also be processed in this manner – and thereby to transact 450 million euros' worth of business annually.



"With our increasingly digitalised and decentralised procedures, we are definitely on the right track. I am looking forward to the next steps."

**Jens Düssel**





## On the right track with ECM

"By introducing Doxis as a strategic ECM platform on a company-wide basis, we have created the technical foundations for many more years of success and many more successful transport projects", sums up Jens Düssel. "Now it is a question of setting up and developing further workflows, which have become an organisational necessity."

In this regard, DEGES stands to benefit from flexibility within the organisation and the ability to collaborate across different departments and sites. Further branch offices — such as the new one in Düsseldorf — can be integrated into the existing infrastructure without any unnecessary detours. As far as individual employees are concerned, they can feel the added value in their day-to-day project work: standardised and familiar structures across all projects, comprehensive context-specific information and the elimination of routine manual tasks.

See DOXIS in action

[www.doxis.com](http://www.doxis.com)