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THE ARCHIVING OF DIGITAL RECORDS IN GERMANY - EXPERIENCES AND CHALLENGES FOR ARCHIVISTS AND FUTURE SCIENTISTS

Abstract

Purpose: *Digital records are one of the central components of the digital transformation of administration in Germany. Numerous authorities have been creating digital records for many years, but corresponding data has not yet been able to be archived on a large scale so far. The purpose of the research was to examine the current challenges of standardized and semi-automated archiving of digital records.*

Method/Approach: *The approach taken in this research builds in the evaluation of the current challenges and initial results of various archiving projects in Germany and especially in Bavaria as well.*

Results: *Archiving digital records is a complex issue and requires partially automated and standardized interfaces. In order to implement, adapt and keep these evident, close, and continued collaboration between data producers, software manufacturers and archivists is necessary. In addition to the so-called file systems, other software systems that manage records-relevant data must also be taken into account.*

Conclusions/findings: *In order to further archive digital records in a material sense data from various systems must be archived. Specialized digital systems in particular must be given greater consideration in this regard so that sufficient metadata is available for later evaluations. With first large-scale e-file archiving based on the standard xdomea in Germany, Valuable experience will be gained through Bavaria's state archives in 2024. From this point onwards, far more archivists will be working with digital data in a conceptual and an operational way as well.*

Key words: *digital records, electronic records management, archiving of electronic records, digital transformation*

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INTRODUCTION

The digital transformation of administration has been a central concern of politics in Germany for several years and is also part of the coalition agreement of the current federal government.[2] The first important steps for this major reform in Germany were taken more than 20 years ago with different initiatives on federal and state level, like the eGovernment concept and corresponding catalogs of measures in Bavaria 2002 (Bayerische Staatsregierung, 2002). One of the most important components in this project is management of digital records with the help of electronic file systems. Under certain conditions digital records offer a whole range of decisive advantages when it comes to legally compliant management of administrative data such as easier research of information relevant to processing, location-independent, continuous access to information, elimination of media breaks, accelerated processing of processes, increased transparency, automatic verification (audit security) and simplified exchange of information and documents and after all savings on office and registration space. This requires that the files are kept authentically, with integrity, in a usable and reliable manner for the entire duration of the retention period, as required by the common standards for records management (DIN ISO 15489). And this in turn requires the use of certain software products, so-called document management systems and process processing systems (DMS/VBS), which technically implement these specifications. In addition, legally compliant records management requires organizational regulations and changes in previous data management, which often delay the rapid digitization of work processes or even digital transformation.

IMPLEMENTATION OF ELECTRONIC RECORDS MANAGEMENT IN GERMANY

The implementation und rollout of these e-file-software was not a centrally controlled and homogenous process throughout Germany and it is not yet finished. Rather, a lot of very different systems were implemented and are used today. In Bavaria alone, state authorities and justice use 10 different e-file systems. In ad-

2 MEHR FORTSCHRITT WAGEN. BÜNDNIS FÜR FREIHEIT, GERECHTIGKEIT UND NACHHALTIGKEIT. Koalitionsvertrag 2021 – 2025 zwischen der Sozialdemokratischen Partei Deutschlands (SPD), BÜNDNIS 90 / DIE GRÜNEN und den Freien Demokraten (FDP), Berlin 2021 im Internet abrufbar unter: https://www.bundesregierung.de/resource/blob/974430/1990812/1f422c60505b6a88f8f3b3b5b8720bd4/2021-12-10-koav2021-data.pdf?download=1 (zuletzt abgerufen am 23.11.2023).

dition, very heterogeneous levels of implementation have been developed in the individual branches of administration and justice as well as at the federal and individual state levels. For example, while the state administration in Baden-Württemberg and the federal administration of Germany began introducing e-files only in the last several years, parts of the state administration in Bavaria have already been working with e-files for 10 years or longer. The Bavarian Ministry of the Environment already used an e-file-system in 1996. The Bavarian State Archives were the first entire administrative branch to introduce and roll out e-file with case processing across the board in 2009. But smaller authorities in Bavaria have also been working with e-files for 20 years. The status of the e-file introduction is now at an advanced stage in most federal states and the file is now being rolled out quickly at the federal level after a pilot phase in 2018/19.

When the systems were introduced, the foreseeably necessary archiving of these electronic records still seemed very far-away and seemingly more important challenges were prioritized. The implementation of corresponding archiving interfaces for electronic records was postponed. For this reason, electronic records have not been archived on a really large scale anywhere in Germany, although masses of archive-ready data have now been accumulated. This growth has increased dramatically in recent years in particular, as a number of implementation projects have been started in larger branches of government at the federal, regional, and local levels and in the judiciary since 2015. In many cases, the shortest retention periods of up to five years for the records stored there have already expired.

Basically, it is also a matter of fact that numerous government agencies already have archive-ready electronic records, and this number has increased significantly in recent years. Almost 60,000 users from various government agencies are currently working with the most common Bavarian e-File-System, the so-called eAkte Bayern. This software is also used in specific adaptations by the federal government, in Hesse and Rhineland-Palatinate as well as in the federal and state administrations of Austria (Schöggl-Ernst, 2020). In Bavaria users of this software have already processed more than 44 million documents in almost 9 million records. Of these, up to a million records are currently ready for archiving. Exact numbers are difficult to obtain because in many cases the correct retention periods have not yet been stored in the system.

EXCHANGE STANDARD XDOMEA

For deposing and archiving all of these data successfully, the exchange standard xdomea has long existed throughout Germany[3]. Like other standards, xdomea is an important prerequisite for the long-term archiving of authentic data and enables the implementation of automated interfaces (Ernst, 2022). The standard includes both a workflow and the definition of process-related, content-related and technical metadata that is to be supplied with the primary documents based on XML (Hoppenheit & Schmidt, 2022). The xdomea-workflow is closely based on the processes of disposing and appraisal of analog-based administrative information that have been established for many decades. Accordingly, the emitting office provides the archive with the records that are ready for disposal using an XML message. This message is similar to an offer list known from the analogue world and only contains metadata and structural information. Optionally, receipt of the message is confirmed by the archive. In a second process step, the archive evaluates the records offered based on the metadata and sends an XML message with the appraisal decisions to the submitting authority. Another XML message is then created there, which only contains the metadata and structural information about the information that is worthy of being archived. In addition, primary documents, e.g. PDF files are transmitted. The archive can now appraise the records on the basis of an autopsy. In the final process step, the archive confirms the successful processing of the information with another XML message and, if necessary, transmits the archive signatures. The data can now be deleted at the emitting office. The standards also enable a shortened two-stage process for records that have already been appraised. In this case, the XML message with metadata, structural information and primary data is sent to the archive and from there, after processing the data, only the acknowledgment message is sent back to the emitting office. The IT Planning Council of the federal and regional govern-

3 This archiving procedure was theoretically described as the basis for the transfer and appraisal of electronic files, records and documents from a records processing and document management system in 2004/2005 by the then Federal Government Coordination and Advisory Center for Information Technology in the Administration in the Federal Ministry of the Interior and became part of the DOMEA- Organizational concept and its expansion module "Segregation and archiving of electronic files". In 2008, xdomea was approved and recommended for use by the "Federal and State Cooperation Committee for Automated Data Processing (KoopA ADV)". With version 2.2 xdomea was XÖV certified for the first time, i.e. recognized as a standardized data exchange for public administration in XML syntax. The current version is version 3.0. Version 4.0 is currently being prepared. For the state administration in Bavaria, the ICT standard BayITS-20 for interoperability between e-file/document management and long-term archiving systems has stipulated xdomea as an exchange format for documents and processes since 2004.

ments determined in 2017 that for the exchange as well as the archiving of digital files, records and documents xdomea has to be used.[4] Corresponding xdomea interfaces have been mandatory for all newly built or essentially rebuilt applications which serve the cross-federal and state data exchange or the exchange of data with citizens and businesses for all state agencies in Germany since 2017. For all other affected software systems, the implementation deadline expired in October 2020 (IT-Planungsrat, 2017). Therefore, the xdomea standard offers a reliable basis for archiving the administration‘s e-files, which ultimately has to be used by all manufacturers of corresponding software products as well as by the archives. For this reason, the Bavarian State Archives have had a tool developed with the xdomea client and put it into production in 2016, which allows largely automated appraisal, structuring, ingestion, and acknowledgment as well as the basic automated indexing of electronic files and records that are worthy of archiving and the automated documentation of all working processes (Puchta, 2021).

NECESSARY EFFORTS AND COORDINATION FOR LARGE SCALE ARCHIVING OF ELECTRONIC RECORDS

Since e-files have been produced in Bavaria and other federal states of Germany for more than 15 years and the corresponding tools are available with the xdomea standard and in Bavaria with the xdomea client, it could be assumed that administrative and judicial e-files have already been archived on a larger scale. However, this is not the case. In fact, xdomea-compliant archiving on a large scale has not been exercised in Germany until now. In Bavaria, too, automated xdomea-based archiving was only carried out in the case of two specialist procedures and not in one of the ten different e-file systems currently in use by the Bavarian state administration. For the ten e-file systems of the state administration in Bavaria, however, the implementation of corresponding archiving interfaces is currently in various phases of coordination and implementation. The archiving of e-files is now most urgent for the major e-file system of the Bavarian state administra-

4 The IT Planning Council has existed since 2010 on the basis of the IT State Treaty of April 1, 2010 by the federal and regional governments of the Federal Republic of Germany. The IT Planning Council coordinates the cooperation between the federal and state governments information technology issues, decides on subject-independent and cross-disciplinary IT interoperability and IT security standards, coordinates and supports federal cooperation and state governments in questions of digitalization of administrative services and controls projects and products of government and administration supported by information and communication technology, which are assigned to the IT planning council and provide binding decisions.

tion, the so-called eAkte Bayern, due to the large amount of archive-ready data. This is where the implementation and coordination of an archiving interface on the original system side has progressed furthest and will be completed in the first half of 2024. This is also the case for the archiving of data from the first large pilot authorities. The first large xdomea-compliant data transfer from public administration e-file systems in Germany already clearly shows the associated challenges and opportunities. This already points to the effort and coordination that is necessary for archiving electronic records on a larger scale. For reasons of data provenance but also due to the large number of files and processes that are already ready for archiving and are to be archived in the future, an at least partially automated and standards-compliant solution for archiving e-files has to be used (Puchta, 2021).

This requires that a data mapping is coordinated for the XML data in accordance with the xdomea standard and kept evident for the respective version updates of the standard and the components involved. This means that for each individual piece of information from the original system that is worthy of being archived, it must be determined which xdomea XML attribute it should be assigned to. This is absolutely necessary for the long-term correct interpretation of the archived data, and this has to be defined for every e-file-system and every major update of that software. The process is time-consuming and can only be implemented sensibly in consultation with the responsible archives because the xdomea standard is broad and allows for different interpretations. So far, this coordination process for e-files in Bavaria could only be completed for the major e-file system and two specialized digital systems (Baumann & Schmalzl, 2021). For all other systems this process is still pending. A reason for the delays that should not be underestimated is that the implementation of suitable archiving interfaces is still not a priority for the software manufacturers. But even if automated interfaces between e-file systems and archives have been implemented and are working productively, important questions still remain to be clarified. This also applies in particular to the archiving of record-relevant data from specialized digital systems. In many administrative areas and also in justice document management systems or e-file systems were only implemented long after essential business processes had been digitized with the help of special software systems (Ernst,

2017). All too often, important record-relevant information is not stored in the so-called e-file systems. In some cases, it may be sufficient to ensure that the data from the connected specialist digital systems is transferred to the e-file systems. For this purpose, the focus must be directed not only on the interface between the e-file system and the archive but also on the interface between the e-file system and associated software systems. The data producers must be advised accordingly so that important data from all involved software systems can also be stored in the e-file systems and archived from there.

In many cases though the e-file systems only serve as a mere document storage and do not hold all the information that one would generally expect to be found in records (Ernst, 2017). Rather, the information on the course of business that is absolutely necessary for the traceability of administrative actions may only be found in a connected special software system. The same applies to essential content metadata that may not even be present in the documents stored in the e-file-system (Schmalzl & Unger, 2020). A mere fixation on e-file systems is not enough if complete files in a material sense should continue to be archived for posterity, containing all essential information about an administrative matter. Rather, data from different specialized digital systems and e-file systems have to be brought together for archiving. Archivists therefore will have to deal with these software systems much more intensively in order to be able to archive file-relevant information from these, but also to be able to automatically use the information stored there for the archival description of the archived files. Only then will sufficient data and metadata be available for digital files for scientific access and reuse of the records. In addition to these requirements, which are already clearly evident for various delivery points and source systems, some further challenges are to be expected with the introduction of productive archiving from e-file systems. This applies, for example, to the connective appraisal of hybrid – paper and electronic – files. Another issue is the archiving of a wide variety of data formats that were imported into the e-file systems as document attachments and file inserts and can only be interpreted using special software or only to a limited extent or even not anymore, fifteen years after they were stored.

With the implementation of the partially automated archiving interface for the major e-file system of the Bavarian state administration, valuable experience will

arise here over the course of 2024. This will be the first large-scale e-file archiving based on xdomea in Germany. From this point onwards, far more archivists will be working with digital data. This will continue to affect conceptual work as well. This includes, among other things, data mapping for other e-file systems, the definition of minimum requirements for metadata for the various departments and specialist areas or, of course, the adaptation of the already productive interfaces to the respective new versions of the different software systems and standards. The appraisal activity will also continue to change and shift more towards the run-up to data production. (Schöggl-Ernst, 2020). Last but not least an infrastructure has to be created and implemented to make the archived data conveniently available to users again.

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