Markus Schmalzl[1]

FAIR ACCESS OPTIONS TO ARCHIVAL DATA IN GERMANY?

Abstract

Purpose: *The purpose of the research was to examine the extent to which FAIR access options for data held by public archives currently exist in Germany. To this end, the most important archive portal in Germany, the Archivportal-D was analyzed. In addition, projects were identified that point towards the further FAIRification of archived data.*

Method/Approach: *This article examines the online access options provided to public archives across all sectors via the Archivportal D and evaluates them against the FAIR criteria. Additionally, drawing on current literature in archival science, the article identifies pioneering projects and best practices that are currently advancing the FAIRification of archived data.*

Results: *Overall, the data from public German archives made available via Archivportal D already largely meet the FAIR criteria for research data. The long-term reusability of records and data - extending far beyond the ten-year retention period currently required by research organizations - has long been a core value of public archives. Furthermore, the findability of and access to archival holdings in state archives have improved significantly in recent years, and large-scale nationwide projects by state archive administrations to implement protected digital reading rooms will further advance this progress. Smaller-scale initiatives and lighthouse-projects implemented notably within the framework of the National Research Data Infrastructure (NFDI) or other collaborative efforts also make it possible to assess the effort involved in „FAIRification" and to pilot the necessary processes. In contrast, the criteria regarding the interoperability of archived data and provided metadata are still met only to a limited extent. The degree to which this situation improves significantly in the coming years will depend - even for high-performing archive administrations - on the personnel and financial resources made available to them.*

[1] Markus Schmalzl, Dr. phil., Staatsarchiv München, email: Markus.Schmalzl@stam.bayern.de.

Conclusions/findings: *For many years, public archives in Germany have been striving to improve access to archival holdings. Despite these efforts, however, success has so far been limited. The vast majority of public archives in Germany - specifically those of small and medium-sized municipalities - either unable or barely able to provide (online) access to archived data. This study examined the most important German archive portal, which offers both large, high-capacity archives and many smaller ones the opportunity to publish data online. Limitations regarding the FAIR criteria persist here, primarily concerning data interoperability. The development of protected digital reading rooms - a process driven by the major project „Transformation of Restitution" (Transformation der Wiedergutmachung) - is likely to accelerate this trend among state archives and other larger archives in the coming years. If AI-based transcription and GIS tools are subsequently integrated into these systems on a broader scale, it will be possible to make FAIR data from public archives available in large volumes. Conversely, achieving FAIR access to „born-digital" and analog-origin data on a larger scale will require further adjustments to the access components of digital archives. In the coming years, therefore, it will depend primarily on the personnel and financial resources made available to public archives to facilitate the usability of the archived data.*

Keywords: *Findability, Accessibility, Interoperability, Reusability*

MOŽNOSTI DOSTOPA DO PODATKOV IZ NEMŠKIH ARHIVOV V SKLADU Z NAČELI FAIR?

Izvleček

Namen: *Namen raziskave je bil ugotoviti, v kolikšni meri je v Nemčiji trenutno omogočen dostop do podatkov, ki jih hranijo javni arhivi, v skladu z načeli FAIR. V ta namen je bil analiziran najpomembnejši nemški arhivski portal Archivportal-D. Raziskava je opredelila tudi projekte, ki prispevajo k nadaljnjemu usklajevanju arhivskih podatkov z načeli FAIR.*

Metoda/pristop: *Prispevek obravnava možnosti spletnega dostopa do podatkov javnih arhivov z različnih področij prek portala Archivportal-D in jih vrednoti glede na merila FAIR. Na podlagi novejše arhivske strokovne literature predsta-*

vi tudi pionirske projekte in primere dobre prakse, ki izboljšujejo skladnost arhivskih podatkov s temi merili.

Rezultati: *Podatki nemških javnih arhivov, dostopni prek portala Archivportal-D, v veliki meri že izpolnjujejo merila FAIR za raziskovalne podatke. Dolgoročna ponovna uporaba gradiva in podatkov, ki močno presega desetletno obdobje hrambe, trenutno zahtevano od raziskovalnih organizacij, je že dolgo eno temeljnih načel delovanja javnih arhivov. Možnost iskanja arhivskega gradiva v deželnih arhivih in dostop do njega sta se v zadnjih letih znatno izboljšala. K nadaljnjemu napredku bodo prispevali obsežni projekti vzpostavljanja varovanih digitalnih čitalnic. Manjše pobude in pilotni projekti, zlasti v okviru Nacionalne infrastrukture za raziskovalne podatke (NFDI) in drugih oblik sodelovanja, omogočajo oceno dela, potrebnega za uskladitev podatkov z načeli FAIR, ter preizkušanje ustreznih postopkov. Nasprotno pa arhivirani podatki in njihovi metapodatki merila interoperabilnosti za zdaj izpolnjujejo le v omejenem obsegu. Nadaljnji napredek bo tudi v dobro razvitih arhivskih upravah odvisen od razpoložljivih kadrovskih in finančnih virov.*

Sklepi/ugotovitve: *Nemški javni arhivi si že vrsto let prizadevajo izboljšati dostop do arhivskega gradiva, vendar so rezultati teh prizadevanj za zdaj omejeni. Večina arhivov manjših in srednje velikih občin spletnega dostopa do arhiviranih podatkov ne more zagotavljati ali pa ga zagotavlja le v zelo omejenem obsegu. Archivportal-D omogoča spletno objavo podatkov tako velikim arhivom z večjimi zmogljivostmi kot številnim manjšim arhivom, vendar ostajajo pomanjkljivosti pri izpolnjevanju meril FAIR, predvsem glede interoperabilnosti. Vzpostavljanje varovanih digitalnih čitalnic v okviru obsežnega projekta Transformation der Wiedergutmachung bo v prihodnjih letih verjetno pospešilo razvoj spletnega dostopa v deželnih in drugih večjih arhivih. Širša vključitev orodij za prepisovanje besedil z umetno inteligenco in geografskih informacijskih sistemov bi omogočila dostop do velikih količin arhivskih podatkov v skladu z načeli FAIR. Za širši dostop do izvorno digitalnega gradiva in gradiva, ki je nastalo v analogni obliki, pa bo treba dodatno prilagoditi dostopne funkcionalnosti digitalnih arhivov. Uporabnost arhiviranih podatkov bo zato v prihodnjih letih odvisna predvsem od kadrovskih in finančnih virov javnih arhivov.*

Ključne besede: *iskanje arhivskega gradiva, dostopnost, interoperabilnost, ponovna uporaba.*

OPZIONI DI ACCESSO FAIR AI DATI D'ARCHIVIO IN GERMANIA?

Abstract

Obiettivo: *Lo scopo della ricerca era quello di esaminare in che misura esistano attualmente in Germania opzioni di accesso FAIR ai dati conservati dagli archivi pubblici. A tal fine, è stato analizzato il portale archivistico più importante della Germania, l'Archivportal-D. Inoltre, sono stati individuati progetti che puntano a un'ulteriore "FAIRificazione" dei dati d'archivio.*

Metodo/Approccio: *Il presente articolo esamina le opzioni di accesso online fornite agli archivi pubblici di tutti i settori tramite l'Archivportal D e le valuta alla luce dei criteri FAIR. Inoltre, attingendo alla letteratura attuale nel campo dell'archivistica, l'articolo individua progetti pionieristici e buone pratiche che stanno attualmente promuovendo la FAIRificazione dei dati d'archivio.*

Risultati: *Nel complesso, i dati provenienti dagli archivi pubblici tedeschi resi disponibili tramite Archivportal D soddisfano già in larga misura i criteri FAIR per i dati di ricerca. La riutilizzabilità a lungo termine dei documenti e dei dati – che va ben oltre il periodo di conservazione di dieci anni attualmente richiesto dagli enti di ricerca – è da tempo un valore fondamentale degli archivi pubblici. Inoltre, la reperibilità e l'accessibilità dei fondi archivistici negli archivi statali sono migliorate in modo significativo negli ultimi anni, e i progetti su larga scala a livello nazionale promossi dalle amministrazioni degli archivi statali per l'implementazione di sale di lettura digitali protette favoriranno ulteriormente questi progressi. Anche le iniziative su scala più ridotta e i progetti faro realizzati in particolare nell'ambito dell'Infrastruttura Nazionale per i Dati di Ricerca (NFDI) o di altre collaborazioni consentono di valutare l'impegno richiesto dalla "FAIRificazione" e di sperimentare i processi necessari. Al contrario, i criteri relativi all'interoperabilità dei dati archiviati e dei metadati forniti sono ancora soddisfatti solo in misura limitata. La misura in cui questa situazione migliorerà in modo significativo nei prossimi anni dipenderà – anche per le amministrazioni archivistiche più efficienti – dalle risorse umane e finanziarie messe a loro disposizione.*

Conclusioni/risultati: *Da molti anni gli archivi pubblici tedeschi si impegnano a migliorare l'accesso ai fondi archivistici. Nonostante questi sforzi, tuttavia, i risultati ottenuti finora sono stati limitati. La stragrande maggioranza degli archivi pubblici in Germania – in particolare quelli dei comuni di piccole e medie dimensioni – non è in grado, o lo è solo in misura minima, di fornire l'accesso (online) ai dati archiviati. Il presente studio ha esaminato il più importante portale archivistico tedesco, che offre sia agli archivi di grandi dimensioni e ad alta capacità sia a molti archivi più piccoli l'opportunità di pubblicare i dati online. In questo ambito persistono alcune limitazioni relative ai criteri FAIR, soprattutto per quanto riguarda l'interoperabilità dei dati. Lo sviluppo di sale di lettura digitali protette – un processo guidato dal grande progetto «Trasformazione della Restituzione» (Transformation der Wiedergutmachung) – dovrebbe accelerare questa tendenza tra gli archivi statali e altri archivi di maggiori dimensioni nei prossimi anni. Se la trascrizione basata sull'intelligenza artificiale e gli strumenti GIS venissero successivamente integrati in questi sistemi su scala più ampia, sarebbe possibile rendere disponibili grandi volumi di dati FAIR provenienti dagli archivi pubblici. Al contrario, garantire l'accesso FAIR ai dati "nati digitali" e di origine analogica su scala più ampia richiederà ulteriori adeguamenti alle componenti di accesso degli archivi digitali. Nei prossimi anni, quindi, la facilità d'uso dei dati archiviati dipenderà principalmente dalle risorse umane e finanziarie messe a disposizione degli archivi pubblici per facilitare l'utilizzo dei dati archiviati.*

Parole chiave: *reperibilità, accessibilità, interoperabilità, riutilizzabilità*

FAIR DATA: A TOPIC FOR ARCHIVES?

Improving access to archived information is an ongoing task of great importance for public archives in Germany. The ICA's Universal Declaration on Archives - supported by the Association of German Archivists - calls for the freest possible access to archives, not only because it enriches our collective knowledge of human society, but also because it is a vital element in fostering democracy, protecting civil rights, and improving quality of life (ICA, 2011). For decades, archives in Germany have been working to build the infrastructure needed to meet this goal. Huge quantities of archived paper-based data are not currently retrievable or accessible via digital means and many smaller archives will hardly be in a position to change this in the foreseeable future either. But nevertheless descriptive metadata and digital copies of archival materials are now available online by the millions offered via the websites and digital reading rooms of major archival authorities (Schöggl-Ernst, 2025) as well as through the portals of cooperation partners. Since 2012, Archivportal-D has made it possible to aggregate this information across all archival sectors at the national level and publish it internationally via Archives Portal Europe and Europeana. However, further adjustments are required to further increase the visibility and relevance of archived data: the (meta)data must be further processed to enable integration into the information infrastructures currently being developed at national and European levels. Datasets must be linkable to other online resources in line with Linked Open Data and Semantic Web principles-requirements that necessitate data standardization. For some years now, the so-called FAIR principles have served as a benchmark for data reusability, particularly within the academic and research communities. What do these principles entail?

WHAT DOES FAIR DATA MEAN?

First described in 2016, the 'FAIR Guiding Principles for scientific data management and stewardship' have since become a key standard for research data management within the EU. They aim to ensure that data are prepared, documented, and archived in such a way that they can be reused and analyzed - either by humans or through automated processes - over extended periods. The acronym FAIR stands for Findable, Accessible, Interoperable, and Reusable.

The GoFAIR initiative has further refined each of these requirements-which apply to data, metadata, and infrastructure-by specifying criteria, adding interpretations, and illustrating them with examples (GO FAIR, 2022). Only the main criteria are listed here:

Findable

F1. (Meta)data are assigned a globally unique and persistent identifier.

F2. Data are described with rich metadata (defined by R1 below).

F3. Metadata clearly and explicitly include the identifier of the data they describe.

F4. (Meta)data are registered or indexed in a searchable resource

Accesible

A1. (Meta)data are retrievable by their identifier using a standardised communications protocol.

A1.1 The protocol is open, free, and universally implementable.

A1.2 The protocol allows for an authentication and authorisation procedure, where necessary.

A2. Metadata are accessible, even when the data are no longer available.

Interoperable

I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.

I2. (Meta)data use vocabularies that follow FAIR principles.

I3. (Meta)data include qualified references to other (meta)data

Reusable

R1. (Meta)data are richly described with a plurality of accurate and relevant attributes.

R1.1. (Meta)data are released with a clear and accessible data usage license.

R1.2. (Meta)data are associated with detailed provenance.

R1.3. (Meta)data meet domain-relevant community standards

HOW FAIR IS THE DATA FROM PUBLIC ARCHIVES IN GERMANY – ARCHIVPORTAL-D?

Taking the data from public German archives provided via Archivportal-D as a benchmark, a high level of findability becomes apparent. The data

are described using meaningful metadata based on (quasi-)standard archival practices; they include, at a minimum, the name of the holding archive, an assignment to a specific fonds, provenance information regarding the data's origin, a summary subject description, and a date range indicating when the data were created. The metadata also include the item's reference number, which serves as the identifier for the described data. Ideally, this reference number functions as a persistent, globally unique identifier composed of the archive name, the fonds designation, and the specific number of the archival record or unit. However, given the frequency with which archives undertake retrospective corrections and the reorganization of holdings, one might well question the extent to which the reference number actually meets these criteria. Consequently, some state archive administrations and major institutions--such as the Bavarian State Archives-supplement the request signature with Universally Unique Identifiers (UUIDs) included in the metadata record and, where applicable, assign URLs to digital copies. In such cases, the requirements for a persistent, unique identifier are unequivocally met. Furthermore, Archivportal-D has implemented ID-based person searches utilizing the controlled vocabulary of the Integrated Authority File (GND), which is managed by the German National Library. This ensures the unambiguous identification of individuals mentioned in the descriptive metadata and facilitates further research via dedicated person pages.

Data accessibility within Archivportal D is also largely ensured. The portal offers extensive search functions and enables the retrieval of (meta)data based on provenance - that is, by tracing the functions or spheres of authority of the historical data creators and the jurisdictions of the holding archives. Some data can also be accessed via thematic portals, where the data are indexed with additional content-related metadata. As a rule, descriptive metadata for archived data is provided, even if the archived data itself is not yet, or is no longer, available online. Furthermore, this descriptive metadata can be retrieved using a standardized protocol that is open, free, and universally implementable (HTTP/HTTPS); this also applies where the archived data is already available in digitized form. Currently, Archivportal D contains almost exclusively descriptive metadata for archived data that is not subject to further access restrictions.

In principle, however, it is also possible to provide descriptive metadata for archived data with restricted access. The descriptive metadata indicates the conditions under which the data can be made accessible by referencing any remaining embargo periods. Conversely, the metadata does not specify the actual conditions under which the archived data may be viewed and analyzed; this is determined on a case-by-case basis at the discretion of the holding archive and in some instances, such as with the Bavarian State Archives, in consultation with the agency that produced the data. Consequently, there is currently no mechanism for automatically verifying compliance with these access conditions or for automatically notifying users of such restrictions, as envisaged by the FAIR principles. While downloading descriptive metadata and digital copies is generally possible-provided the data is appropriately licensed and the partner archives offer this functionality-there is currently a lack of interfaces that would enable large-scale data downloads directly from the portal, or even the harvesting of descriptive metadata for presentation across the channels of emerging research data infrastructures and across disciplinary boundaries.

In terms of interoperability, however, the (meta)data from public archives within Archivportal-D still exhibits certain shortcomings. Consequently, description was frequently based on the historical subject lines of the documents, thereby utilizing terminology that is partly obsolete today. This significantly limits comprehensibility for contemporary users, particularly for non-native speakers. The same applies to the data itself, the archived records, which were naturally written in the language of the era in which they originated. Moreover, much of this material is handwritten; consequently, beyond the linguistic challenges, the handwriting itself makes automated or even manual analysis difficult. Currently, Archivportal-D offers no transcription tools or similar software to overcome this barrier to interoperability. While linking to other (meta)data is technically and organizationally feasible, such links have generally not been included in the descriptions. This applies to only a small fraction of the data, specifically, the records that have been indexed with additional content-related metadata and made accessible via so-called thematic portals. However, a growing (albeit still modest) portion of the descriptive metadata concerning individuals has now been linked to the German National Library's Integrated Authority File (GND) and

Wikidata; this significantly strengthens cross-data connectivity both within the portal and with external resources, in line with Linked Open Data principles.

In terms of reusability, data from public archives made available via Archivportal-D performs relatively well. The data is described using extensive and relevant metadata, such as subject matter, date range, and notes regarding contents or inclusions. While this data largely does not yet comply with international archival standards like ISAD-G or Records in Context partly because it predates these standards and archives often lack the capacity or automated processes to revise descriptive metadata, the metadata nonetheless enables diverse forms of analysis and meets a recognized quasi-standard for archival description.

Terms of use are also generally displayed clearly and accessibly alongside the respective dataset in Archivportal-D, adhering to the specific guidelines of the contributing archive. However, this metadata element is not provided by all contributing archives for every dataset, representing a minor shortcoming.

In contrast, determining the origin and provenance of the data is a core competency of archival description. Consequently, information regarding the data's origin, often established through considerable effort, is ensured for all, or virtually all, datasets.

PROJECTS, BEST PRACTICES, AND OTHER INITIATIVES TO MAKE DATA FROM PUBLIC ARCHIVES EVEN MORE FAIR.

Numerous major archive administrations in Germany are currently running flagship projects that test and implement improvements regarding findability, accessibility, interoperability, and reusability in a variety of ways. Although only a few of these projects can be mentioned here, the associated best practices highlight untapped potential and offer a glimpse of what archive usage might look like in the near future. For instance, users of the cross-border portal Porta Fontium have access to extensive full-text search capabilities for digitized handwritten sources from the cooperating Bavarian and Czech archives; these capabilities rely on image recognition and analysis strategies, as well as OCR and HTR technologies (Augustin and Halla, 2022). This significantly enhances

the interoperability of the originally analog, handwritten archival records. Since 2024, the Lower Saxony State Archives has provided a geo-search-feature that enables users to initiate searches based on location using a geographic information system (GIS). Users can view not only current locations but crucially historical settlements (such as mills, abandoned villages, and manor houses) and administrative boundaries from the 19th and 20th centuries. For in-depth analysis in QGIS, this historical data can be exported or linked via geo-services (Niedersächsisches Landesarchiv, 2024).

Within the major project to establish a National Research Data Infrastructure (NFDI) in Germany, participating archives have successfully developed various best practices in collaboration with a wide range of partners. For instance, as part of the NFDI4Memory consortium, the Bamberg State Archives worked with partners from the university and library sectors to devise strategies and methods for linking archival finding aids to the controlled vocabulary of the Integrated Authority File (GND) in a resource-efficient manner, while also integrating this task into standard archival workflows (Haslauer, 2025). Additionally, within the NFDI4Biodiversity consortia, an interdisciplinary team comprising the Bavarian State Archives, the University of Passau, and the German Centre for Integrative Biodiversity Research (iDiv) applied FAIR principles to analog animal observation data dating back to 1845. The handwritten data were digitized, automatically transcribed, georeferenced, structured according to international data standards, and validated by cross-referencing historical animal species names with modern taxonomy. Subsequently, the dataset was published via GBIF - the world's most widely used platform for biodiversity data - and on the portal Living Atlas of Nature Germany (Rehbein, 2025). In doing so, the project team created a model use case that can serve as a template for the future mobilization of archived biodiversity data. In 2026, the project and the resulting dataset received the „FAIRest Dataset Award" from the Thuringian Competence Network for Research Data Management (Thüringer Kompetenznetzwerk Forschungsdatenmanagement, 2026).

The most significant project currently underway in Germany to further the FAIRification of data from public archives is titled "Transformation of Restitution". Within this project, all compensation and restitution files - as well as

other archived records and explanatory information regarding the redress of Nazi-era injustices held in German state archives - are being cataloged and digitized according to standardized criteria; they are then made accessible via the thematic portal "Restitution of National Socialist Injustice" within Archivportal D. This initiative will lead to a substantial increase in the volume of metadata records and digitized archival materials available through the portal over the coming years, rising from the current figure of approximately 33 million to around 66 million catalog records. Descriptive metadata is compiled using uniform federal standards and aligned with controlled vocabularies. Subsequent steps - such as linking records to explanatory information on historical administrative procedures and connecting them with external resources regarding the history of National Socialism and redress efforts, in line with Linked Open Data principles - are also planned (Dubout/Pilz, 2025). Above all, the project involves the creation of "Protected Digital Reading Rooms" within German state archives, enabling users to access all archival services directly online for the first time. This includes the ability to view - subject to authorization - digitized versions of analog records and archived "born-digital" materials that are still under statutory access restrictions. The first of these Protected Digital Reading Rooms went live at the Bavarian state archives in mid-July 2026 (Puchta, 2026). This represents a significant step toward a proactive, participatory user service that fosters greater outreach and education (Schlenker, 2025).

REFERENCES

Augustin M., Halla K. (2022). Das Tor zu den Quellen als Tor zur freundschaftlichen Zusammenarbeit. Dreizehn Jahre Digitalisierung von westböhmischem und bayerischem Archivgut. *Festschrift für Margit Ksoll-Marcon*, *Archivalische Zeitschrift*, *99*, 35–42.

Dubout, K. & Pilz, N. (2025). Das Themenportal Wiedergutmachung nationalsozialistischen Unrechts im Archivportal-D. Zwischenbilanz und Perspektiven. *Archivar, 78*(4), 319–323. Retrieved from: https://www.archive.nrw.de/sites/default/files/media/files/ARCHIV-theorie-praxis-2025-4-Internet_0.pdf (accessed on 07.09.2026).

Fähle, D. & Seidu N. (2017): *Mit „Match & Merge" zur GND? Erprobung von Anreicherungsverfahren um Archivportal-D-Projekt*. *Archivar*, *73*(2), 196–198. Retrieved from: https://www.archive.nrw.de/sites/default/files/media/files/Archivar_2_2017.pdf (accessed on 07.09.2026).

GoFAIR, FAIR-Principals. Retrieved from: https://www.go-fair.org/fair-principles (accessed on 28.08.2026).

Hänger, A. (2025). Analog, hybrid, digital und virtuell. Perspektiven für die Archivnutzung im Bundesarchiv. *Archiv. Theorie & Praxis, 78*(2), 117–121.

Haslauer, J., Stimpert, M. et al. (2025). Hands-on Normdaten! Use Case zur communityorientierten, ressourceneffizienten und kreativen Implementierung der Gemeinsamen Normdatei (GND) in den Erschließungsworkflow einer staatlichen Archivverwaltung am Beispiel Bayerns. *Archiv. Theorie und Praxis*, *78*(3), 244–247.

International Council of Archives. (2010). *Universal Declaration on Archives*. Oslo. Retrieved from: https://www.ica.org/resource/universal-declaration-on-archives-uda/ (accessed on 28.08.2026).

NFDI4Biodiversity. (2026). *Historischer Biodiversitätsdatensatz erhält FAIRest Dataset Award 2026*. Retrieved from: Historischer Biodiversitätsdatensatz erhält Thüringer FAIRest Dataset Award 2026 - NFDI4Biodiversity (accessed on: 09.09.2026).

Niedersächsisches Landesarchiv. (2024). *Geosuche des Niedersächsischen Landesarchivs ist online*. Retrieved from: https://nla.niedersachsen.de/startseite/aktuelles/neuigkeiten/2024/geosuche-des-niedersachsischen-landesarchivs-ist-online-230679.html (accessed on 07.09.2026).

Puchta, M. (2026). Der Geschützte Virtuelle Lesesaal der Staatlichen Archive Bayerns – GVL. Der virtuelle Zugang zum Archiv – von der Kür zur Pflicht. *Archiv. Theorie und Praxis*, *76*(1), 102–106.

Rehbein, M., Escobari, B., Fischer, S. et al. (2025). Quantitative and qualitative Data on historical Vertebrate Distributions in Bavaria 1845. *Sci Data, 12*(525). Retrieved from: https://doi.org/10.1038/s41597-025-04846-8 (accessed on: 10.09.2026).

Ruisinger, D. (2024). Das Archivportal-D 2014-2024. *Archiv. Theorie und Praxis, 78*(2). 149–151.

Schlenker, D. (2025). Pro-Active and User-Centered Archives Services. *Atlanti*, *35*(2). 21–35.

Schöggl-Ernst, E. (2025). The Digital Reading Room. A Window to the Outside World. *Atlanti, 35*(1). 47–58.

Thüringer Kompetenznetzwerks Forschungsdatenmanagement (2026). *Gewinner des FAIRest Data Set Awards*. Retrieved from: https://forschungsdaten-thueringen.de/nachricht/gewinner-des-fairest-datasets-award-2026.html (accessed on: 10.09.2026).

SUMMARY

Public archives in Germany have substantially expanded online access to their holdings, yet the extent to which archival data meet the FAIR principles-Findable, Accessible, Interoperable and Reusable-remains uneven. This article assesses data and metadata made available through Archivportal-D, Germany's national archive portal, and examines projects that could improve their use in research.

Archivportal-D provides a strong basis for finding archival material. Descriptive metadata identify the holding archive, fonds, provenance, content and date range, while reference codes and, in some cases, persistent identifiers help users locate records. Metadata are generally searchable and accessible even when the records themselves are not available online. Access remains more limited for restricted records, however: conditions for consultation are often assessed by the holding archive, and the portal lacks interfaces for downloading large datasets or harvesting metadata at scale.

Interoperability presents the greatest challenge. Descriptions may use historical or inconsistent terminology, while handwritten records require transcription before they can be searched and analysed effectively. Links to external resources and controlled vocabularies are still uncommon, although connections to the German Integrated Authority File and Wikidata are increasing. Reusability is supported by archival descriptions and provenance information, but terms of use are not consistently supplied for every dataset.

Several initiatives show how these limitations can be addressed. Full-text search for handwritten sources in Porta Fontium, geographic search in the Lower Saxony State Archives, and projects within Germany's National Research Data Infrastru-

cture combine transcription, georeferencing, controlled vocabularies and shared data standards. The *Transformation of Restitution* project is expected to add large quantities of standardised descriptions and digitised records to Archivportal-D. Its protected digital reading rooms will also enable authorised online access to records subject to statutory restrictions, including born-digital material.

These developments could make far more archival data available for research and reuse. Their wider adoption will depend on sustained funding and staff capacity, particularly in smaller municipal archives that currently have limited means to provide online access.

Typology: 1.03 Short Scientific Article