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DANS

Self Evaluation

2024

Colophon

This report was a joint effort thanks to the many DANS colleagues who contributed to it by writing texts, collecting, and analysing data, and thanks to the stakeholders and Honorary Fellows who provided valuable feedback during the writing process. The DANS Communications Team played an invaluable role in finalising and delivering the report.

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Introduction



DANS is a national research data infrastructure and contributes to the development and innovation of research data services by participating in national and international networks, infrastructures, programmes, and projects. As part of the KNAW institution portfolio, DANS is exceptional because it provides services that create and maintain (digital) research data collections and develops new infrastructural means to do so. DANS provides repository and training services to the Dutch research community and data professionals. Operating under the open science paradigm, DANS strives to open its services to a broad societal audience. In addition to these primary user groups, some of DANS' services are also important nodes in international collaboration.

DANS serves as the national centre of expertise and repository for research data in the Netherlands. Our vision is focused on promoting the reuse of research data to enhance the quality of scientific research. DANS is an active player in the Dutch data landscape, promoting cooperation and alignment with other organisations such as the eScience Center and SURF. All of this is aimed at improving the FAIRness of research data in the Netherlands and making a valuable contribution to science and society.

1.1 Centre of expertise

As a centre of expertise, DANS provides various services to meet the growing needs in the field of FAIR data. This includes providing expertise in research and data infrastructure projects at the European level, taking on board-level responsibility in international organisations, providing consultancy on demand, and training data professionals and researchers.

Additionally, DANS plays a prominent role in European projects, taking a leading position in developing standards, techniques, and methods for sharing, reusing, and archiving research data. This involvement enables DANS to transfer new knowledge and expertise from international projects to the national level, contributing to strengthening the position of the Netherlands in data management and research.

1.2 Data services

DANS offers a diverse package of data services, addressing the diverse needs and disciplines within scientific research. This includes providing modular solutions that align with the specific requirements of different research disciplines, offering domain-specific Data Stations and DataverseNL. Additionally, DANS also offers services for the long-term preservation of datasets, using the DANS Data Vault.

DANS is dedicated to facilitating data reuse within the research community through our specialised Data Stations. These domain-specific digital repositories provide researchers with secure environments for storing datasets, complete with comprehensive metadata and version control tools. Integration with data portals and platforms improves the discoverability of datasets across scientific disciplines.

Our Data Stations prioritise user-friendliness, enabling researchers to effortlessly update datasets, auto-complete information, and manage access rights. Various Creative Commons licences respond to sharing preferences, while safeguards protect sensitive data through embargo options and access restrictions. Citation management is simplified, and access is streamlined through institutional or widely used platform accounts. Using the Dataverse software developed by Harvard University, our Data Stations are constantly evolving to meet the needs of different scientific fields. Collaboration with the Dataverse community ensures continuous feature enhancements, and reflects our commitment to open-source solutions.

DataverseNL, a collaborative effort between DANS and participating institutions, provides a robust research data repository. While DANS manages technical infrastructure,

institutions oversee user rights and data curation within DataverseNL. The advisory board, consisting of representatives from the institutions, guides policy and strategic direction.

1.3 Governance

As a joint institute of KNAW and NWO, DANS is governed by both scientific umbrella organisations. Organisationally, DANS is part of the KNAW. The governance of the institute is described in a covenant between KNAW and NWO¹⁾. The Director of DANS is integrally responsible for the institute.

DANS holds meetings with external committees, representing different stakeholders, to monitor the general strategy and our key performance indicators:

- A Board Meeting (annually), in which the KNAW Director(s), one NWO Director and the DANS Director, discuss the general strategy of the institute. The Chair of the DANS Scientific Advisory Board attends these meetings as an advisor.
- The DANS Scientific Advisory Board (twice a year) offers solicited and unsolicited advice to the DANS management, and at the Board Meeting.
- Periodic Board Meeting (twice a year) in which the KNAW Director(s) and the DANS Director, the Head of Business Section and other DANS guests discuss the strategy and business of DANS.
- DataverseNL Advisory Board (twice a year) is chaired by a representative of one of the subscribing organisations and discusses the service in the context of developing RDM policies and practices in research institutions.

1.4 Composition and staff

The staff of DANS consists of about 55 people. There are also a number of volunteers who carry out specific tasks.

The Expert, Data, and Tech Sections are subdivided into 'competency groups'. The three sections are led by a section head, and coordinators lead the competency groups. The management team meets on a bi-weekly basis, and a joint meeting of the section heads with the coordinators takes place each month.

Since 2021, DANS no longer maintains a dedicated research team. However, some current staff members are registered part-time as faculty, and are involved in research projects and/or publications. DANS does not employ PhDs.

See Figure 1; DANS organisational chart, Figure 2; Composition and Staff, and Figure 3; Number of FTE.

Figure 1 **DANS organisational chart**

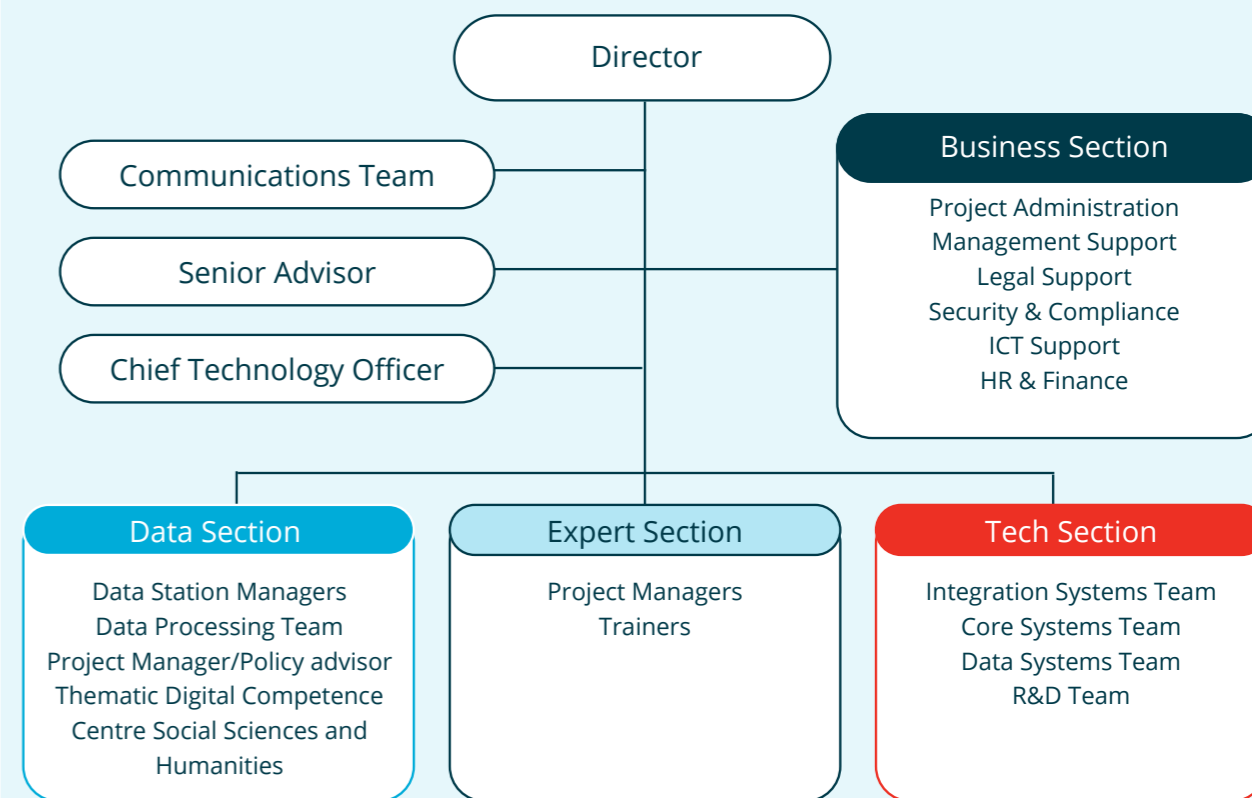


Figure 2 **Composition and Staff**

	2017	2018	2019	2020	2021	2022	2023
Total employees in persons	60	57	61	57	57	57	53
Total employees in FTE	51	46	48	48	48	49	45
Total non-employee personnel in persons	7	8	8	7	5	4	3
Allocation of FTE per function							
Faculty	13	10	11	11	6	4	4
Research Support Staff	28	27	30	29	33	34	31
Admin and management staff	10	9	7	8	9	11	11
Total	51	46	48	48	48	49	45

Figure 3 **Number of FTE per team December 2023**

Business Section	5
Data Section	9
Expert Section	10
Tech Section	16
Staff	5
Total FTE	45

1.5 Finances

Over the past six years, DANS' funding has increased from M€ 5.19 in 2017 to M€ 6.71 with the following fluctuations:

- The budget received from KNAW and NWO was M€ 3.2 in 2017, and increased to M€ 3.8 in 2023, mainly due to indexation and (partly) as a result of compensation for wage increases.
- The budget received from externally funded projects and paid data services increased from M€ 1.8 in 2017 to M€ 2.5 in 2023.
- In relative terms, DANS' earning capacity increased from about 54% in 2017 to 64% in 2023. *See Figure 4; DANS Funding.*

The joint contribution to the DANS budget by KNAW and NWO during this period decreased from about 65% to 57%. At the same time costs are soaring, mainly due to inflation and wage increases. By economising on costs and through the growth of the externally funded activities, DANS has managed to keep up financially with the steady increase of its data holdings and carry out the transition of the DANS services system. DANS has been able to adjust to fluctuations in the available external (project) funding by continuous monitoring of policy trends. We trust we will be able to in the future. *See also Chapter 6 (page 18).*

1.6 Organisational development

Between 2017 and 2023, DANS faced turbulent times. While 2018 saw plans to advance and address recommendations from the 2017 Evaluation, challenges began in 2019. A formal portfolio analysis recognised DANS as a crucial infrastructural institution within the Dutch data landscape, however questioned its position as an institute of KNAW and NWO. The reason for this was that DANS' focus is on research support in an environment of research institutes. This prompted extensive exploration of governance alternatives, ultimately not resulting in a decision to change the current structure. However, 2020 brought a change in leadership, with an interim director taking over from the founding director. These shifts significantly affected DANS just as the pandemic struck. Staff turnover peaked in 2022, with the onboarding of 20 new employees. With the start of a new, permanent director after these turbulent years, the goal was to restore stability to the organisation.

Despite these challenges, DANS staff exhibited resilience and dedication. We continued delivering services, collaborating internally and nationally, executing a large-scale digital migration project, and acquiring new projects. In 2020, DANS' position within KNAW and NWO remained unchanged. A new strategy was developed and published in 2021 to address future needs.

Responding to the new strategy of 2021, a new organisational structure was introduced in 2024 to enhance our adaptability and responsiveness. Decision-making is led by a four-member management team chaired by the Director. Additionally, structures for workers' representation and a confidential counsellor are in place, along with an IDEAS (Inclusion, Diversity, Equity, Accessibility and Social safety) working group.

Monthly meetings are held for all DANS members to exchange information, which encourages a more personal approach than e-mails and newsletters. Working lunches serve as another means of organisation-wide knowledge exchange, where employees are updated on new projects and infrastructure developments or discuss data archiving challenges. Work satisfaction surveys were conducted in 2019 and 2022³. An action plan based on the 2022 survey is currently underway to ensure work satisfaction.

Figure 4 **DANS Funding**

Amounts in K€	2017	2018	2019	2020	2021	2022	2023
Funding							
Funding KNAW	2,559	2,627	2,681	2,748	2,778	3,003	3,114
Funding NWO	677	677	677	677	677	677	677
Direct funding	3,236	3,304	3,358	3,425	3,455	3,680	3,791
Project funding incl. research funds	1,794	1,407	1,561	1,723	1,925	1,848	2,487
Other ²⁾	170	178	413	100	125	180	434
Total Funding	5,200	4,889	5,332	5,248	5,505	5,708	6,712
Expenditure							
Personnel costs	3,987	4,032	4,429	4,519	4,510	4,991	5,624
Other costs	1,057	933	978	838	777	985	1,157
Total Expenditure	5,044	4,965	5,407	5,357	5,287	5,976	6,781
Total operating result	156	-76	-75	-109	218	-268	-69

2

Mission and strategic aims over the past six years

Context

DANS operates in a dynamic context where research data management (RDM) is becoming the norm within research. Data support systems and services are being constantly developed, engaging an increasing number of stakeholders. Today, the national research data landscape is large but also rather scattered and there is an ongoing effort to further align infrastructures and activities. The international (and certainly the European) vision of data infrastructures and services, is one of a federated landscape, inspired by open science principles (e.g. European Open Science Cloud (EOSC)⁴⁾ and 'open science 2030 in the Netherlands'⁵⁾. While there is a need for generic standards to serve global research collaboration, current research methodologies and data practices vary widely in various disciplines and require different solutions⁶⁾. Different scientific disciplines operate on different maturity levels when it comes to standards and technological solutions. In this quickly-evolving landscape, facilities often continue to be developed in order to reflect the different and ever-changing user demands.

In this context, and based on DANS' experience and expertise, our strategies focus on adding value to the evolving data landscape through active collaboration, sharing expertise, and providing interoperable and trusted repository services. DANS' primary target group is the national research community and, in addition, the broader public nationally and internationally. We work across disciplines with some focus on the Social Sciences and Humanities (including Archaeology), and specific alertness to newly-emerging interdisciplinary areas at the crossroads of the Natural and Social Sciences, and Humanities. We connect with international networks to support research in addressing societal challenges, and in doing so foster innovation along the technical, social and policy dimensions inside of a research infrastructure. Our work is guided by open science principles, with a strong emphasis on the FAIR Data concept.

"DANS is a crucial infrastructure in the Netherlands, also for open science. Not just as an enabling partner, but also in advancing open science".

Hans de Jonge
(NWO/Open Science NL)

This evaluation covers two strategic periods, each with its own mission:

- 2015-2020 Sharing data together**
DANS' mission is to promote sustainable access to digital research data.
- 2021-2025 Focus on FAIR**
DANS' mission is to enhance the reusability of research data and thus the quality of scientific research. DANS advances the implementation of FAIR Data in research by providing expert advice and certified repository services. As an active collaborator in (inter-)national projects, networks, and research, DANS contributes to continued innovation in the (inter-)national research data infrastructure.

Please see Figure 5 for an overview of those two different strategy periods and the nuances in focus they represent. Both strategies contribute to key strategic goals related to the two different roles of DANS:

- 1. Securing DANS' role in the research data landscape**, as a prominent building block in the research data landscape as a centre of excellence and active collaborator.
- 2. Developing the DANS services**, improving DANS services for more users by providing versatile, collaborative and connected data repositories.

Those two higher level key goals and the strategic specific subgoals are used throughout the argumentation in this document and can be found under subheadings in Chapter 3 (Realising the strategy) and in Chapter 5 (Accomplishments over the past six years) where, if appropriate, further quantitative and qualitative details are given. Chapter 4 (Evidence) offers a bridge between the narrative in Chapter 3 and the numbers and examples given in Chapter 5, by introducing the choice of indicators.

As is always true for evaluations; not everything which is really important can be measured in numbers. So, we also decided that, throughout the document, we would give space to hear the voices of experts in our networks, quoting their statements as specific evidence. While we address the recommendations of the previous evaluation review (2017) in the relevant subsections within this report, we also provide an overview of recommendations and responses in Appendix 3.

Sharing data together

2015 - 2020

Serve as a prominent building block in the federative national and international data infrastructure

- Prominent in federative data infra-structure

2015 - 2020

Improve services for more users

- Growth in use of services
- User satisfaction
- Support management of 'living' data and RDM
- Software sustainability

Support services with efficient and integrated systems

- Linking information types
- Innovation and integration of systems

Focus on FAIR

2021 - 2025

Act as a centre of expertise for FAIR research data

- Participate in research data infrastructure projects, especially at the European level
- Be a reliable partner in international organisations
- Provide consultancy
- Train data professionals and researchers
- Monitor trends in data processing

Collaborate and connect

- Play an active role in national initiatives to advance open science and FAIR data
- Be involved in further collaboration and better coordination within the Dutch data landscape by participating in partnerships and projects

2021 - 2025

Provide versatile data repository services

Offer repository services which:

- are based on international standards
- can be integrated in virtual research environments
- provide domain specific repository services
- support both reuse and long term preservation of research data
- are supported by domain specific expertise
- are complementary and where possible connected to the services of other providers

Securing DANS' role in the research data landscape

Developing the DANS services

3

Realising the strategy



3.1 Securing DANS' role in the research data landscape

Serve as a prominent building block in the national data infrastructure

Within the Netherlands, DANS is one of the most prominent providers of national research data infrastructures and the staff is highly valued for its expertise. The international reputation, network, and activities of DANS are also very visible and appreciated by national partners. DANS brings international developments, policies, best practices, and implementation on a structural basis, to the national arena and vice versa. DANS is also active in the national 'nodes' of international networks such as EOSC, RDA and OpenAIRE. The DANS activities in those networks always come with a positive attitude that is ready to explore, to innovate and to nurture all of these networks. Examples include:

- Assuming governance roles in national programmes and infrastructures (such as Open Science NL, DCC-network).
- Providing innovations as a project partner such as:
 - o new computer engineering solutions, (e.g., new metadata standards⁷⁾)
 - o new guidelines for FAIRification (e.g., Persistent Identifier Implementation)
 - o new forms of Data Stewardship (e.g., RDM as part of research project management – the case of the Polifonia Research Ecosystem approach⁸⁾)
- Providing training for data professionals.

Social Sciences and Humanities

The strong reputation of DANS in the Social Sciences and Humanities is unwavering. Over the past seven years, DANS has continued to invest in this domain. One important step was the involvement of DANS in the production of a Roadmap for the Thematic Digital Competence Centre SSH (TDCC-SSH)⁹⁾ and it effectively became the host organisation and Board Member in 2023 for five, possibly ten years. The missions of the TDCC-SSH and DANS align to a large extent and this activity provides DANS with additional opportunities to both share and expand its network with the TDCC-SSH Team to advance collaboration in the Dutch data landscape by increasing the volume of reusable research data and software across the domain.

The high number of SSH-related projects in which DANS participated and continues to participate, underpins this, supplemented by roles in national SSH-programmes and infrastructures. Through these projects, DANS has been able to contribute to the future development of the national data infrastructure for SSH, and to connect SSH-datasets in its holdings to other services. An example is the work on the ODISSEI Portal, which significantly enhances the findability of datasets by linking to multiple repositories, including the datasets stored at DANS.

The Dutch Humanities recognise DANS as a main service provider for the long-term storage and accessibility of their research data. For example, this is evidenced by the position of a Chief Data Officer in the two CLARIAH roadmap projects (CLARIAH and CLARIAH+) held by a DANS employee. Datasets archived and published in the DANS infrastructure are known to meet a high standard of reusability. DANS has a particularly strong track record in FAIR management of Oral History research data, relevant to heritage institutions, community archives, and academic research projects. DANS' initiatives to develop a shared language and understanding of FAIRness in the Humanities are appreciated and embraced by institutions such as the NDE, the National Library, Sound & Vision, and the KNAW Humanities Cluster (KNAW HuC).

Archaeology

In 2016 the Dutch Heritage Act came into effect. DANS was involved when professional guidelines were developed in 2018 based on the new Act, which then became the basis for protocols within Archaeology in the Netherlands. With this development, digital archaeology really became the norm nationally. As the only specialised organisation in the field, and based on its trustworthy repository as acknowledged by a CoreTrustSeal, DANS provides the national e-depot

for archaeological reports and truly is an important building block of this well organised eco-system. Through several projects, (such as ARIADNEplus and Built Heritage¹⁰⁾) DANS contributes to the development of the archaeology landscape.

Life Sciences, Physical and Technical Sciences

In 2019, a policy document was the basis for a plan to intensify engaging the Life Sciences community, more actively disseminate the DANS experiences, probe opportunities, and to indicate relevant niches and needs.

The role of DANS as a partner within dedicated Life Sciences projects was acknowledged through an increasing number of externally-funded projects, such as the Technology Hotel project¹¹⁾ on MRI data, Data for Digital Twins together with NIOO-KNAW and LTER-LIFE.

“I am very positive about the quality of DANS. DANS Staff are typically experts who know more about data management than many researchers.”

*Menno Rasch
(HuC Digital Infrastructure)*

“I think the added value of DANS is undisputable, they are very important for the SSH domain. Needless to say they are the natural host for the TDCC-SSH.”

*Jet de Ranitz
(SURF)*

“There is a need for a 'data philosophy' for the Humanities in research and teaching. DANS could be a guide in developing data literacy within the university curricula.”

*Dirk van Miert
(HuC)*

Serve as a prominent building block in the international data infrastructure

DANS has a national mission, but research is inherently international, and our services are increasingly also a part of the European (and international) data infrastructure. Serving as both a national data repository and as a centre of expertise, DANS plays a crucial role in shaping the European research data landscape. This is reflected in our collaboration with international partners, such as the DARIAH ERIC, and our organisational memberships, e.g. RDA. Over the past decade, DANS has become an established and highly-respected entity in this arena, benefiting its national role through its international engagements.

Starting well before the current review period, DANS developed strong relationships with organisations in the SSH domain (e.g. UKDA, GESIS), as well as with more generic organisations (e.g. DCC, CSC) internationally. DANS participated in the creation of domain-specific infrastructures like CESSDA and DARIAH, as well as in generic e-infrastructures like EUDAT and OpenAIRE. Furthermore, DANS was present at the establishment of international data organisations like CoreTrustSeal and the RDA, and was heavily involved in the development of the TRUST principles. The latter providing a much needed institutional counterpart of the practice-driven FAIR principles.

Building on this positive reputation, DANS was invited to participate in an increasing number of European research infrastructure projects, funded by the European Commission. At first these projects were mainly domain-specific (e.g. Humanities at Scale, ARIADNE¹²⁾), CESSDA-SaW, SSHOC).

Those projects are connected to European Research Infrastructure Consortia (ERICs), either accredited or in the process of being accredited, for which DANS increasingly has also delivered

structural services (e.g., the Chief Integration Officer for DARIAH). With the arrival of the vision of an EOSC and the further development of DANS as a more generic data service provider, the institute also participated in more generic and EOSC-building projects (e.g. EOSC-hub, FREYA¹³⁾).

In 2019, DANS started to coordinate its first European project, called FAIRsFAIR, followed in 2022 by the coordination of the current FAIR-IMPACT project. Both are M€ 10 projects, involving over 20 European partners with a focus on the implementation of FAIR policies, practices, tools and services in the EOSC. The very positive assessment of DANS' leadership role in these projects further strengthened our international position.

Through DANS' active involvement in European research infrastructures, international data initiatives and European projects, the institute is able:

- to provide innovative data services in line with the latest international developments;
- to transfer expertise and knowledge from these arenas to its national stakeholders;
- to contribute to the realisation of the EOSC and the wider international data landscape to which DANS belongs.

Act as a centre of expertise for FAIR research data

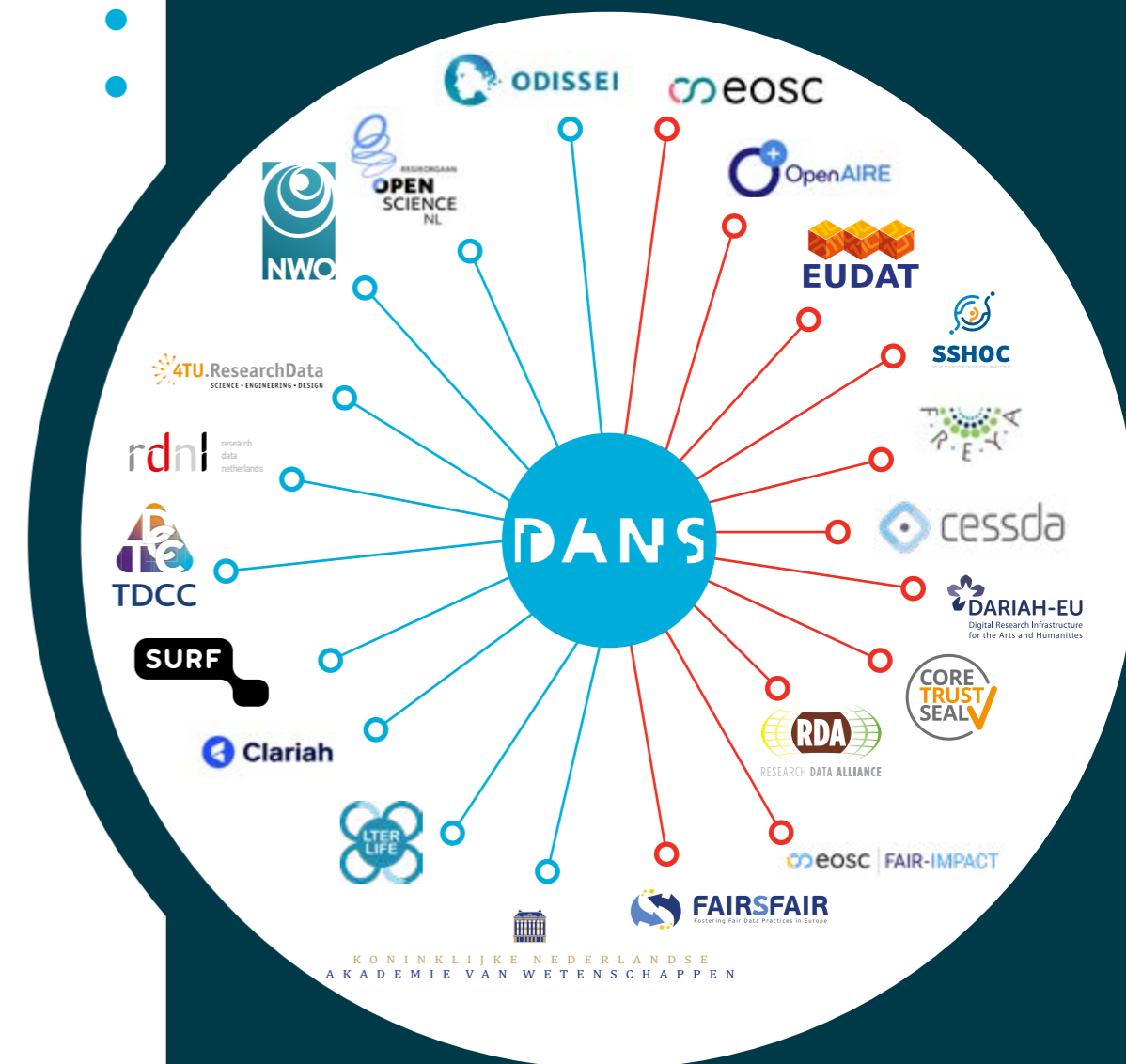
Sharing expertise is a crucial aspect of DANS' mission. The institute frequently organises training activities within projects and has strengthened its role as a trainer as its international project portfolio expands. These training initiatives align closely with DANS' mission and areas of expertise, covering topics such as open science, FAIR data, RDM, archiving and repository management, data ethics and, increasingly, privacy regulation and data protection.

On a national level, DANS takes a leading role in Essentials4DataSupport, a cross-domain training provided by the RDNL consortium. A significant number of former training participants go on to play key roles in research support at their local Digital Competence Centres, demonstrating the outcomes of DANS' training efforts. Looking ahead, DANS anticipates leading the coordination of a national training and community platform for data professionals, inspired by the RDNL vision and funded by Open Science NL (NWO).

As a leading international player in the field of public digital services for research data, DANS has built an extensive network of international collaborators, including distinguished DANS Honorary Fellows, each of whom is known as a leading expert in their respective fields. These collaborations enhance DANS' expertise and contribute to the wider research data community through seminars and publications. As the community of data professionals continues to grow, DANS increasingly serves as a hub for research data experts at various stages of their careers, facilitating knowledge transfer through staff mobility. This trend has led to the development of a highly relevant network among research data professionals, and efforts are being made to maintain active and mutually beneficial relationships.

Collaborate and connect

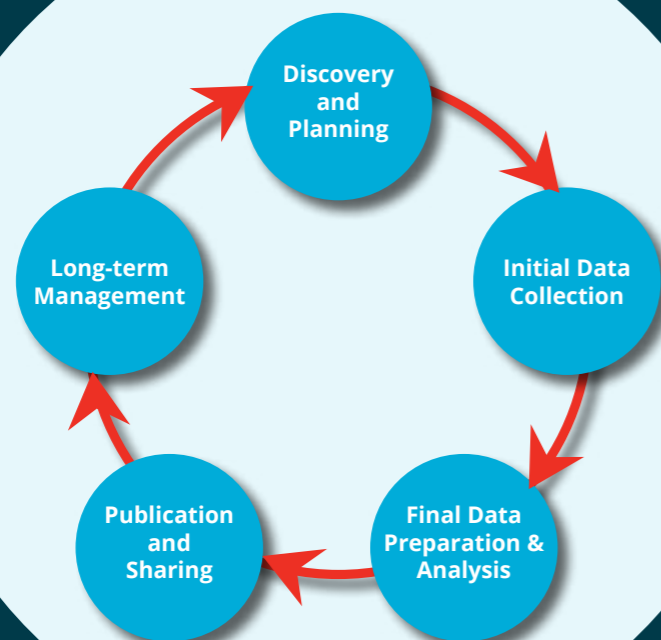
In recent years, DANS has been able to take advantage of national project funding opportunities, aimed at promoting open science and FAIR research data, to expand our activities. In addition, there is an increasing demand for facilities for research data, which is provided by several service providers besides DANS. This leads to more collaborations, sometimes competing for available funding. Naturally, DANS also seeks collaboration to prevent the complex landscape of services for user communities from falling apart into a multitude of disconnected facilities.



"On a European level, DANS is probably outstanding. Everyone knows DANS. They are quite central to many European projects, especially around FAIR."

Hilary Hanahoe
(RDA)

Figure 6 Data Management cycle



3.2 Developing the DANS services

Improve services for more users

Providing repository services is a crucial aspect of DANS' mission, allowing us to extend from practical data management within research workflows to international innovation and the organisation of the research data landscape.

In 2021, the new strategy prioritised improving core services focused on FAIR data reuse. We therefore merged the NARCIS service into its successor, as planned by other national stakeholders. The decommissioning of NARCIS was successfully completed in 2023, in line with our decision not to extend the scope of our services beyond research data. Instead, we invested in providing data services to other institutions. The DataverseNL platform is, in essence, the tangible implementation of a previously envisioned division of labour¹⁴⁾ between a central data archiving service provider and a multitude of data producers at various institutions. We also decided to forefront the 'serving community' orientation of our data services by establishing discipline-specific Data Stations¹⁵⁾ (see subsection 'Provide versatile data repository services'). This strategic shift allowed us to focus on providing repository services that integrate operational aspects of research data management with broader strategic initiatives in international innovation, both globally and within the Netherlands.

Since 2021, DANS has aimed at wider participation in national and EU-funded projects that aligns with our service development and refinement,

and this strategy has started paying off, with DANS now contributing to efforts on several fronts: improvements to end-user experience¹⁶⁾, development of compliance assessment infrastructure¹⁷⁾, semantic enhancement to metadata and discovery tools¹⁸⁾, and improved reusability of data¹⁹⁾.

Nationally, DANS is actively working with SURF, eScience Center, 4TU, the Yoda Consortium, and other stakeholders to simplify and improve data repository infrastructure and its integration with computing resources for end-users, and to frame the nationally available infrastructure in such a way that its future use by the Large-Scale Research Infrastructure programme can be optimised. DANS is an active participant in both SSHOC-NL and LTER-LIFE.

DANS has broadened its portfolio around FAIR data, adding new, and improved repository services. The use of DANS data services has continually grown over the past seven years; examples are the growth of the volume of our repository by 700%, the usage of the most popular datasets increased by 300% and the total number of downloads per annum by almost 400%. In addition, the customer base for DataverseNL has steadily grown from seven institutes in 2014 to 22 today.

DANS' services cover an increasing part of the data management workflow, including:

- discovery of data and production of a research data management plan at the planning stage;
- sharing data before publishing;
- data preparation for publishing and sharing data;
- and long-term preservation, including curation.

Data Stations and DataverseNL archive successive versions of datasets from the time of deposit, allowing research data to be enhanced and developed while maintaining its provenance. Enhanced curation in the Data Stations by DANS to improve the FAIR qualities of a dataset is now reflected in the version history, more accurately recording some of the steps in the 'life of a dataset'. See Figure 6; *Data Management cycle*

As DANS is guided by the open science agenda with a focus on FAIR data, the accessibility of the data in our repository is a high priority. This is why Creative Commons licences were made available and actively advocated to all depositors in 2020. Depositors were contacted and many agreed to change their licence from a custom restricted one to a CC-BY licence. A large part of the data is openly accessible – or 'open' for short – when possible, even to the broader public – this is certainly true for the archaeology data which is public data by nature. In addition, curation always includes a critical assessment of the use of sustainable file formats²⁰⁾, using the File Format Guidelines²¹⁾.

Provide versatile data repository services

As research data management becomes the norm for an increasing number of disciplines, the needs regarding infrastructures are both generic and discipline-specific. Recognising the diverse research data practices inherent to different disciplines and the consequent need for tailored solutions, DANS has chosen to refine our expertise and strengthen our repository services to integrate seamlessly within discipline-specific research environments (alongside the generic DataverseNL service).

In 2021, a team of disciplinary experts, referred to as Data Station Managers, was formed within DANS to support and liaise with the different domain-specific research communities. The already existing generic repository, EASY, was partitioned into four separate, new Data Stations for Archaeology, Social Sciences and Humanities (SSH), Life Sciences (LS), and Physical and Technical Sciences (PTS). The rationale behind establishing the Physical and Technical service, which diverges from DANS' core domains, underscores DANS' commitment to facilitating access for scientists and organisations from all domains, without exclusion. Consistent with our policy, DANS continues to embrace datasets from all domains, and treat them in the best possible way.

The transition from the generic EASY repository to the discipline-specific Data Stations also facilitated a migration from DANS' own custom designed software, Fedora, to the internationally-acclaimed, open-source research data repository software, Dataverse. For each Data Station, an installation of Dataverse was set up. With the successful deployment of all four Data Stations – Archaeology in summer 2022, SSH in spring 2023, and LS and PTS in December 2023 – depositors actively used the platforms to submit datasets, while careful migration of existing data content from EASY to the respective Data Stations ensured continuity.

These Data Stations provide improved services for users and serve as a solid foundation for further tailoring to meet disciplinary requirements²². Efforts to correlate specific metadata formats with disciplinary vocabularies, combined with integration with disciplinary catalogues such as the ODISSEI Portal – which aggregates datasets from different repositories in the social sciences domain – have significantly enhanced the findability and reusability of datasets published in the Data Stations. See Figure 7; DANS Data Stations.

Social Sciences and Humanities

In renewing the repository services and expanding the scope of expertise and services across disciplines, DANS has retained its strong position in the SSH domain. In recent years, DANS has intensified its role in the national Social Sciences data infrastructures such as ODISSEI, CBS and NPSO, resulting in collaborative innovation in terms of services, including those of DANS itself.

Moreover, DANS is increasingly combining efforts within the SSH, evident in initiatives like the CLARIAH+ and SSHOC-NL projects. Currently, the configuration of the Data Station SSH is mainly focused on quantitative Social Sciences, but DANS is actively soliciting feedback from data stewards and digitally adept end-users to tailor the Data Station to adhere to the requirements of Humanities research more closely. DANS also invested in Linked Data technology and machine-executable metadata enrichment via the CLARIAH and ODISSEI roadmap projects.

Archaeology

For Archaeology, DANS plays a vital role in managing various types of information, e.g. excavation reports and data on artefacts, by connecting different parties in the national ecosystem to the Data Station Archaeology as their trusted e-depot. To enhance data management efficiency, specific metadata fields have been integrated into the Data Station Archaeology, using standardised terminology from the national Dutch archaeological vocabulary ABRplus, developed, and maintained by the Cultural Heritage Agency of the Netherlands.

Additionally, metadata for datasets, input via SWORD, from Portable Antiquities of the Netherlands (PAN) already contained standardised keywords for artefact types, facilitating their integration into the new ABR Artefact field.

Life Sciences

The aspiration of more explicitly serving the Life Sciences dates back to 2015, yet it was not until December 2023 that this ambition materialised with the establishment of the Life Sciences' dedicated Data Station. The preparatory efforts and accomplishments of this Data Station primarily revolve around community-building initiatives, dissemination activities, and training events, all aimed at showcasing DANS' expertise and services in this domain. Several organisations, including Wageningen University & Research and the Technical University of Twente, have already chosen to use this Data Station.

Physical and Technical Services

The DANS Data Station for the Physical and Technical Sciences is a new domain-specific service offered by DANS. This Data Station is managed in close cooperation with 4TU.ResearchData, and only focuses on a small selection of existing and/or potential users, such as earth and environmental sciences, geodesy, physical geography. To strengthen the cooperation with 4TU.ResearchData, two projects have been initiated within the SURF DCC programme to build the collaborative portal for depositors and discovery of data.

DataverseNL

The DataverseNL-solution for institutional repositories, is discipline-agnostic. Clearly, there is a need for such a service, as the number of subscribing institutions has been growing steadily (see Chapter 5; *Accomplishments over the past six years*). The usage of DataverseNL makes it easy for the RDM departments (also known as Digital Competence Centres) of the universities, and universities of applied sciences to help their researchers to publish their data. The publication of datasets advances open science. This service has been steadily developed based on user-demands. The locally-managed datasets are now integrated with the data in the DANS Data Stations, for example for discovery and long-term preservation. The technical platform for both DataverseNL and the Data Stations is now Dataverse, which creates benefits in further aligning services more efficiently.

Support services with efficient and integrated systems

DANS has invested in improving our services by successfully attracting the right expertise to DANS, such as the CTO-role, other IT-experts, as well as research and data professionals. The planned migration of the EASY service to a new technical infrastructure in 2018 was delayed by the pandemic and lack of available project budget. It got well under way in 2021 and will be completed in 2024 with the decommission of EASY. The new architecture aligns all repository services, providing a sound basis for further development of the repository services. In addition, it enables DANS to link our content to other research output in graph-environments and complementary services for our users, in collaboration with SURF as an important infrastructural partner.

The Data Stations are based on the international Dataverse platform and further development conducted in collaboration with national infrastructures such as ODISSEI, CLARIAH and SURF, to ensure adherence to standards and linking to other types of research information.

Figure 7 **DANS Data Services**



“In EASY, it could be hard for users to recognise the relevancy of the services for their specific discipline. I think the Data Stations are a big step forward.”

Stefan Vriend
(NIOO)

“What researchers need is high-quality data, well-described data. In this, DANS is a guiding institution for the data landscape.”

Dirk van Miert
(HuC)

4

Evidence

4.1 General indicators

DANS works with general performance indicators that are standard within the KNAW, which include indicators which focus on the financial health of the institute:

- earning capacity including project revenues;
- resilience capacity;
- equity.

In the area of personnel, information like what is included in this report is recorded, including:

- number of employees (FTE);
- type of contract (permanent or temporarily).

Also reported are information and narratives are reported around the composition and development of the organisation and staff, including staff satisfaction surveys. Over time, there will be a focus on different themes, such as Social Safety and Diversity & Inclusion (*see Chapter 1*).

4.2 Specific indicators

Specific indicators for DANS typically address DANS' services, project activity and outreach activities. Research activities and output are not a focus of DANS. Reporting includes both narratives and quantitative indicators. In this report, specific indicators for DANS are structured in line with the strategic goals. In addition, twelve stakeholders were interviewed in February 2024 on their experiences in collaborating with DANS. Quotes from the interviews can be found throughout this document and a summary of the findings are reported in *Appendix 5*.

DANS in the data landscape:

- project activities in number of projects, revenues, research domains, national or international, reputation, results;
- network activities: collaborations, roles in the governance of data-organisations.

Versatile repositories:

- services offered;
- development of audiences and collaboration;
- use of services: Throughout the previous seven years, DANS has worked with two strategies and has performed a migration of its services to a new technical environment. Together with other developments such as the pandemic and organisational developments, this has impacted the continuity of quantitative indicators.

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5

Accomplishments over the past six years

5.1 Securing DANS' role in the research data landscape

A prominent building block in the federative national and international data infrastructure

DANS has been very successful in acquiring project funding over the past seven years: the total project revenues per annum were at a constant high level, with an upward trend. Highlights were the projects FAIRsFAIR (K€ 2,019) and FAIR-IMPACT (K€ 2,408), in which DANS has the leading role. The earning capacity of DANS reached an all-time high at 63.5%²³. See Figure 8; Financial indicators, and Figure 9; Total project revenues and acquired funding per annum. Figure 9 also shows the difference between acquisition (total acquired project funding in the year of

their awarding) and the work actually executed in the context of those projects. Calls for project funding usually come in waves, and the blue area shows the increasing success in acquiring funding which will pay out in increasing revenues per year in the years to come. DANS – by means of an excellent call monitoring and project acquisition policy – has been successful in keeping the project-based income steady over the years despite of the external fluctuations in available calls. This requires broad networks and networking skills, present in the Acquisition Team.

Figure 8 Financial indicators

Reference date 31-12	2017	2018	2019	2020	2021	2022	2023
Earning capacity	53.60%	42.30%	46.50%	50.03%	54.80%	48.90%	63.50%
Resilience capacity	16.20%	17.80%	17.90%	22.90%	25.80%	20.02%	16.10%
Equity in K€	1,460	1,384	1,309	1,200	1,419	1,152	1,082
Acquired projects in numbers	21	10	7	15	18	9	12
Total acquired projects in K€	1,670	2,773	663	1,200	1,963	4,709	2,074
Total project revenues in K€	1,794	1,407	1,561	1,723	1,925	1,848	2,487

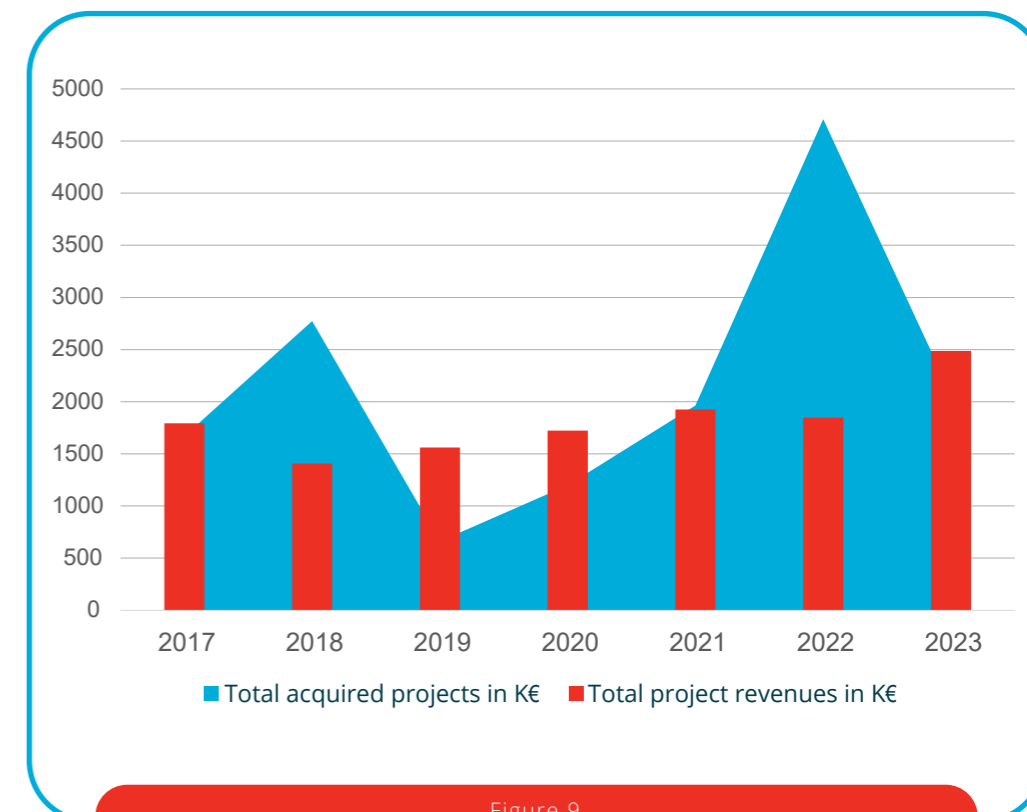


Figure 9 Total project revenues and acquired funding per annum

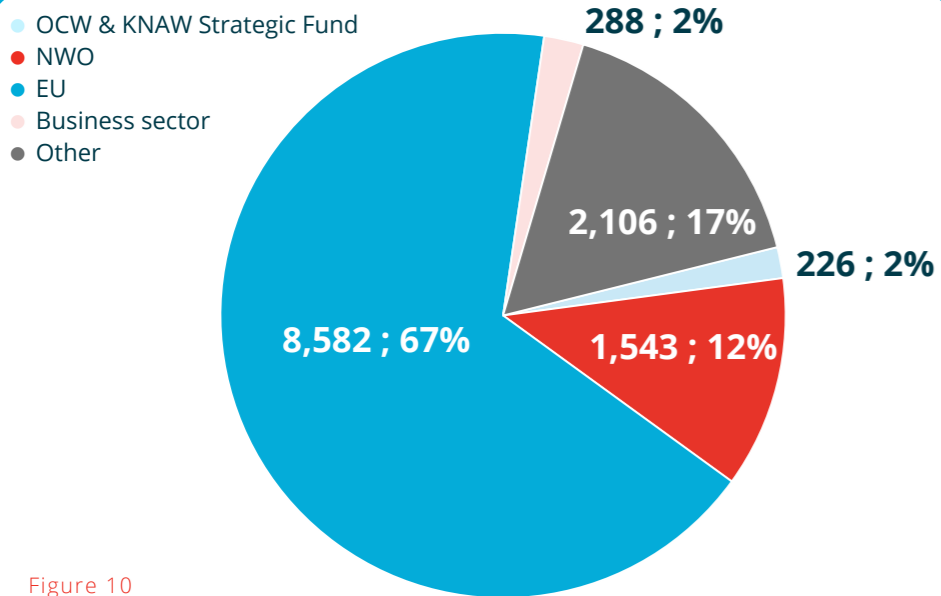


Figure 10
Distribution of funding streams over total project income 2017-2023

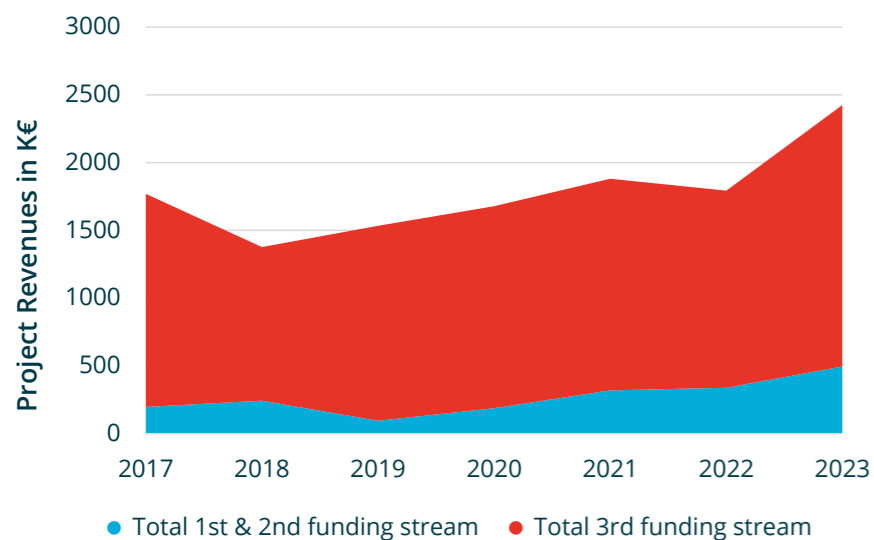


Figure 11
Breakdown project revenues national and international funding

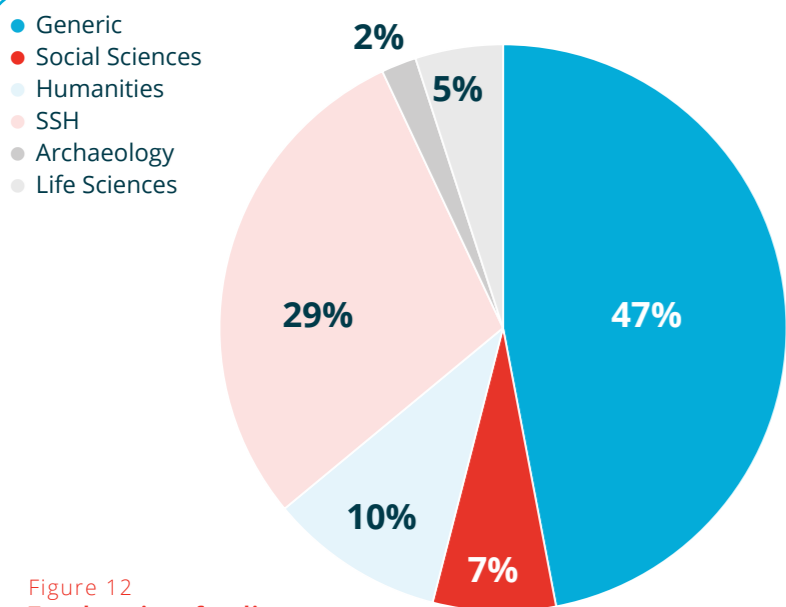


Figure 12
Total project funding per domain 2017-2023



The EU Horizon programmes have been providing many opportunities for DANS, as they match with DANS' core mission around FAIR data: 67% of the project revenue came from the EU Horizon programmes. See Figure 10; Distribution of funding streams over total project income 2017-2023.

Over the years, national project funding (1st & 2nd funding streams) increased, compared to EU-funding (3rd funding stream). This reflects the national investments in open science and research data services and the fact that DANS is able to develop our national role by acquiring available project funding and thus expanding activities. The national SSHOC-NL project is the largest project of all acquired in 2023, whereas previously the EU-projects dominated in terms of budget. See Figure 11. Breakdown project revenues national and international funding.

The total funding portfolio shows the dominance of the SSH domains (Social Sciences, Humanities, projects across SSH and Archaeology), which demonstrates the ongoing strong position of DANS in the SSH-domain. See Figure 12; Total project funding per domain 2017-2023. In addition, over the years, DANS' project portfolio has become more diverse in terms of domains, and most recently in the Physical and Technical Sciences. Due to the (small) amount of the funding this is not visible yet in Figure 12, but it shows in the relative distribution in Figure 13. The growth in the domains of Life Sciences and Physical Sciences depends in large part on (increased) national funding (mainly NWO) supporting FAIR research data.

The number of projects across SSH (versus separate social sciences and humanities) in the SSH domain also increased, which indicates that collaboration within the SSH domain is encouraged by research funders. With our sound experience in both the Social Sciences, and Humanities, DANS has been able to adjust and benefit from this trend. See Figure 13; Trends in project acquisition in K€ over domains per annum and Figure 14; The spread of domains over the total number of acquired projects.

The projects in which DANS participated resulted in work to develop fundamental elements in generic infrastructures, tools, and services, as well as in delivering results for disciplinary solutions. Examples are:

FAIRsFAIR

As part of the FAIRsFAIR project, DANS had a leading role in the development of the online FAIR Aware tool²⁴, translating the FAIR Principles into practical guidance on making data FAIR.

DANS within ODISSEI

DANS increasingly plays an active role in ODISSEI, developing the Portal and providing FAIR Data Support and combining efforts with CLARIAH in the SSHOC-NL project. The ODISSEI Portal provides access to other social sciences data repositories. DANS has committed to maintaining the Portal after the project for five years (2025-2029). Further development of the ODISSEI Portal is foreseen in the SSHOC-NL project (2024-2027) and beyond. The Portal project has also further intensified our relationship with CBS, in which DANS provides access to a growing collection of CBS microdata. In the Portal project, DANS has supported CBS to assign DOIs to their metadata records. This improves findability of the metadata and makes it easier for researchers to cite the CBS data they are using.

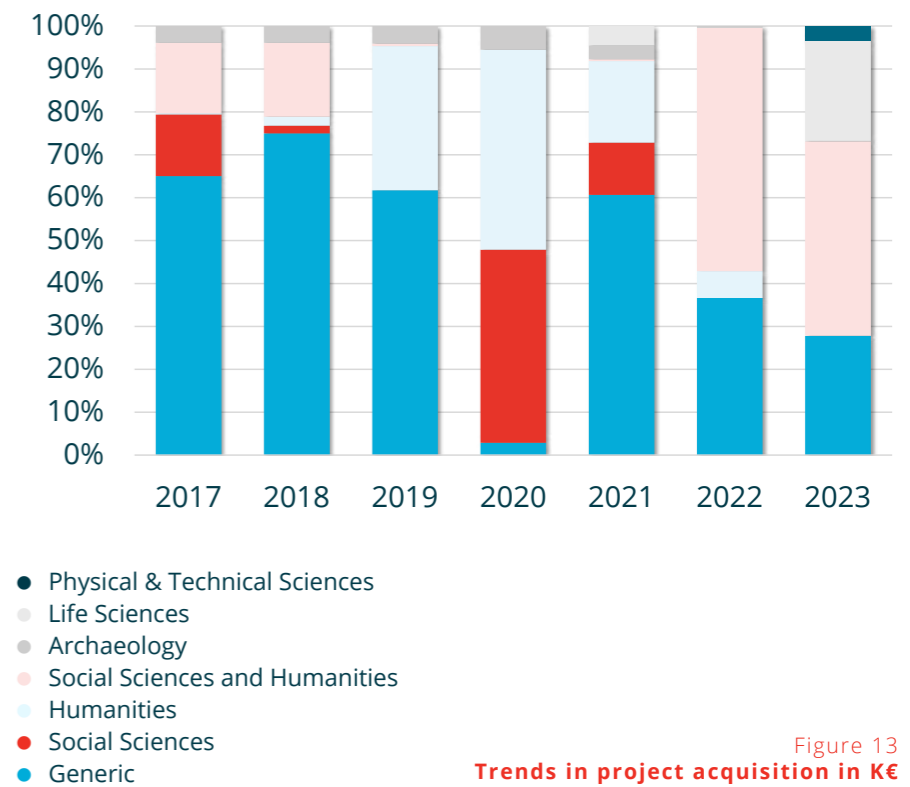


Figure 13
Trends in project acquisition in K€ over domains per annum

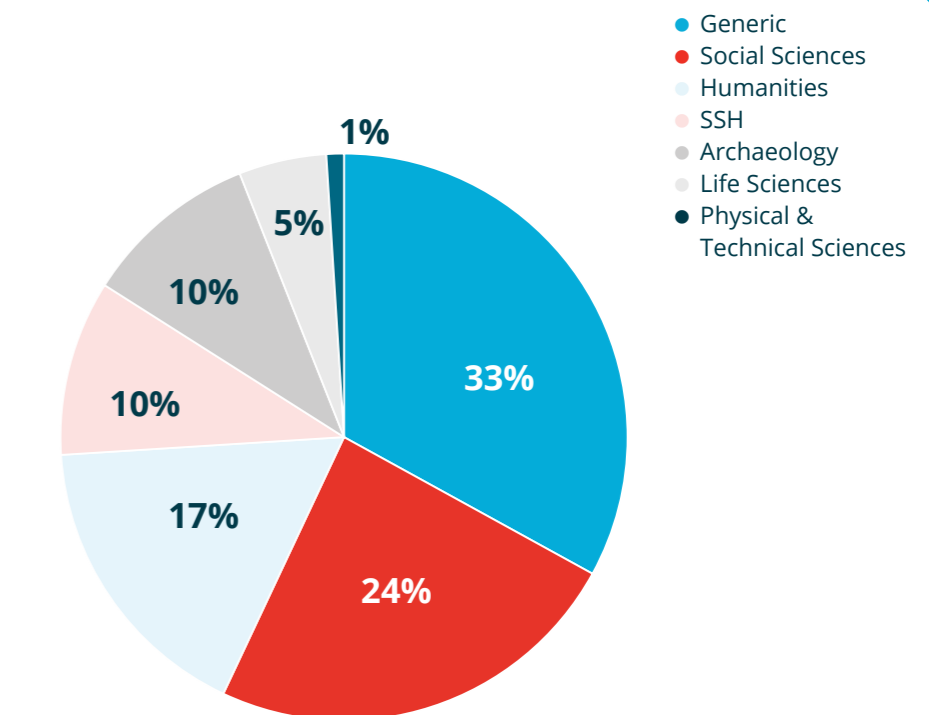


Figure 14
The spread of domains over the total number of acquired projects

Centre of expertise for FAIR research data and active collaborator

Although DANS is not a research institute, it abides by the KNAW paradigm of excellence. This means that DANS provides top services in the field of data infrastructure and is actively involved in research infrastructure innovation. From 2012 to 2021, DANS hosted a research group to link up with academic discussions in areas such as computer engineering and information sciences, which was relevant to providing excellent-quality data services. As part of the new Strategy 2021, the research department was dissolved, and scientific expertise incorporated in the new competency groups.

Knowledge dissemination currently takes place through the section for research data experts (the Expert Team), and the positions of Senior Advisor and Chief Technology Officer, and a Senior Policy Advisor. DANS maintains collaboration with Honorary Fellows and tries to retain former employees (DANS alumni). During the pandemic, the DANS Seminar series filled the void when on-location 'working lunches' were no longer possible. After the pandemic the working lunch tradition has been revived with presentations on new projects, educational topics, discussions about the future, and occasional guest speakers. The number of reports published, often as a result of European projects, is an important indicator of DANS' expertise and reflects the increasing focus on FAIR data.

Publications at DANS include scientific and technical reports, edited books, proceedings and articles, although articles are a minority due to the nature of DANS as a service institute. We also include professional publications aimed at a wider audience in this category. Overall, we see an increase and growing focus on FAIR topics over the years.

Our outreach efforts extend to actively organising and participating in events, with DANS staff often acting as keynote speakers at conferences focused on research data, FAIR principles, and open science. Membership and expert advice play a crucial role in expanding our network. We hold formal positions on advisory boards of other institutions and conduct peer reviews in this capacity. DANS' consultancy services are demand-driven and offer critical advice to organisations. In addition to training and consultancy, we share our expertise through manuals, papers, webinars, and FAQs. *See Figure 15: Outreach activities.*

DANS engages in training initiatives:

- In European projects, our training responsibilities have increased, with a total of 75 man-months in currently ongoing projects compared to 34 in 2019 and 61 in 2022, reflecting growing confidence in our expertise.
- We organise numerous trainings under the umbrella of DANS, including more than 10 in 2023 in addition to project-specific trainings. We have also set up a community for DANS training materials on Zenodo.
- Within the RDNL consortium, we offer cross-domain Essentials4DataSupport and GDPR4DataSupport training, aimed at data support staff and with open content for reuse.

The European Data Landscape Study, commissioned by the European Commission (and which was executed by DANS among others), revealed gaps in researchers' application of FAIR principles and in FAIRness of datasets. As tools that assess FAIRness become increasingly important, DANS is ready to take the lead in training repositories and research support staff on their application and interpretation, drawing on our experience in FAIR-IMPACT and EOSC Association Task Forces.

For more examples of DANS' activities, see Appendix 4.

Figure 15 Outreach activities

	2017	2018	2019	2020	2021	2022	2023
Publications	42	28	41	58	70	62	52
Talks & Presentations	49	46	47	84	87	59	52
Organised events	32	34	19	36	36	39	56
Memberships & Expert Advice	13	12	19	39	34	34	32

CASE STUDIES



DANS' role in the TDCC-SSH

The Thematic Digital Competence Centres are network-based programmes set up by NWO and the Dutch academic community to broker investments into open science projects. The three TDCCs are national and discipline based, with one pillar each for the Social Sciences & Humanities (SSH), Natural and Engineering Sciences (NES) and Life Sciences & Health (LSH). Between 2023 and 2031, the networks will formulate and fund projects designed to promote the adoption of open data, software and research practices, alongside the development of the necessary expertise. The total amount of funding each TDCC must allocate is M€ 8.3, which will be allocated over the years via NWO open calls, designed together with the TDCCs.

The TDCC-SSH started in March 2023 with the appointment of a Leadership Team: a Network Manager and a Community Coordinator, who handle day-to-day activity. The programme is overseen by a three-partner consortium representing the main Dutch Research Infrastructures (RIs) in the Social Sciences (ODISSEI) and Humanities (CLARIAH) and the main SSH research service provider and repository (DANS), who also act as the host organisation for the Leadership Team. In early 2024 more DANS staff were allocated hours, as part of the organisation's in-kind contribution to the programme. These staff members include three Data Station Managers (Humanities, Social Sciences and Archaeology), a Senior Policy Advisor, and a Data Specialist.

CoreTrustSeal

The CoreTrustSeal, launched in 2018, defines requirements and offers core-level certification for Trustworthy Data Repositories. It is the culmination of a cooperative effort, initiated amongst others by DANS, between the Data Seal of Approval (DSA) and the World Data System of the International Science Council (WDS), under the umbrella of the Research Data Alliance (RDA), to harmonise their data repository certification standards.

CoreTrustSeal is a legal entity under Dutch law. DANS has a seat on the CTS Board and provides secretariat support. CoreTrustSeal is currently the leading certification standard, with over 160 certified repositories around the globe.

FAIR principles

In 2016 the FAIR guiding principles for scientific data management and stewardship were published in Nature Scientific Data²⁵⁾, with DANS as one of the co-authors. Since then, DANS has actively contributed to the international debate around the implementation of the FAIR guiding principles by:

- co-authoring a paper on FAIR metrics principles²⁶⁾
- organising multiple workshops and webinars around data FAIRness assessment²⁷⁾
- developing a self-assessment tool to improve the FAIRness of a dataset²⁸⁾
- developing a FAIR awareness tool in the context of the EU-funded FAIRsFAIR project²⁹⁾
- contributing to the development of a FAIR data assessment tool in the context of the EU-funded FAIRsFAIR project³⁰⁾

This work is now continued and expanded in EU-funded projects like FAIR-IMPACT, OSTrails and FAIRCORE4EOSC.

TRUST principles

As information and communication technology has become pervasive in our society, we are increasingly dependent on both digital data and repositories that provide access to and enable the use of such resources. Repositories must earn the trust of the communities they intend to serve and demonstrate that they are reliable and capable of appropriately managing the data they hold. DANS was heavily involved in the development of the TRUST principles³¹⁾.

Following a year-long public discussion and building on existing community consensus, several stakeholders, representing various segments of the digital repository community, have collaboratively developed and endorsed a set of guiding principles to demonstrate digital repository trustworthiness.

Transparency, Responsibility, User focus, Sustainability and Technology: the TRUST principles provide a common framework to facilitate discussion and implementation of best practice in digital preservation by all stakeholders. The TRUST principles have been officially endorsed by a large number of scientific organisations around the globe and are referenced by funders like the European Commission.

Research Data Alliance

The RDA was launched as a community-driven initiative in 2013 with the vision that researchers and innovators can openly share and reuse data across technologies, disciplines, and countries to address the grand challenges of society.

The RDA's mission is to build the social and technical bridges that enable that vision, accomplished through the creation, adoption and use of the social, organisational, and technical infrastructure needed to reduce barriers to data sharing and exchange.

As an organisational member of RDA, DANS has been actively involved in the RDA in multiple ways: by initiating, chairing and participating in numerous RDA working and interest groups, by organising a plenary meeting, and by taking multiple governance responsibilities over a period of 10 years. Most recently on a national level, DANS is working together with NWO and LCRDM to connect the LCRDM network to the RDA as the Dutch region of RDA³²⁾.

5.2 Developing the DANS Services

Improved services for more users

The DANS repository services have steadily grown in number of deposited datasets and number of downloads. Alongside deposits by individual researchers, DANS increasingly receives datasets by bulk import from organisations (currently Mendeley data from Elsevier, and archaeology data from ArchoDepo and PAN). These bulk imports amount to a total of 75% of the current volume. See Figure 16; *Volume and use, including EASY, Data Stations, DataverseNL and Data Vault.*

The distribution of the volume of datasets and files over the different services shows the dominance of archaeology over the other domains in number of datasets and files. See Figure 17; *The distribution of the volume of datasets and files over the different services.*

The number of organisations subscribing to DataverseNL grows steadily each year. From six universities and one research institute in 2014, the usage of the service is gradually increasing. In January 2024: nine universities, seven universities of applied sciences, three research institutes, and three University Medical Centres (UMC³³) subscribed to DataverseNL. Research institutions definitely have an interest in this in-house solution compared to other options. See Figure 18; *Use of DataverseNL.* The number of published datasets in DataverseNL is growing, from 263 datasets in 2014 to 6,917 datasets as of 1 January 2024. See Figure 19; *Number of published datasets and linear trend of number of downloads.*



Figure 17 The distribution of the volume of datasets and files over the different services

	Archaeology	SSH	Life sciences	Physical & Technical Sciences	DataverseNL	Total*
Number of available datasets	141,042	7,228	836	760	6,917	156,783
Number of available files	2,073,097	93,883	2,034	99,8862	18,678	2,287,554

* These numbers exclude the content, stored in the Dark Archive.

Figure 18 Use of DataverseNL

	2017	2018	2019	2020	2021	2022	2023
Number of subscriptions	11	10	11	14	17	16	20
Number of published datasets (cumulative)	503	665	1,282	1,574	5,642	6,299	6,917
Number of downloads (files) in total	7,242	16,926	38,561	74,749	207,197	566,190	2,708,364

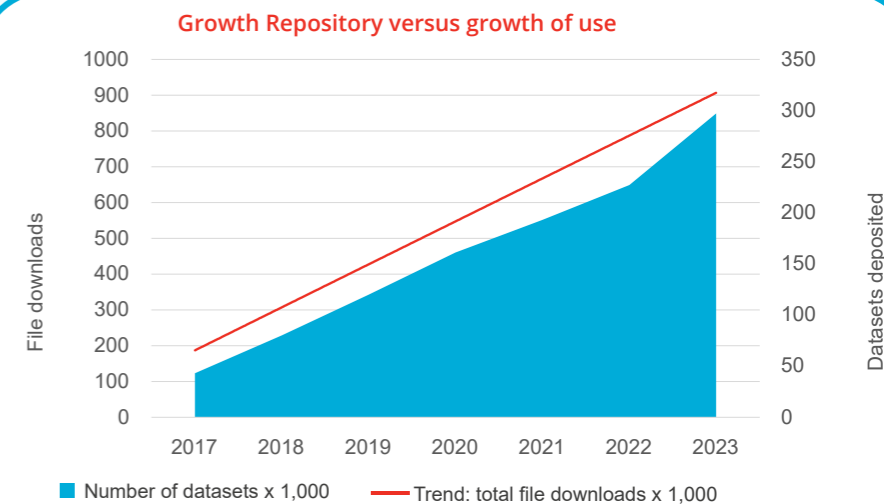


Figure 16
Volume and use, including EASY, Data Stations, DataverseNL and Data Vault

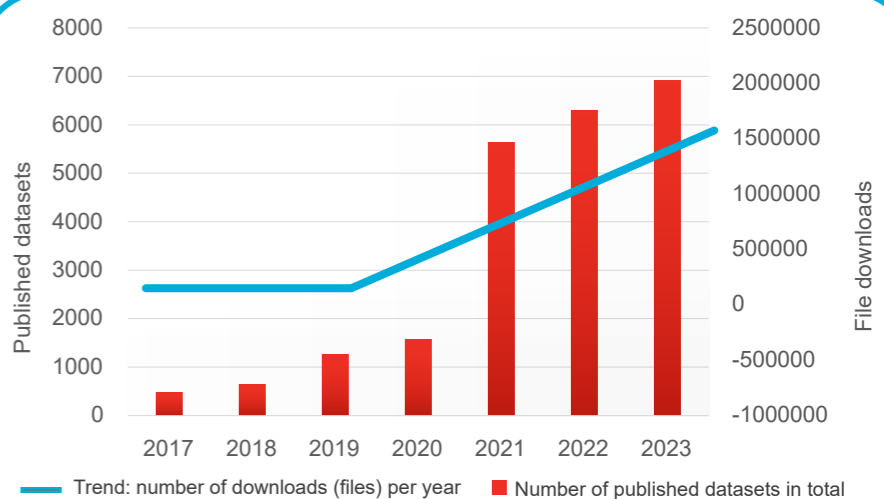


Figure 19
Number of published datasets and linear trend of number of downloads

NB:
a) The increased growth of published datasets in 2021 is caused by an automatic deposit and,
b) The high number of downloads is caused by a couple of datasets with a lot of files.

6

Reflections on future directions for DANS

We start this section with a SWOT analysis. We further identify four directions for the future strategy of DANS, which respond to aspects of the SWOT analysis. The strengths and weaknesses within the SWOT are in the hands of the institution itself, the opportunities and threats depend on the conditions, the environment in which DANS has to operate. DANS has been very proactive in the past and has engaged in a forward-thinking manner with those external factors. Being aware of our own position in the national, European, and global data landscape (DANS in the research landscape - key goal #1), and focusing on our own service portfolio (Developing the DANS services - key goal #2) will also continue to guide our actions in the future.

STRENGTHS

- Highly regarded as a key player and well-respected in the research and infrastructure landscape, nationally, and especially Europe-wide.
- Unique combination of centre of expertise and repository services provider.
- Specialised, trustworthy generic, and domain-specific data services.
- DANS is recognised as an active collaborator.

OPPORTUNITIES

- EOSC becomes operational with improved governance and funding.
- Impact of generative AI for further automation of data curation.
- National and international open science and FAIR data agendas emphasise the relevance of the services and expertise of organisations such as DANS.
- A rising need for alignment of impulse funding among public domain infrastructure providers.
- Rising demand in research for interoperable, trustworthy repository ecosystems.

SWOT DANS 2024

WEAKNESSES

- Inflexible lump sum and dependence on competitive project funding provide a weak basis for supporting the dynamic growth of user demand for sustainable digital infrastructures.
- Suboptimal capitalisation on our expertise in European projects in a national context.
- Development of expertise in domains outside SSH is in the early stages.

THREATS

- New (for-profit) service providers entering the rapidly evolving data landscape, providing uneven competition to public domain initiatives.
- Competitive environment: Rapidly development of (not-for-profit) data-services in research institutions challenges the leading role of a central data service such as DANS.
- Uncertainty about direction of EU-funding opportunities after 2027.
- The tight labour market threatens the ability to attract and retain skilled personnel.

6.1

Securing DANS' role in the research data landscape

Strong partner in the EOSC network

The EOSC is evolving and should become operational within three years. Concrete implementation plans, funding and improved governance structures are now in place. The Horizon Europe 2025-2027 strategic plan highlights the European Commission's continued support for open science as the gold standard for research and innovation activities. Newly emerging ERICs in addition to cross-sectoral data clusters provide further opportunities to collaborate. This includes promoting the reuse of research results in research, policy, and decision support, improving data interoperability and reproducibility of research, developing relevant skills and promoting the adoption of open science practices. These all provide opportunities for DANS to participate in EU-funded projects over the next two to three years. However, uncertainties remain about EOSC's governance and funding models after 2027. Moreover, Europe is witnessing the emergence of large conglomerates encompassing e-infrastructure and domain-specific cluster organisations,

increasing uncertainty about the future European landscape and the role of smaller institutes such as DANS.

Future directions for DANS

As the European data landscape evolves with the emergence of EOSC, the EU remains a key environment for DANS, positioning us as an innovation partner and a crucial link to the national data landscape. Over the next three years, EOSC and the open science agenda present opportunities for DANS to engage in emerging science clusters and European e-infrastructures. Our established position within the European network enables us to adapt swiftly to upcoming changes. Leveraging our reputation and expertise as a service provider and collaborative partner, we are confident that DANS will maintain its strong position in the years ahead and continue to contribute significantly to the European research data landscape beyond 2027.

Enhancing DANS' guiding role in FAIR Data

In the Netherlands, open science and FAIR data are central themes on the agendas of higher education institutions, research funders, and the national government. This emphasis derives from the recognition that addressing societal challenges necessitates rapid innovation and the integration of insights from diverse research disciplines. Sharing research data early in the research cycle and facilitating cross-disciplinary data reuse are crucial for achieving these goals.

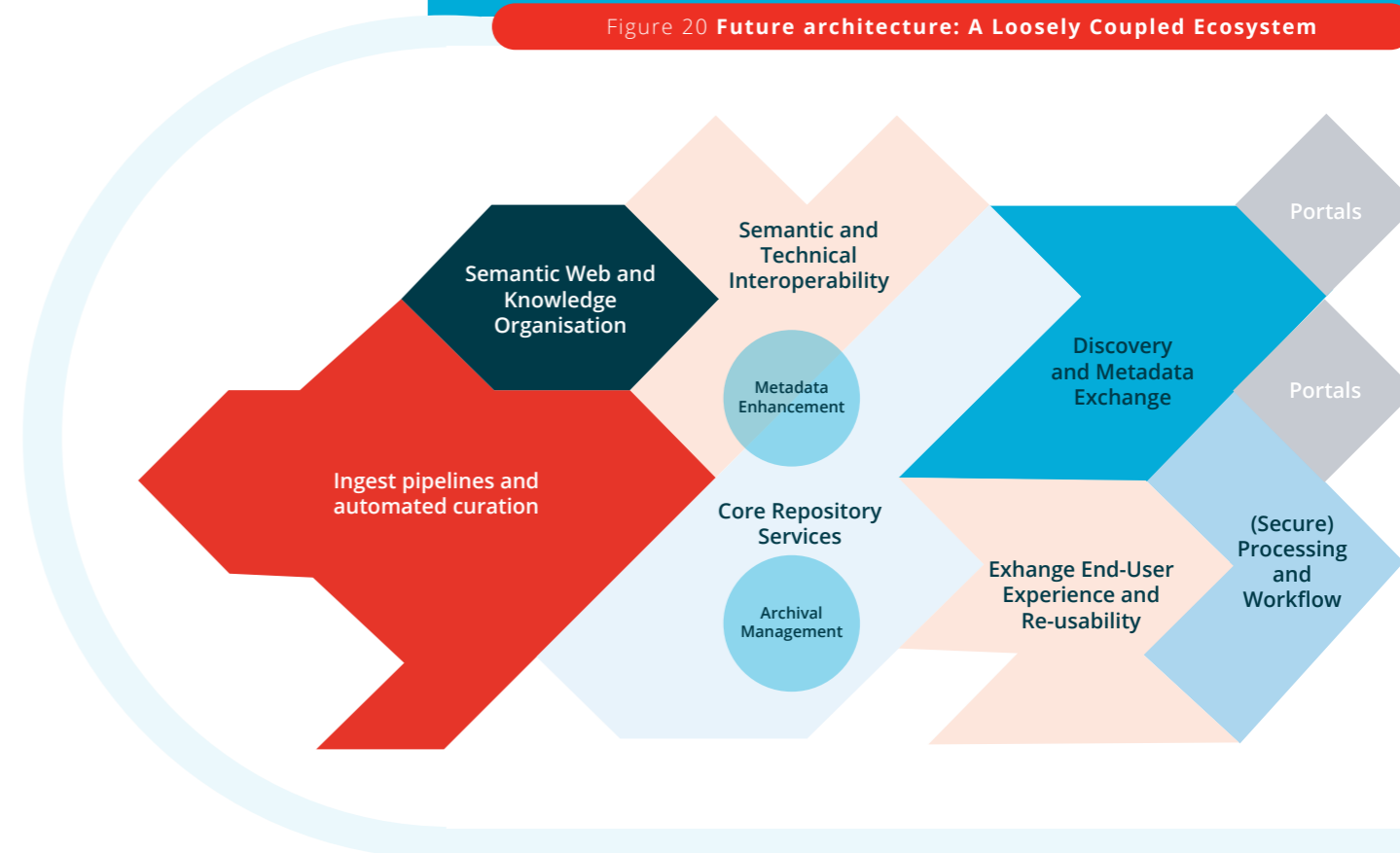
Generic open science programmes run alongside initiatives that focus on developing research domain-specific needs. While this approach encourages rapid development, it also results in a fragmented landscape of data support systems and services across various organisations. In light of the indisputable importance of research data, this fragmented data infrastructure landscape leads to an increasing need to align initiatives and impulse funding.

Future directions for DANS

We expect to be able to benefit from the current impulse funding opportunities in the next four to eight years, especially the long-term Open ScienceNL and TDCC-SSH programmes. Our foundation and expertise in innovation in both generic solutions and domain-specific services, and our strong networks will enhance the impact of DANS as key contributor to the development of the national data landscape in several ways:

- Capitalise on our international activities to further develop a guiding role in 'how to' share FAIR research data as early in the research cycle as possible.
- Use our collaborative approach to bring stakeholders and initiatives together. Hosting the TDCC-SSH until potentially 2032 provides an extra layer of stakeholder engagement within the SSH domain by raising awareness about FAIR data and software practices and stimulating grassroots innovations through its funding scheme.
- Apply our training expertise at a national level. DANS anticipates leading a forthcoming national, domain-independent project that will coordinate a range of trainings and communities for data stewards, as well as develop a curriculum for this stakeholder group.

Figure 20 Future architecture: A Loosely Coupled Ecosystem



"Surrounding countries sometimes envy us for DANS, which is able to do 'the right things' within a small budget. Hopefully, Open Science NL Programme funding will support DANS in strengthening their role in developing a national data training platform."

Hans de Jonge
(NWO/Open Science NL)

6.2

Developing the DANS Services

Provide versatile data repository services: collaborative and connected

As data management is rapidly becoming the norm in data-driven research today, a substantial share of researchers have yet to fully adopt systematic data management practices and/or FAIR principles. Furthermore, datasets in repositories often fall short of high FAIRness standards. While institutional incentives, rewards policies, and the more explicit role and position of data stewards are gradually encouraging adoption, comprehensive user support and infrastructure are still needed over an extended period of time to effect substantial and sustainable changes in research practices.

At the same time, the digitisation of research workflows is evolving rapidly, also in domains which are traditionally less dependent on digital tools and resources. A world where everything is linked also increasingly creates expectations amongst researchers of finding linked research outputs, such as publications, data, and software; in other words: through a single-point-of-entry to interlinked, and interoperable repository ecosystems.

Future directions for DANS

As previously mentioned, DANS currently operates five core repository services based on Dataverse, which is an open-source, community-owned technology. Four of these are domain-specific, and one provides a domain-agnostic service. Starting from the second half of 2024, they will also have access to DANS' long-term preservation service, Data

Vault. These core services constitute the solid backbone of DANS' infrastructure, enabling the organisation to enhance its functionality in the upcoming strategic period according to the needs of its user community. These core services constitute the solid backbone of DANS' infrastructure, enabling DANS to offer more customisable core services that allow users to select and combine functionalities to meet their data management needs, such as data curation and long-term preservation.

As open science communities grow, DANS engages with them to identify generic and domain-specific data management needs. Improving data quality and promoting FAIR principles early in the research lifecycle is a key focus for DANS' core infrastructure development. This involves providing tools and workflows to depositors at the point of creating research outputs, such as integrating services into virtual research environments and offering automated curation and guidance for selecting appropriate trustworthy repositories.

Developing search and discovery services which integrate scholarly records, is further shaping DANS' future focus on domain-specific solutions. These solutions have to be based on community-agreed standards for data and metadata and including supporting sustainable preservation. Creating these interlinked infrastructures requires coordinated and sustained efforts within the Dutch research support landscape, and European research infrastructure community.

6.3

Supporting services with efficient and effective organisation

Strengthen the organisation of DANS

DANS holds immense potential as an organisation, with expertise that is essential for building global, regional, and national research data commons. However, our current reliance on temporary funding poses vulnerabilities, hindering our ability to share expertise and innovate effectively in this rapidly evolving field. To sustain our innovative role and attractiveness as a partner, particularly

in Europe, we must maintain a culture of innovation, actively engage in international discussions, and incentivise staff participation. This necessitates two areas of internal development: a reassessment of our financial model to secure stable funding streams, and organisational development to ensure a motivated, professional, and content workforce.

“It is imperative to identify how machines can be employed in the tasks they excel at and reserve human input for the tasks that require it. Artificial intelligence and large language models present both challenges and opportunities to enhance our capabilities.”

*Andrew Treloar
(Australian RDCcommons)*

“I think DANS' work is very relevant for developing collaborative preservation standards. Someone needs to be the gatekeeper of those standards, to enable the long-term preservation of data; here's where DANS comes in.”

*Merik Seven
(ZonMw)*



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Self Evaluation

2024

Appendix 1

Endnotes

Chapter 1

page 4	1	See: Updated partnership agreement concerning Data Archiving and Networked Services – DANS 2021
page 5	2	Various separate sources of income, e.g. training, secondment of staff, sale of old laptops, storage fees, etc. The year 2023 shows a peak, as a result of a contribution from RVO in the context of Horizon Europe
	3	Overall results were positive. In 2019 future job security was lower than before. In 2022 this had improved and work pressure, career development and internal communication were revealed as areas that need attention

Chapter 2

page 6	4	The EU's open science policy
	5	Ambition Document and Rolling Agenda open science 2030 in The Netherlands
	6	Gregory 2021, Borgman, Groth 2024

Chapter 3

page 8	7	Akthar, M., Benjelloun, O., Conforti, C., Giner Miguelez, J., Jain, N., Kuchnik, M., Lhoest, Q., Marcenac, P., Maskey, M., Mattson, P., Oala, L., Ruysen, P., Shinde, R., Simperl, E., Thomas, G., Tykhonov, V., Vanschoren, J., Vogler, S., & Wu, C.-J. (2024). <i>Croissant: A Metadata Format for ML-Ready Datasets</i> . Arxiv.org. https://arxiv.org/abs/2403.19546
	8	8 Daga, E., Daquino, M., Fournier-S'niehotta, R., Guillotel-Nothmann, C., & Scharnhorst, A. (2023). Documenting the research process. Opportunities and challenges for Bibliometrics and Information Retrieval. In I. Frommholz, P. Mayr, G. Cabanac, S. Verberne, & J. Brennan (Eds.), <i>Proceedings of the 13th International Workshop on Bibliometric-enhanced Information Retrieval co-located with 45th European Conference on Information Retrieval (ECIR 2023)</i> (pp. 4-20). (CEUR Workshop Proceedings; Vol. 3617). CEUR WS.org. https://doi.org/10.5281/zenodo.10529113
	9	Thematic Digital Competence Centre Social Sciences and Humanities website
	10	Long-term storage of built heritage reports
	11	Technology Hotel project , Data for Digital Twins and BY-COVID
page 9	12	Advanced Research Infrastructure for Archaeological Dataset Networking in Europe
	13	Connected Open Identifiers for Discovery, Access and Use of Research Resources
page 10	14	Doorn, P. K., Dillo, I., & Witkamp, P. (2014). Building a Federated Infrastructure for Preservation of and Access to Research Data in the Netherlands: The Front Office-Back Office Model. In D. Katre, & D. Giaretta (Eds.), <i>APA/C-DAC International Conference on Digital Preservation and Development of Trusted Digital Repositories</i> (pp. 72-77). Article 8 EXCEL INDIA PUBLISHERS. http://www.ndpp.in/APA-DPDTR-2014/
	15	Technically, ensured by using the Dataverse software, the Data Stations are connected – and no silos
	16	Examples: OHSMArt , SiCaDA , RDA TIGER , and OH-CORE
	17	Examples include EOSC PID Policy compliance (FAIRCORE4EOSC), FAIR (OSTrills) , and EOSC Interoperability assessments (FAIR-IMPACT)
	18	Examples: ODISSEI , SiCaDA , EOSC Beyond , and RDA TIGER
	19	Examples: SiCaDA , RDA TIGER
	20	Gilissen, V. (2023). "Het vormen van duurzame databases: De omgang met databases gericht op de lange termijn." <i>Archiefblad</i> , 127(2), 9-11. ISSN 1385-4186. Short content: To ensure that digital sources remain accessible, file formats have to be used of which it can be expected that they can be opened in the future. The scientific data archive Data Archiving and Networked Services (DANS) has guidelines for dealing with various types of file formats. This article takes a closer look at the issues surrounding the preservation of databases and the choices DANS has made in this regard
	21	See the File Format Guidelines
page 11	22	See for an overview of the features of the Data Stations https://dans.knaw.nl/en/advantages/

Chapter 5

page 13	23	Calculated total project revenue as a % of the lump sum in a certain year minus the incidental revenues in the 1st funding stream
page 14	24	See the FAIR Aware website
page 16	25	Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. <i>Sci Data</i> 3, 160018 (2016). https://doi.org/10.1038/sdata.2016.18
	26	Wilkinson, M., Sansone, SA., Schultes, E. et al. A design framework and exemplar metrics for FAIRness. <i>Sci Data</i> 5, 180118 (2018). https://doi.org/10.1038/sdata.2018.118
	27	http://opensciencefair.eu/parallel-day-3-2/fair-metrics-starring-your-data-sets , https://www.tarki.hu/eng/webinar-fair-data-practice-fairy-tale-fair-enough
	28	https://satisfyd.dans.knaw.nl/
	29	https://fairaware.dans.knaw.nl/
	30	https://www.fairsfair.eu/f-uji-automated-fair-data-assessment-tool
	31	Lin, D., Crabtree, J., Dillo, I. et al. The TRUST Principles for digital repositories. <i>Sci Data</i> 7, 144 (2020). https://doi.org/10.1038/s41597-020-0486-7 . The most recent contribution of DANS to the debate on the importance of trust in science consisted of a keynote at the IDCC 2024: https://dans.knaw.nl/en/news/trust-and-transparency-in-science-an-ongoing-journey/
	32	https://www.nwo.nl/en/news/nwo-joins-the-research-data-alliance
page 17	33	In addition, UMC Groningen and UMC Maastricht make use of DataverseNL via their University's subscription

Appendix 2 Glossary

(1)

4TU	Also known as 4TU.Federation or 4TU.ResearchData; an initiative of the three Dutch technical universities and joined by Wageningen University and Research Centre
4TU.Researchdata	4TU.ResearchData is led by the 4TU.ResearchData Consortium, which consists of Delft University of Technology, Eindhoven University of Technology, University of Twente and Wageningen University & Research
AI	Artificial Intelligence
ABRplus	Archaeological Base Register
ARIADNE/ARIADNEplus	Advanced Research Infrastructure for Archaeological Dataset Networking
CBS	Statistics Netherlands/ Centraal Bureau voor de Statistiek
CC-BY	Creative Commons Licence
CESSDA (ERIC)	Consortium of European Social Science Data Archives (European Research Infrastructure Consortium)
CESSDA SaW	A project to establish the conditions for, and initiate the movement towards, a seamless social science data archive service for the whole of the European Research Area (ERA)
CLARIAH	Common Lab Research Infrastructure for the Arts and Humanities
CLARIAH+	Research Infrastructure; proposal submitted for the NWO Roadmap 2017
CSC	IT Centre for Science in Finland
CTO	Chief Technology Officer
CTS	CoreTrustSeal
DANS	Data Archiving and Networked Services
DARIAH (ERIC)	Digital Research Infrastructure for the Arts and Humanities (European Research Infrastructure Consortium)
Data Station	A domain-specific digital repository for research data
Data Vault	Longterm archive
DataverseNL	A research data repository co-provided by DANS and participating institutions
DCC	Digital Curation Centre
DOI(s)	Digital Object Identifier(s)
DSA	Data Seal of Approval
EASY	Electronic Archiving System
e-depot	A facility with functionality for the storage, management and retrieval of digital archives eligible for permanent preservation
EOSC	European Open Science Cloud
ERIC	European Research Infrastructure Consortium
EU	European Union
EU Horizon 2020	Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness Current Research Information System, international organisation
EUJDAT	European Association, for Databases in Education and Training
FAIR	Findable, Accessible, Interoperable, Reusable
FAIRCORE4EOSC	FAIRCORE4EOSC project focuses on the development and realisation of core components for the European Open Science Cloud (EOSC)
FAIR-IMPACT	Ongoing EU funded project that identifies practices, policies, tools and technical specifications to guide researchers, repository managers, research performing organisations, policy makers and citizen scientists towards a FAIR data management cycle
FAIRsFAIR	EU funded project
FAQs	Frequently Asked Questions
Fedora	Open source Linux-based operating system (version 3)
FREYA	Norse origin of earlier project names to su/ was a 3-year project funded by the European Commission under the Horizon 2020 programme
FTE	Fulltime equivalent
GDPR	General Data Protection Regulation
GESIS	Leibniz-Institute for the Social Sciences, the largest infrastructure institution for the Social Sciences in Germany/ Gesellschaft Sozialwissenschaftlicher Infrastruktureinrichtungen
Horizon Europe	Horizon Europe is the EU's key funding programme for research and innovation until 2027
IDEAS	Inclusion, Diversity, Equity, Accessibility and Social Safety
IT	Information Technology
K	Thousand
KNAW	The Royal Netherlands Academy of Arts and Sciences/ Koninklijke Nederlandse Academie van Wetenschappen
KNAW-HuC	KNAW Humanities Cluster
LCRDM	Landelijk Coördinatiepunt Research Data Management

Appendix 2 Glossary

(2)

LS	Life Sciences
LTER-LIFE	Large-Scale Research Infrastructure in the making that will provide a state-of-the-art infrastructure to better understand ecosystem functioning and to forecast how human-induced pressures affect ecosystems and biodiversity
M	Million
Mendeley	Desktop and web program produced by Elsevier for managing and sharing research papers, discovering research data and collaborating online
National library	National Library of the Netherlands/Koninklijke Bibliotheek
NARCIS	National Academic Research and Collaborations Information System
NDE	Digital Heritage Network/ Netwerk Digitaal Erfgoed
NIOO-KNAW	Netherlands Institute of Ecology perform leading ecological research on individual organisms, populations, ecological communities and ecosystems. NIOO is the largest institute of the KNAW
NPSO	Dutch-language Platform Survey Research / Nederlandstalig Platform Survey Onderzoek
NWO	The Netherlands Organisation for Scientific Research / Nederlandse Organisatie voor Wetenschappelijk Onderzoek
ODISSEI	Open Data Infrastructure for Social Science and Economic Innovations
OHSMARt (targets)	Stories at the Museum around Artworks (OH-SMARt), a long term initiative to significantly improve the digital research chain around using Oral History and spoken narratives, with research into artworks and museums as a use case
OpenAIRE	Open Access Infrastructure for Research in Europe
Open Science NL	Open Science NL is the national programme that aims to promote and accelerate the transition to open science in the Netherlands
OSTrails	Open Science Trails, aims to improve the way we plan, track, and assess scientific knowledge
PAN	Portable Antiquities of the Netherlands
PTS	Physical and Technical Sciences
RDA	Research Data Alliance
RDA-TIGER	Research Data Alliance facilitation of Targeted International working Groups for EOSC-related Research solutions
RDM	Research Data Management
RDNL	Research Data Netherlands
RI	Research Infrastructure
SCP	The Netherlands Institute for Social Research/ Sociaal en Cultureel Planbureau
SHEBANQ (project)	System for Hebrew Text: Annotations for Queries and Markup
SSH	Social Sciences and Humanities
SSHOC (EU)	Social Sciences and Humanities part of the European Open Science Cloud
SSHOC-NL	SSHOC-NL enables the further development of ODISSEI and CLARIAH
Sound & Vision	The Netherlands Institute of Sound and Vision/ Nederlands Instituut voor Beeld en Geluid.
SURE	The collaborative ICT organisation for Dutch education and research
SWORD	Simple Web-service Offering Repository Deposit; protocol for depositing content from one location to another
SWOT	Strengths, Weaknesses, Opportunities and Threats
TDCC	Thematic Digital Competence Centre
TRUST principles	Transparency, Responsibility, User focus, Sustainability, Technology
UKDA	United Kingdom Data Archive
UMC	University Medical Centre
WDS	World Data System
Zenodo	Repository of CERN
ZonMw	ZonMw designs programmes on behalf of the Ministry of Health, Welfare and Sport (VWS), the Dutch Research Council (NWO) and other organisations

Appendix 3

Recommendations Review 2017 and responses 2024

Review Report, page 15:

Based on the assessment provided in this report, the committee would like to provide DANS with a number of recommendations with which its research and services can be developed further.

1. The first recommendation is about the role of DANS in the SSH domain. The committee recommend that DANS further develops and continues to guard DANS' strong home base in this domain. This can be done by identifying key stakeholders in this community, strengthening the network here and by making sure that stakeholders are always the starting point of DANS' activities.

DANS has maintained its strong position in the SSH domain over the past seven years, nationally and internationally as centre of expertise, as well as its strong position in repository services. DANS' hosting of the TDCC-SSH is a clear result of continued investment. See also Chapters 3 and 5, reporting a majority of project activities, engagements with partners, repository services and outreach activities in this domain.

2. Secondly, the committee thinks it is important to develop more explicit ideas about DANS' aspired position in the rapidly changing data landscape (e.g. international focus points, life sciences, rise of big data and technologies like blockchain). This is in particular relevant when it comes to support services in applying the FAIR data principles.

DANS operates at the forefront of developments in the data landscape by its leadership of innovative European projects, developing its services within the EOSC and technical collaboration with CTOs of national partners. Networking in domains other than SSH has resulted in collaboration within projects and around the DANS repository services.

3. The committee recommends to rethink the current governance structure of DANS with a dual headed Steering Committee from both NWO and KNAW.

The Updated partnership agreement concerning Data Archiving and Networked Services – DANS 2021, Article 3 has been revised. Instead of "a Steering Committee", a "Consulting Board" is now charged with the supervision of the general affairs of DANS, etc. Please find the document in the folder for this Review Committee.

4. The committee recommends that DANS implements a sounding board for EASY, which could also advise on the establishment of communities of users of specific data collections.

As the number of subscribing institutions for the DataverseNL-services expands, DANS engages with a larger group of users in a variety of research domains. DANS has also intensified engaged research (support) communities in the different domains during the implementation of the Data Stations and continues to ask for feedback and advice.

5. In tandem to the previous point, the committee advices to increase the presence and visibility of DANS at universities and thus to strengthen networks with key stakeholders.

DANS has strengthened relations and concrete collaborations within Dutch Higher Education via close collaborations through partnerships and national Open Science NL and TDCC programmes, in an increasing number of national projects, engaging data professionals and researchers.

6. Link up with the university libraries, in order to facilitate their efforts in supporting local researchers to make data FAIR, to develop shared standards, and to profit from the distributed storage of data at local institutions.

DANS increasingly collaborates with communities of data professionals and open science communities, consisting of both data professionals and researchers. In addition, the current Director has brought relevant national and international library networks to DANS.

7. The committee recommends turning towards the user perspective more in the upcoming years. This entails identifying current and potential users of DANS' core services and investigating their experiences with DANS. The committee believes more attention should go to those users who wish to reuse the data that has been uploaded to DANS.

See under recommendation 4. In addition, in realising the Focus on FAIR strategy, DANS is working on enhancing findability through the ODISSEI Portal and access to data, through licences that are 'as open as possible', sustainable file formats, etc.

8. Finally, the committee believes it is important to continue to seek opportunities for collaboration with academic partners, visiting professors and PhDs working on topics related to DANS' services. The field of data science is rapidly expanding and if DANS wants to remain at the international forefront in the development of data services in-depth knowledge of innovations is required.

National and international open science agenda's guide DANS' strategies and place DANS right in the heart of the development of the data landscape. DANS has increased collaboration with academic partners in ODISSEI, CLARIAH, SSHOC-NL and in other projects, which involve close collaboration with innovative research in this arena. The DANS Fellow Programme is still very much alive and brings innovations to the DANS organisation and networks. In addition, the broad international background and network of several DANS staff members is instrumental of keeping up with developments.

Appendix 4

Examples of DANS' activities

(1)

International projects

- [FAIRsFAIR](#), 2019-2022, project leader
- [FAIR-IMPACT](#), 2022-2024, project leader
- [SSHOC-EU](#), 2022-2024
- [CaRe DaRe](#), 2022, deliverable: [Qualitative data guide](#)
- [BY-COVID](#), 2021-2024
- [QUANTUM](#), 2024-2026
- [RDA-TIGER](#), 2023-2025
- [Croissant](#)

National projects

- [ODISSEI Portal project](#)
- [OH-SMArt](#) 2022-2024
- [SSHOC-NL](#) 2023-2028
- [Technology Hotel project](#) 2020
- [MuseIT](#) 2022-2024
- [Data for Digital Twins](#) 2023-2024
- [LTER-LIFE](#) 2023-2033

Scientific publications

Flohr, Pascal et al. Shaping the World of 3D: Towards a roadmap for increased reusability of 3D cultural heritage datasets Zenodo. 2024. <https://doi.org/10.5281/zenodo.10200379>

Nelson, Michael L. and Herbert Van de Sompel "D-Lib Magazine Pioneered Web-Based Scholarly Communication". *Proceedings of the 22nd ACM/IEEE Joint Conference on Digital Libraries*. JCDL '22. New York, NY, USA: Association for Computing Machinery (ACM). 2022, 1-12. <https://doi.org/10.1145/3529372.3530929>

Daga, Enrico et al. "Documenting the research process. Opportunities and challenges for Bibliometrics and Information Retrieval"., Frommholz, Ingo, Mayr, Philipp Cabanac, Guillaume Verberne, Suzan Brennan, Jordan (editors). *Proceedings of the 13th International Workshop on Bibliometric-enhanced Information Retrieval co-located with 45th European Conference on Information Retrieval (ECIR 2023)*. Chapter Keynotes, CEUR Workshop Proceedings. CEUR-WS.org. 2023, 4-20. <https://doi.org/10.5281/zenodo.10529113>

Van Horik, Rene et al. *Mapping of PID policies for different stakeholders* Zenodo. 2023. <https://doi.org/10.5281/zenodo.10370215>

Myers, Jim and Vyacheslav Tykhonov A Plug-in Approach to Controlled Vocabulary Support in Dataverse Zenodo. 2023. <https://doi.org/10.5281/zenodo.8133723>

Smiraglia, Richard P. and Andrea Scharnhorst, ed. *Linking Knowledge: Linked Open Data for Knowledge Organization and Visualization* Ergon – ein Verlag in der Nomos Verlagsgesellschaft. 2021. <https://doi.org/10.5771/9783956506611>

Lin, Dawei et al. "The TRUST Principles for digital repositories". *Scientific data*. 2020, 7. 1-5. <https://doi.org/10.1038/s41597-020-0486-7>

Professional publications

Braukmann, Ricarda. "Bruggen bouwen in het Nederlandse onderzoekslandschap - TDCC's ondersteunen FAIR data in verschillende domeinen". *E-data & Research*. 2023, 17(3). 5.

Brinkman, Loek et al. *OSC-NL and NLRN team up to collaborate on Open and Reproducible Science in the Netherlands* Zenodo. Zenodo. 2023. <https://doi.org/10.5281/zenodo.10075256>

Krūminas, Pijus et al. *European Research Data Landscape Study Report (deliverables 3.2, 4.2, 5.2)* Zenodo. 2022. <https://doi.org/10.5281/zenodo.7351121>

Wittenberg, Marion. "Van SSH Open Cloud naar SSH Open Cluster: Succesvolle afsluiting van het SSHOC-project". *E-data & Research*. 2022, 16(3). 7

Verburg (Maaik), M. L., Jerry de Vries, and Cees H.J. Hof. "Cultureel erfgoed in kaart gebracht". *E-data & Research*. 2022, 17(1). 6.

Ras, Marcel, Stephanie Bosschaert, and Ilona von Stein. "Wegwijs in beleid voor duurzame toegang: Wegwijzer Certificering". IP. *Vakblad voor informatieprofessionals*. 2021, 2021(2). 14-16. <https://doi.org/10.5281/zenodo.4630333>

Talks and presentations

Trust and transparency in science: An ongoing journey
Ingrid Dillo (Speaker) 2024

Modelling Mycenaean Chamber Tombs with Photogrammetry
Daniel Turner (Invited speaker) & Valentijn Gilissen (Invited speaker) 2023

Harmonising Access Procedures for Sensitive Data
Ricarda Braukmann (Speaker) & Wim Hugo (Speaker) 2023

In Now Museum. Digital media space-time from Dataverse
Yves Rozenholc (Speaker) & Vyacheslav Tykhonov (Speaker) 2023

Info session Amsterdam UMC "Data Matters"
Cees H.J. Hof (Speaker) 2022

Seminar Swedish National Heritage board: DANS: Data Archiving and Networked Services in the Netherlands
Hella Hollander (Speaker) 2021

Appendix 4

Examples of DANS' activities

(2)

Organised events

Discover the European Open Science Cloud (EOSC)

Pascal Flohr (Organiser), Kim Ferguson (Organiser), Louise Bezuidenhout (Organiser), Jorik van Kemenade (Organiser), M.J. (Marjan) Grootveld (Contributor), Laurents Sesink (Contributor) & Mark van de Sanden (Contributor) 2023

FAIR-IMPACT All-Hands Meeting

Daniel Turner (Organiser), Lisa De Leeuw (Organiser), Ingrid Dillo (Organiser), Vasso Kalaitzi (Organiser), M.J. (Marjan) Grootveld (Participant), Loek Brinkman (Participant), Michael Priddy (Contributor), M. L Verburg (Maaik) (Contributor), Ingrid Korver (Participant) & Samantha Willemsen (Participant) 2023

DARIAH ANNUAL EVENT 2023 Cultural Heritage Data as Humanities Research Data?

Sally Chambers (Chair), Andrea Scharnhorst (Chair), Francesca Morselli (Chair) & Kim Ferguson (Member of programme committee) 2023

Dataverse Community Meeting 2022

Vyacheslav Tykhonov (Chair)

Research Data Management and Knowledge Organization in Musicology

Femmy Admiraal (Organiser) & Andrea Scharnhorst (Organiser) 2021

Memberships

DANS staff members have extensive national and international networks, being actively engaged as a member and in many cases also assuming roles in the governance.

Examples international positions:

- International Open Science Communities chair
- CoreTrustSeal Member Board of Directors
- CESSDA DMEG, DAG
- EUDAT CDI
- OpenAIRE AMKE
- DataCite Board Member
- RDA Europe President
- EOSC-A GA Representative
- LIBER Secretary General

Examples national positions:

- RDNL Steering Committee Member
- DARIAH CIO
- CLARIAH Data Officer
- Digital Heritage Network (NDE) WG Preservation Watch
- Dutch tech Centre for Life Sciences Member
- CLARIAH+ Advisory Board Chair
- ODISSEI FAIR Support Team Member, Managing Board Member
- Open Science NL Board Member
- LBDI SSH Board Member

Expert Advice

Consultancy is demand-driven and responds to a need for larger, business-critical advice. In addition to training and consultancy DANS shares its expertise via [guidebooks](#), [papers](#), [webinars](#), and [FAQs](#).

Two examples:

- In addition to training on Data Management Plans, DANS is frequently involved in consultancy. See for instance the work done within Science Europe to create [domain-specific DMP protocols](#), which aim to make both writing and evaluating DMPs easier.
- Based on our deep familiarity with repository certification, in FAIRsFAIR and FAIR-IMPACT, we support selected repositories to become more trustworthy and to enable more FAIR data. This in turn benefits data producers, i.e. researchers, to comply with the FAIR data principles. Thanks to this track record, DANS expects to lead a substantial training work package in a European project that will grow a network of trustworthy repositories.

Training

- FAIR Data training at Netherlands Annual Ecology Meetings ([NAEM](#))
- The CESSDA [Data Management Expert Guide](#), helping social sciences researchers make their research data FAIR
- Developing and piloting training activities for researchers within the The PATTERN project to promote the practice of Open RRI
- In 2023, we organised more than 10 trainings in addition to the planned project trainings and we set up a [DANS-KNAW training materials community](#) on Zenodo for curated training materials supplementary to projects' training catalogues.
- Workshop uploaden rapporten / Werken in het DANS Data Station Archaeology, 2023
- Lorentz Center workshop for ecologists, 2021: FAIR Data for the 'Long Tail of Science'
- Repositories for the Life Sciences workshops at NWO Life in 2021, 2022 & 2023
- Health-RI Data Steward training on repositories, 2023

Appendix 5

Summary of stakeholder interviews

Summary of external interviews as part of DANS' Self Evaluation

January - March 2024

The items below are points that were raised by various interviewees.

Strengths

- 1. Expertise in open science and FAIR principles:**
DANS is recognised for its expertise in and contribution to open science and promoting FAIR principles. The continuation and further development of this core expertise is vital.
- 2. Qualitative services:**
The quality of service, in particular data steward training and the collaboration with other organisations such as SURF and the eScience Center is particularly valued. According to the interviewees, these services should be maintained and expanded.
- 3. Important infrastructure for research data:**
DANS is seen as an important infrastructure for archiving and accessing research data, particularly within the SSH domain. Maintaining this core function is vital.
- 4. Contributions to the international community:**
The international interviewees laud DANS's contribution to the development and implementation of FAIR data across the globe. DANS is referred to as a model institution in that respect.

Areas of improvement and recommendations

- 1. Engagement with target audiences:**
Visibility and interaction with researchers: the interviewees differ on how they view DANS interaction within the field. Some see DANS' collaboration with data professionals as the most important (and realistic) task. Other interviewees emphasise the need for insight into how the services directly contribute to research and researchers' needs.
- 2. Positioning and future role:**
It makes sense that DANS' role within the fast-changing digital research infrastructure landscape should be dynamic. This makes a clear proposition both necessary and complex. DANS does a lot of different things and interviewees indicated that they didn't precisely know what DANS does and doesn't do.
- 3. Technological development and innovation:**
DANS should not only maintain current technologies and standards but also take the lead in technological developments and innovations.
- 4. International collaboration and projects:**
DANS is an internationally valued institution, but there is room for improvement in how these international partnerships can contribute to the Dutch data landscape.

Future roles

- 1. Expertise centre for data and open science:**
DANS can position itself as a national expertise centre that not only offers services but also actively contributes to policy-making practices and standardisation in the FAIR data and open science field.
- 2. Bridge between research and technology:**
Given the growing need for advanced data storage and maintenance, DANS can play a pivotal role in bridging the gap between researchers and technological solutions.
- 3. Leader in global standards and partnerships:**
DANS can contribute to strengthen the position of the Netherlands in the global research community by playing a more active role in international projects and standardisation.
- 4. Champion of the SSH domain:**
Several interviewees have indicated that DANS should remain focused on the SSH domain as its area of expertise.