RESEARCH SUPPORT IN THE NETHERLANDS

CURRENT SITUATION | PART 2

SURF

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1. INTRODUCTION

Researchers at Dutch institutions of higher education are placing ever-growing demands on the field of computing power, networking services and data storage. Access to a high quality, low threshold ICT infrastructure has become a prerequisite. As such, the need for suitable support in order to simplify access for researchers is growing all the time. There is a growing number of employees working in the field of research support: ICT managers, library staff, information managers, research data officers, data stewards and escience engineers.

Although all universities and research institutions are addressing the issue of research support, each institution is taking an independent approach to the matter. SURF approached four institutions to gain a clearer picture of the different options. Each of these institutions was asked to answer the following questions:

- What is your vision for research support?
- What e-infrastructure and associated services can researchers utilise?
- How is research support organised?
- What are your intentions for the (immediate) future?

This report follows 'Research Support in the Netherlands: Current Situation', a report published in 2016. This follow-up report compiles all chapters published in the period 2017-2018 in the knowledge bank on www.surf.nl/kennisbank.

What is the purpose of this report?
The study – whose results are detailed in this report – was conducted as part of the Support4research project run by SURF (part of our 'Collaboration on ICT environments for research' innovation programme.). Within this project, SURF looks at how researchers can have their requirements met most effectively. Research support is the basis for all of it. This report is intended to demonstrate how research supporters can organise their support processes and which services, both their own and those supplied by third parties, they can offer. This report offers a number of examples that show how different institutions approach this. For SURF, this helps to determine the key points where we can provide our services.

Which institutions worked with us?
The four institutions that participated in the research for this follow-up report are: Eindhoven University of Technology, Hanze University of Applied Sciences, VU University Medical Centre, University of Groningen & University Medical Centre Groningen. Together, they provide a representative selection: one technical university, one general research university, one university of applied sciences and two academic medical centres. They show the available options for organising research support: centrally or close to the researcher. This offers a whole range of options.

SURF is aware that this selection meant that a number of other institutions had to be excluded. This includes institutions that have made excellent progress in the area of research support. However, SURF believes that this selection presents a good overall impression of the available options. If, as the result of this report, other institutions feel inspired to share their approach to research support, SURF encourages this by all means. Does your institution have an interesting business case in the field of research support? Please contact us via support4research@surf.nl.

How is this report structured?

The report is composed as follows: In chapters 2 to 5 Eindhoven University of Technology, Hanze University of Applied Sciences, VU University Medical Centre, University of Groningen & University Medical Centre Groningen each describe their situation. Each of these four chapters follows the same format. Each chapter contains key figures, the institution's vision regarding research support, an overview of their e-infrastructure, the organisational context, an ideal scenario for research support and a wish list for future development. Chapter 6 provides a summary of the most obvious results from this report and the report published previously.

2. SUPPORT FOR RESEARCH TU/e

TU/e
(fact & figures 2015)

Scientific staff
2.044

Number of academic staff
260

Number PhD students
841

Number of students
9.909

Number of auxiliary staff
2.857 FTEs, of whom 60 FTEs in ICT

Scientific publications
2.484

Areas of activity
- Energy
- Health
- Smart Mobility

Research Centers
- Data Science Center Eindhoven
- High Tech Systems Center
- Institute for Photonic Integration
- COBRA Research Institute
- Robotics Research
- Institute for Complex Molecular Systems
- Materials Technology
- Intelligent Lighting Institute
- EIRICT - ICT Research
- NRSC-Catalysis
- Eindhoven Multiscale Institute

Introduction

Eindhoven University of Technology (TU/e) is one of four technical universities in the Netherlands. TU/e is nestled within the top technology region of Brainport, the technological heart of the Netherlands. By pursuing intensive collaboration with the business community and the health sector, TU/e is able to translate research results into new products and services for society, in particular in the fields of health, energy, and mobility.

TU/e specialises in engineering science & technology. The educational & research activities and knowledge valorisation of the TU/e contribute to:
- Science for society: finding solutions for major social issues and increasing prosperity and well-being;
- Science for industry: working together with the business community to develop technological innovations;
- Science for science: technical scientific progress via excellence in key research areas and educational innovation.

Organisation

As a result of major developments in ICT, research projects are increasingly making use of the opportunities offered by ICT. As such, it is not surprising that researchers are making ever-increasing demands on (the use of) ICT. In addition, research is increasingly taking place via collaboration between multidisciplinary teams from different departments, with ICT becoming an indispensable tool in many respects. An essential element of these activities is the growing quantity of data that is generated before, during, and after the research. Researchers need effective support to take advantage of these new developments and opportunities in their research activities.

The above developments have been a motivating factor in the decision taken by the Board of Directors to set out the *Digital University* information strategy. As part of this strategy, the opportunities offered by ICT in all areas are explored and implemented. Information management has been organised to enable the business to manage this process and set priorities. This has resulted in a governance structure with four round tables at which various representatives from the organisation have a seat. Each round table has its own theme, namely: education, research, business management and basic services. With the information strategy in mind, the round tables determine the information requirements for their own theme and decide which projects can contribute. These theme-based projects are integrated into a university-wide portfolio in the ICT governance board.

The process is supported by a CIO Office. This office consists of the Chief Information Officer (CIO), information managers, enterprise architects, an information expert (CISO), a project manager and a communication consultant. The CIO Office can provide specific project managers depending on the project portfolio. Functional management will be an essential element of information management and the CIO Office.

IT research vision

The round table Research & ICT table manages all the initiatives and developments for the research domain in a comprehensive, integrated manner. The central question is always: *What does the researcher need and what does ICT need to provide?*

The round tables determine the project portfolio on an annual basis and appoint a contractor, project manager, and steering group for each project. For the projects and programmes of the round table Research & ICT, the steering groups primarily consist of researchers and senior suppliers.

The round table Research & ICT table has started formulating a vision based on interviews with a broad selection of researchers. An internal report, *IT for Research*, was prepared after these interviews were conducted. This report was then used by the round table Research & ICT to launch three programmes within the *Digital University* framework.

- Research data, research data management and support;
- Computing infrastructure (HPC) and support;
- Library and information systems.

Research data & research data management programme

The Research data & research data management programme (RDM) addresses all aspects essential for the storage, archiving, publication and management of research data. In addition, the programme deals with the financial and legal aspects of research data management. Comprehensive support is provided for these aspects. The RDM programme is based on the research data lifecycle in which the research stages are defined. Each stage has its own specific challenges; see Figure 1. An important basic point here is that the focus is on the researcher and that there are three pillars of support: policy, infrastructure and support services. It is also important for the researcher to become aware of the necessity of transparent RDM.

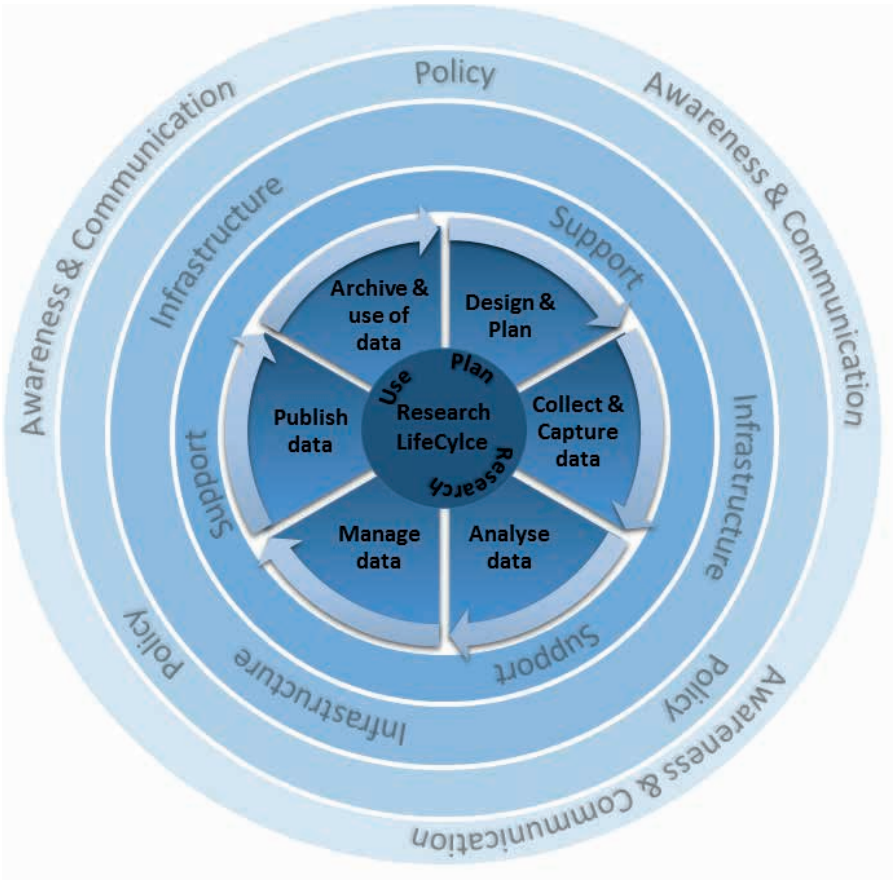

Figure 1: The support services, infrastructure and policy for RDM are organised for the entire research data lifecycle.

Data storage for research is essential. For this purpose, researchers also make use of local and less expensive data storage solutions, often accompanied by only limited backup facilities. This can have a negative impact on the traceability, reliability, and reusability of the research data. The *IT for Research* vision document recommends further expanding the data storage facilities at TU/e and improving the management of this valuable store of research data. Topics such as familiarity with, availability of and access to existing and external facilities and RDM tools are also an important part of this programme.

Support - Research Data Support Office

A clear need has been identified for a central source of support where the researcher is welcome to ask questions in a clear, approachable manner. Within the programme, an initiative is underway to establish a Research Data Support Office (RDSO). This virtual RDSO contains representatives from the various services at TU/e (library, ICT, Innovation Lab, general affairs and financial & economic matters). In addition, a pilot has been started to use e-science engineers and data stewards as a bridge between ICT and research. TU/e is investigating the available possibilities for structuring this role within the faculties. The ultimate goal is to support the researcher as effectively as possible.

TU/e is aiming to provide support for its researchers by making an e-science engineer or data steward available. This type of position is extremely promising. It is based on the e-science engineer or data steward providing ICT support to researchers in relation to all ICT aspects that might have an impact on their research. This could include:

- supporting and reviewing the RDM plan for the research project;
- designing and facilitating research environments;
- translating requirements into operational ICT services;
- providing support for research data management;
- training courses;
- project management.

The services provided by e-science engineers and data stewards enable the researcher to focus fully on the research at hand and spend as little time as possible dealing with advanced ICT facilities and methods and staying abreast of current knowledge in that area.

RDM pilots

There are currently six pilots underway for the implementation of RDM within the framework of research at the TU/e:

- A digital version of a lab (logging) journal that can be used for various disciplines;
- Generic archiving functions for securing research data for a certain period of time (10 to 20 years) after completion of the research. Published datasets are being made available on a long-term basis via the 4TU.Centre for Research Data;
- Privacy and security of research data for data science and e-health, e.g. in the event of collaborations with third parties;
- A machine learning (www.openML.org) platform;
- Tools and support are being organised for software sustainability. Software and research data cannot be addressed in isolation;
- Designing workflows for tracking data and source codes in local and national computing infrastructure.

Computing infrastructure programme
This programme focuses on optimising the TU/e computing infrastructure, in particular the HPC (High Performance Computing) clusters. Computing infrastructures can be organised and used at four levels: within the research group, the faculty or the institution, via national facilities (SURF) or European and international facilities (for example PRACE).

There is no shared computing infrastructure present at the TU/e level. The necessary facilities have been organised and implemented differently at faculties and research groups. Local HP clusters are popular and are being used successfully in research. However, management (hardware and software) and continuity present a challenge in this regard. The use of these facilities, the support provided and knowledge acquisition must be coordinated more effectively. Another challenge is to simplify the transition to (inter)national facilities and services.

The survey carried out among the researchers made it clear that there is a great need for a TU/e community in which the management and use of HPC clusters can be discussed and optimised. ICT management and HPC experts will facilitate this community.

A pilot has been started with SURF which is aimed at providing all TU/e researchers with access to the HPC infrastructure of SURF. The expectation is that this will reduce the need to invest in smaller HPC clusters and that researchers will be able to quickly switch from a local computing environment to a real HPC infrastructure. SURF will provide the local HPC community with proactive support.

Library and research information systems programme
This programme aims to modernise the library and research information systems, including the catalogue, the management of digital resources, and the search system for the entire (analogue and digital) collection. The Pure research information system is operational for research information.

Overview of TU/e services and e-infrastructure

Services

	INFRASTRUCTURE	SUPPORT
ICT services	• Networks • Servers (physical/virtual) • Central storage • Software (licenses) • Workstations	• Central ICT service desk for second-line support
Library (IEC)	• Catalogue • Digital magazines/journals • Pure • 4TU.Centre for Research Data	• Open-access training courses for information skills • Archiving
Innovation lab		• Startups • Patents • Grants
Equipment & Prototype Center	• Laboratory setups • Mechatronics	• Software (customised)

E-infrastructure

	COMPUTING SERVICES
Number of clusters within the institution	10 (all managed under a decentralised configuration)
Total scope of computing power	500+ nodes, 2500+ cores
Third-party clusters within the institution	-
Acquisition of computing services	SURFsara
	STORAGE
Capacity of centrally provided bulk storage	350 TB - unlimited (accounted for on the basis of actual use via a cloud model from the supplier)
Capacity of centrally provided archives	As required
Externally purchased storage services	SURFdrive for all researchers (100 GB max. per account)
	NETWORK
Routed capacity (external)	40 Gbit/s
MSP capacity	SURF standard
	AUTHENTICATION AND AUTHORISATION INFRASTRUCTURE
Connected to SURFconext	Yes
Other AAI supplier	-

Agenda for research support

A roadmap has been drawn up for the organisation and implementation of research support within TU/e; see Figure 2. The projects planned for 2017 are primarily implementation projects for RDM and HPC. In 2018 and beyond, these projects will become a permanent part of the internal services provided.

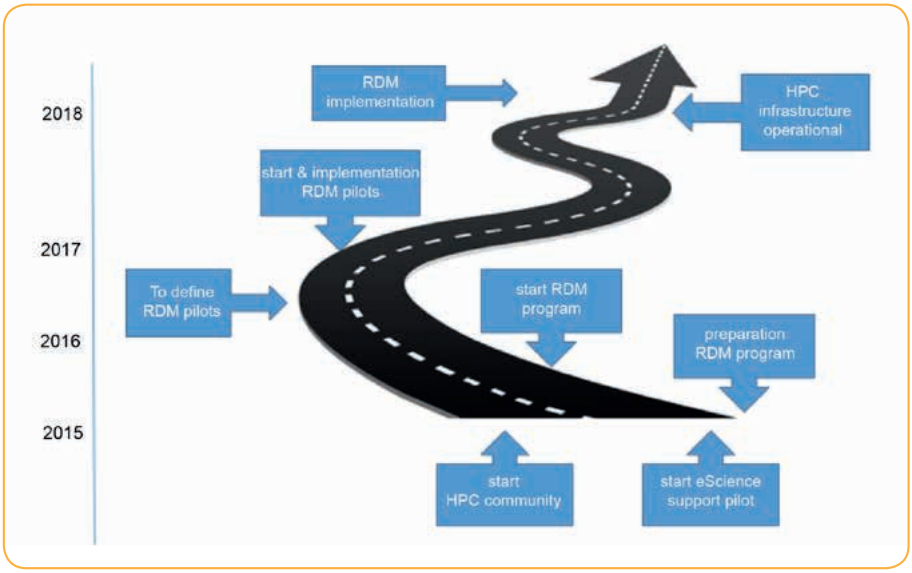

Figure 2: Roadmap research support.

Points to consider

- The demand for middleware for data management is expected to increase at national and international level. The complexity involved is too great for the institution to do this by itself. Collaboration, for example with SURF, will play an important role in this regard;
- The further development and expansion of national e-infrastructure (HPC and RDM) that is seamlessly connected to the TU/e infrastructure is adviseable;
- RDM training is highly advisable;
- Attention to the costs of research data during the entire research data lifecycle and, in particular, for the daily management of research data. Most of the costs are incurred through the daily RDM. Subsidy providers still pay too little attention to these technical and financial challenges;
- The profession of e-science engineer or data steward is relatively new. This expertise on the shop floor can enable researchers to focus more on their core activities. It would be a very good idea to continue and to coordinate national and local initiatives.

3. SUPPORT FOR RESEARCH AT HANZE UNIVERSITY OF APPLIED SCIENCES GRONINGEN

Hanze University of Applied Sciences Groningen

(figures from 2016, rounded)

Scientific staff
300 (75 fte)

Number of professors
52 (30 fte)

Number of PhD students
90

Number of students
BA 28.000 | MA 250

Number of auxiliary staff
800 auxiliary staff of which 75 for ICT or research support

Practice-oriented publications per year
300

Areas of activity
- Impact of research on professional practice
- Connection between education, research and professional practice

Strategic focus areas of Hanze University
- Energy
- Healthy Ageing
- Entrepreneurship

Introduction

Hanze University of Applied Sciences Groningen is the oldest multi-sector university of applied sciences in the Netherlands. In 2018 it will celebrate its 220th anniversary. The university has approximately 28,000 students and 3,100 members of staff and has locations in Groningen, Assen, Leeuwarden and Amsterdam. Its educational portfolio consists of 54 Bachelor programmes and 19 Master programmes. Some of the programmes are taught in German or English. Hanze University of Applied Sciences Groningen has three focus areas:
- Energy
- Healthy Ageing
- Entrepreneurship

Aside from education, practice-oriented research is increasing in importance at Hanze University. With four multi-disciplinary knowledge centres and two Centres of Expertise, Hanze University of Applied Sciences Groningen is a knowledge institute where research, professional practice and innovation are integrated into education. Over 50 research groups carry out applied research in close collaboration with the business community and non-profit institutions. Hanze University is a leading university of applied sciences that is helping to develop the research function of universities of applied sciences.

Vision for research support

Hanze University wants to provide researchers with support during the entire research lifecycle – from funding to publication and valorisation. This support helps researchers meet their immediate needs and promotes the professionalisation of the research function of the university.

Support needs to be easy to find, accessible and user-friendly. This is why this research support should, where possible, be available via a single central help desk. At this help desk, support providers from different departments work together in a network. In this way, we hope to relieve researchers of unnecessary work, leaving them to carry out their research more efficiently. On an organisational level, we are creating a coherent information management system for research using a Current Research Information System (CRIS).

Hanze University wants to provide the ICT facilities and knowledge that researchers need for their applied research (see Support scenario's). This support may be provided to researchers directly, via auxiliary departments or via national collaboration (SURF).

Organisational guarantees

The various staff departments at Hanze University provide research support within their own specialisations. A point of strength is the increasingly strong collaboration between ICT, library services, marketing & communication, human resources and the policy department on an operational, tactical and strategic level. At the level of the staff directors, an initiative has been launched to take research support to the next level and to integrate it. Among other developments, this has led to the coordination of annual plans on the issue of research support.

For the valorisation of research, a new organisational unit has been established under the name of Hanze Invent. This organisational unit is currently separate from the other research support facilities, but is nevertheless a member of the support network.

Consensus on the changes still needs to be reached within the knowledge centres. The implementation of large-scale changes (e.g. CRIS) is a lengthy process. The Executive Board and leading deans are responsible for this.

Support scenarios

The table below provides an overview of the various types of support and their relevance to Hanze University. The table also shows at which level this support could be provided and whether Hanze University has an immediate need for support in this area.

SUPPORT	RELEVANCE	WHICH LEVEL?			CURRENT NEED?
		RESEARCHER	HANZE	NATIONAL*	
Knowledge about	high				
• Subsidies		☐	○		
• Literature/databanks		☐	○		
• Data management		☐	○	△	✔
• Methodology		☐	○		
• Privacy		☐	○	△	✔
• Publishing (open access)		☐	○	△	
• Valorisation		☐	○		✔
Data storage facilities, all scenarios	high		✔	✔	✔
Standards	high				
• Research indicators				✔	
• ORCID				✔	
• Open access				✔	✔
Collaboration environment	high		✔	✔	(✔)
National systems	high				
• Narcis				✔	
• Sharekit				✔	
• HBO knowledge bank				✔	
CRIS	high		✔		✔
Efficient business processes (using CRIS)	high		✔	✔	✔
Customised research software/ visualisation	medium	✔			(✔)
Light paths	low			✔	
High performance computing	low			✔	
3D visualisation	low			✔	

☐ *basic knowledge required*
○ *advanced knowledge required*
△ *expert knowledge required*

* *If a service is not available on a national level, the tick symbol ✔ indicates that Hanze University is interested in national collaboration.*

Current and future e-infrastructure and support situation

COMPUTING SERVICES	
Number of clusters within the institution	1 ESX cluster, not specifically for compute cluster
Total scope of computing power	VMWare ESX cluster for office automation services
Third-party clusters within the institution	n/a
Acquisition of computing services	Azure, SURF and University of Groningen CIT on an occasional basis
STORAGE	
Capacity of centrally provided bulk storage	Central 2 x 250 TB SAN of which 25 TB is available
Capacity of centrally provided archives	n/a
Externally purchased storage services	n/a
NETWORK	
Routed capacity (external)	10 Gbit/s internet
MSP capacity	10 Gbit/s of which 5 Gbit/s is available
AUTHENTICATION & AUTHORISATION INFRASTRUCTURE	
Connected to SURFconext	Yes
Other AAI supplier	No

Agenda for research support

Hanze University will continue to strengthen its research support programme in the coming years. Now is a good time to explore what we can collaborate on with SURF and other institutions:

- Data storage facilities for various use cases (lifecycle phases, types of data, privacy, collaboration partners, etc.)
- Open access
- Setting up CRIS, efficient business processes
- User-friendly, easy to obtain, just-in-time/on demand

References

www.hanze.nl/eng/research/knowledge-development/knowledge-portal

4. SUPPORT FOR RESEARCH AT VUMC

VUmc
(2015 figures)

Scientific staff
1,079

Number of academic staff
155

Number of PhD students
900 (640 employed as PhD student, 260 otherwise)

Number of students
1,271 (bachelor)
1,436 (master)

Number of auxiliary staff
Within VUmc, supporting functions for care and research overlap too much to be shown as a separate figure here

Scientific publications per year
A total of 2,953 scientific journal articles and 429 specialist publications, reports, books and book chapters

Areas of activity
The core tasks consist of patient care, education and research. Research is conducted by a network comprising the eight multidisciplinary research institutions listed in the table on the right

Introduction

Patient-based research is one of the core strengths of the Vrije Universiteit Medical Centre (VUmc). Our primary focus is translational research, which addresses how scientific developments can be of benefit to patient care.

Research at VUmc is conducted by a number of multidisciplinary research institutions. Within these institutions, VUmc has, recently collaborated primarily with Vrije Universiteit Amsterdam (VU). The number of research institutions has expanded from five to eight as the result of the proposed alliance with the Academic Medical Center (AMC). Within these eight research institutions, the VUmc, AMC, VU and University of Amsterdam (UvA) – potentially also a number of other research institutions – will work together in Amsterdam.

Research at VUmc focuses primary on cancer, the immune system, the brain and nervous system, the heart and circulation, reproduction and development, nutrition and metabolism, extramural and transmural care, and human movement. Each research institution has its own primary focus.

Vision for research support

VUmc wishes to provide researchers with support spanning all areas of the data lifecycle, including applying for grants and commercialising research. Various points of contact are available to researchers within VUmc. Researchers can turn to the data management department, the Clinical Research Bureau (CRB), the grants desk, a privacy officer for research, statistical support and the Medical Research Ethics Committee (METc). In addition, the ICT department has a special (delivery) team for research, education and innovation that concentrates on applications used by researchers. This delivery team also provides access to the VUmc Research Cloud. This is a VMware-based environment where researchers can create and run virtual machines.

VUmc is working to consolidate all of these points of contact into a single virtual help desk under the name “Support4research”. Support4research organises meetings for researchers, sets up a website for research, answers questions, and refers researchers to the right support groups. VUmc wants to provide researchers with as much support as possible by means of standard procedures and services without these limiting researchers’ freedom.

RESEARCH INSTITUTION	PRIMARY FOCUS
Amsterdam Neuroscience	Brain
Amsterdam Gastroenterology & Metabolism	Nutrition and metabolism
Cancer Center Amsterdam	Cancer
Amsterdam Reproduction & Development	Reproduction and development
Amsterdam Infection & Immunity	Immune system
Amsterdam Public Health	Extramural and transmural care
Amsterdam Cardiovascular Sciences	Heart and blood vessels
Amsterdam Movement Sciences	Movement

See also www.amsterdamresearch.org

VUmc is working to establish an alliance with the AMC. Researchers from VUmc, AMC, VU and UvA will work together on projects within these research institutions. This is why we are seeking to jointly organise at least part of the research support. In anticipation of the alliance, VUmc and AMC have opted to make use of a joint Electronic Patient Dossier (EPD), which enables researchers to access data about each others' patients, if authorised to do so. AMC and VUmc are also working together in the fields of data disclosure, data management and valorisation. In addition, AMC and VUmc are collaborating on the development of a joint research infrastructure. Furthermore, we are aligning the research information plans for AMC and VUmc, and are working on drawing up a joint research information plan for 2018.

At national level, we are collaborating as part of the Netherlands Federation of University Medical Centres (NFU) Data4lifesciences, the Committee of UMC IT Directors (AcZie), the Platform of IT managers (TacZie), SIG Prima (special interest group for reference architecture) and Translational Research IT (TraIT). Moreover, the business intelligence departments of the various UMCs are working together to use each others' knowledge and experience as much as possible.

At international level, it is important to jointly influence European privacy guidelines to ensure that policymakers take full account of the privacy aspects of scientific research in the life sciences. International cooperation is also important when putting together cohort studies focusing on rare diseases. This is why a point of contact (the grants desk) has been set up which is up to date on the directives for European collaboration and the prerequisites for awarding grants.

Organisational guarantees

For the provision of care, VUmc is subdivided into six divisions. Each division is home to a number of medical departments. Different departments from various divisions work together within the research institutions. Research support is primarily covered by Division VI. This division consists of the Clinical Research Bureau (CRB), the grants desk, the data management department, the information manager for research, and part of the statistical support.

In addition to placing research support within Division VI, the ICT department is home to a delivery team tasked with research, education and innovation. In 2015, this delivery team organised a Support4research day together with SURF, TraIT and the information manager for research. The aim of this day was to present a use case to provide researchers with an insight into the services provided by SURF, TraIT and ICT for research.

For the protection of privacy and information security, a privacy officer dedicated for research has been appointed. VUmc uses the library facilities provided by the VU.

The data management help desk assists researchers with obtaining research data. If a researcher only requires data from the EPD for research purposes, the EPD service centre supplies the data. VUmc uses the Research Data Platform (RDP) for the provision of data from multiple sources. This RDP is an extension for research on the data warehouse of business intelligence (BI). The data warehouse contains information from a range of data sources for the purpose of company support (days hospitalisation, diagnosis/treatment packages (DBC), etc.). For research purposes, the data warehouse has been expanded to include sources such as EPD data, lab results, pathology reports and more. The RDP is able to combine data from various sources and provide a pseudonym.

Support scenario

A researcher has an idea. The grants desk helps the researcher find out what grant options are available to them. In parallel to this, the researcher draws up a data management plan for their research, and talks to the research privacy officer in order to find out how to safeguard the privacy of the patients involved. METc is informed of the study, and the study is recorded in the EPD after approval is granted. This allows the researcher to request transactions from the EPD for the study. They also receive support from the data management department. They receive information stored in the EPD combined with the pathology reports from the research data warehouse. This data is delivered under a pseudonym. Researchers can process and analyse the data using virtual machines in the VUmc Research Cloud. Based on the data, they can then publish their conclusions in one or more publications. The information is subsequently provided with metadata and archived for re-use. The virtual machines are also archived so that they may also potentially be re-used.

Current and future e-infrastructure and support situation

In the VUmc Research Cloud, researchers can use virtual machines that they manage themselves. After an intake procedure by the ICT delivery team for research, education and innovation, the researcher is granted access to the Research Cloud. In the Cloud, the researcher can create, amend, delete and archive virtual machines. The researcher can create these virtual machines within a virtual organisation (VO) and keep them logically separate from other machines. The virtual machines can be connected to the Internet if desired.

The researcher can use the Store4Ever storage facility to store their data. This storage is relatively cost-effective and easily scalable. Users are charged an annual fee based on their use of the service. In addition to virtual machines, VUmc has a computer cluster with 512 cores available in multiples of 64 cores. A researcher can use the VUmc Research Cloud to connect and use the computing capacity of SURFsara by providing SURFsara with access to the data in the VO via a lightpath (multi-service port connection). This enables the computing capacity to be scaled up if there is not sufficient capacity within VUmc.

In the VUmc Research Cloud, researchers can create virtual Windows and Linux machines themselves. They can also collaborate with third parties. If they do so, the researcher needs to take care of the user management on the virtual machines. In the future, VUmc is aiming to utilise SURFconext for user management. The Research Cloud portal can already be accessed via SURFconext, but user management within the virtual machine is not yet available. Using SURFconext, it is easy to invite parties outside VUmc to use the Research Cloud. Local accounts can be linked to the employer's account. SURF is working on a solution to enable user management within a virtual machine. At present, SURFconext is only suitable for the authentication of web-based applications.

E-infrastructure

COMPUTING SERVICES	
Number of clusters within the institution	1 general computer cluster + 1 for medical genetics
Total scope of computing power	128 cores, 1 TB memory (VUmc Research Cloud) + 512 cores in the computer cluster
Third-party clusters within the institution	None; breakout to SURFsara
Acquisition of computing services	None
STORAGE	
Capacity of centrally provided bulk storage	1300 TB (1,3 PB) netto, out-of-the-box extendable to 12 PB. Parallel file system scalable up to 2^{64} (9 quintillion) files and 2^{99} bytes
Capacity of centrally provided archives	Tiered storage (tier 0 t/m 2) with active archiving (always online) of FLASH/SSD, SAS/SATA to redundante LTO6 tape robots offering intergrated lifecycle management and recall
Externally purchased storage services	Vancis in case of contract research
NETWORK	
Routed capacity (external)	1 Gb/sec, scalable to 2x10 Gb/sec
MSP capacity	1 Gb/sec, underlying network infrastructure multiple 10 Gb/sec
AUTHENTICATION & AUTHORISATION INFRASTRUCTURE	
Connected to SURFconext Federation	Yes
Other AAI suppliers	None

Agenda for research support

In 2015, VUmc organised a major seminar called “Support4research” jointly with SURF and TraIT. The evaluation of this seminar indicated that researchers would prefer to focus in more depth on a single topic. This is why in 2017, VUmc initiated a new round of Support4research meetings. These meetings take place every eight weeks. Each meeting has a specific topic and lasts approximately one hour. During each meeting, two researchers explain how they made use of a particular service, what went well and where there is room for improvement.
A supporting service then explains what it can offer researchers. The meeting concludes with a discussion about the subject.

In addition to the Support4research meetings, VUmc wants to publish the Support4research “brand” in the form of a website and newsletter. The intention is to form an overarching committee in which to discuss research questions. We want this to cover the following activities and elements: protection of privacy and information security, the Clinical Research Bureau (CRB), data management, the grants desk, METc, statistical support, information management and ICT. Our aim is to create a joint information portal for research which is based on the data lifecycle.

References

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5. SUPPORT FOR RESEARCH AT UG AND UMCG

UG / UMCG

Number of UG employees
5.900 FTEs (including UMCG Education & Research)

Number of UMCG employees
9.064 FTEs

Scientific staff
3.000 FTEs

Number of professors
400 (female: 100)

Number of doctoral candidates 2.000

Number of students
30.000

Scientific publications per year 6.000

Key research areas
- Energy
- Healthy Ageing
- Sustainable Society

Introduction

The University of Groningen (UG) has a rich academic tradition dating back to 1614. This research university sets itself apart internationally due to the strong link between its education and research, focused on three key areas: Energy, Healthy Ageing and Sustainable Society. Not only is the education and research of direct social relevance, the researchers also perform large-scale work with partners from the business community, social organisations and the government.

The university has three focal points in the area of digitalisation: Big Data, Smart Industry and Facets of Cultures – Digital Humanities. The Center for Information Technology (CIT) provides all IT facilities for the university, including for the management and storage of research data. The CIT namely has expertise in relation to very large-scale data and sensitive data (such as personal data and company-sensitive data).

The University Medical Center Groningen (UMCG) is the second largest hospital in the Netherlands and the largest employer in North Netherlands. More than 10,000 employees work daily towards the common goal: building the future of health. UMCG's core tasks are healthcare, education and research. In the area of research, UMCG works closely with UG, and in particular the university's Center for Information Technology (CIT). The research addresses new techniques and treatments, new medicines and new forms of care, focusing on helping people lead healthier, more active and longer lives, in other words Healthy Ageing.

Vision for research support

Up-to-date data management, training, IT support and infrastructure form the basis for excellence in research, education, social impact and talent development. UG and UMCG occupy a leading position in the area of High Performance Computing (HPC), visualisation, geo-analytics and the virtual (research) workspace. Besides providing facilities, significant expertise has been acquired in areas that include data science, data management, privacy and security. Centralised and decentralised expertise and facilities co-exist and collaborate to form a live and interactive network that comes together in the Data Federation Hub.

The underlying idea is to support researchers during the entire research data life cycle. Researchers need help in finding the correct datasets, processing this data, large-scale storage capacity and computing power. Legislative amendments increase the need for support.

UG and UMCG attach importance to a transparent research environment. We encourage this by applying the principles of Open Science, as set out in the UG Strategic Plan. UG and UMCG also encourage researchers to apply the FAIR-principes (Findable, Accessible, Interoperable and Reusable) to dealing with and managing research data.

Professional support entails brainstorming with the researchers, translating complex questions into concrete solutions and responding to the latest developments. This is why we invest in innovation and a user-oriented service here at IT support. UG and UMCG participate, for example, with different private partners in the testbed projects of the North Netherlands Cooperation Agency (Samenwerkingsverband Noord Nederland), where new and innovative techniques, such as the *dHealth*, *5G* and *Mining Big Data* testbeds are being developed.

Cooperation is vital for the optimal support of researchers. Short lines of communication are needed to link the different expertise units and facilities. It is important that the support is findable and user-oriented, and that the researcher is referred to the correct counter for assistance. The Data Federation Hub plays a major role in linking these different initiatives and promoting cooperation.

Examples of current and future international cooperation include the large astronomical projects such as MUSE, MICADO, LOFAR, Euclid and KiDS. As the Euclid Netherlands Science Data Centre is housed in the CIT, the CIT plays a major role in developing the *Euclid Data Processing System* and the *Euclid Distributed Storage System*. The technology that is developed for Euclid will also support the SNN testbed project Mining Big Data. The data volumes of all these projects are enormous: 1 petabyte of data is already being stored for MUSE and KiDS at several locations, while Euclid will produce more than 50 petabytes of data.

Organisation of research support

Different units of UG and UMCG collaborate closely in Groningen. As the spider at the centre of the web, the Data Federation Hub plays a major role in this regard. Support for researchers entails that wherever they turn for help, they are always assisted further (no wrong door policy) and that all front-line counters have the same information or know where the required information can be found. The available IT services form part of the large-scale national scientific infrastructure of the Netherlands Organisation for Scientific Research (NWO) and can be found under the name CIT data warehouse. UG and UMCG also work with different national and international partners.

Units that provide research support:

- **Center for Information Technology (CIT)** The CIT is an ICT expertise centre that analyses large data sets and provides support in research data management and processing. The CIT has two focus areas: Big Data and sensitive data.
- **Research and Innovation Support (RIS)** RIS provides services in the area of HPC, visualisation (3D/AR/VR), the Geodienst, data science and research data management/repositories.
- **Research Data Office (RDO)** The RDO plays a role in front-line support and research data management plans, as well as supporting researchers in selecting the correct IT solution.
- **UMCG – Service Desk Clinical Research Office (CRO)** The CRO is a designated service portal for clinical researchers. The CRO has strong links to the RDO.
- **UMCG – Genomic Coordination Center (GCC)** The GCC provides support for the entire research data cycle and focuses on bioinformatics, genomics and biobanking.
- **UMCG – Research Data Support (RDS)** Research Data Support supports researchers in designing and conducting high-quality human research.

Current infrastructure and associated services for researchers

CIT provides a large part of the infrastructure for UG researchers. Data takes centre stage in this regard: big/complex/privacy-sensitive data is the essence of much scientific research. In addition to secure and stable storage facilities, the CIT provides additional facilities for researchers. The facilities are housed in four computing centres, with redundant network links for both internal and external connectivity. Researchers also use external data services, including DataverseNL, DANS-Easy, BBMRI-NL and CTMM/TRaIT.

	COMPUTING SERVICES
Number of clusters within the institution	± 14 clusters
Total scope of computing power	5640 CPU cores (Peregrine HPC cluster PG), 200 nodes (PG), 30 TB RAM (PG), 600TB storage
Third-party clusters within the institution	Genomic Coordination Center (GCC) clusters, Molecular Dynamics Group, Solid Matters Cluster, DAWN GPU cluster, LOFAR (Cobalt correlator/CEP4/CEP3) ASTRON (Aartfaac/Dragnet) OpenStack, VMware-rugcloud
Acquisition of computing services	SURFsara
	STORAGE
Central bulk storage capacity	• 3 PB Lustre; Data handling • 0.6 PB Lustre; HPC cluster • iRODS storage services • 0.5 PB incl. dedupe data user storage Windows workspaces • 4 PB UG-Cloud storage
Central archive capacity	• 2.5 PB Tape backup double copy (2018) • 1 => PB disk backup with dedupe double copy (2018) • 3.7 = > PB Tape Archive double copy (2018) • 2 => PB Research archive (dcache - iRODS) (2018-2019)
	NETWORK
Routed capacity (external)	2 x 10Gbit/s Campus IP 2 x 10Gbit/s HPC IP
MSP capacity	2 x 100Gbit/s MSP 1 x 10Gbit/s MSP
	AUTHENTICATION & AUTHORISATION INFRASTRUCTURE
Connected to SURFconext Federation	Yes
Other AAI suppliers	No
	DATA CENTRES
Landleven Data Centre (UG)	Tier 2 power 450 kW 1 x 100G SURFnet network link 2 x 100G Smitsborg interconnect
Smitsborg Data Centre (UG)	Tier 2 power 300 kW 1 x 100G SURFnet network link 2 x 100G Landleven interconnect
Eemspoort UMCG Data Centre (UG part)	Tier 3 power 150 kW 2 x 40G network link
DUO Data Centre (UG - HPC)	Tier 1 power 180 kW 2 x 100G network link
New-build data centre (UG)	Tier 3 power 720 kW planning 2018-2019
	EXPERTISE
	Data consultants, data scientists, scientific programmers, visualisation, Geodienst HPC experts, IT lawyers

Virtual Research Workspace

The Research Workspace is a virtual Windows ICT environment that the user can partly set up themselves. This environment provides access to all research ICT services of UG and UMCG. These services are available 24/7 and are equipped, where necessary, with extra memory, extra powerful processors or graphic-intensive support. The Research Workspace is very suitable if the standard university workspace is not adequate and if the Windows applications are not suitable for HPC use. This environment is also suitable in case of stringent dataset security requirements or if additional privacy measures are needed.
The Research Workspace portfolio consists of the following workspaces that a researcher can use:

1. **Shared**: all users share all components (memories/graphics card/processor).
2. **Dedicated Start**: components are assigned to a user, i.e. there is no need to share memory, etc.
3. **Dedicated Middle**: the same as Dedicated Start, but with extra memory or computing power.
4. **Dedicated Large**: to be customised by the client/researcher.

All workspaces are delivered with a standard basic software package and standard data storage. The university is responsible for management (OS and applications). The provision of all other services is by agreement.

High Performance Computing

Researchers whose work includes large numbers or complex calculations can approach the university's Peregrine Linux computing cluster for assistance. Hundreds of researchers from a broad range of disciplines – from linguistics to molecular dynamics, and from robotics to genomics – use the computing cluster. The CIT has a second national HPC centre in the Netherlands (besides SURFsara). The Genomics Coordination Center (GCC) also provides HPC facilities for human research within UMCG. The CIT further accommodates and manages three clusters for the LOFAR radio telescope.

Reality Center

The CIT Reality Center has very advanced virtual reality (VR) facilities and provides scientists with hypermodern facilities in the area of 3D visualisation. By providing this as a central service, the Reality Center has been able to acquire optimal expertise, making it possible to reuse knowledge and software. Researchers can contact the Reality Center for data visualisation, simulations, 3D design, courses and workshops. The Reality Center makes it possible to obtain new information from complex data, explain complex concepts, avoid construction faults, save time in the design process and advance decision-making processes.

Network infrastructure

The university has a state-of-the-art network that is managed by the CIT. The CIT works continually on innovating and improving the network. The CIT also addresses improved network security and increasing network capacity and virtualisation (software-defined networking). Measures such as network zoning also ensure optimal security.

Big data handling

Significant expertise has been acquired over the last few years in data handling, data sharing and data reuse, particularly in the areas of astronomy, energy and the life sciences. Examples of such large research infrastructure and projects include LifeLines, Energysense, GLIMPS, LOFAR and Euclid. This Big Data expertise is documented in the existing research data support organisations, such as RIS and GCC, so that it can continue to be provided to researchers.

Data science

Proper and smart data analysis is required in order to use the increasing quantity of data for research. A data scientist can help to retrieve information from bulk data. Data scientists work with experts in multidisciplinary teams such as the Center for Data Science and Systems Complexity (DSSC) and the Genomic Coordination Center (GCC). Various courses are also on offer, ranging from data warehousing, programming in Python and R, and using HPC and visualisation facilities, to machine and deep learning. The CBS Academic Data Center is also based in the CIT. The Data Federation Hub provides support in bringing together different forms of expertise and reusing best practices in the area of data science.

Geodienst

The Geodienst is UG's spatial expertise centre that provides research support and innovative services in the area of geodata, geo-analysis and GIS software.
The Geodienst maintains an open data portal and provides customised courses.

Toolbox UMCG and RDMP (Research Data Management Plan) webtool

Toolbox clinical research includes a broad range of Standard Operating Procedures (SOPs), templates and best practices in support of human research. Researchers can use the toolbox as an aid to translate codes of conduct, guidelines and legislation into research practice. Researchers can also specify which facilities (internal and external) they use in their research projects. The RDMP webtool is moreover available for research data management. The RDMP webtool is set up specifically for each research institute and helps researchers to use the most suitable facilities for their research.

Training and education

Customised training and workshops are available for the use of applications and IT facilities. These include data analysis, HPC, data science, geo-software and tools and 3D visualisation. Both UMCG and UG also provide different training courses and workshops on research data management and privacy aspects of research data. A website with a summary of all available training is under development.

Agenda for the immediate future

It is important for the university that data is easily accessible, reliable and secure from several locations on a 24/7 basis. Secure collaboration on the basis of federated identity management (FIM) is highly desirable. The data must be accessible from the workspace, research workspace, computing cluster and visualisation systems. A national federated infrastructure with adequate broadband is needed for this purpose. Low-threshold access to a range of expertise is also important.

Data Federation Hub

In order to coordinate and make the existing facilities more visible, we are working on intensifying collaboration and pooling knowledge. The Data Federation Hub is a shared resource in the area of data management and data science for all research domains. The primary focus areas are training, FAIR data catalogues, knowledge exchange and data science.

The researcher centrally

The researcher is increasingly taking centre stage. To this end, it is firstly important that the researcher knows where to find support. We are also working towards a central point of contact. The Data Federation Hub further serves as a gateway to all available data expertise.

Virtual Research Environment (VRE)
Over the coming years, we will be creating a Virtual Research Environment (VRE). Support throughout the entire data life cycle is at the forefront of this initiative. We are also aiming to connect with other VREs in the Netherlands. A properly functioning VRE will also enable us to grant external parties access to the different internal systems.

Human Subject Research (HSR) Programme
In January 2017, UG and UMCG started the university-wide H*uman Subject Research (HSR) Programme* for data from human research. The purpose of the HSR is to provide up-to-date infrastructure and resources for storing and processing privacy-sensitive research data. Infrastructure that stimulates innovative research in line with current policy in the areas of research data management, Open Science and FAIR data.

National and international positioning
Over the coming period, we will be strengthening the national and international position of our IT services and actively participating in national and international e-infrastructure. We work together with national federated services, in collaboration with partners that include SURF, Netherlands eScience Center and the NWO. In the area of health, we also participate in various national and international initiatives, including BBMRI, ELIXIR, Health-RI and DTL. And we continue to collaborate internationally in the area of astronomy. Lastly, we actively participate from Groningen in the European Open Science Cloud initiative.

For contact with the Data Federation Hub, send an e-mail to: dfh@rug.nl

6. SUMMARY OF RESEARCH SUPPORT IN THE NETHERLANDS

SURF wants to give institutions inspiration and insight into how they can organise research support and the services they can offer researchers. As part of the Support4research project, eight institutions were asked how they arrange research support for their own services and for third-party services. The results are also intended to facilitate discussions between the institutions and SURF about the establishment, coordination and organisation of research support. This may contribute to the efficiency and quality of the service.

To gain an impression of the different ways the institutions configure their research support and what their ambitions are, SURF asked a number of institutions the following questions:

- What is your vision for research support?
- What e-infrastructure and associated services can researchers utilise?
- How is research support organised?
- What are your intentions for the (immediate) future?

Eight institutions (one of which is a combination of a research university and a university medical centre) submitted a report in response to these questions. These eight institutions are listed in the table below, which shows the diversity in terms of number of students, contribution to scientific output and institution ICT facilities. The figures provided are snapshots and refer to different years (2015-2017).

INSTITUTIONS	NUMBER OF STUDENTS	NUMBER OF PUBLICATIONS	CLUSTERS / CORES	STORAGE	NETWORK
TU Eindhoven	9.909	2.482	10 / 2.500+	350 TB	40 Gbit/s
RU Groningen en UMCG	30.000	6.000	14 / 5.640	600 TB	2x 10 Gbit/s
VUMC	2.007	3.382	2 / 640	1.300 TB	1 Gbit/s
Hanze	30.000	300	SURF, Azure, RuG	2x 250 TB	10 Gbit/s
Leiden UMC	2.536	1.993	1 / 1.000	1.000 TB	10Gbit/s
Erasmus University	25.000	6.416	SURF, DANS	300 TB	2 x10 Gbit/s
Maastricht UMC+	4.507	2.114	2 / 17.348	1.000 TB	10 Gbit/s
TU Delft	19.600	5.139	7 / 5.674	1.000 TB	10 Gbit/s

The reports from the eight institutions show that there are a number of important themes. The themes are, in order of prominence:

- The support of data management and the (phases of the) data lifecycle
- Establishment of a single help desk for research support
- Infrastructure and support: centralised (at institutional level) or decentralised (departments, faculties, research groups).
- Researcher centricity and support that allows more core activities
- SURF as mediator and coordinator
- Data stewardship
- Compliance with subsidy conditions, laws and regulations
- Multidisciplinary approach

Data management and the data lifecycle

All institutions report that good data management is the basis for good research and is therefore a priority. Data management support is consequently a very important part of research support. The importance of Good Research Practice is recognised. Open Science and making data FAIR (Findable, Accessible, Interoperable, Reusable) are also high on the agenda of a large number of institutions. MUMC+ states that the transformation from raw source data to data that is used in research must be replicable and must be available for research verification purposes. The University of Groningen and University Medical Centre Groningen encourage the principles of Open Science and want to ensure that researchers apply the FAIR principles when dealing with and managing research data.

Support often focuses on the phases of the data lifecycle. A number of institutions, such as MUMC+ and VU University Medical Centre, also include the phases of subsidy acquisition and valorisation of research in their support. Hanze University of Applied Sciences is also considering this. Currently its valorisation support is still separate. Researchers are obliged to provide a data paragraph or data management plan in the first phase of the data lifecycle already to apply for funding. The VU University Medical Centre is building a support portal that is entirely based on the data lifecycle. At Delft University of Technology, the research support is split: The Research Support department focuses on the first phases, such as conceptualisation and publication, and the Research Data Services department handles all RDM, from research data production to publication and archiving.

A single help desk

It is not always easy for researchers to find the support they need. The support on offer is often fragmented. It is usually based on the discipline or department level and sometimes on the organisational structure of the staff departments. Researchers need clarity on where they can get which support. For example, they need to know who they can contact if they have any questions on compute services or data storage. The main issues here are clear communication and the organisation of the response to questions. An easy-to-find help desk with clear procedures and support staff who know the way is indispensable. This one help desk, which almost all institutions want to offer, may be the front end of a world of services and technical platforms both within the institution and beyond, at SURF for example.

A single help desk is high on the list of priorities of many institutions, but the way of achieving this may vary considerably. The Leiden University Medical Centre has sufficient knowledge within the organisation, but support is not always easy to find. It therefore strives towards ‘a clear and easily accessible virtual help desk for research support’. It is also considering an electronic guide that supports researchers and informs them of the legal requirements and rules. Several sections of the University of Groningen and University Medical Centre Groningen work in close collaboration within the Data Federation Hub. Their no wrong door policy states that researchers must always receive support, regardless of which help desk they get in touch with. The University of Groningen and University Medical Centre Groningen ensure that the staff of all their first-line help desks have all the information they need to do this. The Eindhoven University of Technology is working on a similar approach. Its data stewards offer local support to researchers at the various faculties from a central Research Data Support Office. MUMC+ wants to set up a professional research facilitating unit and Delft University of Technology states the need for ‘a one-stop shop offering centralised and integrated support’.

The primary place where researchers obtain their knowledge must be easy to find and must be within the institution. Many institutions indicate that besides organisational clarity, the availability of the necessary expertise is a challenge: half of the institutions that were questioned, including the Leiden University Medical Centre and Eindhoven University of Technology, want to improve the training of available eScience engineers and data stewards and increase their number.

Infrastructure and support: centralised or decentralised

Many of the institutions find it difficult to determine what should be centralised and what should be decentralised. This discussion takes place at various levels. At universities, the place where research support is provided is arranged by the distribution of tasks and responsibilities between the faculties and the central services, including infrastructure and data management. Hanze University of Applied Sciences shows which support is provided where in a table: with the researcher (for example for customised research software), at the institution (for example for the CRIS system) or nationwide (for example for ORCID).

At nationwide level, there are issues surrounding coordination and delegation: what do institutions want to keep under their own management and what is more convenient to organise nationwide, for example tasks given to the Dutch organisation Data Archive Network Services (DANS) or SURF? This discussion also takes place at an international level, for example when considering the development of computing resources in a European context.

The assessment of what should take place where depends on the nature of the various research universities. A technical university such as Delft University of Technology and a university with traditionally extensive computer facilities such as the University of Groningen, offer their own e-infrastructure services. Their large scale allows them to set up facilities for computing power and data storage and the associated on-premises support. Smaller institutions and institutions relying on local or national facilities outside the institution tend to outsource their support. All institutions agree on the benefits of collecting and making available research data on a national basis: the solutions that are eventually selected are different for each institution because of their different characteristics.

There are also differences in the departments or services that act as the coordinator or driver when organising research support. At the Delft University of Technology and Erasmus University Rotterdam, the support is located at and organised by the library. At Hanze University of Applied Sciences, the library offers a major part of the support. At MUMC+, the pursuit of professionalism is the driving force, and at Erasmus University Rotterdam, the Erasmus Data Service Centre (EDSC) for researchers and students is the most important starting point to offer support to data-intensive research. At the Leiden University Medical Centre, the Research Directorate (DO) is responsible for supporting the policy on scientific research. At Eindhoven University of Technology, the Research Data Support Office, which comprises the library, ICT, Innovation Lab and general and financial economics department, manages the Research Data & Research Data Management programme. At the VU University Medical Centre, six divisions – each with a number of medical departments – are working on research support and one division coordinates research support collaboration. A (central) privacy officer has been appointed to ensure the protection of privacy and the security of research information.

Researcher centricity with support that allows more core activities

Nearly all institutions indicate that the establishment of research support should put the researcher at the heart of it. Researchers must get the support they need for every question they have in the different phases of their research without having to look for it. That means that the researcher is central to the establishment of the support. The ambition is to allow the researcher to focus on his or her core activities as much as possible. Erasmus University Rotterdam, Eindhoven University of Technology and Hanze University of Applied Sciences specifically mention this ambition. Delft University of Technology wants to allow researchers to focus on their core activities with a one-stop shop for all research-related support questions. The researcher can get in touch with a single help desk without having to delve into the organisational structure of the services. The University of Groningen and University Medical Centre Groningen state that their 'IT support invests in innovation and user-oriented service'.

SURF as mediator and coordinator

All institutions agree on the importance of the national e-infrastructure, a precondition for continuing data-intensive research. The large calculators know how to get in touch with SURF for national and international infrastructure services and support. They have also set up their own support facilities based on their own infrastructure and services and are part of national and international (support) infrastructures. For many institutions, collaboration within SURF offers opportunities to join certain developments and gain expertise. On that basis, each institution can choose to strike the desired balance between national and/or local research support.

Most institutions list the services that they use. A non-exhaustive list is: HPC developments (Eindhoven University of Technology, Hanze University of Applied Sciences), Open Science services (University of Groningen), data storage (Hanze University of Applied Sciences, Delft University of Technology), light paths (VU University Medical Centre), archiving (MUMC+), basic infrastructure, software licenses, SURFdrive and computing power from SURFsara (Erasmus University Rotterdam). The Leiden University Medical Centre and Delft University of Technology indicate that they are promoting growing national collaboration with SURF, particularly in terms of research support.

The gathered information on the research support practices in eight institutions may inspire SURF, the research assistants and the ICT departments of the institutions to find out how we can set up research support together. Constantly being alert to shared questions allows the national and local services and support to reinforce each other in an optimal way.

Data stewardship and assistance in terms of regulations

A large number of institutions provide concrete measures to improve research support: further definition of the task of research support and the training and deployment of data stewards, sometimes also referred to as eScience engineers. A second measure, often directly based on the institution's vision on research, is support in meeting subsidy conditions, laws and regulations, for example as part of RDM support or in the form of privacy officers.

Multidisciplinary approach

Most reports give an impression of the institution's ideal support scenario. A multi-disciplinary approach is very popular, which is hardly surprising as the knowledge and approach for a large number of questions are similar. The institution then needs advisors with knowledge on the different computing methodologies and clusters, who know where to best store its research data and who can offer specific advice on rules concerning sustainably available data, for example. Most scenarios assume that there is a one-stop shop or 'omniscient' local point of contact. This help desk offers generic support – for example in the form of information – and also provides support that meets the specific research situation. In medical environments, extra attention is required to ensure patient privacy and to protect sensitive or confidential data, but the scenarios for research support at university medical centres are no different from the other scenarios.

The description of the ideal scenarios and the reports on the current support services show that institutions try to present realistic ambitions for establishing their support. They consult other institutions (in other countries, for example) and they involve and mobilise all departments that affect the supply and demand of the support. Institutions perform a good analysis of what they can offer in terms of technology and expertise, and they also indicate what they can only offer in collaboration with other parties. We see here that the central ICT department or the central support service that includes several disciplines, task departments or ICT services, is responsible for the management and the delivery of the portfolio to the support services. The model shows a broad and accessible range that researchers are free to choose from.

Conclusion

The eight surveyed institutions' needs for research support are very similar as far as the considerations and issues are concerned, but the content of the research support is highly dependent on each institution's size, type and organisational structure. Each institution tries to configure the support in such a way that it is clear to researchers where they should go and an efficient route towards first call resolution is found.

The route towards the right research support is often digitally deployed with a portal or digital form, for example. The actual support requires interaction with 'real people', such as experts with an overview at a support desk, RDM specialists, privacy officers and data stewards. This allows the dialogue between researcher and specialist research assistants to focus on the solution, regardless of whether the actual services have been set up locally by the department or institution, or nationally via SURF.

COLOPHON

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SURF is the collaborative ICT organisation for Dutch education and research. SURF offers students, lecturers and scientists in the Netherlands access to the best possible internet and ICT facilities.