



# **DARIAH ERIC: Technical and Scientific Description**

Version: 1.0  
Date: 27.6.2011

## Table of Contents

<b>Table of Contents</b>	<b>I</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. DARIAH Objectives</b>	<b>1</b>
<b>3. DARIAH's Virtual Competency Centres (VCCs)</b>	<b>2</b>
3.1. VCC1 - e-Infrastructure	3
3.2. VCC2 - Research and Education Liaison	3
3.3. VCC3 - Scholarly Content Management	4
3.4. VCC4 - Advocacy, Impact and Outreach	4
3.5. The DARIAH Coordination Office (DCO)	4
<b>4. DARIAH Service Infrastructure</b>	<b>5</b>
4.1. Technology Services	5
4.2. Scientific/ Knowledge Services	6
<b>5. DARIAH At Work in the European Research Area: Building Services around Communities of Practice</b>	<b>7</b>
5.1. European Holocaust Research Infrastructure (EHRI)	7
5.2. Collaborative European Digital Archive Infrastructure (CENDARI)	8
5.3. Network for Digital Methods in the Arts and Humanities	8
<b>6. Summary of ERIC requirements</b>	<b>9</b>
6.1. DARIAH is necessary to enhance the current state-of-the-art	9
6.2. DARIAH adds value to strengthen the ERA and provides effective access to services	9
6.3. DARIAH provides effective access for the ERA research community and enhances its mobility	9
6.4. DARIAH contributes to the mobility and dissemination of research	10
<b>7. Conclusion</b>	<b>10</b>

## 1. Introduction

Digital research methods have recently started to enter the mainstream of humanities, arts and social sciences research. Digital Humanities has existed<sup>1</sup> for years as specialised fields but the recent growth in the number of centres and research projects associated with digital methods in arts and humanities (A+H) and social sciences indicate that we are at fundamental shift. There have been significant national investments in the field. For instance, in the first decade of the 21<sup>st</sup> century the UK Arts and Humanities Research Council and its predecessor invested about half of its research funding into projects with some kind of digital output.<sup>2</sup> Most of these resources are online and open access.

Europe has played a key role in developing the state-of-the-art of Digital Humanities. Not only, can digital humanities trace its origin to an Italian collaboration with IBM but also nowadays there exists a vast array of collaborations in the digital humanities across Europe in the form of spontaneously funded research networks and associations. What is lacking, however, is an infrastructure that would ensure that the state-of-the-art of these collaborations is preserved and integrated and that common best practices and methodological and technological standards are followed. The Digital Research Infrastructure for Arts and Humanities (DARIAH) aims to be this infrastructure.

This document is intended to describe the objectives of the proposed Digital Research Infrastructure for Arts and Humanities and to demonstrate how DARIAH meets the five specific requirements of Article 4 of the European Research Infrastructure Consortium (ERIC) Regulation. Using practical examples and case studies from the DARIAH's preparatory phase, this document describes the significant value that DARIAH will add to digital A+H research in Europe.

The document is organised as follows: Section 2 introduces the DARIAH objectives and relates these to the requirements of digital arts and humanities research within European research communities. Section 3 and 4 answer these requirements and demonstrate how DARIAH add values to current research practices and infrastructures in the field of European digital arts and humanities by (a) establishing European-wide Virtual Competency Centres (Section 3), which will help scale national services, and (b) by providing a service infrastructure (Section 4) that combines technical services with support and knowledge services for effective access to DARIAH resources. Section 5 showcases how DARIAH is already working to build services around European communities of practice, while Section 6 summarises how the ERIC requirements are met by DARIAH.

## 2. DARIAH Objectives

The mission of the DARIAH ERIC is to enhance and support digitally-enabled research across the arts and humanities (A+H). The DARIAH infrastructure initiative aims to build a virtual bridge between different A+H resources, initiatives and infrastructures across Europe. In its ecosystem, it will combine outcomes from various national infrastructures – from the UK's Arts and Humanities e-Science initiative programme to the French Adonis project, which provides 'integrated access to digital data and documents in the Humanities and Social Sciences', to the German e-Humanities infrastructure projects such as TextGrid or the worldwide unique A+H digital preservation service, the Dutch DANS.

The DARIAH infrastructure will be an open platform to bring these initiatives together. At the same time, it also intends to help other EU countries establish their own A+H research infrastructures. DARIAH strengthens the European Research Area (ERA) by facilitating national digital A+H competence and by creating durable structures and synergies at a pan-European level.

We aim to build an infrastructure that concentrates on digital methods and research activities in A+H based on the trusted provision of digital resources. With its focus on digital methods in A+H, DARIAH

---

<sup>1</sup> [http://en.wikipedia.org/wiki/Digital\\_humanities](http://en.wikipedia.org/wiki/Digital_humanities)

<sup>2</sup> [http://www.arts-humanities.net/system/files/ahrc\\_data\\_resources\\_report.pdf](http://www.arts-humanities.net/system/files/ahrc_data_resources_report.pdf)

concentrates on cutting-edge next generation research in the A+H. Over the last two decades the natural sciences, in partnership with national governments, have undertaken great efforts to create sustainable e-Science infrastructures to address the opportunities and ‘grand challenges’ created by the shift towards data and information intensive research methods. The A+H, too, have seen an exponential growth in digital research material, especially in the last decade, as a result of new born digital material or large digitisation efforts in the EU and elsewhere.

DARIAH will be the decisive European step towards exploiting these digital resources for A+H, to help fulfil the predication of Dan Atkins, the former director of the US cyber-infrastructure programme, on the future of A+H research:

“Arts and humanities are poised to achieve large benefit from e-Science methods and infrastructure as the human record becomes increasingly digitised and multimedia, and [...] with the ability now to compute across enormous collections [...]” Dan Atkins et al, RCUK e-Science Review<sup>3</sup>

Atkins is citing in this report on the UK e-Science programme some of the work in the A+H e-Science initiative.

DARIAH is the European infrastructure to continue these national efforts and to realise the benefits of data-driven A+H research. In order to realise its overall aims of innovating and applying new digital methods in A+H, DARIAH will

1. act as a **trusted intermediary** and provide a reliable technical infrastructure (Section 4.1.) developed for researchers by other researchers as well as their trusted traditional infrastructure providers such as libraries and archives.
2. establish scientific knowledge services by means of a network of knowledge bases and advisory services (Section 4.2.) in order to embed digital methods in the various institutions of humanities research such as universities but also specialised centres. At its core, DARIAH is defined by the **collective intelligence** of its peers.
3. work together with other social science and humanities as well as natural science infrastructures to continue its members’ successful national collaborations and enhance the impact of A+H research.

Thus, DARIAH aims to add value to the current state-of-art in European digital A+H as an integrating activity for various world-leading and unique national research infrastructures. DARIAH partners are recognised contributors to national excellence in A+H research and successful collaborators in European research projects. The challenge for DARIAH will then be to join up this national/local knowledge in a sustainable, collaborative and lasting ecosystem. To accomplish this principal task, DARIAH will establish a flexible model of European Virtual Competency Centres (VCC) which will work together to achieve the overarching aims and objectives of DARIAH as a European research organisation. This network of VCCs will provide DARIAH with the necessary structure to enable national competencies to be shared, and built on, at a European level, thereby strengthening the European Research Area (ERA).

### 3. DARIAH’s Virtual Competency Centres (VCCs)

In order to carry out its principal tasks, DARIAH will be organised in European VCCs, through which partners will benefit from the established local/national knowledge in the various centres of expertises in DARIAH. These centres are often embedded in higher education institutions and provide an organisational framework for the various actors and research stakeholders of DARIAH: A+H scholars, infrastructure providers, etc.

Participating centres include traditional Digital Humanities Centres such as the recently funded Göttingen Centre for Digital Humanities (GCDH).<sup>4</sup> DARIAH has been instrumental in helping organise the GCDH and parts of the DARIAH office will be located here. Other types of centres are national support centres such as the Dutch

<sup>3</sup> <http://www.epsrc.ac.uk/SiteCollectionDocuments/Publications/reports/RCUK-e-ScienceReviewReport.pdf>

<sup>4</sup> <http://www.uni-goettingen.de/en/136017.html>

Data Archiving and Networked Services (DANS)<sup>5</sup> or the soon to be established Danish Centre of Digital Humanities, again directly supported by DARIAH. Such digital A+H centres will form the backbone of the DARIAH organisation and ensure the longevity and sustainability of DARIAH services, as they are embedded in established educational institutions such as universities and national research organisations. The VCCs will facilitate how these national partners in DARIAH can collaborate in an effective European organisation to deliver advanced services for all European A+H researchers.

The VCCs have been specifically designed to allow for the enhanced mobility of research knowledge and practitioners in digital A+H. With this model, we commit ourselves to enhancing collaboration beyond national borders. Our goal is to develop even collaboration across Europe where national projects can stimulate one another. Partners in DARIAH will contribute their particular area of expertise for the benefit of all other members. The VCC structure also offers a flexible entry point for potential new partners where new tasks can be added to cater with new needs and interests. Even the number of VCCs and their overall organisation is not fixed and could be amended to reflect new expertise and interest, following appropriate procedures.

The DARIAH European organisation will consist of four Virtual Competency Centres (VCCs) and a Coordination Office staffed and coordinated by its EU partners. Each of the four VCCs is focussed on one particular area of expertise: (1) e-Infrastructure, (2) Research and Education Liaison, (3) Scholarly Content and (4) Advocacy. The DARIAH Coordination Office, finally, will bring together all DARIAH activities. While centred on a specific area of expertise, the VCCs are at the same time cross-disciplinary, multi-institutional and multi-national and collaborate on the DARIAH services presented in Section 4. The goals and scope of the individual VCCs are described next:

### **3.1.VCC1 - e-Infrastructure**

*... to establish a shared technology platform for A+H research.*

#### **Goals and Scope**

The VCC1 e-Infrastructure establishes the technological basis for DARIAH as a trusted intermediary. It will develop, support and maintain the architecture of participation (see Section 4: *DARIAH Service Infrastructure*), in which community-developed data, tools and services can be preserved, shared and integrated. The VCC will also offer a range of technical consulting services in cooperation and consultation with the other VCCs as well as to individual A+H centres, institutions and researchers.

### **3.2. VCC2 - Research and Education Liaison**

*... to expose and share digitally-enabled A+H research methods, training, expertise and tools.*

#### **Goals and Scope**

The goal of the Research and Education VCC is to understand A+H research practices and processes in the context of the services provided by DARIAH. The VCC will then promote the use and application of digitally-enabled methods and tools, with a particular emphasis on promoting the interdisciplinary exchange of research data. It aims to address a range of people and interests, from established researchers to students, as well as different disciplines and domains inside and outside of higher education. This VCC is unique to DARIAH within ESFRI, as far as we can see, and reflects the fact that most A+H researchers are embedded in higher education research and teaching institutions. VCC2 reflects their interest. VCC2 together with VCC3 will be in charge of knowledge services that make up the collective intelligence layer of DARIAH (see Section 4.2.).

---

<sup>5</sup> <http://www.dans.knaw.nl/en>

### **3.3. VCC3 - Scholarly Content Management**

*... to expose and share scholarly content.*

#### **Goals and Scope**

Scholarly content management is at the heart of the DARIAH services, as A+H researchers are especially concerned with the longevity of their research output. VCC3 will deal with the various stages of the scholarly content life cycle, from creation, curation and dissemination, through to the pooling of scholarly digital resources and results for publication and reuse. The VCC will offer services and resources for the representation and management of scholarly data, as well as for the management of associated legal and organisational issues.

VCC3 will facilitate the identification and dissemination of existing research objects by defining channels for their reuse and exchange. It will provide knowledge bases and reference registries (see Section 4.2.) for the description of scholarly data (e.g. authority lists, registries, reference ontologies, etc.). In collaboration with VCC2, it will maintain tools and services registries and identify relevant open standards.

### **3.4. VCC4 - Advocacy, Impact and Outreach**

*... to interface with key influencers in/for A+H.*

#### **Goals and Scope**

This VCC will focus on advocacy with key influencers in research and industry who are in a position to assist and collaborate with DARIAH. VCC4 will also assess the impact of DARIAH and measure the 'added value' that it delivers through both quantitative and qualitative measures. VCC4 will focus on how DARIAH facilitates the transfer of knowledge and expertise between (a) the relevant disciplines within the humanities (themselves often silos) and (b) the humanities and other areas such as qualitative social sciences, computer science, information science, and bioinformatics. It will undertake outreach activities with a wide community of stakeholders and disseminate European research results in the field. VCC4 will be responsible for ensuring the consistency and growth of the DARIAH network of partners. In collaboration with VCC2 Research and Education, this activity aims to ensure the uptake of infrastructure-based research in A+H and to foster diversity in the DARIAH community. VCC4 will also present a single point of contact and entry to coordinate the promotion of results beyond Europe.

### **3.5. The DARIAH Coordination Office (DCO)**

*...to assume the overall responsibility and to ensure adequate operations across all DARIAH organisational units and partners.*

#### **Goals and Scope**

The DCO supports and integrates all levels of DARIAH work, including the representation of all DARIAH partners (General Assembly, Scientific Board, Board of Directors, VCC Heads, etc.). The DCO oversees the interactions with all DARIAH partners and boards and takes on a variety of tasks to support the consistent administration of DARIAH.

A particular emphasis of DARIAH is the dissemination of European research results in digital A+H. We know that a technical/scientific infrastructure can only work if it is at the same time a social infrastructure and dedicate a whole VCC to the dissemination and advocacy the DARIAH service infrastructure needs, which we will describe next using concrete examples of our existing work. This DARIAH service infrastructure will consist of technology services as well as scientific/knowledge services. The latter have the specific aim to directly embed digital A+H scholarship in DARIAH.

## 4. DARIAH Service Infrastructure

### 4.1. Technology Services

#### Led by VCC 1 and VCC 2

The DARIAH service infrastructure will bring together the services of the VCCs into a pan-European open platform. It is designed as an open, collaborative environment that enables research in the A+H by linking data, functionalities and people. Its architecture of participation, based on web 2.0 and web 3.0 standards and principles, will be light-weight and decentralised. It accommodates A+H data centres, research networks and researchers that are widely independent, stem from multiple backgrounds, interact with DARIAH to achieve adverse goals and will access DARIAH via a variety of entry-points. Rather than a single technical solution, DARIAH will be many in one ecosystem, according to community activities and willingness to collaborate.

The DARIAH technical architecture is built of three horizontal tiers. There is no real hierarchy between these service tiers as in traditional layered architectures. Nevertheless, to understand the level of participation that DARIAH envisages with the researcher communities, it is useful to visualise DARIAH services in these three tiers: Advanced digital research services can be found in (a) the user-facing framework and (b) infrastructure service environment, while (c) the core infrastructure contains guaranteed DARIAH services. Each tier may open up different organisational contexts for managing service components.

#### Core Services

The core technical services will be guaranteed by DARIAH as a platform for users to build their advanced research services upon. Its services are created, hosted and administered by DARIAH ensuring reliability and scalability. The core layer includes services that serve to sustain the DARIAH infrastructure and to establish coherent operation across the open DARIAH environment. It will include a wide range of technical services, for instance a service for persistent identifiers (PIDs) and an infrastructure for shared authentication and authorisation (AAI).

PIDs enable citability of research objects and are necessary for the openness of the DARIAH infrastructure. The DARIAH PID service links various system components with relevant policies. While there are numerous experiences on establishing PID services within the DARIAH centres, DARIAH faces the specific challenge of how to weave together diverse PID schemas that are currently in place at A+H data centres. AAI, on the other hand, is a good example of existing expertise in DARIAH, as many early adopters for single-sign-on in A+H come together in DARIAH. In the preparatory phase of DARIAH, a report was commissioned on the challenges of joining these resources into federated access management for A+H repositories in Europe.<sup>6</sup>

#### Advanced Research Services

Advanced services in the DARIAH framework are those created together with research communities. The first type can be found in the infrastructure service environment, which lists services that will be supported by DARIAH but not guaranteed. The national DARIAH projects will collaborate with outside initiatives and researchers to build them. A good example is the Authority Mediation Service (AMS), which deploys a network of reference data services, including library authority lists (e.g. Virtual International Authority File (VIAF)) as well as various dictionaries, thesauri and gazetteers. Such services are essential for semantically enhancing retrieval and extraction of information from digital A+H collections. The requirements of the infrastructure services will depend upon the priorities of the national initiatives and cannot be predicted easily, although one can already identify general tendencies such as the building of national preservation archives – be it federated or centralised.

---

<sup>6</sup> See deliverable D 8.2. of the DARIAH preparatory. To be published.

The second type of advanced services can be found in the user-facing framework (UFF), which exemplifies another core principle of DARIAH. DARIAH's central aim is to concentrate on guaranteeing those core services, which enable users to develop their own research (services). For the UFF, we document how to interact with those guaranteed core services but we also accommodate a collection of end-user tools contributed by research projects or third parties. Beyond mere documentation, tools and services ideally comply with the DARIAH service framework to foster interoperability with other DARIAH components.

Beyond services that correspond to the three conceptual layers of DARIAH, there will be services and software solutions which will make it easier to participate in DARIAH. In the beginning, we aim for DARIAH-created solutions aimed at A+H institutions wishing to create their own new digital research archives or digital research environments. These 'In-a-box' solutions combine software that is installed and administered at the institution and 'connects' to the DARIAH central infrastructure services.

These DARIAH technology services are complemented by scientific knowledge services. A research infrastructure is never just about technology solutions but has to be accompanied by support activities and services directly aimed at research and needed to operate the infrastructure and keep it working effectively.

## **4.2. Scientific/ Knowledge Services**

### **Led by VCC3 and VCC2**

The above listed technical services can only work if they are a reflection of the expertise of the DARIAH members. Next to the technical services and closely linked to them, DARIAH is defined as a marketplace of knowledge services to develop DARIAH and to allow A+H researchers in Europe and the world to work together in new ways. The knowledge services support the collaboration of researchers to re-use and curate their scholarly data, co-develop tools, share experiences and develop methodologies. We believe that the guiding DARIAH principle of collective intelligence will emerge from the knowledge bases and reference registries that collate the information from disparate user groups, as well as the gateways that connect the heterogeneous resources into a single environment.

### **Reference Registries and Knowledge Bases**

Reference registries enhance the infrastructure environment by offering actual research-relevant content for reference and reuse. For example, authority data on authors and other persons, thesauri, dictionaries from various epochs, and other reference data are often essential for research initiatives, yet are outside their scope. Shared reference services that offer data for reuse and perhaps mechanisms to contribute new data are hence infrastructural components for ensuring quality and efficiency in A+H research, as well as focus points for collaboration. DARIAH has started to build/integrate:

- Collections Registry - machine-readable registry for object sources.
- (Ad Hoc) Resource Registry - machine-readable registry for orphaned objects (deployed as SaaS).
- Metadata Registry - management and versioning of metadata schemata to enable e.g. metadata schema mappings
- Services Registry - references and descriptions for relevant tools and services

### **Digital Curation**

Closely related to the knowledge bases and registries that DARIAH will set up and maintain are general advisory services for managing and curating scholarly content in the A+H. DARIAH is embedded in a large ecosystem of related initiatives. Existing resources and experiences need to be tapped into to enhance the quality and the sustainability of DARIAH. Its members themselves have especially large expertise in the curation of semantically enriched and intelligent A+H resources. Many are either based at libraries or are even working for specialised services to help develop and sustain scholarly content in the A+H. DARIAH will offer trusted data curation services for owners of digital research assets, and foster interoperability and preservation from the very early



stages of the research lifecycle. We will continue and coordinate better existing initiatives, especially with a perspective on helping those who do not yet have digital curation services in place. We will further the development of standards for sharing and enriching research data as research objects.

### Education and Training

A+H research takes place in higher education institutions with a specific focus on teaching-related activities. A+H departments generally have the largest student numbers in universities, and A+H researchers consider teaching to be an essential part of their work. In recent years, digital A+H teaching has established itself as a new field in European institutions. Many new degrees in digital arts and humanities have been set up. This highlights the need for DARIAH to get involved in education and training activities.

Training and education in DARIAH aims to link educational services and support activities of DARIAH members in order to integrate DARIAH-specific technologies and findings. Due to the large amount of disciplines and sub-disciplines in the A+H, their communities may not be in immediate touch with DARIAH. This work aims to pro-actively address these research communities. In addition to new research communities, we aim to address non-domain experts. Especially, students are expected to be open and curious about the opportunities of digital A+H.

A whole set of DARIAH educational activities will be planned including expert groups to support developing university curricula or creating e-Learning objects. DARIAH itself will organise rotating lectures, seminars and digital methods summer schools, which have proven to be a popular means for enhancing the knowledge of A+H researchers. To make this feasible, we will define learning modules that can be integrated easily into existing courses and offer expert advice on how to present these modules.

Next we present three snapshots of how existing DARIAH technology and knowledge services are already at work in the European Research Area.

## 5. DARIAH At Work in the European Research Area: Building Services around Communities of Practice

Building on the work in the VCCs, DARIAH will provide the necessary infrastructure to ensure the effective execution of European research programmes and projects in A+H. Already, two major European Research initiatives, the European Holocaust Research Infrastructure (EHRI) and the Collaborative European Digital Archive Infrastructure (CENDARI), rely on DARIAH to provide the necessary services to carry out their work. Furthermore, DARIAH was instrumental in setting up the ESF-funded Network for Digital Methods in the Arts and Humanities to research digital methods in A+H.

### 5.1. European Holocaust Research Infrastructure (EHRI)

In October 2010, the European Holocaust Research Infrastructure (EHRI)<sup>7</sup> was launched. EHRI aims to support the European Holocaust research community by initiating new levels of collaborative research through the development of innovative methodologies and transnational access to research infrastructures and services. The DARIAH expertise has been key for planning and organising the technical service work for EHRI, in particular the requirements, data integration and virtual research environment work. DARIAH's involvement in these key development fields will ensure that access to integrated archival material will follow best practices and European standards. Figure 1 summarises the DARIAH activities to support the EHRI effort.

---

<sup>7</sup> <http://www.ehri-project.eu/>

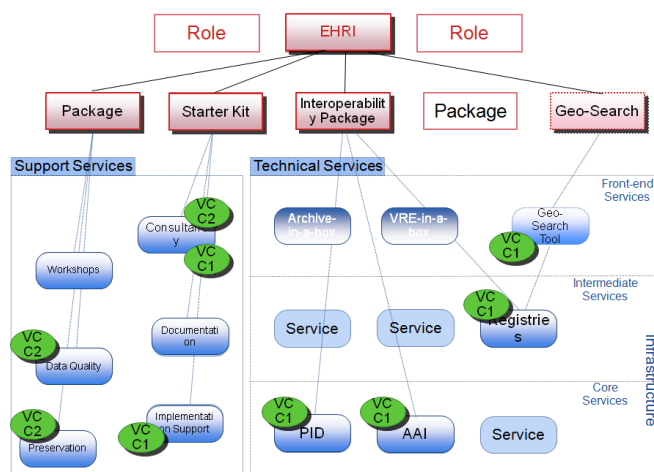


Fig. 1: Composing various services and infrastructure components to establish a tailored research environment, in this example for EHRI, the European Holocaust Research Infrastructure.

DARIAH offers to EHRI its expertise in ensuring data quality and access to its registry services. In detail, DARIAH will collaborate with the following EHRI services:

- Interoperability Service such as registries for collections and metadata to support the core tasks of research data integration
- Authentication and Authorisation Infrastructure to provide single-sign-on for sensitive Holocaust research data
- Persistent identifiers to identify redundant/duplicate research collections on the web.

## 5.2. Collaborative European Digital Archive Infrastructure (CENDARI)

The Collaborative European Digital Archive Infrastructure (CENDARI) will commence its work in October 2011. It will provide and facilitate access to existing archives and resources in Europe for the study of medieval and modern European history through the development of an 'enquiry environment'. This environment will increase access to records of historic importance across the European Research Area, creating a powerful new platform for accessing and investigating historical data in a transnational fashion overcoming the national and institutional data silos that now exist. It will leverage the power of DARIAH to bring technical experts together with leading historians and existing research infrastructures (archives, libraries and individual digital projects) within a programme of technical research informed by cutting edge reflection on the impact of the digital age on scholarly practice.

## 5.3. Network for Digital Methods in the Arts and Humanities

The ESF-funded NeDiMah (Network for Digital Methods in the Arts and Humanities)<sup>8</sup> Network is based on the assumption that there is a critical mass of digital content in the A+H, and that researchers need to collaborate on creating awareness and understanding of how ICT-based tools and methods can make that digital content valuable for transformative research. The Network will work in close collaboration with DARIAH to identify ways that researchers can use digital collections and content for research through the exploitation of digital research methods and tools. It will offer DARIAH researchers a platform to evaluate the value of digital research. Two of the three chairs of NeDiMah lead the DARIAH VCC2 work nationally and European-wide.

<sup>8</sup> <http://www.esf.org/activities/research-networking-programmes/humanities-sch/current-esf-research-networking-programmes-in-humanities/nedimah.html>

## **6. Summary of ERIC requirements**

### **6.1. DARIAH is necessary to enhance the current state-of-the-art**

We are at a turning point where digital research methods are entering the mainstream of A+H research. However, the field is still very much dominated by ad-hoc experiments instead of systematic investigations, as it lacks an infrastructure to sustain and help develop the state-of-the-art. Many national programmes have led to advanced tools and methodologies for digital A+H research but it has become clear in the past that only by working together on all levels and internationally, it can be ensured that they are used as widely as possible and therefore sustained.

DARIAH is set up as an integrating activity of the many successful national programmes. With its VCC structure, it provides a flexible means of working together and sharing resources internationally. It will deliver the necessary support services to sustain and promote the significant investments in digital A+H, currently undertaken in national programmes.

DARIAH is necessary for the European Research Area to strengthen and widen the impact of its world-leading digital scholarship in the A+H. It will provide researchers with the means of concentrating on applying their tools and methods to a wide range of digital resources. It will expose and share the existing research and enable exchange between its different partner sites.

### **6.2. DARIAH adds value to strengthen the ERA and provides effective access to services**

DARIAH sees itself as an integrating activity with the primary aim to scale national digital A+H services to a European level and add new services by enhancing the existing ones. DARIAH will concentrate on developing those core services that facilitate the integration of the established national infrastructures.

The partners of DARIAH have shown in their respective national contexts that their expertise is necessary in developing the most advanced digital A+H research. They have also collaborated on a European level in order to lead the way in the development of digital methods in A+H. Digital methods are beginning to change some existing research approaches and open the way to new research questions. Many of these can only be asked in a pan-European context, as culture and history do not stop at national borders. The Roman Empire extended across various current nation states. The EHRI project is another good example. Its principle aim is to enable European-level research questions such as 'Find all information about prisoners arriving in Theresienstadt from the Netherlands in 1944'. These questions cannot currently be answered, as the necessary data resources are not integrated but kept in national silos.

DARIAH needs to be a European activity, as A+H research can only be done internationally. It will provide and guarantee the core technical and support services that grant joint access to data collections and research services that enable new transnational research. DARIAH's VCC structure is designed to interconnect data, services and researchers in a light-weight and federated way so that researchers can work with a large but cohesive body of research materials. DARIAH will be as decentralised as possible, empowering individual contributors (e.g. researchers, national centres, thematic centres) to work with and within the DARIAH community and to shape its features to their needs. Each contribution builds DARIAH and is linked via DARIAH's architecture of participation.

### **6.3. DARIAH provides effective access for the ERA research community and enhances its mobility**

DARIAH will provide all European researchers with effective access to its services and data resources, restricted only by the necessary licences and privacy clauses. In general, DARIAH will promote open access to its

resources but is limited in this attempt by the existing legal and ethical requirements that restrict access according to the rules of the rightful owners of the resources as well as general ethical considerations. For instance, EHRI has to follow strict rules on publishing names of victims and perpetrators of the Holocaust. DARIAH supported services will ensure that these requirements are fulfilled by adding an authentication and authorisation infrastructure to support access to EHRI resources only to researchers and on a bona fide basis. Where such access restrictions are necessary, as data is confidential, DARIAH will support the publication of the access restrictions and provide legal and ethical advice.

But, effective access is not just about providing easy access to services and data. It is also about embedding research activities directly in the infrastructure and ensuring that research interests are directly represented. The biggest challenge for a digital research infrastructure such as DARIAH is to generate trust with its primary stakeholders, the researchers. In order to embed research in its infrastructural activities, DARIAH has VCC2 where researchers are not just trained and educated in the use of DARIAH tools and services but can also discuss A+H research practices and processes in the context of the services provided by DARIAH. Furthermore, it is ensured that digital scholarship is directly embedded in DARIAH by concentrating on technical services for the creation of gazetteers and other dictionaries, which can then be used to create semantically rich and intelligent content.

#### **6.4. DARIAH contributes to the mobility and dissemination of research**

Digital research infrastructures such as DARIAH do not need to provide means of physical transnational access. DARIAH, however, provides services to disseminate research results and discuss them online. It will provide transnational registries for digital A+H tools, services and projects and offer virtual means to review these. Furthermore, VCC2 will run summer schools, workshops, conferences, etc. to directly address research communities. The DARIAH VCCs do not only represent a flexible model to scale the national services, but are also a commitment to work European-wide and internationally. VCC4 is dedicated to the dissemination and knowledge exchange of digital A+H research.

### **7. Conclusion**

DARIAH will be a significant step towards a European platform of integrated digital A+H research with the commitment of all its participants to share resources and knowledge and enhance research. European countries have been at forefront of developing digital A+H in the past, but effective exploitation and dissemination of the results is hindered by national silos and a lack of durable infrastructures that would ensure that the state-of-the-art is preserved. DARIAH will establish a flexible organisational and technological framework that will ensure the sustained support for future generation high-quality digital scholarship in the A+H. By concentrating on digital A+H research, DARIAH will be the decisive step to ensure that Europe will play a key role in this field of advanced research with a growing international reputation and importance.