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Towards a concise DARIAH service strategy: 2020 Reflections - White Paper

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Towards a concise DARIAH service strategy

2020 Reflections - White Paper¹

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Abstract:

This white paper primarily served as an internal working document for the DARIAH ERIC. We inspected current service policies and practices across ERIC's with an emphasis on social sciences and humanities. We summarised earlier analysis of the DARIAH service portfolio. The ultimate purpose of the paper was to create a common ground of understanding what DARIAH services are and how to develop governance and management around them. Still, when writing this paper, we realised that others might encounter similar questions in their quest, and so could learn from our exploration.

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Acronym table

AAI	Authentication and Authorisation Infrastructure
ACDH-CH	Austrian Centre for Digital Humanities and Cultural Heritage
CESSDA	Consortium of European Social Science Data Archives
CIO	Coordination Integration Office
CLARIN	Common Language Resources and Technology Infrastructure
DARIAH	Digital Research Infrastructure for the Arts and Humanities
DDRS	Data Deposit Recommendation Service
DCO	DARIAH Coordination Office
DESIR	DARIAH ERIC Sustainability Refined
DH CR	Digital Humanity Course Registry
DL(s)	deliverables
EGI	European Grid Initiative
EOSC	European Open Science Cloud
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
FIM4D	Federated Identity Management for DARIAH
ITSM	IT service management
GWDG	Gesellschaft für wissenschaftliche Datenverarbeitung
HAL	Hyper Articles en Ligne
HaS	Humanities at Scale
IEC	International Electrotechnical Commission
INRIA	Institut national de recherche en sciences et technologies du numérique
ISO	International Organization for Standardization
ITIL	Information Technology Infrastructure Library
JRC	Joint Research Committee
KPI	Key Performance Indicator
NCC	National Coordinators Committee
OECD	Organisation for Economic Co-operation and Development
RI(s)	Research Infrastructure
SSH	Social Sciences and Humanities
TRL	Technology readiness level
VCC	Virtual Competency Centre
XaaS	Everything as a service

Executive summary

This paper addresses the Strategic Action Point 12 “DARIAH will improve its understanding of the value of in-kind contributions and make more effective use of them in line with its proposed categories for impact. It will also investigate light- (eg. funding challenges) and medium-touch (eg. SLAs) methods to guide and coordinate in-kinds toward community requirements.” It is an internal document for SMT and other bodies, with the main aim to create a shared knowledge base and attitude towards DARIAH services. The paper focuses on **IT services**, and their service management.

This document describes the foundations on which such a policy needs to be developed. It starts from a short comparison of the approaches of other ERIC’s to service management, gives an overview on current service definitions, and actual DARIAH services (based on former and on-going projects). It presents a table of services and a prioritisation.

Its main purpose is to mobilise the tacit and factual knowledge in all bodies. It documents the achieved insights, and lays the ground to prepare discussions and decisions of the General Assembly regarding potential changes in the in-kind contributions management. Following those discussions a structured and transparent approach towards DARIAH services will be in a DARIAH service policy document, which will guide the DARIAH approach in the upcoming years.

Services in context - state of art

ESFRI

- Services as a central notion: “ESFRI RIs are facilities, resources or services of a unique nature” ([ESFRI strategy report](#) p.11).
- DARIAH Operational Phase in 2020: during the implementation phase of the RI, the launch of services for the user communities is expected, and “During their OPERATION, RIs produce frontier research and deliver advanced services for excellent science satisfying the users’ demand, boosting brain circulation of early career scientists and trainees...” ([ESFRI strategy report](#) p.29)
- [Charter for Access to Research Infrastructures and access modes](#) (also used within EOSC) defines three access modes: excellence-driven; market-driven; wide access.

EOSC

- The role of RIs and ESFRI in EOSC
 - RIs in a prosumer position in EOSC
 - (cf. [Nov. 2019 ESFRI WS](#)) “The interactions and dynamics between the different EOSC stakeholders and RIs, namely:
 - Horizontal (generic) e-Infrastructures vs. thematic (domain-specific) RIs, considering that RIs also have e-Infrastructure/data infrastructure built into them. Where is the meeting point and interface between the EOSC minimum viable product and the thematic services? How will EOSC gain better understanding of RIs needs?
 - National vs. EU/thematic approaches (including national components of RIs and related funding) and aligning national initiatives with EOSC”
- **In the EOSC context, an “everything as a Service” (XaaS) approach is deployed.** It means that all the layers in the Cloud environment, and by extension all the resources provided, should be designed and integrated “as a Service” (cf. [service model](#) in cloud computing).
- Service definition “an EOSC Resource implemented by the EOSC System to provide EOSC System Users with ready-to-use facilities. EOSC Services are supplied by an EOSC Service Provider in accordance with the EOSC Rules of Participation for EOSC Service Providers. EOSC Services are approved by the EOSC Service Portfolio Management Committee and populate the EOSC Service Portfolio and the EOSC Service Catalogue.”
- EOSC distinguishes federating core services and the EOSC service portfolio. Note: According to FitSM a Service is a “Way to provide value to customers through bringing about results that they want to achieve”. Moreover, the text of the definition aims at stressing the fact that there is a service-orientation in EOSC. EOSC Services are usually IT services. EOSC Services provide value when taken on their own – unlike the specific EOSC Service Components of which they are composed of.” (cf. [EOSC glossary](#))
- Frame to become an [EOSC service provider](#) (with basic services requirements)
- Existing categorisation of services presented on EOSC portal (coming from EOSC-Hub): Networking, Compute, Storage, Sharing and Discovery, Data Management, Processing and Analysis, Security and Operations, Training and Support (see for instance EOSC-Hub [D2.6](#))

- [First Service roadmap, service portfolio and service catalogue](#)). Other attempts for EOSC services classification developed in EOSC Pilot [D5.4: Final EOSC Service Architecture](#) (esp. Chapter 4. EOSC classes of services).

Other RIs

- Several models of distributed RIs exist (cf. [OECD report 2014](#) see schema p. 10 and [OPERAS Platforms and Services White Paper](#), and the [RISCAPE project report](#)): Loose connection, Central co-ordination, Central shared co-ordination, combination. See also the implementation section of [Principles for Open Scholarly Infrastructures](#) (Bilder, Neylon 2015).
- Services in CLARIN as an example of a decentralised way to organise the distributed nature (balance between what is local and what is central).
 - Most of the (specialised) services are provided by individual CLARIN centres. These are the sustainable building blocks - with funding, institutional background, governance, as well as with strong commitment.
 - A few central services are maintained directly by the tech team of CLARIN-ERIC
 - User-oriented [presentation of services](#), especially via the [CLARIN portal](#) which features showcases and highlights specific resources.
 - Part of the CLARIN central services are the [Virtual Language Observatory](#) as aggregator, a metadata catalogue, collecting information about resources from ~60 content providers); the [Switchboard](#) mediates between resources and services (provided by other SPs). Both of these central services build their offer consolidating resources from other CLARIN nodes and beyond.
 - Guidance for researchers by (re-)ordering sources and services (both central and distributed) according to so-called '[Resource families](#)'
 - Other services come directly from some of the [Service Providing Centres](#) (= CLARIN B-Centres), like the [Language Resource Inventory](#).
 - [SCCTC](#) (Standing Committee of CLARIN Technical Centres) is the body/forum for exchange and coordination between the centres.
 - [The Centre Assessment Committee](#) performs the assessment of CLARIN-B Centres (up for renewal every three years). However this is an assessment solely of the repository services provided by the Centres. Other services (NLP processing) are provided by the centres at their own discretion.
- Services in CESSDA as an example of a centralised approach. Services are provided by CESSDA ERIC centrally, and costs are covered by the membership fees (another take on the balance between local and central).
 - [CESSDA Tools & Services webpage](#) presents a categorisation by type of end-user as well as a timeline showing the development and availability plan of their services.

- The main asset of CESSDA services is the [Data Catalogue](#) that gathers resources from CESSDA Service Providers. Some services dedicated to controlled [vocabularies](#) and [thesaurus](#) - this one is managed by a CESSDA service provider in support of the work of CESSDA - are also presented in the service offer. Other resources are training or expertise resources ([CESSDA Training](#), [Data Management Expert Guide](#), [Guide for Developing National Data Service Plans](#), [Resource Directory](#) (Zotero Library))
- CESSDA is also an example of an RI partly relying on paid commercial services made available via the CESSDA ERIC central office to all members (e.g, AAI, Google Cloud services). Partners seem to be happy with their membership contributions in exchange to this added value provided by the CESSDA.

Take-away

- ❑ Services are central to ERIC's.
- ❑ Although RI's are "knowledge infrastructures" (people and IT) there is an emphasis on services=IT services.
- ❑ ERIC's have different approaches on how to organise their services (loose connection, combination...); but independent of the concrete model, the ERIC as legal entity and administered by a central office itself is in a coordinating role. This role materialises differently in the organisational structure of the ERIC (Technical board, responsible director/officer). Experiences show that it is important to define a clear procedure, e.g. to assign an individual or body to this role (usually somebody on the top management level, who has the overall accountability, can act as a contact point for strategical issues, and helps to define goals and key policies).
- ❑ The bases form always agreed standards (e.g., configuration of API's, software maturity baselines, compatibility criteria, coverage in a central registry, sometimes metadata harvestable in a central discovery service).
- ❑ It depends on the nature/purpose/envisioned user base and role of a service which criteria are to be applied.

Current definition of DARIAH services

Actual DARIAH policy

- [DARIAH ERIC Statutes](#):
 - Art. 7&8 Members and Observers in DARIAH ERIC may use all tools and services
 - Art. 13 BoD and SMT: "ensuring consistency, coherence and stability of the research infrastructure services"
 - Art. 25 - Access Policy: tools and services "freely available for use by the scientific and educational community". GA can decide that some services shall be offered against a fee.
- [DARIAH strategic plan](#):

- Page 1: “The consortium supports the sustainable development of digitally-enabled research in the arts and humanities by building services for researchers working with ICT-based methods.”
- Page 3: “VCC1, the e-Infrastructure, is a first contact point within DARIAH to people knowledgeable about and responsible for the technical foundations of research infrastructures, and coordinates the provision of (technical) services by individual DARIAH partners.”
- Page 6: “DARIAH seeks to ensure that humanities researchers are able to assess the impact of technology on their work in an informed manner, access the data, tools, services, knowledge and networks ...”
- Page 9: DARIAH pillars via which services are provided: Marketplace; Working groups; Foresight; Education/Training
- Page 12: about impact “Our users, if indeed they are such, are as much contributors as beneficiaries: the high in-kind contribution our statutes require of members canonises this much more equal standing between those who might be considered central within DARIAH and those who might be seen as peripheral. We therefore use the term only in the sense of the ‘producer’ or ‘prosumer,’”

Actual DARIAH service definitions

- HaS Reference Architecture - as implemented in the DARIAH contribution tool
 - [Service](#), “**in the context of DARIAH a service represents an action that one or more institutions affiliated to DARIAH (the service provider/s) offers to another (DARIAH) institution or single researcher in order to enable the user of the service to reach a certain objective (related to the enrichment, dissemination and sustainability of research outputs).**”
 - 4 types of service (HaS-DARIAH#D5.1):
 - DATA HOSTING SERVICE e.g. data repository service, data deposit service, software repository.
 - PROCESSING SERVICE e.g. NERD service
 - SUPPORT SERVICE e.g. help-desk, software maintenance
 - ACCESS TO RESOURCES e.g. educational resources, data resources, enriching/creating metadata not normally available...
- DARIAH website
 - Tools and Services, classified by main use: News and events, publishing, services, teaching and learning, tools and software

Past analyses of DARIAH services

Services in a Research Infrastructure are documented to be found by users (discovery), to foster interoperability (assessment), and to account for the efforts of an infrastructure (KPI's). The Knowledge Organisation Systems (KOS) applied to index registered services are slightly different depending on the main purpose of the ‘service listing’ (e.g., catalogue, accountability tool, gap analysis, business model analysis, etc.). There is a sufficient overlap in collected information, but it is not harmonised (yet). All analyses show that DARIAH produces a large number of services.

Both HaS and DESIR in various reports attempted to classify/present/assess DARIAH services

- Cf. [HaS D5.1 “Integrated Service!Needs: DARIAH \(inkind\) contributions - Concept and Procedures”](#) - types of Resources/Contributions (p.13), assessment criteria for Services (p.19) like “Maturity level”, “Support level”, etc. The HaS metadata of services combine criteria of quality (maturity), and targeted audiences. The in-kind tool also maps services to VCC’s, this way tagging them as infrastructure/research and education/scholarly content/advocacy.
- Cf. [HaS D6.3 SLA/business models](#)- introduced 3 potential types of DARIAH services (core services (=DARIAH website, AAI); essential services (contribution tool); in-kind contributions (DARIAH wiki). This categorisation might be outdated, as the DARIAH wiki is no longer used to list in-kind contributions (not on the ERIC level), but it entails the need to differentiate between services central for the role of DARIAH, and services with a more limited range.
- Cf. [DESIR D 4.1 - Gap Analysis of DARIAH Research Infrastructure](#). Analysis of services in 4 specific domains/methods (entity-based search, scholarly content management, text analytic services and visualisation), analysing services as listed in the in-kind contribution tool and on DARIAH national websites. 110 services were analysed, further refined with 3 aggregated categories of services (Infrastructure (20), Research (84) and Communication (6)) and classified according to the VCCs (VCC1: 66 services; VCC2 0; VCC3 43; VCC4 13) (cf. p. 25-28). Findings: “most services are related to scholarly content management (37) and text-analytic services (21) and to a lesser degree to visualisation (16) and entity-based search (8).” Also integrated aspects for sustainability (maintenance).
- Cf. DESIR [D5.3 Report on a business plan and marketing strategy](#) (not public). Differentiates between operational services and services as covering the four pillars of DARIAH: Training and Education, Policy and Foresight, Marketplace, Working groups, . Defines the DARIAH User Communities (p.28): from DARIAH Core users (= ‘producers’) to DARIAH user base; differentiates areas services & activities and target audience (p. 31, Table) (similar to HaS core services, essential services and in-kind contributions) and aligns them with the DARIAH Strategy pillars. Evaluates access to services (openly available, or via DARIAH-AAI); specifies audiences and different dissemination streams (especially the User Strategy and Communication and Branding parts (p. 27 to 50))

Among the dimensions relevant for central services are: (1) maturity or Technological readiness level (TRL), (2) reach of the intended use (global/local/domains), (3) relationship to DARIAH (e.g., branded as DARIAH) and (4) relationship to DARIAH strategic pillars.

Take-away

- ❑ In the DARIAH strategy services are addressed but we miss a link between those high-level principles and actual services produced in the member countries.
- ❑ Based on HaS, we have high-level definitions for services, and assessment criteria for them. The new Contribution tool allows an overview, but also shows that due to user-generated content, information about the services is not always suitable for a direct

evaluation/ranking and not suitable to make a decision about the role of submitted services for the DARIAH ERIC.

- ❑ Both HaS and DESIR, in various Deliverables (DLs), added further categorisations of services (partly aligned), and a detailed content analysis of a substantial number of services (analyses only loosely connected).
- ❑ Each change in high-level ordering principles (e.g, pillars of the current DARIAH Strategy versus VCC structure) influences the view on services. To be taken into account for any change of the DARIAH Strategy to come.
- ❑ Aligning DARIAH services with EOSC service criteria could be a way to foster harmonisation of description. Disclaimer: also EOSC criteria are in flux. Currently, in the current EOSC portfolio some providers 'represent' DARIAH with their thematic services, but the DARIAH ERIC does not appear in the EOSC catalogue (not as provider, and only one example has DARIAH in the title), hence we miss opportunities for visibility on high, cross-domain levels.²
- ❑ In short, we have some definition(s) of a "DARIAH service" but not a clear pathway from a (national) contribution to a "DARIAH service" nor a service policy which differentiates between different types of services. Consequently, currently DARIAH's offer is unclear and fuzzy, services appear on different platforms, and DARIAH only partly has an overview.
- ❑ For a DARIAH service policy two elements are missing: a policy-oriented **prioritisation/ranking of services** and a **professional service management**. The latter also includes clearly defined roles (authorities and responsibilities) and implementation of processes.

² <https://marketplace.eosc-portal.eu/services/dariah-science-gateway>

Moving towards a service policy

Who is DARIAH?

DARIAH knows a lot of services, and has definition(s) and assessment criteria for a “DARIAH service”. But, so far decisions about which services are indispensable for the functioning of DARIAH as a distributed infrastructure have been made rather ad hoc. In short, we miss a policy to **prioritize services**. Additionally, DARIAH lacks clear agreements about services: who is responsible for the curation of content in a service, who is responsible for hosting, maintenance and long-term sustainability of services. In short, we miss **professional service management**.

The distributed nature of DARIAH does not make it easy to come to a concise policy. In the making of this document we debated to which extent DARIAH is a service provider at all or a federation of service providers? The answer to this question depends also on the definition of DARIAH.

- DARIAH is a European Research Infrastructure Consortium (ERIC, a legal entity) currently consisting of 19 Members. Its existence, mission, governance and operations are defined by its statutes.
- The DARIAH Coordination Office (DCO) is the central administration responsible for the coordination of the activities of DARIAH ERIC. Part of the DCO’s activity includes the management of certain services, for instance the website or the contribution tool.
- DARIAH is built from member states, which sometimes are represented by national nodes (DARIAH.XY, sometimes also in combination with other ERIC’s - CLARIAH.XY), or by a number of institutions. Often, they provide services primarily oriented towards their national users, but sometimes also open for wider communities.

Classification and Prioritisation of DARIAH services

As detailed above, services produced in the DARIAH ERIC have been documented and evaluated in different European projects. DESIR introduced the notion of ‘**operational services**’ as services needed for the coordination of the DARIAH ERIC. Among all other services provided inside of DARIAH, there are services which are used by communities across countries. There are also services which have been built as explorations in the context of an external funded project (e.g., a European project with DARIAH ERIC as a partner), often induced by a priorly identified gap in the ensemble of DARIAH services.

All services in the DARIAH ERIC DARIAH SERVICE POLICY		
Services which require a close monitoring by the DARIAH ERIC’s governance structure (so-called blue list)		Other DARIAH services
Operational services	DARIAH core services	
Those are services needed for	Those are services which are	All other DARIAH services

<p>the coordination of DARIAH ERIC.</p> <p>The 'Customer'³ is various internal DARIAH bodies (DCO but also other bodies in DARIAH (e.g. the NCC, JRC, Working groups)). These operational services are often provided to the rest of the ERIC for their operations. Service providers can be commercial parties, institutions in the DARIAH member states or other institutions.</p> <p>These services are financed via the central budget of DARIAH, or provided by institutions in DARIAH member states and declared as in-kind.</p> <p>Examples are: DARIAH website, DARIAH wiki, Sharedocs, Basecamp, Zoom, mailing lists.</p>	<p>used by a wider community of users inside of DARIAH or that are evaluated as central and relevant for the DARIAH infrastructure by DARIAH bodies.</p> <p>The 'Customer' is the DARIAH ERIC.</p> <p>Service providers are institutions in DARIAH member states.</p> <p>Services are financed by the national hosts, they can be provided as in-kind contributions to DARIAH. About those services agreements should be/are made between the DARIAH ERIC and the Service provider.</p> <p>Examples are: DARIAH Authentication Service, DH course registry, DARIAH teach</p>	<p>provided by an institution in one of the DARIAH member countries and declared as in-kind; or produced as explorative service in a project (funded nationally or pan-european).</p>
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As indicated in the above table, the DARIAH service policy embraces all services. But, it is also clear that there are services which require a closer monitoring concerning the stable delivery of a service and its long-term stability.

This service landscape is by no means stable. DARIAH services exist on all levels of (technological) maturity, and on different levels of audience (international versus national, domain-specific versus cross-domain). Services emerge, develop, vanish or are abandoned. DARIAH needs a simple, clear and transparent procedure to deal with this. For instance, services, such as DARIAH-Campus, are set up in the context of a European project. For their long-term stability and sustainability, we need procedures on how to take care of them. The set-up of the DARIAH ERIC with cash and in-kind contributions suggests to use the latter to ensure stability of services. But, for new services emerging from cross-countries collaboration, there is no transparent procedural trajectory to secure them via in-kind contributions, nor has there been a negotiation process to commission services to institutions in member states. Moreover, not all services offered as in-kind contributions might need close monitoring from the DARIAH ERIC. In other words, what is needed

³ FitSM, Part 0: Overview and Vocabulary, Edition 2016, Version 2.4. <https://www.fitsm.eu/downloads/>

is a change from traditional in-kinds to what has been also labeled 'out-kind' contributions; hence contributions which are of functional and operational value for DARIAH as an ERIC.

The key to a consistent service policy is selectivity and a multi-tier approach to service management: from agreement-based, close monitoring over registering of services in tools, such as the Contribution tool or the SSH Open Marketplace, to just disseminating information about services.

Elements of a Professional Service Management

In this section, we describe what it would mean for DARIAH ERIC to closely manage a selection of DARIAH services. IT Service Management has been developed to allow Service Providers to organise and operate services offered to users. Several services management systems and standards exist, such as [ISO/IEC 20000](#) or [ITIL](#) framework, and [FitSM](#) standards are one of the most used methods in the e-infrastructures environment (and in the EOSC context). The purpose of this paper is not to choose one standard or another, but for the sake of clarity we'll rely on the following FitSM definitions⁴ as much as possible for our analysis:

- Service Provider: "Organisation or federation (or part of an organisation or federation) that manages and delivers a service or services to customers"
- Customer: "Organisation or part of an organisation that commissions a service provider in order to receive one or more services. Note: A customer usually represents a number of users."
- Service Level Agreement: "Documented agreement between a customer and service provider that specifies the service to be provided and the service targets that define how it will be provided"
- Operational Level Agreements: "Documented agreement between a service provider and another part of the service provider's organisation or a federation member to provide a service component or subsidiary service needed to allow provision of services to customers"

In the FitSM approach, after establishing a clear portfolio and catalogue of services, Services Level Agreements or Operational Level Agreements can be defined. For more details on a potential DARIAH implementation, see HaS D6.3 "DARIAH Service Level Agreements and Business Models". Some risks or limits applying IT Service Management to DARIAH services have been identified while preparing this white paper:

- FitSM does not address high-level strategy or budgeting issues (compared to other service management systems like ISO/IEC 20000 or ITIL).
- The kind of guarantee developed between the Service Provider and its users might be considered with a different angle, as it is for example explained by the [Zenodo](#) team via the "Best Effort Principle": "Zenodo does not sign SLAs (service-level agreements). This is

⁴ FitSM, Part 0: Overview and Vocabulary, Edition 2016, Version 2.4. <https://www.fitsm.eu/downloads/>

not a weakness, it is by design and marks a philosophy that we believe is most appropriate for Science. Instead, Zenodo is run by leading practitioners according to best practices. What Science needs is inherent reliability, or more accurately demonstrated reliability based on open best practices. Furthermore the users should be able to influence these best practices. In the long-term, a service which is trusted is much more valuable than one for which assurances must be bought. Service failure can never be undone. Enforcing an SLA means being prepared to litigate against the contract, which means compensation, frequently assessed on the basis of loss of revenue... but none of these concepts have any place or relevance in the free exchange of research results! Living by these principles, Zenodo strives to make available architecture, implementation, practices and statistics. Please see for example the infrastructure page. We are also aiming to have these certified.”

- Overengineering a process that is working without procedures could also become a counterproductive measure. Establishing agreements between institutions could call into question a service currently provided on an informal basis for example.
- Human resources needed for the implementation of the methodology need to be taken into account, as well as the consequences on the already dense organisational chart of DARIAH.

Implementing a professional service management in DARIAH would require clarifications regarding: 1/ the in-kind contributions management; 2/responsibility and division of labour among DARIAH bodies and members. Standards and assessment, a service policy, and the appropriate communication channels and contact points are also major questions, partially already covered by some of DARIAH processes, but that might gain clarity being professionalised.

Evaluating current DARIAH services in the light of a service policy

Overview

In the context of this White paper, we started a re-inspection of services, detailing those information details concerning a service management (about 30, plus a list of 131 services from the 2017 contributions).

For 32 services we documented:

- Draft categorisation (core service/others)
- Short name of the service
- URL
- Customer
- Service provider
- Contact person (inside/outside the service provider)
- Provider of content/curators (inside/outside of the service provider)
- Business model/Finances
- Registration
 - DARIAH Contribution tool
 - DARIAH Website
 - BalanceScoreCard statistics
- Contracts/Agreements (notes on them)
- Branding as DARIAH.EU service

The result can be found in another Google sheet (**table** [internal document]) (see snapshot in Figure 2). This sheet can be seen as a first attempt to identify DARIAH Services for close monitoring.

A	B	C	D	E	F	G	H	I	J	K	L	M
#	Short name of the service	Location/link	Customer	Service provider	Contact person known (in/outside of SP)	Content provider/Curators (in/outside of SP)	Bussines model/ Finances	DARIAH contributi on tool	DARIAH website	Balanc eScore Card	Contracts /Agreeme nts	DARIAH Branding
1	FIM4D Authenti	https://auth.de.dariah.eu/		GWDG (?) - 3 locations		DARIAH Working	registered in-kind					
2	DH Course Reg	https://dhcr.clarin-dariah.eu/		OEAW		DARIAH Working	registered in-kind+ERIC budget+project budget					
3	SSK	http://ssk.huma-num.fr/		CNRS/ Huma-Num		DARIAH Working	registered in-kind+ERIC budget+project bt					
4	#dariahTeach	https://teach.dariah.eu/		OEAW		DARIAH Working	ERIC budget+project budget					
5	DARIAH-Campi	https://campus.dariah.eu/		hosted at private supplier		DCO	project budget					
6	Parthenos Train	http://www.parthenos-project.eu/pc		PIN		DCO is taking ca	project budget					
7	DDRS	https://ddrs-dev.dariah.eu/		GWDG (?) or DARIAH-BE		DCO (ongoing di	project budget					
8	DARIAH Open	https://dariahopen.hypotheses.org		CNRS/ Hypotheses		DCO	registered in-kind (OpenEdition portal)					
9	OpenMethods	https://openmethods.dariah.eu/		CNRS/ Huma-Num		DCO	project budget+registered in-kind (HN hosting)					
10	Website	https://www.dariah.eu/		CNRS/ Huma-Num		DCO	ERIC budget+ registered in-kind (HN hosting)					
11	Mail server	https://email.gwdg.de/		GWDG		GWDG	ERIC budget					
12	Wiki	https://wiki.de.dariah.eu/		GWDG		CIO team and W	registered in-kind (DE)					
13	Basecamp	https://basecamp.com/2943612/		Private supplier		DCO	ERIC budget					
14	In-kind contribu	https://dariah-beta.dans.knaw.nl/		DANS		DCO	ERIC budget+project budget					
15	Sharedocs	https://sharedocs.huma-num.fr/		CNRS/ Huma-Num		DARIAH-FR	?					
16	TERESAH	http://teresah.dariah.eu/		GWDG		DCO	project budget					
17	zoom	https://dariah.zoom.us/		Private supplier		DCO	ERIC budget					
18	Gitlab	https://gitlab.gwdg.de/		GWDG		GWDG	project budget					
19	Gitlab	https://gitlab.com/DARIAH-ERIC		Private supplier		DCO	free					

Figure 2: Snapshot of the DARIAH services google sheet

Discussion of specific cases

To clarify what kind of information is needed for each kind of service, the following examples can be considered.

Examples of services needed for the internal communication and coordination of the DARIAH ERIC (so-called operational services)

- **Basecamp** is a project management application, provided by a private supplier. It's used to communicate between different DARIAH bodies, as well as to manage projects coordinated by DARIAH ERIC. Basecamp licence is financed from the ERIC central budget.
- **DARIAH Wiki** is a collaborative space provided by GWDG for DARIAH internal purpose, and declared as a German in-kind contribution. DARIAH wiki is mainly used by the CIO Team, JRC and Working Groups.

Examples of services which are candidates for a close monitoring

- **DH Course Registry.** The DH Course Registry is a “[joint effort](#)” of CLARIN and DARIAH, for the whole European DH community. In 2019, a [Memorandum of Understanding](#) was signed between CLARIN and DARIAH to ensure the commitment of both ERICs in sustaining the DHCR. It is operated on behalf of CLARIN and DARIAH by ACDH-CH and as such it is also registered as an [in-kind contribution](#) by Austria regarding the “User management, maintenance, hosting and dissemination”. Furthermore, the intellectual maintenance of the service is also ensured by a dedicated [DARIAH Working Group](#).

- **Standardization Survival Kit.** Developed by INRIA during the PARTHENOS project, the SSK is now hosted by Huma-Num, and the Guidelines and Standards Working Group ensures the intellectual maintenance of the service. The service is built to serve all Humanities researchers in Europe and beyond.
- **DARIAH AAI.** Developed in the DARIAH-DE context, DARIAH-AAI is maintained by GWDG and DAASI International. This service can be accessed by every independent researcher. No administrative or legal framework links DARIAH AAI providers to DARIAH-EU, but the service is registered as a German in-kind contribution. Additionally, the Federated Identity Management for DARIAH (FIM4D) DARIAH Working Group ensures the development and intellectual maintenance of the DARIAH AAI.
- **DARIAH-Campus** DARIAH-Campus is a discovery framework and hosting platform for DARIAH learning resources. Currently in beta, this portal was developed during the DESIR project. A [Reuse Charter](#) for training materials, inspired by six core principles of Reciprocity, Interoperability, Citability, Openness, Stewardship and Trustworthiness clarify under which framework the daily operations of the platform are performed and clarify service provider expectations regarding the interaction between content creators, users and curators of the platform.
- **DDRS** the Data Deposit Recommendation Service, relevant to humanities communities at large, was developed by DARIAH under the HaS project. Not sustained with the ERIC central budget after the end of the project, a way to sustain the DDRS on a national level (via DARIAH-BE) is under consideration.
- **HAL** is an open and multidisciplinary archive platform, declared as a French in-kind contribution. This service was designed to meet the needs of the French research communities, but is used beyond this national context. HAL is promoted by DARIAH ERIC as a major archive platform, alongside others (like Zenodo).

Take away

- Conclusion from the different analysis executed in projects: The DARIAH ERIC (more precisely the DARIAH Coordination Office) is not a Service Provider, but represents a network of service providers. This is visible in the substantial number of services produced by the DARIAH community. Those reach from local production (in an institution or lab) to national available infrastructure (national DARIAH's), address specific research communities but also cross-domain service needs, and are, in principle, of a mature nature. But, their sustainability is often not explicitly addressed. **DARIAH wants to move from a collection of services towards a network of complementary, (partly) interoperable and well-used services, showing its capacity for coordination also on the technical level of services.** To achieve this, DARIAH needs to detail the analysis of existing services with aspects of service management (as defined generally for IT services). To gain more knowledge in this area, it will also help to clarify how to best organise the division of labour concerning services for digital humanities research between the member states of DARIAH and the DARIAH-EU coordination layer.
- IT Service Management methodology can be followed, but needs to be translated to DARIAH specificities as a coordinator of service providers.

- Transparency in the DARIAH service policy and selectivity concerning close monitoring are key.
- Relying on the existing DARIAH organisation and previous work is one of the conditions to ensure a successful implementation of a DARIAH service policy. A DARIAH service policy doesn't mean a reorganisation of the existing network, neither the creation of new categories, frameworks or standards, but to operate with clear definitions and to set out simple procedures.

Recommendations - DARIAH as a coordinator of service providers

As a **coordinator of service providers**, DARIAH ERIC is in a good position to:

1. **Provide overview/discovery tools** (such as the SSH Open Marketplace, DARIAH-Campus or the contribution tool for example)
2. **Foster use of existing services**, advertising services through dissemination channels
3. **Ensure quality of services**, promoting principles, standards, and interoperability schemas
4. **Coordinate the provision of services** used or needed by the Arts & Humanities communities

Based on the analysis conducted in the previous sections and to ensure a smooth implementation of the services strategy, the following recommendations are suggested.

1) services needed for the coordination of the DARIAH ERIC (so-called operational services)

- provided by private suppliers (like Zoom or Basecamp), and included in the (annual) budget of DARIAH ERIC. Where possible, there should be an exit strategy (maintenance, archiving), and preference will be given to open, free and reliable solutions. Use statistics (KPI).
- provided by DARIAH members. Agreements between DARIAH-EU and the national provider should be signed and updated on a regular basis. (If possible) services should be automatically counted as in-kind contributions. Use statistics (KPI).

2) service candidates for a close monitoring due to their central role for the community (DARIAH core services)

- When a service, developed in a project or on an ad-hoc basis by a national member, is identified by the BoD as a central service for DARIAH, the following sustainability plan can be followed:

- Agreement between DARIAH-EU and partners involved in the maintenance of the service.
- Declaration of the costs incurred to maintain the service registered as in-kind, preferably automatic ingestion to the contribution tool (by CIO team).
- Provision of use statistics (KPI)
- Optional: have a Working Group in charge of the intellectual maintenance of the service
- Clear statements about DARIAH-EU involvement on the website pages describing the service (cf. DH CR)

3) All other services

- In-kind contributions with a large intended use are advertised and promoted by DARIAH-EU. They should be advertised as DARIAH contributions, by including (at least) the DARIAH ERIC logo. Use statistics annually delivered (KPI).
- Other services produced by DARIAH members can be advertised and submitted as in-kind. Here some synergy strategies can be followed for services with similar goals

Take-away and suggested actions

Further analysis

- Analyse IT standards and select the methodology that could be applied to DARIAH ERIC services. FitSM seemed the best suited. Thanks to the difference between service portfolio⁵ and service catalogue⁶, FitSM might help us to identify “core services”. Next steps should follow the methodology chosen.
 - Assessment of current DARIAH (in-kind) contributions to identify candidates for monitoring (blue list)
 - Finalise the list of services (blue list) adding relevant information for the operational services & services candidate for a close monitoring
 - Start a list of “orphan services” (those are services abandoned in a project or institution but with a significant user basis) (open google document), inspected by JRC/VCC on a half-year basis leading to a priority ranking. “Orphan services” are subject for a coordination by DARIAH in the sense to find a new institutional home in one of the DARIAH member states (think here of the possibility to have at NCC meetings an auction item as recurrent agenda point)

⁵ “Internal list that details all the services offered by a service provider, including those in preparation, live and discontinued. Note: For each service, the service portfolio may include information such as its value proposition, target customer base, service description, relevant technical specifications, cost and price, risks to the service provider, service level packages offered, etc.”

⁶ “Customer-facing list of all live services offered along with relevant information about these services. Note: The service catalogue can be regarded as a filtered version of and customers’ view on the service portfolio.”

- ❑ Comparison of metadata used to describe services in EOSC, DARIAH contribution tool, and other analysis. (Started already partially in SSHOC, this could serve as a base for further analysis).

Procedural implementation

- ❑ Design legal template(s) based on existing MoU for hosting existing services (by DCO, VCC1)
- ❑ Formalise agreements with member states institutions which will host services from the blue list (DCO)
- ❑ Design a procedure where the DARIAH ERIC solicits the development of core services from member states institutions (includes staff as well as hosting capacities). Those are later automatically entered as in-kind contributions (fixed cost scales, category 'activity: software development' or service category). (DCO, CIO)

Communication

- ❑ Update the tools and services page on the website to feature in priority core services for the community (DCO)
- ❑ Consider developing 'DARIAH labels' to brand the various services on their websites. It could be something like 'provided by DARIAH-EU' label to ensure transparency of which services are DARIAH services.
- ❑ National profiles of DARIAH members planned for the website could include national service highlights (example: possibility to use OMEKA provided by DARIAH-PL...) (DCO and communication officers network)
- ❑ Feature "success stories", like a good sustainability plan after the end of a project, like the DDRS, OpenMethods or PARTHENOS Training Suite for example (DCO with project lead)

Fostering expertise

- ❑ Continuous support to EURISE Network
- ❑ DARIAH services presence in the EOSC context: do we need a specific place where to discuss (a new Working Group, or revitalise the hibernating EGI WG)?

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