



**Kerrin Borschewski and Brigitte Hausstein (GESIS), April 2016**

**Report on information collection of CESSDA Service Providers' opinions on the use of Persistent Identifiers (PID)**

**Preliminary notes**

The persistent identification of CESSDA Service Providers' (CESSDA SP) data holdings requires more attention. While some ERICs achieved practical and administrative successes (e.g. CLARIN), CESSDA still lacks a common approach to PID services use. To bridge this gap GESIS and contributing partners - DANS and SND - have the task of preparing administrative guidelines for persistent identifiers within CESSDA. The intended goal of the CESSDA PID Task is the preparation of administrative guidelines for the use of persistent identifiers (PID) within CESSDA – a so called CESSDA PID Policy. In order to lay some groundwork for the CESSDA PID Policy GESIS did extensive desk research and conducted two different kinds of data collection – a quantitative online questionnaire and qualitative expert interviews. Those efforts serve to get an overview on the usage of PID within CESSDA, the needs of the different CESSDA SP considering different PID systems, as well as the aspects that need to be considered for the CESSDA PID Policy. The results of the data collection served as a basis for the “Workshop on Persistent Identification within CESSDA”, which was held on February 18<sup>th</sup>-19<sup>th</sup> 2016 in Cologne, Germany. Within the context of the workshop, the participants further discussed and developed the ideas, demands and information deduced from the survey concerning the CESSDA PID Policy.<sup>1</sup>

**1. CESSDA online survey on PID**

The survey period for the quantitative online questionnaire was from October 8<sup>th</sup> 2015 to November 30<sup>th</sup> 2015. The software used in order to collect the data was “SoSci Survey”.<sup>2</sup> The questionnaire of the quantitative survey built on the DASISH and DwB projects' previous efforts and was intended to determine the current practices of PID usage within CESSDA and the demands from the CESSDA SP concerning the CESSDA PID Policy and PID systems in general.<sup>34</sup>

All organizations being a CESSDA SP at the time of the survey period were asked to participate. This concerned 14 different member countries: Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Lithuania, The Netherlands, Norway, Slovenia, Sweden, Switzerland, and the United Kingdom. The questionnaire was completed by 11 CESSDA SP out of those 14 different members; namely by: ČSDA (Czech Republic), DDA (Denmark), FSD (Finland), GESIS (Germany), LiDa (Lithuania), DANS (The Netherlands), NSD (Norway), ADP (Slovenia), SND (Sweden), FORS (Switzerland), UKDA (United Kingdom).

One of the survey questions addressed specifically the CESSDA SP who already use global PID, another was specifically for those CESSDA SP who do not use global PID yet. The rest of the survey questions concerned both PID users and PID non-users.

1.1. Basic information on the organizations' use of global PID (Questions 1-4, see appendix) Six out of the 11 CESSDA SP, who completed the questionnaire, already use global PID. Those six SP are: ČSDA (Czech Republic), DDA (Denmark), GESIS (Germany), DANS (The Netherlands), SND (Sweden), UKDA (United Kingdom). All of them use the DOI system with an average satisfaction of 4.2 (with 1 = completely dissatisfied and 5 = completely satisfied). ČSDA has been using the DOI system since 2015, DDA since 2013, GESIS since 2010, DANS since 2015, SND since 2012, UKDA since 2011. DANS is the only CESSDA SP who uses two different global PID systems. Since 2007 DANS has been using URN:NBN (with a satisfaction of 4) for which it is also a national Service Provider. In 2015 DANS additionally introduced the DOI system.

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<sup>1</sup> Further Information on the “CESSDA Workshop on Persistent Identification”: <http://bit.ly/1TCbmHo>

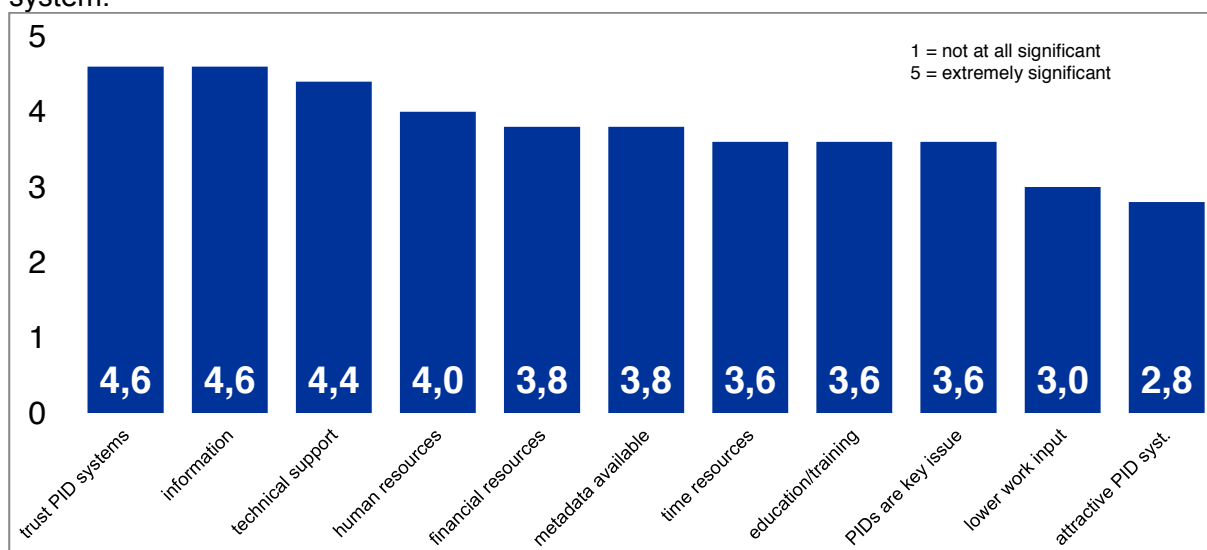
<sup>2</sup> SoSci Survey Website: <https://www.sosicisurvey.de/index.php?page=home&l=eng>

<sup>3</sup> DASISH Project Website: <http://dasish.eu/>

<sup>4</sup> DwB Project Website: <http://www.dwbproject.org/>

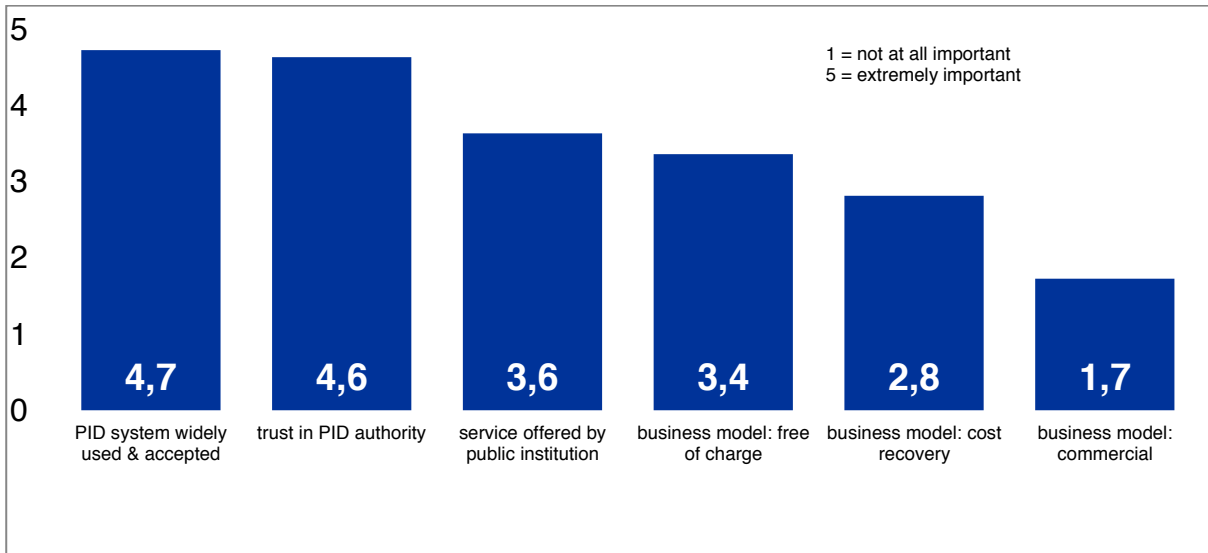
ČSDA and SND are both thinking about adopting a second PID system (ČSDA is looking at Handles and SND is thinking about adopting Handles generated by ePIC). The five CESSDA SP who are not using global PID yet (FSD, LiDa, NSD, ADP, FORS), are all planning to adopt PID. FSD is thinking about adopting URN:NBN, NSD and FORS are considering the DOI system, LiDA is considering the adoption of the DOI system as well as Handles and ADP is thinking about adopting URN:SI:UNI-LJ-FDV:ADP (based on the URN system).

1.2 Different needs concerning the introduction of a PID system (Question 5, see appendix) It addresses the significance of the non-users' different needs concerning the introduction of a PID system (with 1 = not at all significant and 5 = extremely significant). The calculated averages (out of the answers of the 5 non-users) shows (see also Figure 1 below), that the most important issues (most important are considered those issues with an average equal to or above 4.0) are "trust in PID systems" ( $\bar{x}$  = 4.6), "sufficient information on PID system" ( $\bar{x}$  = 4.6), "sufficient technical support" ( $\bar{x}$  = 4.4) and "sufficient human resources" ( $\bar{x}$  = 4.0). The issues with an average below 4.0 are "sufficient financial resources" ( $\bar{x}$  = 3.8), "availability of metadata for the resources that need to be identified" ( $\bar{x}$  = 3.8), "sufficient time resources" ( $\bar{x}$  = 3.6), "special education/training" ( $\bar{x}$  = 3.6), "PID are key issue for the organization" ( $\bar{x}$  = 3.6), "lower work input" ( $\bar{x}$  = 3.0), and "existing PID systems need to be more attractive" ( $\bar{x}$  = 2.8). Generally, one can conclude, that trust and the different resources play a major role for the considerations concerning the adoption of a PID system.



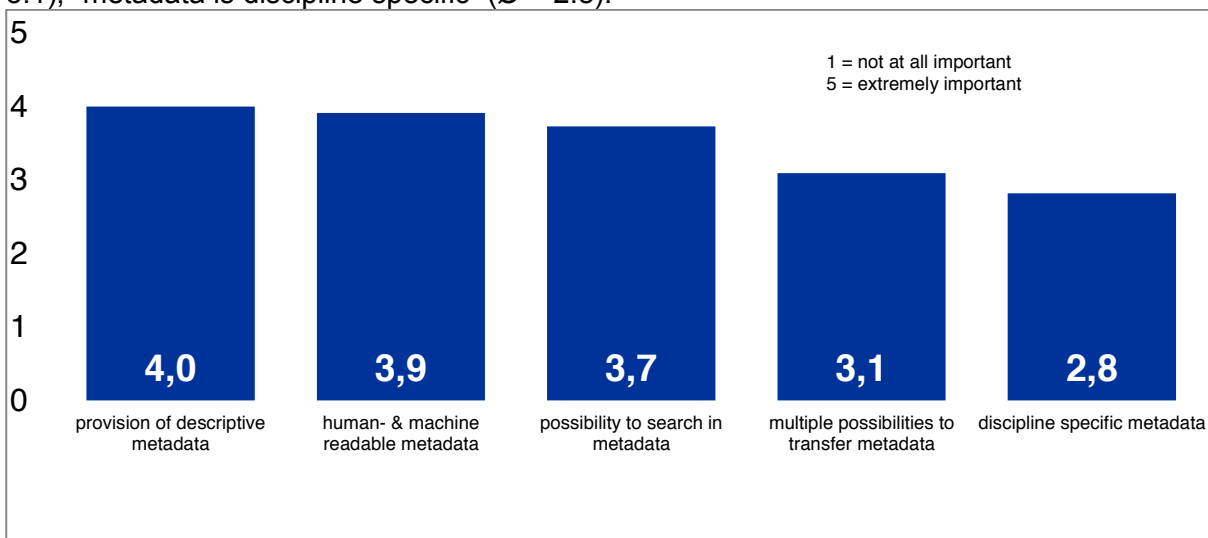
Figur 1 – PID System Needs: Question 5 (Non-User): Think about your organization: how significant are the following **needs** when considering introducing a PID system?

1.3. General expectations within the organizations concerning different aspects of PID systems (Question 6, see appendix). All the respondents were asked about the general expectations within their organization (with 1 = not at all important and 5 = extremely important). Those different aspects refer to "authority and credibility issues", "metadata issues", "architecture and infrastructure issues", "PID syntax issues" and "additional technological aspects". First, the issues "authority and credibility" are addressed. The calculated average shows, as demonstrated in Figure 2, that the most important issues concerning "authority and credibility" are "PID system is widely used and accepted" ( $\bar{x}$  = 4.7) and "trust in PID authority" ( $\bar{x}$  = 4.6). The issues with an average below 4.0 are "service offered by a public institution" ( $\bar{x}$  = 3.6), "business model: free of charge" ( $\bar{x}$  = 3.4), "business model: cost recovery" ( $\bar{x}$  = 2.8), "business model: commercial" ( $\bar{x}$  = 1.7).



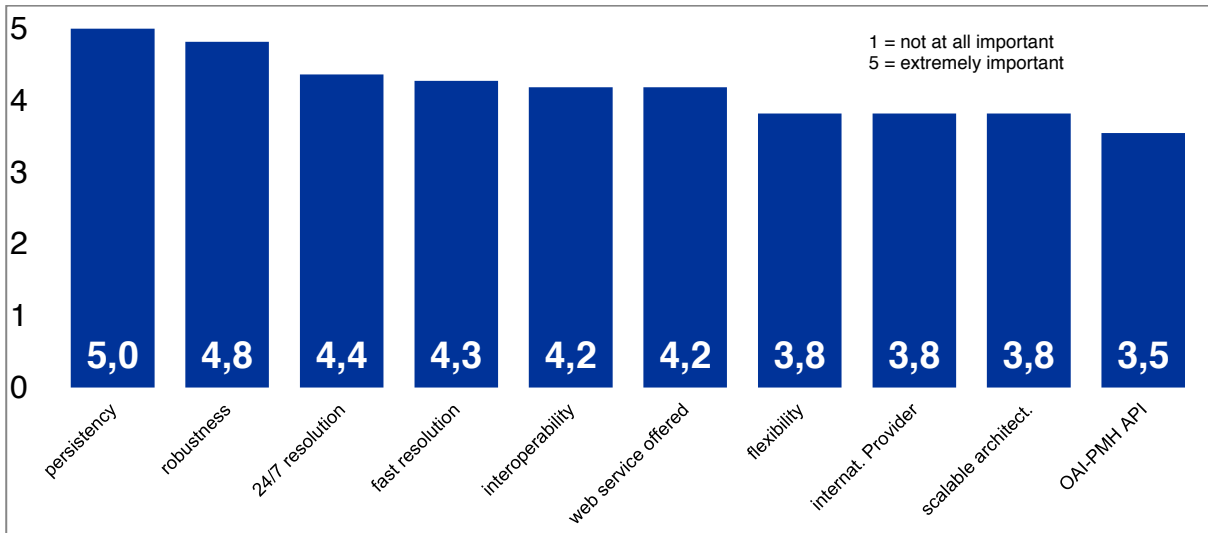
Figur 2 – General Expectations: Authority & Credibility: Question 6 (ALL): Please indicate how important each of the following **authority and credibility issues** is for your organization?

There is only one issue concerning “metadata” which is considered most important concerning “metadata” (see also Figure 3), which is “provision of descriptive metadata” ( $\bar{\varnothing} = 4.0$ ). The other issues are “offered metadata is machine and human readable” ( $\bar{\varnothing} = 3.9$ ), “possibility to search in metadata” ( $\bar{\varnothing} = 3.7$ ), “multiple possibilities to transfer metadata (to the PID Service Provider)” ( $\bar{\varnothing} = 3.1$ ), “metadata is discipline specific” ( $\bar{\varnothing} = 2.8$ ).



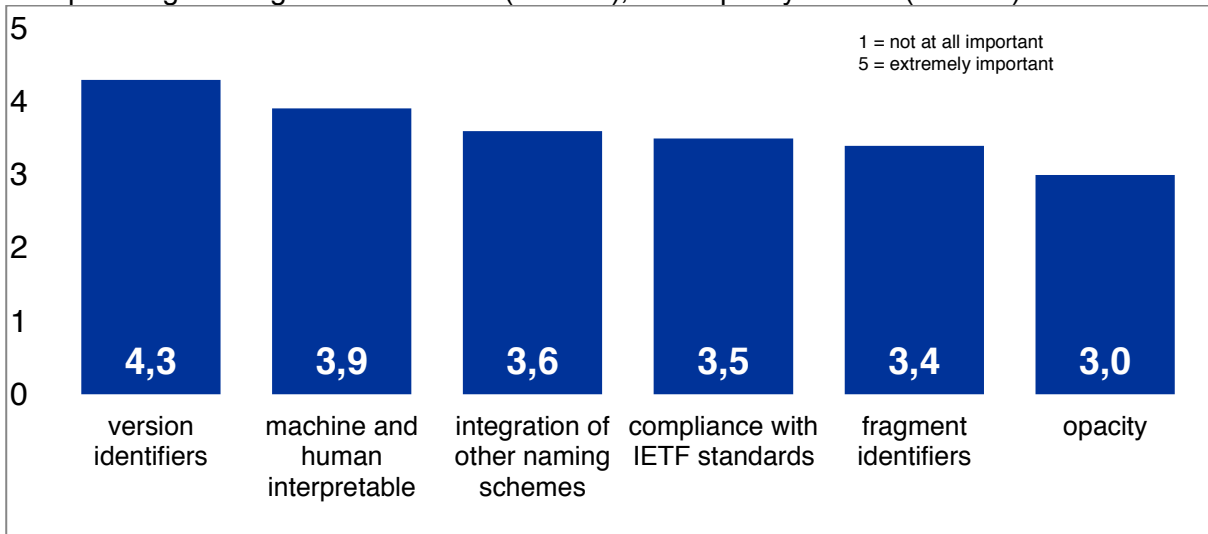
Figur 3 – General Expectations: Metadata: Question 6 (ALL): And indicate how important each of the following **metadata issues** is for your organization, when considering a PID system?

Concerning “architecture and infrastructure” issues, the calculated average in Figure 4 below shows, that the most important issues are “persistence” ( $\bar{\varnothing} = 5.0$ ), “robustness” ( $\bar{\varnothing} = 4.8$ ), “24/7 availability of resolution service” ( $\bar{\varnothing} = 4.4$ ), “fast resolution service” ( $\bar{\varnothing} = 4.3$ ), “interoperability of PID schemes among each other” ( $\bar{\varnothing} = 4.2$ ) and “web service offered” ( $\bar{\varnothing} = 4.2$ ). The issues with an average below 4.0 are “flexibility” ( $\bar{\varnothing} = 3.8$ ), “international PID Service Provider” ( $\bar{\varnothing} = 3.8$ ), “scalable architecture of PID service” ( $\bar{\varnothing} = 3.8$ ), and “OAI-PMH API in place” ( $\bar{\varnothing} = 3.5$ ).



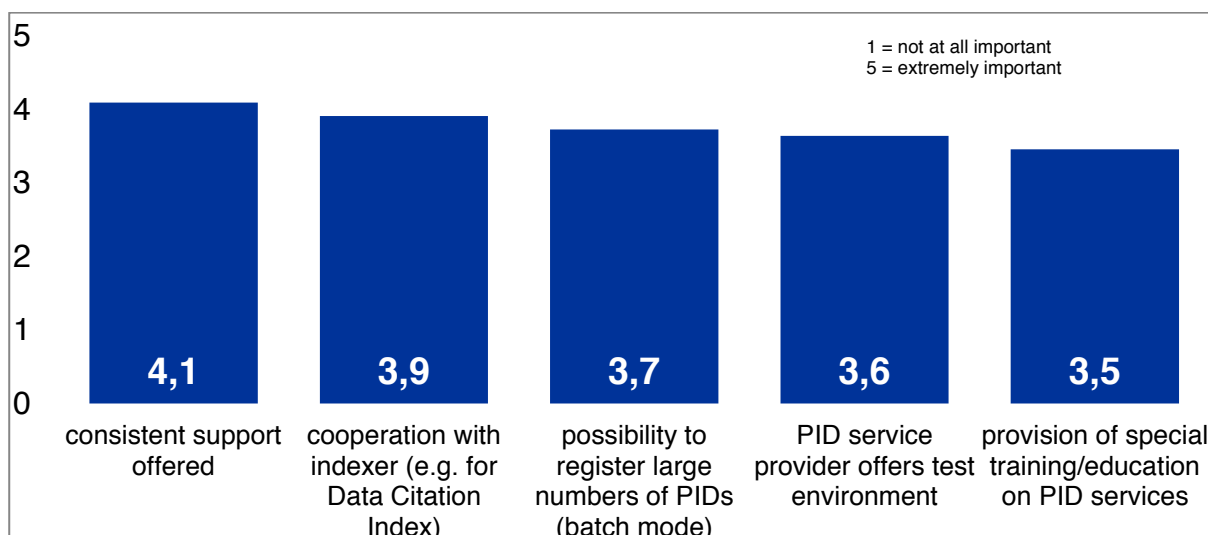
Figur 4 – General Expectations: Architecture & Infrastructure: Question 6 (ALL): And indicate how important each of the following **architecture and infrastructure issues** is for your organization, when considering a PID system?

As shown in Figure 5 below, there is only one issue concerning “PID syntax” considered most important, which is “syntax accepts usage of version identifiers” (Ø = 4.3). The other issues are “PID is machine and human interpretable” (Ø = 3.9), “the integration of other naming schemes should be possible” (Ø = 3.6), “PID syntax complies with IETF standards” (Ø = 3.5), “PID syntax accepts usage of fragment identifiers” (Ø = 3.4), and “opacity of PID” (Ø = 3.0).



Figur 5 – General Expectations: PID Syntax: Question 6 (ALL): And indicate how important each of the following **PID syntax issues** is for your organization, when considering a PID system?

Only one issue concerning “additional technologies” has an average equal to or above 4.0 and can hence be considered most important: “consistent support offered by PID Service Provider” (Ø = 4.1). As shown in Figure 5 below, the other issues are “cooperation with indexer (e.g. for Data Citation Index)” (Ø = 3.9), “possibility to register large numbers of PID in a kind of batch mode” (Ø = 3.7), “PID Service Provider offers test environment” (Ø = 3.6) and “provision of special training/education on PID services” (Ø = 3.5).



Figur 5 – General Expectations: Additional Technologies: Question 6 (ALL): And indicate how important each of the following **technological aspects** is for your organization, when considering a PID system?

1.4. Metadata connected to PID (Question 7 and 8, see appendix). The survey ended with two open questions. The answers show, that the CESSDA SP consider different information necessary, which should be covered by metadata associated with the PID. In general there is a dissent between the respondents, if a PID system itself should cover metadata or not. DANS answered, that a PID system itself should only cover minimal metadata or no metadata at all; the metadata for the CESSDA resources should be provided by CESSDA via additional services. SND would like metadata that provides full citation information and GESIS would like standard metadata on study level. NSD thinks metadata such as “name”, “abstract”, “concepts associated with the dataset” and “information for cataloguing of sets” should be provided. ADP thinks information on “ID”, “type of material”, “language” and “version” should be contained in the metadata. LiDA would like the following metadata associated with a PID: “Title(s)”, “abstract”, “Keywords: topics”, “PID producers” and “type: survey data, historical data, quantitative or qualitative data”.

Quite different answers were provided to the second open question on potential concerns about a common CESSDA Policy. They show that many different opinions and concerns need to be considered for the CESSDA PID Policy (and any other CESSDA policy for that matter). DANS’ concerns are on the instrumentality of the PID and PID Policy; they should focus on the end user. GESIS and FSD consider the interoperability between different PID systems as very important (FSD wants to work with URN, but it is also possible, that it might adopt another PID system additionally). NSD worries mainly about financial aspects and ADP about the flexibility of the system. FORS thinks that CESSDA should not centrally impose a PID system since some archives already have their own national solutions.

## 2. Expert Interviews on PID systems

The qualitative expert interviews were conducted from October 19<sup>th</sup> 2015 to November 13<sup>th</sup> 2015. GESIS interviewed three different PID experts from CESSDA whose institutes act as a service provider for PID. The first interview took place October 19<sup>th</sup>, 2015. The interviewee was Brigitte Hausstein from GESIS namely from the da|ra service, which provides DataCite DOI names.<sup>5</sup> The second interview took place on November 5<sup>th</sup> 2015 and was conducted with Birger Jerlehag and Iris Alfredsson from SND, which also provides DataCite DOI names. The last interviewee was Maarten Hoogerwerf from DANS. DANS is a Service Provider for URN:NBN in The Netherlands. The interview was conducted on the 13<sup>th</sup> of November 2015.

The main topics of interest of the expert interviews concern the criteria for a common CESSDA PID Policy and its contents.

### 2.1 Criteria for a common CESSDA PID Policy

In order to reference, cite and locate data, the use of PID is a prerequisite. Therefore, the basic statement of the CESSDA Policy must demand the use of PID.

There also needs to be a guideline that ensures CESSDA SP assign PID as far as possible in a similar manner. Furthermore, the policy should describe the benefits of the use of PID.

The experts named different quality criteria for the policy:

- The policy should be short (one page with up to seven principles)
- It needs to be written in an understandable language to ensure everybody, not just PID experts and technical persons, can understand and make sense of it
- The focus of the policy should be targeted at the end-user.

Therefore, every piece of the policy should be related to what it adds to the end-users of CESSDA and it should not be about technicalities. According to the experts' opinions the policy should be on a high and more general level. A CESSDA PID Policy can only be effective, if it is supported by the CESSDA board and therefore binding. Furthermore, it needs to be agreed on by all the CESSDA SP. In order to keep the policy up to date, feasible and applicable, it needs to be maintained and revised on a regular basis. The compliance of the CESSDA SP to the CESSDA PID Policy needs to be monitored to assure it is effective (this could be a task undertaken by the established CESSDA PID Task Force). When implementing the CESSDA PID Policy the diversity of the CESSDA SP needs to be taken into account and reflected within the policy. It would be feasible to prioritize the different requirements contained by the policy and determine which of them are mandatory, recommended or optional. Since some of the CESSDA SP already use varying PID systems, the policy must allow the use of different systems. Additionally, it needs to be aligned with other PID policies (e.g. from CLARIN) and naturally with other CESSDA policies.

### 2.2. Contents of the common CESSDA PID Policy


Concerning the contents of the policy the experts came up with a (not exhaustive) list of principles. One principle should address the durability of the identified objects. There should be a definition for what is meant by "persistency" within the CESSDA context. Other issues that concern the durability are the questions of pre-assignment of PID, as well as movement and deletion of identified objects. Further principles concern the versioning and granularity. For the issue of granularity the experts recommended identification on the study level. The policy should also include principles on fragmentation, relations and linking. It should also be addressed that the CESSDA SP should use PID systems, which are compatible with each other. Technology issues – like the possibility to resolve the PID 24/7 needs to be ensured and that the PID system needs to be internationally accepted as well as trustworthy – also have to be part of the policy. An issue that needs to be considered for the policy is, whether the objects considered should be restricted to datasets or if other kinds of resources should be taken into account as well.

### 2.3 Further issues discussed:

As within the quantitative survey the experts disagreed on the fact whether there should be metadata provided with a PID. SND as well as GESIS advocate the provision of metadata with the PID (if possible DDI compatible), in order to facilitate locating data on different levels and to support the development of further CESSDA services. On the other hand DANS endorses the

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<sup>5</sup> da|ra Website: <http://www.da-ra.de/>



independence of identification services and object-related metadata. When considering the idea to establish one common CESSDA PID Service the experts agreed that even though such a service on CESSDA level would be able to take into account the different needs and capacities of the CESSDA SP and it could ensure that they use the service in the same level and quality – such a service would not be feasible. It would be costly, difficult to realize and it might also interfere with the national solutions for persistent identification, which are already used by some of the CESSDA Service Providers. The interviewees came up with a large number of quality criteria for persistent identifiers. Those are: PID should be easy to use, opaque, machine resolvable, compatible, providing the ability to deal with the provenance of the identified objects and offered by a stable, functioning, robust, trustworthy, transparent (e.g. by providing the policy of the service online), up to date, long-ranging, flexible, global and internationally accepted system, which is interoperable with other PID systems. The system does not need to be specific for the social sciences it could be community-overarching and it must meet the needs of the CESSDA SP. The service should be low in costs in general (work efficiency) and also financeable for those applying it. Technical support for the users should be offered. In case metadata is offered with the PID, it should be open (CC-0). There are different reasons for the experts to use PID in general and their preferences for the chosen system. DANS, which uses URN:NBN as well as the DOI system, employs DOI names for citation and URN:NBN for infrastructural purposes. SND decided to adopt the DOI system in order to be able to reference objects, to give credit to the creators of datasets and for citation purposes. The main interests of GESIS in using DOI names are citation, referencing, visibility and findability of data, linking of data with publications, the improvement of the offered service of GESIS Data Archive and the benefits and advantages of possible future technical scenarios. When asked what the next steps that need to be undertaken towards the CESSDA PID Policy should be, the experts answered that a CESSDA PID Task Force should be established. In order to find the lowest common denominator for the CESSDA PID Policy all CESSDA SP need to be included. Some of the CESSDA SP are in need of more information on PID systems and special training (which could be provided by the planned CESSDA Virtual Center of Competency). The general policy needs to be drafted and if the time allows for it, implementation guidelines as well as Best Practice guidelines should be outlined as well.

Appendix: Quantitative Questionnaire:

**CESSDA-Questionnaire on PID**

The persistent identification of CESSDA Service Providers' data holdings requires more attention. While some ERICs achieved practical and administrative successes (e.g. CLARIN), CESSDA still lacks a common approach to PID services use. To bridge this gap GESIS and contributing partners - DANS and SND - have the task of preparing administrative guidelines for persistent identifiers within CESSDA. The outcome of this task will lay the groundwork for the development of a common CESSDA PID Policy. To accomplish this we wish to involve all CESSDA members from the very beginning. We ask for your help obtaining an overview of the different CESSDA stakeholders' needs and problems as relates to a common CESSDA PID policy.

This questionnaire is for all CESSDA member organizations. It builds on the DASISH and DwB projects' previous efforts and seeks to determine the current status quo for PID usage and demands related to a common PID policy within CESSDA.

We kindly ask you to answer the following questionnaire (which takes about ten to fifteen minutes). Deadline is October 25, 2015.

If you have any questions or remarks, please don't hesitate to contact [Kerrin.Borschewski@gesis.org](mailto:Kerrin.Borschewski@gesis.org)

**Question 1) ALL**

a) Please enter the name of your organization: \_\_\_\_\_

b) Does your organization use persistent identifiers (other than internal identifiers) for its data holdings?

- Yes (continue with question 2)
- No (continue with question 4)

**Question 2) USER**

a) Please indicate which of the persistent identifier(s) your organization uses (for its data holdings), and how satisfied your organization is with (each of) your used persistent identifier(s):

	completely dissatisfied		neutral		completely satisfied	not used
ARK	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
DOI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Handle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PURL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
URN:NBN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 1: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 2: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 3: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b) Your organization registers the (different) PID with which PID registration service provider?

ARK: _____	<input type="radio"/>
DOI: _____	<input type="radio"/>



Handle: _____	<input type="radio"/>
PURL: _____	<input type="radio"/>
URN:NBN: _____	<input type="radio"/>
Other 1: _____	<input type="radio"/>
Other 2: _____	<input type="radio"/>
Other 3: _____	<input type="radio"/>
<b>c) To the best of your knowledge, your organization started using (each of) the PID system(s) in: please provide the <b>year</b> in 4 digits, e.g. '2010'</b>	
	<input type="radio"/>
ARK: Year _____	<input type="radio"/>
DOI: Year _____	<input type="radio"/>
Handle: Year _____	<input type="radio"/>
PURL: Year _____	<input type="radio"/>
URN:NBN: Year _____	<input type="radio"/>
Other 1: Year _____	<input type="radio"/>
Other 2: Year _____	<input type="radio"/>
Other 3: Year _____	<input type="radio"/>
	<input type="radio"/>

**Question 3) USER**

**a)** Is your organization considering adopting another PID system (for its data holdings)?

Yes

No (*continue with question 6*)

**b)** If “Yes” (in 3a): Which PID system(s) is your organization considering (for its data holdings)?

(multiple answers are possible)

ARK

DOI

Handle

PURL

URN:NBN

Other 1: \_\_\_\_\_

Other 2: \_\_\_\_\_

Other 3: \_\_\_\_\_

**c)** If “Yes” (in 3a):

Would it/they be as a **substitute** for or as an **addition** to the PID system(s) your organization currently uses or **both**?

**Substitute** for **one of** the currently used PID systems (in case your organization uses more than one PID system)

**Substitute** for **part of** the currently used PID systems (in case your organization uses more than one PID system)

**Substitute** for the currently used PID system(s) **entirely**

In **addition** to currently used PID system(s)

Still remains to be decided

**Question 4) NON-USER**

**a)** Is your organization considering the adoption of one or more PID systems (for its data

holdings)?

- Yes
- No (*continue with question 3 nonuser*)

**b) If “Yes” (in 4a):** Which PID system(s) is your organization considering (for its data holdings)?  
(multiple answers are possible)

- ARK
- DOI
- Handle
- PURL
- URN:NBN
- Other 1: \_\_\_\_\_
- Other 2: \_\_\_\_\_
- Other 3: \_\_\_\_\_

**Question 5) NON-USER**

Think about your organization: how significant are the following **needs** when considering introducing a PID system?

	not at all significant		neutral		extremely significant
Sufficient technical support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient human resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient time resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust in PID systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient Information on PID system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special education/training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Existing PID systems need to be more attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of metadata for the resources that need to be identified	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower work input	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PID are a key issue for the organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 1: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 2: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other 3: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 6) ALL**

The following questions ask about the general expectations of your organization concerning PID systems. Please indicate how important each of the following **authority and credibility issues** is for your organization?

<b>Authority and Credibility</b>	not at all important		neutral		extremely important
Trust in PID authority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service offered by a public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

institution					
PID system is widely used and accepted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business model: commercial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business model: cost recovery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business model: free of charge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And indicate how important each of the following <b>metadata issues</b> is for your organization, when considering a PID system?					
<b>Metadata</b>	not at all important		neutral		extremely important
Provision of descriptive metadata	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offered metadata is machine and human readable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possibility to search in metadata	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multiple possibilities to transfer metadata (to the PID service provider)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metadata is discipline specific	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And indicate how important each of the following <b>architecture and infrastructure issues</b> is for your organization, when considering a PID system?					
<b>Architecture and Infrastructure</b>	not at all important		neutral		extremely important
Persistency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Robustness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
International PID service provider	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interoperability of PID schemes among each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24/7 availability of resolution service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast resolution service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scalable architecture of PID service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
OAI-PMH API in place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web service offered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And indicate how important each of the following <b>PID syntax issues</b> is for your organization, when considering a PID system?					
<b>PID Syntax</b>	not at all important		neutral		extremely important
Opacity of PID	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PID syntax accepts usage of version identifiers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PID syntax accepts usage of fragment identifiers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PID syntax complies with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

IETF standards					
The integration of other naming schemes should be possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PID is machine and human interpretable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And indicate how important each of the following <b>technological aspects</b> is for your organization, when considering a PID system?					
<b>Additional Technologies</b>	not at all important		neutral		extremely important
PID service provider offers test environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possibility to register large numbers of PID in a kind of batch mode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperation with indexer (e. g. for Data Citation Index)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provision of special training/education on PID services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consistent support offered by PID service provider	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 7) ALL**

What is the position most prevalent at your organization, which information needs to be covered by metadata that is connected to a PID?

**Question 8) ALL**

Please note here any further remarks or concerns you have about a common CESSDA PID Policy:

## Qualitative Interview Guide

**1** *The following questions will be about the common CESSDA PID Policy that we are working on.*

### **Common CESSDA PID Policy**

- 1) What are the expectations for [name of organization] for a common CESSDA PID Policy?
  - Which are the quality criteria for a common CESSDA PID Policy?
  
- 2) What must be covered by such a PID Policy?
  - Which aspects must be taken into account in the PID Policy?
  - What is important for your organization concerning a common CESSDA PID Policy?
  - Which are the quality criteria for PID that need to be covered in the CESSDA PID Policy?
  
- 3) What are the reservations [name of organization] has regarding a common CESSDA PID Policy?
  - What are your organizations concerns?
  
- 4) What does your organization think about establishing a CESSDA PID taskforce that is officially endorsed by the CESSDA Board? Would your organization be interested in joining and contributing to such a taskforce?
  
- 5) What should be the next steps towards a common CESSDA PID Policy?

**2** *Now, since [name of organization] is an experienced Service Provider for PID, I would like to gain knowledge about [name of organization]s experiences and ideas concerning the “best practices” of PID services. Therefore, the next questions are:*

### **Best Practices**

- 1) What would [name of organization] consider “best practices” for PID services?
  - What must be considered offering a PID service?
  - What would you consider are the needs of your clients?
  - Do you provide any guidelines / best practice papers for your clients?
  
- 2) What would [name of organization] consider “best practices” for a CESSDA PID service?
  - And what are the expectations for [name of organization] for a CESSDA PID service?
  - Is one Service for all CESSDA members possible/necessary? – WHY?
  - What are the needs of the CESSDA members (concerning a CESSDA PID service)?

What must be covered by such a common PID service?

  - Which features must be entailed?
  - What is important for your organization concerning a CESSDA PID service?
  - Which are the quality criteria for PID that need to be covered in the CESSDA PID service?

3) What are the reservations [name of organization] has regarding a CESSDA PID service?

- What are the concerns your organization has?

### 3a PID in general

*Okay, let's continue with some general questions on PID*

- 1) a) Why did [name of organization] decide to adopt [name of PID1]s as PID?
- Why does your organization use **PID**?
  - What purposes and expectations/requirements does the organization have concerning the usage of **PID**?
  - Where any aspects you would consider important for a PID missing in the PID system you chose?


b) Only if applicable: (e.g. in the case of DANS, that uses URN:NBNs and DOIs):

Why did [name of organization] decide to adopt [name of PID2]

- Why does [name of organization] use more than one **PID system**?
  - What are the differences between the different **PID systems** that [name of organization] has adopted, concerning their usage?
- c) What was or is your organizations long-term strategy in order to integrate the different **PID systems**?
- How did you connect the different PID / How do you intend to connect the different PID?
  - What were the different workflows? / How are the different workflows planned?
  - How do you work with the different syntaxes? / How do you intend to work with the different syntaxes?
  - What are the conflicts you have to deal with and how do you deal with them?
- d) What are [name of organization]'s needs concerning the usage of **PID**?
- e) Which suggestions for improvements does [name of organization] have for **PID** in general?

### 3b Only if organization considers the adoption of a different/new PID. Adoption of new PID

- 1) In the quantitative questionnaire [name of organization] received from us, [name of organization] stated, that it considers a different PID as [a substitution of / an addition to] the one[s] it currently uses. Is that still the case?
- 2) What are the reasons for [name of organization] to consider a different PID system to the one(s) it currently uses?
- 3) If: ADDITION:  
→What is your organizations long-term strategy in order to integrate the different PID systems?
- How does your organization intend to connect the different PID
  - How are the different workflows planned?
  - How does your organization intend to work with the different syntaxes?
  - What are the conflicts your organization has to deal with and how does



your organization deal with them?

If: SUBSTITUTION:

→What is your organizations long-term strategy in order to manage this transfer?

- How does your organization intend to transfer the old PID into the new system?
- How are the different workflows planned
- How does your organization intend to work with the different syntaxes?

4) What are the conflicts your organization has to deal with and how does it deal with them?

**4 Further questions or remarks**

Now, do you have any further questions or remarks?