INTEROPERABILITY SOLUTIONS FOR EUROPEAN PUBLIC ADMINISTRATIONS MONITORING AND EVALUATION

D03.05 ACTION 1.17 UTILITY MONITORING REPORT

Framework Contract n° DI/07173

31st July 2015

DISCLAIMER

EXECUTIVE SUMMARY

The purpose of this section is to provide an overview of the key findings of the Utility monitoring and evaluation activity.

The survey for measuring the Utility of Action 1.17 – A Reusable INSPIRE Reference Platform (ARE3NA), was launched during the first semester of 2015. The goal of the survey was to understand and identify the ARE3NA usefulness and the benefits that the users might gain from it.

The survey was designed in the EUSurvey tool and distributed to 30 ARE3NA stakeholders by e-mail. The survey was launched on the 12th May 2015 and was active until the 17th of June 2015. There were two reminders sent out – the first one on the 3rd of June and the second one on the 15th of June 2015.

In total, 25 stakeholders responded to the survey. Several survey statements were targeted at particular respondent groups, therefore eleven statements have a small number of responses. Consequentially, the results of these statements can be biased and do not present statistically valid results and have only an informative purpose.

The survey result analysis (see Table 1) shows the Action 1.17 Utility scores. The **Utility score** is **3.88** (scale: 1…5).

The detailed score calculation process is described in Section 4.1.3.

TABLE 1 – ACTION 1.17 SURVEY RESULTS

Evaluation criteria	Mean[1]	Mode[1]	StDev[1]	StErr[1]
Action 1.17 Utility	**3.88**	**4**	**0.91**	**0.05**

Conclusions: The findings present that the majority of the respondents agree that ARE3NA helps to increase the interoperability among public authorities and it promotes the reuse of the INSPIRE technical components.

However, there is a need for drawing a special attention to the access control test-bed's potential to improve the cross border and cross-sector interoperability and awareness within the national INSPIRE stakeholders at member states.

[1] See Glossary (Section 6.4)

REVISION HISTORY

Date	Version	Description	Authors	Approved by
31-July-2015	1.00	For QA purpose, the accepted draft version is changed into the final version. No other changes are implemented.	CGI-Accenture	
09-July-2015	0.20	Initial version updated	CGI-Accenture	
25-June-2015	0.10	Initial version	CGI-Accenture	

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1. INTRODUCTION

CGI-Accenture has been requested to deliver a Utility Monitoring and Evaluation Report as part of the execution of the ISA programme monitoring (Technical Annex for Specific Contract N° 52 under Framework contract N°DI/07173).

Based on the scope of the Specific Contract, the Utility is to be measured for thirteen actions. This report covers the Utility measurement for the Action 1.17 – A Reusable INSPIRE Reference Platform (ARE3NA).

This document is divided into the following sections:

- **Section 1** provides an overview of the structure of the report;
- **Section 2** provides an overview of the methodology used for the Utility measurements;
- **Section 3** summarises the collected data;
- **Section 4** focuses on the survey result overview and data analysis;
- **Section 5** provides the survey conclusions and recommendations;
- **Section 6** appendix includes:
    - Statement mapping per dimensions;
    - Detailed list of respondents' functions/positions;
    - Raw data export;
    - Glossary.

2. SURVEY METHODOLOGY

A common methodology was developed for all surveys that enables the comparison between the different survey results. This section explains how the Utility is measured and what dimensions the Action 1.17 covered. The last part of this section describes the architecture of the survey.

2.1. UTILITY

'Utility' is defined as the **extent to which the effects (impact) of an ISA action correspond with the needs, problems and issues to be addressed by the ISA programme[2].**

Utility is measured using an adaptation of the VAST (**V**alue **AS**sessment **T**ool) methodology[3], considering an additional dimension related to the Global and Intermediate objectives of the ISA programme.

The assessment is based on the following dimensions:

- **Value for the European Union:** Looks at the assessment of the external value of an information system or an IT project. External value of a project is considered to be any benefit which is delivered outside the Commission itself. This external aspect is divided into two parts: society (Social Value) and individuals (External Users' Value);
- **Value for the European Commission:** Encompasses criteria through which the internal value of an IT project can be assessed. All factors that can contribute to the improvement of the EC performance should be considered as delivering an internal value;
- **Value for cross-border and cross-sector interoperability:** Covers all aspects of how an information system or an IT project can support the efficient and effective cross-border and cross-sector interaction between the European Public Administrations.

The ISA programme is mainly focusing on the value for the cross-border and cross-sector interoperability dimension. In this context, the value for EC is considered to have a lower weight than other dimensions. Consequently, less focus is put on this dimension.

2.2. SURVEY ARCHITECTURE

In order to measure the Utility, a respondent is supposed to grade the statements based on his/her level of agreement. A 5-point Likert scale[4] is used as a grading scale, ranging from 'Strongly Agree' to 'Strongly Disagree' with an additional 'No Opinion/Not Applicable' option.

For each presented statement the user is able to provide his/her opinion and suggestions for improvement in a free text field in case he/she rated the statement with 'Disagree' or 'Strongly Disagree'.

As the responses collected are depending on the users' profiles, the user is requested to answer skip logic questions with either 'Yes' or 'No' and afterwards more questions are presented if the respondent selected 'Yes'.

[2] DG BUDG (2004), "Evaluating EU activities, a practical guide for the Commission services"
[3] More information can be found on: http://ec.europa.eu/dgs/informatics/vast/
[4] A Likert Scale is a widely used scaling method developed by Rensis Likert. Likert scale refers to the use of an ordinal 4- or 5-point rating scale with each point anchored or labeled.

3. Action 1.17 Survey Data Summary

Table 2 gives an overview on the survey start date, end date, the sample size, the amount of responses collected and the survey launching method.

TABLE 2 – ACTION 1.17 SURVEY DATA SUMMARY

Action 1.17 - ARE3NA	
Start date:	12/05/2015
End date:	17/06/2015
Sample size:	30
Amount of responses:	25
The survey launching method:	E-mail notification

4. Action 1.17 Survey Results and Analysis

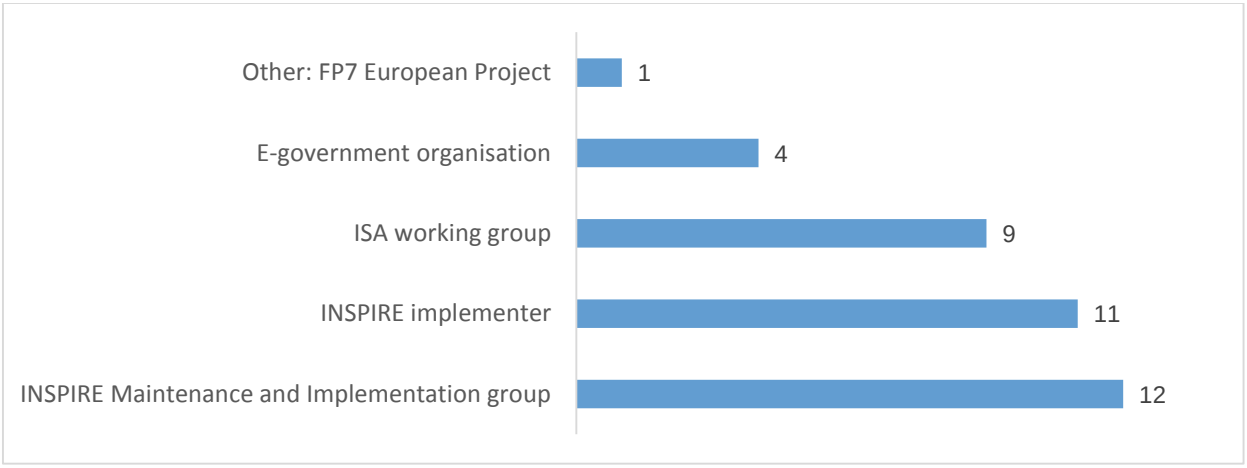
This section aims to provide a detailed overview and survey result analysis on the survey response range at the following levels:

- **Overall Survey Response** shows a complete survey response range collection covered by the Action 1.17 Utility survey;
- **Result Analysis According to the Evaluation Criteria** provides a score calculation by evaluation criteria dimensions and the overall evaluation criteria score.

4.1. Action 1.17 Survey Result Overview

Figure 1 shows the classification of the respondents' groups. 18 respondents were members of only one group and seven belonged to several groups. Almost half (12) of the respondents were from the INSPIRE Maintenance and Implementation group, eleven were INSPIRE implementers and nine belonged to the ISA working group.

FIGURE 1 – ACTION 1.17 SURVEY RESPONDENTS' GROUPS



Based on the responses received from 19 different countries, Figure 2 shows the respondents' familiarity with the ARE3NA platform and the list of countries those respondents came from. The percentage underneath the familiarity criteria is the total amount of respondents for that particular answer. The majority, twelve respondents (48%), had only heard about ARE3NA, eight (32%) had used some of the ARE3NA tools and five (20%) had participated in the ARE3NA activities. The numbers in brackets next to the countries indicate the amount of people where there were more than one respondent.

FIGURE 2 – ACTION 1.17 FAMILIARITY CRITERIA AND CORRESPONDING COUNTRIES

I have only heard about it (48%)	Belgium Cyprus Finland (2) France Germany Greece Hungary Luxembourg Netherlands Spain (2)
I have used some of the ARE3NA tools (32%)	Bulgaria (2) Denmark Estonia Netherlands Norway Slovakia United Kingdom
I have participated in the ARE3NA activities (20%)	Czech Republic Germany Italy (2) Slovenia

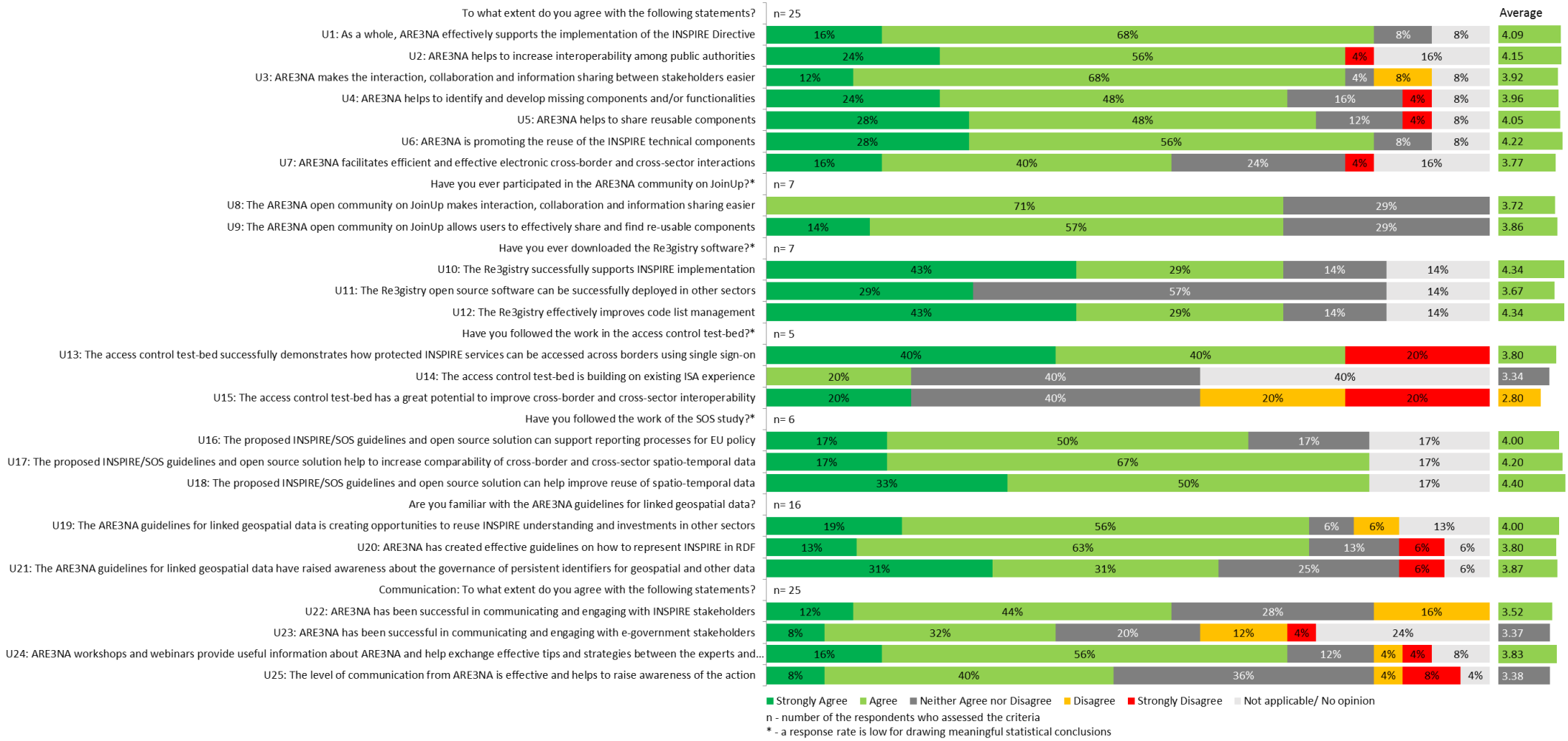
4.1.1. Overall Survey Response Overview

Figure 3 gives an overview of the overall survey results. The statements were graded based on the users who responded 'Yes' to the skip logic question (a question that directs a respondent to a series of questions based on their responses).

Questions marked with an asterisk (*) had a small number of responses, therefore the results of these statements can be biased and do not present statistically valid results and have only an informative purpose.

One of the respondents was considerably negative in his/her responses and chose the "Strongly Disagree" answer option for almost all the statements without providing any comments or feedback. This has caused the statement scores to be lowered and has impacted the overall result. The profile of this respondent was analyzed, and the Action 1.17 Project Officer commented that they are not aware of such a stakeholder and that the respondent might not have been properly objective.

FIGURE 3 – OVERALL ACTION 1.17 SURVEY RESPONSE OVERVIEW



n - number of the respondents who assessed the criteria
* - a response rate is low for drawing meaningful statistical conclusions

4.1.2. Comments and Recommendations

Table 3 gives a detailed overview of the comments received for Action 1.17 once the respondent chose a 'Disagree' or 'Strongly Disagree' option to evaluate the survey statement.

TABLE 3 – ACTION 1.17 USER COMMENTS

The Access Control Test-bed	A main and unsolved issue is the management of identity providers. So far there is no obvious use case that would justify the wide implementation of Identify Providers that are needed for a working federation.
ARE3NA Communication Activities	It has been successful to some extent. However this hold true mostly for people/stakeholders, that are quite engaged in the INSPIRE process on the EU level anyway. ARE3NA has so far not managed to get much attention/understanding for the broad group of national INSPIRE stakeholders. ARE3NA seems to be mostly an INSPIRE show. Participation from the eGovernment side seems to be very rare. Webinars are great, however the awareness of the specific actions/outcomes is low in the member states. One reason might be that the coordination between the ISA actions and the ISA working group on spatial information and services was not very intense in the past.

Table 4 presents a list of events that respondents suggested the ARE3NA should participate next year.

TABLE 4 – SUGGESTED EVENTS FOR ARE3NA

Events	GEOSS Events, INSPIRE Conference, EDF.
	eGov, hackathons and similar related events on national level.
	Semic 2016, INSPIRE conference, ISA WG on Spatial Data and Services venus, MIG-T when applicable.
	INSPIRE 2016 Conference; ISA SIS WG meetings and further dissemination activities at the national level; thematic events - esp. those regarding the INSPIRE Annex III themes (awareness raising on the implementation supporting tools).
	INSPIRE Conference; Potential EuroGeographics INSPIRE KEN Workshops.
	SEMIC, INSPIRE Conference, agenda INSPIRE expert group MIG P.
	SEMIC.

Table 5 presents respondents' recommendations for an improvement of the ARE3NA platform.

TABLE 5 – ACTION 1.17 RESPONDENTS' RECOMMENDATIONS

Recommendations for an Improvement	Focus on use case driven pilots to action developments into the practice.
	publicise more ARE3NA.
	ARE3NA is working on enabling a European Infrastructure, which means interoperability in Europe. Another level of complexity is to enable global interoperability, global vocabularies for Geographic information components. For example, global rules for creating RDF vocabularies from UML models (according to ISO 19150-2). Practical experience should be made available in global communities. Which means a more practical role in international standardization when applicable.
	ARE3NA aims to provide a variety of tools. Nevertheless, if this would happen too late or without being well addressed at the national level, the MSs (obliged to deliver their INSPIRE tasks) will need to find their own ways/tools and the principle and momentum of re-using might be lost.

	Current GIS software are not able to handle INSPIRE data. ARE3NA should deal with this issue in order to foster user take-up.
	Unfortunately I was not able testing yet, but in further activities would be possible to give feedback.
	More best practises.
Other Recommendations	There are several “titles” used as concerns this action. Therefore it is not easy to find in one place all the products and up-to-date info related to ARE3NA (or at least links to them).
	Support projects concretely implementing INSPIRE interoperability and tools such as ELF.
	You did good job on that project! It has been a pleasure working with you and I look forward to possible future opportunities.

4.1.3. Result Analysis According to the Evaluation Criteria

This section presents the method used for Utility score calculations. In order to obtain more accurate results, mean, mode, standard deviation and standard error values have been calculated.

Before performing the calculations, the 5-point Likert scale range values need to be interpreted as numeric values, i.e.:

- 5 – Strongly Agree;
- 4 – Agree;
- 3 – Neither Agree nor Disagree;
- 2 – Disagree;
- 1 – Strongly Disagree;
- 0 – No opinion/ not applicable **was not considered for the calculation**.

Mean and mode are used in statistics and hereafter in this report for measuring the Utility evaluation criteria:

- The **mean**[5] (average) is the most popular measure of location or central tendency; has the desirable mathematical property of minimizing the variance. To get the mean, you add up the values[6] for each case and divide that sum by the total number of cases;
- **Mode** refers to the most frequent, repeated or common value[6] in the quantitative or qualitative data. In some cases it is possible that there are several modes or none.

In order to measure the degree of dispersion of a probability distribution, i.e. how far the data points are from the average, the standard deviation and standard error values are applied:

- **Standard deviation**[7] shows the spread, variability or dispersion of scores in a distribution of scores. It is a measure of the average amount the scores in a distribution deviate from the mean. The more widely the scores are spread out, the larger the standard deviation;
- **Standard error**[7] is the standard deviation of the sampling distribution of a statistic. It is a measure of sampling error; it refers to error in estimates due to random fluctuations in samples. It goes down as the number of cases goes up. The smaller the standard error, the better the sample statistic is as an estimate of the population parameter – at least under most conditions.

Based on the survey methodology presented in Section 2, the statements were mapped to two Utility dimensions. The detailed mapping of the statements is described in Section 6.1.

[5] Dictionary of statistics & methodology: a nontechnical guide for the social sciences (page 226).
[6] 5-point Likert scale range values are interpreted as numeric values like described in Section 4.1.3.
[7] Dictionary of statistics & methodology: a nontechnical guide for the social sciences (page 375).

4.1.3.1. RESULT ANALYSIS ON STATEMENT LEVEL

Table 6 presents the detailed analysis of each utility statement.

TABLE 6 – ACTION 1.17 UTILITY SCORE DETAILS ON STATEMENT LEVEL

Statement	Mean	Mode	StDev	StErr	Dimension
U1: As a whole, ARE3NA effectively supports the implementation of the INSPIRE Directive	4.09	4	0.52	0.11	Value for EU Value for cross-border and cross-sector interoperability
U2: ARE3NA helps to increase interoperability among public authorities	4.15	4	0.86	0.19	Value for EU Value for cross-border and cross-sector interoperability
U3: ARE3NA makes the interaction, collaboration and information sharing between stakeholders easier	3.92	4	0.74	0.16	Value for cross-border and cross-sector interoperability
U4: ARE3NA helps to identify and develop missing components and/or functionalities	3.96	4	0.93	0.20	Value for cross-border and cross-sector interoperability
U5: ARE3NA helps to share reusable components	4.05	4	0.93	0.20	Value for cross-border and cross-sector interoperability
U6: ARE3NA is promoting the reuse of the INSPIRE technical components	4.22	4	0.60	0.13	Value for cross-border and cross-sector interoperability
U7: ARE3NA facilitates efficient and effective electronic cross-border and cross-sector interactions	3.77	4	0.95	0.21	Value for EU Value for cross-border and cross-sector interoperability
U8: The ARE3NA open community on JoinUp makes interaction, collaboration and information sharing easier*	3.72	4	0.49	0.19	Value for cross-border and cross-sector interoperability
U9: The ARE3NA open community on JoinUp allows users to effectively share and find re-usable components*	3.86	4	0.70	0.27	Value for cross-border and cross-sector interoperability
U10: The Re3gistry successfully supports INSPIRE implementation*	4.34	5	0.82	0.34	Value for EU
U11: The Re3gistry open source software can be successfully deployed in other sectors*	3.67	3	1.04	0.43	Value for EU Value for cross-border and cross-sector interoperability
U12: The Re3gistry effectively improves code list management*	4.34	5	0.82	0.34	Value for cross-border and cross-sector interoperability
	3.80	4	1.65	0.74	Value for EU

Statement	Mean	Mode	StDev	StErr	Dimension
U13: The access control test-bed successfully demonstrates how protected INSPIRE services can be accessed across borders using single sign-on*					Value for cross-border and cross-sector interoperability
U14: The access control test-bed is building on existing ISA experience*	3.34	3	0.58	0.34	Value for EU Value for cross-border and cross-sector interoperability
U15: The access control test-bed has a great potential to improve cross-border and cross-sector interoperability*	2.80	3	1.49	0.67	Value for EU Value for cross-border and cross-sector interoperability
U16: The proposed INSPIRE/SOS guidelines and open source solution can support reporting processes for EU policy*	4.00	4	0.71	0.32	Value for EU
U17: The proposed INSPIRE/SOS guidelines and open source solution help to increase comparability of cross-border and cross-sector spatio-temporal data*	4.20	4	0.45	0.20	Value for cross-border and cross-sector interoperability
U18: The proposed INSPIRE/SOS guidelines and open source solution can help improve reuse of spatio-temporal data*	4.40	4	0.55	0.25	Value for cross-border and cross-sector interoperability
U19: The ARE3NA guidelines for linked geospatial data is creating opportunities to reuse INSPIRE understanding and investments in other sectors	4.00	4	0.79	0.21	Value for EU Value for cross-border and cross-sector interoperability
U20: ARE3NA has created effective guidelines on how to represent INSPIRE in RDF	3.80	4	0.95	0.25	Value for cross-border and cross-sector interoperability
U21: The ARE3NA guidelines for linked geospatial data have raised awareness about the governance of persistent identifiers for geospatial and other data	3.87	4	1.13	0.30	Value for cross-border and cross-sector interoperability
U22: ARE3NA has been successful in communicating and engaging with INSPIRE stakeholders	3.52	4	0.92	0.19	Value for cross-border and cross-sector interoperability
U23: ARE3NA has been successful in communicating and engaging with e-government stakeholders	3.37	4	1.07	0.25	Value for cross-border and cross-sector interoperability
U24: ARE3NA workshops and webinars provide useful information about ARE3NA and help exchange effective tips and strategies between the experts and stakeholders	3.83	4	0.94	0.20	Value for cross-border and cross-sector interoperability
U25: The level of communication from ARE3NA is effective and helps to raise awareness of the action	3.38	4	1.02	0.21	Value for cross-border and cross-sector interoperability

* - The response rate is too low for drawing meaningful statistical conclusions.

4.1.3.2. Overall Utility Result Analysis

Table 7 gives an overview on the analysis of each Utility dimension as well as a total score for the Utility evaluation criteria. In order to make the total Utility score calculation more accurate, a weighted mean was used. The dimension weight is defined based on the amount of statements within specific dimension.

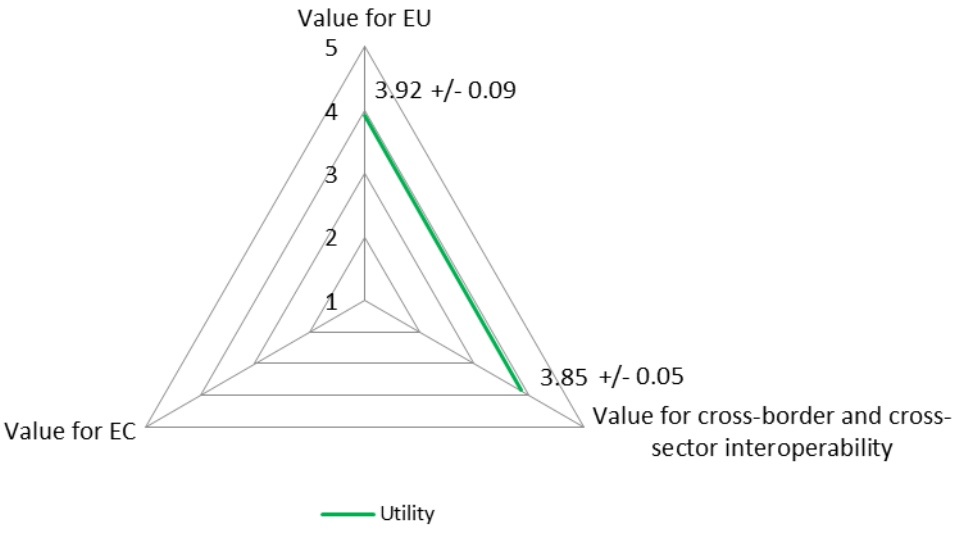
The weighted average of the Utility is **3.88** with the standard deviation equal to **0.91**, on a scale from 1 to 5, where 5 is the maximum (best) value.

TABLE 7 – ACTION 1.17 UTILITY SCORE DETAILS

	MEAN	MODE	StDev	StErr	Dimension	Weight
Per dimension	3.92	4	0.91	0.09	Value for EU	0.30
	3.85	4	0.92	0.05	Value for cross-border and cross-sector interoperability	0.70
	-	-	-	-	Value for EC	-
Utility	**3.88**[8]	**4**	**0.91**	**0.05**		

Figure 4 gives a visual overview on the Utility coverage per two predefined dimensions.

FIGURE 4 – ACTION 1.17 UTILITY AGGREGATION



[8] Weighted mean is a procedure for combining the means of two or more groups of different sizes; it takes the sizes of the groups into account when computing the overall or grand mean.

4.2. STRENGTHS AND WEAKNESSES

This section provides an overview of the strong and weak aspects of ARE3NA revealed by the Action 1.17 Utility survey.

Due to the fact that the Action 1.17 has begun its work relatively recently, many of its activities had a small number of stakeholders and it was expected that several aspects of the ARE3NA platform were not properly acknowledged and might be projected in lower results. In particular, the statements referring to the access-control test-bed (U13, U14, U15).

Prioritization of the statements were made based on the mean value of each statement. Statements with nearby mean values were grouped into three different clusters to which the following colours have been applied:

- A Green colour applies to statements that refer to the ARE3NA's strong aspects;
- A Grey colour applies to statements that refer to the aspects that require attention. For those statements respondent opinion was spread proportionally between 'Agree' and 'Disagree';
- An Orange colour applies to a statement that refers to the ARE3NA's weak aspect.

It has been noted that statements referring to the access-control test-bed were expected to have a lower response rate and lower resulting scores as the topic does not necessarily directly address survey respondents that may be less interested in the barriers varying access control solutions can create to data usage (rather than data publication).

Table 8 presents an overview of the aspects that are strong, require attention or are weak of the Reusable INSPIRE Reference Platform in the context of Utility.

It has been noted that statements referring to the access-control test-bed were expected to have a lower response rate and lower resulting scores as the topic does not necessarily directly address survey respondents that may be less interested in the barriers varying access control solutions can create to data usage (rather than data publication).

TABLE 8 – ACTION 1.17 UTILITY STRENGTHS AND WEAKNESSES

Utility statement	Mean	Dimension
U18: The proposed INSPIRE/SOS guidelines and open source solution can help improve reuse of spatio-temporal data*	4.40	Value for cross-border and cross-sector interoperability
U10: The Re3gistry successfully supports INSPIRE implementation*	4.34	Value for EU
U12: The Re3gistry effectively improves code list management*	4.34	Value for cross-border and cross-sector interoperability
U6: ARE3NA is promoting the reuse of the INSPIRE technical components	4.22	Value for cross-border and cross-sector interoperability

Utility statement	Mean	Dimension
U17: The proposed INSPIRE/SOS guidelines and open source solution help to increase comparability of cross-border and cross-sector spatio-temporal data*	4.20	Value for cross-border and cross-sector interoperability
U2: ARE3NA helps to increase interoperability among public authorities	4.15	Value for EU Value for cross-border and cross-sector interoperability
U1: As a whole, ARE3NA effectively supports the implementation of the INSPIRE Directive	4.09	Value for EU Value for cross-border and cross-sector interoperability
U5: ARE3NA helps to share reusable components	4.05	Value for EU Value for cross-border and cross-sector interoperability
U16: The proposed INSPIRE/SOS guidelines and open source solution can support reporting processes for EU policy*	4.00	Value for cross-border and cross-sector interoperability
U19: The ARE3NA guidelines for linked geospatial data is creating opportunities to reuse INSPIRE understanding and investments in other sectors, including e-government	4.00	Value for EU Value for cross-border and cross-sector interoperability
U4: ARE3NA helps to identify and develop missing components and/or functionalities	3.96	Value for cross-border and cross-sector interoperability
U3: ARE3NA makes the interaction, collaboration and information sharing between stakeholders easier	3.92	Value for cross-border and cross-sector interoperability
U21: The ARE3NA guidelines for linked geospatial data have raised awareness about the governance of persistent identifiers for geospatial and other data	3.87	Value for cross-border and cross-sector interoperability
U9: The ARE3NA open community on JoinUp allows users to effectively share and find re-usable components*	3.86	Value for cross-border and cross-sector interoperability
U24: ARE3NA workshops and webinars provide useful information about ARE3NA and help exchange effective tips and strategies between the experts and stakeholders	3.83	Value for cross-border and cross-sector interoperability
U13: The access control test-bed successfully demonstrates how protected INSPIRE services can be accessed across borders using single sign-on*	3.80	Value for EU Value for cross-border and cross-sector interoperability
U20: ARE3NA has created effective guidelines on how to represent INSPIRE in RDF	3.80	Value for cross-border and cross-sector interoperability
U7: ARE3NA facilitates efficient and effective electronic cross-border and cross-sector interactions	3.77	Value for EU Value for cross-border and cross-sector interoperability

Utility statement	Mean	Dimension
U8: The ARE3NA open community on JoinUp makes interaction, collaboration and information sharing easier*	3.72	Value for cross-border and cross-sector interoperability
U11: The Re3gistry open source software can be successfully deployed in other sectors*	3.67	Value for EU
		Value for cross-border and cross-sector interoperability
U22: ARE3NA has been successful in communicating and engaging with INSPIRE stakeholders	3.52	Value for cross-border and cross-sector interoperability
U25: The level of communication from ARE3NA is effective and helps to raise awareness of the action	3.38	Value for cross-border and cross-sector interoperability
U23: ARE3NA has been successful in communicating and engaging with e-government stakeholders	3.37	Value for cross-border and cross-sector interoperability
U14: The access control test-bed is building on existing ISA experience*	3.34	Value for EU
		Value for cross-border and cross-sector interoperability
U15: The access control test-bed has a great potential to improve cross-border and cross-sector interoperability*	2.80	Value for EU
		Value for cross-border and cross-sector interoperability

* - The response rate is too low for drawing meaningful statistical conclusions.

5. CONCLUSIONS AND RECOMMENDATIONS

The objective of the survey was to evaluate the Utility of Action 1.17 – A Reusable INSPIRE Reference Platform (ARE3NA). The following conclusions and recommendations have been drawn based on the analysis performed and are only interpretation that can be biased due to the fact that several statements had a small number of responses.

- Most of the survey respondents agreed that ARE3NA helps to increase interoperability among public authorities and promotes the reuse of the INSPIRE technical components;
- The findings indicate that the access control test-bed's potential to improve cross-border and cross-sector interoperability is not fully recognised;
- Respondent opinions are divided whether the current level of communication from ARE3NA is effective and helps to raise awareness of the ISA action.

Based on the conclusions drawn, CGI-ACN adduces the following recommendations:

- It is recommended to carry out ARE3NA awareness raising activities for national INSPIRE stakeholders in the member states;
- It is suggested to take into consideration and participate in the events presented in Table 4.

6. APPENDIX

6.1. STATEMENT MAPPING TO DIMENSIONS

In order to measure the Utility of the Action 1.17 and calculate the average score of each dimension, all survey statements were mapped to dimensions according to the evaluation criteria.

Table 9 shows the statement mapping according to the three Utility dimensions.

TABLE 9 – ACTION 1.17 STATEMENT MAPPING TO DIMENSIONS

Question	ID	Value for EU	Value for EC	Value for cross-border and cross-sector interoperability	Count of areas covered by question
As a whole, ARE3NA effectively supports the implementation of the INSPIRE Directive	U1	✓		✓	2
ARE3NA helps to increase interoperability among public authorities	U2	✓		✓	2
ARE3NA makes the interaction, collaboration and information sharing between stakeholders easier	U3			✓	1
ARE3NA helps to identify and develop missing components and/or functionalities	U4			✓	1
ARE3NA helps to share reusable components	U5			✓	1
ARE3NA is promoting the reuse of the INSPIRE technical components	U6			✓	1
ARE3NA facilitates efficient and effective electronic cross-border and cross-sector interactions	U7	✓		✓	2
The ARE3NA open community on JoinUp makes interaction, collaboration and information sharing easier	U8			✓	1
The ARE3NA open community on JoinUp allows users to effectively share and find re-usable components	U9			✓	1
The Re3gistry successfully supports INSPIRE implementation	U10	✓			1
The Re3gistry open source software can be successfully deployed in other sectors	U11	✓		✓	2
The Re3gistry effectively improves code list management	U12			✓	1
The access control test-bed successfully demonstrates how protected INSPIRE services can be accessed across borders using single sign-on	U13	✓		✓	2
The access control test-bed is building on existing ISA experience	U14	✓		✓	2
The access control test-bed has a great potential to improve cross-border and cross-sector interoperability	U15	✓		✓	2
The proposed INSPIRE/SOS guidelines and open source solution can support reporting processes for EU policy	U16	✓			1

Question	ID	Value for EU	Value for EC	Value for cross-border and cross-sector interoperability	Count of areas covered by question
The proposed INSPIRE/SOS guidelines and open source solution help to increase comparability of cross-border and cross-sector spatio-temporal data	U17			✓	1
The proposed INSPIRE/SOS guidelines and open source solution can help improve reuse of spatio-temporal data	U18			✓	1
The ARE3NA guidelines for linked geospatial data is creating opportunities to reuse INSPIRE understanding and investments in other sectors, including e-government	U19	✓		✓	2
ARE3NA has created effective guidelines on how to represent INSPIRE in RDF	U20			✓	1
The ARE3NA guidelines for linked geospatial data have raised awareness about the governance of persistent identifiers for geospatial and other data	U21			✓	1
ARE3NA has been successful in communicating and engaging with INSPIRE stakeholders	U22			✓	1
ARE3NA has been successful in communicating and engaging with e-government stakeholders	U23			✓	1
ARE3NA workshops and webinars provide useful information about ARE3NA and help exchange effective tips and strategies between the experts and stakeholders	U24			✓	1
The level of communication from ARE3NA is effective and helps to raise awareness of the action	U25			✓	1
# of questions covering dimension		10	0	23	
% of questions covering dimension		40%	0%	92%	

6.2. Detailed List of Respondents' Functions/Positions

Table 10 shows a detailed list of answers that were provided by the respondents indicating their position.

TABLE 10 – ACTION 1.17 DETAILED LIST OF RESPONDENTS' FUNCTIONS/POSITIONS

Positions	Director of National Centre for Geographic Information
	Scientific Officer / Consultant
	Project coordinator
	Head of Cartography Branch, INSPIRE NCP
	GeoICT specialist, project manager
	Project manager
	Expert
	Consultant
	Head of Management Information Systems
	Technology and standards provider
	Responsible of service database and open data
	Senior Advisor, Project Manager
	Head of International and European Affairs
	IT specialist
	Policy advisor at the Ministry of Infrastructure and Environment and the INSPIRE contact point
	Project Manager
	GI and INSPIRE coordinator
	National contact point
	National contact point for NIFO

6.3. Raw Data Export

The attached file provides the survey result export.

RawDataExport.xls

6.4. GLOSSARY

- The mean[5] (average) is the most popular measure of location or central tendency; has the desirable mathematical property of minimizing the variance. To get the mean, you add up the values for each case and divide that sum by the total number of cases;

- Mode refers to the most frequent, repeated or common value in the quantitative or qualitative data. In some cases it is possible that there are several modes or none;

- Standard deviation[7] shows the spread, variability or dispersion of scores in a distribution of scores. It is a measure of the average amount the scores in a distribution deviate from the mean. The more widely the scores are spread out, the larger the standard deviation;

- Standard error[7] is the standard deviation of the sampling distribution of a statistic. It is a measure of sampling error; it refers to error in estimates due to random fluctuations in samples. It goes down as the number of cases goes up. The smaller the standard error, the better the sample statistic is as an estimate of the population parameter – at least under most conditions;

- 'Utility' is defined as the extent to which the effects (impact) of an ISA action correspond with the needs, problems and issues to be addressed by the ISA programme[2];

- A Likert Scale is a widely used scaling method developed by Rensis Likert. Likert scale refers to the use of an ordinal 4- or 5- point rating scale with each point anchored or labelled;

- Weighted mean is a procedure for combining the means of two or more groups of different sizes; it takes the sizes of the groups into account when computing the overall or grand mean.