



---

**INTEROPERABILITY SOLUTIONS FOR  
EUROPEAN PUBLIC ADMINISTRATIONS  
MONITORING AND EVALUATION  
D03.05/D03.06 ACTION 1.9 PERCEIVED QUALITY AND  
UTILITY MONITORING REPORT**

Framework Contract n° DI/07173

31<sup>st</sup> July 2015

## DISCLAIMER

The information and views set out in this publication are those of the author(s) and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this document. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

© European Commission, 2015

## EXECUTIVE SUMMARY

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

The survey for measuring the Perceived Quality and Utility of Action 1.9 – eSignature tools to support cross-border access to eServices for businesses, was launched during the first semester of 2015. The objective of the survey was to evaluate the Perceived Quality and Utility of the eSignature tools – SD-DSS and TL-Manager among its users. More specifically, the goal of the survey was to understand to what extent the tools are user-friendly and to identify the benefits which users might gain from the using them.

The survey was designed in the EUSurvey tool and distributed by e-mail to 221 respondents from:

- Member States national administrations;
- European Agencies.

The survey was launched on the 24<sup>th</sup> of March 2015 and was active for one month until the 27<sup>th</sup> of April 2015. During this period two reminders have been sent out: the first one on the 19<sup>th</sup> of April and the second on 23<sup>rd</sup> of April 2015. In total, 33 people responded to the survey, which accounts for 15%<sup>1</sup> of the total amount of recipients.

The survey result analysis (see Table 1) shows the Action 1.9, Perceived Quality and Utility scores. The **Perceived Quality score** is **3.75** (scale: 1...5) and the **Utility score** is **4.21** (scale: 1...5).

The detailed score calculation process is described in Section 4.2.3.

**TABLE 1 – ACTION 1.9 SURVEY RESULTS**

Evaluation criteria	Mean <sup>2</sup>	Mode <sup>2</sup>	StDev <sup>2</sup>	StErr <sup>2</sup>
Action 1.9 Perceived Quality	3.75	4	0.92	0.06
Action 1.9 Utility	4.21	4	0.74	0.07

**Conclusion:** Among the respondents, the TL-Manager tool is more widely used than the SD-DSS and overall the tools are used across almost all European countries. Based on the survey data analysis, the results and effects of the eSignature tools successfully correspond with the needs, problems and issues that are to be addressed by the ISA programme.

However, there is a need for drawing special attention to the tools' reliability, support and efficiency and awareness among various countries based on the recommendations provided in Sections 4.2.1.1 and 4.2.1.2 and weaknesses presented in Section 4.3.

<sup>1</sup> The responses to the survey were received on behalf of organisations and member states, therefore the amount of responses are perceived as acceptable for this survey.

<sup>2</sup> See Glossary (Section 6.5)

## 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	
13-May-2015	0.20	Updated version	CGI-Accenture	
06-May-2015	0.10	Initial version	CGI-Accenture	

# TABLE OF CONTENTS

---

<b>1. INTRODUCTION.....</b>	<b>7</b>
<b>2. SURVEY METHODOLOGY.....</b>	<b>8</b>
2.1. PERCEIVED QUALITY.....	8
2.2. UTILITY.....	8
2.3. SURVEY ARCHITECTURE.....	9
<b>3. ACTION 1.9 SURVEY DATA SUMMARY.....</b>	<b>10</b>
<b>4. ACTION 1.9 SURVEY RESULTS AND ANALYSIS.....</b>	<b>10</b>
4.1. RESPONDENT DISTRIBUTION ANALYSIS.....	10
4.1.1. <i>Respondent Distribution by Country</i> .....	10
4.1.2. <i>Respondent Distribution by Usage</i> .....	12
4.1.3. <i>User Distribution between Tools</i> .....	13
4.2. ACTION 1.9 SURVEY RESULT OVERVIEW.....	13
4.2.1. <i>Action 1.9 Overall Survey Response Overview</i> .....	14
4.2.1.1. Respondent Feedback.....	15
4.2.1.2. Recommendations.....	15
4.2.2. <i>Result Overview According to the Evaluation Criteria</i> .....	16
4.2.2.1. Perceived Quality of the Action 1.9.....	17
4.2.2.2. Utility of the Action 1.9.....	18
4.2.3. <i>Result Analysis According to the Evaluation Criteria</i> .....	19
4.2.3.1. Perceived Quality of the Action 1.9.....	20
4.2.3.2. Utility of the Action 1.9.....	23
4.3. STRENGTHS AND WEAKNESSES OF THE eSIGNATURE TOOLS.....	25
4.3.1. <i>Perceived Quality of the Action 1.9</i> .....	25
4.3.2. <i>Utility of the Action 1.9</i> .....	27
<b>5. CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>28</b>
<b>6. APPENDIX.....</b>	<b>29</b>
6.1. STATEMENT MAPPING TO DIMENSIONS.....	29
6.2. DETAILED LIST OF RESPONDENTS' ORGANISATIONS.....	31
6.3. DETAILED LIST OF RESPONDENTS' FUNCTIONS/POSITIONS.....	31
6.4. RAW DATA EXPORT.....	32
6.5. GLOSSARY.....	33

## TABLE OF FIGURES

FIGURE 1 – RESPONDENT DISTRIBUTION BY COUNTRY .....	10
FIGURE 2 – RESPONDENT DISTRIBUTION BY COUNTRY AND USAGE.....	11
FIGURE 3 – RESPONDENT DISTRIBUTION BY USAGE.....	12
FIGURE 4 – ACTION 1.9 USER DISTRIBUTION BETWEEN TOOLS .....	13
FIGURE 5 – OVERALL ACTION 1.9 SURVEY RESPONSE OVERVIEW.....	14
FIGURE 6 – ACTION 1.9 PERCEIVED QUALITY STATEMENTS COMPARISON .....	17
FIGURE 7 – ACTION 1.9 UTILITY STATEMENTS COMPARISON .....	18
FIGURE 8 – ACTION 1.9 PERCEIVED QUALITY AGGREGATION .....	22
FIGURE 9 – ACTION 1.9 UTILITY AGGREGATION .....	24

## TABLE OF TABLES

TABLE 1 – ACTION 1.9 SURVEY RESULTS.....	3
TABLE 2 – ACTION 1.9 SURVEY DATA SUMMARY.....	10
TABLE 3 – ACTION 1.9 TOOL MAPPING BY COUNTRIES .....	11
TABLE 4 – ACTION 1.9 RESPONDENT FEEDBACK .....	15
TABLE 5 – ACTION 1.9 RECOMMENDATIONS .....	15
TABLE 6 – ACTION 1.9 PERCEIVED QUALITY SCORE DETAILS AT STATEMENT LEVEL.....	20
TABLE 7 – ACTION 1.9 PERCEIVED QUALITY SCORE DETAILS .....	21
TABLE 8 – ACTION 1.9 UTILITY SCORE DETAILS ON STATEMENT LEVEL.....	23
TABLE 9 – ACTION 1.9 UTILITY SCORE DETAILS .....	24
TABLE 10 – ACTION 1.9 TL-MANAGER TOOL PERCEIVED QUALITY STRENGTHS AND WEAKNESSES.....	25
TABLE 11 – ACTION 1.9 SD-DSS TOOL PERCEIVED QUALITY STRENGTHS AND WEAKNESSES.....	26
TABLE 12 – ACTION 1.9 TL-MANAGER UTILITY STRENGTHS AND WEAKNESSES.....	27
TABLE 13 – ACTION 1.9 SD-DSS TOOL UTILITY STRENGTHS AND WEAKNESSES .....	27
TABLE 14 – ACTION 1.9 PERCEIVED QUALITY STATEMENT MAPPING TO DIMENSION.....	29
TABLE 15 – ACTION 1.9 UTILITY STATEMENT MAPPING.....	30
TABLE 16 – ACTION 1.9 DETAILED LIST OF RESPONDENTS’ ORGANISATIONS.....	31
TABLE 17 – ACTION 1.9 DETAILED LIST OF RESPONDENT’S FUNCTIONS/POSITIONS.....	31

# 1. INTRODUCTION

---

CGI-Accenture has been requested to deliver a Perceived Quality and 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 Perceived Quality is to be measured for 9 actions and the Utility is to be measured for 13 actions. This report covers the Perceived Quality and Utility measurements for Action 1.9 – eSignature tools to support cross-border access to eServices for businesses.

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 Perceived Quality and 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' organisations;
  - Detailed list of respondents' functions/positions;
  - Raw data export;
  - Glossary.

## 2. SURVEY METHODOLOGY

---

A common methodology was developed by the previous ISA Monitoring and Evaluation contractor for all the surveys that enables comparison between the different survey results. This methodology was also applied to evaluate Action 1.9. This section explains how the Perceived Quality and Utility are measured and what dimensions are covered under each evaluation criterion. The last part of this section describes the architecture of the survey.

### 2.1. PERCEIVED QUALITY

**'Perceived Quality'** is defined as the **extent to which the outputs of an ISA action are meeting its direct beneficiaries' expectations.**<sup>3</sup>

Perceived Quality is measured using the eGovQual scale model<sup>4</sup>.

The assessment is based on the following dimensions:

- **Efficiency:** measures the degree to which the tools are easy to use;
- **Trust (Privacy):** measures the degree to which the user believes the tools are safe from intrusion and protects personal information;
- **Reliability:** measures the feasibility and speed of accessing, using, and receiving services of the tools;
- **Support:** measures the ability to get assistance when needed.

### 2.2. 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**<sup>5</sup>.

Utility is measured using an adaptation of the VAST (Value **AS**essment **T**ool) methodology<sup>6</sup>, 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;

---

<sup>3</sup> DG BUDG (2004), "Evaluating EU activities, a practical guide for the Commission services"

<sup>4</sup> eGovQual scale developed by Papadomichelaki and Mentzas (2012)

<sup>5</sup> DG BUDG (2004), "Evaluating EU activities, a practical guide for the Commission services"

<sup>6</sup> More information can be found on: <http://ec.europa.eu/dgs/informatics/vast/>



- **Value for cross-border and cross-sector interoperability:** Covers all aspects of how information system or 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, this particular survey did not focus on this dimension and there are no utility statements that cover this dimension.**

## 2.3. SURVEY ARCHITECTURE

In order to measure the Perceived Quality and Utility a respondent is supposed to grade the statements based on his/her level of agreement. A 5-point Likert scale<sup>7</sup> 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'.

---

<sup>7</sup> 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 1.9 SURVEY DATA SUMMARY

Table 2 gives an overview on the survey start date, end date, the amount of responses collected, as well as the survey launching method.

TABLE 2 – ACTION 1.9 SURVEY DATA SUMMARY

Action 1.9 - eSignature	
Start date:	24/03/2015
End date:	27/04/2015
Sample size	221
Amount of responses:	33
The survey launching method:	E-mail notification

### 4. ACTION 1.9 SURVEY RESULTS AND ANALYSIS

This section aims to provide a detailed survey analysis and to represent the results depending on the division of the eSignature tools usage within the Action 1.9 Perceived Quality and Utility evaluation criteria.

#### 4.1. RESPONDENT DISTRIBUTION ANALYSIS

##### 4.1.1. Respondent Distribution by Country

Figure 1 shows the classification of eSignature survey’s respondents according to their country. The survey respondents came from 23 different countries; 18 of which had only one respondent, and five (Germany, Denmark, Estonia, Poland and Lithuania) had two or more respondents.

FIGURE 1 – RESPONDENT DISTRIBUTION BY COUNTRY

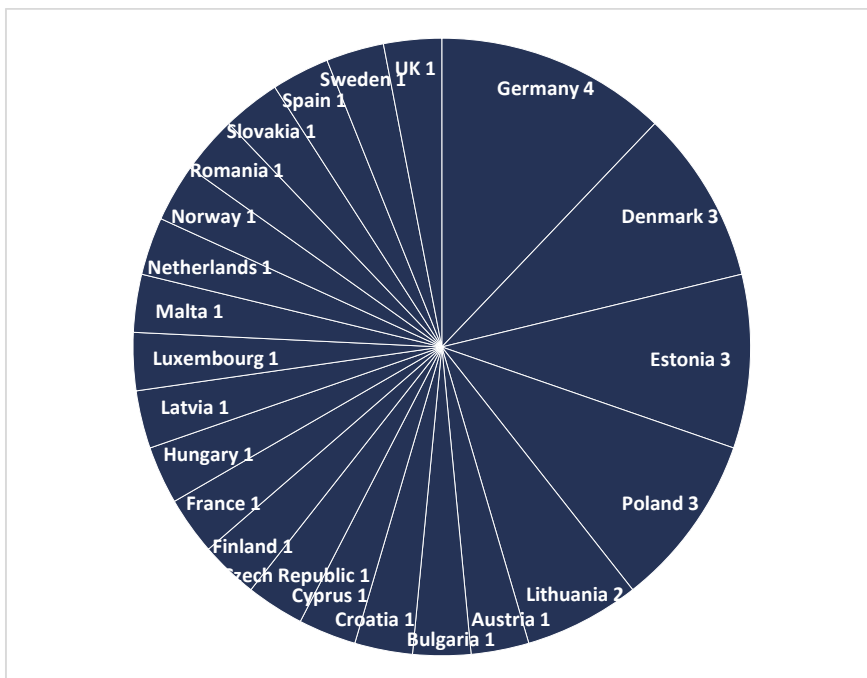


Figure 2 shows the respondent distribution by country and tool usage criteria. Among all Action 1.9 survey respondents, there were no TL-Manager and SD-DSS tool users from Norway, Hungary, Finland and Cyprus and several nonusers from Germany and Denmark.

FIGURE 2 – RESPONDENT DISTRIBUTION BY COUNTRY AND USAGE

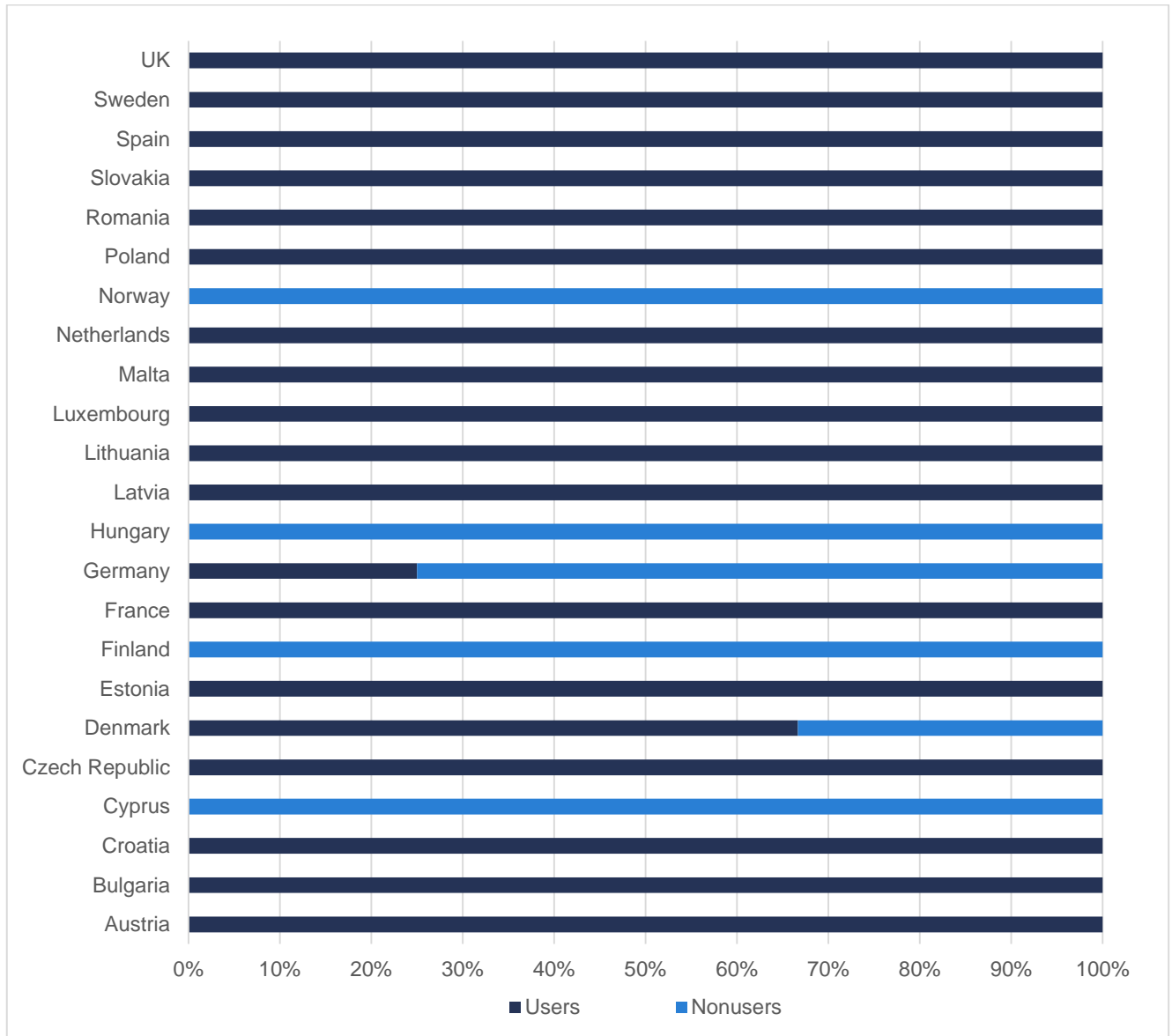


Table 3 shows the tool mapping by country. It presents which of the eSignature tools are used in which countries.

TABLE 3 – ACTION 1.9 TOOL MAPPING BY COUNTRIES

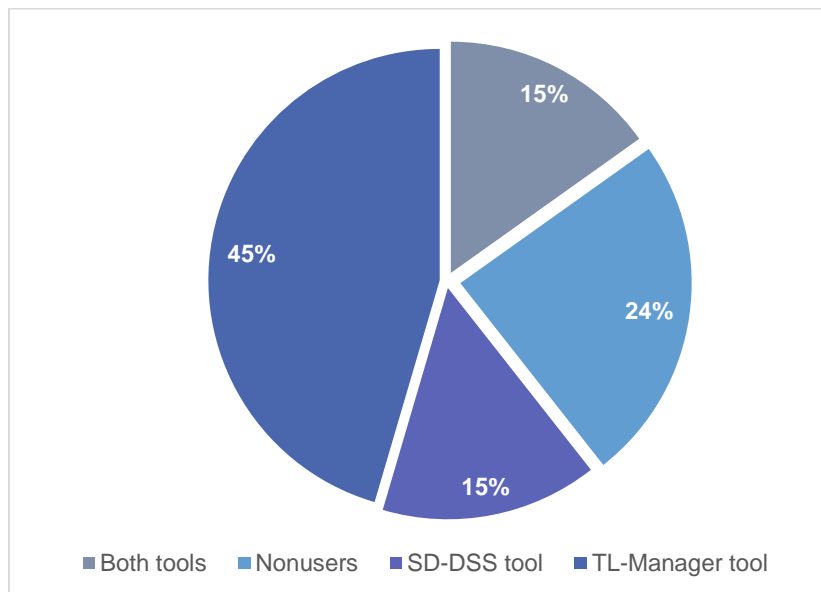
Country	TL-Manager tool	SD-DSS tool
UK	✓	
Sweden	✓	
Spain	✓	
Slovakia	✓	

Country	TL-Manager tool	SD-DSS tool
Romania	✓	✓
Poland	✓	✓
Netherlands	✓	
Malta		✓
Luxembourg	✓	
Lithuania	✓	✓
Latvia	✓	
Germany	✓	✓
France	✓	✓
Estonia	✓	
Denmark	✓	✓
Czech Republic	✓	
Croatia	✓	
Bulgaria	✓	✓
Austria	✓	✓

#### 4.1.2. Respondent Distribution by Usage

Figure 3 shows the classification of eSignature survey’s respondents by the tool usage criteria. In total 5 respondents (15%) referred to both Trusted List Manager (TL-Manager) and Digital Signature Services software (SD-DSS) tools, while 8 respondents (24%) indicated that they have never referred to any of the listed tools. The remaining respondents have referred to either the TL-Manager (45%) or SD-DSS tool (15%).

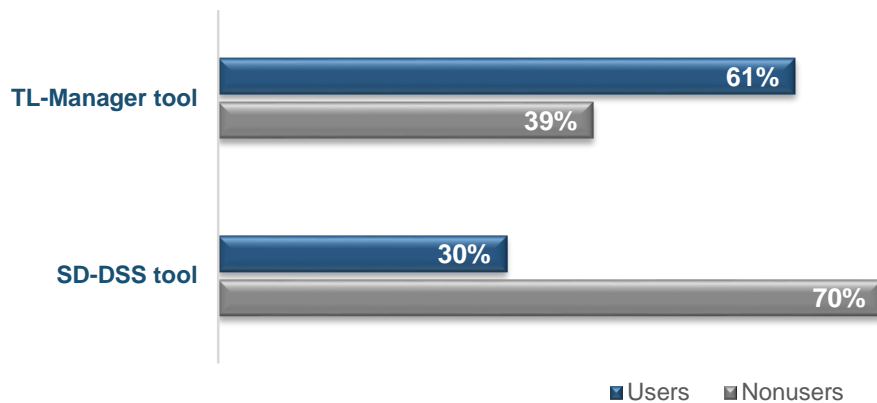
FIGURE 3 - RESPONDENT DISTRIBUTION BY USAGE



### 4.1.3. User Distribution between Tools

Figure 4 shows the classification of eSignature users by the tool they are using. The majority of respondents (61%) refers to the TL-Manager tool which is more than twice the amount of respondents who are using the SD-DSS tool.

FIGURE 4 – ACTION 1.9 USER DISTRIBUTION BETWEEN TOOLS



## 4.2. ACTION 1.9 SURVEY RESULT OVERVIEW

This section aims at providing an overview on the survey response range at the following levels:

- **Action 1.9 overall survey response overview** shows a complete survey response range collection covered by the Action 1.9 Perceived Quality and Utility survey;
- **Result overview according to the evaluation criteria** shows the survey response range per statement depending on the evaluation criteria (Perceived Quality and Utility);
- **Result analysis according to the evaluation criteria** provides a score calculation by evaluation criteria dimension and the overall evaluation criteria score.

### 4.2.1. Action 1.9 Overall Survey Response Overview

Figure 5 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).

FIGURE 5 – OVERALL ACTION 1.9 SURVEY RESPONSE OVERVIEW



#### 4.2.1.1. RESPONDENT FEEDBACK

Table 4 gives a detailed overview of the feedback received for Action 1.9. It should be noted that this feedback was provided once the user chose a 'Disagree' or 'Strongly Disagree' option to evaluate the survey statement.

**TABLE 4 – ACTION 1.9 RESPONDENT FEEDBACK**

TL-Manager Tool	TL-Manager is a great initiative from EU but "product management and client support" needs polishment.
	Selection of status starting date should be flexible (calendar function). Service status should refer to service, not to several certificates used by the service since the Status is granted for a service not for a certificate. Certificates should be bundled under a certain service so that changes of the status of a service affect all used (linked to the service) certificates.
SD-DSS Tool	The main problem with the SD-DSS tool is that it does not offer a customisable interface. In order to adopt the SD-DSS tool we need to understand the all the specific calls an implement and new interface according to our requirements.
	Code quality, and especially support has improved radically over the years.  The verification results are misleading, in particular with showing "indeterminate" results on basic formats. As there is no POE requirement (lie timestamps) in the legal basis, giving such validation results render the tool of little use.

#### 4.2.1.2. RECOMMENDATIONS

Table 5 gives a detailed overview of the recommendations received for Action 1.9.

**TABLE 5 – ACTION 1.9 RECOMMENDATIONS**

TL-Manager Tool	About TL manager, there is a lot of possibilities for creating TL and specific Options for TSP, they are explained in ETSI standard, but some of them are hard to understand. Maybe there is a possibility to add tooltips in Human language with real examples for configuration options?
	TL-manager is quite good, but not always correctly working after standard changes.
	Readily available user guide and/or clear instructions on applying changes to the TL-Manager.
	The 'Open File' dialog box in TL Manager should default to file type "XML" and not "All Files".
	signing PDF/A TL in TL manager would be nice feature. Now we have no tools to do PDF/A TL signing @ PADES-Base level.
	Some options in the TL-manager tool is straightforward. But there seem to be a lot of options. It would be nice to be invited to a course where the tool and the options in the tool would be explained.
	Having tested the new Release Candidate of TL Manager, we expect the next version (4.1.8) to allow the UK to populate its TSL with Accredited services. When resource constraints allow, we expect to be able to configure a PC to act as a DSS server to test examples of digital signatures and, thus, to be able to give some support and advice to prospective UK organisations looking to support signatures based on QCs.
	If I select list issue and next update date it will be better to insert system time instead 0:00:00.
We do not use these tools.	
SD-DSS Tool	Mobile approach.
	Get real. Mass software (e.g. Adobe Acrobat or some Microsoft tool) would kill all good intentions

	Signing in browser without Java applet.
	The tool should provide an easy to the end user, off-the shelf software component to sign eDocument that works on variety of OS (e.g. Windows, Linux, MacOS).
	Create an EU-standard for locating the PKCS#11 library; users should be able to sign a doc without knowing such technical details.
	The SD-DSS tool is tailored to smartcards / local key-stores. Mobile signature solutions enjoy increasing takup (e.g. by far more mobile signature users in Austria than Smartcard signature users). Without inclusion of such solutions the tool has a limited applicability.
	Since personally I'm not using SD-DSS, but according to some screenshots, which I saw, it would be helpful for common users to have a more user-friendly GUI.
	Since version 4.1.0 there has been huge improvement. We have no issues at all with version 4.1.7. Ways of improvement: add a signing facility to sign the prettyprint HR version obtained with the ConformanceChecker ETSI tool, for those countries like SPAIN who wish to do so and obtain a basic PAdES. That would be most useful.
	ETSI-plugtest sort-of environments shall be permanent.
	Functionality for signing document should be more important than verification of eSignature (to verify the signature, the document must be signed first).
	To take steps to raise awareness among user from public and private sector. Thank you..
	As generally known, eSignature in Germany was not successful.
	A hint: as an administration we use special service providers for public administration, these providers take care that we can accept signatures from other countries. So we have no contact directly, but indirect over our service providers to the eSignature tools. Perhaps this hint helps you to qualify my answers.
	We do not use these tools.

#### 4.2.2. Result Overview According to the Evaluation Criteria

This section presents a comparison of the received replies depending on the evaluation criteria.

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.**

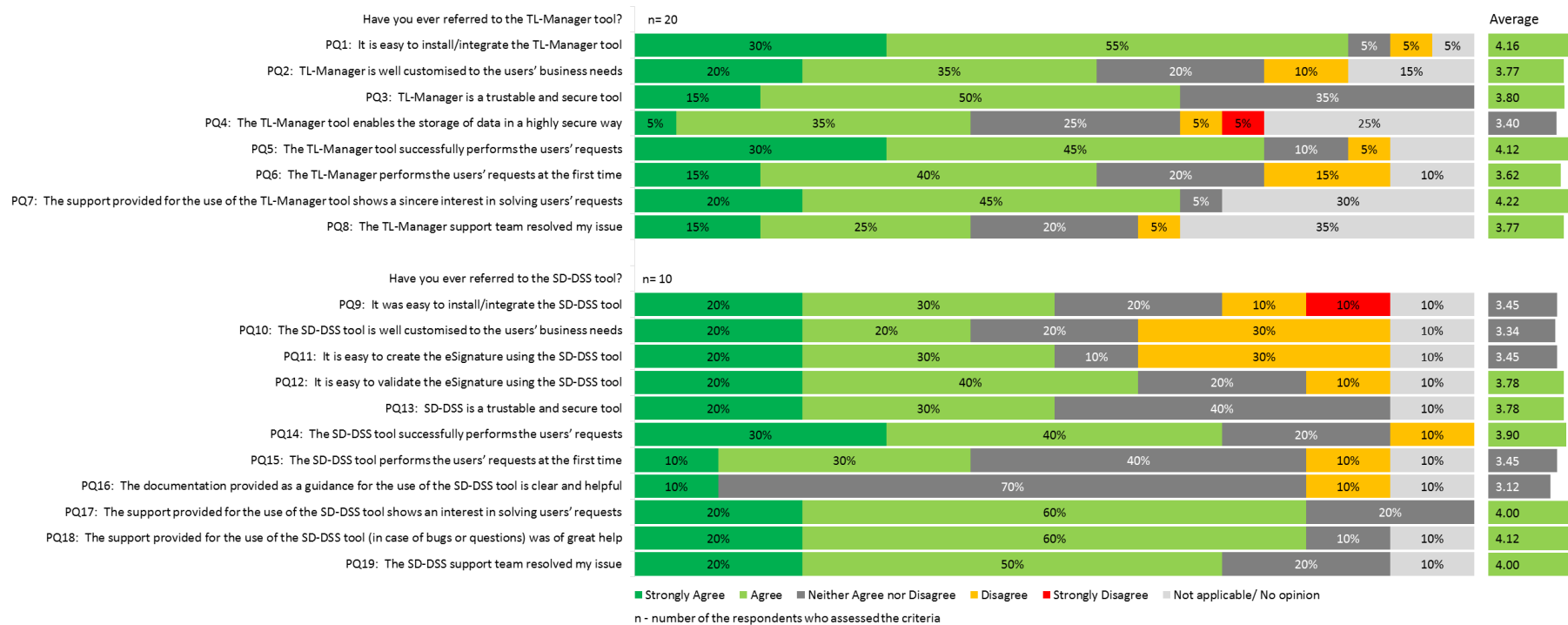


4.2.2.1. PERCEIVED QUALITY OF THE ACTION 1.9

This subsection gives an overview on the Perceived Quality results of Action 1.9 – eSignature tools SD-DSS and TL-Manager.

Figure 6 gives an overview on the Perceived Quality results for both eSignature tools. 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).

FIGURE 6 – ACTION 1.9 PERCEIVED QUALITY STATEMENTS COMPARISON

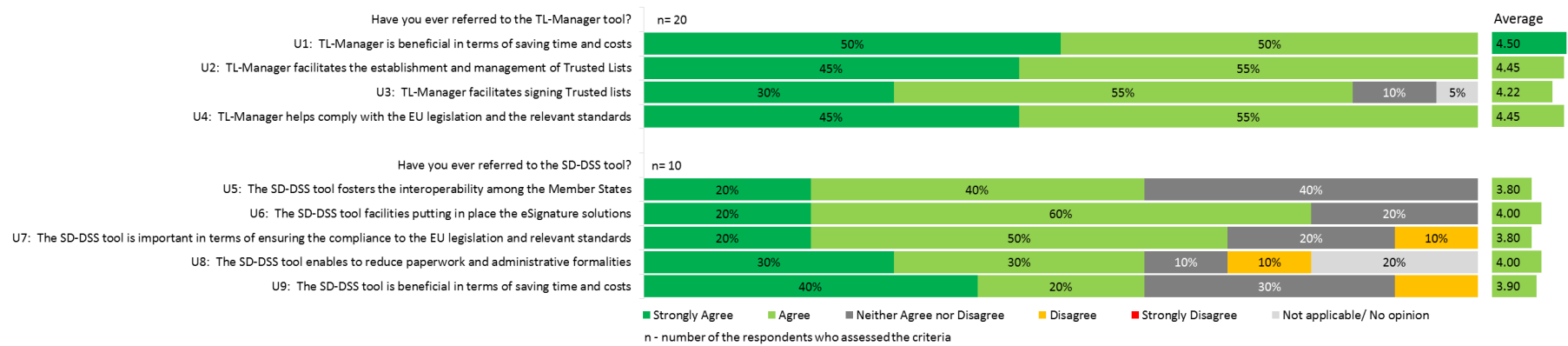


4.2.2.2. UTILITY OF THE ACTION 1.9

This subsection gives an overview of the Utility results of Action 1.9 – eSignature tools SD-DSS and TL-Manager.

Figure 7 gives an overview of the utility results for both eSignature tools. The statements were graded based on those users who responded ‘Yes’ to the skip logic question (a question that directs a respondent to a series of questions based on their responses).

FIGURE 7 – ACTION 1.9 UTILITY STATEMENTS COMPARISON



### 4.2.3. Result Analysis According to the Evaluation Criteria

This section aims at presenting the method used for Perceived Quality and Utility score calculation. In order to obtain more accurate results, mean, mode, standard deviation and standard error values have been calculated.

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

- The **mean**<sup>8</sup> (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<sup>9</sup> for each case and divide that sum by the total number of cases;
- **Mode** refers to the most frequent, repeated or common value<sup>9</sup> 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**<sup>10</sup> 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**<sup>10</sup> 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 related to the Perceived Quality were mapped to four dimensions and the statements related to the Utility were mapped to three dimensions. The detailed mapping of the statements is described in Section 6.1.

---

<sup>8</sup> Dictionary of statistics & methodology: a nontechnical guide for the social sciences (page 226).

<sup>9</sup> 5-point Likert scale range values are interpreted as numeric values like described in Section 4.2.2.

<sup>10</sup> Dictionary of statistics & methodology: a nontechnical guide for the social sciences (page 375).

## 4.2.3.1. PERCEIVED QUALITY OF THE ACTION 1.9

Table 6 presents the detailed analysis of each Perceived Quality statement.

TABLE 6 – ACTION 1.9 PERCEIVED QUALITY SCORE DETAILS AT STATEMENT LEVEL

Statement	Mean	Mode	StDev	StErr	Dimension
PQ1: It is easy to install/integrate the TL-Manager tool	4.16	4	0.77	0.18	Efficiency
PQ2: TL-Manager is well customised to the users' business needs	3.77	4	0.98	0.24	Efficiency
PQ3: TL-Manager is a trustable and secure tool	3.80	4	0.70	0.16	Security/Privacy (Trust)
PQ4: The TL-Manager tool enables the storage of data in a highly secure way	3.40	4	0.99	0.26	Reliability
					Security/Privacy (Trust)
PQ5: The TL-Manager tool successfully performs the users' requests	4.12	4	0.84	0.20	Reliability
PQ6: The TL-Manager performs the users' requests at the first time	3.62	4	0.98	0.24	Reliability
PQ7: The support provided for the use of the TL-Manager tool shows a sincere interest in solving users' requests	4.22	4	0.58	0.16	Support
PQ8: The TL-Manager support team resolved my issue	3.77	4	0.93	0.26	Support
PQ9: It was easy to install/integrate the SD-DSS tool	3.45	4	1.34	0.45	Security/Privacy (Trust)
PQ10: The SD-DSS tool is well customised to the users' business needs	3.34	2	1.23	0.41	Efficiency
PQ11: It is easy to create the eSignature using the SD-DSS tool	3.45	4	1.24	0.42	Efficiency
PQ12: It is easy to validate the eSignature using the SD-DSS tool	3.78	4	0.98	0.33	Efficiency
PQ13: SD-DSS is a trustable and secure tool	3.78	3	0.84	0.28	Security/Privacy (Trust)
PQ14: The SD-DSS tool successfully performs the users' requests	3.90	4	1.00	0.32	Reliability
PQ15: The SD-DSS tool performs the users' requests at the first time	3.45	3	0.89	0.30	Reliability
PQ16: The documentation provided as a guidance for the use of the SD-DSS tool is clear and helpful	3.12	3	0.79	0.27	Support
PQ17: The support provided for the use of the SD-DSS tool shows an interest in solving users' requests	4.00	4	0.67	0.22	Support

Statement	Mean	Mode	StDev	StErr	Dimension
PQ18: The support provided for the use of the SD-DSS tool (in case of bugs or questions) was of great help	4.12	4	0.61	0.21	Support
PQ19: The SD-DSS support team resolved my issue	4.00	4	0.71	0.24	Support

Table 7 gives an overview on the analysis of each Perceived Quality dimension, as well as a total score of the Perceived Quality evaluation criteria.

In order to make the total Perceived Quality score calculation more accurate, a weighted mean<sup>11</sup> was used. The dimension weight is defined based on the amount of statements within a specific dimension. All four perceived quality dimensions were considered as applicable for the Action 1.9.

The weighted average of the Perceived Quality is **3.75** with the standard deviation equal to **0.92**, on a scale from 1 to 5, where 5 is the maximum (best) value.

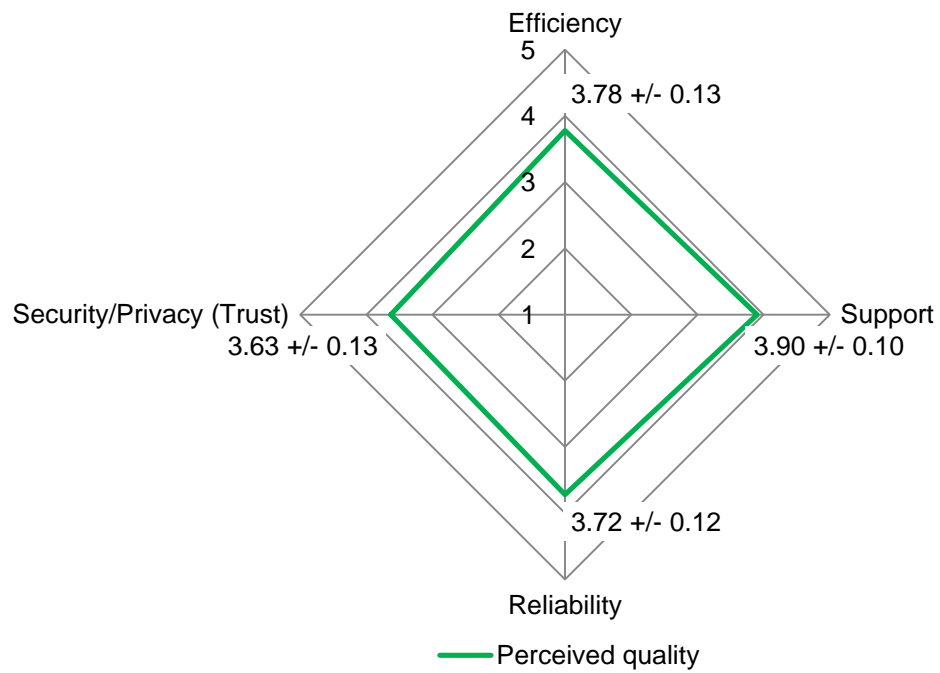
**TABLE 7 – ACTION 1.9 PERCEIVED QUALITY SCORE DETAILS**

	Mean	Mode	StDev	StErr	Dimension	Weight
Per dimension	3.78	4	1.01	0.13	Efficiency	0.25
	3.90	4	0.78	0.10	Support	0.20
	3.72	4	0.96	0.11	Reliability	0.25
	3.63	4	0.93	0.13	Security/Privacy (Trust)	0.30
Perceived Quality	<b>3.75<sup>11</sup></b>	<b>4</b>	<b>0.92</b>	<b>0.06</b>		

<sup>11</sup> 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.

Figure 8 gives a visual overview on the Perceived Quality coverage per four predefined dimensions.

**FIGURE 8 – ACTION 1.9 PERCEIVED QUALITY AGGREGATION**



## 4.2.3.2. UTILITY OF THE ACTION 1.9

Table 8 presents the detailed analysis of each utility statement.

TABLE 8 – ACTION 1.9 UTILITY SCORE DETAILS ON STATEMENT LEVEL

Statement	Mean	Mode	StDev	StErr	Dimension
U1: TL-Manager is beneficial in terms of saving time and costs	4.50	5	0.52	0.12	Value for EU
U2: TL-Manager facilitates the establishment and management of Trusted Lists	4.45	4	0.52	0.12	Value for EU
					Value for cross-border and cross-sector interoperability
U3: TL-Manager facilitates signing Trusted lists	4.22	4	0.64	0.15	Value for EU
					Value for cross-border and cross-sector interoperability
U4: TL-Manager helps comply with the EU legislation and the relevant standards	4.45	4	0.52	0.12	Value for EU
U5: The SD-DSS tool fosters the interoperability among the Member States	3.80	4	0.79	0.25	Value for EU
					Value for cross-border and cross-sector interoperability
U6: The SD-DSS tool facilitates putting in place the eSignature solutions	4.00	4	0.67	0.22	Value for EU
					Value for cross-border and cross-sector interoperability
U7: The SD-DSS tool is important in terms of ensuring the compliance to the EU legislation and relevant standards	3.80	4	0.92	0.30	Value for EU
U8: The SD-DSS tool enables to reduce paperwork and administrative formalities	4.00	4	1.07	0.38	Value for EU
					Value for cross-border and cross-sector interoperability
U9: The SD-DSS tool is beneficial in terms of saving time and costs	3.90	5	1.11	0.35	Value for EU

Table 9 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<sup>11</sup> was used. The dimension weight is defined based on the amount of statements within specific dimension.

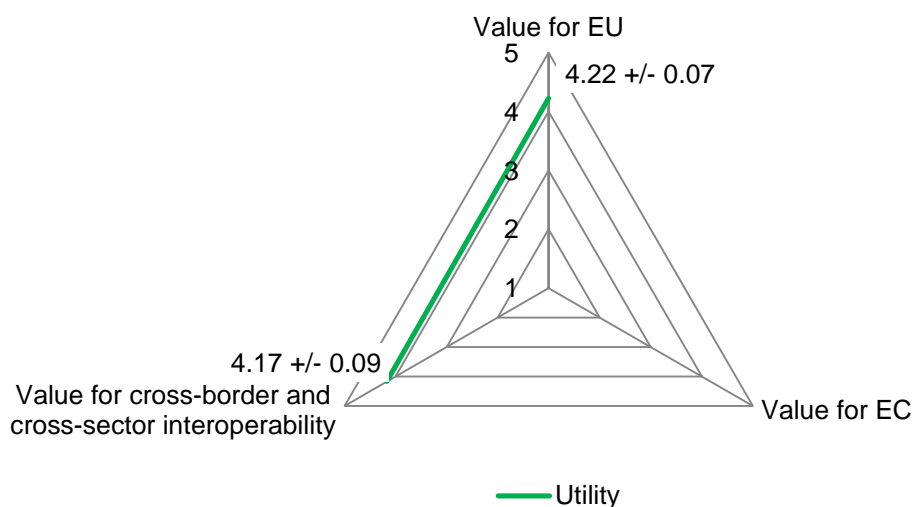
The weighted average of the Utility is **4.21** with the standard deviation equal to **0.74**, on a scale from 1 to 5, where 5 is the maximum (best) value.

**TABLE 9 – ACTION 1.9 UTILITY SCORE DETAILS**

Per dimension	MEAN	MODE	StDev	StErr	Dimension	Weight
	4.22	4	0.74	0.07	Value for EU	0.64
	4.17	4	0.71	0.09	Value for cross-border and cross-sector interoperability	0.36
	-	-	-	-	Value for EC	-
<b>Utility</b>	<b>4.21<sup>11</sup></b>	<b>4</b>	<b>0.74</b>	<b>0.07</b>		

Figure 9 gives a visual overview on the Utility coverage per two predefined dimensions.

**FIGURE 9 – ACTION 1.9 UTILITY AGGREGATION**





### 4.3. STRENGTHS AND WEAKNESSES OF THE ESIGNATURE TOOLS

This section provides an overview of the strong and weak aspects of the eSignature tools, revealed by the Action 1.9 Perceived Quality and Utility survey.

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 strong aspects of the eSignature SD-DSS and TL-Manager tools;
- 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 statements that refer to the weak aspects of the eSignature SD-DSS and TL-Manager tools. Weaknesses of those aspects are confirmed by the feedbacks provided in Table 4 and Table 5.

#### 4.3.1. Perceived Quality of the Action 1.9

Table 10 and Table 11 give an overview of the aspects that are strong, require attention or are weak of eSignature TL-Manager and SD-DSS tools in the context of Perceived Quality.

**TABLE 10 – ACTION 1.9 TL-MANAGER TOOL PERCEIVED QUALITY STRENGTHS AND WEAKNESSES**

Perceived Quality Statement	Mean	Dimension
PQ7: The support provided for the use of the TL-Manager tool shows a sincere interest in solving users' requests	4.22	Support
PQ1: It is easy to install/integrate the TL-Manager tool	4.16	Efficiency
PQ5: The TL-Manager tool successfully performs the users' requests	4.12	Reliability
PQ3: TL-Manager is a trustable and secure tool	3.80	Security/Privacy (Trust)
PQ2: TL-Manager is well customised to the users' business needs	3.77	Efficiency
PQ8: The TL-Manager support team resolved my issue	3.77	Support
PQ6: The TL-Manager performs the users' requests at the first time	3.62	Reliability
PQ4: The TL-Manager tool enables the storage of data in a highly secure way	3.40	Reliability
		Security/Privacy (Trust)

**TABLE 11 - ACTION 1.9 SD-DSS TOOL PERCEIVED QUALITY STRENGTHS AND WEAKNESSES**

Perceived Quality Statement	Mean	Dimension
PQ18: The support provided for the use of the SD-DSS tool (in case of bugs or questions) was of great help	4.12	Support
PQ17: The support provided for the use of the SD-DSS tool shows an interest in solving users' requests	4.00	Support
PQ19: The SD-DSS support team resolved my issue	4.00	Support
PQ14: The SD-DSS tool successfully performs the users' requests	3.90	Reliability
PQ12: It is easy to validate the eSignature using the SD-DSS tool	3.78	Efficiency
PQ13: SD-DSS is a trustable and secure tool	3.78	Security/Privacy (Trust)
PQ11: It is easy to create the eSignature using the SD-DSS tool	3.45	Efficiency
PQ15: The SD-DSS tool performs the users' requests at the first time	3.45	Reliability
PQ9: It was easy to install/integrate the SD-DSS tool	3.45	Security/Privacy (Trust)
PQ10: The SD-DSS tool is well customised to the users' business needs	3.34	Efficiency
PQ16: The documentation provided as a guidance for the use of the SD-DSS tool is clear and helpful	3.12	Support

### 4.3.2. Utility of the Action 1.9

Table 12 and Table 13 present an overview of the aspects that are strong, require attention or are weak of the eSignature SD-DSS and TL-Manager tools in the context of Utility.

**TABLE 12 – ACTION 1.9 TL-MANAGER UTILITY STRENGTHS AND WEAKNESSES**

Utility Statement	Mean	Dimension
U1: TL-Manager is beneficial in terms of saving time and costs	4.50	Value for EU
U2: TL-Manager facilitates the establishment and management of Trusted Lists	4.45	Value for EU
		Value for cross-border and cross-sector interoperability
U4: TL-Manager helps comply with the EU legislation and the relevant standards	4.45	Value for EU
U3: TL-Manager facilitates signing Trusted lists	4.22	Value for EU
		Value for cross-border and cross-sector interoperability

**TABLE 13 - ACTION 1.9 SD-DSS TOOL UTILITY STRENGTHS AND WEAKNESSES**

Utility Statement	Mean	Dimension
U6: The SD-DSS tool facilitates putting in place the eSignature solutions	4.00	Value for EU
		Value for cross-border and cross-sector interoperability
U8: The SD-DSS tool enables to reduce paperwork and administrative formalities	4.00	Value for EU
		Value for cross-border and cross-sector interoperability
U9: The SD-DSS tool is beneficial in terms of saving time and costs	3.90	Value for EU
U5: The SD-DSS tool fosters the interoperability among the Member States	3.80	Value for EU
		Value for cross-border and cross-sector interoperability
U7: The SD-DSS tool is important in terms of ensuring the compliance to the EU legislation and relevant standards	3.80	Value for EU

## 5. CONCLUSIONS AND RECOMMENDATIONS

---

The objective of the survey was to evaluate the Perceived Quality and Utility of Action 1.9 – eSignature tools to support cross-border access to eServices for businesses. The following conclusions have been drawn based on the analysis performed:

- Perceived Quality:
  - Most of the respondents agree that it is easy to install/integrate the TL-Manager tool;
  - The findings present that the weakest aspect of the tools is their reliability, i.e. the speed of accessing, using, and receiving services of the tools;
  - The results show that respondents does not perceive the SD-DSS tool to be well customised to the users' business needs;
  - Respondents indicated issues with the support, stating that the documentation provided as guidance for the use of the SD-DSS tool is not clear and helpful. However, the support services are perceived as sincere and helpful.
- Utility:
  - The TL-Manager tool is perceived as more beneficial in terms of saving time and costs in comparison to the SD-DSS tool;
  - Respondents' thoughts are divided whether the SD-DSS tool is important in terms of ensuring the compliance to the EU legislation and relevant standards.

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

- Perceived Quality:
  - The reliability (speed of accessing, using, and receiving services) and functionality of the tools should be improved in order to correspond to the user's expectations and business needs;
  - The documentation provided as guidance for the tools should be improved in order for the users to clearly understand and effectively use the tools. In addition, the respondents also suggested adding tooltips to the tools.
- Utility:
  - It is recommended to research the eSignature tools usage at national levels and analyse why the tools are less popular in some countries than others. Respondents from countries such as Germany, Finland, Norway, Cyprus, Hungary and Denmark have indicated that they have never referred to any of the eSignature tools;
  - From users recommendations it is also advised to take steps to raise awareness about the tools among users from public and private sector.

## 6. APPENDIX

### 6.1. STATEMENT MAPPING TO DIMENSIONS

In order to measure the Perceived Quality and Utility of the Action 1.9 and calculate the average score of each dimension, all survey statements were mapped to the dimensions according to the evaluation criteria.

Table 14 shows the statements mapping according to four dimensions of the Action 1.9 Perceived Quality.

**TABLE 14 – ACTION 1.9 PERCEIVED QUALITY STATEMENT MAPPING TO DIMENSION**

Question	ID	Efficiency	Security/Privacy (Trust)	Reliability	Support	Count of areas covered by question
It is easy to install/integrate the TL-Manager tool	PQ1	✓				1
TL-Manager is well customised to the users' business needs	PQ2	✓				1
TL-Manager is a trustable and secure tool	PQ3		✓			1
The TL-Manager tool enables the storage of data in a highly secure way	PQ4		✓	✓		2
The TL-Manager tool successfully performs the users' requests	PQ5			✓		1
The TL-Manager performs the users' requests at the first time	PQ6			✓		1
The support provided for the use of the TL-Manager tool shows a sincere interest in solving users' requests	PQ7				✓	1
The TL-Manager support team resolved my issue	PQ8				✓	1
It was easy to install/integrate the SD-DSS tool	PQ9		✓			1
The SD-DSS tool is well customised to the users' business needs	PQ10	✓				1
It is easy to create the eSignature using the SD-DSS tool	PQ11	✓				1
It is easy to validate the eSignature using the SD-DSS tool	PQ12	✓				1
SD-DSS is a trustable and secure tool	PQ13		✓			1
The SD-DSS tool successfully performs the users' requests	PQ14			✓		1
The SD-DSS tool performs the users' requests at the first time	PQ15			✓		1
The documentation provided as a guidance for the use of the SD-DSS tool is clear and helpful	PQ16				✓	1
The support provided for the use of the SD-DSS tool shows an interest in solving users' requests	PQ17				✓	1
The support provided for the use of the SD-DSS tool (in case of bugs or questions) was of great help	PQ18				✓	1
The SD-DSS support team resolved my issue	PQ19				✓	1
<b># of questions covering dimension</b>		5	4	5	6	
<b>% of questions covering dimension</b>		26%	21%	26%	32%	

Table 15 shows the statement mapping according to two dimensions of the Action 1.9 Utility.

**TABLE 15 – ACTION 1.9 UTILITY STATEMENT MAPPING**

Question	ID	Value for EU	Value for cross-border and cross-sector interoperability	Count of areas covered by question
TL-Manager is beneficial in terms of saving time and costs	U1	✓		1
TL-Manager facilitates the establishment and management of Trusted Lists	U2	✓	✓	2
TL-Manager facilitates signing Trusted lists	U3	✓	✓	2
TL-Manager helps comply with the EU legislation and the relevant standards	U4	✓		1
The SD-DSS tool fosters the interoperability among the Member States	U5	✓	✓	2
The SD-DSS tool facilitates putting in place the eSignature solutions	U6	✓	✓	2
The SD-DSS tool is important in terms of ensuring the compliance to the EU legislation and relevant standards	U7	✓		1
The SD-DSS tool enables to reduce paperwork and administrative formalities	U8	✓	✓	2
The SD-DSS tool is beneficial in terms of saving time and costs	U9	✓		1
<b># of questions covering dimension</b>		9	5	
<b>% of questions covering dimension</b>		100%	56%	

## 6.2. DETAILED LIST OF RESPONDENTS' ORGANISATIONS

Table 16 shows the detailed list of answers that were provided by the respondents in order to identify the organisation they belong to.

**TABLE 16 – ACTION 1.9 DETAILED LIST OF RESPONDENTS' ORGANISATIONS**

Organisations	CRC is a specialized independent state authority, entrusted with the functions of regulation and control over the carrying out of the electronic communications in compliance with the Bulgarian legislation.
	Public administration of an EU-country.
	Notified body on SSCD assessment.

## 6.3. DETAILED LIST OF RESPONDENTS' FUNCTIONS/POSITIONS

Table 17 shows the detailed list of answers that were provided by the respondents indicating their function or position.

**TABLE 17 - ACTION 1.9 DETAILED LIST OF RESPONDENT'S FUNCTIONS/POSITIONS**

Function/Position	Project manager responsible for eGovernment projects
	eIDAS expert
	eGovernment
	Project leader for eSignature deployment from 2002
	TSP service manager
	Chief officer
	Expert associate at the Ministry of Economy
	head of bureau of public administration root CA; supervisor of Trust Service Providers
	Application Administrator
	NRA
	legal advisor, information society
	department
	Supervisory Body / TSL Editor
	Estonian eID middleware product manager
	Consultant
	Estonian TL manager / specialist
	Senior Enforcement Official
	Head of Section
	Head of Digital trust department
	Special consultant at the Danish Agency for Digitisation
	Developer
	Technical Manager
	PKI specialist
director	
Liaison point of services directive	
Head of Unit, Ministry of Industry, Energy and Tourism. Responsible for Spanish TL creation, publication and maintenance.	
Public servant	

## 6.4. RAW DATA EXPORT

The attached file provides the survey result export.



RawDataExport.xlsx



## 6.5. GLOSSARY

- The mean<sup>8</sup> (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<sup>9</sup> for each case and divide that sum by the total number of cases;
- Mode refers to the most frequent, repeated or common value<sup>9</sup> in the quantitative or qualitative data. In some cases it is possible that there are several modes or none;
- Standard deviation<sup>10</sup> 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<sup>10</sup> 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;
- ‘Perceived Quality’ is defined as the extent to which the outputs of an ISA action are meeting its direct beneficiaries’ expectations<sup>3</sup>;
- ‘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<sup>5</sup>;
- 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.