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INTEROPERABILITY SOLUTIONS FOR  
EUROPEAN PUBLIC ADMINISTRATIONS  
MONITORING AND EVALUATION

D03.04/D03.05 PERCEIVED QUALITY AND PERCEIVED  
UTILITY MONITORING REPORT

ISA ACTION 1.4 ECAS-STORK INTEGRATION

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Framework Contract n° DI/07173-00

16 August 2016

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## EXECUTIVE SUMMARY

The purpose of this section is to provide an overview of the key findings of the Perceived Quality and Perceived Utility monitoring of **the ISA Action 1.4 – ECAS-STORK Integration**. The objective of the survey is to measure the action’s Perceived Quality, which is defined as the extent to which the outputs of an ISA action are meeting its direct beneficiaries’ expectations<sup>1</sup>, and Perceived Utility, which 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>2</sup> and the action’s specific objectives.

The survey of Action 1.4 included the evaluation of the demo version of ECAS-STORK Integration. The survey was designed in the EUSurvey tool and distributed by e-mail to 14 contacts. Over the duration of one month<sup>3</sup>, three stakeholders have responded.

Table 2 and Table 2 give an overview of the main results of the survey. The detailed score calculation process is described in section 5.4.4.

**TABLE 1 – ACTION 1.4 PERCEIVED QUALITY SURVEY MAIN RESULTS**

	Score	Explanation of the score scale
<b>Usefulness Score</b>	5.33	Average value on a scale from 1 (Not Useful at All) to 7 (Very Useful).
<b>Value Score</b>	4.30	Average value of all the statement means in the range from 1 (Disagree) to 5 (Agree).
<b>User Satisfaction Score</b>	86.11	User Satisfaction Score from 0 (none of the respondents are satisfied) to 100 (all respondents are satisfied with the work performed by the Action).
<b>Net Promoter Score</b>	67	Net Promoter Score from -100 (every customer is a Detractor) to 100 (every customer is a Promoter).
<b>OVERALL PERCEIVED QUALITY SCORE</b>	4.24	The Overall Perceived Quality Score is the average value of the Usefulness Score, the Value Score, the User Satisfaction Score, and the Net Promoter Score reduced to a five point scale in range from 1 (lowest score) to 5 (highest score).

<sup>1</sup> DG BUDG (2004), “Evaluating EU activities, a practical guide for the Commission services”

<sup>2</sup> Papadomichelaki, X. and Mentzas, G. (2012), “e-GovQual: A multiple-item scale for assessing e-government service quality”

<sup>3</sup> The survey was launched on the 10<sup>th</sup> of February 2016 and was active until the 11<sup>th</sup> of March 2016.

**TABLE 2 – ACTION 1.4 PERCEIVED UTILITY SURVEY MAIN RESULTS**

	Score	Explanation of the score scale
<b>Usefulness Score</b>	5.33	Average value on a scale from 1 (Not Useful at All) to 7 (Very Useful).
<b>Value Score</b>	4.44	Average value of all the statement means in the range from 1 (Disagree) to 5 (Agree).
<b>User Satisfaction Score</b>	84.09	User Satisfaction Score from 0 (none of the respondents are satisfied) to 100 (all respondents are satisfied with the work performed by the Action).
<b>Net Promoter Score</b>	67	Net Promoter Score from -100 (every customer is a Detractor) to 100 (every customer is a Promoter).
<b>OVERALL UTILITY SCORE</b>	<b>4.26</b>	<b>The Overall Perceived Utility Score is the average value of the Usefulness Score, the Value Score, the User Satisfaction Score, and the Net Promoter Score reduced to a five point scale in range from 1 (lowest score) to 5 (highest score).</b>

It is important to take into account that only three respondents participated in the survey. This means that the results of this survey only represent the opinions of these three unique respondents and cannot be used as a statistically meaningful assessment of the entire action. The results of this survey perform more like indicators of the Perceived Quality and Perceived Utility without fully representing the opinions of all the users.

Main findings:

- **The survey results demonstrate that the demo version of Action 1.4 – ECAS-STORK Integration complies with both the ISA programme and the action’s specific objectives.**
- Regarding the Perceived Utility, the demo version of ECAS-STORK Integration is perceived as **beneficial in terms of Collaboration.**
- Regarding the Perceived Quality, the demo version of ECAS-STORK Integration is perceived as **more beneficial in terms of Trust and Support than in Performance and Usability.**
- According to the respondent recommendations, ECAS-STORK Integration should be disseminated as a trusted and mature example of a modern way of user authentication.
- Another respondent recommends to implement a permanent access to the research participant portal through ECAS-STORK service. In addition, the number of applications that can be used through ECAS-STORK Integration should be increased.
- The main benefits of ECAS-STORK Integration are high security, user convenience and its usage in more than 19 countries.
- Additional work should be applied to the Performance and the Usability of the demo version of ECAS-STORK Integration as they are the lowest conformable dimensions.

## REVISION HISTORY

Date	Version	Description	Authors	Approved by
07/06/2016	0.10	Initial version	CGI - Accenture	
27/06/2016	1.00	Final version	CGI - Accenture	.
16/08/2016	2.00			Approved by HVA on 29/07/2016

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# 1 INTRODUCTION

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CGI-Accenture has been requested to deliver Perceived Quality and Perceived Utility Monitoring and Evaluation Reports as part of the execution of the ISA programme monitoring (Technical Annex for Specific Contract SC 193 under Framework contract n° DI/07173-00).

Based on the scope of the Specific Contract, the Perceived Quality is to be measured for 15 actions and the Perceived Utility is to be measured for 17 actions. This report covers the Perceived Quality and Perceived Utility measurement of the demo version of the ISA Action 1.4 – ECAS-STORK Integration.

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 action and its objectives;
- **Section 3:** explains the methodology used to measure the Perceived Quality and Utility;
- **Section 4:** summarises the collected data;
- **Section 5:** focuses on the survey results and the data analysis:
  - o The demographic profile of respondents;
  - o Usage frequency of the action's outputs;
  - o Usefulness Score;
  - o Perceived Quality and Perceived Utility measurements;
  - o Action strengths, weaknesses, opportunities and threats;
  - o Statements based on action objectives;
  - o Respondent recommendations and main benefits;
- **Section 6:** provides the survey conclusion and recommendations;
- **Section 7:** appendix includes:
  - Raw data export;
  - Glossary.



## 2 ACTION 1.4 – ECAS-STORK INTEGRATION

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The objective of this action is to enable access to European Union information systems using the user's national electronic identity (e-ID) solution with minimal impact on the information systems themselves.

This would improve user-friendliness, by reducing the number of credentials a user has to rely on, and security, since the national e-ID solution normally relies on artefacts that are stronger than a login name and password.

STORK (Secure identity across borders linked) is a project co-funded by the EU that aims to implement EU-wide interoperability of electronic identities (eIDs).

While eID is used in important applications in the areas of eGovernment across the EU, it is also of considerable value for secure access to the EU's own information systems which have their own authentication system known as ECAS (European Commission Authentication Service).

The goal of ISA's ECAS-STORK Integration action is to develop a secure and user-friendly solution that will allow users to access EU information systems, using their national eID solutions and procedures to authenticate.

### **Action's objectives:**

- To provide the demo version of ECAS-STORK service integration in order to promote and showcase the capabilities of STORK.

### **Action's benefits:**

- Minimise or eliminate the impact of integrating 250+ ECAS-enabled information systems with STORK;
- Increase confidence in user identity;
- Simplify development thanks to the use of a common mechanism for all information systems;
- Improve and modernise the EU's image as authentication using electronic identity cards is more advanced than with a login name and password;
- Increase consistency as same credentials are used to access both national information systems and European Commission information systems;
- Aligning automatically with the level of security provided by the Member State itself is particularly important for an information system such as Internal Market Information system where critical information is exchanged.

## 3 SURVEY METHODOLOGY

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A common methodology was developed by the CGI-Accenture team for all the surveys included in the Perceived Quality and Perceived Utility Monitoring and Evaluation Reports. The common methodology enables a comparison between the different action results. The first section explains how the Perceived Quality is measured and which dimensions are covered. The second section explains how the Perceived Utility is measured and which dimensions are covered. The next section gives an overview of the main survey measurements. The last section describes the architecture of the survey.

### 3.1 PERCEIVED QUALITY

**Perceived Quality** is defined as the extent to which the outputs of an ISA action are meeting its direct beneficiaries' expectations<sup>1</sup>.

Four dimensions are used to measure the Perceived Quality criterion. These dimensions are derived from the main objectives of the ISA programme. Perceived Quality for tools and services is measured using an adaption of the eGovQual scale model<sup>4</sup> which covers the following four dimensions:

- **Usability (Us):** the ease of using or user friendliness of the service/tool and the quality of information it provides<sup>4</sup>;
- **Trust (Privacy) (T):** the degree to which the user believes the service/tool is safe from intrusion and protects personal information<sup>4</sup>;
- **Performance (P):** the feasibility and speed of accessing, using, and receiving services of the service/tool<sup>4</sup>;
- **Support (S):** the ability to get help when needed and the level of service received<sup>4</sup>.

The survey statements for the dimensions listed above are directly adapted from the statements used in the eGovQual scale model.

### 3.2 PERCEIVED UTILITY

**Perceived 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> and the action's specific objectives.

Regarding the Perceived Utility measurement, several statements are derived from the objectives of the ISA programme. These statements are grouped into three dimensions which are defined as the criteria for measuring the Perceived Utility:

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<sup>4</sup> Papadomichelaki X., Mentzas G (2012), "e-GovQual. A multiple-item scale for assessing e-government service quality" <http://imu.ntua.gr/sites/default/files/biblio/Papers/e-govqual-a-multiple-item-scale-for-assessing-e-government-service-quality.pdf>

<sup>5</sup> Papadomichelaki, X. and Mentzas, G. (2012), "e-GovQual: A multiple-item scale for assessing e-government service quality"

- **Potential Re-usability:** the degree to which the action's outcome(s) can be reused by Public Administrations (PAs);
- **Sustainability:** to what extent the financial, technical and operational sustainability of solutions is ensured<sup>6</sup>;
- **Collaboration:** the degree to which the action promotes/facilitates collaboration/cooperation between PAs<sup>7</sup>.

Due to the non-applicability of the Sustainability and the Potential Re-usability dimensions, they were excluded from the evaluation of Action 1.4 – ECAS-STORK Integration upon the request of the Project Officer.

The survey statements for the dimensions listed above were developed according to:

- The ISA programme's main objectives: "To support cooperation between European Public Administrations by facilitating the efficient and effective electronic cross-border and cross-sectorial interaction between such administrations, including bodies performing public functions on their behalf, enabling the delivery of electronic public services supporting the implementation of Community policies and activities<sup>8</sup> and actions' specific objectives." The Perceived Utility statements were tailored to reflect these objectives and were based on the ESOMAR<sup>9</sup> (World Association of Opinion and Marketing Research Professionals) standards.

The developed Perceived Utility dimension enables the comparison between different actions and also will provide the opportunity to see if the ISA programme objectives have been met (from the user point of view).

### 3.3 SURVEY MEASUREMENTS

In the data analysis, the core types of measurements which are performed include the Value Score, the User Satisfaction Score, the Net Promoter Score and the Overall Score for Perceived Quality and Perceived Utility. The survey measurements are divided into two groups: action level measurement and Perceived Quality and Perceived Utility level measurements.

Action level measurements:

- The Usefulness Score indicates the respondents' evaluation of how useful the action is. The Usefulness Score is calculated taking into account a mean value from a single question: "*How useful overall was the "ECAS-STORK" service to you?"*"

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<sup>6</sup> European Commission (2013), Interim evaluation of the ISA programme, "Report from the Commission to the European Parliament and Council COM (2013) 5 final".

<sup>7</sup> CRN (2015), Collaboration [http://research.crn.com/technology/knowledge\\_management/collaboration](http://research.crn.com/technology/knowledge_management/collaboration)

<sup>8</sup> Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on interoperability solutions for European Public Administrations (ISA) (2009)

<sup>9</sup> ESOMAR, edited by Hamersveld. M., Bont C. (2007), Market Research, Handbook, 5<sup>th</sup> Edition

- Action strengths, weaknesses, opportunities and threats: statements are located in quadrants based on the calculated mean values of the dimensions' conformity and dimensions' importance. The quadrants highlight the weak and strong aspects of the action, as well as threats and opportunities.
- Statements based on action objectives show the respondents' evaluation to what extent the action's objectives have been achieved.

Perceived Quality and Perceived Utility level measurements:

- The Value Score shows the action's compliance to the dimensions defined above (see sections 3.1 and 3.2). Two aspects are considered for each dimension. On one side, the importance of the dimension for the users is assessed. On the other side we measure if the action is compliant with the dimension. This section includes statement mapping to dimensions, dimensions conformity results, criterion score and aggregation.
- The User Satisfaction Score shows how satisfied the respondents are with the action. The User Satisfaction Score is assessed with reference to the results of the dimensions' importance and dimensions' conformity evaluation. The User Satisfaction Score is measured at the individual level for each of the survey respondents via the identification of the important dimensions for that particular respondent.
- The Net Promoter Score® (NPS) is a widely used management tool that helps evaluate the loyalty of a customer relationship. In order to evaluate the NPS, the question *"how likely the respondent would recommend the particular action's output to others"* is asked.
- The Overall Score is used to get a single score that describes the overall Perceived Quality and Perceived Utility of the action. In order to determine the Overall Score, the average value of the Usefulness Score, the Value Score, the User Satisfaction Score and the Net Promoter Score is calculated. To calculate the Overall Score, all measurements are reduced to a five point scale.

### 3.4 SURVEY ARCHITECTURE

The survey is divided into several sections which are outlined below:

- The demographic profile: for the purpose of identifying the respondents' demographic profile, respondents are asked to answer several questions. The demographic profile illustrates the diversity of the respondents who have participated in the survey.
- Usage of the action outputs: for the purpose of identifying the usage rate of the action outputs, the respondents are asked to answer a question regarding the usage of action outputs. This question also works as a filter, selecting the respondents who should evaluate the statements regarding the specific action output.

- The action's Usefulness: for the measurement of the action's usefulness, the respondents are asked to evaluate a single question using a 7-point Likert grading scale<sup>10</sup>.
- The Perceived Quality and Perceived Utility Measurement: in order to measure the Perceived Quality and Perceived Utility, the respondents are asked to grade dimensions and statements based on their level of importance and agreement using a 5-point Likert grading scale<sup>10</sup>. Responses to these questions are used to determine the Value Score, action strengths, weaknesses, threats and opportunities, and the User Satisfaction Score.
- The Net Promoter Score: there is a single question that measures the Net Promoter Score. By answering this question, the respondents indicate their likelihood of recommending the action's outputs to colleagues or other PAs.
- Action strengths, weaknesses, opportunities and threats show the location of the action statements based on dimensions' conformity and dimensions' importance results.
- Statements based on action objectives: in order to evaluate the extent to which these objectives conform to the action, the respondents are asked to grade statements based on their level of agreement using a 5-point Likert grading scale<sup>10</sup>.
- The recommendations: the last section includes several open questions for recommendations and opinions regarding the action and the survey.

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<sup>10</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.

## 4 SURVEY DATA SUMMARY

This section aims to provide detailed information about the data gathering fieldwork. Table 3 gives an overview of the survey start and end dates, the number of respondents the survey was proposed to, the amount of responses collected, as well as the survey launching method.

**TABLE 3 – ACTION 1.4 SURVEY TECHNICAL INFORMATION ABOUT THE FIELDWORK**

<b>Start date:</b>	10/02/2016
<b>End date:</b>	11/03/2016
<b>The survey launch method:</b>	E-mail notification
<b>Reminders:</b>	E-mail reminders sent out on 18/02/2016, 29/02/2016 and 07/03/2016
<b>Target population:</b>	14
<b>Total number of respondents:</b>	3
<b>Number of suitable respondents for the survey:</b>	3

## 5 SURVEY RESULTS AND ANALYSIS

This section aims to provide the detailed survey analysis and to present the results.

### 5.1 DEMOGRAPHIC PROFILE OF RESPONDENTS

The respondents' demographic profile describes the action respondents from the demographical point of view. It illustrates the diversity of the respondents. **It is important to take into account that only three respondents participated in this survey, thus the percentage value of one respondent is 33.3%.**

**TABLE 4 – ACTION 1.4 DEMOGRAPHIC PROFILE OF RESPONDENTS**

RESPONDENT PROFILE			
		Amount	Col %
<b>ALL RESPONDENTS</b>		3	100.0
<b>LOCATION</b>	Austria	1	33.3
	Czech Republic	1	33.3
	Sweden	1	33.3
<b>POSITION LEVEL</b>	Decision-making (Mid, senior level manager)	2	66.7
	Other (1 respondent: Project leader, Senior advisor)	1	33.3

*Base: all respondents, n=3*

## 5.2 USAGE OF THE ACTION

The usage profile provides an overview of the usage rate of the action.

**TABLE 5 – ACTION 1.4 USAGE OF ECAS-STORK SERVICE**

USAGE PROFILE			
		Amount	Col %
ALL RESPONDENTS		3	100.0
USAGE OF "ECAS-STORK INTEGRATION"	Yes, have used/worked with it	3	100.0
PURPOSE OF USING "ECAS-STORK INTEGRATION"*	For demo purpose	3	100.0
	For production use	1	33.3
INTENSITY WORKING WITH "ECAS-STORK INTEGRATION"	Regularly	2	66.7
	Occasionally	1	33.3
FOLLOW-UP ACTIVITIES NEEDED FOR "ECAS-STORK INTEGRATION"**	Yes	3	100.0

*Base: all respondents, n=3*

*\*There were multiple choices possible for these questions. This explains why the percentage of responses can exceed 100%.*

*\*\*There is an upcoming ECAS-eIDAS action, which is the successor of the ECAS-STORK activities.*



### 5.3 USEFULNESS SCORE

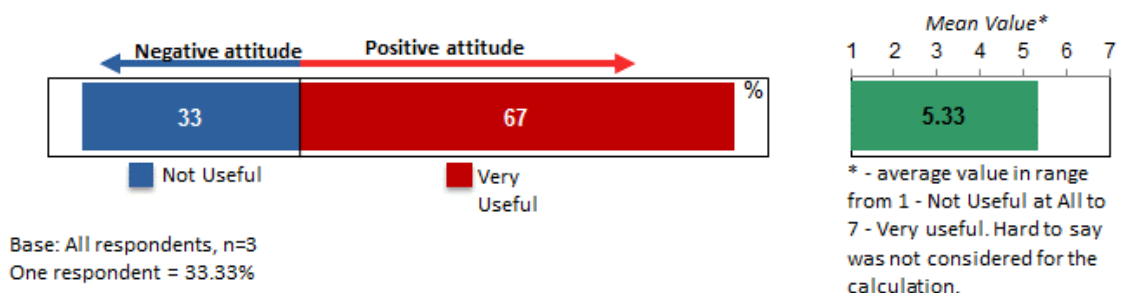
The Usefulness Score is calculated taking into account a single question: “How useful overall was the “ECAS-STORK” service to you?”

The survey respondent is asked to provide his/her opinion using the 7-point Likert grading scale. For the evaluation of Usefulness, a grading scale is used with values ranging from “Very Useful” to “Not Useful at All”. An additional “Hard to Say” option is provided, however this score is excluded from the score calculations. Before performing the survey data calculations, the 7-point Likert scale values are interpreted as numeric values:

- 7 – Very Useful;
- 6 – Useful;
- 5 – Rather Useful;
- 4 – Neither Useful nor Not Useful;
- 3 – Rather Not Useful;
- 2 – Not Useful;
- 1 – Not Useful at All;
- 0 – Hard to Say (*is not considered for the calculation*).

In order to have an overview of the positive (Rather Useful, Useful and Very Useful) and negative (Rather Not Useful, Not Useful and Not Useful at All) attitude proportions, the bar in blue represents the negative attitude, whereas the bar in red represents the positive attitude. The average mean value is presented on the right side of the figure.

**FIGURE 1 – ACTION 1.4 USEFULNESS SCORE**



The survey results show that two out of three respondents had a very positive attitude towards the usefulness of the ECAS-STORK demo version. The mean value is **5.33**. It is important to take into account that only three respondents have participated in the survey. This means that the results of this survey only represent the opinions of these three unique respondents and cannot be used as a statistically meaningful assessment of the entire action. The findings of this survey perform more like indicators of the Perceived Quality and Perceived Utility without fully representing the opinions of all the users.

## 5.4 PERCEIVED QUALITY AND PERCEIVED UTILITY MEASUREMENTS

This section aims to provide a detailed Perceived Quality and Perceived Utility measurement analysis and to present the results.

### 5.4.1 Value Score

This section includes the analysis and results of the Perceived Quality and Perceived Utility Value Score and is structured into two main sections: the dimensions' importance and dimensions' conformity via statements.

#### 5.4.1.1 DIMENSIONS IMPORTANCE

Prior to the evaluation of the dimensions' conformity to the outputs of the action, it is essential to initially ascertain whether these dimensions are important to the respondents while working with the action. If a specific dimension is important to the respondents, then it is essential that its conformity assessment is positive. However, if a dimension is not important to the respondents, then it should not be considered as the action's weakness because of non-compliance with the outputs of the action.

Four Perceived Quality dimensions (Usability, Trust (Privacy), Performance and Support), and one Perceived Utility dimension (Collaboration) are included in the survey. This section describes the respondents' answers regarding the importance of the dimensions.

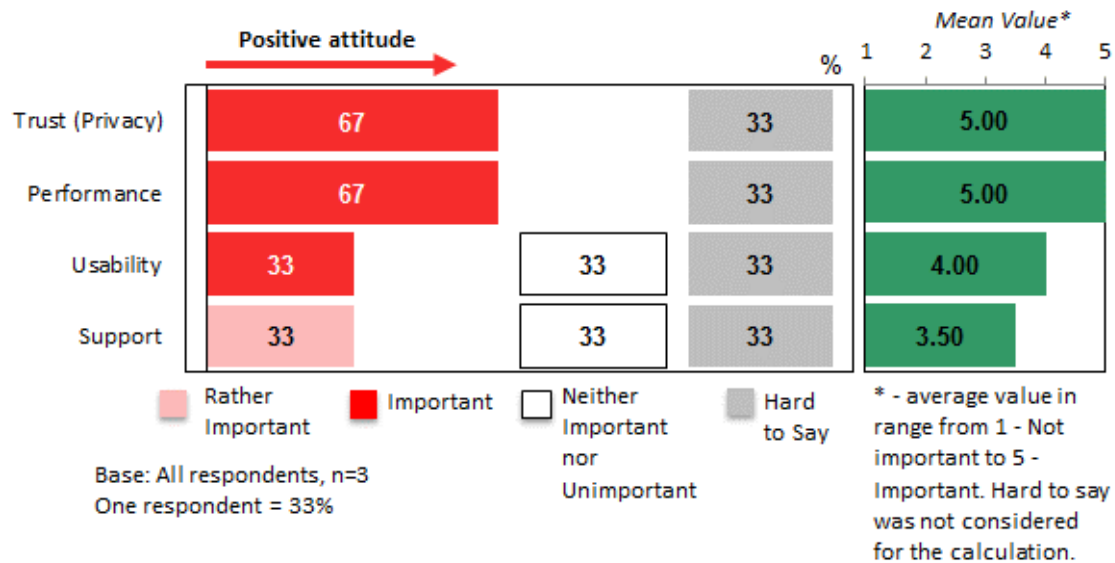
Each respondent is requested to provide his/her opinion using the 5-point Likert grading scale. For the dimensions' importance evaluation, a grading scale with values ranging from 'Important' to 'Not important' is used. An additional 'Hard to Say/Not Applicable' option is provided, however this choice is excluded from the score calculations. Before performing the survey data calculations, the 5-point Likert scale values are interpreted as numeric values:

- 5 – Important;
- 4 – Rather Important;
- 3 – Neither Important nor Unimportant;
- 2 – Rather not Important;
- 1 – Not Important;
- 0 – Hard to Say/Not Applicable (*is not considered for the calculation*).

In Figure 2 and Figure 3 the bars in pink/red represent the positive attitude (answers 'Rather important' and 'Important'). None of the respondents provided negative responses. In addition, a neutral opinion (the bars in white) and the answer 'Hard to say' (the bars in grey) are presented separately on the right. An explanatory legend with colour codes represents the available data. The average mean value for each of the dimensions is presented on the right side of the figure.

**FIGURE 2 – ACTION 1.4 PERCEIVED QUALITY DIMENSIONS IMPORTANCE RESULTS**

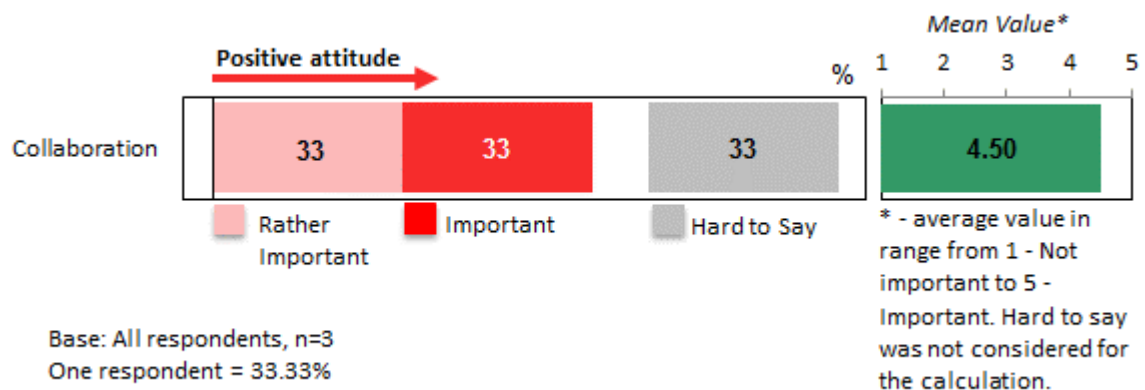
"How important were the factors below to you when using the "ECAS-STORK" service, taking into consideration the service as a whole with all its outputs?"



The survey results indicate that the Performance (mean value **5.00**) and the Trust (Privacy) (mean value **5.00**) dimensions are important to two out of three respondents, while the Usability (mean value **4.00**) dimension is important to one respondent. The Support dimension (mean value **3.50**) is evaluated as the least important dimension regarding the demo version of ECAS-STARK Integration. The mean values for all of the dimensions are higher than the neutral value – 3 (Neither Important nor Unimportant).

**FIGURE 3 – ACTION 1.4 PERCEIVED UTILITY DIMENSIONS IMPORTANCE RESULTS**

"How important were the factors below to you when using the "ECAS-STORK" service, taking into consideration the service as a whole with all its outputs?"



The survey results indicate that two out of three respondents have a positive attitude towards the only Perceived Utility dimension. The mean value of the Collaboration dimension is **4.50** and it is between values 4 – ‘Rather Important’ and 5 – ‘Important’.

#### 5.4.1.2 DIMENSIONS CONFORMITY

In order to measure the Perceived Quality dimensions’ conformity to the action, a set of descriptive statements was developed for each dimension. By evaluating the statement conformity to the action, the extent to which the dimensions correspond to the ISA programme’s objectives is measured.

This section provides an analysis of the statements. It starts with statement mapping to dimensions, which is followed by the analysis of the Perceived Quality and Perceived Utility dimension conformity statements. Finally, the last section provides an overview of the statement conformity scores, which are summarised in groups according to the dimensions.

##### 5.4.1.2.1 STATEMENT MAPPING TO DIMENSIONS

In total, Action 1.4 has nine Perceived Quality and three Perceived Utility statements regarding the dimensions’ conformity. Table 6 gives an overview of the statements representing each dimension. The Support and the Collaboration dimensions are represented by three statements each, while the Usability, Performance and Trust (Privacy) dimensions are represented by two statements each.

**TABLE 6 – ACTION 1.4 STATEMENT MAPPING TO DIMENSIONS**

	Perceived Quality Statements	Dimension
1	The structure of the provided ECAS – STORK service is clear and easy to follow	Usability
2	The ECAS – STORK service is well customized to individual users’ needs	Usability
3	Data provided by users in the ECAS – STORK service are transported securely	Trust (Privacy)
4	Data provided in the ECAS – STORK service are used only for the reason submitted	Trust (Privacy)
5	The ECAS – STORK service is available and accessible whenever it is needed	Performance
6	The ECAS – STORK performs the service successfully upon the first request	Performance
7	The support team showed a sincere interest in solving problems	Support
8	The support team provided prompt replies to the inquiries	Support
9	The support team has the knowledge to answer the questions	Support
	Perceived Utility Statements	Dimension
1	The ECAS – STORK service helps successfully cooperate with European Commission	Collaboration
2	Overall, the ECAS-STORK service supports effective electronic interaction between the EU Member states and the European Commission	Collaboration
3	The ECAS-STORK service supports the implementation of European community policies and activities	Collaboration

#### 5.4.1.2.2 DIMENSIONS CONFORMITY RESULTS

For the purpose of describing dimensions' conformity to the action, nine Perceived Quality and three Perceived Utility statements were designed for this survey. The respondents are asked to evaluate the extent to which these statements conform to this particular action.

Each respondent is requested to provide his/her opinion using the 5-point Likert grading scale. For the dimensions' conformity evaluation, a grading scale with values ranging from 'Agree' to 'Disagree' is applied. An additional 'Hard to Say/Not Applicable' option is provided, however this score is excluded from the score calculations. Before performing the survey data calculations, the 5-point Likert scale values are interpreted as numeric values:

- 5 – Agree;
- 4 – Rather Agree;
- 3 – Neither Agree nor Disagree;
- 2 – Rather Disagree;
- 1 – Disagree;
- 0 – Hard to Say/Not Applicable (*is not considered for the calculation*).

In Figure 4 and Figure 5, the bars in pink/red represent the positive attitude (answers 'Rather Agree' and 'Agree'). None of the respondents provided negative responses. In addition, a neutral opinion (the bars in white) and the answer 'Hard to say' (the bars in grey) are presented separately on the right. An explanatory legend with colour codes represents the available data. The average mean value for each of the dimensions is presented on the right side of the figure.

**FIGURE 4 – ACTION 1.4 PERCEIVED QUALITY DIMENSIONS CONFORMITY RESULTS**

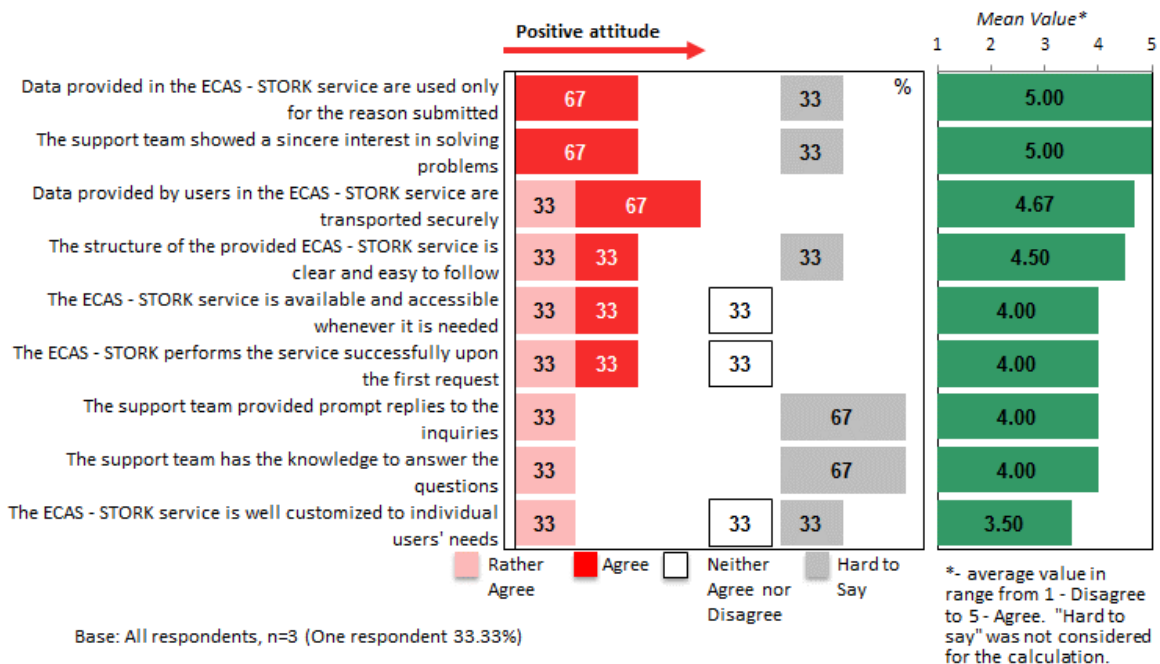


Figure 4 shows that all of the statements are evaluated as relevant to the demo version of ECAS-STORK Integration; the average value is higher than the neutral value 3 - 'Neither Agree nor Disagree'. **Also, six statements out of nine are evaluated with the answer 'Hard to say' by at least one respondent.** This means that a respondent was unable to evaluate a particular statement or simply has not had enough experience working with the ECAS-STORK Integration demo version.

**FIGURE 5 – ACTION 1.4 PERCEIVED UTILITY DIMENSIONS CONFORMITY RESULTS**

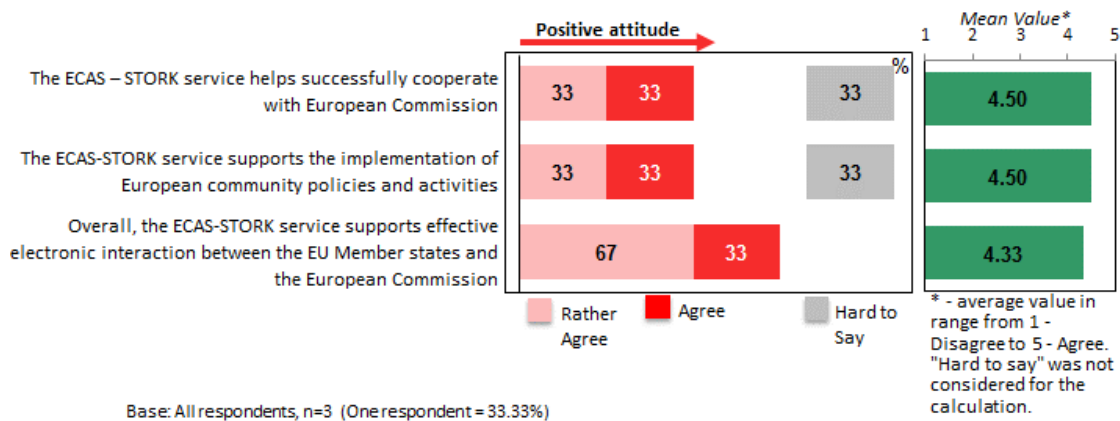


Figure 5 shows that all of the statements are evaluated as relevant to the demo version of ECAS-STORK Integration; the average value is higher than the neutral value 3 - 'Neither Agree nor Disagree'.

The additional statistical calculations - mode, standard deviation and standard error are excluded from the data analysis due to a low number of respondents. With reference to the theory used in business research

methods, it is concluded that for statistically meaningful calculations the minimum respondent number should be equal to or greater than ten per statement, thus they are not calculated for the Perceived Quality and Perceived Utility statements.

Table 7 and Table 8 provide an overview of the statement conformity scores, which are summarised per dimension. To calculate these scores, the average values of all the conformable dimension statements are taken into account.

The additional statistical calculations<sup>11</sup> - mode, standard deviation and standard error are excluded from the data analysis due to a low number of respondents. With reference to the theory used in business research methods,<sup>12</sup> it is concluded that for statistically meaningful calculations the minimum respondent number should be equal to or greater than ten per statement, thus they are not calculated for the Perceived Quality and Perceived Utility statements.

**TABLE 7 – ACTION 1.4 AVERAGE RATING PER PERCEIVED QUALITY DIMENSION**

Per dimension	Dimension	MEAN
	Trust (Privacy)	4.80
	Support	4.50
	Usability	4.00
	Performance	4.00
<b>Total Criterion Score</b>		<b>4.33</b>

The survey results show that the respondents evaluated the Trust (Privacy) statements as the most relevant to the demo version of ECAS-STORK Integration (mean value 4.80). The Support statements (mean value 4.50) are the second most relevant. The respondents evaluated the Usability and the Performance statements (mean values 4.00) as the least relevant (but not as irrelevant, since the value is higher than the neutral value of 3 - 'Neither Agree nor Disagree').

**TABLE 8 – ACTION 1.4 AVERAGE RATING PER PERCEIVED UTILITY DIMENSION**

Per dimension	Dimension	MEAN
	Collaboration	4.43
<b>Total Criterion Score</b>		<b>4.43</b>

The survey results show that the respondents evaluated the Collaboration statements with a mean value of 4.43, meaning that they are relevant to the demo version of ECAS-STORK Integration.

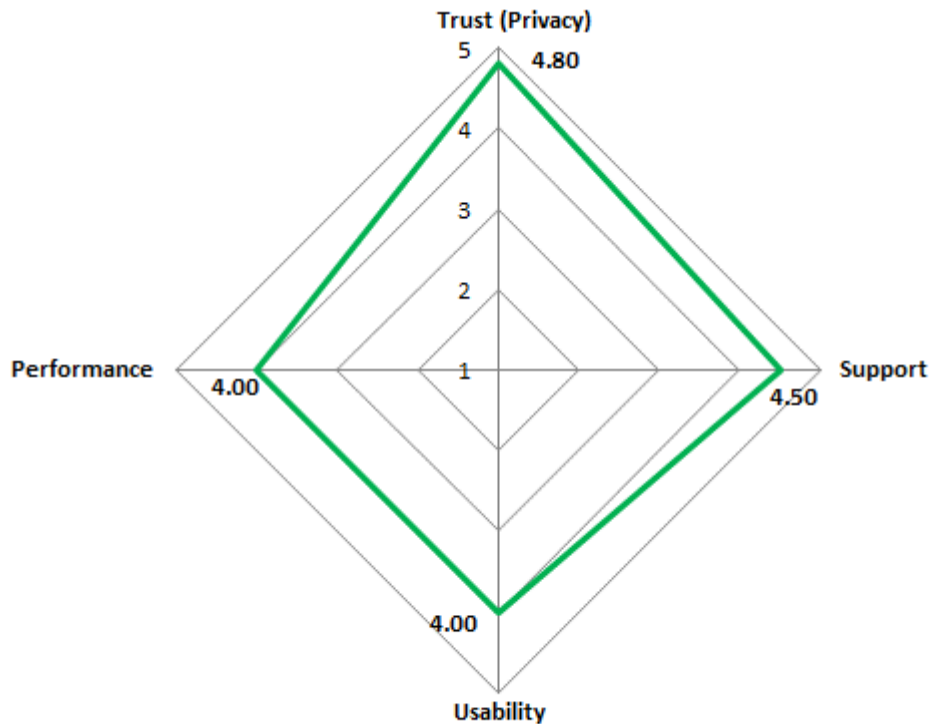
<sup>11</sup> Dictionary of statistics & methodology: a nontechnical guide for the social sciences (page 226).

<sup>12</sup> Cooper D. R., Schindler P. S. (2013), Business Research Methods, 12th Edition

#### 5.4.1.2.3 PERCEIVED QUALITY CRITERION SCORE AGGREGATION

Figure 6 provides a visual overview of the dimensions' conformity scores.

**FIGURE 6 – ACTION 1.4 PERCEIVED QUALITY CRITERION SCORE AGGREGATION**



#### 5.4.2 User Satisfaction Score

The User Satisfaction Score shows how satisfied and happy the respondents are with the performance of a specific action. The User Satisfaction Score is expressed as a percentage from 0 to 100, where 0 signifies that there are no satisfied and happy respondents, whereas 100 signifies that all respondents are satisfied and happy with the work performed by the action.

The User Satisfaction Score is assessed with reference to the results of the dimensions' importance and dimensions' conformity evaluation. The User Satisfaction Score is measured at the individual level for each of the survey respondents via identification of the important dimensions for that particular respondent.

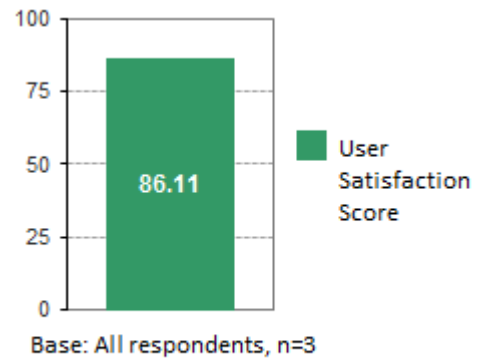
To increase the accuracy of the calculation, a specific weight coefficient is applied to the dimensions. To those dimensions which were evaluated as "Important" a weight coefficient of 1 was applied, while a coefficient of 0.5 was applied to the dimensions which were evaluated as "Rather Important". A coefficient of 0 is applied to all the other dimensions. Finally, all the individual values are summed.



As the next step, an analysis of the statements which represent these identified dimensions is performed. If a respondent claimed that a particular statement fully corresponded to the specific dimension (value 5 – ‘Agree’), then a coefficient of 100 (100% eligibility) is assigned. If evaluated with 4 – ‘Rather Agree’, a coefficient of 75 applies, if evaluated with 3 – ‘Neither Agree nor Disagree’, a coefficient of 50 applies, if evaluated with 2 – ‘Rather Disagree’, a coefficient of 25 applies, and in the case it was evaluated with 1 – ‘Disagree’, the coefficient is 0.

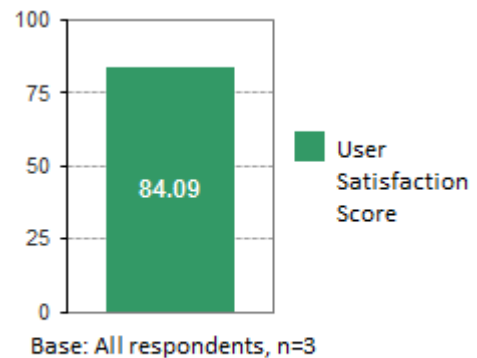
**FIGURE 7 – ACTION 1.4 PERCEIVED QUALITY USER SATISFACTION SCORE**

Figure 7 shows that the **Perceived Quality User Satisfaction Score is 86.11**. The result indicates a high level of respondent satisfaction with the demo version of ECAS-STORK Integration. However, this value is only indicative due to the low number of respondents who participated in the survey.



**FIGURE 8 – ACTION 1.4 PERCEIVED UTILITY USER SATISFACTION SCORE**

Figure 8 shows that the **Perceived Utility User Satisfaction Score is 84.09**. The result indicates a high level of respondent satisfaction with the demo version of ECAS-STORK Integration. However, this value is only indicative due to the low number of respondents who participated in the survey.



### 5.4.3 Net Promoter Score

The Net Promoter Score® (NPS) is a widely used management tool that helps evaluate the loyalty of a customer relationship<sup>13</sup>. This management tool has been adapted to suit the ISA programme’s Evaluation and

<sup>13</sup> Official webpage of Net Promoter Score® community <http://www.netpromoter.com/home>.

Monitoring activities and measures the overall respondents'/stakeholders' experience and loyalty to a specific ISA action.

In order to evaluate the NPS, the question "how likely the respondent would recommend the particular action's output to others" is asked. The assessment is done on a scale from 0 to 10, where 0 represents the answer "Not likely at all" and 10 – "Extremely likely"<sup>14</sup>. After the data analysis, the respondents are classified as follows:

- **Promoters** (numeric values from 9 - 10) - loyal users who will keep using the action's final outcome and refer others, promoting the usage of the action's outcomes;
- **Passives** (numeric values from 7 - 8) - satisfied but unenthusiastic users who will most probably not recommend the action's outcomes to others;
- **Detractors** (numeric values from 0 - 6) - unhappy users who can damage the image and decrease the usage of the action's outcomes.

The NPS final score calculation is done based on the following formula:

$$\text{NPS} = \% \text{ of Promoters} - \% \text{ of Detractors}^{14}$$

The result can range from a low of -100 (every customer is a Detractor) to a high of +100 (every customer is a Promoter).

**FIGURE 9 – ACTION 1.4 PERCEIVED QUALITY NET PROMOTER SCORE**

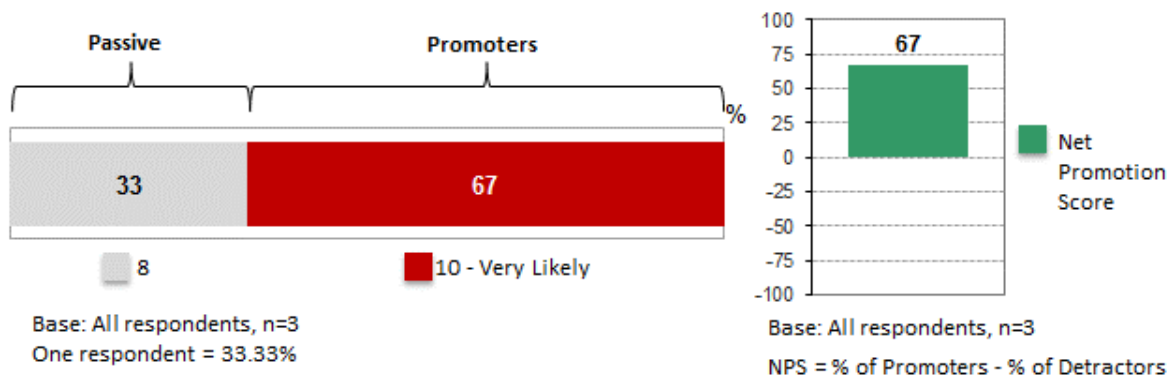


Figure 9 shows that two out of three respondents are Promoters of demo version of ECAS-STORK Integration and would recommend it to colleagues or other PAs. One respondent is a Passive user. The Net Promoter Score is 67. However, this value is only indicative due to the low number of respondents who participated in the survey.

<sup>14</sup> Markey, R. and Reichheld, F. (2011), "The Ultimate Question 2.0: How Net Promoter Companies Thrive in a Customer-Driven World"

**FIGURE 10 – ACTION 1.4 PERCEIVED UTILITY NET PROMOTER SCORE**

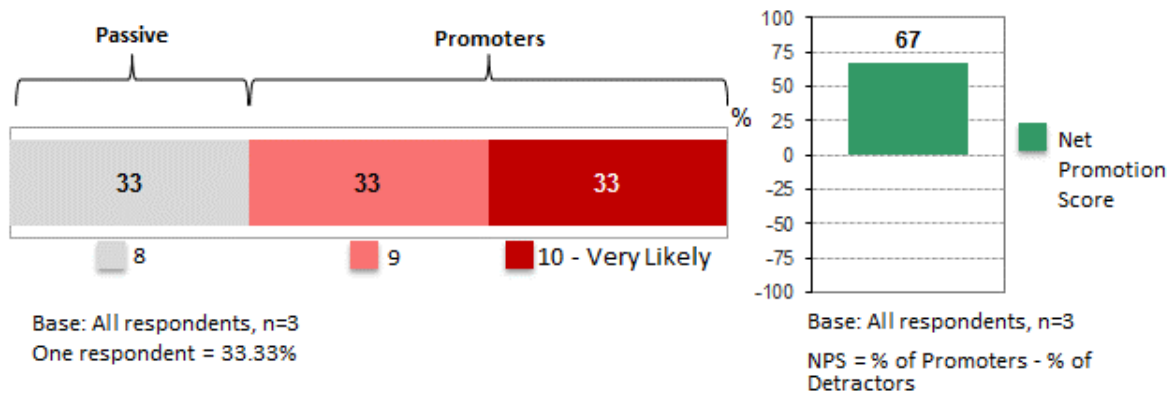


Figure 10 shows that two out of three respondents are Promoters of the demo version of ECAS-STORK Integration and would recommend it to colleagues or other PAs. One respondent is a Passive user. The Net Promoter Score is **67**. However, this value is only indicative due to the low number of respondents who participated in the survey.

#### 5.4.4 Overall Score

Referring to the performed measurements described earlier, namely the Usefulness Score, the Value Score, the User Satisfaction Score and the NPS, an Overall Perceived Quality Score and Perceived Utility Score are calculated.

To calculate the Overall Perceived Quality and Perceived Utility Scores, all measurements are reduced to a five point scale (the statements used to calculate the Value Score are already expressed using a scale from 1 to 5, the Usefulness Score had values from 1 to 7, NPS - from -100 to +100, and the User Satisfaction Score - from 0 to 100). In order to determine the Overall Perceived Quality and Perceived Utility Scores, the average value of these four measurements is calculated. To reduce any linear scale to a different linear scale the following formula<sup>15</sup> is used:

$$Y = (B - A) * (x - a) / (b - a) + A$$

- Y = Value after reducing to a five point scale
- x = Value in the initial scale
- B = The highest value of the new scale (in this case it is 5, as we are reducing other scales to a five point scale)

<sup>15</sup> Transforming different Likert scales to a common scale. IBM. Retrieved February 04. 2016., from <http://www-01.ibm.com/support/docview.wss?uid=swg21482329>

- A = The lowest value of the new scale (in this case it is 1, as we are reducing other scales to a five point scale)
- b = The highest value of the original scale (for Net Promoter Score and User Satisfaction Score it is + 100, for Usefulness Score it is 7)
- a = The lowest value of the original scale (for the Net Promoter Score it is -100, for the User Satisfaction Score it is 0 and for the Usefulness Score it is 1)

*Example of reducing Net Promoter Score to a five point scale:*

$$(5-1) * ((67) - (-100)) / (100 - (-100)) + 1 = 4 * 167 / 200 + 1 = 428 / 200 + 1 = 3.34 + 1 = 4.34$$

**TABLE 9 – ACTION 1.4 OVERALL PERCEIVED QUALITY SCORE CALCULATION**

NAME OF THE SCORE	ORIGINAL VALUE	VALUE AFTER REDUCING TO A FIVE POINT SCALE
Usefulness Score	5.33	3.89
Value Score	4.30	4.30
User Satisfaction Score	86.11	4.44
Net Promoter Score	67	4.34
<b>OVERALL PERCEIVED QUALITY SCORE</b>		<b>4.24</b>

The survey results show that on a 5-point scale the **User Satisfaction Score (4.44)**, the **Net Promoter Score (4.34)**, and the **Value Score (4.30)** have the highest evaluation. The Usefulness Score (3.89) has the lowest value, yet it is above the average value of 3. However, due to the low number of respondents who participated in the survey and the high standard error, these values are only indicators of the real situation.

**TABLE 10 – ACTION 1.4 OVERALL PERCEIVED UTILITY SCORE CALCULATION**

NAME OF THE SCORE	ORIGINAL VALUE	VALUE AFTER REDUCING TO A FIVE POINT SCALE
Usefulness Score	5.33	3.89
Value Score	4.44	4.44
User Satisfaction Score	84.09	4.36
Net Promoter Score	67	4.34
<b>OVERALL PERCEIVED UTILITY SCORE</b>		<b>4.26</b>

The survey results show that on a 5-point scale the **Value Score (4.44)**, the **User Satisfaction Score (4.36)** and the **Net Promoter Score (4.34)** have the highest evaluation. The Usefulness Score (3.89) has the lowest value, yet it is above the average value of 3. However, due to the low number of respondents who participated in the survey and the high standard error, these values are only indicators of the real situation.

## 5.5 ACTION STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

When analysing the data results of the dimensions' conformity versus the dimensions' importance, the action's strengths, weaknesses, opportunities and threats can be identified.

Statements are located in quadrants, based on the dimensions' conformity statements and dimensions' importance calculated mean values. The quadrants highlight the weak and strong aspects of the action, as well as threats and opportunities.

In general, all the statements that are attributed to the action can be grouped into four categories:

- Strengths – Essential to respondents and relevant to the action (1<sup>st</sup> quadrant);
- Weaknesses – Essential to respondents but not relevant to the action (2<sup>nd</sup> quadrant);
- Threats – Not essential to respondents and not relevant to the action (3<sup>rd</sup> quadrant);
- Opportunities – Not essential to respondents but relevant to the action (4<sup>th</sup> quadrant).

Four colours are used to identify Perceived Quality dimensions in Figure 11:

- Dark blue: Usability;
- Red: Trust (privacy);
- Brown: Performance;
- Purple: Support.

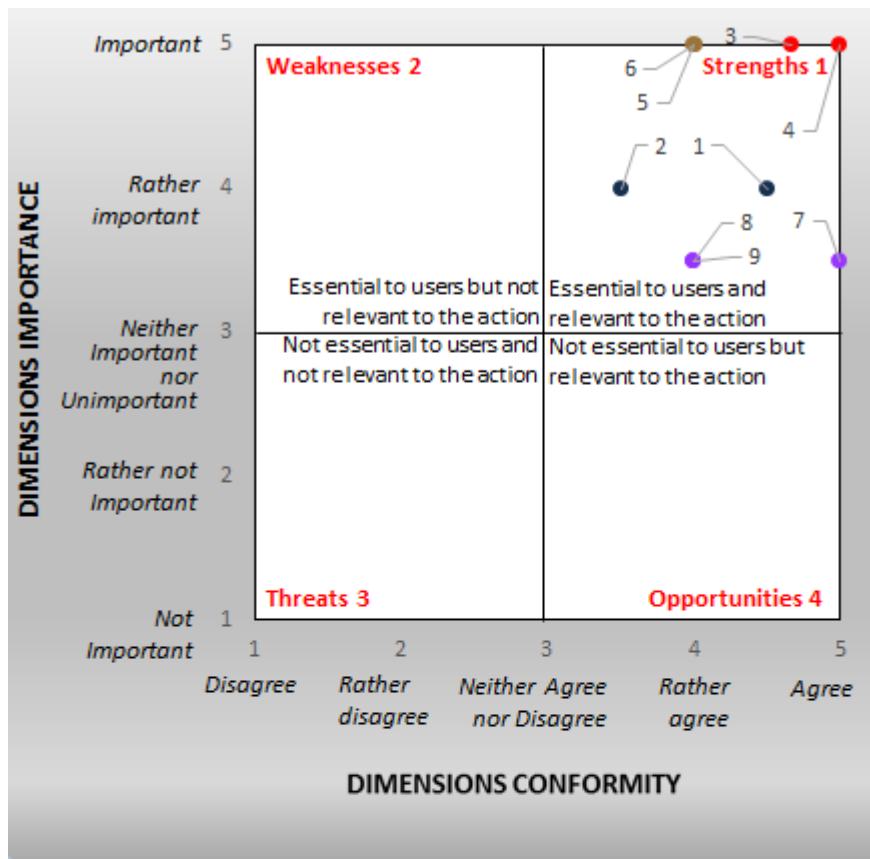
Dark blue colour is used for the Collaboration dimension in Figure 12 .

As seen in Figure 11, all nine Perceived Quality statements are evaluated as essential to the respondents and relevant to the action - all of them are located in the 1<sup>st</sup> quadrant and are identified as strengths of the demo version of ECAS-STORK Integration.

The following three statements are the most important to respondents:

- *'Data provided by users in the ECAS – STORK service are transported securely'* (statement 3);
- *'Data provided in the ECAS – STORK service are used only for the reason submitted'* (statement 4) and
- *'The support team showed a sincere interest in solving problems'* (statement 7).

FIGURE 11 – ACTION 1.4 ACTION STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS



**I. Usability:**

- 1 - The structure of the provided ECAS – STORK service is clear and easy to follow
- 2 - The ECAS – STORK service is well customized to individual users’ needs

**II. Trust (Privacy):**

- 3 - Data provided by users in the ECAS – STORK service are transported securely
- 4 - Data provided in the ECAS – STORK service are used only for the reason submitted

**III. Performance:**

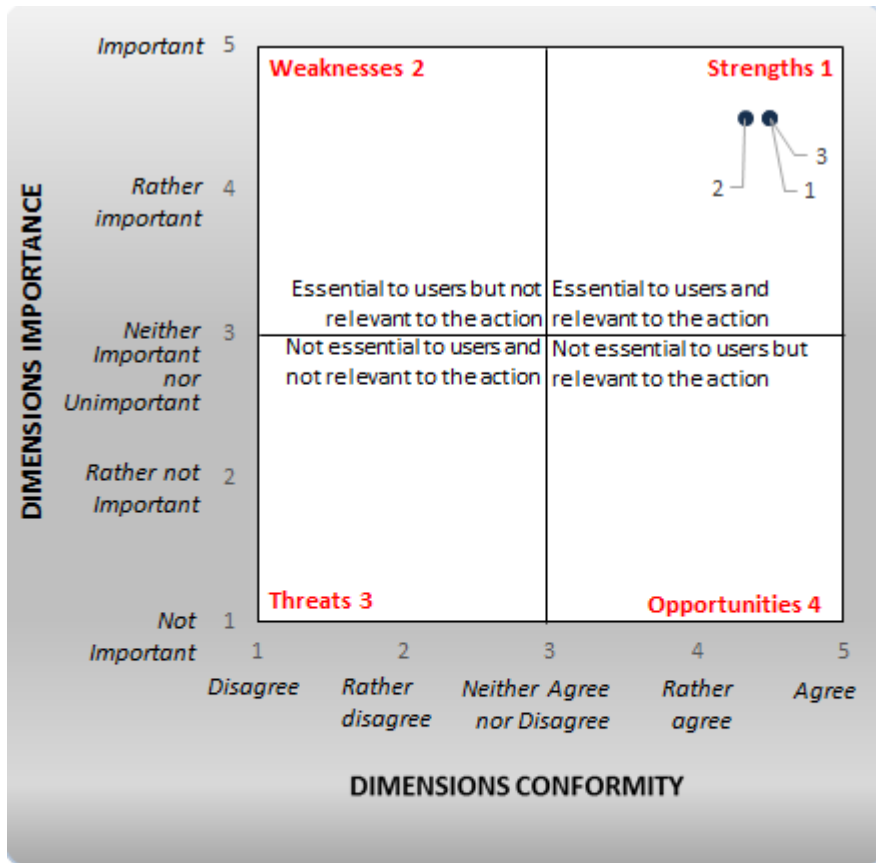
- 5 - The ECAS – STORK service is available and accessible whenever it is needed
- 6 - The ECAS – STORK performs the service successfully upon the first request

**IV. Support:**

- 7 - The support team showed a sincere interest in solving problems
- 8 - The support team provided prompt replies to the inquiries
- 9 - The support team has the knowledge to answer the questions

As seen in Figure 12, all three Perceived Utility statements are evaluated as essential to the respondents and relevant to the action - all of them are located in the 1<sup>st</sup> quadrant and are identified as strengths of the demo version of ECAS-STORK Integration.

FIGURE 12 – ACTION 1.4 ACTION STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS



**I. Collaboration:**

- 1 - The ECAS – STORK service helps successfully cooperate with European Commission
- 2 - Overall, the ECAS-STORK service supports effective electronic interaction between the EU Member states and the European Commission
- 3 - The ECAS-STORK service supports the implementation of European community policies and activities

## 5.6 STATEMENTS BASED ON ACTION OBJECTIVES

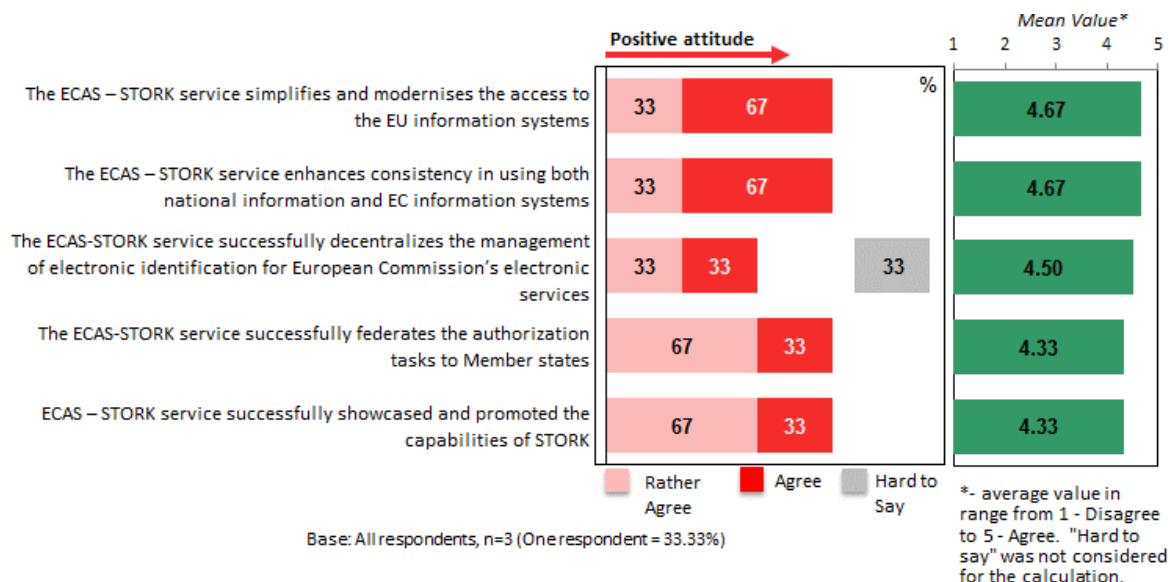
For the purpose of describing the action’s objectives, statements based on action objectives were designed for this survey. The respondents are asked to evaluate the extent to which these statements conform to the particular action, namely if the action’s objectives have been achieved.

The respondent is asked to provide his/her opinion using the 5-point Likert grading scale. For the dimension conformity evaluation, a grading scale with values ranging from ‘Agree’ to ‘Disagree’ is applied. An additional ‘Hard to Say/Not Applicable’ option is provided, however this score is excluded from the score calculations. Before performing the survey data calculations, the 5-point Likert scale values are interpreted as numeric values:

- 5 – Agree;
- 4 – Rather Agree;
- 3 – Neither Agree nor Disagree;
- 2 – Rather Disagree;
- 1 – Disagree;
- 0 – Hard to Say/Not Applicable (*is not considered for the calculation*).

In Figure 13 the bars in pink/red represent the positive attitude (answers ‘Rather agree’ and ‘Agree’). None of the respondents provided negative responses. In addition, the answer ‘Hard to say’ (the bar in grey) is presented separately on the right. An explanatory legend with colour codes represents the available data. The average mean value for each of the dimensions is presented on the right side of the figure.

**FIGURE 13 – ACTION 1.4 STATEMENTS BASED ON ACTION OBJECTIVES**





The survey results demonstrate that all of the statements which are based on action objectives (i.e., statements which describe the action's objectives) have been evaluated as relevant to the action. All of the statements have a higher mean value than the neutral value 3 - 'Neither Agree nor Disagree'.

## 5.7 RESPONDENT RECOMMENDATIONS AND OPINIONS

This section provides an overview of the feedback received about the demo version of the ECAS-STORK Integration. It should be noted that each response is given by a single survey respondent, which means that the number of different answers to each question is the same as the number of respondents who had an opinion or a recommendation to the specific question.

**TABLE 11 – ACTION 1.4 RECOMMENDATIONS AND MAIN BENEFITS**

<p><b><i>"Do you have any recommendations on how to improve "ECAS-STORK" service and upcoming "ECAS-eIDAS" service, taking into consideration the service as a whole with all its components?"</i></b></p>
<p>Disseminate the use of ECAS-STORK for EC / ISA e-services as trusted and mature examples of a modern way of user authentication.</p>
<p>The number of applications I can use using ECAS-STORK is limited (CIRCABC, eJustice portal, further?). The research participant portal access through ECAS STORK worked just for a limited period with ECAS-STORK. ECAS-STORK should get extended to all ECAS connected EC services.</p>
<p>Disseminate and market the ECAS-STORK service and future possibilities within the Commission and Parliament as well as its staff. Especially those in central positions.</p>
<p><b><i>"What are the main benefits or the most valuable things about "ECAS-STORK" service and upcoming "ECAS-eIDAS" service?"</i></b></p>
<p>STORK and/or STORK 2.0 has been used/tested in more than 19 countries.</p>
<p>No more passwords, higher security and user convenience.</p>

## 6 SURVEY CONCLUSION AND RECOMMENDATIONS

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The objective of this survey was to evaluate the Perceived Quality and Perceived Utility of the demo version of Action 1.4 – ECAS-STORK Integration. It is important to take into account that only three respondents participated in the survey. This means that the results of this survey only represent the opinion of these three unique respondents and cannot be used as a statistically meaningful assessment of the entire action.

- The ISA Action 1.4 – ECAS-STORK Integration received a **positive Perceived Quality (4.24 out of 5) and Perceived Utility (4.26 out of 5) assessment.**
- Regarding the Perceived Utility, the results identify that the demo version of ECAS-STORK Integration is perceived as **beneficial in terms of Collaboration.**
- Regarding the Perceived Quality, the results identify that the demo version of ECAS-STORK Integration is perceived as **more beneficial in terms of Trust and Support than in Performance and Usability.**
- Based on the respondent recommendations, ECAS-STORK Integration should be disseminated as a trusted and mature example of a modern way of user authentication.
- Another respondent recommends to implement a permanent access to the research participant portal through the ECAS-STORK service. In addition, the number of applications that can be used through ECAS-STORK Integration should be increased.
- The main benefits of ECAS-STORK Integration are high security, user convenience and its usage in more than 19 countries.

Based on the conclusions drawn, CGI-Accenture advises the following recommendations:

- Additional work should be applied to the Performance and the Usability of the demo version of ECAS-STORK Integration as they are the lowest conformable dimensions.

## 7 APPENDIX

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### 7.1 RAW DATA EXPORT

The attached file contains the survey result export.



Raw Data.xls

## 7.2 GLOSSARY

- 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.
- The mean<sup>11</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>11</sup> for each case and divide that sum by the total number of cases;
- Mode<sup>11</sup> 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;
- The Net Promoter Score® (NPS) is a widely used management tool that helps evaluate the loyalty of a customer relationship. Customers are classified as Promoters, Passive and Detractors.
- 'Perceived Quality' is defined as the extent to which the outputs of an ISA action are meeting its direct beneficiaries' expectations;
- Standard deviation<sup>11</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>11</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 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;