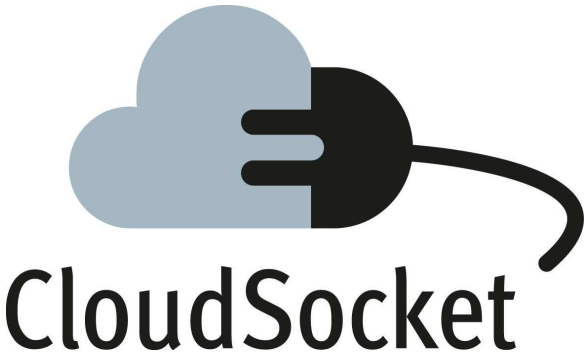

CLOUD TRANSFORMATION FRAMEWORK

EXPLANATORY NOTES

D2.3

Editor Name	Wilfrid Utz (BOC)
Submission Date	June 30, 2015
Version	1.0
State	FINAL
Confidentially Level	PU

Co-funded by the Horizon 2020
Framework Programme of the European Union

EXECUTIVE SUMMARY

The document at hand acts as explanatory note for the Cloud Transformation Assessment prototype developed in context the initial requirements gathering and use-case definition.

The prototype provides an assessment and guidance framework for organizations to analyze their business processes following a defined sequence of questionnaires and maturity calculations. The resulting report/roadmap enables the (self-) assessment whether it is feasible to transform specific business process into the cloud (BPaaS) or further steps/pre-requisites need attention. This includes future state visualizations, recommendations on transformation/change management steps to be taken into consideration and interactive reporting.

The guidance engine considers at this stage 4 phases, from an initial AS-IS collection of the organizational background to interactive report generation as an outcome of the assessment. The 4 phases are introduced in the following sections, concluded with a technological view on the implementation and next steps.

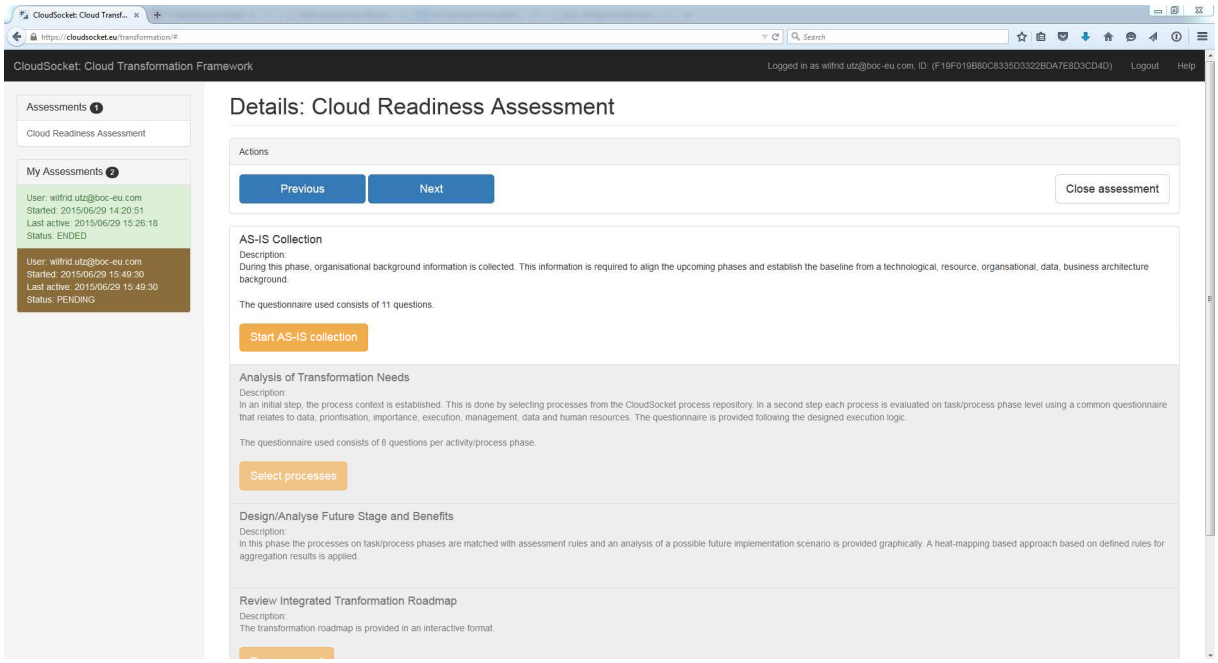

Figure 1 Cloud Transformation Framework Prototype

URL	**https://cloudsocket.eu/transformation/**
Access	No username/password is needed to access the prototype. The tool is available publicly. Assessments can be performed anonymously or using a private space available after login with a valid email address.

PROJECT CONTEXT

Workpackage	WP2: Use Case Requirements and Evaluation Criteria
Task	T2.3 Cloud Transformation Framework
Dependencies	Results of T2.1 (Process repository)

Contributors and Reviewers

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Version History

Version	Date	Authors	Sections Affected
0.1	June 5, 2015	FHNW	Collection of sources
0.5	June 15, 2015	All	Initial structure of document and collection of sources
0.8	June 29, 2015	Wilfrid Utz	Combination of content and finalization of document
0.9	June 30, 2015	Reviewers and Contributors	Feedback on review version
1.0	June 30, 2015	Wilfrid Utz	Inclusion of review comments

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1 CLOUD TRANSFORMATION FRAMEWORK

The Cloud Transformation Framework enables interested end-users (start-ups, SMEs) to self-check their readiness to transform and deploy their business process into the cloud. The implementation aims to reduce the entry barrier of those stakeholders and provides initial guidance for the transformation process in the form of maturity indicators, recommendations and an individual transformation roadmap.

In an initial configuration the guidance framework consists of 4 consecutive steps, graphically visualized in Figure 2 and introduced in the following:

1. **AS-IS Collection:** During this phase, organizational background information is collected. This information is required to align the upcoming phases and establish the baseline from a technological, resource, organizational, data, and business architecture background.
2. **Analysis of Transformation Needs:** In an initial phase, the process context is constructed. This is done by selecting processes from the CloudSocket process repository. Thereafter each process selected is evaluated on process phase level using a common questionnaire that relates to data, prioritization, importance, execution, management, data and human resources. The questionnaire is provided following the designed execution logic.
3. **Design/Analyze Future Stage and Benefits:** based on the input collected in the steps 1 and 2, the future scenario is visualized by applying rule-based assessment and visualization techniques. The processes selected are analyzed and a heat map is constructed as visual representation.
4. **Review Integrated Transformation Roadmap:** the final step in the guidance framework constructs the report containing the important observations and recommendations for change.

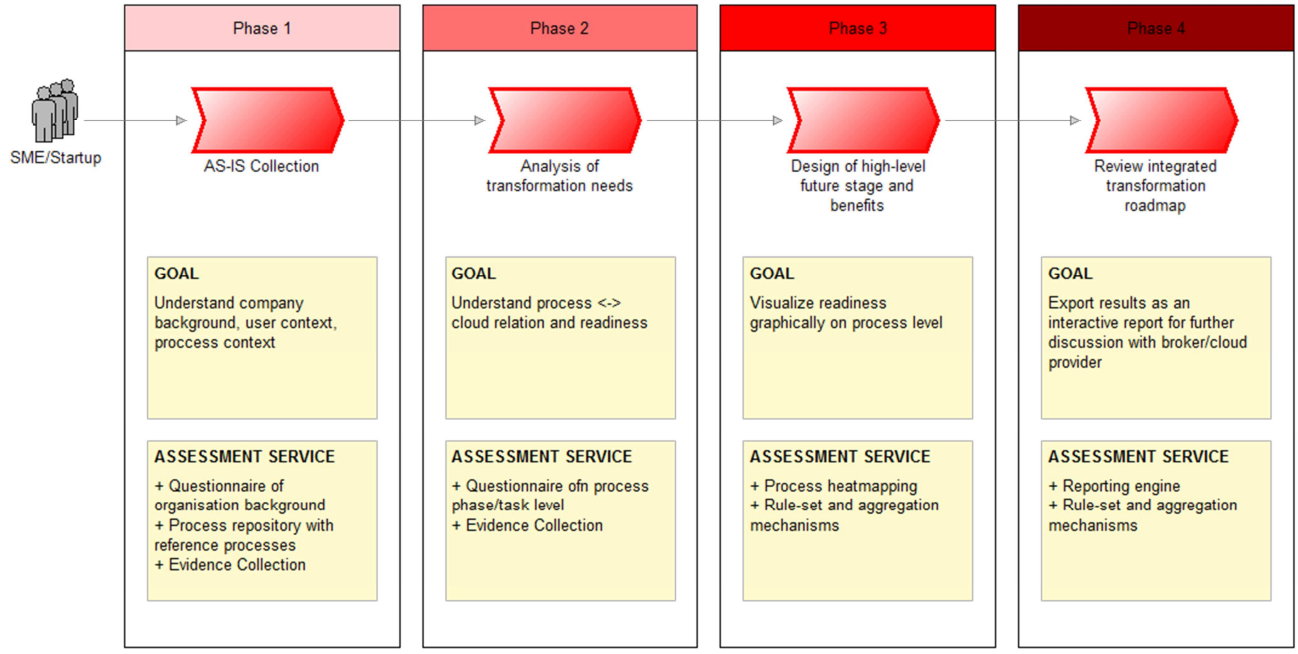

Figure 2 Cloud Transformation Guidance Phases

Cloud readiness in our context is defined as follows:

$$\boldsymbol{CloudReadiness} = \boldsymbol{Company\ Maturity} + \textit{Process Maturity}$$

where

$$\boldsymbol{Company\ Maturity} = Business\ Architecture\ Maturity + Information\ Architecture\ Maturity + Technology\ Architecture\ Maturity + \boldsymbol{Strategy\ Maturity}$$

and

$$\boldsymbol{Strategy\ Maturity} = Cloud\ Strategy + Compliance\ Maturity + Governance\ Maturity$$

and

$\boldsymbol{Process\ Maturity}$ as a decomposition of the above from organization level to processes, activities and tasks.

In the following the user interface of the prototype is introduced. This is followed by details for each of the phases, providing background information on how the assessment services have been developed and their impact on the overall assessment.

2 USER INTERFACE AND FUNCTIONALITY

The user interface of the prototype provides access on a personalized level to running/completed assessments. The basic user interface functionality is introduced below.

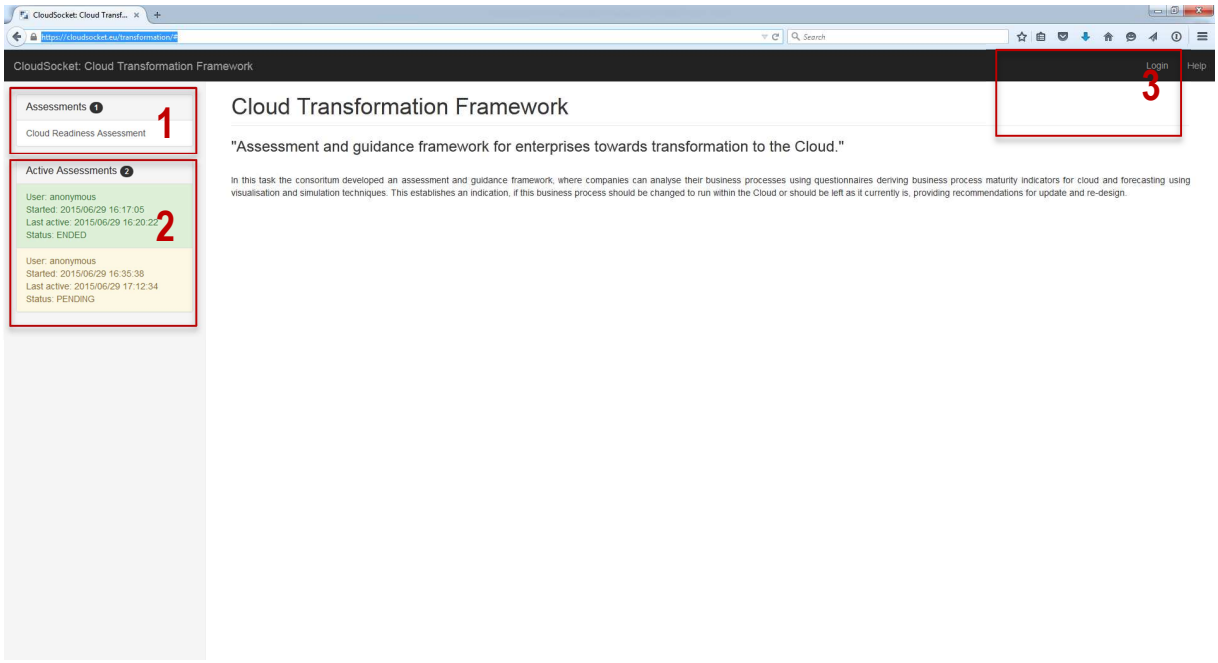

Figure 3 User Interface: General

1. Assessment Processes: the user can select from available guidance processes. The framework has been developed to support adaptation of the guidance process to different situations and backgrounds.
2. Assessment Instances: The panel below enables the selection of running/completed assessments. Assessments are colour coded.
3. Login/Personalization: it is possible to login using a valid email address. All assessments created are then assigned to the login and only available after login. In case of anonymous use, all assessments are publicly available (also for further assessment and interaction).

To start an assessment, select “Cloud Readiness Assessment” from the “Assessments” panel. To continue a running assessment select the instance from the “Active Assessments” panel.

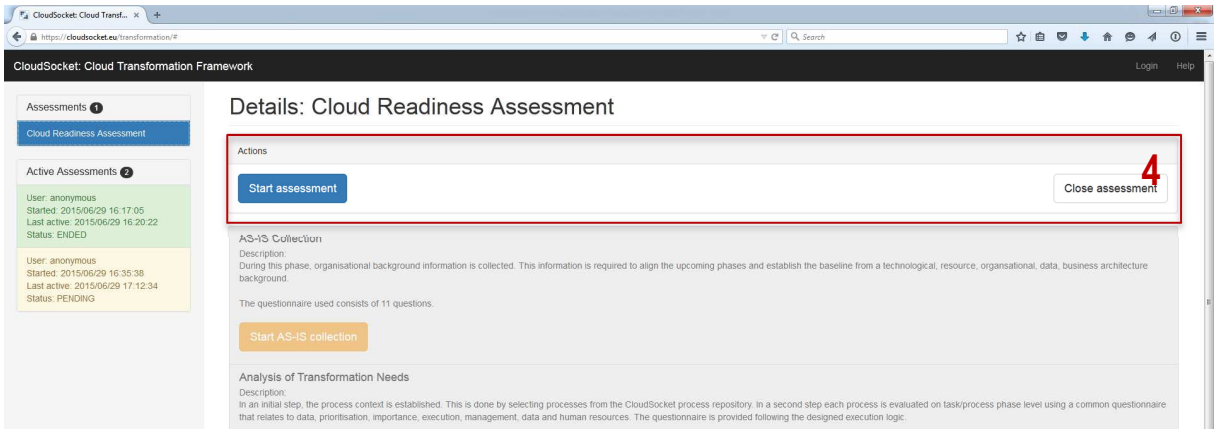

Figure 4 User Interface: Start Assessment

4. To start an assessment, click on “Start assessment” in the action panel. A new assessment instance is added and shown in the “Active Assessments” panel.

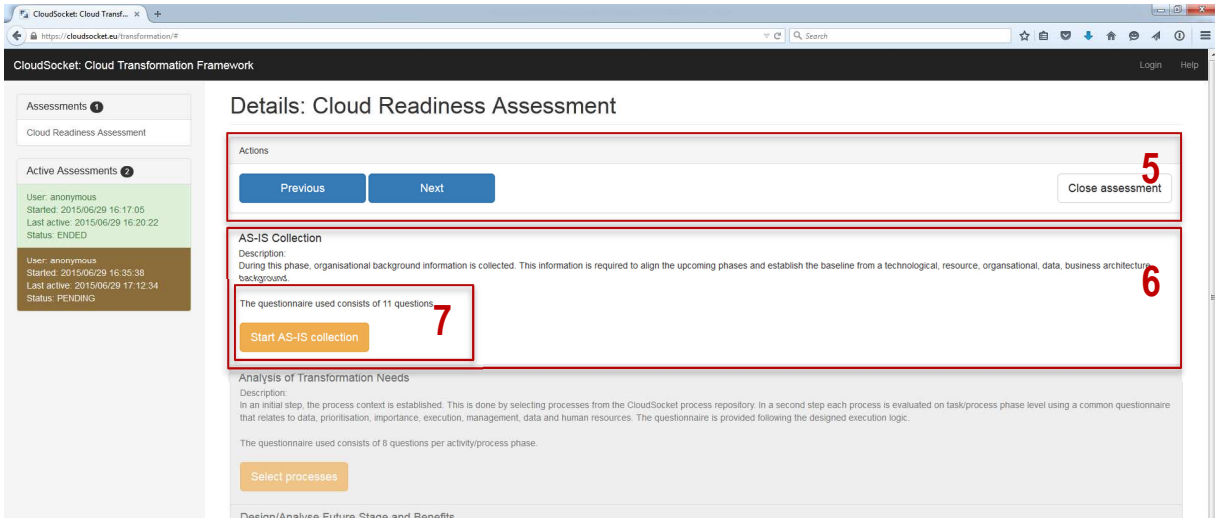

Figure 5 User Interface: Run Assessment

5. Using the action panel, the user can navigate through the phases of the assessment.
6. The active steps are enabled and accessible, showing further details. In-active steps are greyed out.
7. Assessment service actions are available within active tasks (in Figure 5, “Start AS-IS Collection”)

The results and the states of each step is persisted within the instance. This allows the user to re-visit an active assessment at any time. In case an assessment instance is finalized (Status: ENDED), only the final step is accessible.

3 ASSESSMENT PHASES

3.1 Phase 1 AS-IS Collection

The AS-IS Collection is performed using a static questionnaire to retrieve information on the organisation's background. 11 single-selection questions target the background on strategy, business, technology and data level. The design of the questionnaire has been conducted by CloudSocket partner FHNW, building upon the team's experience in the context of cloud readiness (see [1], [2], [3], [4], [5], [6], [7], [8]).

AS-IS: STRATEGY	
Question How is the management's commitment for the Cloud projects?	
	A: The management does not know that cloud initiatives/projects are in place
	B: The management is only partially involved with information about what is going on.
	C: The management needs to be convinced by meaningful arguments (security and privacy issues make them skeptical)
	D: The management is fully committed (knows the objectives, supports the initiative)
Question Do you have in your organization a dedicated sourcing team?	
	A: No, we do not have a sourcing team or group within our organization
	B: We do have some groups that take care of their specific sourcing
	C: We do not have a dedicated company-wide team, but we have department specific teams
	D: Yes, we have a sourcing team/group that is responsible for the sourcing of IT/cloud solutions
Question Do you operate in different countries?	
	A: No, we just operate in one country that is a member of the European Union
	B: Yes, we operate in different countries within Europe
	C: Yes, we operate in countries within and outside of Europe
AS-IS: BUSINESS ARCHITECTURE	
Question Are you making use of a process framework, such as ITIL, APQC?	
	A: No, we do not use a process framework.
	B: We would like to introduce a process framework in the future
	C: Yes, we make use of a framework, but we it has not been fully established
	D: We make use of a company-wide established process framework
Question Is a business continuity in place?	
	A: No, we do not have a business continuity plan in place
	B: Yes, we do have a business continuity in place, but it hasn't been verified/tested yet
	C: Yes, we do have a business continuity in place that is being verified/tested on a regular basis

AS-IS: TECHNOLOGY ARCHITECTURE	
Question How are you connected to the Internet?	
	A: No Internet connection available
	B: Normal speed with fast DSL or fiber, up to 60 Mbit/s
	C: Fast Internet access (fiber connection) up to 100Mbit/s
	D: Fast Internet access (fiber connection) up to 1000Mbit/s
Question Do you have a centralized, automated change management process that follows an IT Service Management framework?	
	A: No
	B: Yes, but not fully automated, the process is in compliance with ITIL rules or other frameworks.
	C: Yes
Question How would you describe the degree of standardization in your current IT-Infrastructure?	
	A: No standardization at all
	B: Low, due to lack of resources we are not able to follow that
	C: Medium
	D: High
AS-IS: DATA ARCHITECTURE	
Question How much is your Internet access utilized?	
	A: up to 90%
	B: around 50%
	C: around 25%
	D: 0%
Question Are internal data access policies and file access rights in place?	
	A: Data (Confidential) is stored locally by each employee
	B: No, we have not defined any access rights, everyone is able to see everything
	C: Yes, we set file access right
Question How are the compliance requirements (data/content) within your sector?	
	A: no compliance requirements
	B: Low compliance requirements
	C: Medium compliance requirements
	D: High compliance requirements

Table 1 AS-IS Collection Questionnaire

All questions are single-selection questions. Answers are scored as input for rule-based evaluation. The questionnaire is implemented using a model-driven questionnaire service (available online at https://www.adoxx.org/svn/all-repo/3_Example_Questionnaire_ADOxx15/) developed by BOC, the graphical model (using a collection of possible questions derived from the sources mentioned above) is shown in Figure 6, the web-based front-end for the end-user, integrated in the guidance engine in Figure 7.

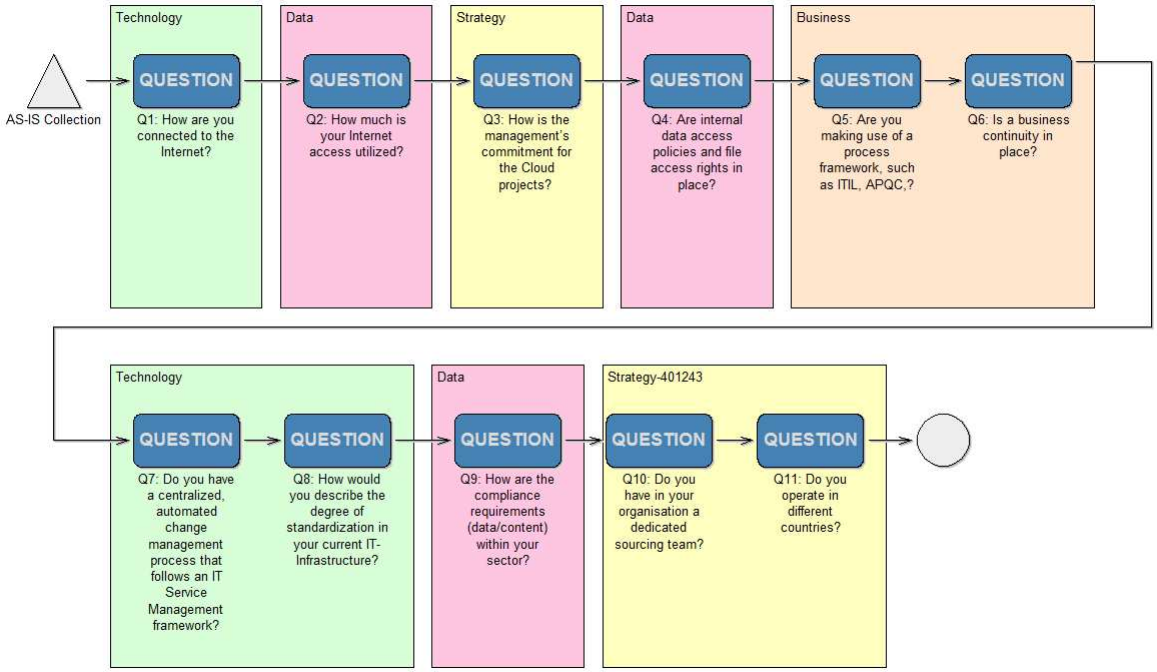

Figure 6 AS-IS Questionnaire Model

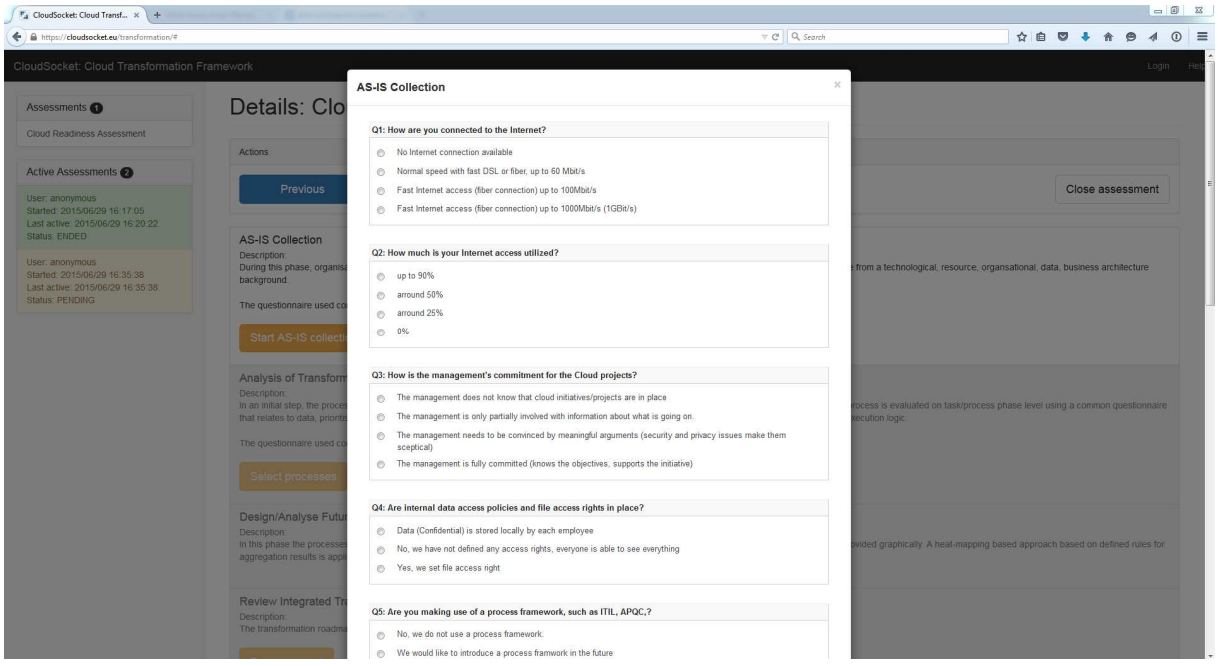

Figure 7 Phase 1: AS-IS Collection

3.2 Phase 2 Analysis of Transformation Needs

The Analysis of Transformation needs is performed using the process context as a basis. In an initial step the user selects processes interesting for analysis from the CloudSocket process repository. At the current stage, reference processes enhanced by the results of T2.1 [9] are available in the repository. The process repository consists at this stage of 321 process models (company map and BPMN diagrams) specified using the community edition of the ADONIS Business Process Management Toolkit (online at www.adonis-community.com) using the reference model set APQC as a baseline

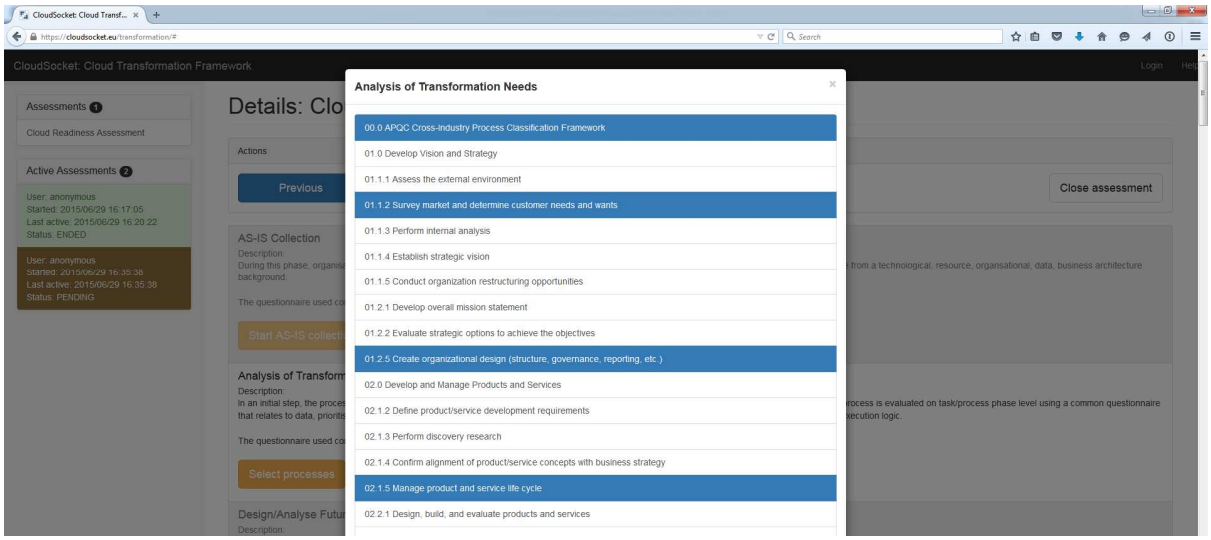

Figure 8 Process Selection

For each of the processes, the graphical representation is retrieved from the repository. Using the graphical model, the user can annotate process phases/tasks/activity using a questionnaire to details cloud-relevant information as annotations. The structure of the questionnaire for annotation is available below.

TASK: MANAGEMENT		CR Score	CR State
Question Is the process currently monitored? (in terms of KPIs, risks, etc.)			
	A: We do not have the possibilities to measure the process	0	RED
	B: We do not make use of measuring the process, even though we do have the capability	1	YELLOW
	C: Yes, we measure the process, but we do not take actions	2	YELLOW
	D: Yes, we measure the process and use the report to improve the process on a regular basis	3	GREEN
TASK: STRATEGY			
Question What is the strategic importance of the process(es)?			
	A: The process(es) is not of strategic importance for the organization and low involvement of stakeholders is required for decision-making	0	N/A

	B: The process(es) is of medium strategic importance for the organization and the involvement of stakeholders is sometimes required for decision-making	1	N/A
	C: The process(es) is of high strategic importance for the organization and high involvement of stakeholders is required for decision-making	2	N/A
TASK: EXECUTION			
Question How often is the process executed?			
	A: 10/month	0	N/A
	B: 500/month	1	N/A
	C: 1000/month	2	N/A
	D: more than 1000/month	3	N/A
Question Describe the degree of complexity and standardization?			
	A: The process is complex and not standardized	0	RED
	B: The process is simple and not standardized	1	YELLOW
	C: The process is complex and standardized	2	YELLOW
	D: The process is simple and standardized	3	GREEN
TASK: DATA			
Question What kind of content (size) is usually accessed?			
	A: high (higher than 100MB)	0	RED
	B: medium (up to 50MB)	1	YELLOW
	C: low (up to 1MB)	2	GREEN
Question What kind of content (size) is usually generated?			
	A: high (higher than 100MB)	0	RED
	B: medium (up to 50MB)	1	YELLOW
	C: low (up to 1MB)	2	GREEN
Question What kind of data is used? (confidentiality)			
	A: highly sensitive data	0	RED
	B: medium sensitive data	1	YELLOW
	C: low sensitive data	2	YELLOW
	D: no sensitive data	3	GREEN
TASK: HUMAN RESOURCES			
Question Do you have offline workers (no Internet connection) working/contribute in this process?			
	A: no	0	N/A
	B: yes	1	N/A

Table 2 Task/Process Annotation

All questions are single-selection questions, answers are scored as input for rule-based evaluation. The questionnaire is implemented – similar as for the AS-IS collection using a model-driven questionnaire service developed by BOC.

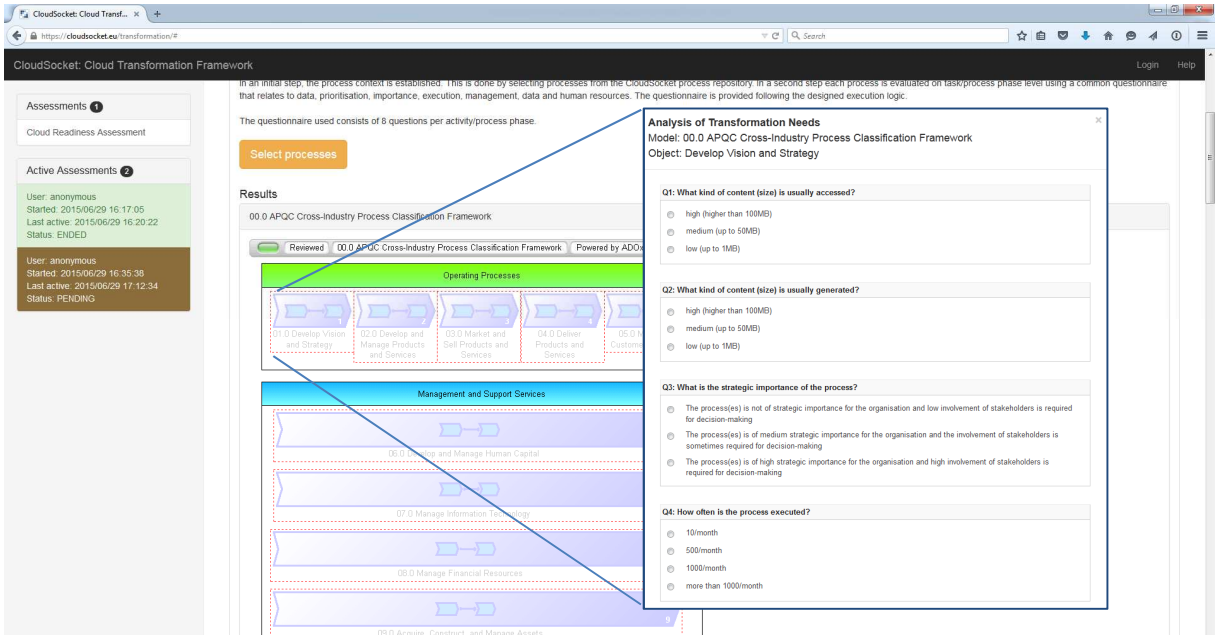

Figure 9 Cloud-Readiness Annotation

Phase 2 concludes the information acquisition in the assessment implementation.

3.3 Phase 3 Design of High-Level Future Stage And Benefits

This phase evaluates the results of phase 2 and provides a preliminary heatmap as a visualization on the graphical process model. This view provides an indication of the cloud-maturity of process phases, tasks and focus points for further refinement. The heatmap calculation is based on the “Cloud Readiness (CR) state” field assigned to each answer (see Table 2), for aggregation the worst value for a phase determines the overall status.

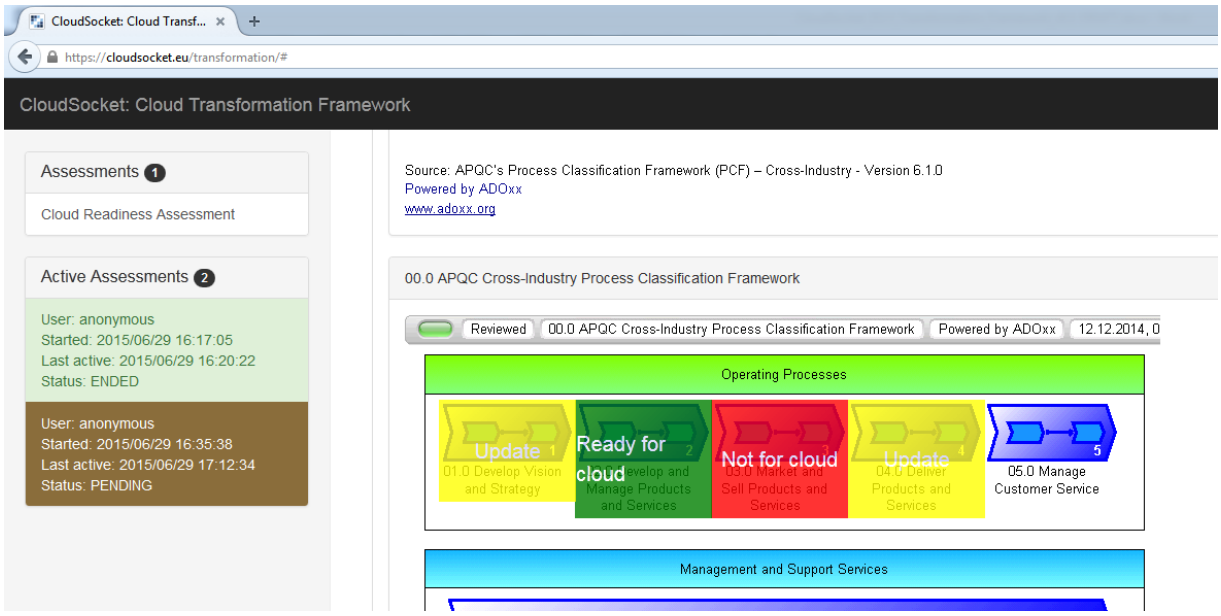

Figure 10 Phase 3 Heatmap

Possible outcomes of the assessment per process/task are:

1. "Ready for cloud": transformation of the process to the cloud as a BPaaS is possible.
2. "Update": to transform the process/task, further steps are necessary, recommendations are provided in phase 4.
3. "Not for cloud": It is recommended to not consider this process/task for transformation based on its annotation.

3.4 Phase 4 Review Integrated Transformation Roadmap

The final phase in the assessment creates a comprehensive report based on the previous inputs. Recommendations are calculated based on 2 values: Cloud Readiness and Value Benefit for combined recommendations. For aggregation, questions are weighted.

Cloud Readiness (CR): This value determines how well the selected answer contributes to the Cloud readiness of an organisation. The values are within the range of 1 to 9. The higher the value the better the Cloud readiness of the organisation is. The Cloud readiness values of all questions within a category are summed up and divided by the number of posed questions. The result is the average cloud readiness score for a category.

Value Benefit (VB): This value determines how well the selected answer contributes to the value benefit that an organisation could generate by the adoption of Cloud-services. The values are within the range of 1 to 9, whereby the higher the value is the higher the value benefit is. The value benefit values of all questions within a category are summed up and divided by the number of posed questions. The result is the average value benefit score for a category.

Question Weight (QW): For the sake of simplicity, the author has set the weight of the questions within a category equal for all (weight=1). If there is a need to weigh the questions within a category, by changing the value of this attribute it can be executed in future.

48 possible Recommendations and suggestions are implemented as 15 rules, building on the input data of above.

4 SUMMARY AND CONCLUSIONS

The Cloud Transformation Framework available at https://cloudsocket.eu/transformation/ enables interested end-users (start-ups, SMEs) to self-check their BPaaS readiness. Building up extensible mechanisms, enhancements from content as well as evaluation perspective are possible.

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