



Mastering Data-Intensive Collaboration and Decision Making

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Summary

This deliverable reports on the second evaluation round of Use Case 2 "Trial of Clinical Treatment Effects" and particularly focuses on the evaluation of the Dicode workbench and the enhanced services integrated into it. The evaluation process was performed by using properly formulated metrics and instruments which are described in D6.1 based on the specifications of D2.2. Collaboration and decision making support services, as they are developed and accommodated in the Dicode workbench, as well as Augmentor, are evaluated by senior real users under real Use Case 2 related settings. Particular emphasis is given to the usability and acceptability of Dicode services, to thus guide their final revisions and improvements.

Table of Contents

1. Introduction.....	5
1.1 Context	5
1.2 Objectives.....	5
1.3 Structure.....	5
2 First evaluation round of Use Case #2	6
3 Second evaluation round	6
3.1 Evaluation process.....	7
3.2 Detailed evaluation feedback.....	8
3.2.1 Overall impression of the Dicode Workbench	8
3.2.2 Support of data analysis, collaboration and decision making.....	10
3.2.3 Potential benefit to current work practices	12
4 Discussion.....	15
Appendix: Dicode questionnaire - second round	17

1. Introduction

1.1 Context

This deliverable reports on the evaluation of the enhanced version of Dicode services relative to Use Case 2 (Trial of Clinical Treatment Effects - TCTE). Specifically, it presents the evaluation outcome of the integrated Dicode collaboration and decision making services (through the Dicode workbench) by summarizing the answers of senior real users (radiologists, radiographers and other professionals in the medical domain) who responded to the questionnaire shown in the Appendix. It also presents evaluation results of Augmentor as a tool to aid analysis and sharing of clinical research reports generated by Image Analysis software (i.e. Dynamika, which does post processing and analysis of magnetic resonance images (MRI)).

This is the second of two deliverables reporting on the validation and assessment of the developed Dicode services through the TCTE use case. While the focus of the first deliverable (D6.3.1) was on the evaluation of Augmentor and TCTE related semantic services, this deliverable (D6.3.2) puts emphasis on the evaluation of the enhanced version of the integrated Dicode collaboration and decision making services, and also comments on how the feedback provided in the first evaluation round was taken into account.

Dicode project's evaluation activities will be summarized in deliverable D6.5 (due in month 36), together with an assessment of the project's outcome from external experts/ bodies or communities.

1.2 Objectives

The purpose of this document is to present the second evaluation round of the integrated Dicode services related to the TCTE use case in the context of Tasks 6.2 and 6.4, as these originate from the functional specifications outlined in deliverable D2.3 and presented in deliverables D3.1.2, D3.2.2, D4.1.2, D4.2.2, and D5.4.2, in order to assure their usability and acceptability.

The Dicode workbench and corresponding innovative work methodologies are evaluated based on how they can improve the everyday practice of senior clinicians (e.g. radiologists, researchers) during the processing of voluminous and heterogeneous data, whilst enhancing collaboration, decision making, data management and collective sense making.

As discussed in D6.2.2, the evaluation of the Dicode services is performed based on a series of Key Success Indicators (which were first presented in D6.1). The evaluation results and feedback presented in this document will serve as a guideline for service providers to develop the final Dicode suite of services, putting emphasis on the improvement of their usability and overall quality.

1.3 Structure

In Section 2, we give a brief overview of the first evaluation round of the TCTE use case, together with the project reviewers' comments for WP6 and Use Case 2 in particular. In

Section 3, information about the process of the second evaluation round of TCTE are provided, emphasizing on the characteristics of the enhanced services now integrated into the Dicode workbench, along with detailed evaluation feedback and summary statistics for the evaluation results. Section 4 gives a summary of the evaluation procedure and indicates possible directions for the final revision of Dicode services.

2 First evaluation round of Use Case #2

During the first evaluation round of the TCTE use case, the main objective was to identify the tools and work methodology suitable for effectively delivering and sharing knowledge between communities of researchers, doctors and patients by revealing trends within a clinical trial. It was revealed that Dicode services could certainly enhance IMA's routines. Services of immediate interest included the Dicode workbench, the Dicode collaboration and decision support services, and Use case 2 related data mining services, in particular the Subgroup Discovery service.

A second objective of the first evaluation round was to evaluate Augmentor and TCTE related semantic services. Augmentor was shown to have large potential utility for enhancing the workflow of clinicians using Dynamika for image analysis in randomised clinical trials.

As discussed in detail in D6.2.2, the results of the second year Dicode's review were positive with respect to work carried out in WP6 and the evaluation procedure followed for the initial set of services of the project. A special remark concerning WP6 and especially D6.3.1 (the first version of this deliverable) was that "the final evaluation methodology needs to be performed with real users" (the same remark was also made for Use Case 3). Having taken this into account, the second round of evaluation, which is described in detail in the next section, was performed only with real users (practising professionals).

3 Second evaluation round

For the second evaluation round, all technical partners have worked towards finalizing the enhanced version of all Use Case 2 related services, in close proximity with IMA. The services now available are integrated into the Dicode workbench and display all the features presented in D3.1.2, D3.2.2, D4.1.2, D4.2.2, and D5.4.2. Issues raised by the evaluators of the first round and the abovementioned reviewers' remark reported in the second review meeting of the project are addressed.

As justified in D6.2.2, in the second evaluation round we collected feedback from real senior users in the medical field. We decided to combine the two evaluation methodologies, namely scenario-formed videos and questionnaires. Emphasis was given to measuring usability, acceptability and functionality of the TCTE related Dicode services. Questionnaires captured the users' opinion based on scenario-formed videos to guide system usage. Summaries of the evaluation analysis results were produced using the Statistical Programming language R (<http://www.r-project.org/>, R version 2.15.3) and routines supplied via Google Docs platform (<https://www.google.com/intl/en/drive/start/apps.html#product=sheets>). The evaluation results and feedback collected and critically presented in this document will then serve as a guideline for technical partners to finalize and improve services' usability and

overall quality, and for the use case partner as constructive dissemination guidance. In the following, we present the details of the second evaluation round.

3.1 Evaluation process

We recruited ten participants from the medical domain; we find that this is an adequate sample size which will allow us to focus on qualitative remarks of senior users. Participants have a background in radiology and execution of clinical trials. Table 3.1 outlines their area of expertise and position held.

Evaluator No	Area of expertise	Position held
1	Musculoskeletal Diseases	Radiologist
2	Musculoskeletal Diseases	Clinician/Researcher
3	Oncology	Radiologist
4	Operating MRI Scanners	Radiographer
5	Operating MRI Scanners	Radiographer
6	Clinical Trials	Project Manager
7	Clinical Trials	Data Manager
8	Dynamika software	Lead Developer
9	Dynamika software	Developer
10	Osteoarthritis	Research Fellow

Table 3.1: Characteristics of the evaluators' sample.

The goal of the second evaluation round is to simulate a real setting where users need to work on diverse TCTE related collaboration and decision making tasks. Based on the above, a real working scenario was presented to the evaluators via three video-casts. Emphasis was given to the seniority of evaluators (4 of them had 5-10 years of experience in their domain, while 6 had above 10 years of experience). Here we include a brief summary of the scenario presented:

'A radiologist analysing images gathered as part of a clinical trial spots some problems with the data. Out of the 500 scans he has analysed, 100 were not of sufficient quality to obtain any conclusive results. He would like to discuss this with the radiographer. Also present during the discussion is a representative from IMA who knows how data should be acquired to work best in Dynamika Workstation. It's hoped that the discussion can reveal the root cause of the problem and enable it to be corrected before any more poor data is acquired.'

The integrated services considered through the above scenario are the following:

- Collaboration services,
- Decision-making services,
- Augmentor service.

The questionnaire (see Appendix) included references to the three accompanied video-casts.

Feedback collected by online questionnaires was uploaded via Google Docs (<https://www.google.com/intl/en/drive/start/apps.html#product=docs>). Quantitative and qualitative feedback was collected by evaluators aiming to explore:

- the ease of use of the enhanced version of the services,
- the functionalities of the enhanced and integrated version of the services.

3.2 Detailed evaluation feedback

This section includes summary statistics for Use Case 2 evaluation as well as representative qualitative feedback from the questionnaires. The tables and figures included summarize the quantitative evaluators' responses relative to ease of use, accessibility & acceptability, the scenario provided, the acceptability and the overall quality of the Dicode services. Answers to the quantitative questions of the questionnaires are given for ordinal data in a 1-5 scale, where 1 stands for 'I strongly disagree' and 5 for 'I strongly agree'. The evaluation outcome is presented for each service separately. Note that missing data were not imputed.

The detailed statistics relevant to the completed questionnaires collected for all three Dicode Use Cases' evaluation are uploaded in the Dicode wiki:

<https://wiki.dicode-project.eu/display/DIC/WP6+Evaluation+results>.

3.2.1 Overall impression of the Dicode Workbench

Use Case 2 evaluators watched the first video-cast provided and completed the first set of questions (Section A) of the Dicode Evaluation Questionnaire. Figure 3.1 summarizes the responses to questions of Section A, and particularly the mode and quartile trend (minimum, median and maximum values) of the responses relative to the evaluators overall impression of the Dicode Workbench. The questions of Section A were:

- Question 1: The information provided on the video is clear.
- Question 2: The look of the Dicode Workbench is pleasing.
- Question 3: The use of DICODE workbench is intuitive and it is clear how the features work and are accessed.

Overall mode/median values range from 3 to 4, where the minimum value is 2 except from Question 3 which is 3. Evaluators were generally satisfied with the information provided by the video (only one value is 2), and its pleasant design (mode and median values equal 4); particularly, an evaluator comments:

'Like the window based workspace page.'

Additionally, some suggestions were given for the video-cast quality:

'Voice over would have helped maintain my concentration for longer.'

'Without any narration it is difficult at times to see what is going on in the first two videos.'

Suggestions for the Dicode Interface were also given:

'When people update this system are you notified and how?'

Nevertheless, evaluators were generally reluctant in forming an opinion about the Dicode workbench only based on the video-casts.

We found that for Questions 1-3 the seniority of evaluators does not significantly affect the bad or good impression of the evaluators towards the Dicode Workbench (chi-squared test

p-value>0.05). In Figure 3.2 we can see that seniority does not affect the responses of the reviewers for Section A questions, since values are roughly within the [-0.5, 0.5] interval.

Lastly, in Table 3.2 we present the marginal distribution of evaluators' responses relative to their overall impression of the Dicode Workbench in Questions 1-3. We can observe that the majority of their responses are '3' and '4', marks with their marginal frequency being 0.33 (10/30) and 0.43 (13/30) respectively, whereas the highest rate '5' has marginal frequency 0.167. This constitutes an overall good impression of evaluators for the Dicode Workbench, also indicating some technical issues of interface finalization that need to be considered.

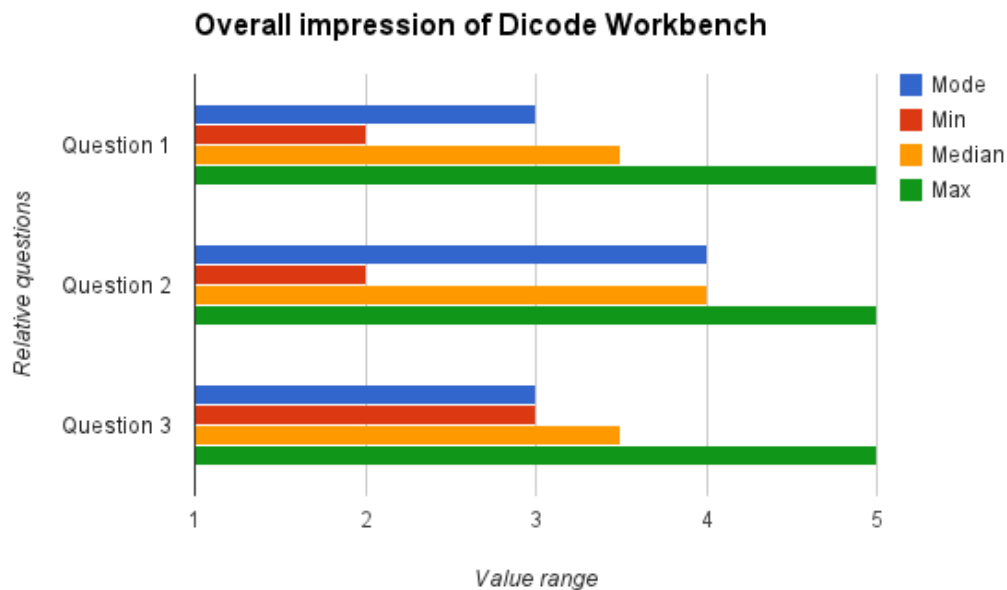


Figure 3.1: The overall impression of Dicode Workbench: mode, minimum, median, and maximum values are presented for Questions 1-3. The range of original values is 1-5, where 1 denotes strong disagreement and 5 strong agreement.

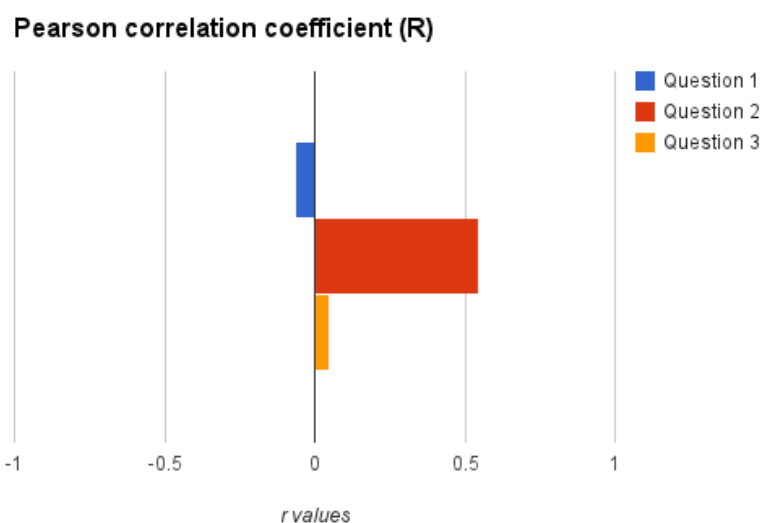


Figure 3.2: The overall impression of Dicode Workbench: the Pearson correlation coefficient is reported for Questions 1-3. Values close to 1 or -1 indicate high positive or negative correlation with seniority of users, respectively.

Questions\ Marks	1	2	3	4	5	N/A
Question 1	0	1	4	3	2	-
Question 2	0	1	1	7	1	-
Question 3	0	0	5	3	2	-
SUM	0	2	10	13	5	-

Table 3.2: The overall impression of Dicode Workbench: marginal distribution of responses for Questions 1-3.

3.2.2 Support of data analysis, collaboration and decision making

Use Case 2 evaluators watched the second and third video-casts provided and completed the second and third set of questions (Sections B, C) of the Dicode Evaluation Questionnaire. We present summarized responses and remarks for questions of Section B in this section and for Section C in the following section (section 3.2.3). The summarized responses of the evaluators for Section B questions can be seen in Figure 3.3. Particularly, we present the mode and quartile trend (minimum, median and maximum values) of the responses relative to the evaluators' opinion for the support of data analysis, collaboration and decision making via the Dicode Workbench. The original answers were given in a 1-5 scale (ranging from 1: strongly disagree to 5: strongly agree). The questions of Section B were:

- Question 4: DICODE services can help me to deal with data-intensive issues.
- Question 5: DICODE services can help me to deal with cognitive-complex issues.
- Question 6: The DICODE workbench can facilitate collaboration.
- Question 7: The DICODE workbench can enhance decision making.
- Question 8: The services of DICODE workbench are very well integrated.
- Question 9: The DICODE workbench can help me be more productive and concentrate on creative activities.

Thus, Question 4-9 refer to the usefulness and assessment of the integrated into the Dicode Workbench services, i.e. the collaboration and decision-making services as well as to the capabilities of the Augmentor service, as those were presented by the two video-casts.

Overall mode/median values range from 3 to 4. Evaluators are less reluctant towards those second set of questions, they believe that Dicode services could help them with data-intensive and cognitive complex issues, as well as that the services seem to be well integrated at the workbench, although they find that using the services before concluding relatively to whether Dicode could increase productivity and creativeness (mode/ median values equal 3) would be preferable. Some of their positive comments relative to the usefulness of Dicode workbench capabilities are the following:

'I'm sure it could be if all the users are well versed in its functions.'

'It may do, this of course will depend on how others interact with the system. Would seem more useful than just a series of emails.'

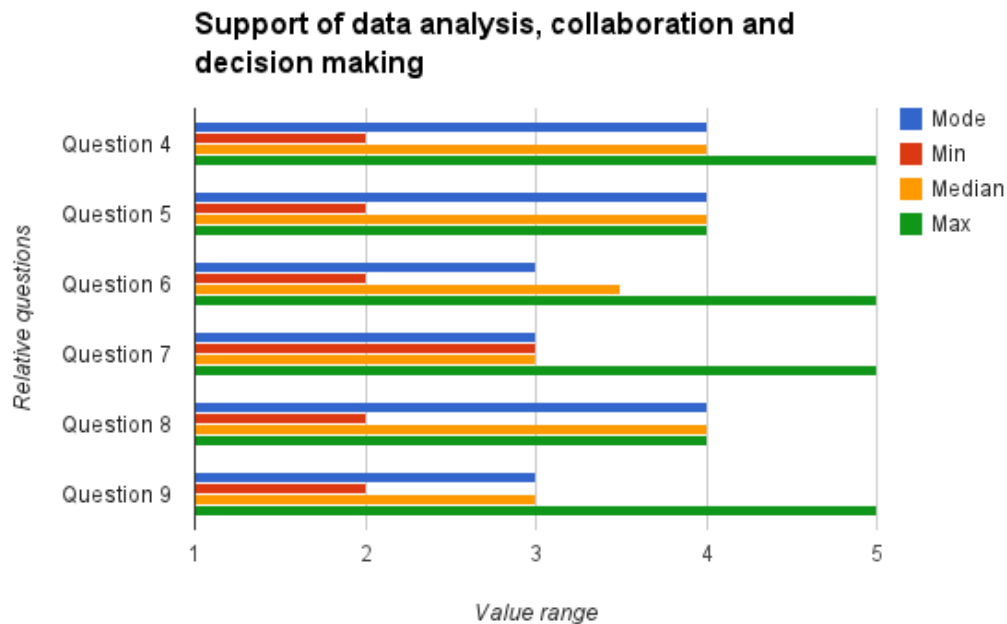


Figure 3.3: Support of data analysis, collaboration and decision-making: mode, minimum, median, and maximum values are presented for Questions 4-9. The range of original values is 1-5, where 1 denotes strong disagreement and 5 denotes strong agreement.

As far as the collaboration and decision making issues are concerned, evaluators were more sceptical, mode/median values equal 3 for collaboration issues, and 3 to 3.5 respectively for decision making issues. This could be attributed to the high importance of decision making and collaboration in the particular field.

Indicative remarks given in Question 6 are:

'Depending on the user. The people hired by a company to test their drug, would use it, but the once employed in where the patients are probably don't have the time dis[c]ussing in a forum like this. This could lead to wrong decision making.'

'it is difficult to appreciate the usefulness from a series of videos'

Also, some positive remarks were given for Question 7:

'In theory. However is it preferable to a conference call or meeting. in some ways it could be as it does not have to be time and location specific. However for other things it may be simpler to get people talking in real time.'

'Because the conversation is noted down, it is easy to see any agreements/disagreements and come to a consensus.'

In Figure 3.4, we can observe that seniority of the evaluators does not significantly affects the responses of the reviewers for Questions 4-9, where correlation coefficient values are within the $[-0.548, 0.417]$. However the chi-squared test p-value for Question 7 is not statistically significant at a 0.05 significance level.

In Table 3.3, we report the marginal distribution of evaluators' responses relative to Questions 4-9 (Section B in the distributed questionnaire) enquiring about data analysis, collaboration and decision making issues of the Workbench integrated services presented in the video-casts. From the 57 valid answers (3 N/As were reported) we can observe that most

of them range in the scale from 3 to 4, with the frequency of $p(\text{mark} \geq 3) \approx 0.895$ and $p(\text{mark} \geq 4) \approx 0.549$. This is in accordance with the mode and median trend values presented above.

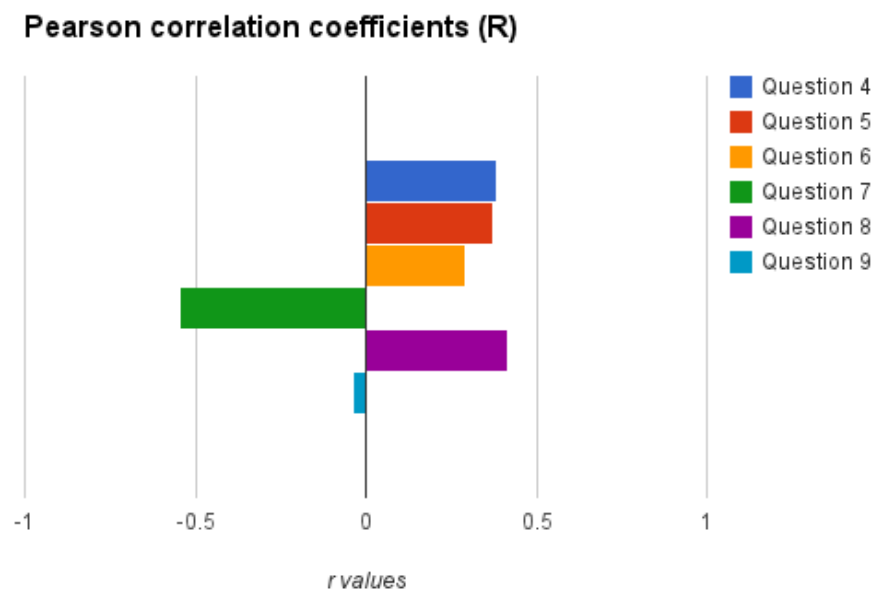


Figure 3.4: Support of data analysis, collaboration and decision-making: the Pearson correlation coefficient is reported for Questions 4-9. Values close to 1 or -1 indicate high positive or negative correlation with seniority of users, respectively.

Questions \ Marks	1	2	3	4	5	N/A
Question 4	0	1	2	4	3	-
Question 5	0	2	2	5	0	1
Question 6	0	1	4	3	2	-
Question 7	0	0	7	2	1	-
Question 8	0	1	1	7	0	1
Question 9	0	1	4	3	1	1
SUM	0	6	20	24	7	3

Table 3.3: Support data analysis, collaboration and decision-making: marginal distribution of responses for Questions 4-9.

3.2.3 Potential benefit to current work practices

Use Case 2 evaluators answered the last set of questions (Section C) based on the three video-casts shown. In this section, we summarize their responses to Questions 10-16 which

explore the potential benefit of Dicode to evaluators current work practices. The questions of Section C were:

- Question 10: The “Augmentor” service will be a strong support during clinical trials.
- Question 11: I can see the potential benefit of using DICODE workbench in my work.
- Question 12: The DICODE project provides sufficient services to support my work.
- Question 13: I would consider using the DICODE workbench in the near future.
- Question 14: The use of DICODE workbench will have positive impact on my current work practices.
- Question 15: The use of DICODE workbench will change my current work practices.
- Question 16: I will recommend the DICODE workbench to my peers/ community.

In Figure 3.5, we present the mode and quartile trend (minimum, median and maximum values) of their responses. The original answers were given in a 1-5 scale (ranging from 1: strongly disagree to 5: strongly agree). We can observe that mode and median values range between 2 to 4, although their majority ranges in 3-4. Evaluators are keen towards Augmentor service; some of the benefits mentioned are:

‘... yes I can see the potential but it is very difficult to assess these things from a series of videos.’

‘Since doctors have different schedules, the DICODE workbench allows me to track conversation, ideas of everyone and progress in a project which my email account or skype will not allow me to do.’

‘its collaborating and sharing. And a new view on the data’

Overall, they believe that the Dicode Workbench brings potential benefit to their work (mode, median equal 4) and provides sufficient services to support their work (mode, median values equal 4), whereas they are willing to recommend it to their community (mode, median equal 4) seeing that it could have a positive impact on their current work practices (mode, median equal 4). Again some benefits mentioned are:

‘Quality insurance of our ongoing project’.

‘May help decision making in issues for which we normally use email or TC’

They are more reluctant to use the Dicode integrated services in the near future (mode, median equal 2 and 3.5 respectively), or in changing their current work practices (mode, median values equal 3).

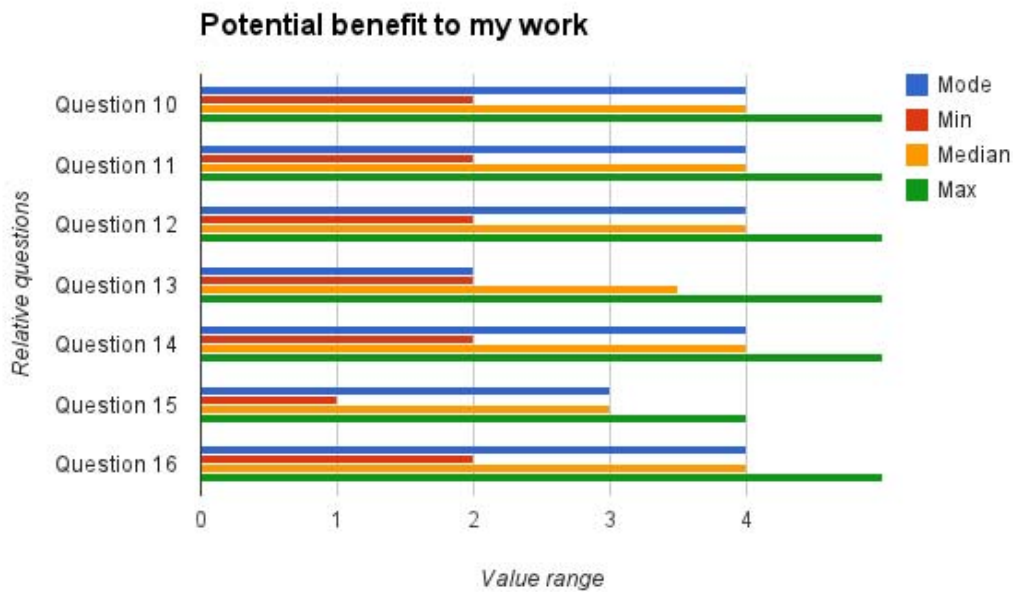


Figure 3.5: Potential benefit to my work: mode, minimum, median, and maximum values are presented for Questions 10-16. The range of original values is 1-5, where 1 denotes strong disagreement and 5 denotes strong agreement.

In Figure 3.6, we can observe that the seniority of the evaluators does not significantly affect their responses for questions relative to the benefit of the Dicode Workbench and integrated services. Nevertheless, for Questions 10 and 16 the Pearson correlation coefficients reported are 0.553 and 0.609 respectively, showing a positive correlation with seniority. Especially for Question 16, less senior evaluators seem more keen to recommend Dicode to their peers or community. This is in accordance with the chi-squared test of association examined for all Questions 10-16.

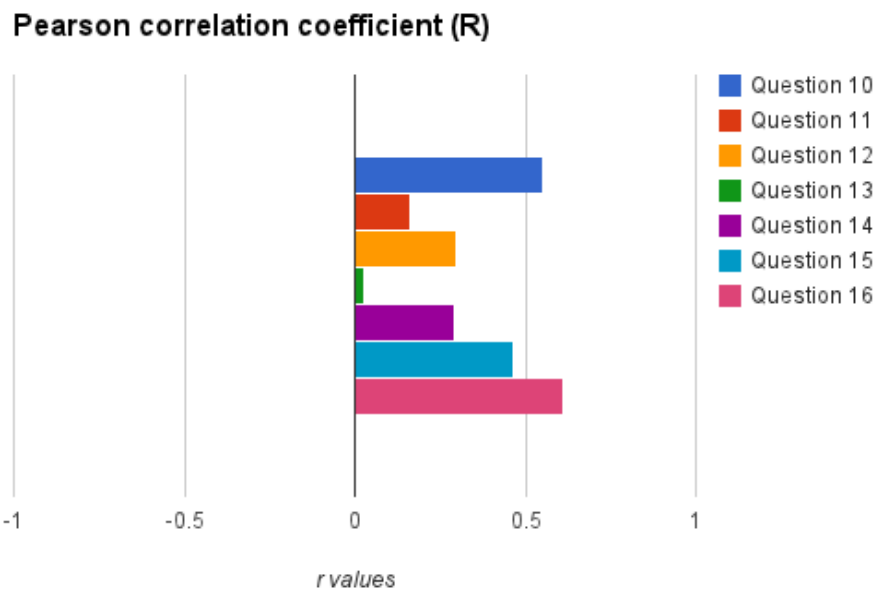


Figure 3.6: Potential benefit to my work: the Pearson correlation coefficient is reported for Questions 10-16. Values close to 1 or -1 indicate high positive or negative correlation with seniority of users, respectively.

In Table 3.4, we report the marginal distribution of evaluators' responses relative to Questions 11-16 (Section C in the distributed questionnaire) asking about the potential benefit to researchers' work from the Dicode Workbench and integrated services presented in the videos. From the 65 valid answers (5 N/As were reported) we can observe that most of them range in the scale from 2 to 5, with the frequency of $p(\text{mark} \geq 3) \approx 0.738$ and $p(\text{mark} \geq 4) \approx 0.6$. This is in accordance with the mode and median trend values presented above.

Questions \ Marks	1	2	3	4	5	N/A
Question 10	0	2	0	5	2	1
Question 11	0	2	2	3	3	-
Question 12	0	1	0	5	3	1
Question 13	0	3	2	3	2	-
Question 14	0	3	1	5	1	-
Question 15	1	3	3	2	0	1
Question 16	0	2	1	4	1	2
SUM	1	16	9	27	12	5

Table 3.4: Potential benefit to my work: marginal distribution of responses for Questions 10-16.

4 Discussion

During the first evaluation round of the Dicode project, the users gave valuable feedback regarding clinical trial processes that contributed to the adaptation of the Dicode workbench for this purpose. There was agreement that for a more effective clinical trial, a tool like the Dicode workbench could help in combining services such as Dynamika and data analytical tools in supporting the collaborative effort amongst users involved in the trial. On the second evaluation round, emphasis was given to real users involved in clinical trials and research. We have combined two evaluation methodologies, namely scenario-formed video-casts and questionnaires, in order to capture experts' judgements about the usage of TCTE related Dicode services. Our main objective was to measure the usability, acceptability and functionality of the Dicode workbench and services.

The Dicode workbench was reported to have well integrated services. Evaluators were generally satisfied with the information provided by the video-casts, however suggested that voice overs could help in further grabbing their attention. Nevertheless, evaluators were generally reluctant in forming an opinion about the Dicode workbench only based on the video-casts.

In assessing the analytical tools of Dicode, the evaluators believed they could help them with data-intensive and cognitive complex issues, as well as that the services seem to be well integrated in the workbench. However, they did not dismiss the fact that a longer evaluation period of the service would have helped to understand it and make better judgements about it. It was also noted that the Dicode user interface could be more intuitive for faster user adaptability.

Evaluators had mixed feelings about Dicode's collaborative and decision making support functions. Some users saw this as an advantage because it wasn't time or location specific and it was praised for being able to track written conversations and ideas which usually can get lost during a verbal meeting. The negative users saw this as a risk for miscommunication and inefficiency, however highlighted that ultimately it is environment and scenario dependant, i.e. a team of users in the same hospital could find that meeting up is easier and quicker than writing their thoughts electronically. The general consensus was that the Dicode Workbench could bring potential benefit to the users' work with capable services for support, however when asked if they would introduce the service into their workflow soon, many users were reluctant. As with most software, there is the issue of change management which every organisation would need to deal with whenever something new is implemented.

Future work will concentrate on enriching and finalizing the Dicode services that are related to Use Case 2 by incorporating the detailed feedback of the evaluators. The update of TCTE related services will be based on the evaluators' suggestions, and will particularly focus on: (i) making the user interface of the Dicode workbench and integrated services more intuitive, (ii) inclusion of help files (with voice overs, where appropriate), (iii) integration of Dicode data mining services for TCTE related purposes, and (iv) broader dissemination of the Dicode workbench and integrated services to TCTE related settings.

Appendix: Dicode questionnaire - second round

Tell us what you think!

We appreciate your input on the DICODE EU FP7 project. The following short questionnaire will help us collect your feedback and understand what aspects of the DICODE workbench and integrated services satisfy you.

Before filling in this questionnaire please watch the accompanied screen casts, which show on a step-by-step basis the log-in process to the DICODE workbench and the options offered for intuitive collaboration and data analysis via the workbench integrated services.

Think about all the tasks that were presented at the screen casts while you answer these questions. Please read each statement and indicate how strongly you agree or disagree with the statement by ticking a number on the scale. If a statement does not apply to you, please tick N/A. Whenever it is appropriate, please write comments to explain your answers. Thank you for your participation!



Introduction to DICODE: DICODE aims to facilitate and augment collaboration and decision making in data-intensive and cognitively-complex settings. A special use case of the project (Use Case 2) focuses on supporting clinical trials on complex diseases such as Rheumatoid Arthritis. In this context, the DICODE workbench provides certain tools as well as an overall environment to collaboratively explore, evaluate, disseminate and diffuse clinical decisions, drug therapies and medical research findings.

DICODE Objectives: The DICODE workbench aims to support interdisciplinary collaboration and decision-making by facilitating the process of making clinical decisions in drug trials by combining datasets from patient results (blood tests, physical examinations) and the different scan modalities (X-Ray, Static and Dynamic MRI scan images) to reveal the effectiveness of a drug within a trial.

DICODE's evaluation: This task aims to assess how the DICODE workbench can improve the processing of numerous and complex data in collaboration and decision-making settings. Through this process the DICODE workbench and its integrated work methodologies will be evaluated towards their usability and acceptability by medical specialists.

Screen casts walkthrough: A radiologist analysing images gathered as part of a clinical trial spots some problems with the data. Out of the 500 scans he has analysed, 100 were not of sufficient quality to obtain any conclusive results. He would like to discuss this with the radiographer. Also present during the discussion is a representative from IMA who knows how data should be acquired to work best in Dynamika Workstation. It's hoped that the discussion can reveal the root cause of the problem and enable it to be corrected before any more poor data is acquired.

The following screen casts will help you go through some of the steps that need to be followed when using the DICODE workbench to discuss data acquisition protocols.

Please answer the first set of questions (questions 1-3) after watching screen cast 1 and the two remaining sets (questions 4-16) after watching and screen casts 2,3.

Screen casts:

1. The first screen cast presents the log-in process along with the functionalities of the DICODE workbench.

<http://hodgkin.dia.fi.upm.es:8080/dicode/workbenchVideo2.mp4>

2. In the second screen cast, emphasis is given on the collaboration and decision-making procedure which can be followed whilst launched on the DICODE workbench.

http://dicodedev.cti.gr/screencast/UC2_screencast/UC2.html

3. The third screen cast presents an overview of the Augmentor service functionalities concerning uploading and enriching unstructured and semi-structured medical data (e.g. scan modalities, medical reports).

<http://vimeo.com/31053453>



A. Overall impression of DICODE workbench

1. The information provided on the video is clear.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

2. The look of the Dicode Workbench is pleasing. Please name any specific styles / colors / layout / other visual characteristics you did not like so much.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

3. The use of DICODE workbench is intuitive and it is clear how the features work and are accessed.

Strongly disagree 1 2 3 4 5 Strongly agree

Please indicate any alterations you would suggest / features that were not clear and usable.

B. Support of data analysis, collaboration and decision making

4. DICODE services can help me to deal with data-intensive issues.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

5. DICODE services can help me to deal with cognitive-complex issues.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

6. The DICODE workbench can facilitate collaboration.

Strongly disagree 1 2 3 4 5 Strongly agree
Please add comments if any.

7. The DICODE workbench can enhance decision making.

Strongly disagree 1 2 3 4 5 Strongly agree
Please add comments if any.

8. The services of DICODE workbench are very well integrated.

Strongly disagree 1 2 3 4 5 Strongly agree
Please add comments if any.

9. The DICODE workbench can help me be more productive and concentrate on creative activities.

Strongly disagree 1 2 3 4 5 Strongly agree
Please name specific activities you foresee to perform using DICODE workbench.

C. Potential benefit to my work

10. The "Augmentor" service will be a strong support during clinical trials.

Strongly disagree 1 2 3 4 5 Strongly agree
Please add comments if any.

11. I can see the potential benefit of using DICODE workbench in my work.

Strongly disagree 1 2 3 4 5 Strongly agree
Please name specific foreseen/ expected benefits:

12. The DICODE project provides sufficient services to support my work.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

13. I would consider using the DICODE workbench in the near future.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

14. The use of DICODE workbench will have positive impact on my current work practices.

Strongly disagree 1 2 3 4 5 Strongly agree

Please name specific aspects of your current work practices where you foresee/ expect a positive impact: Please add comments if any.

15. The use of DICODE workbench will change my current work practices.

Strongly disagree 1 2 3 4 5 Strongly agree

Please provide specific examples of the foreseen/ expected changes:

16. I will recommend the DICODE workbench to my peers/ community.

Strongly disagree 1 2 3 4 5 Strongly agree

Please add comments if any.

Thank you for your participation!