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COnCEPT

Collaborative CrEative design PlaTform

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| Abstract (few lines): | The objective of this deliverable is to register the process of pilot testing the first prototype iteration of the COnCEPT platform. It presents the results of testing by the four testing partners which focused on functionality and usability by running different scenarios accustomed to the seven module structure of the platform. The obtained results will be used for giving feedback to the next prototype version development, in order to improve its quality. The preliminary evaluation was performed by using a rating scale system |



and questionnaires for assessing how well functions and UX requirements were implemented and work.

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1 INTRODUCTION

This deliverable documents the process and results of the pilot tests for the first iteration of the COnCEPT platform prototype. The main scope is to record the execution of the tests by each testing partner and the collection of the results based on the first version of the prototype. It is worth mentioning that a second round of tests will be done when a later, more complete version of the prototype will be available. However, the second round of tests fall outside of the scope of this document.

Following the pilot guidelines and the testing scenarios defined in T5.1, this document extends the preparation and description of the tests, and includes the necessary refinements for getting the most relevant and useful results. Since several functionalities have not been fully implemented, partial scenarios were defined in order to run the tests in a way that a comparative evaluation would be possible. These partial scenarios enable the tests of the platform prototype, without having to rely on a high and equal level of functionality implementation between the different modules. Each of the partial scenarios focuses on one of the seven main modules of the platform:

1. Project setup, planning and Brief Analysis
2. File Management
3. Search (semantic elastic & visual)
4. Mind-mapping
5. Storyboard (and Moodboard)
6. Sketching
7. Communication (text IM chat & voice)

This approach proved to be useful, as for example the semantic elastic & visual search module was not ready at the moment of these tests and it will only be available for testing after the 2nd interim iteration of the platform is released, which will be before the end of M27. Other functionality refinements are also expected to be released in the 2nd prototype iteration and will be tested, in order for the technical partners developing the platform to be provided with feedback and suggestions for improvement.

In total, four partners, two from a industrial context and two from a academic context were involved in the evaluation. Each partner has conducted their own scenarios based on stages of the creative process. The scenarios are described in section 2 and the results from the evaluation are presented in section 3.

Section 4 describes the methodologies and results of the evaluations conducted to assess the COnCEPT platform in consideration on the UX requirements defined in D1.7. The objective of these evaluations was to identify the challenges and opportunities that need to be considered for the COnCEPT platform to satisfy the UX requirements as far as possible. Two evaluation techniques were used for this end. First, expert reviews were used to evaluate the first version of the COnCEPT platform in consideration of the UX requirements. The outcomes of these expert reviews were used as a basis



to define the level of detail of the pilot tests reported in this deliverable. Second, an online UX questionnaire was used for gathering quantitative data about the perceptions of participants during the pilot tests in a standardized way.

1.1 OBJECTIVES

The objectives of this deliverable are the following:

The goal of this test was to determine the strengths and aspects to improve in the current version of the CONCEPT platform. As this was the first time during this project, that the involved partners have had the opportunity to witness the designed architecture and User Interface incorporated into an interactive usable way, it was important to record the first impressions and experience a user would have by using the prototype. In order to get the most out of the test and provide as many and useful elements of feedback to the developing partners, the objectives were structured according to the User Interface structure. Based on the User Interface requirements list, the tests were designed to:

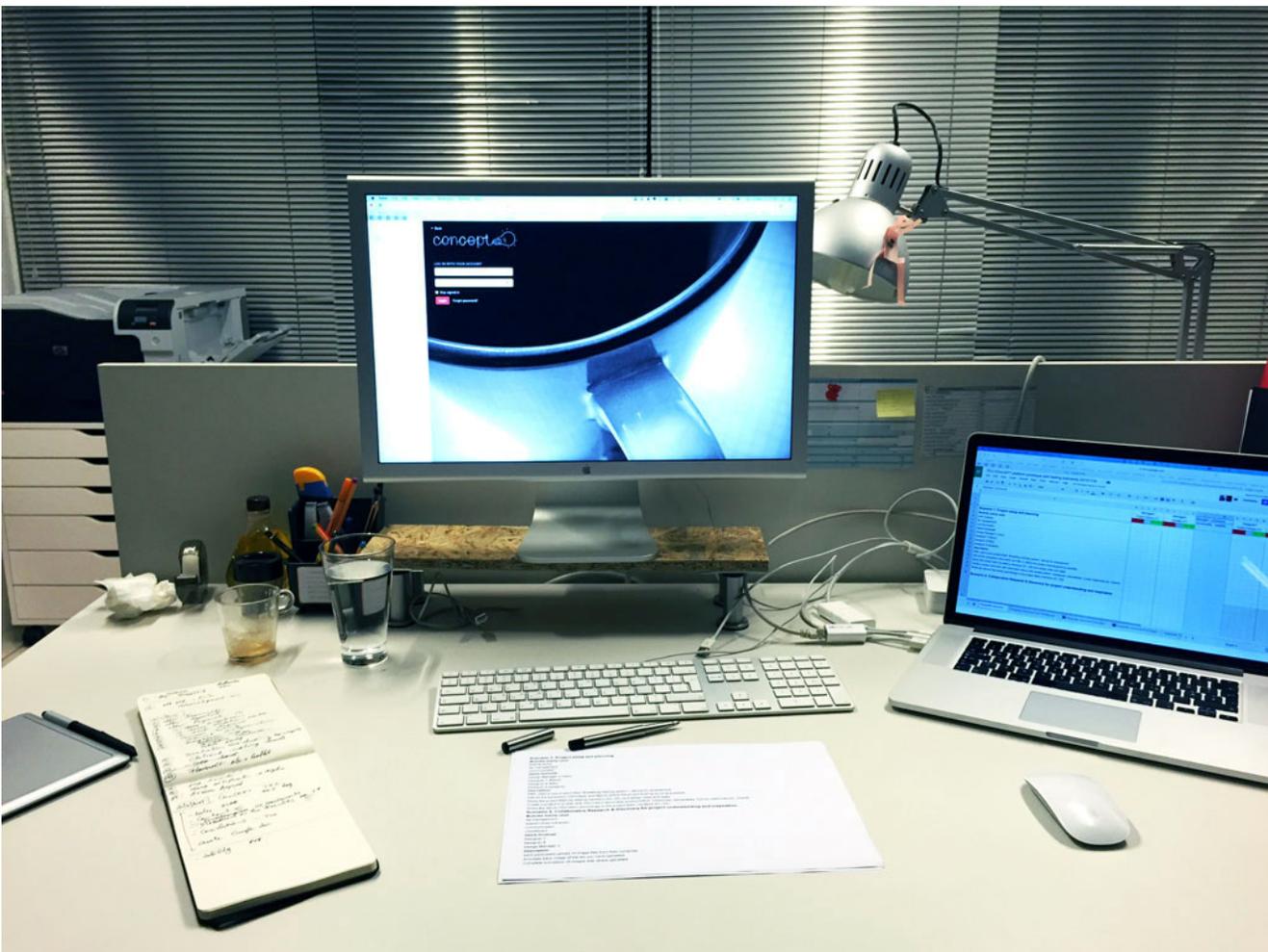
- help the testers distinguish which parts and functions are implemented and how well,
- what functions could be useful and should be added,
- how well the existing modules and functions perform,
- how easy it is for the users to understand their purpose and how they can be easily applied,
- if the overall User Interface makes it clear and simple to understand its content and features,
- if it makes all the requested and necessary information available to the users in a simple, clear and concrete way,
- without creating misunderstandings, multiple perceptions and confusion,
- if it is designed in a way that it can be used with the least mental, physical and time consuming effort and generally
- if it helps the users to perform their tasks and complete them as efficiently and pleasantly as possible.

The expected outcome of this study was to provide feedback for refining the features for the CONCEPT platform in further iterations. In other words these objectives and any other deriving outcome, will be used to define the best possible design of User Interface elements and brief the developing partners on how to improve the prototype towards an even better working platform that provides a User eXperience as close to optimal as possible. At the same time the tests will consolidate which parts of the platform work well and will also act as a reference and model for the rest that need to be improved.

2 TESTING PROCEDURE

2.1 DLAB

The pilot in Greece by Designlab was based on an industrial design project about designing a "Smart breathing training device". A team of three professionals took the roles of a design project manager and two product designers, while there was also the role of a client. The testing scenarios were divided into smaller partial scenarios, which were designer based on the platform's modules and corresponding processes. The partial scenarios are interconnected and follow a logical sequence, representing the stages of a design project starting from the initial project setup until the presentation of design concepts.



The typical DLAB user's setup for testing consisted of a computer connected with two screens, the main screen displaying the COnCEPT prototype and being screen recorded for further reference and analysis and the small screen being used for direct rating and comments input into a prepared Google Sheet, along with the printed scenarios's steps as a guide, a wireless WACOM sketching tablet with pressure sensitive stylus and a conventional notebook.



Based on the seven platform modules, seven initial partial scenarios were planned which then were brought down to four, as it was realised that it would be more realistic and closer to the real design process. Each of the four partial scenarios included more than one module. For example the communication module was included in all of them and the annotation and file management too.

The partial scenarios for testing were defined as follows:

COncEPT pilot testing preparation (T5.2)

Designlab partial testing scenarios:

Scenario 1: Project setup and planning

Modules mainly used:

- brief analysis
- file management
- communication

Users involved:

- Design Manager 2 (Alex)
- Designer 7 (Nikos)
- Designer 8 (Niki)
- Designer 9 (Iordanis)

Description:

1. DM: start a new project titled “Breathing training system / device for smartphone”
2. Add all the necessary information and files to define the project brief as good as possible
3. Setup the project team by adding members (D1, D2) and assign roles and tasks
4. Create a project time plan with information about task duration/effort, milestones, deliverables, human resources etc. (Gantt)
5. Share the above information accordingly to the project team members (D1, D2)

Scenario 2: Collaborative Research & Discovery for project understanding and inspiration



Modules mainly used:

- file management
- semantic elastic & visual search (does not work!)
- communication
- moodboard

Users involved:

- Designer 7
- Designer 8
- Design Manager 2

Description:

1. each participant upload 10 image files from their computer
2. Annotate each image of the ten you have uploaded
3. Complete annotation of images that others uploaded
4. Create collaboratively one moodboard with the available images

Scenario 3: Ideation, User Scenarios

Modules mainly used:

- Mind-mapping
- storyboard
- moodboard
- file management
- semantic/elastic & visual search (does not work!)
- communication

Users involved:

- Designer 7



- Designer 8
- Design Manager 2

Description:

1. Create one collaborative mind-map starting with “breathing”
2. Communicate as a team and select one path/chain on the mind-map
3. Create one storyboard depicting a potential user scenario based on the selected path/chain of the mind-map

Scenario 4: Ideation, Conceptualization, Sketching

Modules mainly used:

- sketching
- story boarding (for presentation)
- file management
- semantic/elastic & visual search (does not work!)
- communication

Users involved:

- Designer 7
- Designer 8
- Design Manager 2

Description:

1. Each member to generate 3 different concepts visualized with separate sketches
2. Collaborate on commenting on the team’s sketches and select 3 favorite ones

Create a presentation with the selected sketches/concepts

The participating designers went each through the scenarios’ steps at the same time and tried to emulate a real time design process as closely as possible, which was more or less achieved, giving the confidence of having valuable results.



2.2 VWG

The pilot conducted by Virtualware was based on an industrial scenario that focused on creating a multimedia design that would improve the user experience for consumers choosing a kitchen. As part of the scenario, the design required the creation of a multimedia design and its components in High Definition of the 3D Virtual Environment. Before starting the evaluation, we were aware that the task represented an extreme use scenario since the COnCEPT platform is a design collaboration tool but it is not specialised in supporting the development of 3D Virtual applications.

Four profiles were defined for testing the prototype: two designers, one client and one project manager.

- Designer one: It represented the profile of an expert in sketching tools and drawings designs for multimedia and 3D applications. This profile should establish the dimensions, layers and components of each design.
- Designer Two: It represented a profile of an expert in developing applications for 3D Visual Environment. The person was also experienced in programming multimedia actions in virtual environment with skills in creating multimedia designs. This profile had the same expertise on graphic design as Designer One but also experienced designing graphics for Virtual Environments.
- Manager: The manager had extensive experience in managing ICT projects in several and different profiles. The manager focused in agile methodology and in understanding the specifications of client.
- Client: Client had no experience in this type of ICT development. It was crucial for the client to see at any moment the current progress of the project in order to validate the requirements, designs and the final prototype.

Participants were informed about the objective and goal of using the tool, the amount of time and the tasks that they would do. They were asked to make an assessment based on the functional and non-functional specifications that were required to perform each task. At the end of the test, participants were interviewed in order to collect the results.

2.3 NUA

Evaluation of the COnCEPT platform was based on the identification and testing of seven separate components within the first iteration of the software. These components are:

- i. Brief analysis
- ii. File manager
- iii. Semantic/elastic & visual search tool
- iv. Mind mapping tool
- v. Storyboarding tool
- vi. Sketching tool
- vii. Communication functions

For each of these areas, the NUA team devised a set of tasks designed to test the range of functionality. This was tested according to a hypothetical design scenario. Tasks comprised short steps that sought to explore the capabilities of the platform. For example, the sketching tool task comprised the following steps:

- a. Create a blank sketching document*
- b. Make a series of sketches using both shapes and line functionalities*
- c. Annotate the sketch with text*
- d. Share the sketch with a collaborator*
- e. Allow the collaborator to edit the sketch*
- f. Save and name the sketch*

The testing was conducted internally by the NUA team. Two members of the team were logged on remotely yet synchronously to the COnCEPT platform. One using a Manager profile (Participant 1), and the other using a Designer profile (Participant 2).

Participant 1 uploaded details of the hypothetical design scenario, including 1) creating the new project, 2) inviting Participant 2 to join the project, 3) uploading a design brief, and 4) uploading a series of stimulus images and material. Participant 2 then carried out the tasks using this material. Participant 1 viewed progress via the browser version of the platform, and also in conversation with Participant 2. Participant 1 recorded notes and observations relating to the



progress made by Participant 2 in a spreadsheet. The ease of carrying out the tasks was assessed as being carried out either: a) successfully, b) with difficulties, or c) unsuccessfully. Specific comments, details and observations were then recorded next to this assessment. Recommendations on how the functionalities could be improved were recorded in a further column. Both Participants 1 and 2 took screenshots to illustrate problematic areas and error messages encountered during their tests and these were pasted into the spreadsheet. A section of the spreadsheet relating to Task 1 is illustrated in Figure 1.

COnCEPT: Piloting and Evaluation

| | | | | | |
|--|---------------------------|-----------------------------|--------------|--|--|
| Participant login details: | Manager 4 (Participant 1) | Designer 15 (Participant 2) | | | |
| Browser and system: | Chrome (Mac OS) | Safari (Mac OS) | | | |
| Q1. Were you able to complete the tasks successfully? Please comment on the ease of use of the COnCEPT platform. | | | | | |
| | Successful | With problems | Unsuccessful | Comments | Futher observations |
| TASK 1: Brief Analysis | | | | | |
| 1a. Upload a one-page brief | | | | Cannot upload a brief document onto 'Brief analysis' section. Can only copy and paste brief into the text area. Text copied and pasted, and saved by manager (Participant 1). Text was shared with designer (Participant 2). Designer could edit the text. | NB: Cannot hit 'back' button on I back link. |
| 1b. Using the annotate / auto-annotate tool, identify and add up to 10 keywords | | | | Tried to auto-annotate the brief document. Five keywords are identified. However, some of those words aren't even in the brief document. Identified keywords can be deleted. Need to be able to say 'yes' or 'no' to these keywords. Can't use auto-annotate AND add keywords from the list. | NB: Auto-annotate can only be u "WARNING – this will clear your NB: Small icons (eye, label etc.) Could incorporate a rollover. NB work. |
| 1c. Save these keywords | | | | Clicked save. But where are they keywords saved? Could not retrieve them | Left bar – Project members is gr avatars to identify team member |

Figure 1 Recording of test results from COnCEPT first evaluation

The pilot test conducted by Eindhoven University of Technology consisted of a design scenario which portrayed the use of the platform in an academic setting. The pilot scenario presented a design task similar to the actual assignments that students from the TU/e are regularly asked to execute in teams.

The assignment devised for the pilot evaluation consisted on designing a peer-to-peer feedback system for student portfolio development. Three students of design belonging to the University of Technology of Eindhoven participated taking the role of the designers. The researcher moderated the task while taking the role of the professor or manager of the project. During the experiment, all participants were in the same room but using individual computers and they were not be allowed to communicate with other means than the CONCEPT platform. To complete the assignment, the students were asked to perform the following 6 tasks:

- i. **Brief analysis:** First, the students were instructed to consult the brief analysis that was previously created and to resolve questions with the manager using the chat. The design brief was incomplete with the intention to lead the students to look into the document and resolve questions using the chat. They were free to comment and add more details to the design brief as more details become available.
- ii. **File management:** The students were instructed to create a new folder for Inspirational material and to upload inspirational material (at least 5 images). They should also annotate the uploaded material and add comments to each of the inspirational materials.
- iii. **Mind mapping:** During this task, the students had to map the solution space of the design. The mind map should include the initial descriptions about the end users, personas, profiles, requirements, technology, and related designs.
- iv. **Storyboarding:** The students needed to create a storyboard for on boarding (first use after design) of the feedback system. They were also asked to create a storyboard of an advanced use case.
- v. **Sketching:** The students were instructed to sketch 6 different screens on different levels of details. They were allowed to upload sketches from other design software if they preferred to do so.



- vi. Review (communication with chat): Finally, the students were asked to review each of the deliverables from the tasks 2, 3, 4 and 5 using the chat.

The partial scenarios were related to each other requiring from the students to follow a certain sequence during the evaluation. The data gathered was mainly of qualitative nature, however some quantitative measures were registered (for instance, time to finish a task). Photographs, audio and notes of the session were recorded. At the end of the task, participants were invited to discuss their experience in order to provide insights about the usability and functionality of the platform.



3 RESULTS

3.1 DLAB

The tests by DLAB were intended, planned and carried out by following the real professional design process as closely as possible. The team was formed by three experienced Industrial Design Engineers, each with a background and expertise focused on skills out of a range of creative, mechanical engineering and digital design & development qualities. All three have participated in commercial industrial/product design and development projects before and are still active as collaborators and members of the Designlab product design & development unit.

During the execution of the partial scenarios, testing often went beyond the prescribed steps and several situations that would happen during a real project, were also promptly tested. A general remark is that because of the semantic elastic & visual search module not being implemented at the time of the tests, it was not possible to explore the prototype's capabilities in combination with a smart searching system. This is expected to be resolved with the second prototype iteration expected after the middle of M27 and will be tested then.

The most important results for each of the partial scenarios are the following while one can read a table in Appendix 5 which includes the resulting comments for each module scenario by all the testing partners in a comparative manner:

i. Brief Analysis testing results summary:

Brief Analysis module, strictly seen is just a word processor which allows for generating formatted text documents to be viewed, edited and exchanged between the team members. One would expect some set of fields in a brief analysis document that would guide the team members to distinguish between different categories of the information contained in a brief and any designed layout elements that would guide and facilitate the user to insert analysis results and comments into the most obvious positions within the document. At the same time this would make further and collaborative viewing and editing by the rest of the team, simple and easy.

For this first module, the project setup and brief definition process was also included in the partial scenario, as we think that the analysis of a brief is one of the first things to do when starting a new project and it affects several project planning aspects and process requirements. In this context it became obvious that by having to “jump” to another module (OpenProject) on a different page is disruptive and it feels like the user is using a different platform. The fact that the User Interface elements of OpenProject (e.g. layout, icons, fonts, sizes, colours, positions etc.) are not consistent with the main UI (Dashboard) enhances the feeling of uneasiness and confusion along an increased insecurity about the work being done on OpenProject actually going to be kept, saved and be accessible through the Dashboard environment.

Simple minimal additions like a button in OpenProject for going back to the Dashboard environment and any message explaining that the user is still working on the CONCEPT platform and how to navigate between the two, would already improve the User Experience.



In OpenProject there are also other problems, absent or not fully implemented functions like missing functionality for assigning multiple team members to one task, unclear labels of functions (e.g. “update” instead of “edit”) and more.

ii. File Management testing results summary:

The File Management module works well and it is easy to upload files from the local computer used by the user. Especially the way the user can drag and drop multiple files at once by dragging them onto the designated area is intuitive and straightforward. Still, feedback is missing in most of the actions performed and this creates a feeling of uncertainty to the user if the files were uploaded or if there were problems etc. The UI doesn't support a unified layout for giving information about the files and their content and allowing at the same time for direct annotating or editing. It jumps every time back to the general files view stage and the user has to select the next file every time, although they are all visible and listed when editing the first one. Uploading files directly from the web is not possible either, so the user has to find and save the files conventionally through the browser to a local disk and then upload them into COnCEPT file management.

There is also limited feedback of who uploaded a file, making it difficult to distinguish even the user's own files. Feedback on whether a file has been already annotated and when would also help.

Nevertheless, there is a successfully working auto-annotation function which many times results in useful and smart tag generation especially when annotating files for the first time.

iii. Semantic/elastic & visual search module (plain, elastic and visual) was not yet implemented and working so it was not possible to test it

iv. Mind mapping testing results summary:

The Mind-mapping module works and is usable for creating mind-maps. It can be used quite fast, also by using “enter” in combination with “shift” or “alt” for generating new nodes of different kinds. Nevertheless, this and other usability elements are not clearly documented or shown, so the user doesn't know that they are available.

One main missing feature is the collaborative aspect of working on one mind-map. It is not possible to work on the same file, even on a semi-synchronous modus: If one user starts a new mind-map and the second user opens that one and works on it, then as soon as the first user saves the file, the second user's contribution is lost and not even possible to be save in a second duplicate file of the first one. This is a general problem of the prototype as collaborative work is not really possible, although maybe implemented in an uncommon way through the TogetherJS – communication (screen sharing) tool/module.

v. Storyboard/Moodboard testing results summary:

Storyboarding was difficult to use right from the start, as it wasn't clear how to create a new document and how to name it. The result was that mainly it couldn't be tested and appreciated. It is important here but also generally that the steps for creating, naming, opening, editing, saving and sharing a document must be exactly the same with all the platform's module. Common way of using the modules will improve User Experience, reduce initial learning time and improve the satisfaction of use by minimising confusion and frustration.



Moodboard tool is mainly a vector drawing tool and less of an image arranging / combining canvas as the user would expect. It is not working for collaboration either and it would be really useful if it would be combined with the semantic semantic/elastic & visual search engine underneath, which could generate more relevant output in a smart way and give the User Experience a welcome intelligent assistant “edge”. Some visual aids on the canvas, like different grid arrangement variations and ready to use common layouts / themes (e.g. like pinterest) would also elevate the usefulness inside an everyday professional creative process.

vi. Sketching testing results summary:

Sketching is a module that fulfils its purpose as a “napkin” sketching replacement in terms of sketching aids, but when it comes to collaborative working it is limited by the platform’s missing integrated synchronous co-working features. As a sketching tool it gives the impression of using a software of older technology (e.g. paint, macpaint etc.), because it lacks some features, that modern sketching software already has implemented. So, while it is more than sufficient, it is being inevitably being compared to software that supports stylus pressure sensitivity, interpolated line stroke edges and other additions that help the imitation of analog sketching with a real pencil on paper. Collaborative working is here practically almost absent and other common expected features are missing like exporting in common image or exchange file formats (e.g. jpg, pdf, png etc). Basic UI functionality like pan and zoom is also not there yet.

At the same time it is interesting that the storyboard/mood-board module is actually also a sketching module, but with a different interface. One should think about choosing and using one of the two, to promote unity, to simplify use but possibly also development requirements.

vii. Communication testing results summary:

Communication between the team members working together on a project with COnCEPT is based on two different modules. One is a simple text chat module, which in itself works well. Nevertheless it is not available at the same time with all the modules. While it is on the same “page” when using sketch, it is not there when using storyboard or mind-map. The result is that usefulness is dropping, as the user has to switch between browser tabs or work with at least one extra window open.

The second module supports voice communication and also tries to justify that the prototype supports collaboration by giving to the user the ability to share his screen and cursor control with another team member. This is difficult to realise and understand how it works, but even if it is somehow mastered it is actually an approach of collaborating close to the analogy of two users having one pencil, which they constantly need to give one to the other. An approach supporting different virtual transparent layers for each team member, which could be viewed and filtered at will, would work better and there is also the Google Drive collaboration reference, which also works quite well.

3.2 VWG

The pilot performed by VWG focused on evaluating the functional and non-functional (User Experience) requirements of the COnCEPT platform.

The general comments of the participants were that it was very hard to get a successful 3D Virtual Environment that fulfils the requirements of the client. Based on each of the partial scenarios, we report the following results:

i. Brief Analysis

The module Brief Analysis allows us to do the tasks in general but its behaviour is basic. The behaviour of the User Interface is archaic and non-intuitive. It misses specific functionality related text (Word) applications and improved options to add images from web browser or drag and drop functionality. One of the important issues that it is not yet implemented is the possibility to see the changes made in each of document and who was the responsible for these changes. Additionally it requires improvement in features such as:

- It lacks a contextual menu on right click,
- The like button does not work.
- The functionality of the visibility button is not clear
- There are no instructions or help options.

ii. File Management

This module has some basic deficiencies that are necessary for a normal functioning file management system. The interface is not very intuitive and it does not provide feedback when uploading an image or a confirmation message when deleting it. It would be good if the user could drag and drop an image. Other deficiencies are the following:

- It is not possible to create folders
- It is not clear how to make a public file so that the client can access it.
- It is not possible to use and share the images uploaded in this module into others modules.

iii. Mind Mapping

The Mind Mapping module works properly. It is possible to create a Mind Map and it provides a lot of options. For example, the tool has some good and helpful features and the possibility to add links and notes. It is also possible to export the mind map to a PDF file. However, there are some characteristics that should be improved:

- It lacks the possibility to add images in nodes.
- It is not possible to add a name to the file when saving it. The module assigns one name automatically.
- The tool does not have a share option in the menu.
- It misses a labelling option. It is necessary to go to dashboard and use this option and add one by one of the Mind Mapping files.



The tool presented a problem the first time it was used. It is not very clear how to create new nodes. After this action, the tool is very easy and intuitive to use. Terminology and interface is the typical for mind mapping tools.

iv. Storyboard

The Storyboard module allows the creation of scenes and the preparation of a storyboard, but the general comment from using this tool it is that it seems archaic. The principal deficiency is that the module does not use all of the space of "workplace" in the screen, leaving a limited space for drawing. The module tool is very simple which makes it harder for the designer to make good drawings. The participants recommended that it should work similarly as an advanced drawing tool such as Illustrator.

Another remark was that using two modules one for Sketches and the other for Storyboard is not the logical way to design. It should be ideal if the same tool provides sketching and storyboard functionality. Additionally, a participant recommended that it would be better to have a template that simulates the storyboard where the designer can draw directly. It should also show a section where anybody can add comments related to the design.

Finally, the navigation and look and feel of the interface is confusing. It is not clear how to create a storyboard and how it works. Moreover, it seems that there is a problem when trying to save the storyboard because it does not appear afterwards.

v. Sketching

The tool is very basic and it allows a user to create drawings but if the designer is used to work with other more advanced tools, then the interface seems very simple and it is hard to work with. Furthermore, it is very confusing to have two different tools with drawing capabilities. For the task, one of the designers commented that it is possible to create a design of virtual space but the tool is so primitive that the task becomes more difficult. The deficiencies become more salient as the design task is more complex. For instance, the module only allows the drawing of two types of forms but usually designer use multiple types of forms and shapes. It is not possible to change the brushes and create new types of stroke styles. The possibility to add gradients is not implemented so as it is not possible to work with layers. There are no effects available and it is not possible to add effects of rotation or reflection to the drawing. It is not possible to change the size of text or to simply add a text box.

It would be ideal to have an option to connect it to the repository of the File Management module to use these images in the Sketching module. It should be beneficial for the process to have a history of the file that has modified so that one can easily open the desired version of the file. Another highly appreciated functionality would be the option to export a sketch.

vi. Communication

The Communication Tool is basic and has the following deficiencies

- It is not possible to chat only with one person. The chat is for communicating with all the team.
- It is not possible to have an avatar for each profile to identify the people you are talking to.
- It is not possible to insert an image or to have a video-conference
- It would be good if the application could send an email when there is a new message or a new notification.



- There is a notification section but it is not possible to see in detail what were the changes that the others have done.

In general, the results from the pilot in such a special scenario and type of tasks show a clear set of improvements for COnCEPT Platform. On the one hand the idea of integrating all of the tools in one dashboard seems to be a good idea. However, the functionalities that these modules offer are not advanced enough to create designs according to requirements of the typical client in this case scenario. The results also reflect that there is still a big room for improvement to reach the requirements defined in the deliverables from the previous phases of the COnCEPT project. As a consequence of lack functionalities and problems encountered while testing the prototype, the participants could not finish the task.

The integration of all of the modules is not fully working and there are clear deficiencies when communicating with other members involved in a design project. So far, the integration does not show a consistent data flow to have a suitable management of the modules. The proper integration between all the modules is very important in on-line collaboration because the users do not share the same physical place and they depend highly on great communications tools such as what COnCEPT aims to provide.

3.3 NUA

To discuss preliminary findings relating the first iteration of the COncEPT platform, observations and ideas are categorised into the seven evaluative tasks. A further section looks at the overall usability and user interface.

i. Brief analysis

It was simple and straightforward to paste text from a brief document into the Brief Analysis tool, however a PDF or any other file could not be uploaded. Participants were able to run the annotate tool to pick out keywords from the brief document, however the platform returned a mix of useful and insignificant words.

ii. File manager

Users were able to upload images and files using the File Manager without difficulty. Auto-annotating images was particularly impressive. For example, an image of a plate containing restaurant quality food returned the keywords ‘food’, ‘consomme’, ‘garnish’, ‘plate’, ‘meal’, ‘gourmet’ and ‘delicious’ amongst others (Figure 2). This is significant in the accuracy of choice of keywords. Moreover, users are able to choose to select and keep or discard individual keywords. This was considered by the NUA participants to be the strongest aspect of the platform.

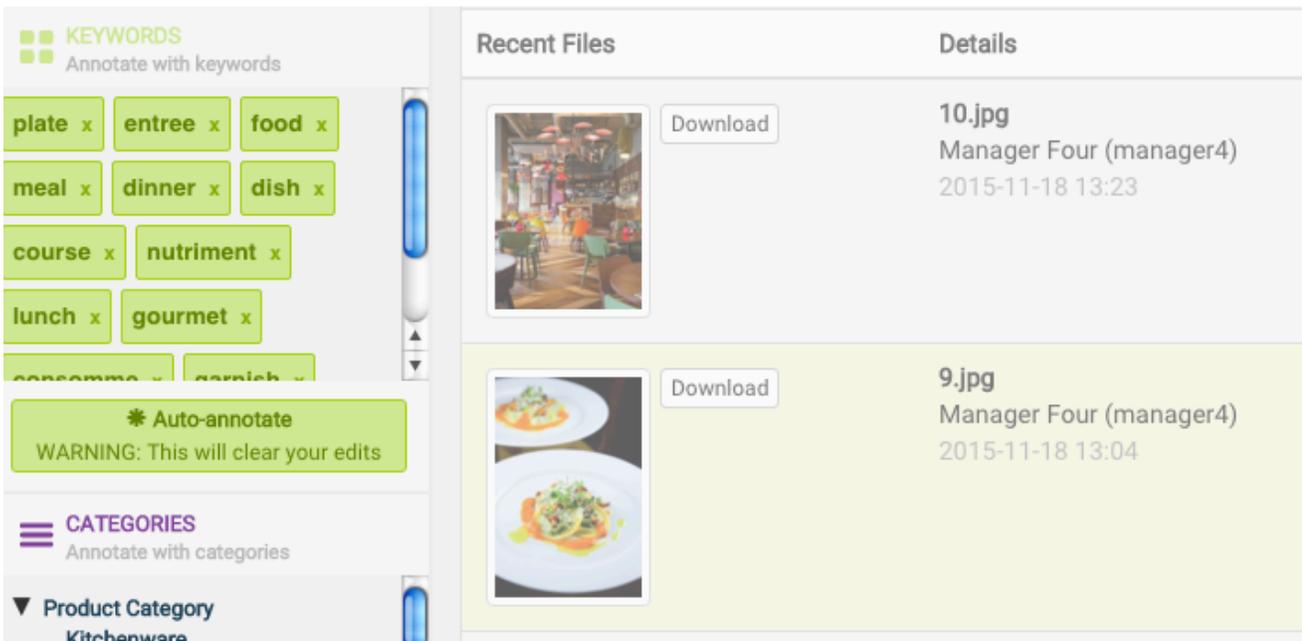


Figure 2 Illustration of ‘Auto-Annotate’ tool in operation



iii. Semantic/elastic & visual search tool

The semantic/elastic & visual search tool is not available in the first iteration of the platform, and therefore has not been evaluated. Further testing is required to assess whether the semantic/elastic & visual search tool will search across all projects, or just the currently open project. Moreover, it should be tested in its ability to search the web as well as just the internal COnCEPT repository.

iv. Mind mapping tool

Participants had difficulty using the mind mapping tool. It was not as advanced in its functionality and usability as others available on the market. While the basic functionalities of building a mind map were available, it was impossible to build the mind map in real time with the project collaborator. This is considered by the NUA team to be the core advantage of the tool in comparison with already existing mind mapping software. It should be developed further in the subsequent iterations of COnCEPT.

v. Storyboarding tool

There were also difficulties in utilising the storyboarding during the testing session. While it was straightforward to create 'scenes', NUA participants found difficulties in editing and moving images around the scenes. There were also technical difficulties in saving the scenes which led to error messages. These have been recorded in the evaluation spreadsheet. Moreover, the collaborative element was missing from the first iteration of the storyboarding tool. This aspect should be addressed in the following iteration of the platform.

vi. Sketching tool

Like the mind mapping and storyboarding tools, the sketching tool is problematic in the inability to see the updating of files in real-time, hence the extent of synchronous collaboration is limited. However, to counter this, the 'Notifications' panel does allow the user to see any edits to sketches. This is expected to be addressed in the next COnCEPT iteration.

vii. Communication functions

The testers at NUA were unable to get the chat facility to operate. This part of the platform requires upgrading in order to make COnCEPT collaborative



viii. Overall interface and usability

There are problems in the interface of the platform, particularly relating to the integration of the various components. For example, the basic icons (e.g. for ‘save’) in the mind mapping and sketching tools are different. Consistency is required across the platform in the visual language, and as well as the labelling and terminology used. The same terms should be used throughout the platform to ensure user understanding.

There are other problems relating to navigation. For example, in the File Manager, clicking on a file will only give a preview of the contents of that file – to make any amendments, one must first click ‘View all’, then click on the appropriate image. This sequence of clicks is unwieldy and is laborious for the user.

In summary, the COnCEPT platform still requires considerable upgrading for the interface to work intuitively, and for the various elements to be fully integrated. Each of these elements requires systematic improvement to enhance the usability aspects.

The results from the pilot tests conducted by the Eindhoven University of Technology clearly show that the current implementation of the platform is missing important functionalities and requires refinements in some of the existing features. In the next paragraphs, a detailed description of the insights uncovered by the tests is included.

The feedback collected during the user tests revealed several problems with the navigation and user flow through the platform. A common remark about the interface was that it was experienced as slow, specially when interacting with multiple users. Participants complained that the interface seemed that it was not doing anything.

The users expressed confusion when trying to go back to a previous screen. This is notorious when a user accesses a specific module (e.g. mindmap) and the platform opens the module in a different tab without the user having any choice. A participant explained that she would prefer to stay on the same screen or tab and to easily go back. Additionally, there was a general remark on the left section of the screen where the main navigation menu is displayed. Users complained that the screen containing the menu changed depending on the module they were working on. They thought that this section of the interface was used for navigation purposes, thus they expected consistency across all the modules.

All of the users suggested to make clickable all the titles or headers of each section in the dashboard. They explained that by clicking on the title, the dashboard should show the list of files of the selected section.

Users also referred that the error messages that appeared when «something went wrong» in the platform were also confusing and they could not tell what was the reason of the error.

In the case of the notifications, it appears that not every action in the CONCEPT platform are turned into a notification. Two of the participants complained that they did not get any notifications about what the other team members were doing. They also added that it is not possible to open a document directly from the notification when the given notification contains information related to that specific file. Another problem was that the new notifications were always displayed as «new», even if users have seen it. They expect that when they open the notifications screen, all the unseen notifications should change their status to «seen».

As a positive point, the users liked the overview that the platform gives. They can easily see that they have one sketch, two storyboards and four mind maps. It gives the feeling that there is content related to a project in a better way than having different folders, one for the sketches, one for the mindmaps, and one for anything else.



i. Design brief.

All users mentioned that it was easy to open a file or a document. For one participant it was not clear if they could edit the existing documents in terms of permissions, for instance if a client or someone else created the document. It was also not clear if someone else was working on the same file. During the same time one user is editing. Participants were concerned about losing changes when multiple people interact in the same file.

ii. File management.

A related complaint to the ones in the general sections is that it is confusing how the left screen changes when opening a file and trying to annotate it. Another comment was that there were many buttons that are not clear in how they work, for example the “eye” symbol. The categories on the file annotation section are not clear how do they work or what is their purpose. They wonder if there is a specific difference with the tags that are added and the existing categories.

A user added that when a new annotation is made on a file, the team should be notified. Users would like to comment on files, pictures and all the materials, such as adding comments to specific parts of an image is not possible.

A user noticed that when deleting a file, there should be an option to recover the file.

iii. Mind mapping

Not being able to notify people when a change is made was a common comment. Participants noticed that it is not possible to use the mind map at the same time that someone else is using it. The work of one member is lost when someone else edits the mind map at the same time. The collaboration experience in mind map module seems to be more of a competition to see who manages to save the work first. She suggested that users should get a notification telling that someone else is working in the same mind map just like Dropbox or it should let you work at the same time, like Google Docs.

A user reported that when closing the mind map, it feels that the file is lost. When opening the mind map it is confusing to how to go back to the dashboard because it opens a new tab on the explorer.

A participant complained that every time someone saved the mind map, it created a new one copy of the original. Out participant found so annoying if several people are working on the same document. You don't see what is happening and you lost everything you did.

iv. Storyboard

concept

Two of the users had positive remarks about the presentation view of the storyboard. The flow of the interaction on how to create a new storyboard was confusing to all participants. One of the individuals tried to save a new storyboard, by just giving it a name but that is not possible. The user thought that the platform did not like what she was doing but it was not clear why or how to do it better. When creating a new storyboard, the user wants to save the storyboard with a name, but it is not possible because the storyboard is empty. The user wants to assign a name to the storyboard even if it is empty.

One of the users was confused because she could not find the storyboards that were created before. It was not clear how to link the scenes together or how to drag the scenes to the storyboard. Another participant described that the screen is too small to actually do something. She explained that there were better graphic programs and it seemed more convenient to just upload the sketches done in another program.

v. Sketching

All the participants noticed that the sketching module has a similar interface to the one of the storyboard. One user said that she did not understand the reason to have two different drawing interfaces (sketches and storyboard modules). The interface was so primitive that they commented to prefer to use Illustrator for sketching. She also noticed that it is not possible to do detailed sketching. Another user said that it was not possible to select a specific part of the sketch or to copy and paste a drawing. The sketching toolbox appeared to be very complicated to the participants. All of the users encountered problems when adding new elements or even when trying to change the colors.

vi. Communication

Users reported that the main chat window was too small and hard to scroll to previous messages. One participant explained that she uses Dropbox and Google drive because Google Drive has chat and she comment in an easier and better way. However, the current implementation seemed to be not very easy to control. A participant found annoying that the chat always showed a text saying that she just joined the chat room, however she did not do anything to cause the message.



4 ASSESSMENT OF THE UX REQUIREMENTS FOR CONCEPT

This section reflects on the assessment to the COnCEPT platform related to the UX requirements listed in D1.7. These UX requirements include considerations about User Experience (UX) and usability based on the results of WP1 (D1.2, D1.3, D1.6) and WP3 (D3.1, D3.2).

The objective of this assessment was to identify the challenges and opportunities that need to be considered for the COnCEPT platform to satisfy the UX requirements as far as possible. With this objective in mind, we used two evaluation techniques:

1. *Expert reviews* for evaluating the first version of the COnCEPT platform in consideration of the UX requirements, checking the completeness of the functionalities in order to satisfy the UX requirements.
2. *Online questionnaire* for evaluating the perceptions of the end-users when using COnCEPT during the pilot tests, and the extent to which the platform is useful to achieve their goals in an effective and efficient way.

In the remainder of this section, we describe the methodologies and report on the results of these evaluations, followed by a brief discussion of the implications for COnCEPT.

4.1 EXPERT REVIEWS

Expert reviews were performed to assess the current implementation of the COnCEPT platform in preparation of the pilot testing. The aims of these expert reviews were: (1) Evaluate the completeness of the functionalities of the first version of the COnCEPT platform to check if they satisfy the UX requirements, ensuring that the required functionalities were in place before the pilot tests with end-users. (2) Detect the open issues and challenges for COnCEPT.

The expert reviews were organized by Hasselt University, and conducted between 22 and 28 October, 2015, by 5 consortium partners: Virtualware, DLAB, NUA, TUE, and UHasselt.

Each evaluator was asked to conduct their expert review in two phases. The first phase required the evaluator to explore the first version of the COnCEPT platform, while keeping in mind the key scenario of their WP5 pilot as reference. For the second phase, each evaluator was asked to access a shared spreadsheet which included the full list of UX requirements, and to evaluate the status of the different functionalities of COnCEPT against each UX requirement by



using a color code (green = implemented; yellow = partially implemented; red = not implemented). Additionally, evaluators could enter textual comments to clarify their findings.

Results of the finalized spreadsheet reflected the functionalities that are suitable for testing within the pilot testing and those that are yet to be implemented. A summary of the results is presented in Table 1, in consideration of the categories of the UX requirements defined in D1.7.

| Category of UX requirements | Results of expert reviews |
|--|--|
| Synchronous and asynchronous communication tools | Functionality is partially implemented, and needs to be improved, expanded, or is yet to be implemented. |
| Documents: word processor, notes... | |
| Overall usability | |
| Idea generation and evaluation | |
| Sketching tools | |
| Image collections: gallery, mood boards, storyboards | |
| Project management | A number of functionalities are yet to be implemented. |
| Common repository and semantic/elastic & visual search functionality | |
| User accounts | |

Table 1: Results of expert review evaluation

The results of the expert reviews indicate that there are several functionalities that need to be improved and expanded to satisfy the UX requirements. Accordingly, the outcomes of the expert reviews were processed and thoroughly discussed by the CONCEPT consortium partners during the 3rd plenary meeting, which took place in Madrid between 4th and 5th November 2015. The outcome of this discussion was used as a basis to define the level of detail of the pilot tests for CONCEPT and resulted in a schedule with actions and recommendations related to the upcoming tasks in the scope of WP3.

4.2 ONLINE QUESTIONNAIRE



Questionnaires are useful tools to complement the results gathered from observations and usability tests, deepening the understanding about users' perceptions and opinions with qualitative data (Preece et al., 2002).

In the scope of T5.2, the online questionnaire had two objectives:

1. Collect general and quantitative data on top of the qualitative results gathered during the individual pilot tests. Qualitative data is useful to chart a general overview of the opinions of participants, providing means to compare the opinions and challenges described by pilot participants in a standardized way.
2. Evaluate the outcomes of the pilot tests in consideration of the UX requirements. This online questionnaire was created in consideration of the UX requirements (D1.7), thus we named this evaluation tool as “UX questionnaire”.

The UX questionnaire consisted of 26 questions: 21 of them concerning the experiences of the respondents using COnCEPT, and 5 questions at the end of the questionnaire for gathering general information about the respondents. A 5-point Likert scale was used to measure the agreement of participants to a variety of statements describing their experiences using COnCEPT. These statements were created based on the UX requirements for COnCEPT and general usability principles.

The questionnaire was created using Google Forms. A draft version of this questionnaire was included in D5.1.1 (see section 5.5.2). The full UX questionnaire is available in the Appendix section of this document. The URL of the UX questionnaire was shared with the consortium partners on 18th November, 2015. Each consortium partner conducting a pilot was asked to invite the pilot participants to fill in the UX questionnaire. After collecting the results, the responses were analyzed to provide an overview of the opinions of respondents.

RESULTS

A total of 8 pilot participants (5 female, 3 male) responded the UX questionnaire. Three respondents joined the pilot organized in the Netherlands (TUE), three participated to the pilot in Greece (DLAB), one participate to the pilot in Spain (Virtualware) and another one participated in the pilot in United Kingdom (NUA). When asked about their profession, 3 respondents described themselves as students, two as researchers, and 3 respondents as design practitioners (project management, industrial design, and mechanical engineering). Respondents reported a wide variety of years of professional experience, ranging from novices to experienced designers.



The following sections report on the responses of the respondents to the UX questionnaire. Graphic representations are used to visualize relevant results, using the questions and 5-point Likert scale to quantify the agreement to the statements included in the UX questionnaire (see Table 2). Respondents had the option to mark a question as “not applicable” when they consider that certain functionality was not tested during their pilot test.

| 0 | 1 | 2 | 3 | 4 | 5 |
|----------------|-------------------|----------|----------------------------|-------|----------------|
| Not applicable | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |

Table 2: Likert scale to evaluate agreement

The Y-axis of the graphics below are charted using Table 2 as reference.

CONCEPT tools

When asked about their perception of the chat module, respondents had mostly favorable opinions. As illustrated in Figure 3, five respondents either agree or strongly agree that it is effortless to send chat messages in CONCEPT, while 6 participants agreed that they could send chat messages quickly.

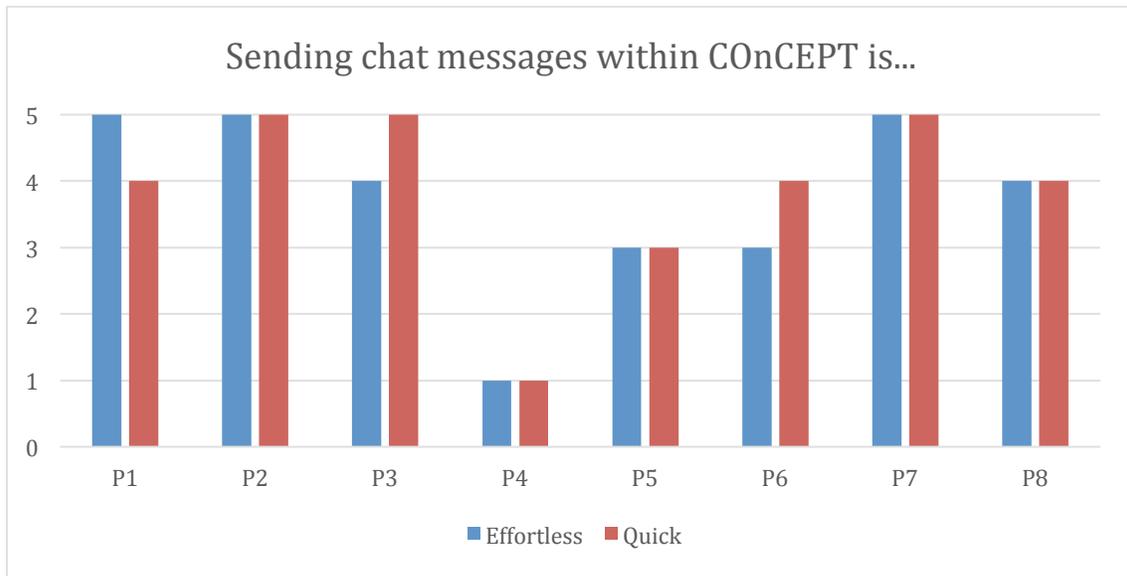


Figure 3: SENDING CHAT MESSAGES WITHIN CONCEPT



Three respondents felt that it is easy to start using any tool within COnCEPT, while five participants either disagree or strongly disagree with this statement.

As illustrated in Figure 4, when questioned about individual tools, the majority of respondents reported that it is not easy to create and refine sketches, storyboards or mood boards. P1, P2, P3, and P7 mentioned that mood boards were not included during their pilot test, thus could not be evaluated.

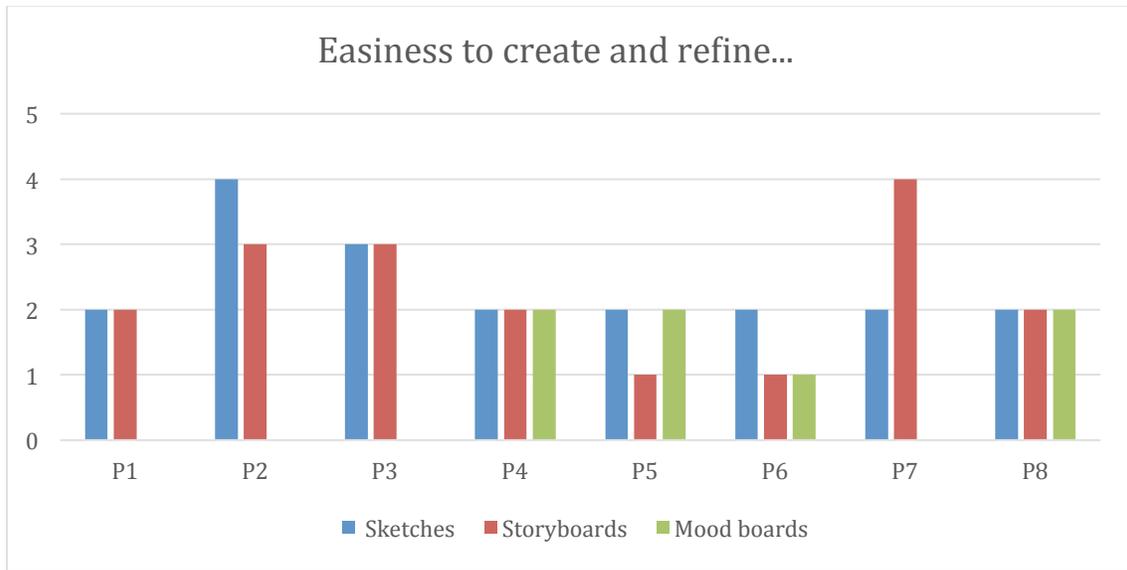


Figure 4: CREATE AND REFINE SKETCHES, STORYBOARDS, AND MOOD BOARDS

Four respondents agreed or strongly agreed that it is efficient to upload images to COnCEPT, while 2 participants were neutral and two disagreed.

Team work in COnCEPT

As illustrated in Figure 5, two respondents found COnCEPT efficient to organize activities with others, while only one respondent found it effortless to collaborate with others within COnCEPT. The rest of the respondents either disagreed, strongly disagreed or remained neutral to these statements.

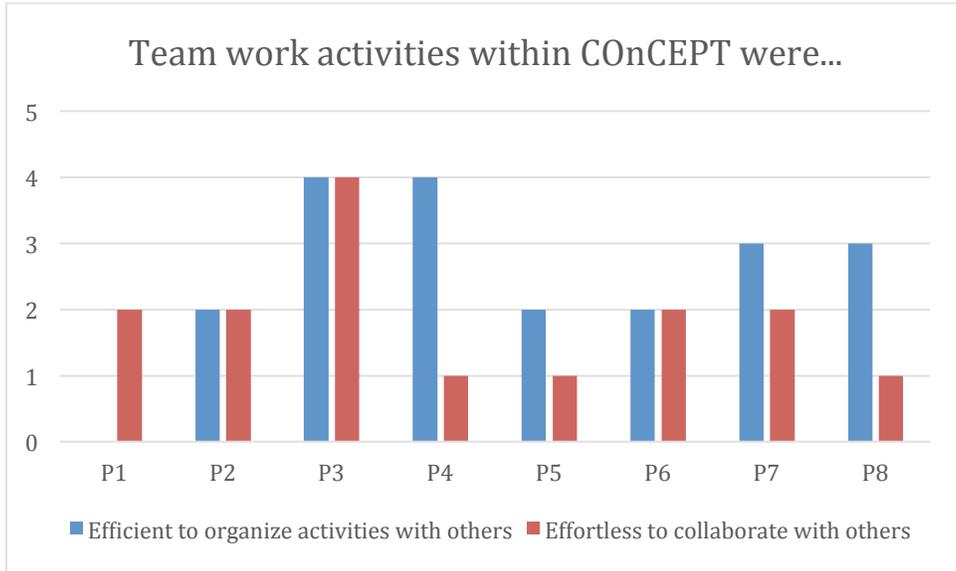


Figure 5: WORKING WITH OTHER WITHIN CONCEPT

As illustrated in Figure 6, when asked about managing and sharing files, 6 respondents reported problems to control who has access to their work. Three participants found that they could access shared files quickly, and 3 respondents found easy to share files with other people within CONCEPT.

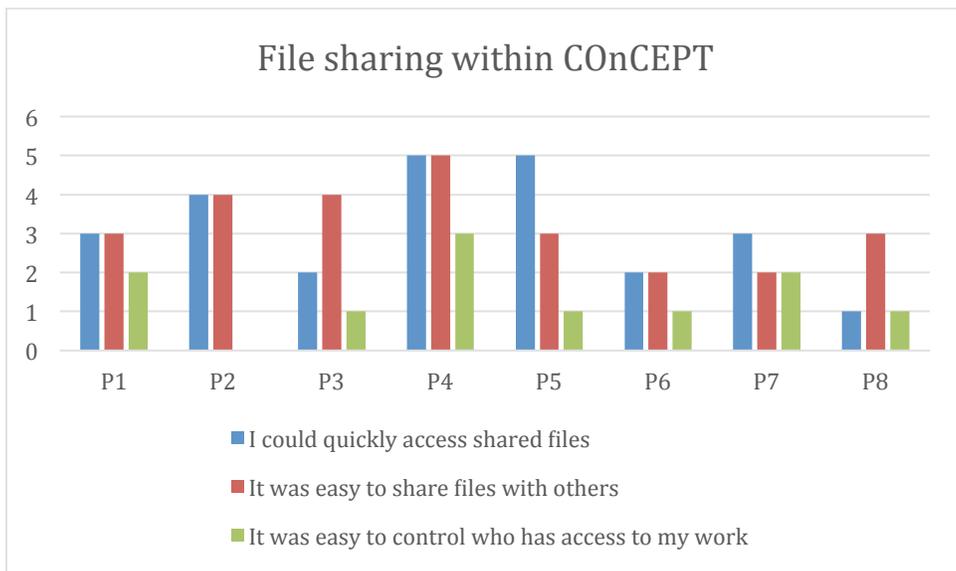


Figure 6: SHARED FILES WITHIN CONCEPT



When it comes to collaborating using the sketching tool, 5 respondents either disagreed or strongly disagreed when asked if the sketching tool in COnCEPT could be easily used to share and collaborate with others.

Project management tools

6 respondents evaluated the COnCEPT project management tools. Five participants agreed that these tools are useful, but only one respondent found the project management tools within COnCEPT easy to use.

Individual activities

When asked about awareness within COnCEPT, 5 participants agreed or strongly agreed that it is easy to have an overview of their projects within the platform, while 5 respondents mentioned that and could clearly see notifications of updates. The rest of participants either disagreed or remained neutral to these statements.

General usability

Respondents were asked their opinion about the general usability of COnCEPT. As illustrated in Figure 7, five respondents agreed that they quickly learned how to use COnCEPT. In contrast, only one respondent reported that COnCEPT was easy to use, while 3 remained neutral, and 4 either disagreed or strongly disagreed.

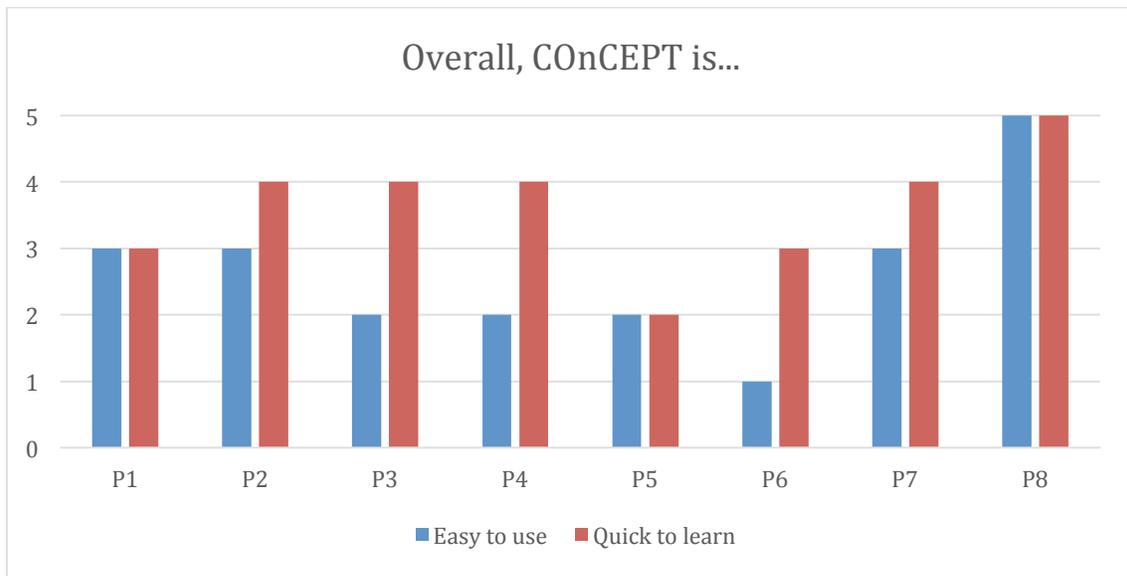


Figure 7: overall usability of COnCEPT

Finally, 2 respondents reported that COnCEPT could support them to complete their tasks in a collaborative way. Two respondents remained neutral about these statements, while the rest either disagreed or strongly disagreed.



4.3 DISCUSSION

The objective of the evaluations reported in the sections above was to identify the challenges and opportunities that need to be considered for the COnCEPT platform to satisfy the UX requirements as far as possible. Therefore, we present three general recommendations based on the results of the expert reviews and UX questionnaire for upcoming iterations of the COnCEPT platform, which emerged from these evaluations.

- Respondents reacted positively to the features that deal with awareness. These features could be expanded and used to support collaborative design activities.
- Prioritize user experience over functionalities. Improve and implement those features that most likely have a significant impact to improve the UX of designers, such as collaborative features.
- Critical to have a better integration of the features to support coordination and collaboration within the design process.

Reflecting on the validity of the evaluation, we discuss the limitations. First, it is unwise to make generalizations out a small group of participants. Furthermore, we need to include participants from a wide variety of backgrounds (e.g. design practitioners from different fields) to have a representative sample of our end-users. As next steps, we consider relevant to integrate the quantitative results (e.g. UX questionnaire) with the qualitative results gathered during the pilot tests (e.g. observations, interviews) to give a broader understanding of the responses of participants and draw conclusions from these evaluations. Further analysis to relate these results will be included in upcoming WP5 deliverables.



5 CONCLUSIONS

The realization of the testing pilot it is a good way to evaluate the COnCEPT Platform and to know the opinion of expert profiles outside of the project. It permits to see the reality of the platform functionality and user interactions to improve in next phases.

In this case, the pilot testing was done by two expert designs one manager and a client for design a 3D Virtual Environment. The only profile that was not used to use ICT tools was the client.

All of them, checked the functionalities of the modules to a greater or lesser extent and in spite of the fact that modules have basic functionalities to use by designers principally; all of them communicated the necessity to improve the modules especially Storyboard, Mood Board and Sketches modules and communications, share and tracking options between modules

In spite of critical opinions of the people involved in testing, they affirmed that the idea of Concept platform is right with a principal dashboard with access different tools. So, in the following steps the project could take an account the recommendations and try to improve the communications tools and improve the StoryBoard and Sketches module.

Taking an account the deliverables in WP1 and WP3 there are several items to describe that it is necessary to improve:

- The platform supports storage of files in centralized repositories in the module “Final Management” by web-interface as functional requirement previously defined
- The platform supports user’s authentication and management functionalities with different roles for end users (e.g. administrator, content creator, guests) as functional requirement previously defined
- The platform supports multilingual content included by user but the platform only show the platform data in unique language
- Asynchronous and synchronous collaboration among users in the developed components is very simple and it is necessary to develop more advanced functionalities to fulfil with the specifications defined
- Semantic/elastic & visual search functionalities are not existed
- Integrate information creates in each module is not possible to share with others and with heterogeneous input and output formats
- Platform doesn’t allow interconnection with social media tools
- In Mood board modules doesn’t support presentation mode to clients

The platform allow the basic functionalities in the different modules but it doesn’t have a good integration with the rest of the modules

concept

In general the tested prototype proved to be offering functionality of almost all of the planned parts and modules. There are several potential improvements, in order to make the different modules work better together and also offer added features that would enhance the platform's capabilities and improve the collaborative creative process further by making it more efficient. The fact that the modules have to be based on opens source software has the advantage of having a lot of mature features integrated, but at the same time the overall architecture, UI design and consequently User Experience don't all share the same approach. This results in a not yet unified User Experience and should be improved as much as possible, both by «syncing» common and similar functions and by adjusting the User Interface design (structure, positioning, UI elements, fonts, sizes, colors etc.) into one common concept. This would minimise learning effort and increase the chances of the user being «hooked» faster into using the platform and be pleased and efficient at the same time.

Apart from limited existing collaboration functionality, which is yet to be implemented, the upcoming semantic elastic & visual search engine is planned to be implemented into the next prototype interim iteration after the middle of M27 and will give to the overall experience of using the platform a substantial innovative aspect. This ofcourse also relies on how well it will be integrated and be supported by all the modules. By judging by the auto-annotation feature, which is already available and works impressively well for a first prototype, that the semantic elastic & visual search is going to work as auto-annotation is based on the same technological base for semantics.

Based on the results and as a preliminary guide for the next prototype iteration development, the main issues to be addressed follow and are organized by each module:

Brief analysis:

- Improve module's interaction with the rest of the working environment of the user (upload and share documents more easily etc.)
- Improve document's structure as a guide for defining a brief (e.g. include fields for parts of brief etc.)

File Management:

- Improve usability (e.g. less back and forth actions necessary, give better feedback about what was added/changed and by whom and when in the right viewing screens, better design icons & buttons for concrete understanding by the user etc.)
- Semantic/elastic & visual search:
- Integrate and make it interact with all the platform modules

Moodboard:

- improve stability (it crashes)
- add features about inserting and managing images easily
- include examples for different grids and layout (e.g. like pinterest, free, "cartesian" layouts etc.)



Mind-map:

- keep Mind-maping canvas inside the Dashboard area
- improve guidance and feedback to the user

Storyboard:

- keep Story-board canvas inside the Dashboard area
- improve User Interface to make it clearer and easier for the user, eliminate confusion
- improve sketching tool qualities, make User Experience more appealing and sketching more natural
- Sketch:
- Improve line and tools qualities and "feel", make sketching more natural
- Add more basic features (e.g. mirror, rotate, copy etc.)
- improve navigation between sketch files (allow for navigation without having to go "out" to the file management module)

Communication/collaboration

- integrate collaborative synchronous working in all the modules
- eliminate confusion created by having two communication tools at the same time
- screen and cursor sharing is one possible way to collaborative working, but an approach of resolving based on allowing for synchronous collaborative contribution by each user without losing track should be investigated (Google Drive paradigm)
- files generated by each user during collaborative work should be safely kept and saved in order not to lose input
- communication should be available at all the modules in the same area and not in a different window or tab
- communication over voice and collaboration should be possible for more than two users at the same time

General comments:

- Improve integrated User Experience of the platform
- Create a common basic User Interface with common elements for all the modules
- Improve Usability by eliminating redundant actions, clicks, back and forth steps etc.
- Improve file management and handling by giving better and clearer feedback and information about version, user, commentator etc.
- Improve connection of the platform with the outside world, interaction with web etc.
- Integrate semantic/elastic & visual search in all the module (e.g. smart import of new images, keywords etc based on user's initial input)



SOURCES

Preece, J., Rogers, Y., Sharp, H. (2002). *Interaction Design: beyond human-computer interaction*. US: John Wiley & Sons.



APPENDIX A: POST-QUESTIONNAIRE - UX QUESTIONNAIRE FOR CONCEPT

UX questionnaire for COnCEPT

Your experiences using COnCEPT

Please rate how much you personally agree or disagree with these statements using the following scale.

| | | | | |
|-------------------|----------|----------------------------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |

| <i>COnCEPT tools</i> | | 1 | 2 | 3 | 4 | 5 |
|------------------------------------|--|---|---|---|---|---|
| Q1 | It was effortless to send chat messages within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q2 | It could quickly send chat messages within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q3 | I could efficiently upload files to COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q4 | It was easy to start using any tool within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q5 | It was easy to create and refine sketches within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q6 | It was easy to create and refine storyboards within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q7 | It was easy to create and refine mood boards within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| <i>Team work in COnCEPT</i> | | 1 | 2 | 3 | 4 | 5 |
| Q8 | It was efficient to organize activities with others within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q9 | It was effortless to collaborate with others within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q10 | I could quickly access shared files within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q11 | It was easy to share files with other people within COnCEPT | 1 | 2 | 3 | 4 | 5 |
| Q12 | I could easily share and collaborate using the sketch tool in | 1 | 2 | 3 | 4 | 5 |

| | | |
|---------------------------------|--|-----------|
| | COnCEPT | |
| Q13 | It was easy to control who has access to my work | 1 2 3 4 5 |
| Project management tools | | |
| Q14 | The project management tools within COnCEPT are useful | 1 2 3 4 5 |
| Q15 | The project management tools within COnCEPT are easy to use | 1 2 3 4 5 |
| Individual activities | | |
| Q16 | It was effortless to set up my user account in COnCEPT | 1 2 3 4 5 |
| Q17 | It was easy to have an overview of my projects within COnCEPT | 1 2 3 4 5 |
| Q18 | I could clearly see notifications of updates within COnCEPT | 1 2 3 4 5 |
| General usability | | |
| Q19 | COnCEPT could support me to complete my tasks in a collaborative way | 1 2 3 4 5 |
| Q20 | Overall, COnCEPT is easy to use | 1 2 3 4 5 |
| Q21 | Overall, I quickly learned how to use COnCEPT | 1 2 3 4 5 |

About you

We would like to ask you a number of questions about to your demographic information and professional practice.

| | |
|-----|---|
| Q22 | What is your gender? <ul style="list-style-type: none"> • Female • Male |
| Q23 | What is your age? |
| Q24 | What is your profession? Please enter your profession, job title, or description |
| Q25 | For how many years have you been in this profession? |
| Q26 | From what country are you participating to this test? <ul style="list-style-type: none"> • Greece |

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APPENDIX B: DETAILED RESULTS FROM THE EVALUATION

| | NUA | | VWG | | TUE | | | DLAB | |
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| | Comments | Futher observations | Functionality | Usability | Problems | Expectations | Other comments | Functionality | Usability |
| Brief Analysis | Cannot upload a brief document onto 'Brief analysis' section. Can only copy and paste brief into the text area. Text copied and pasted, and saved by manager (Participant 1). Text was shared with designer (Participant 2). Designer could edit the text. \$ Tried to auto-annotate the brief document. Five keywords are identified. However, some of those words aren't even in the brief document. Identified keywords can be deleted. Need to be able to say 'yes' or 'no' to these keywords. Can't use auto-annotate AND add keywords from the list. \$ "Clicked save. However could not retrieve the keywords - where are they saved?" | NB: Cannot hit 'back' button on browser – need to hit the back link. \$ NB: Auto-annotate can only be used on one document. "WARNING – this will clear your edits" very un-user friendly! \$ NB: Small icons (eye, label etc.) – unclear what they do. Could incorporate a rollover. NB: 'Like' button does not work. Left bar – Project members is grey and barely legible. No avatars to identify team members. | "The module Brief Analysis permits to do the task in general mode but his behavior is primary. it is missing more functionality related with Word application and better actions to add images from web browser or with drag and drop functionality. One of the important thing that it is not implemented is to see the changes made in each of document and who is the responsible of this changes." | "The behavior of the User Interface is a little archaic and not intuitive. It is not too clear to do some actions such as: - Not ask for the name of document or in order to delete document - Not clear to add images - Lack of contextual menu on right click - Like button doesn't work very good - Visibility button is not clear - Everything is not clear. No instructions" | It was not clear if they could edit the existing documents in terms of permissions, for instance if a client or someone else created the document. \$ It is not clear if someone else is working on the same file. \$ If someone changes the same document one user is working on at the same moment, are the changes lost? " | | - The user finds it easy to open a document | -Calendar starts week only on a Sunday -Can only assign task to one person and the rest as watchers Project setup is not inside the Dashboard UI. | There is no clear and obviously integrated way to navigate between Dashboard and OpenProject. UI elements and layout is not consistently designed between modules and Dashboard. |
| File Management | Easy to upload jpegs and files. NB: When click the file from the | NB: When click on 'Notifications', can't actually open the | One of the principal functionality(cre | "The interface is not very | "- It is confusing how the left screen changes | - When a new annotation | | It works and it is relatively | It is rather straightforward. A) Every |

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| | <p>main page, it shows a preview, but cannot open the file itself. Have to click into 'View all' to make an edits. \$ Cannot rename. \$ Auto-annotate brought up a list of keywords relevant to the image. \$ Can be saved. \$ Where has the file and annotations been saved? Can preview the image, but can't view the image with the metadata. \$ Auto-annotate tool for images is good.</p> | documents listed. | <p>ate folders) doesn't work. On the other hand it is not clear how to make public file to see by client profile. If you don't know how to do this it is impossible to client can see in based on some filters. The worst of this module is that it is not possible to use this photos in others modules.</p> | <p>intuitive in actions and doesn't provide feedback when uploading or confirmati on messages when deleting It would be good idea to drag and drop above the file Managemement Module"</p> | <p>when opening a file and trying to annotate it. - It is not possible to comment on files, pictures and all the materials - There are many buttons that are not clear how they work, for example the "eye" symbol. - The categories on the file annotation section is not clear how do they work or what is their purpose. What is the difference with the tags that are added?</p> | <p>is made on a file. The team should be notified. - Adding comments to specific parts of an image is not possible - When deleting a file, there should be an option to recover the file. The file should go to a garbage bin</p> | <p>fast. However it would be better to be able to add pictures directly from the web without having to download them to PC and upload them to the platform afterwards. Most features work, however the auto-annotate feature showed irrelevant tags. What is more I would like to be able to add categories. Very quick and easy process. Very easy to put tags on photos. However when annotate an image, the application goes to the start-page. What is the use of annotation? If it groups images depending on the name, where is this displayed? I think the annotation should be shown in File Management gallery \$</p> | <p>time I annotate an image, the interface returns me to the home page and I have to click again "View all" in files manager. I would prefer to be able to annotate one after another continuously. B) If I am annotating one image I cannot click on it and zoom on it. It would be useful to have such a choice.</p> <p>1) I can not see who uploaded each image. 2) I can not see which images have already been annotated 3) Every time I annotate an image the interface returns me to the home page and I have to click again ""View all" in files manager."</p> | |
| Semantic/elastic & visual search | Not yet available. | Can't assess how good the semantic/elastic & | it Doesn't work | | | | | | |

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| Engine | | visual search tool is – will it search all the projects? Will it search the web and web repositories? Remains unclear how material can be saved and reused for subsequent projects. | | | | | | | |
| Moodboard | | | | | | | | A) The app is mainly a vector sketching. I would prefer the app to have the ability to arrange the photos automatically into a mood-board using semantics etc. B) It does not work collaboratively. C) Not reliable. It crashes or gets stuck | Maybe a grid, or different layouts in which photos could be organized automatically it would be helpful for the user |
| Mind Mapping | Mind map opens in a new window – this is disruptive to workflow. \$ Mind map does not appear to be auto-populating with keywords from the brief. Can add branches to mind map, however cannot continue the mind-map branch to smaller sub-categories. \$ Cannot add images to the mind map. Added a link. \$ Can save mind map. Problem with labeling - name is not showing on the dashboard. \$ Can share, but cannot co-edit. Mind map is not being updated in real time. It is only available to the other participant when 'save' is clicked. \$ Updating in real time is the core of this tool | 'History' function not showing previous edits of the mind map. \$ 'View all' on the dashboard does not show the list of saved mind maps. NB: 'Save' icon is two figures – counterintuitive. | "The Mind Mapping module as tool works properly. It is possible to do any mind mapping with a lot of options. Maybe the unique option that we are missing it is the possibility to add images in nodes. On the other hand it is not possible to add a name to save. The module assign one name automatically. Moreover, the tool doesn't have share option in the menu as well as labeling option. It is necessary to go to dashboard | The tool has a problem the first time that we use. It is not very clear how to create new nodes. After of this action, the tool it is very easy and intuitive to use. Terminology and interface is the typical for this types of tools. | "- When something new is added, no one is notified - It is not possible to use the mind map at the same time that someone else is using it. The work of one member is lost when someone else edits the mind map at the same time. - The user reported that when closing the mind map, it feels that the file is lost. - The collaboration experience in mind map module seems to be more of a competition to see who | - You should get a notification telling that someone else is working in the same mind map just like Dropbox or it should let you work at the same time, like Google Docs | | A) If one user creates one mind-map then the rest users are able to see it. However two or more users cannot edit the mind-map collaboratively. B) I cannot see the mind-map names on the list on the mind-map frame on the home page, in order to open the mind-map I want "\$It's not working collaboratively, I can see the other members' | "A) When I drag a node it disconnects from the parent node. B) It is not obvious how to change a node's name (which is done by just typing). On the other hand it is easy to change the nodes' appearances (colors, strokes etc.) and the interface is ""clean"". It would also be useful to have some keyboard shortcuts for common tasks like |

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| | and is missing. | | and use these option and one by one Mind Mapping file. The tool has some good and helpful features as the possibility to add links and notes and to export to pdf" | | manages to save the work first. - When opening the mind map it is confusing to how to go back to the dashboard because it opens a new tab on the explorer. - Users had troubles adding a new node at the first time - Every time someone saves the mind map, it creates a new one copy of the original. - It is so annoying if several people are working on the same document. You don't see what is happening and you lost everything you did. | | work, long after save. Sometimes save button fails to operate." | adding nodes etc." \$Easy to make Mind Map Tree, clarity in display. \$ |
| Story Boarding | Can create storyboard. New storyboard opens in a separate window – annoying \$. Can name storyboard. \$ Cannot move the image around on the screen. Scene has not saved – getting an error message (SEE IMAGE ATTACHED). \$ Can drag and drop to rearrange the different scenes. \$ Can save but cannot retrieve the storyboard - storyboard is not showing up on list of storyboards on Dashboard. Error screen when trying to save (SEE IMAGE 1). Clicking 'Take me home' on that error message brings you to another error message (SEE IMAGE 2). \$ Cannot export to a | Recommendation: Save icons are different from the icons in the mind mapping tool. Two different save icons within the storyboard tool (SVG edit tool and blue 'save' button on the top right. | "The module Mood-Board and Storytelling permits to create the scenes and prepare the Story-Board but it is archaic. At the first time doesn't use all of the space of ""workplace"" in the screen. Moreover, in order to get a good drawings this tool is very simple. It should be an advanced tool as Illustrator. At the same time It is meaningless because of working in Sketcher and storyboard module are diferent. With one tool could be possible. | Navigation and use the interface is confuse because of existing two different tools. It is not very clear how to create the storyboard and how to works. Moreover Sometimes there are problems to save the storyboard and to see again in other any time. | "- The flow of the interaction on how to create a new storyboard is confusing. The user started by trying to save a new storyboard, by just giving it a name but that is not possible. The user thinks that the platform does not like what the person is doing but it is not clear why or how to do it better. - It is hard to do something and the screen is so small to actually do something - The user cannot find the storyboards that were created before - It is not clear how to link the | - When creating a new storyboard, the user wants to save the storyboard with a name, but it is not possible because the storyboard is empty. The user wants to assign a name to the storyboard even if it is empty. - The user thinks that there are better graphic programs. For the person it is smarter to | - The users like the presentation view of the storyboard . | storyboard is not working. \$ |

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| | Powerpoint. \$ | | Finally, it would be a good idea to have a template that simulates the storyboard where designer can draw in direct way and a section where anybody can to add comments related with the design" | | scenes together or how to drag the scenes to the storyboard. | just upload the sketches done in another program. | | | |
| Sketching | <p>Can create new sketch. \$</p> <p>\$ Can add lines and shapes. Can't edit the lines or shapes easily. Sketching tool is not vector based.</p> <p>\$ Text functionality – can add text. Every time you try to move the text box, it duplicates. (Must change the tool before clicking anywhere in the sketch window – highly annoying).</p> <p>Can change the font size and style. Two styles are available (serif and sans serif).</p> <p>\$ Must save the sketch before sharing it with a collaborator.</p> <p>\$ Two collaborators cannot sketch at the same time.</p> <p>\$ Two collaborators cannot save synchronously – one or the other takes precedence and the edits made by the others are discarded.</p> <p>\$ Can see how sketch was built up in the 'Notifications'</p> | <p>NB: Very crude sketching tool. Not an infinite whiteboard as was specified in the DOW. \$</p> <p>NB: Cannot undo. \$</p> <p>NB: Cannot add any pre-existing image to the sketch. \$</p> <p>RECOMMENDATIONS: Needs overhauling rather than simply improving upon this tool. Sketching tool is basic, and has very limited application.</p> <p>\$ An infinite whiteboard was specified in the DOW - not realised here.</p> <p>\$ Updating in real time is the core of this tool and is missing.</p> | <p>"It is possible to create the virtual space but tool is so archaic.</p> <p>- it does not permit to draw in vectorial way</p> <p>- It only allows two forms to draw. It should have more forms</p> <p>- It is not possible to change the brushes and create news</p> <p>- Gradients are not possible</p> <p>- it is not possible to work with layers</p> <p>- Effects are not available</p> <p>- There are not tools to rotate and reflection.</p> <p>- It is not possible to change the size of text and to add text box</p> <p>- The option to have a repository in</p> | <p>The tool is basic and allows to create drawings but if you are used to work with others advanced tools the interface is very simple and it is rare to work.</p> | <p>"- It is not possible to do detailed sketching</p> <p>- It is not possible to select a specific part of the sketch</p> <p>- It is not possible to copy and paste a drawing</p> <p>- The toolbox seems to be more complicated.</p> <p>The users encountered problems when adding new elements or even when trying to change the colors.</p> | <p>- It has a similar interface to the one of the storyboard. The user does not understand the reason to have two different drawing interfaces.</p> | <p>- The interface is so primitive. They prefer to use Illustrator.</p> | <p>"A) It is not possible to sketch simultaneously with other users.</p> <p>B) There is no export functions (pdf, png, jpg)</p> <p>C) There is need for more vector drawing tools, like the tools that are available to the mood-board app</p> <p>D) pan/zoom navigation should be added</p> <p>On the other hand, it does work on a very basic level" \$ "Not useful application, not many functions and pictures can't be imported in</p> | <p>"A) In order to navigate from one sketch to another, one has first to return to the dashboard. Navigation between different sketches needs improvement</p> <p>. B) The sketching tools that are available to the mood-board tool are not available to the sketching tool. For instance a user can not drag a line after drawing it.</p> <p>C) The only way a user can navigate to the sketch pad is by using the</p> |

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| | toolbar. | | File Management is a good idea but then the tool doesn't have the option to use these images in Sketching module - It should be a good idea to have an history files to open the version that you want easily way - Option to export it is not available " | | | | | order to sketch on. The Storyboard application is more suitable for sketching than the Sketching application." | arrow keys of the keyboard. I would like to have pan and zoom functionality. "\$ |
| Communication - Collaboration | Whole philosophy of the CONCEPT platform is missing - it's very difficult to evaluate without the semantic/elastic & visual search tool. Semantic/elastic & visual search tool the core of the platform. \$ Separate tools are inadequate – not enough integration between them. Lack of integration between the tools – this version is a TOOL SUITE rather than an integrated platform. \$ Doesn't go beyond existing applications already available on the market. | NB: Cannot close the blue collaborative bar on the right hand side. Can only close it by clicking the circle icons in the top of the left tool bar. \$ NB: Can change name, profile avatar, and profile colour. RECOMMENDATION: Invite a friend function redundant – asking you to copy and paste a link into an email. Better to invite a friend by typing in their email address to generate a link sent directly to them. | "The Communication Tool is basic: - It is not possible to chat only with a person. The chat is for a team. - It is not possible to have an avatar for each profile to identify better the people - it is not possible to insert an image or to have a video-conference - It would be a good idea that the application send and email when there are a change. - There is a notification button or link but it is not possible what type of changes profiles are done." | | "- It is hard to refer a file when communicating with someone. Is it possible to send the link of the file? - The main chat window is too small and it is hard to scroll back to previous conversation - It is not easy to control. It is annoying that is always showing that I just joined the chat. I haven't done anything. \$ TOGETHER JS: "- How did we get to open the other chat (togetherjs)? How does it work? It wasn't intentional; I just clicked without knowing where I clicked. - TogetherJs opens a different chat, but I am | "- I use dropbox and google drive, Google drive has chat and I comment in an easier and better way. - I should be able to use voice to review documents Where is the voice chat option?" \$ TOGETHER JS: - Why are there two different types of chats? What are the reasons for having them apart? - TogetherJs feels like a totally different | TOGETHER JS: - I like that I can see when someone is typing. - I like that I have an avatar and that I can edit it. - it has a voice chat function | text only \$The feature does not work when an app opens on a new tab as happens with mind-mapping and storyboarding tools. But even with the file management tool, which open on the same page, the "follow" feature is not reliable. The only way to collaborate is by chatting. The "like" icon does not work. There should be a gallery view in order to compare the sketches more easily. Comments cannot be | text only Although it does not work, it is rather useful to see the cursors of the rest collaborators and act concurrently "The following should be added: A gallery view with one sketch next to the other allowing users to dynamically rearrange them, add comments to them, be able to view history of comments, be able to mark them, and be able to vote from the best sketches. If |

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| | | | | | <p>not talking to anyone, where is my team?</p> <ul style="list-style-type: none"> - The chat in togetherjs is so weird, who are the other people on the chat? It doesn't show the real users' names. - It is confusing and useless to have lots of mouse pointers with TogetherJs, it feels like someone else is taking control of my screen. I don't understand what is happening. I don't get why I would use this. - It feels very complicated - Togetherjs says that the other users are on the same page. It is confusing. Then it asks them to join someone but when they click, nothing happens. | <p>tool, what is this function for?</p> <ul style="list-style-type: none"> - TogetherJs feels like a game with all those pointers and mouse moving around, it is funny for the users but totally useless | | <p>attached to the sketch.</p> <p>"The communication was easy. However there is an issue with the green chat, specifically when the blue chat is on, the green chat is useless because the users write at the same time in the chat box."</p> | <p>the tools could moreover automatically generate a report of the selection procedure it would be an asset."</p> |
| General | <p>Whole philosophy of the CONCEPT platform is missing - it's very difficult to evaluate without the semantic/elastic & visual search tool. Semantic/elastic & visual search tool the core of the platform.</p> <p>\$ Separate tools are inadequate – not enough integration between them. Lack of integration between the tools – this version is a TOOL SUITE rather than an integrated platform.</p> <p>\$ Doesn't go beyond existing applications already available on the market. \$</p> | <p>RECOMMENDATION: Testing will be more useful when the second version of the software is available since integral components are not yet functioning. Things are starting to work but major revisions are required.</p> | | | <p>NAVIGATION:</p> <ul style="list-style-type: none"> - Navigation of the system is confusing. - It is not clear where to click to go back - The screen on the left seems to be the main menu used mainly for navigation, but it changes depending on the screen or the module you are working on. It is confusing. - It is confusing to switch to a different tab when opening a module, for example, when | <ul style="list-style-type: none"> - The user would like to be able to stay on the same screen or tab and to easily go back. - The title or header of each section in the dashboard is clickable, when clicking on it, it shows the list of files of the selected section. - It is slow. | <p>The users like the overview that the platform gives. They can easily see that they one sketch, two storyboards and four mind maps. It gives the feeling that there is content related to a project in a better way than having different</p> | <p>Being in a section e.g. 'File Management' can't choose the other sections directly, I have to choose the Dashboard button to go back and then choose the other sections.</p> | |

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| <p>Interface / Usability: Dated and unintuitive and lacking in user friendliness - e.g. constantly having to go back and re-select the project when changing tools. Platform still requires considerable upgrading for the interface to work intuitively, and for the various elements to be fully integrated. Each of these elements requires systematic improvement to enhance the usability aspects. \$ Terminology: In consistency in labelling in the platform. Consistency is crucial - for example, using an array of terms that mean the same thing (such as 'login' and 'keep me signed in'; and 'user' and 'team member') are confusing. Same terms must be kept throughout the platform. Labelling requires improvements. This is being completed by NUA, Dlab and Hasselt \$ Login: Simple and clear \$ \$ Coffee cup image distracting. Replace with a plain block colour (blue or white). \$ Paragraph of text should be replaced. RECOMMENDATIONS: Replace with: "Collaborative Creative Design Platform (COnCEPT) - A collaborative platform to support product design" \$ Dashboard: Continually logged off the project whenever you click 'back' on your browser, rather than hitting the 'back'</p> | | | <p>opening a mind map - Error messages are also confusing. Users don't know what they mean - - NOTIFICATION: I don't get the notifications about what others are doing. - I want to click on the notifications and I see that someone edited the brief analysis, but I cannot open the brief from the notifications - Why are the notifications always shown as new? How can I set my notifications as already seen? It doesn't work. It is annoying.</p> | <p>It feels like the interface is not doing anything. Sometimes nothing appears even when the user selected the project. Experience is slow when interacting with multiple users.</p> | <p>folders, one for the sketches, one for the mind-maps, and one for anything else.</p> | |
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