

OTEC ASSESSMENT TOOL

JMP 2012/2013 (28th Jan. 2013)

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BRINGING
BLUERISE
TO THE NEXT LEVEL OF
STAKEHOLDER
INTERACTION

EXECUTIVE SUMMARY

This is the final report in a three-report series outlining the Joint Master Project carried out by the authors. The project was divided into three phases. This document gives focus to the accomplishments of Phase 3.

This project works within the industry of ocean thermal energy. The client, Bluerise, is active in the development and progression of the OTEC technology. Ocean Thermal Energy Conversion (OTEC) is a technology that exploits the temperature difference between shallow and deep water. This temperature delta drives a rankine cycle to power turbines which generate electricity. Supplementary to OTEC, the system of Sea Water Air Conditioning (SWAC) is also considered vital for the Bluerise business strategy. The design team will present the initial answer to the challenge of taking Bluerise's to the next level of stakeholder interaction.

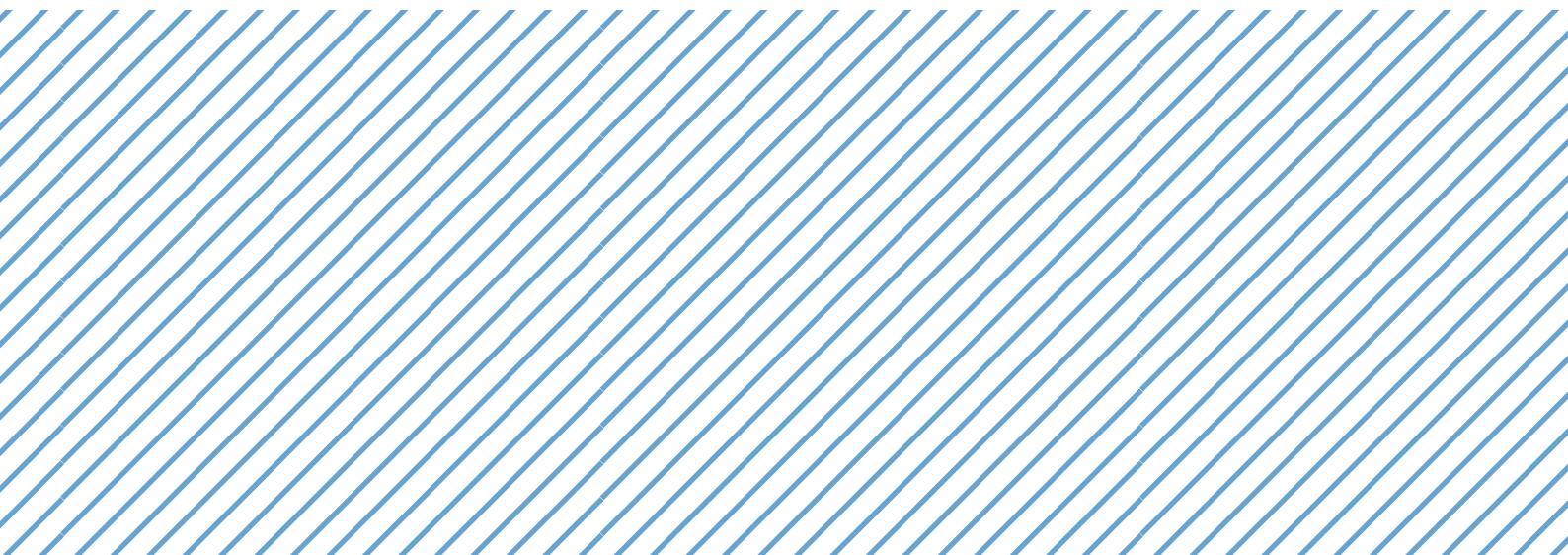
The first section provides an overview of the web tool's design, which can be described according to three stakeholder tracks. The Primary-Stakeholder is defined as the immediate implementer of OTEC +/ SWAC technology (the hotel/airport/business owner, the utility manager, etc.). Support-Stakeholders are defined as Project Financers (lenders, banks, etc.) and Project Builders (trade contractors, parts suppliers, etc.). These stakeholder groups have been accommodated by leveraging the accrualment of data produced by primary-stakeholder tool use.

The value proposition of the tool has been extended to serve multiple stakeholder perspectives according to the opportunity-analysis described in the 'Added Value' Chapter. Opportunity-1 is the existence of data that can be exploited to serve primary stakeholders. Opportunity-2 relates to data generation, which serves Support-Stakeholders. Opportunity-3 relates to community-building capability.

The final design presented in this report has been influenced by an extensive user test (User Test 1) conducted at the beginning of Phase 3. Results from this test formed the basis for a design iteration of the primary-stakeholder track. Effectiveness of various design refinements and the introduction of Support-Stakeholder tracks were evaluated in a final user test (User Test 2).

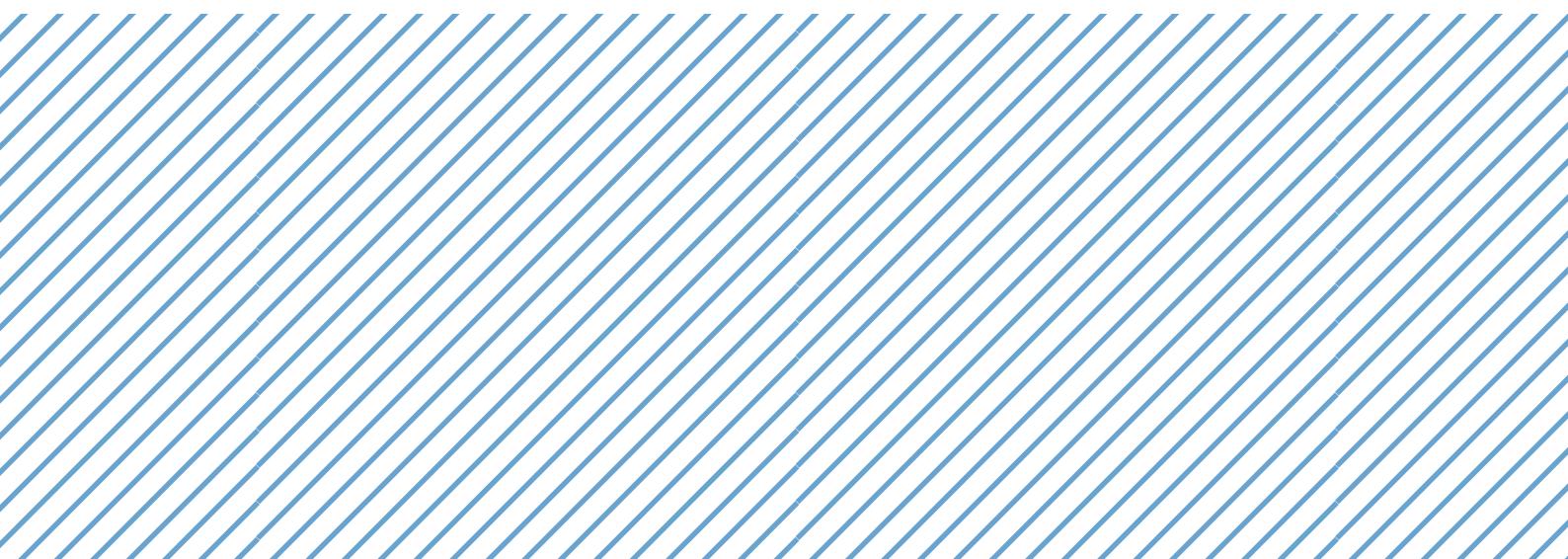
A strategy for Market Introduction is defined in the 'Market Introduction' Chapter. The basis for which includes a Promotion Tour, complemented by a Physical Promotion Kit. As part of Phase 3, the strategy has been initiated through the participation in the CODE_n - An international competition, hosted by the CeBET 2013. CODE_n searches for IT based solutions that provide answers to climate change and the impending energy shortage (CODE_n, 2013). The web tool described in this report has been accepted among 50 finalist that will present for the jury in March, 2013.

A list of recommendations have been provided in order to achieve further refinement of usability and interaction. A new phase of user testing should be conducted once an interactive "beta" version is complete, as this will cause a fundamental shift in how the user reacts to information and calls-to-action. As a conclusion to this project, the authors strongly recommend the continued development of Support-Stakeholder engagement and community formation. Such functionality is critical to realizing fundamental objectives of this project. Diversity in stakeholder collaboration at the earliest stages of pre-assessment will improve the likelihood of positive action while community formation, particularly among primary-stakeholder, will be critical if OTEC is to penetrate the hotel industry in regions such as the Caribbean.



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INTRODUCTION

This final report documents the design of the OTECT tool, its added value and the process which was undertaken to reach the presented result. It is important to consider the way in which this design has been developed. Phase 2 of the project culminated in a design framework and initial solution supported by this framework (Arvidsson et. al, 2012). The early part of Phase 3 was then the development of this initial solution into a web design that could enable a user test. This user test was conducted and resulted in beneficial and implementable changes

concurrent with Bluerise obligations for the duration of the project. Phase 3 naturally became the phase in which this conclusion was further investigated and executed.

This document has been set up in such a way as to prioritise the comprehension of the final outcome, the design. Secondly the report aims to demonstrate and explain the pivotal elements of our process that effect and reason the outcome, i.e. the previous phases, the user test iterations, and Bluerise's needs

This final report documents the design of the OTECT tool, its added value and the process which was undertaken to reach the presented result.

and improvements for the design, both content and execution wise. Mid-Phase 3 was spent implementing the changes and elaborating the content design to facilitate maximum experience and usability for the Primary Stakeholders. In parallel to the Primary Stakeholder experience, similar emphasis and energy was put into the development and implementation of the Supporting Stakeholders. Need for inclusion of these stakeholder groups has been concluded from the initial Phase 1 of the project and had run

and opportunities. As such, the report starts with a first part including a presentation of the Design tool itself and its 'Added Value' component. This part is followed by a summary of Phase 1, Analysis and Phase 2, Conceptualisation and a summary of the user tests. A market introduction strategy for implementing and achieving best impact for the tool is then presented. Finally the recommendations the design team have for Bluerise moving forward will be presented.



THE DESIGN AND ITS ADDED VALUE

The first part of the report shows the final result of the project. It includes the Design Style of the tool, its Interaction Framework and the Information Architecture. As well as the value created by its implementation.

THE DESIGN

Introduction

Merging two perspectives

The design can be considered from two different perspectives: (a) the content design, and (b) the execution of this content in a web interaction design. The following section will present both perspectives simultaneously. The content design is deemed to be the emphasis of the value contribution of the design team. The interaction design of the tool is deemed to be the secondary emphasis, but also important as it forms the way in which the user will access and understand the content. These two elements are by definition interwoven and interlinked, but in principle the content has dictated the execution, with respect to interaction norms and cultural context. For ease of comprehension and a holistic story, both perspectives are described as one.

Information Architecture

The content has three parallel paths, best demonstrated in Fig. 01. The reason, nature and content of these three paths will also be described in the following section. Each path is broken down into elements, where each element represents a page/stage in the tool flow. In order to support the reading experience, each element is numbered and its location can be referenced in Fig. 01. Each element detail is described comprehensively in the document Technical Data Package, accompanying this report. The flow of the elements, which makes up the content of the tool is described later in the User Flow section of this report.

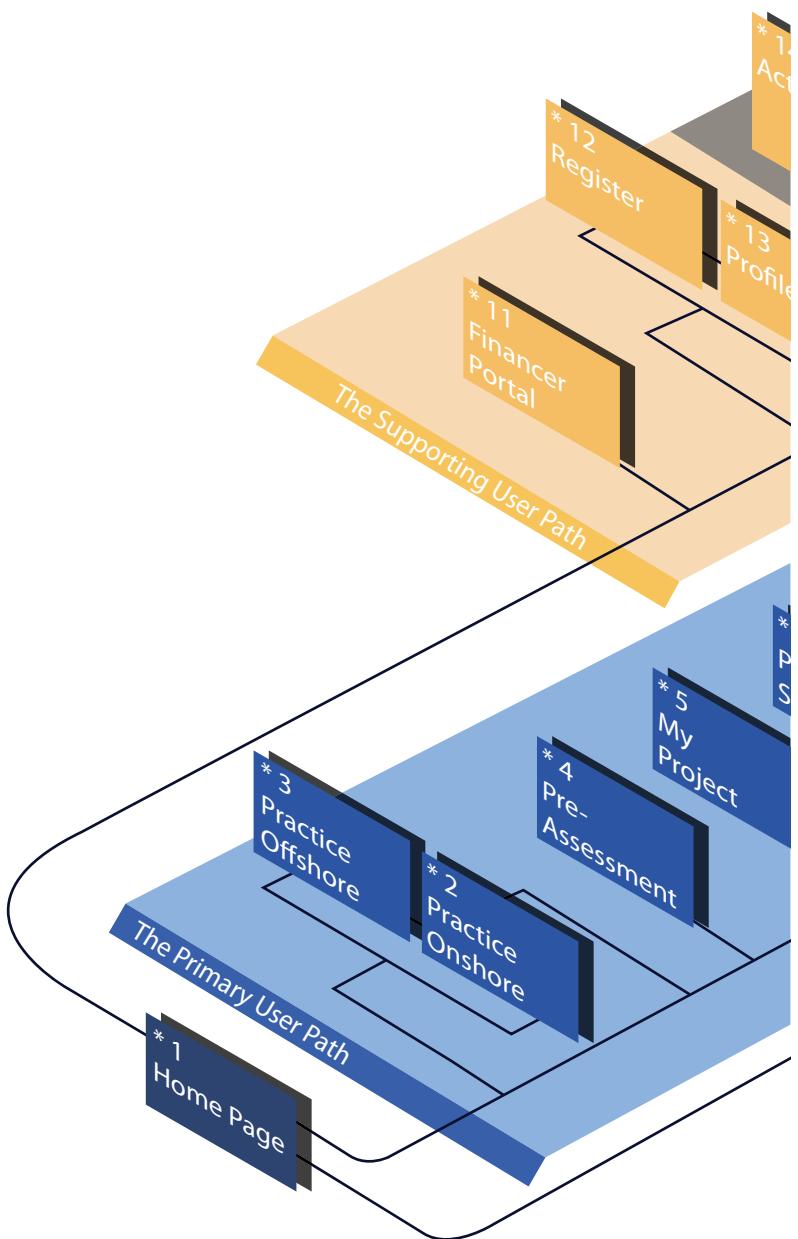
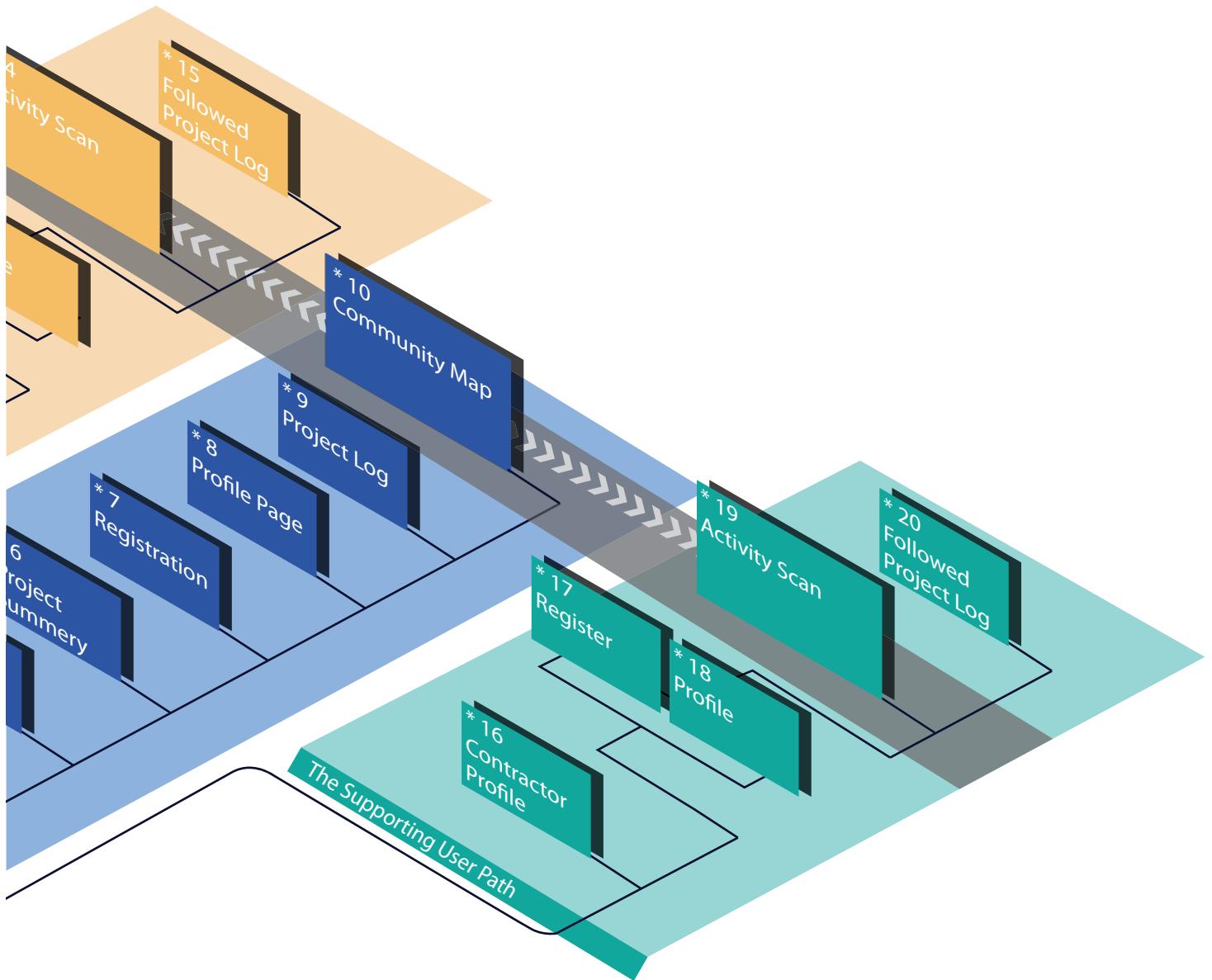


Figure 01: Flow Architecture for User Paths



THE DESIGN: KEY OBJECTIVES

Optimisation decisions were made after reviewing and discussing proposed ideas, looking into alternatives and reasoning the best option. The key objectives for content and execution are summarized in the list below:

- 1** *Provide a homepage that delivers the opportunity for added learning and initial grounding in the technology and explanation of how to use the tool, without it being a forced interaction and without overloading the viewer with options and text.*
- 2** *Achieve comprehension within the Practice section of the tool. Ensure that the focus of the Practice section of the tool prioritises the most important learning goals. These learning goals are: temperature difference and plant efficiency relationship, pipe size and cost relationship, plant efficiency and plant cost relationship. Ensure logical build up of the scene and therefore the understanding of the tool.*
- 3** *Integrate this Practice step in the process to invite non- or semi-experts to use the tool (and make them familiar with the technology). The need to ensure engagement of Technology Expert users was made explicit during interviews in Phase 2 of the project, most particularly Karel Tujeehut of the Aruban electricity company. In his view, this tool could be used within the company as a means of generating company adoption of known but not proven technologies, therefore an educated user group not needing to learn the OTEC principles.*
- 4** *The Pre-assessment section of the tool should happen after the Practice section. This section is made up of two parts: the location finder and the location specific Project. The tool flow should provide a clear, understandable pre-assessment journey. The location finder should indicate the need for a required scale (based on the program coder's calculation time requirement). The location finding map should be as intuitive and in line with previous 'google maps' user experience, while communicating the calculation scale requirement. The link between the specific location finder and the specific location Project should be explicit and clear.*

5 Ensure that the learned interaction methods from the Practice page are replicated in the My Project assessment page. This allows the user to first practice the tool functionality while learning the relations of the different variables; in the second part of the pre-assessment, the user will re-apply this learning for his/her specific requirements. Thereby the familiar interactivity will enhance the engagement and understanding.

6 An optional log-in at the end of the pre-assessment journey offers serious and interested users additional valuable features; positioning this log-in at the end of the process allows all users to experience the main journey.

7 Reasoning for the timing and need for log-in was considered in order to accomplish a number of things. In collaboration with Bluerise the final role and position of the log-in feature was established. The user should be able to 'get something for nothing' i.e. to learn and assess their location (acquire new valuable information for free as permitted by Bluerise). As it will benefit Bluerise to generate contact information for bodies and individuals interested in OTEC, the log-in function allows the user to also 'get something for their contact information'.

8 The Supporting Stakeholders; the project financers and the project contractors, will be included and considered within the scope of the tool. Their tool paths should include sector specific functionality and also links with the Primary Stakeholders, the project up-takers.

THE DESIGN: CONSIDERATIONS

Design Style

Objective

For the designed content to be delivered effectively, the design execution required a style. The design style strives for a combination of two attributes: professionalism and appeal. These attributes represent a credible, serious and attractive web tool, being used by a diverse user group with business intentions, see Fig. 02, for example.

Execution

The sensitive (financial) content and meaningful purpose of the tool require a credible and professional look and based on the superior objective of the design. This seriousness is reflected in a clean, consistent layout using white, blue and grey as the main colours. The text is shown in a modern sans-serif font (Myriad Pro and Optima) with focus on a good readability and fact-based information. A clear composition of the content provides orientation; spacious elements in-between prevent a page overload.

As the tool is time consuming and used voluntarily, the appeal plays another important role. The user may need to learn about new facts and relationships, therefore the interface should support this step. The appeal is intended via simple visualisations that represent the context and environment. In an abstract style the ocean, coastline, houses and the technology are represented, adding a little colour to the design and aiming for a friendly and pleasant look. Additionally, the visualisations serve to increase an understanding of the content and replace textual explanations (where appropriate).

In summation, the design relates to Bluerise's corporate identity and integrates the same blue shade, geometrical elements similar to their logo, uses the same website font (Myriad Pro) and shows a connection in the overall style.

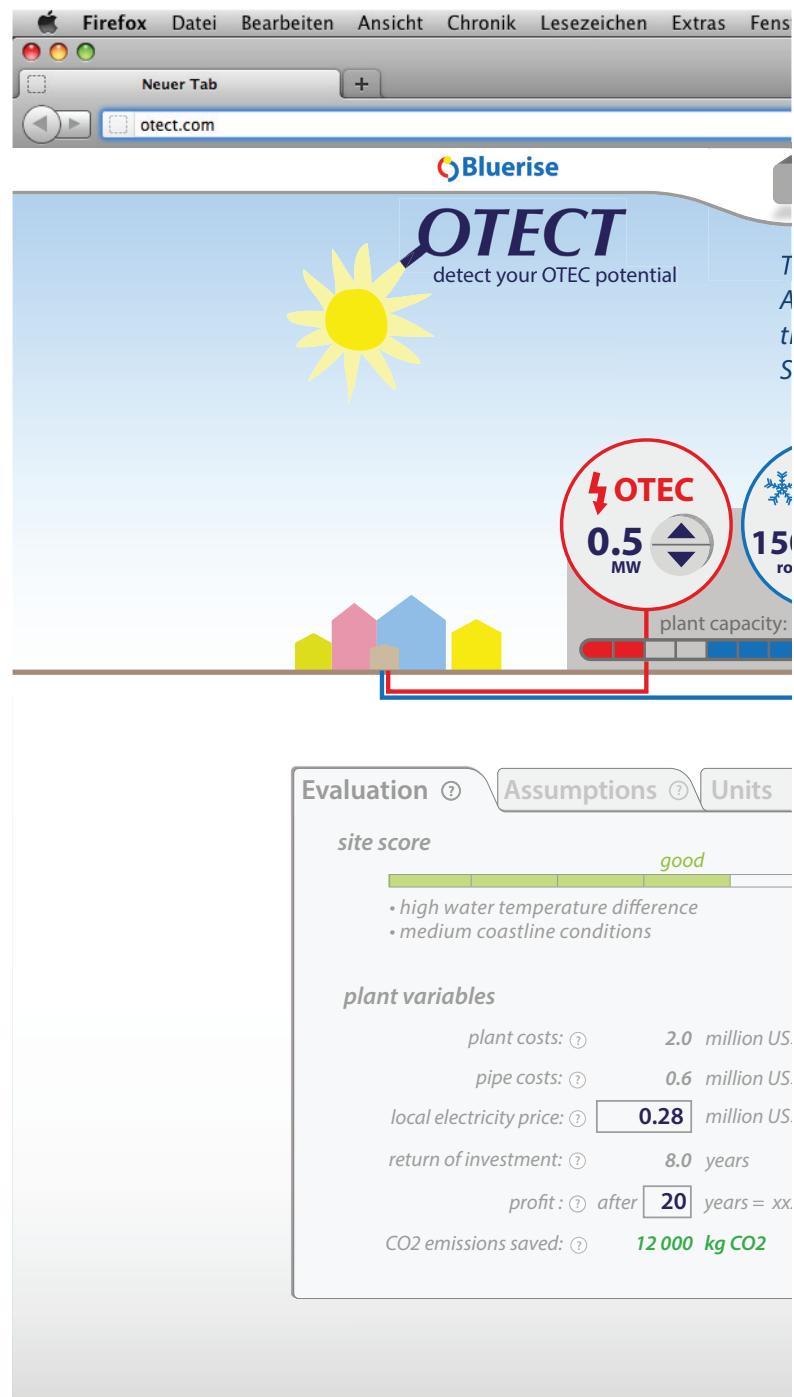
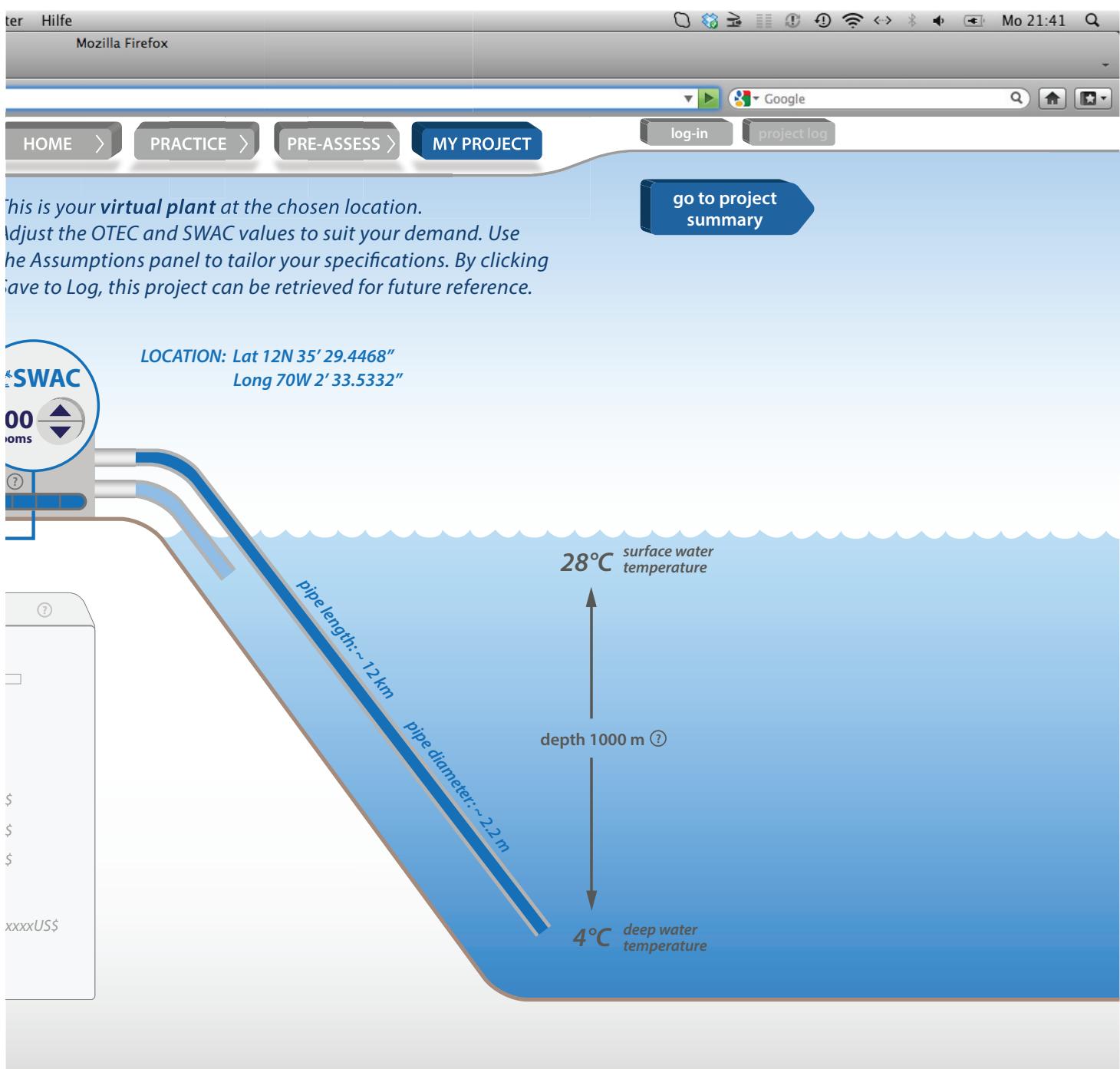


Figure 02: Demonstration of Professional Appeal



THE DESIGN: CONSIDERATIONS

Interaction Framework

Objective

Further to the design execution requiring a style, it also needed an interaction framework to allow for continuity in the full tool. To provide clear and pleasant usability the interaction framework is of high importance.

Execution

The navigation element consists of a basic menu bar that directs the user through the process and gives him/her control as well as an overview of the sequence. This menu is centrally positioned at the top of the page. With dominant arrow buttons the user can move forward and backwards.

The content elements are positioned under the menu bar, central on the page. A short and clear introduction text, written in italics, explains each page's function and tasks. The italic font represents non-clickable information.

The interaction elements stand out with a 3D effect. Buttons and clickable objects are put in perspective signaling to the user that they are different and interactive. A colour change marks which buttons are in session. Regular bold fonts specify interactive elements additionally. Fig. 03, is an example of how the interaction framework is embodied in the design.

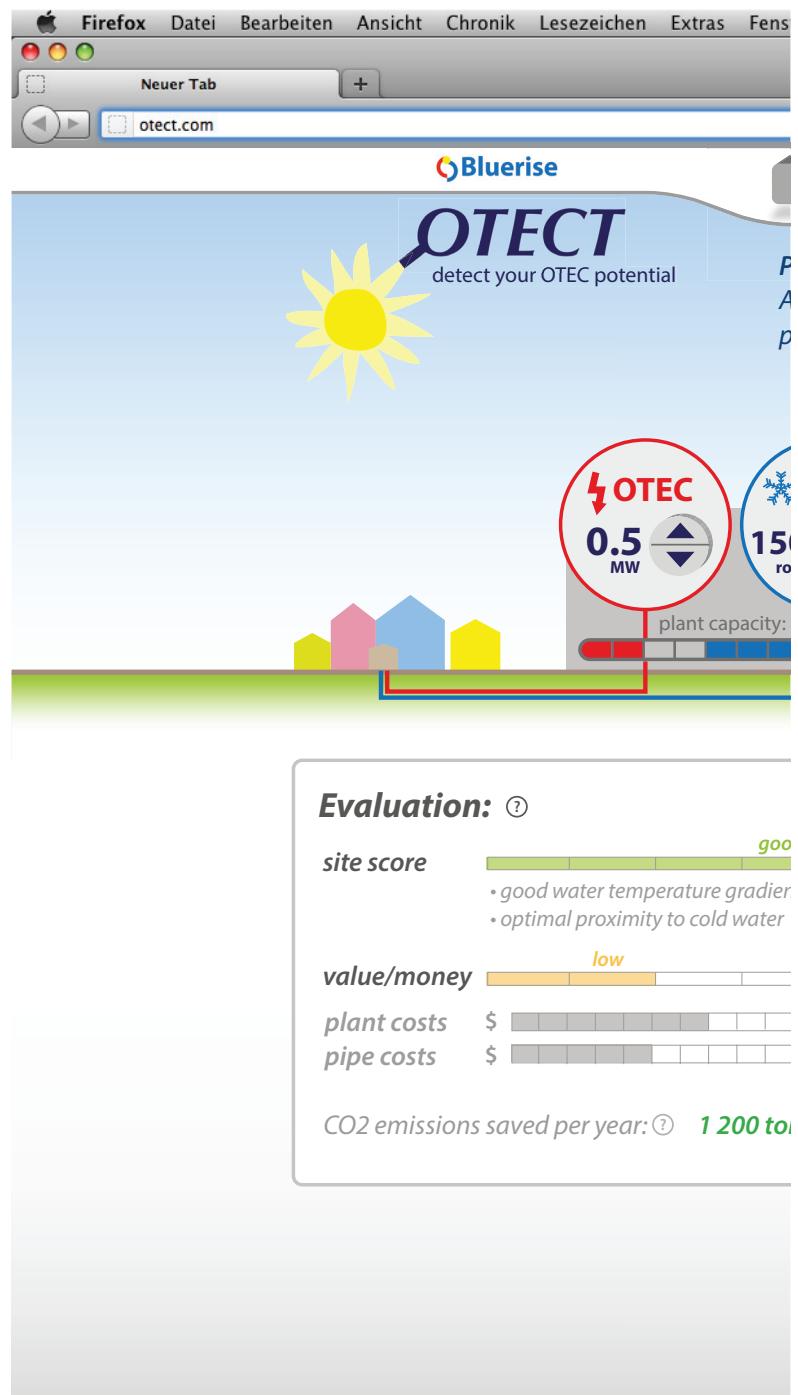


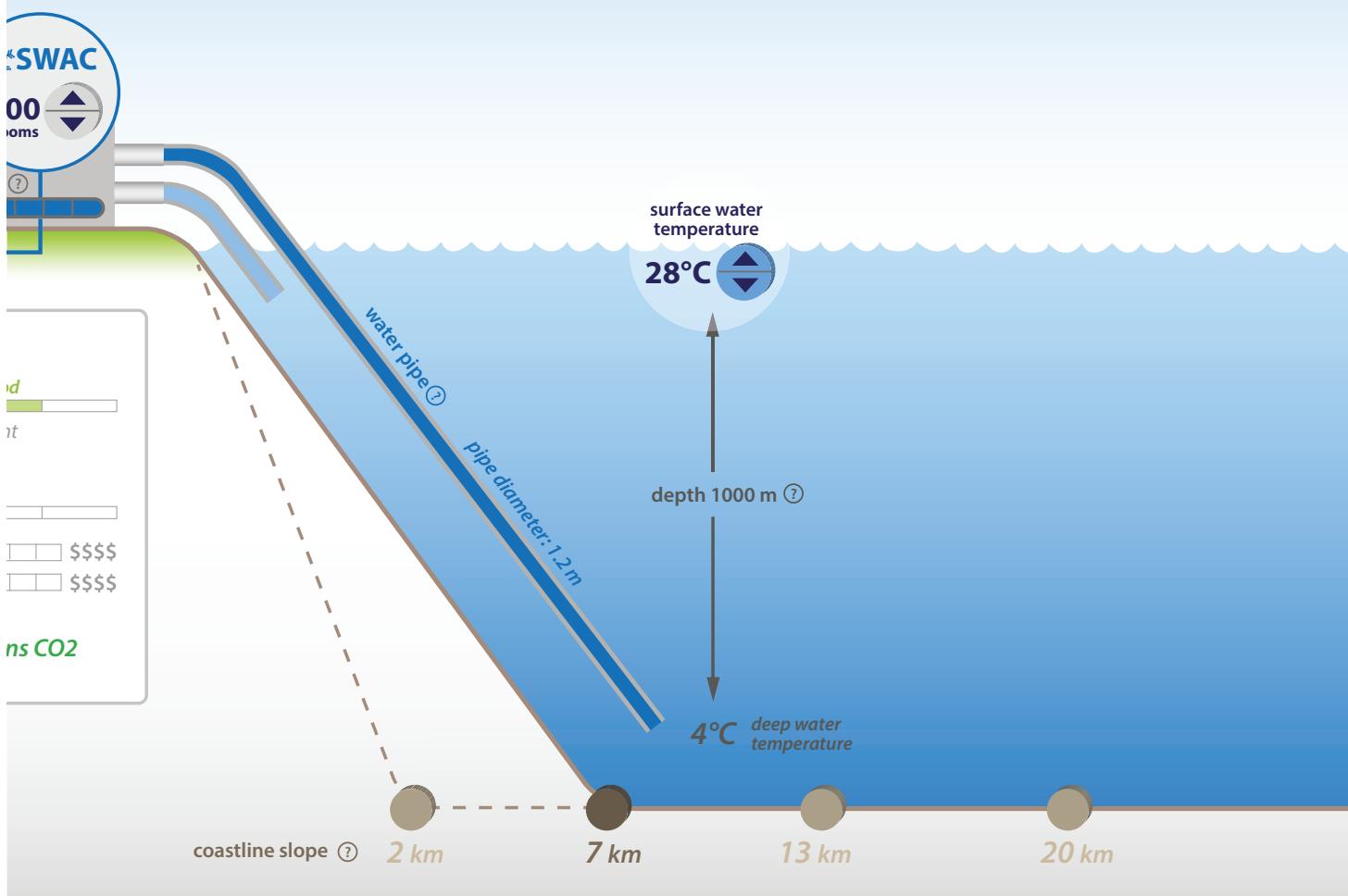
Figure 03: Demonstration of Interaction Framework

Practice Plant

Practice Plant
At this stage you have the opportunity to learn about OTEC and practice using the tool.

START
PRE-ASSESSMENT

PRACTICE
offshore plant



THE DESIGN: USER FLOW

Introduction

The User Paths

The following section describes how the content design is achieved throughout each of the paths within the tool. Please see the numbering system for referencing, see Fig. 04.

Primary Stakeholder

As concluded from the analysis phase of the project, the primary user of the tool is the Micro stakeholder. This ‘primary user’ is defined as the immediate implementer of OTEC +/ SWAC technology, the hotel/ airport/business owner, the utility manager.

For the primary user there are two main services that the tool offers; learning about OTEC/SWAC and pre-assessment of their location. These services are offered in four linear steps that can be controlled and directed by the user. The steps are named Home, Practice, Pre-Assess and My Project. Each step contain interactive functions in order to actively engage the user. Home and Practice perform the learning service; Pre-Assess and My Project perform the location pre-assessment service.

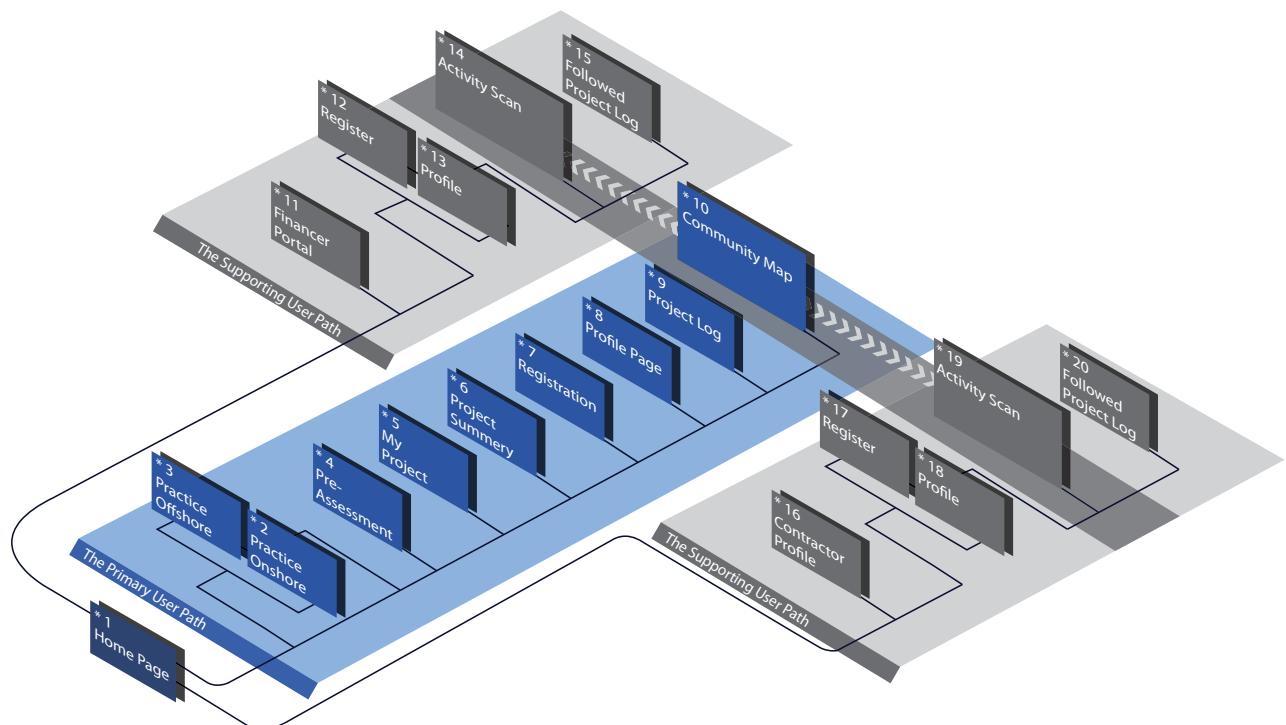
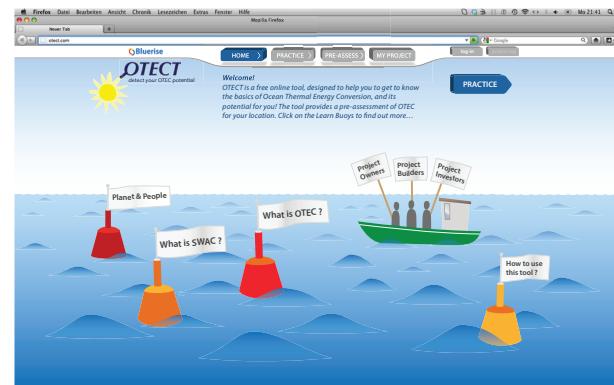


Figure 04: Information Architecture

1 HOME

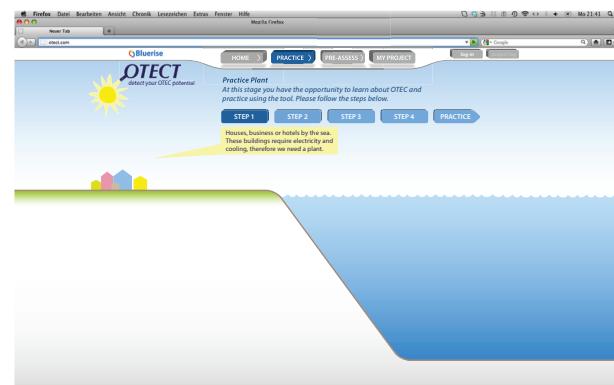
This is the home and starting page and gives an overview of what the tool does, describes the referred technologies and provides general information of the Ocean Thermal Energy industry. Through clicking on “Learn-Buoys” and signboards the user is exposed to the different topics; information is presented in a short explanation text including links to further sources. A navigation arrow on the upper right corner leads the user to the next step Practice.



1

2a WIZARD

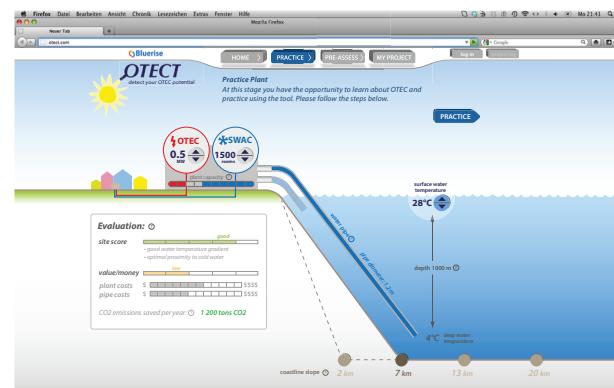
The help Wizard is present in both the Onshore and Offshore Practice pages. The Wizard is a four step process that sequentially builds up the picture of the Practice page, in order to support logical learning for the user. By taking the user through a breakdown of the components, ease of comprehension is facilitated.



2a

2b PRACTICE ONSHORE

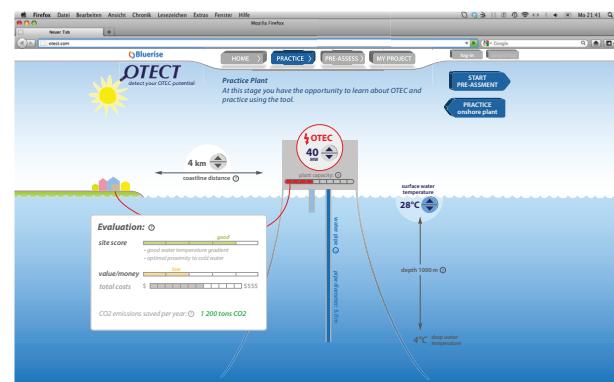
This page offers an exploration of the technology and the tool features. An abstract plant in an onshore setting, has several interactive variables that can be clicked and changed by the user. An evaluation window below the plant provides feedback of the physical attributes of the fictional site location, surface water temperature and coastline slope, and the cost efficiency related to the plant costs and its outcome. The navigation arrows at the top right give the user the option to practice the offshore plant or move on to the pre-assessment.



2b

3 PRACTICE OFFSHORE

This page offers an exploration of the technology and the tool features. An abstract plant in an offshore setting has several interactive variables that can be clicked and changed by the user. An evaluation window below the plant provides feedback of the physical attributes of the fictional site location, surface water temperature and the cost efficiency related to the plant costs and its outcome. The navigation arrows at the top right give the user the option to practice the onshore plant or move on to the pre-assessment.

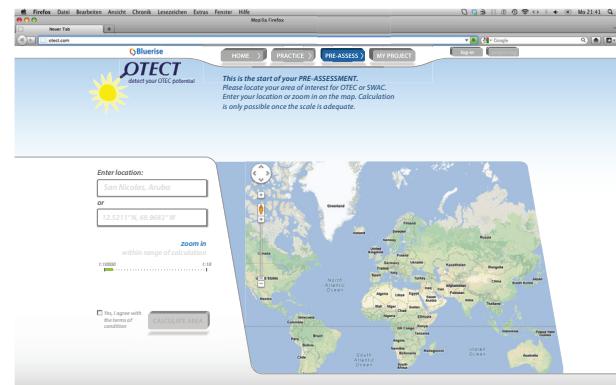


3

THE DESIGN: USER FLOW

4 PRE-ASSESS

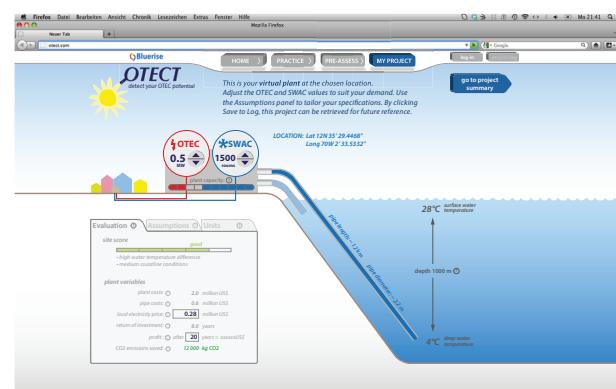
Here the user can start his/her individual, location specific OTEC pre-assessment by entering (or zooming into) his/her area of interest. Again, this step is an interactive page and combines several features. Having selected a specific area, the bathymetry data and sub-marinal profile is calculated and presented to the user via an enriched information in the map. Thus the user can now view how appropriate various sites are for OTEC, within the region. He/She can move on either by picking a precise location on the map or by starting a new location search.



4

5 MY-PROJECT

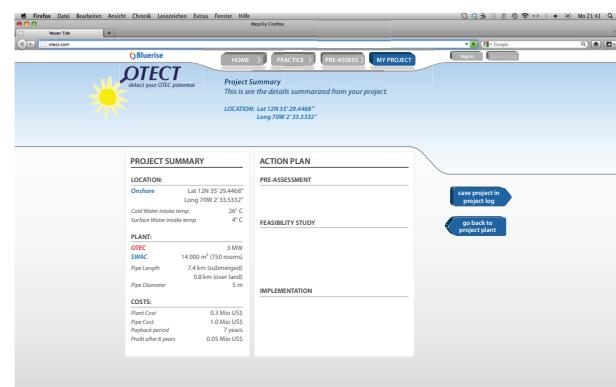
Having defined a specific location on the map and clicked "continue", the user reaches the next step, My Project. Here, the familiar plant scenario from the Practice page is shown again, with the difference of representing the selected location instead of a fictional place. Therefore, the user cannot change the physical site attributes (water temperature and coastline slope) as these are now defined by the database referring to the location. The user can modify, as practiced, the plant parameters (OTEC electricity and SWAC cooling power generation). The evaluation window offers now advanced settings including detailed costs information and financial data options. Many of the backend calculations that support the evaluations of the module are based on assumptions. Importantly, at this stage these assumptions can be challenged by the user. Thus the accuracy of the location specific evaluations is improved.



5

6 PROJECT SUMMARY

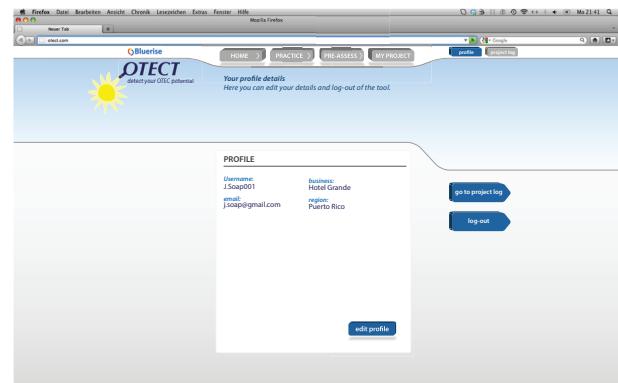
Having defined the desired OTEC and SWAC supply, the user can then move to a complete summary of his/her project, on the Project Summary page. With this step the basic user flow is completed, but to finalise the pre-assessment the user has the option to create a profile/ or to log-in and to receive a detailed evaluation PDF of his/her project. The tool provides a Project Log for this purpose, where the user can manage all created projects in a file overview.



6

7 REGISTER & 8 PROFILE

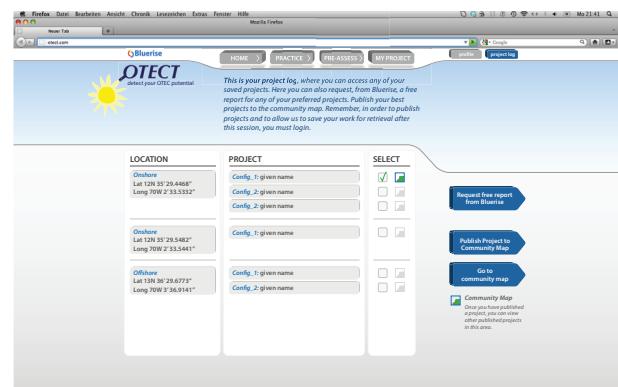
In order for the user to save projects in the Project Log for reference during a later session, they are required to log-in. As such, they must create a profile page. The creation of this page requires registration of a username, password, business name, and region. The profile enables the web-tool to store their information and projects. Furthermore this facilitates Bluerise in future communication with the user, should the user request such communication.



7,8

9 PROJECT LOG

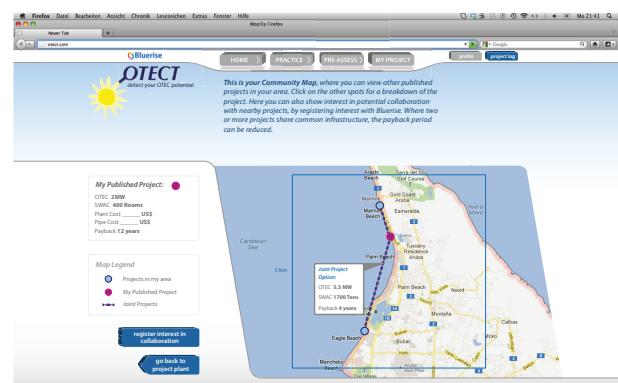
The Project Log page provides the primary user with a catalogue of all of the projects they have saved. This means that each individual project, with the site specific data and user determined assumptions and options, is retrievable during the session without log-in, and after the session with log-in. For the primary user track the Project Log page has several options. It is from here that the user can select a project and publish it to the Community Map. Access to the Community map of published projects is possible from this page. Users can also request a detailed report document from Bluerise for a particular project. Projects are catalogued on the basis of location and project profile (amount of OTEC MW etc.).



9

10 COMMUNITY MAP

The community map charts the projects that the primary users have elected to publish for public viewing on the web-tool. (For description of 'Published Projects' see Added Value Chapter) Functions within the community facilitate primary users to create links with neighbouring projects, and view the power/cooling needs of such projects. It is only possible for a user to see their neighbouring projects if they themselves have published a project in the area.

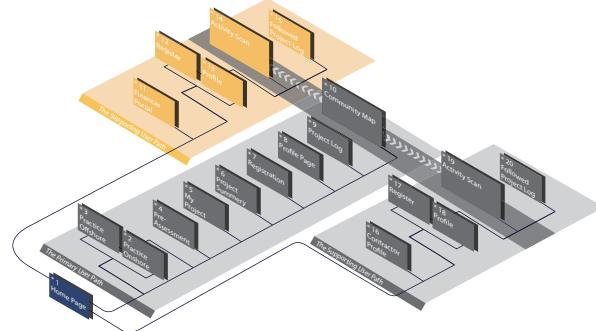


10

THE DESIGN: USER FLOW

Supporting Stakeholder (Financers)

As concluded from the analysis phase of the project, the supporting user of the tool is the Macro stakeholder. This ‘supporting user’ is defined as those bodies that facilitate the implementation of OTEC +/- SWAC technology; financing bodies and contractors. The following descriptions refer to the tool elements for the Financers path.



11 HOME/Financer Information

This is the home and starting page and gives an overview of what the tool does, describes the referred technologies and provides general information of the Ocean Thermal Energy industry. Through clicking on “Learn-Buoys” and signboards the user is exposed to the different topics; information is presented in a short explanation text including links to further sources. The ‘Finance providing’ user is directed to click on the project financers signcard. This results in a pop-up window, on which there is a description of how the tool refers to them. They are then prompted to continue with the tool by logging in or registering.



11

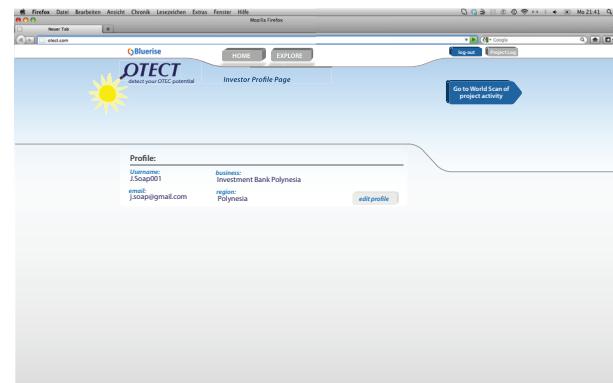
12 REGISTER

In order to create a profile each user must register with the tool. This page requires basic inputs: username, email, password, business and region.

12

13 PROFILE

Once registered or logged in the Financer is taken to their profile page. This is a simple page where their username, email, business, and region are stored, together with the option for password change and profile editing. Once on the profile page the user can then access the Activity Scan via the 'Go to World Scan' button.



13

14 ACTIVITY SCAN

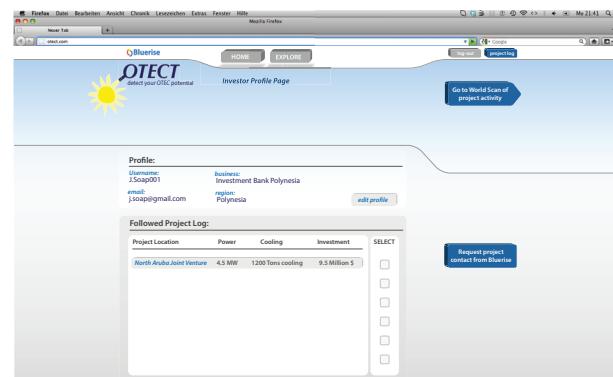
The world activity scan presents the Financer with a global picture of all of the projects published by the primary user group. This scan can be filtered via size of finance required and payback term. Once the user has selected a preferred range in which to search, they can choose to click the 'Alert Me' button. This button indicates that the user wishes to be contacted by Bluerise should projects of the selected nature be published to the map in the future. Once the scan has been run, the map is populated with dots representing single enterprise projects or joint venture projects that match the filter. The Joint Venture projects, are projects that have been linked by the primary users on the Community Map.



14

15 FOLLOWED PROJECT LOG

The Project Log is a log/list of all of the projects that the Financer has deemed interesting, be they single enterprise projects or joint venture projects. Once the Financer has clicked the 'Follow this Project' button, the project title (location) and project details (OTEC/ SWAC capacity, project cost) will be filed such that the user can re-visit this project. Furthermore should the Financer desire, they can choose to request updates from Bluerise about activity and progression of a particular project, by clicking on the 'Request Contact' button.

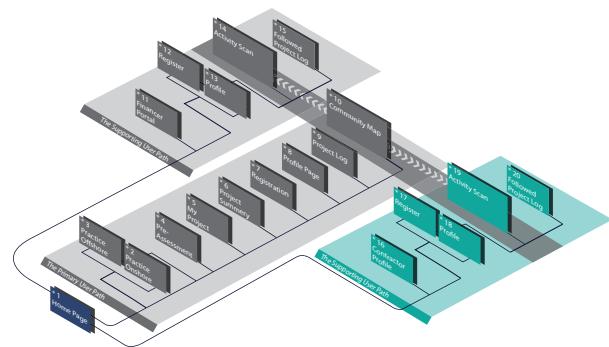


15

THE DESIGN: USER FLOW

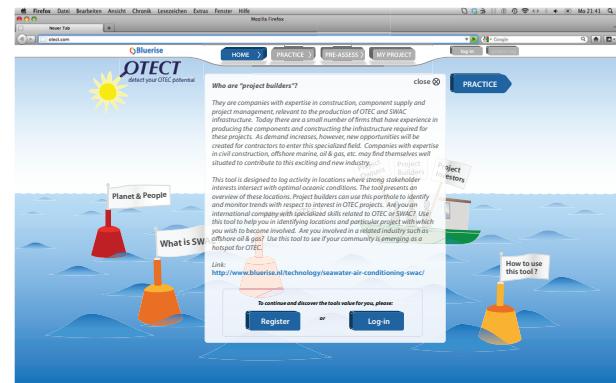
Supporting Users (Contractors)

The following descriptions refer to the tool elements for the Contractors path.



16 HOME/Contractor Information

This is the home and starting page and gives an overview of what the tool does, describes the referred technologies and provides general information of the Ocean Thermal Energy industry. Through clicking on “Learn-Buoys” and signboards the user is exposed to the different topics; information is presented in a short explanation text including links to further sources. The user with contractor and project implementation interest is directed to click on the ‘Project Builders’ signcard. This results in a pop-up window, on which there is a description of how the tool refers to them. They are then prompted to continue with the tool by logging in or registering.



16

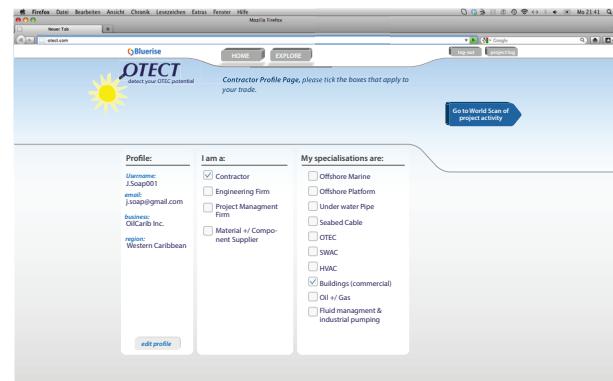
17 REGISTER

In order to create a profile each user must register with the tool. This page requires basic inputs: username, email, password, business and region.

17

18 PROFILE

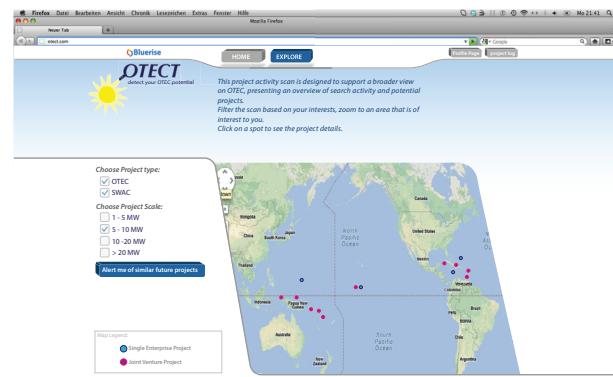
Once registered or logged in the Project Builder is taken to their profile page. This is a simple page where their username, email, business, and region are stored, together with the option for password change and profile editing. Additional the user is asked to give information on his profession and specialisation. Once on the profile page the user can then access the Activity Scan via the 'Go to World Scan' button.



18

19 ACTIVITY SCAN

The world activity scan presents the Project Builder with a global picture of all of the projects published by the primary user group. This scan can be filtered via nature of project (OTEC or SWAC) and Project Scale (MW range). Once the user has selected a preferred range in which to search, they can choose to click the 'Alert Me' button. This button indicates that the user wishes to be contacted by Bluerise should projects of the selected nature be published to the map in the future. Once the scan has been run, the map is populated with dots representing single enterprise projects or joint venture projects that match the filter. The Joint Venture projects, are projects that have been linked by the primary users on the Community Map.



19

20 FOLLOWED PROJECT LOG

The Project Log is a log/list of all of the projects that the Project Builder has deemed interesting, be they single enterprise projects or joint venture projects. Once the user has clicked the 'Follow this Project' button, the project title (location) and project details (OTEC/SWAC type and capacity) will be filed such that the user can re-visit this project. Furthermore should the user desire, they can choose to request updates from Bluerise about activity and progression of a particular project, by clicking on the 'Request Contact' button.

A screenshot of a Firefox browser window showing the Bluerise Followed Project Log page. The page has a blue header with the Bluerise logo and 'OTECT' text. Below the header, there's a section for 'Followed Project Log:' with a table showing one project: 'North Aruba Joint Venture' located in '4.5 MW' with '1200 Tons cooling' and '5.6 km'. To the right of the table is a 'SELECT' column with several empty checkboxes. A tooltip 'Request project contact from Bluerise' is shown over the 'Request project contact' button. Other text on the page includes 'This is your Project Log page, here you can view the list of projects you are following. You can request tendering contact for interesting projects from Bluerise.' and 'Followed projects are projects that you have deemed interesting possibilities.'

20

27

THE ADDED VALUE: MULTISTAKEHOLDER FULFILMENT

Opportunity: Data Generation

In accordance with our project planning goals, Phase 2 saw the completion for the framework of the primary user-track. This user experience was designed with the project up-taker in mind: Its purpose is to educate users on the technology and enable them to assess the appropriateness of OTEC and/or SWAC for a particular location.

As identified during Phase 1, the primary track relies on records and data banks pertaining to global

bathymetry and ocean temperatures. Use of the tool however, in and of itself, generates new data sets. This creates an opportunity to satisfy the needs of supporting-stakeholders. By generating value for different stakeholders (Fig. 05) - thus attracting a broader audience to the tool - further opportunity is generated for building multi-stakeholder project communities (Fig. 06). The tool's capacity for network building brings additional value to primary and supporting stakeholders alike.

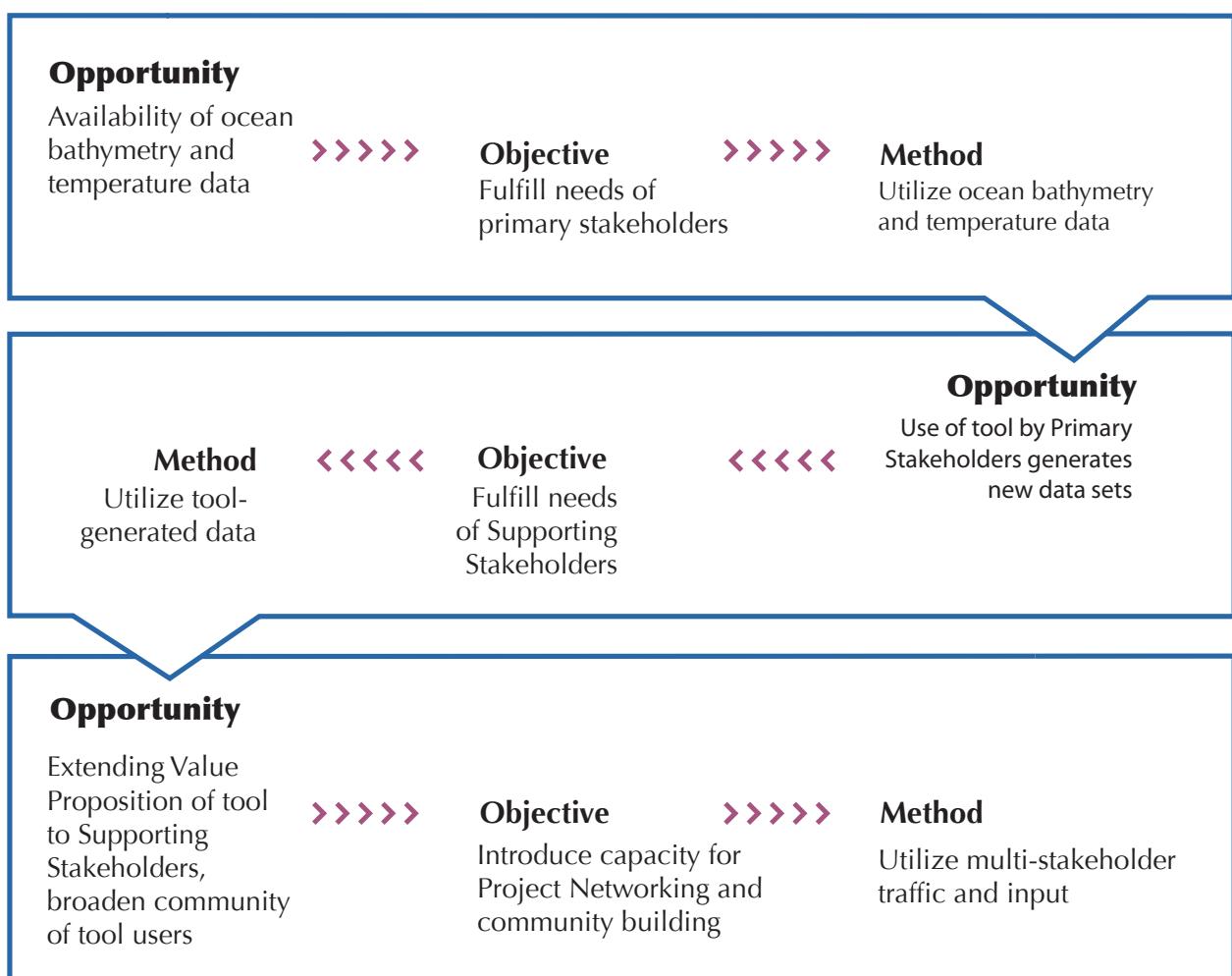


Figure 05: Value Levels

Supporting Stakeholders: Macro Level

During Phase 1, a stakeholder analysis was concluded by categorizing various stakeholders in accordance with micro and macro interests. Micro interests were defined as those relating to the details of a particular location. Macro interests were defined as those which relate to scanning countries or regions for industry activity and/or interest. The ability to have an overview of OTEC activity/interest is considered to be valuable to supporting stakeholders. Two categories of supporting-stakeholders have been targeted:

By generating value for different stakeholders - thus attracting a broader audience to the tool - further opportunity is generated for building multi-stakeholder project communities.

Project Financers

Project Investors refers to equity-providing enterprises that have an interest in understanding how OTEC and SWAC technologies can provide strong returns on investment over a sustained period. This stakeholder has an interest in observing and tracking trends in order to understand (a) globally, where projects are being considered (b) which of these regions/projects are showing evidence of strong bankability (c) on what scale are projects being considered, both at an individual and joint-venture level.

Project Builders

In Phase 1, our stakeholder analysis identified and categorized various stakeholders who are involved in the construction of OTEC and SWAC infrastructure. Specifically there are: trade contractors, project managers, engineering firms, and component & material suppliers. Little consideration had been

given to the inclusion of project builder as a tool user, however, research (stakeholder interviews) in Phase 2 revealed that it is infact difficult to forecast construction costs for an OTEC or SWAC project, due to the very small pool of experienced contractors who are able to construct infrastructure of this nature. As explained by Remi Blokker from Bluerise (2012), when there are only three companies capable of bidding on such work and they are all busy, bids tendered for a project could be substantially higher than if all

contractors were searching for work. In short, lack of supply could, in the future, result in price instability. In order to avoid such price fluctuations, contractors that have competency in related fields (offshore oil & gas, deep sea drilling, etc) should be encouraged to pursue construction and supply opportunities in this emerging industry. Data collected by the tool can be used to help trade contractors to scan the industry of OTEC/SWAC in order to understand where and when projects are being considered. This information will help contractors to make forecasts regarding industry opportunities while minimizing risk.

THE ADDED VALUE: MULTISTAKEHOLDER FULFILMENT

Opportunity: Multi-stakeholder Tool Use

As described above, tool usage produces new data sets which are valuable to supporting stakeholders. By providing platforms within the tool that serve the interests of supporting stakeholders, the diversity of stakeholders using the tool is increased. This presents yet another opportunity: community formation.

The tool's capacity for community formation enables stakeholders to identify opportunities for partnership and, most importantly, to see the impact such partnership can have on the bankability of the project.

Community can be formed through two types of links: Those between primary stakeholders (hotel to hotel) and those between primary-stakeholders, or communities of primary stakeholders, and supporting-stakeholders (hotel to contractor). By enabling community formation within the tool, Bluerise's strategic position is strengthened; they establish themselves as a trusted steward for partnership and project up-take. Fig. 06 is a graphical summary of how community links can be established.

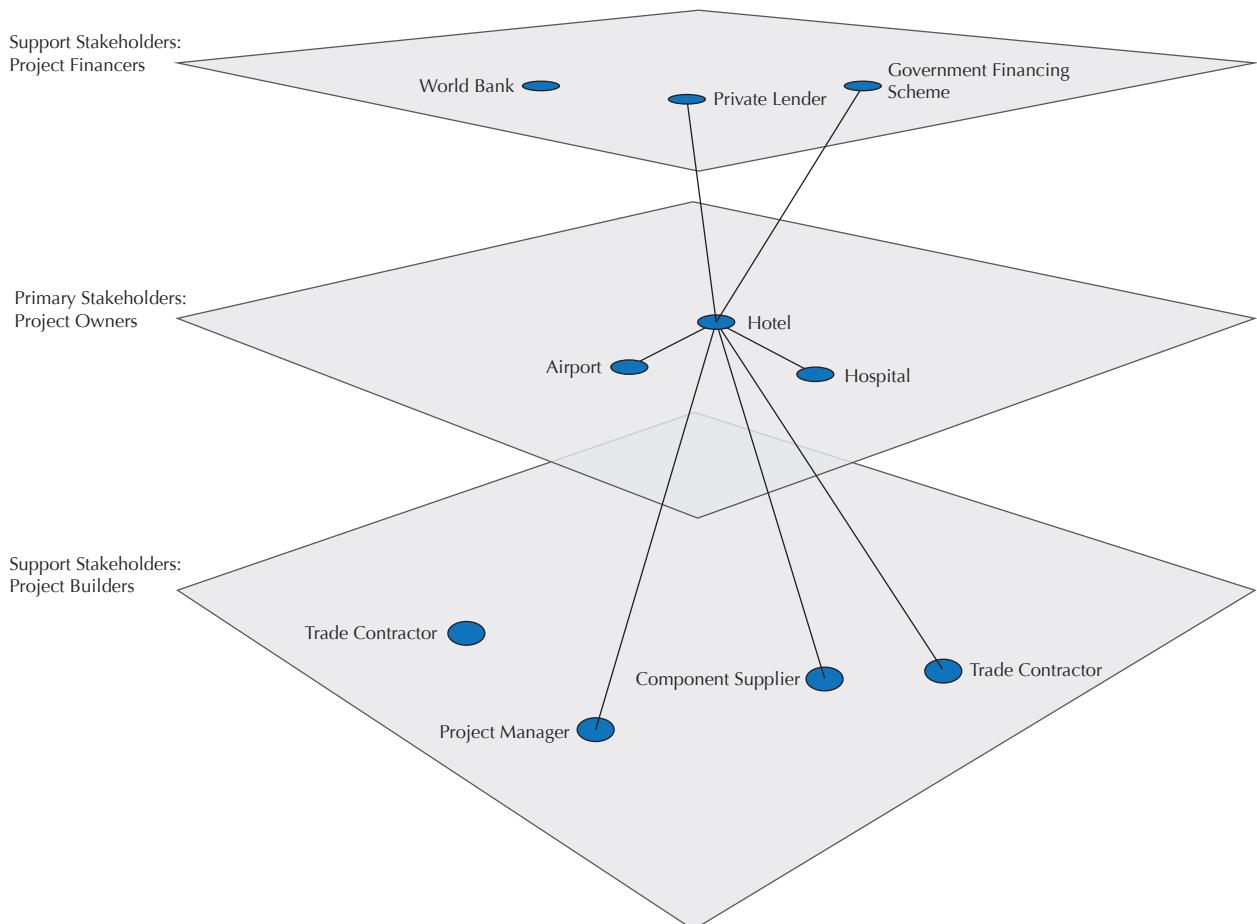


Figure 06: Multi Stakeholder Project Communities

Execution of Added Value Elements in the Tool

The following section provides a definition and functional breakdown of the concepts described above. Once the areas of added value had been explored and validated by the design team, they were then implemented into the body of the existing tool structure. Each added value concept was considered from the perspective of flow, user expectations, and logic within the tool structure. The critical elements of these concepts are described below:

'Publish my Project' Function

The main tool flow is designed such that the primary user, e.g. a Caribbean hotel owner, works through the tool and assesses the conditions of his/her particular location. The saved projects are presented in the Project Log, where the user has an overview of their work. From this stage, the user can then make selected projects public to other tool users. After publishing a project, the user is able to view other published projects within a certain radius of their location and similarly, their project can be viewed by neighbours.

'The Community Map'

The Community Map provides the primary stakeholder with a number of rewards for the publication of a project. Once published, a project is represented on the map, and within a radius of 5km from that project, other published projects are visible. This means that the user can then see the possibilities for collaboration and mutual projects. Functions within the Community Map are such that the user can assess what a joint project profile would look like, should they collaborate with a neighbour. These projects can then be connected and the seeds of community can be shown.

The World Activity Scan (Contractor and Financer Perspective)

This tool logs activity in locations where strong stakeholder interests intersect with optimal oceanic conditions. Project builders and Financers can use

this porthole to identify and monitor trends with respect to interest in OTEC projects. Contractors may apply filters to their searches: Firstly, one may select to search for projects related to OTEC, SWAC or both. Secondly, one may filter according to project scale - based on megawattage. Financers can filter according to project cost and payback potential. Once the filters have been appropriately set, the website will display markers on the map which indicate the locations where prospective projects have been published. Two colours are shown: blue dots identify single enterprise projects (project that are based, for example, on one hotel) and purple dots identify locations where multiple projects exist in close proximity, and where an interest in forming a joint-project has been expressed by the relevant primary stakeholders. The Contractor or Financer may zoom and pan within the map to regions of particular interest. Clicking on any of the markers will reveal a brief project summary, informing the tool user of:

- Number of project uptakers within the project community (if it is a joint project)
- Project publish date
- OTEC and SWAC requirements
- Cold water pipe details
- Ocean surface temperature

Based on the quick summary, a contractor can decide to 'follow' the project. This means that updates will be provided regarding project developments.

THE ADDED VALUE: DISCUSSION

Primary-Stakeholder Community Formation

User testing afforded an opportunity to test and verify the principles of support-stakeholder engagement and community formation. As discussed in the ‘User Test’ Chapter, final tests were conducted with hotel managers from the Caribbean. This afforded opportunity to receive valuable feedback regarding the formation of community among neighbouring businesses. Hotelier participants 1 and 2 affirmed our assumptions that collaboration among neighbouring hotels is possible. Hotelier 1 explained that:

“Tourism in the Caribbean is a team sport, hotels in St. Lucia don’t compete against one another, we work together and compete against our neighbouring Islands. Industry organizations are setup to facilitate cooperation.”

The importance of community-building at the primary-stakeholder level was reiterated from many perspectives. Caribbean hotel expert and project manager of the Caribbean Hotel Efficiency Action Project (CHENACT), Loreto Duffy-Mayers, explained that over 70% of hotels in the Caribbean are smaller than 400 rooms. This makes OTEC and SWAC technology inaccessible to most of the industry. During our user test, both participants quickly understood that reducing the electricity and air conditioning demand to suit a “small” hotel resulted in a payback period that was unattractive. If SWAC and OTEC are to penetrate the hotel industry, it will be necessary to procure projects where communities of buildings and businesses benefit from a single Cold Water Pipe (CWP).

The contractor participant, an experienced commercial and high-rise building developer resonated the importance of sharing infrastructure

between buildings. Currently, the participant is developing a site in Dartmouth, Nova Scotia called Kings Wharf. The development is comprised of 17 mixed commercial and residential buildings ranging in size from 30 to 12 stories. Making a comparison between geothermal and SWAC/OTEC, the participant explained how his company is currently seeking planning permission for a geothermal system that would serve all 17 buildings in the development.

“Sharing the infrastructure between buildings is the only way to make the technology financially viable. If I had to build an geothermal system for each building, it simply wouldn’t make sense.”

During the user test the participant was impressed by the community building capacity and felt it could be the most important aspect of the tool, in terms of its ability to drive prospective plans towards becoming reality.

Primary-to-Support Stakeholder Networking

As communicated in Fig. 06, the tool facilitates networking in two ways: (a) between primary stakeholders and (b) between primary and support stakeholders. Again, the contractor participant who was guided through the Project Builder track during user testing, commented on the importance of monitoring industry developments from the perspective of a contractor:

"If you are a contractor, you need to go after the work. It's your business to know what projects are being considered, where they are, and what trades, services and materials will be needed. Being able to observe industry demand and monitor project proposals from their earliest state could be hugely valuable to contractors."

In order to evaluate the merits of the project-financer track, the financer participant, Wealth Management Investment Advisor at the Royal Bank of Canada, served as a test participant. During the test, the participant provided helpful insight regarding the nuances of equity procurement for projects of such a large scale. He explained that where money is being loaned to a project owner, the merits upon which a loan would be granted (from for example of private lender) would be based on the company's cash flow position.

"If its a hotel, what matters in terms of securing a loan will be the cash flow situation based on the hotels normal business activity. A bank won't be interested in the technology or its impact unless it can be shown to positively affect future cash flow."

In this respect, a bank may find such a tool useful for the purposes of due diligence however, the participant pointed out that objectivity would be paramount. The tool, as a service, would have to be provided with strict objectivity by, for example, a third party auditor. As Bluerise is a stakeholder in the advancement of OTEC projects, this tool could not be relied upon for the needs of banking due diligence procedures. If however, it could be offered to banks through subscription as an objective auditing tool, then the participant believes that there are a small number of specialized "niche" lenders who would find it useful. The windmill industry, for example, has a select number of such niche financing institutions who understand the business model and are adept to assessing risks involved. The participant supposes that, as the fledgling industry of OTEC gains traction, a similar collection of niche financers will emerge. This would constitute the target user for the Project Financer track.

THE PROCESS AND THE USER TESTS

The following part of the report aims to demonstrate and explain the pivotal elements of our process that effect and reason the outcome, i.e. the previous phases, the user test iterations, and Bluerise's needs and opportunities.

THE PROCESS

Analysis

Internal Analysis

After looking at the given assignment more thoroughly the team started with an internal analysis. Looking at the company structure and their mission as well as the levels of competition (Fig. 07) and the implications of strategies in other energy sectors on their operations.

External Analysis

The external analysis started with an extensive stakeholder analysis (Fig. 09) covering major parts of the business ecosystem of Bluerise and the emerging field of OTEC. This lead to the conclusion that the anticipated outcome has to reflect the complexity behind this venture.

The already touched upon competition was more thoroughly analysed by applying Porter's Five Forces, eventually resulting in threats and opportunities and their resulting strategic implications for Bluerise. Foremost the emerging market and the correct positioning, branding issues and the complex multi-stakeholder environment were seen as crucial.

The analysis of the technology helped the team to understand the underlying assumptions of the technology and bring everyone to the same state of knowledge on the development status and socio-technical implications of OTEC.

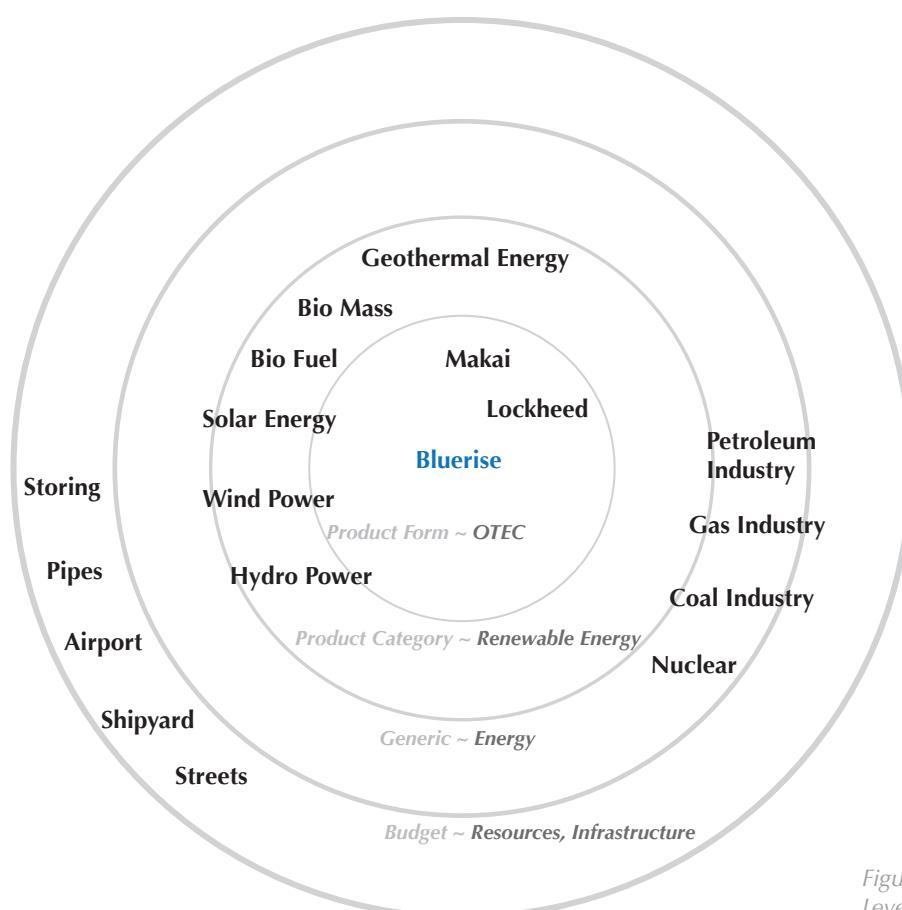


Figure 07:
Levels of Competition

This helped the team in later stages to assess the completeness and validity of its work. Using the acquired knowledge and a tweaked version of the VIP method the team developed a framework that was supposed to reflect the status quo of the business ecosystem and possible future developments in order to outline the boundaries of the project. To do so two case studies -Aruba and Bali- (Appendix 01) and a trend analysis (Appendix 01) based on the PESTEL factors were conducted.

The trend analysis led to a future scenario that was used as a reference point for the VIP method.

To summarize and close the analysis phase a SWOT analysis (Fig. 08) was conducted taking all the previous insights into account. Based on the findings and conclusions a project vision (Fig. 10) was developed, that helped to clarify the goals and communicate them to Bluerise.

Assets	Weaknesses
OTEC technology knowledge holder Research Connection (TU Delft) _knowledge builder	OTEC technology not tested on economic feasibility No finished project _show case / working and successfull example
Market	Market
One of only a few Players Extending business opportunities (Ecopark)	No clear defined market Complex Business Environment (multiple stakeholders)
Company	Company
Incubation Center Awards, Prices, Competitions High flexibility due to small company size Full-Service offering _Assessment, Business Development Technology, Software Tools Young, ambitious and competent Team	No Revenue resource Sales Channels No clear target group No Man Power _Projects can only be implemented by contractors
Strengths	Threats
Political Increasing policies towards climate change; regualtions on emissions Special funds for Least developed countries (LCD)	Political Preference for low-risk investments (approved technology, stable market) Funds for other renewable technologies
Economical High volatation in oil prices Concern for water and agriculture resources Growth in renewable energy	Economical High dependence on tourism sector; erratic growth Unstable financial systems; high interest rates High vulnerability; dependence on imports
Social Growing population; increase in health, education Increase in global awareness for climate change Increase in knowledge; new market and business	Social Reluctance to change; new technologies, long-term investments and future savings Emigration of educated population
Technological Rising demand for fresh water technologies Increase in renewable technology implementations	Technological Stronger growth in other renewable technologies
Environmental Rising CO ₂ emissions Decrease in fossil resources	Environmental Increase in frequency and intensity of natural desasters (cyclones, floods, storms, droughts) Coastal zones with high population especially vulnerable to climate change effects
Opportunities	

Figure 08:
SWOT Analysis

THE PROCESS

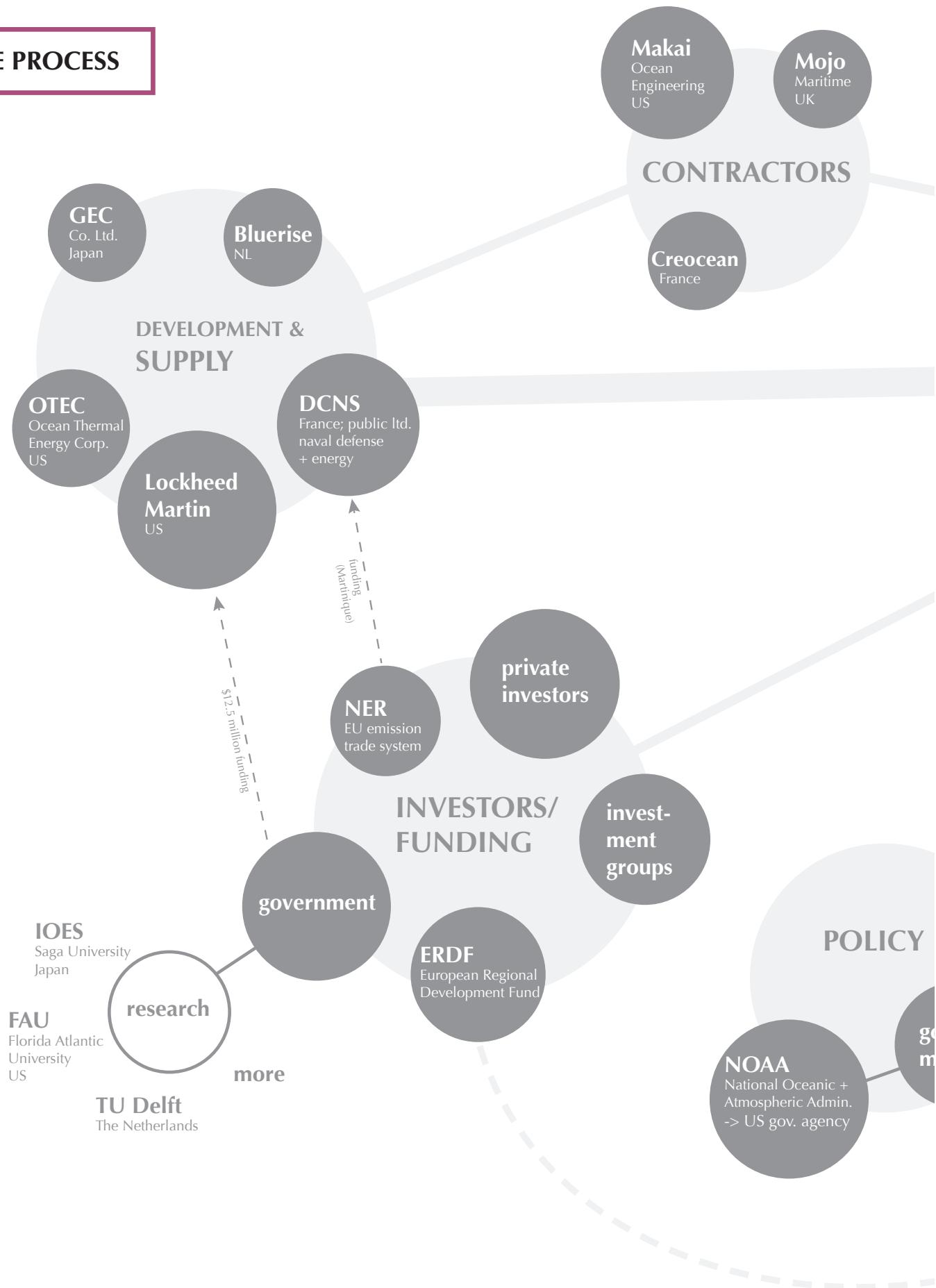
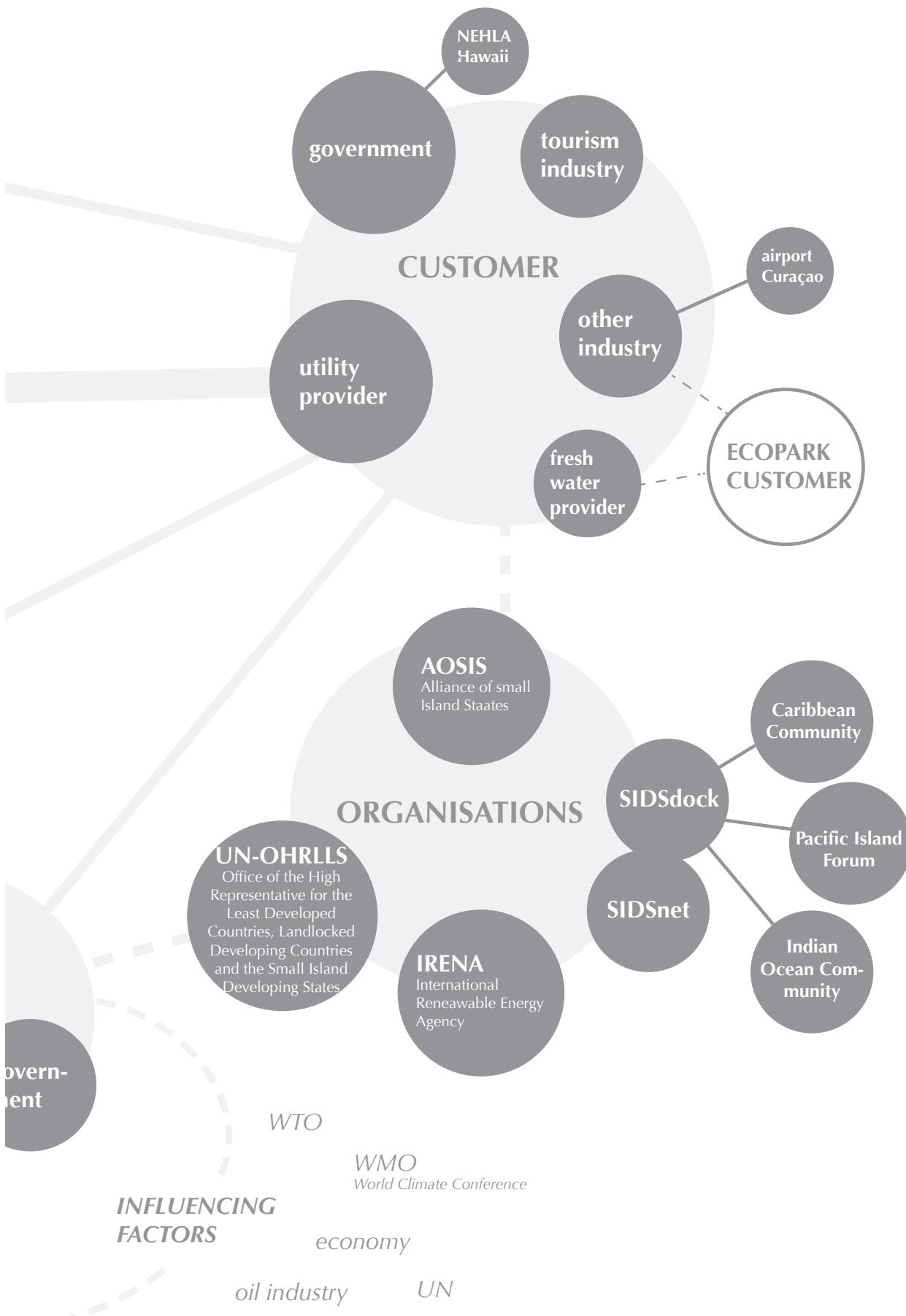


Figure 09:
Stakeholder Map



THE PROCESS

Conceptualisation

Tool Interaction Study

Starting with a 'tool interaction study' the following aspects have been described and clarified.

The first step defined the 'Tool Stages' (Fig. 10). The stages include a learning environment in which the user is acquainted with the technology and the tool itself, an assessment platform in which the user can assess and optimise a chosen location based on databases and back-end calculations and finally reach the evaluation stage in which she receives an evaluation of her chosen settings.

The 'Interaction Style' enabled the development of an interaction framework (Appendix 01) including different user motivations depending on background, expected results and timespan using engagement methods such as infotainment and gamification and lead to defined rules of engagement (Appendix 01). The final conclusion from the framework has been to build an interactive tool that depending on the tool stage and the different user needs would engage

and invite to discover, be clear and logical in the assessment and serious and credible in the evaluation.

Beside the clarification of the front-end objectives it has been necessary to link the anticipated interaction with the back-end of the tool. The 'Input/Output System' (Fig. 11) enabled the team as well as the programmers and the client to understand the requirements of both sides and synchronize its interactions.

Cultural Differences

The second part of the conceptualisation aimed to validate the interaction framework against the actual user case. In order to do so the team investigated cultural attributes across the target areas translated the findings into concrete statements and implemented those into the existing framework. To evaluate the suitability of the findings and their implementation, interviews with people from the field or out of the target area have been conducted.

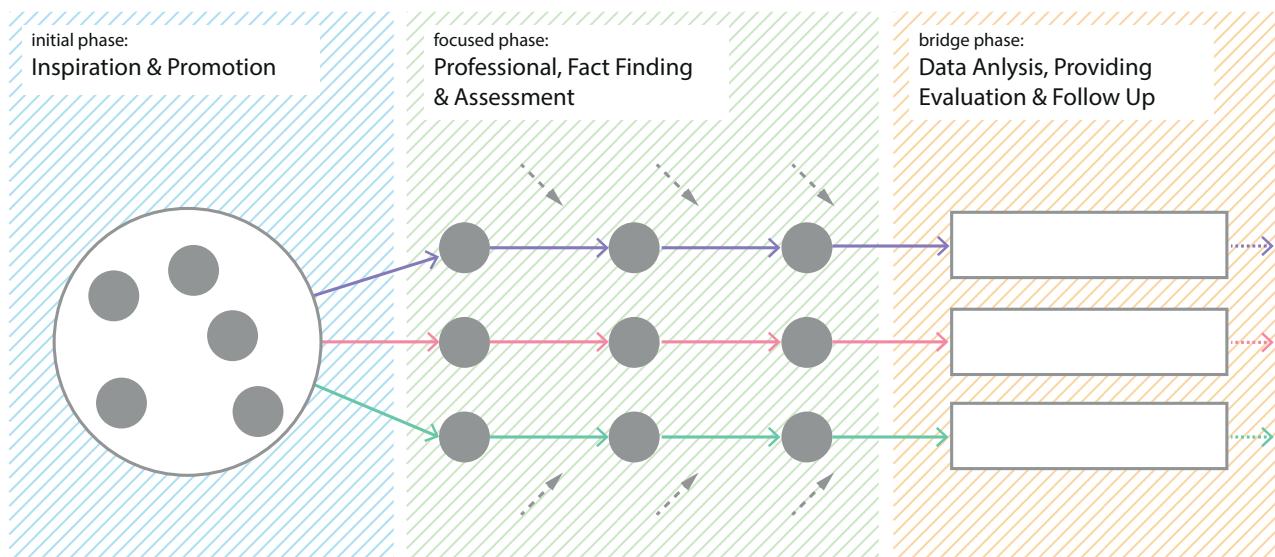


Figure 10: Project Vision & Tool Stages

Concept Development

Based on the ‘tool interaction study’ the ‘concept development’ took place. Two basic concepts evolved out of the previous work and the group effort on concept development. The ‘all-in-one’ concept (Appendix 01) provides the user with an interactive interface including all possible interactions, information and output. The ‘step-by-step’ concept (Appendix 01) builds up the interaction in a sequential order.

After consolidating both concepts the team decided to merge the distinct features of both concepts in order to achieve high usability in all tool stages.

The overall proposition of the concept was to educate and emerge the user, then lead him to a tailored pre-assessment and afterwards offer an evaluation that would lead, in case of a positive outcome, to further steps bringing both the user and Bluerise closer to a project implementation.

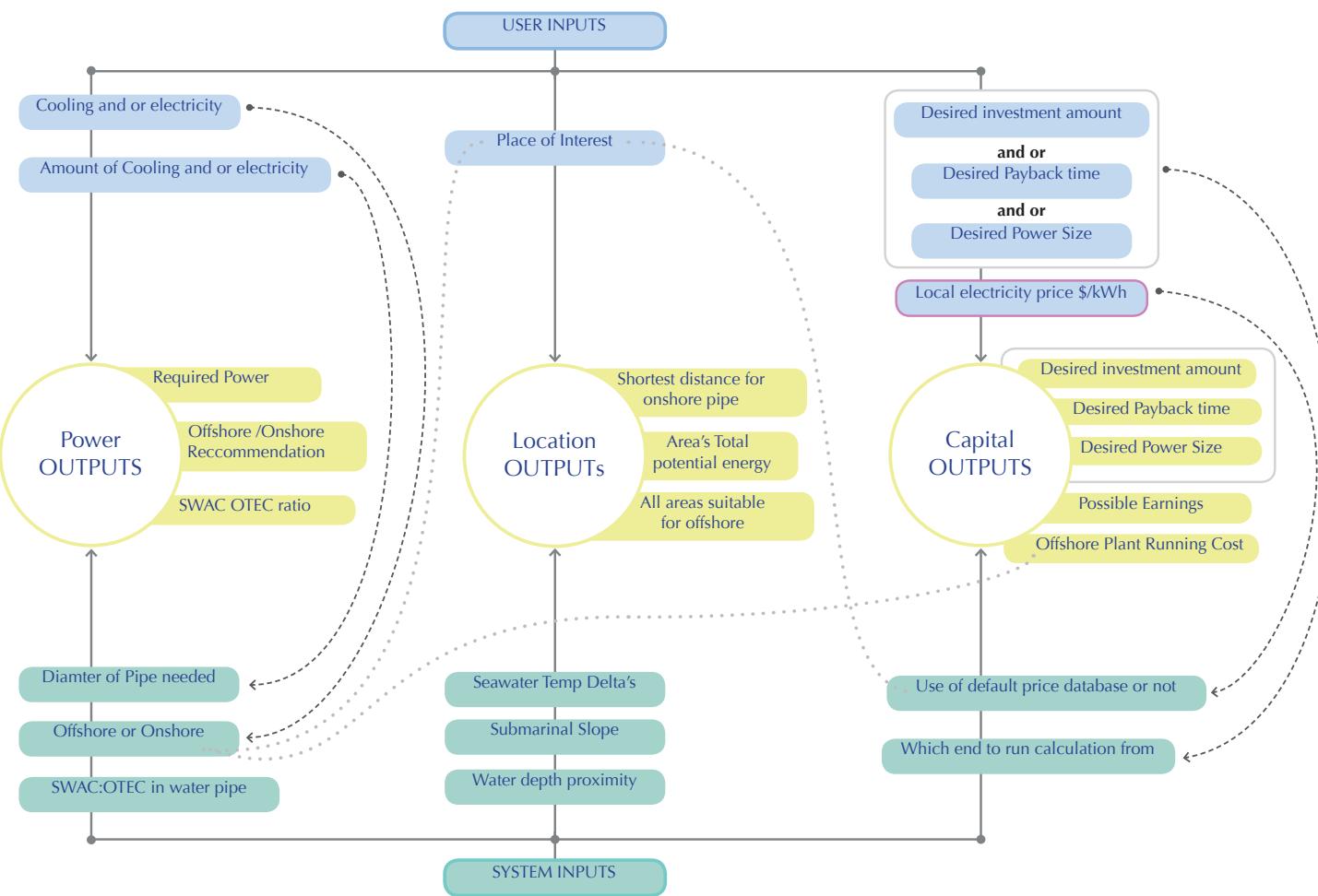


Figure 11: Input / Output System

USER TEST: MARK ONE

User Test 1

User test 1 was performed after weeks of intensive design work, in order to assess opportunities to improve the concept further during the last phase of the project. This chapter includes a description of the user test in terms of objective, participants and execution. A summary of the test results are given in the last section.

The objective was to evaluate the quality of the tools graphical user interface and gain insights on what improvements can be made.

Objective

In order to truly benefit from a user study it is important that the research objective is clearly defined from the start (Radoiu, 2009). For user test one a main objective formed the backbone for the test. It was formulated as follows:

- To evaluate the quality of the tools graphical user interface and gain insights on what improvements can be made for bettering the usability and understanding of the tool during the upcoming Mark II iteration.

Participants

A total number of seven participants took part in the test. These were chosen for achieving maximum diversity by providing feedback from three different perspectives.

User group 1) The cultural perspective.

This group included two participants from the targeted geographical area (Trinidad and Tobago and Indonesia). These participants had no previous knowledge of the technology which opened up for testing the understanding of the tool design in the extreme case of novice users.

User group 2) The technology perspective.

User group two included three participants with extensive experience of the technology and a personal understanding for possible future tool users.

User group 3) The user interface perspective

As a third participant group we included two UI experts with long experience of evaluating interaction designs and building websites with a high usability.

Execution

The test was constructed as a semi-structured discussion of the tool design. The participants were individually scheduled for about 45 minutes each and the test was conducted in the teams' JMP studio at the faculty of Industrial Design Engineering, TU Delft.

The test consisted of two parts: For Part 1, a pdf including all tool slides was put up on a wide screen in front of the participant. For part 2, a online prototype was built in order to imitate the real interactions possible for one section of the tool - the Onshore, Practice page. For the prototype, slices were made in Adobe Illustrator and implemented by the help of the programming language PHP, an acronym for Hypertext Preprocessor. The prototype was presented

on the wide screen and the participant could by the help of a mouse interact with the elements on the page. The functionality of the online prototype did not include the full range of interactions intended for the design, however the primary means of interaction (clicking to initiate change/learning) was present.

At least one facilitator was present in all tests to avoid a biased result due to procedural differences. Test guidelines as well as predefined interview questions as a follow-up on each of the two test parts were used as supporting materials for the facilitator during the test. All tests were recorded and one or two note-takers were present using specially made note-taker documents. The test interviews were transcribed to allow for easy analysis and implementation.

Screen Walk-Through

→ A first part of the test included a visual walk-through of the total tool flow via a pdf with the tool slides. The user was asked to guide the facilitator through the tool and to for each page explain his/her interpretation and understanding of the elements presented. The user was motivated to describe the interactions he/she would expect.

30 min

Interactive Prototype

→ As a final part of the test, the user was asked to evaluate the understanding while interacting with the elements on one of the tool pages: the on-shore, practice page. The participant could now reflect on changes between expected interactions and real ones while trying out an on-line, partially working prototype of this tool page. Throughout the test the participants were encouraged to speak out loud and not be hesitant in sharing their opinions on what was seen.

15 min



Figure 12: Execution User Test One

USER TEST: MARK ONE

Results

User test one led to many rich insights considering what could be done to improve the tool and better fit it to the understanding and the demands/wishes of its users. This section includes a brief summary of the feedback gained.

- In order to improve the users' understanding when navigating through the tool, the texts and terminology used could be improved. The language used should fit the targeted users, be logically positioned and not overlap with other texts. The information given should be limited to not overload the user. Furthermore explanatory texts linked to interaction elements could be added to higher the usability and minimize the time needed to understand what is being seen. This will help motivate users to stay on the page and use the tool.
- Throughout the design, clearer calls to action could be used to guide the user interaction.
- The buttons could generally be redesigned to better illustrate their functionality. More conventional ways to indicate that they are clickable would help the user.
- The tool would benefit from a better structured and more clear introduction.
- The user should be better guided through the tool. The users attention should be directed and elements should be explained step-by-step to make sure the user does not feel overloaded by information.
- Interaction functionality needs to be more clearly indicated in order to invite the user to play with the data that can be changed. Interactive elements needs to be obviously communicated as such.
- The purpose of the tool and its pages needs to be clearer to the user. Specifically the differentiation of pages needs to be made clearer.
- The navigation bar should be redesigned to better fit conventional website use. It's positioning should be reconsidered and possibly changed to the top of the page due to users common direction of reading starting from the top left and ending in the bottom right side of a page. Generally, the positioning of elements throughout the design should be reconsidered due to the above argument.
- The interactions should as far as possible be simplified, with the goal of creating a natural and intuitive user behaviour.
- The user should be given opportunities to alter locations and possible assumptions made during the calculations of data in the tool.
- The importance of elements should be communicated in words as well as in illustrations, to provide better guidance.

USER TEST: MARK TWO

User Test 2

The objective is to define recommendations for further improvements considering potential user's needs, wishes and levels of understanding.

In order to assess the quality of the Mark II iteration of the tool, a second user study was performed. In this chapter a thorough account of the study including its objectives, participants and execution as well as a discussion of the outcome and a conclusion is provided. For a more detailed picture see list of recommendations and transcripts from the user interviews in Appendix 02 and 03.

Objective

Research objectives were formulated to guide the structure of the user test. As for any design development it is important to ensure a concepts strong and possible weak points by testing it with potential users and interaction experts. For user study two, the following objectives were formulated:

- To gain rich insights and receive feedback from potential users on the Mark II design by:
 - » Evaluating revisions made to the primary-stakeholder track.
 - » Performing an initial evaluation of the support-stakeholder functionality.
 - » Performing an initial evaluation of the community-building functionality.
- To define recommendations for further improvements considering potential user's needs, wishes and levels of understanding.

Participants

To accomplish the objectives above, insights were sought through feedback from relevant stakeholders.

Where User test one relied on expertise that was local to our location, User test two was constructed in order to execute tests with mainly remote participants. This allowed for feedback from :

Group 1) Potential tool users from the stakeholder group Hotel managers, from the targeted geographical region.

A number of 22 hotel managers were invited to take part in the test and give feedback on the Primary user track. Two of these participated in the final test: a Property manager from Elegant Hotels, Barbados and a Hotel Manager from the Windjammer Landing Resort, St. Lucia.

Group 2) Potential tool users from the stakeholder group Financer and Project builder.

A Commercial, High-rise Building Contractor and a Wealth Management Investment Advisor with appropriate experience was invited and participated in the test to specifically give feedback on the Finance/ Project Builder tracks.

Group 3) UI expert and participant from user test 1 (for comparison).

One local participant was asked to take part in both user test one and two, which opened up for comparison between the Mark I and II designs. As a UI expert this participant also gave further recommendations for improvements regarding the tool's usability and interaction design.

USER TEST: MARK TWO

Test setup and execution

The test was as earlier mentioned dependant on the involvement of remote participants. The methods used were chosen for supporting this setup.

Prior to the test, the participants were sensitized via a pdf (Appendix 04) sent to their email including information about the project, the group and the OTEC/SWAC technology. The pdf also included an interview agenda giving the participant a chance to assess the scope of the test on beforehand.

The test was performed as a semi-structured, open interview and online walkthrough of the tool slides followed by an informal general discussion. A SKYPE conference call with the possibility to share screen with the participant was to all proposed as a first option.

As a second option, participants were to be contacted by phone and a pdf with the tool slides was sent via email prior the test.

All tests were facilitated by the same two persons to avoid bias due to difference in procedure. Predefined targeted interview questions were prepared for supporting the facilitator of the test. During the interviews notes were taken by the help of supporting note-taker documents. All interviews were recorded and transcribed for enabling proper analysis.

The test duration was about an hour per participant. The participants were encouraged to speak out-loud while walking through the tool design together with the facilitator. The following procedure was defined as a guideline for the test:

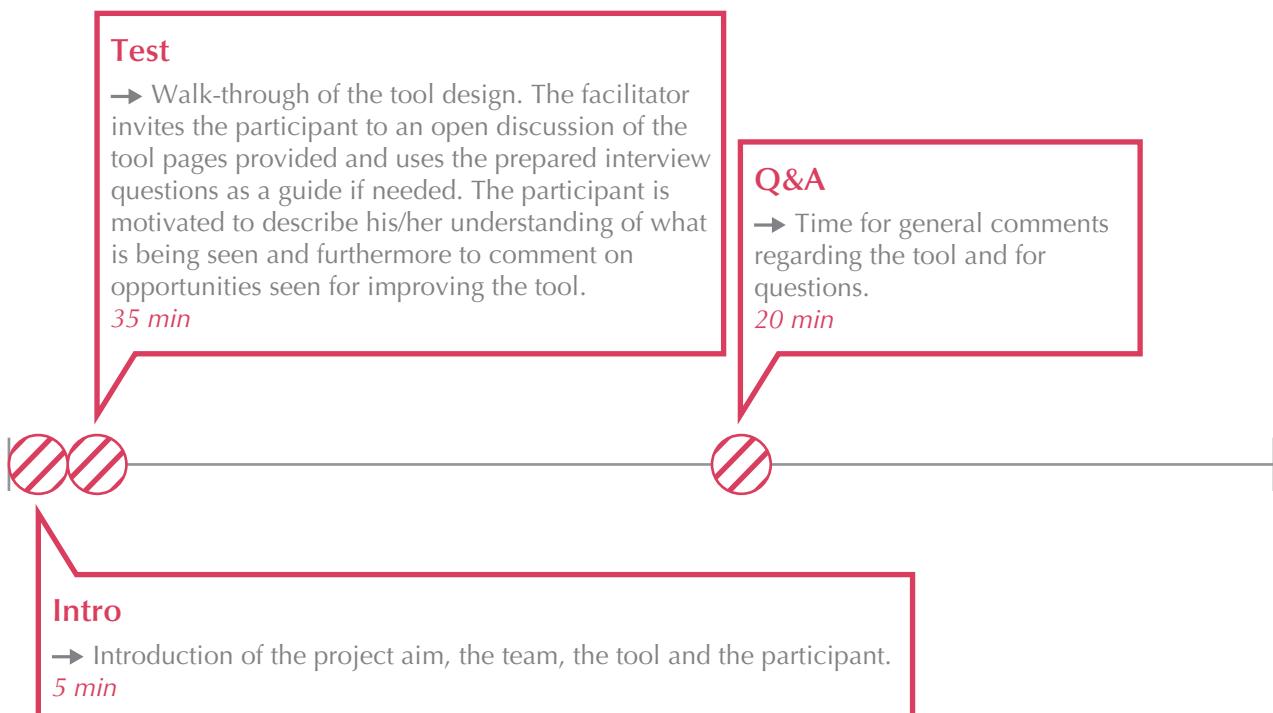


Figure 13: Execution User Test Two

Discussion

The User test resulted in very rich insights concerning the Mark II design. A selection of the feedback given is presented below. A list of recommendations and transcripts can be found in Appendix 02 and 03.

Primary-user Track: Mark I vs. Mark II

A valuable component to our testing procedure was the inclusion of a user-interaction (UI) expert, who had participated in the testing of the Mark I design. Through participant feedback and empirical data, it is clear that substantial gains were made in usability between Mark I and II. Logic has been improved overall and the use of an introductory wizard improves user understanding of how to use the playground and what purpose it serves. As can be seen in Appendix 02, our feedback from the UI expert includes many recommendations that could further improve flow, continuity and reduce the possibility of user anxiety or confusion. Interestingly however, much of the criticism is focused upon the usability of the support-stakeholder and community-building functionality. This is to be expected as these tracks were presented in their Mark I conditions, where the primary-track is a Mark II iteration. This shows clear progress in our efforts to improve the primary-track according to lessons learned in User Test 1.

Stakeholder Experience

Possibly the most important discovery from User Test 2, is the empirical evidence demonstrating clear gains, experienced by our stakeholder groups, with regards to their understanding of OTEC.

With all stakeholder participants, the effectiveness of the playground was very high. Despite the lack of interaction (a limitation of our test-prototype), our test procedure was successful in allowing a limited amount of ‘virtual’ interaction. This proved highly effective in terms of educating the first-time user on matters such as scale and the importance of

location. Before reaching the pre-assess area. The playground made users aware of costs and raised questions regarding payback periods. By raising such curiosities, users felt satisfied upon receiving answers to their questions (related to their specific location) in the pre-assess stage.

An interesting observation, relates to the excitement level of users. Both Hotelier participants and the Contractor were visibly excited about the technology. This can be interpreted as a success of the learning goal of the tool. Beyond all other objectives, the point of this tool is to call users to take further action regarding OTEC and SWAC. The aforementioned participants were excited, wanted to talk more about the technology, and wanted to remain involved in the project and looked forward to using the final, online version.

Stakeholder Comprehension

During Phases 1 and 2, extensive research was conducted to understand our primary user. It was important to understand their probable industry, education, location, cultural context, etc. Our efforts to understand the primary-user included attending the CREF forum and leveraging contacts made during the conference to procure stakeholder interviews. Though such information prepared us well for the design phase, only a user test could provide answers regarding matters of user comprehension.

In the case of the hotelier participants, both showed a high level of understanding. There was no evidence that the tool was “pitching-over” their level of comprehension. Outputs, and the units in which they are provided, were familiar measurements to this stakeholder group. The only request was that an option for British Standard units be made available as well (instead of metric). Most importantly, users felt that their questions had indeed been satisfied.

USER TEST: MARK TWO

Both hotelier participants agreed that where a payback period of seven years might be prescribed, they would be compelled to further investigate a project using this technology.

Support-stakeholders

Although the support-stakeholder functionality proved not to have the refinement of the Mark II primary-stakeholder design, its implementation promises very interesting possibilities. The most successful result came from the Project-Builder track. Our expert in this field verified that information provided by the tool is indeed of the utmost value to this stakeholder group. Feedback from both the contractor and financer indicates that the tool does not overreach in terms of involvement, nor does it under deliver in terms of satisfying user needs. As our Finance participant explained that:

"Professionals will withdraw from a web tool that implies a level of automated decision-making and you have not strived to produce this which is good."

Both the Contractor and the Financer valued the scanning capacity and felt this was an appropriate use of automated assistance.

A fundamental challenge does exist with the financer-track: an importance for auditing quality, 3rd party objectivity was communicated. The tool's relation to Bluerise, a stakeholder within the industry, does present a barrier to acceptance within certain domains the financial industry.

Community-Formation

Prior to User Test 2, many questions remained unanswered regarding how stakeholders would react to (a) joint-venture projects and (b) sharing information and intent regarding an infrastructure project. As discussed more thoroughly in the Added Value section of this report, user participants were clear in their willingness to cooperate with nearby companies and businesses. Both affirmed that a track record for industry cooperation was already established and neither had concerns about "revealing" information within a public domain.

With respect to community formation, the level of assistance provided by the tool proved to be appropriate. The Contractor participant commented that:

"You've done as much as you need to – this communication tool get people to start talking!"

This is a positive remark as the design intent was not to manage community or broker its development, but to identify possibilities and compel stakeholders to reach out to others in order to realize mutual objectives. Indeed the presumption was that business and collaboration is a 'people' oriented domain and that automation of communication would be seen as unappealing. The user test confirmed our assumptions. We feel that initiation of community within the tool places Bluerise in a strong strategic position to broker communication and project development.

Conclusion

In conclusion to User Test 2, we have verified that improvements made to the primary-stakeholder track are effective in improving usability and minimizing risks for confusion, although a wide range of suggestions/recommendations have been identified for further improvement. Support-Stakeholder tracks need more refinement in terms of usability and although usability issues were never raised by any of the representative stakeholders, our UI expert was able to identify critical improvements. More important to the objectives of the test, implementation of the new functionality proved very useful. The biggest improvement to serving the support-stakeholder, would come from improving perceived objectivity (detaching from Bluerise). Such a change is not advisable as it would compromise many opportunities that the tool presents for our client. As a recommendation, we believe that stakeholder support for project-builders and community-formation are valuable features that should be pursued and developed further. With respect to community, connectivity between adjacent primary-stakeholders could unlock the potential of OTEC and SWAC within the hotel industry. The idea of inter-hotel cooperation was highly regarded by test users.

MARKET INTRODUCTION AND RECOMMENDATIONS

In the last part of the report a market introduction strategy for implementing and achieving best impact for the tool is presented. Finally the recommendations the design team have for Bluerise moving forward will be presented.

MARKET INTRODUCTION: DUAL STRATEGY

Market Introduction 2013

Objective

In order for the tool to reach its potential it has to attract and establish a diverse but topic focused user pool. As described in the previous sections, besides the informative and educational aspect, the tool also has the potential to align and accumulate stakeholders that in their completeness can enable the implementation of an OTEC project. As such, the overall aim is to reach people within the energy field and draw their attention towards OTEC. In the following section, two introduction strategies are described in order to reach this goal.

OTECT, beside its function as a pre-assessment tool, can be seen as a promotion element in itself.

OTEC Foundation

The OTEC foundation is seen as one of the key players in the promotion of OTECT. Its non-profit position and overall mission suits the aim of OTECT to educate possible users but also raise awareness among the general public about the technology and its benefits. OTECT, beside its function as a pre-assessment tool, can be seen as a promotion element in itself. This enables the foundation to present the tool on topic related conferences and summits (see Section 'Promotion Tour 2013'). An explanatory video animated by the team (Appendix 05) introduces OTECT in its greater context of harnessing the ocean's power. The use of the video is manyfold and can be used by the foundation in future situations.

Strategy: Publicity

OTECT Promotion Tour 2013

One of the proposed strategies by the authors is to initiate and execute an OTECT promotion tour. The promotion tour is meant to visit a series of events in which the OTEC foundation or Bluerise itself present themselves and the pre-assessment tool OTECT. The events can be commercial fairs, conferences and summits that in one way or the other touch the topic of energy, renewable energy, OTEC or SWAC. Further OTECT can participate in competitions that call for innovative IT solutions, for new energy sources or promising technology developments in the energy

sector. For an overview of possible dates and locations see the roadmap (Fig. 14) and for a detailed version consult Appendix 05.

CODE_n

In order to bring about awareness of the pre-assessment tool, the project was submitted to the CODE_n contest, hosted by CeBit 2013 in Hannover. The OTECT Pre-Assessment Tool is among 50 projects selected (from over 250 entries) to present for the competition-jury in March.

The Mission of CODE_n is as follows:

'CODE_n promotes outstanding talents and their groundbreaking business ideas in a unique way.'

As a vital community of digital pioneers, CODE_n gives answers to the most crucial questions in the fields of innovative IT and digital business. Thereby, the initiative targets IT-related areas like mobility, energy, health and finance. CODE_n turns the spotlight on future technologies and services and paves the ways for new trends in the marketplace. (CODE_n, 2013)

The team produced the earlier-mentioned video to participate in the first round and succeeded. As a result, Bluerise will have a presentation booth for the duration of the fair. Representatives from the design team will be in attendance on Thursday 7th of March, 2013 to present its innovation. The promotional effect, along with the publicity gained throughout the fair itself, will be valuable. Selection of the tool among the 50 top finalists validates the importance and seriousness of the tool through an external, critical, third-party panel comprised of technology and sustainability experts. Should the tool win the competition, its "award winning status" would serve as a highly effective mechanism for dissemination

Strategy: Focus Group

SIDS Foundation and other NGO's

Apart from promoting the tool on relevant events the OTEC Foundation and Bluerise should follow an additional strategy that targets their market directly. Within the analysis phase the authors mapped some of the major stakeholders of the field. One of the key players identified is the SIDS Foundation - highly interested in supporting Small Islands Developing States (SIDS). Their network reaches over Governmental Institutions within the targeted states, Investors and other NGO's with the aim to accelerate the developments of these states and enable a sustainable future beyond their dependency on developed neighbour states.

In order to reach out to this network Bluerise and the OTEC foundation have to introduce the tool to the SIDS Foundation and convince them of its value to initiate and support a sustainable and independent energy supply for their member states.

The physical promotion kit

The team sees the need to design a physical promotion kit to be able to introduce the tool to the aforementioned foundation and their members. This recommendation mainly builds on the insights of the analysis specifically pointing at the cultural differences that indicate a different approach to media like the Internet. This argumentation is validated by some of the user test respondents who clearly identify, at least one segment (utility management and governmental bodies in the target area) as insensitive to the medium Internet and more likely to open up towards new technologies communicated through 'known' channels like letters and printed brochures (Charmane Sealey, Caribbean Project Manager -Travel Foundation, 2012).

Therefore the kit should consist of a formal letter introducing the OTEC Foundation and its goals. Further a brochure that includes a shortened version of the OTECT tools first steps (Home and Practice). This introduction is needed in order to set the context and ensure a minimum level of understanding.

Once this is accomplished the value of the tool for its specific user has to be clarified. Here some of the features within the tool and the outcome have to be explained. If the value proposition is valid for the recipient the step to use the tool on the internet will be much less of a hurdle. On top of that the probability of actually being recognized from the target audience is much higher through a postal channel than over the internet.

MARKET INTRODUCTION: DUAL STRATEGY

Roadmap OTECT Market Introduction

Objective

The two described strategies come together in the following roadmap and give Bluerise and the OTEC Foundation an idea in which timeframe to execute the proposed market introduction. To measure the success of the introduction strategy, traffic on the tools website and other contacts regarding the OTECT tool have to be monitored and analysed. Only if there is a significant increase in the tool usage after each event and after the expected arrival of the physical tool kit the strategy may be continued.

CeBit

→ Hannover, Germany
Tue, Mar 05 - Sat, Mar 09, 2013

International Convention Marine Renewable Energy

→ Brest, France
Wed, Apr 10 - Thu, Apr 11, 2013

Ocean, Offshore Arctic Enginee

→ Nantes, France
Sun, Jun 09 - Fri, Ju

Promotion Tour



Physical Promotion Kit

Design

→ Formal introduction letter, explanatory brochure
Mar 11 - Mar 29, 2013

Scope

→ Define target group, establish data base
Mar 18 - Apr 05, 2013

Print

→ Send out print job, quantity defined by scope
Apr 08 - Apr 12, 2013

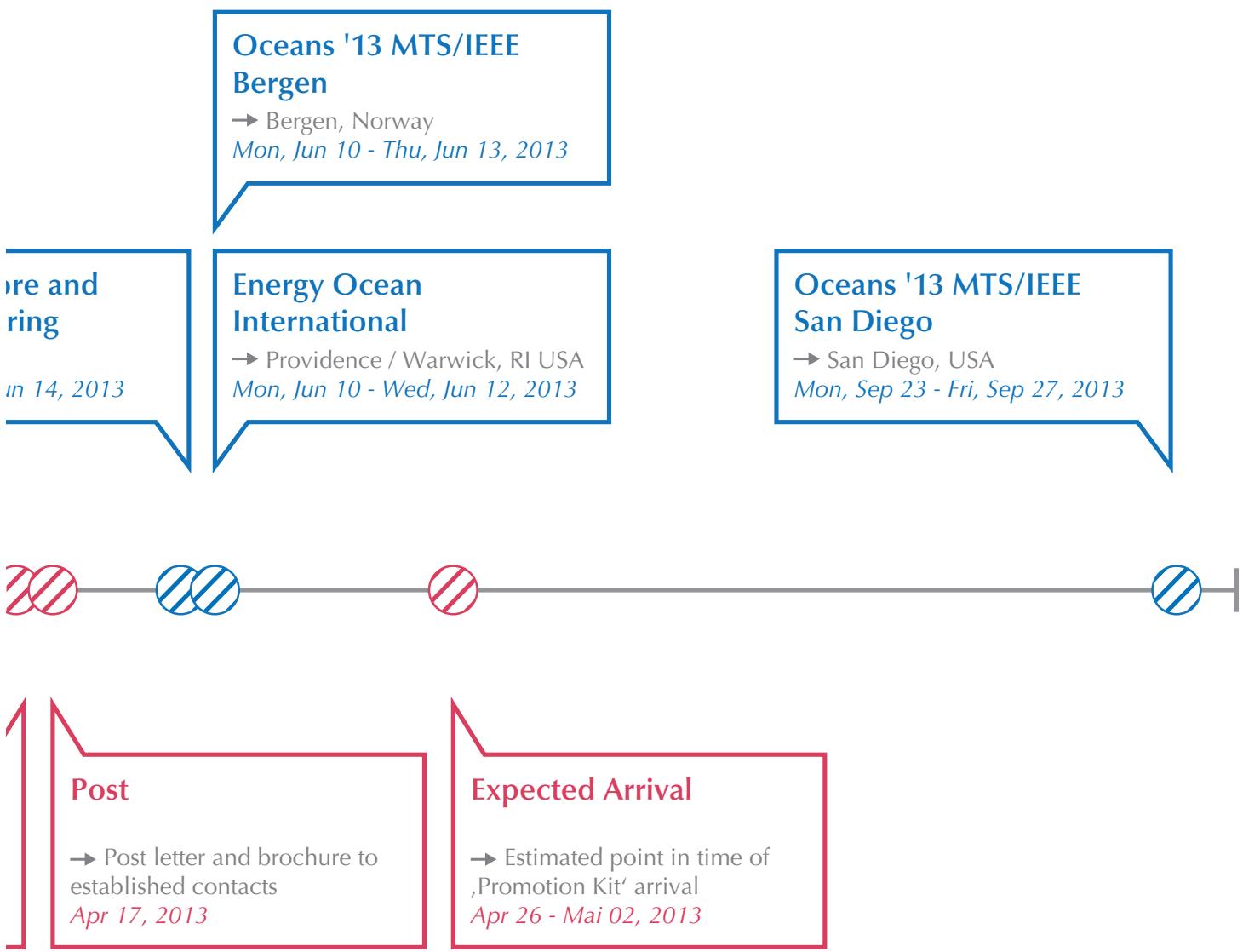


Figure 14: Roadmap Market Introduction

RECOMMENDATION

Implement User Test 2 Refinements

As outlined in Appendix 02, a list of interface refinements has been identified. These recommendations should be considered in further iterations of the design. Feedback from an experienced UI specialist formed the basis for these recommendations.

Extending Value Proposition: Opportunities 1, 2, 3

Opportunity-identification, during the early phases of this project, formed the basis for a multi-stakeholder engagement strategy. The opportunities (described in the 'Added Value' Chapter) are sequential in nature (exploitation of Opportunity 1, engenders Opportunity 2 and exploitation of Opportunity 2, engenders Opportunity 3). Sequential formation of opportunity is compatible with a modular implementation strategy. The authors recommend full implementation of the Primary-Stakeholder Track for Phase-1. The Primary-Stakeholder track affords the opportunity for concept validation and interaction refinement. Furthermore, implementation of Support-Stakeholder usability, will have greater value once the "data" upon which it relies, has had opportunity to accrue. The same applies to community functionality, which should be implemented as a third and final phase.

Our recommendation, for a modular implementation strategy, is based on pragmatic reasons and resource limitation: it should not undermine the importance for capitalizing on opportunities 2 & 3 (Fig. 05). As verified in User Test 2, the opportunities for multi-stakeholder usage and community formation are critical to the objectives of this project. Firstly, where Project-Financers and Project-Builders can be engaged at the earliest stages of a project, the probability for translating proposals into realized projects will be increased. Secondly, community-formation is paramount to the dissemination of OTEC and SWAC. Particular to the hotel industry in the Caribbean, a strategy that aims to pair a single project

to a single hotel will alienate 70% of the market (Loreto Duffy-Mayers, Project Manager CHENACT, 2012). Industry experts and stakeholder research support this argument and confirm a willingness within the industry to collaborate.

Opportunity 4: Case Study Database

Propagation of new opportunities should be considered throughout the implementation of all phases. For example, our contractor-participant commented on the importance that case studies serve within the industry. This user explained that, as a first action to problem solving, research is conducted to see if and how similar problems have been addressed, both locally and further abroad. As the industry of OTEC grows, the tool could leverage accrued data in order to build a portfolio of case studies. These could be filtered according to the barriers and opportunities facing each prospective project.

Action Plan

Identified within the research of Phase 2, a clear and direct action plan is necessary if prospective Primary-Stakeholders are to be encouraged to translate knowledge attained through pre-assessment into further action. Due to the infancy of the OTEC market, and in the absence of prior projects to serve as case-studies, it is difficult to identify a clear plan of action. Currently, this process requires many man-hours and is highly customized according to factors that require additional research (Bluerise, 2013). The authors recommend that further research be conducted regarding the methodology for constructing an OTEC action plan. Where a robust methodology for project planning can be determined, it is then possible to develop software capable of constructing such a plan through proper exploitation of databases and algorithms. Defining of an action plan can be described as a "goal-seeking system" according to Gharajedaghi (2011). In this respect, software capable of developing a suitable action plan should

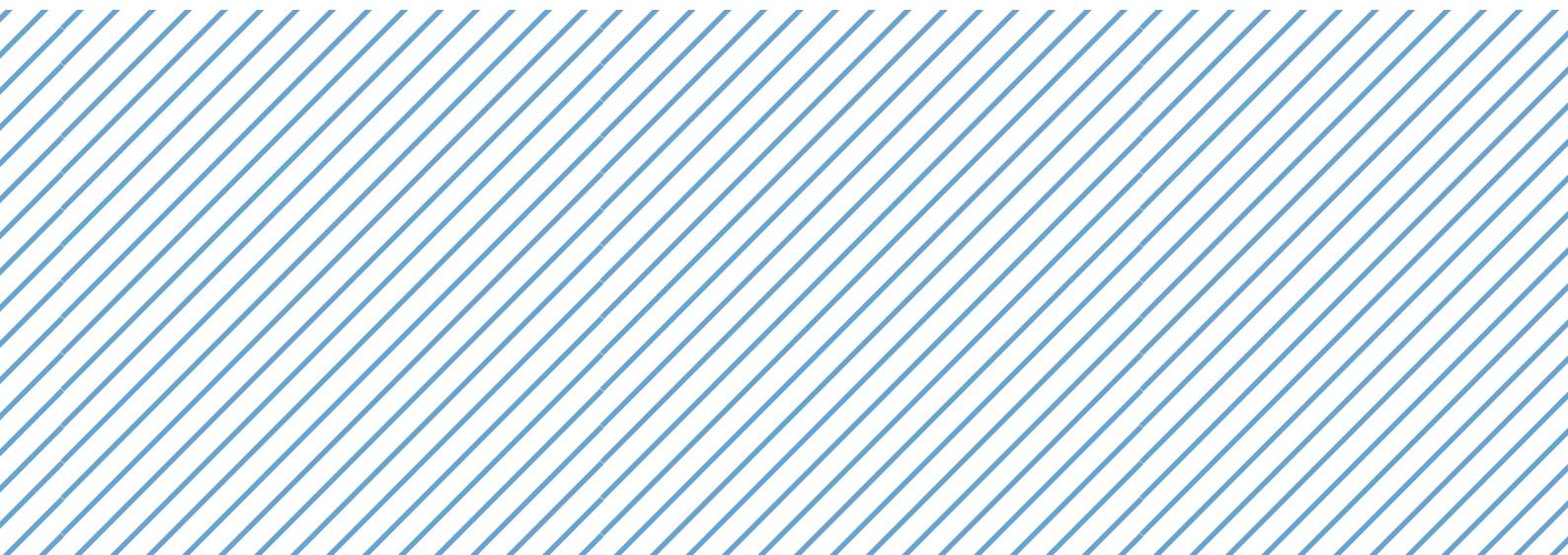
“respond differently to different events in the same or a different environment until it produces a particular outcome. [...] A goal-seeking system has memory; it can learn to pursue its goal more efficiently over time” (Gharajedaghi, 2011).

Concept Validation (beta version assessment)

The basic motivation for this tool is based on certain assumptions about the target user, their expectations and needs. Every effort has been made to understand and confirm these assumptions. User testing has produced positive affirmations regarding the appropriateness of the tool and its usability, however limitations must be acknowledged. Firstly, our user test prototype lacked interactive functionality. Once the tool is in its intended interactive form, the dynamic between tool and user can be expected to shift. Assessment of usability should continue to be refined well into interactivity (Radoiu, 2009). Release of a Beta version is recommended. This version should be released to controlled numbers of users and modern methods for usability assessment should be employed.

Conclusion

In closing, we believe that the OTECT Pre-Assessment Tool holds great potential as an agent for dissemination of OTEC and SWAC technology. This project has developed a refined architecture as well as an appropriate interface. The tool and the information that it delivers has been proven appropriate for the intended end user. Opportunity Analysis has identified strong potential for extending the value proposition of the tool beyond primary stakeholder expectations. The ability to build interconnected project communities will prove essential for the success of OTEC and SWAC. By encouraging joint-venture projects, we make these technologies accessible to a far broader group of potential project uptakers.



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APPENDIX 01: THE PROCESS

CASE STUDY ARUBA 2012

Taking the economic situation of Aruba and their stable political system into account the political and economic environment is supportive in terms of technological changes in energy production.

The Island itself shows a demand in electricity and water consumption that has great potential to be served by OTEC and SWAC technology. The geographical location without further analysis is assumed to fulfill the requirements for an OTEC/SWAC plant.

The current electricity production including the newly built plant is based on oil soley. Although this results in a high dependence, the technology itself is solid and has been used for over 6 decades. The former investment lets us assume that a near investment in energy production facilities is unlikely.

Contrary to this assumption Aruba has claimed to become a sustainable island with renewable resources. Enforcing this ambition is the increase in oil prices as well as the rising demand for energy. The former increase is due to the global shortage of oil the later is due to the increase in tourism on Aruba itself and a growing developed society.

POLITICAL:

- ~ Constituent Country of the Kingdom of the Netherlands.
 - ~ Primarily Parliamentary.
 - ~ Multi Party System.
 - ~ Prime Minister as Head of Government.
 - ~ Several Departments and Institutions.
 - ~ Highest rate of Foreign Investment Control.

LEGAL:

Legal jurisdiction is with the common courts in Aruba and the Netherland Antilles.

Independent but adapted from Dutch Law.

ENVIRONMENTAL:

Water Temp 28°C Air Temp 27°C
 Standard deviation 2°C Standard deviation 4°C

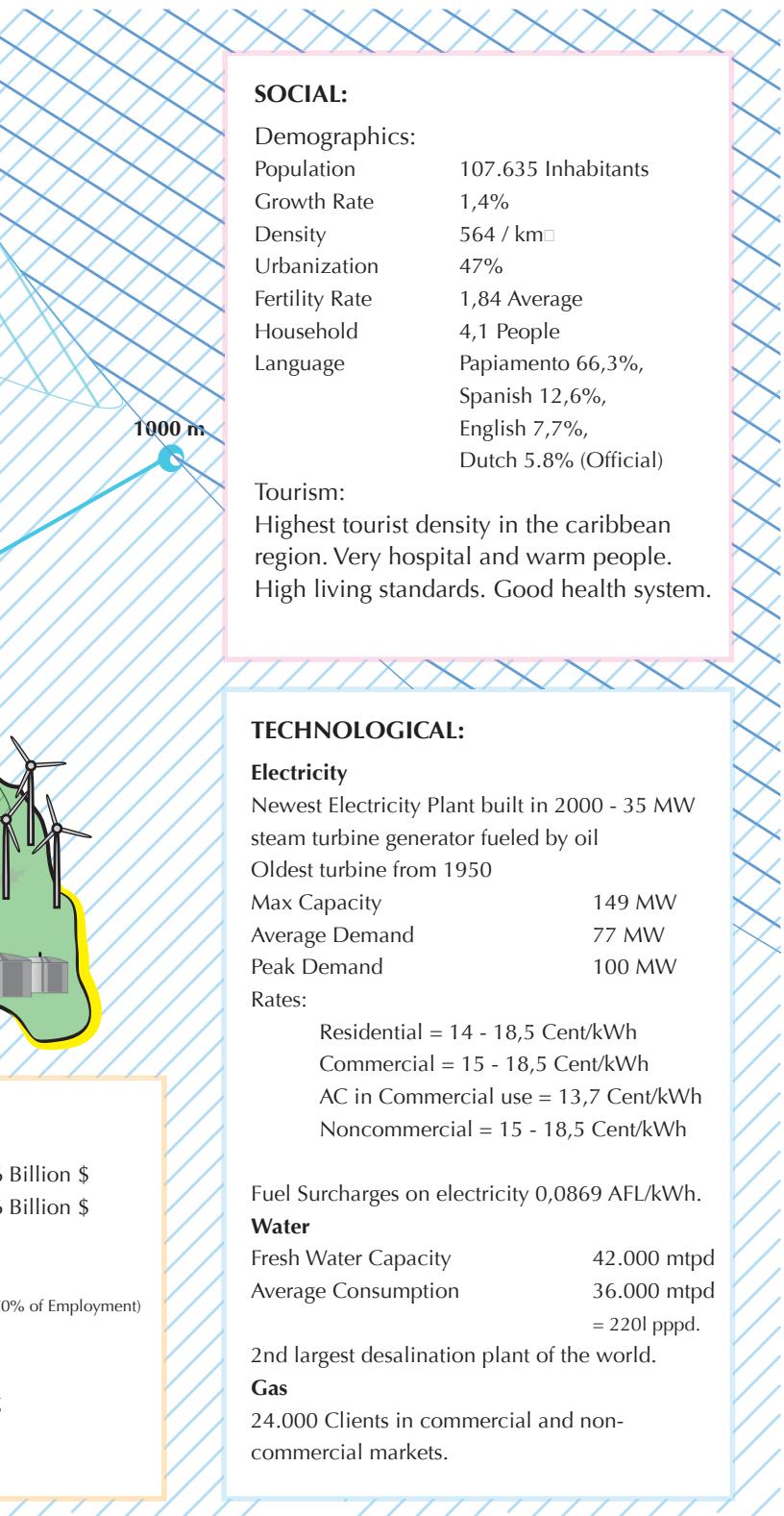
Coastline Character west = sandy
east = cliffs, rocky, small beaches



ECONOMICAL:

GDP	2.205 Billion \$	Export	1,276
GDP per Capita	21.800 \$	Import	2,016
Budget Revenue	547 Million \$	Industries	
Budget Spent	637,4 Million \$	~ Tourism (60-65% of GDP, 65-70% of Exports)	
Budget Deficit	-4%	~ Transshipment Facilities	
Taxes	24,4% of GDP	~ Banking	
Inflation	4,4%	~ Gold & Phosphor Mining	
Financial Support	EU Development Fund.		

Figure 01:
Case Study Aruba



APPENDIX 01: THE PROCESS

TRENDS for SIDS relevant for OTEC

Source: Trends in Sustainable Development SIDS, UN 2010

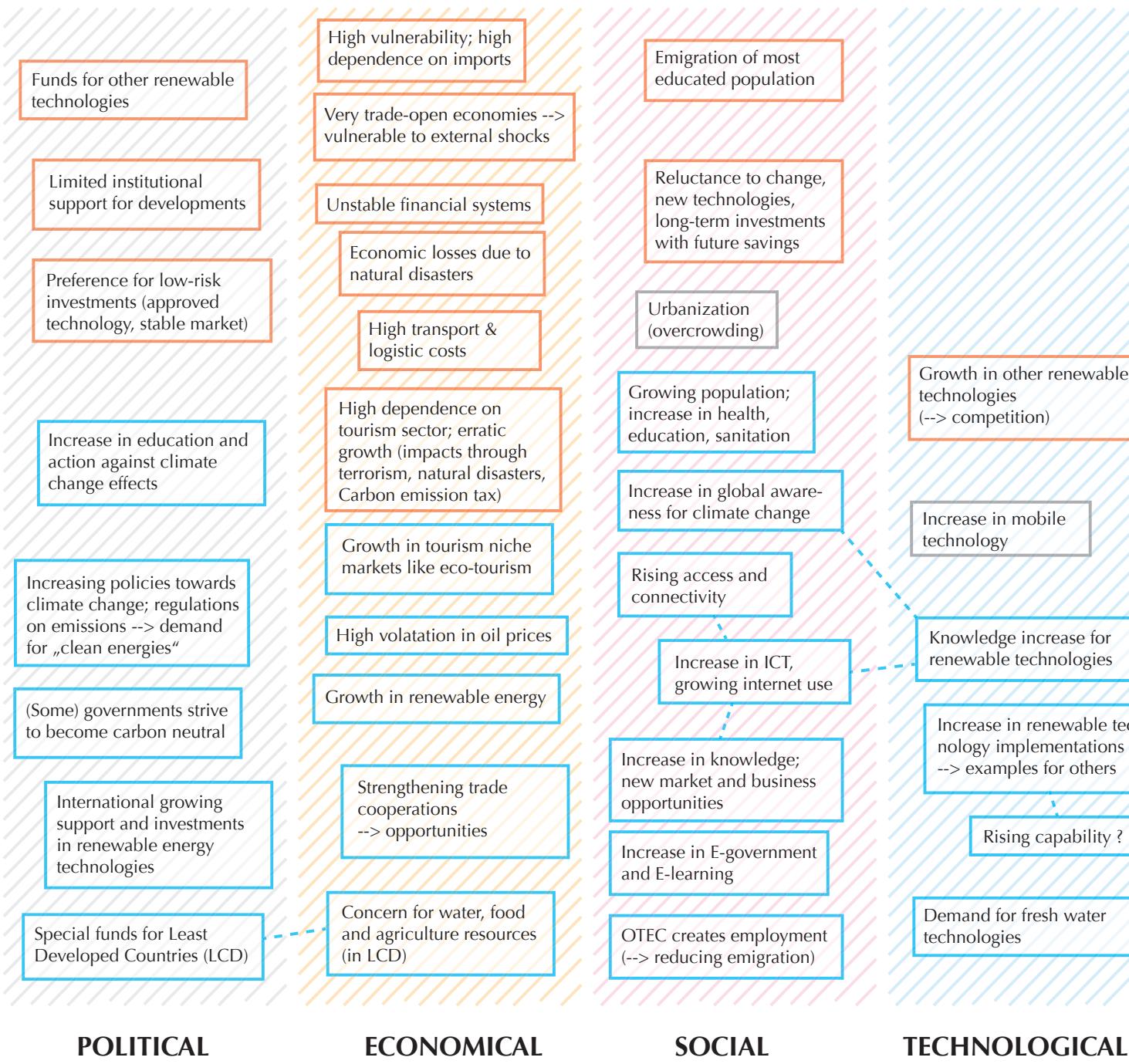
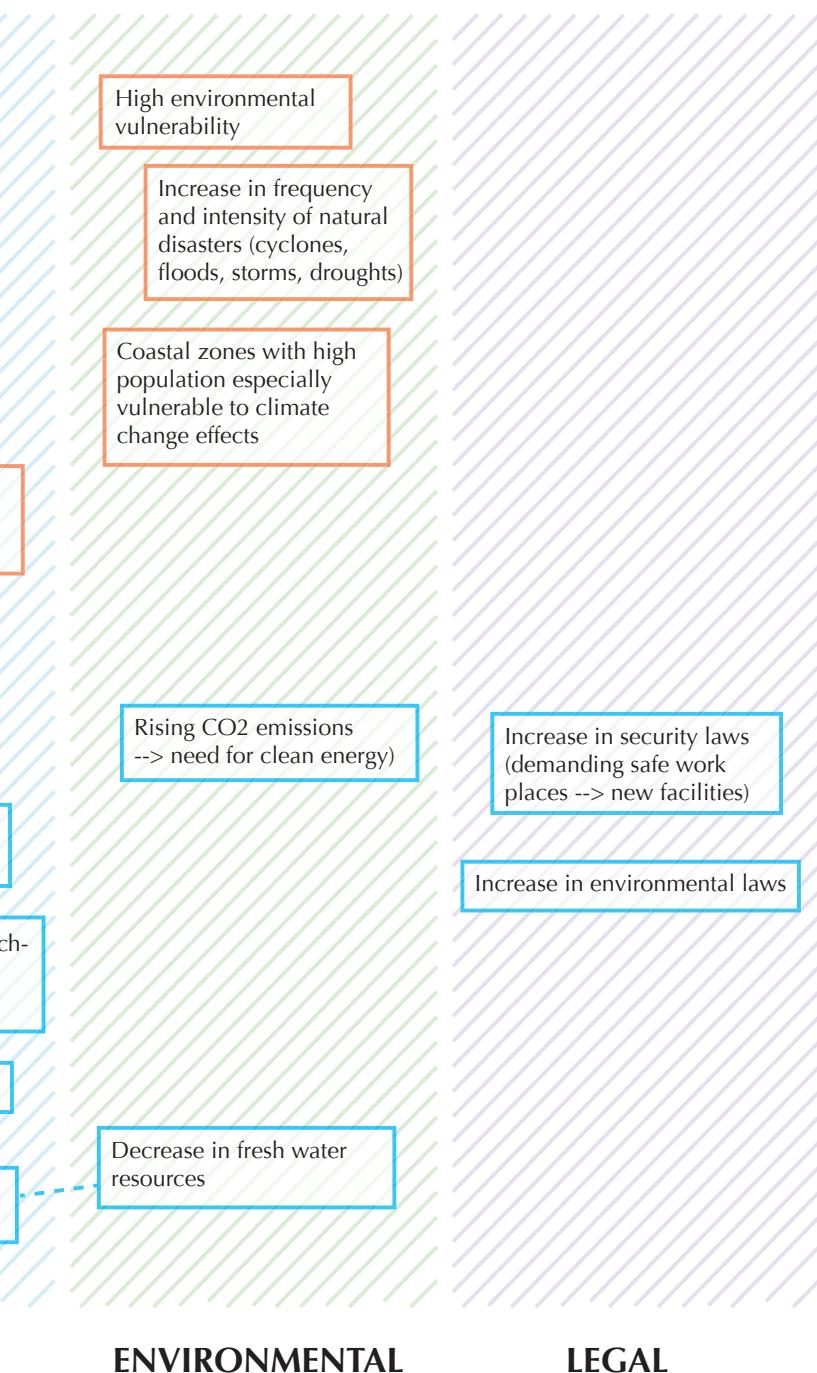


Figure 02:
PESTEL Trend Analysis

Orange = negative for OTEC
Blue = positive for OTEC



APPENDIX 01: THE PROCESS

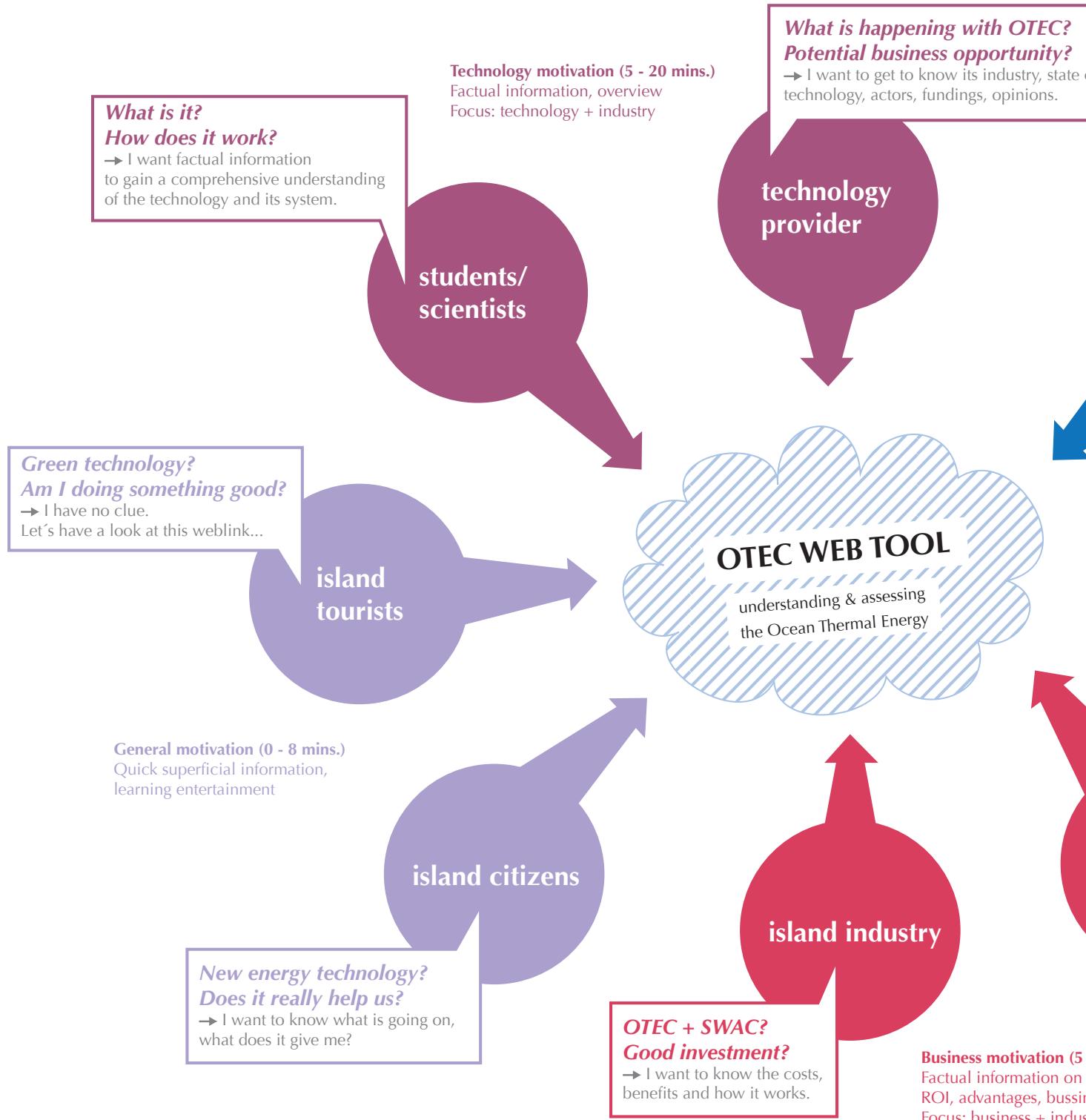
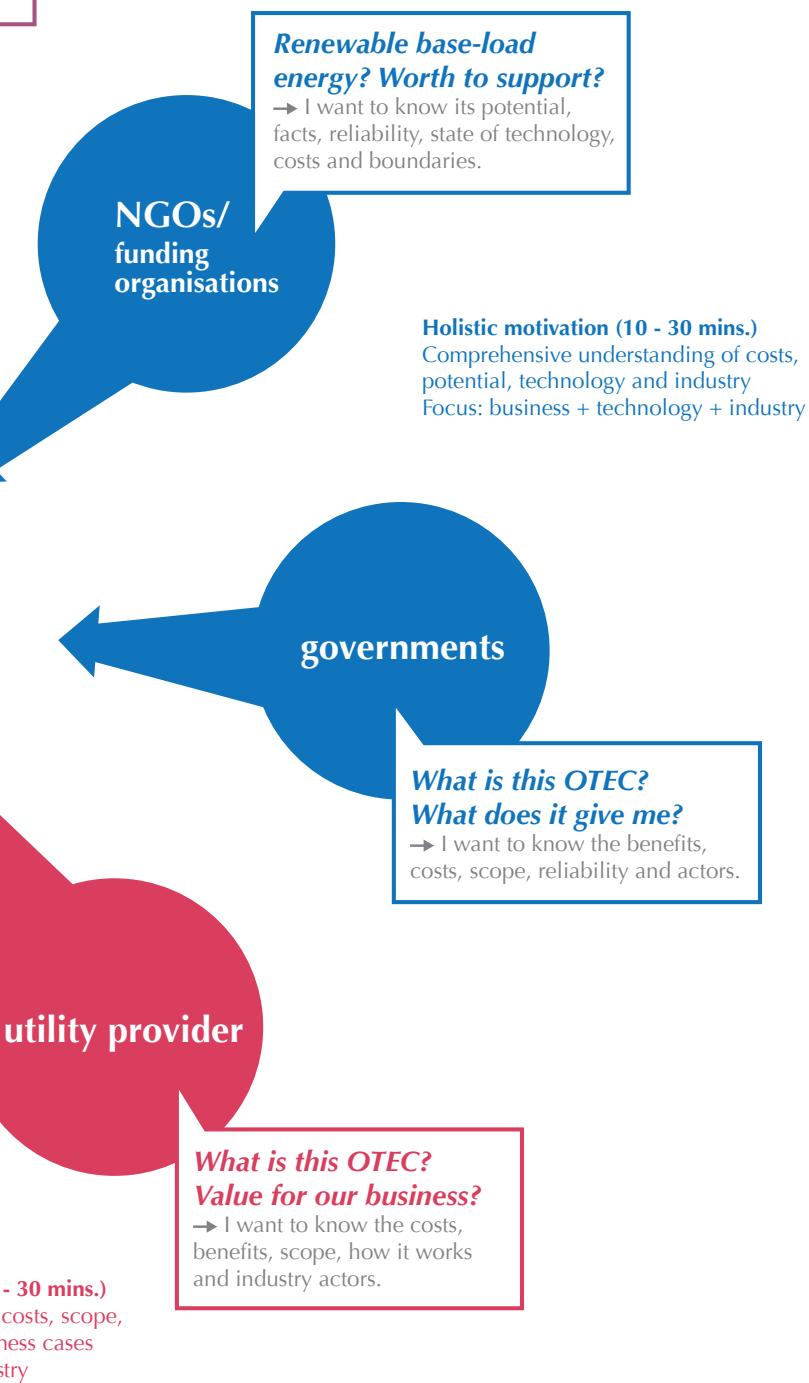
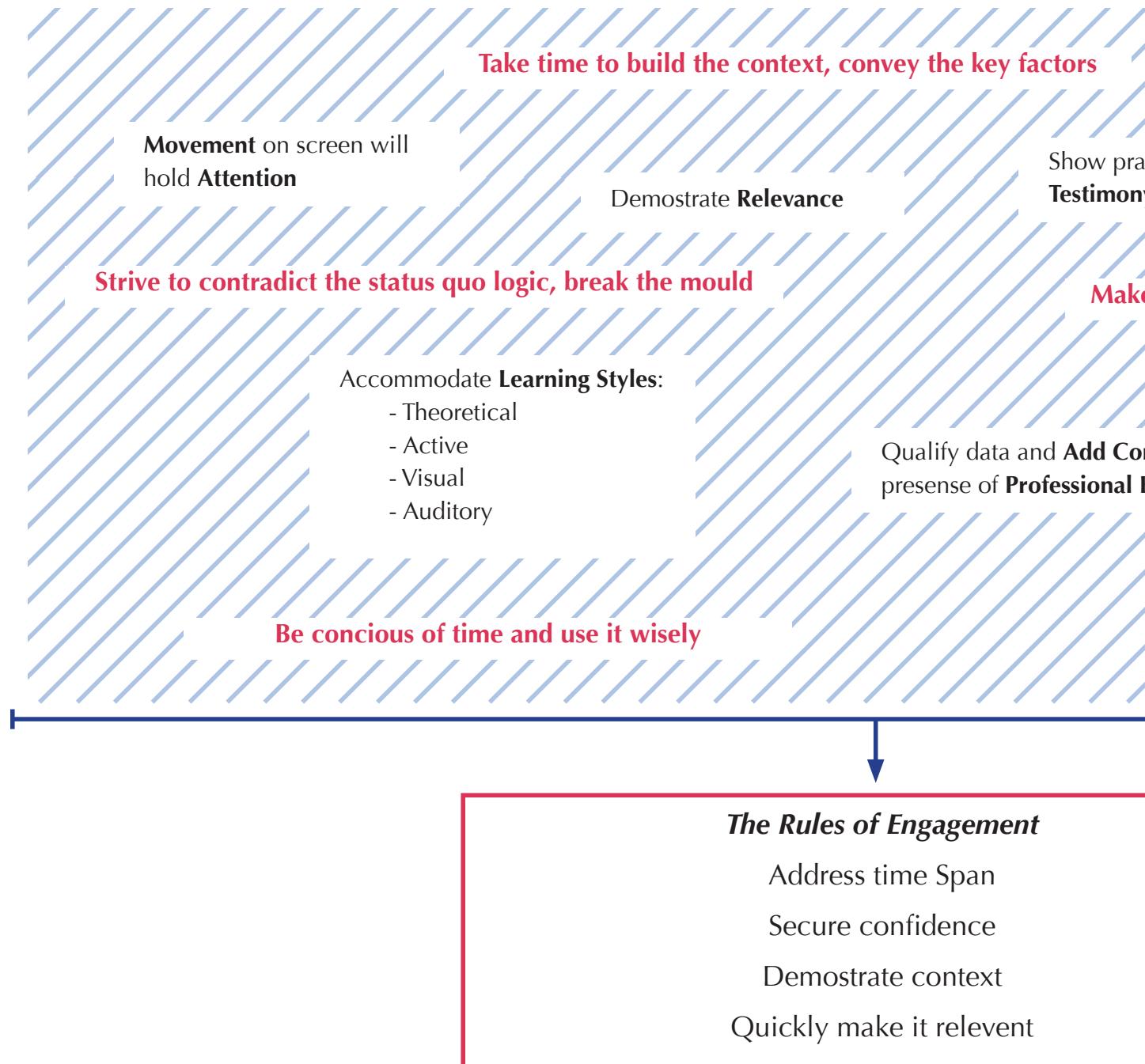


Figure 03:
Interaction Framework



APPENDIX 01: THE PROCESS



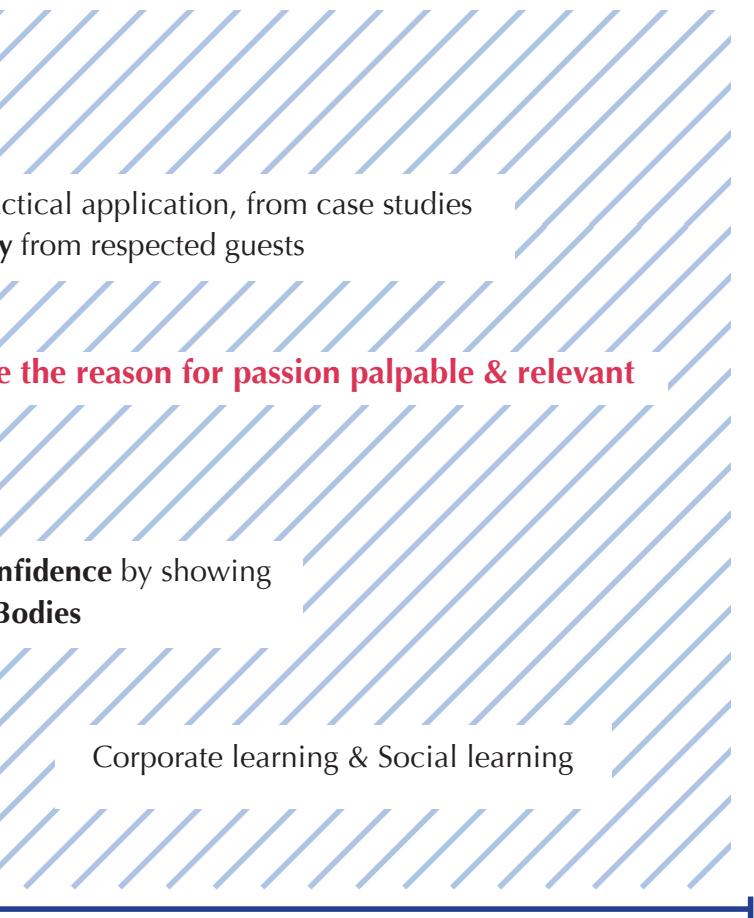
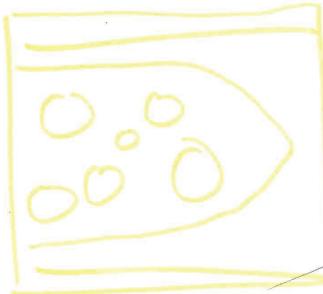


Figure 04:
The Rules of Engagement

APPENDIX 01: THE PROCESS

- flexible, play-able
- emphasising UNDERSTANDING!
- All in "one" window.
- direct results

INFORMATION



Ways of presenting
changing variables:

- POWER: light glowing through windows
- Cooling: cold wind through windows.

PARAMETERS
to adjust in
picture:

- x power output
- x cooling output
- x plant size
- x pipe diameter
- (x pipe length: constant
(location specific))
- x number of rooms
- x energy prices
- x investment + pay back time.

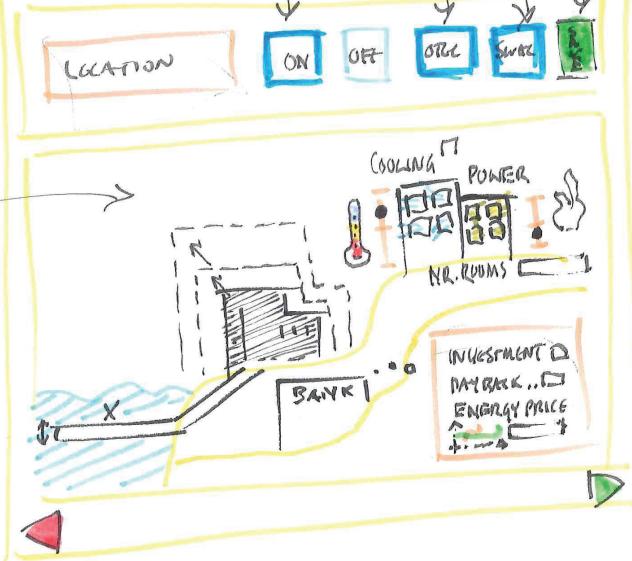
ON/OFF
(only one can
be selected)

Clear difference in
buttons when active
and not

(both
one can be
selected)

Menu bar for
choosing ON/
OFF and
+ / -

ALL-IN-ONE!



- Starting with an "example island" → enabling user to play around with the parameters and see the results of this. (everything interchangeable)
- Also a specific location can be added and specific data filled in.

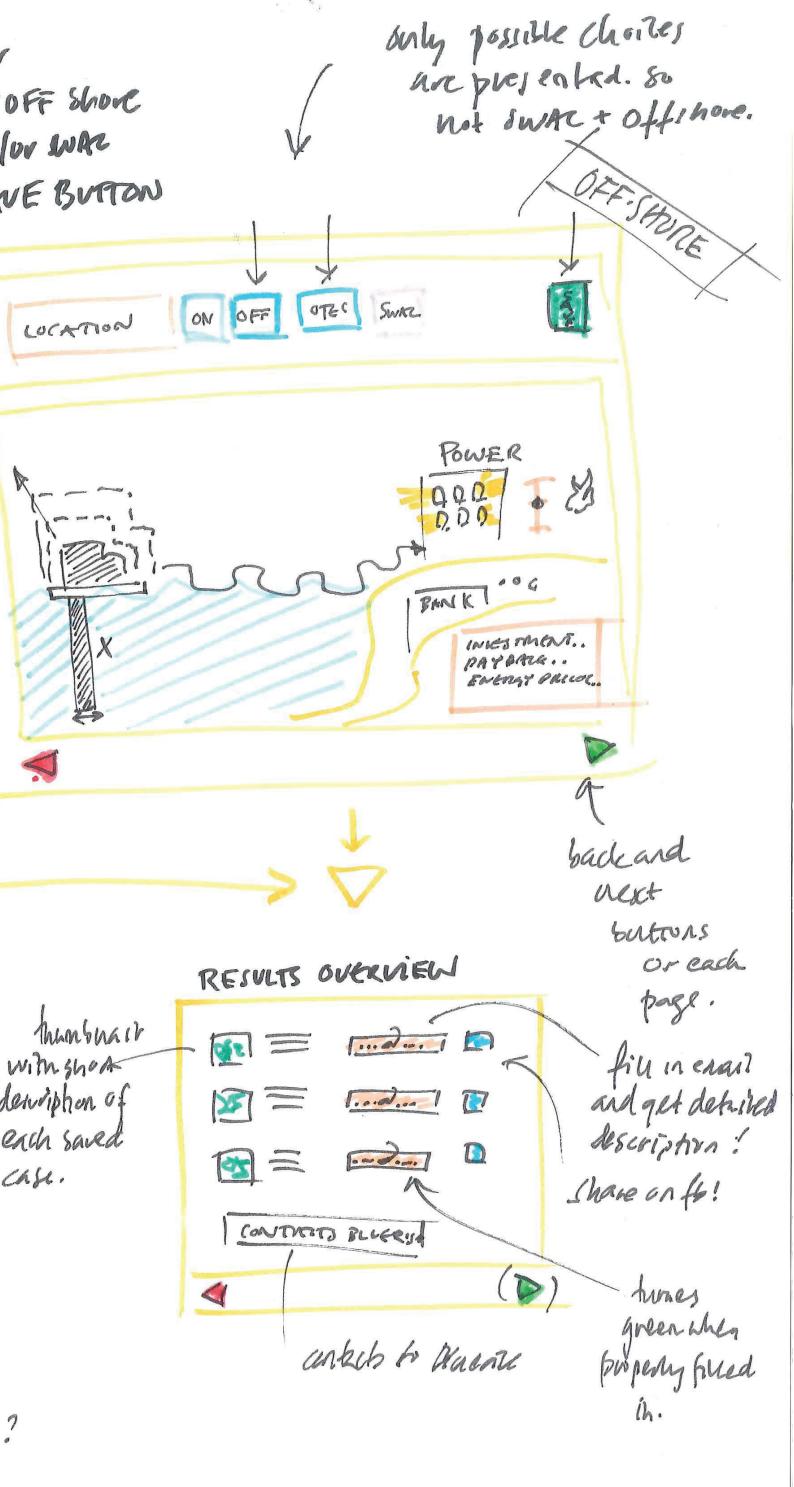
Each case can be saved with the save button.



Should there be continuous variables
or for ex. three fixed stages...

? faster to load in browser

Figure 05:
Concept 'All in One'



APPENDIX 01: THE PROCESS

- STEP-BY-STEP
- GUIDED
- SEVERAL WINDOWS
- FINAL RESULT PAGE (in end)

STEP-BY-STEP

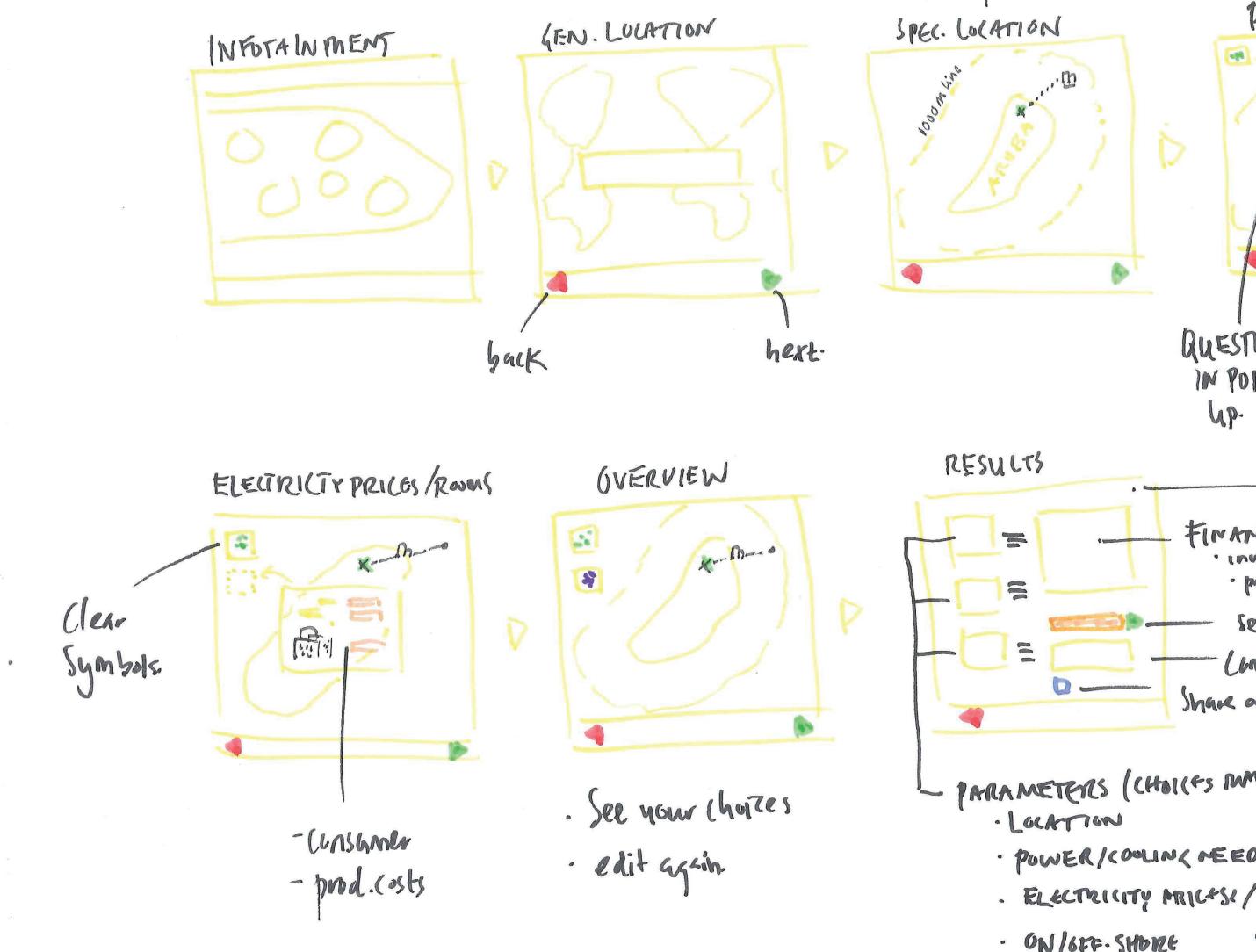
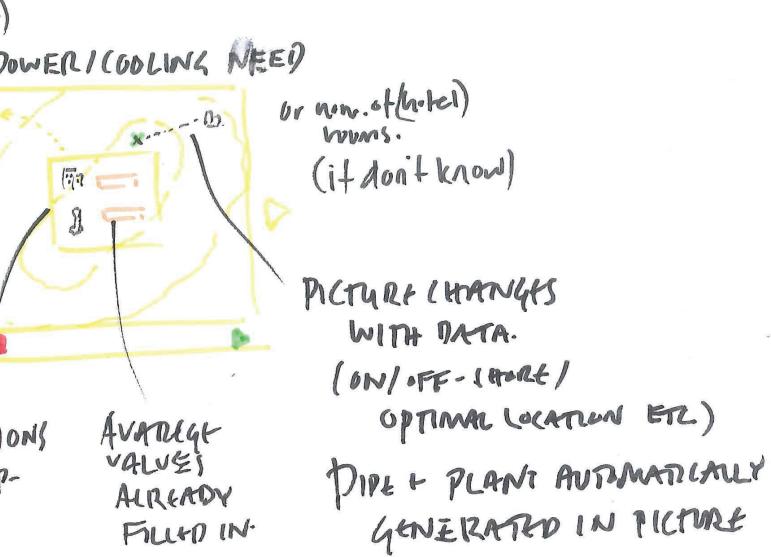


Figure 06:
Concept 'Step by Step'



RESULT PAGE

Gives clear
OVERVIEW.

AND CAN BE
corrected
EDITED IN

THE WINDOW.



PICTURE CHANGES
Everything depend
on one another.

and detailed PDF (fill in email)

ffects Bluecurve

n FB

DE):

→ define plant size
+ on/off shore
ROOMS.



APPENDIX 02: USER TEST RECOMMENDATIONS

Recommendations User test 2.

The following section is structured similarly to how the test was planned, by walking through the design of the tool page by page. The recommendations are given in the order of: 1) The primary user-track 2) The finance & Project Builder track 3) General comments and recommendations. This should allow for easy use further-on while bringing the tool to a final, online stage.

The Primary-user Track

HOME

"I really like the new design. It is a great improvement!"

An even clearer call to action could be included in this first page of the tool.

"What I really miss though is a clear call to action here, telling people in visuals what you like the user to do now... You want to invite people to start, and here I am not directed to start trying out the tool; you should motivate me more to continue...".

Tool-tips in the form of small text boxes in the same style as the rest of the page could be used to furthermore guide the user interaction.

HOME/Extra Information

In order to make the text easier to read, sub-headers could be added for each paragraph.

"I would still use small headers in the text that can direct me in the reading, something to help me consume the text quicker. I want to be able to assess the information directly, before reading it all"

PRACTICE ONSHORE

"Okay, very good. I have a feeling something more will come... because of all the blank space. The text is nice and short...!"

The wizard is very helpful. The understanding of the logic and how to interact with the wizard is clear. Declarative titles could be added next to the numbers to create an even better understanding.

The practice page fulfills its purpose of explaining the technologies and helping the user understand how different elements relate to each other as well as their individual importance.

"... That's a lot of pipe to put down ... and it's a pretty big pipe too... I see - 2 m in diameter..."

The wizard (and all steps) should always be accessible in order for the user to feel in control.

"Ohh, Step 1 and 2 disappeared. That's weird. I feel out of control, like I am down the tunnel and I can't get back..."

The interaction elements for changing the slope could be more clearly communicated.

"It would be cool to use the same kind of button as on the other interaction elements... to put this arrow-thing on the "stone" that is active. That would work better I think"

PRACTICE OFFSHORE

A clearer use of sub-menus is needed in order to communicate where in the process the Offshore practice page is located and how to get back to this page again.

"You don't have a clear navigation... I don't know how to get back here... you continue to delete my sub-navigation. A general user won't get this. I have to first go here (to practice) in order to go here (to Off-shore)... "

PRE-ASSESS

It could be interesting to look into using new technologies for location search.

“... With modern browsers you can retrieve the location directly from the browser... so the user doesn't have to do anything”.

It might be interesting for a user to get some information on how the data is being calculated.
“ohhh... how did it calculate where possible or not?”

The colors chosen should not deviate from standard color-coding. Using a color variation from green to red might be clearer than using blue to red for the coast indications.

“... The colors around the coast here got me in trouble. I don't quite understand what they mean/communicate...the red... and the blue... how does it work?”

The exact procedure of specifying location – clicking on the map – and interacting with the map might need a better explanation.

“Specify location? What? I just did that... Aruba right. So what should I do next?”

MY-PROJECT

The evaluation includes all main parts of relevance for the user. Also the Carbon emission data seems to be of high interest.

“Yeah the numbers you present are logical. Everything I would need is here... in order for me to know if I should move on with a feasibility study or not...”

“For us it's most important to reduce our electricity bills, but an reduction of CO2 emissions is also a pretty cool motivation. We have a green certificate, so the environment is part of our business values and also very important...”

The page is also of interest for the user group: Contractors.

“Even from a builder's perspective, these assumptions are very important for me... these are interesting numbers to play with...”

For advanced assumptions a scroll bar for accessing more data, would be more in line with standard website use and therefore easier for users to understand.

For changing the units, check boxes are used, while it would more logically be radio buttons. British units could also be added.

“For the units I would use kWh for OTEC and no. rooms for SWAC... but maybe you should also add British units to this list (Btu/h).”

REGISTER/PROFILE

The forced login page is wisely positioned at a stage of the tool sequence where it is likely not to discourage users from proceeding.

“Yeah, registering at this stage wouldn't discourage me at all...”

The use of user-names might be elusive and old fashioned. A better option that also communicates more seriousness is to include first and last name.

The buttons for moving on should be relocated.

APPENDIX 02: USER TEST RECOMMENDATIONS

"... yeah, hehe, these buttons are really weird. I would say these buttons should be positioned below where you fill it out because that's super standard and deviating from the standard does not help the usability"

PROJECT LOC

The buttons in the diagram for going back to previous locations and projects could be even more clearly communicated as buttons.

In order to simplify the user interaction, buttons for adding a new location or project could be included in the page. You should also be able to easily remove a location or project in this page.

"This would be a logical place to be able to add or remove my projects. But here it is not clear to me how I would do that..."

The button "Enter publish code" would need a clear explanation. The use of including it on this page would benefit from further user testing. Its value might be outdueled by the risk of scaring users away.

"Enter publish code... I have no idea what that means? If you really want to make sure no user will add anything to the community page, make sure they actually, like now, have to wait for a confirmation from Blue-rise"

COMMUNITY MAP

The community map would be of great interest to some of the tool users. They see a great potential in being able to partner up.

"As being part of the hotel industry I see this being of high interest... We are used to partnering up. The cooperation would be there, that's not a problem. We are all in the same boat..."

"Okay, so this gives me a possibility to see what projects are happening around me... I would look at the projects next to me on the coast...yeah I would be very eager to do it..."

The users see a need to include an external party that can drive the joint projects forward and be responsible for things such as maintenance and operation.

"... A joint venture would be very interesting, especially if there would be other parties to help drive the project and help with the investment etc. such as a cooperation with for example the government or an outside stakeholder to be the driving force...very good!"

"I like the idea, but who is responsible/ will operate it then? Who takes care of the maintenance? Who fix it when it breaks? And who pays for that? What if we are three parties in a joint project, and when something goes wrong only two can pay?"

It should be clearly communicated exactly what data is to be published and shared with others on the community map.

"Will all the data that I saw before be visible also here [if I add my project to the map]?... I don't want to share all my numbers... profit etc. If that's the case I would be hesitant to post anything..."

In order to enable better understanding of this page a few things should be clarified: exactly how the user interacts with the map, what is the meaning behind the square and what "requesting interest" actually means.

"... And then what... can I click on the spots or? Register interest... what happens then, how do I do it? That is not really clear"

The Finance and Project Builder track

HOME/Financer Information/Project Builder information

It would be important to use the exact right wordings in the introduction text in order to avoid misunderstandings later on.

"...[for the finance track] "Our aim is to connect interested parties and get OTEC on the road to success" – you can't say that... because it depends on who it is. This wouldn't work for a lender who is only concerned about cash-flow... basically the four C's: Character, Capacity, Capital and Collateral..."

"I wouldn't call it investor – that is the hotel owner, but rather finance..."

REGISTER/PROFILE

It might be useful to look more into the exact wording of Contractors.

"Specify Contractor... say trade contractor... and actually this is the same as a project management firm."

ACTIVITY SCAN

The users seem to have a clear understanding for what is being communicated within the explore page. The follow button has a clear message and is furthermore not believed to indicate commitment of any kind.

"The follow this project – button, I would see that as a way for me to get feedback on it, what happens, it's developments. I want to hear if anything happens with this project... and pressing the button wouldn't make me feel committed to anything... that's how I think most Contractors would interpret this."

This track is believed to have a clear and useful purpose to Contractors.

"You've done as much as you need to – this communication tool get people to start talking!"

General comments from all user groups

"I think in general it has come a long way. It's really nice. It looks good.

It is a huge project to implement... This is really the kind of website where you would pay 30.000-60.000 EUR to make it... and it would take ...a lot of time... maybe 4 months..."

"I definitely see this tool as being very useful, and especially the idea that a few hotels can go together and cooperate. I think there would be great interest for that."

The interest for the technology has potential to become big within the hotel industry due to high electricity prices.

"Our electricity prices varies a lot depending on the price of oil... but I think we generally pay 40 USD cents / kWh... It more than doubled in the last 10 years... so that is 150.000 USD/month in electricity costs for my 330 rooms."

It is important to identify possible barriers for implementation for finding ways to overcome them.

"You would need a lot of permissions, planning permits etc... that will be a challenge for these kind of projects"

"We have per room air-conditioners, I see that as a barrier to implementation. I would first have to get a centralized system..."

To further improve the tool, case studies could be included to support the development of new projects.

APPENDIX 02: USER TEST RECOMMENDATIONS

"It would be a good idea to use case studies even in the tool. Post case studies so people can learn from earlier projects, problems and how they were solved... This also to motivate people, Ahh if it can be done there, we can do it too! That would be a useful element to include in the tool."

"Make sure you know your exact audience!"

The tool would be of interest to only a small and selected market of finance.

"A bank would probably have a traditional way of looking at it. But a few specialized lenders who focus on lending money to these kinds of projects... There is also a problem with conflicting interests here. The tool would be biased, since it is Bluerise website. I therefore see it having very little use for investors and specifically for lenders. Banks will be suspect in using Bluerise software for evaluating. They look at current cash flows and ability to pay back the money no matter what. The tool won't make any bank decide to invest."

"If the technology will help lowering the hotels operating costs the bank will care about this and be interested..."

There is a general problem with the navigation of the tool at this point. A sub-navigation needs to be added in order to create a clear logic of sequence. Each element in the main menu should correspond to a sub-menu that is visible throughout the whole tool sequence for that main menu element. This will give the user direct access to all pages as well as a better understanding for the tool flow and how to navigate within the tool.

"The whole experience for me as a user that I have no idea what the size of this project is when I get started... You don't give me any structure. Maybe after going here, there might be another 15 sub-pages I can go to. I feel I have no control. You never tell me where I am in the whole page structure, that's why you need sub-navigation"

The style of the buttons could be improved to better help the user in the decision making process. If several options are provided guidance should be offered in text as well as illustrations, for how to proceed and what the result of proceeding will be.

"So I have two options to move on here, but no guidance in which one to chose. You don't help me... They are both same color, same size. You need to work on this interaction here, because this is not clear. I would add hint texts again, to inform me what they mean. Is it a long process?"

The positioning of buttons could be made more consistent throughout the tool, and also more in line with standard positioning of "next buttons" in websites.

"... And now the buttons to go to the next pages are in a new location. That's not really logical"

"... Now you make all buttons equally important, while really only one of them is most important..."

APPENDIX 03: USER TEST TRANSCRIPT

Transcript User test 2

The transcript is structured according to the Mark II tool flow, starting with the Primary user track, followed by the Project Builder/Financer track and ending with general comments from the three participant groups.

Primary user track

HOME

[Hotelier 1] "How to use this tool is a logical starting point for me..."

[Hotelier 2] "I would start by clicking on Planet and People... and thereafter go through the flags one by one..."

[Contractor] "Practice... a button to what?"

[UI expert] "I really like the new design. It is a great improvement. But I will focus on what can be improved in this test."

[UI expert] "Nice theme. And it could be made even more realistic with some fog and stuff, yeah that would be cool. What I really miss though is a clear call to action here, telling people in visuals what you like the user to do now. I would say ... something like practice. Without reading the text yet I want to see a clear call to action. I would not know where to start. So what I would do is to in the bottom, of the page make "how to use this tool" bigger and green – and this would be the button you use to start the tool with."

[UI expert] "I don't know about the logo though, it looks a bit like in a different style. Out of place."

[UI expert] "You want to invite people to start! To be sucked into the tunnel... because the more likely they are to order OTEC in the future. And here I am not directed to start trying out the tool; you should motivate me more to continue by the help of your visuals."

[UI expert] "I would always assume people read from top left to bottom right. That's [in the bottom corner] where the next button is normally positioned. I would like something in the bottom right to click for moving on."

[UI expert] "On the page, the first thing I see is the flags; they are clearly seen as something I can interact with and they are clearly separated. Maybe they always fly a bit in the wind, and even more so when you hover over one of them to indicate that they are buttons."

[UI expert] "The text in the top of the page – it feels like a lot of text somehow. I would like simply one sentence or so. I would leave out the last two sentences. People are not stupid. They will look into the buoys anyway, they like this kind of discovering as long as it is obvious what can be done. ...Pre-assessment if OTEC bla bla is basically repeating the sentence before. Instead of the last sentence include tool tips in the same design as the rest, like a small text with an arrow next to a buoy. [we could possibly use the same style with yellow text as on the practice pages]"

[UI expert] "Pop-up: I would still use small headers in the text that can direct me in the reading, something to help me consume the text quicker. I want to be able to assess the information directly, before reading it all. "Link"... that doesn't mean anything to me. I would make it more like "to find out more about SWAC go

here..." And furthermore, if you want people to click on it, make it a button instead – make it a real call to action. A call to action comes in text, size, color, position, shape, and language..."

PRACTICE ONSHORE

[Hotelier 1] "... That's a lot of pipe to put down ... and it's a pretty big pipe too... I see - 2 m in diameter..."

[Hotelier 1] "One problem to consider for you might be the traffic out there. Outside of our coast there are a lot of big cruise liners anchoring ..."

[Hotelier 1] "It looks like a project that would make sense but with high initial investment... So I would directly wonder what's the payback?"

[Hotelier 1] "It would be very interesting if you could cut my electricity bill by half in 5-6 years of payback time... otherwise it wouldn't make sense..."

[Hotelier 2] "[Step 4= the evaluation] this might need a better, more comprehensive explanation in order to easily get it"

[Hotelier 2] "Interesting, but where can I get it for my location?"

[UI expert] "The practice button would be the button for me to press for moving on.

Okay, very good. I have a feeling something more will come... because of all the blank space. The text is nice and short. That's the amount of text I like. It is all very accessible to me."

[UI expert] "1. Step, 2. Step 3. Step etc.. This doesn't make sense to me. What will happen? They don't include and information? And also that is not how to write 2nd in English. It only tells me it is steps... I would use more declarative titles. In the text, business, should be plural. I would then make it a button with like... Go to next step, create a plant! or How to fix this... a button to click on to get to the next step. All step buttons should be clickable, but I would also have another button to move on. A call to action."

[UI expert] "Step 2. A lot of information appeared. Nice design. I like the plant... clearly communicated. Okay so, at this point I don't know if I can change this in the website... or if in general people can do it in the real world!!?"

[UI expert] "I would really put arrows here in the picture, like drag me... In the plant capacity... I thought I could drag something here... and well it would tell me there is a maximum capacity, and I get the main idea... 20% to OTEC, 60% to SWAC. But I still feel it is like a waste... I would miss out on 20%... but I guess in reality I would just build a smaller plant. So that's a bit weird maybe. To have an over capacity sound more expensive, which I don't want."

[UI expert] "Not being able to drag the pipe... that's good. I would see it more like an output anyway."

[UI expert] "Step 3. Ohh, Step 1 and 2 disappeared. That's weird. I would keep those. I want access to my former steps, to be able to play around and feel in control/secure. To have to reload the page is not good enough. I feel out of control, like I am down the tunnel and I can't get back. And I am a nerd, so I don't think other people will know how to retrieve it back..."

[UI expert] "The main help text in the top... it doesn't change, but I think it should. You could use it for other stuff, or rather. Now when I don't use/need it anymore, just remove it."

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[UI expert] “[text] temperature and slope... they are defined by a specific location.. Okay, obviously you cannot change the slope of your real location. What you want to say is, they are given and based on where you live... so maybe reformulate this. And also it is not clear why I can play with them, to get a sense of how it impacts energy production or something.”

[UI expert] “I feel like I can drag the surface temperature. I believe I can drag it up and down... but it wont work like that... well that’s actually a very nice interaction. To be able to both click but also drag the arrow upwards/down to change the number...”

[UI expert] “The yellow tips-things are really handy. I would put them here in the top but also next to the things I can change/the things you tell me about. Like tips/hints in the picture. If you only keep them in the top of the picture, you don’t link them to where I can interact. I would make it so that the submenu/wizard in the top includes general information for each step and then add these yellow squares in the picture to give more direct tips of interaction possible. That would make it clearer for me as a user. ”

[UI expert] “I get what elements I can interact with, except for the slope. It’s more like status indicators. I don’t think it is clear now. It would be cool to use the same kind of button as on the other interaction elements... to put this arrow-thing on the “stone” that is active. That would work better I think.”

[UI expert] “Step 4. This is a weird sentence (the last one). Instead write something like: move the mouse over the (?) symbols. And use the actual symbol. It is getting a bit awkward with the yellow text now... it’s very far away.”

[UI expert] “[Evaluation] Good water temperature gradient... what does that mean? I would say difference or something? Value for money... low. Why? How does it work... hm.. I would maybe put the bar after the costs. What is the capital cost? The total? Okay, I would want my energy/cooling output info also visible in the evaluation (as output numbers). I have the value and the money here and that would make the “value for money” logical to me.”

[UI expert] “So we are still in practice... but I lost track of all the steps before. So confusing, I don’t know where I am. You remove my complete sub-menu. I want direct access to any part of the sub-menu. To always be able to get to the beginning or end of the wizard. Hmmm so this is the practice page? Hmm. What should I do here? It doesn’t say it anywhere? Still very weird to me that... the submenu disappears. People really wouldn’t know how to get back now. I would add a different text. All pages that are sub-pages of a page must be possible to go to. I would have the sub-menu always visible in the top.”

[UI expert] “I think people will start click and explore during the wizard, not simply after...so now I don’t get what to do... Maybe I will move on directly.”

[UI expert] “You never talk about off-shore, except on the first page, and now it is suddenly here again... It was not really clear even that I am in on-shore... So I have two options to move on here, but no guidance in which one to chose. You don’t help me... I don’t know what will happen? They are both same color, same size. You need to work on this interaction here, because this is not clear. I would add hint texts again, to inform me what they mean. Is it a long process? And what is this off-shore thing. I completely forgot about it while playing around here... and it even feels a bit, ohh I have to do this whole thing again. Its fun, but it takes time. I would in the beginning make clear there is both on- and off-shore. Ohh, off-shore is part of practice as well. I didn’t get that, How could I know? I thought the off-shore was a new thing. And that I was done. I went through this whole step by step... feeling I am done, but

suddenly I am only halfway. A big surprise! I thought I was going to go to pre-assessment now, but then there is this whole new thing... That's confusing."

[UI expert] "If off-shore is not for everyone, then make it much clearer... its used for generating very much energy... then the off-shore is the way for you to go. So I can dismiss it. Now I have to go there and check it out before getting to know this."

[UI expert] "That is the problem with your way of using the menu and the submenu. I don't know where I am in the process... now when I believe I am done, there is suddenly more to come!"

PRACTICE OFFSHORE

[UI expert] "The plant still looks huge for me. Maybe make the picture more 3D, like in the home page. Okay, I would still give tips, change this and change that. That could help me/guide me what to do. I wouldn't have a wizard here, so that's right. I didn't know this was going to happen, but this is really a surprise to me. By putting it to the right...on the last page... I was assuming I was going to go through a 5-step process again. So I would not call this practice. I am practicing the whole time, so that weird anyway. I would call it complete or something."

[UI expert] "You don't have a clear navigation... I don't know how to get back here... you continue to delete my sub-navigation. A general user won't get this. I have to first go here (to practice) in order to go here (to Offshore)... I barely get it and I am good at this... then imagine other people wont get it at all!"

[UI expert] "It is difficult because from one page, practice you have a wizard, and then off-shore/... and its all part of practice... but that is not clear to me. There should be an always visible sub-menu below each main menu element."

PRE-ASSESS

[Hotelier 1] "I would say this is okay... to appropriate range... yeah it's clear."

[Hotelier 1] "And I would click further... of course on Calculate area..."

[Hotelier 1] "The colors around the coast here got me in trouble. I don't quite understand what they mean/communicate...the red... and the blue... how does it work?"

[Hotelier 1] "Okay. Its clear, locations yeah and pipes"

[Hotelier 2] "I would add my location using either the grid or a name..."

[Hotelier 2] "I don't totally get what Calculate area means, but I would click it..."

[Hotelier 2] "The colors, okay – they tell me the best location for the plant, okay I understood. So it's got to do with location, distance to deep water..."

[Contractor] "How did it calculate where possible/not?"

[UI expert] "Scale adequate? This means? I don't know. I don't get it> I can't see where this level is? I don't get it. So this... is not already good? Then why is it green? The scale shouldn't be green when it is not good, so it should start in red, go yellow and end green. The text doesn't help me.... Engineer language. Zoom in within range within calculation?"

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[UI expert] "Zoom in...what, I don't get it. ahh it is two states! That is not clear. There should be a title above the bar. And below it you should have what I have to do to improve it."

[UI expert] "Scale 1:10... also add km. So I get it right.

Maybe include the zoom level on the zoom tool in the map instead. There are more map providers in the world. Use a different one that can be modified. There is one of them allowing for 2000 maps/day for free for an account, for free. Google maps is 200.000 maps/day."

[UI expert] "Its not terms of condition... terms of service or conditions. And you should be able to click it, if you want to read them. Make the text underlined. That should be possible."

[UI expert] "Also with modern browsers, you can retrieve the location directly from the browser... so the user doesn't have to do anything. You can also use that for the first mapping page. "

[UI expert] "I don't know what calculate area means> what will happen? It doesn't mean anything to me. What are you going to calculate? Use a better title and include good explanations. And also if the user have to wait for 15 seconds, that is okay, but only if the user is informed properly... You should include that a status indicator."

[UI expert] So, what does this mean here... here it is not a status thing anymore? Now the text looks like a title and sub-title? I don't get your use of status indicators. They look like just text placed somewhere. That's not so good. Maybe in the previous page also include a check-box for if you are interested in off-shore and/or on-shore. Since a lot of people will probably not be interested in off-shore, then why always include it. "

[UI expert] "Suitability for an OTEC plant - that should be a title, written in the top. Make it clearer. Like BAM!"

[UI expert] "For the colors around the island, it's a bit hard to see for some places... is it good or bad. And I want to be able to hover over and get more information, how good is it or how bad? I also want to be able to zoom further here. Use green instead of blue. So you go from green to yellow to red. That's clearer. "

[UI expert] "Specify location? What? I just did that... Aruba right. So what should I do next? Click on the start all over button... ahh. No that's not what I want to do. And since you don't want people to do that, you want them to move on right - so make this button less obvious. Make it a back button and put it to the left. So, I would like to continue, but it is grayed out. I would still try to press it... No I don't know what to do next..."

[UI expert] "I don't pay attention to the instruction text in the top anymore. I only look here in the bottom, so I didn't see it change. Colour... British English suddenly? Indicates suitability, I think it should be. Hatched... that sentence doesn't mean anything. And maybe you should use a color instead of hatched..."

And it doesn't talk about offshore only on-shore in this text. So anyway, this page is not good. I need to specify location. I would start all over... and then I don't know. I don't get that I have to click on the map."

[UI expert] "Huh... Yeah there is some interaction missing here. I don't know. This is really not as thought through as the other pages. There is like help text missing, I don't understand how it works. Do I hover over with my mouse... will something happen... will the mouse turn into a circle or something? How do I know I can continue to place circles? That interaction is missing. And the GPS coordinates... well that would be clearer to describe by the name of the location or so. It is so accurate... that it is probably more a specific spot on the island?"

[UI expert] "It would be nice to be able to get some information about these spots... when I hover over them.

So I get some help in choosing one of the spots. In general I would use a lot of hover overs to get indications of why this or that is."

[UI expert] "Yeah... this thing needs more work. It is not finished yet.
And there are two continue buttons. I wouldn't even see the upper one. I don't even know what it does. Why is it suddenly there...it was never there? And its location would make me think it has to do with some main navigation here..."

MY-PROJECT

[Hotelier 1] "I think it is clear now that this is for the location I chose."
"The plant variables... yeah I can see that they would answer my questions... Okay 8 years of payback... which isn't bad actually"

[Hotelier 1] "Seven years seem to be the standard/optimum that people here generally are happy with and can live with... no problem at all."

[Hotelier 1] "For the units I would use kWh for OTEC and no. rooms for SWAC... but maybe you should also add British units to this list (Btu/h)."

[Hotelier 2] "So what I see here is... that the location I chose have been evaluated by the model... that the variables are good..."

[Hotelier 2] "I would start changing the variables and fill in my numbers... of rooms etc."

[Hotelier 2] "Yeah the numbers you present are logical. Everything I would need is here... in order for me to know if I should move on with a feasibility study or not"

[Hotelier 2] "For us it's most important to reduce our electricity bills, but an reduction of CO2 emissions is also a pretty cool motivation. We have a green certificate, so the environment is part of our business values and also very important. I am also the chair of Greenpeace..."

[Hotelier 2] "The assumptions, yeah. Nice... Maybe include an explanation of the electricity prices and some information on revenue potential in case of surplus of energy..."

[Hotelier 2] "We talk in kW or electricity and tons of cooling..."

[Contractor] "Ahh, so this is for my local area... yeah clear, good. Looks perfect... it includes the basics... What the infrastructure is going to cost, payoff time... what revenue we are looking at..."

[Contractor] "As a contractor it is also very interesting to know about maintenance/operating costs... ah it is here under assumptions, exactly. An you can change the numbers... wow."

[Contractor] "Even from a builder's perspective, these assumptions are very important for me; these are interesting numbers to play with..."

[UI expert] "It is hard to connect this to the location I just filled in. It would be nice to show a little map here or something and with the name of my chosen location... To more clearly indicate where we are."

[UI expert] "I do understand that this is for my own location and not as before for practicing. For the instruc-

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tions in the top... tailor your specifications... I would just use these yellow boxes, like – tailor your specifications! That makes more sense to me."

[UI expert] "For saving I shouldn't have to leave this page. And I feel that if I click on that button it will take me to the next page, which I probably am..."

[UI expert] "Ahh, I see now there is some location data here... latitude/longitude. I think that is too technical for an average hotel owner... And furthermore they would then have to remember two numbers? Show a little map instead. That'll make everybody happy."

[UI expert] "... Add maintenance costs? ... ahh it is here under assumptions. This is pretty cool, so I can tailor everything to my own factors... But what's that gray, thick thing on the right side? I hope its not some kind of accordion or something...what the fuck is that...? Noo, just use a scroll bar! Don't start inventing everything, you already have a weird website – just use a scrollbar, and everything will be fine. This feels very Microsoft Windows 3.11. Okay, if your idea is to separate the right and left side... I would use more titles: Basic assumptions for the left part, and a title Advanced assumptions for the right part. And for the right side I would still have a scroll bar instead of these arrows that nobody understands. "

[UI expert] "Apply changes, and reset. That's logical, sure. But they are weirdly located when you also use the advanced settings because they seem to only apply to the basic ones. So you've got an issue there. "

[UI expert] "Units, mmm yeah. You use check boxes here while it should really be a radio buttons. "

PROJECT SUMMARY

[UI expert] "I thought we already were at sort of a project summary. So again the sub-navigation is totally gone here... You have a problem here. You don't give me any structure. Maybe after going here, there might be another 15 sub-pages I can go to. I feel I have no control. You never tell me where I am in the whole page structure, that's why you need sub-navigation."

[UI expert] "And now the buttons to go to the next pages are in a new location. That's not really logical. "

[UI expert] "Nice details... I don't know what is this whole action plan thing? I would like a nice pdf printout here you know, with a generated map with my location and what I can do with it etc."

REGISTER/PROFILE

[Hotelier 1] "Yeah, registering at this stage wouldn't discourage me at all... "

[UI expert] "I wouldn't use user names. That's ridiculous. Skip the whole user name. Why do you need it for, what are you going to do with it? I would use a name. First name, last name, etc. And then... yeah, hehe these buttons are really weird. I would say these buttons should be below where you fill it out because that's super standard and deviating from the standard does not help the usability. Now it looks like if I click on log-in that it will log me in, but it doesn't – it's a different page. So you need to create more levels of buttons. There is basically two buttons here the whole time. And also you can use text sometimes as well. Only using buttons when you actually want people to click that one, to really make the buttons a call to action when needed. Now you make all buttons equally important, while really only one of them is most important – to create profile, right. You need a confirm button. The wording, create profile might be wrong, and an arrow really tells me I will go to the next page. As it is now, it really feels like, this information I filled in will be neglected by going to the next page. More levels of importance is needed in the buttons."

[UI expert] “[Edit profile] Can you also edit your password? Or I guess since you couldn’t fill it in it is auto-generated? Which is also weird. This is not finished, because I don’t really feel like...”

[UI expert] “And on the next page... log-in turned to profile... so where do I log-out. I shouldn’t have to go to my profile to log out. But yeah, you maybe don’t want people to log-out anyway... or. So maybe if you hover over profile you would get a logout option or something. You need an actual log-out button and it is illogical that it is under profile.”

PROJECT LOG

[Hotelier 2] “So I see we have three given locations and different projects, possible configurations to explore...”

[UI expert] “There is so much text in the top again. ... to the community map? What, nooo! You are doing it again. Even in project log, there is like... more pages. Ohhhh, if you go into this closet there is like Narniaaaa! It’s like, never ends. It’s impossible to assess the scope of this project by only looking at the menu and clicking around. Why do you have a community map anyway? That is not clear to me at this stage.”

[UI expert] “Okay, so select doesn’t mean anything. So I can do two things here... check it, and something green? Hmm, community map. Okay. Yeah. I would probably not put the community map explanation here, but rather where you see it. And I still don’t know what the check mark in select means, this is not clear. It’s not logical to assume I will understand that checking is linked to getting a report. Maybe also look at the texts on the buttons to better link it to the selection. No there is no link, since you don’t even use the same word. But I wouldn’t even do it in this view. I wouldn’t make this some super user view... I would make this page simply an overview of what you have. Don’t make users select here. Just have a request free report from Bluerise, and there you can select for which project(s) you want the report. So separate it in two steps. That would make it less confusing. If you would keep it like this, don’t call it select. It doesn’t mean anything. I would maybe call the two columns in the select column, report and the second map... but the problem is that that would take way too much space.”

[UI expert] “The projects and locations, okay they still don’t really look like buttons, I am not sure I would realize I could click them to go back. I would make buttons in the bottom of the table (one in each of the columns) where you can click to create new location or a new project, like a plus button or something, to a specific location. Or something... This would be a logical place to be able to add or remove my projects. But here it is not clear to me how I would do that.”

[UI expert] “Enter publish code... I have no idea what that means? What is that?! Why would I have to wait for publish code from Bluerise? Why? This shouldn’t have to be the bother of the user. Bluerise should simply get an email every time a new project is added to the Community map and in that email there is a little link saying: delete this entry, so they they can decide to delete it if not appropriate/serious enough. If you really want to make sure no user will add anything to the community page, make sure they actually like now having to wait for confirmation form Bluerise.”

COMMUNITY MAP

[Hotelier 1] Yeah, linking me to other projects... yeah, of course. And I want to see the payback periods etc. That would be essential... you don’t want to be the Ginny pig...”

[Contractor] “Will all the data that I saw before be visible also here [if I add my project to the map]?... I don’t want to share all my numbers... profit etc. If that’s the case I would be hesitant to post anything!”

[Contractor] “I like the idea, but who is responsible/ will operate it then? Who takes care of the maintenance?”

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Who fix it when it breaks? And who pays for that? What if we are three parties in a joint project, and when something goes wrong only two can pay?"

[Contractor] "The concept of the community pipe is brilliant, but these questions should be considered..."

[Contractor] "It's a good way to get these people together."

[Contractor] "It would be interesting to see Bluerise as the 3d party and the utility company that operates and own the plant and then they sell the service to the hotels... the hotels know nothing about these things, but they still want the service! I see this the way to get 3-4 people together – for that you need someone to operate the whole thing, so that everyone feels secure!! Otherwise it will just become operationally and legally to complex..."

[UI expert] "I might have more than one published projects, right? And then what... can I click on the spots or? How do I show interest? "

[UI expert] "I think this is really total feature... ahh. It means that the client just keeps pushing extra nice little features, for no good reason. Is this useful?

This is beautiful it's a good idea but, is it needed... you don't really need a website for doing this right? I think this is very cool, but it shouldn't be the first thing built. It is simply added value, a network effect. You won't get anything out of it before having a lot of active users. "

[UI expert] "How does this work, how do I connect/join two projects? Okay, yeah nice. What does the square do... Register interest... what happens then? That is not really clear."

[UI expert] "You really want people to register interest, but it seems like you just as much want them to go back. They both look the same."

[Hotelier 1] "As being part of the hotel industry I see this being of high interest... We are used to partnering up. The cooperation would be there, that's not a problem. We are all in the same boat"

[Hotelier 1] "It is also especially useful since hotels tend to be located in focused areas like here on St. Lucia."

[Hotelier 2] "Okay, so this gives me a possibility to see what projects are happening around me... I would look at the projects next to me on the coast...yeah I would be very eager to do it..."

[Hotelier 2] "... A joint venture would be very interesting, especially if there would be other parties to help drive the project and help with the investment etc. such as a cooperation with for example the government or an outside stakeholder to be the driving force...very good!"

The Project Builder/Finance Track

HOME/Contractor Information/Financer information

[Contractor] "Okay clear enough!"

[Financer] "Okay, I guess in the text you want to be very clear in your thinking what kind of investor we are talking about..."

[Financer] "Make sure you know your exact audience!"

[Financer] "...Our aim is to connect interested parties and get OTEC on the road to success – you can't say that... because it depends on who it is. This wouldn't work for a lender who is only concerned about cash-flow... basically the four C's: Character, Capacity, Capital and Collateral."

[Financer] "I wouldn't call it investor – that is the hotel owner, but rather finance..."

REGISTER/PROFILE

[Contractor] "Specify contractor... say trade contractor... and actually this is the same as a project management firm."

[Contractor] "What is the intent of this? Who will see this? That is not clear and it might influence people's willingness to share information..."

[UI expert] "Here you create a profile by adding a password... I guess that should be the same in both tracks."

ACTIVITY SCAN

[Contractor] "Okay, its clear..."

[Contractor] "The follow this project – button, I would see that as a way for me to get feedback on it, what happens, it's developments. I want to hear if anything happens with this project... and pressing the button wouldn't make me feel committed to anything... that's how I think most contractors would interpret this."

[Contractor] "You've done as much as you need to – this communication tool get people to start talking!"

General comments

Participant group: Hotel managers.

[Hotelier 1] "Here on St. Lucia the electricity prices are high, and my hotel includes many large properties... We are already committed to solar energy, and I would say there is a great interest for these kinds of technologies..."

[Hotelier 1] "Our electricity process varies a lot depending on the price of oil... but I think we generally pay 40 USD cents /kWh... It more than doubled in the last 10 years... so that is 150.000 USD/month in electricity costs for my 330 rooms."

[Hotelier 1] "You would need a lot of permissions, planning permits etc... that will be a challenge for these kind of projects"

[Hotelier 1] "I definitely see this tool as being very useful, and especially the idea that a few hotels can go together and cooperate. I think there would be great interest for that."

[Hotelier 1] "It's good! An excellent tool, You've done great!"

[Hotelier 1] "The critical part is what's needed to get it working and the payback periods."

APPENDIX 03: USER TEST TRANSCRIPT

[Hotelier 2] "We have per room air-conditioners, I see that as a barrier to implementation. I would first have to get a centralized system..."

[Hotelier 2] "We use quite a bit of energy, but I still see potential in selling electricity to the grid...it's not difficult to sell to the grid on Barbados...that is definitely what we see as a potential in the future... so definitely a realistic possibility."

[Hotelier 2] "We pay 23-24 USD cent/kWh including demand and fuel charges, so it's expensive enough. We have a yearly goal to reduce our electricity demand with 10%."

[Hotelier 2] "You're on the right track! I would like to go though it more in detail... and especially when it's interactive so you really can play with it for my specific location..."

[Hotelier 2] "Of course I think it's a phenomenal tool – it would be very useful for doing an initial feasibility study..."

[Hotelier 2] "The tool might also be interesting for Ice production companies... we have 4 centralized ice factories on the island."

Participant group: Project Builders.

[Contractor] "I like it! It's an educational process... keeping people up to speed. In these things I think you have to learn by doing... it is a tricky road. These pipes are very expensive and where will the pipe run? Since these projects are not (yet) regularly done... so I don't know."

[Contractor] "It would be a good idea to use case studies even in the tool. Post case studies so people can learn from earlier projects, problems and how they were solved... This also to motivate people, Ahh if it can be done there, we can do it too! That would be a useful element to include in the tool."

Participant group: Financers

[Financer] "It's all about who is your exact audience. And don't make this tool work for too many different target groups... that will only water out the idea...and make it less useful."

[Financer] "I am thinking, there could be a use for it... if a hotel already have the technology installed and a person buying it would be interested in knowing if it's worth paying for..."

[Financer] "Lenders are generally not going to use this! They wouldn't spend the time on it. They only have two questions, how much money do you need and when will I get it back! The main value of the tool is for the project owners – they can really make use of the databases..."

[Financer] "If the technology will help lowering the hotels operating costs the bank will care about this and be interested..."

[Financer] "For the finance sector it would be a very selected and small market... A bank would probably have a traditional way of looking at it. But a few specialized lenders who focus on lending money to these kinds of projects... And there are like, maybe 10 of them in total in Europe. For this small market there would be an interest in this kind of tool... they would care about it and use it. But this is a totally different group."

[Financer] "It is the hotels responsibility to prove to the lending institution if it will be worth it... They might bring the tool into play"

[Financer] "There is this saying... Banks don't lend money to the ones that need it! They base their decisions on current and past operating financials – not on if the technology at stake is good or bad. Therefore they won't spend a whole lot of time on the technology."

[Financer] "There is also a problem with conflicting interests here. The tool would be biased, since it is Bluerise website. I therefore see it having very little use for investors and specifically for lenders. Banks will be suspect in using Bluerise software for evaluating. They look at current cash flows and ability to pay back the money no matter what. The tool won't make any bank decide to invest."

[Financer] "So, make it independent/not biased. Then a bank might be willing to pay for the service and use it for verification... before they move on with there standard procedures..."

[Financer] "But I love it, it looks really cool. And it is good for marketing purpose and for Bluerise, but yeah, you'd have to find a way to market it... something you pay for, where you make your own evaluation... yeah it might work."

Participant group: UI experts.

[UI expert] "I think in general it has come a long way. It's really nice. It looks good.

It is a huge project to implement. It is really huge and so much in it. This is really the kind of website where you would pay 30.000-60.000 EUR to make it... and it would take a lot of time. It would take maybe 4 months..."

[UI expert] "The whole experience for me as a user that I have no idea what the size of this project is when I get started. I have no idea how many pages you were going to show me. That was a constant surprise... ohh there is another page!"

[UI expert] "[The sub navigation] It's not good now, but it is completely fixable. Use a sub-navigation with all items always visible. It should be a row of elements below the main menu. The main menu is always there, but the sub-menu changes for whatever main menu item is active. It could also be built into the main menu, like when you hover over an element there is a list under it with the submenu, same thing but a different style."

APPENDIX 04: SENSITIZING PACKAGE

USER TEST - Information and preparation materials

Project: Initial feasibility study for OTEC & SWAC in the Caribbean region.

Introduction project team and project goal

Introduction technology

Test/meeting agenda

Name participant

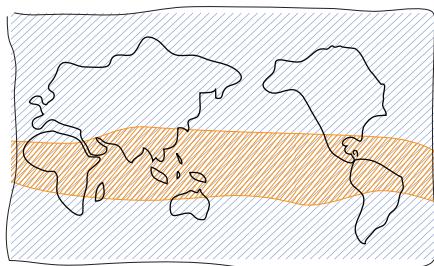
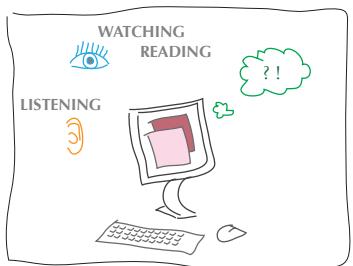
Title, location.



Dear Mr./Ms. [Name Participant],

We are so happy that you want to help us and invest your time in supporting our user research! Your input and experience will be of high value to the project. It will enable us to adapt and improve our solutions to better fit your and other user's needs and wishes.

Please feel free to contact us at any moment with questions or remarks you might have about the project. We look forward to the interview/conversation on [DATE].



Introduction project team

The design team is comprised of five graduate level students from the Faculty of Industrial Design at the Technical University of Delft. Our team shares a common passion for the importance and imperative nature of sustainable energy development. We believe that industrial design engineering has a significant role to play in this development, through the combination of user understanding and technical knowledge. The team is supported by our academic partner, Technical University of Delft, and by our technology partner, Bluerise.



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Introduction project goal

The project aims to facilitate and progress the dissemination of ocean thermal energy in all of its guises within the target area, the Caribbean. We see a disconnect between the technology providers and the interested parties on the ground. Our design team is working on a 'tool' to bridge this gap. This 'tool' is an online first phase feasibility tool for the OTEC, SWAC and Ecopark technologies. The tool will provide, for example, a way for a Caribbean Hotel owner to quickly and accurately assess the potential cost, return, energy efficiency savings, and payback period of an OTEC/SWAC project, specific to his/her local geographical and economical conditions.

The design vision for the web tool has 3 different elements:

- Firstly, the tool will provide an optional education platform where the un-informed user can learn about OTEC and SWAC technologies, understand the context and grasp its energy efficiency potential.
- Secondly and most importantly, the tool will take inputs from the user that relay location specific data, and combine these inputs with databases in order to generate an assessment of feasibility for that location.
- Thirdly, the results of the feasibility study will be presented, unbiased and clearly, to the user, so that he/she can make a first estimate of the success of OTEC/SWAC implementation.

The project is currently in the concept development phase, where user research is being conducted in order to better the interaction and overall design of the tool.

APPENDIX 04: SENSITIZING PACKAGE

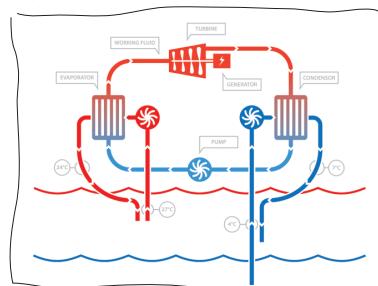
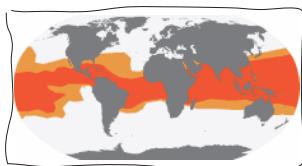
Introduction technology

OTEC

Ocean Thermal Energy Conversion (OTEC) is a marine renewable energy technology that harnesses the solar energy absorbed by the oceans. OTEC generates electricity by exchanging heat with the warm water from the ocean surface and with the cold water from the deep ocean. The exchanged heat drives a Rankine Cycle, which converts it to electricity. The technology is viable primarily in equatorial areas where the year-round temperature differential is at least 20 degrees Celsius.

One of the main advantages when comparing OTEC to other renewables, such as wind and solar energy, is the fact that OTEC is a baseload source, available day and night. This is a big advantage for tropical islands that typically have small, isolated, electric grids, not capable of handling a large share of intermittent power.

The potential of OTEC is vast. One square meter of Ocean surface area on average receives about 175 watts of solar irradiation. The total amount of globally received solar power is therefore about 90 petawatts. This is over 6,000 times the total global energy usage.



Introduction technology

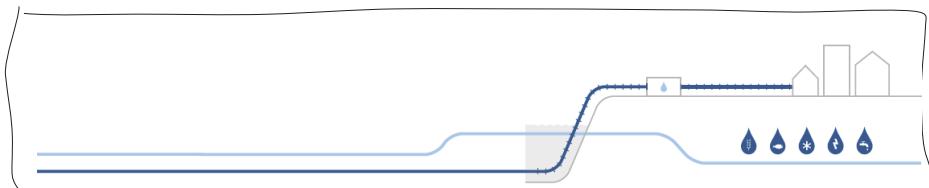
SWAC

Seawater Air Conditioning (SWAC) works by replacing the energy intensive electrical air conditioning system of a building or a group of buildings directly with the cold water from the deeper ocean. The cold seawater is fed through a heat exchanger that cools the fresh water of the air-conditioning for buildings, or other facilities.

Taking advantage of available cold deep seawater for air conditioning enables significant energy savings up to 90%. Therefore, SWAC is a very attractive technology with a high capital ROI.

SWAC gives utilities the possibility to offer a new product to their customers. Cooling can be distributed and metered to individual users via district cooling systems.

SWAC is not technically complex nor does it involve a high technical risk. It is established technology being applied in an innovative way. All the components necessary exist and have been operated under the conditions required.



Test/Meeting agenda

We feel it is important that, prior to our conversation, we make you aware of the general scope of the test/discussion.

④ Test scope and planning

We hope to have an informal discussion with you about the tool and to gain insights by hearing your view on what we are developing. As a potential future user of this tool you are the expert and we look very much forward to hearing your opinions.

We will start by a very short introduction of (a) who we are, our project and the tool we are developing and (b) you and your work at [title, location].

At this stage the tool is not yet implemented, we will therefore show you the tool layout via a pdf on screen during our meeting. You will be able to give feedback and comments on the concept, the information it provides and its design.

④ Again Thank You for your participation and interest. We look forward talking to you on [date].

APPENDIX 05: MARKET INTRODUCTION

PROMOTION TOUR DATES

Mar 07

CeBit

Tue, Mar 05 2013 - Sa, Mar 09, 2013

Hannover, Germany

<http://www.cebit.de/>

April 10

International Convention Marine Renewable Energy

Wed, Apr 10, 2013 - Thu, Apr 11, 2013

Brest, France

<http://www.thetis-emr.com/en/>

Jun 09

32nd international conference on Ocean, Offshore and Arctic Engineering

Sun, Jun 9, 2013 - Fri, Jun 14, 2013

Nantes, France

<http://www.ooae.org/omae-2013/>

Jun 10

Energy Ocean International

Mon, Jun 10, 2013 - Wed, Jun 12, 2013

Providence/Warwick, RI USA

<http://www.energyocean.com/>

Oceans ,13 MTS/IEEE Bergen

Mon, Jun 10, 2013 - Thu, Jun 13, 2013

Bergen, Norway

<http://www.oceans13mtsieeebergen.org/main.cfm?EID=27>

Sep 23

Oceans ,13 MTS/IEEE San Diego

Mon, Sep 23, 2013 - Fri, Sep 27, 2013

San Diego, USA

<http://www.oceans13mtsieeesandiego.org/>

CODE_n Competition

<https://vimeo.com/55052898>



