



---

**Cozinha da Madeira Website: The online  
touchpoint for a sustainability oriented Service of  
Madeira Island**

---

**Joana Gonçalves Pereira**

(Licenciada em Engenharia Informática pela Universidade da Madeira)

Tese Submetida à Universidade da Madeira para a  
Obtenção do Grau de Mestre em Engenharia Informática

Funchal – Portugal

Fevereiro 2014



*Advisor:*

Valentina Nisi, PhD

Assistant Professor

*Co-Advisor:*

Nuno Nunes, PhD

Associate Professor

---

# ABSTRACT

---

Over the past several years technology has been evolving in a way that it has become crucial for most businesses and companies to have interactive technology enabled touchpoints available online. Such interactive touchpoints can be developed as mobile application, webpages, or even through social networks. In the end such touchpoints will most surely represent the most easily reachable and marketable side of the business.

Today selling a product alone is no longer enough to make consumers satisfied and complete, businesses and business models are changing. Increasingly, companies are choosing to not just sell products but to combine both sale and service. These service-based approaches will provide the client with a unique and personalized experience of what the company is selling. By selling a service the company transmits values that are more complex than the simple selling of a product. A service is something immaterial, happens over time and exists in the moment of the delivery.

When conceiving and designing services, the use of the new technologies becomes a crucial step in order to craft touchpoints that facilitate the whole experience cycle of the service, from attracting, orienting, interacting and retaining the client, as well as providing later support to the consumer to advocate for the service itself.

This thesis reports on the design and implementation of the online touchpoint of Cozinha da Madeira, which is a service designed to support tourism, specifically promoting the discovery of tradition and landscapes in the island of Madeira. Such touchpoint developed in the form of a website, embodies completely or partially various stages of the Service Experience cycle, from attracting and connecting, orienting, interacting as well as retaining and advocating. Through this thesis we will describe the design and implementation of such touchpoint as well as the evaluation and possible future implications.

---

# KEYWORDS

---

Service Design

Sustainability

Biological ingredients

Sustainable Tourism

Sustainable Agriculture

---

# RESUMO

---

Ao longo dos anos a tecnologia tem vindo a evoluir de uma forma que se tornou crucial a todos os negócios e empresas a terem um ponto de contacto interativo disponível online. Estes pontos de contacto interativos podem ser desenvolvidos como forma de aplicação móvel, um site ou até através das redes sociais. No final, estes pontos de contacto vão certamente representar o lado mais acessível e comercial do negócio.

Hoje a venda de um produto por si só já não é o suficiente para manter os consumidores completos e satisfeitos, as empresas e modelos de negócio estão mudando. Cada vez mais as empresas optam não apenas por vender um produto, mas sim combinar a venda com um serviço. Estas abordagens baseadas em serviços irá fornecer ao cliente uma experiência única e personalizada do que a empresa está vendendo. Ao vender serviços a empresa transmite valores muito mais complexos do que a simples venda de um produto. Um serviço é algo imaterial, acontece ao longo do tempo e existe no momento da entrega.

Ao conceber e desenhar serviços, o uso de novas tecnologias torna-se um passo crucial de forma a criar pontos de contacto que facilitem todo o ciclo de experiência do serviço, desde atrair, orientar, interagir e reter o cliente, bem como providenciar apoio ao cliente para mais tarde recomendar o serviço.

Esta tese reporta o desenho e implementação do ponto de contacto online da Cozinha da Madeira, sendo que é um serviço destinado a apoiar o turismo, promovendo especificamente a

descoberta de tradições e as paisagens da Ilha da Madeira. Tal ponto de contacto desenvolvido em forma de site incorpora totalmente ou parcialmente as várias fases do ciclo de experiência do serviço, desde atrair, conectar, orientar, interagir, bem como reter e proteger. Através desta tese vamos descrever o desenho e implementação do ponto de contacto desenvolvido em forma de site, como também a sua avaliação e possíveis implicações futuras.

---

## **PALAVRAS CHAVE**

---

Desenho de Serviço

Sustentabilidade

Turismo Sustentável

Agricultura Sustentável

Ingredientes biológicos

---

# ACKNOWLEDGEMENTS

---

First of all I want to thank, Professor Valentina Nisi and Nuno Nunes for all the support and guidance through this process. Without them I couldn't have finished this stage of my life. All feedback received was crucial to successfully complete this thesis. Also want to thank Miguel Caldeira for sharing his experience in design with me, guiding me into the best practices, and for helping me in the needed design.

A big thank you to Ruben Gouveia, José Rodrigues and Rui Alves for all the support given and patience in help every time I had some doubt, thank you so much for your availability.

To my family, especially my father and mother, to give me this opportunity to finished this stage of my academic life.

To all participants that work with me in the field study: Susana, Abilio, Stephen, Nuno, Sónia, Mauro, Ray and Susan, my thanks for your help.

To Amanda Myers and Mayur Karnik a big thanks for helping me in reviewing my English grammar.

To all my friends that came along with me in this stage of my life, especially César Dias and Catarina Ramos. Sincere thanks to both of you, for patiently supporting me, even when I was unbearable.

---

# TABLE OF CONTENTS

---

1. Introduction	13
1.1. Motivation.....	15
1.2. Objectives .....	17
1.3. Thesis structure .....	17
2. Literature Review	18
2.1. Sustainable tourism .....	19
2.2. Sustainable agriculture.....	20
2.3. Related Platforms .....	23
2.4. Technologies Used .....	33
3. Designing a SustainableService - Cozinha da Madeira	35
3.1. Customer Journey and Service Touchpoints.....	35
3.1.1. "Cozinha da Madeira" Customer and Food Journey.....	36
3.2. Experience Cycle and Touchpoint Analysis.....	39
3.3. Service Blueprint .....	41
3.3.1. Supplier Searching stage.....	41
3.3.2. Chef Searching stage.....	43
3.3.3. Participants Experience stage.....	45
4. Web-Application(Cozinha da Madeira)	47
4.1. Modeling .....	47
4.1.1. Requirements.....	47
4.1.1.1. Functional Requirements (FR)	47
4.1.1.2. Non-Functional Requirements (NFR)	48
4.1.2. Use Cases .....	49
4.1.3. Essential Use Case and Task Flows .....	51
4.1.4. Wisdom Model.....	52
4.2. Implementation Aspects .....	53
4.2.1. Model View Controller Pattern.....	53
4.2.2. Entity Relationship Diagram .....	55
4.2.2.1. Relational Model	56
4.2.3. Practical Example of MVC Pattern Using Codeigniter.....	56
4.2.3.1. Controller	56
4.2.3.2. Model	58
4.2.3.3. View	59
4.2.4. Libraries.....	60
4.2.5. Plug-ins.....	60
4.3. Web-application Design (Cozinha da Madeira) .....	61
4.3.1. Logo Concept.....	61
4.3.2. Graphic Design Decisions.....	61
4.3.2.1. Home	62
4.3.2.2. Recipes	64
4.3.2.3. Journeys	67
4.3.2.4. Ingredients	69
5. Study	71
5.1. Concerns and Goals .....	72
5.2. Participants .....	74
5.3. Method .....	75
5.4. Study 1: Usability Tests .....	77
5.4.1. Findings.....	78

5.4.1.1. General Tasks Results	79
5.4.1.2. Chef Tasks Results	82
5.4.1.3. Supplier Tasks Results	88
5.4.1.4. Participants Tasks Results	90
5.4.2. Conclusions .....	93
5.5. Study 2 : Survey .....	93
5.5.1. Findings .....	93
6. Conclusions and future work	96
References	99
7. Appendices	105
<hr/>	
7.1. Appendix A - Blueprint.....	105
7.1.1. Blueprint - Supplier Searching Stage.....	105
7.1.2. Blueprint - Chef Searching Stage and Participant Searching Stage.....	106
7.2. Appendix B - Use Cases Diagram .....	107
7.3. Appendix C - Essential Use Case and Task Flows .....	109
7.4. Appendix D - Wisdom Model.....	111
7.5. Appendix E - Entity Relationship diagram .....	113
7.6. Appendix F - Database - Relational Model .....	115
7.7. Appendix G-Low Fidelity Prototype .....	117
7.7.1. Home Page - Prototype .....	117
7.7.2. Recipes Page - Prototype.....	118
7.7.3. Journeys Page - Prototype .....	119
7.7.4. Ingredients Page - Prototype.....	120
7.7.5. About Us - Prototype .....	121
7.8. Appendix H - High Fidelity Prototype .....	122
7.8.1. Anonymous User - Screen Shoots .....	122
7.8.2. Role Chef - Screen Shoots .....	130
7.8.3. Role Supplier - Screen Shoots.....	134
7.8.4. Role Participant - Screen Shoot .....	136
7.8.5. Role Admin - Screen Shoots .....	138
7.9. Appendix I - Affinity Map .....	143
7.10. Appendix J - Customer Journey MaP.....	145
7.11. Appendix K - Poster "Cozinha da Madeira" .....	147

---

---

# LIST OF FIGURES

---

Fig. 1 - Slow food movement - Homepage [26].....	22
Fig. 2 - WWoof Portugal- Homepage [34].....	24
Fig. 3 - WWoof Portugal - Hosts (list view) [35].....	25
Fig. 4 - WWoof Portugal - Hosts (map view) [35].....	25
Fig. 5 - WWoof Portugal - Host Information.....	26
Fig. 6 - WWoof Portugal - Join Wwoofers [36].....	26
Fig. 7 - WWoof Portugal - Join Host Farm [36].....	27
Fig. 8 - Homepage of the website FresBio [38].....	28
Fig. 9 - Freshbio, order form page [39].....	29
Fig. 10 - Tukxi website [40].....	30
Fig. 11 - Up Mountain Madeira - Lack of coherence between pages [41].....	32
Fig. 12 - Recipe ingredients leading to customer journey.....	38
Fig. 13 - Customer Journey Map.....	39
Fig. 14 - Partial image of the blueprint - Supplier Searching Stage [1].....	42
Fig. 15 - Image number 1 of the partial blueprint - Chef Searching Stage [1].....	43
Fig. 16 - Image number 2 of the partial blueprint - Chef Searching Stage.....	44
Fig. 17 - Image number 2 of the partial blueprint - Participant Searching Stage.....	45
Fig. 18 - Image number 2 of the partial blueprint - Participant Searching Stage.....	46
Fig. 19 - Use cases diagram.....	50
Fig. 20 - Essential Use Case and Task Flows.....	51
Fig. 21 - Wisdom Model diagram.....	52
Fig. 22 - Web Application abstract architecture.....	54
Fig. 23 - Database : Entity Relationship Diagram.....	55
Fig. 24 - Database: Relational Model.....	56
Fig. 25 - A snippet of code of MY_controller class.....	57
Fig. 26 - A snippet of code from a function within the ingredients controller.....	57
Fig. 27 - A function accessible to all controllers.....	58
Fig. 28 - A snippet of code from the ingredient model.....	59
Fig. 29 - A snippet of code of active record mechanism used in Codeigniter.....	59
Fig. 30 - Template used to manipulate the views.....	59
Fig. 31 - A snippet of code within one of the HTML files.....	60
Fig. 32 - Logotype of the CdM service.....	61
Fig. 33 - Homepage without user logged in.....	62
Fig. 34 - Homepage with a user logged in.....	63
Fig. 35 - Recipe page without login.....	64
Fig. 36 - Add recipe button.....	65
Fig. 37 - Recipe details page.....	65
Fig. 38 - Proposing a journey by choosing the recipes.....	66
Fig. 39 - Journey page.....	67
Fig. 40 - Journey details.....	68
Fig. 41 - Example of a journey with a logged user.....	69
Fig. 42 - Example of a journey with a non-register user.....	69
Fig. 43 - Ingredients page with a supplier logged in.....	70
Fig. 44 - Seasonal products page.....	71
Fig. 45 - Presented categories in the quantitative data analysis.....	78

Fig. 46 - Quantitative results for the general tasks .....	79
Fig. 47 - Partial view of the interface <b>before</b> task #1 evaluation.....	80
Fig. 48 - Partial view of the interface <b>after</b> task #1 evaluation.....	80
Fig. 49 - Partial view of the interface before task #3 evaluation .....	82
Fig. 50 - Partial view of the interface after task #3 evaluation .....	82
Fig. 51 - Continuation of the quantitative analysis for the chef tasks .....	83
Fig. 52 - Web element before the task#6 evaluation.....	84
Fig. 53 - Web element after the task#6 evaluation.....	84
Fig. 54 - Web element before the task#7 evaluation.....	85
Fig. 55 - Web element after the task#7 evaluation.....	85
Fig. 56 - Web elements before the task#8 evaluation .....	85
Fig. 57 - Web elements after the task#8.....	86
Fig. 58 - Partial view of the interface after task#9 evaluation.....	86
Fig. 59 - Partial view of the interface before task #10 evaluation.....	87
Fig. 60 - Partial view of the interface before task#10 evaluation.....	88
Fig. 61 - Partial view of the interface after task#10 evaluation.....	88
Fig. 62 - Continuation of the quantitative analysis for the supplier tasks.....	89
Fig. 63 - Web elements before task #5 evaluation .....	90
Fig. 64 - Web elements after task #5 evaluation .....	90
Fig. 65 - Continuation of the quantitative analysis for the participants tasks. ....	91
Fig. 66 - Web elements before task #7 evaluation .....	92
Fig. 67 - Web elements after task #7 evaluation .....	92
Fig. 68 - Brainstorming the survey answers .....	93
Fig. 69 - Affinity map to evaluate answers from the survey .....	94

---

## LIST OF TABLES

---

Table 1 - Functional Requirements .....	48
Table 2 - Non-Functional Requirements.....	49
Table 3 - External Libraries list used to help the development process .....	60
Table 4 - Plug-ins list used to help the development process.....	60
Table 5 - Different tasks for each type of users .....	74
Table 6 - The tasks presented for the Chef role.....	75
Table 7 - The tasks presented for the Supplier role.....	76
Table 8 - The tasks presented for the Participant role.....	76

---

# ACRONYMS

---

AJAX - Asynchronous JavaScript and XML

CdM - Cozinha da Madeira

CSS - Cascading Style Sheet

EA - Entity Association

ER - Entity Relationship

FTP - File Transfer Protocol

HTML - Hypertext Markup Language

IDE - Integrated Development Environment

JSON - JavaScript Object Notation

MVC - Model - View - Controller

PHP - Hypertext Preprocessor

SD - Service Design

SQL - Structured Query Language

WWOOF - World Wide Opportunities on Organic Farms

---

# 1. INTRODUCTION

---

Human beings live in a world where they consume more resources than can be produced [1]. Today sustainability has become a subject that needs special attention regarding future generations. In 1987 at a conference of the United Nations (UN) sustainable development was defined as development that *“meets the needs of the present without compromising the ability of future generations to meet their own needs”* [2]. Sustainability is not only about re-use and re-cycle of materials anymore [1]. Current definitions of sustainability go beyond that, encompassing human needs and satisfactions as the main goals of this concept [2].

Accordingly to the UN, *“sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life”* [2]. Knowing exactly what people’s needs are in present generations is difficult, trying to predict needs for future generations seems almost impossible [3]. In order to take seriously the concept of sustainable development, care must be taken in present decisions, because these can be harmful for future generations [3]. However, to understand future needs, it is important to understand the progress of sustainability [3].

There are multiple concepts behind the term sustainability, but in the end all concepts rely on increasing the quality of life for human beings. Charles state that *“sustainability are so deeply embedded in fundamentally different concepts, each of which has valid claims to validity, that a search for a single definition seems futile”*[4]. Sheddoff deepened this line of thought, stating that *“before caring about humans, we need to preserve our environment”* [5]. These environments not only wrap the planet Earth but everything involved in the system: *“the human systems we live in, our societies, and the forming, changing, and constantly evolving values, ethics, religion, and culture that encompass these societies”* [5]. All of these concepts need special attention. It’s important for humans to work together regarding the impact that our actions will take in future generations [5].

In order to tackle the problems identified in sustainability, many sustainable services have arisen in the recent past. Chun-Juei-Chou et al states that *“service design has been widely adopted to improve relationships between companies and customers and it also advanced products’ life cycle for sustainable development”* [6]. Service design (SD) do not have a fixed definition. In general, people define SD according to the domain in which they operate, solving different issues [6].

Stefan Holmlid define service design as *“business innovations that use strategies combining process and interactive technology creating several modeling techniques for services experiences”* [7]. For example, Sue Coppard [8] designed a service that already reaches more than 50 WWOOF (World Wide Opportunities on Organic Farms) groups worldwide. Namely by WWOOF, this service aims to gather and give opportunity to support the countryside and organic behaviors [8]. People get to travel to other countries and stay on organic farms or smallholdings in exchange for food, accommodation and learning opportunities in organic farming (WWOOFers) [8]. This service allows people from everywhere to explore and help in the development of organic farms, learn sustainable techniques and contact directly with different cultures [8].

This thesis will deepen the idea of sustainable services linked to local agriculture and natural resources highlighting how tourism can be used to promote local sustainable services. In particular, the web interface *“Cozinha da Madeira”* was developed. This interface is a service system that combines food and travel to support sustainability while discovering Madeira’s culture and landscapes [1]. The CdM service brings food to life by combining people, products and travel through the island in search of the right ingredients for seasonal recipes. At the end of the day, a local chef will teach the guests how to cook traditional recipes from food collected by the guests at local farms. In our Thesis work we developed the web interface for such a service. The CdM web interface is an important touchpoint for attracting and connecting participants and the CdM team, organize and choose the recipes and the food producers availability. Additionally, this interface serves as an archive of photos from trips for future reference, reflection and publicity.

This thesis will include the following: further analysis of other areas of sustainability within tourism, and introduction to the web application that was designed and developed to address the CdM service needs, an evaluation of the web application and discussion of the insights gathered from its study.

---

## 1.1. MOTIVATION

---

Madeira is a major tourist destination in Portugal, as confirmed by the World Travel Award given in 2013, for being the best European island destination oriented towards tourism [9].

According to official statistics, Madeira receive a total of 4,935,666 international tourists in 2012, with an annual increase of 2% in overnights stays (from 2011 to 2012). Forecasts for future tourism are positive, comparing with 2012 [10]. The results between January 2013 and November 2013 are pointing to a total of 5,074,865 international tourists, which is an increase of 8,4% [11]. Despite the current economical crisis, these results indicate that Madeira keeps receiving a considerable number of tourists, which is a consistent part of the income of the local economy.

According to Luís Machado *“tourism marketing campaigns are becoming increasingly creative”* [12], and this indicates how important it is to focus on marketing to maintain growth. With all that Madeira has to offer, marketing is the key point to attract tourists from everywhere, as explained by Noémi and Vieira who stated that *“all form of advertising should be used to capture the attention of even the most distracted potential tourists”* [13].

The Internet is recognized as an extremely valuable tool for disseminating information about tourist destinations [13]. Tourists can schedule a trip in the comfort of their own home, using the internet. In turn, this new privileged means of communication, increase the level of requirements and expectations about the touristic destinations [13].

According to Noémi and Vieira *“It’s important to transmit to the potential tourist an idea of living an unique experience in different places with singular characteristics”* [13]. Thus, professionals carry an important responsibility while communicating why tourists should choose Madeira instead of other destinations.

Manuel and Almeida point to the fact that industry actors should pay more attention to the rural sector in Madeira. They state: *“This sector is in direct competition with other destinations chosen by those visitors interested in stress coping strategies, which should be capitalized on the promotion strategies”* [14]. Rural tourism enables a close proximity with nature and a direct contact with local communities and cultures. Madeiran culture contains a substantial amount of knowledge and traditions regarding land, food and agriculture. According to statistics gathered

on agricultural use on Madeira, in 2012 there were 73 farmers producing organic goods, with a respective area of 169 hectares [15]. Additionally, there are more than 29 farmers exchanging 27,9 hectares for this kind of production which should increase the attraction for rural tourism [15]. Regarding the sustainable practices that have been increasing over the years in the country side, tourists are likely to be more interested in seeing biological lands instead of industrial ones.

The industry should take more advantage of rural tourism, creating more opportunities and choice in this segment, including both *"tours around the island for adventurous travelers, but also culturally oriented visitors"* [14]. There should be an attempt to match the expectations of those who *"wish to improve their knowledge about the local natural environment and culture"* [14]. It is important to raise the tourist's satisfaction levels, because *"maximizing tourist's satisfaction is an important factor for the destination's success, satisfaction is associated to the will to return, or to recommend, the destination"* [12].

In the light of the above we considered Cozinha da Madeira [1] an important concept to experiment and research with. We extended the concept by building a complete web system for the service as a first step towards the full realization of the concept. The CdM website is designed to attract and help curious users and participants to the service to orient themselves through the proposition, make choices regarding the food and the itinerary they wish to build in order to purchase all ingredients necessary to prepare the local traditional recipe they have initially chosen. In this way, the CdM connects tourism, as the major economical resource of the island, with Madeira traditions (i.e. the food) and the beauty of Madeira landscapes as a natural resource.

---

## 1.2. OBJECTIVES

---

This thesis aims to design and develop an online touchpoint to Cozinha da Madeira's service. Using the internet as a means of communication will enhance interaction between stakeholders, resulting in higher visibility for our service. Tourists who wish to visit Madeira, will have an available online touchpoint, in the form of a highly interactive website, which is reachable from any location. In this website they will find meaningful information regarding what the service has to offer and how to organize themselves in order to participate. Furthermore, the website stores shared experiences and stories in the form of pictures and comments from past trips, generating something new and different from the normal tourist experience. Through the CdM service, users, will be able to enjoy the natural landscape and beauty of the island, the gastronomic traditions, and the local culture - all in one experience. The CdM website touchpoint is a communication gateway between users and the service, allowing them to subscribe to the service and enjoy the given experience. Additionally, a usability test has been conducted in order to evaluate the user experience with the web touchpoint of the service. After the usability test, we also conducted a mini-survey to gather some insights about the service concept itself. Finally, towards the end of this thesis the findings will be discussed. Conclusions will be drawn from those, and possible future improvements to the adopted solutions will be proposed if applicable.

---

## 1.3. THESIS STRUCTURE

---

This thesis is organized in six chapters:

**1º Chapter** - The first chapter will give the context of our theme.

**2º Chapter** -The second chapter will include a literature review of sustainable practices in the tourism and agriculture sector and how web technologies have played a role. Related work involving the subject of sustainable food and tourism will be included, as well as a review of the technologies used to develop and design the website.

**3° Chapter** – This chapter describes the service concept of Cozinha da Madeira, including the touchpoints available and the blueprint map for each type of user (Supplier/Chef/Participant), are explained with particular attention to the internet based touchpoint, namely the website.

**4° Chapter** –This chapter is divided in 3 main sections:

*Modeling:* This section will overview the modeling aspects of the website, with reference to requirements, the use cases, the essential use case and the wisdom model.

*Implementation aspects:* In this section, the implementation aspects of the site will be detailed, including the type of architecture chosen to develop the website and the database diagrams. This section will include the libraries and plug-ins used to help the development phase.

*Web-application Design:* In this section the justification of the design decisions taken into account when developing the service’s website will be given.

**5° Chapter** – In this section the methodology used to develop the usability tests and the mini-survey will be presented. This section will also include the findings and conclusions from the study.

**6° Chapter** – General conclusions about all of the processes taken to develop and execute this thesis work and some preliminary ideas for future work will be presented. This chapter will also include, procedures that have to be done to continue and improve this work.

---

## 2. LITERATURE REVIEW

---

In this chapter we present some important issues about sustainable tourism and sustainable agriculture will be overviewed. Some services that have overlapping concerns in terms of tourism, food and sustainability like CdM will be addressed.

Detailed will be the content that these other services have and do not have in common with CdM and comparisons of these other services and the CdM experience will be given to evaluate their website as a touchpoint.

---

## 2.1. SUSTAINABLE TOURISM

---

According to the World Tourism Organization (WTO), tourism is defined as *“the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and others purposes not related to the exercise of an activity remunerated from within the place visited”* [16]. In the 20<sup>th</sup> century, tourism stands as the most socio-economic phenomena [16]. Back then, not everyone had the privilege to enjoy this activity, but around 1970 the concept of tourism became a mass consumption [16]. Nowadays the number of people willing to travel around the world keep growing massively, along with the dissemination of shared economic values in many countries [17]. Due the fast growth of the tourism sector, many countries encounter big changes in their natural, cultural and socio-economic environments. This results in eventual identification that the short-term benefits of tourism is married to the negative impacts of increased stress on the local environment [18]. These negative impacts involve damaging the environment and societies, which slaughters the basis on which tourism increases local prosperity [18]. Frederico Neto, emphasizes that *“countries and regions where the economy is driven by the tourism industry have become increasingly concerned with the environmental, as well as the socio-cultural problems associated with unsustainable tourism”* [16]. It was acknowledged that tourism could bring more economic value to host communities, help with poverty alleviation, and preserve natural and cultural assets along with other benefits if performed in a sustainable manner [18]. Sustainable tourism, as described by the WTO in the context of the United Nations, is defined as the act of preserving resources in a way that economic, social and aesthetic needs can be accomplished having in consideration the cultural integrity, essential ecological processes, biological diversity and life support system [16]. Host communities started adopting an awareness of the problems of unsustainable tourism [18]. This kind of awareness regarding sustainability concerns eventually, reached the national, regional and local tourism policies [18]. Sue Berry and Adele Ladkin performed research to evaluate how sustainable tourism is understood by small businesses at the local level [19]. This study was conducted in three different regions in the south coast of England [19]. The method chosen to perform this study, was using focus group, that aim to create a flow of discussion between the interviewer and the individuals being polled [19]. The researcher works as a facilitator, recording the group discussion for later analyses [19]. The people invited to the study *“consisted of a selection of people who ran small business, such as bed and breakfast establishments, small hotels, farm attractions and self catering accommodations”* [19]. The authors

gathered some interesting findings from the groups, that may help to promote sustainable behaviors in the tourism sector. These include, the design of new services to promote less known areas of the local regions [19]. The respondents also felt that communicating an image of locals adopting and using sustainable practices may increase the flow of tourists to the region. Tourists that appreciate environmental quality would definitely choose a destination with these types of characteristics [19]. The interview groups also suggested that “ *the government and the local tourism industry should collaborate to educate people to be more respectful towards the environment, with children being the most receptive*” [19], p. 437. Local activities should also make use of local products and this would improve the local economy [19]. The author concludes with two important key points: “ *there is a place for the general macro principles of sustainable tourism*” and “ *decision making and implementation must have a strong regional and local focus in order to these principles to become workable practice*” [19], p. 439.

---

## **2.2. SUSTAINABLE AGRICULTURE**

---

According to David Tilman et al, sustainable agriculture is seen “ *as a practices that meet current and future societal needs for food and fiber, for ecosystem services, and for healthy lives, and that do so by maximizing the net benefit to society when all costs and benefits of the practices are considered*” [20]. Petit et al state that “ *sustainable agriculture is concerned with the ability of agro ecosystems to remain productive in the long term*” [21]. These concerns have to do with the use of “ *heavy reliance on chemical fertilizers, pesticides and herbicides, the destruction of wildlife habitats, environmental pollution and risk to human health*” [22]. With the growth of earth’s population, by 2050 both population size and the need for resources is estimated to double [20].

Angela Maycock states that across the United States, “ *green initiatives are growing into a powerful, popular phenomenon*” [23]. The organic food movement is key in supporting these green initiatives [23].

Carolo Petrini, one activist from the 70s, believed that it was important to preserve local culture as if one were promoting political beliefs [24]. Petrini had an interest in local goods and wine [24]. With his appreciation for good food, cultural life and wine, in 1986 he founded the slow food movement in Italy [24]. The slow food movement was founded with the intention of

preserving cultural life and promoting sustainable practices around the agricultural sector, working with organic farms, and helping the local economy by promoting the local farms [25].

This movement started in Italy with a simple reaction to the invasion of fast food chains [24]. Nowadays it has reached worldwide with a membership of 100,000 people all over the world. It has outlets in 150 countries, grouped in 1,500 local divisions, named '*convivia*' [26]. These groups are responsible to "*develop activities, projects and events at a local, regional and global level*"[26].

*"Slow Food envisions a world in which all people can access and enjoy food that is good for them, good for those who grow it and good for the planet"* [25]. The core concept of the slow food movement is connected with three principles: Good, clean and fair [25].

- **Good:** A fresh seasonal diet which is part of the local culture [25].
- **Clean:** "*Food production and consumption that does not harm the environment, animal welfare or human health*" [25].
- **Fair:** Fairness between the price versus condition for consumer and producers [25].

These three principles represents a guideline to be used in all local initiatives around the globe related with the slow food movement [24].

Today this movement includes, "*more than 5000 Slow Food initiatives each year, over 10,000 small producers involved in more than 400 **Presidia projects** [27], Over 1000 products at risk of extinction promoted through the **Ark of Tastcatalog** [28], 1,300 **food education activities** [29] and 350 school gardens in 100 countries and **Terra Madre network**[30] activities which involve 2,000 food communities, 1,000 cooks, 500 academics and 1,000 young activists"* [26].

Vicky Berkley demonstrate the importance of the slow food movement in his revision about the book of "*the slow food story: politics and pleasure*", the author state: "*reminded me of the valuable role for local foods and artisan products in preserving local knowledge and sense of place, as well as in creating connections between food producers and consumers*" [24].

The slow food movement through the website touchpoint could reach thousands of people around the world. The information available on the slow food movement website increased visibility for their cause as well as kept the slow food community connected. They have national associations, each one of them also has a website touchpoint. On their main website, they have a

world map, with all the 'convivia' events available by country. This information is useful because local communities can obtain access to the slow food movements within their countries, increasing the slow food community around the globe. The slow food movement organizes a lot of events around the theme of sustainable behaviors, and the website allows for the sharing of organizational information for these events. All of the testimonials available on the website give examples of positive words and experiences which helps to promote the movement and keep this community growing. In the end, without a worldwide website touchpoint this movement would not have the visibility they currently have.



Fig. 1 - Slow food movement - Homepage [26]

---

## 2.3. RELATED PLATFORMS

---

This section will review some projects that are focused on the themes of tourism, food and sustainability, followed with a brief discussion about the website touchpoint used to promote the project.

### **WWOOF (WORLD WIDE OPPORTUNITIES ON ORGANIC FARMS)**

WWOOF aims at supporting the countryside and organic behaviors [8]. People who are associated with the WWOOF project get to travel to other countries and stay in WWOOF's organic farms or smallholding in exchange for food, accommodation and learning opportunities in organic farming (WWOOFers) [8]. This service allows people from everywhere to explore and help in the development of organic farms, as well as learn sustainable techniques and have direct contact with different cultures [8]. Portugal is part of the many countries that contribute to this project [31]. WWOOF is a non-profit organization; therefore, membership fees are requested for host finding services and maintenance of contacts for future wwoofing experiences [32]. The WWOOF group from Portugal charges 25€ annually per volunteers and 15 € for farmers [32]. After the registration, the users are the ones responsible for making contact with farmers to arrange the stay on their land .

WWOOF makes use of an internet touchpoint in the form of a website. This platform serves as a bridge of communication between WWOOF hosts from Portugal and wwoofers from around the world. With this touchpoint, people who want to be involved and participate can find all the information they need on the website. To be able to interact with each other they have to pay for a membership account [32].

*“WWOOF has a very simple principle: In return for volunteer help, WWOOF hosts offer food, accommodation and opportunities to learn about organic lifestyles” [33].*

Shown in the

Fig. 2 is the homepage of the website of the wwoof group from Portugal. They have a video on the main page explaining the project and why interested users should wwoof, using some statements of people who have already experienced the service. The map representing Portugal on the main page, allows users to filter the hosts by city when clicking on one certain area of the map.



Fig. 2 - WWOOF Portugal- Homepage[34]

Shown in Fig. 3 is the interface that has all the information related to the hosts available in Portugal. This page will have a brief introduction of the farm content, for example, the status of the farms, which includes whether the farm is open to receive wwoofers, if needs helps urgently, and if it is closed. Users also have the choice of using the map view, instead of using the list with the content. Using the map view, gives to the user a direct contact to the place they want to visit, instead of searching a big list of information. Each farm will have a personal page, with all the needed information to keep the wwoofer interested in going to their farm. They will have a gallery, showing some photos from the farm. They normally have photos with people who already volunteered on their farm. In the references page, they will have testimonials about the experience on their farms. Contact and direction information, are only available to membership accounts. The interface is shown in Fig. 5.

**WWOOF PORTUGAL**  
WORLD WIDE OPPORTUNITIES ON ORGANIC FARMS

Username:  Password:  [Login](#)  
Stay logged in:  [Forgot your password?](#)

[HOME](#) [ABOUT](#) [PROJECTS](#) [HOSTS](#) [FORUM](#) [CONTACT](#) [JOIN](#)

Here you can see a short description of all hosts.  
Have in mind that usually it is easier to find an available host on Central and North Portugal.

Search hosts:   Only show available hosts [List](#) [Map](#)




Name	Updated	Status	Region	Information
 <b>Jason Baker</b>	Dec 07 2013	<a href="#">Open</a>	Beira Litoral	Animals: Dogs and cats Languages: portuguese, english, german, french, spanish, italian, arabi
 <b>Ameixeirinha</b>	Dec 06 2013	<a href="#">Needs help urgently</a>	Algarve	Areal: 7 ha Animals: 4 dogs, 14 chicken, 2 chicks, 1 sheep, 1 cat, 1 goat Languages: German, English, Portuguese, Spanish
 <b>Monte da Portela Nova</b>	Dec 05 2013	<a href="#">Needs help urgently</a>	Baixo Alentejo	Areal: 15 ha Animals: dogs, cats and chicken Languages: Portugues, English, Dutch and French

Fig. 3 - WWoof Portugal – Hosts (list view) [35]

**WWOOF PORTUGAL**  
WORLD WIDE OPPORTUNITIES ON ORGANIC FARMS

Username:  Password:  [Login](#)  
Stay logged in:  [Forgot your password?](#)

[HOME](#) [ABOUT](#) [PROJECTS](#) [HOSTS](#) [FORUM](#) [CONTACT](#) [JOIN](#)

Here you can see a short description of all hosts.  
Have in mind that usually it is easier to find an available host on Central and North Portugal.

Search hosts:   Only show available hosts [List](#) [Map](#)

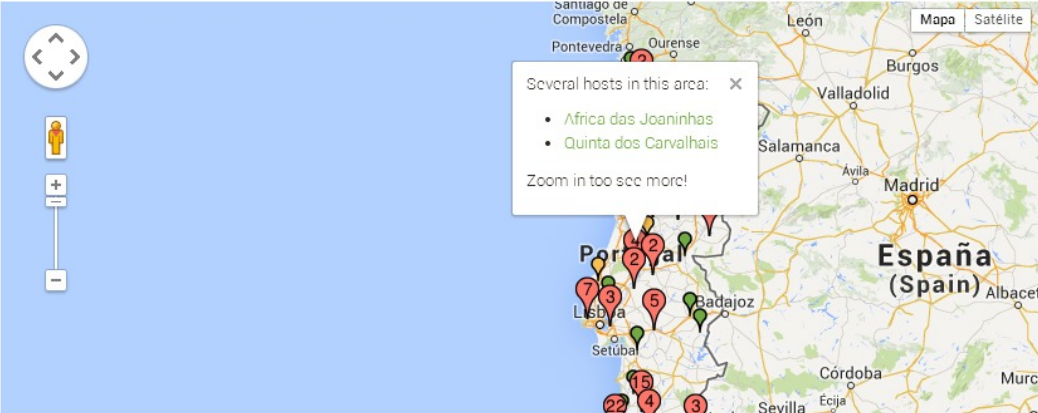


Fig. 4 - WWoof Portugal - Hosts (map view) [35]

**Welcome to Jason Baker**

I live in the countryside in central Portugal about 10km from the beach. My garden is very jungle-like and full of energy. The beaches near here are both crowded and also deserted. I have 3 small children to take care of and that is why I cannot dedicate my time to the garden. I think that about 4 hours a days work for 2 weeks will be enough at the meantime. During the summer I will need some help as well. You are welcome to come and stay with us. We have bicycles to ride to the beach and we like meeting open-minded people. I offer good food, good company and an open, loving atmosphere. Ideally I would like a german-speaking person, couple, family to come here because I speak some german with my younger children and that way they can also hear it from other people. But the language isn't the most important part. Hope to see you soon. Hugs Jason

**Availability calendar**

When can you visit Jason Baker?	Vacancy
Dec.	✓
Jan.	✓
Feb.	✓
Mar.	✓
Apr.	✓
May.	✓
Jun.	✓
Jul.	✓
Aug.	✓
Sep.	✓
Oct.	✓
Nov.	✓

**Host Information**

Name: Jason Baker  
Region: Beira Litoral

Fig. 5 - WWOOF Portugal - Host Information

Another important feature of the wwoof web interface is the join task. Here the users can choose which role they want to practice. If they have an organic farm to receive people, they definitely will be registering a host profile (Fig. 7), or if they are just an individual traveler who wants to travel and experience other cultures and learn techniques about organic behaviors in the farms, those users will chose the wwoofers profile option (Fig. 6).

**WWOOF PORTUGAL**  
WORLDWIDE OPPORTUNITIES ON ORGANIC FARMS

Username:  Password:

Stay logged in:  [Forgot your password?](#)

**HOME ABOUT PROJECTS HOSTS FORUM CONTACT JOIN**

**Join WWOOFer**  
Join Host

**WWOOF Portugal Host Application**  
Registration entitles you to a username and password used for editing your host profile. We really encourage you to keep your profile up to date with texts and images.

When the form below is submitted you will receive an email with your login information. The WWOOF coordinator will review your application and make a phone call to you to make sure that you fulfill the requirements for being a WWOOF Host. After your membership is approved you can proceed to the payment.

**Payment**  
The cost of annual membership is 25 euros.  
You will receive further instructions on how to pay after your membership is approved.

Fields marked with \* are mandatory.  
For questions regarding registration [contact us](#).

**Host Information**

Username\*

Password\*

Confirm Password\*

Fig. 6 - WWOOF Portugal - Join Wwoofers [36]

**WWOOF PORTUGAL**  
WORLD WIDE OPPORTUNITIES ON ORGANIC FARMS

Username:  Password:

Stay logged in:  [Forgot your password?](#)

HOME ABOUT PROJECTS HOSTS FORUM CONTACT JOIN

Join WWOOFer  
Join Host

### WWOOF Portugal Volunteer Registration

To Join WWOOF Portugal as a Host farm, please [click here](#).

Registration entitles you to a WWOOF ID (username and password) used for obtaining hosts contact information and making WWOOFing arrangements. With your WWOOF ID you can make your own arrangements directly with the host and to take part in all forum discussions.

Payment is done with VISA, MASTERCARD, PAYPAL or bank transfer when you login to the website for the first time.

The cost of annual membership is **15 euros** ([find here on other currency](#))

If you aren't able at all to pay your fee we offer a limited number of memberships. Please have in mind that this may be a long process and you must work for a few hours for your fee. [Click here](#) for further information.

In case you are under 18 years old, please [click here](#).

**No couple membership!** Double membership is only possible if you are travelling with your own children.

**User Information**

Username\*

Password\*

Fig. 7 - WWOOF Portugal - Join Host Farm [36]

In conclusion, the website of the wwoof group from Portugal has all the needed information to connect hosts and potential wwoofers. The design and implementation of the website is efficient and complete, but it lacks of the local characteristics and colors of Portugal. Thus users will not have a strong impression of where the experience takes place through this website. From this web touchpoint it is clear that it is important to foster the users participation in the service by depicting the local aspects of the experience as well. This can be achieved by giving them as many indicators as possible of how would such experience will look and feel in actuality on the website.

### FreshBio - Produtos biológicos

FreshBio is a distribution company and home delivery service of organic ingredients, from local organic farms in Madeira [37]. This local company delivers fresh high quality products to their customers. They choose regional products, because it's fresh, require less fossil fuel and promotes the development of the local economy [37]. The main goal of the Freshbio is to encourage healthy eating habits, promote the sustainability of the agricultural ecosystem, develop community cooperation and promote social consciousness [37].

FreshBio has a web interface. Fig. 8 shows the home page of the company website. In the main page they have some hot topics about the service, each one of them has a brief explanation, that helps the user understand the whole concept of the service.



Fig. 8 - Homepage of the website FreshBio [38]

Besides the home page, the rest of the website, is confusing and not easy to navigate. This is particularly true of the Freshbio website ordering page as shown in Fig. 9. Since this service is based on ordering local ingredients to deliver to the client's homes, the order page should be carefully designed, as it is the most important requirement of the website. For example in the selection of ingredients (Fig. 9), form requires the user to select the ingredients that they do not want instead of selecting the ingredients that they do want to order. This is counter-intuitive and may lead the user to make the wrong order.

The website should also have a client profile, allowing users to fill their personal information and avoid duplicate entries each time a new ingredients basket is ordered. This client profile could be also used to share vivid experiences with the service, such as sharing photos of the ingredients basket previously ordered with other clients helping the promotion of the service.

## ENCOMENDAR

### Dados Pessoais

Nome	<input type="text"/>
E-mail	<input type="text"/>
Morada	<input type="text"/>
Cod. Postal	<input type="text"/>
Telefone	<input type="text"/>

### Escolha os cabazes que deseja receber \*

Cabaz S | 5 Kg     Cabaz M - 8Kg     Cabaz L - 10 Kg

Cabaz BABYBOX | Data Nascimento do Bêbê

\*Actualmente só fazemos entregas nos concelhos: Camãra de Lobos, Funchal e Santa Cruz.

### Assinale os produtos que **não** deseja receber:

<input type="checkbox"/> Feijão Verde	<input type="checkbox"/> Ameixa	<input type="checkbox"/> Alecrim
<input type="checkbox"/> Grelos	<input type="checkbox"/> Anona	<input type="checkbox"/> Aneto/Endro
<input type="checkbox"/> Milho Doce	<input type="checkbox"/> Araçá	<input type="checkbox"/> Basilico
<input type="checkbox"/> Nabiça	<input type="checkbox"/> Banana	<input type="checkbox"/> Borragem
<input type="checkbox"/> Nabo	<input type="checkbox"/> Cana de Açúcar	<input type="checkbox"/> Camomila
<input type="checkbox"/> Pepino	<input type="checkbox"/> Damasco	<input type="checkbox"/> Cavalinha
<input type="checkbox"/> Pimento	<input type="checkbox"/> Diospiro	<input type="checkbox"/> Coentros
<input type="checkbox"/> Pimpinela	<input type="checkbox"/> Figo	<input type="checkbox"/> Erva Cidreira
<input type="checkbox"/> Rabanete	<input type="checkbox"/> Kiwi	<input type="checkbox"/> Hissopo
<input type="checkbox"/> Rábano	<input type="checkbox"/> Laranja	<input type="checkbox"/> Linho
<input type="checkbox"/> Tomate	<input type="checkbox"/> Limão	<input type="checkbox"/> Losna
	<input type="checkbox"/> Maça	<input type="checkbox"/> Louro
	<input type="checkbox"/> Maracujá	<input type="checkbox"/> Mifólio
	<input type="checkbox"/> Marmelos	<input type="checkbox"/> Orégãos
	<input type="checkbox"/> Melão	<input type="checkbox"/> Hortelã
	<input type="checkbox"/> Meloa	<input type="checkbox"/> Salsa
	<input type="checkbox"/> Morango	<input type="checkbox"/> Salva
	<input type="checkbox"/> Nectarina	<input type="checkbox"/> Segurelha
	<input type="checkbox"/> Nêspere	<input type="checkbox"/> Tanchagem
	<input type="checkbox"/> Papaia	<input type="checkbox"/> Tomilho
	<input type="checkbox"/> Pêra	<input type="checkbox"/> Urtiga
	<input type="checkbox"/> Pêra Abacate	
	<input type="checkbox"/> Pêssego	
	<input type="checkbox"/> Pitanga	
	<input type="checkbox"/> Romã	
	<input type="checkbox"/> Tangerina	
	<input type="checkbox"/> Uva de mesa	

### Com que frequência deseja receber o seu cabaz?

Semanalmente     Quinzenalmente

### Em que dia da semana deseja receber o seu cabaz?

Quinta-feira     Sexta-feira

Estou disponível para receber o cabaz na morada a partir das

### Encomende os seus cabazes aqui.

#### Guia Rápido de Encomenda

1 | Preencha o formulário com os seus dados e escolha o cabaz (S, M, L ou Babybox) que pretende adquirir.

2 | Personalize o seu cabaz seleccionando os produtos que não deseja receber.

3 | Escolha com que frequência deseja receber o seu cabaz (semanalmente ou quinzenalmente).

4 | Clique enviar, em breve receberá um email a confirmar a sua subscrição.

5 | Entrega gratuitamente do cabaz em sua casa.

Na composição dos cabazes S, M e L não estarão incluídos batatas e cebolas. Poderão ser adquiridos em caixas de 5, 10 ou 20 Kg ao preço de época.

Fig. 9 - Freshbio, order form page [39]

The website also misses a FAQ page, allowing the user to have some questions answered immediately without using the contact form. In general the website presents a lot of information regarding sustainable practices, including some recipes that use biological ingredients but it lacks information regarding their suppliers and images of the goods.

## Tukxi – Eco City Tours

Tukxi is a local company that provides customers with an eco experience in the heart of Funchal, the main city in Madeira. Tukxi uses an electric car to give the tours around the city, in an ecological fashion. The car was inspired by the Italian dolce vita glamorous style and the iconic three wheeled Ape Calessino [40].

The screenshot displays the Tukxi website interface. At the top, the Tukxi logo and 'ECO CITY TOURS' are visible. Below the header, there is a section titled 'At the Heart of our City' with a brief description of the tours. The main content area features a table of tour options, categorized into 'City Tours' and 'Eco City Tours'. Each tour entry includes a name, duration, price, and a list of stops. A small image of the Tukxi electric car is shown on the left side of the table. Below the table, there are social media icons and contact information.

City Tours			
Tour	Duration	Price	Highlights
Discover	30min	€20eur	Former's Market / Town Hall Square / Municipal Garden
Cathedral tour	45min	€25eur	Former's Market / Town Hall Square / Ar. Antigo / Cathedral / Parliament / Yellow Square
Large boat	45min	€25eur	Lido / Monumental / Famosa Beach / Dock St. Catarina
Cathedral tour	45min	€25eur	Pico Fortes / Cruzes Mouras / S. Clara Cemetery / S. Pedro (North) / Ar. Antigo / Municipal Garden / S. Catarina Park
Piccola tour	60min	€25eur	Old Town / Square View Point / Town Hall Square / Municipal Garden / S. Catarina Park
Grand tour	90min	€40eur	Old Town / Square View Point / Town Hall Square / S. Pedro Church / Square View Point / S. Clara Cemetery / Municipal Garden / S. Catarina Park
Perfecta tour	90min	€45eur	Pico Fortes / Cruzes Mouras / S. Clara Cemetery / S. Pedro (North) / Ar. Antigo / Cathedral / Market / Old Town / S. Trigo / Parliament / Square View Point / Park of S. Lourenço
Top	2h00min	€70eur	Personalized tour specially designed for you!
Special	3h00min	€90eur	Personalized tour specially designed for you!
Eco City Tours			
Tour	Duration	Price	Highlights
Piccola	45min	€20eur	Cande Canhal / Via Galés View Point / Piccola View Point
Historic Church	90min	€40eur	Lido / Monumental / Famosa Beach / Dock St. Catarina / Camera de Lido

Below the table, there are social media icons for Facebook, Instagram, and Twitter. At the bottom, there is a contact section with the phone number 912121012 and the website URL www.tukxi.com. The footer includes the copyright information: Copyright © 2016 Madeira - Eco City Tours 2017 - Madeira Portugal.

Fig. 10 - Tukxi website [40]

The website of this service (Fig. 10) has only one page, where they have all the information about the service, including the tours routes available. Some of the tours have an icon representing what is included, like making stops to take pictures, or even to a walk guided tour, it depends on the tour route. Each tour also has the price per person and the estimated time the tour will take.

The information within the website is clear to understand, as well as the explanation of what the company does, and what kind of services they are providing to their customers. Nevertheless by putting all their information in one unique page, they overwhelm the user

right at the beginning of their touchpoint. The customers can get confused, and the site could benefit from organizing the information by categories. Having the information separated by categories helps the client to find what they want more quickly. For example if the website showed them routes that could be filtered by the characteristics of each route, it would decrease the time wasted trying to understand the meaning of each icon represented in each tour. On the other hand the video used to disclose the service is very clear and explicit and shows in a few minutes what they do and what can be accomplished with this experience.

To conclude, the Tukxi website is in some ways informative, but overall cluttered. A gallery to show happy moments from the tourists who previously enjoyed the service, and wanted to share with future customers would also be beneficial, since the experience seems fun and entertaining. It is important to keep the customers interested, both indicating the good service, as well as some of the particulars of the experience for example stopping to let the customers take photos, which allows the tourist to save special moments and memories.

### **Up Mountain Madeira**

UMM (Up Mountain Madeira) is a local and small company who cares about sustainable tourism, local art and traditional culture [41]. It is a service more directed for tourist who are interested in getting to know Madeira from a cultural and artistic perspective, without engaging with big crowds of tourists. This company organizes tours around the island in a open classic jeep, with a small group, the driver and a few tourists [41].

The web touchpoint of this service allows bookings to be performed within the website and also shares some useful information about the experiences by previous clients. However, despite providing rich content, the way the contents are presented is not clear at first sight. The presentation lacks coherence between pages, making it difficult to read. In this touchpoint we can see that many design guidelines are not used in the right way. For example they use more than one type of font, the font size differs from page to page and also the content is not aligned. They try to highlight the important information by increasing the font size and changing the background color, instead of organizing the content and make the webpage clean and simple. Fig. 11 shows the main page, where is visible how confusing it can be.



Fig. 11 - Up Mountain Madeira - Lack of coherence between pages [41]

Besides the website's appearance, UMM's service concept is very appreciated by the tourist as is demonstrated by the positive comments on the Trip Advisor website. The website link out associated with the Trip Advisor helps to promote the service and the customers feedback is very positive. Likewise, links from Trip Advisor back to the UMM website increase traffic through UMM's website. UMM has won a Trip Advisor certificate of excellence for two consecutive years (2012-2013). It is clear that for UMM their internet touchpoint is secondary since their main publicity and contacts are made through travel agents and Trip Advisor. Nevertheless nowadays web touchpoints are often becoming substitutes for real travel agents

touchpoints and in this case websites need to be simple to use and need to present clear information with an easy means of preliminary engaging with the service.

---

## **2.4. TECHNOLOGIES USED**

---

This chapter summarizes the core technologies used across the CdM web touchpoint development process, from the modeling phase, through design and implementation.

### **Cacoo**

“Cacoo” is a free web application used to draw different types of diagram from wire frame diagrams, site maps, architecture, mind maps and much more. This software was used to design all the diagrams used in the modeling phase.

### **MySQL Workbench**

MySQL Workbench is a unified visual tool for database architecture. This software was used to design the database. With this software it was possible to export the SQL file, to thereafter be upload to the server (refer to appendix E).

### **Xampp**

This tool was used to simulate a local server, working in a local host. Testing and debugging while programming is facilitated by using a local host.

### **Adobe Illustrator & Adobe Photoshop**

Adobe Illustrator and Adobe Photoshop are both image editing tools. Illustrator was used to design the low fidelity prototype (refer to appendix F) and the Interactive map representing Madeira. Photoshop was used to design all the visual aspects of the website, as demonstrated in the high fidelity prototypes (refer to appendix G) and the respective poster of the Cozinha da Madeira Service (refer to appendix H).

### **Filezilla**

Filezilla is a free ftp client, used to manage the files in the server.

### **Netbeans is a IDE (Integrated Development Environment)**

Netbeans was the platform used to program in PHP. Programming with a good IDE like Netbeans makes the work easier for the developer, providing a lot of useful tools that will increase the time of development.

### **Notepad++**

Notepad++ is a very good code editor. This software was used to program the client side of the website (HTML/CSS/JavaScript). After uploading the full website to the online server. Notepad++ in addition to a plug-in called NppFTP, it was possible to connect with the server and make the possible modifications without using the local host again.

### **Dropbox**

Dropbox was used to share the work with the stakeholders of this project.

### **Mendeley Desktop**

Mendeley desktop was software that was used to manage research papers.

---

## **3. DESIGNING A SUSTAINABLE SERVICE**

### **– COZINHA DA MADEIRA**

---

Designing sustainable solutions requires designers to present alternatives that comply both to user's needs and, at the same time, are beneficial for the environment and for the local communities. This encourages the users to change from un-sustainable behaviors to more sustainable ones [1].

Users do not desire a given system of products or services. They look for the benefits or results of these services or products. These results can change in time but can be achieved by combining different products and services.

In this project our goal is to design a web based touchpoint to support the CdM sustainable service. Furthermore CdM aims to create a mental model in the tourists minds about the acquired experience, that perhaps might inspire them to choose more sustainable practices in their future tourism experiences. *“Our approach investigates a holistic view of the Madeira culture, rituals, influence, products, and services contemporary as well as past. Traditions that have been practiced for a long time in the island and have disappeared over time”* [1].

In brief, the major goal of the CdM service is to promote sustainable habits, i.e. to think, act, reflect and consume sustainably. Thus, through our CdM touchpoint we provide an attractive entry and orientation guide on how the service works and how to engage with it. Furthermore, since we hope that the experience might motivate users to opt for similar experiences in others places, we provide a repository for sharing their experiences, storing their memories and contributing with comments and pictures to the CdM website.

---

### **3.1. CUSTOMER JOURNEY AND SERVICE TOUCHPOINTS**

---

The customer journey map is one of the most important tools within service design. This technique allows for visualization of the sequence of activities that defines a process in which

all the dimension of the service experience can be explored [1, 42]. The customer journey map is valuable to identify the service touchpoints, in which customers and service meet and interact. As mentioned by Stickdorn and Schneider, touchpoints can take many forms, from personal face to face contact between individuals, to virtual interactions with a website or physical trips to a location [43]. Each touchpoint allows the interaction between the customer and the service.

The touchpoints should be presented to the customers in a positive way, with good design as each touchpoint is an important and crucial interaction that can make or break the service [1, 43]. Designers must pay particular attention to the development of touchpoints, because these points are where they can look for opportunities to innovate and improve the overall service process, thus leveraging the user experience [1].

The CdM customer journey enables a series of touchpoints in a way that promotes and helps to understand sustainable practices. These points are based on, or intensified by, social context and technological aids. Each touchpoint was designed to provide customers with a unique moment, resulting in a memorable experience for them [1]. In the next section, the CdM's customer journey map will be detailed in order to illustrate how the web based touchpoint we designed fulfills many of the service requirements supporting several touchpoints along the customer's journey. .

### **3.1.1."Cozinha da Madeira" Customer and Food Journey**

---

People outside of Madeira or Madeirans will find the CdM service through the internet, and advertisement in travel agencies, airports and hotels. These are the touchpoints to attract people to the service. People willing to participate in our service can either directly contact the headquarters of CdM or use the website. Both of these touchpoints connect people with our service. As previously stated, this thesis intends to design and develop the touchpoint of CdM service through a website. The website is an important touchpoint of the service, allowing users to connect to our service from literally anywhere. Additionally, it will allow people to plan activities before arriving in Madeira. Once engaged with the service they will choose how they want to participate by pinpointing their roles (chef, supplier/farmer, participant). This can be performed through the website and from the headquarters of CdM. The website brings practical benefits since users have the opportunity to subscribe to the service from their own homes,

dismissing the need to physically appear at CdM's headquarters. Each time a recipe is proposed by the chefs and accepted by the CdM staff a journey is ready to accept participants (Fig. 12). Once there are enough people subscribed to a journey, the food journey is ready to start. This information is managed throughout the website by the CdM staff, who contact the farmers and food providers to test the journey route. Ingredients that are unavailable will be purchased at the supermarket and stored in the kitchen facilities. The information about the number of ingredients available to be collected around the island and the ingredients that have been acquired is stored on the website to keep customers informed of what they will be doing during the journey.

The journey starts at CdM headquarters, which can be one of the service's main touchpoints depending on the client's choices. Clients can either use the website or go directly to the headquarters.

In the headquarters, a driver will be waiting in his van for all the participants, associated with the service, to start the journey around the island to collect the ingredient for their meal. After passing by the first and the second touchpoint, the van will be the third touchpoint, where the driver will be responsible to take them around the island and make the stops. During the journey there will be some stops, to show to the participants our island, the beauty of its landscape, endemic forest (Laurisilva [44]) and agricultural places. During each stop, the participants are allowed to take pictures, which can be uploaded to the website referencing the journey, and share comments with others participants about their experience, creating the CdM social community. It is important to create a spot where people who experienced the service can share their experiences to others that participate or want to participate in the service.

Suppliers that have ingredients related with the journey recipe agree to receive our participants in their homes. Consequently, they show them the land and share some knowledge about food and agricultural products. The suppliers home is considered the fourth touchpoint, here suppliers will share with the participants their story, and what they do on the farm. Each touchpoint will have something special to be shared with the participants. The website is both the first touchpoint and the last touchpoint, because we expect that the participants, suppliers and chef, share their experience with us, the CdM staff, with the CdM community and everyone who wants to be part of the Cozinha da Madeira service.

The journey page of the website will have an image representing Madeira Island with the path of the journey, the points that create the path will have the ingredient and the locality with the

name of the localities where they will travel through. The website allows users to share information with the intent to improve client engagement towards the service (Fig. 12). Back on the farm, after collecting all the ingredients during the trip, the van returns to the starting point in CdM headquarters. The kitchen is the fifth touchpoint, and customers are free to learn with the chefs how to prepare the food in the kitchen facilities, or go home and rest, while waiting for dinner to be ready [1].



Fig. 12 - Recipe ingredients leading to customer journey

At dinnertime everybody is seated to enjoy the meal, but before starting eating, participants will hear a short explanation about the meal preparation and traditions [1]. At the end of the dinner, the participants are kindly invited to answer a mini questionnaire to evaluate the performance of the service in each touchpoint [1]. Furthermore, they will also vote for the winning dish, and the winning chef gains the opportunity to be highlighted on the website. This vote will foster a sense of community and pride for the chefs, as being featured on CdM’s website will increase their visibility in the community as well as abroad. Before leaving, participants can buy memorabilia from the CdM store, for example T-shirts with CdM logo and website link, aprons or table mats with the map of each journey printed. Participants who have purchased memorabilia from the CdM store, also can share later in the website those moments with the CdM community. Fig. 13 represents the visual content present in the customer journey (refer to appendix J - Customer Journey Map).

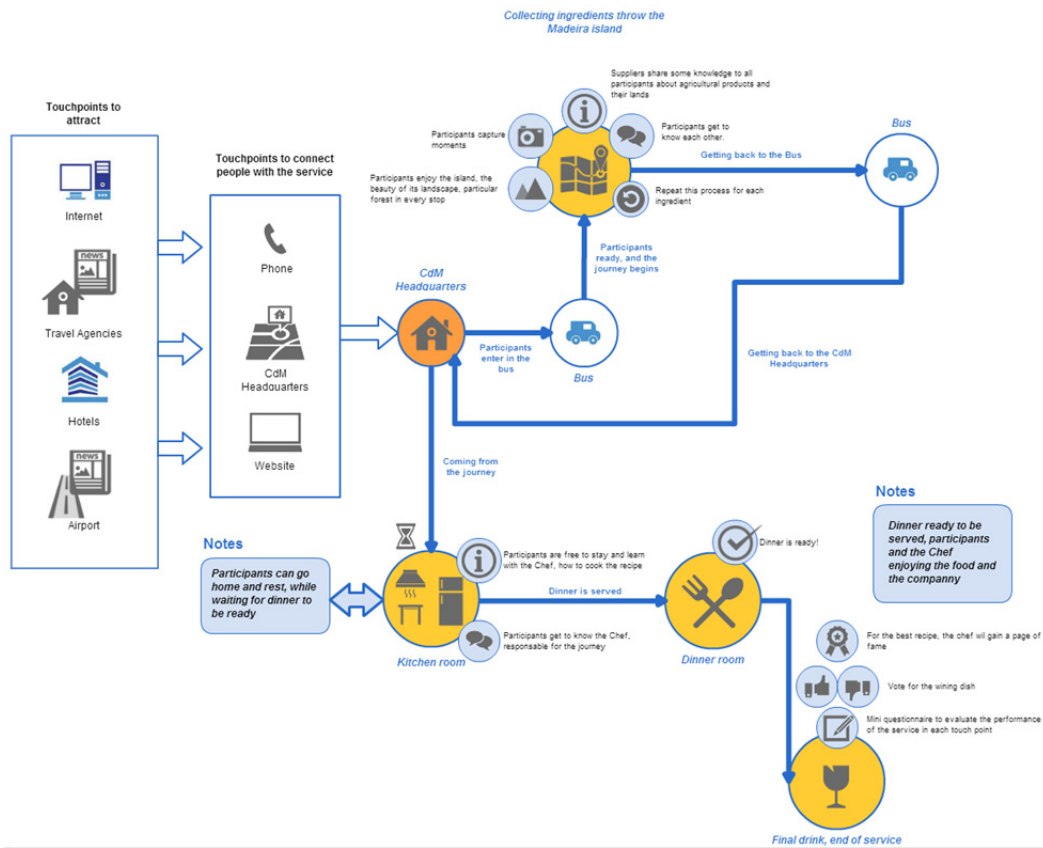


Fig. 13 - Customer Journey Map

## 3.2. EXPERIENCE CYCLE AND TOUCHPOINT ANALYSIS

Another crucial aspect of the service design process is the analysis experience cycle provided by the service itself. This section of the thesis will outline the contact points of the experience cycle with CdM, demonstrating the distinct parts of an activity, journey or performance, and explaining how the distinct stages of experiences unfold during the proposed service. Touchpoint analysis refers to the study of how customers perform activities in order to derive value at various stages of their interaction with the service and associated stakeholders. The experience cycle, show the touchpoints operate as a whole in order to take the users through the whole experience cycle of the service. The experience model for service is based on the

assumption that experience emerges from the activity of persons acting in a setting and is embedded in context and ongoing social practices [13]. The experience originates from context and social practices, allowing people to engage physically and emotionally with the service.

Dubberly and Evenson developed a model of the ideal “experience cycle”. The stages of that model are: *“i) connect & attract – the initial connection with the person and using that contact to make an effective and effective impression, ii) orient – the overview or preview of what’s available or possible, matching expectations and allowing exploration and supporting the early stages of learning, iii) interact – the completion of valuable or valued activities while delighting the senses, skilling, and establishing expectations about the overall content of encounters, iv) extend & retain –the person comes back for more as their expectations are raised, creating loyalty and leveraging existing experiences and v) advocate - the person actively communicates their satisfaction level to others”* [46].

In the CdM service **Stage i** will be achieved through advertisement and marketing material as well as the CdM website [1]. The website functions as an attraction point by presenting the service using aesthetically careful design and attention to depicting the location and core competency of the service. **Stage ii** “in our service this is accomplished through the online touchpoint: the website” [1]. Users will be oriented to the experience via prior user testimony which will give an idea of what can be done, and future experiences where the customer can sign up to participate. **Stage iii** is the CdM headquarters where all the participants and staff come together and where the staff explains the service to customers [1]. This interaction continues during the journey around the island when searching for the ingredients, when ingredients are found and explained and through the encounter with local culture and land [1]. Further interaction occurs at CdM headquarters after the journey, where the food is prepared in the kitchen facilities and then served in the dining room, and the voting happens [1]. Moreover, part of the interactions with the service also happen on the website touchpoint. Users are allowed to choose recipes, choose roles they want to play and comment and engage in conversations among each other before and after the experience. For **Stage iv**, the CdM service allows participants to revisit in distinct roles or in different seasons as well as buying some memorabilia in the shop available on the CdM headquarters, which should solidify experiences through memorabilia as well as the sharing of memories on the website [1]. Advocacy of **Stage v** in the cycle is facilitate by the CdM website, where customers share their experience using the service with others, commenting and voting and also buying our memorabilia in the CdM headquarters after finished the customer journey [1].

---

## 3.3. SERVICE BLUEPRINT

---

Service blueprint serves to specify in detail every aspect of the service [43]. This approach helps to project the service delivery process giving a visual schematic of the user, the service provider and other stakeholders that maybe be involved in the service. This artifact, creates a visual connection between the customer contact and the behind-the-scenes processes [1, 43]. The service blueprint involves the physical evidence of the service encounter in each touchpoint [1]. Our service has the reception, a physical spot responsible for interacting with the customers in order to give answers about any doubts that the customers may have, the kitchen where the Chef will cook for all participants, the food storage to keep the food fresh to serve to the customers, the van that will take all the participants through the island creating a beautiful journey, amongst others physical evidence that complement the CdM service. The line of interaction separates the touchpoint and the onstage. Touchpoint represent a point of contact between the customer and the service. Our service has the website, email, phone and a reception with a receptionist, that belongs to the onstage, in charge of responding to requests by customers. The onstage actions are defined as visible to the customer, and situated above the line of visibility [1]. Below the visible line we have the backstage actions and the supporting processes. In the backstage actions we have all the necessary actions to make the service happen, a bit like the behind the scenes in a theater. Since CdM is a complex service, a blueprint was developed to visually explain how to co-create and stage the experience [1].

The blueprint was divided in three services stages, the Supplier Searching stage, Chef Searching stage and Participants Experience stage. Further detail is provided in the following sub-sections. In the following sections we will highlight where the internet components are and further explain what it does in the blueprint.

### 3.3.1. Supplier Searching stage

---

Fig. 14 shows the blueprint of the supplier searching stage, where we highlight interactions between the website touchpoint and the supplier role. The suppliers can contact our service by phone, email or website. To subscribe to the service, as a supplier, he/she must have a source of ingredients, so as to be able to provide its service. To register on the website they have two choices, making contact with the CdM staff by using the contacts available on the website (**point number two**, see Fig. 14), or directly though the website using the registration form

**(point number one).** After registering on the website they can start introducing ingredients using the website touchpoint. The website has an interaction map of Madeira Island where suppliers can add ingredients. All this data will be available on the website **(point number three)**, to be used by the Chefs to introduce new recipes. Each time a new ingredient is added, the ingredients information is updated on the website to keep the Chef aware of what is new **(point number four)**. The Staff of CdM are responsible for contacting and checking the supplier's location to guarantee that the data available on the website about the ingredients is reliable. When everything is confirmed, the staff can update the ingredients information on the website, if necessary.

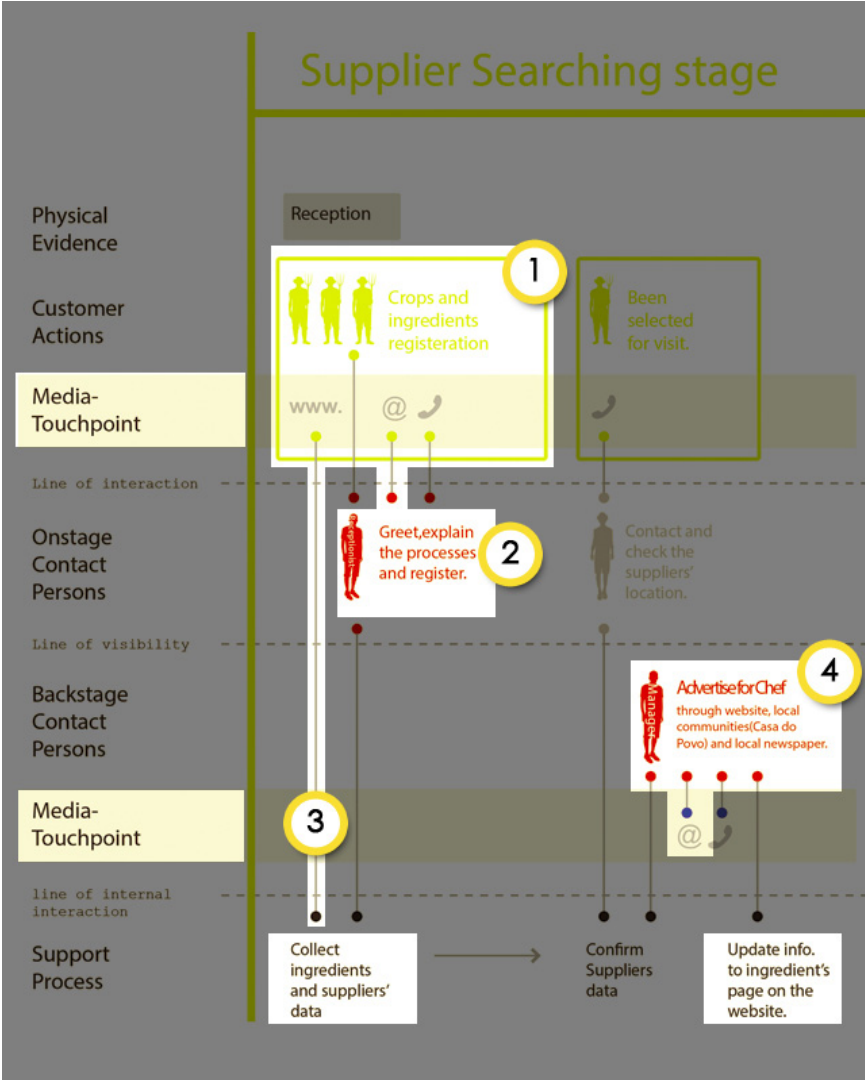


Fig. 14- Partial image of the blueprint - Supplier Searching Stage [1]

### 3.3.2.Chef Searching stage

The process of interaction with the service works in the same way across all roles. As mentioned in the previously section, the interaction can be through email, phone or website. Customers wanting to be part of the service as a Chef just need to do the registration on the website choosing their role (**point number 1**). The Chef can be any person who enjoys cooking or works as a chef on a daily basis. He is responsible for introducing recipes and propose menus to create journeys. All these actions can be done on the website (**point number 1**). The recipe is evaluated by the CdM Staff, and if required a new page with the journey details will be exposed on the website, ready to receive participants willing to participate in the journey (**point number two and three**).

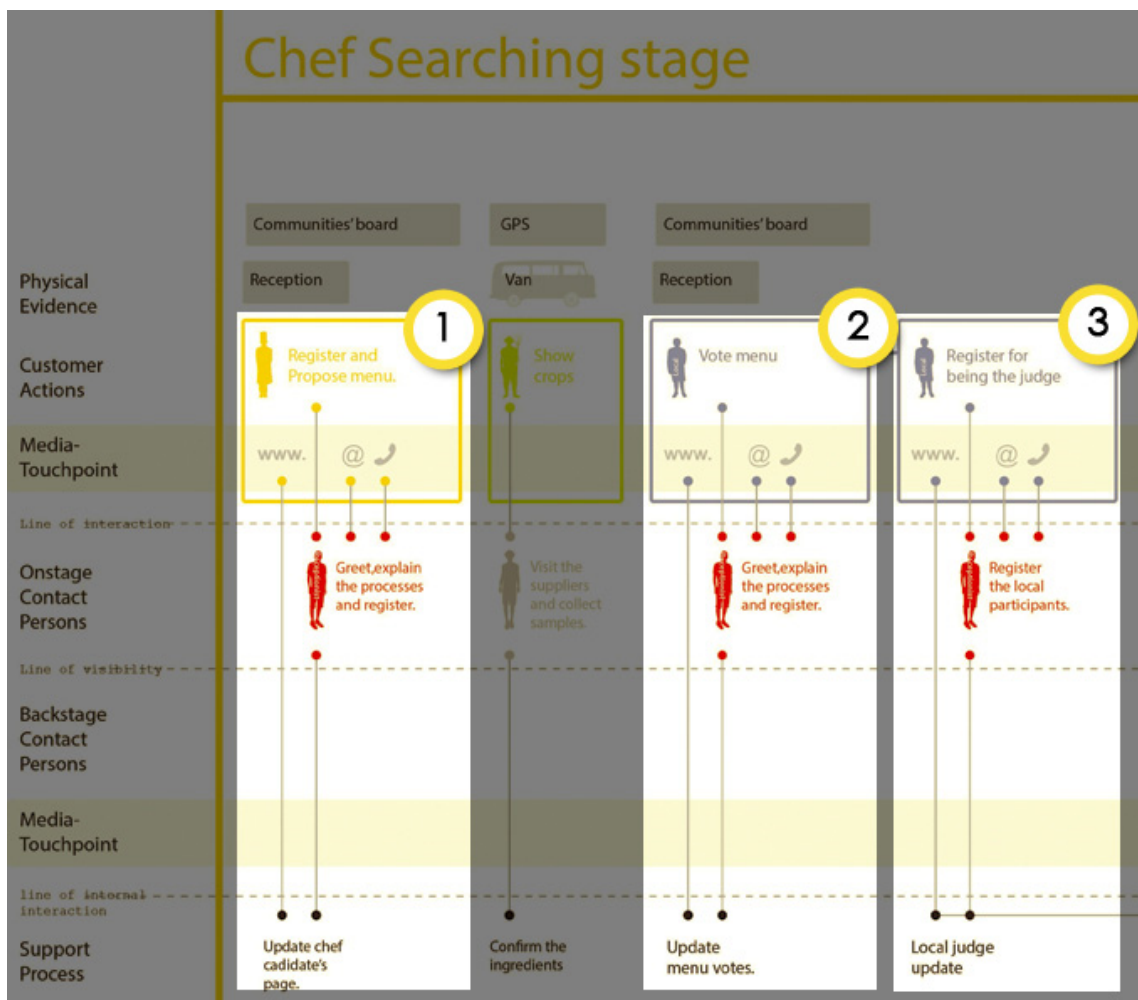


Fig. 15 - Image number 1 of the partial blueprint - Chef Searching Stage [1]

When the journey has enough participants, the staff contacts the chef to confirm the journey, and all the participants receive an email with the confirmation of the journey with all the details of the same (point number four, see Fig. 16).

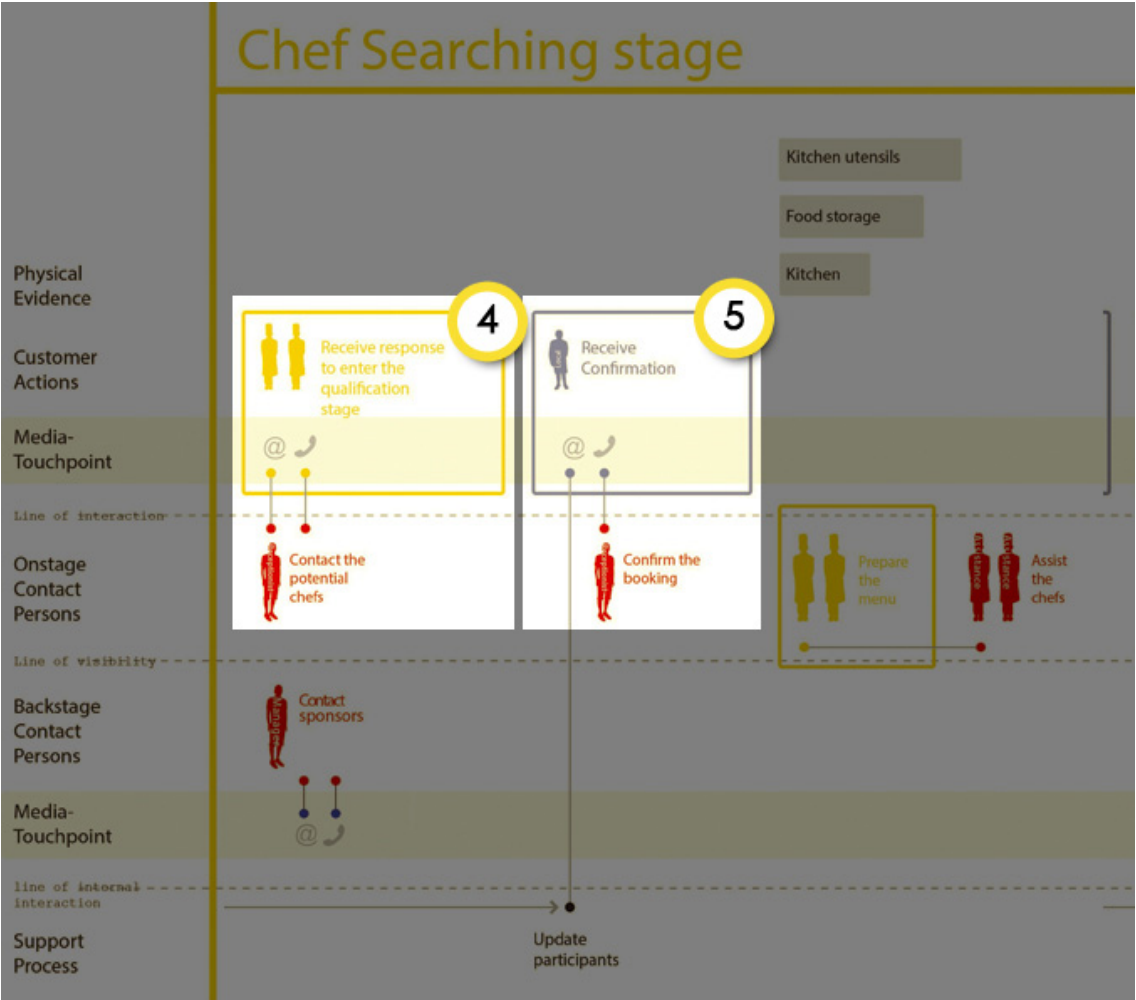


Fig. 16 - Image number 2 of the partial blueprint - Chef Searching Stage [1]

At the end of the journey, the Chef receives all the ingredients collected in the journey and can start cooking. Meanwhile, all other participants have time to go rest at CdM facilities, or they can watch the Chef cook and learn with him all the secrets and techniques from his recipe. The full blueprint of the Chef Searching stage can be seen on the appendix A.

### 3.3.3. Participants Experience stage

The participant co-creates the service passing over the line of visibility of a “traditional restaurant experience by engaging into many actions, that traditionally would be part of the backstage (e.g buying ingredients from the local farmers and getting involved in cooking the recipes together with the chef)” [1].

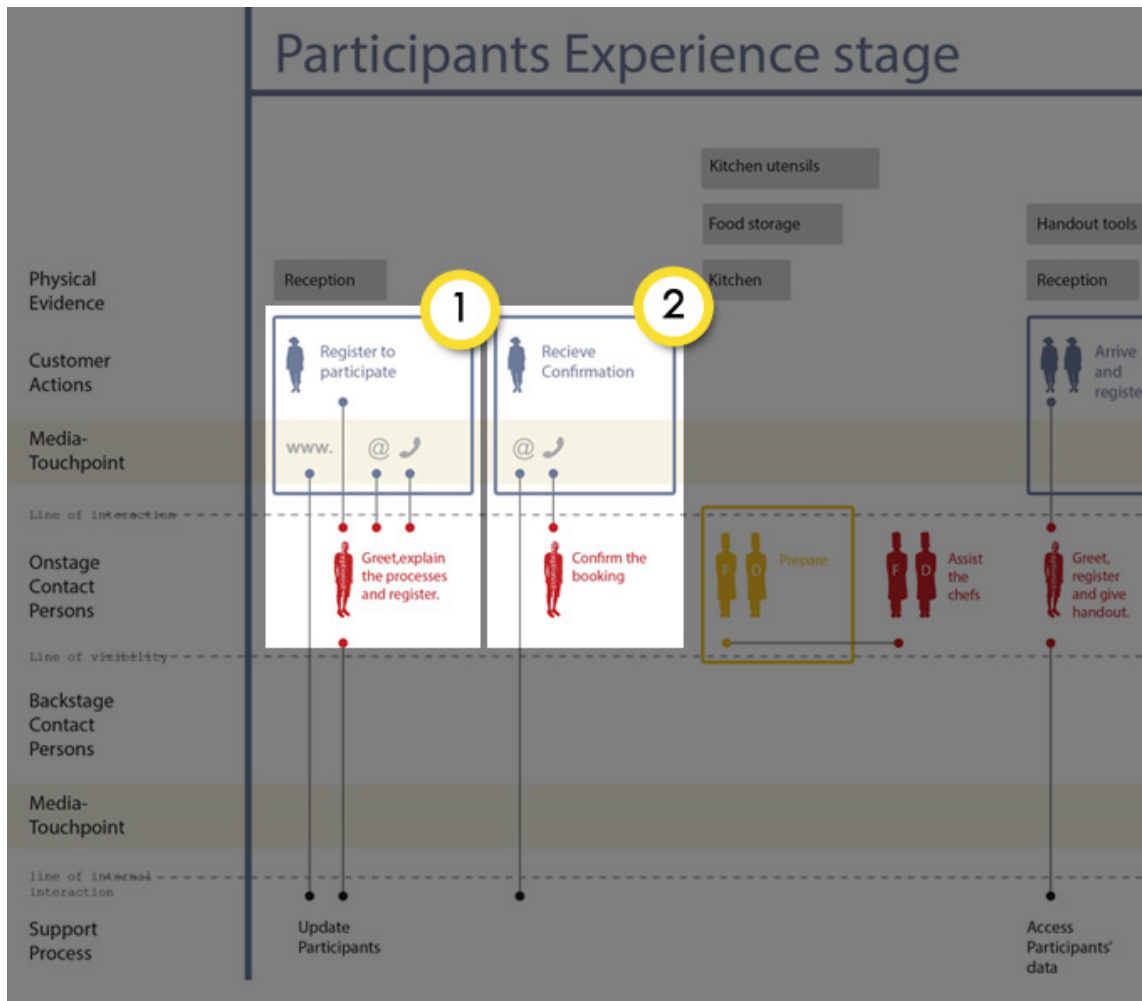


Fig. 17 - Image number 2 of the partial blueprint - Participant Searching Stage [1]

The Participant Experience stage involves planned social interaction with locals around food as a theme. We can see in the Fig. 17 the **point number one** represents the registration of participants for the service. After being registered on the service the participants can explore the website with more privileges compared to a non-user. If the participants decide to participate in a journey and once there are enough people to participate, they will receive a notification on their user profile about the journey details. After going around the island to get the ingredients

to be cooked in the kitchen facilities in the CDM headquarters, at the end of the dinner, as we can see in the Fig. 18 the final stage of the participants experience, they can use the website to give feedback about their experience with the service (**point number three**) and also the chefs at the end of the dinner can give feedback (**point number four**). The full blueprint of the Participant Searching stage can be seen on the appendix A.

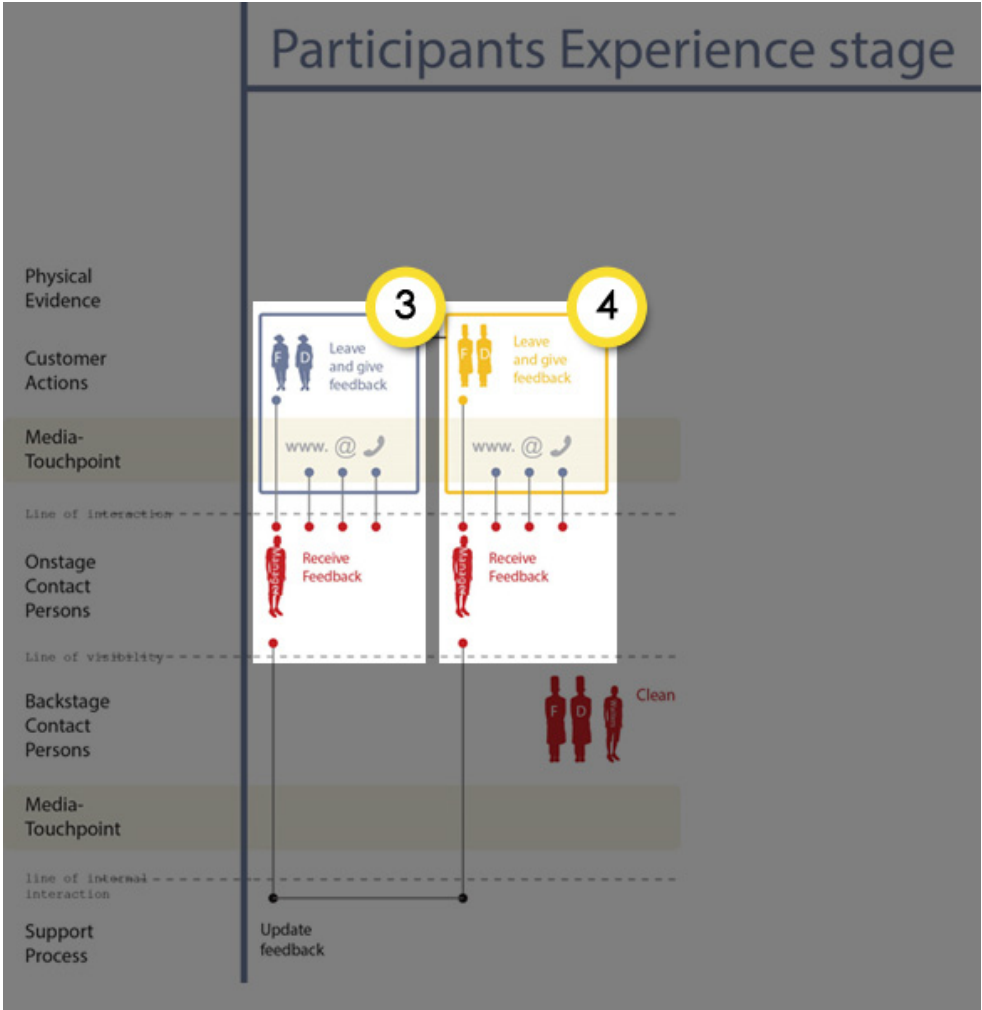


Fig. 18 - Image number 2 of the partial blueprint - Participant Searching Stage [1]

---

## **4. WEB-APPLICATION(COZINHA DA MADEIRA)**

---

After gaining a deeper understanding of service design and its implications, we designed one of the touchpoints in our service: a website. It allows non-subscribers and subscribers to visualize what ingredients, recipes and journeys are available and also the feedback provided by previous participants.

---

### **4.1. MODELING**

---

Modeling is an important and necessary process to design an application. It helps to, write, design, create, discuss and visualize ideas in the lower stages of the design conception, decreasing possible risks and errors in the implementation stage.

#### **4.1.1.Requirements**

---

A requirement is a specification of an action or condition that the system must be able to satisfy [47]. The information gathered about the project is important, giving us a detailed perception of what the system should be able to do. Requirements can be categorized as functional requirements or non-functional requirements [47]. These requirements were created based on the service concept and discussions with the supervisors.

##### **4.1.1.1.Functional Requirements (FR)**

Functional requirements describe an action or function that the system should be able to execute. They may also represent what the users would expect to have in the application [47].

The CdM functional requirements are:

Table 1 - Functional Requirements

<b>ID</b>	<b>Description</b>
FR1	The Chef, suppliers and participants must be able to register on the system.
FR2	All Stakeholders must be able to edit their personal data.
FR3	The suppliers must be able to add ingredients on the system.
FR4	All Stakeholders must be able to visualize their profiles.
FR5	The system must allow the addition of further information about the previously added products.
FR6	The suppliers must be able to add, remove and edit ingredients.
FR7	The chef must be able to add a new recipe.
FR8	The chef must be able to propose a journey.
FR9	The chef must be able to add, remove and edit recipe.
FR10	The system must allow the registered users to dislike a previously added like.
FR11	The system must allow the registered users to remove a previously added comment.
FR12	The system must be able to filter all the available ingredients through the present season.
FR13	The system must be able to notify the chef that he/she was selected for the journey.
FR14	The system must allow all the participants to sign up for the journey.
FR15	The system must be able to detect that the minimum number of participants allowed are already full.
FR16	The system must be able to inform about the journey details to all participants.
FR17	The system must be able to detect which ingredients did the suppliers not provide
FR18	The system must allow the addition of comments from the registered users
FR19	The system must allow the addition of likes from the registered users
FR20	The administrator of the website should be able to insert, edit and remove any type of information.
FR21	The system must be able to show important information about the service, including the address of headquarter CDM

#### **4.1.1.2.Non-Functional Requirements (NFR)**

The non-functional requirements represent the overall aspects of the system, which include performance, security, integration with the internet and strengths [47].

The non-functional requirements are:

Table 2 - Non-Functional Requirements

ID	Description
NFR1	The system shall protect the data from unauthorized access.
NFR2	The system shall allow users to add any type of file to the system
NFR3	The system query shall not take more than 3 minutes to retrieve data from the server.
NFR4	The system shall be prepared to backup the data in case of a fail
NFR5	The system shall allow that the users could access to their account permanently

#### 4.1.2. Use Cases

---

Use cases are used to help the designer to identify the roles of users that interact with the system as also the type of interaction. In this diagram two major swim lanes divide user intentions and system responsibilities. The notation is quite simple, we use sticky figures to represent actors and ellipses representing the use cases [48]. The relationships between use cases are represented by includes and extends. Include is used when you want to avoid duplication of uses cases, the base use cases incorporates the included case behaviors [47]. The extend relationship implicitly incorporates the extended use case behavior [47]. Lano and Wiley deepened the relationship includes and extends between uses cases, stating that *“every execution of the including use case contains an execution of the included use case, and there exists an execution of the extended use case that contains an execution of the extension use case”* [48].

The actors represent entities that directly or indirectly interact with the system. In our project we have five actors: chef, supplier, participants, administrator and unregistered users. In detail:

**Chef** – Responsible for adding recipes and propose journeys.

**Supplier** – Responsible for adding ingredients that are included in the recipes, that were added by the Chef.

**Participants** – Interact more actively in the system by commenting and putting likes in the proposed recipes or journeys, keeping a level of social communication and sharing between all the stakeholders.

**Administrator** – Manages all the information within the website, particularly the evaluation of the recipes that will be responsible to output a journey.

**Unregister user** - An unregistered user is able to visualize all the social communication between the stakeholders already subscribed, the journey, recipes and information about ingredients.

The users can interact through the system, based on their role (participant, chef, supplier or administrator). Each actor can have equal interactions or a few specifically directed to their role. For example the supplier is the only one that can add ingredients. Such interactions are represented by the use cases, which represent the overall functionalities of the system. Fig. 19, is the use case diagram, in which all actors and use cases are depicted (refer to appendix B – Use cases diagram).

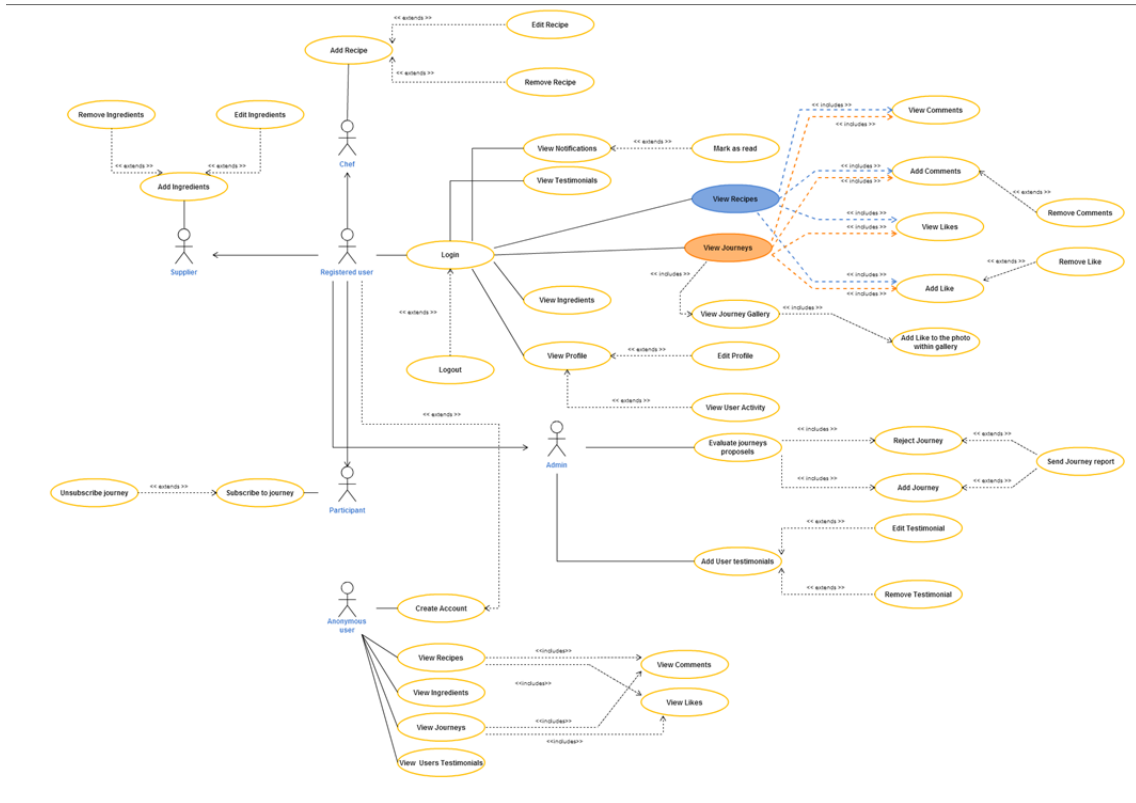


Fig. 19 – Use cases diagram

### 4.1.3. Essential Use Case and Task Flows

The Essential Use case model is where we choose the most important uses case, that needs a special attention, i.e. these are technology free, general descriptions of user intentions and system responsibilities. The essential use cases show us the flow between the system and the user, giving us a sequence of interaction, with abstract steps, represented by the users intentions and the system responsibilities, as aforementioned. This diagram allows us to have a variety of concrete implementations [49]. In the Fig. 20, we can see a combination of these models (refer to appendix C – Essential Use Case and Task Flows).

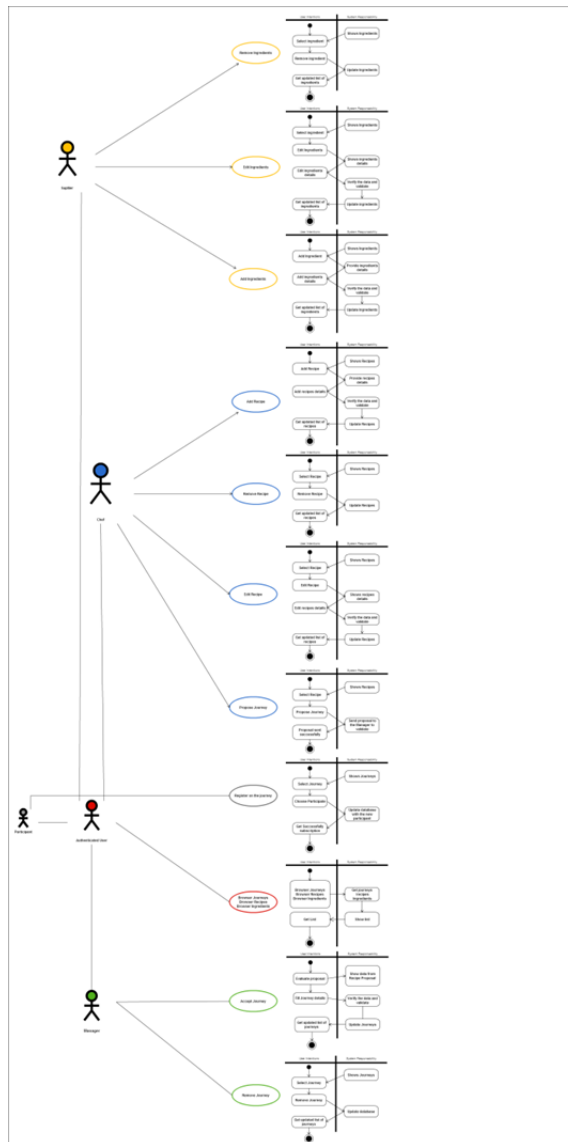


Fig. 20- Essential Use Case and Task Flows

#### 4.1.4. Wisdom Model

The Wisdom architectural model represents the logic map of the system where we have the different user interfaces of the system. This model is an improvement of the UML modeling (object oriented), and concerns with the overall organization of the user interface in an interactive system. Depicted in Fig. 21, we have the view class elements that represent the interaction space within the user interface. These elements are used to build the interaction model between the system and the users (human-actors) [50]. This model also depicts the connections between the interaction spaces (through the notions of `<<includes>>` and `<<navigation>>`). Additionally, it also describes how the physical interaction within the system takes place. This is achieved through the notion of *input element* (incoming information on the interface), *output element* (outgoing information on the interface) and *actions* (actions that can be done on the interface) [50]. This model can be found in Appendix D - Wisdom Model.

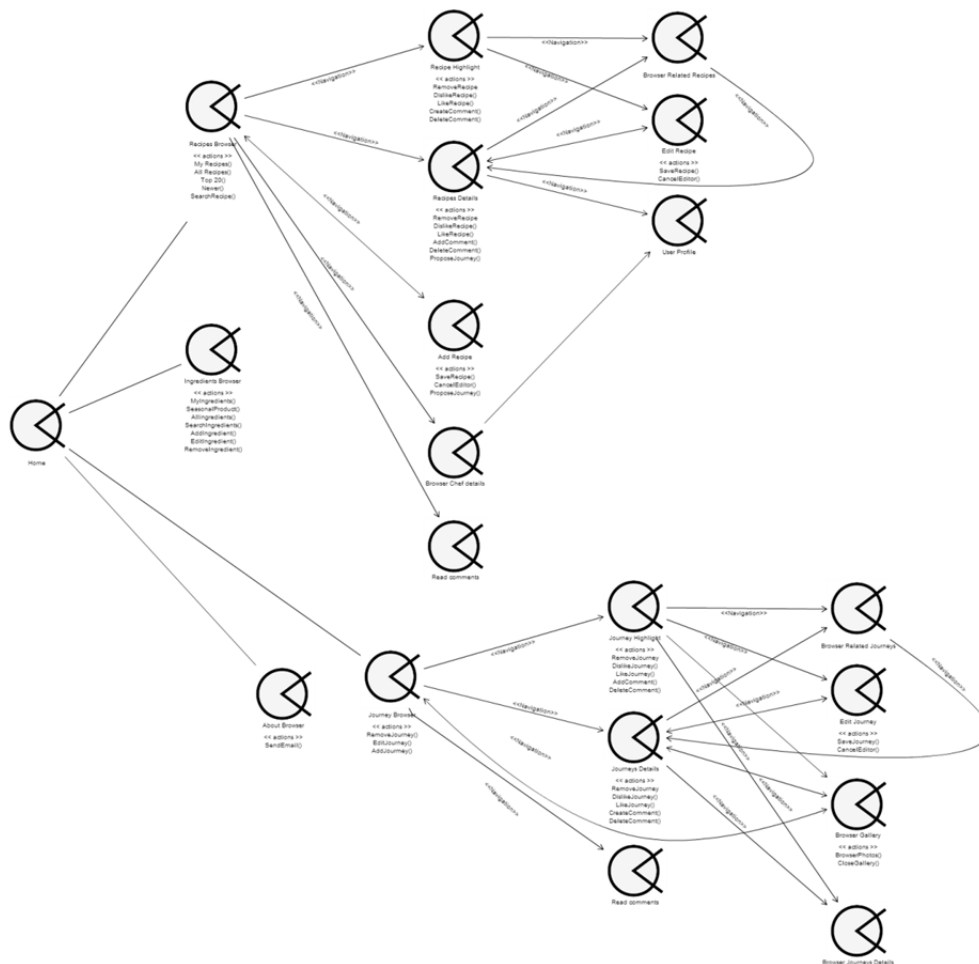


Fig. 21 - Wisdom Model diagram

---

## 4.2. IMPLEMENTATION ASPECTS

---

All services encompass several touchpoints, through which participants interact with the service. In CdM, we have designed and developed a website, which is one of the touchpoints available to interact with the service. With this platform users can access all the information related to their roles in the service and the feedback given by people who have used the service, thus creating a CdM community, where people can exchange lived ideas and experiences.

This website was built, using an FTP server, a database (*MySQL*), to store all the needed data. In what concerns development, CdM's website was built according to the Model View Controller (MVC) programming paradigm. Several technologies were used to implement it, namely, CSS (*Cascading Style Sheet*), PHP (*Hypertext Preprocessor*), Javascript and HTML (*HyperText Markup Language*). HTML was used for the interaction spaces, CSS was employed for formatting and to take care of the look and feel, PHP was employed for data handling and, last but not the least, Javascript was the scripting language used to build the client-side scripts to interact with the user.

In the next section we present all the development process to implement the website of CdM.

### 4.2.1. Model View Controller Pattern

---

To implement the web application, we used a powerful open source PHP framework named Codeigniter [51]. This framework is known for being extremely easy to use and practice with a very clear documentation, which helps the development and is based on MVC programming paradigm.

The MVC is one of the most used methods to organize the files that form a website, separating the website into different parts, instead of putting all code in only one file.

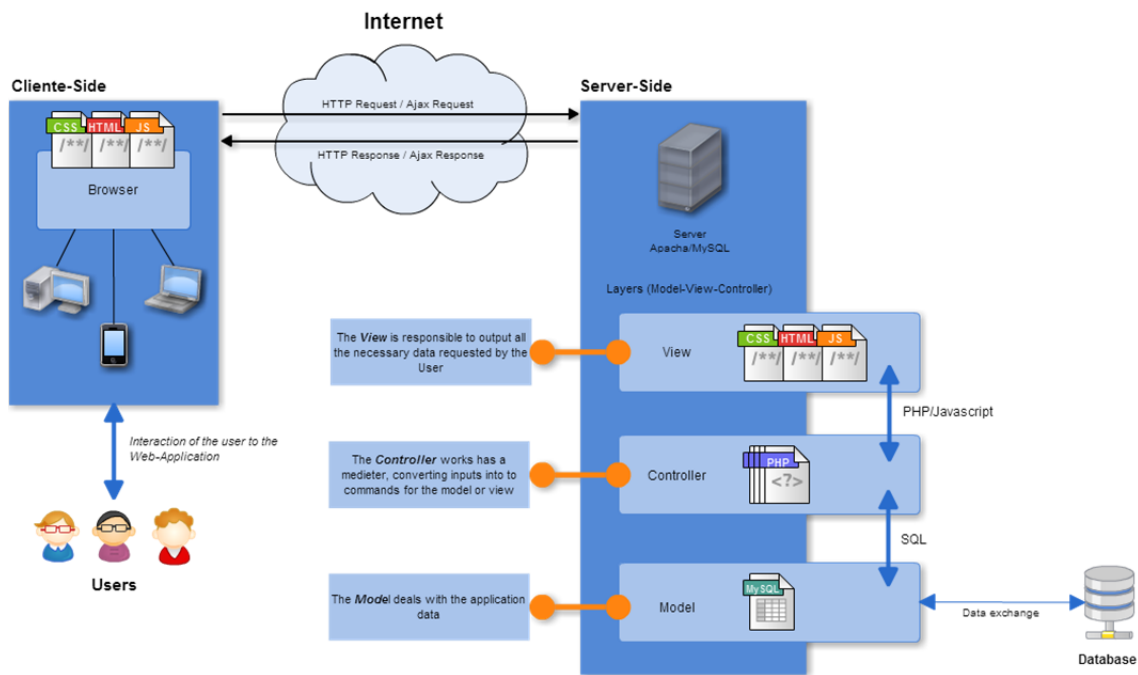


Fig. 22 - Web Application abstract architecture

The Codeigniter framework explores the directory into three folders, Model, View and Controller creating a coherent structure. The model, represent the application data, allowing us to manage the database through which it can fetch, modify, insert and remove data [51]. All the files within the view folder, represents the output of data to our users and visitors of our application, no programming logic, SQL (*Structured Query Language*) queries, or any type of script must be run here [51]. The controller is the “brain” of the MVC pattern where all the programming logic occurs. It is responsible for calling and fetching the data from the Model and further on for load the data and passing it to the Views, thus sending the results to the users. It’s a very clean way to keep your code organize and makes it easy to maintain the code repositories.

We can see the abstract architecture of our application in the Fig. 22. This illustrates how the files are organized and how the three components (models, views, controllers) communicate between each other.

## 4.2.2. Entity Relationship Diagram

Entity Relationship diagrams (Fig. 23) are graphical specifications that represent the static relationships within the system [47]. The purpose of this diagram is to represent all the entities involved in the project along with their attributes and the relations between them.

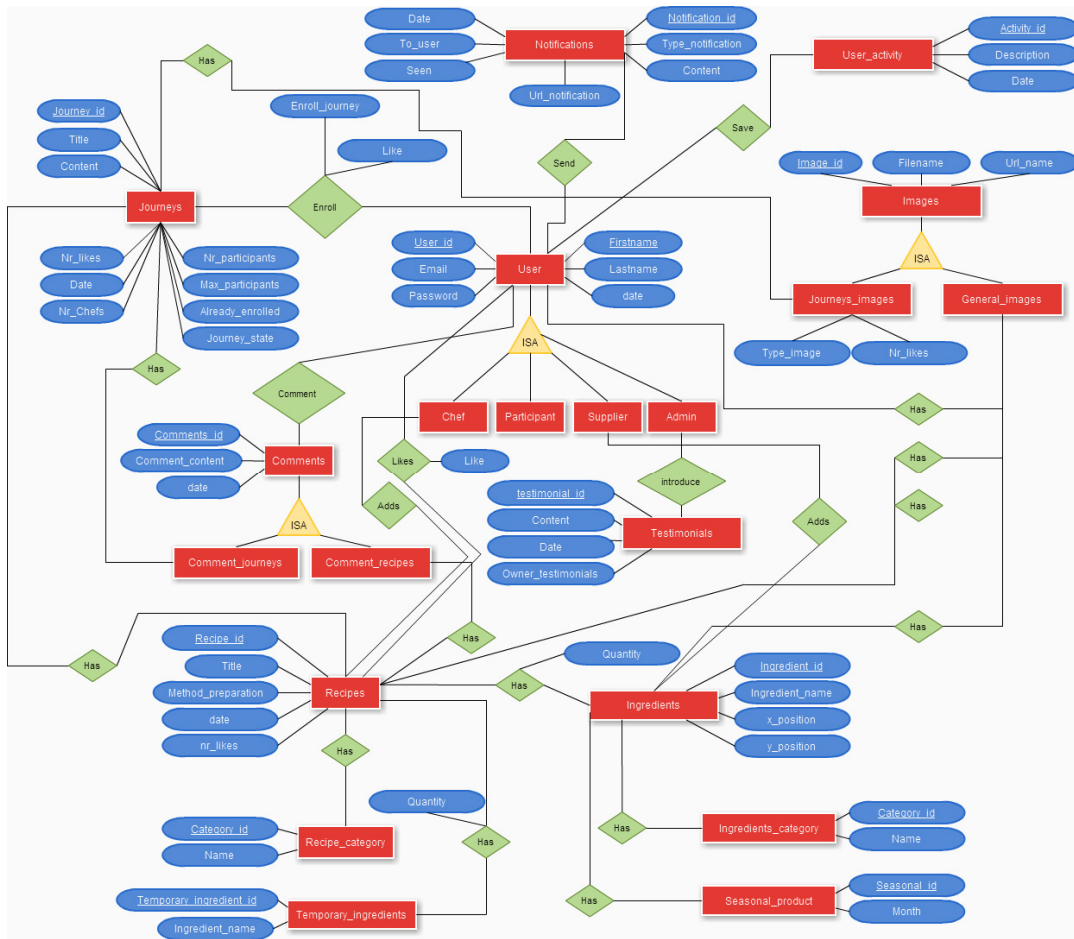


Fig. 23 - Database : Entity Relationship Diagram

In Fig. 23, we have for example the user entity (all the entities are represented by the red rectangle) with their attributes (represented by the blue circle). We also have the relations between the entities represented by the green rhombus. The ISA relationship represented by the yellow triangle is designated by the relationship between superclass/subclass, where we can see in the Fig. 23, the entity *user* is the superclass of the entities chef, participant, supplier and admin. Each subclass of the entity *user* inherits its attributes, avoiding duplication of data in final database model. This model can be found in the appendix E.

### 4.2.2.1. Relational Model

Fig. 24 represents the relational model that define the tables of the database and their relationships. This model can be found in the appendix F.

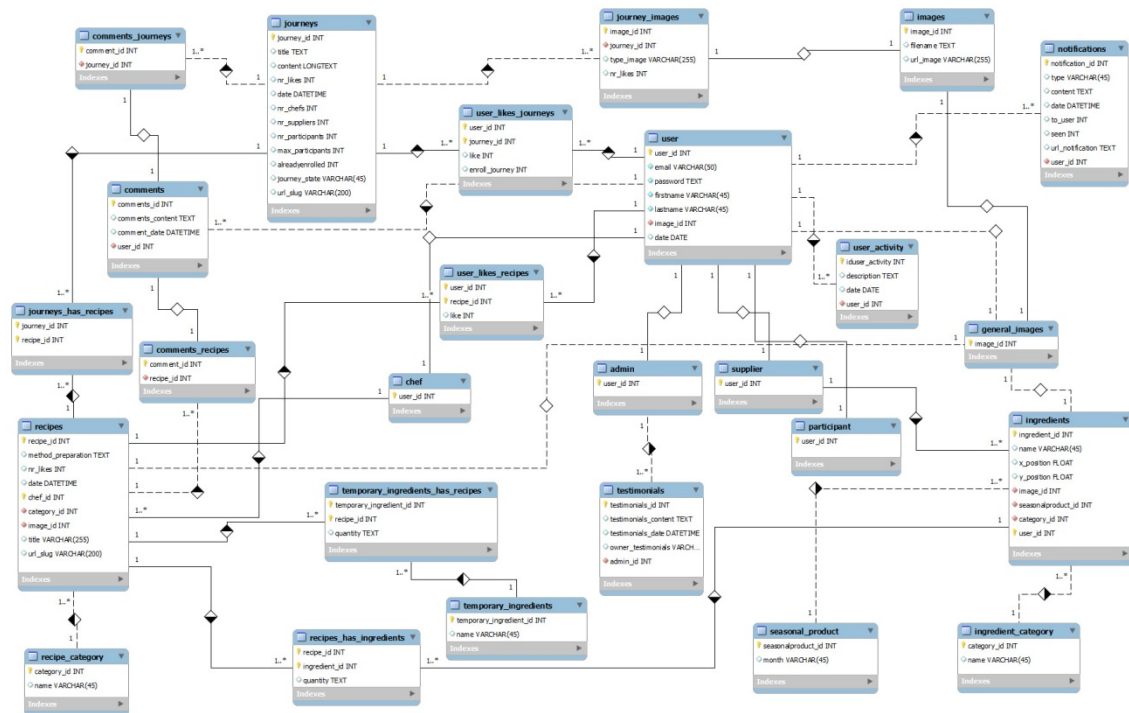


Fig. 24- Database: Relational Model

### 4.2.3. Practical Example of MVC Pattern Using Codeigniter

In this section we will show the internal behavior of the MVC pattern using the Codeigniter framework. We will also show some snippets of code to demonstrate how the Codeigniter deals with the communication between model, controller and view.

#### 4.2.3.1. Controller

In Fig. 26, we have a function called “all\_ingredients” which, as the name implies, serves to gather all the ingredients information from the database. We call the function within the ingredients model, as one can see in line 37 (`$data['ingredients_list'] = $this-`

>ingredients\_model->get\_all\_ingredients()), to receive the necessary data to print to the view. Codeigniter uses the array *\$data* to keep all the information that we want to send to the view, the index that we assign is the one used in the view to access the data. Respecting the principle of DRY (*don't repeat yourself*), Codeigniter allows us to extend the core system class [52]. The way that is ensured is by creating a file called "MY\_Controller" inside your local "application/core" directory and guarantee that all the available controllers extends "MY\_controller" instead of "CI\_controller" that represent the core controller of the Codeigniter framework [52], (Fig. 25).

```
3 class Ingredients extends MY_controller {
4
5
6     public function __construct() {
7         parent::__construct();
8         $this->load->model('ingredients_model');
9         $this->load->model('upload_model');
10        $this->load->model('activity_report');
11        $this->load->model('recipe_model');
12    }
13 }
```

Fig. 25 - A snippet of code of MY\_controller class

```
32 public function all_ingredients()
33 {
34     $page = 'ingredients';
35     $data['title'] = 'All Ingredients';
36     $data['active_submenu'] = 'all_ingredients';
37     $data['ingredients_list'] = $this->ingredients_model->get_all_ingredients();
38     $data['scripts'] = $this->config->item('ingredients_scripts');
39     $this->view($page, $data);
40 }
```

Fig. 26 - A snippet of code from a function within the ingredients controller

This approach gives us the opportunity to create general functions that serves other parts of the code avoiding duplication. In Fig. 27 we can see a general function called "view" allowing the manipulation of what we want to print on the view. The function view receives two arguments, *\$page* and *\$data* respectively meaning the name of the page that will be printed to the user and the data need to that page.

```

10 | public function view($page,$data)
11 | {
12 |     if(!file_exists('application/views/'.$page.'.php'))
13 |     {
14 |         //Page not found, error message will show up.
15 |         show_404();
16 |     }
17 |     if($this->session->userdata('logged_in'))
18 |     {$data['image_profile'] = $this->user_model->get_image_name($this->session->userdata('user_id'));}
19 |     $data['activeTab'] = $page;
20 |     $data['logged_user_id'] = $this->session->userdata('user_id');
21 |     $data['page_name'] = $page;
22 |     $data['role'] = $this->session->userdata('role');
23 |     $data['user_state'] = $this->check_user_loggin();
24 |     $data['user_name'] = $this->session->userdata('firstname')." "." ".$this->session->userdata('lastname');
25 |     $data['header']= $this->load->view('includes/generalheader',$data);
26 |     $data['content']=$this->load->view($page,$data);
27 |     $data['footer']=$this->load->view('includes/footer',$data);
28 |     $this->load->view('includes/cdmtemplate',$data);
29 | }

```

Fig. 27 -A function accessible to all controllers

#### 4.2.3.2.Model

Models are responsible for working with information available in database. The folder 'Models' contains PHP classes to each kind of data that needs to be manipulated [53]. To maintain the organization of the code, we have different classes to treat different data. Here we show an example of the "ingredients\_model" that have all the necessary functions to manipulate the ingredients within the database.

To use the classes within the 'Model' folder, each class needs to be called within each controller (Fig. 25).

In Fig. 28 we have an example of a function within the "ingredients\_model" class. This function calls an external function "general\_ingredients\_query" (Fig. 28 at line 108) which has a general query that works with others functions avoiding duplication of code. Codeigniter uses "a modified version of the Active Record Database Pattern" [54] which allows us to manage data from the database with less scripting; for example instead of using the classical way "SELECT title, content, date FROM mytable" we used "\$this->db->get('mytable');". The function will return an object with the data retrieved from the database using the line of code "\$query->result()". In Fig. 29 we can see a practical example of how the active record works in Codeigniter.

```

106 | function get_all_ingredients()
107 | {
108 |     $this->general_ingredients_query();
109 |     $query = $this->db->get();
110 |     return $query->result();
111 |
112 |
113 | }

```

Fig. 28 - A snippet of code from the ingredient model

```

87 | function general_ingredients_query()
88 | {
89 |     $this->db->select('ingredient_id,ingredients.name,ingredient_category.name as category_name,
90 |         filename,ingredients.x_position,ingredients.y_position,
91 |         user_id,month');
92 |     $this->db->from('ingredients,ingredient_category,seasonal_product,images,general_images');
93 |     $this->db->where('ingredients.category_id = ingredient_category.category_id');
94 |     $this->db->where('ingredients.seasonalproduct_id = seasonal_product.seasonalproduct_id');
95 |     $this->db->where('ingredients.image_id = general_images.image_id');
96 |     $this->db->where('general_images.image_id = images.image_id');
97 | }

```

Fig. 29 - A snippet of code of active record mechanism used in Codeigniter

#### 4.2.3.3.View

Our views are separated in three parts: header, content and footer. We created a template (Fig. 30) that loads every part of the view in one page, avoiding code duplication, giving us the liberty to change just the content (Fig. 31) and maintain the header and the footer that works equally on every page of the website. After the controller loads the necessary data from the model, it sends the page to the user with the information retrieved from the database.

```

<?php $header ?>
<?php $content ?>
<?php $footer ?>

```

Fig. 30 - Template used to manipulate the views

```

7 <div class="content">
8 <div class="submenu">
9 <ul class="smenu">
10 <?php if($role == 'Supplier' && $user_state == TRUE){?>
11 <li <?php if($active_submenu == "my_ingredients") echo "class=\"activemenu\" id=\"my_ingredients\">
12 <li <?php if($active_submenu == "all_ingredients") echo "class=\"activemenu\" id=\"all_ingredients\">
13 <?php }else{?>
14 <li <?php if($active_submenu == "all_ingredients") echo "class=\"activemenu\" id=\"all_ingredients\">
15 <li <?php if($active_submenu == "seasonal_products") echo "class=\"activemenu\" id=\"seasonal_products\">
16 </li>
17 </ul>
18 </div>
19 <div class="top-search">
20 <form class="formsearch">
21 <label for="s">Search</label>
22 <span class="wrapsearch">
23 <input type="text" name="s" id="s" class="input-search">
24 <input type="submit" value="" id="submit" class="searchbutton">
25 </span>
26 </form>
27 </div>
28 <div class="imagetitle">
29 <h5><?php echo $title; ?></h5>
30 </div>

```

Fig. 31 - A snippet of code within one of the HTML files

#### 4.2.4. Libraries

The website was built with the help of some external libraries that are listed below.

Table 3 - External Libraries list used to help the development process

Library Name	Version	Description
jQuery	1.8.3 (min)	This library was used to support the user interface interactions.
jQueryUI	1.9.2 (min)	This library was used to support the visual aspects of the user interface.
Kinetic	4.3.3 (min)	This library was used to support the development of the interactive map of Madeira Island.

#### 4.2.5. Plug-ins

Besides the libraries described before, we also used some important plug-ins in our website.

Table 4 - Plug-ins list used to help the development process

Plug-in Name	Version	Description
jQuery.jgrowl	1.2.10 (min)	This plug-in was used to help the development of the notifications for the user.
jQuery.nivo.slider	3.1 (min)	This plug-in was used to display the gallery slide of the recipes and journeys.
Lightbox	2.51	This plug-in was used to maximize the images after the user clicks on them

---

## 4.3. WEB-APPLICATION DESIGN (COZINHA DA MADEIRA)

---

### 4.3.1. Logo Concept

---

The logo is an important element in service design where branding plays an important role for organizations and individuals engaged in the service. Our logo was designed keeping in consideration what message the service would want to pass to the costumers. The CdM logo reflects old traditions and habits by using the pattern of an old tablecloth along with the mountains with the trail, representing the journey around the Madeira Island. The colors indicate something unique, traditional and respectful of nature. The typeface we chose adds something new and modern. There are no sharp edges similar to those found in old typefaces. The roundedness in this typeface brings some freshness and modernity to the overall design (Fig. 32).



Fig. 32 - Logotype of the CdM service

### 4.3.2. Graphic Design Decisions

---

In order to complement our design concept and ideas for the logo, we used a wood pattern for the background of the website, representing the wood of traditional kitchen tables. As for the banner and footer, we choose a texture of old tablecloths. The website was designed from scratch, and serves as a unique design in the industry. The website was developed around the main interfaces: home, ingredients, recipes and journeys. In the following sections we describe the main interfaces and explain in detail some of the key decisions guiding the design process.

### 4.3.2.1.Home



Fig. 33 - Homepage without user logged in

1 - In the language menu, we decided to use the acronym of the country, because not everyone is familiar with the flags of the countries.

2 - The login form is usually located in the top right corner of the websites.

3 – The image on the header points to a video explaining how the service works. It is important to provide the user with an initial idea of how the service works, thus helping us capture their attention and hopefully their interest in the service.

4 –We represent the journeys in the first page through “review the last journeys”, because new users seek for something that’s already done by others as evidence or examples. They also need to browse through the feedback from others members who share their experiences and discuss using the comments sections. We also allow the users to browse the photos from the journeys gallery, grabbing the customer’s attention with beautiful photos of landscape from Madeira Island.

5 – This section provides the Chef with a quick view of the new ingredients that are available to them for proposing a future recipe.

6 –This section gives quick access to the recipes and informs all the registered and non-registered users about what is going on in the recipes list and what is new.

7 – This section is for special comments that are made in the headquarters of CdM after dinnertime enabling users to share their opinions and experiences.

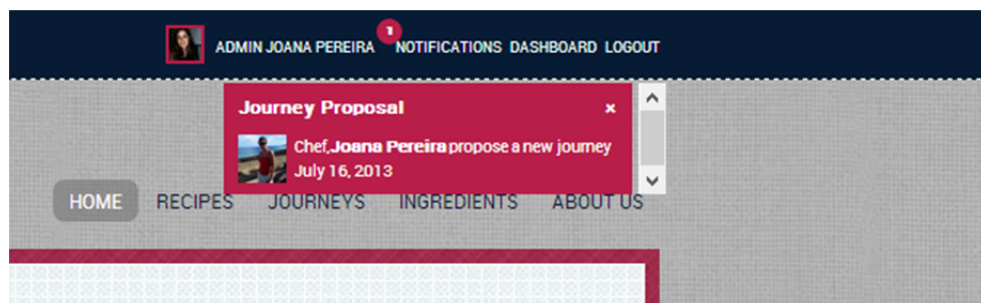


Fig. 34 - Homepage with a user logged in

In Fig. 34 we show a partial image of the point number 2 described above, but with a logged-in user. When clicking the notifications link, we can see the notifications messages.

## 4.3.2.2.Recipes



Fig. 35 - Recipe page without login

1 - Here we exhibit a slide show of the 3 most voted recipes

2 - A search form, allowing quick access to a specific recipe.

3 – You can also filter the recipes by, 'all recipes' or top 20.

4 – The Chef with more votes in the total of their recipes will have an honored picture in the recipes page.

5 – In this section we have a quick over look of the last comments that were made in all recipes.

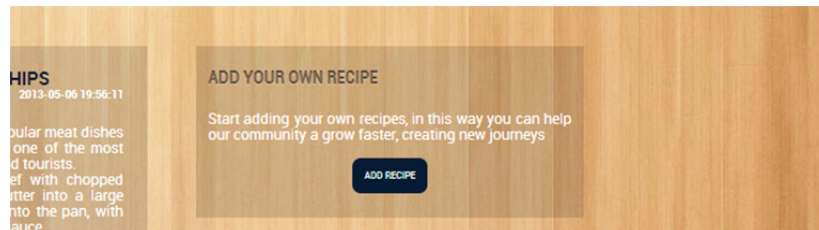


Fig. 36 - Add recipe button

In Fig. 36, we have a partial section that belongs to the recipe main page, but only appears when a user designated as a chef logs in, since they are the only ones who can add recipes. You can have a bigger vision of this page with a chef logged in, on the appendix H in the chef section.



Fig. 37 - Recipe details page

In the recipe details page (Fig. 38, refer to appendix H, section chef), we have the recipe description, including ingredients from the market and ingredients from the journeys, a large photo representing the owner of the chef, a heart button, representing the like button where

users can like or dislike the respective recipe and the comments sections where the social interactions happens.

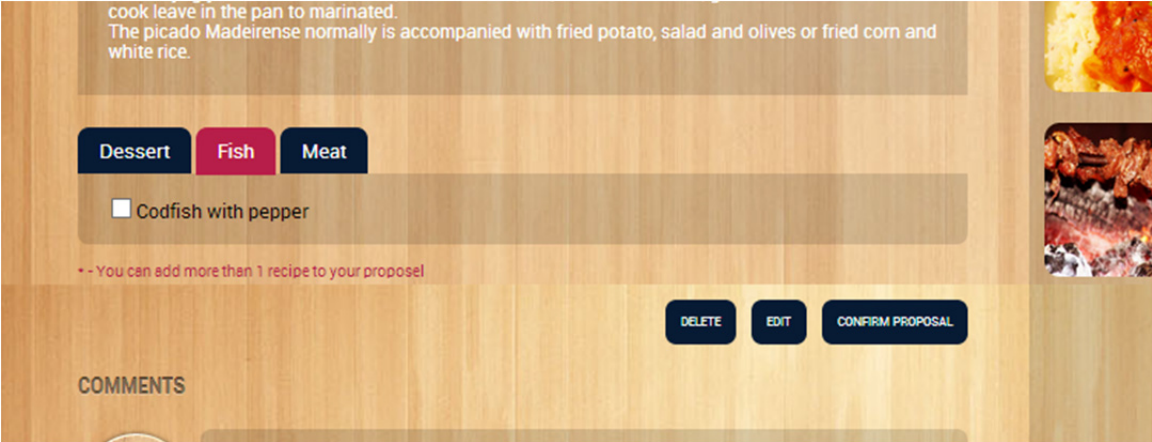


Fig. 38 - Proposing a journey by choosing the recipes

The section in Fig. 38, is only visible to a chef when logged in and also owner of the respective recipe that you are visualizing. Each tab represent the type of recipe and the chef can propose a journey with more than one recipe. All the recipes listed in this section, belong to the chef who has logged in. After confirming the proposal, the chef has to wait for the staff of CdM to evaluate (refer to appendix H, section chef).

### 4.3.2.3. Journeys

PT EN User email Password LOGIN REGISTER FORGET PASSWORD?

**Cozinha da Madeira** HOME RECIPES JOURNEYS INGREDIENTS ABOUT US

#### PONTA DO PARGO

MAY 09, 2013

We start going directly to calheta to grab the ingredients necessary to cook ours recipes, starting with the garlic and the eggs. After that we will make a stop in Ponta do Pargo. A beautiful place in Madera island, with an awesome view.

Ponta do pargo is on the extreme coastal west point of the island, it's called Ponta do pargo for being rich in a species of fish called pargo.---

[READ MORE](#)

ALL JOURNEYS OPENED JOURNEY CLOSED JOURNEY SEARCH

#### ALL JOURNEYS

##### OPENED JOURNEY

#### FAMOUS HOUSE OF SANTANA

2013-05-11 00:00:00

With this journey the Cozinha da Madeira pretend to take our participants to see the famous house of Santana, here in Madera island.

First of all we go to Santa Cruz to grab the white cabbage.---

[Read More](#)

##### OPENED JOURNEY

#### SANTA CRUZ

2013-05-11 00:00:00

We will start the journey going to Santa Cruz. Santa Cruz have a promenade close to the sea, where we have the bars, the bech and swimming pools, restaurants, hotels, it's very beautiful and peaceful.---

[Read More](#)

##### OPENED JOURNEY

#### PONTA DO PARGO

2013-05-09 00:00:00

We start going directly to calheta to grab the ingredients necessary to cook ours recipes, starting with the garlic and the eggs. After that we will make a stop in Ponta do Pargo. A beautiful place.---

[Read More](#)

#### GALLERY

#### RECENT COMMENTS

by Admin Joana Pereira at May 13, 2013  
Beautiful houses of Santana .)

by Admin Joana Pereira at May 07, 2013  
Hi Elton, I'm glad that you liked of this journey, the price isn't already defined but I let you know.---

by Elton Gouveia at May 07, 2013  
I'm interested to participate in this journey. Can you please tell me the cost per person?

1 2 >

COZINHA DA MADEIRA - 2012. PRIVACY POLICY

Fig. 39 - Journey page

The concept used to design the interface in Fig. 39, is similar to the recipes page with the only difference being the theme, which in this case is 'journeys' while in the other it is 'recipes'. In the right side of the webpage, we have the journey gallery with the photos most voted by the users. This keeps the design of the interface consistent.



Fig. 40 - Journey details

In the journey details page (Fig. 40, refer to appendix H), we have the journey description, with all the information needed to perform the journey, including a schematic idea of the trails represented by the photo generated by the interactive map and also the related recipes.

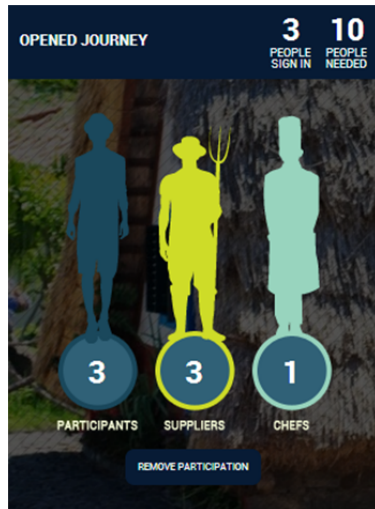


Fig. 41 - Example of a journey with a logged user

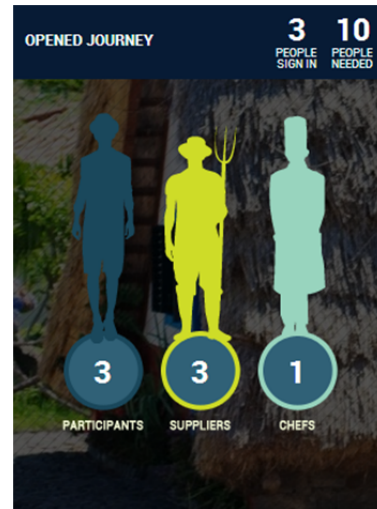


Fig. 42 - Example of a journey with a non-register user

In Fig. 40 we display all the journey details, zooming in further on the participants details. Fig. 41 we have an example of an open journey with a participant logged in wherein participants can subscribe to the journey. We also have the number of suppliers that provided their ingredients to the journey and the chefs who proposed the recipes for the journey. In Fig. 42 we have an example of a non-registered user, where we only display the of participants, hiding the participation button, since a user needs to log in first in order to participate in a journey.

#### 4.3.2.4. Ingredients

In Fig. 43, we have the ingredients page, with a supplier logged in. As we said before the supplier is the only one capable to introduce an ingredient to our service. The map represented in the Fig. 43 displays Madeira Island, the place where the journeys take place. When a supplier wants to add a new ingredient, he just needs to double click the approximated area within the map. To view the image of the ingredient to a bigger size, he just needs to 'mouse over' on the little photo of each ingredient to see a larger image in the right top corner within the rectangle of the map.



Fig. 43 - Ingredients page with a supplier logged in

The supplier can filter the ingredients by clicking “My ingredients” and see their own ingredients already introduced in the map. On clicking “all ingredients” the supplier sees all the ingredients introduced not just by him, but also by others suppliers. Finally “seasonal products” represents ingredients filtered according to the time of the year giving a seasonal products view. We can see this in detail in Fig. 44 where we have filters for all the months of the year. It is important to allow filtering by season, because each ingredient has its own season to be cultivated.



Fig. 44 - Seasonal products page

The remaining high-fidelity prototypes and their respective description can be found in the appendix H.

---

## 5. STUDY

---

After finishing the processes of modeling and their respective implementation, we proceeded to conduct some usability tests regarding the website with the aim of collecting important insights, that could help us to identify possible error or difficulty that our application might have. The usability tests are valuable part of the design process in order to evaluate if the users were comfortable with the application, if every task was accomplished in a satisfactory way and if the application fulfilled all their needs. In this type of process, i.e., the process of gathering feedback from users, a few questions stand out as most important for them. As L.L.Constantine

points out in [55], “What are they trying to accomplish and what do they need from the system in order to accomplish it? What is or will be their relationship with the system?”. Having this in mind, in the next chapter we will describe the study related with our system, taking into consideration our concerns and goals. We will also present all the processes related to the study and the respective results.

---

## 5.1. CONCERNS AND GOALS

---

It is important to explain the importance of conducting usability tests before setting our concerns and goals. A common mistake in software engineering is that engineers design interfaces, without collecting the needed information to understand the system and the relation between users and system [55]. Said that, our goal in doing usability testing is to evaluate the user experience while using our interactive system by asking them to perform some task using the system. As testers, we will observe their behavior towards the interface, evaluating their actions and body expressions, as LL Constantine in [55] states “Testers also tend to interpret user hesitation or uncertainty as indicative of usability problems”. This kind of observation is important, some notes are taken from the tests and discussed in the end of this section. Thus, with all the insights gathered from the tests, we identify the possible changes of the system in order, to improve the user experience and the system itself.

We filtered some questions specifically related with our project that further will help us to write the right tasks to be performed during the usability tests.

### **Service concept**

In order to test our website, we first came up with some general questions regarding the service concept.

- Will the users understand the concept of the service?
- Will the service be considered useful?
- Will the users be willing to participate in this kind of service?

## Website Interface

In order to test the interface of the website, we came up with the following question regarding the user experience in the website.

- Will users be able to successfully navigate through the website?
- Does the main page have all the important information required to capture the user's attention and interest in the service?
- Will suppliers be able to find the ingredients by season?
- Will users be able to work with the interactive map of the ingredients?
- Will users with a Chef role, be able to add recipes easily into the website?
- Will users with a Chef role, be able to choose more than one recipe to propose a journey?
- Will users with a Chef role, be able to understand that they have to propose the recipe for a journey, if they want to create a journey?
- Will users be able to subscribe for a journey?
- Will users be aware of what is an open journey and a closed journey?
- Will users be able to find the notifications menu?
- Will users be able to understand the mechanism of choice between the 3 different roles presented in the service?

With all these concerns we defined some goals, that we wanted the users to accomplish. These goals are:

- They have to be able to do the tasks in a determined time.
- They can't ask for help, except if they take too long to complete the task
- They can't make more than two errors doing the task.

At the end of the test we presented them with a mini questionnaire, in order to understand the importance of the service for them, specifically what they think about it, the things that they liked the most or less.

---

## 5.2. PARTICIPANTS

---

Since our service has different types of users, each one of them will execute different tasks. It's important to choose wisely our target to obtain more tangible results based on their roles. Our goal was to find the right persons to do the usability test, people who had some basic knowledge in technology in terms of using a website. For the supplier and the chef role, we required users with relevant experience in the field. We separated the usability tests in 3 different groups of users, the participant, supplier and the chef. Each type of user was meant to use the platform with different goals.

Table 5 - Different tasks for each type of users

<b>Chef</b>	<b>Supplier</b>	<b>Participant</b>
Comment a recipe or a journey	Comment a recipe or a journey	Comment a recipe or a journey
Like a journeys or a recipe	Like a journeys or a recipe	Subscribe to a journey
Edit their own profile	Edit their own profile	View Notifications
View Notifications	View Notifications	Add photos to the gallery of the journey that he/she have done
Add Recipes	Add ingredients	Like a journeys or a recipe
Propose a journey	Delete ingredients	Edit their own profile
Delete Recipes	Edit ingredients	Unsubscribe a journey
Edit Recipes	View list of recipes	View list of recipes
View list of recipes	View list of journeys	View list of journeys
View list of journeys	View the ingredients	View the ingredients
View the ingredients		

---

## 5.3. METHOD

---

For the usability tests, we used the ‘Think Aloud’ method, meaning that the user had to verbalize their thoughts when performing the presented tasks in the system, thus helping us as evaluators to understand how they interpret the system [56]. We presented to the user some tasks related to their role in the service. When executing the task, we aimed to evaluate their actions and “listen” to their thoughts, giving us a “*direct understanding of which parts of the dialogue cause the most problems*”[56], p. 73. We conducted eight usability tests with three suppliers, three Chefs and two participants. It was important for us to select users who had a genuine interest in the subject and good knowledge of their roles. The three suppliers were students of biological agriculture, the three Chefs were actual professional chefs and the participants were foreigners studying in University of Madeira. We started the tests by asking their name, age and level of technological knowledge for final observations. Later on with a brief introduction, explaining the concept of the service and what they will do and how they should behave considering the think aloud method. During each task we timed how long it took them to execute the task, and we also took some notes regarding their behavior and thoughts (‘Think aloud’). In the end, we took three types of states in consideration: ‘finished without help’, ‘finished with some difficulty’ and ‘didn’t finish’.

As such, to determine the usability of the website, and regarding the concerns and goals, we request to the users to perform the following tasks.

**The tasks presented for the Chef role were as follows:**

Table 6 - The tasks presented for the Chef role

Tasks	Estimated Time
Visit the website <a href="http://cozinhadamadeira.m-iti.org">http://cozinhadamadeira.m-iti.org</a> and sign up as a Chef	4 minutes
After the registration, sign in to the Website	1 minute
Change your profile photo	1 minute
See you notifications	1 minute
Verify which ingredients is available on the website	2 minutes
Go to recipes page, filter by “all recipes” and open the last recipe of the list and add a like	1 minute
Search for a specific recipe. (Ex:Velvet Pudding)	2 minutes
Add a new recipe, using some of the ingredients available	1 minute
Propose the added recipe to a journey	3 minutes

Tasks	Estimated Time
<i>Logout, and Login with the username ju.pereira0920@gmail.com and password:123456</i>	1 minute
Propose a new journey, using one desert and a main dish.	
Choose a recipe and add Comment and a like	5 minutes

The tasks presented for the Supplier role were as follows:

Table 7 - The tasks presented for the Supplier role

Tasks	Estimated Time
Visit the website <a href="http://cozinhadamadeira.m-iti.org">http://cozinhadamadeira.m-iti.org</a> and sign up as a Supplier	4 minutes
After the registration, sign in to the Website	1 minute
Change your profile photo	1 minute
See you notifications	1 minute
Verify which ingredients is available on the website.	2 minutes
Verify the ingredients available in January and October	1 minute
Search for a specific ingredient. (Ex: Orange)	2 minutes
Add a new ingredient in some region of the map	1 minute

The tasks presented for the Participant role were as follows:

Table 8 - The tasks presented for the Participant role

Tasks	Estimated Time
Visit the website <a href="http://cozinhadamadeira.m-iti.org">http://cozinhadamadeira.m-iti.org</a> and sign up as a participant	4 minutes
After the registration, sign in to the Website	1 minute
Change your profile photo	1 minute
See you notifications	1 minute
See the recipes available on the website	2 minutes
Search for a specific recipe. (Ex: Velvet Pudding)	1 minute
See the available opened journeys on the website	2 minutes
Subscribe to one of the opened journeys	1 minute
Choose a journey and add a comment and a like	5 minutes
Zoom in on the image representing the trail of the journey	1 minute
In the same journey, open the related recipe of the journey	1 minute
Within that recipe, puts like and comment on the recipe	5 minutes

At the end of the usability test, we presented a survey, to gather some insights about the service concept itself. The users were interviewed and were asked the following questions:

- What do you think of such service?
- What did you like more?

- What did you like less?

After all tests had been made, we proceeded to the evaluation phase.

---

## 5.4. STUDY 1: USABILITY TESTS

---

We performed the usability tests as we explained above. We did the tasks analyses where we took notes during the process to register possible errors made by the users, when executing the tasks. To evaluate possible problems and errors we used Jakob Nielsen principles of heuristics evaluation, which aim to find usability *“problems in an existing design”* [57], p. 373.

Jakob Nielsen presents a list of ten heuristics principles capable of detect a large amount of problems in user interface design [58]. He claims that it is important to have some experience but also underline that *“even nonexperts can find many usability problems by heuristic evaluation, and many of the remaining problems would be revealed by the simplified thinking-aloud test”* [58], p. 20. Being easy to learn and put into practice we used the following usability principles to evaluate our tests: **visibility of system status**: appropriated feedback; **match between system and the real word**: words and phrases should have concepts familiar to the users, avoid technical terms; **user control and freedom**: give to the user a way out when choosing a wrong action, like an undo action, to go back to the state before; **consistency and standards**: the user should not have to wonder why same elements are in different places; **error prevention**: present to the user a careful design avoiding possible error from occurring at first place; **recognition rather than recall**: the user should not need to remember all the actions and options should be visible; **flexibility and efficiency of use**: give users shortcuts to improve their user experience, speeding up their interaction, normally useless at first place to new users, but productive to experienced users ; **aesthetic and minimalist design**: The information given to the users should be short and precise, indicating the problem and a possible solution; **helping users recognize, diagnose, and recover from errors**: error messages should be presented in a familiar language indicating the problem follow with a precisely solution; **help and documentation**: The system should be well design, regarding the previous heuristics, but if needed, documentation should be short and precisely focused on the user’s task [59].

We separate the evaluation in four parts, because the first four tasks were identical for all users. The sections were divided in the following manner. The first one is for general tasks (which mean those that are the same for all of the users), following with the rest of the tasks for each

type of role. In the next sections we present a summary of the tests results with the evaluation methods that we explained before.

### 5.4.1. Findings

---

The figure below (Fig. 46) represents the used variables to do a quantitative analysis of the usability tests. The meaning of the respective variables are: **finished without help**, meaning that the user finished the task successfully within the expected time; **finished with some difficulty**: means that the user finished the task within the expected time, but took some time to get to the point of the task, it wasn't an immediately action, the user get to the point in a second try; **didn't finish**: the user could not finish the task without asking for help to proceed to the next task.

- Finished without help
- Finished with some difficulty
- Didn't finish

Fig. 45- Presented categories in the quantitative data analysis

In the following section we present a sum up of the obtained results for each type of task evaluated qualitatively and also their respective heuristic evaluation using Jakob Nielsen principles of heuristics for user interface design [59]. If some task were performed with the state "**finished with some difficulty**" and "**didn't finished**" it will be presented as a possible solution exemplifying the interface design, before and after the usability tests.

### 5.4.1.1.General Tasks Results

The Fig. 47 represent the quantitative analysis from each general task of the usability tests. These tasks were performed by all the eight users.

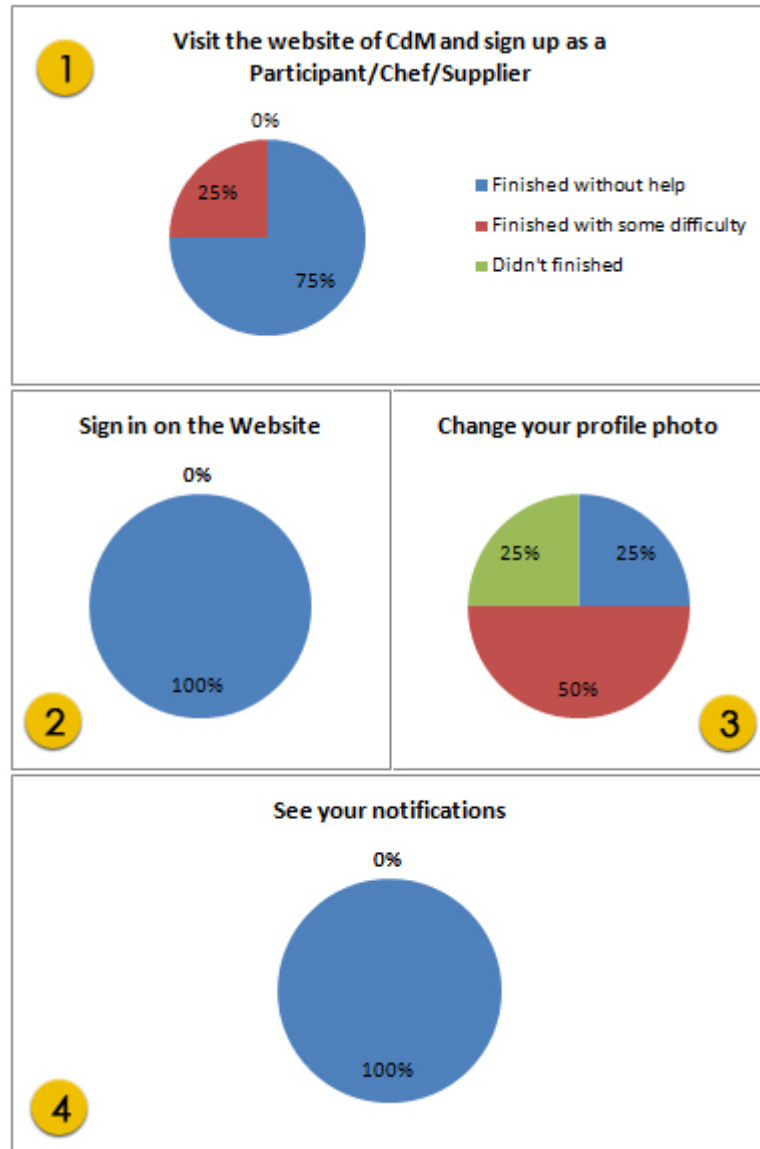


Fig. 46- Quantitative results for the general tasks

Task #1 - Visit the website of CdM and sign up as Chef/Participant/Supplier.

- Issues found, applying Nielsen heuristics:

- **Visibility of system status:** The register form at first sight is hidden, due to the size of the screen and it isn't clear to the user that after choosing their respective role, they should scroll down the page to fill up the form.
  - **Possible Solution:** After user chooses, the page should scroll down automatically showing immediately the registration form. This problem can be fixed with JavaScript, which is responsible for the dynamic elements of the website.
  
- **Aesthetic and minimalist design:** The shadow effects, on the name of the type of role, in the register page, made the users select the wrong button when choosing the role (Fig. 47).
  - **Possible Solution:** The shadow effect should be removed from the name label representing each role (Fig. 48).

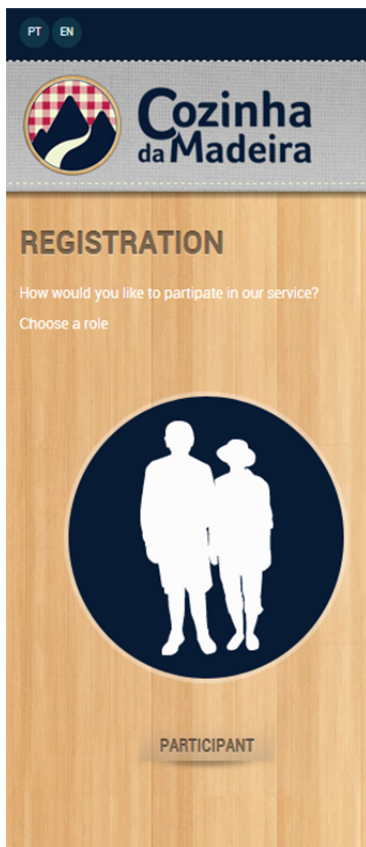


Fig. 47 - Partial view of the interface **before**

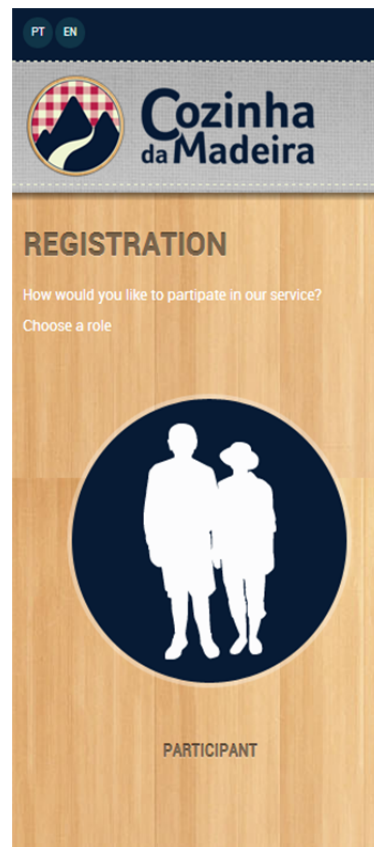


Fig. 48 - Partial view of the interface **after**

- **Observations:** It is important to mention, that only two people had some difficulty performing this task, hence we can conclude that it is a small problem. However, it is still important to avoid even such minor errors, thus improving our interface design.

**Task #3** - Change your profile photo.

- **Issues found, applying Nielsen heuristics:**
  - **Visibility of system status:** The “visual” message of the two buttons “upload file” and “Change picture” is confusing, leading the user to click on the “change picture” first with no success, since they should upload the file in the first place and then change the picture (Fig. 49).
    - **Possible Solution:** Remove the “upload file” button, staying with only the “change picture” button, and when the user clicks on it, the internet explorer will show up, giving the possibility to the user to choose their picture. When the user confirms the selected file, the photo will appears automatically on the photo area (Fig. 50).
  - **Error prevention:** The system should prevent the button of “change picture” of being submitted, before the user uploads an image.
    - **Possible Solution:** This problem could be solved with the solution of the previous problem, i.e. using only one button (Change picture).



Fig. 49- Partial view of the interface before task #3 evaluation



Fig. 50-Partial view of the interface after task #3 evaluation

- **Observations:** Two of the users couldn't finish the task. We observed that they insisted on clicking on the "change picture" button, waiting for something to happen, while ignoring the "upload file" button completely.

#### 5.4.1.2.Chef Tasks Results

The Fig. 51 represents the results of the usability test for the role of chef. These tasks were performed by 3 users. The first task of the image is numbered with the five number, because it's a follow-up of the previously described tasks (general tasks), but these ones are specifically directed for the chef role.

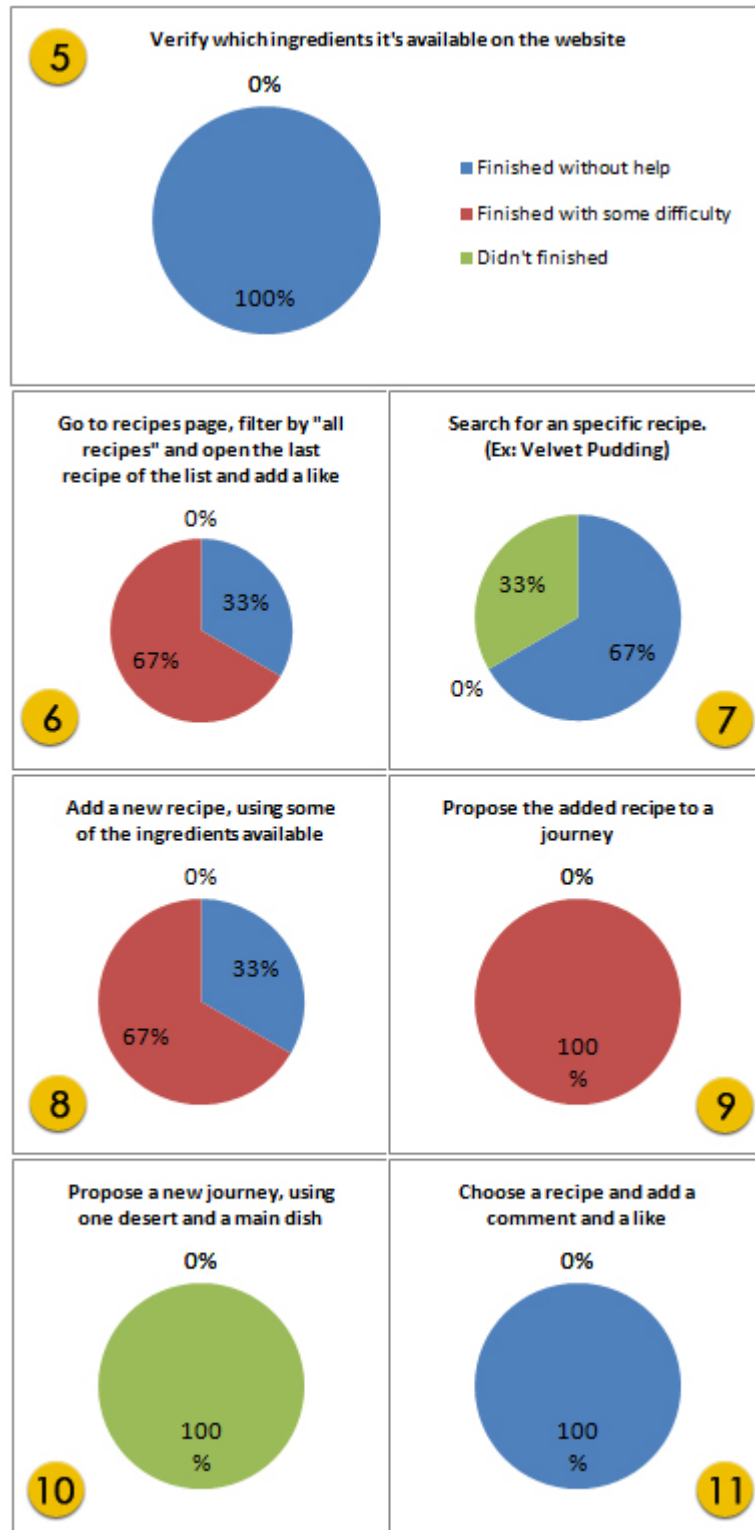


Fig. 51- Continuation of the quantitative analysis for the chef tasks

**Task #6** – Go to recipes page, filter by “all recipes” and open the last recipe of the list and add a like.

- **Issues found, applying Nielsen heuristics:**
  - **Aesthetic and minimalist design:** The font color of the link “all recipes” isn't appropriate to be used with the background image of website (Fig. 52).
    - **Possible Solution:** Changing the color of the link. The pink button corresponds to the selected link and the blue to the deselected button (Fig. 53).

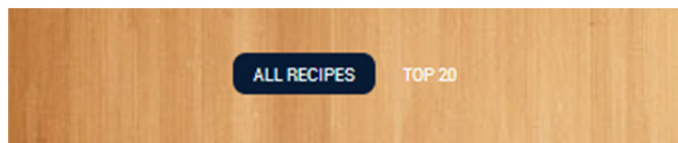


Fig. 52–Web element before the task#6 evaluation

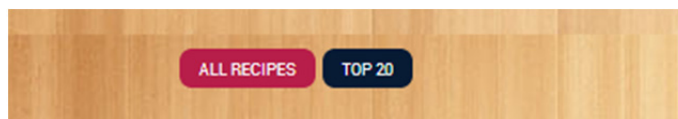


Fig. 53–Web element after the task#6 evaluation

**Task #7** – Search for a specific recipe (Ex: Velvet Pudding)

- **Issues found, applying Nielsen heuristics:**
  - **Aesthetic and minimalist design:** The font color of the label “search” isn't appropriate to be used with the background image of website(Fig. 54).
    - **Possible Solution:** Change the font color and font style, to be consistent with the main titles of the page, helping the user to identify more clearly the search box and also change the position of the icon “🔍” reinforcing the feedback before inserting the text to search (Fig. 55).



Fig. 54 - Web element before the task#7 evaluation



Fig. 55 - Web element after the task#7 evaluation

- **Observations:** Only one user failed to accomplish this task, due the lack of technology knowledge, the user continuously clicked the icon of the search, expecting that would open an input field to proceed with the search.

**Task #8** – Add a new recipe, using some of the ingredients available.

- **Issues found, applying Nielsen heuristics:**
  - **Visibility of system status:** The user had some difficulties in adding an ingredient when filling up the recipe form, because the “quantity” and the “ingredients name” input field weren’t clear enough that they should be added in separated fields. Our system doesn’t have a precise feedback regarding this problem(Fig. 56).
  - **Possible Solution:** Since the textbox size of the “quantity” and the “ingredient name” have almost the same size, probably indicating that the user could write the ingredients name and quantity in only one box. We reduced the size of the quantity box, and we added a label giving more feedback of what can be added in the “quantity” box (Fig. 57).



Fig. 56 - Web elements before the task#8 evaluation



Fig. 57 - Web elements after the task#8

- **Observations:** It is not an explicit problem, but we observe by the behavior of the users that “add ingredients” link, didn’t have enough visibility. We can see the changes in the Fig. 56 and Fig. 57 (before/after). Two users did not complete the task successfully because they introduced for example “100g of Chocolate” in the field of “quantity”.

**Task #9** – Propose the added recipe to a journey.

- **Issues found, applying Nielsen heuristics:**
  - **Flexibility and efficiency of use:** The user got lost in the journey page, trying to find the “propose journey” button, because it is not clear that the user should go directly with their own recipes to propose the respective recipe to a journey.
    - **Possible Solution:** This is an important task, to resolve this problem we will add shortcuts inside the journeys main page (figure 45), keeping the website flexible and efficient.

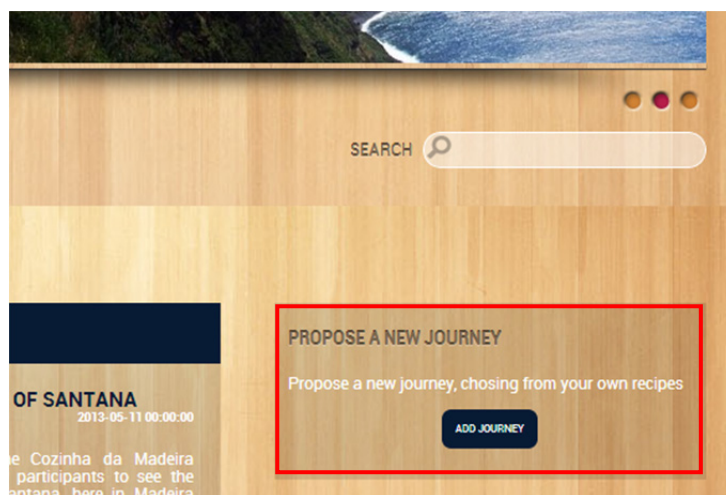


Fig. 58 - Partial view of the interface after task#9 evaluation

- **Observations:** The three users had a similar problem.

**Task #10** – Propose a new journey, using one desert and a main dish.

- **Issues found, applying Nielsen heuristics:**
  - **Visibility of system status:** Having in consideration the task #9, the user couldn't understand that to propose a journey with more than one recipe he/she needed to swap between tabs, and choose from their own recipes. The user thought that she/he should open the main dish and propose the journey, and then open the deserve dish and propose the journey. The information wasn't explicit enough, having the button "propose journey" close to the buttons of "edit recipe" and "delete recipe" leads to an idea that it is only possible to propose one journey with one recipe at a time (Fig. 59 and Fig. 60).
    - **Possible solution:** Separate the buttons when choosing the "purpose journey", avoiding wrong interpretations about the meaning of the subject (Fig. 61).
  - **Help and documentation:** The user does not have enough information to understand that he/she can add more than one recipe in one journey (figure 46 Fig. 60).
    - **Possible solution:** Separate the "propose journeys" actions and add some information focused in the user task (Fig. 61).
- **Observations:** None of the users could complete the task successfully. In this task, we ask them to change login, because we wanted to know if they could propose a journey with more than one recipe, remembering that the last task, was to propose a journey with only one recipe.



Fig. 59 - Partial view of the interface before task #10 evaluation

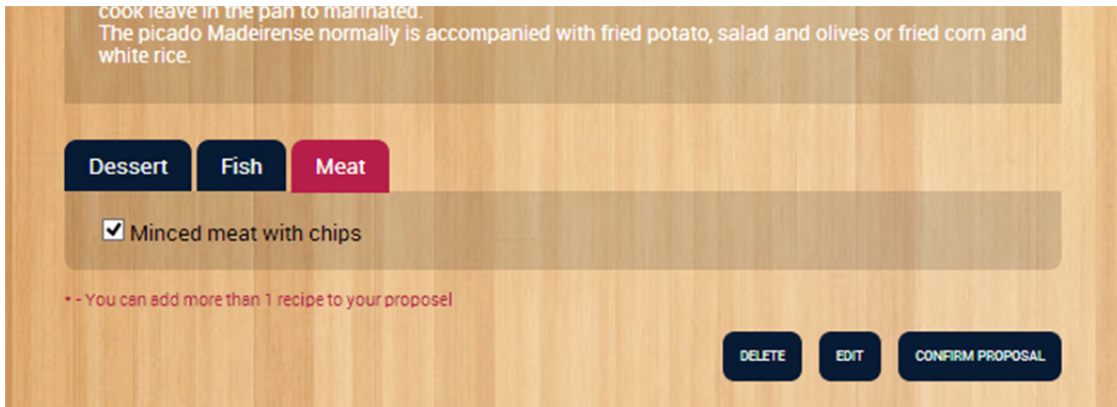


Fig. 60 - Partial view of the interface before task#10 evaluation

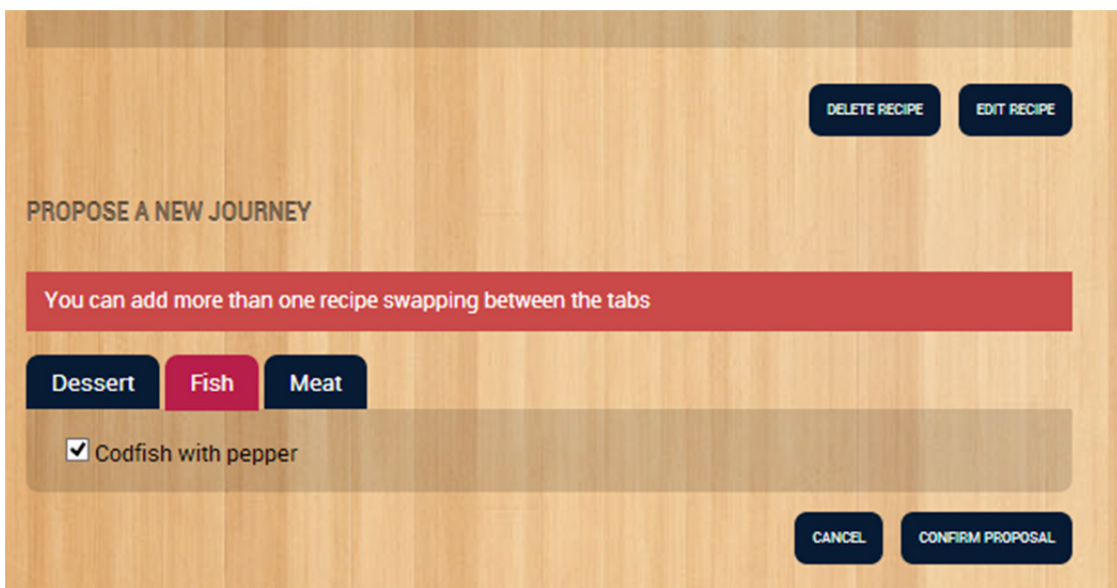


Fig. 61 - Partial view of the interface after task#10 evaluation

### 5.4.1.3. Supplier Tasks Results

The Fig. 62 represent the results of the usability test for the role of supplier. These tasks were performed by 3 users. The first task of the image is numbered with the number five, because it's a follow-up of the general tasks. The usability tests for the supplier went very well, all tasks were completed, and only one of them was finished with some difficulty.

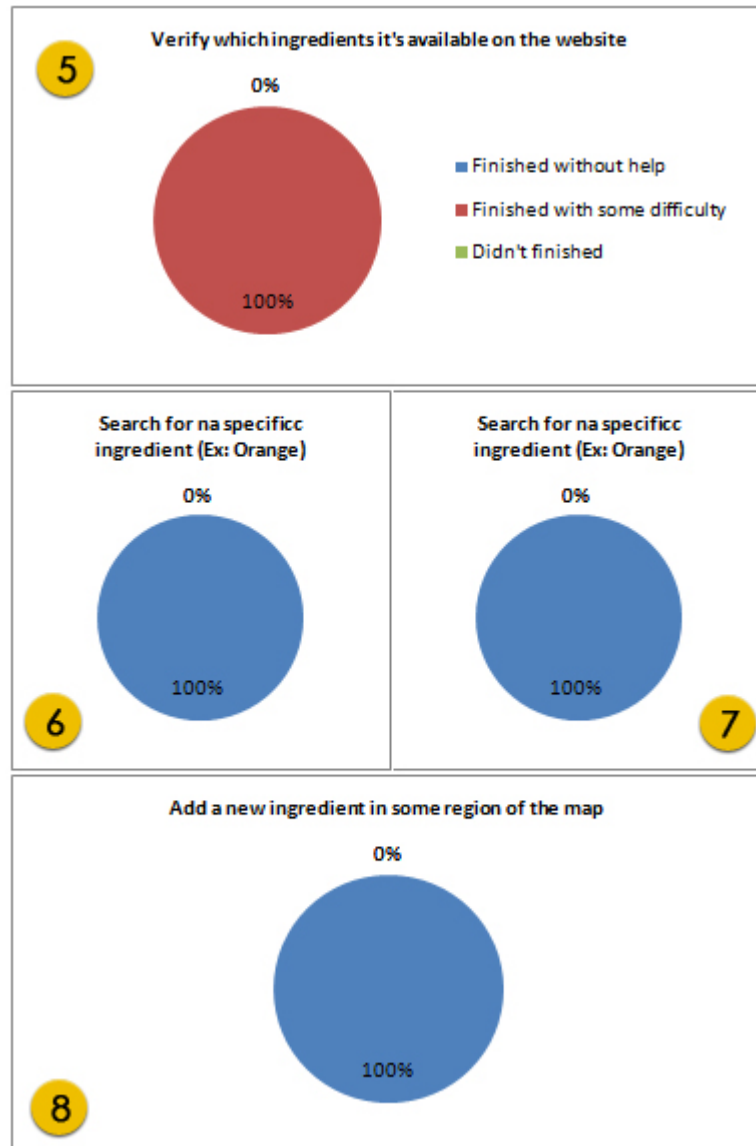


Fig. 62 - Continuation of the quantitative analysis for the supplier tasks

**Task #5** - Verify which ingredients is available on the website.

- **Issues found, applying Nielsen heuristics:**
  - **Aesthetic and minimalist design**: The font color of the link “all ingredients” is not appropriate to be used with the background image of website (Fig. 63).

- **Possible Solution:** Changing the color of the link. The pink button correspond to the selected link and the blue to the deselected button (Fig. 64).



Fig. 63 - Web elements before task #5 evaluation



Fig. 64 - Web elements after task #5 evaluation

#### 5.4.1.4. Participants Tasks Results

The Fig. 65 represents the results of the usability test for the role of participant. These tasks were performed by 2 users. The first task of the image is numbered with the five number, because it's a follow-up of the general tasks. The usability tests for the participants also went very well, all tasks were completed, and only one of them was finished with some difficulty.

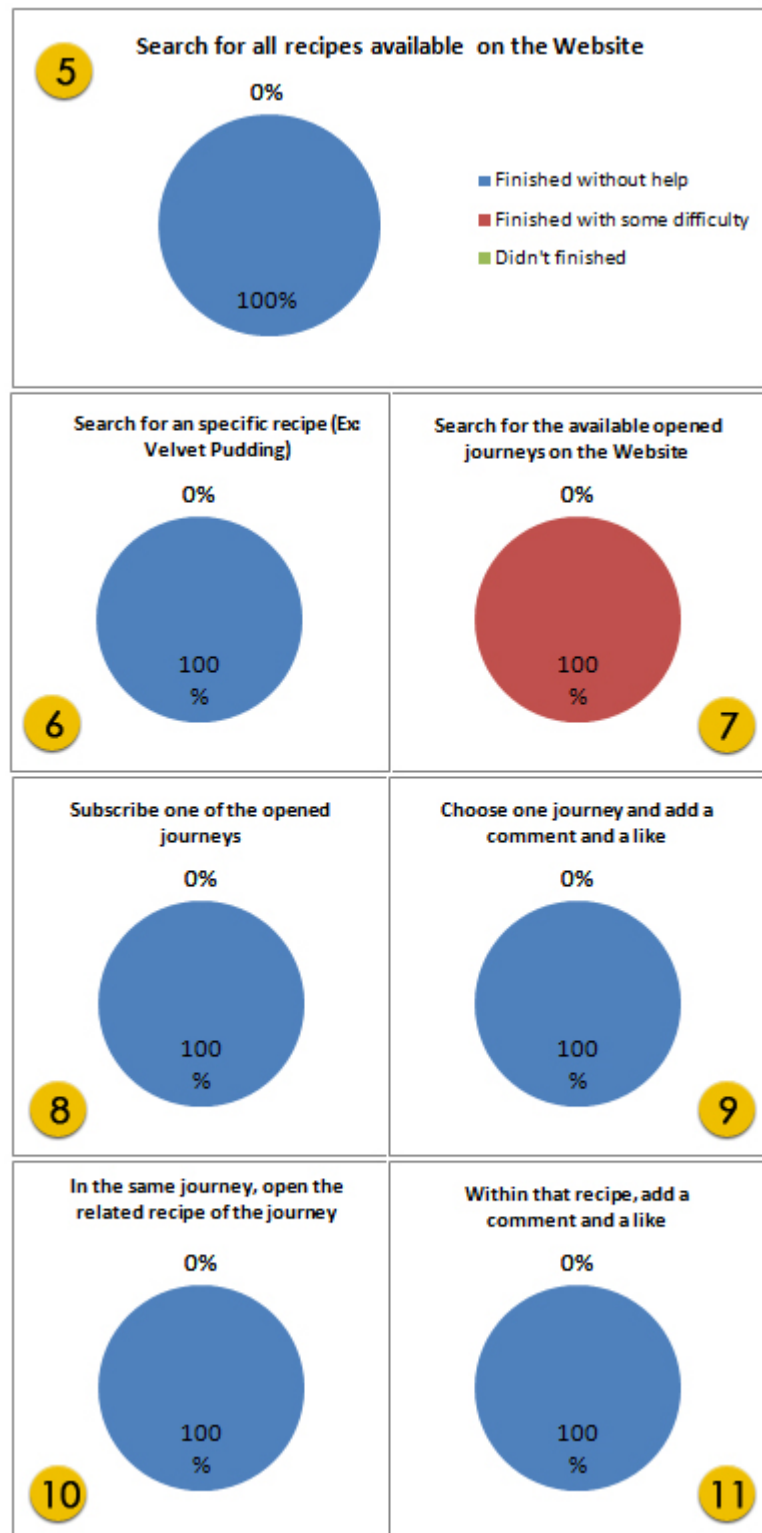


Fig. 65 - Continuation of the quantitative analysis for the participants tasks.

**Task #7** – Search for the available opened journeys on the website.

- **Issues found, applying Nielsen heuristics:**
  - **Aesthetic and minimalist design:** The font color of the link “opened journeys” isn't appropriate to be used with the background image of website (Fig. 66).
    - **Possible Solution:** Changing the color of the link. The pink button correspond to the selected link and the blue the deselected button (Fig. 67).

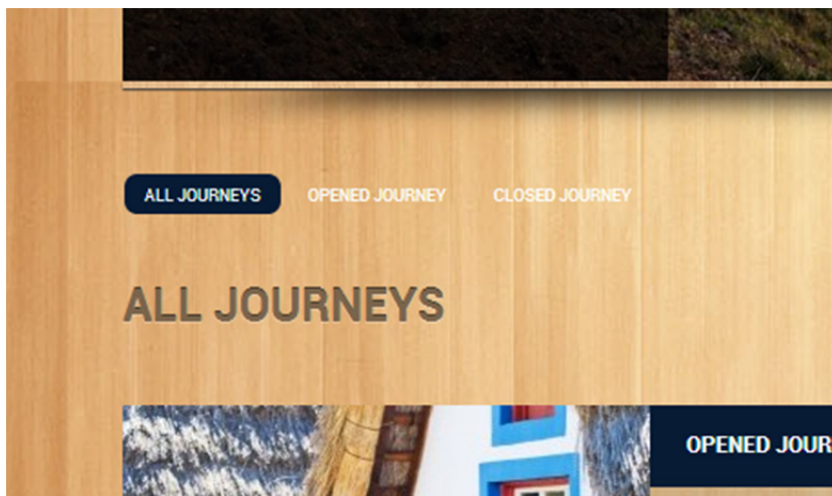


Fig. 66 - Web elements before task #7 evaluation

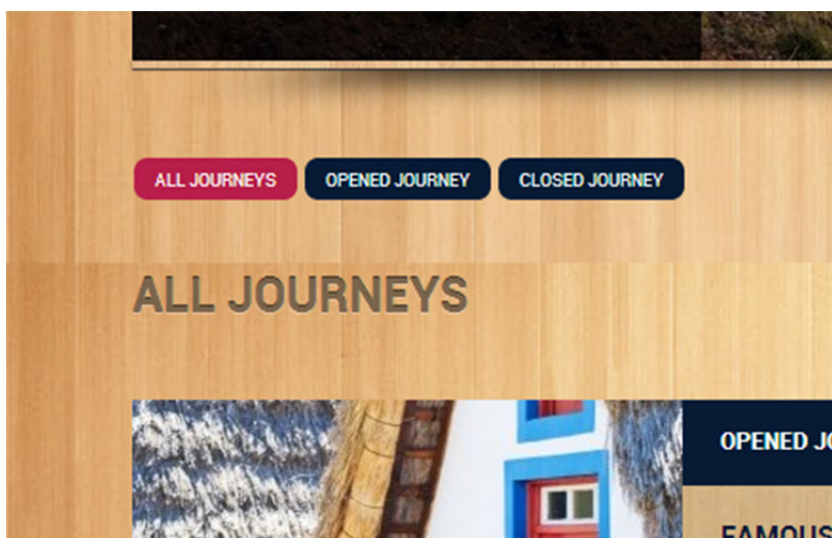


Fig. 67 - Web elements after task #7 evaluation

## 5.4.2. Conclusions

---

In general we had positives results from the usability tests study. The tasks designed for the chef role were the ones with the lowest success rate. However, once the problematic issues were identified, we proposed solutions for each one of them . These solutions were implemented by using the code inspection tool embedded on the browser Chrome, just to propose possible solutions. They are not implemented yet on the website, due the lack of time. .Not all requirements were implemented. The most important and needed functionalities to proceed with the usability tests, having in mind the tasks that a users should proceed to eventually participate in the service, have been implemented.

---

## 5.5. STUDY 2 : SURVEY

---

At the end of the usability test, we interviewed each user one at a time based on the questions of the mini-questionnaire. Despite there being only three questions, we had a lot of feedback from the users. Apart from doing the usability tests, it was important for us to gather this information in order to understand if this kind of service could be a desirable one.

### 5.5.1. Findings

---

We used the affinity map (AM) method to evaluate the information gathered from the surveys. An affinity diagram *“is a powerful method for performing large-scale qualitative data organization and analysis”* [60], p. 1179. To design the affinity map we start by filtering by topics the information from the surveys and writing it in a post-it such as a brainstorming process (Fig. 68).



Fig. 68 - Brainstorming the survey answers

After that we removed duplicated entries and formed groups with the related topics [61], p. 344. Further on, we named each topic according to the group concept. For each topic we pointed out negative and positive aspects along with improvements. The negative aspects represent the direct insights from the users, where they think that the service might fail. The positive aspects, represent the good things that the service has to offer to the customers. The improvements group represents the ideas that probably would improve the service concept. Using the affinity map to organize the feedback given by the users, allowed us to filter and organize the obtained results. The affinity map gave us a visual and more concrete idea of what the results were.



Fig. 69 - Affinity map to evaluate answers from the survey

After grouping and sorting the feedback received from the users using the affinity map method, we came up with the diagram present in the Fig. 69, ( refer to appendix I ). We identified six main categories for topics: namely transportation, customer experience, countryside, seasonal products, service concept and farmers. We listed the topics raised by the participants under each category. Each topic is marked with a signal, which indicate the type of insight, positive, negative or improvement. In the transportation and farmers group we only gathered negative aspects of the service. These results might be telling us that the local farmers would not appreciate the service and so the contact with the locals and the transportation aspects need to be revised and redesigned.

The transportation group represents the means used to move participants around the island during the food-gathering journey. Since the transport implies costs of not only fuel but also extra food and beverages that need to be purchased for the trip, it was seen as a critical point of the service. Another referred negative point within the transportations topic, was that not all the farms had easy access. At times it could be necessary that users leave the bus and walk a long way to reach the farm, leading to tiredness and discouragement to reach the destination point.

The farmers group also indicated some negative aspects. Most of the insights within this group were given by users that represented the supplier roles. They pointed out that it was difficult to arrange farmers willing to stop their work and receive people in their own homes. Most of the times the work done by the farmers in Madeira is done by hands, hence end up being tired. The CdM service aims to engage its customers with farms that are enthusiastic and willing to participate, and it may be hard to them after a long day working in the lands to receive the participants with the mood that CdM expects.

Another negative point in this category was the fact that most of the farmers were elderly people without Internet or any technological knowledge. However we believe that younger farmers or members of their families could help the farmers in this process, due the economical issues that Portugal is experiencing, many young people are beginning to focus on biological agriculture. Nevertheless, it was also pointed out during this study that in Madeira we have a website that acts as an online marketplace for agriculture [62], where local farmers can register and share their products and the respective price. Navigating into the website we can see a lot of local producers who have already registered, which means that we could have local suppliers willing to participate in the CdM service.

Although these two categories present mainly negative aspects related to the service concept, evaluating the results of all participants to the study in general we had more positive than negatives aspects. All the users evaluate the service as being very interesting and useful, especially because it improves the local economy and promotes a sustainable behavior.

Looking into countryside group, which represent everything related with the rural areas of Madeira Island, we can conclude that besides the negative aspects presented (occasional bad weather and long walking path not suitable for some people) we identify eight positive aspects, whereas the idea of collecting fresh and biological ingredients directly where they were cultivated are very well received, as well as getting to know the beautiful landscapes that Madeira Island has to offer. These aspects imply a unique experience for the participants.

The users that represented the Chef role, thoroughly enjoyed the idea of cooking with fresh, seasonal and biological ingredients. The seasonal products group, emphasizes the fact that using seasonal products made the cooking less expensive, because there is more supply in the market. The only downside mentioned in this group, is the fact, that being seasonal products, they could exist in a limited number which may impose further costs. This would mean that they would otherwise be needed to be bought on the super market or one had to wait too long for their availability. If most ingredients were to only purchased in the super market it would make it difficult for users to take the journey, since there was not enough local ingredients and hence make the engagement less meaningful.

Another interesting point that came across for the Chef role was that all the three users suggested that the chef should go in the journey to collect the ingredient too since they had the responsibility to evaluate the ingredients themselves for their recipes.

Last but not least, we have the service concept group, pointing only positive aspects. Overall, we can conclude that CdM is an interesting service and was well perceived by the respondents. The concept enhances a lot of positives points regarding Madeira's economy, the countryside and gives more visibility to Madeira Island, thus helping in the development of the rural areas as interesting tourist destination.

---

## **6. CONCLUSIONS AND FUTURE WORK**

---

In conclusion, this project allowed a practical implementation of knowledge acquired during the course in practice - from modeling to design and implementation aspects. It also allowed the interaction with latest technologies that have been enhancing web development recently, such as HTML5.

Ongoing literature points towards the relevance of sustainability: many natural resources are rapidly depleting, and the ongoing depletion of these resources has negative consequences in the future. Overall, sustainable behaviors are of growing importance and as described in the literature review, adopting sustainable behaviors could increase the outcomes of tourism. This makes the overall concept of this thesis very relevant today.

Furthermore this thesis is centered around the design of a technology enabled specific service touchpoint to support Cozinha da Madeira, a service dedicated to sustainable practices. The CdM service focuses in general on the use of local ingredients, thereby helping the local economy – whether by revitalizing our island, or by the focus on our culture and its traditions. Sustainable agriculture is a very important practice –there is an ongoing increase in the number of organizations and services willing to support local farmers, mainly because these are likely to adopt sustainable behaviors while using biological ingredients. In this way, Cozinha da Madeira, aims to bring together sustainable tourism and sustainable practices, helping in the acquisition of healthy behaviors, and consequently improving lifestyles. The experience that Cozinha da Madeira service has to offer involves helping customers adopt sustainable lifestyles. More concretely, we believe that allowing customers to collect ingredients in local farms and allowing them to watch farmers' work may enable sustainable behaviors, choosing biological and local ingredients instead of conventional ingredients.

Based on the above-mentioned needs and goals of the Cozinha da Madeira's service, a website was designed and developed, as a main touchpoint between customers and the service. Such a touchpoint would connect and attract users to the service, orient them and provide many pre experience interactions such as browsing the seasonal ingredients and recipes, choosing a role in the experience, commenting asking questions and seeing some of the pictures and testimonials of previous participants. The same touchpoint functions also have a repository of memories and dialogues about the experience after it has happened, closing the experience cycle of the service by extending and possibility retaining consumers willing to experience in CdM through a different role. After concluding its implementation, a usability test was conducted, evaluating users experience with the website. The usability test was conducted with three different types of customers (chef's, suppliers and participants), allowing a concrete evaluation of their actions when interacting with the website. In terms of website's dynamics, chef's are responsible to add recipes on the website, suppliers are responsible to add ingredients and participants subscribe to participate in open journeys. It was important to separate by the type of customer since each one of them perform different actions. In addition to this important aspect, a survey was conducted accordingly to each type of user, given their experience in the field.

In general, the vast majority of users did not experience difficulties while interacting with the interface. Furthermore a survey was conducted to gather feedback about the service concept of

Cozinha da Madeira. Overall, several users enjoyed the concept, and this could be an added value to the tourism in Madeira Island, as well to local suppliers. A few questions were raised according to the availability of suppliers to receive participants in their own farms. These questions could only be answered via field studies and some questionnaires performed directly with local farmers.

Overall, the end-result is positive, however an alternatives would have been needed if farmers were not available. This alternative could be achieved via improvements in the service's implementation and concept. Additionally, some changes should be performed to balance this service with real-life agenda's and needs.

The main focus of this thesis was to design and develop a website capable of addressing the connection and attraction of users to the service (informational needs ), as well as providing users with the best possible user experience and guidance to interact with some initial features of our service.

This project has prospects of future development, as follows:

The website is not fully functional, in particular the management area and a few functionalities in the customer's area should be improved. It is important to note that a second round of usability's tests should be conducted after implementing these changes in our service's website.

Additionally, some improvements can be done immediately without further testing such as , associating the website with Facebook and other social media channels. We believe that promoting the service via social networks will definitely help to boost and promote the service.

After concluding the website and the usability tests, the next proposed steps are: 1. Development of the whole service experience, 2. Evaluating concurrently to service development whether further technologically enhanced touchpoint could support the service as it deploys on the territory of the island, 3. Conducting experience prototyping sessions while using the website as a touchpoint of the service. These steps will help in the evaluation of the service in a practical perspective. The experience prototype study will allow us to gather useful information that can improve the service concept and provide understanding into the customer's satisfaction level and sustainability behaviors. Future work may also address the need of sketching and refining a business model to the CdM Service.

---

# REFERENCES

---

1. Nisi, V., Nunes, N., Isarankura, K., Forlizzi, J.: “ Cozinha da Madeira ”: A Sustainable Tourism Service Concept for Madeira Island. *Advanced Research and Trends in New Technologies, Software , Human-Computer Interaction and Communicability*. pp. 365–376. Hershey: IGI Global (2014).
2. Development, W.C. on E. and: *Our Common Future: Report of the World Commission on Environment and Development*, <http://www.un-documents.net/ocf-02.htm#I>.
3. Anderson, M.W., Teisl, M., Noblet, C.: Giving voice to the future in sustainability: Retrospective assessment to learn prospective stakeholder engagement. *Ecol. Econ.* 84, 1–6 (2012).
4. Kidd, Charles V: *The Evolution of Sustainability Table of Contents*. (1992).
5. Shedroff, N.: *Design is the problem, the future of design must be sustainable*. Louis Rosenfeld, Brooklyn, New York (2009).
6. Chou, C.-J., Chen, C.-W., Conley, C.: A systematic approach to generate service model for sustainability. *J. Clean. Prod.* 29-30, 173–187 (2012).
7. Holmlid, S.: *Interaction design and service design: Expanding a comparison of design*. (2007).
8. WWOOF: *The History of WWOOF - WWOOF*, <http://www.wwoof.net/history-of-wwoof/>.
9. Awards, W.T.: *Europe’s Leading Island Destination 2013*, <http://www.worldtravelawards.com/award-europes-leading-island-destination-2013>.

10. DREM: Estabelecimentos hoteleiros, [http://estatistica.gov-madeira.pt/DRE\\_SRPC/IndicadoresEstatisticos/Servicos/Turismo/turismo2012.htm?option=com\\_turismo&x=7&y=1](http://estatistica.gov-madeira.pt/DRE_SRPC/IndicadoresEstatisticos/Servicos/Turismo/turismo2012.htm?option=com_turismo&x=7&y=1).
11. DREM: Estabelecimentos hoteleiros, [http://estatistica.gov-madeira.pt/DRE\\_SRPC/IndicadoresEstatisticos/Servicos/Turismo/estabelecimentoshoteleiros1.htm](http://estatistica.gov-madeira.pt/DRE_SRPC/IndicadoresEstatisticos/Servicos/Turismo/estabelecimentoshoteleiros1.htm).
12. L, M.: Madeira Island - Destination Image and Tourist Loyalty.2,70-91 (2009).
13. Noémi, M., Vieira, N.: A Internet como Novo Meio de Comunicação para os Destinos Turísticos : (2004).
14. Manuel, A., Almeida, M. De: From island mass tourism to rural tourism In Madeira : Is there a place for a re-definition of islands ' image ? VIII, 97–110 (2010).
15. DREM: Agricultores e área de algumas culturas em modo de produção biológico (MPB), [http://estatistica.gov-madeira.pt/DRE\\_SRPC/IndicadoresEstatisticos/Agricultura\\_Floresta\\_Pescas/Agricultura\\_Floresta/Dados\\_Estatisticos/producao\\_biologica.htm](http://estatistica.gov-madeira.pt/DRE_SRPC/IndicadoresEstatisticos/Agricultura_Floresta_Pescas/Agricultura_Floresta/Dados_Estatisticos/producao_biologica.htm).
16. Neto, F.: A new approach to sustainable tourism development: Moving beyond environmental protection. Nat. Resour. Forum. 27, 212–222 (2003).
17. UNWTO: Tourism Highlights 2013 Edition. World Tour. Organ. (2013).
18. Nations, U.: Report of the Secretary-General, in Sustainable development of tourism, Document nr. E/CN.17/2001/PC/21. Econ. Soc. Council. 1–4 (2001).
19. Berry, S., Ladkin, A.: Sustainable tourism : a regional perspective. Tour. Manag. 18, 433–440 (1997).
20. Tilman, D., Cassman, K.G., Matson, P. a, Naylor, R., Polasky, S.: Agricultural sustainability and intensive production practices. Nature. 418, 671–677 (2002).

21. Van der Werf, H.M., Petit, J.: Evaluation of the environmental impact of agriculture at the farm level: a comparison and analysis of 12 indicator-based methods. *Agric. Ecosyst. Environ.* 93, 131–145 (2002).
22. Rigby, D., Woodhouse, P., Young, T., Burton, M.: Constructing a farm level indicator of sustainable agricultural practice. *Ecol. Econ.* 39, 463–478 (2001).
23. Maycock, A.: World Wide Opportunities on Organic Farms (WWOOF) (<http://www.wwof.org/>). *J. Agric. Food Inf.* 9, 282–288 (2008).
24. Berkley, V.R.: The slow food story: politics and pleasure. *Community Dev.* 683–684 (2012).
25. Food, S.: Our Philosophy - About Us - Slow Food International - Good, Clean and Fair food., <http://www.slowfood.com/international/2/our-philosophy>.
26. Food, S.: Slow Food International - Good, Clean and Fair food, <http://www.slowfood.com/>.
27. Food, S.: Slow Food Presidia - Slow Food Foundation for Biodiversity, [http://www.slowfoodfoundation.com/pagine/eng/presidi/cerca\\_presidi.lasso?-id\\_pg=11](http://www.slowfoodfoundation.com/pagine/eng/presidi/cerca_presidi.lasso?-id_pg=11).
28. Food, S.: The Ark of Taste - Slow Food Foundation for Biodiversity, [http://www.slowfoodfoundation.com/pagine/eng/arca/cerca.lasso?-id\\_pg=36](http://www.slowfoodfoundation.com/pagine/eng/arca/cerca.lasso?-id_pg=36).
29. Food, S.: Slow Food Education - Food and Sensory education, <http://www.slowfood.com/education/>.
30. Madre, T.: Home - TerraMadre Rete delle comunità del cibo, <http://www.terramadre.info/pagine/welcome.lasso?n=en>.
31. WWOOF: World Wide Opportunities on Organic Farms: Linking volunteers with organic farms and growers, <http://www.wwof.net/>.
32. WWOOF Portugal: General Information, <http://www.wwof.pt/about/general-information/>.

33. WWOOF Portugal: WWOOF Portugal About > Press Room,  
<http://www.woof.pt/about/press-room/?L=>.
34. WWOOF Portugal: Welcome to WWOOF Portugal, <http://www.woof.pt>.
35. WWOOF Portugal: WWOOF Portugal Hosts, <http://www.woof.pt/hosts/>.
36. WWOOF Portugal: WWOOF Portugal Volunteer Registration,  
<http://www.woof.pt/join/join-woofer/>.
37. Freshbio: FRESHBIO - Empresa, <http://www.freshbio.pt/empresa.htm>.
38. Freshbio: FRESHBIO - Homepage, <http://www.freshbio.pt/index.html>.
39. Freshbio: FRESHBIO - Encomendar, <http://www.freshbio.pt/encomendar.htm>.
40. Team, T.: Tukxi Madeira - Eco City Tours, <http://www.tukxi.pt/>.
41. Team, up mountain: Explore Madeira off the beaten track! Up mountain Madeira Tours -  
Homepage, <http://www.upmountainmadeira.com/>.
42. Gupta, S., Vajic, M.: The Contextual and Dialectical Nature of Experiences. In:  
Fitzsimmons, J. and Fitzsimmons, M. (eds.) *New Service Development: Creating  
Memorable Experiences*. pp. 33–52 (1999).
43. Stickdorn, M., Schneider, J.: *This is service design thinking*. John Wiley & Sons Inc, New  
York, New York, USA (2012).
44. UNESCO: Laurisilva of Madeira : UNESCO World Heritage Centre,  
<http://whc.unesco.org/en/list/934>.
45. Manzini, E., Walker, S., Wylant, B.: *Enabling Solutions for Sustainable Living: A  
Workshop*. (2007).
46. Dubberly, H., Evenson, S.: *The Experience Cycle*. 1–7.
47. Silva, A., Videira, C.: *UML, Metodologias e Ferramentas CASE*. , Porto, Portugal (2001).

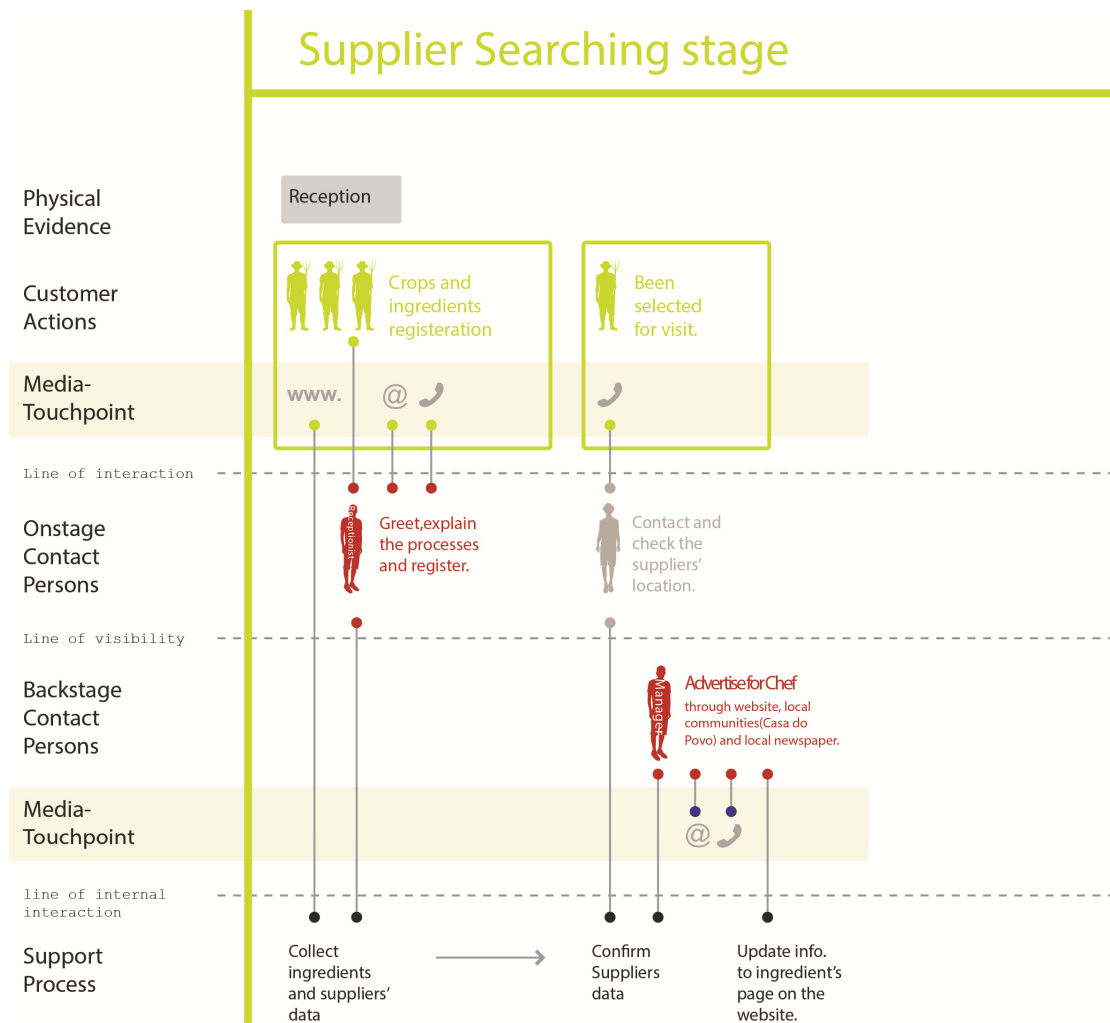
48. Lano, K., Wiley, A.J.: UML 2 Semantics. 29,52 (2009).
49. Biddle, R., Tempero, E.: From Essential Use Cases to Objects for USE 2002. 1, (2002).
50. Nunes, N.J., Falcão, J.: Wisdom – A UML based architecture for interactive systems. 1–14.
51. Blanco, J., Upton, D.: CodeIgniter 1.7. Packt publishing Ltd., Birmingham (2009).
52. Team, E.D.: Creating Core System Classes : CodeIgniter User Guide, [http://ellislab.com/codeigniter/user-guide/general/core\\_classes.html](http://ellislab.com/codeigniter/user-guide/general/core_classes.html).
53. Team, E.D.: Models : CodeIgniter User Guide, <http://ellislab.com/codeigniter/user-guide/general/models.html>.
54. Team, E.D.: Active Record : CodeIgniter User Guide, [http://ellislab.com/codeigniter/user-guide/database/active\\_record.html](http://ellislab.com/codeigniter/user-guide/database/active_record.html).
55. Constantine, L.L.: Beyond User-Centered Design and User Experience : Designing for User Performance. 17, (2004).
56. H, A.: Usability engineering methods for software developers. Mag. Commun. ACM - Interact. Des. Child. 48, 71–74 (2005).
57. Nielsen, J.: Finding usability problems through heuristic evaluation. Proc. SIGCHI Conf. Hum. factors Comput. Syst. - CHI '92. 373–380 (1992).
58. Nielsen, J., Kaufmann, M.: Usability Engineering. (1993).
59. Nielsen, J.: Enhancing the explanatory power of usability heuristics. Conf. companion Hum. factors Comput. Syst. - CHI '94. 210 (1994).
60. Minke, J., Huang, E.M.: Computer Support for Collaborative Data Analysis : Augmenting Paper Affinity Diagrams. 1179–1182 (2012).
61. Harboe, G.: Understanding and Augmenting a Paper Arrangement-Based Method. 343–348 (2013).

62. Online, M.A.: Mercado Agrícola Online, <http://www.sra.pt/MercadoAgricola/>.

# 7. APPENDICES

## 7.1. APPENDIX A – BLUEPRINT

### 7.1.1. Blueprint – Supplier Searching Stage



### **7.1.2. Blueprint – Chef Searching Stage and Participant Searching Stage**

---

(Unfold the next A3 sheet to see the Image)

---

## **7.2. APPENDIX B - USE CASES DIAGRAM**

---

(Unfold the next A3 sheet to see the Image)



---

## **7.3. APPENDIX C – ESSENTIAL USE CASE AND TASK FLOWS**

---

(Unfold the next A3 sheet to see the Image)



---

## **7.4. APPENDIX D – WISDOM MODEL**

---

(Unfold the next A3 sheet to see the Image)



---

## **7.5. APPENDIX E – ENTITY RELATIONSHIP DIAGRAM**

---

(Unfold the next A3 sheet to see the Image)



---

## **7.6. APPENDIX F - DATABASE - RELATIONAL MODEL**

---

(Unfold the next A3 sheet to see the Image)



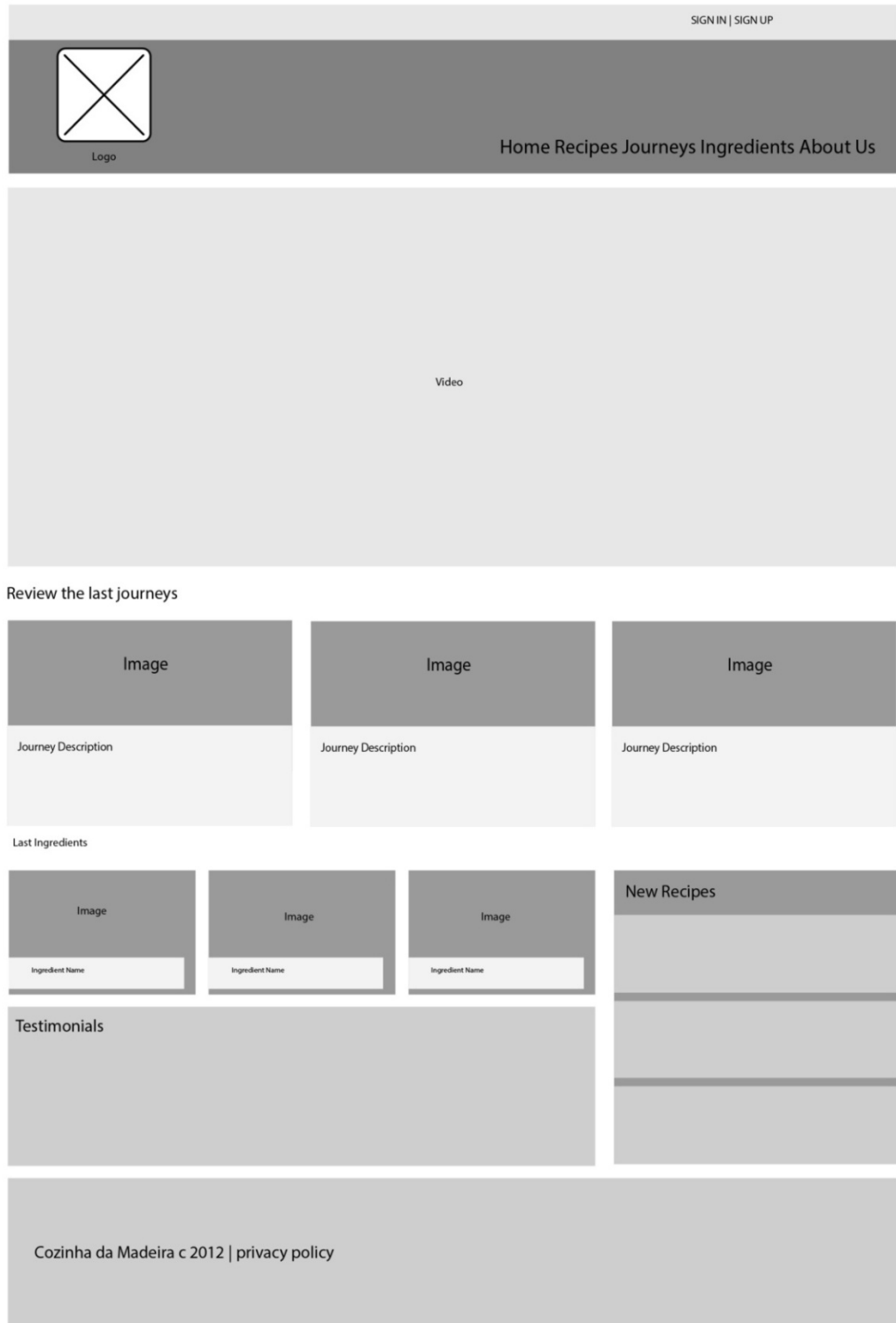
---

## 7.7. APPENDIX G—LOW FIDELITY PROTOTYPE

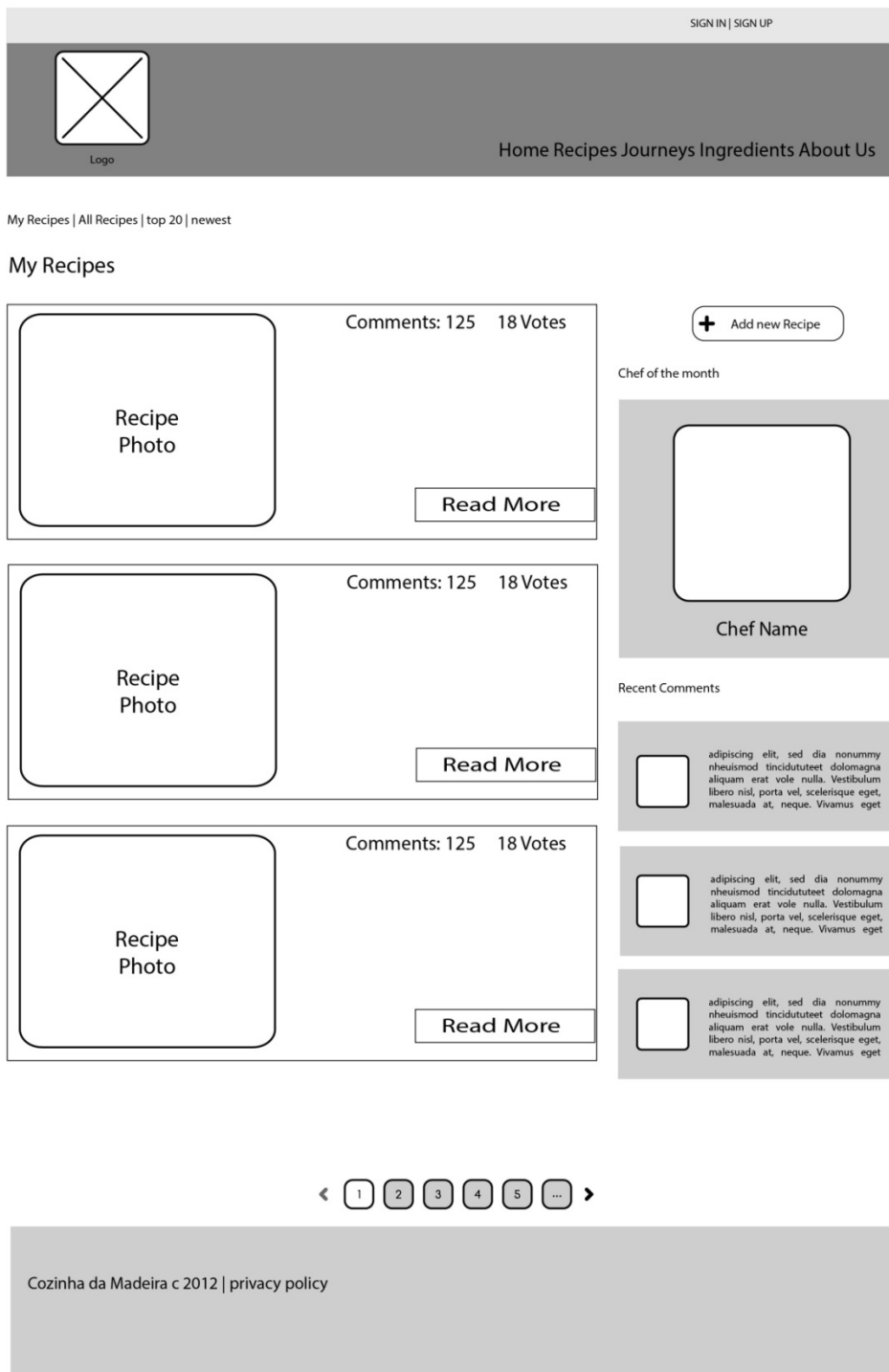
---

### 7.7.1.Home Page - Prototype

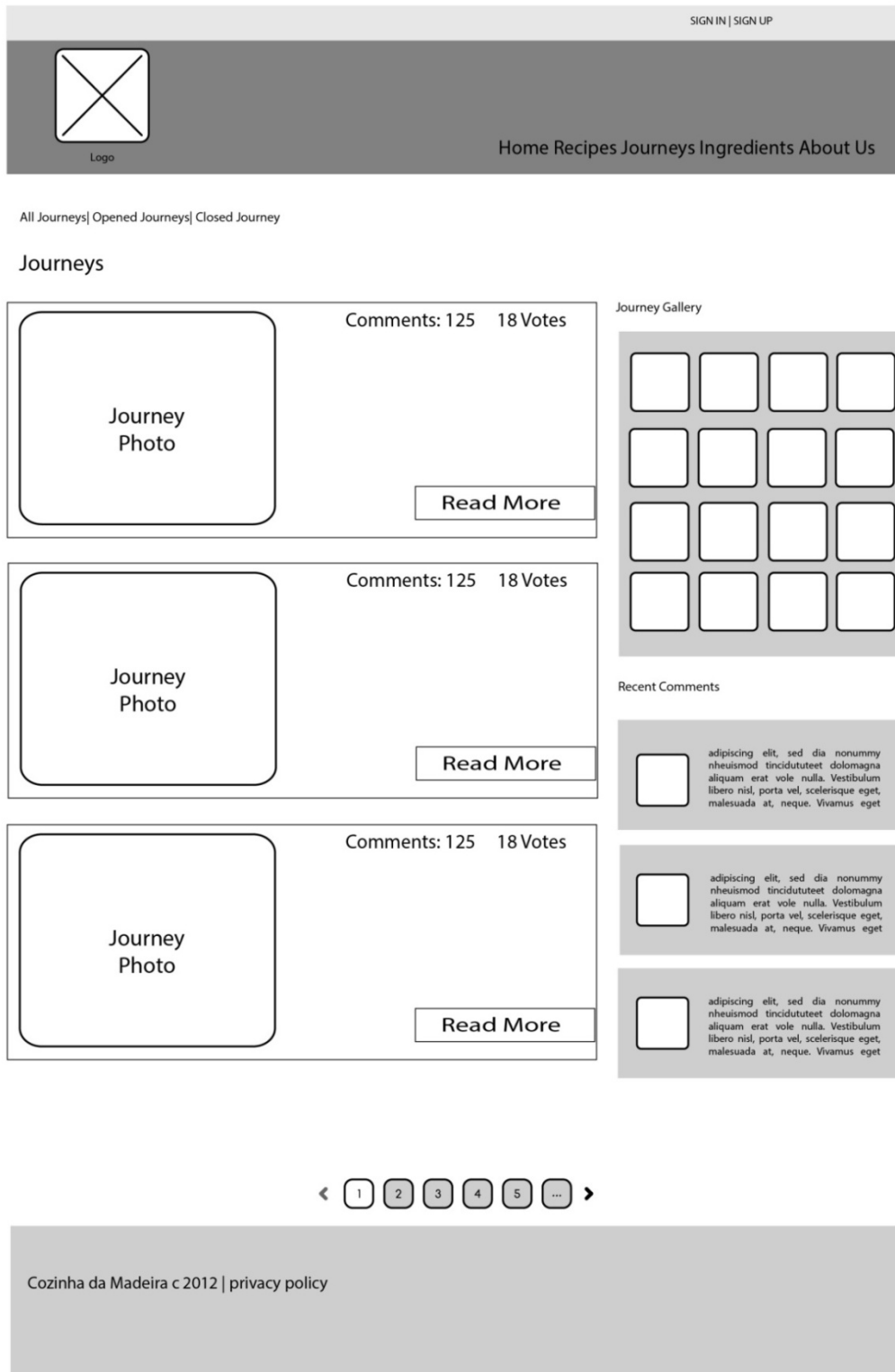
---



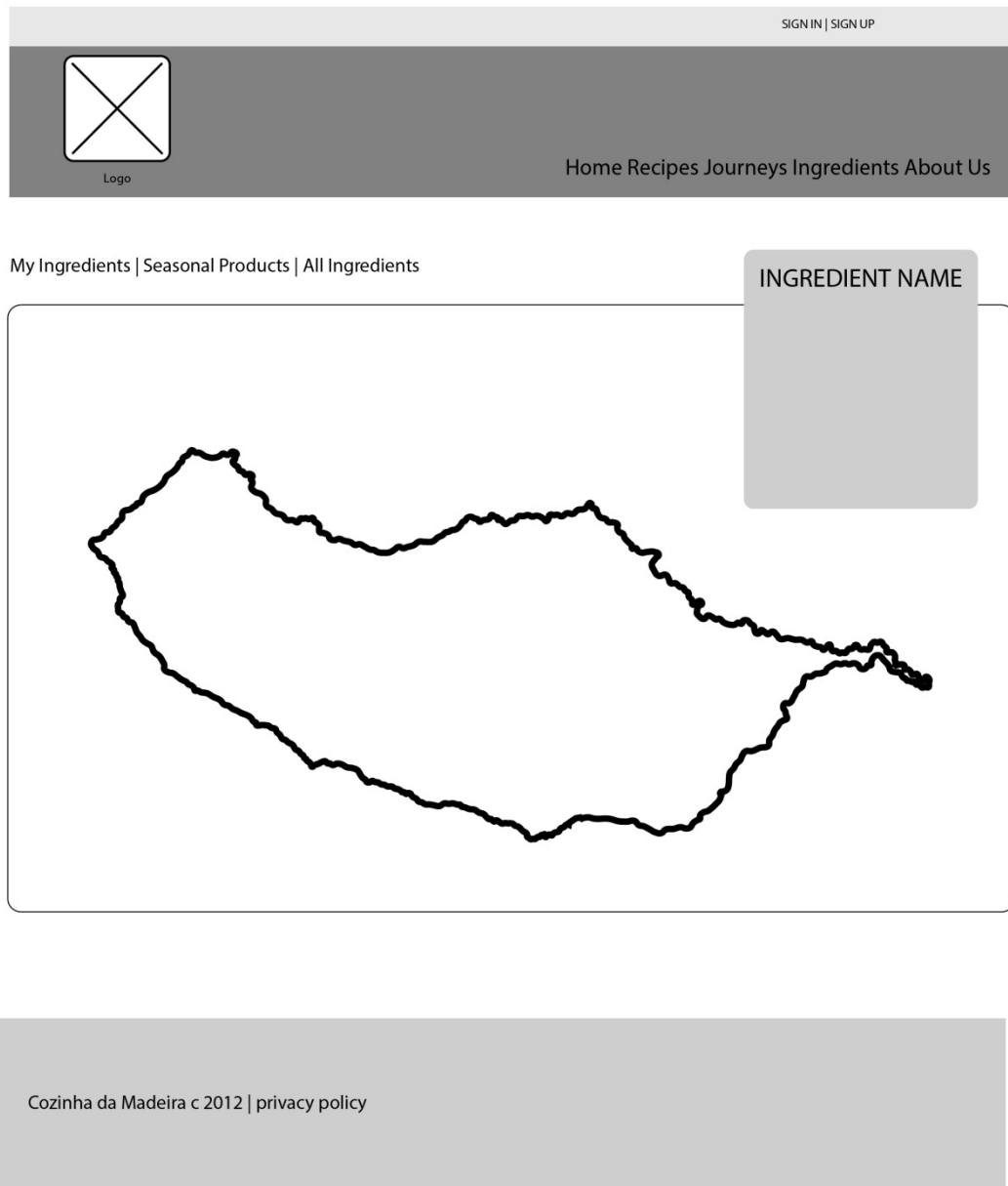
## 7.7.2.Recipes Page – Prototype



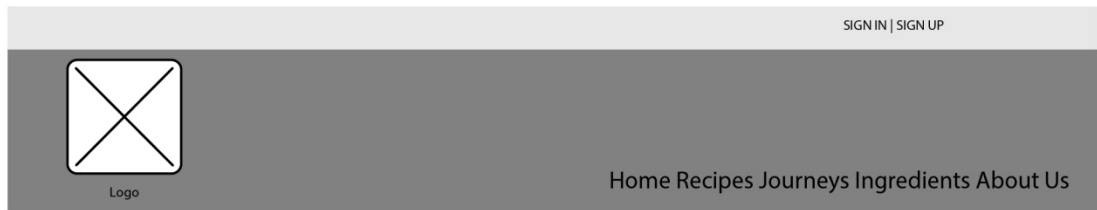
## 7.7.3.Journeys Page - Prototype



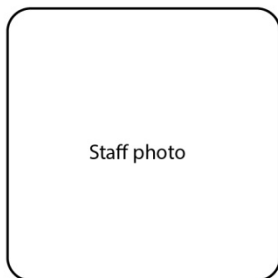
## 7.7.4. Ingredients Page - Prototype



## 7.7.5.About Us - Prototype



### About us



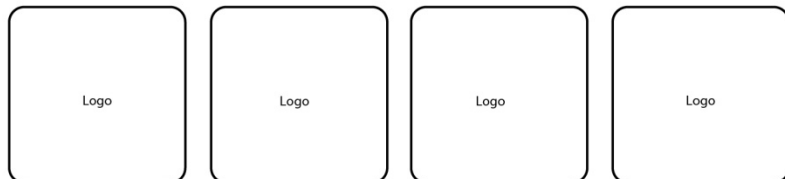
Madeira island is reached by hundreds of thousands of tourists every year in order to enjoy its mild climate, breathtaking landscapes, clean waters and genuine and fresh food. The local's traditions and pride of its fresh and tasty products still holds in today's culture. In order to promote sustainable services and experiences around Madeira food culture, this project will bring food to life by combining people, products and experiences, presenting them to both locals and tourists.

### Contact Info

Cozinha da Madeira  
9020-031 Funchal  
Caminho do pina

Telephone: 96859745  
Fax: 51564519156  
Email : cozinhadaMadeira@miti.com

### Sponsors



Cozinha da Madeira c 2012 | privacy policy

## 7.8. APPENDIX H – HIGH FIDELITY PROTOTYPE

### 7.8.1. Anonymous User - Screen Shoots

In this section we will show all the screens that a non-registered user is able to see.

PT EN User email Password LOGIN REGISTER / FORGET PASSWORD?

Cozinha da Madeira HOME RECIPES JOURNEYS INGREDIENTS ABOUT US

Reconnecting Madeira on the Food's Journey

Staffs Van driver Farmers Chef Tourists Abroad Local

#### REVIEW THE LAST JOURNEYS

**SANTA CRUZ**  
We will start the journey going to Santa Cruz. Santa Cruz have a promenade, done to the sea, where we have the bars, the beach...

**FAMOUS HOUSE OF SANTANA**  
With this journey, the Cozinha da Madeira pretend to take our participants to see the famous house of Santana, here in Madeira.

**PONTA DO PARGO**  
We start going directly to calheta to grab the ingredients necessary to cook our recipes, starting with the garlic and...

**TUNA STEAKS WITH 'SONHOS'**  
Hi Cozinha da Madeira community, with these recipes CDM will lead you to Calheta where we will collect the garlic and the...

#### NEW INGREDIENTS

LEMONS GARLIC FRESH MUSHROOMS

#### NEW RECIPES

**TRADITIONAL MADEIRA 'SONHOS' WITH HONEY**  
The water should boil together with the lemon and the salt. When the water is already boiling... [Read More](#)

**TUNA STEAKS (MADEIRA STYLE)**  
Cut the steaks, season with vinegar, garlic, bay leaf and salt leaving like this for a few hours. Fry... [Read More](#)

**MADEIRAN STEW MADE OF BOILED MEAT WITH VEGETABLES**  
Wash the meat and cook it in salted water in a large pan. If it is salted meat, remove the salt. When... [Read More](#)

#### TESTIMONIALS

“ I have experienced one of the journeys, in Calheta, and I have to tell you guys that was amazing. It was a wonderful experience, with so much culture, good food and wine and, above all, great people. Can't wait to do another journey.”  
By José Rodrigues at 18:23pm, 10th May 2012

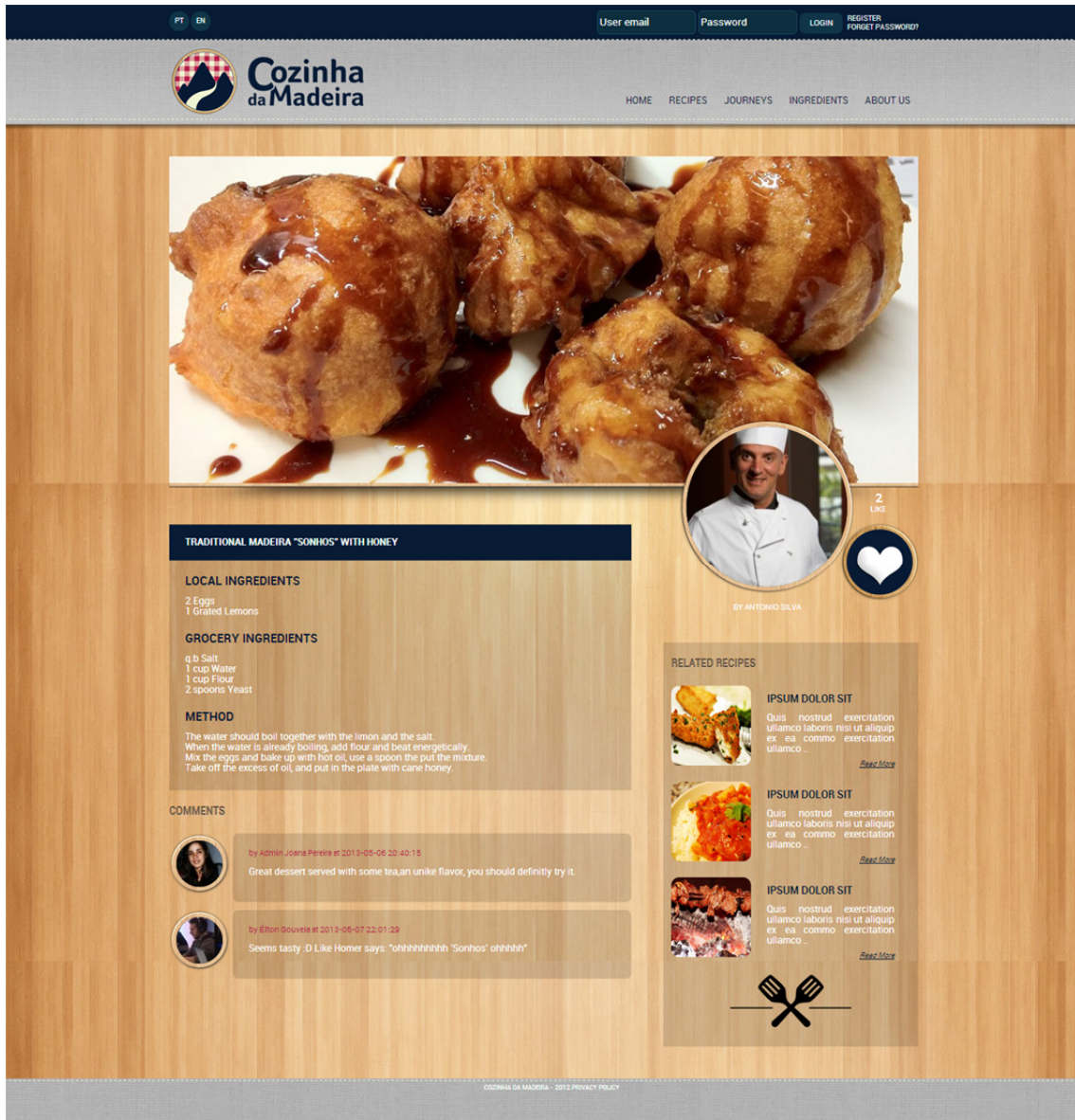
“ It's a great service, it's a different way to enjoy the island escaping from the usual tourists services that Madeira island have to offer. The best thing is the interaction with people from other cultures, and going to the local collect the ingredients, and get to know a little better the culture of Madeira island.”  
By César Dias at 14:23pm, 10th May 2012

COZINHA DA MADEIRA - 2012. PRIVACY POLICY

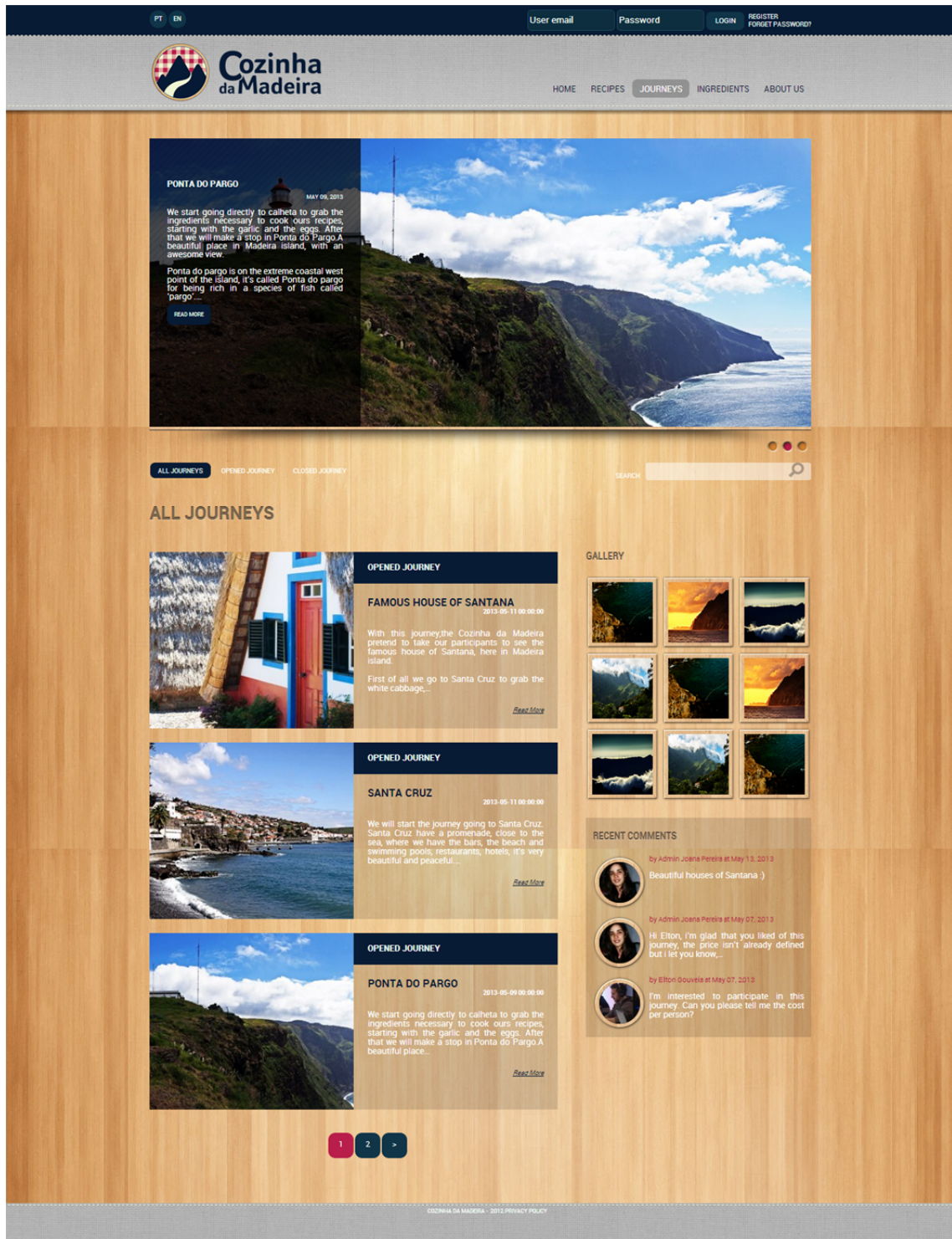
Interface that represents the main page of the website, visualized by a non-register user. We can see that a non-register user have access to the information related with, ingredients, recipes and journeys, giving them a previous idea of what can be done before registering.



Interface representing the list of recipes available on the website. The non-registered user can filter this list by “all recipes” or “top 20” or even search directly in the search form, for a specific recipe introducing a keyword.



Interface representing the recipe details.



Interface representing the list of journeys available on the website. The non-registered user can filter this list by “all journeys” or “opened journeys”, “closed journeys”, because some of the journeys already was done, and in that ones they have access to photos, comments of people that already participated in the journey and can share their pleasure doing it and the open ones, that means that a user can participate.

PT EN
User email Password LOGIN REGISTER FORGET PASSWORD?

Cozinha da Madeira

[HOME](#) [RECIPES](#) [JOURNEYS](#) [INGREDIENTS](#) [ABOUT US](#)

**OPENED JOURNEY**

3 10  
PEOPLE SIGN IN PEOPLE NEEDED

3  
PARTICIPANTS

3  
SUPPLIERS

1  
CHEFS

**JOURNEY DESCRIPTION**

**FAMOUS HOUSE OF SANTANA**

With this journey, the Cozinha da Madeira pretend to take our participants to see the famous house of Santana, here in Madeira island.

First of all we go to Santa Cruz to grab the white cabbage, after that we go to Santana, and there we gonna stay a little bit longer, to show the house of Santana, the landscape all that the nature of Madeira island have to offer.

After Santana we go to Porto Moniz and then Calheta and we will make some stops too.

**DESCRIPTION OF RECIPE**

**MADERIAN STEW MADE OF BOILED MEAT WITH VEGETABLES**

by Antonio Silva # 2013-05-08 20:16:35

Wash the meat and cook it in salted water in a large pan. If u use salted meat, remove the salt. When it's almost cooked, add thyme and all the vegetables.

As the vegetables are baking, separate them from the broth and place on a platter. When it's cooked, cut the vegetables into large pieces and replace all the ingredients into the broth.

[Read more about this recipe.](#)

**COMMENTS**

by Admin Joana Pereira # 2013-05-13 20:05:20  
Beautiful houses of Santana :)

**GALLERY**

**RELATED JOURNEYS**

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

[HOME](#) [RECIPES](#) [JOURNEYS](#) [INGREDIENTS](#) [ABOUT US](#)

Interface representing the journey details, with the map containing the ingredients numbered by the order of the beginning and ending of the journey, the description, explaining the steps of the respective journey, the related recipes and the users comments.



Interface representing the map of Madeira Island with the available ingredients .



Interface representing the map of Madeira Island with the available ingredients per season.



Interface representing the details about the staff and contacts of Cozinha da Madeira service.



Interface representing the registration form, where the user is able to choose between three roles, participant, chef and supplier.

## 7.8.2. Role Chef - Screen Shoots

The screenshot shows the Cozinha da Madeira website interface for a chef user. At the top, there is a navigation bar with language options (PT, EN), a user profile for JOANA PEREIRA, and links for NOTIFICATIONS and LOGOUT. Below this is the Cozinha da Madeira logo and a main navigation menu with links for HOME, RECIPES, JOURNEYS, INGREDIENTS, and ABOUT US. The main content area features a large featured recipe for 'TRADITIONAL MADEIRA "SONHOS" WITH HONEY' with a 'READ MORE' button. Below this is a 'MY RECIPES' section with a search bar and tabs for 'MY RECIPES', 'ALL RECIPES', and 'TOP 20'. The 'MY RECIPES' section displays three recipe cards: 'MINCED MEAT WITH CHIPS', 'VELVET PUDDING', and 'CODFISH WITH PEPPER', each with a 'Read More' link. To the right of the recipe cards is a 'CHEF OF THE MONTH' section featuring a profile for CARLOS VIEIRA. Below that is a 'RECENT COMMENTS' section with three comments from other users. At the bottom of the page, there is a footer with the text 'COZINHA DA MADEIRA - 2012. PRIVACY POLICY'.

This interface is the same as the one before about recipes, but have the different that a chef is logged in, and we can see that with a chef logged in the interface changes a little bit, allowing the chef to do tasks related to his role, as add new recipes, filter by his own recipes and they have also access to their personal data in the top right corner of the website.



This interface presents the form to add a new recipe by the chef.

PT EN
JOANA PEREIRA NOTIFICATIONS LOGOUT



# Cozinha da Madeira

[HOME](#) [RECIPES](#) [JOURNEYS](#) [INGREDIENTS](#) [ABOUT US](#)



**MINCED MEAT WITH CHIPS**

**LOCAL INGREDIENTS**

3 pieces Garlic

**GROCERY INGREDIENTS**

2 leaf Bayleaf  
 4 B Salt  
 1 B Olive Oil  
 500g Cow meat  
 4 B Butter  
 1 tbs Rabo de boi  
 1 glass White wine

**METHOD**

Picado is one of the most popular meat dishes in Madeira Island, and also one of the most appreciated among locals and tourists. We start to season the beef with chopped garlic, and bay leaf. Add butter into a large pan, then spread the meat into the pan, with olive oil. You could add soy sauce in this phase, mushrooms with a bit of cream, red and green peppers to garnish the platter. While frying you should mix, is tempered, with salt, 'sopa de rabo de boi', garlic and white wine. After cook leave in the pan to marinated. The picado Madeirense normally is accompanied with fried potato, salad and olives or fried corn and white rice.

Dessert
Fish
Meat

Codfish with pepper

•• You can add more than 1 recipe to your proposal

DELETE
EDIT
CONFIRM PROPOSAL



BY JOANA PEREIRA

1 LIKE



**RELATED RECIPES**



**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)



**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)



**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)



**COMMENTS**



by Elton Gouveia at 2013-05-07 22:03:04

I have a question. Can you tell me what's "rabo de boi"?



by Joana Pereira at 2013-05-07 22:28:08

Hi Elton, yes of course, 'rabo de boi' it's a sauce that you can buy in the super market, it's really tasty, and gives a good flavor to the recipe. :)

**LEAVE A COMMENT**

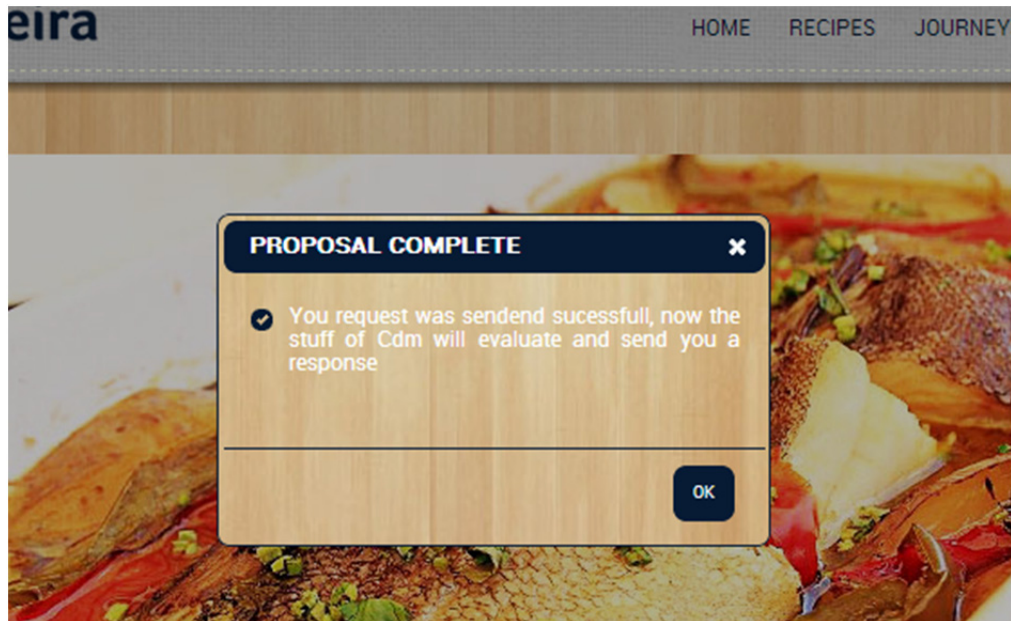
Start typing to see search results for your comment

SUBMIT COMMENT

COZINHA DA MADEIRA - 2013. PRIVACY POLICY

After adding a new recipe, the chef can propose a journey by choosing from their recipes, for example, they have a list of their recipes, and they can choose one of them and then choosing

from the tabs available when they are the owner of the recipe, more recipes, and propose the journey. After the proposal made they have to wait to be accepted by the staff of CdM.



Interface presenting a message, that the proposal was sent successfully.

### 7.8.3.Role Supplier – Screen Shoots



Interface representing the map of Madeira Island where the supplier can add new ingredients, to be available to the chefs recipes.



To add an ingredient on the map, the supplier just need to double click in a certain area of the map, and a form will show up within a pop up, the supplier just need to fill up the form and confirm the ingredient to be added on the map.

## 7.8.4.Role Participant – Screen Shoot

PT EN

 CESAR DIAS NOTIFICATIONS LOGOUT

[HOME](#) [RECIPES](#) [JOURNEYS](#) [INGREDIENTS](#) [ABOUT US](#)

**OPENED JOURNEY**

**3**  
PEOPLE  
SIGN IN

**3**  
PARTICIPANTS

**3**  
PEOPLE  
NEEDED

**3**  
SUPPLIERS

**1**  
PEOPLE  
NEEDED

**1**  
CHEFS

REMOVE PARTICIPATION

**JOURNEY DESCRIPTION**

**SANTA CRUZ**

We will start the journey going to Santa Cruz. Santa Cruz have a promenade, close to the sea, where we have the bars, the beach and swimming pools, restaurants, hotels, it's very beautiful and peaceful.

We will make a walking tour, to show more about Santa Cruz to all our participants, after this stop, we go to Calheta grab the garlic. From Santa Cruz to Calheta it's a long trip, so we pretend to do some stops and enjoy some places in the middle.

**GALLERY**

**DESCRIPTION OF RECIPE**

**CODFISH WITH PEPPER**

by Joana Pereira at 2013-05-06 19:40:49

Cut the codfish in similar pieces. Pass them in flour and fry them in hot oil. Place the pieces on a baking tray.

Chop the garlic, add the oil and fry it on medium heat. Add the bay leaf, chilli and tomato, letting it braise until the liquid evaporates. When it's dry, add a bit of salt, cinnamon and pepper. Add the wine and when this evaporates, mix the sauce with the cod fish.

Bake the pepper and then cut them in strips (1cm), put them over the cod fish, add garlic and chopped parsley...

[Read more about this recipe.](#)

**RELATED JOURNEYS**

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

**IPSUM DOLOR SIT**

Quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo exercitation ullamco...

[Read More](#)

**COMMENTS**

Be the first to comment on this journey!

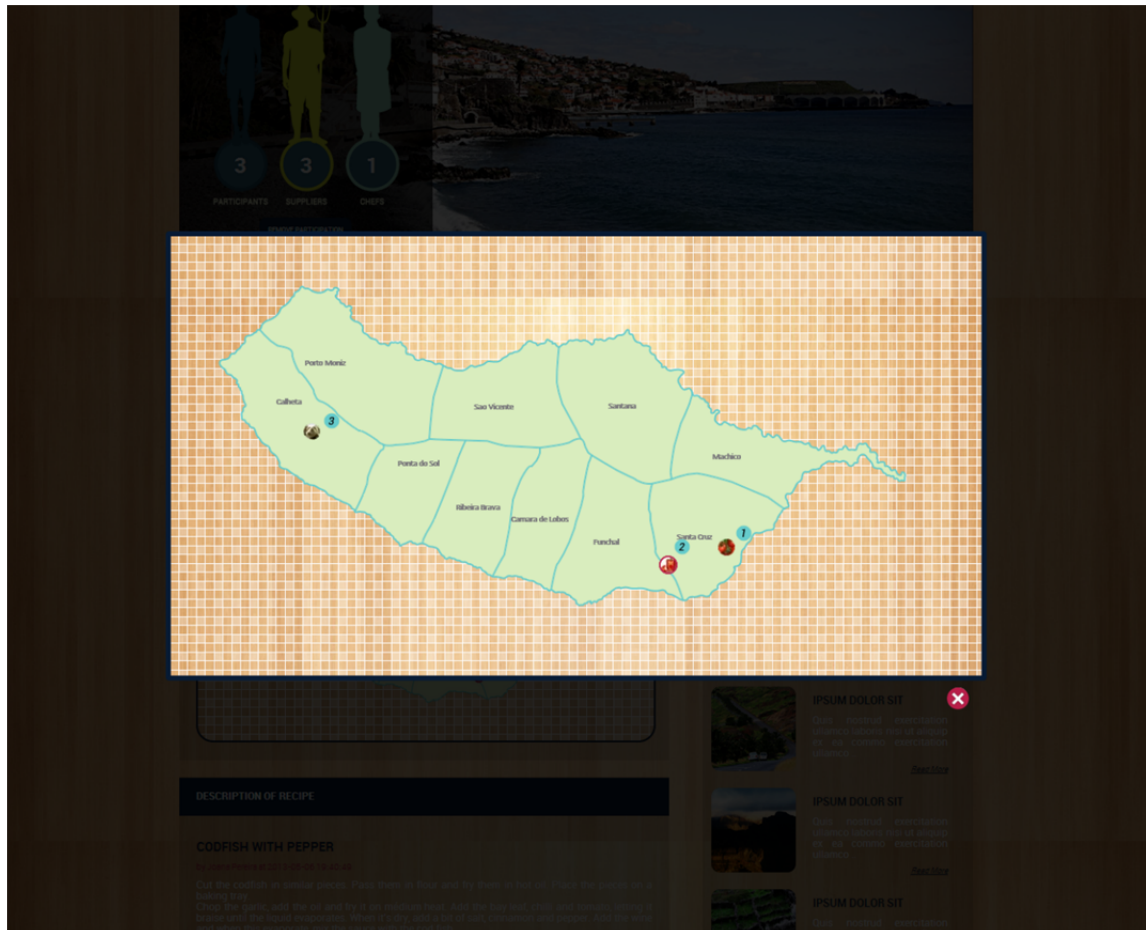
**LEAVE A COMMENT**

Your comment here

**SUBMIT COMMENT**

COZINHA DA MADEIRA - 2012 PRIVACY POLICY

The main tasks of the participants, is add comments, likes and participate on the journey. Here in this interface we can see the textarea box allowing the introducing of comments to the participant role (but also the chef, admin, and supplier can add a comments and like).



This interface represent the zoom up of the journey map, within the page of journey details. To zoom map, it's just needed do click once on the map.

## 7.8.5. Role Admin – Screen Shoots

The screenshot shows the 'Dashboard - Recipes' interface for an administrator. At the top, there is a navigation bar with 'PT EN' on the left, the user 'ADMIN JOANA PEREIRA', and links for 'NOTIFICATIONS', 'DASHBOARD', and 'LOGOUT'. Below this is the 'Cozinha da Madeira' logo and a main navigation menu with 'HOME', 'RECIPES', 'JOURNEYS', 'INGREDIENTS', and 'ABOUT US'. The dashboard itself has a wooden background and is divided into several sections:










- INGREDIENTS RECIPES JOURNEYS** (top navigation)
- DASHBOARD - RECIPES** (main title)
- LATEST RECIPES**: A list of seven recipes, each with a small image, title, description, and a 'Recipe' link. To the right of each recipe are edit and delete icons.
- QUICK OVERVIEW**: A summary box showing 'Total Ingredients: 39', 'Total Comments: 7', 'Total Recipes: 7', and 'Total Journeys: empty'.
- LATEST USERS**: A list of ten users, each with a profile picture, name, role (e.g., Participant, Chef, Supplier, Admin), and registration date.
- LATEST COMMENTS**: A list of four comments, each with a profile picture, text, and author information.

At the bottom of the page, there is a small footer that reads 'COZINHA DA MADEIRA - 2012 PRIVACY POLICY'.

This interface is only available for the administrators of CdM service, this one represents the dashboard of the recipes, where the admin can delete recipes and comments or edit some minor details of the recipes. They can keep track of how many users already are registered in the service and also have a quick overview of the statistics of the CdM website.

## DASHBOARD - INGREDIENTS

## LATEST INGREDIENTS

	Orange		
	American Grapes		
	Cherry		
	Fresh Mushrooms		
	Lemons		
	Cabbage		
	Potato		
	Onion		
	Tomato		
	Sweet Potato		
	Turnips		
	Carrot		
	White Cabbage		
	Red Peppers		
	Eggs		
	Garlic		


























## QUICK OVERVIEW

Total Ingredients: 39  
 Total Comments: 7  
 Total Recipes: 7  
 Total Journeys: empty

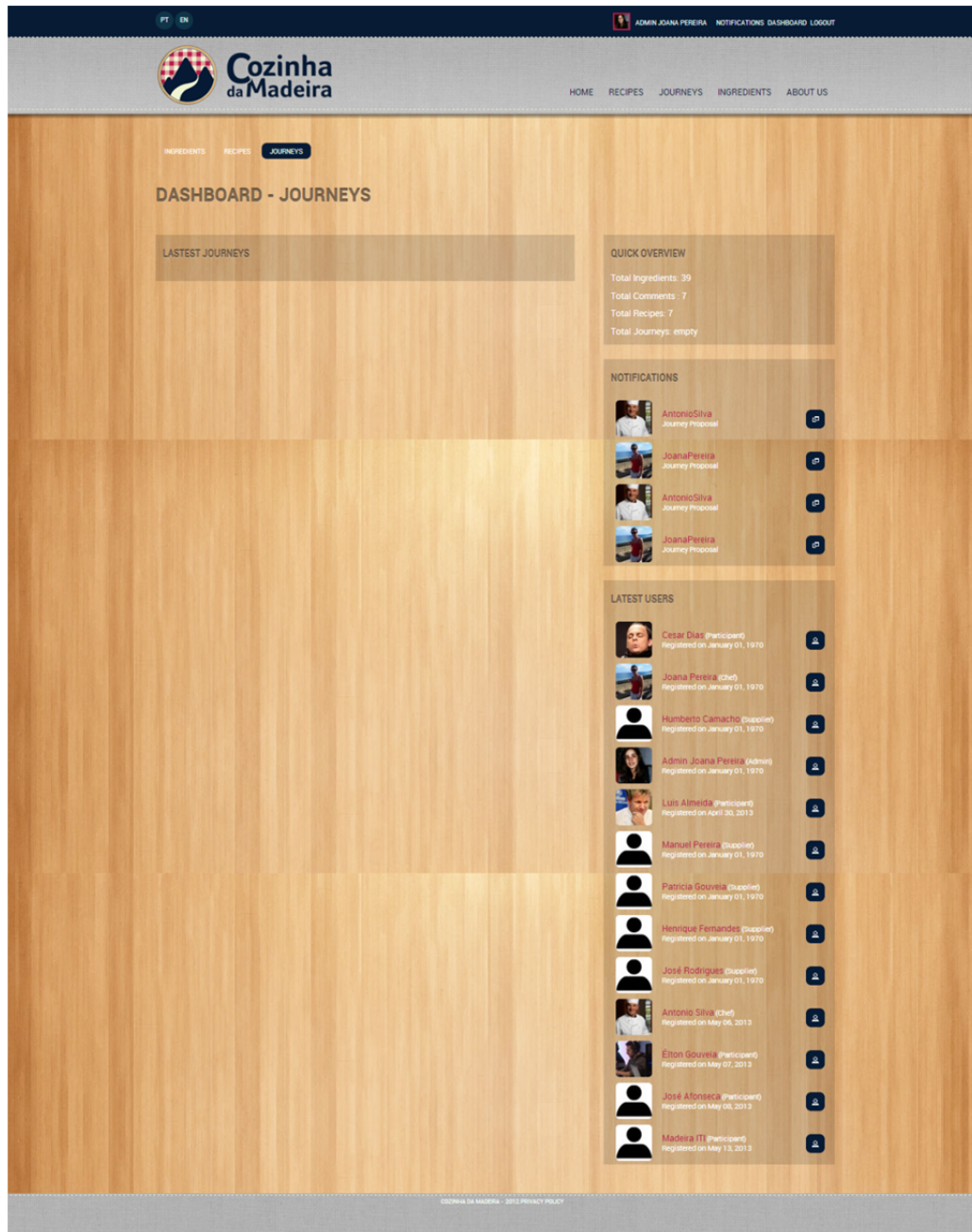
## TEMPORARY INGREDIENTS

Codfish  
 Bayleaf  
 Salt  
 Parsley  
 Chili  
 Olive Oil  
 Olives  
 Milk  
 Sugar  
 Caramel  
 Cow meat  
 Butter  
 Rabo de boi  
 White wine  
 Octopus  
 Red wine  
 Pork meat  
 Pumpkin  
 Tuna steaks  
 Water  
 Flour  
 Yeast  
 Sausage

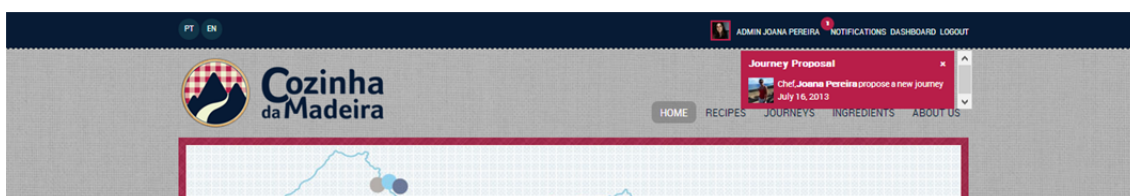
## LATEST USERS

	<b>Cesar Dias</b> (Participant) Registered on January 01, 1970	
	<b>Joana Pereira</b> (Chef) Registered on January 01, 1970	
	<b>Humberto Camacho</b> (Supplier) Registered on January 01, 1970	
	<b>Admin Joana Pereira</b> (Admin) Registered on January 01, 1970	
	<b>Luis Almeida</b> (Participant) Registered on April 30, 2013	
	<b>Manuel Pereira</b> (Supplier) Registered on January 01, 1970	
	<b>Patricia Gouveia</b> (Supplier) Registered on January 01, 1970	
	<b>Henrique Fernandes</b> (Supplier) Registered on January 01, 1970	
	<b>José Rodrigues</b> (Supplier) Registered on January 01, 1970	
	<b>Antonio Silva</b> (Chef) Registered on May 06, 2013	
	<b>Elton Gouveia</b> (Participant) Registered on May 07, 2013	
	<b>José Afonseca</b> (Participant) Registered on May 08, 2013	
	<b>Madeira ITI</b> (Participant) Registered on May 13, 2013	

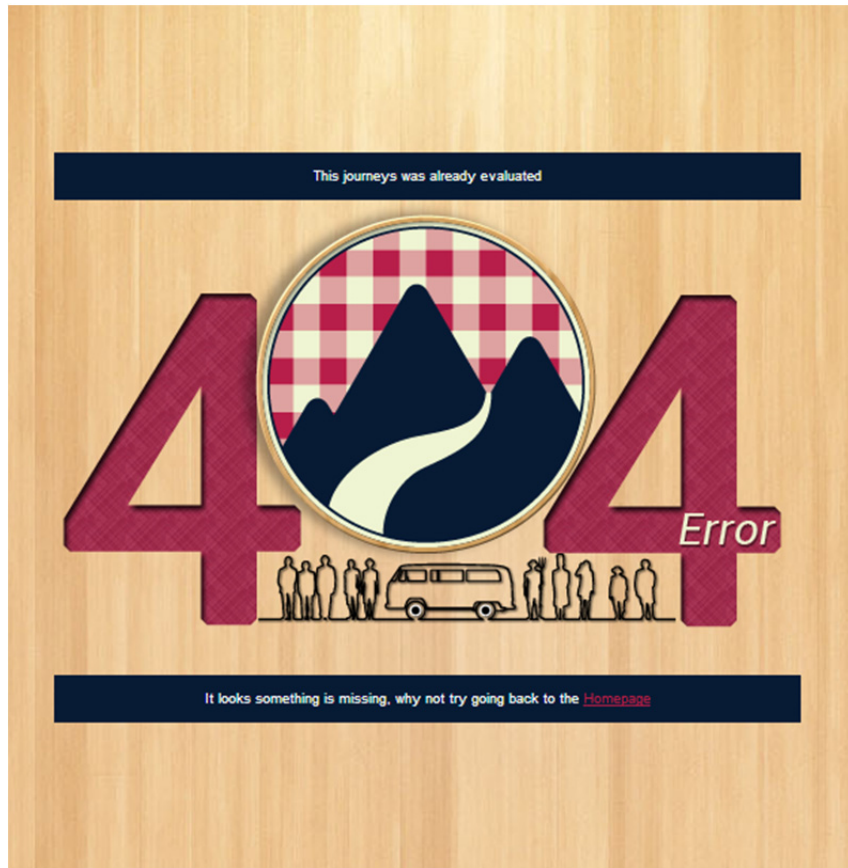
This interface represents the ingredients dashboard for the administrators of CdM, and works equal as the recipe dashboard, with a different context.



This interface represents the journeys dashboard for the administrators of CdM, and works equal as the recipe dashboard, with a different context.







This interface represents the page missing on the CdM website.

---

## **7.9. APPENDIX I – AFFINITY MAP**

---

(Unfold the next A3 sheet to see the Image)



---


## **7.10. APPENDIX J – CUSTOMER JOURNEY MAP**

---

(Unfold the next A3 sheet to see the Image)



# 7.11. APPENDIX K – POSTER “COZINHA DA MADEIRA”



A Sustainable Service Concept for Madeira Island

## COZINHA DA MADEIRA

Joana Pereira, Valentina Nisi, Nuno Nunes, Miguel Caldeira, Kanarak Isarankura, Jihyun Ryou, Jodi Forlizzi

### Overview


Madeira island is reached by hundreds of thousands of tourists every year in order to enjoy its mild climate, breathtaking landscapes, clean waters and genuine and fresh food. The local's traditions and pride of its fresh and tasty products still holds in today's culture. In order to promote sustainable services and experiences around Madeira food culture, this project will bring food to life by combining people, products and experiences, presenting them to both locals and tourists.

"Cozinha da Madeira" (CdM), it's based on collaborative service model that welcomes differences participants where they can operate according to their professions and interest.

CdM is divided into several service stages, which can be listed as: attracting participants, orienting them in the service structure, searching for food and products suppliers from the region, and support them in participating in the service, searching for a chef, that would lead the expeditions and the cooking event, and coordinating and co creating the participants experience.


CdM service proposition motivates customers to adopt an enabling and sustainable stand through their actions. This service concept was design specifically to the island of Madeira, but can be extendable to any other country through localization of concept.

### User Role




DOING THE HARVESTS  
OR THE FISHING  
COOK

SUPPLIER



LEARN  
TRAVEL  
GIVE FEEDBACK  
PARTICIPATE

PARTICIPANTS




UNDERSTAND THE PROPOSITION'S  
CREATE RECIPES  
FOLLOW THE JOURNEY'S  
COOK

**Chef**  
As a chef, you will be able to view the ingredients that CdM have available on the website, add recipes, and propose journeys.

**Supplier**  
As a supplier, you will be able to add new ingredients, and view all the recipes that CdM have available on the website.

**Participant**  
As a participant, you will be able to see all the ingredients, recipes and journeys that CdM have, and participate in journeys that are available.

### Major points of the service CdM




**Ingredients**

Ingredients is one of the majors points of CdM, where the supplier role has a big impact. When a customer subscribe to CdM as a supplier role, that user it's capable to add ingredients using the interactive map. The map it's a visualization of Madeira island, this way all users have a visual idea where the ingredients are located.

CdM also have a section for seasonal products, giving an opportunity to see which ingredients are available in each season, where the user who sign up as a Chef, can create seasonal recipes accordingly with the ingredient season.

Not all ingredients can be supplied by the farmers, in that kind of cases, the ingredient goes to a temporary list and become available when a supplier add that ingredient or have to be purchased in the supermarket. All the participants will be informed, so they do not feel that something did not work in the food journey experience.




**Recipes**

Recipes is where all begin, without a recipe, a journey can't be created. After a user sign up as a Chef, he has de opportunity to create a recipe adding local ingredients and perhaps temporary ingredients if it is need it, that recipe became available to all user to comment, give likes, challenging the Chef to propose a journey.

After proposing a journey, the chef have to wait for it to be accepted by CdM staff, they will contact all the suppliers confirming the ingredients and see if the trails that are create by the relation points of the ingredients spreaded around the island is worth to start a journey.


Staff of CdM are able to change one ingredient for another match, from different supplier, if it's suits a better journey experience to all participants. After the journey accepted, all participants can subscribe to participate in the journey. After all slots filled the journey will begin.



**Journeys**

A journeys is where all the experience begin, after being accepted by the CdM staff, all the users can participate. When a journey have the "Closed journey" state, this means that journey is already up to start, all the slots are filled and the journey will begin. However others participants still can see the journey details, and chat with others in the comments sections.

Each journeys will have available a gallery, where all the participants which participated in the journey can add images that were taken during their experience and share with all the CdM community.



147

