

**U. PORTO**

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## **A Better Way to Search for and Manage Organic Products**

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## **Summary**

We've found that, despite the increasing popularity of organic agriculture all over the world, it still remains largely up to the consumer and the individual producers to find each other, which can be many times a daunting and inefficient process.

To solve this problem we propose the creation and implementation of a web-based system, which would aggregate the information of producers in order to facilitate that process as well as to help develop it. In the meantime revenue should be generated by several means including premium accounts and ads.

Being that the purpose of this class is to mainly focus on the developing of the database, the final project should be a prototype for such a system with the purpose of showing its main functionalities that are possible to implement without deviating too much from the mentioned class objectives.

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## 1 Introduction

On the organic farming in the European Union (2005), it can be read that the value of the sales of food and biological beverages has increased 43% to €25.5bn between 2002 and 2005. Also, in the analysis of the EU organic sector (2010) it's claimed that the area under organic agriculture has increased an estimated 7.4% per year in the period 2000-2008. Globally this market has expanded over three fold from 2000-2010<sup>6</sup>. This growth can be attributed to several factors, some of which are incentives given by the EU to farmers producing organic products, and the increasing demand of such products because of the healthy label that is attached to them<sup>4</sup>.

This demand can be seen in the several different forms the products can be bought<sup>5</sup>. Those range from the farmers themselves, through specialized stores and markets, or just regular supermarkets. Many restaurants are also opting to have organic food on their menu as a form to please a greater number of their clientele. Even though the majority of certified organic farms are export-g geared<sup>6</sup>, an increasingly higher number of people are looking to buy directly from the farmers, especially those living in the neighboring areas.<sup>4</sup> This can present a problem, because it can be hard to find them. Even finding certified organic products that fits one's criteria can be a time-consuming process, because the information is scattered across the websites of stores, supermarkets, or just not digitalized yet.

We think this problem can be solved by an internet-based system that encompasses all this information in order that both clients can more easily find products, selling places and get in direct contact with farmers, as well as for the farmers and business owners to make themselves more visible and searchable. Revenue could then be made by several ways, such as ad-revenue (pay-per-click, per view, etc.) and by renting premium accounts with higher visibility and more options. Since such a system would be out of bonds with the requirements for this project concerning the class it is part of, we will but attempt to create an offline prototype, whose functionality shall resemble the one pretended, minus the revenue part.

We will lay out how such a system can be created, starting by describing the necessary developmental phases, the needed logistical support, manpower and time, as well as specifying all the user requirements.



### **3 Specification of the system to develop**

As mentioned before, the system being developed for our project will attempt to mimic the core of the web-based system, which is the search function for potential customers and data edition by business owners.

#### **3.1 Specification of the user requirements**

**UR 1** – The information system will be used by internet users wanting to find nearby stores, markets or farmers that sell organic foods and beverages. It will also be used by the owners of such businesses.

**UR 2** – The information system should allow potential customers to search businesses / farmers or products by location, and/or by product.

**UR 3** – The information system should allow the introduction of new entries businesses and farmers, and its subsequent edition. In our case this both will be done by the administrator, in the online version it should only be possible by the farmers and businesses owners themselves.

**UR 4** – Products will be characterized by their type - vegetable, fruit, meat, fish, dairy & egg, tea & herb, chocolate & dessert, grain & seed, body & beauty, preserves and oils; and subtype – for example: avocados, oranges, berries, kiwis, and so on, for fruits.

**UR 5** – The information system should allow each business to have, for each product, their price and their available quantity.

**UR 6** – The information system should allow farmers to manage their subscriptions and look for processors for their products.

**UR 7** – A subscription consists of a customer or establishment agreeing with a farmer to pre-order a fixed number of items per time.

**UR 8** – A subscription is characterized by the product to be delivered, its quantity, the time it is expected to be delivered on, the price, and the interval of time between deliveries.

**UR 9** – All the business owners should be able to edit their own information that is to be displayed on the screen for potential customers to see.

**UR 10** – Events are special occasions, where markets have special discounts and usually abide by a theme to be consistent throughout the event.

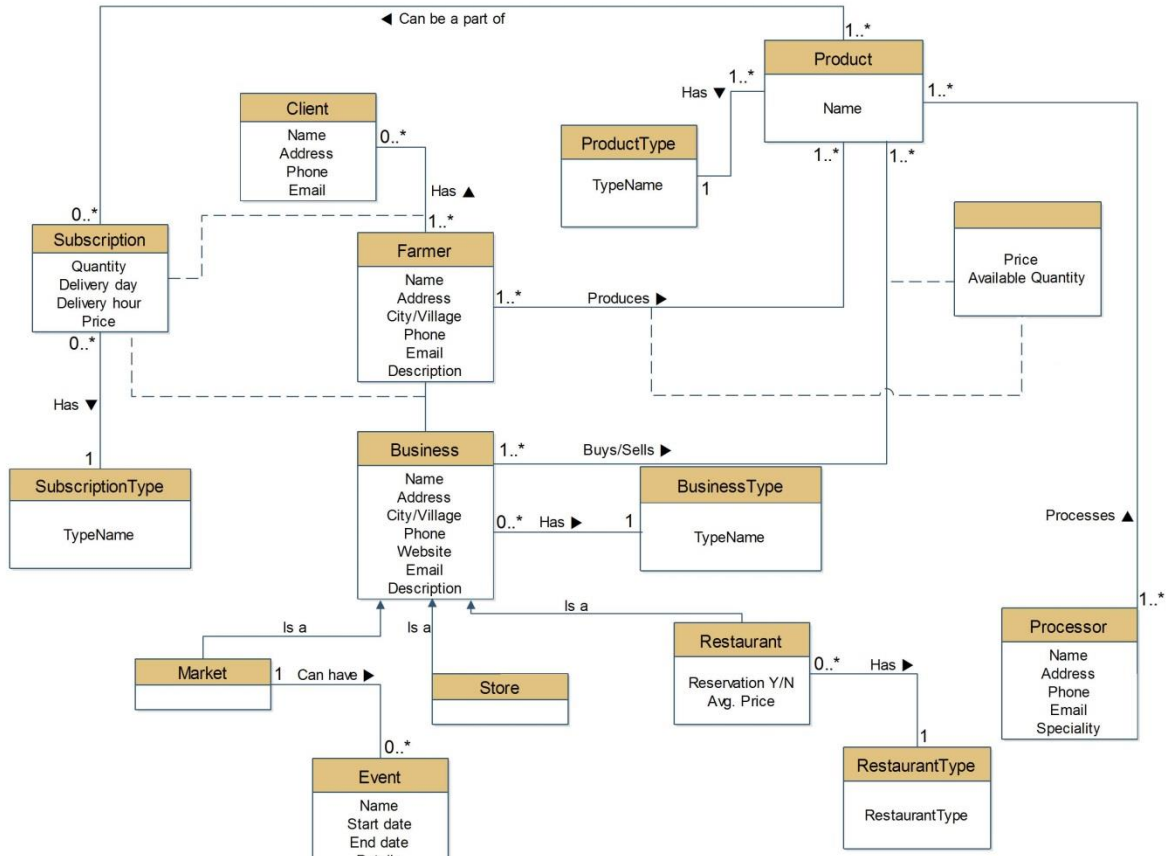
**UR 11** – Markets should be able to add and edit future and on-going events, namely their name, date and details.

**UR 12** – All businesses are identified by their type, address and phone number.

**UR 13** – Restaurants have to be able to introduce information about the average price of their meals, their type (Chinese, Italian, French, etc.), and whether they accept reservations.

### 3.2 Specification of logic supports and external interfaces.

Below we present a possible UML class diagram that fits the requirements stated above.



T\_SubscriptionType

Fig. 2 – UMS diagram of the information system for searching and managing organic products

2	Monthly
3	Other

T\_Event

#EventID	Name	StartDate	EndDate	Details
1	Fall Festival	1.10.2013	15.10.2013	We are celebrating fall...
2	Harvesting Festival	15.4.2013	1.6.2013	Fresh, Fresh, Fresh...

T\_MarketEvent

#BusinessID	EventID
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And the respective relational model tables

T\_Business

#BusinessID	Name	Address	City/Village	Phone	Email	WebsiteLink	Description	#BusinessTypeID
1	Capa Negra	Rua S. Maria	Porto	22553366	capa@capa.com	www.capa.com	Our specialty is...	Restaurant
2	Dia Fresco	Rua Do...	Braga	22448866	dia@dia.pt	www.dia.pt	We have all....	Store

T\_BusinessType

#BusinessTypeID	Name
1	Restaurant
2	Store
3	Market

T\_Farmer

#FarmerID	Name	Address	City/Village	Phone	Email	Description
1	Luiz Silva	Rua do Pedro...	Braga	22558833	luizfarm@gmail.com	Here in Luiz Farm...
2	Carlos Portugal	Rua D. Augusto 15	Porto	44669925	carlos@sss.com	Fresh is our spe...

T\_Client

#ClientID	Name	Address	Phone	Email
1	Pedro Manuel	Rua Sua Dua, Porto	22446699	pedro@sss.com
2	John Olafsen	Av. Morte N 15, Braga	44886695	john@ppp.com

T\_Subscription\_Client

#ClientID	#FarmerID	#ProductID	Quantity	Delivery Day	DeliveryHour	Price	#SubscriptionTypeID
1	1	Apple	15	Mondays	18:30	15€	1
1	2	Calf	1	Saturdays	8:00	50€	3

T\_Subscription\_Business

#BusinessID	#FarmerID	ProductID	Quantity	Delivery Day	DeliveryHour	Price	#SubscriptionTypeID
1	1	Apple	15	Mondays	18:30	15€	1
1	2	Calf	1	Saturdays	8:00	50€	3

T\_Restaurant

#BusinessID	Reservation Y/N	Avg. Price	#RestaurantTypeID
1	Yes	20€	2
2	No	10	1

T\_RestaurantType

#RestaurantTypeID	Type Name
1	Indian
2	Chinese

T\_ProductType

#ProductTypeID	Type Name
1	Fruit
2	Vegetable

T\_Product

#ProductID	Name
1	Apple
2	Broccoli

T\_Product\_ProductType

#ProductTypeID	#ProductID
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T\_Processor

#ProcessorID	Name	Address	Phone	Email	Speciality
1	Olaf Sveinson	Rua D. S. Pedro 15	442233669	olaf@sveinson.pt	Butcher
2	Pedro Augusto	Av. Norte Porto	223396677	pedro@augusto.pt	Fruit Processor

T\_Product\_Processor

#ProductID	#ProcessorID
Apple	FruitProcessorLDA
Orange	FruitProcessorLDA

T\_Product\_Business

#ProductID	#BusinessID	AvailableQuantity	Price
1	2	15	5€
2	1	10	2€

T\_Product\_Farmer

#ProductID	#FarmerID	AvailableQuantity	Price
1	1	25	5€
1	2	5	1€

Fig. 3 – Tables for the relational model of the information system for searching and managing organic products

Next, we will analyze the user interface of the system, and some of its functionalities.

When initializing the system, the user sees the window which mockup is presented in Fig. 4. The banner (in a big font size) will tell the user the name of the window he’s viewing, as well

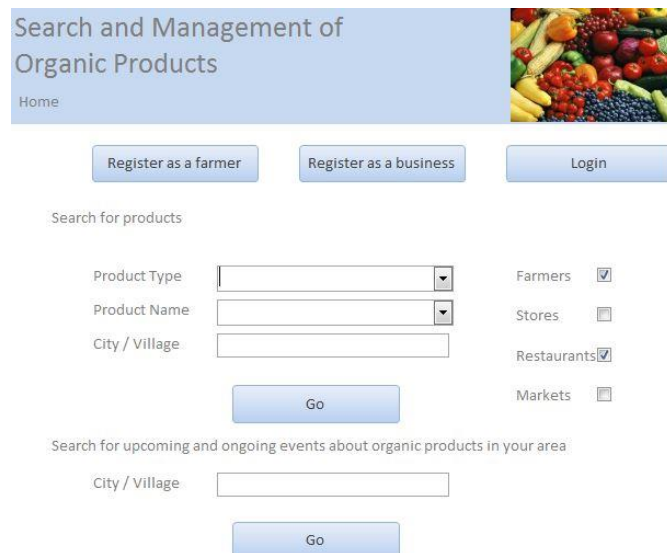


Fig. 4 – Mockup of the main page of the system

as the path (small font size). When registering as a business, for example, the business owner will see the window in Fig. 5. In an online setting this, of course, would work in a slightly different way. Our goal here is to simply loosely mimic its functioning.



Fig. 5 – Mockup of the registry window

Like this one, all the pages except the home page, will always have a “home” button, which will bring back the user to the main page, and possibly a “back” button, in the cases where the user is at least 2 clicks away from the home page.

After having registered in a similar page as the business owner’s and having logged on to the system, a farmer will have access to the farmer’s page, as showed in Fig. 6.



Fig. 6 – Mockup of the page for farmers to manage their information.

The “manage subscriptions” button allows the farmer to edit and control his subscriptions whereas the “manage products” one allows the same functionality for the products.

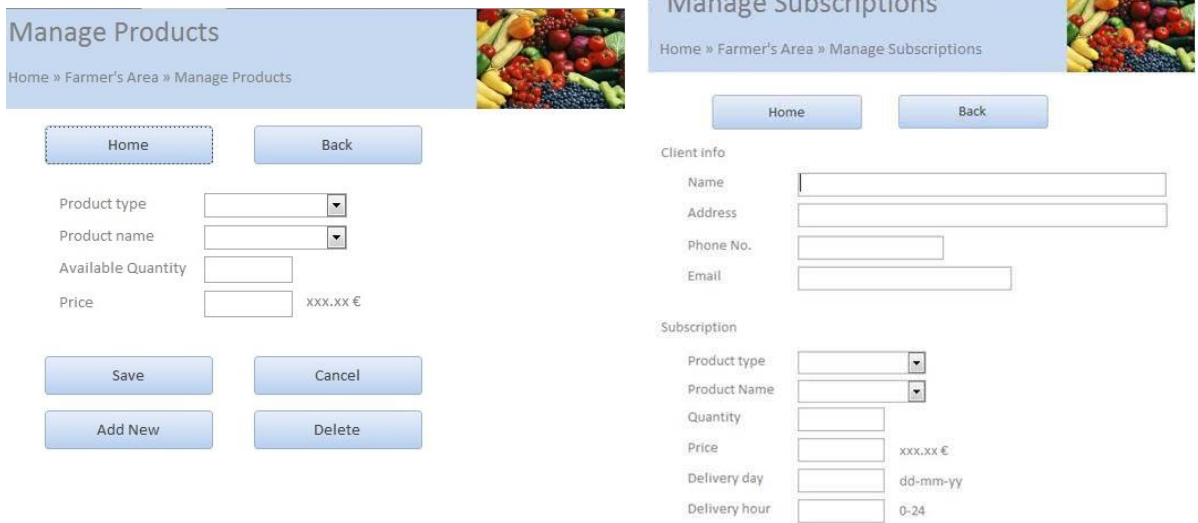


Fig. 7 – Mockups of the pages Manage Products and Subscriptions

Finally, the page the users will see when searching for a product will be similar to the one presented on Fig. 8. “Type of merchant” will tell the user whether it’s a business – and which kind – or a farmer. Something to note is that not all information is being displayed. This is due to screenspace constraints and also because as a first approach, this information should be the one for the user to make it’s first triage of the results they’re interested. If he then wants more information about a specific entry, he can click on any of them, and it will open up another page with all the information available for that merchant.

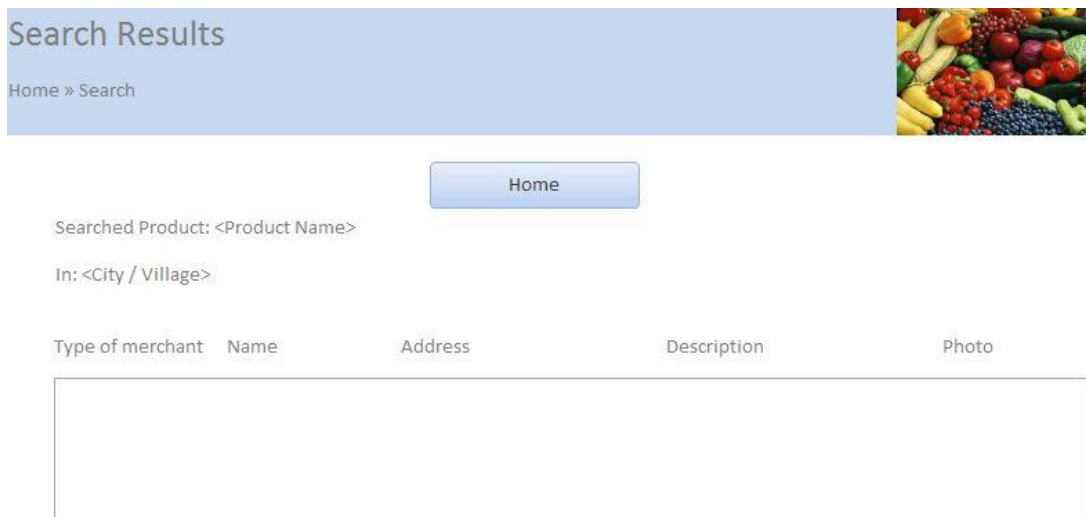


Fig. 8 – Mockup of the page that will show the results of a search in the database

#### **4 Conclusions and future work**

We've showed how we plan to create a prototype for a system that would bridge the gap that exists nowadays in finding and managing organic products with the consumer and the managers of organic products in mind. It is very possible, and due to the ever increasing in popularity of organic products all over the world, and with our knowledge of monetary success in web-based systems, it also appears to be a profitable solution.

For the future it would, of course, be interesting to implement this as the real deal, that is, as a web-based environment, with all the functions in a working state. That wasn't possible, due to the constraints brought by the objectives of the class, software used, and because of the work being done in an offline environment. Either way, he hope to pave the way for what would be such a system.

## References

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- [6] Willer, Helga and Kilcher, Lukas (2012) *The World of Organic Agriculture - Statistics and Emerging Trends*.

