

Diet* a



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Master course in Interactive Design 2004

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Title: Diet* a

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Abstract/Rationale

In this document I will explain the entire process behind Diet*a project. Starting from the specific research I have done, that I decided to show in two different modalities the first one more discursive and the second, through cases histories, more specific.

The project is explained starting from its macro functionalities to have a conceptual overview mainly to make it easier to understand some of the choices I made.

Keywords

- **Multilevel engagement**
- **Soft care**
- **Supervised experiences**
- **Democratic space enhancement**
- **Integrated commodity**

Introduction

Framework

The frenetic life we are being accustomed to pushes us to use technology solely to save time and money. This has had a very negative influence on what we eat and how we relate to eating and its related services. This wrong eating culture has inevitably had repercussions on our health, bringing to light new and always more relevant problems like allergies and intolerances that could be temporary or permanent.

The quality of the experiences can be affected by the transformation of the spaces where the services are provided, helping the mixing of the flows and giving appropriate interfaces to the services themselves.

Objectives

- Remove barriers between health care and wellness, focusing on shared public spaces.
- Provide a service to enhance the quality of activities, sometimes shared with other people, related to health care.
- Inform the whole family about the food culture, not just its benefits
- Follow people in a not intrusive way to help them find the right resources
- Create easy connections between care structures and final users
- Provide people with needed resources in many different moments/places
- Create interfaces of the system where people, with different needs, can have access.
- Manipulate data from users' interactions to enhance the service.

Context

Areas used by institutions, companies where the food service is centred and managed from a single company that can provide the service used by restaurants to small bars (ticket restaurants).

Shared family places related to food where to put information and monitoring activities.

The flexibility of some devices permits to imagine them in other contexts. For instance the restaurant taken in consideration could be in other areas if the system will grow.

Target

The final users are employers and students that regularly have lunch in a specific area, the one where they do their activities (work, study), and for need or for pleasure find useful follow a profiled, diet by doctor or by themselves.

Other active actors are involved in the system. They are restaurants that have to join the system and doctors (hospitals) that may have a profiling or monitoring function.

Business idea

This service is a commodity for all the employers/students to increase the health quality of the users and allow them to work better, increase the company closeness perception and to increase the food information/awareness being nowadays an important issue for everybody.

Process Description

I started thinking about the soft-care in general and I tried first on schematizing the phases of the care process:

- Prevention
- Cure
- Convalescence

Looking at them it is easy to realise how food has a relevant importance on all of them. Therefore I chose to explore the strong relationships between food, health and the areas where these kind of activities happen.

One issue that came up was that generally the care related services stretch to separate in different places people with big issues from the ones who have no serious problems. This act creates a kind of marginalization that influences negatively the providing of the service itself. The diet issue is day by day even more important because of the industrialization and chemical preparation of the food children eat. This causes an increasing percentage of obesity in rich populations affecting especially teenagers (sometime even younger children).

It tends to affects more those countries that do not have a food culture as strong as Italy or other Mediterranean countries could have. About this issue the data published by the World Health Organization (8) are quite relevant.

Currently more than 1 billion adults are overweight – and at least 300 million of them are clinically obese. Current obesity levels range from below 5% in China, Japan and certain African nations, to over 75% in urban Samoa. But even in relatively low prevalence countries like China, rates are almost 20% in some cities.

Childhood obesity is already epidemic in some areas and on the rise in others. An estimated 17.6 million children under five are estimated to be overweight worldwide. According to the US Surgeon General, in the USA the number of overweight children has doubled and the number of overweight adolescents has trebled since 1980. The prevalence of obese children aged 6-11 years has more than doubled since the 1960s. Obesity prevalence in youths aged 12-17 has increased dramatically from 5% to 13% in boys and from 5% to 9% in girls between 1966-70 and 1988-91 in the USA. The

problem is global and increasingly extends into the developing world; for example, in Thailand the prevalence of obesity in 5-to-12 year olds children rose from 12.2% to 15-6% in just two years.

Obesity accounts for 2-6% of total health care costs in several developed countries; some estimates put the figure as high as 7%. The true costs are undoubtedly much greater as not all obesity-related conditions are included in the calculations.

We should not forget that diet does not only have an impact on our weight, so it is even less related just on the aesthetic of the people. In fact there are many pathologies for which it is forbidden or suggested to avoid to eat some food. Watching "The American Journal of Clinical Nutrition" (9) we can easily see how many they are and how important it is to adopt a good diet behaviour in many cases.

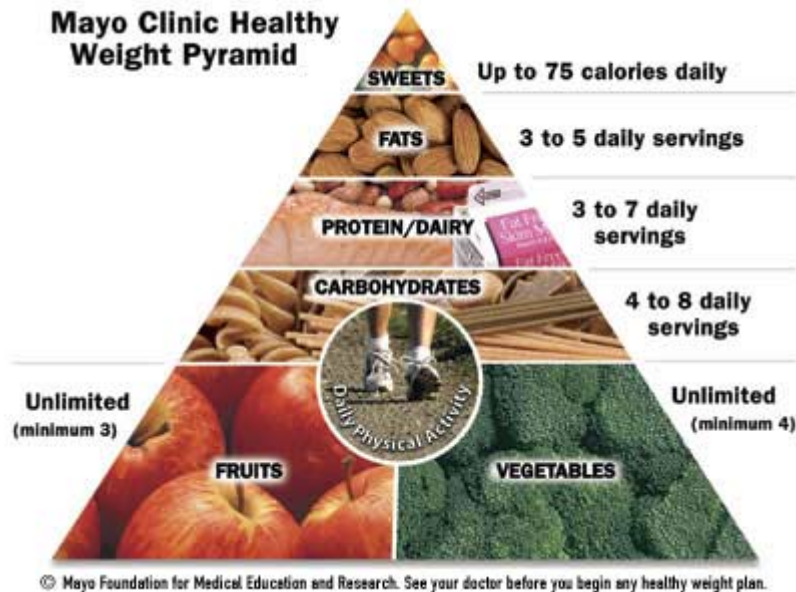
Exploration of Diet issue

Diet from the dictionary is "*A regulated selection of foods, as for medical reasons or cosmetic weight loss*". I can add the time factor, so "*A regulated selection of foods, as for medical reasons or cosmetic weight loss that we have to provide with a defined timing*".

What is healthy eating?

According to most dieticians, there are no unhealthy foods, only unhealthy diets. Healthy eating is about eating the right quantity and balance of foods, month in month out, and not about whether you succumb to fish and chips or a slice of chocolate cake once in a while.

Eating the right balance of foods from the major food groups is the foundation of day-to-day wellbeing, and will reduce your long-term risk of disease.



So when we talk about making diet, joined to the general concept of food, the main factors are:

- **The environment:** Where to eat
- **The company:** With whom
- **The time:** when or for how long
- **The food:** what to eat.
- **The health:** why I have to

Environment

This component is based on places with some qualities. These qualities define the modality of the activity.

It is easy to represent the modalities through a time factor, just think about a fast-food or a restaurant.

The modalities organized on the duration factor could be resumed as:

SLOW:

- **Restaurant:** This is the more formal modality, eating there means not just the wish not to cook by ourselves but to consider the eating as a ceremony. So eating in public areas surrounded by unknown people but in a quite sacred context that is our table. That's why when we have to celebrate a particular event (personal/work) we go there.
- **Home:** We cook by ourselves a food bought in a shop or brought from somewhere else, we want to save money or not to see anyone.

FAST:

- **Fast-food/Self-service:** The place is formal because we eat among other people, usually people use it to save time and money if we compare it to restaurants. A particular thing that happens is that we can easily eat with other people at the same table.
- **Drive-in**

The food

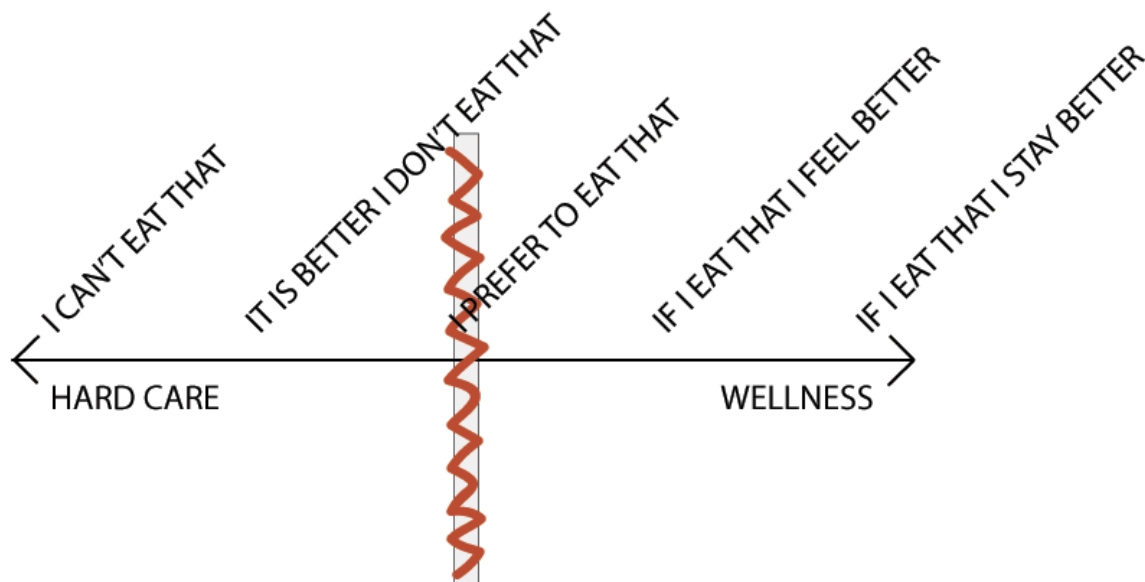
What we eat when we speak about diet is obviously crucial. The reasons could be:

- we can't eat some kind of food
- if we eat some kind of food we don't keep so well
- with some kind of food we feel better
- with some kind of food we can lose weight
- or just to change sometime to feel better

So we need to know which kind of substances are contained in the food we eat to make a good choice and to start knowing better how our body reacts to the food we eat. Nowadays more and more people discover to be intolerant to some substances and after having tried to avoid them their lives are changed. So in the future it will be a hot issue.

Health

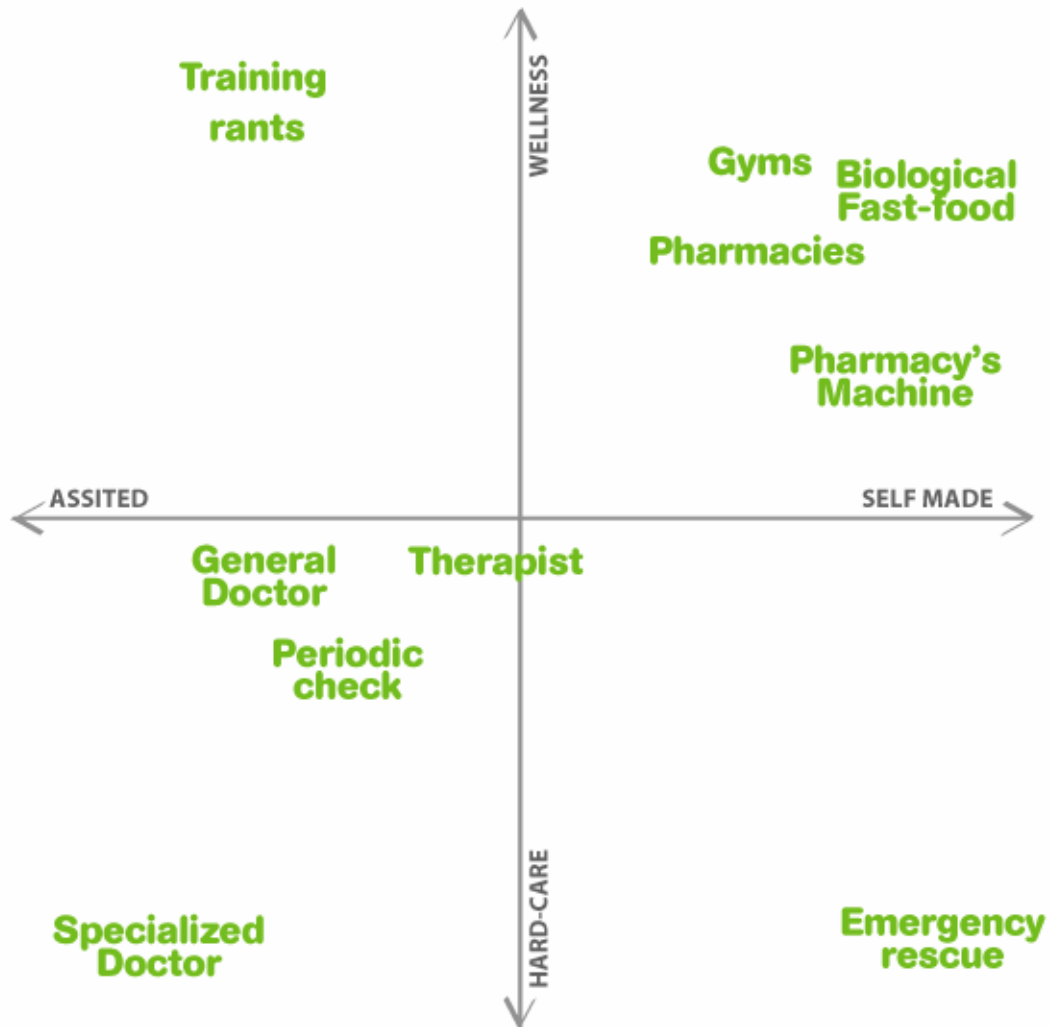
Health could be the reason we are going on a diet, and it can be not just for a cure issue but as we saw before also just for wellness. So there is a kind of horizontal line that can show the area where we can work using as parameter for the need of being on the diet..



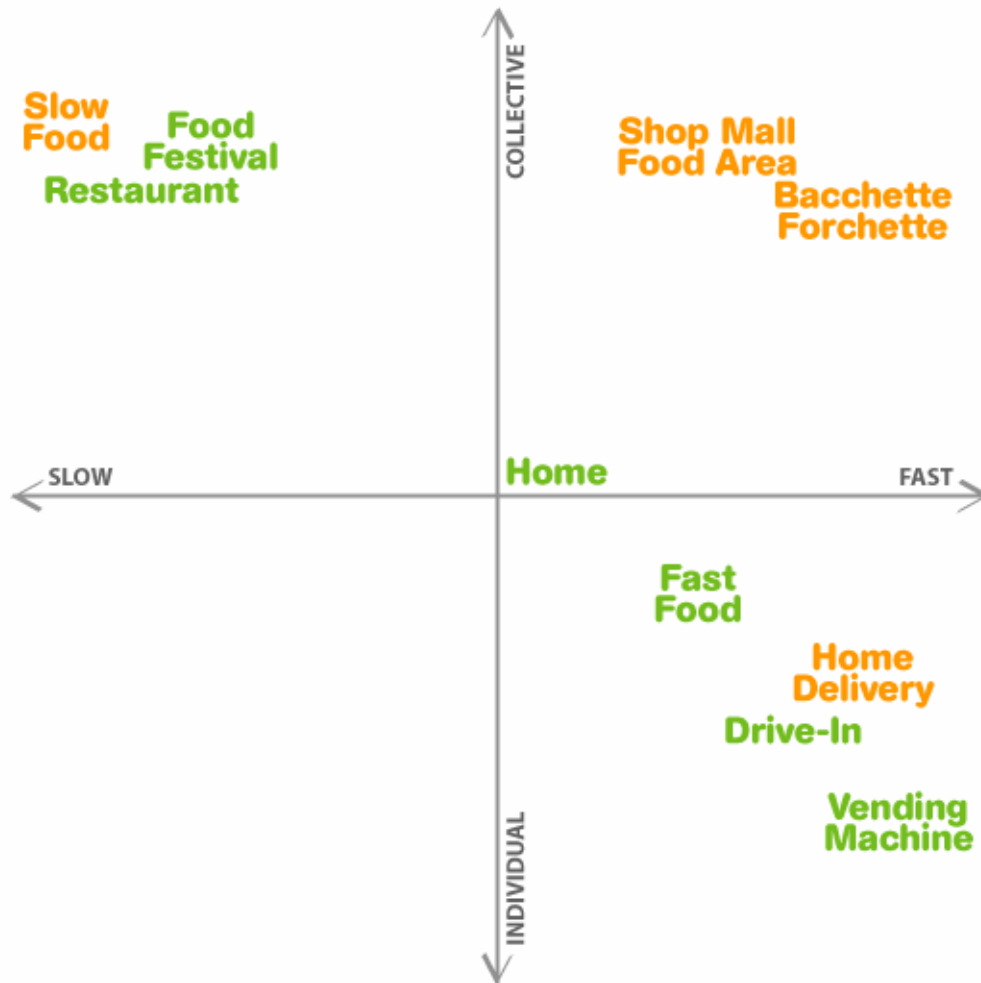
Research Maps

After having analyzed the theme there was the necessity of a deeper analysis of the various elements of these topics (modalities, services).

With regards to health I analyzed the different typologies of elements the user can interface to. Each one implies different relations. I put them in a graph using as coordinates the level of autonomy in the decisions (suggestions) and the level of importance already represented in the graph above.



For what concerns to the Food, I represented the elements split them in two macro categories knowing that sometimes it is not so easy do identify precisely if an item is a service or a modality since after a few period a service that becomes very popular can easily becomes a recognized optional modality for our everyday living.



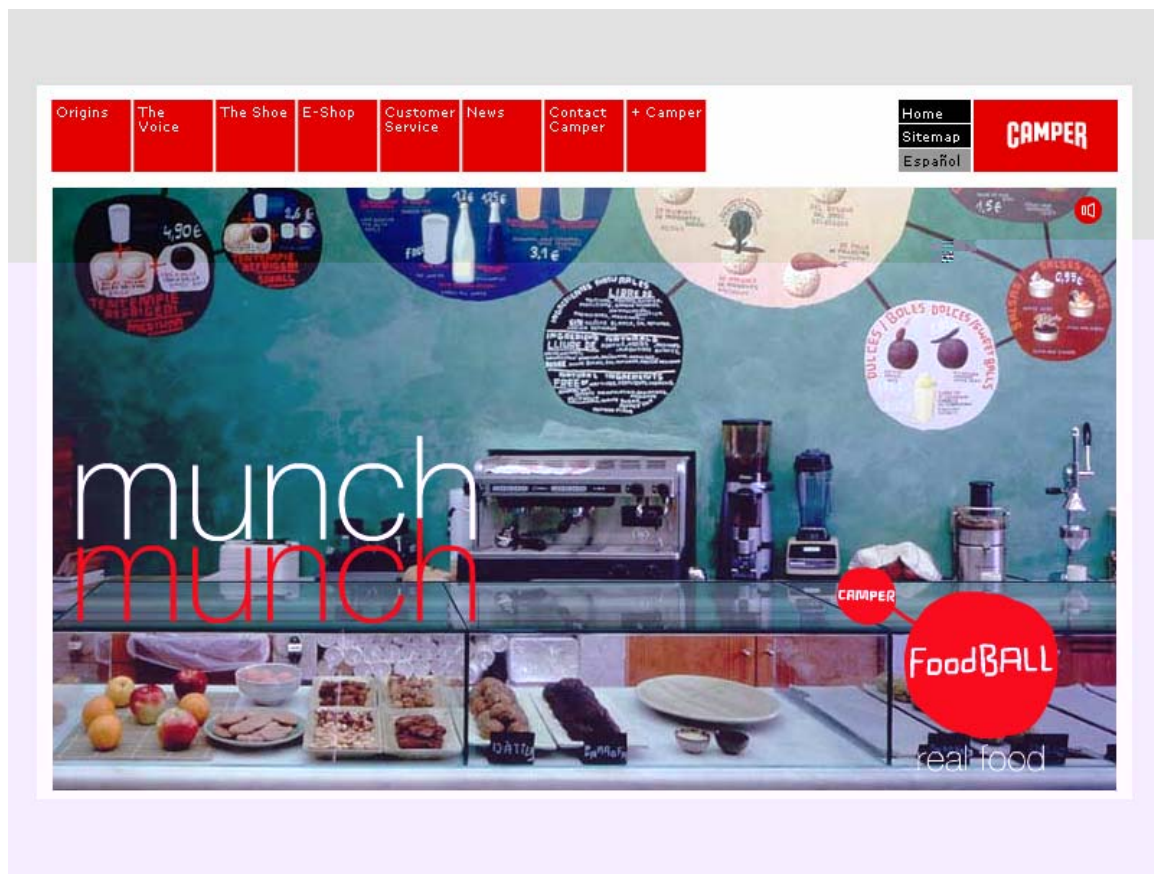
Modalities **Services**

Looking this graph it is clear that an increase of speed to make use of the service pushes the service to be individual. It becomes also clear that services try to have as client more people at the time and so a few times spent on providing the service is economically balanced on providing it to individuals.

Case Histories

Camper FoodBALL

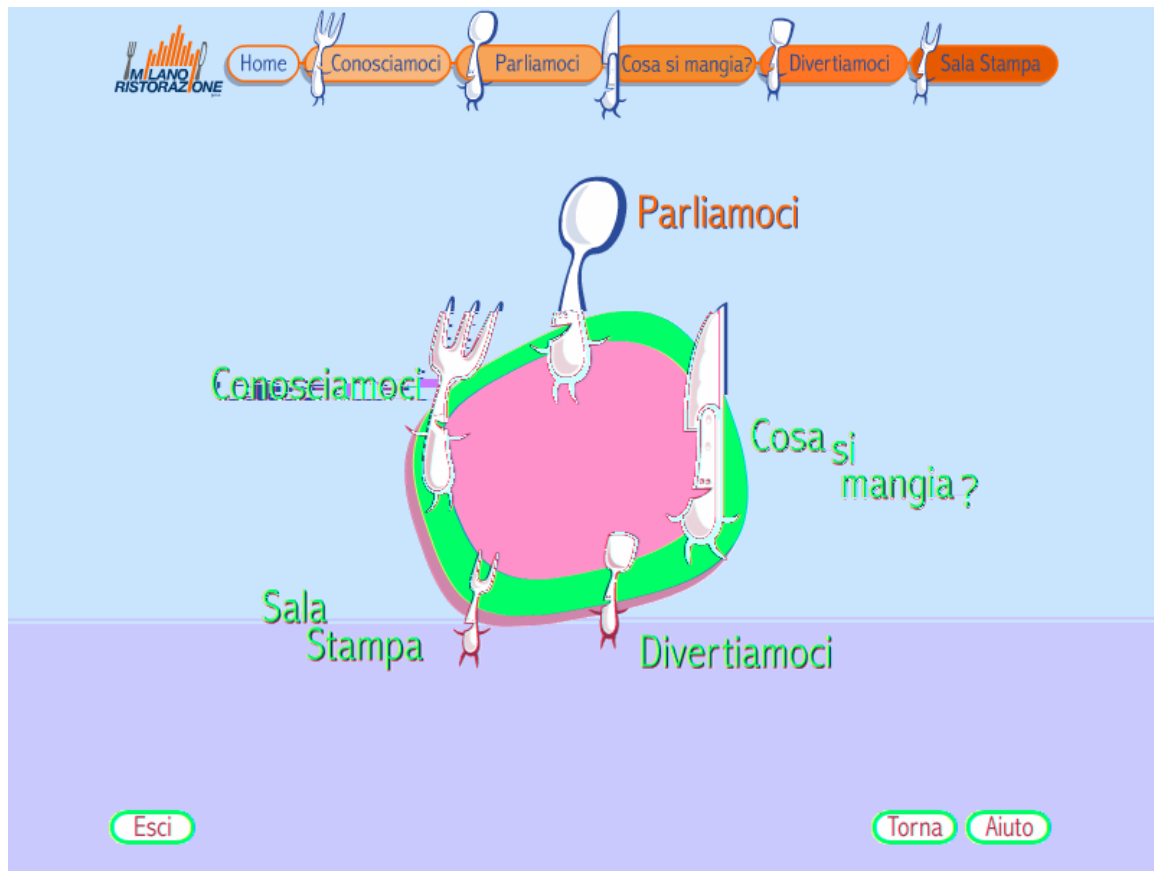
(www.camper.es/web/en/foodball.asp)



This is example shows how it is possible to combine a solid brand with food related activities. This case is particularly interesting because the food has been combined with the slowfood philosophy, to enforce the home making and good quality concept becoming a sort of folkloristic campaign.

Milano Ristorazione

(www.milanoristorazione.it)



“Milano Ristorazione” is a very important case related to the importance of the information. In fact, this company was born with the aim to increase the children knowledge about food and to enhance the awareness of parents at home about what their children eat at school. Other very interesting initiatives were:

- inserting of ethnic food during holyday of specific cultures
- suggesting what to cook at home for the children based on what they eat for lunch to create a more integrated diet for them, and so a cookbook
- making didactic activities in class about the history/origin of the dishes
- distributing placemats, at the school catering, with printed areas where to put the food, to teach how to prepare the table

Sugar Free Superstore

(www.sugarfreesuperstore.co.uk)

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Why Sugar Free?

LOW CARB LIFESTYLE:
Since 1972, the Atkins diet, created by Dr Robert Atkins, has been questioning traditional dieting methods, stating that low carb, high protein is the way to rid the body of cravings and excess fat - providing a healthy, easy way of eating for life! Today, over 17 million Brits are said to have tried the Atkins Diet, and there an increasing number of low carb diets firmly establishing themselves. More importantly, the medical profession are now in agreement that it is a healthy way forward...

DIABETICS:
There are currently over 9 million diabetics under medical supervision in the UK. Our habits and lifestyles dictate that sufferers **MUST** control their intake of sugar to ensure optimum levels of insulin in the blood. This often means cutting out family favourites such as cakes, crisps, chocolate and sweets... Sugar Free, means diabetics are no longer isolated, they too can indulge!

CHILDREIN:
The level of obesity and diabetes in UK teenagers is at an all time high. It is time to teach the next generation a better way forward, no matter what their age... Sugar Free is the ultimate answer - kind to teeth and waistbands and doesn't effect energy levels or mood swings!

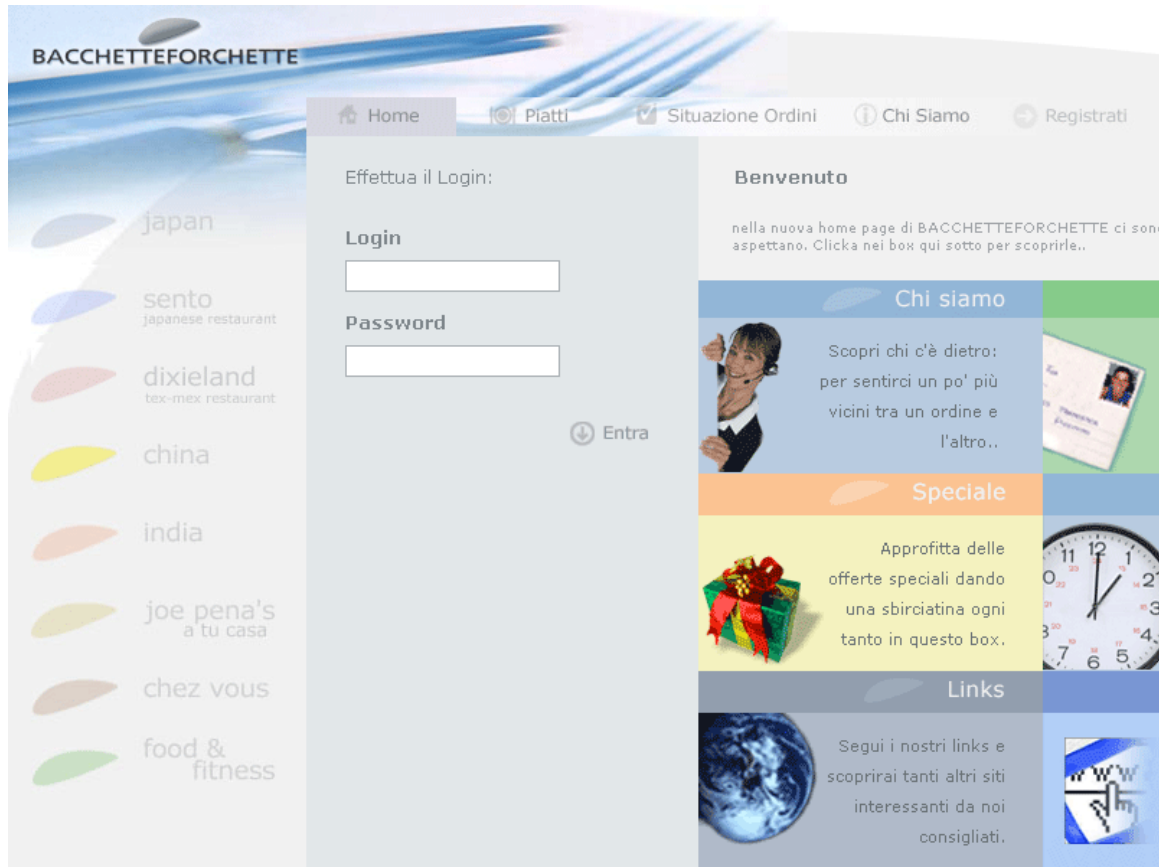
HEALTH CONSCIOUS:
Sugar addiction can be just as fatal as any other addiction, weight gain can be as dangerous to your health as smoking or drinking. With this in mind, many healthy, slim, fit people choose to stay that way by cutting out, or restricting their sugar intake.

Change your life today!

With all of this information, the real question is WHY NOT?

This is a website that offers customers an huge catalogue of sugar free food, and it could be useful for diabetics, children growth or for the ones who wants to live a healthy life.

Bacchetteforchette
(www.bacchetteforchette.it)



This website offers home delivery of international food. It is connected to different restaurants that probably don't have a web site to take orders. The service they provide is to coordinate orders that could be taken by different restaurants and have a single delivery at home. It is useful when people want to eat many different foods in the same occasion.

Japanese vending machines



In Japan vending machines are very diffused and you can find them everywhere, in this picture they are outside a 24 h supermarket, and they sell everything: eggs, rice, liquors, and medicines. You can find them also outside a noodle restaurant and in that case there could be a waitress. They are certainly useful to optimize time and queues but when we talk about food they need many customers to keep the food fresh. That's why they are so diffused in Japan where there is a lot of traffic and the time people have to have meal is not so much to allow queues. Then being so many you can easily find a vending machine that sells panties far from the centre.

Shop mall food area



What is interesting in these areas is that you can easily seat at the same table as your friends having at the same time totally different food from theirs.

Our life rhythm is becoming even more different and could easily happen that at the same time we want to have lunch a friend of us wishes to have breakfast.

Slow Food

(<http://www.slowfoodusa.org>)

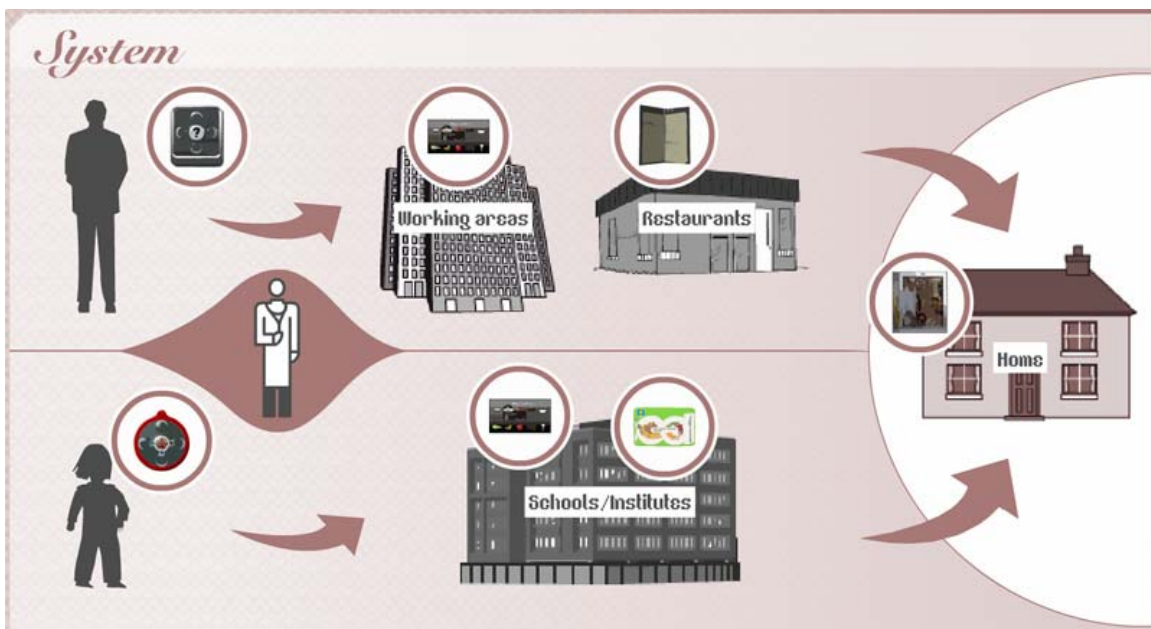
This is a non-profit educational organization dedicated to supporting and celebrating the food traditions of North America. It was born from the Italian Association that was founded in the 1986. It is a movement simply about taking the time to slow down and to enjoy life with family and friends. Everyday can be enriched by doing something slow - making pasta from scratch one night, seductively squeezing your own orange juice from the fresh fruit, lingering over a glass of wine and a slice of cheese - even deciding to eat lunch sitting down instead of standing up.

Project Description

Diet*a is an integrated diet related service based on the question and answer model. When the user wants to know what it could be recommended to eat in a specific place/time based on his profile he will interact using a personal device asking to other various devices, placed in different places, for a suggestion, from here Diet*a(answered).

The user behaviour strictly depends on his/hers own alimentary culture, that's why Diet*a informs all the family about the benefits of a good profiled and varied diet.

The system allows to create relationships with doctors, for more serious health issues, or within the family, for supervising of just to suggest a food that can easily combine all the family needs.



Macro functionalities

Profiling

The diet every user will keep as reference could be provided by a medical institute, as food supplier, can be put on his profile by the user himself, or it can be suggested based on the age or activities of the user. This choice is to have a more scalable solution to satisfy various levels of checking/advising about food policy. The profile contains the diet policy and the user's meal history on what is based also the suggestion. The user is able to insert eventual physical activity, it can happen also interacting with pre-existing systems (Technogym key (3)), to have a more profiled suggestion.

Based on the place where we use this id either to log-in in the system or to modify our profile I identified two possible useful devices. To have access in the system something very portable that can communicate through RFID to other device. This could be different if the user is a child or an adult both for the aesthetic and for the complexity of its usage and it has to give the possibility also to update simple data in the profile. To handle (update) the user profile it could be useful to have a classic personal computer or PDA which, thinking about the possible future, we can easily replace with a smart-phone.

Browsing

Using distributed devices the user can check for food related suggestions in his profile and his meal history to supply a service with a more global view able to consider for the food suggestion his food preferences and what he ate in the past.

In this case the contexts could be very different especially if we want our service to be very scalable. In this case there are many information that have to be passed to the user so it is difficult to think something different from a display. So the features of each display have to be defined based on their exactly context. Putting screen around the area, for instance can be useful to suggest the user where to go to eat, something that in a sort of way could work conceptually as pedestrian signage. If placed outside a restaurant the screen could make the user decide if to get in or not, and it could also allow the user order food before sitting inside. Thinking about something smaller to distribute to the customers inside a restaurant we can imagine a menu that keeps traditional interaction modalities adding a layer of information related to the profile. In an office environment we can also think about something similar to a personal calendar.

Supervising

The system will permit not only to check the user's diet progress but also to create a 1 to 1 relationship, to give to a person the possibility to check the alimentary behaviour of another one. This relationship can be easily inverted (father and son). It is possible to imagine that this information can be checked / filtered by medical staff in more important cases.

The access to this kind of functionality can be made in an individual way more less everywhere using personal or public screens, or if we think that these information have to converge in a kind of family hub it is possible to place this function in a related place that could be a kitchen and using a metaphor that could be a cookbook or a small dash board.

Smart rating

Based on the daily behaviour of the user, the system can identify a kind of preference scale to assign a virtual rating to the food the user consumes. It is not clever to think that the user has to put the appreciation rate every time by himself but it is easy to think that if he want he can do that using other more flexible tools (internet for instance).

Information

The system has as one of its first aims the wish to inform people, children included, about the benefits of a good alimentary behaviour. Other information the system can provide are related to food in general, how to cook or which are the seasonal foods for instance.

System devices

The first section of devices have the first aim to bring with the user the personal id to make the other devices with which they interact have access to the owner's profile.

The profile, for what concerns to the diet, takes in considerations different aspects. So, to suggest an ideal diet, it considers, starting from the most important, obligations (allergies) that can be just temporary in special occasions (hospital admission, etc...), meal history (to have a short or long term balanced diet), eventual physical activities (that can be put manually or through connection to other system, for instance the one from Technogym with the TGS key (3)), and our preferences in taste (in different levels, from the smart one that could be compiled starting our behaviour, what we eat more often is what we like, to a detail rating system that if we want we can put manually).

They are very portable and they differ based on the kind of user. If he/she is a young student he/she will have a kind of badge, if he/she is a worker a sticker to apply where ever he/she prefers, probably to his/her mobile devices.

Badge-id!

It is a **RFID** (1) badge provided to students to have access to all scholar activities, included obviously the food service.

Functionalities:

- **Portable profile:** It is useful to login in to the various school activities (library, marks management, catering, etc...).
- **Remote:** to interact with other devices in a q&a (question and answer) paradigm. Or to manage other devices to receive information or to browse the suggested food for the meal or place where to find it. The navigation menu of the controller interface is highly contextual. So if the student is in the proximity of some enabled areas (could be a different device or the badge of another student) it gives access to some functions instead of others.
- **Awareness:** it can represent the status of the diet behaviour and eventually interaction results between children from funny games to social issues. For instance allow the children to have a personal icon/avatar to help them recognize to each other or the possibility to show answers to easy questions like "what is your name?" or "what did you eat?".

The badge recognizes when it is on the hand and automatically shows the menu.

It can interact with the other badges, making funny jokes (that could be also related to learning) and it can motivate children to adopt a good behaviour about the diet, influencing the power of the badge. If the child, also if he doesn't have any particular health problem, doesn't eat a balanced diet, his badge (in some cases avatar) cannot have access to some features or maybe is even less reactive in some games. A good diet instead will permit to have all the function enabled and to make funny jokes to other children.



Composition:

Its interface consists of a large touch-screen. Its size is useful for the awareness status and the touch function to remote other devices. The screen surface has on relief the buttons placed where the control icons will appear in the remote function. The button are put in a kind of cross, to allow many possibility of controlling/browsing and in the centre there is the big selection button.

Stick id!

It is a **RFID** (1) sticker, which can easily be applied to mobile devices, that gives the possibility to interact with other devices, to receive information about the food or to book a suggested food itself, and that allows the owner to manage his profile.

Functionalities:

- **Portable profile:** It is useful to interact with other device knowing the user profile. The user can decide if to keep it always enabled or if to disable it at times to avoid interferences with his activities.
- **Remote:** to interact with other devices in a q&a (question and answer) paradigm. Or to manage other devices to receive information or to browse the suggested food for the meal or places where to find it.

The navigation menu of the controller interface is highly contextual.

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Composition:

His interface is composed by a large touch-screen. The size is useful for the awareness status and the touch function to remote other devices. The screen surface has one relief the buttons placed where the control icons will appear in the remote function. The buttons are put in a kind of cross, to permit many possibility of controlling/browsing and in the centre there is the big selection button.

With public screens distributed in the area, these devices give access to information in many places. The public screens can be useful to give a previous suggestion/information about the meal or, in the case of many choices about the place to go to eat, they can suggest in which one it is recommended to go giving a kind of direction that can be transmitted to a higher distance to create two different layers of detail, always based on the profile.

Another category of devices is the one that is more related to the places where the eating action happens.

Considering the two different targets I took into consideration two different kind of places: common restaurants and self-service restaurants. For the first category I designed a menu that can work for people subscribed to Diet*a service and for guests, and for the second category placemat dispensers which we can easily imagine in a school catering, that thanks to other small devices allows the system to suggest and to monitor the food behaviour of the user.

Whisper Menu

It is a menu quite low-tech that will be distributed in restaurants that are subscribed to the Diet*a service. Being public spaces it has to work obviously for guest people.

It uses **RFID (1)** to read the id of the user, then the data are sent to the Diet*a system that reply with the profile of the user that is filtered based on the menu content.

Functionalities:

- **Suggestion:** Based on the user profile, the menu suggests some food (highlighting the items with colour frames) and in more important case it hides food (if by eating of that food, for instance, the user could suffer serious health damages).
Based on what are the user choices the menu suggests also combinations or alternatives, always to have a balanced meal related to the user profile.
Booking: Being a menu, it obviously must allow the possibility to book the food. If the waiter presence is thought to be important it could be a pre-booking where then it will be possible to ask deeper questions to the waiter.
- **Friend comparison:** Considering the restaurant meal a kind of social event the menu will help the people at the same table to check what the other friend has taken. That situation is common when someone is not sure on what to take and it helps to eat something different that could help the diet to be more diversified.

Composition:

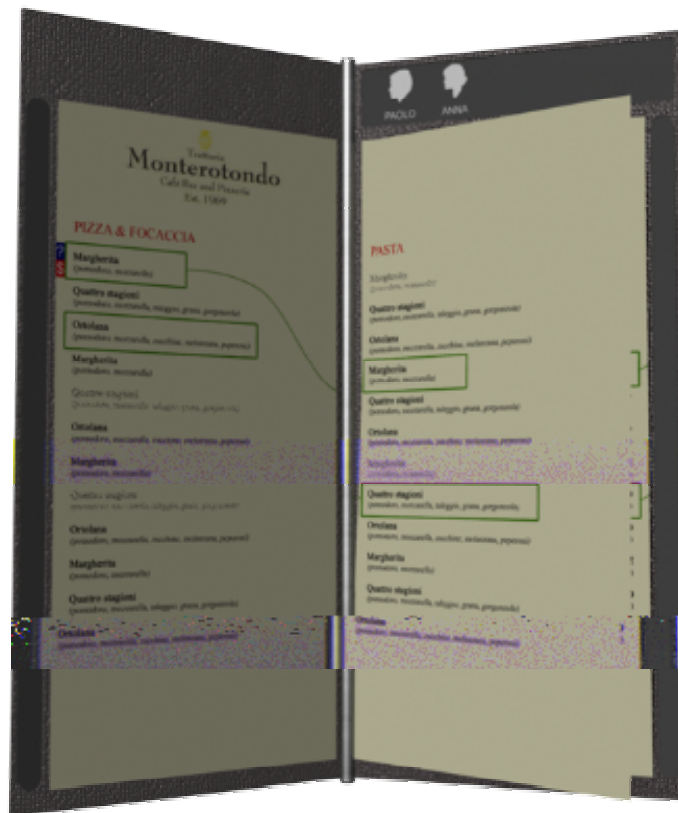
When it is closed the menu looks like a traditional one made with dark leather. The food is written on common paper to try to keep intact the restaurant experience. Over the paper pages there is the **PDLC film (2)** that is very cheap and requires very low energy. Based on the need it permits to highlight the food, putting graphic around its name, or to hide the food, creating shapes with the same colour of the paper. There could be more than two pages and turning them the menu understands in which page the user

currently is. Every page, to make the menu understand how it is composed, will be registered and recognized through a bar code printed in the back. During the browsing activity the film shows connections between foods. These links could be with the aim to suggest a balanced meal or to suggest alternatives.

To select the food (highlighting, booking) there are two lateral track pads that being at the end a low resolution touch screen can easily show the related instructions.

To see what the other friends at the table have chosen, I placed a touch-screen on the top right side. After a user has placed the order an icon with his name will appear on that area and by clicking on it, it will be possible to browse the menu and see the items they chose highlighted.

This module could be an optional to make the menu more scalable and affordable to a bigger range of restaurants.



Interactively speaking, the menu at the moment of its opening makes a check to verify if the user has an active profile. If so, he can instantly see what it is recommended to him, and then, using the two track pads on the sides, can select the food and the film over the paper will show first eventual options, starting from the useful "order" one to "more info". This last one can open a connection to another screen, which could be also integrated in the

menu, to show videos about the food selected. Then the film shows connections to other food to suggest a whole balanced meal. On the top left corner of the touch screen there will be the names of the people who have already ordered. The graphic style of this representation could be easily customized by the restaurant to create a fit user experience. When the menu is closed, it places the order with the selected food.

Wellness Dispenser

It is a placemat dispenser that, in a passive way, suggests to the user what he/she should chose to eat, printing in the placemat, in a super realistic way, the food to take later proceeding to the self-service desk.

Since there could be different typologies of users there could be different level of monitoring.

If the child has to avoid specific types of food, the catering assistant (the one that gives the food to the child) is informed through a monitor display that in that case he should not give the child what he wants.

At the end of the queue there is a camera that, thanks to the Computer-Vision (4), recognizes the food taken and updates the child profile. Then if the family set a lower level of warning the system can inform them about their son/daughter's choice, so the child won't be stressed by continuous alerts because the system works in a hidden way.



The last typology of device I designed for Diet*a project is a device which



Composition:

It is a big screen where with a digital pen it is possible to write on. With the same pen, but positioned parallel to the surface it is possible to delete the writings. When the screen shows the video content the handwritten notes will temporarily disappear. Its back structure permits to attach it to the wall or to place it over any table, particularly useful if the user want to keep cooking instructions closer whilst cooking.

Placed magnets, that are delivered with the profile device (one for each), in a specific area while asking what to cook, is possible to define who will be at dinner, so which profiles to take in consideration for the suggestion.

Conclusions

I chose this topic because I find it very actual and very important. I saw many cases of restrictive diets in my family, so I grew up knowing how important it is to have a profiled diet, also if it is just temporary. I suppose that projects like this usually require a big consent from institutions related to health. The diet issue is certainly something that will become even hotter. Many initiatives from all over the world are moving in that direction and it is just a matter of time until enhanced diet services will be offered.

It was very interesting to see projects like Milano Ristorazione where they pushed very hard the communication about the importance of a good diet to the whole family starting from the children.

This project could be further researched, actually many things were cut to create a more compact and focused package (for instance, a box delivery service) that easily combines to food issues in working places.

Diet*a touches many delicate areas (health, food, children), so I understand how careful we must be in designing products with this purpose.

I find Diet*a a good balance without any danger on altering any of these elements.

Probably as there is a lot of technology in it and at the moment it could seem a too expensive solution. I tried to keep it as low-tech as I could where it was possible. And in general all the technology used are already available to consumers, none is brand new, so it's easy to imagine them become very cheap in the next few years.

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(3) Technogym Net Trainer with TGS Key

<http://www.technogym.co.uk/nettrainer/>

(4) Computer-Vision

<http://www-2.cs.cmu.edu/afs/cs/project/cil/ftp/html/vision.html>

Technology in self-service field

<http://www.self-service-touchpoints.com/>

Articles

Healthy eating

http://hcd2.bupa.co.uk/fact_sheets/html/healthy_eating.html

Sharing Food, Sharing Comfort

http://www.foodfit.com/cooking/archive/foodFamily_sept25.asp

DIET: States target school vending machines in battle against childhood obesity

<http://www.sfgate.com/cgi-bin/article.cgi?file=/news/archive/2004/02/26/national1711EST0772.DTL>

Others

(7) Japanese vending machines

<http://www.chaparraltree.com/vending/notes.shtml>

(8) World health organization:

<http://www.who.int/en/>

(9) The American Journal of CLINICAL NUTRITION

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