

GeoDrinking: How to Extract Value from an Extended Social Wine Drinking Experience

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Abstract. Within the Telecom Italia Research Projects a service prototype has been developed in order to satisfy both the needs arising from the consumption and wine production. Thanks to the new technological opportunities opened by the Internet of Things and Distributed Intelligence, the GeoDrinking service is designed to allow worldwide users to publish on the main social networks their wine consumption behaviour patterns. At the same time GeoDrinking allows the wine producers to watch on a dedicated platform those spatial and time consumption patterns, exploiting those data for marketing purposes.

Keywords: Location Services, LBS, HCI, Service Design, Crowdsourcing, Food & Wine.

1 Introduction

For many years, wine drinking custom was characteristic of few countries, whose meaning was mainly related with a feeding dimension. For French and Italians wine used to come with every meal, but in the rest of the world was not a normal eating habit: beer and spirits were preferred.

After the Second World War, United States soldiers returned from the war experience in France and Italy bringing with them the pleasure and the memory of different wines. However, the product was almost impossible to find outside of Europe, given its limited production to only few countries in the world. During the early fifties some tenants in the United States were the first to think to overcome this weakness by pushing forward the idea that the consumption of wine could become a habit at first among the American mass, and then in the rest of the world. Today, more than 50 years after, the United States are amongst the biggest consumers of wine in the world, and Europe, while maintaining the primacy of exports, has lost its exclusivity.

However, the wine has never been solely a drink. Aggregation factor in taverns, pubs, bars, restaurants, parties and private houses, wine has always brought with itself a strong social component, related to communication and identity expression. And, if in the past, the wine as a socially distinctive and differentiating symbol, was a privilege reserved only to the wealthy classes, now this aspect of wine has become available

to everyone: as for food, cars, fashion, and all those luxury goods present in our social world, the wine is now one of the elements through which ordinary people can express their personality, their taste and, ultimately, their lives. To share what we “are” through what we consume, both in terms of material goods and cultural, seems to have become a crucial need in recent years. The huge success of social networks like *Facebook*® and *Twitter*® is largely due to the satisfaction of this need, which allow individuals to express their identity along a continuous “time” dimension: the public identities construction over the internet proceed progressively through the stratification over time of single user post (“*I’m doing that*”, “*I’m watching this*”, “*I’m buying this*”, *etc.*).

On the opposite side, the producers of goods and services are becoming increasingly aware of these mechanisms. Corporate communication is not anymore solely focused on increasing loyalty of consumers to the brand through customer services, but really struggle to create a unique product and company image that can be internalized by people to express themselves, so working on the components that differentiate and distinguish the lifestyles and personalities of individuals (*for instance Apple*® consumers are often see as cult followers).

In this context, Telecom Italia amongst the Research & Trends Projects has developed a solution aimed to extract value from wine consumption matching the changing needs of both consumers and producers, taking full advantage of recent technological opportunities opened by the Internet of Things and Distributed Intelligence. The GeoDrinking service, using the latest technology components, on the field of image recognition, context awareness and personalization, aims to give visibility to the consumption of wine brands on a worldwide scale, enabling direct and indirect communication between different users and between consumers and producers trough their products.

2 Related Works

Nowadays, research works that aim to bring together the food area with the technology area seem to have concentrated on two different sides [4]: on one hand we have those studies aimed at solving problems that people think they have with food, trying to improve and correct behaviours and habits such as cooking, shopping and eating. On the other hand there are other technologies that are designed to encourage current practices, trying to open up new ways of expression and increase the satisfaction performing behaviours and habits already settled in individual lifestyles.

On the first side we find applications aiming to reduce user indecision like *Kalas* [9, 10] that tries to reduce the user uncertainties seeking out and finding recipes through a social navigation database, which allows them to access choices, feedback and ratings of other people. Or those who seek to promote sustainable consumption patterns [2]: *SourceMap* (www.sourcemap.org) [1], for example, promotes geospatial context awareness in the world of food in a sustainable direction, through a platform for research and optimization of supply chains, with the aim of making visible the origin of products and their components. *Zeer* (www.zeer.com) proposition allows meeting the lack of nutritional information on food finding out the nutritional content of any packaged food (calories, nutrients, vitamins), also enabling product review,

voting and rating (like *Amazon*® does for different products). The *Counteractive* [19] falls in that last set of applications that seek to support learning, in this case of new recipes, through an augmented reality system that provides support to the users through text-based interactions, videos and pictures.

The second front, instead, has not yet received massive attention from the HCI research work. *Living Cookbook* [11] is a tablet PC-based device that allows individuals to be videotaped while they are in the kitchen and make the sharing of their videos with friends and family, with the aim of enlarging the intimacy sphere characteristic of cooking activities. Several suggestions are emerging to stimulate users' creativity, increasing their pleasure encountering food (e.g. [4]), but most of the proposals that seek to improve communication and social experiences related to food through technology today come from exclusively commercial purpose applications. In particular, in web-based services and application related with food and wine sphere, it is possible to find the spread of many thematic social networks: like *Vinix.it* (www.vinix.it) an Italian social network focused on wine that allows to find contacts, addresses, products, and to exchange news and information; or *Foodproof* (www.foodproof.com) that allows to post videos, photos, and comments about food. Also In the mobile area are nowadays numerous the examples of smartphone applications, especially for iPhone and Android platform, oriented to improve the wine purchasing experience: *Hello Wine*, for example, provides support in purchasing decision suggesting the best combinations of food and wine, allowing the sharing of recommendations among the friends circle through the direct connection with *Twitter*® and *Facebook*®; *Wine Prices* is a tool that allows advanced wines search and price comparison with the possibility to find places where they are sold.

In any case it seems to lack in this specific area, research works that, keeping at centre the innovation, try to combine into a single service the needs of consumers, today more and more interconnected trough the social networks, and the wine producers, nowadays facing the global market challenges, also taking into account new business models emerged in recent years.

3 The GeoDrinking Service Concept

The idea behind the GeoDrinking service is to be a prototypical solution aiming to satisfy both the needs arising from the consumption side and the production side of wine world (Fig.1). The application is designed to allow the user/customer to publish worldwide, on a dedicated platform and, simultaneously, on the main social networks, his wine consumption behaviour in order to immediately express his taste and preference, and also addressing the construction of his digital identity on the internet. Wine consumption becomes so a means, among others, to distinguish themselves, to express feelings, share experiences, provide information. The service concept is designed to eliminate all obstacles that may interfere in its use and diffusion, developing a mechanism for fast and intuitive posting, which uses the latest research findings in the area of image recognition. At the same time the GeoDrinking service allows single wine producers both to monitor real-time the consumption of their labels, understanding the geographical dissemination of their products right from the post of

individual customers, both to have a reverberation of their brand in all the main social networks, and last but not least to have access to some weird pattern of consumption indicative of possible brand counterfeiting. In this way the user becomes a probe of wine consumption on a worldwide perspective.

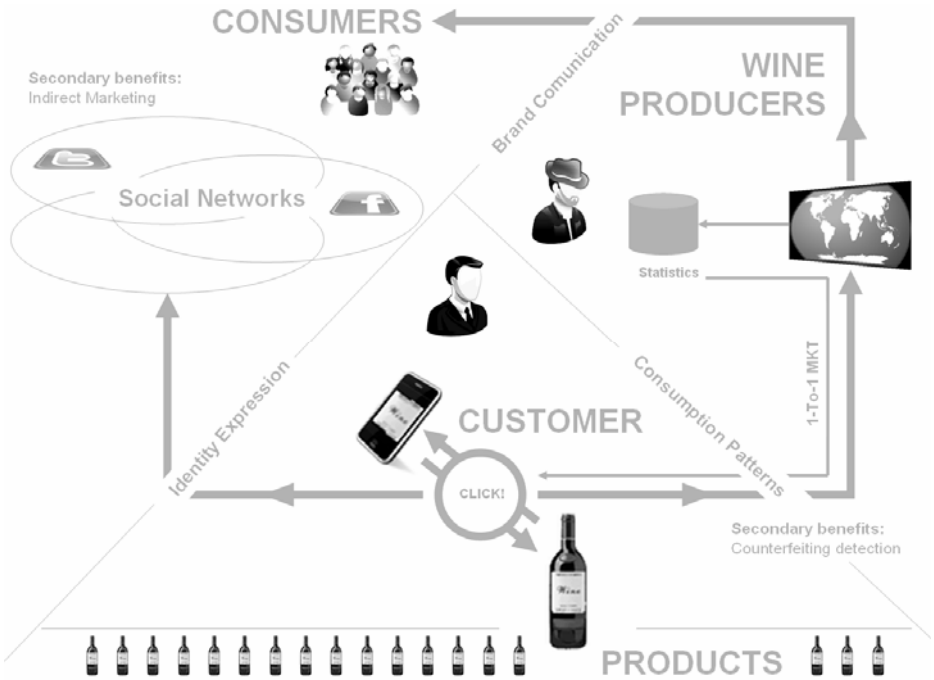


Fig. 1. General overview of the Geordrinking System. The customer chose amongst different products the one that better match his taste, preference and also better expresses his identity. Framing the label with the mobile phone generates three flows of communications. 1/ From the product and wine producer toward the customer. He receives information about the label (and possibly a 1-to-1 communication from the producer, like a promotion of a new label of the cellar). 2/ From the customer toward the main social networks and in general toward possible consumers. His click generates a post on his social network (*I'm drinking ...*) reverberating then around his buddies and generating indirect advertising. 3/ From the customer toward the wine producer. His click generates a post toward the producer map and feeds the producer statistics also informing him about weird pattern of consumption maybe due to counterfeit labels. The producer can then reuse this data for his brand communication.

The proposition aims to give visibility to the wine consumption of small (no need to have barcodes) like big brands on a worldwide level (without any changes into the existing processes, using the actual labels that are already on the bottles).

So, “GeoDrinking”, starting with a specific application context (the wine), through seamless mode of interaction (appropriate to the context of use), and publishing on its own platform as well as known social networks, brings the so appreciated by wine producer mechanism of “*word of mouth*” on a enormously larger dimension than that of a dinner with few friends.

On a very basic architectural point of view the system operates on a client-server model (Fig.2). The behaviour of the system for each query made by the user is as follows: the parameters received by the *RequestHandler* are translated into actual parameters for the *Web Services Communication Module*; the *Communication Module* sends the request of picture comparison to the *Image Matching Server* and receives as answer a set of thumbnails with associated a value of similarity; additional data are retrieved from the *Detailed Info DB* for each thumbnail received and aggregated by the *Data Aggregator module*; then an HTML page with a list of the results (ordered from the most to the less similar thumbnails) is generated in the *Web Server* and the *Map Viewer*, which could be accessed by the producers, is updated; finally the answer is sent to the client as an url to the page in the *Web Server*. Authentication and publication on Social Networks (*Facebook*®, *Twitter*®, etc.) are instead entirely performed on the client side. In conclusion, the service developed at present relies on commercial Social Networks and allows a return channel of direct communication with the wine producer exploiting also all the possibilities of the location services of the client.

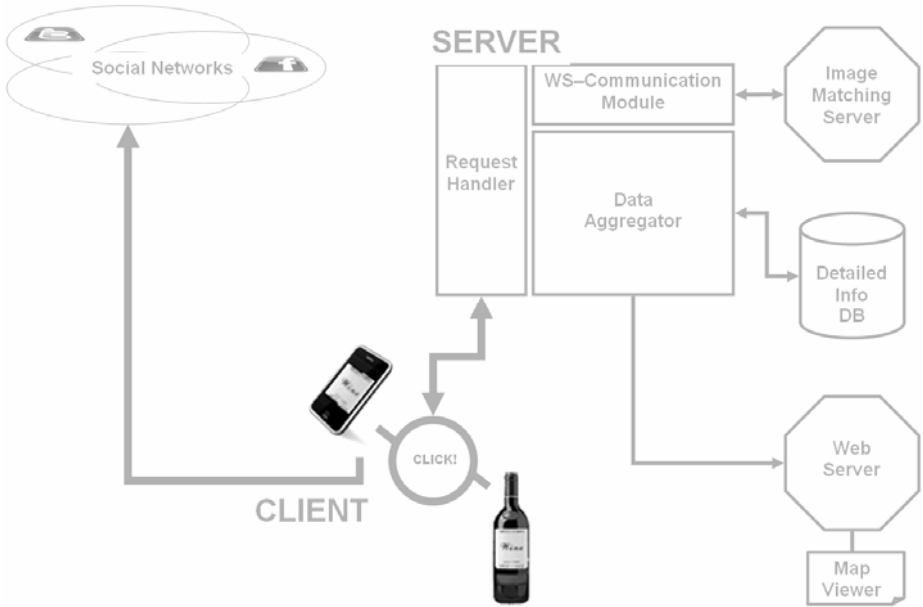


Fig. 2. Basic architecture of Client-Server GeoDrinking system

The service concept and the design process of the application will be illustrated in two separate paragraphs to reflect the experience enjoyed both by the user/customer both by the wine producers.

3.1 The CUSTOMER Side of GeoDrinking Experience

The advent and spread of a participatory culture in contemporary society have become increasingly obvious: people have an increasing need to participate, be

interconnected, be part of the cultural production process and communicate their identity, their own life styles, their own experiences. Recent technological innovations that have led to the advent of Web 2.0 have done nothing but exploiting and feeding these needs through the proliferation of so called "social" applications, such as *Facebook*®, *Twitter*®, and so on. In this framework also the cultural and material consumption patterns are becoming increasingly important, as they are identified by people as a major component, if not the most important, of individual identity construction. In this perspective it becomes essential not only to share our feeling or thinking, but even more the books we read, the movies we watch, the places we frequent, the food we eat. Hence the spread of many thematic social networks and services that allows to satisfy these needs: *aNobii* (<http://www.anobii.com>), *miso* (<http://gomiso.com>), *Foursquare* (<http://foursquare.com>) make this work, functioning as repositories of crowd-sourced recommendations for books, movies, places to eat and general places of interest, and at the same time contributing to the construction of people digital identities through the display and communication of their consumption styles.

In this context, with the GeoDrinking service individual users can publish what they are drinking, in real time. The posting mechanism is facilitated by the automatic recognition of the label of the wine without the user having to search through a text interface, or recognize a bar code [3]. The faster automatic recognition instead of the manual manner adds more natural interaction (*point-and-click like*), since the user is no longer required to input some text through the keyboard and must simply frame the wine label in order to perform the object search.

Let's make a script example about the system as seen by the user/customer. Jackie chose a glass of her favourite red wine in a New York wine bar. She frames the label on the bottle with her mobile phone and, thanks to the recognition made by the server, that database contains all the labels, she is immediately returned to the page with name, year and information about the wine she is drinking. Now she decides to publish her choice so that other friends are able to know what she's doing and what she's drinking. The mobile client publishes real-time information about the wine that Jackie is drinking, both in her *Facebook*® and *Twitter*® profiles and on the "GeoDrinking" web map of "*where people are drinking what*". Now producers can see what Jackie or her friends are consuming, or who is drinking what, choosing whether to deepen the knowledge of Jackie or what is drunk in the world.

3.2 The WINE PRODUCER Side of GeoDrinking Experience

The wine producers nowadays are more and more into the challenge of the new global market. Even the small local producers struggle in the need of exportation of their products in rest of the world, relying on international distributors or new ways of direct sales. To better understand the needs and desires of these producers, and how the new ICT/IT technologies could give them an effective help and improvement in their daily activities, we carried on a qualitative research on the Piedmont region wine producers thanks to the collaboration with the *WantEat* project (www.wanteat.it). In particular we focused our attention on the Langhe and Astigiano area: the first one is renowned in the whole world for his red wine production, that can count on some rare wines, like Barolo and Barbaresco; the latter, instead, has just undertake the way of

the high quality wine production and has to face now the challenge of new market shares acquisition both in Italy and overseas.

We decided to perform some deep qualitative semi-structured interviews, customized on the specific features of the interviewees (in terms of duration, with a minimum of 60 minutes, and topics of the interview, focused on the general production process or on specific business activities). The producers were selected on the basis of the features considered relevant for the research purposes [3, 6]. The final sample was composed by six wine producers (2 small/2 mid-size/2 large) of *Langhe* and *Astigiano*. The schema of the interview was traced towards three pilot interviews with Turin area wine producers and was split into three parts: a general section in order to gather producer personal data and information about his business; a communication section to investigate the promotion and advertising process carried out by the specific producer; a TLC/ICT section to gather information about the actual use of new communication technologies, and to present some possible use cases in order to stimulate the imagination of the interviewee, projecting himself in using some hypothetical future services into the every day processes of the winery.

The data gathered bring us to some general findings valid for all the producers interviewed, and some specific results characteristic of the different areas involved. For all the producers, it is important to know where their product are sold after the distribution (restaurants, clubs, etc.). Both areas under investigation showed their main market abroad: this is the reason why the producers, who, for the most part, trust on the international distributors for the foreign market, rarely know the exact final destination of their bottles. The “*word of mouth*” is the best way of advertising and the customers are severely selected and spoiled specially for small high quality brands. The e-commerce is a solution neither pursued nor desired. Finally the single producers showed a strong individualism in the production, distribution and even promotion patterns proving to be averse to getting together, refusing syndicates and professional associations, that are seen as binding and without an effective surplus value.

In addition a specific feature of the *Langhe* area is the valorization of the territorial heritage and the traditional productive processes: the most part of their customers is loyal and sees in the product a high prestige niche beverage such that the possibility to buy some bottles could worth the visit of the area. The *Astigiano* producers instead are constantly in the research of new markets and new ways to convey their wines. They put all their efforts into growing up the status of their own products, in order to compete at par with the more renowned *Langhe* producers. In order to do that kind of promotion they are always in search of a communication channel for potential customers. These results take us to consider with particular attention the various requirements of the producers, tailoring the GeoDrinking service on their real needs. Adopting the GeoDrinking service indeed the wine producers can track the consumption of their products, finding where they are sold in the world, thanks to the visualization on a map of all the single bottles drunk by their customers. Besides they can consult the consumption statistics and receive a direct feedback from their customers about the quality of their wines through comments, votes and reviews and even activate some 1-to-1 marketing actions. And last but not least they can benefit from the reverberation of indirect advertising in the social networks and from the discovery of unusual patterns of consumption sometimes related with counterfeiting activities, an arising problem in high quality food and beverages.

Let's make a script example about the system as seen by the wine producer. Massimo has a winery that exports in four continents. Many customers have contacted him seeing on *Facebook*® that his wine is consumed in a popular wine bar in London. He then decides to pay a fee to the platform to add labels and information about his products. When someone drinks one of his *Barolo* bottles in the world he can see it in real time or show it to his customers through the real-time map published in his winery website, or even on the big screen in his cellar. He can also check the weekly or monthly consumption trend for his labels.

4 Possible Business Models for GeoDrinking

The development of the ICT field in the last years pivots mainly on the Web 2.0. The technology that has made possible this evolution is very various, including server-side software, content syndication, messenger protocols, and, most of all, client-side browser-based software. Particularly, we are talking about Rich Internet Applications (RIAs), that is, web applications with features typical of the desktop applications (like drag and drop, cut and paste, and so on), developed by technologies as Asynchronous JavaScript and XML (Ajax), Adobe Flash and JavaScript/JavaFX, now available in the new versions of the most common browsers. The content syndication technologies, that permit the data exchange between different websites towards machine-readable formats, like RSS, RFD and Atom, allow the final users to use the data of a specific website in another context (i.e. another website, a browser plugin, a desktop application). These ones together with the spread of the Web API (e.g. REST or SOAP) and the P2P technologies have concurred to the birth of the paradigm of the "Participation Architecture" in which the contents and the services could be recombined in a very simple way. Another technology feature of the Web 2.0 is the concept of Software as a Service (SaaS), that is, online services instead desktop applications, continuous improvements instead periodical releases, temporal subscriptions instead licences of use. The appearance of Apple® in the mobile market, with his mobile phone (iPhone), has introduced the concepts of the web 2.0 in the mobile world. The challenge was taken up by both the smartphone producers (Nokia, Samsung, HTC, RIM, etc.) and Os mobile producers (Symbian, Blackberry, Windows Mobile, Android).

This technology landscape has required the definition of new business models that could find new means of support to the development of the so called Web 2.0 services. Various authors have tried to define and classify these emergent e-business models [5]. The main models born in the last years and suitable for the GeoDrinking Applications are the follows.

- *Advertising model.* The advertising model is a consequence of the traditional business model of the media broadcasters (Tv, Radio, Newspaper) and for this reason is one of the first models that has become apparent. Since the interactivity of the Web 2.0 technologies, however, the static advertisements have been overtaken by more evolved solutions, like interactive or contextual advertisements. It is possible, besides, towards user personalization systems, to provide personalized contents and advertisement to the users that have accepted to register their preferences.

- *Application Store Model*. This is the most common business model in the mobile world: Apple® (with his App Store for iPhone), Google (Android market), RIM (Blackberry App World), Nokia (Ovi store), Microsoft (Windows Marketplace) have all adopted this model. The application developer exploits the Store as a market place, gaining a percentage of the sells of his own application, while the owner of the store takes a charge on each download.

- *Freemium model*. The freemium term is a neologism created merging the terms “free” with the term “premium”, and it means a business model that involve the offer of a free core-base service and an advanced layer of services with fee.

A combination of these models, based on a crowdsourcing platform (as GeoDrinking in fact is), make economically sustainable the GeoDrinking proposition. For instance the wine producers could have a free base service (*freemium*), that will consist in inserting up to three labels in the system, but which could be increased in order to accept more labels and information on an annual basis payment fee. This premium modality could allow the producers to consult different statistics about their products, using advanced analysis on the consumption patterns data or simply increase their indirect advertising trough the social network reverberation of their labels generated by more recognition operated by customers around the world.

5 Future Works and Conclusions

In conclusion the service developed up to now represent an information channel for the consumer, managed directly by the producer, which relies on well established social networks and allows a return channel of direct communication with the producer exploiting all the advanced features provided by the mobile client. Many are the evolutions and the possibility of extension of this kind of service as well as the related business models depending on the various sectors of consumption that can be addressed.

Future developments include for instance the possibility: to have a 1-to-1 producer-consumer communication channel (for rebates, bonuses, etc.), to create competitor statistics of consumption for the producer, to create a WikiWine or a global catalog of wines created on a *crowdsourcing* logic, as well as the fundamental component to improve the education side about production techniques, consuming awareness and culture of good food and good drinking.

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