

Developing a Mobile Application for Wine Amateurs

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ABSTRACT

In this paper, we describe a motivation to develop an Android mobile application for a wine lover. We introduce a simple map of concepts used for analysis and modeling of the subject domain. We also briefly describe the application architecture and the interfaces developed to support major use cases that a wine amateur may require in order to store and manage information about wines.

Categories and Subject Descriptors

H.4 [Information Systems Applications]: Miscellaneous

General Terms

Design, Human Factors

Keywords

Software, Semantic network, Domain ontology, Mobile applications, User interface, Android

1. INTRODUCTION

A wine is complex phenomenon related to the aspects linked by many different domains: biology, oenology, history, cooking, medicine, economics, etc. Professional sommeliers aren't the only ones who like to learn about wines, to discover their special characteristics and to organize their knowledge and wine tasting experience. There are wine amateurs interested not only in tasting wines but also in discovering wine inspired knowledge.

Currently numerous wine information and wine cellar management applications are available ranging from a simple wine notebook to data organizers going to the extreme depth of details. There are solutions for professional experts, educators, sellers and customers as well as many for amateur wine lovers, however "this is a market that's still emerging and in flux" [8]. Existing applications provide features

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IWAIT '15, Oct. 8 – 10, 2015, Aizu-Wakamatsu, Japan.
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which allow storing information about wine properties, accessing numerous wine rankings, or organizing user personalized tasting notes and evaluations.

If one carefully thinks of what is the information that describes a wine, he or she could be surprised to discover so many attributes and classification properties that one has to take into consideration. That's why before collecting requirements for software that would help to manage most of related information (and to add some novelty compare to existing applications), one has to study the subject domain quite attentively. One way of such a study is to try to define a map of concepts which could serve as a foundation for developing use cases and for designing an application.

The next step is to study, in what extent a *mobile* application would fit such requirements better in order to leverage existing sommeliers' experience and to provide rationale for including new features which seem to be hardly implementable without using a mobile platform.

Among others we could cite the following features that customers expect to have in such applications:

- Ability to search for wine information via identifiers like barcodes or labels;
- Ability to link to the geographic, encyclopedic and web resources providing more detailed information about the wines;
- Ability to sort wine directories and creating own wine collections;
- Ability to view and edit wine charts;
- Ability to support advises and tools assisting wine tasting (specialized note editors, ranking schema, access to database);
- Integration with social networks to enable users to share their assessments and reviews.

In this work we describe an Android based software prototype featuring some of the above mentioned requirements partially.

2. RELATED WORK

We discovered few works related to the wine business and culture focusing aspect of wine informatics and possible applications of information technology to benefits of better wine information flow.

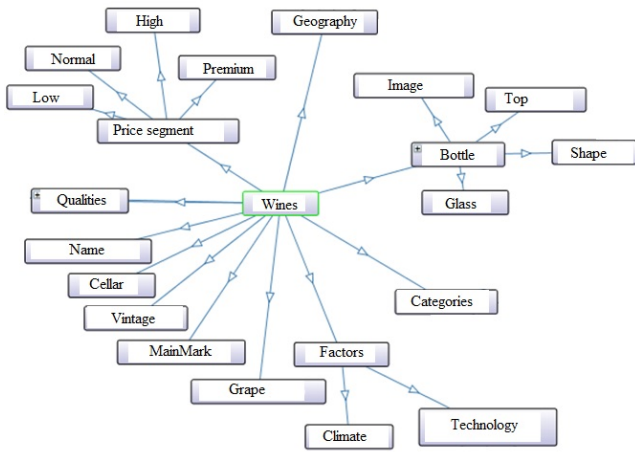


Figure 1: Wine: Graph of major concepts

Thus, in [5] the authors used the wine experience metaphor as an illustration of the process of developing knowledge representation, retrieval and distribution. They use a task of defining a wine ontology as a “test ground” of theoretical ontology engineering models. Despite using the wine related story as an example, the authors elaborated a kind of the very carefully thought ontology representing most of important entities and relations needed to represent and distribute wine related knowledge (at bottom, ontologies are being developed to enable knowledge sharing and reuse [7]).

An attempt of defining a fuzzy ontology to represent unobvious and unusual links like computing the wine score as a product of scores reflecting whether the wine goes well with game or with pork or suits a dinner with friends or even one with wine experts shows well what are the challenges in creating relevant “wineinformatics” system in such a really uncertain domain.

The term “wineinformatics” was introduced in the work [6] where the authors described how techniques of data mining and machine learning might be helpful in researching large number of existing wine reviews and data sheets in systematic way to benefits of wine makers, distributors and consumers.

We found also a couple of wine ontologies where the wine domain is used again like an example. We could mention the example of using the OWL web ontology language [4] which in turn was derived from the DAML Wine ontology [3] with substantial changes, with particular respect to the region based relations.

3. DEVELOPING THE APPLICATION

Major entities related to the wine subject domain are shown in Figure 1 in the form of a map of concepts. In fact, this is also the step towards wine ontology definition. However the discussion on possible improvements of existing wine ontologies is out the scope of this paper.

The map of concepts shown in Figure 1 is used to define the entities, their attributes and relationships, and over all, as a foundational concept model for our application. Every entity is linked to another entity. For example, entity ‘Wine’ contains the next attributes: name, vintage, grap, bottle, e t.c. So the communication between concepts allow to define

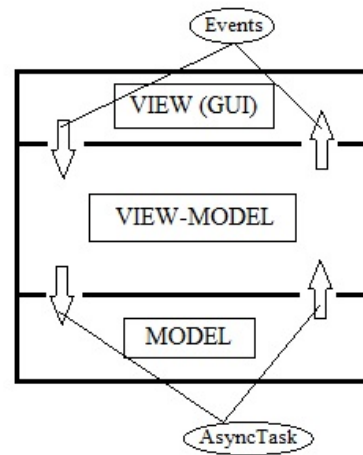


Figure 2: Application architecture

the relationship between entity and attribute. Wine testing holds on wine qualities, and catalogues may be sorted by major characteristics.

In this work we discuss the special class of software – mobile applications. From the viewpoint of customization the mobile application is targeted to the concrete user (unlike web sites) and may use features of the whole device (e.g. device camera, multimedia facilities, touch screen, etc). Application architecture is designed by the well known MVVM (Model-View-Viewmodel) template [2].

The architecture of the developed application is shown in Figure 2.

The application concept model forms the *Model*, while the *View-model*, constructed over the model, serves all GUI related application logic, handles the *View* events and includes the *Model*’s links. The *View* forms the user interface prototypes with the help of XML descriptions.

Let us mention that it is important to use a separate thread for data model conversion. For this purpose the framework provides an *AsyncTask* class enabling the use of the UI thread in such a way that background operations are performed in a separate thread, and their results are published on the UI thread without having to manipulate threads and/or handlers [1].

Some examples of the application interface design are presented in Figure 3. These examples show a selection of scenarios supported by the current version including creating wine collections, attaching photos taken by using the device camera, allowing links to geographic maps, and some facilities of diagramming. To reduce the number of created windows we used the library component *PagerSlidingTabStrips*.

The application deals with user wine collections as with catalogues. Each catalogue may be sorted by name, vintage, producer or by wine type.

Actually, we included two basic methods for wine evaluation, but there is space for further improvements.

One specific feature is an ability to have access to the geographical maps allowing users to add markers describing geographical origin of the wine. We also consider to support geographical information as it is mentioned in [9].

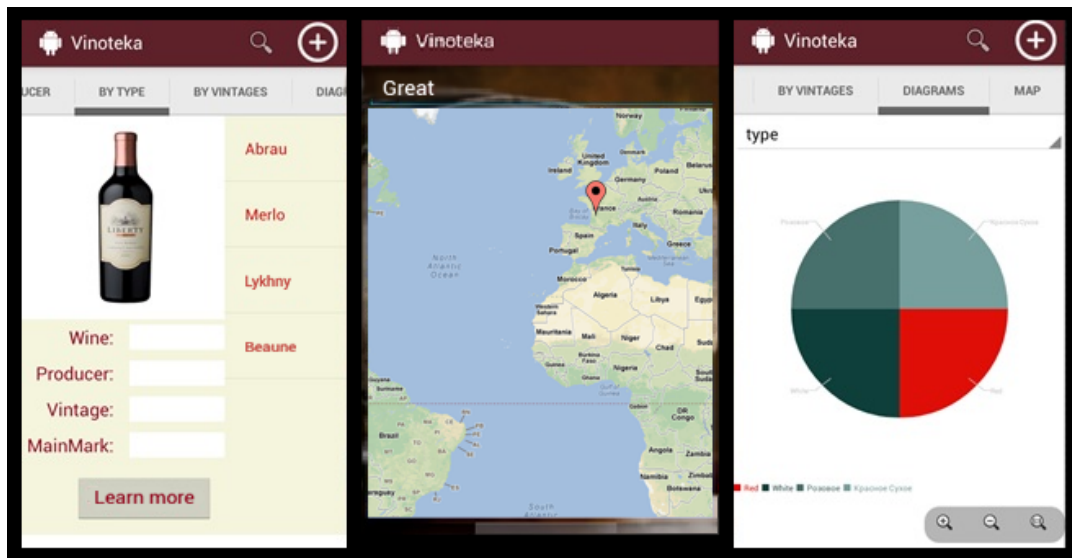


Figure 3: Application interface

4. CONCLUSION AND FUTURE WORK

In its current state the developed mobile application can be addressed to the wine lovers organizing their own local wine cellar information service with the following features:

- Add/Remove wine records and view wine information;
- Organizing wine catalogues and wine search by name;
- Access to the related web site(s);
- Add/show anchors to the geographic map;
- Create/view simple diagrams and graphs base on wine rankings;
- Using device photo camera to get images and to link them to the wine metadata;
- The developed prototype supports two tasting systems: 100 point scale and 20 point.

One of the possible future steps is to overcome limitations conditioned by the current architecture allowing to deploy only local one user application. Changing the architecture to the client-server model will allow us not only to leverage existing experience of one concrete user but to share experience, notes, rankings and other wine information by many users and to access common wine metadata from the server-side database.

With respect to the analysis of existing applications surveyed in [8], currently we couldn't say that our prototype exceeds the analogues but serves as a starting point for further development and for introducing new features such as sommelier training mode, the possibility to compare end-user's wine notes to those of wine experts and others. Let us mention that in order to support such features we have to redesign the application by using a client-server architecture.

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