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# "DESIGN, DEVELOPMENT AND IMPLEMENTATION OF AN OBJECT-ORIENTED DATA MODEL FOR SMALL AND MEDIUM SIZED WINEMAKING ENTERPRISES IN AUSTRALIA."

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## ABSTRACT

The management of winemaking enterprises in Australia has become complex because of the increased complexity of the market and the winemaking process itself. Accurate record keeping goes hand-in-hand with complex sequencing of processes required to efficiently operate these enterprises. Unfortunately, the record keeping aspect is often regarded as an added burden to the process rather than a necessary step within it.

The ability to link obligatory record keeping with the function of controlling the winemaking and grape-growing processes offers many benefits to the enterprise management as long as the performance of these functions is able to facilitate the control of these processes and not become the added burden they fear. The benefits come in the form of enhanced and useful records for the winemaker to truly understand the cause and effect of decision making and individual processes in their winemaking. The records capture the intent and motivation of the decisions as well as the results themselves, thereby potentially revealing the implications and relative performance of their actions.

The aim of this project was to investigate the practicality and scope of building a computer-based vineyard and winery managements system (VWMS) that is capable of fitting in and enhancing the grape-growing and winemaking process for the operator, not simply providing a means of generating reports for the tax department or AWBC auditors.

A system was developed based on extensive ethnographic research of many vineyard and winery operations as well as recorded interviews with dozens of key professionals in the Australian wine industry with vastly different roles within it. It was designed to be intuitive, thorough, and flexible enough for use by operators with very different techniques and levels of intervention in the process. It was able to take into account the relative sizes of the enterprises from the very small, up to medium sized wine making enterprises.

Several new virtual concepts were introduced to enable the data model to link and translate the real activities of winemaking into objects. These functions and processes were easily understood because they were simply formal declarations of practices that were normally carried out, but not formally named or declared in the industry.

The system was successfully piloted at a winery featured in the case studies and continues to be the primary winemaking reporting system for the enterprise.

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# DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to James Alexander Wilson and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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James Wilson

Date :

# TERMINOLOGY AND ASSUMPTIONS

Throughout this document the term “winemaker” will be used to refer to both winemakers and viticulturists, unless otherwise stated, or unless the term “grape-grower” is also used within the context. This convention is only used for the sake of brevity, and does not imply that the role of a winemaker in a winery should be confused with a viticulturist or grape-grower in a vineyard; a concept that would offend many winemakers and viticulturists.

Similarly, the term “enterprise” is used as an all-encompassing grouping term for the individual components that comprise a winemaking or viticultural business. These components, such as a vineyard or a winery are collectively owned and managed by the enterprise or they are integral to the business.

It is also assumed throughout this document that the reader understands that this information is specific for Australian vineyards and wineries only, although it may be applicable in other countries to a greater or lesser extent. Of major concern to any management system for Australian winemakers is the Label Integrity Program (L.I.P.) which mandates the ability to be able to justify claims made on a label with respect to, amongst other things, the proportions of each wine’s source fruit for regionality, vintage, and variety. This is discussed further in *9.2.2 AWBC Label Integrity Program* (page 130). It is interesting to note that the term L.I.P. has come to mean the description of these proportions for a wine as well as its original meaning as the name of the AWBC regulation. In this context the term LIP has come to have another meaning, although closely related to its original meaning. Many winemakers refer to a wine’s L.I.P. to mean its provenance.

There is nothing sinister or alien implied by the term “compute” which has been used in this thesis as a general term for when the data model program works out a value or detail by using an algorithm, structured query language, or other relational database or programming technique to manipulate data.