Provisdom Decision Platform Software Ecosystem

Figure 1 below shows the major software components that support the Provisdom Decision Platform, which lies at the core.

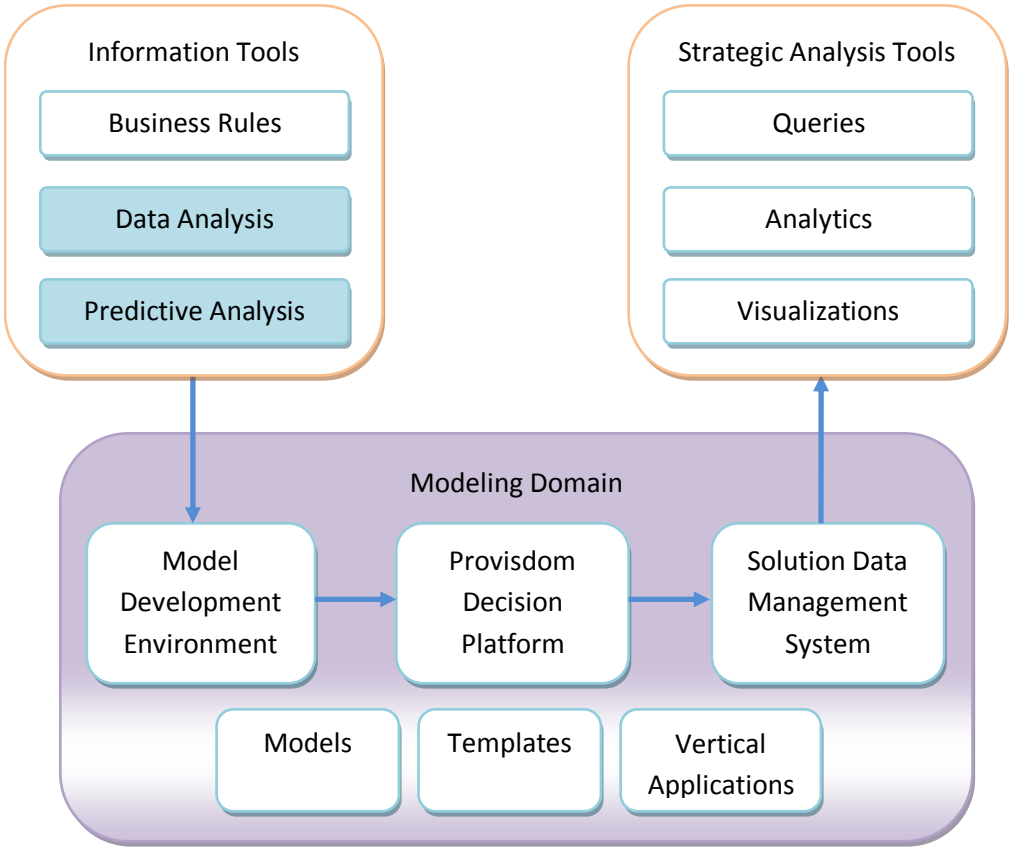

Figure 1: Provisdom Decision Platform Software Ecosystem

Provisdom has built prototype versions of many of the main supporting components, including some Information Tools for the analysis of input data, a Solution Data Management System, and some Strategic Analysis Tools for the analysis and visualization of modeling results. Provisdom's prototypes are sufficient for customized solutions but not suitable as turnkey products. As a Model Development Environment, Provisdom currently uses Microsoft Visual Studio. All of the major components can be supplemented or replaced due to Provisdom's open standards and architecture.

Information Tools

Provisdom's advances in information theory allow any kind of information to be connected to shareholder value. However, some manipulations may be required to take information as it exists and supply in to the Provisdom Decision Platform. One example would be the conversion of historical sales data to a distribution reflecting future demand. Another might be elicitation of the probability that a competitor will enter the market over a given time-frame, based on the inputs of experts.

The Provisdom Decision Platform prototype exposes many ways of supplying information, but clearly the possibilities are infinite, and thus Information Analysis Tools represent a rich opportunity in the Provisdom Decision Platform Software Ecosystem. Information Tools are closely related to (and in many cases the same as) Predictive Analytics, another rapidly growing field in IT. The main difference is that Predictive Analytics is generally trying to make complex information understandable to people, so they can make decisions. Information Tools need only to make information available to the platform, which then shows people the shareholder value of decisions based on that information. Many existing Predictive Analytics tools will be easily adapted for use with the platform, and clearly there is considerable opportunity for future innovation.

Model Development Environment

The Model Development Environment (MDE) represents the most general input mechanism. The MDE allows the user maximum flexibility in creating and debugging models. It would include tools defining the logical structure of the model, inputting formulas (e.g. for payoffs), identifying and connecting to information sources, etc.

Solution Data Management System

Provisdom's current Solution Data Management System is a specialized component optimized for use with the Provisdom Decision Platform. The logical structure of the solution data is that of a relational database. Thus, a given IT shop might wish to use their existing database platform, which could be accomplished with a small software module implementing the Provisdom data interface. Similarly, a third-party could produce a dedicated Solution Data Management System to leverage some specific technology, improve some area of performance, etc.

Since the solution database has a relational structure, many queries can be created using SQL. However, model solutions also have more complex logical relationships which can be difficult to express in SQL. There are thus opportunities to create specialized query tools to facilitate specialized analysis tasks.

Strategic Analysis Tools

Computer visualization is another area which can greatly aid in understanding the relationships between information and shareholder value. One of the simplest and most informative visual representations is a tree view that illustrates the choices and uncertainties, highlights the optimal strategy, and presents key quantitative information. An example is shown in Figure below.

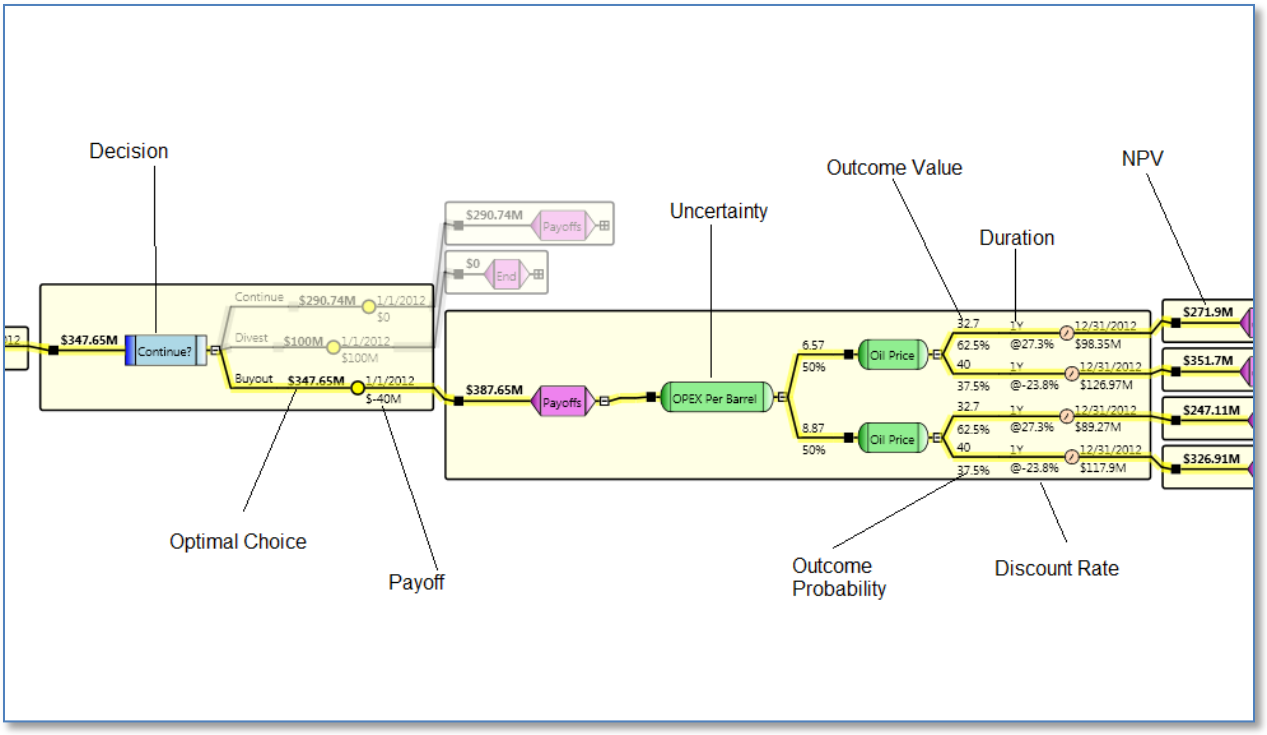

Figure 2: Sample portion of a tree view

The tree view is useful to navigate details of the solution. However one could envision other methods of navigating the solution and viewing the solution, especially in conjunction with query capability.

Other visualizations might show query or analysis results, providing higher level information designed to answer specific questions. An example from an oil production model is shown in Figure below, illustrating the strategy at Year 5 as a function of the uncertain price of oil and variable operating expenses.

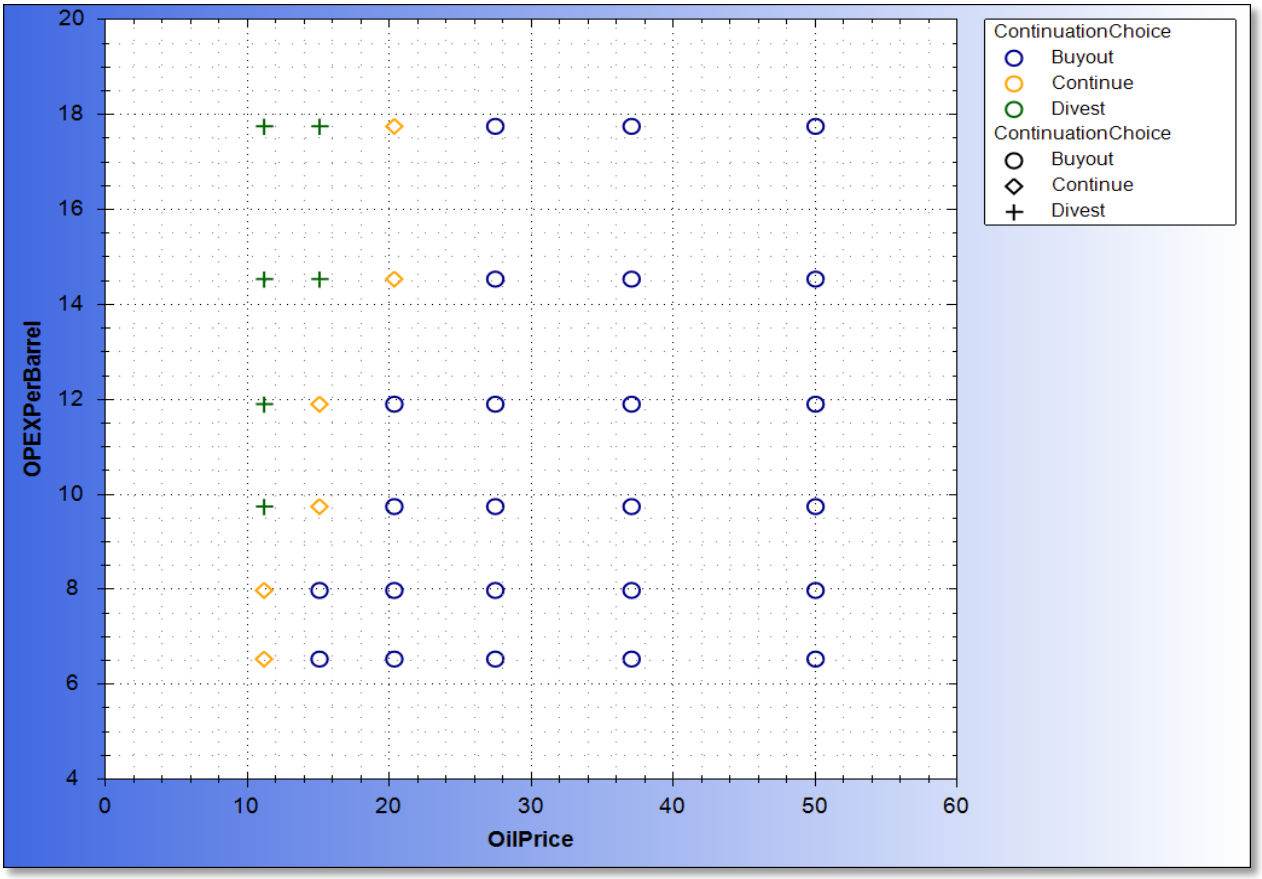

Figure 3: Sample oil production strategy at Year 5 as a function of the uncertain price of oil and variable operating expenses

Many such visualization tools have been adapted in an attempt to help decision makers understand complex information. As with Information Tools, we expect these tools will be easily adaptable for use with the Provisdom Decision Platform. The use of open interface standards (e.g. an ODBC interface to the solution database) greatly facilitates integration. The essential difference with the nominal BI use-case is that the platform generates many possible futures, where existing tools are focused on analyzing the past. Again, we expect many opportunities for innovative use of visualization.