Technology Showcase

Risk modelling throughout an organisation using AgenaRisk Enterprise Edition

Once you have developed your risk models the natural next step is to deploy them as part of an enterprise level risk application for use throughout your organisation. AgenaRisk Enterprise Edition is designed specifically to meet this crucial requirement by providing a software development kit with a number of key components:

1. Application Programming Interface (API) — This is a set of java routines that let you directly create, edit and execute AgenaRisk models as a part of a client server, webs services or desktop enabled application.

2. AgenaRisk Application Generator (AAG) — This allows you to generate large and complex risk models directly from relational databases or text file schemas and then use these models within a wider system or directly use them within the AgenaRisk Desktop.

3. Database Connectivity — The AgenaRisk Enterprise Edition is able to connect to any JDBC or ODBC compliant data source including:

   - CSV files and Excel spreadsheets
   - Personal databases such as Microsoft Access
   - Open source databases such as MySQL and Postgres
   - Enterprise platforms such as Oracle and SQL Server

Example applications that have been developed using AgenaRisk Enterprise Edition include:

   - Extending the desktop edition to support a tailored application to use template AgenaRisk models to estimate system availability from a database containing failure and repair data.

   - Running a server to automatically rank the impact of planned changes to an IT infrastructure and reporting these values onto an ITIL style information portal

AgenaRisk Enterprise Edition

Overview

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**Using the AgenaRisk Application Generator (AAG)**

Firstly, the AAG takes, as input, a relational database and uses its tables to generate metadata objects in AgenaRisk. Figure 1 shows an example set of tables, from an MSAccess database that are to be translated to metadata objects: the tables of interest are organisations, businesses and departments.

Next, the fields within the database are used to provide data to pre-prepared template risk objects or to receive data back from AgenaRisk after a calculation has been performed. For example "Revenue Amount" from the Business Revenue table would be mapped to a node called "Historical Revenue Amount" in a risk object created for each business and the "Organisation 95 percentile" field would be populated from a calculation performed within AgenaRisk upon a risk object, designed to forecast profit/loss for a metadata object called "Organisation".

Figure 1: Example Model Database Tables

Now, AgenaRisk can query the database, import the metadata, import template risk objects, link them, automatically aggregate risk objects, import the data and then map and clone nodes. Once completed the risk explorer tree can be expanded to view the full metadata and risk object tree, as shown in Figure 2.
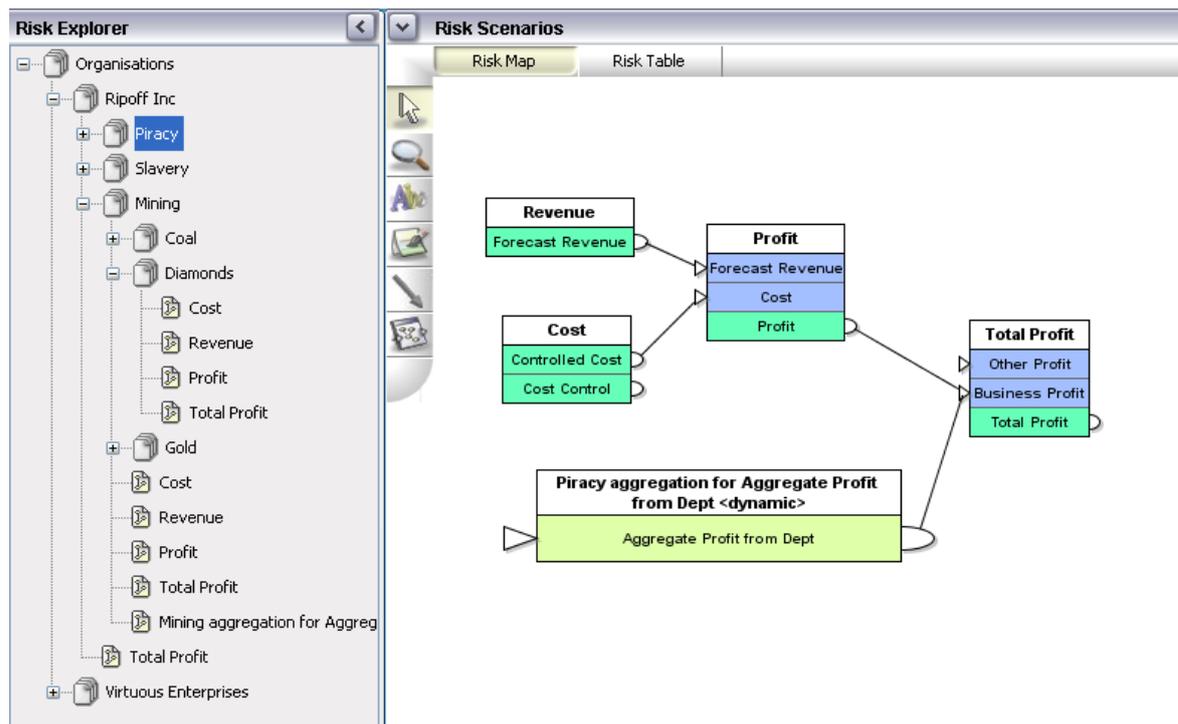
Figure 2: AgenaRisk screen showing model generated from the database

The Risk Explorer lists the metadata and risk objects created from the MSAccess database tables. Here we have two organisations: Ripoff Inc. and Virtuous Enterprises. Ripoff contains three businesses: Piracy, Slavery and Mining, Mining contains three departments: Coal, Diamonds and Gold. Each department, business and organisation has an associated set of connected risk models and these are shown in the risk map for the department called Piracy. Here the risk objects are Revenue, Cost, Profit and Total Profit and each of these are dynamically created from the pre-prepared templates at runtime.

Notice that the risk map contains a risk object with a name containing <dynamic>; this risk object is automatically produced by the aggregation scheme and the dynamic tag indicates that it has been produced dynamically by the application. This risk object sums the profit/losses for each department and then passes the result to the business risk object.

You can use the AgenaRisk Application Generator to do some quite clever things, one of which is "cloning". This involves reading in a table containing repeated data points associated with one node in the risk map, cloning that node and mapping the data to the cloned nodes. This is obviously very powerful in applications where you want to perform parameter learning from data but want to avoid manually creating nodes for each data point.

In our example cloning has been performed in the "Revenue" field in the department and business tables. Each time a new revenue field is encountered a new "Historical Revenue" node is created in the Revenue risk object. The results of cloning are shown in Figure 3.
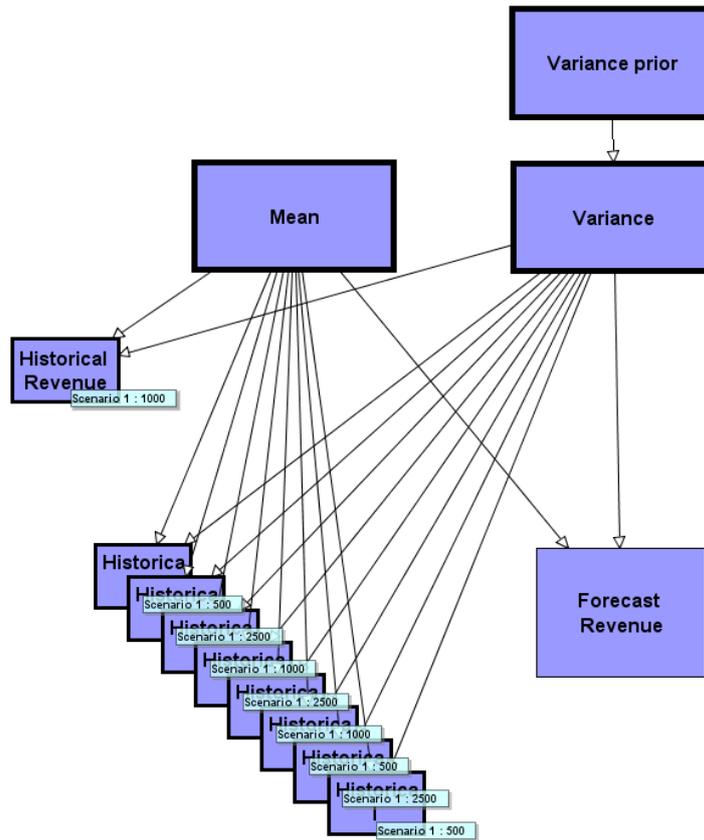
Figure 3: Results of cloning nodes from database

Note as well as generating models from a database from within AgenaRisk desktop all of the above can operations, and more, be done via the server directly, as a batch mode operation or interactively as part of a web services setup.

For more information or for a demonstration please contact AgenaRisk: sales@agenarisk.com.