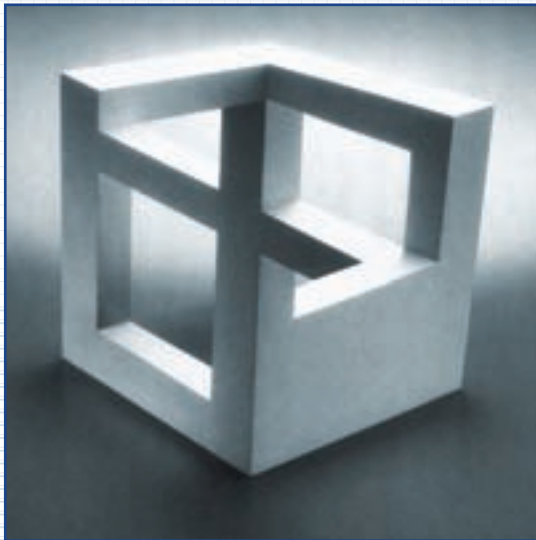


## MetaRisk®: An Economic Capital Model for Enterprise Risk Management



### Outstanding technical abilities

#### REINSURANCE ANALYSIS

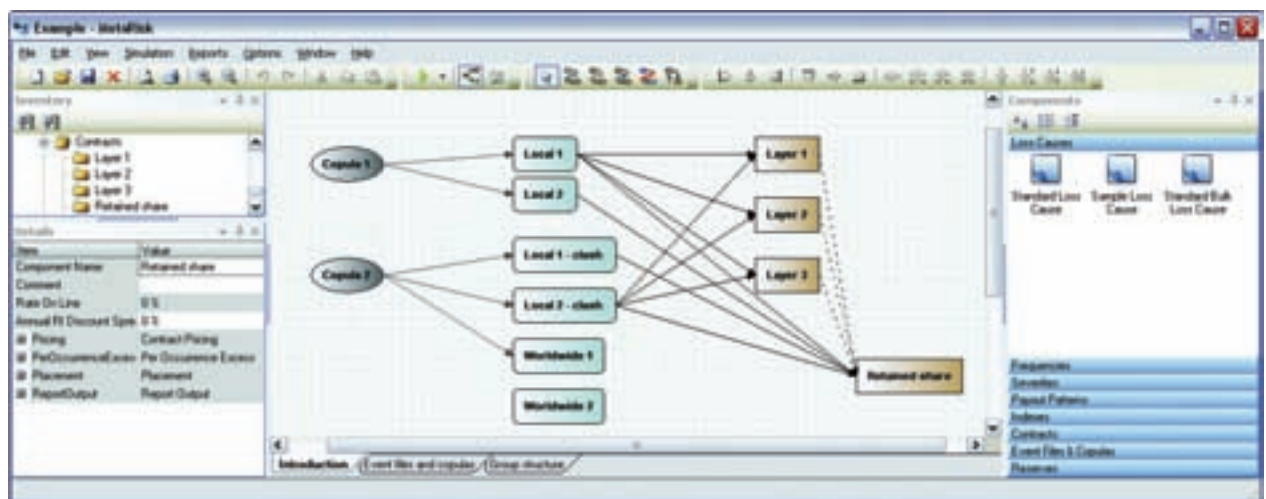
MetaRisk enables you to measure risk exposure, gross and net of reinsurance, at any level in the structure of the enterprise. Reinsurance contracts can be analyzed individually or within a group.

#### TIMELINE SIMULATION

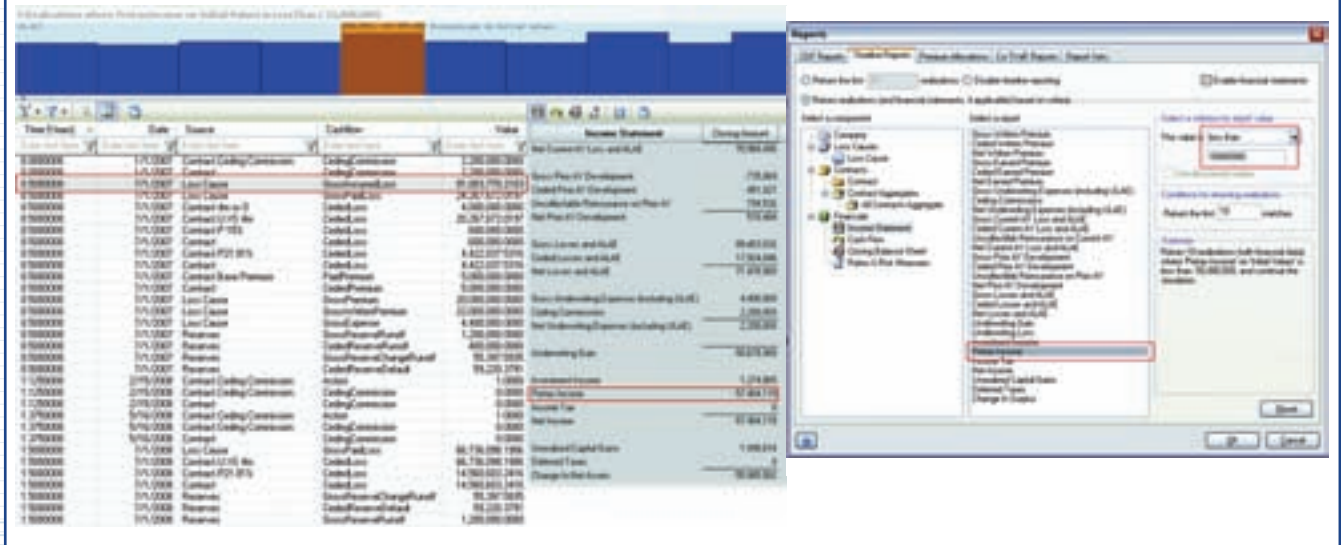
Moving beyond the prior industry standard collective risk approach, MetaRisk is structured on a timeline of events unfolding during the course of a simulation. It is the only platform with true causal modeling, event cascades and emergent phenomena. The detail and sequence preserved in the timeline provide explicit, transparent calculation of

reinsurance treaty features, seasonality of exposure and time-dependent claim payment. Every simulation can be seen on the timeline giving complete transparency.

Reinsurance Analysis Design Surface



## Transparency of the Timeline and Financial Statements



## TRANSPARENCY AND STRESS-TESTING

MetaRisk's completely transparent timeline foundation preserves full internal event detail for stress-testing. You can specify a stress level (e.g., a 1:250 year earthquake loss or a specific adverse financial result) and discover the exact combinations of events that cause or result from the scenario. By enabling you to trace back to specific physical occurrences, such as storms or earthquake scenarios, MetaRisk provides a deeper understanding of the underlying risk than was ever before possible. Projecting through to corresponding financial statements, MetaRisk provides the full range of stress-testing information, from initial causes to financial consequences.

## CONTRACT EDITOR

The MetaRisk contract editor provides you with complete flexibility to model the most intricate reinsurance treaties. Starting from the pre-built templates, you can easily create contracts for any of the following:

- Reinstatement premium protection to control reinsurance spend even after large losses;
- Industry loss warranty and parametric-triggered indemnity contracts linked to physical events or industry-wide loss results;
- Measurement of the OEP (PML) curves for losses, with and without reinstatement premium, as required by various rating agencies;
- Different coverage terms for different loss causes within a single contract;
- Second event covers that provide backup cover after initial limits exhaust.

*MetaRisk provides the full range of stress testing information, from initial causes to financial consequences.*

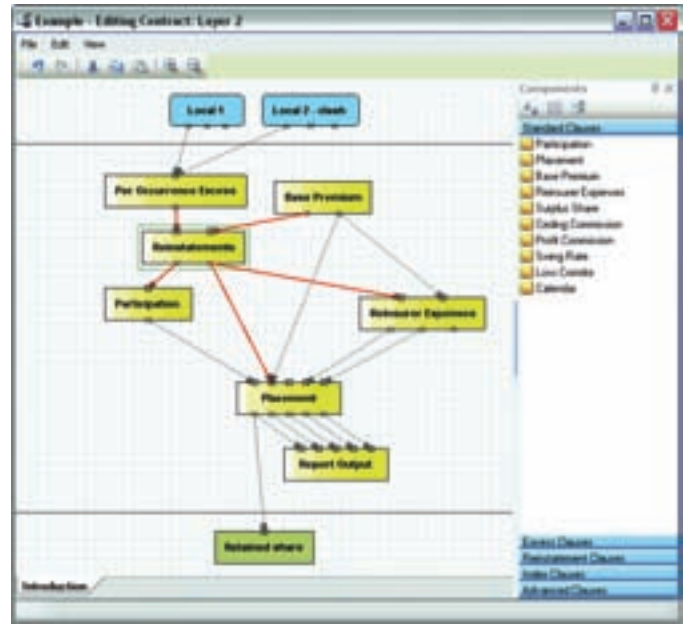
## CATASTROPHE LOSS DATA INPUT

Using a data format originally designed for catastrophe models, MetaRisk can sample from input files representing a large number of correlated risk sources. Secondary uncertainty is inherent in our sampling method.

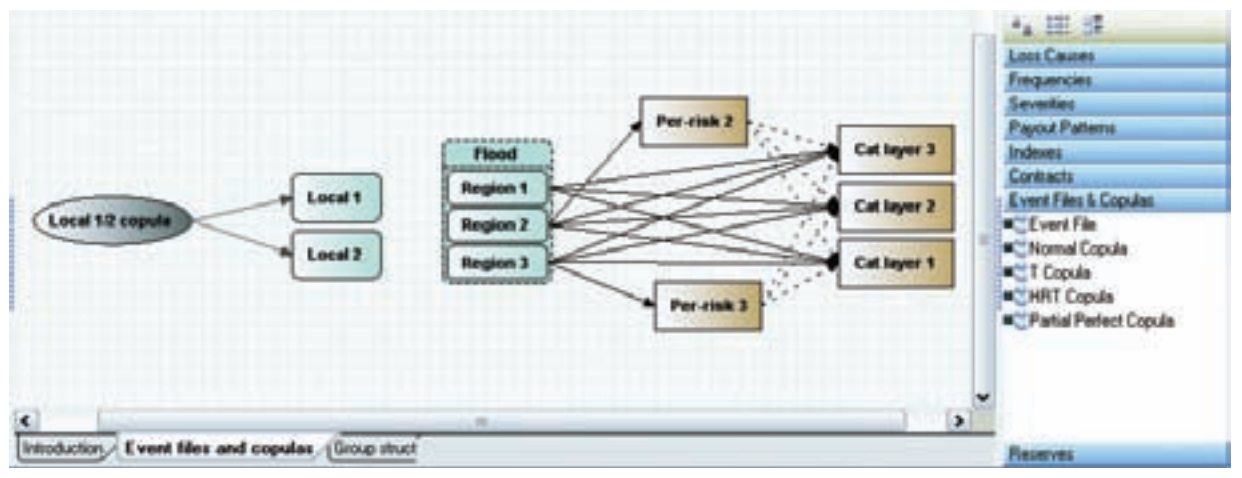
## CODEPENDENCE AND CORRELATION

Since one event can cause losses in more than one line of business, our copula techniques allow loss causes to be driven from a common source of occurrences. Each loss cause responds in addition to any non-correlated loss distributions.

The Contract Editor



Event Files and Copulas



## FINANCIAL STATEMENT INTERPRETATION

MetaRisk can capture distributions of value for any economic (IFRS) or U.S. statutory financial statement item. Traps can be set to capture examples of extreme outcomes. Complete financial statements can be provided to aid in understanding the financial causes and consequences of unusual events.

## COST OF CAPITAL ALLOCATION

MetaRisk provides the measurements required for allocating the cost of capital between a firm's operating entities – including VaR, TVaR and co-TVaR.

## Incoming IFRS Balance Sheet Dialog and Financial Statement Scenario

	Opening Amount	Closing Amount
<b>Assets</b>		
Total Cash and Invested Assets	43,940,000	43,777,629
Uncollected Premium	3,000,000	3,000,000
Ceded Unearned Premium Reserves	2,000,000	2,000,000
Ceded Loss and ALAE Reserves	4,963,724	18,279,685
Other Assets	6,000,000	6,000,000
<b>Total Assets</b>	<b>65,903,724</b>	<b>79,057,315</b>
<b>Liabilities</b>		
Gross Loss and ALAE Reserves	14,891,171	81,390,264
Gross Unearned Premium Reserves	10,000,000	12,000,000
Other Liabilities	8,000,000	8,000,000
<b>Total Liabilities</b>	<b>32,891,171</b>	<b>101,390,264</b>
<b>Net Assets</b>	<b>33,012,552</b>	<b>-22,832,949</b>
<b>Total Liabilities and Net Assets</b>	<b>65,903,723</b>	<b>79,057,315</b>
<b>Other Balances</b>		
Net Loss and ALAE Reserves	9,927,447	63,670,578
Net Unearned Premium Reserves	8,000,000	10,000,000

### REINSURANCE PREMIUM ALLOCATION

MetaRisk can run a report that shows the contribution to the loss or gain of a contract and its volatility for each line covered by the contract. This enables contract premium to be allocated to underwriting units fairly and objectively.

### ECONOMIC CAPITAL AND SOLVENCY II INTERNAL MODEL

Separate distributions are captured under (IFRS) or U.S. statutory assumptions for market and premium and credit risks, meeting the prerequisites for a firm's internal model.

**Algorithmics**



### COLLABORATING WITH THE BEST: ALGORITHMICS INC.

Guy Carpenter has engaged Algorithmics Inc., to license its economic scenario generator to provide example scenarios for use with MetaRisk.

Our economic scenarios, or those from your own economic model, determine the asset-side performance and yield curves in the model. This reflects the important correlation between market risk and discounted reserves.

### EXPORTING RESULTS

You can export graphs and tables to any Microsoft® Office product , as well as querying all the MetaRisk report data using Excel.

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