Next Generation Models (NGM)

Catastrophe models are being relied upon to help companies evaluate different types of risks—from underwriting single locations to performing enterprise risk management on distributed global portfolios.

As the use of our models has become more widespread, computing power has increased, and newer technologies and data have become available, Verisk has thoroughly re-architected the financial module that underlies our peril models to ensure that they produce the most accurate and realistic losses possible, regardless of the size of the contract or book being analyzed. This new architecture enables Verisk model users to more accurately model the losses for single locations, better account for dependencies and correlations in loss accumulation, and more realistically capture the application of complex policy terms.

Industry Challenge: Accounting for Uncertainty

Uncertainty is present in both the event generation component of the models (primary uncertainty) and the damage and loss calculation components (secondary uncertainty); understanding these uncertainties in model assumptions and parameters are essential to translating modeled results into informed decision-making.

Lack of computing power and a shortage of claims data were the key barriers to accurately enhancing the way loss results were calculated in catastrophe models. Today, Verisk utilizes sophisticated computational algorithms to implement more complex and realistic algorithms into our models, which can realistically capture and represent the inherent uncertainties in ways never before possible. Then, the results produced by these algorithms were validated by Verisk using existing and newly available data sets of insurance claims.

Motivations Behind Developing NGM

Increased Complexity of (Re)insurance Contracts
Market fluctuations, dropping prices, increasing M&A activity, the influx of capital resources, and a soft reinsurance market prompted reinsurers to create more elaborate reinsurance terms and conditions that are stacked on top of one another. These reinsurance contracts often have structures with various conditional dependencies that can be difficult to assess using traditional modeling approaches. These complexities can lead to inaccuracies in modeled loss results.

Better Availability of Claims for Model Calibration
In the past, many (re)insurers did not maintain detailed records of their claims data as they paid out policies in the wake of major loss-causing events. This lack of high-quality historical claims data made it difficult for them to estimate their own potential losses from future natural disasters. In recent years, however, improved data management has become a priority for many leading (re)insurers. As they began to collect better claims data, they made this detailed data available to catastrophe modelers, who, in turn, could use this more granular information in addition to publicly available data and data from other sources to refine and enhance the accuracy of the models they develop. Verisk's NGM incorporated this new claims data as we developed and tested our enhanced loss analysis engine, which allows (re)insurers to better manage their portfolios by more accurately modeling their location-level losses.

What to Expect from NGM

Verisk's Next Generation Models improve both the accuracy and flexibility of modeling complex business workflows and provides fully probabilistic financial modeling at all levels, enhanced financial terms and contract setup, modeling and capturing of all insurance coverage and geospatial dependencies in loss accumulation, and a more complete view of tail risk.
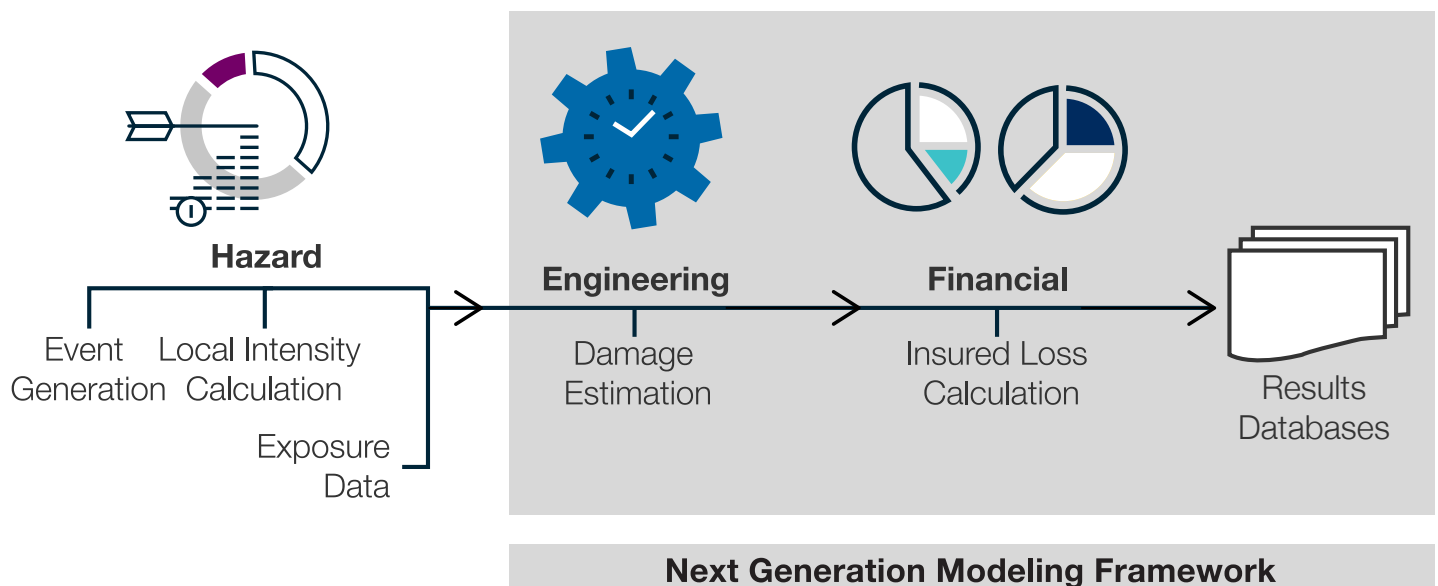
What to Expect from NGM

- Loss accumulation with correlations

- Accurate modeling of insured losses from dependent sub-perils

- Enhanced accuracy when calculating loss results

- Increased support for complex commercial contracts

- Fully probabilistic risk reinsurance module and

- The highest granularity for loss results

Verisk Continues to Support Existing Model Features with Higher Accuracy and Flexibility Enhancements:

- Updated layer/sublimit minimum/maximum policy algorithm

- Modeling sub-perils independently with their own secondary uncertainty distributions

- Coverage deductible after site limits

- Layers and sub-limits by coverage

New Features in the Next Generation Models:

- Insurance single peril and multi-peril annual aggregate terms

- Location-level minimum/maximum deductible

- Inuring (nested) sub-limits

- Excess layers by coverage with all types of location policies

- Additional reinsurance terms, including aggregation terms and reinstatements

- Fully probabilistic modeling of all per-risk facultative and treaty reinsurance

Hazard

Event Generation Local Intensity Calculation

Exposure Data

Engineering

Damage Estimation

Financial

Insured Loss Calculation

Results Databases

Next Generation Modeling Framework
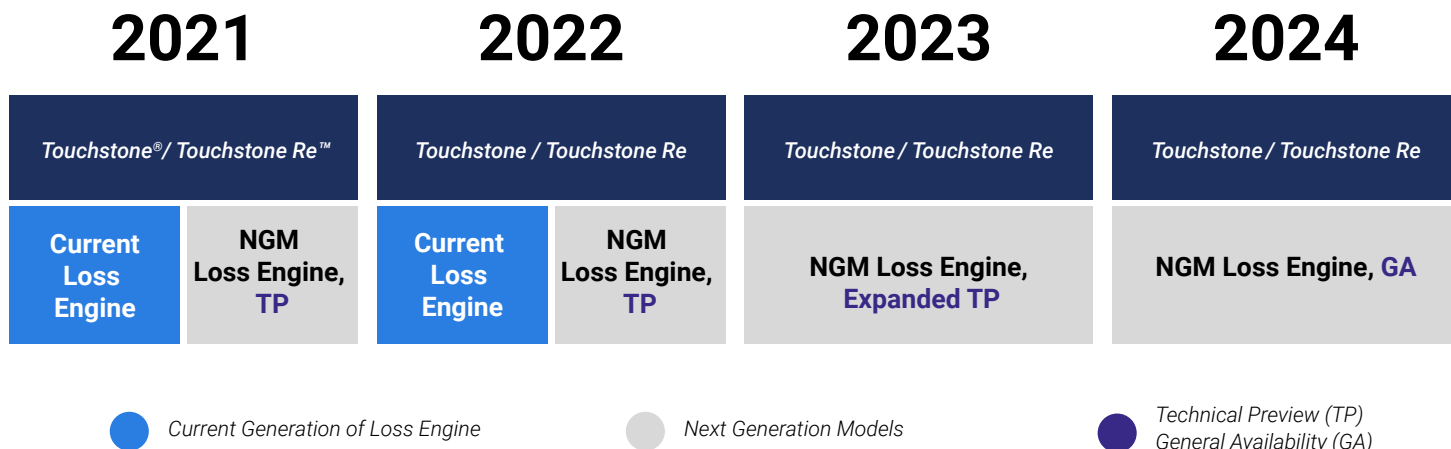
When to Expect Next Generation Models

Technical Preview

Verisk will release Next Generation Models (NGM) starting in 2024. To further assist our clients in transitioning to NGM, Verisk released a technical preview for a subset of 7 models—U.S. inland flood, hurricane, earthquake, and winter storm models and European earthquake, extratropical cyclone, and severe thunderstorm—as part of Touchstone® 9.0 in 2021, at no extra fee, to provide our clients with enough time to review impacts, conduct change management, and develop their own view of risk. In the summer of 2023, Verisk will release an expanded technical preview for all peril models around the world, to give clients an opportunity to continue their testing and change management on their full portfolio of contracts

The technical preview provides access to an updated library for capturing different policy terms and contract structures. Such financial terms are available for the entire primary and reinsurance portfolio stack, from insurance policies to commercial assets and direct treaty and facultative. The technical preview offers a chance to examine the risk of underwriting more complex reinsurance policies and aligning the organization's risk appetite in the new financial module.

General Availability of Verisk's Next Generation Models

The financial and hazard modules will be updated across all Verisk extreme event models in Touchstone 2024. The Next Generation Models offer enhanced transparency in the financial calculations for all Verisk models and more accurately simulate the impacts of large loss-causing events on complex financial structures, accumulating across different geographies and perils, and accounting for coverage sub-limits for commercial policies and lines, and multi-line-of-business commercial policies for large corporations.

2021	**2022**	**2023**	**2024**
Touchstone®/ Touchstone Re™	*Touchstone / Touchstone Re*	*Touchstone / Touchstone Re*	*Touchstone / Touchstone Re*
Current Loss Engine / **NGM Loss Engine, TP**	**Current Loss Engine** / **NGM Loss Engine, TP**	**NGM Loss Engine, Expanded TP**	**NGM Loss Engine, GA**

● *Current Generation of Loss Engine*   ● *Next Generation Models*   ● *Technical Preview (TP) General Availability (GA)*

Trusted and Comprehensive Client Support

Verisk pioneered the catastrophe modeling industry more than 30 years ago, creating the tools that changed how people think about risk management. Since then, stochastic modeling has become standard practice in the property and casualty sector, giving insurers and reinsurers the tools and information they need to help manage their risk. Verisk is committed to simplifying the process of transitioning to our Next Generation Models and to enabling you to deploy your own views of risk throughout your workflows. Our support team will be there every step of the way to help your organization navigate this transition smoothly. In addition to our team of experts, the Developer Zone on our website provides extensive documentation to guide (re)insurers' development teams.

Verisk™

Americas
+1.617.267.6645

contactus@verisk.com

verisk.com