

# GEM Partnership Workshop

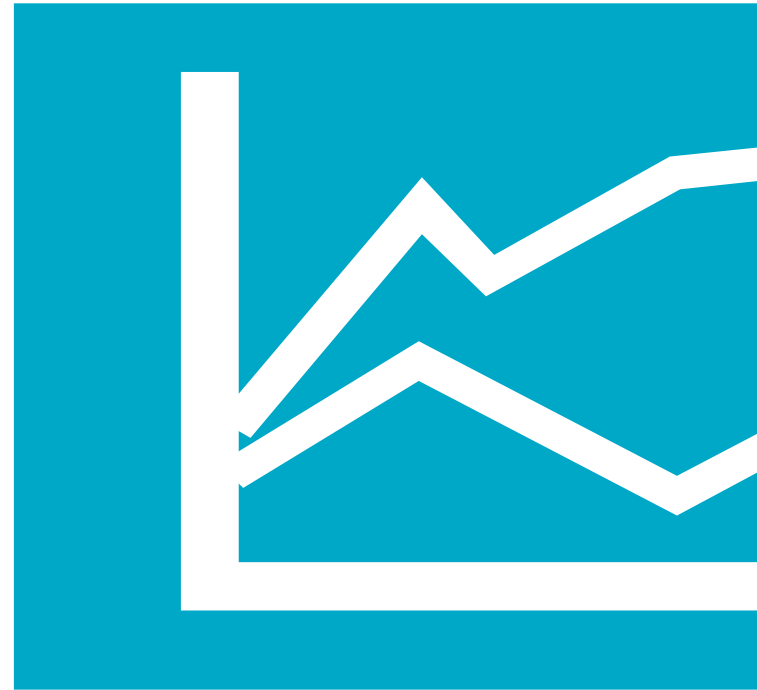
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Pavia  
29/11/2017

# Agenda

- 1 | LATEST TRENDS IN CAT RISK ANALYTICS AND INSURANCE MARKET NEEDS
- 2 | GUY CARPENTER STRATEGY
- 3 | INTEGRATION OF GEM PRODUCTS

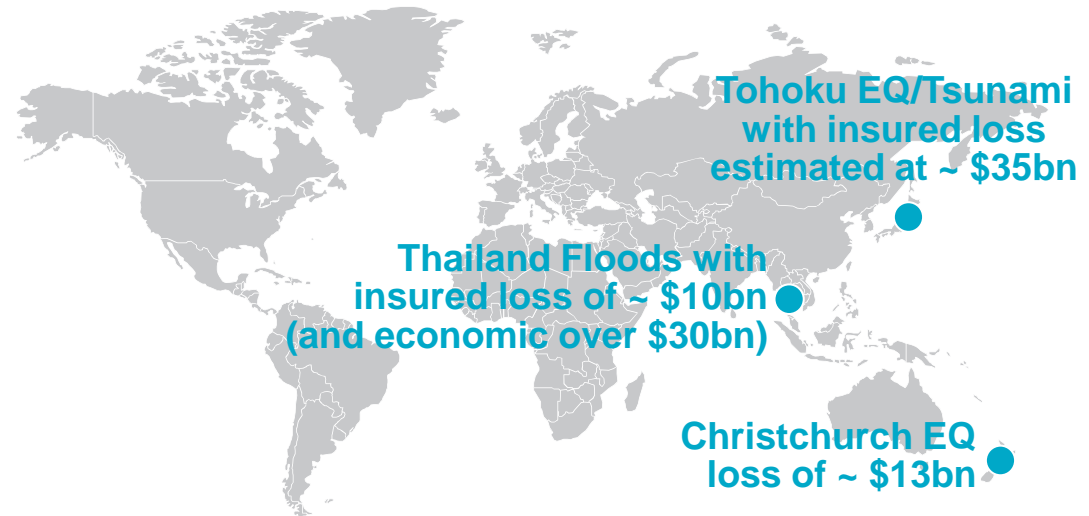
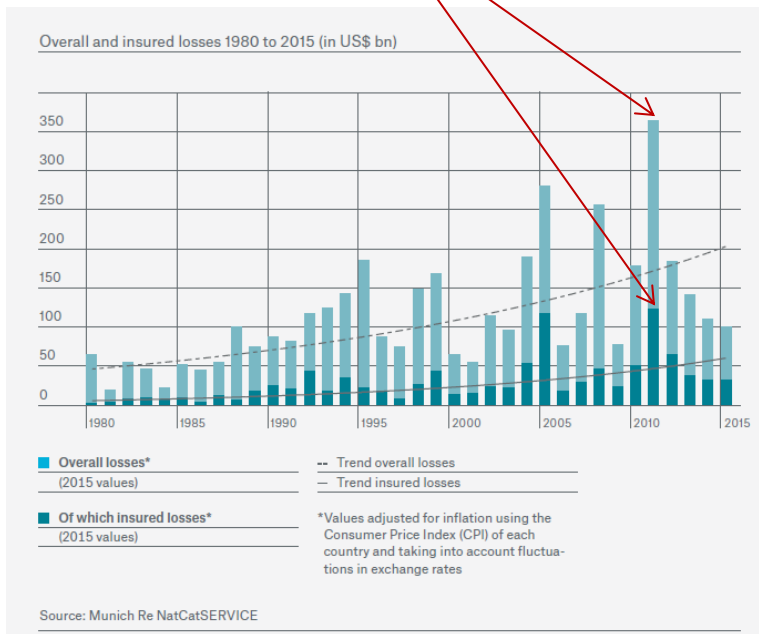
# Latest Trends in Cat Risk Analytics & Insurance Market Needs



# Attitude Change to Catastrophe Modelling

## A Triple Hit in 2011 – Unmodelled losses, Model change, Regulatory pressures

Substantial economic and insured losses from international in 2011, many of which were unmodelled!

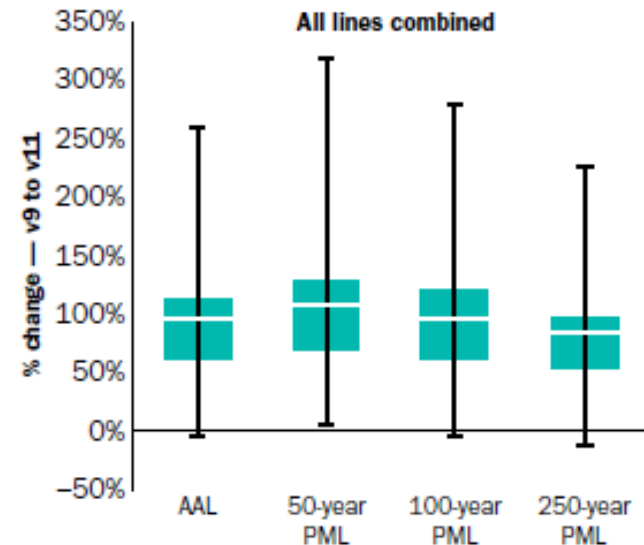


# Attitude Change to Catastrophe Modelling

A Triple Hit in 2011 – Unmodelled losses, Model change, Regulatory pressures

And on top of that in 2011 RMS introduced major model change..

- Major overhaul of the North American Hurricane model
  - PML increases of up to 100%
- And in the same year a major update of European windstorm model
  - With a significant change to losses for lower return periods
- Insurers and reinsurers faced with challenge of how to manage model change within the business



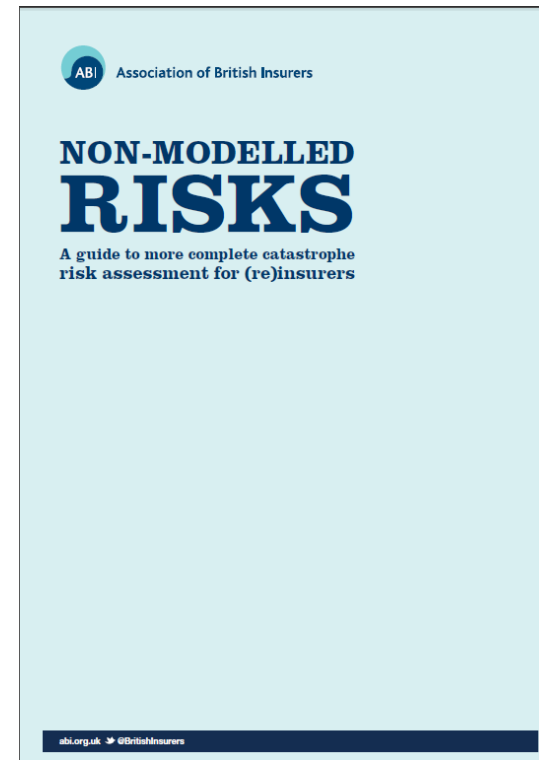
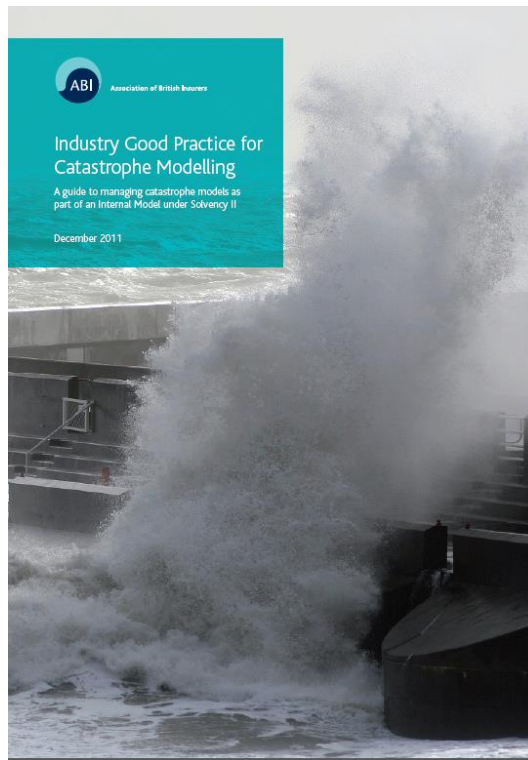
Further big changes expected in 2017/2018 as well, with the release of the first Oasis and RMS HD models, new severe convective storm models by RMS and AIR, etc..

# Attitude Change to Catastrophe Modelling

A Triple Hit in 2011 – Unmodelled losses, Model change, Regulatory pressures

And then there were pressures from the regulatory environment..

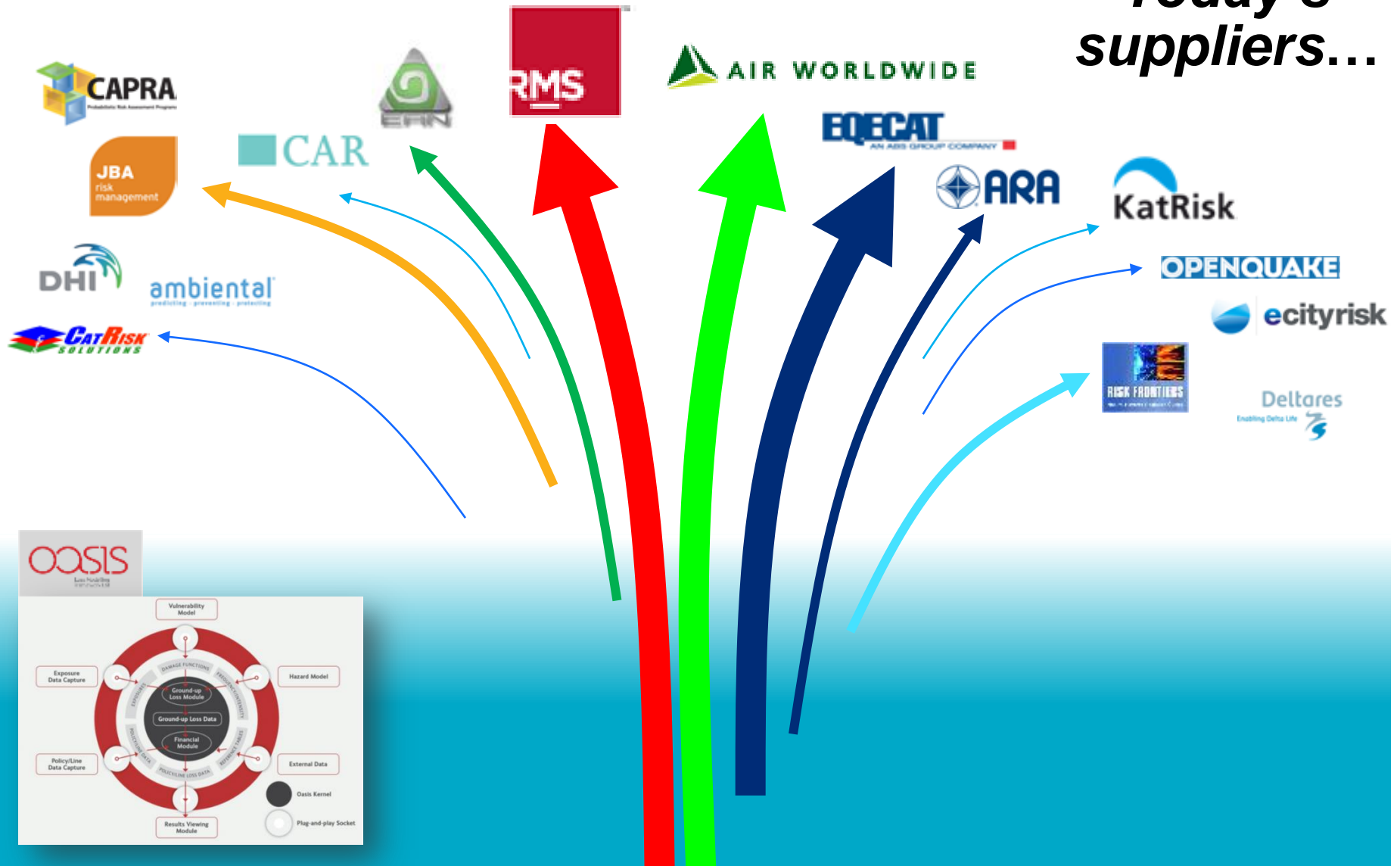
- Solvency II and other regimes insisted that companies demonstrate an understanding of their risk – and take responsibility for their view of risk



# Attitude Change to Catastrophe Modelling

## Evolution of Catastrophe Model Development Universe

*Today's suppliers...*



# New Trends in Catastrophe Modelling

## Emerging activities and new challenges

### ADVANCED PTF MANAGEMENT

- More and more interacting functions require a more advanced management of portfolios
- Ever present internet access and modern GIS capabilities allow for an interactive management and mining of ptf's
- Improved availability of hazard maps and more reliable cat models result in more technical underwriting strategies.

### NEW GENERATION CAT MODELS

- Unprecedented computation power allowed for the development of complex models (e.g. pan European flood models)
- New models moving to the cloud?

### DATA AUGMENTATION / 3D MODELLING

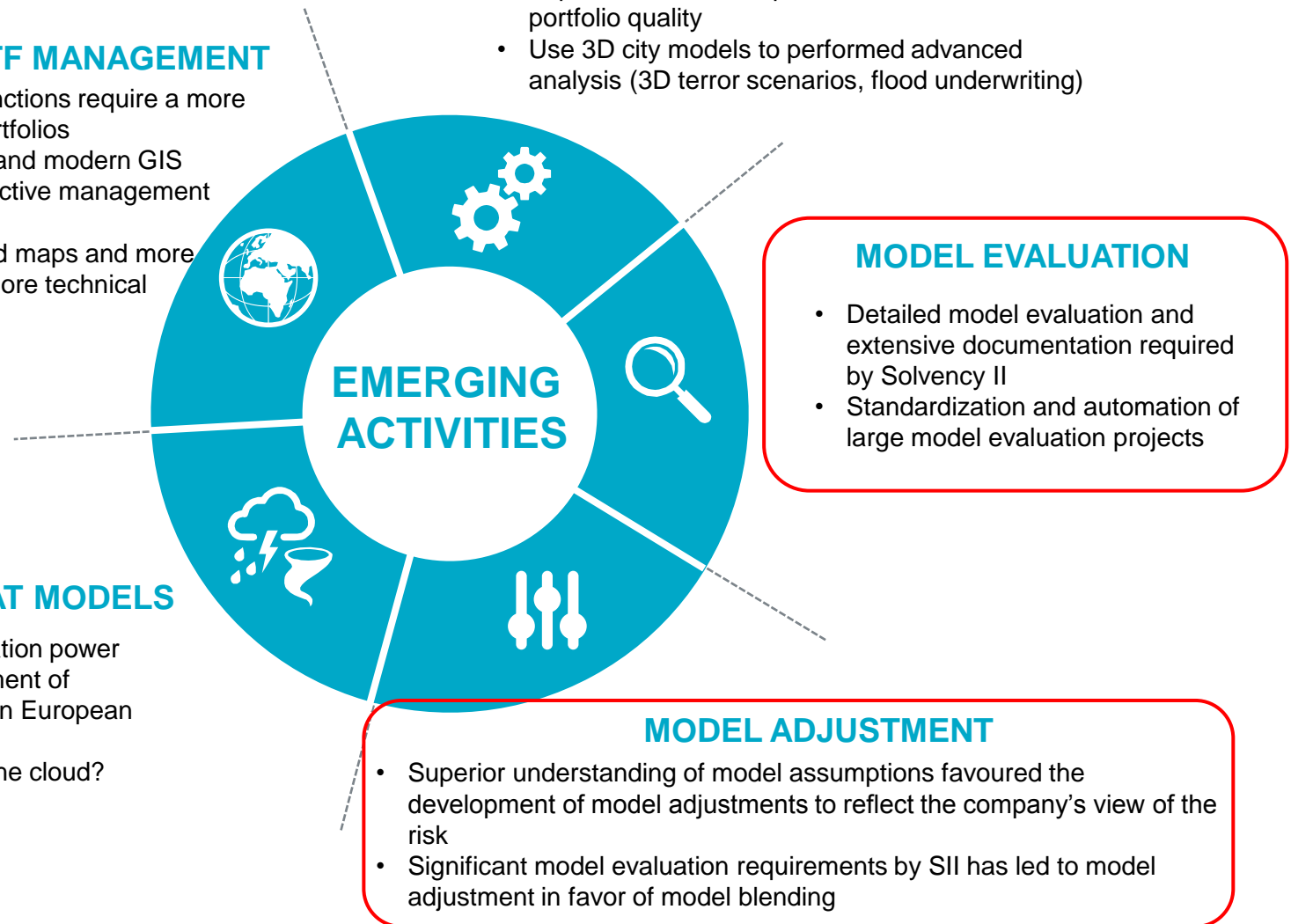
- Exploit satellite and open source data to enhance portfolio quality
- Use 3D city models to performed advanced analysis (3D terror scenarios, flood underwriting)

### MODEL EVALUATION

- Detailed model evaluation and extensive documentation required by Solvency II
- Standardization and automation of large model evaluation projects

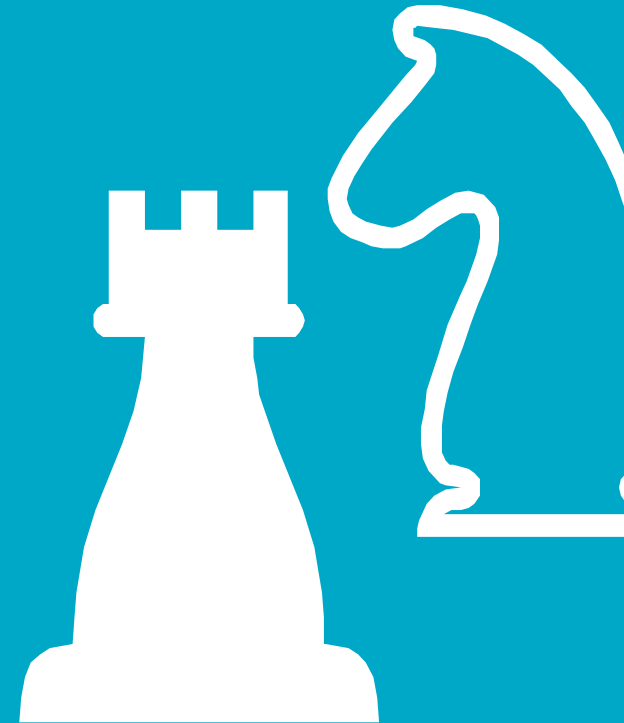
### MODEL ADJUSTMENT

- Superior understanding of model assumptions favoured the development of model adjustments to reflect the company's view of the risk
- Significant model evaluation requirements by SII has led to model adjustment in favor of model blending





# Guy Carpenter Strategy & Integration of GEM Products



# GC Cat Risk Strategy

## Leverage research, development and market reach of commercial vendors

- We pay vendors for their scale
- Common or reference trading currency
- Useful for benchmarking

## Support and actively evaluate new entrants

- Licence models and data from JBA, KatRisk, ERN etc
- Founding member of PERILS and OASIS

## Fill in material gaps with robust and credible models

- Ranging from scenarios through to full probabilistic (simple to leading-edge)
- Always open and transparent
- Building on best available data and research
- Validated and documented for regulatory use

## We do not compete head on with vendors

- Maintain a strong relationship as a client rather than competitor
- Open dialogue

# GC Strategy – Model Evaluation

Don't just go and build another model for an already widely covered peril



Instead we aim to understand models and what drives differences

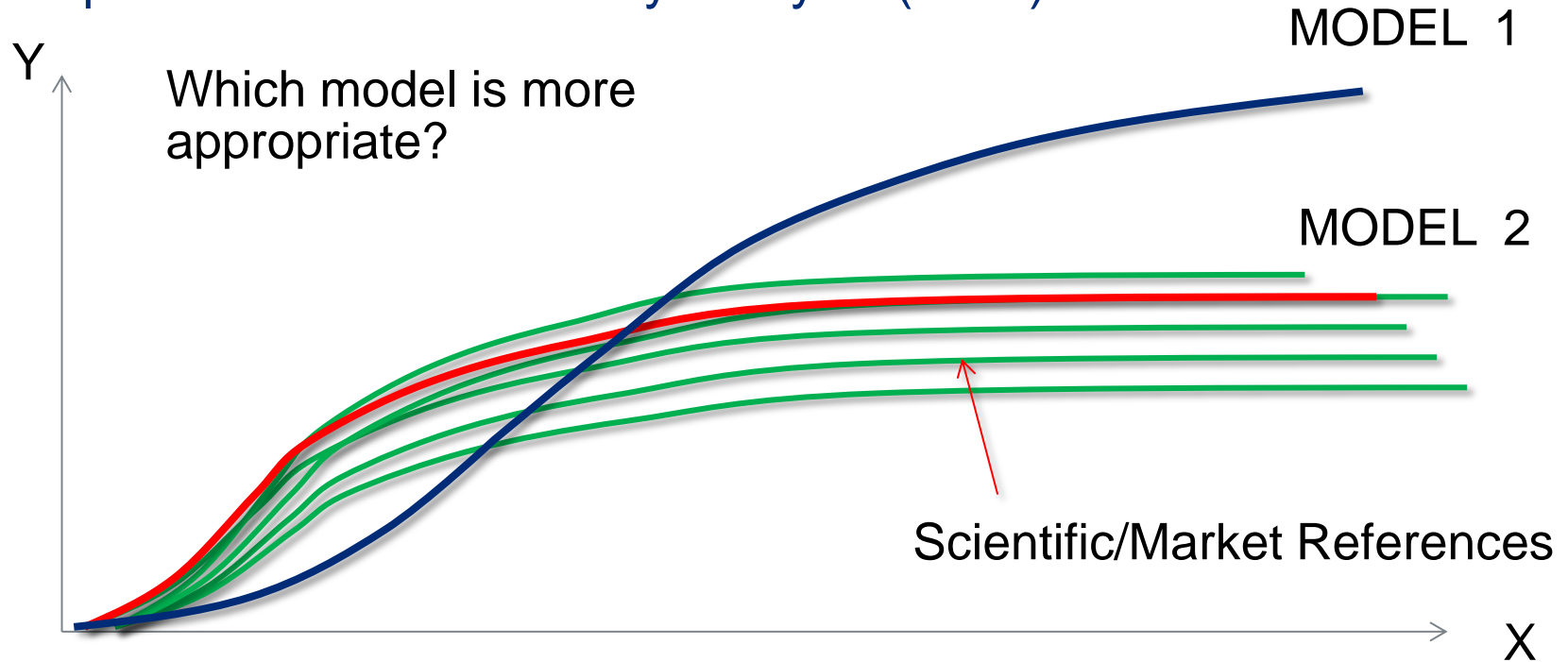
## Ensure we make best use of models

- Sensitivity of exposure data attributes
- Sensitivity of modelling assumptions
- Support clients with data cleaning and data enhancement (e.g. 3-D)

## Use a consistent and open approach to evaluate existing models

- Independent and unbiased – reference to credible scientific research and data
- Transparent
- Leverage our own expertise
- Make adjustments where supported by the analysis

# Guy Carpenter's Model Suitability Analysis (MSA)<sup>®</sup>



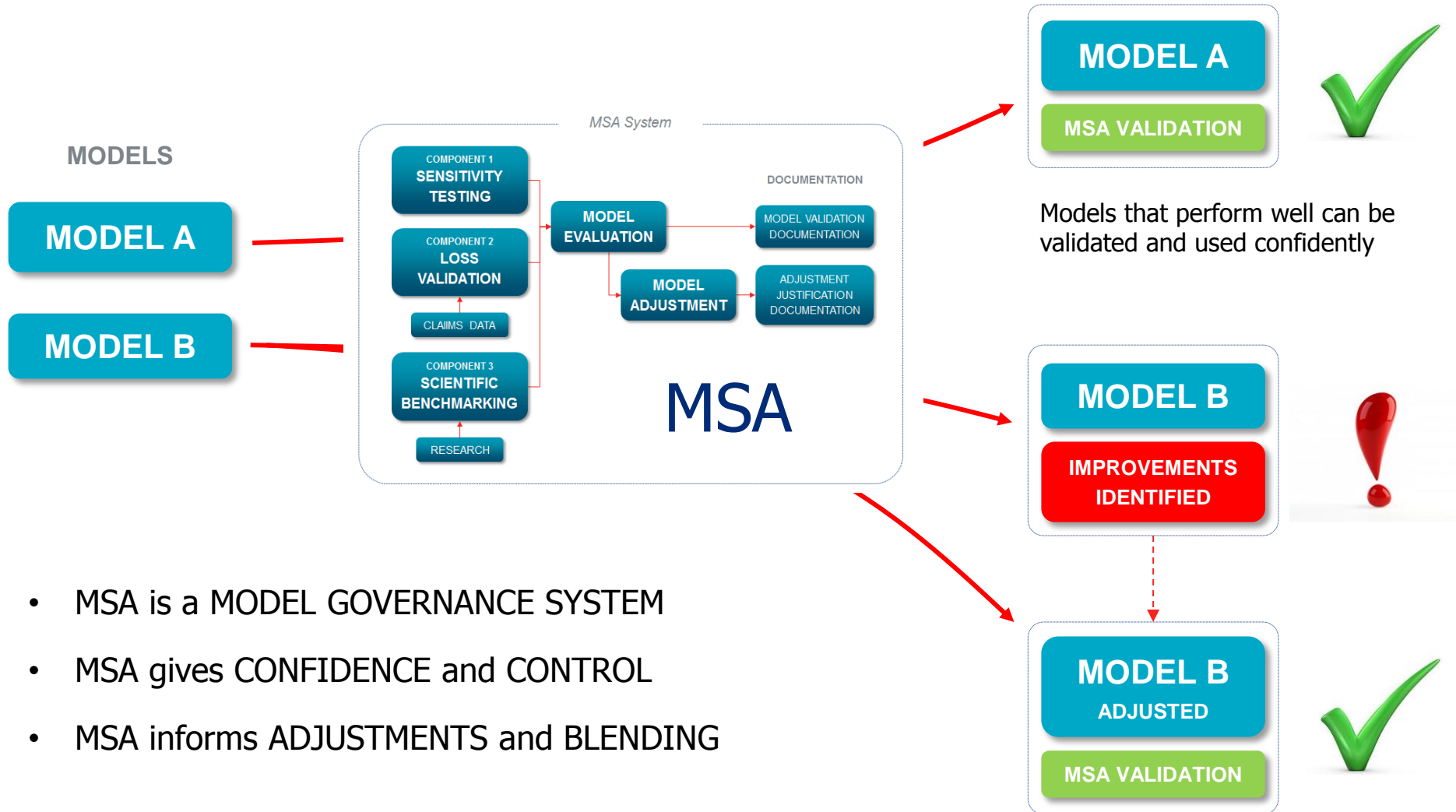
MSA Validation is:

- Independent
- Unbiased
- Transparent
- Standardized

Supported by more than 20 research collaborations:



# Guy Carpenter's Model Suitability Analysis (MSA)<sup>®</sup>



## How can GEM activities fit in all this

- GEM represents an unmatched central repository of cutting edge knowledge in the field of earthquake hazard/risk
- Uniformity of output and approaches enables direct streamlining of research data into business
- Full transparency of assumptions and data implementation (eg. availability of openquake input files) is very valuable
- Ease of replicability and customization of important international research studies (eg. SHARE, EMME, etc.) via OpenQuake allows for an even greater flexibility and deeper understanding, never available before.

## How can GEM activities fit in all this

- New challenges ahead for the vulnerability/fragility field, which presents specific difficulties and complications compared to hazard evaluation
- GEM contribution in the field of vulnerability can be even greater, potentially filling the gaps and providing an ordered structure to a rather chaotic domain
- Historically, cat model development/evaluation/documentation has been focused on hazard much more than vulnerability..
- ..GEM work on vulnerability can help stimulate the discussion on next gen vulnerability evaluation/development, ultimately resulting in more transparent and more reliable EQ risk models.





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