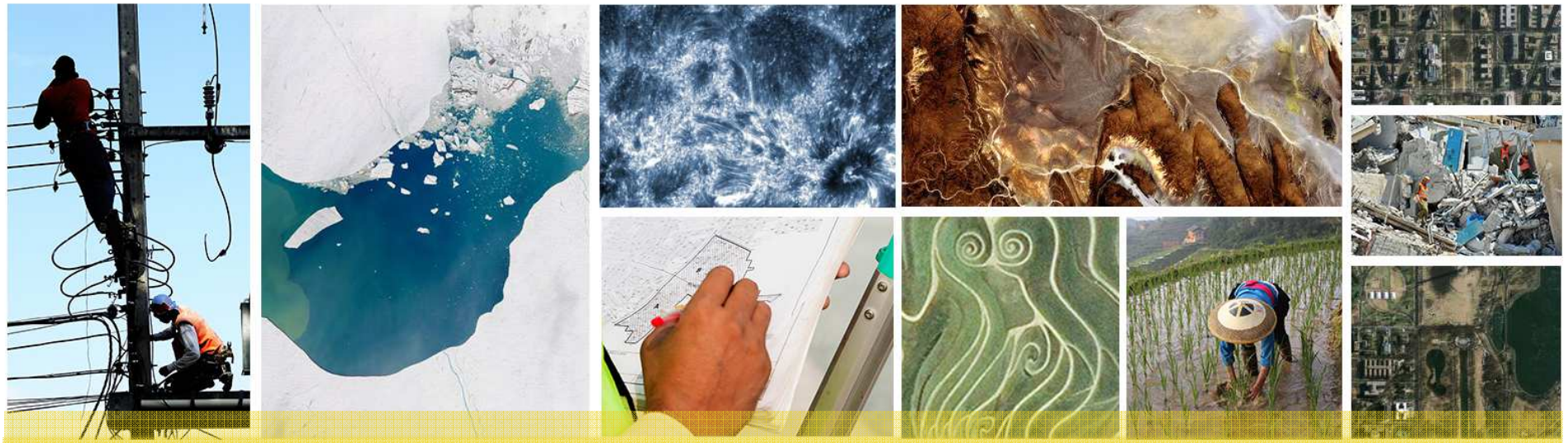


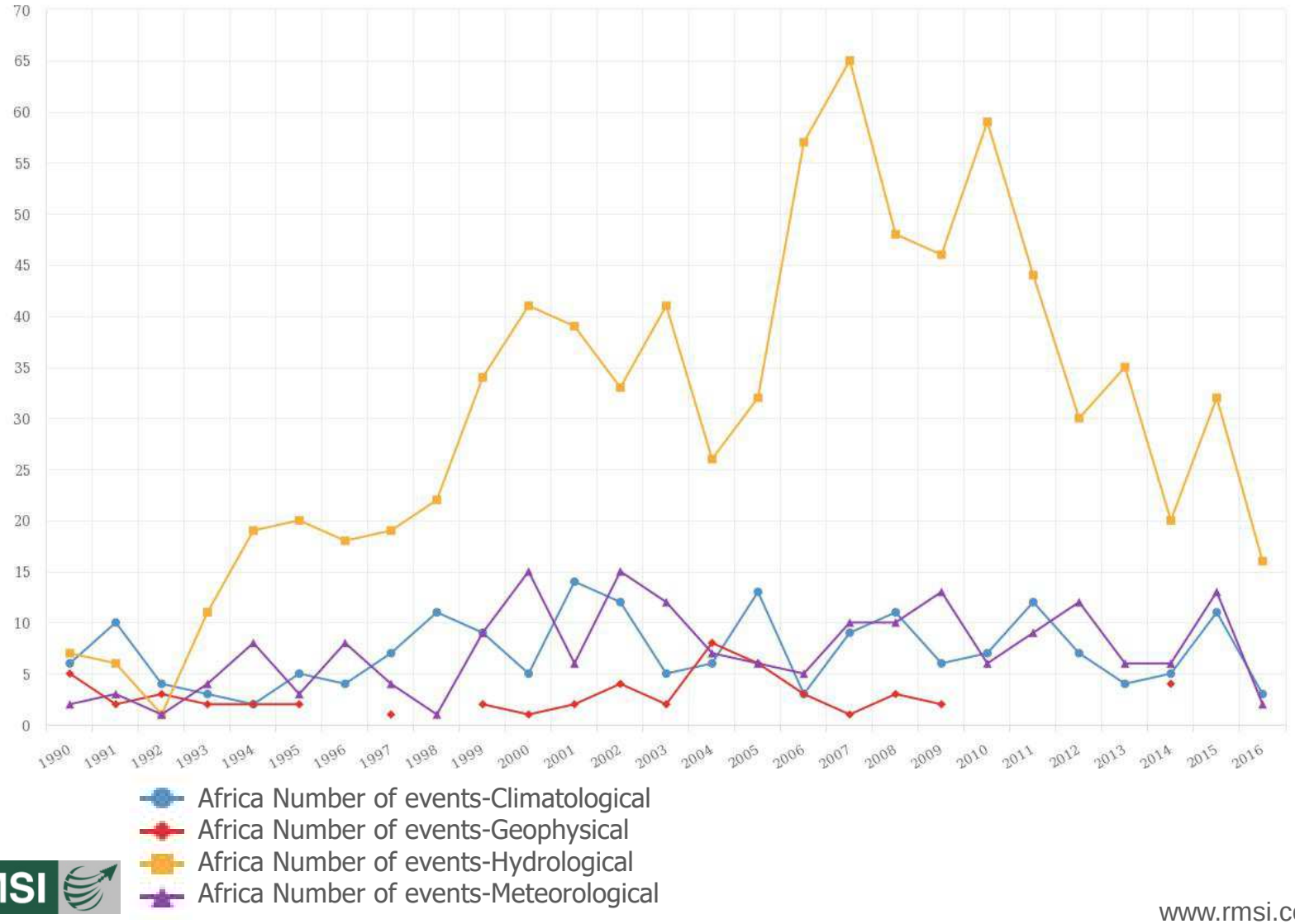
Managing Cat Nat Risk

Is it time to apply Cat Nat Modeling in decision making?

Pushpendra Johari
Vice President – Risk Initiatives
RMSI

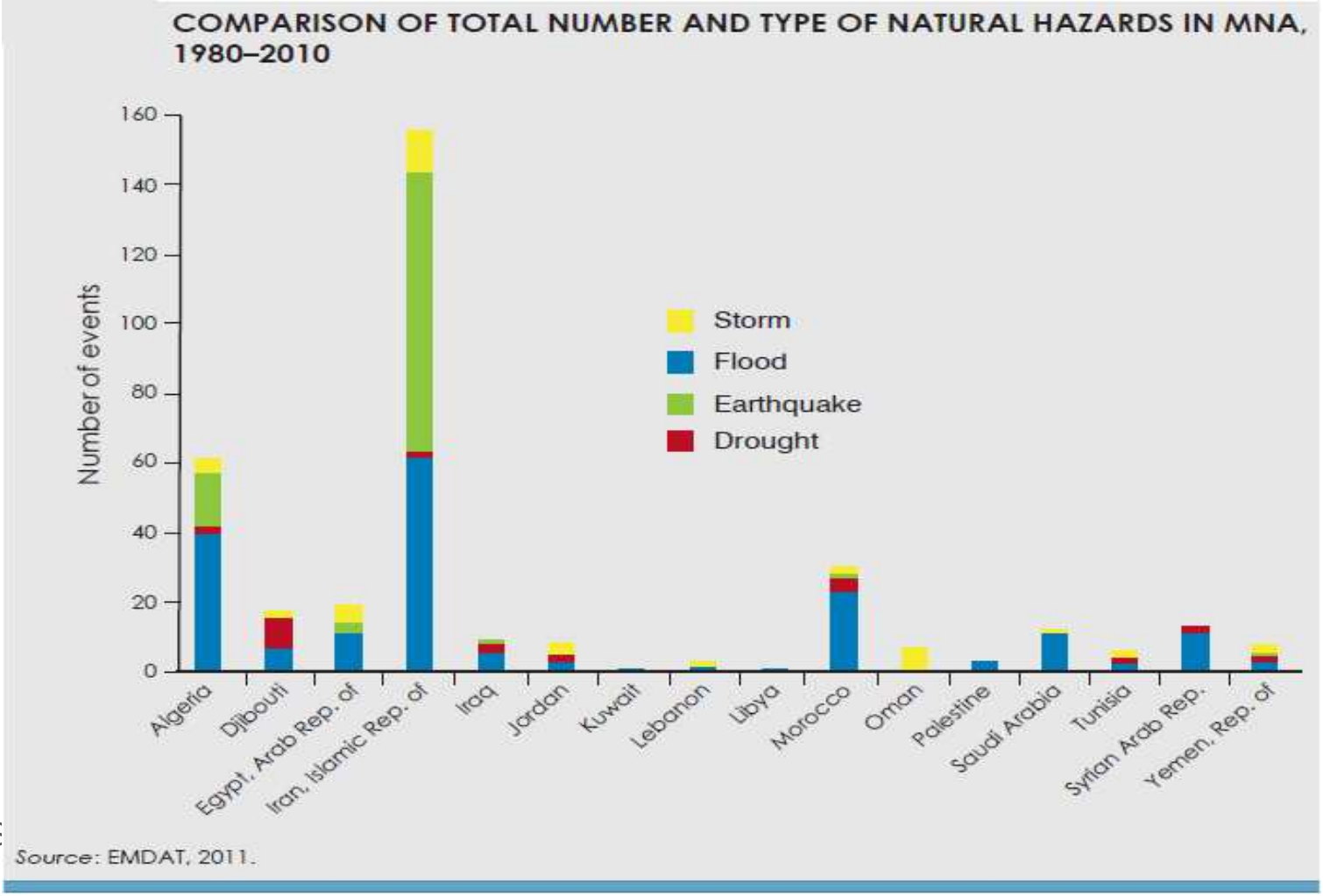
RMSI

Frequency of natural catastrophes is increasing



Source: United Nations ESCAP statistical database

Frequency of key natural hazards in MENA region



MENA is the world's second most vulnerable region to emerging climate-related risks

- Temperatures have been rising by 0.2–0.3°C per decade
- Temperatures will rise by 3–4°C by the end of the century — a significant 1.5 percent faster than the global average.
- As per various climate models, sea-level rise, as well as the frequency and intensity of hydro-meteorological hazards, will likely increase
- During 2010–30, Alexandria, Casablanca, and Tunis individually will face potential cumulative economic losses of US$1 billion from floods, earthquakes, coastal erosion, ground instability, marine inundation, tsunamis, and water scarcity
- Such disasters could expose up to 25 million urban dwellers
- These same climate change effects could lead to a 30–50 percent drop in water availability also

What do we decipher from all this?

- The frequency and severity of hydro-meteorological hazards is rising
- These hazards are contributing more to the economic losses compared to the Earthquake
- Urban areas are more at risk
- Climate change is predicted to increase the frequency and severity of hydro-meteorological hazards even further in the coming years

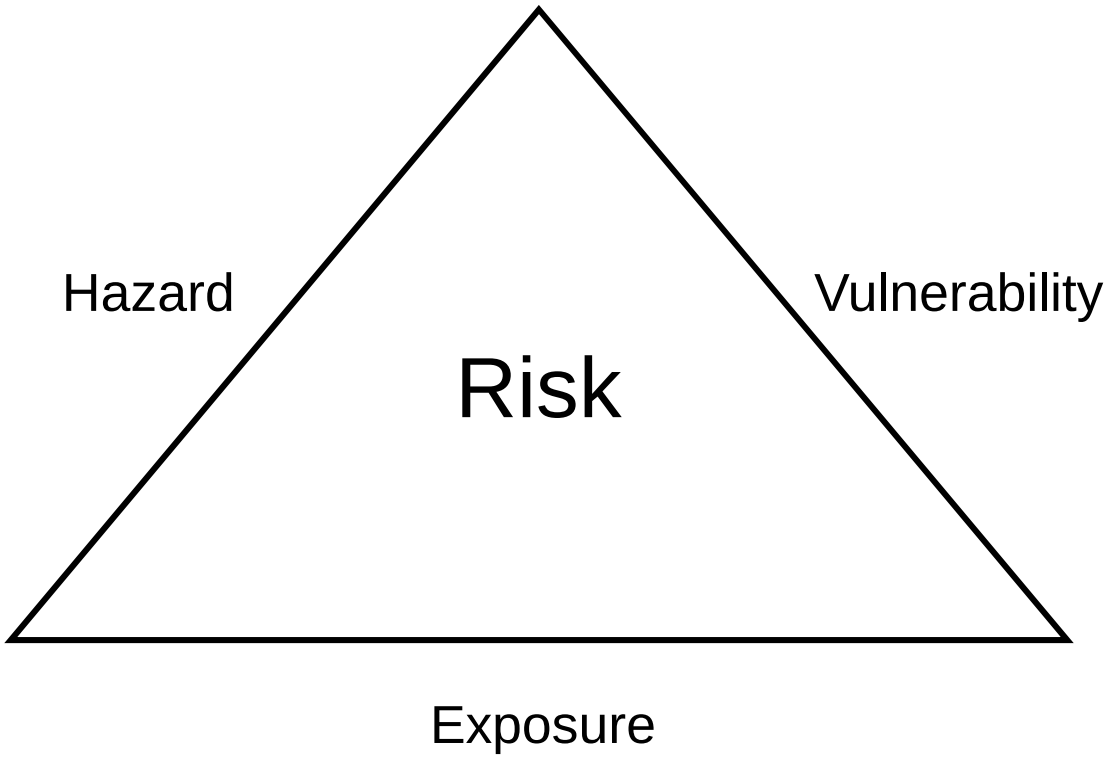
With growing insurance penetration in urban agglomerations the insured losses will increase

Key Operational Challenges of Property Insurers

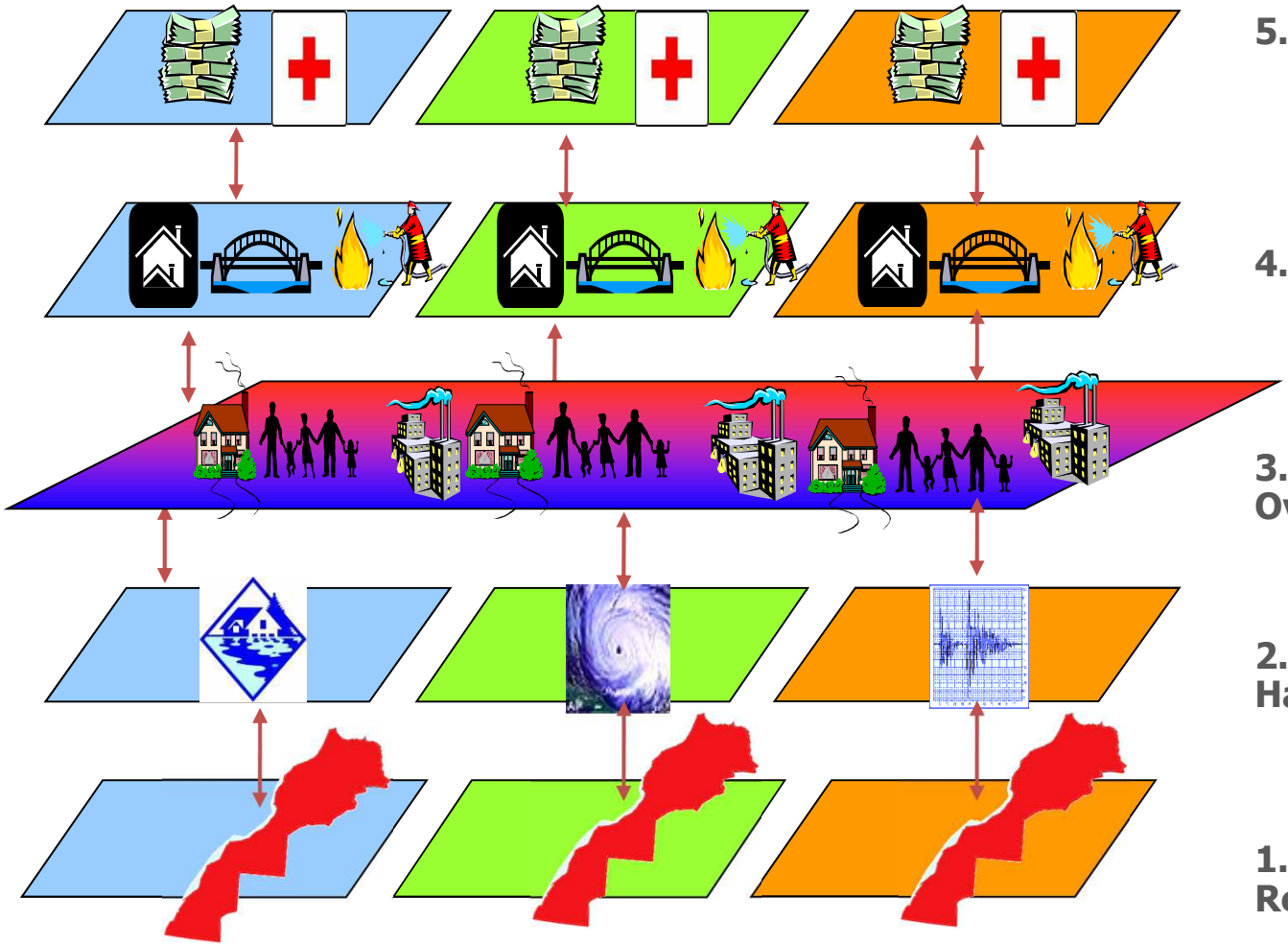
- Increase profitability
  - Competitive market leading to lower rates
  - Frequent losses from disasters
- Segment penetration
- Maintain reputation
- Improve risk management
- Develop new products for Catastrophe Insurance
    - Parametric insurance solutions
    - Optional simple Natural Catastrophe Insurance Policy
    - Mandatory property insurance in highly disaster prone urban areas, etc.
    - Setting up a pools
  - Key current challenges
    - Who would fund the pool and for how much
    - Categories of population to be covered
    - Coverage of such policies, etc.

How Can CAT NAT Modeling Help

Understanding the Risk



Cat Nat Risk Modeling



5. Estimate Losses

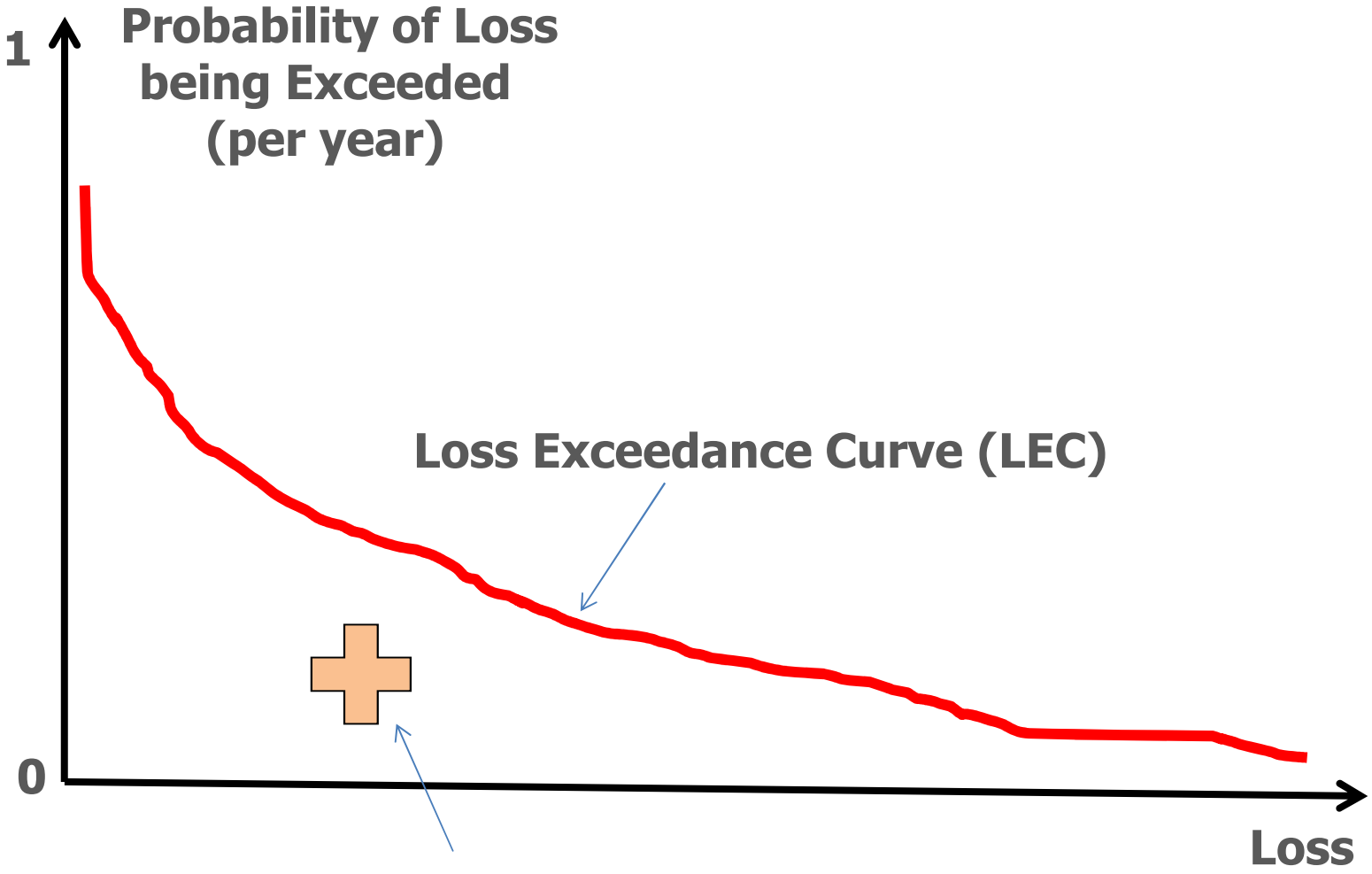
4. Compute Damage

3. Define and Overlay exposure

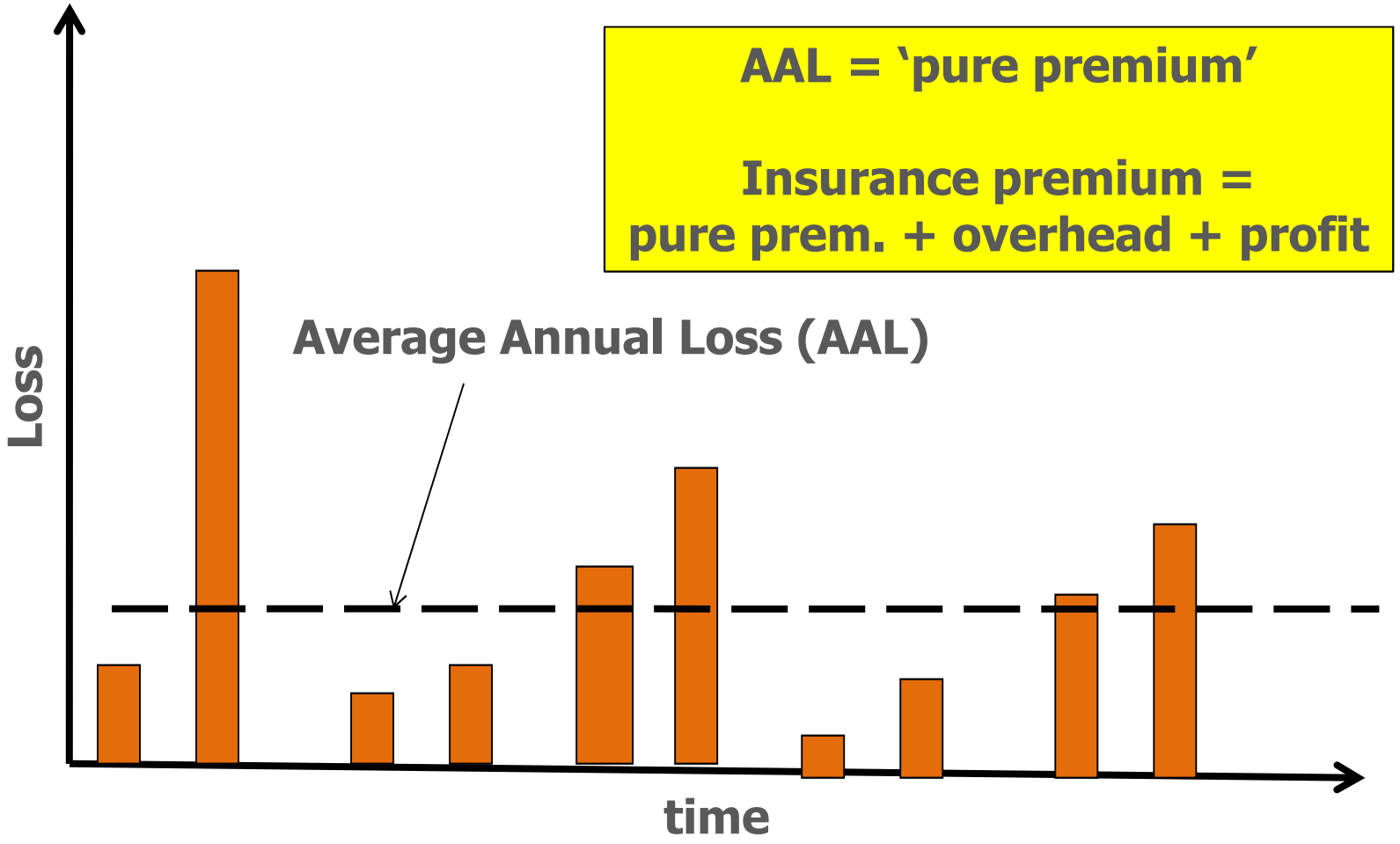
2. Characterize Hazard

1. Identify Study Region

Key Cat Nat Risk Modeling Outputs



Key Cat Nat Risk Modeling Outputs



"*stochastic*" ~ random occurrence

Other Cat Nat Risk Modeling Outputs

- Return period of hazard zones
- Return period PMLs
- Combined loss from multiple perils
- Loss cost (Loss per thousand exposure)
- Loss contributions by administrative boundaries (Region/province)
- Loss contribution by exposure type (residential/commercial/industrial)
- Impact on mega risks (ports/airports/refineries/etc…)
- What can reduce the losses – analysis of mitigation measures
- A pricing mechanism that is driven by
  - Understanding of risk
  - Gives benefits for application of mitigation measures

Application of modeling and analytics outcomes

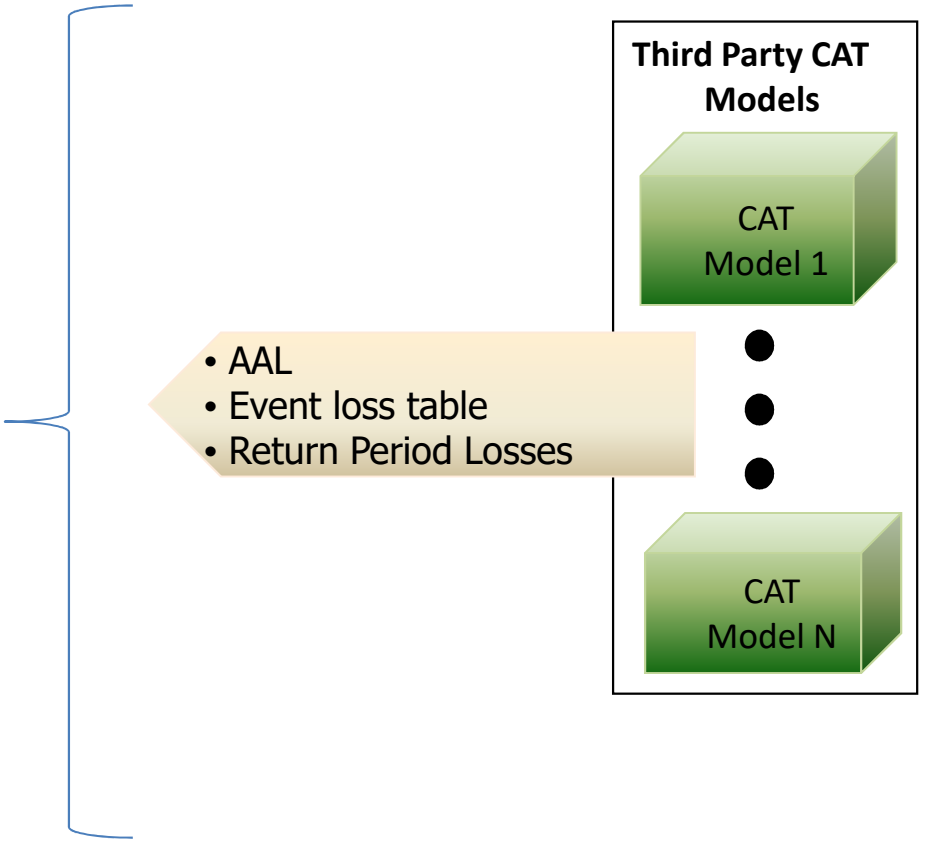
- Exposure modeling for optimal retention – optimal target portfolio design, setting accumulation limits, monitoring of limits
- Stress testing of net retention scenarios – PML scenarios, combined loss scenarios from different perils
- Development of Cat Nat Loss Cost by peril, occupancy and type of structure to move towards a risk based pricing
- Developing rating zones for risk based pricing
- Early intelligence on Cat Nat losses from events for better claims handling
- Detailed risk location and attribute information for better risk estimation
- Designing products based on model outcomes
- Designing parametric insurance products based on triggers derived using model outcomes
- Estimating the pool size

RMSI

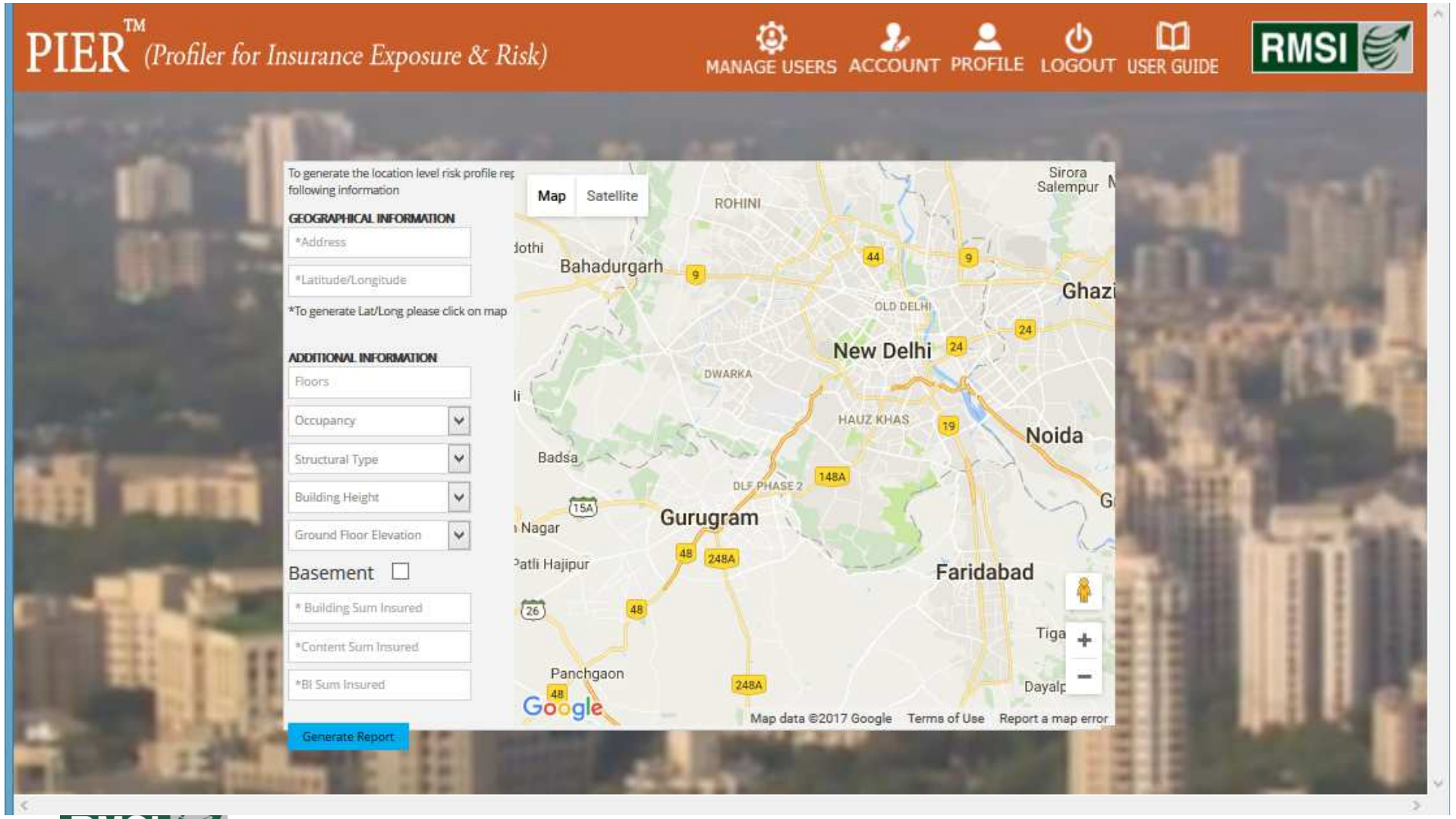
Traditional usage of Cat Nat Modeling

At the time of reinsurance purchase

- Insurer
- Broker
- Reinsurer



Use Cat Nat Model to price every risk



About RMSI

- India's leading disaster risk reduction and climate change risk consulting organization
- Employee resource base of over 2000+ employees
- Multi disciplinary team of eighty specialists in risk, insurance and natural resources domain:
  - Geologists, Hydrologists, Water Resource Experts, Meteorologists, Climatologists, Agriculture Specialists, Risk Modelers, Environment Specialists, Social Experts, Economists, Civil Engineers
- R&D Centres – Dehradun, Noida, Hyderabad
- International Subsidiaries – USA, Canada, UK, Australia and U.A.E
- Certifications & Accreditations – CMMi level 5, ISO 9001:2008, ISO 27001, IS0 14001:2004 and OHSAS 18001:2007
- 100% employee owned, debt free Indian company

RMSI's Global Experience in NAT CAT Risk Management

Extensive experience of creating risk assessment and models globally

Latin America
- Belize
- Nicaragua
- Haiti

Africa
- Morocco
- Malawi
- Mozambique
- Zambia
- Ethiopia
- Kenya
- Tunisia

Asia
- Lao PDR
- Philippines
- India
- Nepal
- Bangladesh
- Japan
- Mongolia
- Tajikistan
- Timor
- Papua New Guinea
- Maldives

Middle East
- Yemen
- Syria

Europe
- Romania
- Turkey
- UK
- Belgium

U.S

Hazards Covered – Earthquake, Tsunami, Landslides, Flood, Cyclone, Surge, Drought, Volcano, Fire, Windstorms

What should the industry do?

- Development of Cat Nat Loss Cost by occupancy and type of structure and use it for designing products
- Exposure modeling for optimal retention – optimal target portfolio design, setting accumulation limits, monitoring of limits
- Stress testing of net retention scenarios – PML scenarios, combined loss scenarios from different perils
- Early intelligence on Ca Nat losses from events for better claims handling
- Develop estimates of Pool sizes needed to cover Cat Nat
- Detailed risk location and attribute information for better risk estimation

RMSI

Delivering a world of solutions

Thank You

info@rmsi.com
www.rmsi.com