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Implementation of Model change and On Going Issues

- The What and Why

Someone has to decide when/which models to upgrade and implement

Tail chasing– won't know impact until you do – and people want to know impact before you do

- The How

Will you accept new answers as full and final replacement for old ones?

The “And so what?” game - what else will need to change?

Mixology 101

- The Communication

“I thought you already adjusted for all that new stuff?”

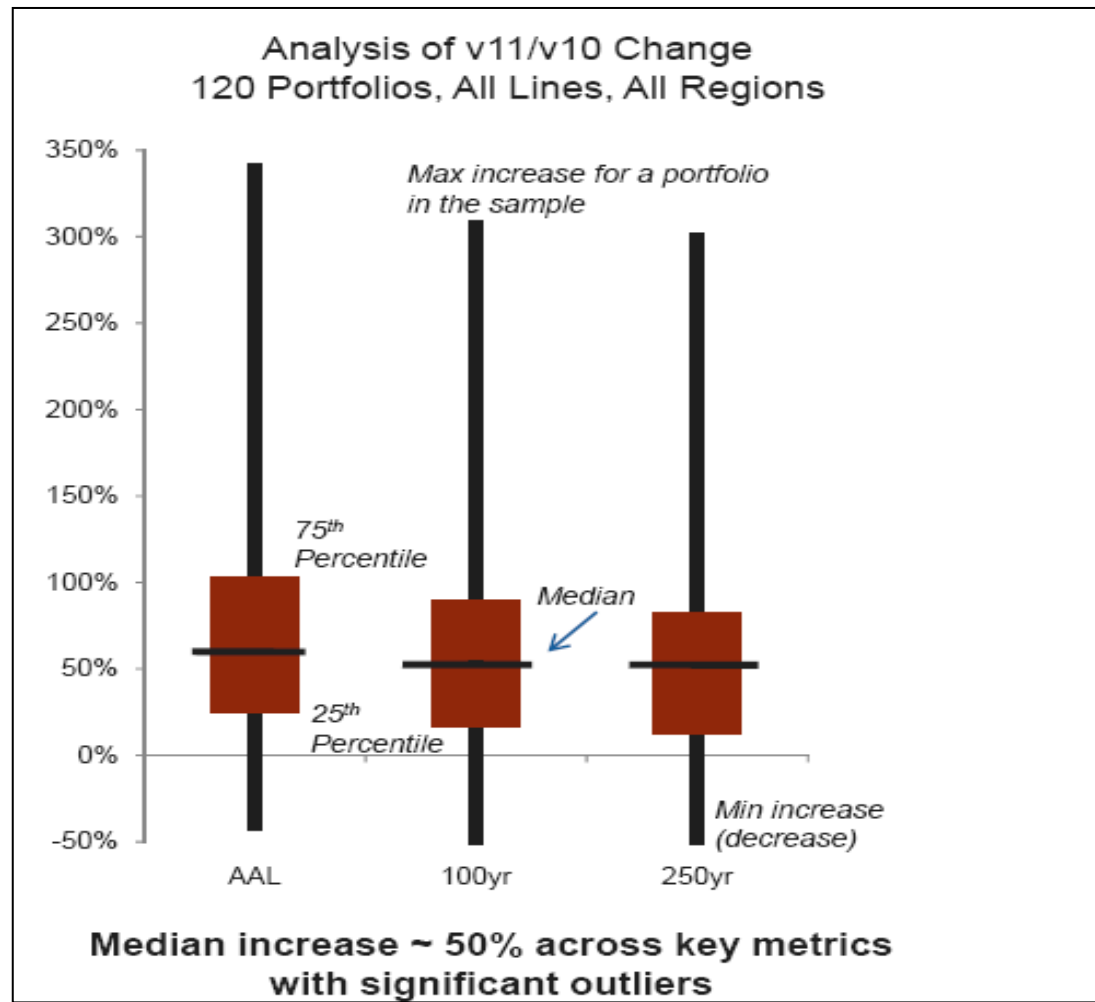
Dad – I want a new I –Phone.

Solutions presented – not problems

- Last major update of hazard (windfield) and stochastic (catalog) in 2003
- Last update of vulnerability in 2006 – both claims analysis and engineering analysis – {My translation is they now have experience and exposure rating}
- Also introduced a “medium term view” of risk in 2006
- **Update provides opportunity to address long-standing issues**
 - Inland filling – wind speed variation with distance from coast. Perceived to be too low in prior models. {Properties away from coast now get slammed}
 - “Model miss” – particularly for Ike. Industry and client loss estimates well below actuals
 - Improved eventset for better geographic coverage and more realistic “like” events for realtime/historical events – {how losses fill in was key driver}
- **Market has its’ own pace for adopting a new model – key renewal dates become a bit foggy**

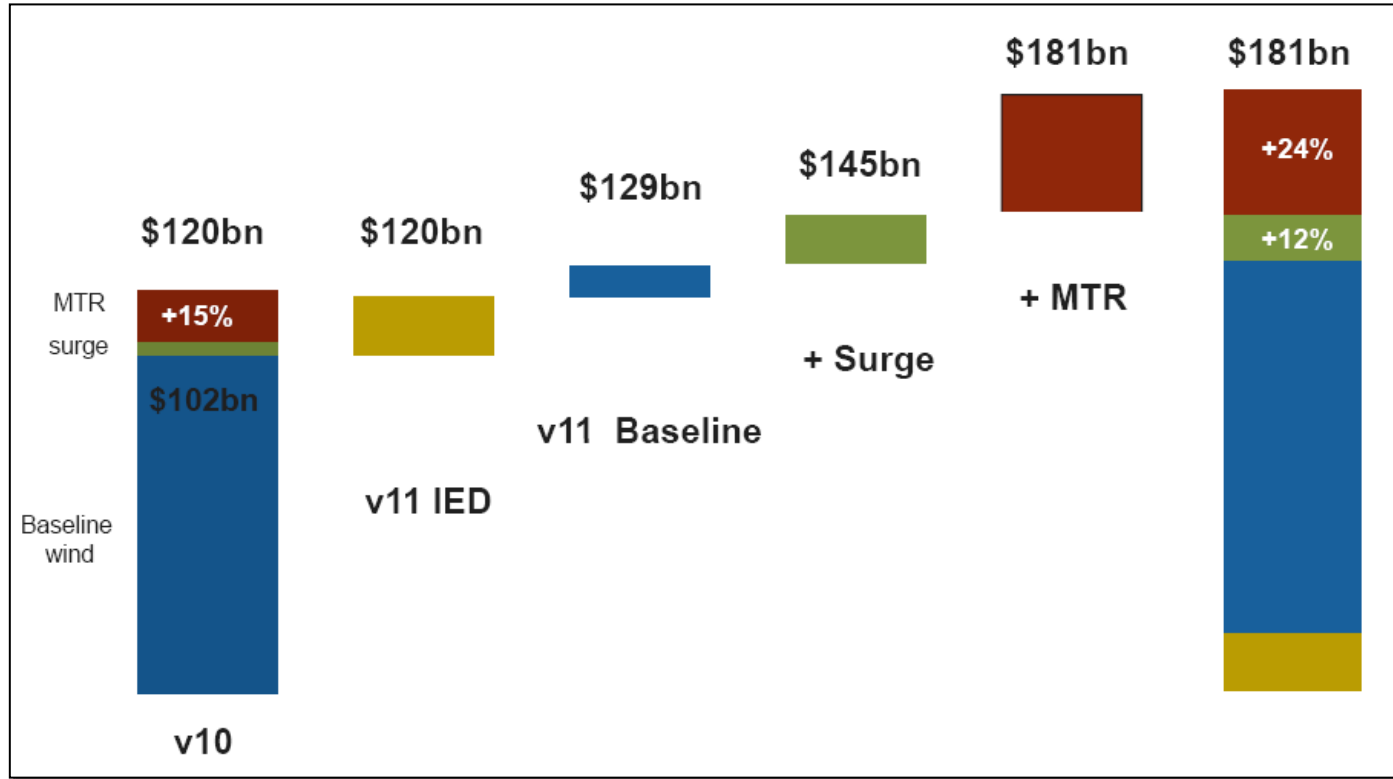
The What and Why

V11 Introduces Significant Increases in Loss Results for Most Books



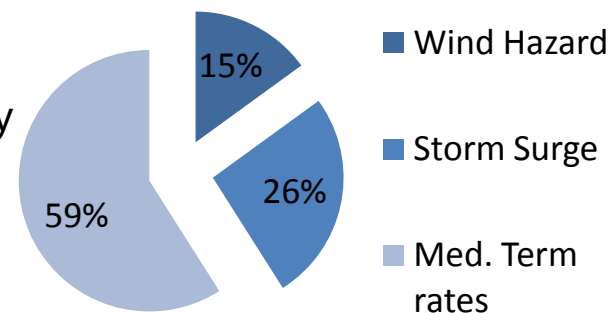
Source: RMS – Spring Conference Presentation. Based on RMS' analysis of sample portfolios

The What and Why Component Drivers of Overall Change – Industry 100 year Loss

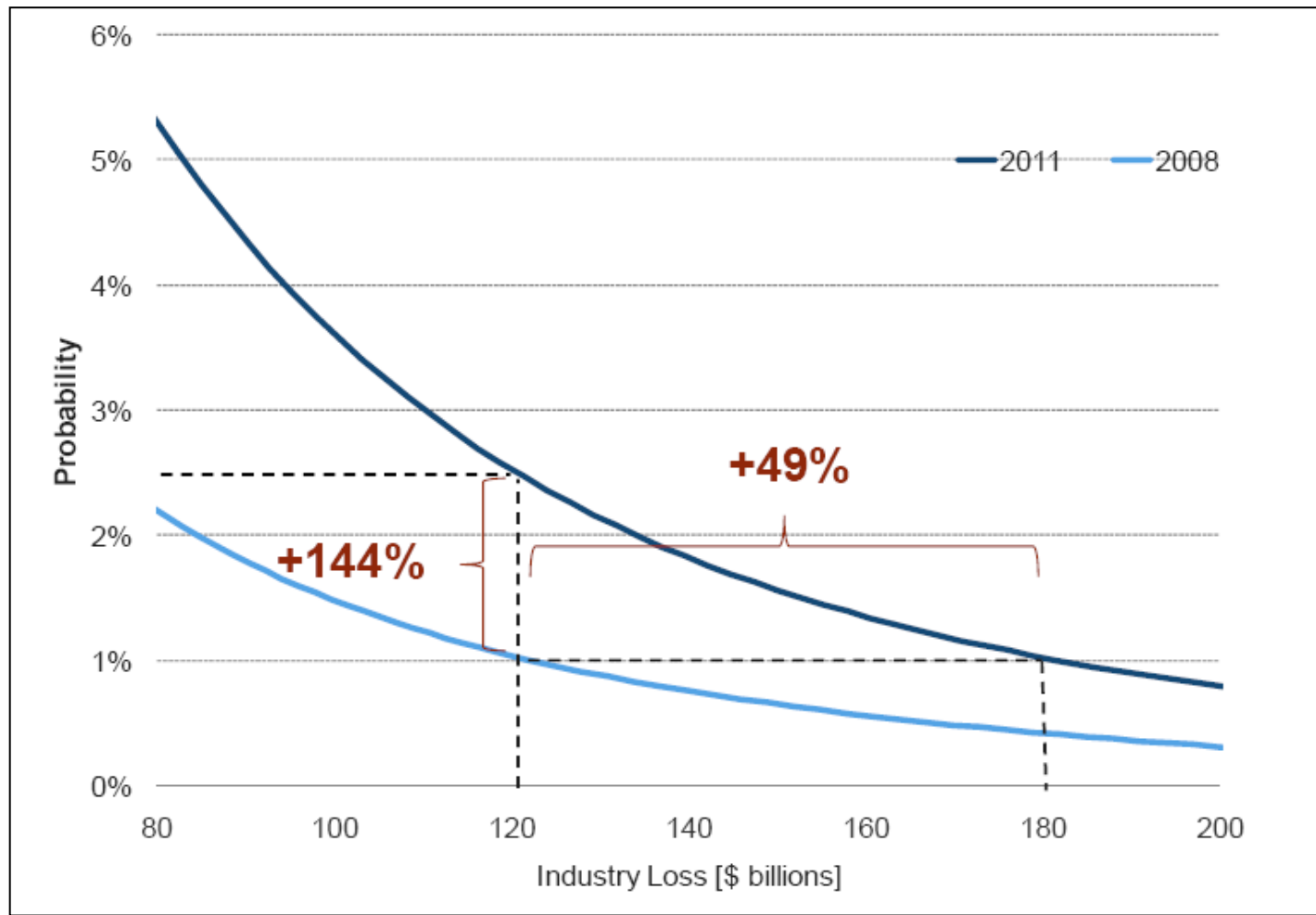


- Overall change – 51%

- Baseline includes wind hazard and vulnerability
- Storm surge at 100%
- Medium term rates for event probability

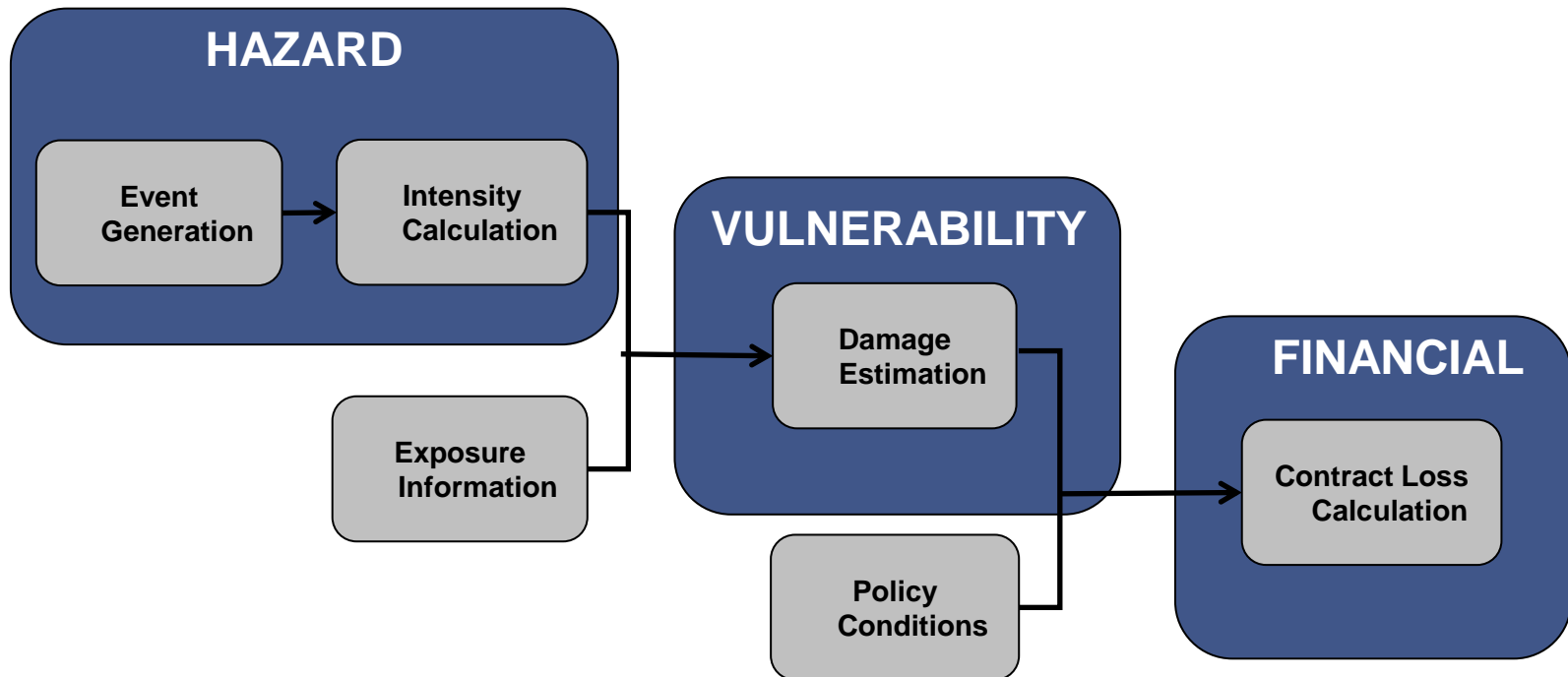


The What and Why RMS Version 11 Model Change for Industry – All Lines



The How

Overview of RMS Model – Summary of Component Changes



Version 11 includes changes to hazard and vulnerability components

- Event generation - new catalogs with long term and medium term rates
- Local intensity – new inland filling and windfield models, updated surface roughness near coast
- Vulnerability - lessons learned from Ike, reanalysis of 2004/2005 claims data
- Also includes a new storm surge model

RMS

- Uses Sea Surface Temperature (SST) forecast model as baseline for predictions
- Includes both Atlantic and Indo-Pacific climatology
- From SSTs, develop rate models to determine frequency
- Uses RMS track model with new SSTs and rates to regionalize landfalls
- **Pros:**
 - SST highly correlated with rates
 - Uses multiple rate models to develop best estimate
- **Cons**
 - SST model highly uncertain
 - Landfall rates not entirely dependent on number of events
 - Track dynamics may change with SST

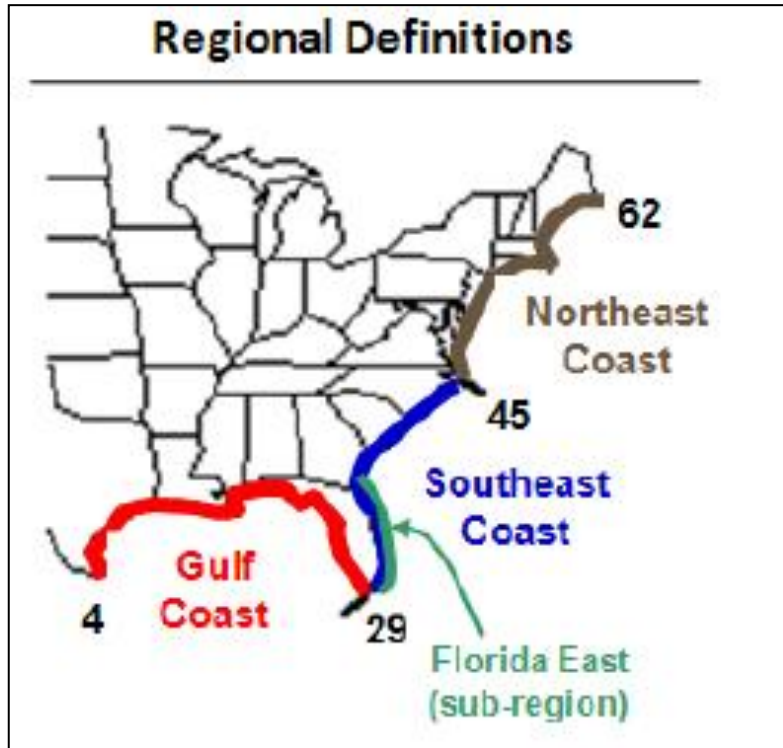
AIR

- Uses historical record from 1900 - 2007
- Stratifies historical record into warm years (60) and cool years (48)
- Develops distributions of key parameters
- Sample from distributions in a bootstrap simulation
- **Pros:**
 - Does not rely on simulating SST directly
 - Will not deviate substantially from historical climatology
- **Cons**
 - Limited historical record overall
 - Limited information for more detailed regional analyses
 - Track dynamics may change with SST

The How – Mixology 101

Comparison of RMS and AIR MTR Models

- From analysis of data in AIR, RMS whitepapers: Increase in landfall rates



	CAT 1-2		CAT 3-5	
	RMS MTR	AIR WSST	RMS MTR	AIR WSST
Gulf	16%	4%	33%	10%
SE	16%	15%	58%	29%
NE	18%	1%	25%	1%
FL East	17%	13%	61%	13%

- Overall Increase in US hurricane landfalls
RMS : 21%, AIR : 10%
- RMS estimates for Gulf is outside the AIR 95% TCI confidence interval, SE, NE and US rates are within the AIR bands
- Biggest differences between models are in the regional estimates of landfall frequency and intensity – you don't need to know why**

The Communication

- For reinsurers, there are at least 2 approaches I know of to adjusting –
 1. Those who already had adjustments for perceived weaknesses in models and would likely now dial back those adjustments
 2. Those who had no adjustments – liked knowing that they had apples to apples coming from model – used ROE or other target to separate amongst deals. Have a somewhat easier implementation exercise it would seem.
 3. Likely there are some in between

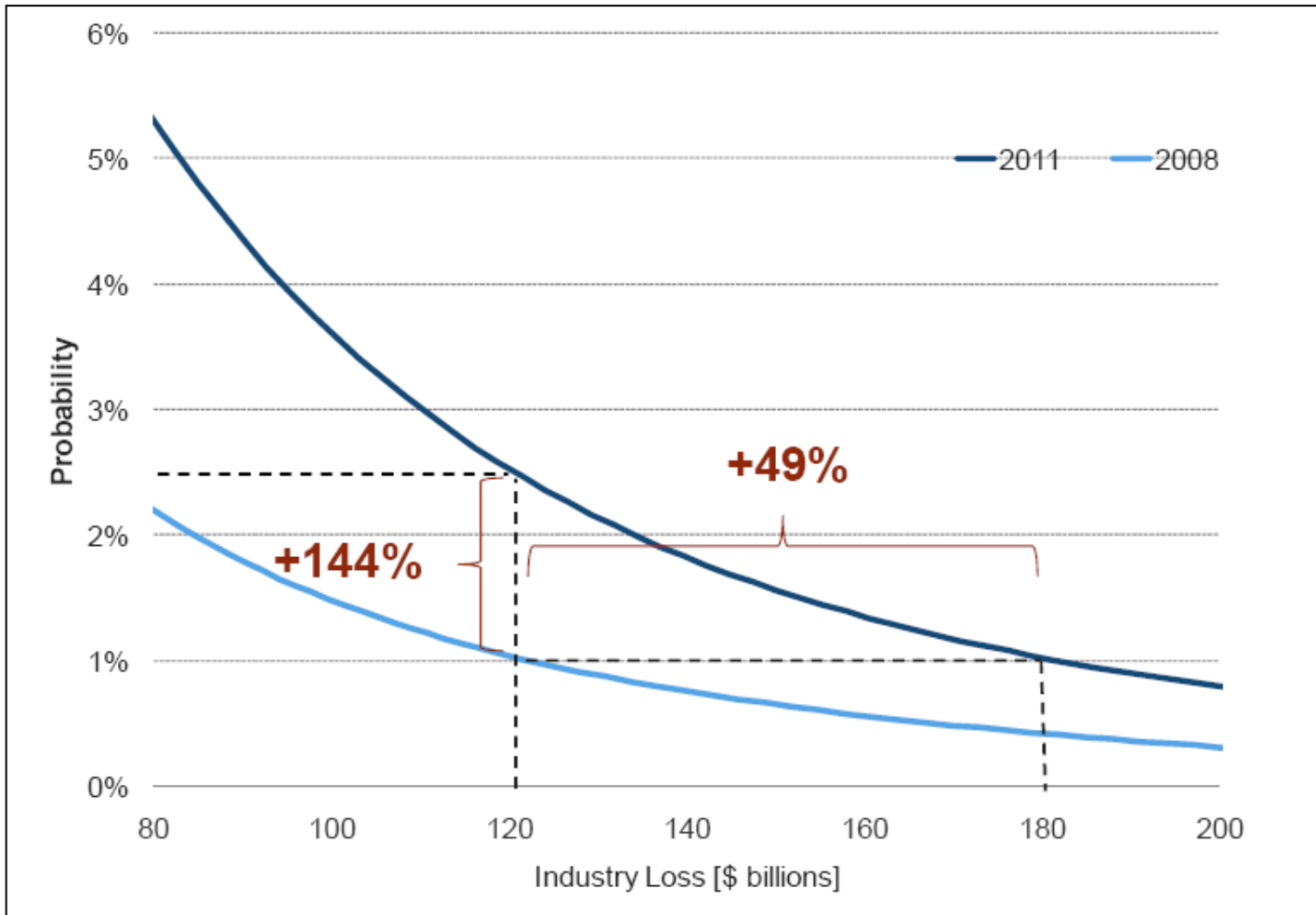
When does it seem like you are just asking for a new I- phone?

1. Think of your daughter asking for a new I phone and the answer to why you need it?
2. When you did not do the “Now So What” exercise.

I love slide 14 – as simple as it gets in portraying the communication dilemma of implementation. A 1 in 100 loss went up 50% - but the old 1 in 100 went up 150% in terms of probability. Is it severity increase? Is it frequency increase? Is it frequency of severe things? The communication of this slide to senior management would tell you a lot about a company and their approach.

Presenting problems is not worth much – solutions are what make you valuable

The Communication RMS Version 11 Model Change for Industry – All Lines



The Known to the Unknown

Unknown Knowns

Known Knowns



Identification

Quality

Exposure data - personal
 Damagability rates - HU, WF, Tidal wave
 Historic data - events - FLA and Gulf

Exposure data - commercial

Damagability rates - EQ and CS
 Historic data - events - Ex Fla and Gulf
 Historic data - demographics

Business Interruption
 Identification

Weather patterns
 Activity vs. Landfalls

What's the worst that can happen?

Where are the workers - WC exposure

Damagability rates - Volcano, EQ, landslide, flood

Government re-invention

Historic data - things that have not happened ever

Correlation of events - aggregation effect?

Damagability rates - sunspots, asteroids, Godzilla, EMP

Lines of business not normally thought of - Pet insurance, Dentists insurance

Unknown Unknowns

Known Unknowns

Modeling cycles?

- Annual updates
- 2- 5 year re-visit of claims (experience rating)
- Who knows how often an update of engineering data (exposure rating)
- 1-2 year break in period for “harsher” models – immediate for “lighter” models
- So is it a classic lagging indicator?
- Rating agencies are still pretty important – might be one of the main cycle drivers

ERM Reporting

“A” Number is different than “The” number

- Example – Lloyds Solvency II Cat Model Validation presentation – 5/3/2012
- Key question that must be answered overall, “Does the model provide a valid assessment of your companies cat risk?”
- Assess materiality – Type of process, level of process, proof of process
- Testing Sensitivity – How sensitive, how did you test, document the discussions
- Levels of Validation – Cat as percentage of business, are there degrees of cat exposure (region/peril), are you using aggregate or detailed model
- So – imagine you use experience and exposure rating processes, allow the main assumptions a 20% range around the mean and use both an aggregate and a detailed version of the models. Can you deliver “The” number? Was it “right” when you change it next year but stay within the previous range?