

Innovations in Modeling Cyber Risk

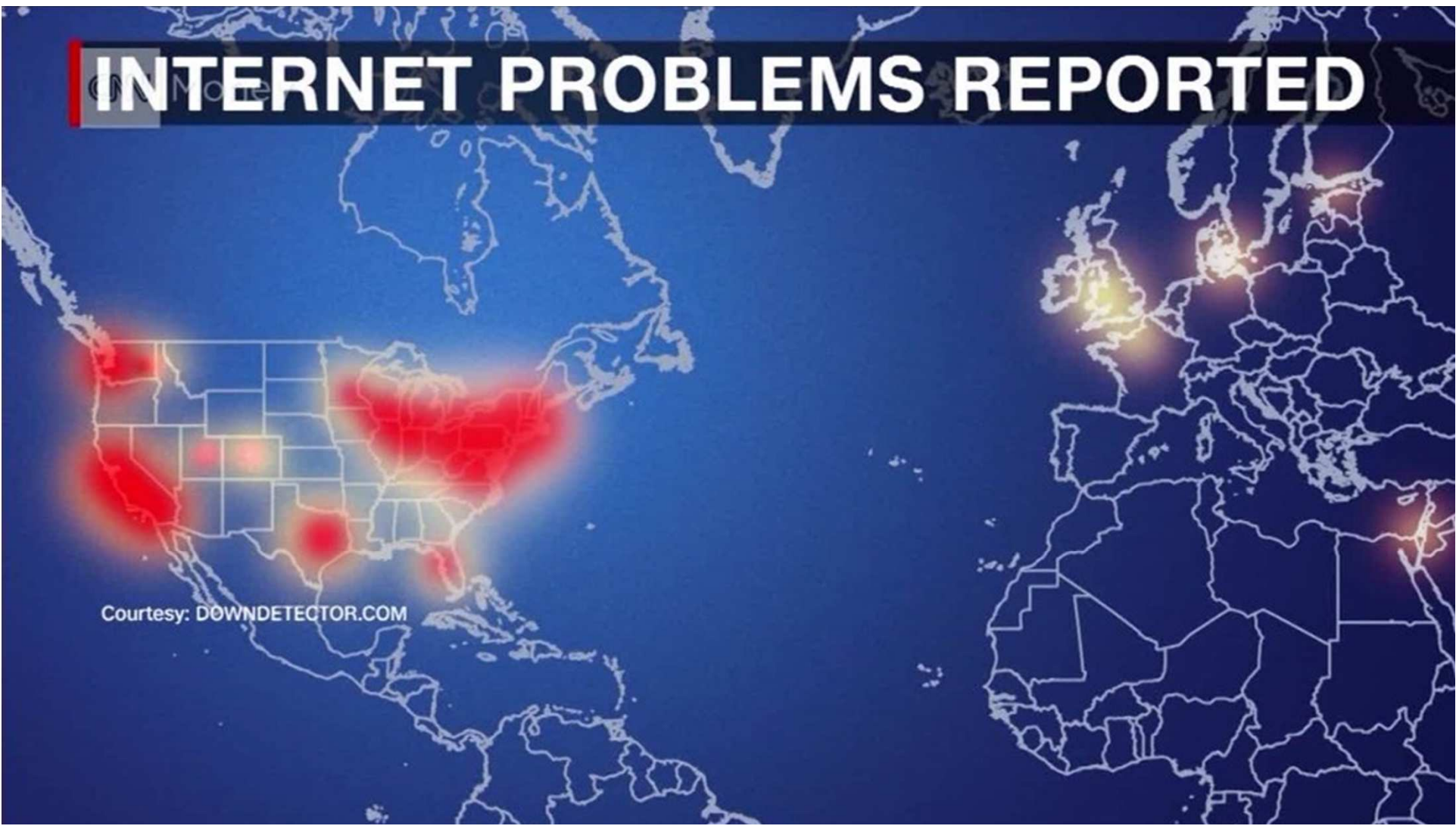
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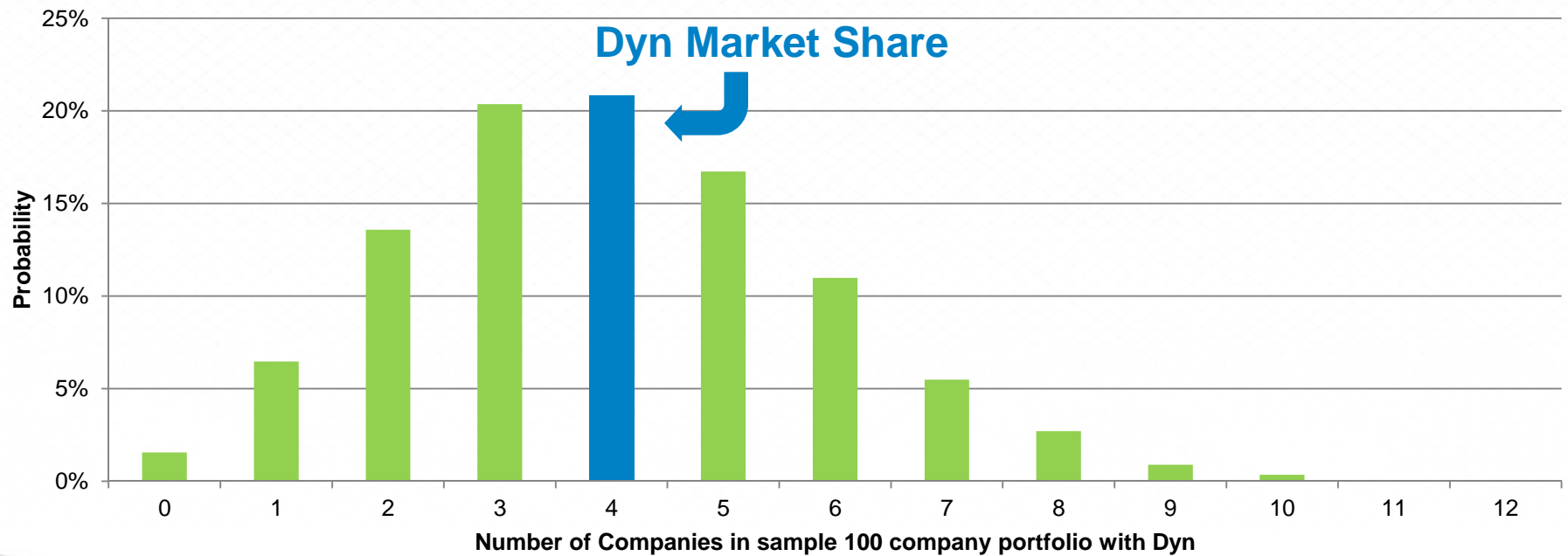
INTERNET PROBLEMS REPORTED



Courtesy: DOWNDETECTOR.COM

Aggregation Uncertainty Limits Cyber LOB Growth

Most Portfolios Can't Be Managed Around Market Shares



GDPR Will Increase Demand for Cyber Insurance

The cost of doing business will increase

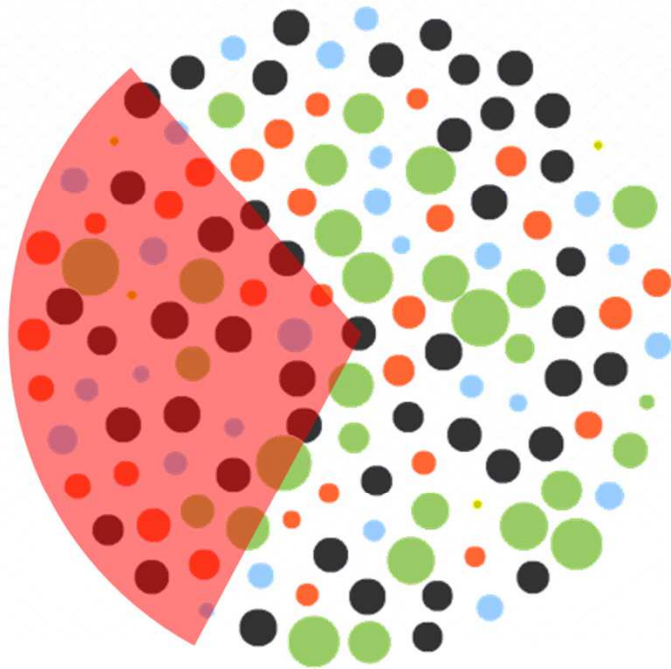
- Breach notification requirements
- Right to access
- Right to be forgotten
- Data portability
- Privacy by design
- Data protection officers

Significant fines for non-compliance

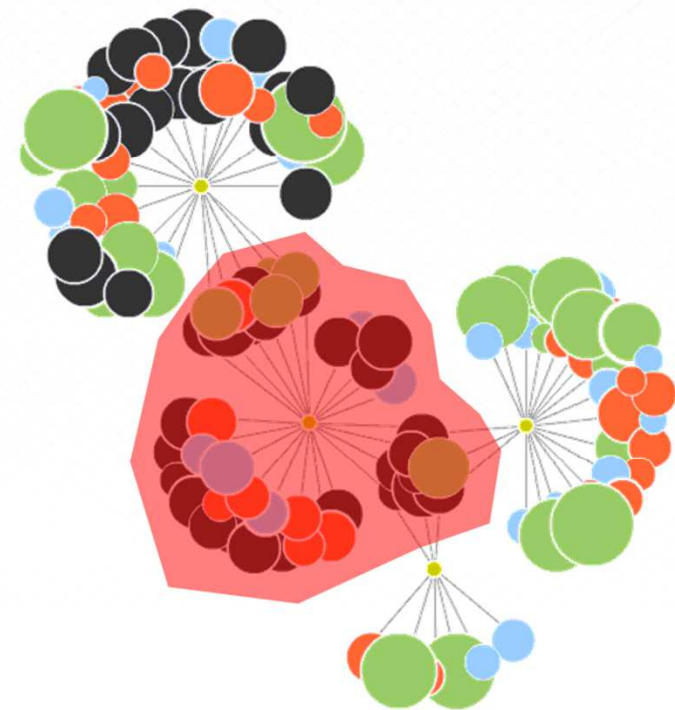
€20 Million
or
4% of Turnover

Detailed Accumulation Approach Provides a More Accurate View of the Risk

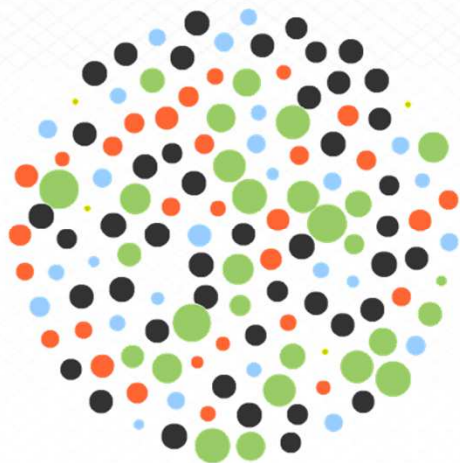
Market Share Approach



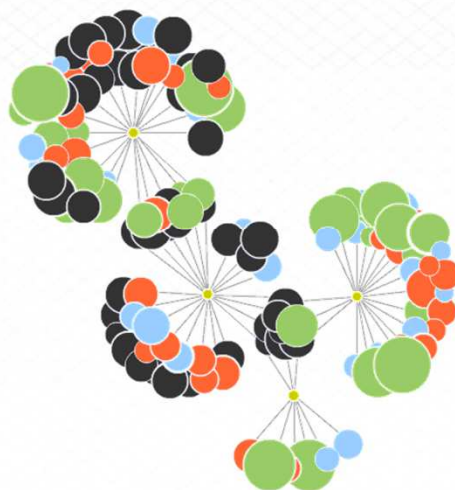
Detailed Accumulation Approach



Detailed Accumulation Modeling Process



Start:
Uncorrelated view of
exposures in
portfolio



Step 1:
Organize exposures
around aggregation
points



Step 2:
Identify exposures
that will be impacted
by aggregation
scenario



Step 3:
Calculate ground-up
and insured losses
for scenario

Any Commercial Policy Can Be Modeled



**Standalone
Cyber**



**Cyber
Endorsements**



Silent Cyber

Model Flexibility Provides Transparency



Targeted Organisations



Event Duration



Vulnerability Assumptions



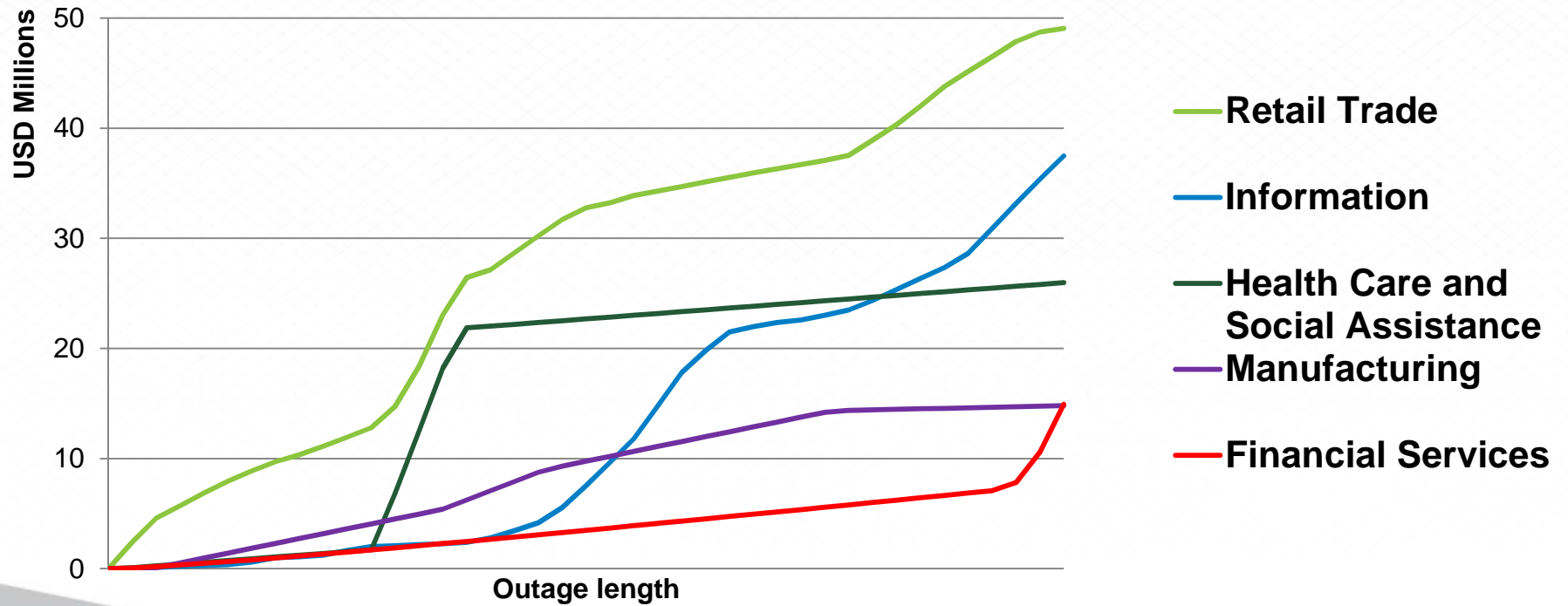
Recovery Assumptions

Uncovering the Virtual Supply Chain

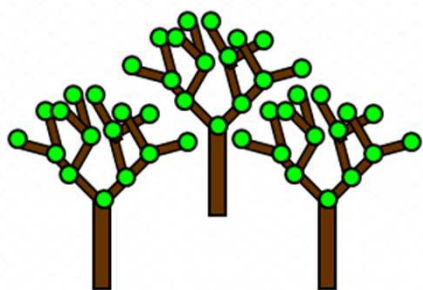


Scenario Analysis Reveals Key Information About a Book

Cloud Breach Scenario: Losses Over Time By Industry



Machine Learning Informs Probabilities



**Decision
Forests**

Claims Data

**Breach
Predictors**

Cyber Security Features: Rating Variables in Probabilistic Model



**Antivirus
Effectiveness**



**Intrusion
Detection**



Email Filters



File Sharing



Firewall Health



**Security
Ratings**

Questions

