

The Internet-of-Things and Causal Analytics

Actuarial Implications

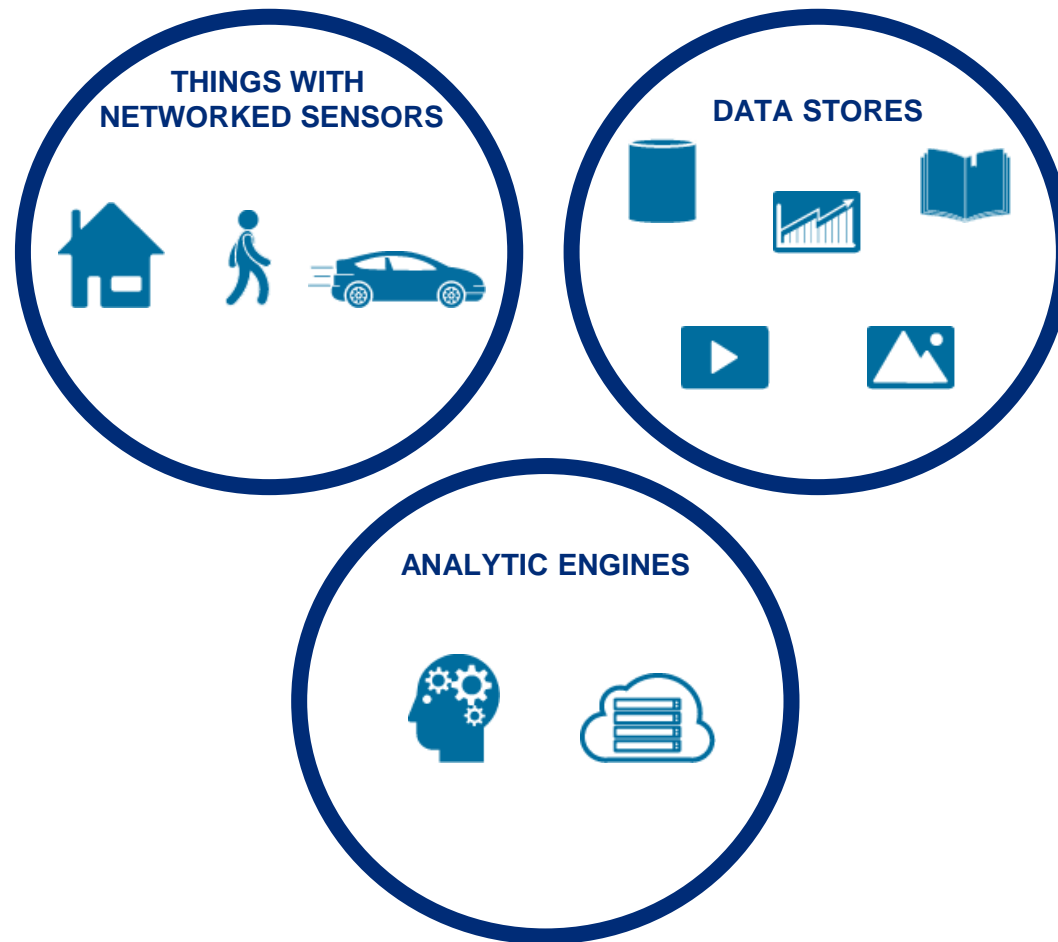
CAS In-Focus Seminar 27 October 2016

Don Mango, FCAS, MAAA
Vice Chairman, Enterprise Analytics
Guy Carpenter

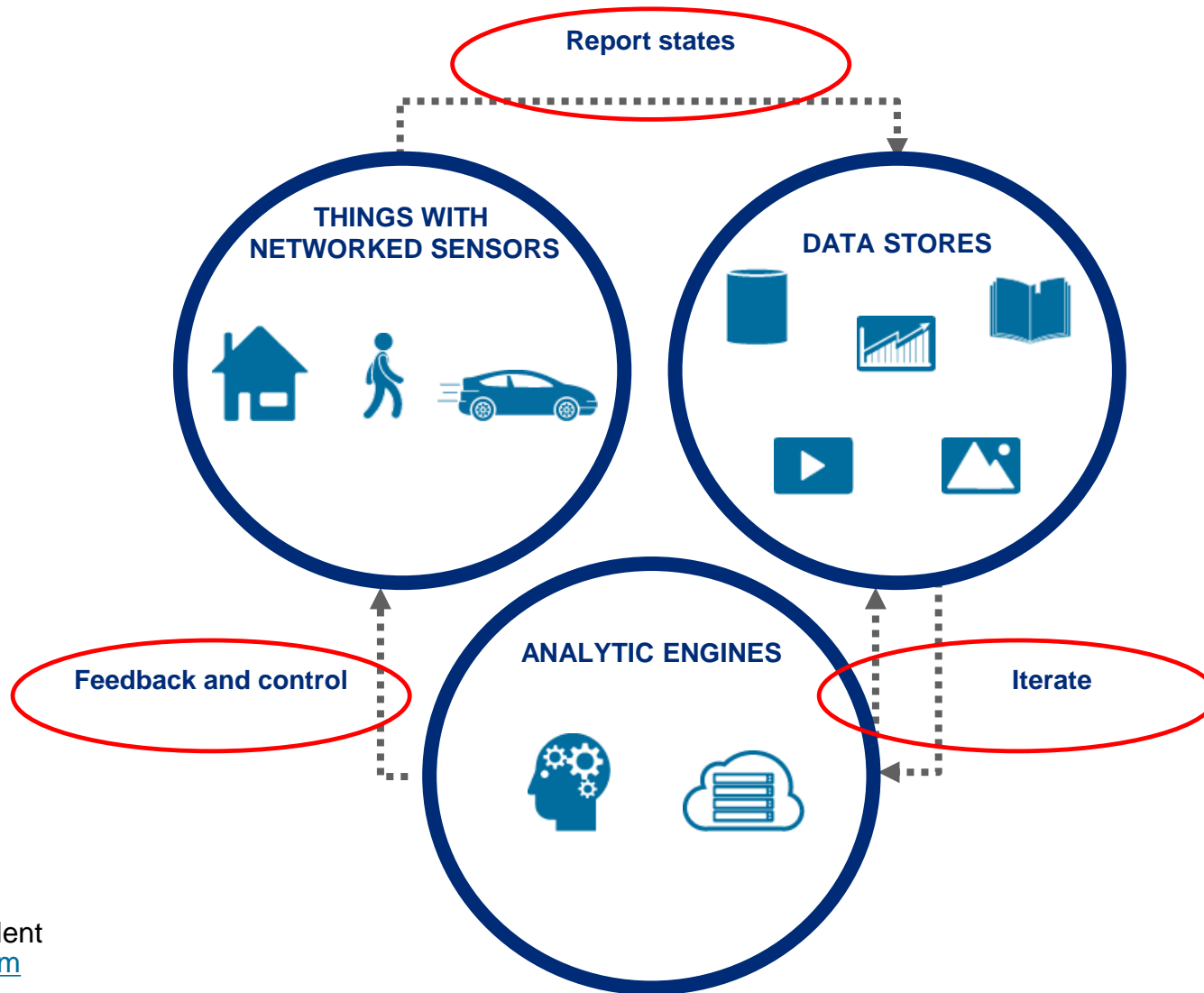
Agenda

- Why actuaries need to be concerned – Causal Analytics (Don)
- In-depth on IoT and Capabilities available today (Phil)
- Q&A (You!)

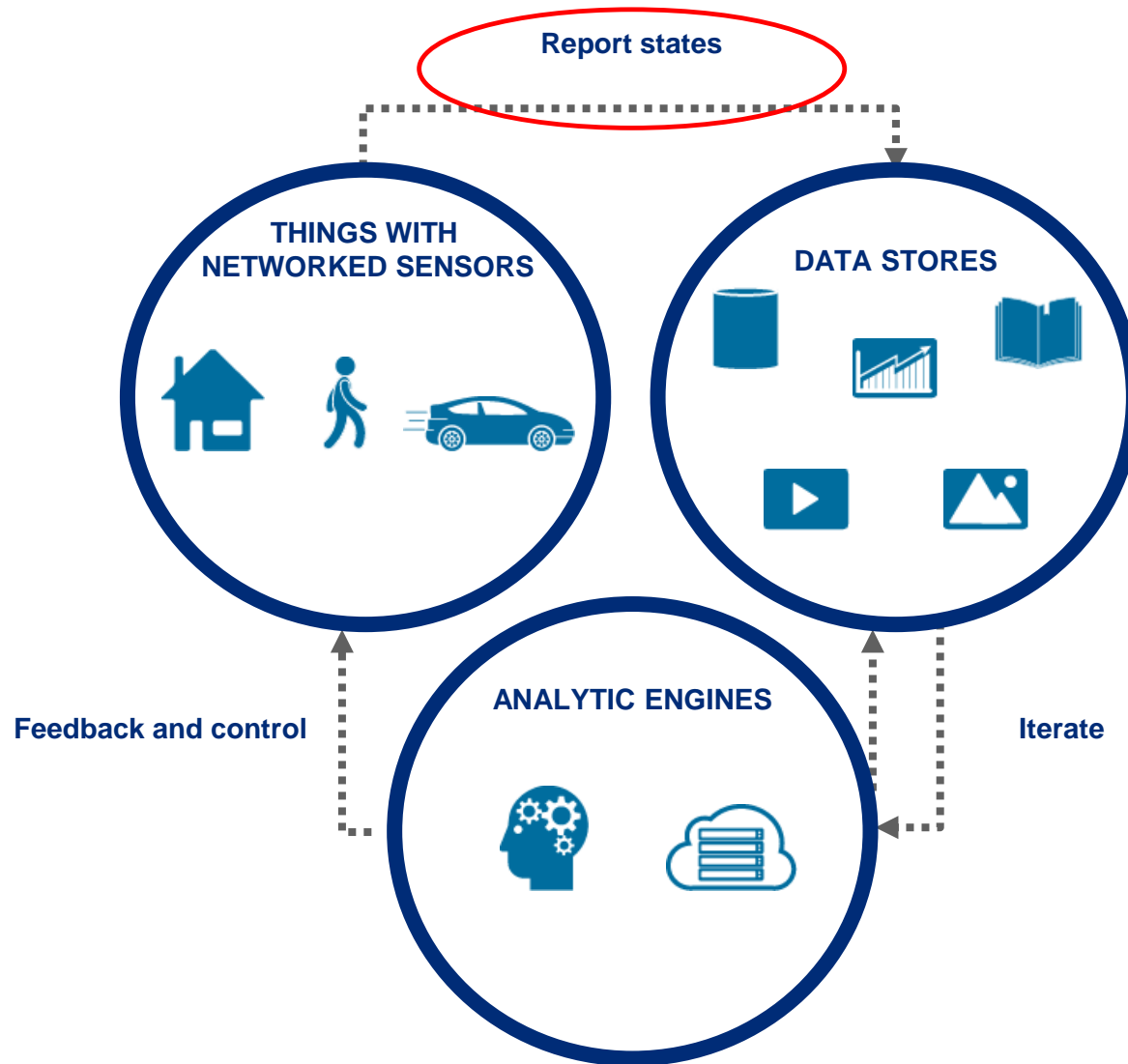
The Internet of Things (IoT) has three constantly interacting components



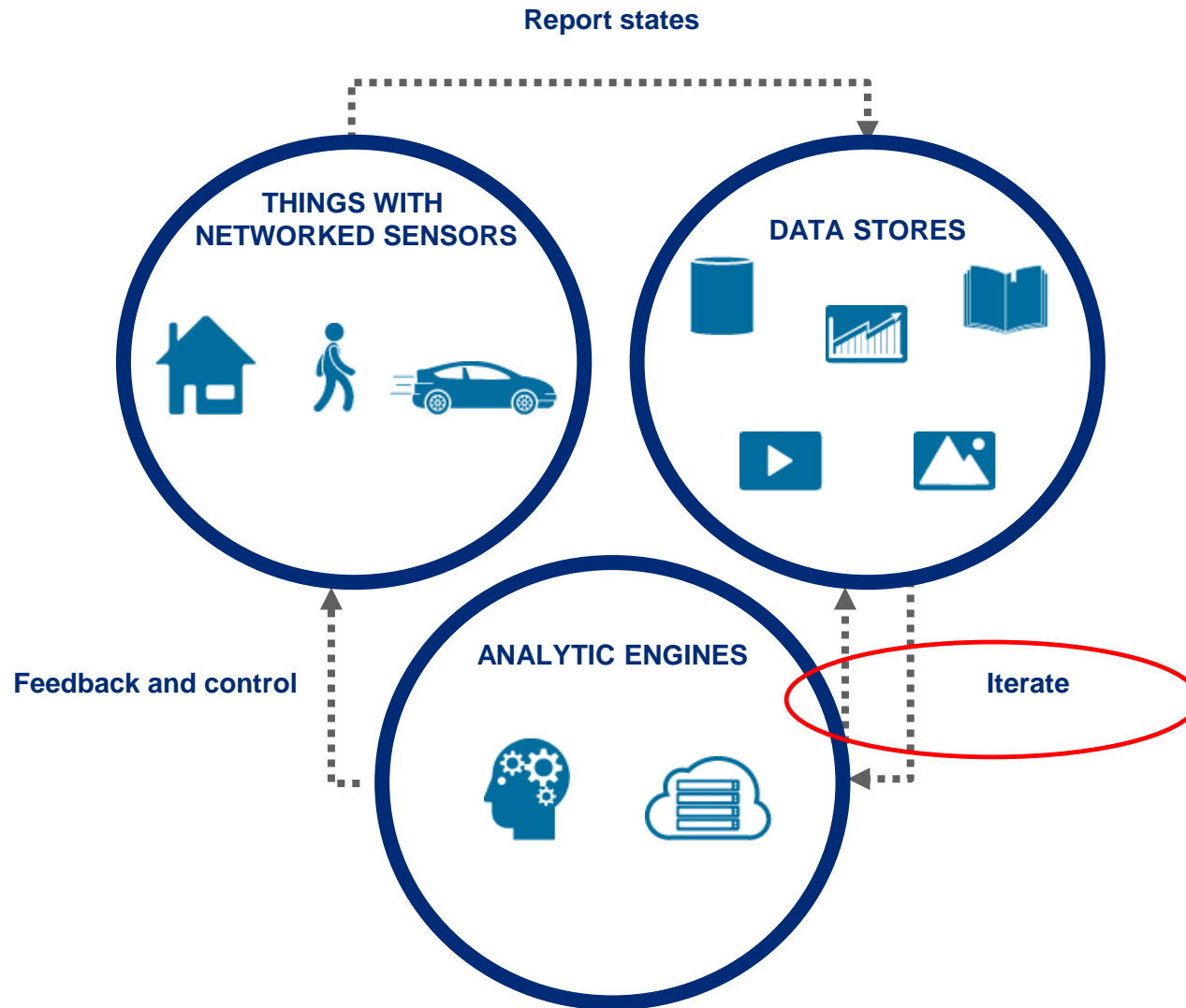
The IoT creates value through what connects the three components.



Internal state and external status data and information provides more accurate, and often previously unavailable, views of hazards and risks

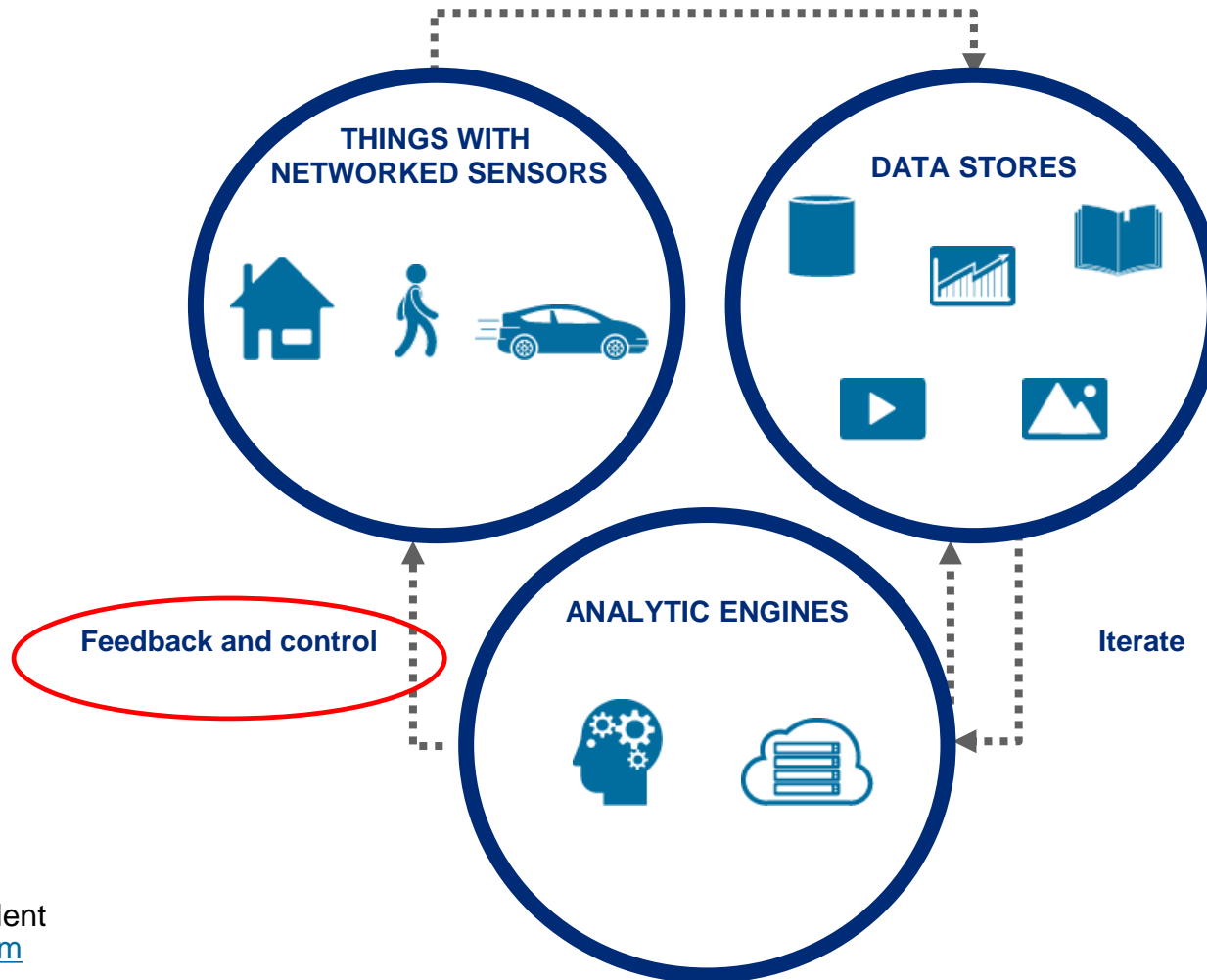


Analytically driven findings look backward to improve pricing, underwriting, and claim decisions

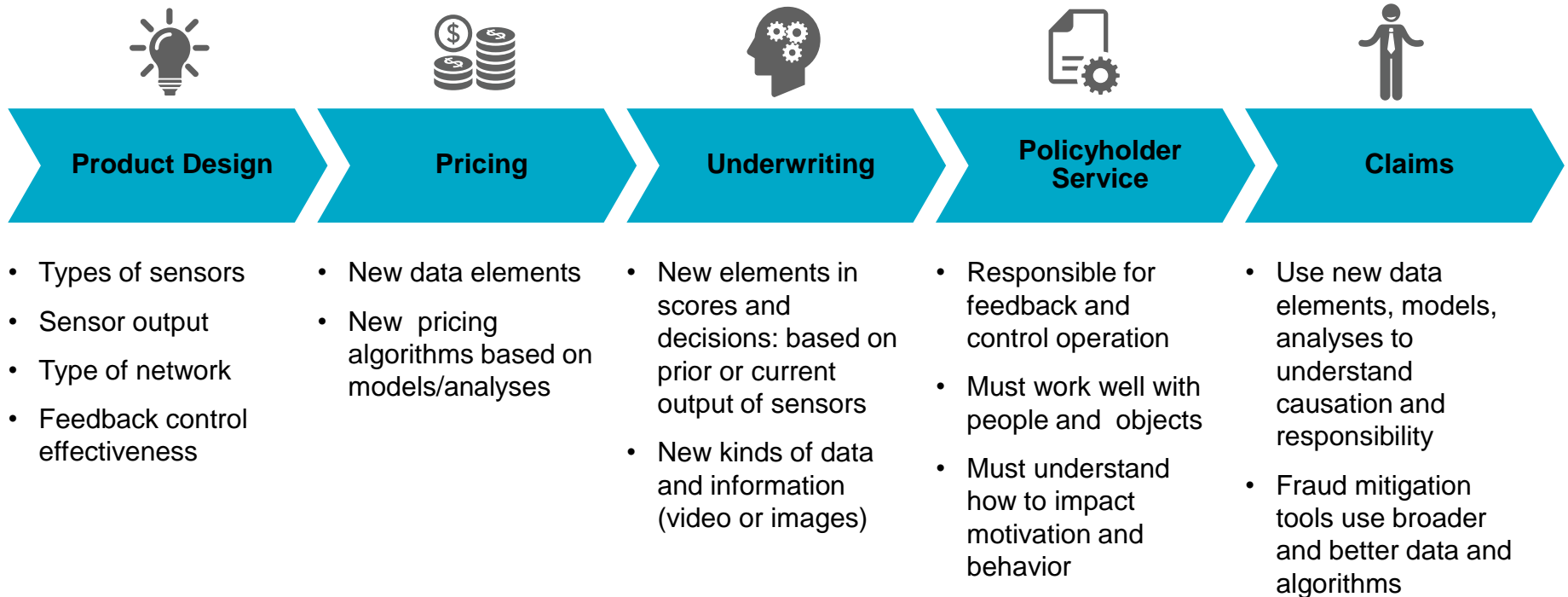


And analytically driven findings look forward—using feedback and control processes to command things or request people—to change loss-related behavior and performance

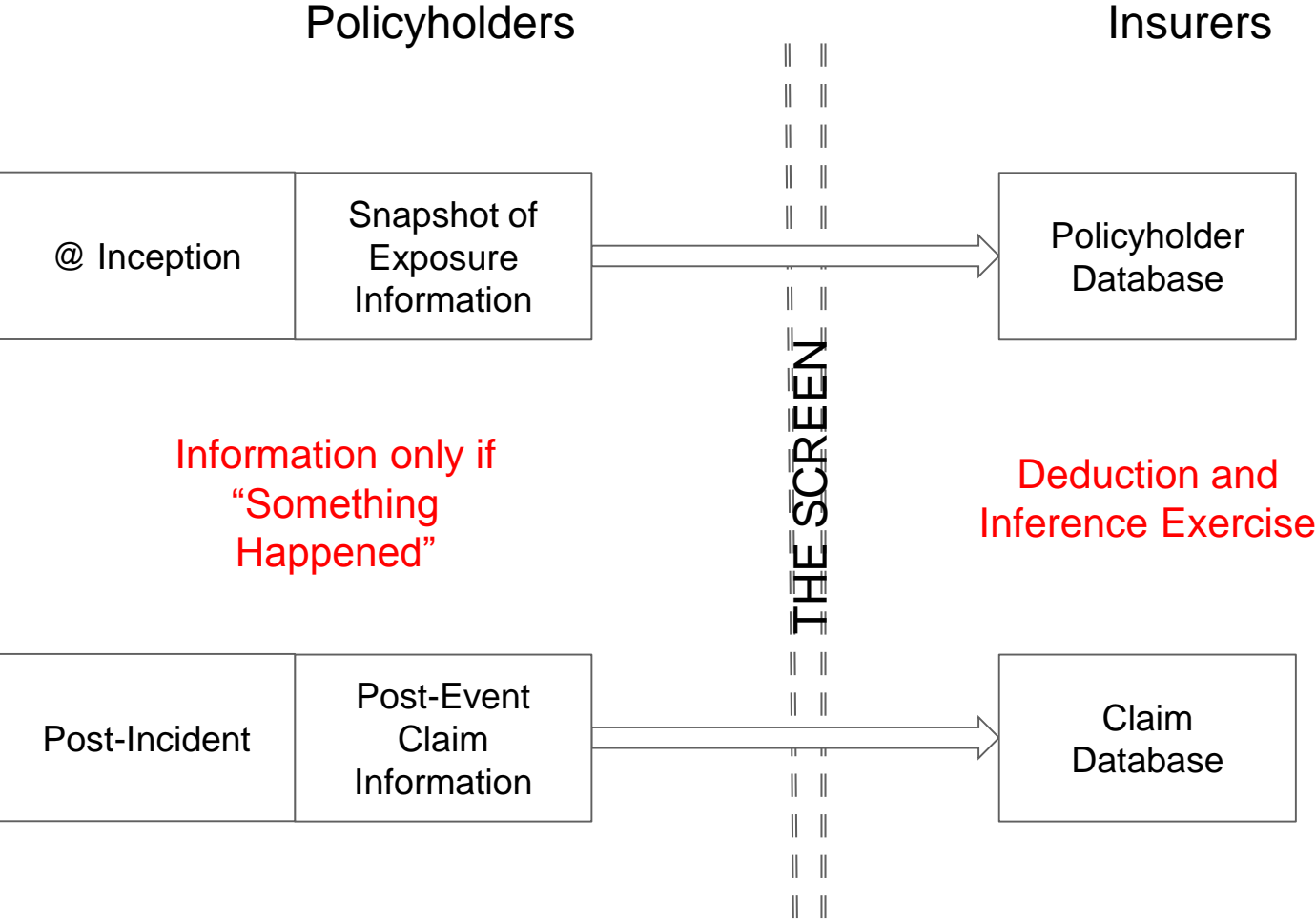
Report states



Impacting every part of the insurance value chain



From Effects Analysis Behind the Screen...



...To Causal Analysis and Preventive Analytics

Policyholders

Intermediary (?)

Insurers

Roles and Responsibilities?

Electrical Engineers

REAL TIME	Sensor Data
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Ownership?

Reliability Engineers

Monitoring	Maintenance	Mitigation
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Vertical Integration
DBOI

Operations and Industrial Engineers

Causal Analysis	Business Interruption	Network Restoration
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Opportunities?

Preventive / Causal Analytics

A New Engineering Discipline or Actuarial Frontier?

- No reason to assume our “Reserved Role” in the insurance industry will translate over automatically
- Engineers are already there and outnumber us 100:1 at least
- And why would a manufacturer or telecom or energy company pay for CAS credentialing? Yellow book? Table M?
- And what do we really bring to the table (sic) in Causal Analytics? We’re effects analysts

Prognostics and Health Management A New Engineering Discipline

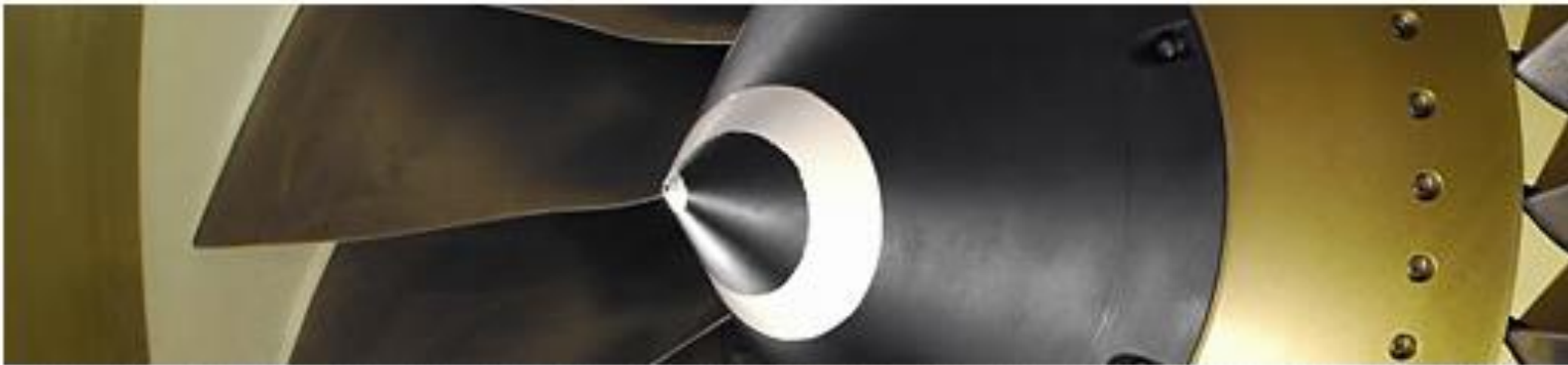


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about the prognostics and health management society

Prognostics and Health Management

A New Engineering Discipline

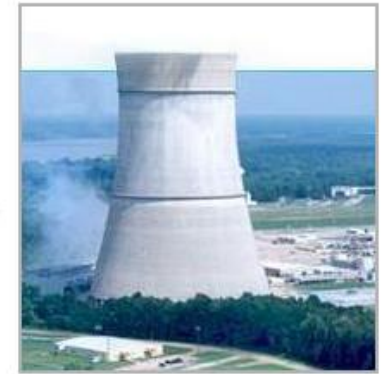
- Prognostics and Health Management is the engineering discipline focusing on
 - Using sensor data in industrial settings (e.g., GE Industrial Internet),
 - Combined with Machine Learning and Artificial Intelligence,
 - To monitor equipment status and forecast likely sources of breakdown
 - And proactively recommend preventive maintenance and parts replacement
- This is what FM Global and HSB have been doing in Equipment Breakdown for decades **by employing large teams of inspection engineers**
- Only now it can be scaled to all types of operations, and without the need for as many inspection engineers

The business of PHM : An “Actuarial Engineering” perspective

Annual Conference of the Prognostics & Health
Management Society 2010

October 10-14, 2010
Portland, Oregon

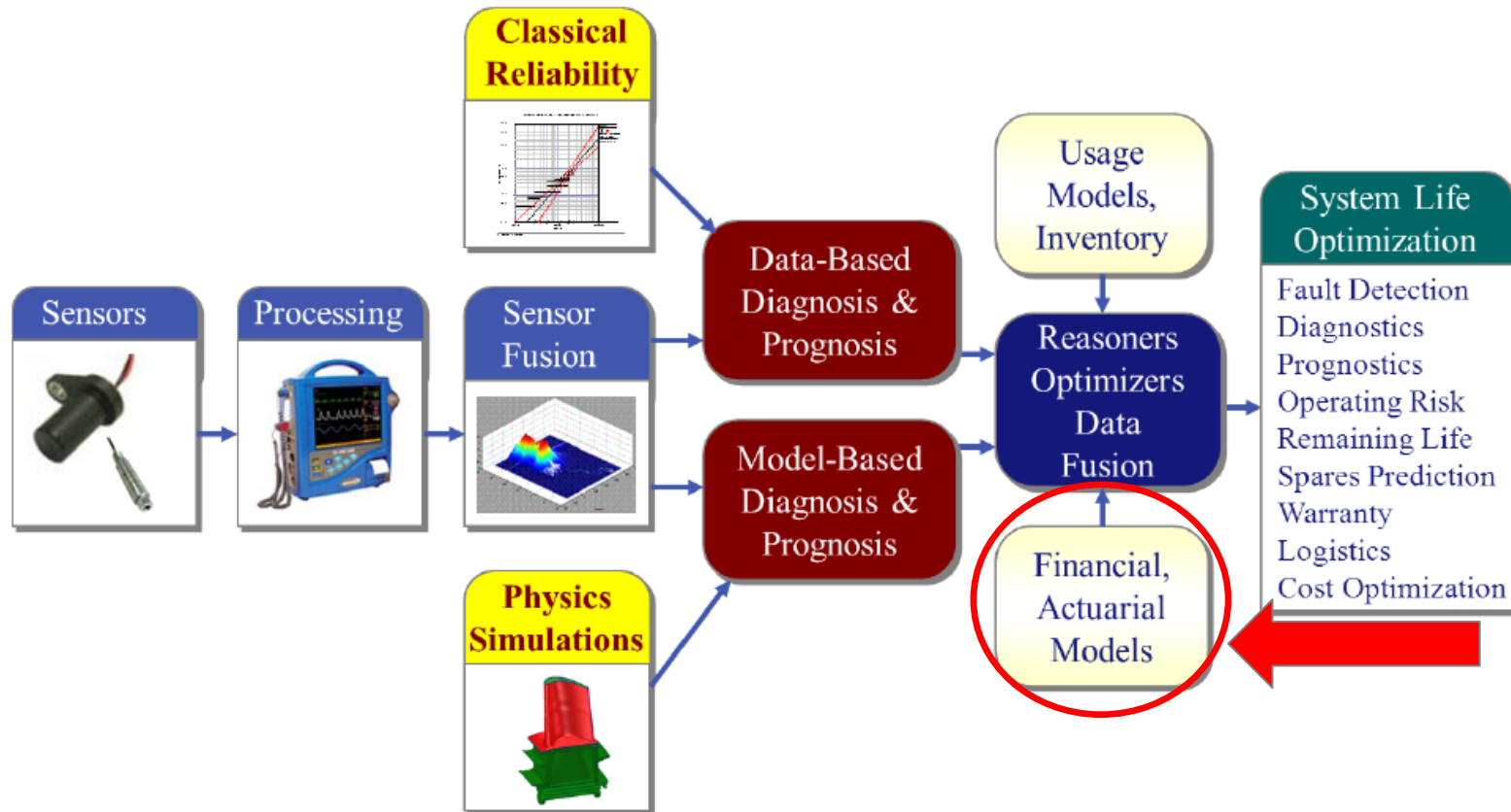
Sameer Vittal, PhD
GE Energy – Advanced Technology Operations



https://www.phmsociety.org/sites/phmsociety.org/files/PHMconference2010_SameerVittal.pdf

PHM As Part of Risk Management

- PHM + Life-Extending Controls provide the “vital knobs” to manage operational risk in portfolio’s of monitored assets
- It’s an “early warning system” .. For emerging/ systemic issues
- Effective risk transfer mechanism .. From unplanned to planned maintenance



OVER TO PHIL SCHWARTZ OF IBM