Modernizing Test and Evaluation for Insider Risk Analysis

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Document Markings

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Initial Testing Approaches

- Insider Risk Management Programs may take a penetration-type testing approach
  - Testing can be *Overt* or *Covert*

Overt	Covert
• + Trains staff • + Exercises Insider Risk scenarios • + Tests process and procedures with team knowledge • - Requires staff time to execute • - Injects activity into an operational network	• + Tests process and procedures and team readiness • + Exercise Insider Risk scenarios • + Third party can execute (with ELT consent) • - Injects activity into an operational network

Both assume sensors and analytics are in place

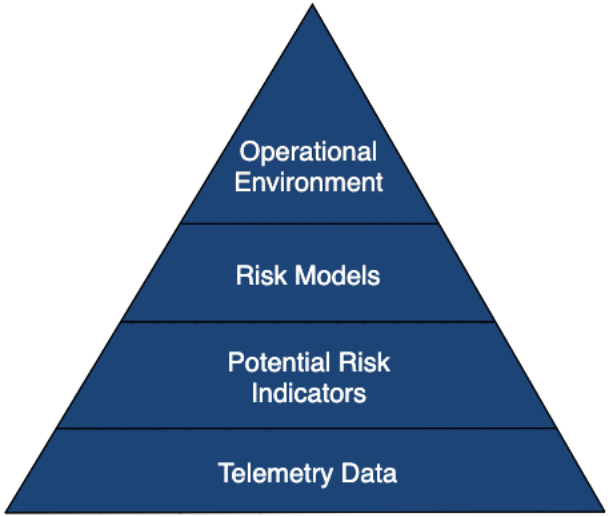
Testing Sensors and Analytics

- Risky to test on an operational environment
  - Can disrupt organizations mission
    - Overwhelm network resources
    - Spike resource utilization
  - Can impact insider risk analysts
    - Potentially flood analyst with false positives
    - Cause alert fatigue
    - Potentially cause analysts to miss true positives due to excessive ‘noise’

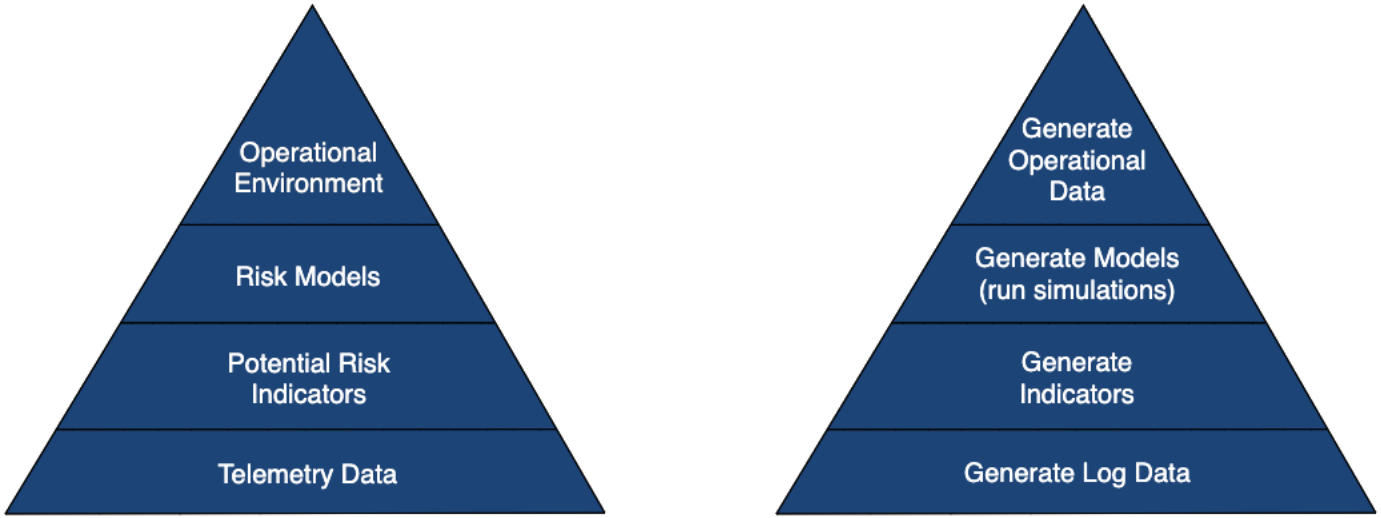
What questions are we trying to test

- At the sensor (data source) level and analytic level
  - Will my indicator work?
    - Will it indicate something an analyst can action?
  - Are my analytics effective and efficient?
    - What data/fields does my analytic need?
    - Can it produce timely results?
  - Is there a better sensor for my analytics?
  - Will my AI/ML algorithm find scenario *X*?
    - Based on scenarios in the IRMP's scope
    - Using the data sets available to the application

Questions can be asked a different levels – 1



Questions can be asked a different levels – 2



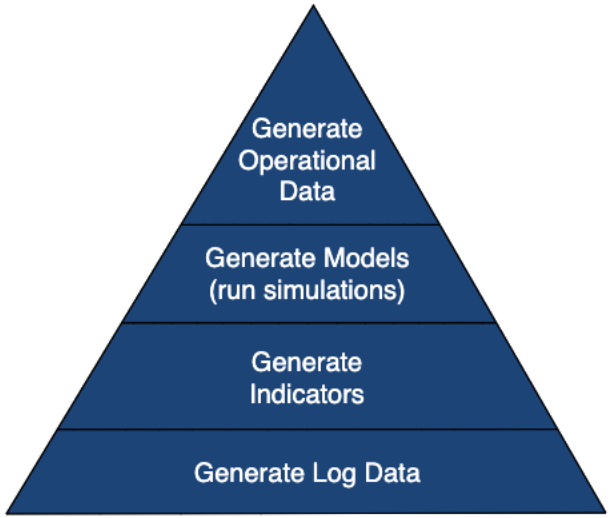
Issues with these approaches

Hard to determine if we have ground truth

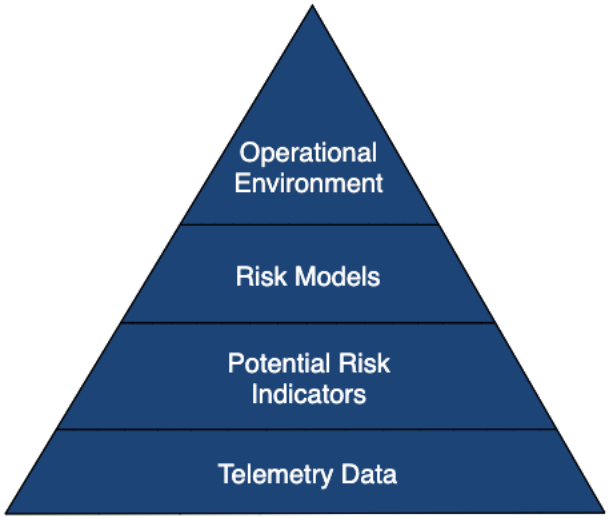
Hard to maintain realism of underlying systems

Hard to *what if* other scenarios

Hard to scale



Test and Evaluation Environment Needs



Environment

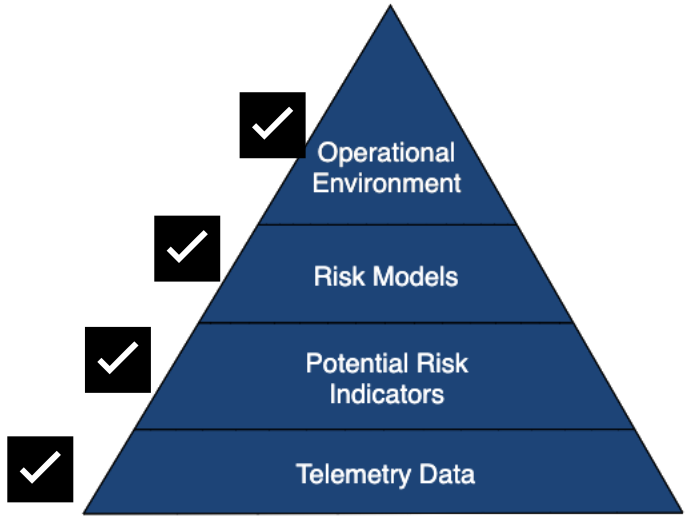
- Ground Truth
- Systems Realism
- Ability to *What-If* different scenarios
- Scalability

- Reasonable cost
- Used different telemetry data

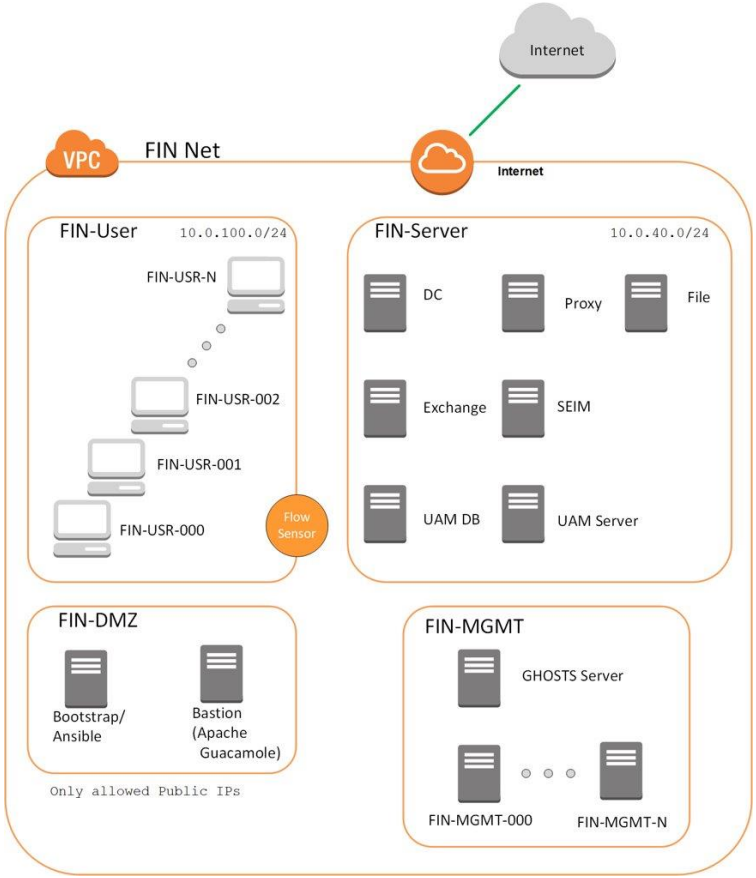
Our approach

NeedleStackCloud

- Infrastructure as Code (IaC)
  - Rapid setup and teardown of environments
    - Went from days/weeks to minutes
  - Easy to what-if different environments
  - Easy to scale environments
  - Easy to run multiple environments simultaneously
- Cloud Based approach
  - Provides scaling at a reasonable cost
  - Bonus: ability to share environments
- Non-player Character (NPC) Approach
  - Ground Truth



NeedleStackCloud



HashiCorp Terraform

https://www.terraform.io

Apache Guacamole™

https://guacamole.apache.org

ANSIBLE

https://www.ansible.com

https://github.com/cmu-sei/GHOSTS

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https://www.sei.cmu.edu/our-work/insider-threat/index.cfm