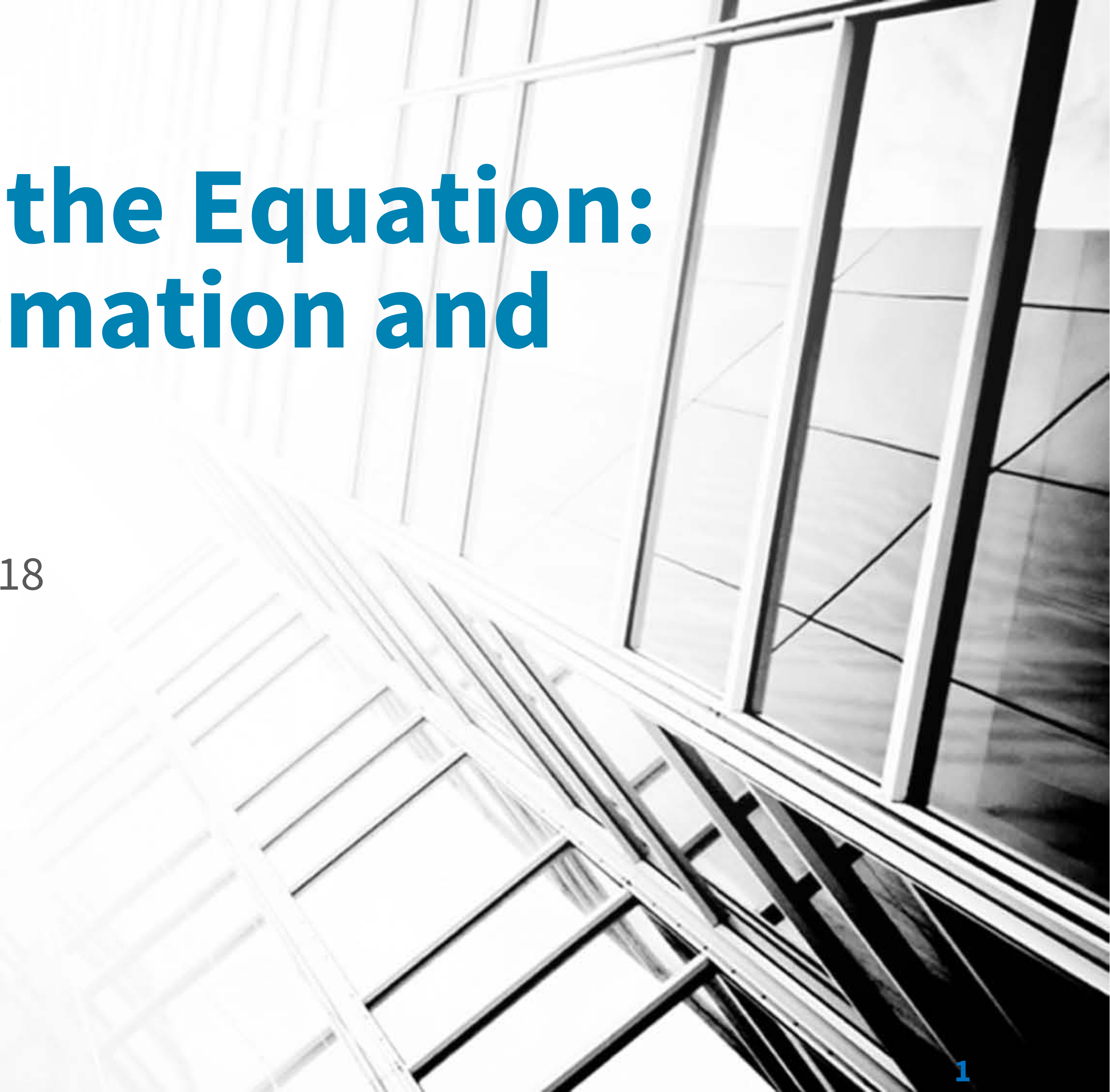
Both Sides of the Equation: Security Automation and Deception

Integrated Cyber - October 2, 2018

Donnie W. Wendt



We are surrounded. Good! Now we can fire in any direction!

Chesty Puller, USMC

Donnie Wendt

Who Is This Guy?

- Security Engineer with MasterCard
- Cybersecurity Professor at Utica College
- Certified Information Systems Security Professional (CISSP)
- MS Cybersecurity with Concentration in Intelligence
- Student at Colorado Technical University
  - Pursuing Doctor of Science – Computer Science - Emphasis in Information Security
  - Area of research – Security Automation and Orchestration
- Interests – Playing guitar, scuba diving, running, and studying history
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Today’s Topics

Asymmetry and the Attacker’s Advantage

The OODA Loop

Speeding Detection & Response

Slowing the Attacker

Conceptual Framework

Shameless Plug for My Research

Research Question
How have US-based companies in the finance sector implemented security automation and adaptive cyber defenses and what challenges have they faced with the implementation?

Soliciting Participants
Security professionals in the finance industry who are implementing or have implemented security automation.

What is required of participants?
60 – 90 minute interview

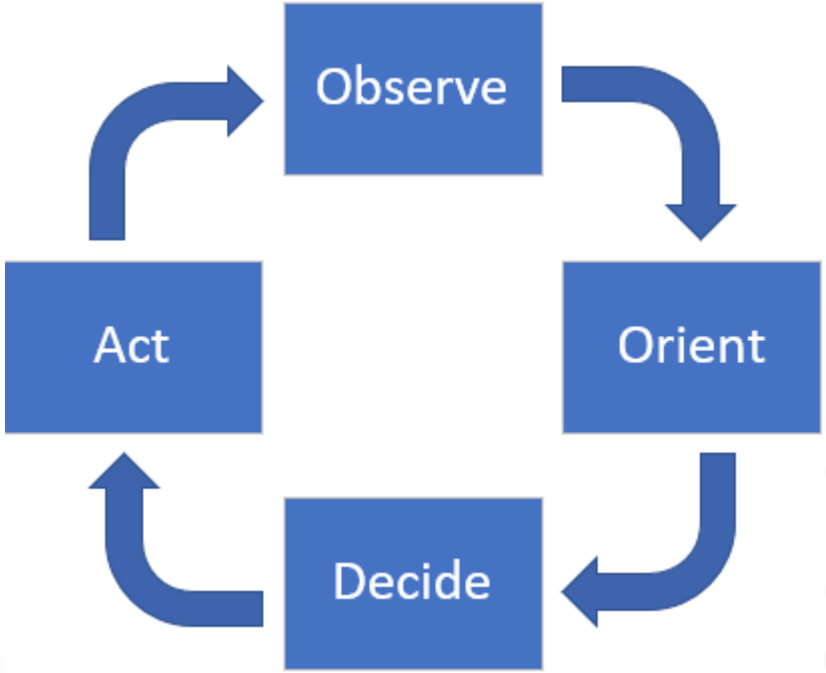
Current State

Advantage Attacker

- Attacker Enjoys an Asymmetric Advantage
    - Exploit one vs. defend all
    - Homogenous platforms and software
    - Well-known static defenses
- Increased Sophistication of Attacks
    - Highly motivated attackers
    - Detection increasingly difficult
- The Need for Speed
    - Human-centered defenses cannot keep pace
    - Defenders must increase speed of detection and response

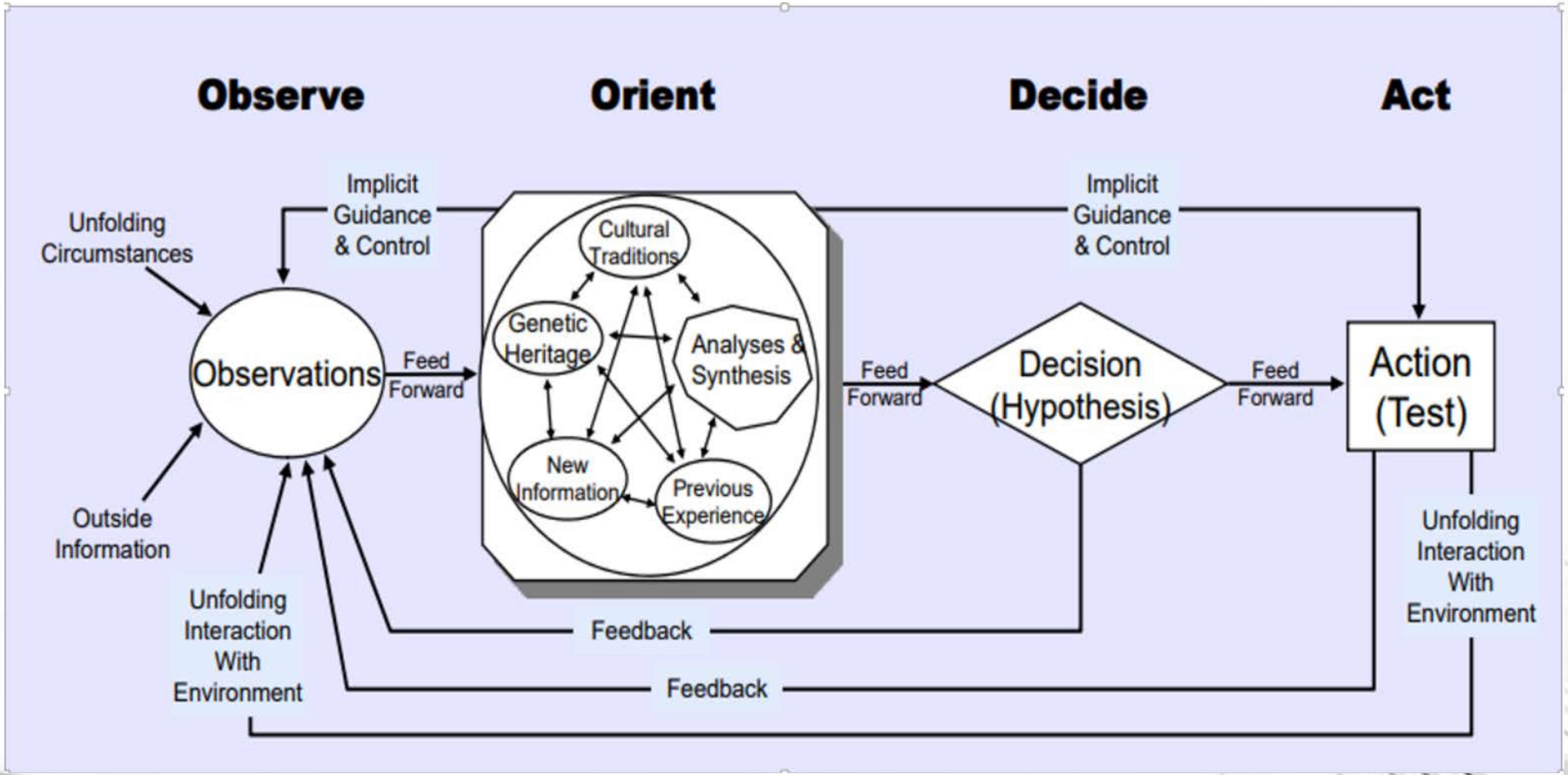
The OODA Loop
Often Referenced, Often Misunderstood

- Developed by Air Force pilot John Boyd
- Refers to gaining superiority in air combat
- Often shown as a four-phase, cyclic process



The OODA Loop

As Drawn by Boyd



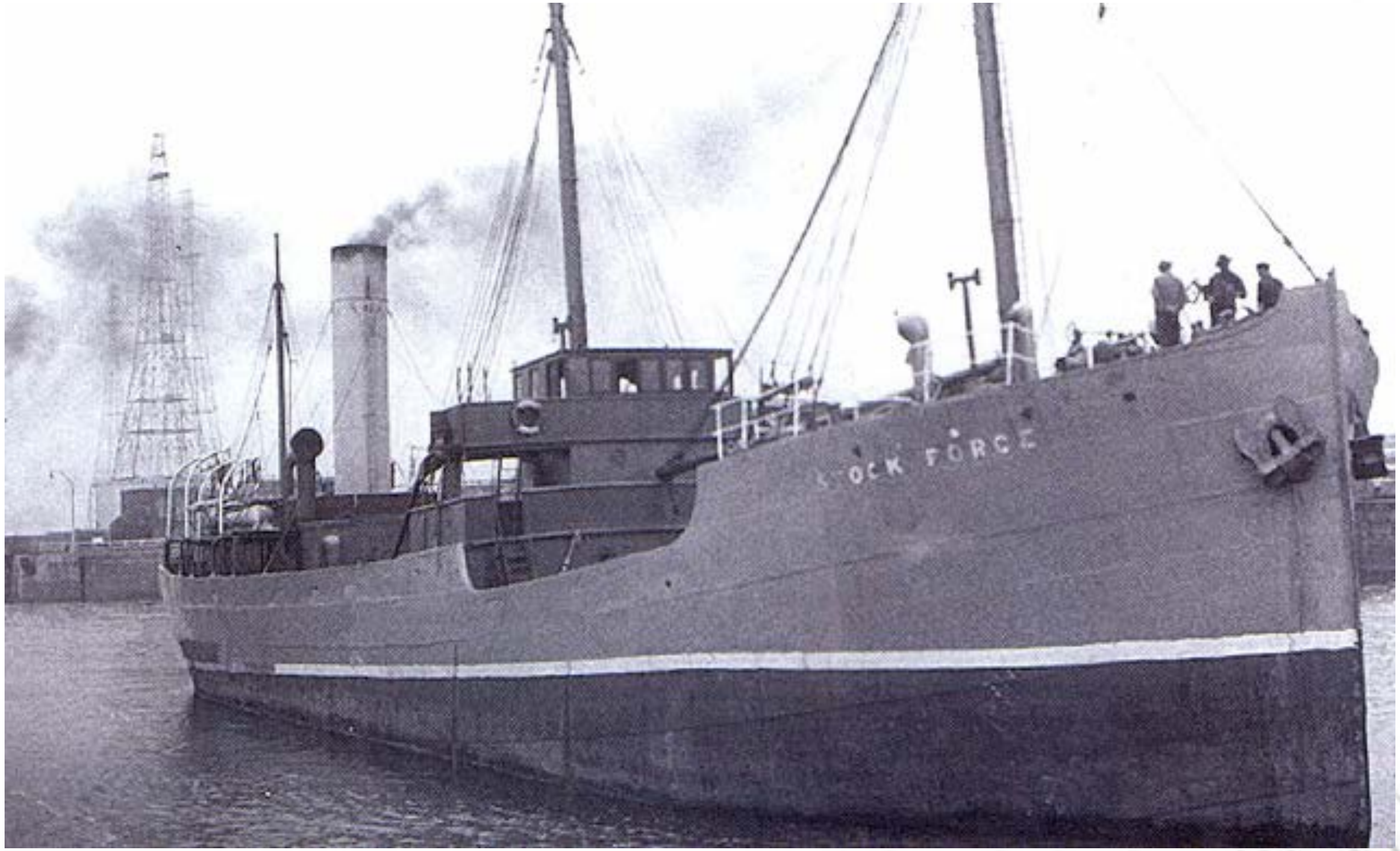
Automation - Speeding the OODA Loop

Continuous Situational Awareness

- Situational awareness requires automation
- IACD – Redefining the OODA loop
- Automated enrichment
  - Improves situational awareness
- Human on the loop
  - Discernment and decision making
- Improving intelligence sharing
  - Decreases attacker’s asymmetric advantage (less exploit reuse)
  - Decreases detection and response times
  - Reluctance and concerns

The British Q-Boats

Using Deception for Defense



Working Inside the Opponent’s OODA Loop

Disrupting Situational Awareness

- Boyd focused on getting inside the attacker’s loop
- Compromise the opponent’s decision-making ability
  - Deceive humans
  - Manipulate data streams
  - Disrupt the opponent’s orientation
- Consume the opponent’s resources
- Improve your own situational awareness
  - Knowledge of opponent

Disrupting the Opponent
Moving Target Defenses

- Diversify critical components
- Temporal Platform Migration
- Platform Diversity
- Concerns with MTD
  - Can Increase Attack Surface
  - Difficult to measure
- Consider the Threat Model

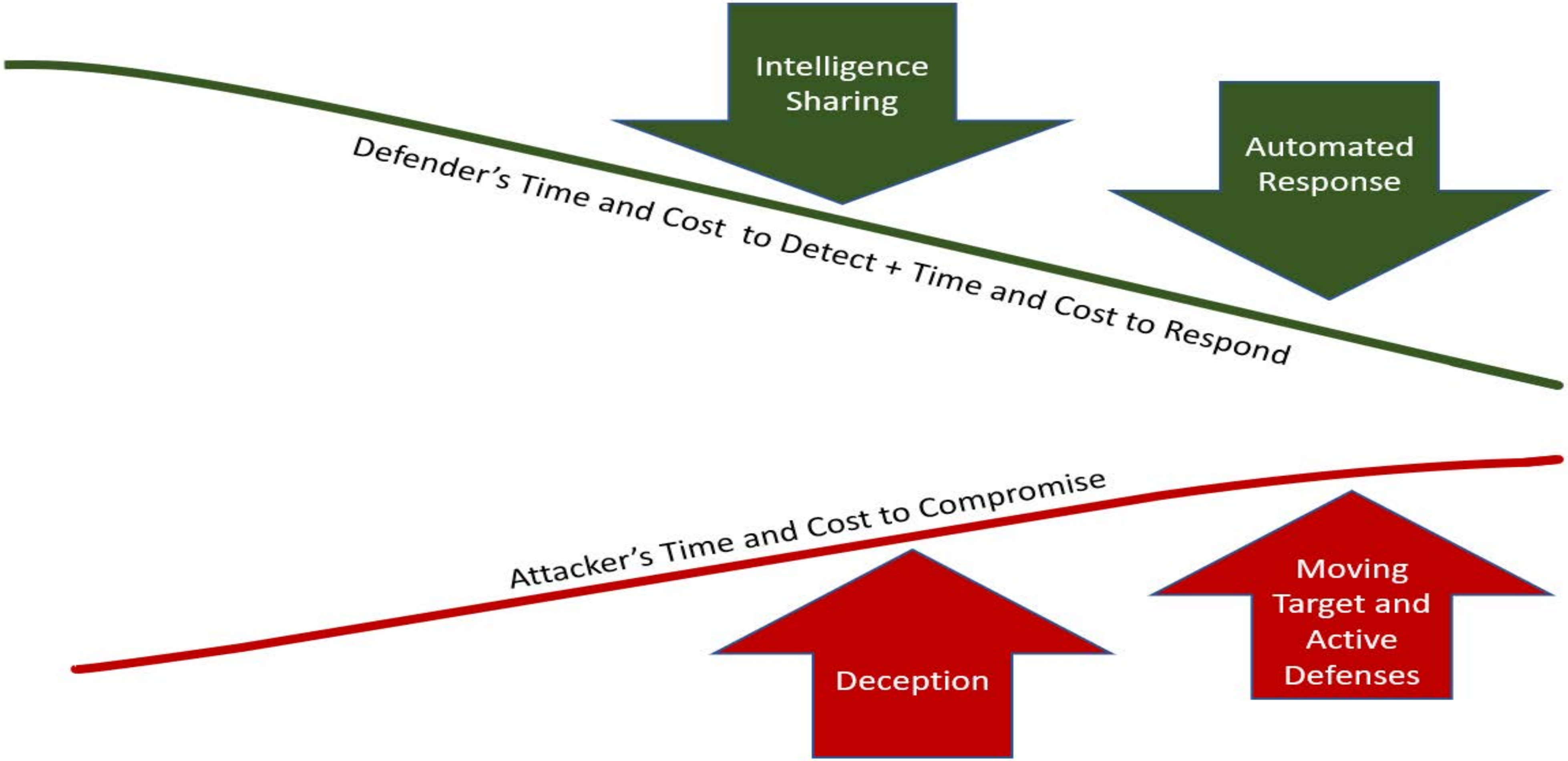
Disrupting the Opponent

Sprinkle in Some Honey

- Applicability of Battlefield Deception
- Deceptive Terrain – Honeypots & Honeynets
- Deploying and Maintaining Honeypots
- Other Deceptions
    - Fake Identities and Beyond
    - Also Used for Insider Threat Detection
- Challenges with Fake Entities

Conceptual Framework

Addressing Both Sides of the Equation



Intelligence Sharing
Automated Response
Defender's Time and Cost to Detect + Time and Cost to Respond
Attacker's Time and Cost to Compromise
Deception
Moving Target and Active Defenses

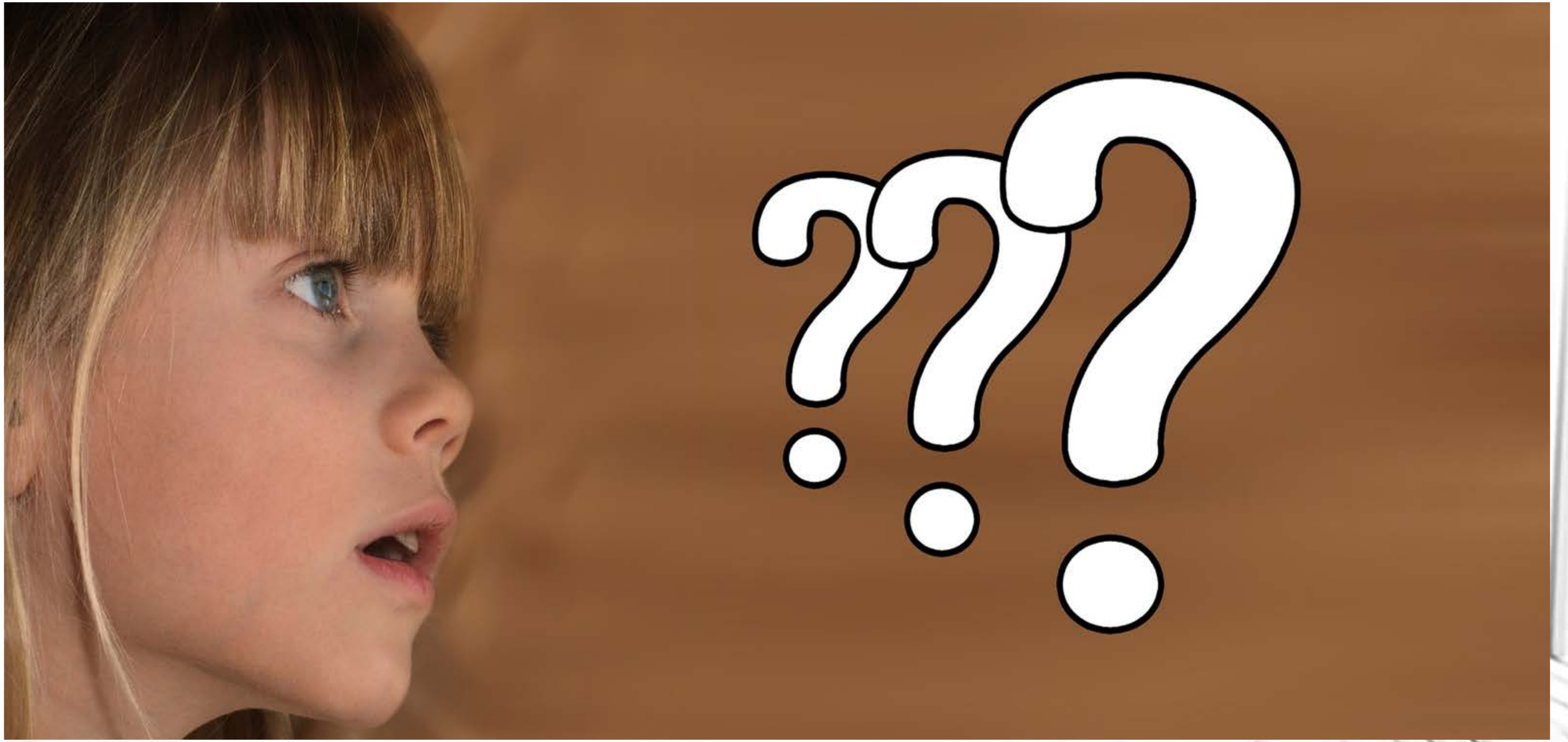
Another Shameless Plug for My Research

Soliciting Participants
Security professionals in the finance industry who are Implementing or have implemented security automation.

What is required of participants?
60 – 90 minute interview

When?
Probably early 2019.

Questions?



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