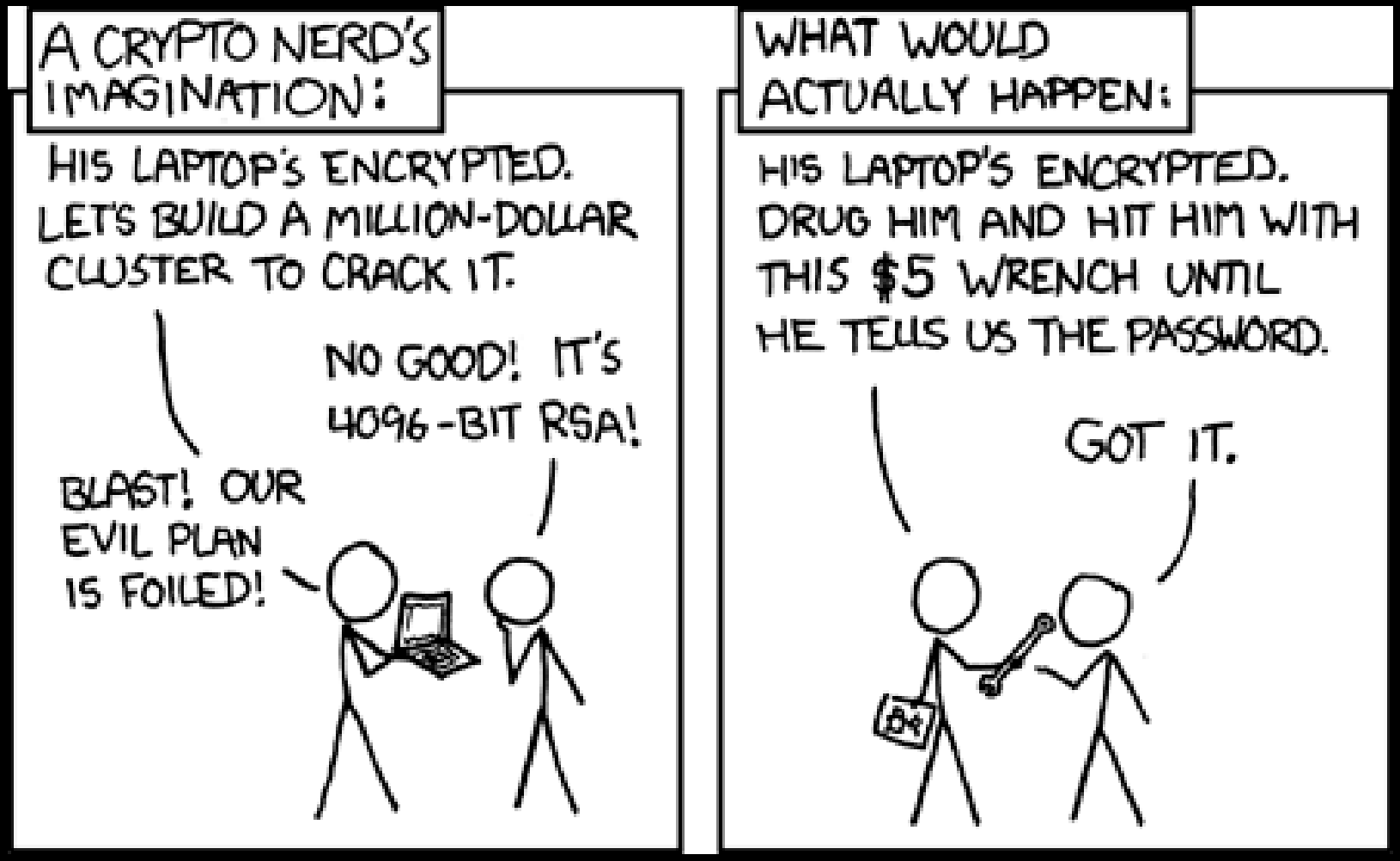
Security Design & High-Risk Users

Eleanor Saitta @Dymaxion

Hack.lu 2015



Security is not about computers.

People built computers to accomplish tasks.

People built more computers and networked them to accomplish more tasks.

Those computers got compromised.

People paid us to fix the problem.

We made the mistake of thinking they meant us to fix the computers.

Having made this mistake, we built an entire industry around solving the wrong problem.

People built yet more computers and networks.

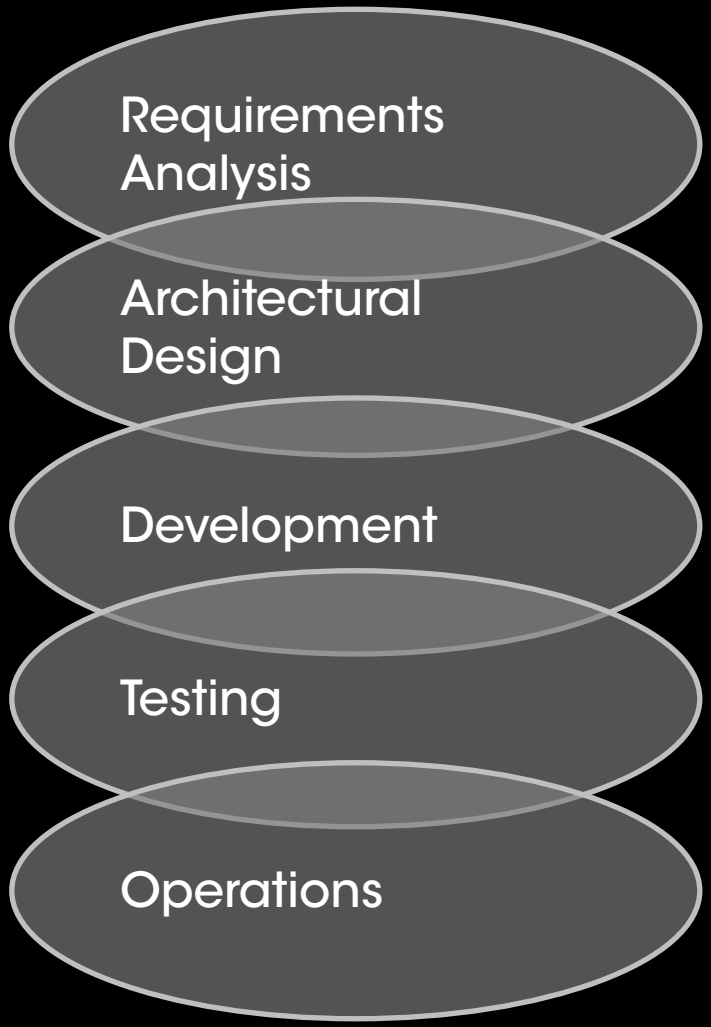
We realized we couldn't secure them individually and started looking at probabilities and scaling.

We never did fix the problem.

Security is the set of activities that reduce the likelihood of a set of adversaries successfully frustrating the goals of a set of users.

Security design is the process of understanding user culture, goals, and workflows, organizational technical capabilities, and adversary capabilities and dispositions and synthesizing a satisficing solution.

Mapping the Security Task



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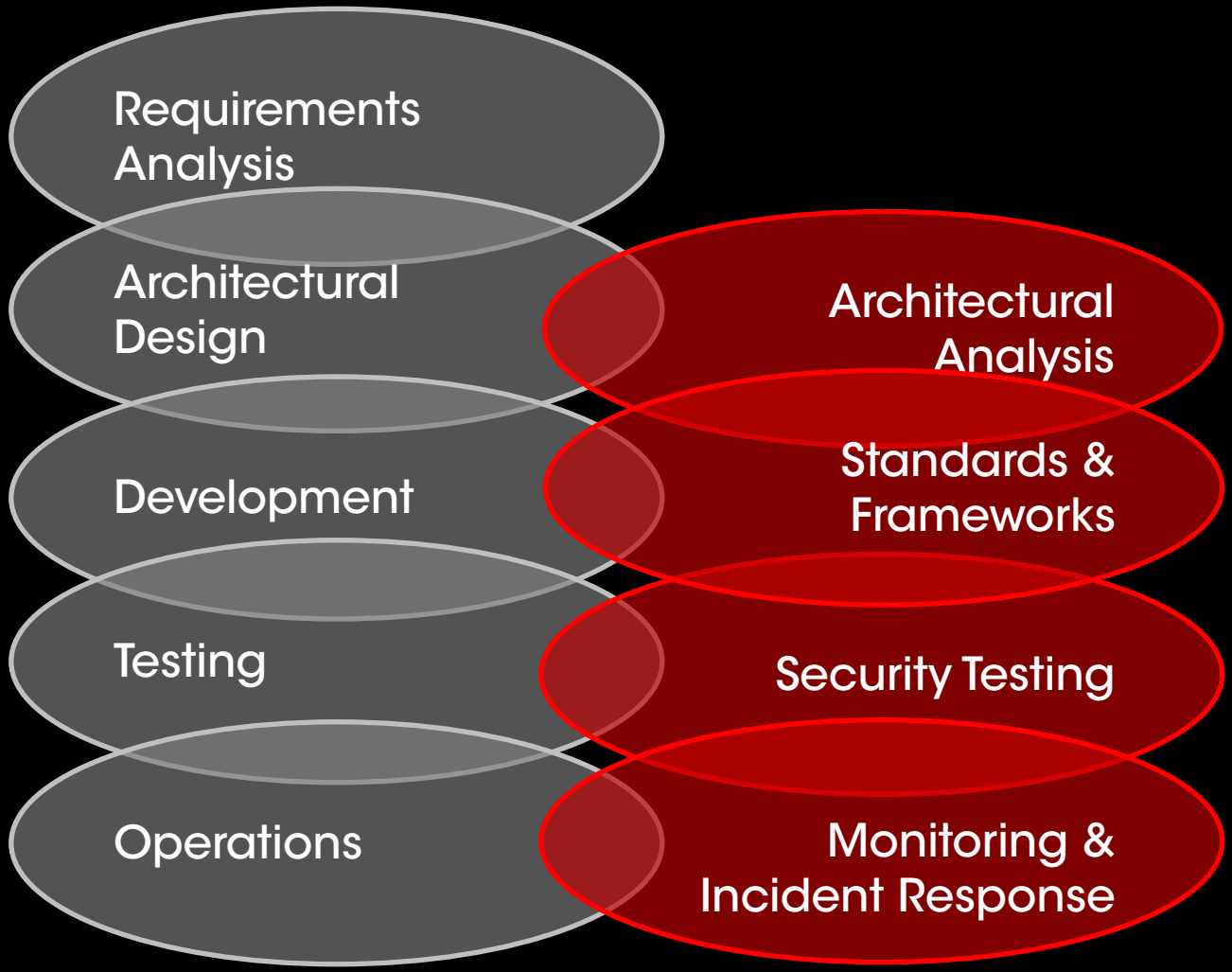
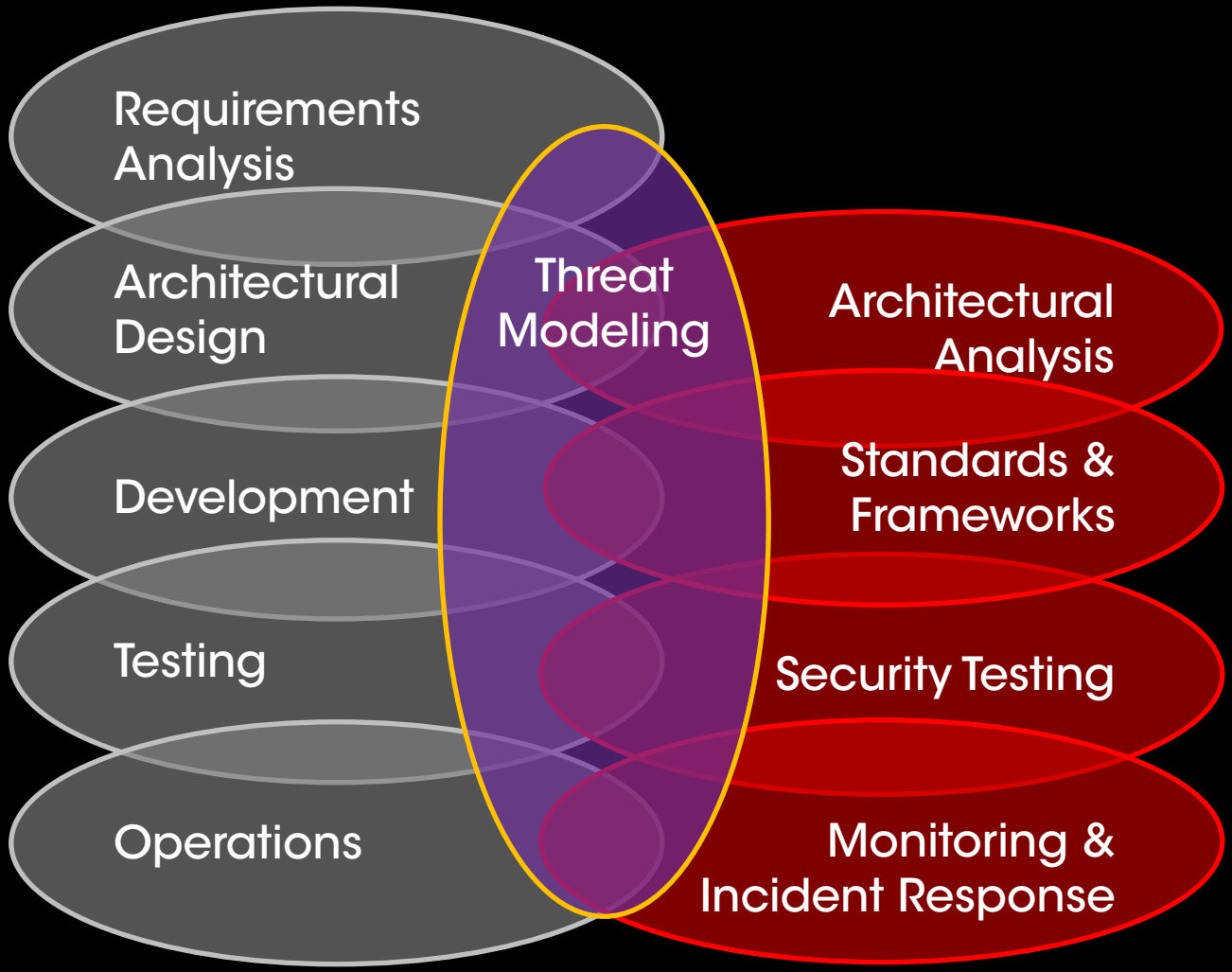


Mapping the Security Task



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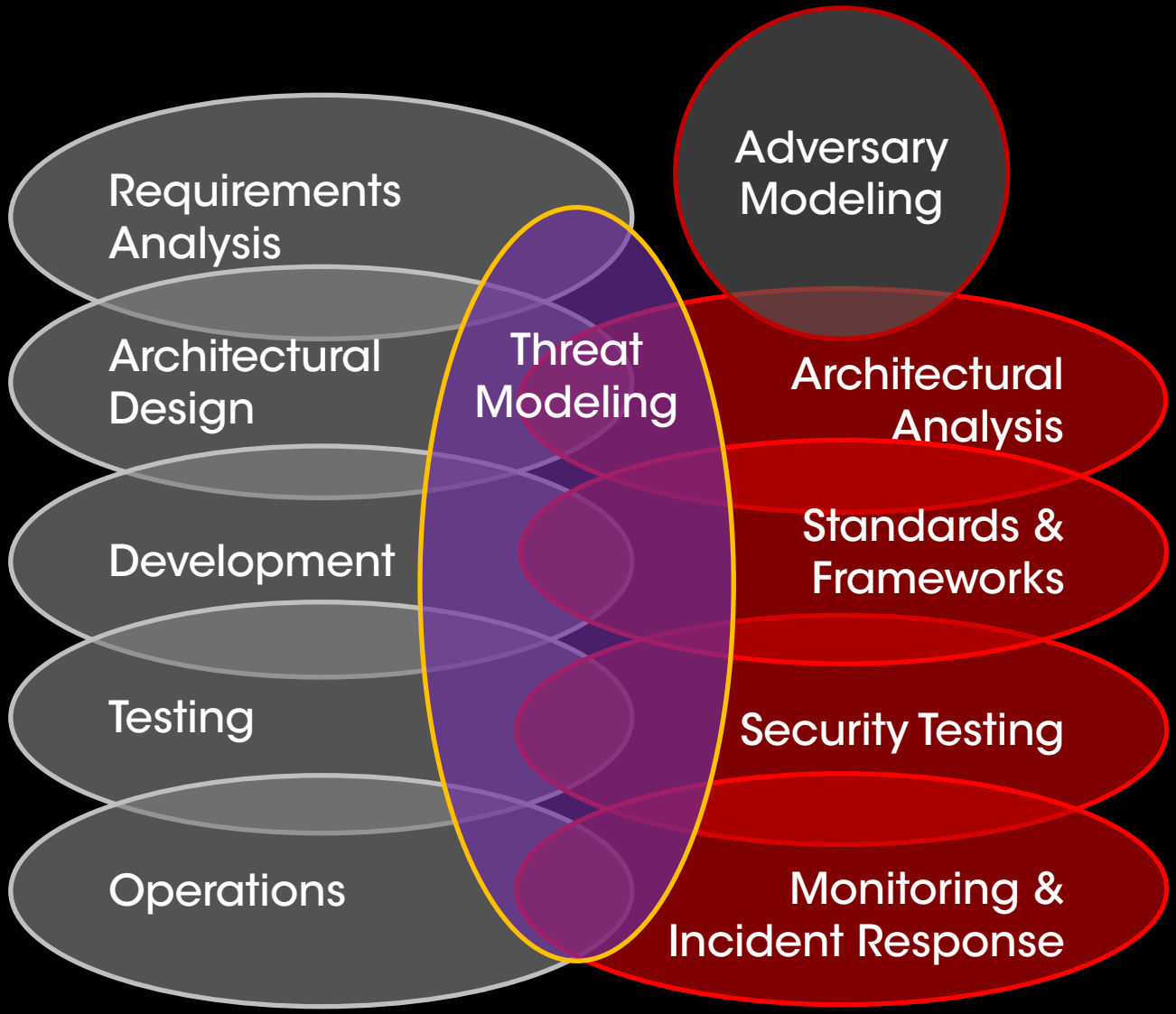

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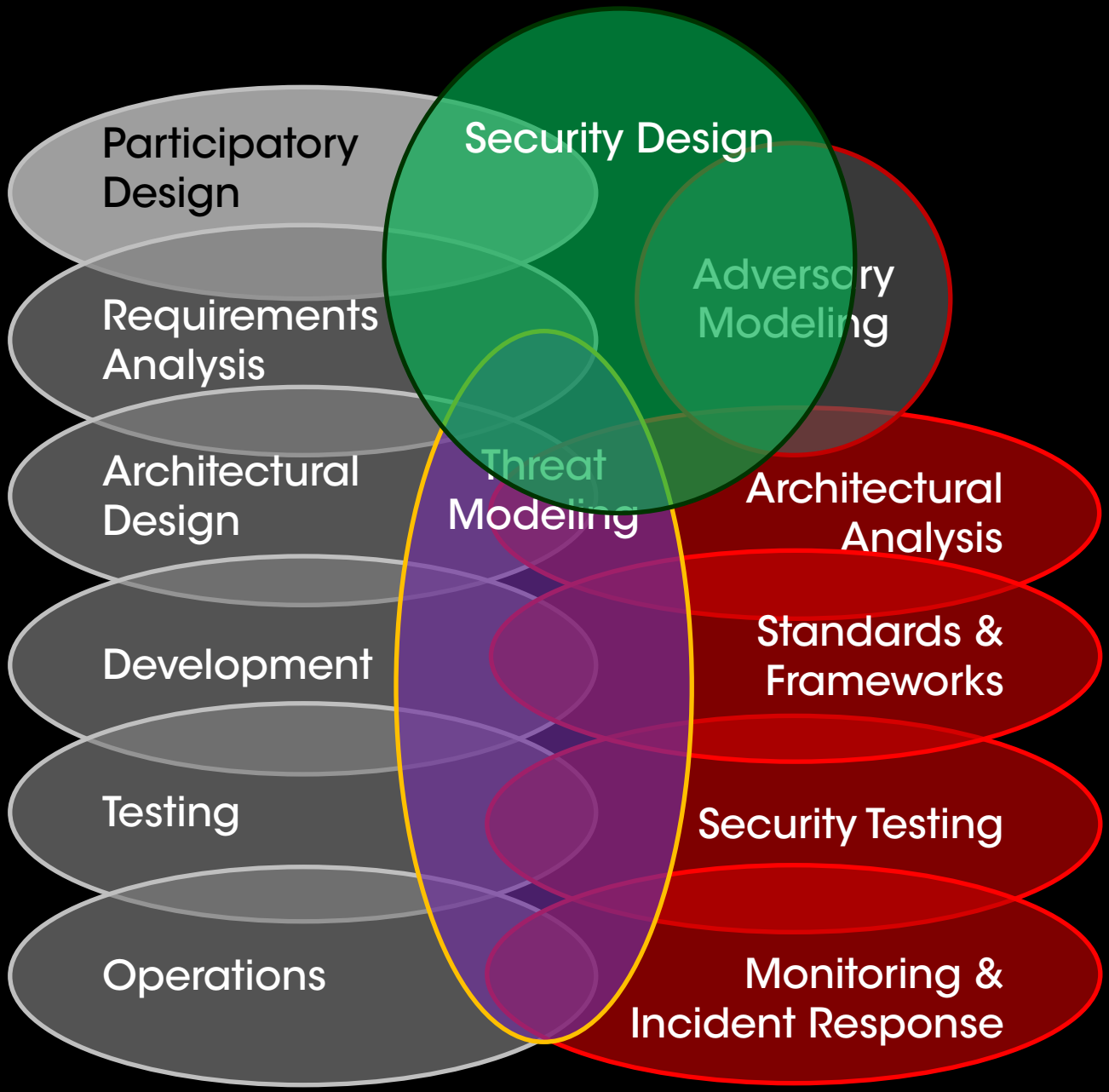
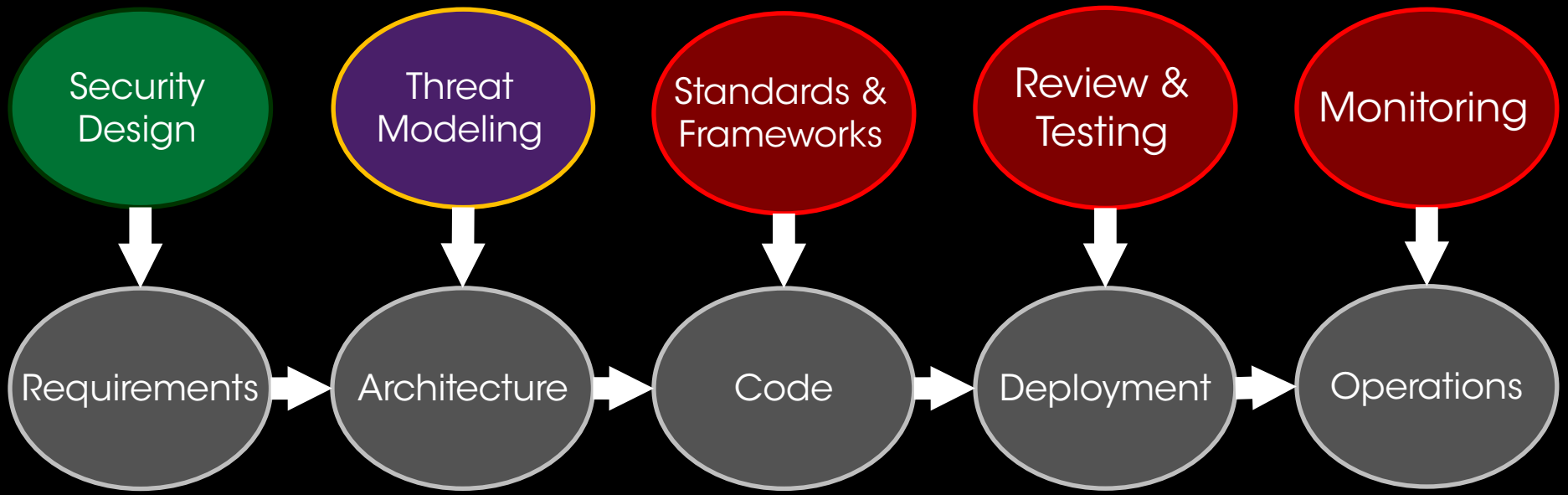
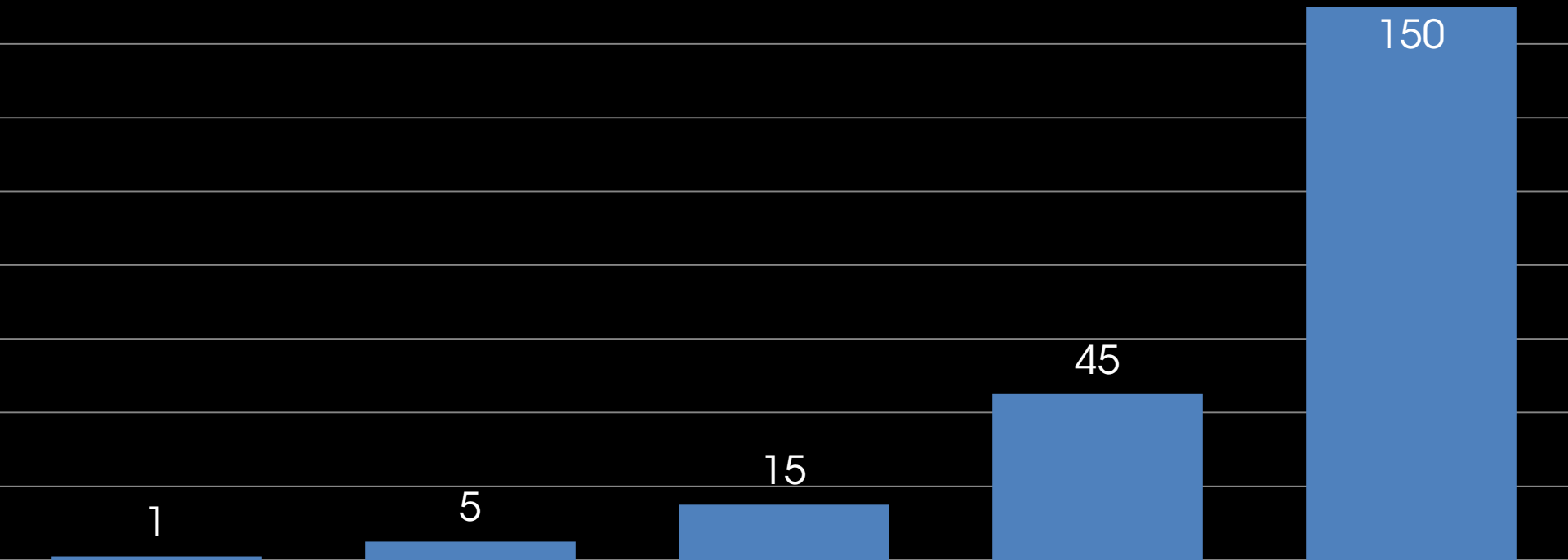


Visibility to Prevent vs. Cost to Fix



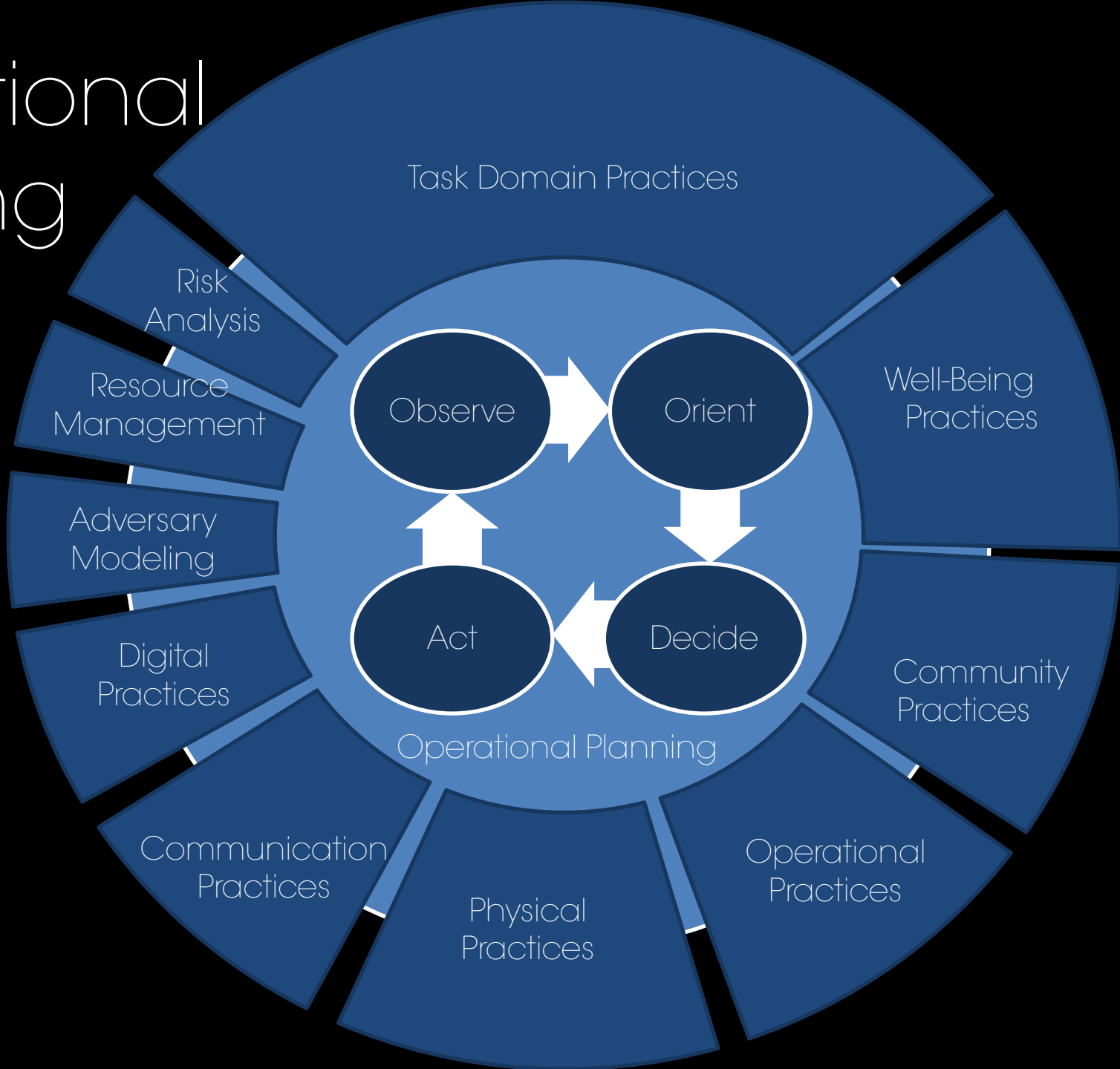


Outcomes are messy

Understanding the Operations Process

- Planning in the presence of an adversary
- OODA Loops
- Cognitive overhead
- Operational utility
- Functional deployability

Operational Planning



Efficacy

Worse is Better

Invariants

Integrity
Simplicity
Deployability
Interoperability
Availability
Nonrepudiation
Trust
Confidentiality
Efficacy
Unlinkability

Invariants

Accuracy
Adaptability
Agility
Anticipation
Assurance
Availability
Awareness
Capacity
Coherence
Concealment
Confidentiality
Continuity
Control
Completeness
Cooperation
Coordination
Deception
Deployability
Deniability
Depth
Deterrence
Discipline
Dispersion
Economy
Efficacy
Endurance
Exposure
Identifiability
Initiative
Integration
Integrity
Interoperability
Goodwill
Mobility
Nonrepudiation
Objectivity
Precision
Predictability
Readiness
Receptivity
Redundancy
Relevancy
Resilience
Responsiveness
Simplicity
Simultaneity
Surprise
Survivability
Synchronization
Trust
Timeliness
Susceptibility
Uncertainty
Unlinkability
Unpredictability
Velocity

Legibility


concept + design
Matthew Wizinsky
University of Illinois at Chicago
Fall 2010

Design

- Understanding, documenting, and communicating constraints and capabilities
- Synthesize and validate potential solutions
- Communicate and justify those solutions
- Support the development process & prevent drift

Participatory Design

- Recognize users as authorities on their goals
- Deep cultural engagement for complex scenarios
- Surface tacit and embodied knowledge
- Build long-term community trust
- Short-circuit long development processes
- Create blended countermeasures
- Minimize team ego

Practical Process Change

- Find your UX designers and product managers
- Insist on coming to all of their meetings
- Learn their language and process
- Learn what your users are actually trying to do
- Design requirements-level security support
- Document and solidify once you have results
- Give yourself room to fail
- Work across your org to center user goals

Thank you!

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ella@dymaxion.org

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