Threat Modeling: Lessons from Star Wars

Adam Shostack
@adamshostack

Agenda

- What is threat modeling?
- A simple approach to threat modeling
- Top 10 lessons
- Learning more

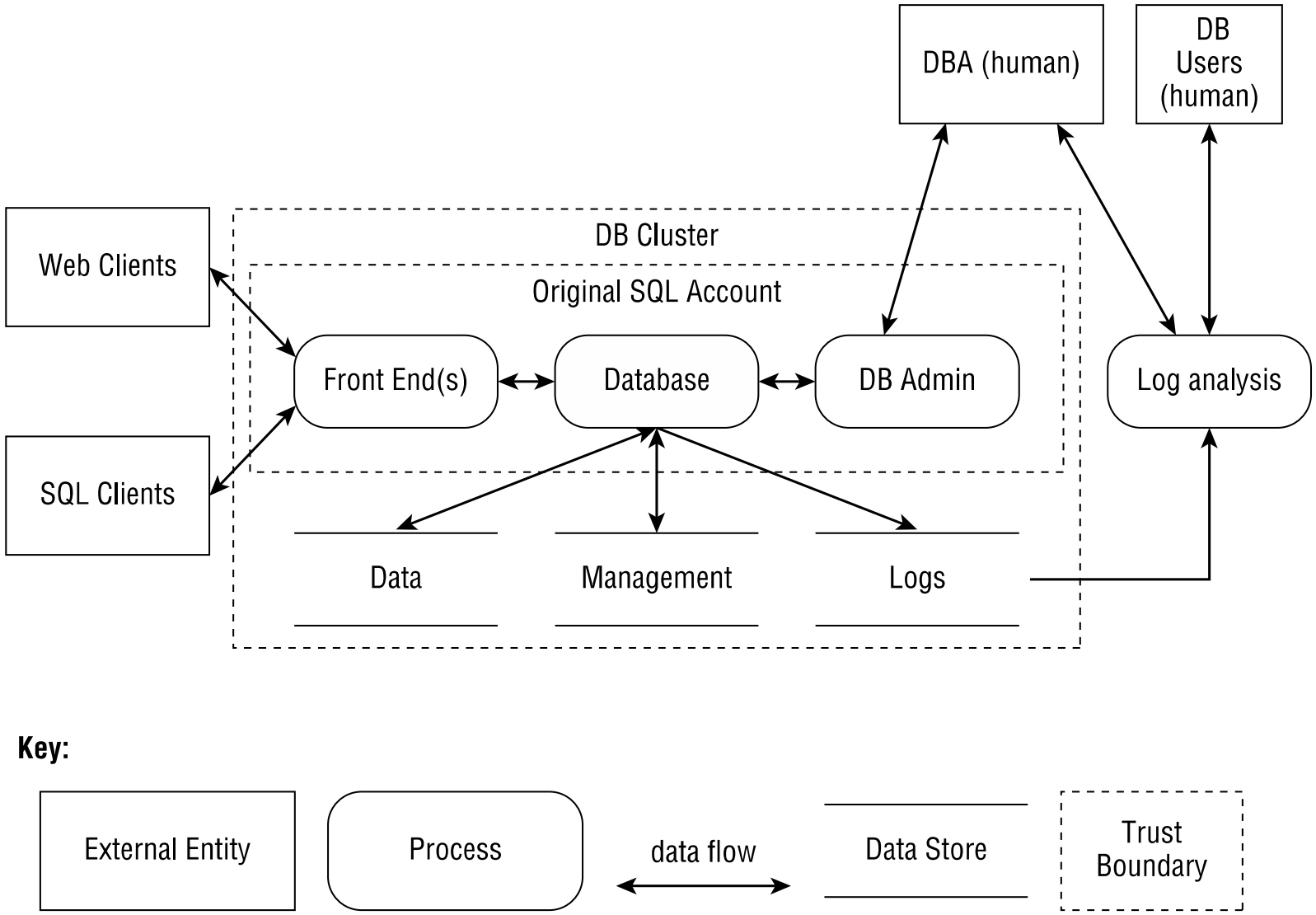
What is threat modeling?

A SIMPLE APPROACH TO
THREAT MODELING

4 Questions

1. What are you building?
2. What can go wrong?
3. What are you going to do about it?
4. Did you do an acceptable job at 1-3?

What are you building?
Data Flow Diagrams are a great representation

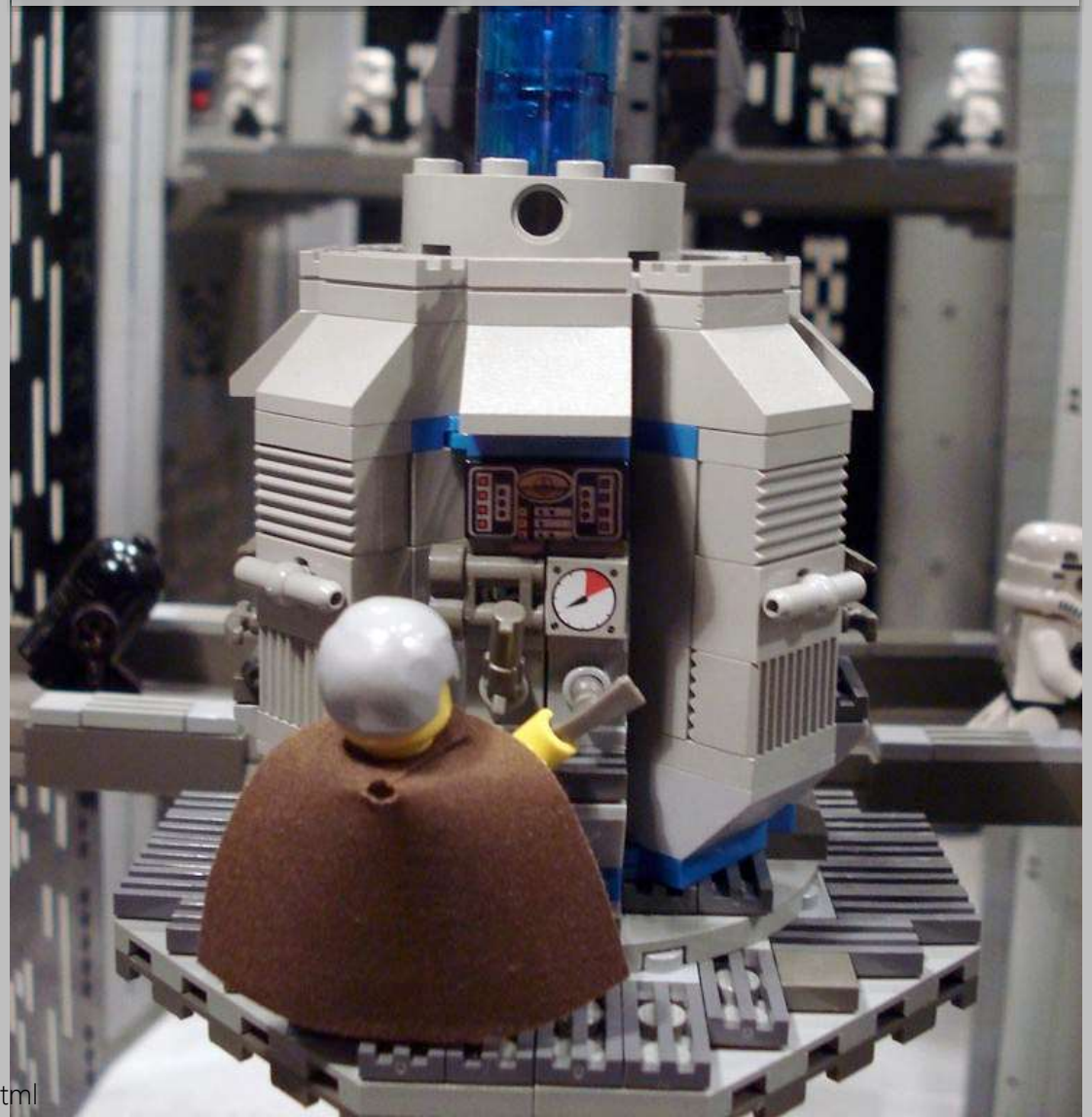


What Can Go Wrong?
Remember STRIDE

Spoofing

By Lego Envy, http://www.eurobricks.com/forum/index.php?showtopic=64532

Tampering

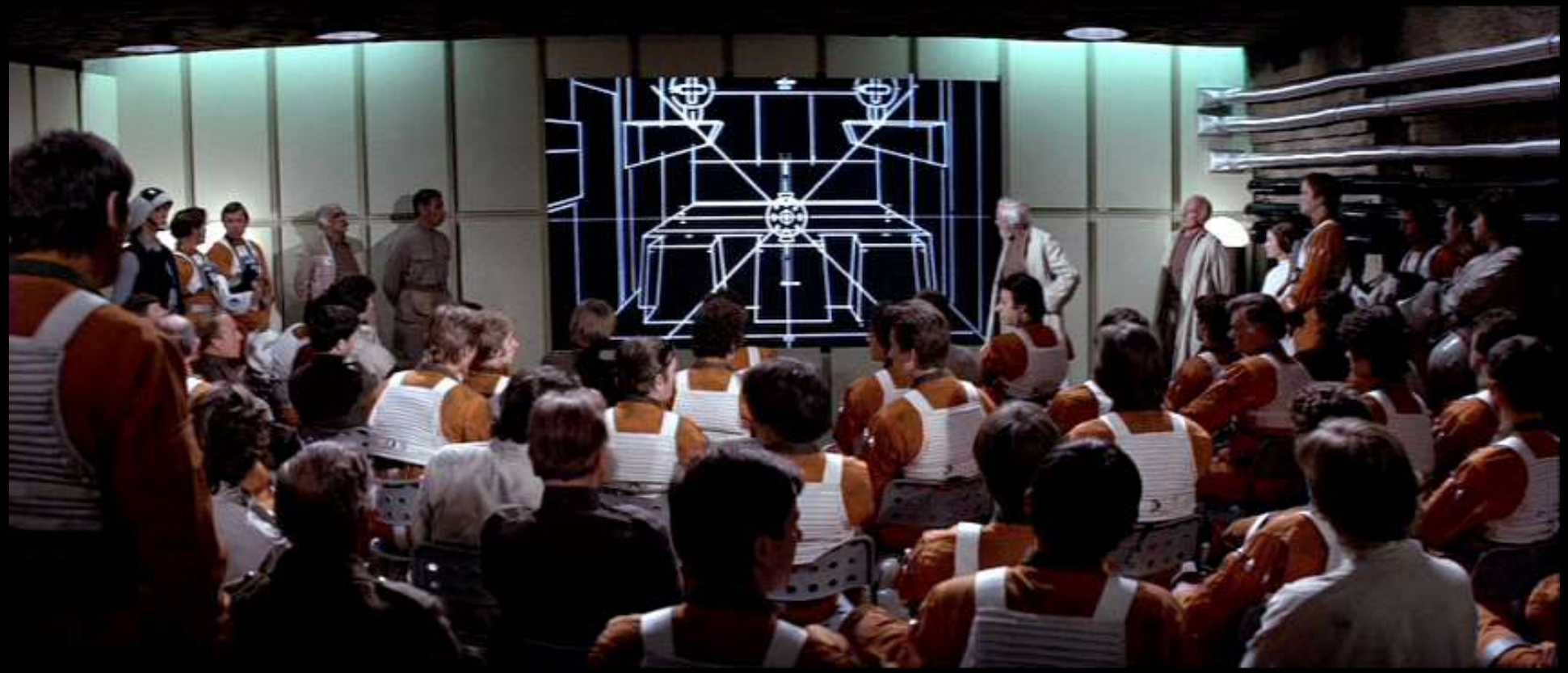


http://pinlac.com/LegoDSTractorBeam.html

Repudiation

By Seb H http://www.flickr.com/photos/88048956@N04/8531040850/

Information Disclosure



Information Disclosure (and impact)

Photo by Simon Liu http://www.flickr.com/photos/si-mocs/6999508124/

Denial of Service

Model by Nathan Sawaya
http://brickartist.com/gallery/han-solo-in-carbonite/

Elevation of Privilege

http://www.flickr.com/photos/prodiffusion/

4 Questions

1. What are you building?
2. What can go wrong?
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4. Did you do an acceptable job at 1-3?

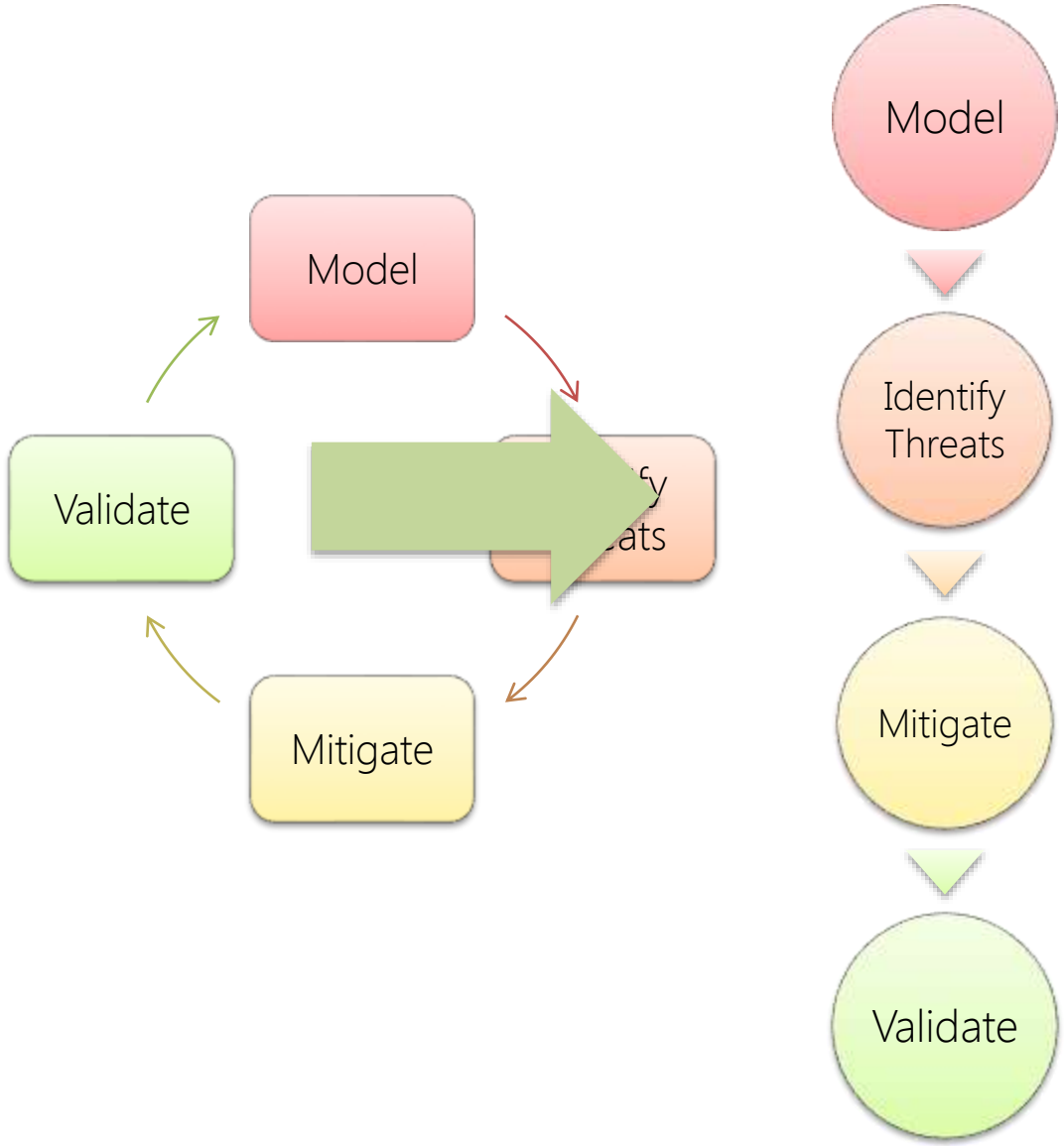
TOP TEN LESSONS


IT'S
A
TRAP!

Trap #1: “Think Like An Attacker”

- “Think like a professional chef”?
- Most people need structure

Trap #2: “You’re Never Done Threat Modeling”



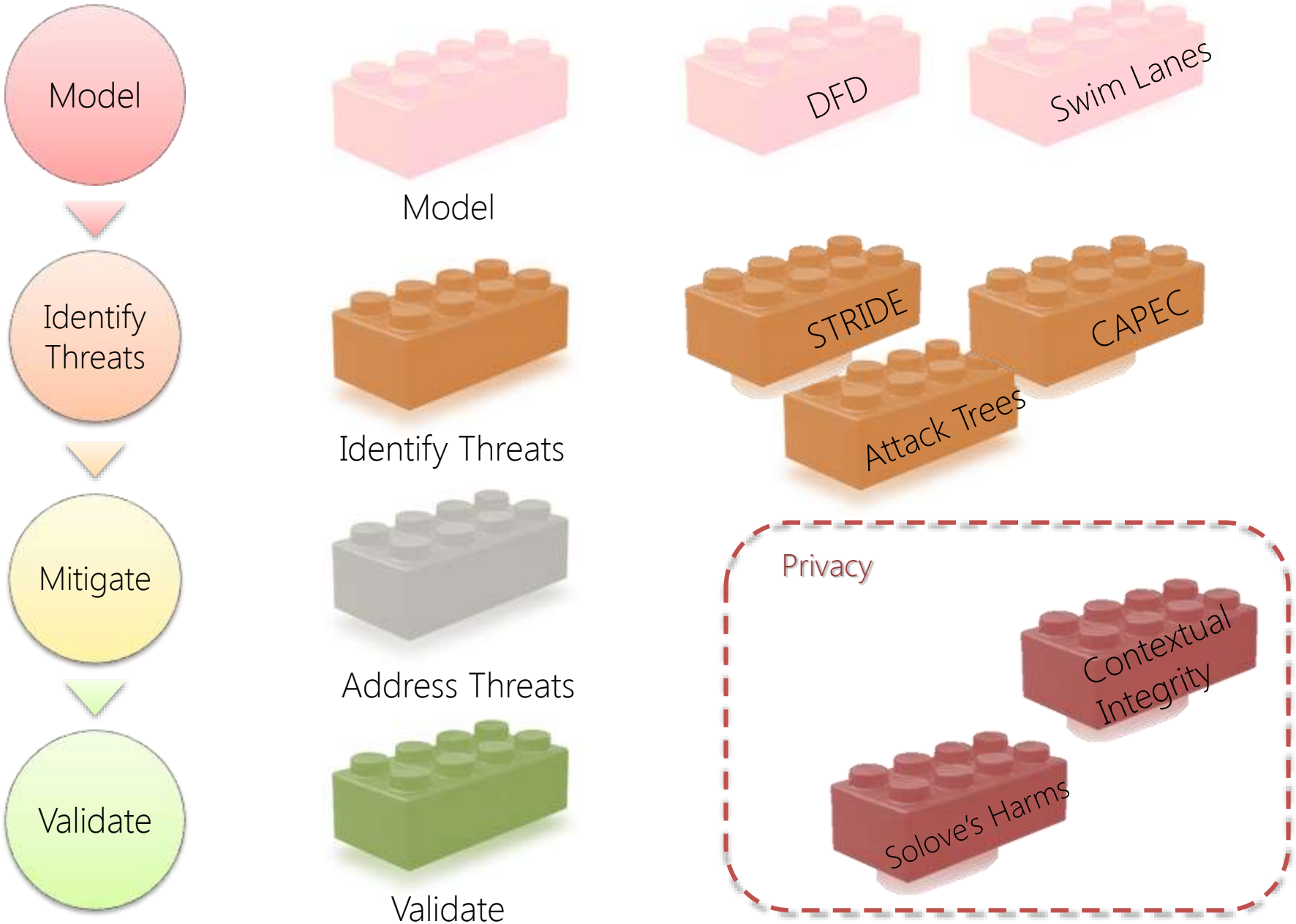
Trap #3: "The Way To Threat Model Is…"

- Too much focus on specifics of how
  - Use this framework (STRIDE)
  - With this diagram type
- Focus on what delivers value by helping people find good threats
- Focus on what delivers value by helping lots of people

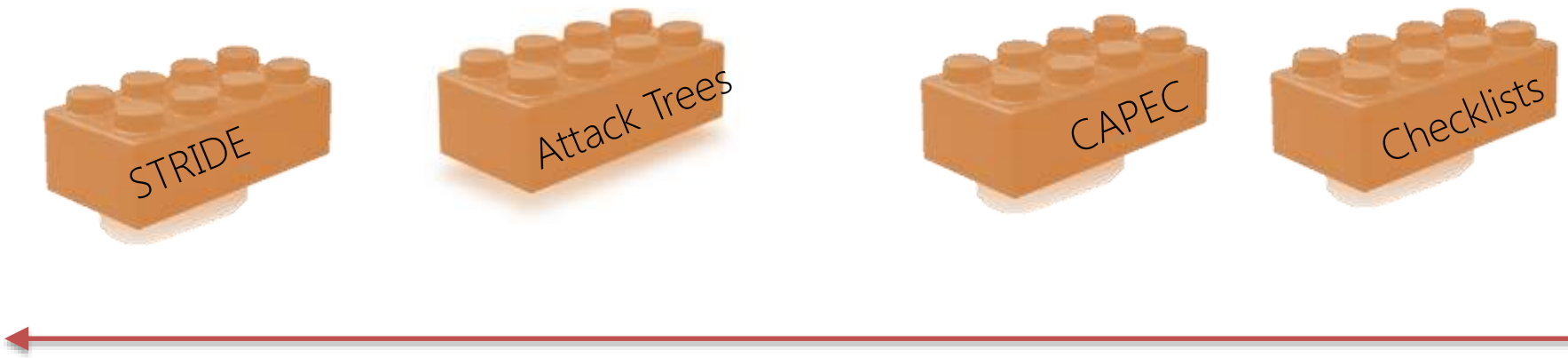
Borrowing a line from the Perl folks…

There's more than one way to threat model

Trap #3: Monolithic Processes



Trap #3: “The Way To Threat Model Is…”



Trap #4: Threat Modeling as One Skill

- Technique: DFDs, STRIDE, Attack trees
- Repertoire:
  - SSLSpoof, Firesheep
  - Mitnick, Cuckoo's Egg
  - Conficker, Stuxnet and Crilock

- Frameworks and organization
  - Elicitation and memory for experts

There's Technique and Repertoire

Trap #5: Threat Modeling is Born, Not Taught

- Playing a violin…You need to develop and maintain muscles
- Beginners need easy and forgiving tunes
- Not everyone wants or needs to be a virtuoso

Threat Modeling Is Like Playing A Violin

We’ve got to give them more time!

Trap #6: The Wrong Focus

- Start from your assets
- Start by thinking about your attackers
- Thinking that threat modeling should focus on finding threats

- Remember trap #3: “The Way to threat model is”
- Starting from assets or attackers work for some people

Trap #7: Threat Modeling is for Specialists

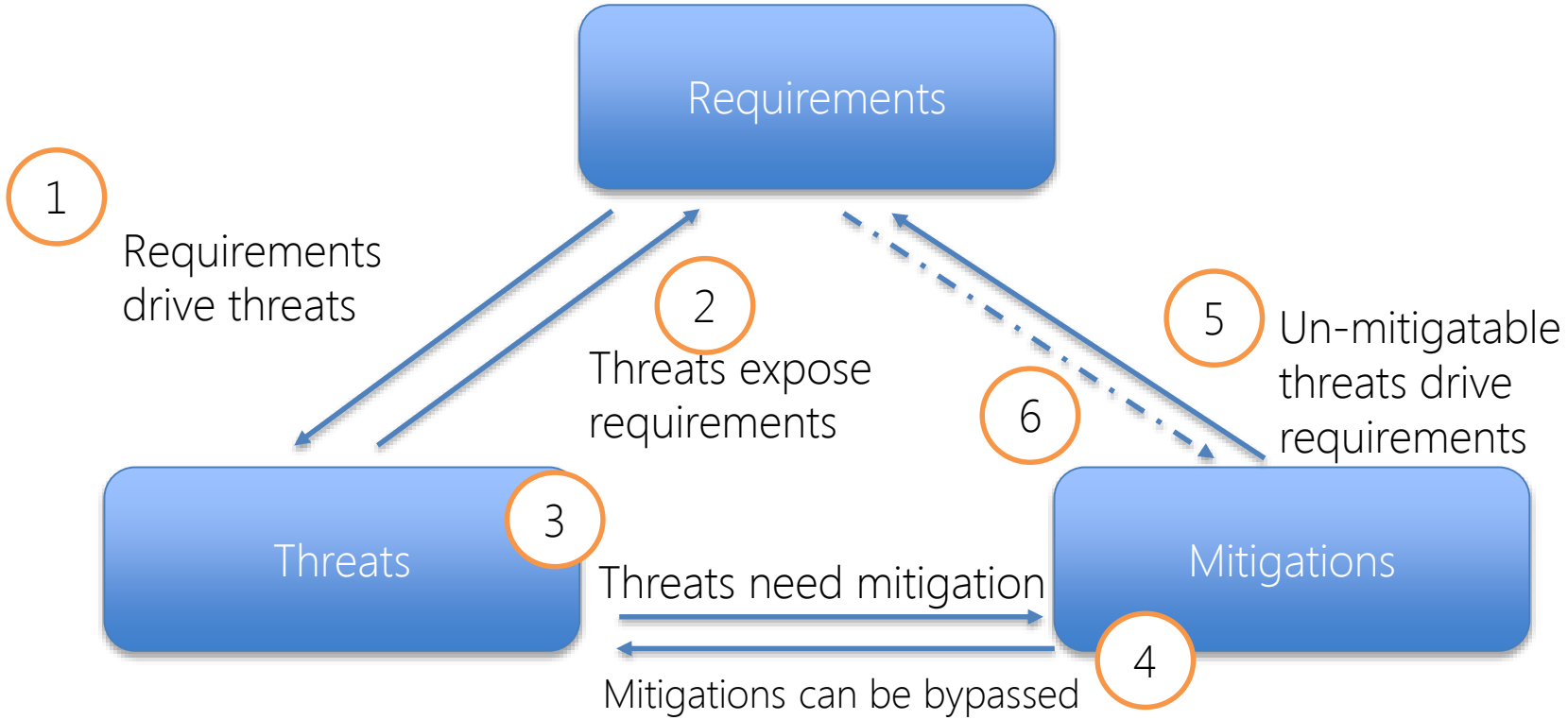
- Version control:
  - Every developer, most sysadmins know some
  - Some orgs have full time people managing trees
- This is a stretch goal for threat modeling

Threat Modeling Is Like Version Control

Trap #8: Threat Modeling Without Context

- Some threats are “easy” for a developer to fix (for example, add logging)
- Some threats are “easy” for operations to fix (look at the logs)
- Good threat modeling can build connections
  - Security Operations Guide
  - Non-requirements

Trap #9: Laser-Like Focus on Threats



Interplay of attacks, mitigations and requirements

Trap #10: Threat Modeling at the Wrong Time

Summary

- Anyone can threat model, and everyone should
- The skills, techniques and repertoire can all be learned
- There are many traps

- Threat modeling is one of the most effective ways to drive security through your product, service or system

Call to Action

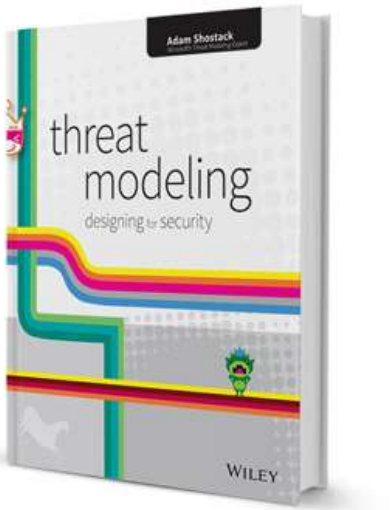
- Remember the 4 Questions
- Be proactive:
  - Find security bugs early
  - Fix them before they're exploited
- Drive threat modeling through your organization
- Drive threat modeling throughout the profession

"All models are wrong, some models are useful"

— George Box

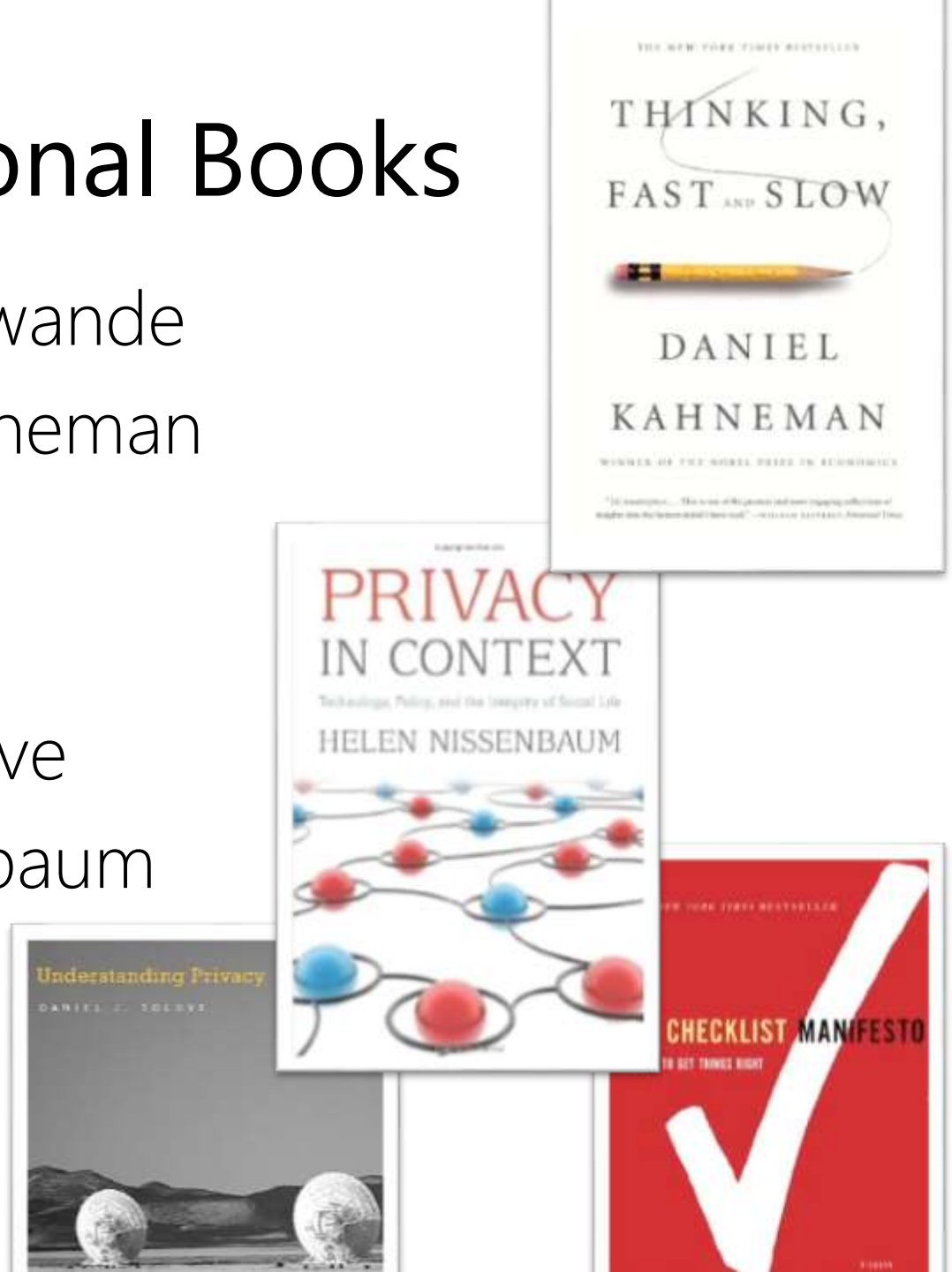
Questions?

- Please use the microphones
- Or tweet @adamshostack
- Or read the new book ☺
  - Threatmodelingbook.com



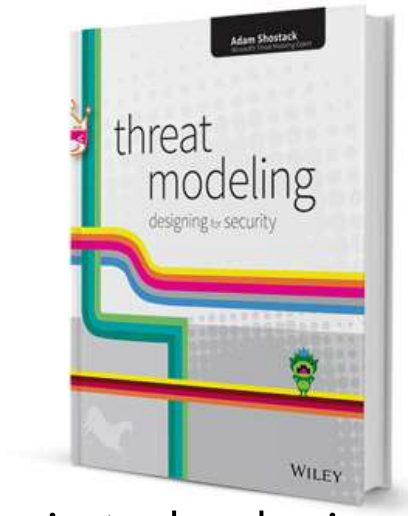
Resources: Additional Books

- *The Checklist Manifesto* by Atul Gawande
- *Thinking Fast & Slow* by Daniel Kahneman
- *The Cukoo's Egg* by Cliff Stoll
- *Ghost in the Wires* by Kevin Mitnick
- *Understanding Privacy* by Dan Solove
- *Privacy in Context* by Helen Nissenbaum



Resources

Threat Modeling: Designing For Security



Part I: Getting Started

1. Dive in and threat model
2. Strategies for threat modeling

Part II: Finding Threats

3. STRIDE
4. Attack Trees
5. Attack Libraries
6. Privacy Tools

Part III: Managing and Addressing Threats

7: Processing and managing threats
8. Defensive Building Blocks
9. Tradeoffs when addressing threats
10. Validating threats are addressed
11. Threat modeling tools

Part IV: Threat modeling in technologies and tricky areas

12. Requirements cookbook
13. Web and cloud threats
14. Accounts and Identity
15. Human Factors and Usability
16. Threats to cryptosystems

Part IV: Taking it to the next level

17. Bringing threat modeling to your organization
18. experimental approaches
19 Architecting for success

Appendices

- Helpful tools, Threat trees, Attacker Lists, Elevation of Privilege (the cards), Case studies

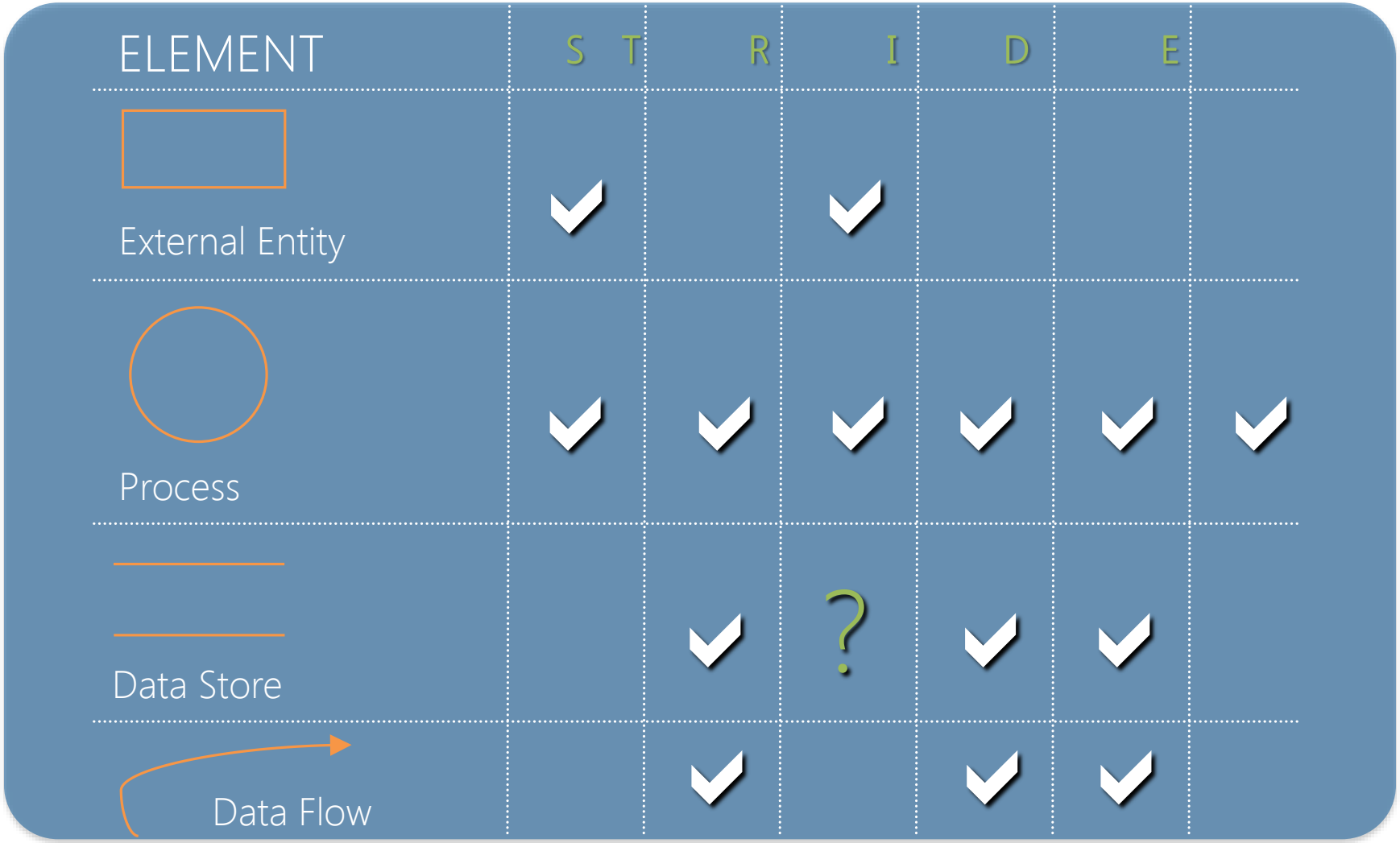
Resources

Thank you!

- Star Wars: Episodes IV-VI
- Great Creative Commons Lego brick art:
  - Lego Envy, http://www.eurobricks.com/forum/index.php?showtopic=64532
  - http://pinlac.com/LegoDSTractorBeam.html
  - Seb H http://www.flickr.com/photos/88048956@N04/8531040850/
  - Simon Liu http://www.flickr.com/photos/si-mocs/6999508124/
  - Kaitan Tylerguy http://www.flickr.com/photos/kaitan/3326772088/
  - Nathan Sawaya, http://brickartist.com/gallery/han-solo-in-carbonite/
  - http://www.flickr.com/photos/prodiffusion/

BACKUP

Different Threats Affect Each Element Type



This isn’t the reputation you’re looking for…

Searches related to **threat modeling**

threat modeling **example**	**why is** threat modeling **difficult to understand**
threat modeling **tool**	threat modeling **tool software**
threat modeling **dread**	threat modeling **ppt**
threat modeling **stride**	threat modeling **book**