RSAConference2016

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Connect to Protect

SESSION ID: SBX1-W13

Hacking IoT:
Why Security in IoT is Failing

(and how to fix it!)

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#RSAC

Why is this important?

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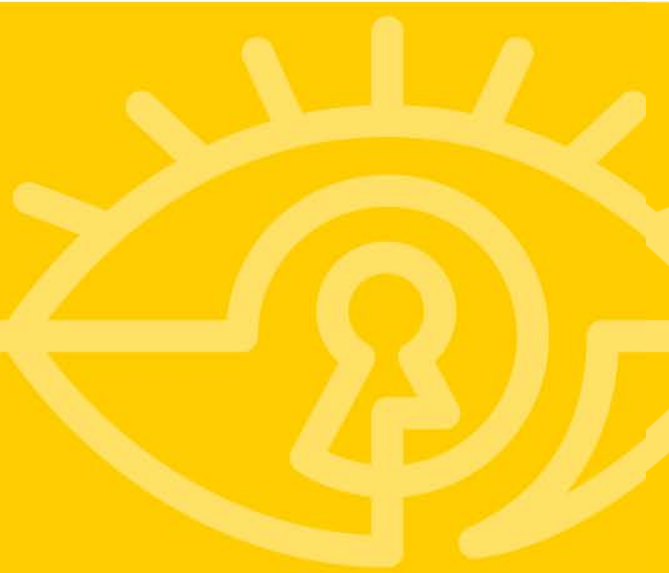
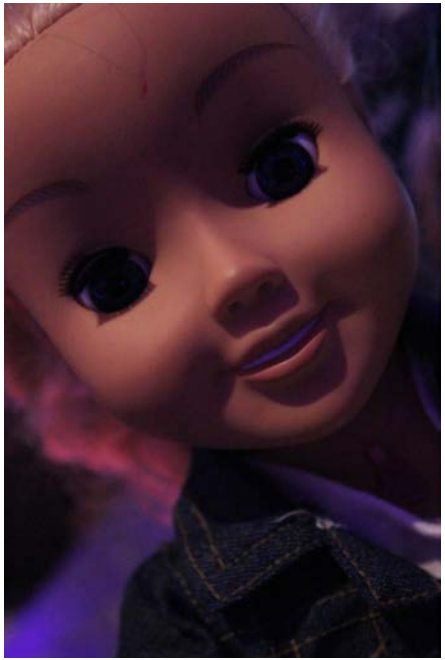


IoT Village


VILLAGE

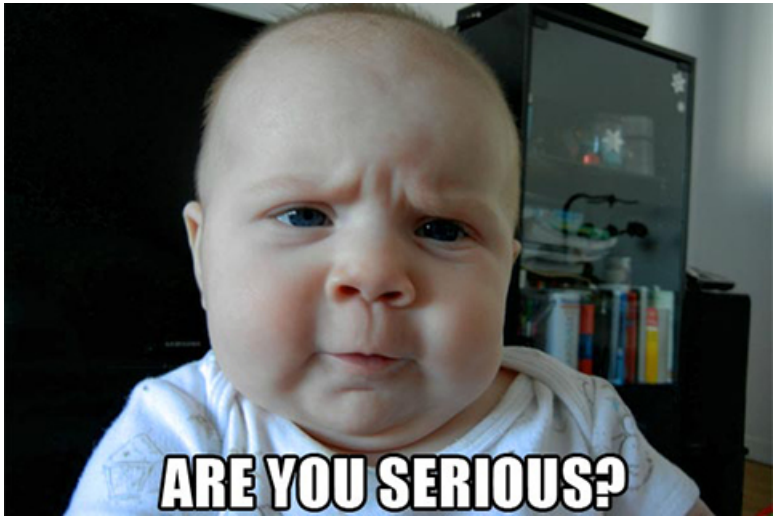

DANGER LIVE RAILS
DEFCON
23




VILLAGE
SECURITY OF WIRELESS
HOME AUTOMATION
SYSTEMS – A WORLD
BESIDE TCP/IP
cognosec
HAC
VILLAGE

IoT Village: Results

- **66** zero-days
- **27** device types
- **18** manufacturers



IoT Village: Results

SAMSUNG

PHILIPS

fitbit

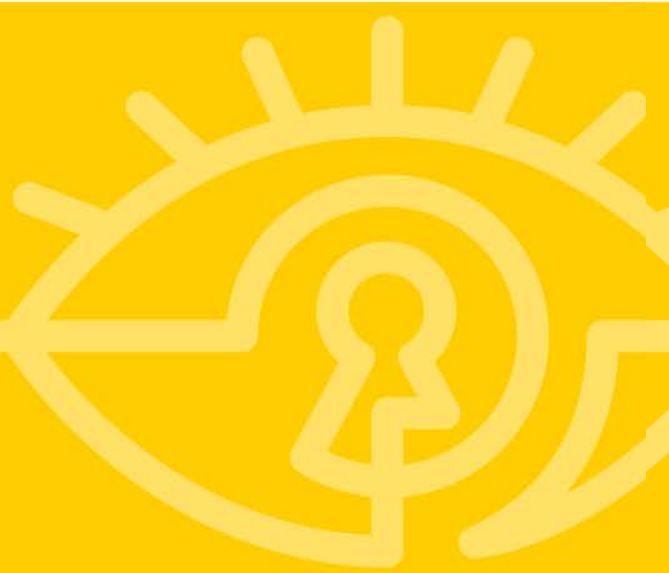
BOSE

D-Link®

ISE
independent security evaluators

IoT Village: Results

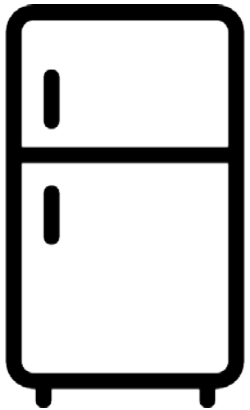
- Privilege Escalation
- Remote Code Execution
- Backdoors
- Runs as Root
- Lack of Encryption
- Key Exposure
- Denial of Service
- Etc, etc, etc



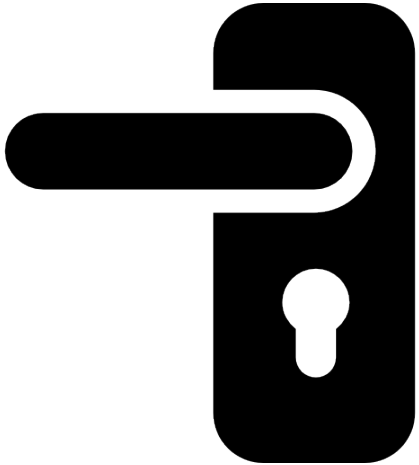
Attack Anatomies

Baby Monitors

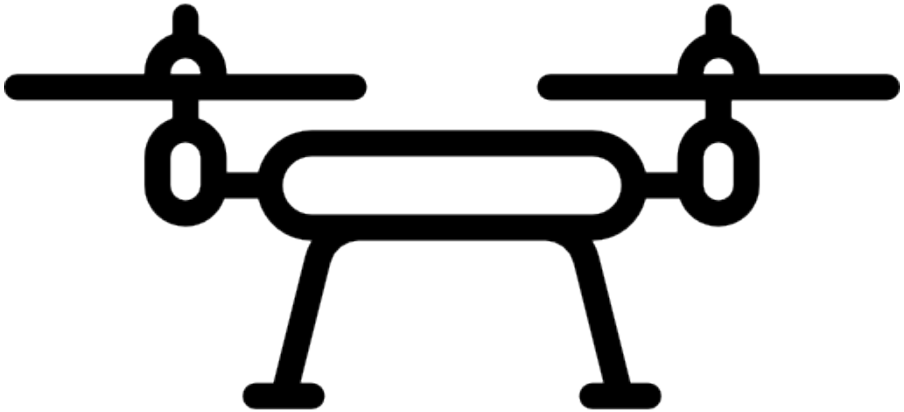
Refrigerator



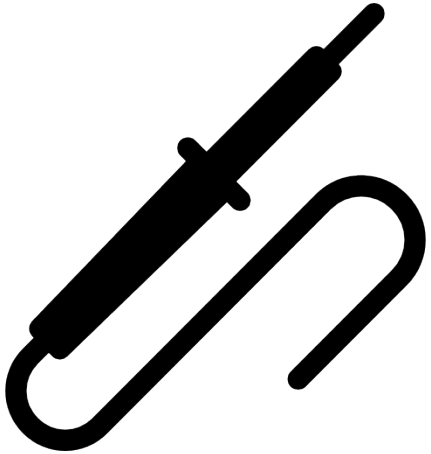
Lock

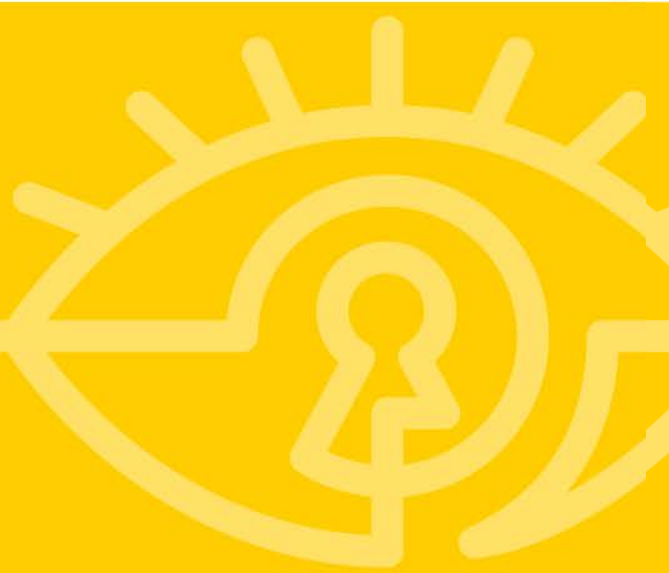


Drone



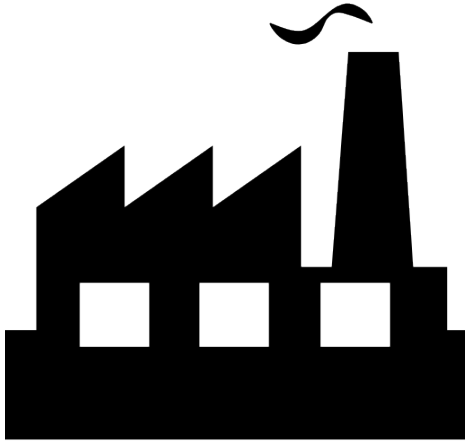
Hardware Hacking

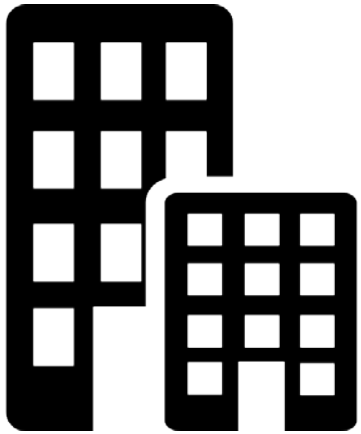




Solutions

What Can Be Done?





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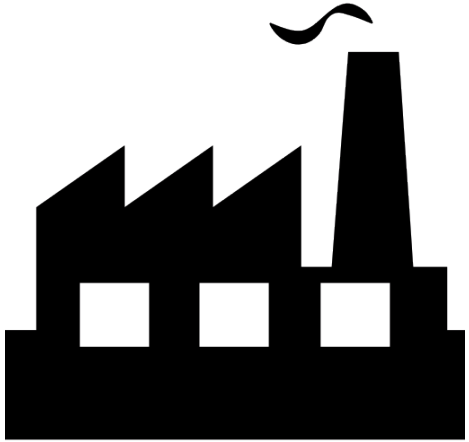
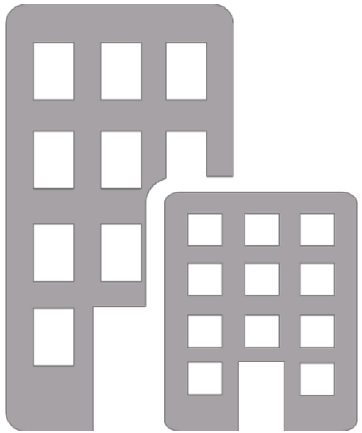
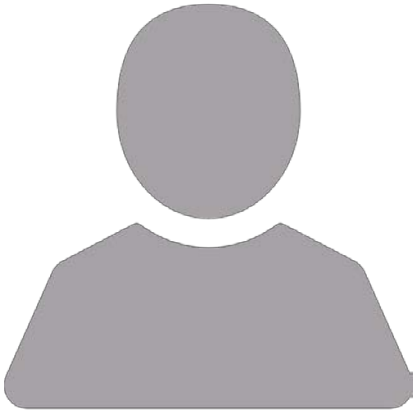






Back to Basics

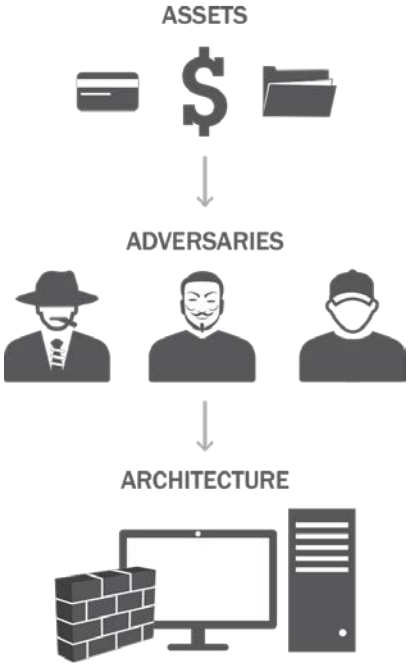
- Secure Design Principles
- Threat Model
- IoT is no different, from a security perspective

Threat Model

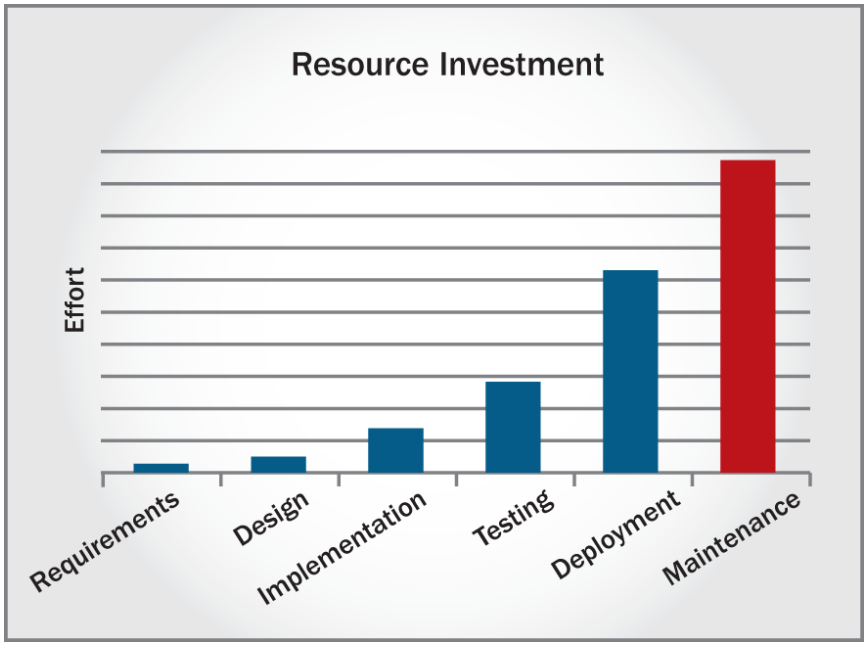
"If you don't know where you are going…

… any road will take you there."

Threat Model



Build It In!



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Reduce Asset Handling

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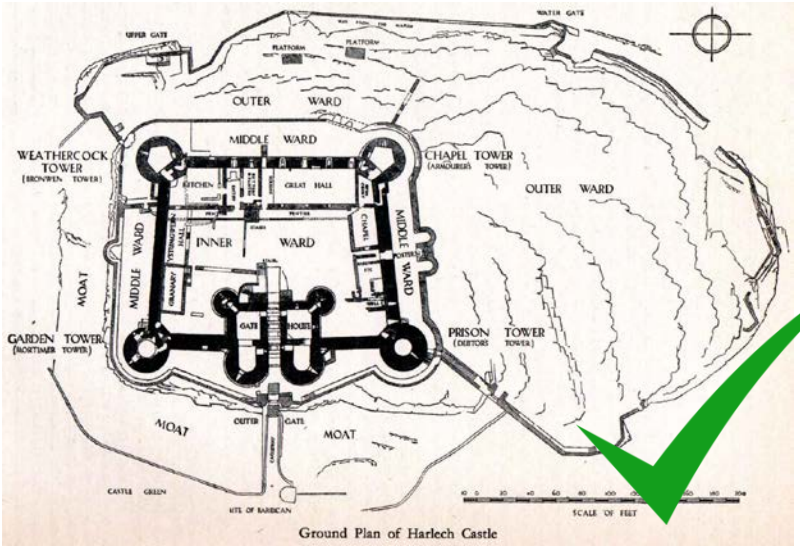
Complete Mediation

Security Assessment



Ground Plan of Harlech Castle

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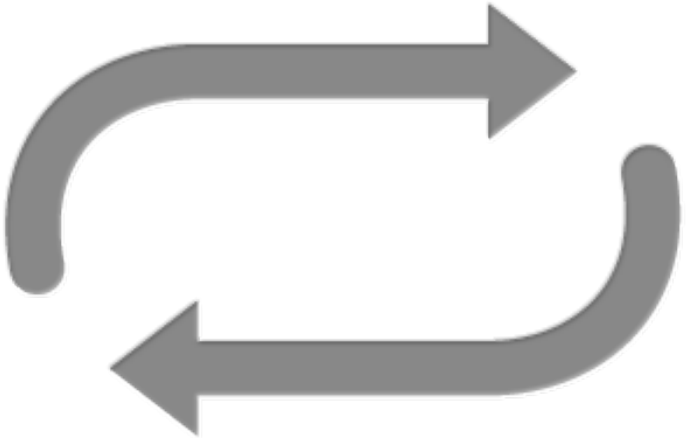
Ongoing Reassessment



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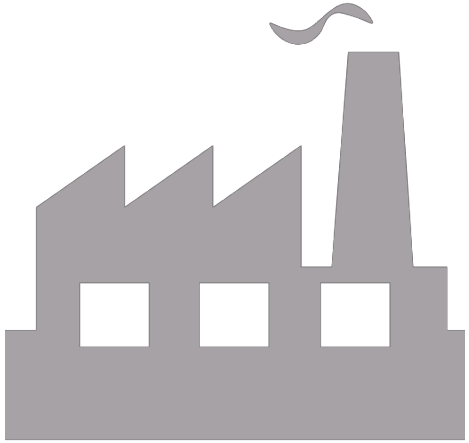
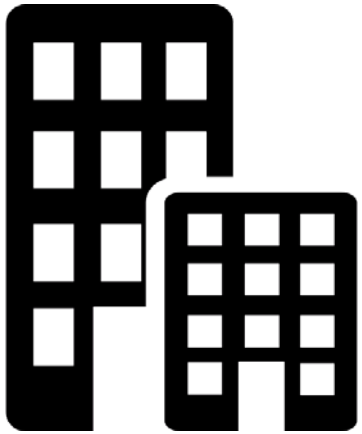
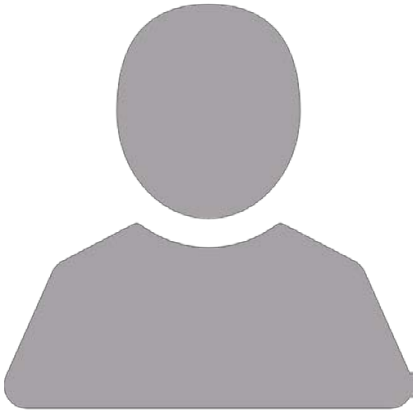
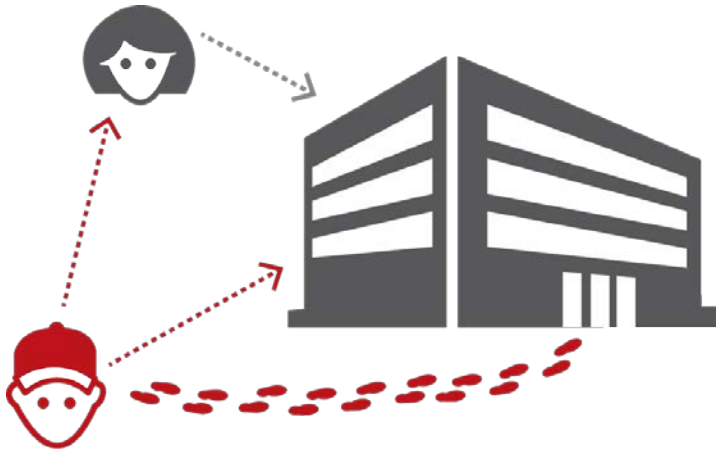




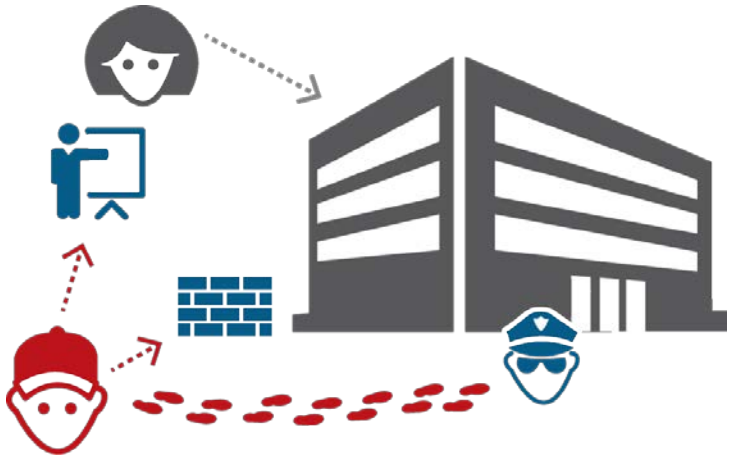


Understand Threat Landscape

Traditional Attacks



Traditional Defenses



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Understand Threat Landscape

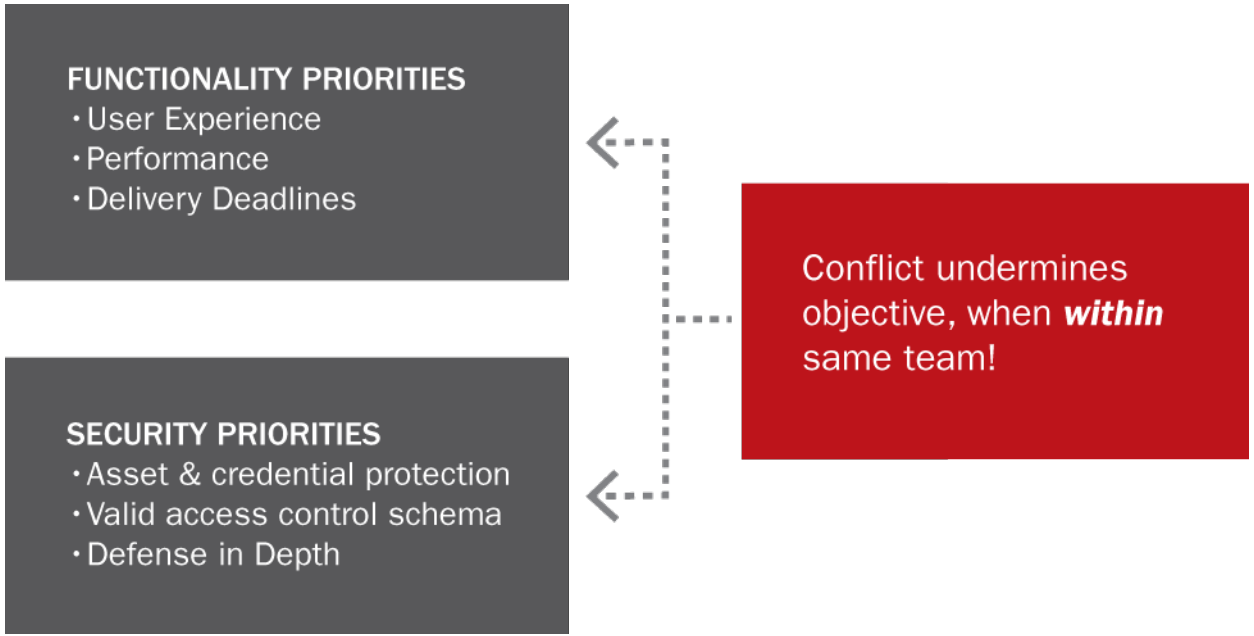
Defense in Depth

Priorities Affect Outcomes

FUNCTIONALITY PRIORITIES
- User Experience
- Performance
- Delivery Deadlines

SECURITY PRIORITIES
- Asset & credential protection
- Valid access control schema
- Defense in Depth

Priorities Affect Outcomes



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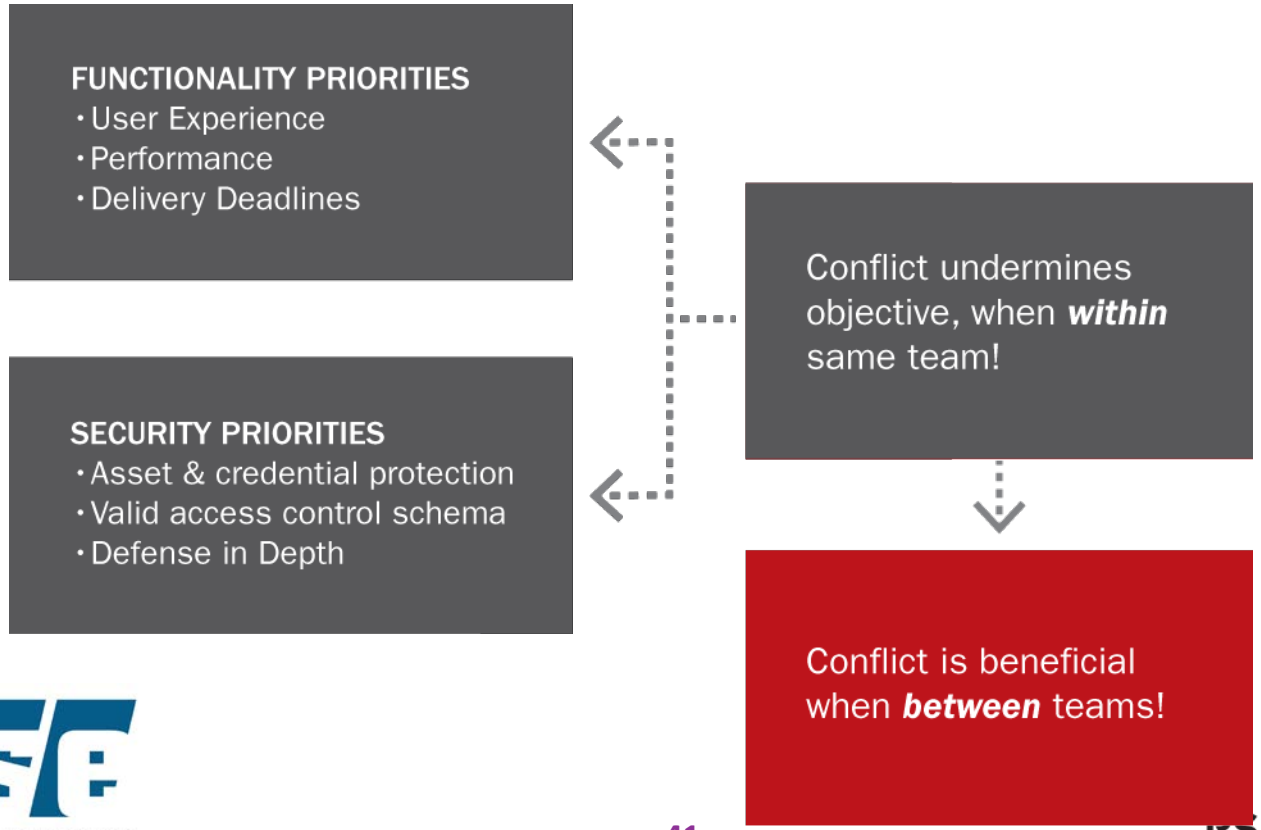

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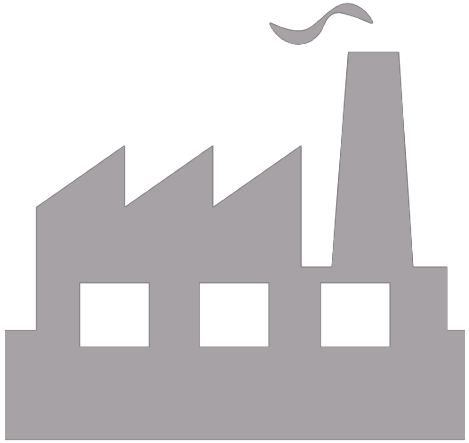
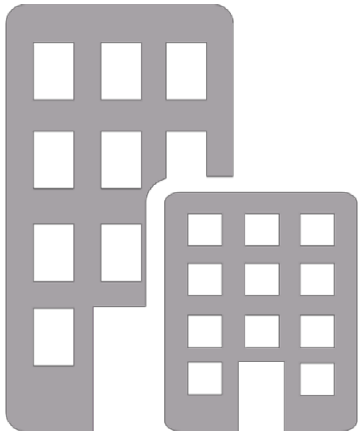
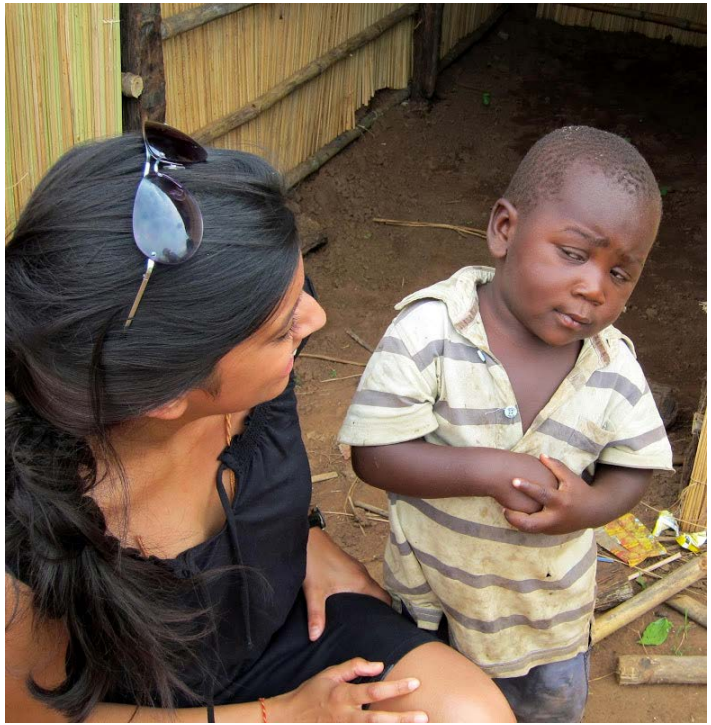




Trust Reluctance



Sniff out the B******t

- “bank-level security”
- “military-grade encryption”
- Unsupported claims
- Lack of security features

Vote With Your Wallet!

Apply

Manufacturers

- Adhere to Secure Design Principles
- Establish Threat Model
- Perform security assessment… before the bad guys do!

Apply

Businesses

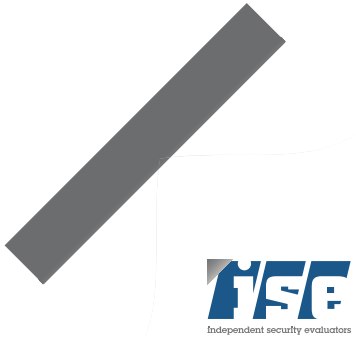
- Define Assets
- Consider Adversaries
- Identify and Reduce Risk

Apply

Users

- Understand the risk you are adopting
- Be an informed consumer
- Speak up!

Questions?



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