Re-thinking penetration testing

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SDX SECURITY

Who are we?

Dr. Luka Malisa

Head Information Security

Be kind – be empathetic

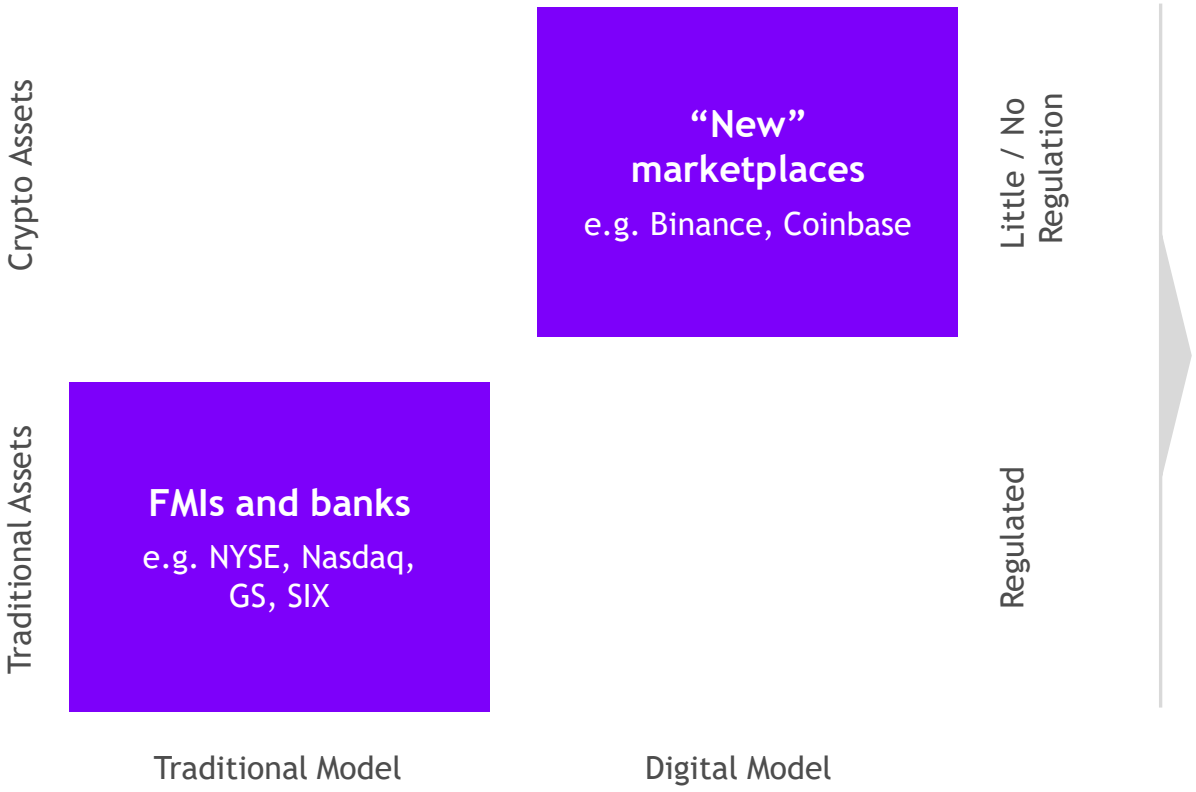
Dr. Stefan Frei

Senior Information Security Officer

Tame complexity

https://www.sdx.com

SDX will set the standard for digital assets, embedded in the existing financial market infrastructure



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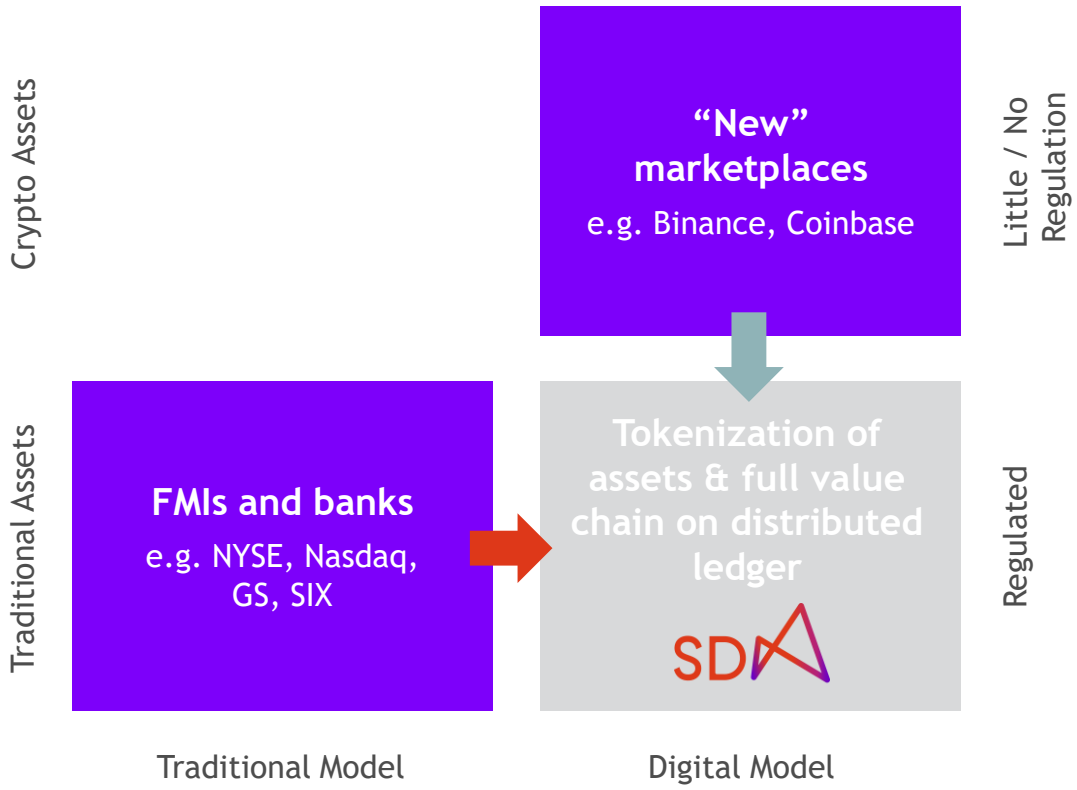
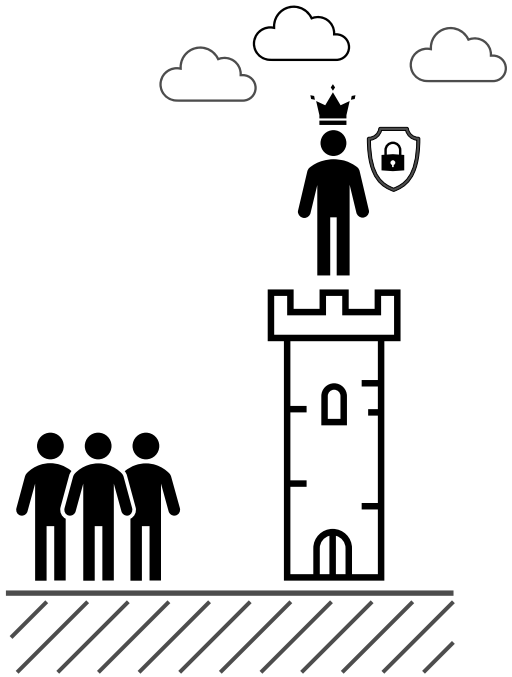


- Traditional and new **market participants try** to **disrupt** existing market **infrastructure and business models**
- SDX is creating a **regulated B2B market infrastructure solution** allowing access only to **institutional participants**
- SDX offers its members **access to new products and services** and enables the creation of new business models
- SDX is connecting banks through **existing connectivity** to SIX

Security Stereotypes

1

Ivory Tower



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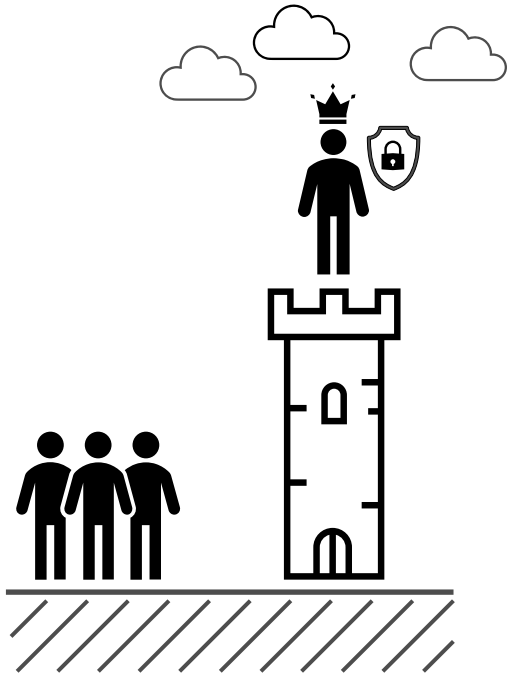
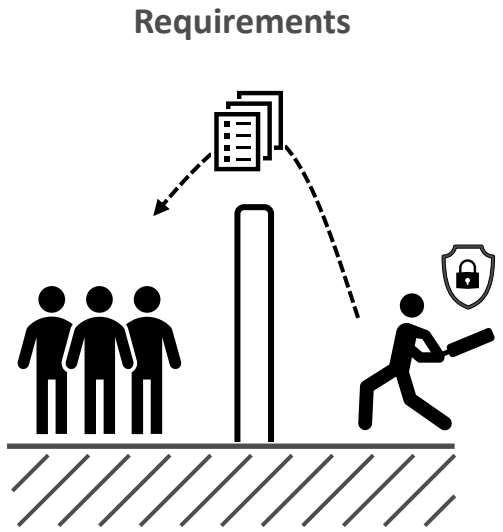


2

Silo Thinking



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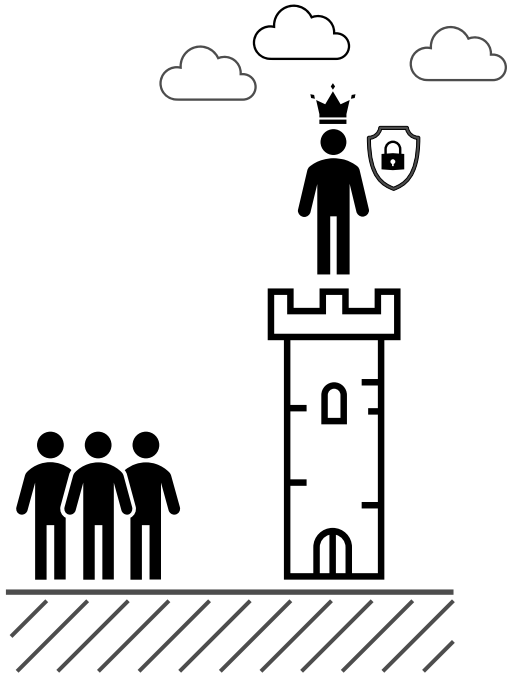

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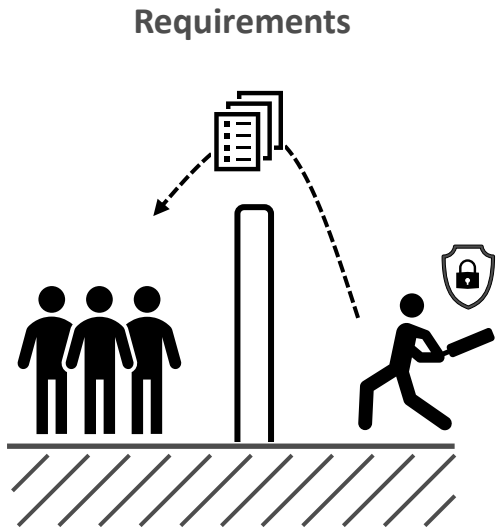

3

Non-technical

Security Stereotypes

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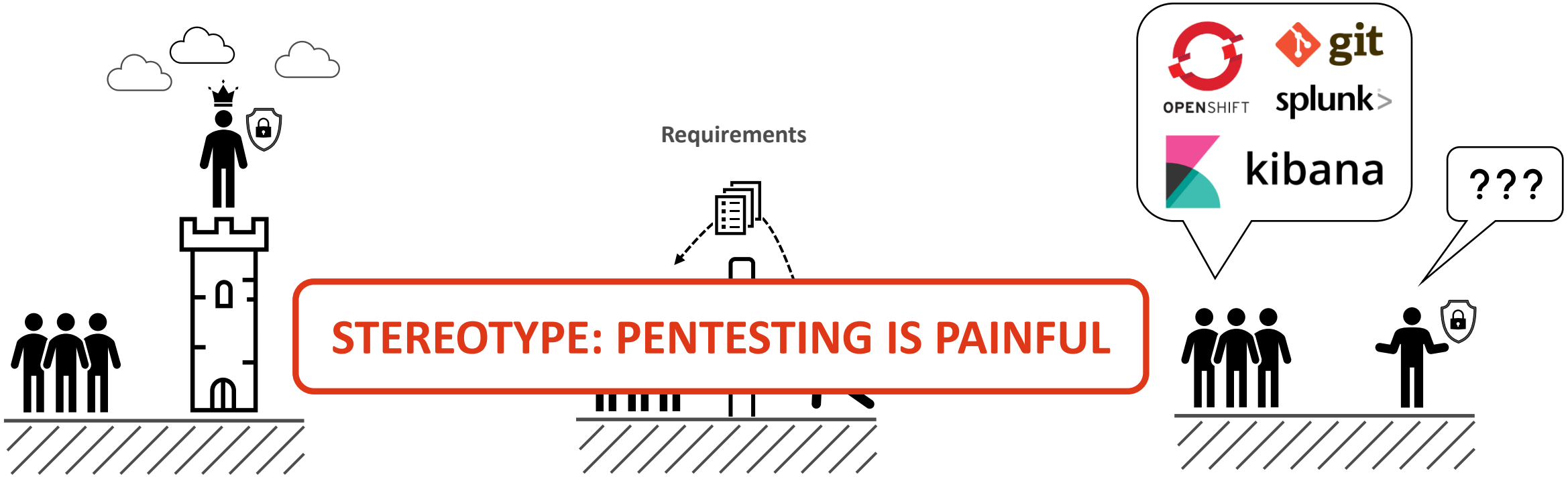

STEREOTYPE: PENTESTING IS PAINFUL

Challenges Securing SDX

SITUATION	SECURITY CHALLENGES
1. SDX at frontier of new tech	**Manual approaches** not helpful
2. High uncertainty	**Slow** security is a liability
3. Permanent change	**Spot fixes** are insufficient

Team Mission: Four STEPs

WHAT	*HOW*	*WHY*
STRATEGIC	Enabling & Scalable	• Point fixes don't work • Duct-tape is our friend • Scalability through automation

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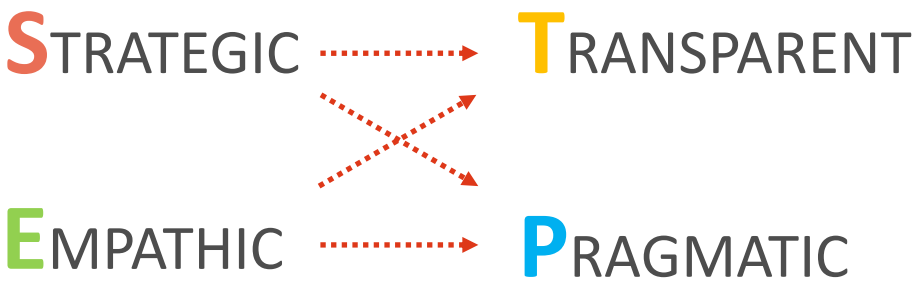
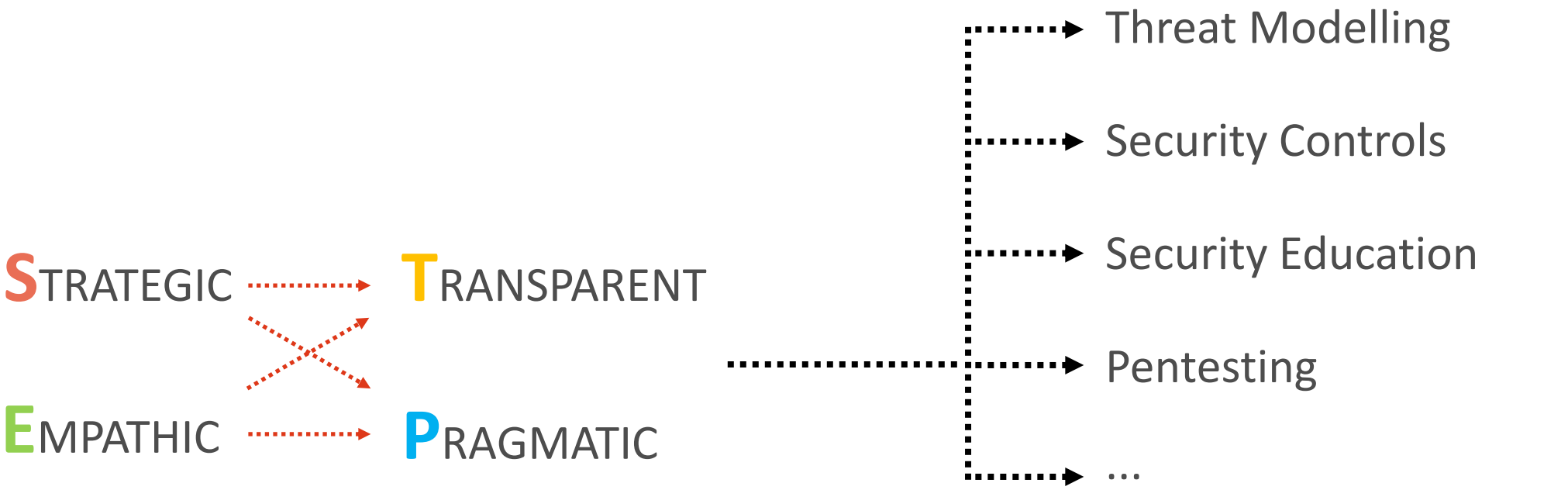
EMPATHIC	Supportive & Understanding	• We shut-up and listen, then solution • We ask for, and act on, feedback • We trust and support our organization
PRAGMATIC	Resourceful & Risk-based	• Approximately right today tops late precision • Get the basics right first • Know our big fires / risks

Team Mission: Four STEPs



Thinking pattern

Team Mission: Four STEPs



Thinking pattern

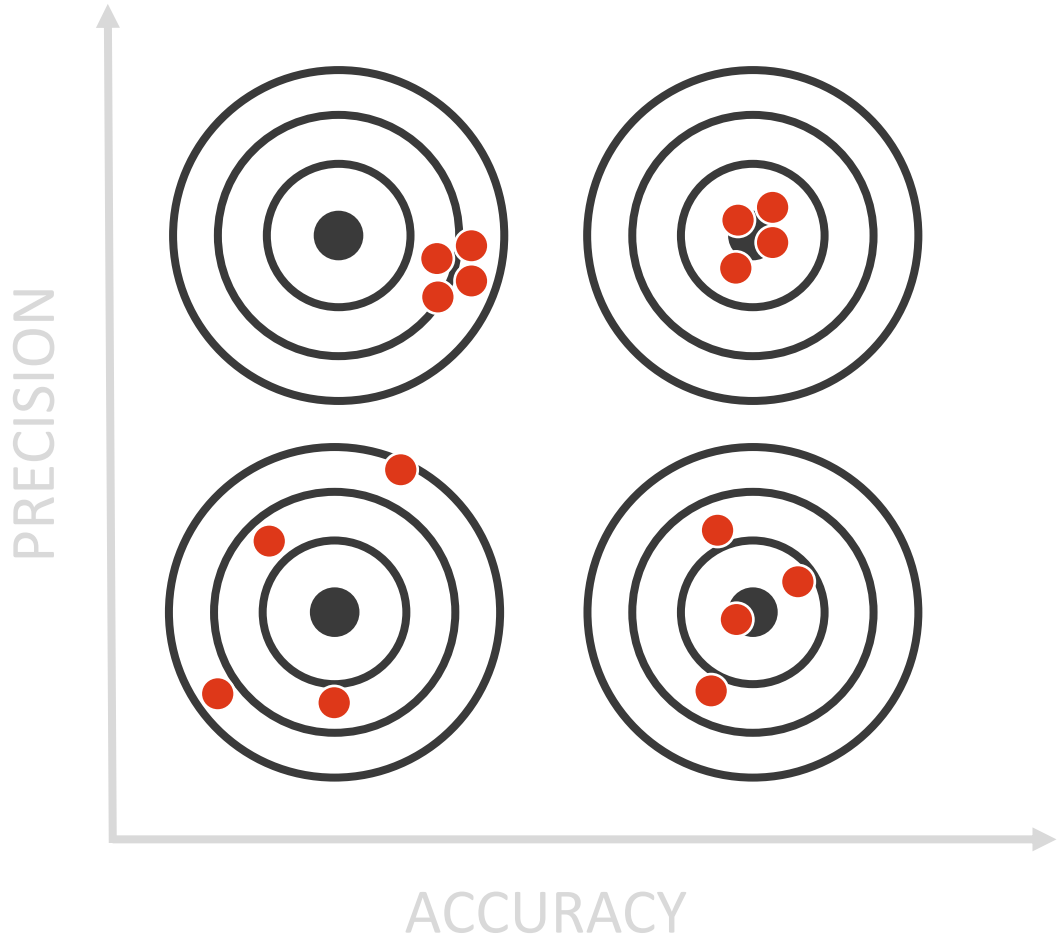
Results in

Quo Vadis Penetration Testing?

TRADITIONAL MODEL

- *Compliance driven security*
- *Testing monolithic artifacts*
- *Pentesting outside of development*
- *Service-oriented*

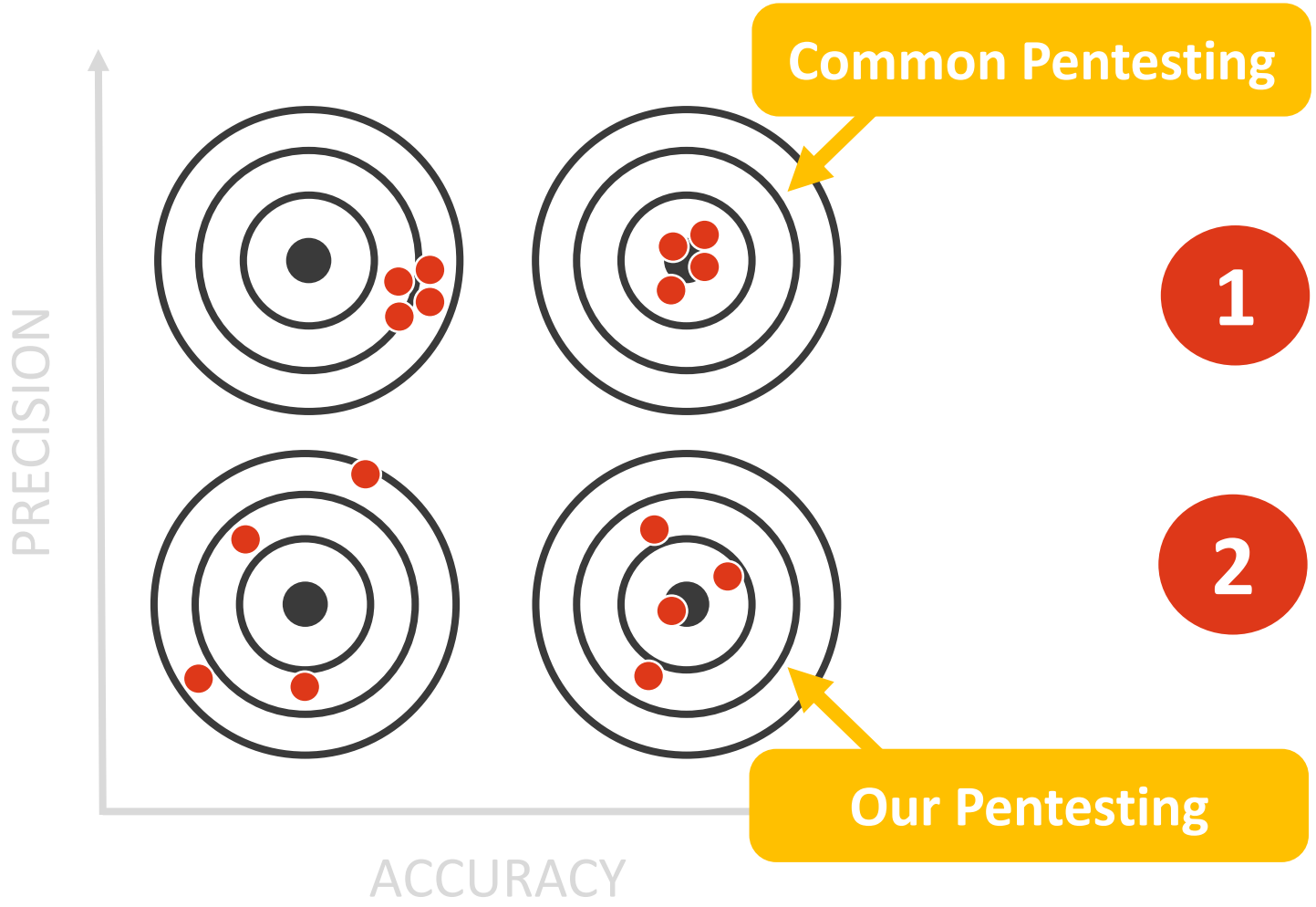
Quo Vadis Penetration Testing?



1. **Approximately right today**
   >> Precisely right tomorrow

2. **Imprecise & often**
   >> Precise & rare

Quo Vadis Penetration Testing?



1 **Approximately right today**
>> Precisely right tomorrow

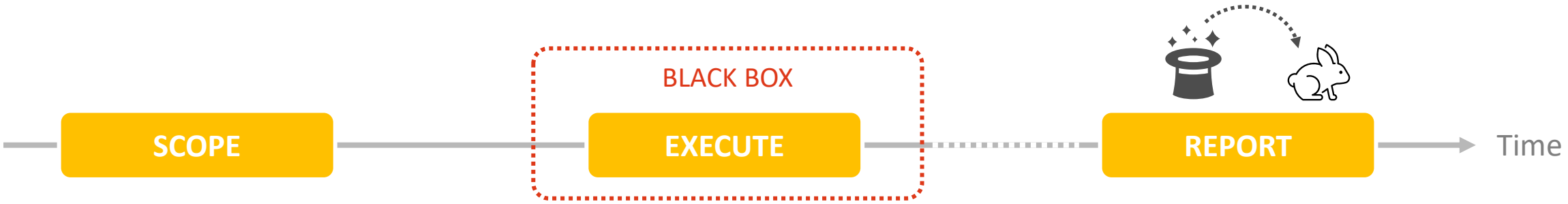
2 **Imprecise & often**
>> Precise & rare

Security Smoke Test (SST)

Re-thinking penetration testing for agile environments

Security Testing - Traditional Model

1. **PREPARE**
   Define price and time for given scope
2. **EXECUTE TEST**
   Magic happens in a black box
3. **REPORT**
   Results delivered after test concluded



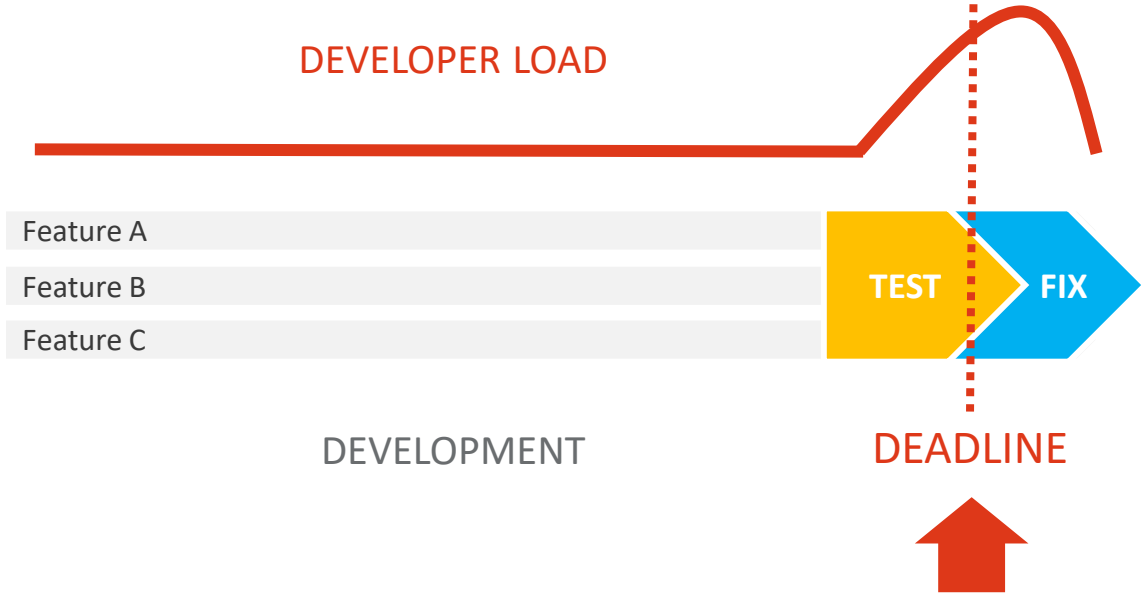
LIMITATIONS

- Test completeness or quality?
- Feedback & learnings for deveoplers?
- Trends over a series of tests?

Security Testing - Traditional Model

Penetration tests are rare, one-off events at end of development

- **Compliance driven** security
- Designed for big **monolithic artifacts**
- Pentesting **disconnected** from development



PEAK INTENSITY
Organization overloaded

LATE TESTING

- No reduction of uncertainty
- Overload to address findings
- High risk of project delay

Security Testing - Traditional Model

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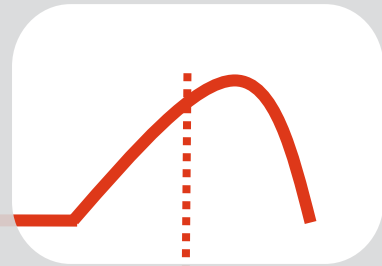
Security is blocking us!



Not enough time!

PEAK INTENSITY
Organization overloaded

LATE TESTING

- No reduction of uncertainty
- Overload to addr
- High risk of proje

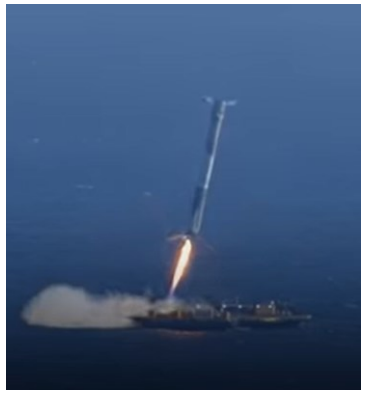
Bad way to make friends

Drawing Inspiration

- Development of disruptive products & services always comes with surprises
- **No issues means no innovation (you are only optimizing)**

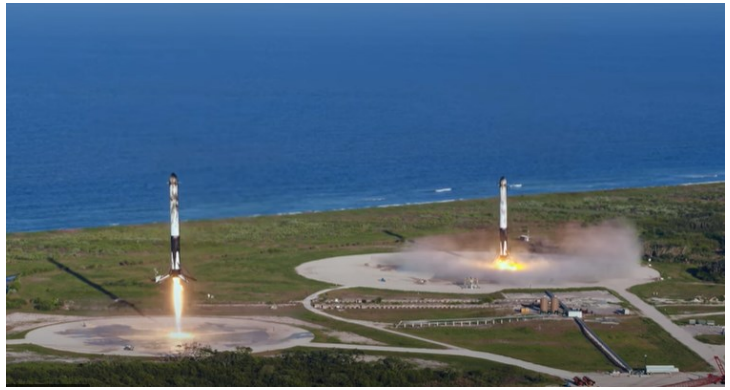
MISSED THIS ONE

CLOSE, BUT…



ALMOST

BUSINESS AS USUAL

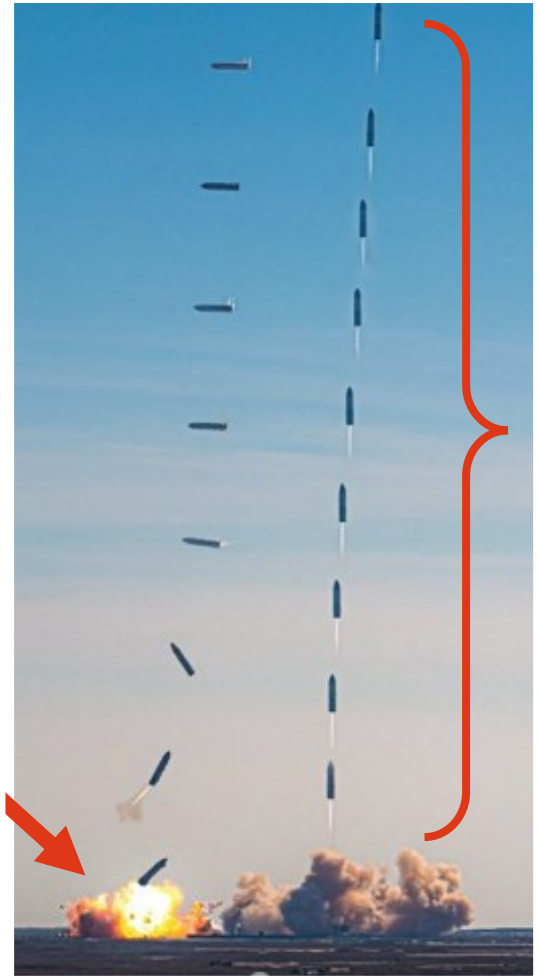


NOT FAILURES, BUT **CRITICAL LEARNINGS!**

Reduction of Uncertainty

- Actual cause of failure **WAS NOT ON OUR RISK LIST**
- We will **TAKE A LOT OUT** of that

THEORY ≠ PRACTICE



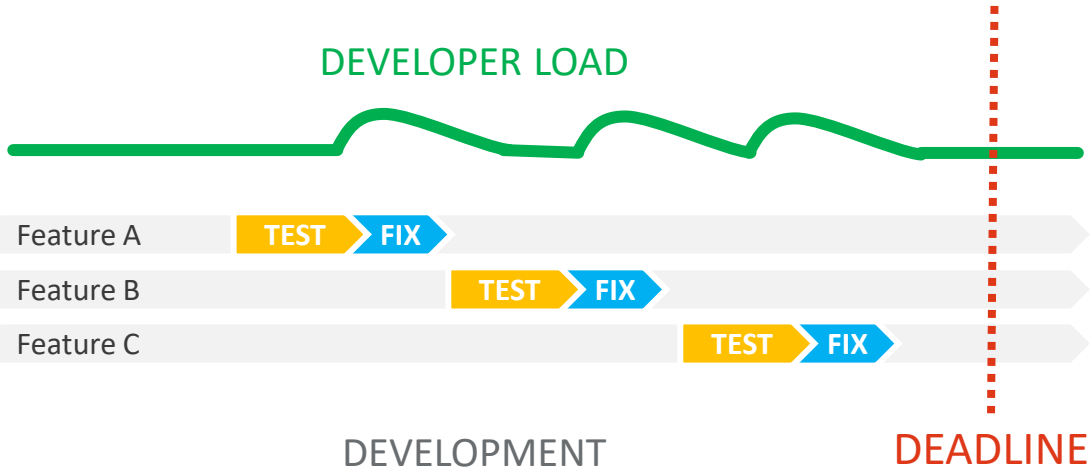
PERSPECTIVE

- Many failures happened simply because a new system tries to do **unusual things**
- Controlling all the way to **putting the crater in the right spot** was epic

Security Testing - New Model

Agile environments require a novel approach

- **Agile** and **continuous** testing
- Pentesting **integrated** in development
- Early **validation** of assumptions



EARLY & CONTINUOUS TESTING

- Test new function when ready
- Early reduction of uncertainty
- Buy time to learn and fix

Small and plannable load

OUR APPROACH

Get more by removing unnecessary things rather than adding more things

Phase 1 - Pre Test

Early documentation by test provider

PREPARE | EXECUTE | REPORT

METHODOLOGY

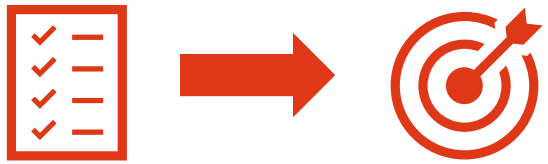
Outline **testing methodology**

TOOLS

Define **list of tools** to be used

OBJECTIVES

- Align expectations
- Early identification of testing gaps
- Guard rails for test execution
- Ensure consistency & quality across tests



+ Reusable methodologies

Phase 2 - During Test

PREPARE | **EXECUTE** | REPORT

Daily meeting with stakeholders generates trust and consistency

DAILY TOUCHPOINT

Briefing with **testers**, **developers**, and **application owners**

DAILY REPORT

Template based, consistent, and continued documentation

OBJECTIVES

- Q&A
- Communication & learning
- Key findings
- Ensure consistency and quality

+ Issues owned and quickly addressed

SDA SECURITY

Phase 3 - Post Test

Standardized deliverables and classification across tests

PREPARE EXECUTE **REPORT**

REPORT

Red teaming section and
test automation information

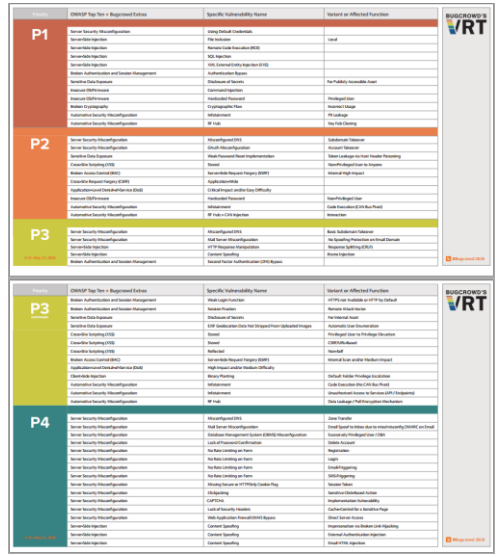
RESULTS

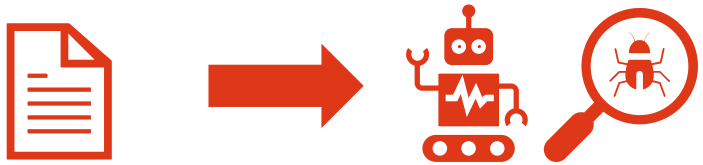
Raw results from tools, **positive & negative** findings

OBJECTIVES

- Facilitate automation of testing in CI/CD
- Track testing coverage and trends across tests

bugcrowd VRT





+ Deeper security understanding

SDA SECURITY

Reduce, Simplify, & Optimize

Prepare organization for testing at scale rather than testing as a one-off

SETUP FOR TESTER

- Company notebooks and accounts
- Shared folders and AD groups
- Templates

TEMPLATES & WORKFLOW

- Naming convention **SST-*YYYY-NN***
- Chat-Ops from **prep to close** with all stakeholders

Objectives

- Reduced preparation and turnover time
- Better rapport between engineering & testers
- Streamlined communication & documentation

Consistent naming supports scalable automation and linking between **Confluence**, **Reports**, **JIRA tickets**, ...

Our Result – Agile Penetration Testing

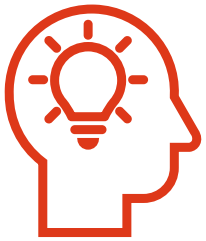
TRADITIONAL MODEL

- *Compliance driven security*
- *Testing monolithic artifacts*
- *Pentesting outside of development*
- *Service-oriented*

NEW MODEL

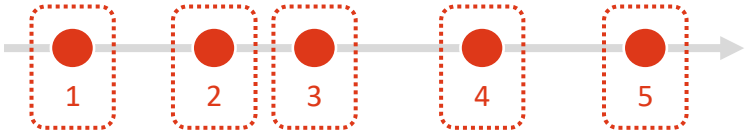
- *Agile driven development & security*
- *Continuous and step-wise testing*
- *Pentesting integrated in development*
- *Pentest provider is a partner*

Security Smoke Testing - Lessons Learned

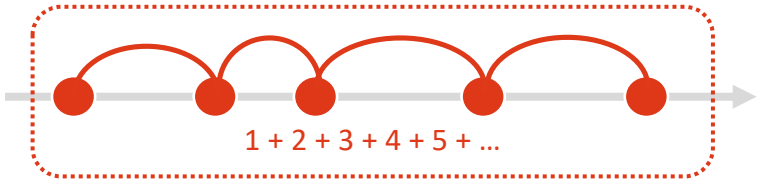


EXPERIENCE & BENEFITS

- **Know how transfer** between developers & security
- Early **reduction of uncertainty**
- **Reduced load** on developers
- Increasing **familiarity** with security testing



Isolated Tests



Trends, Patterns, Learnings

LEARNINGS

- Testing often exerts **healthy pressure** on organization
- **More** security issues are fixed by testing often
- Increased **security awareness** in dev community
- Increased **efficiency** of testing

Conclusion & Key Takeaways

- Common security controls (e.g., pentesting) need not be painful
- Embrace change and unpredictability
- Cybersecurity is about people – technology just makes it go faster
- Be kind, be empathetic, build genuine relationships

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Q & A

"Plan for the difficult whilst it is easy – act on the large while it is minute."
– Lao Tzu