To DevSecOps or not to DevSecOps: is that a question ?

Using an Archetype-based model of Security in DevOps

Mario Platt
Strategy Director

Today's Agenda

- The 2 schools of thought
- Who is it for ?
- DevOps Security Archetype model
- Meet the Archetypes
- Grappling with Constraints and Bottlenecks
- Helping Archetypes - Governance and Maturity
- Helping Archetypes - Team Topologies
- Do we need DevSecOps or not, then ?

The 2 schools of thought

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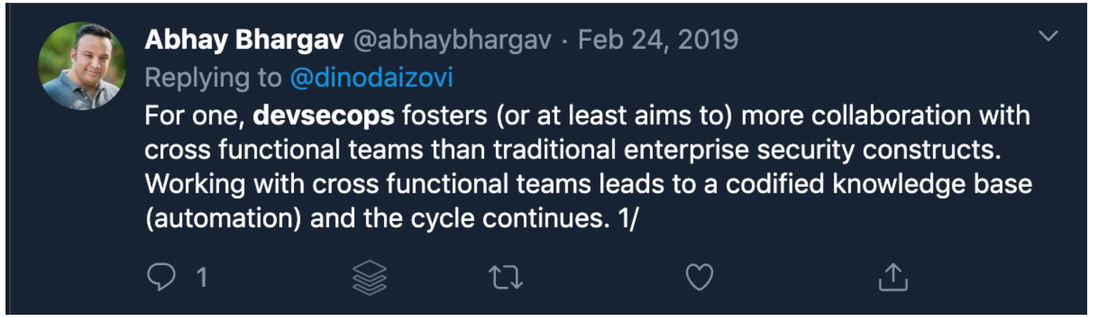
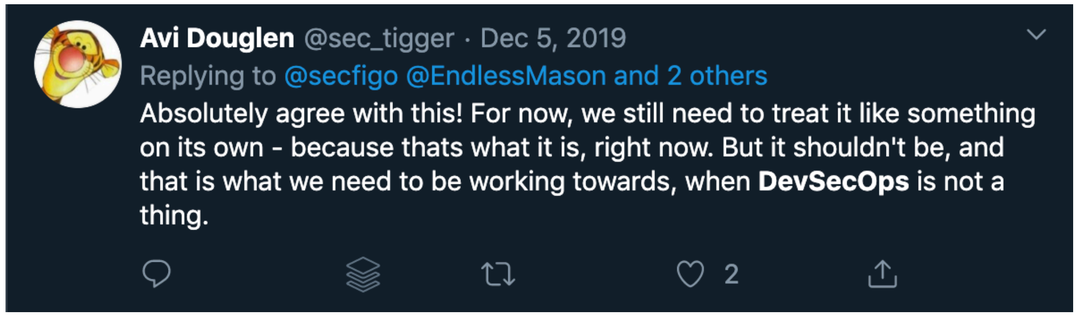
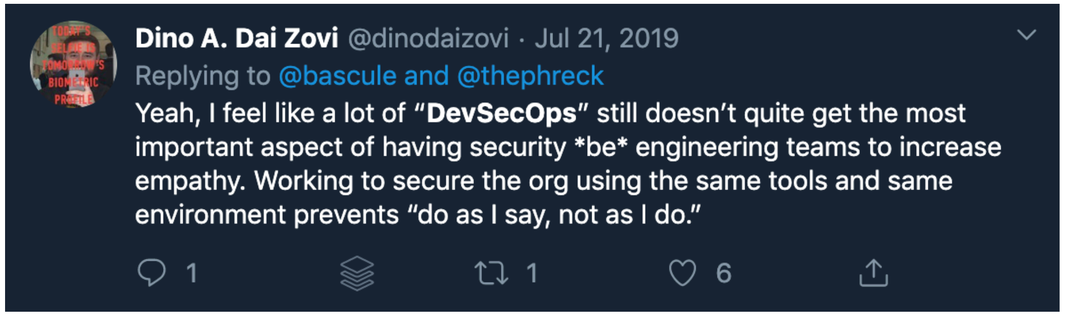
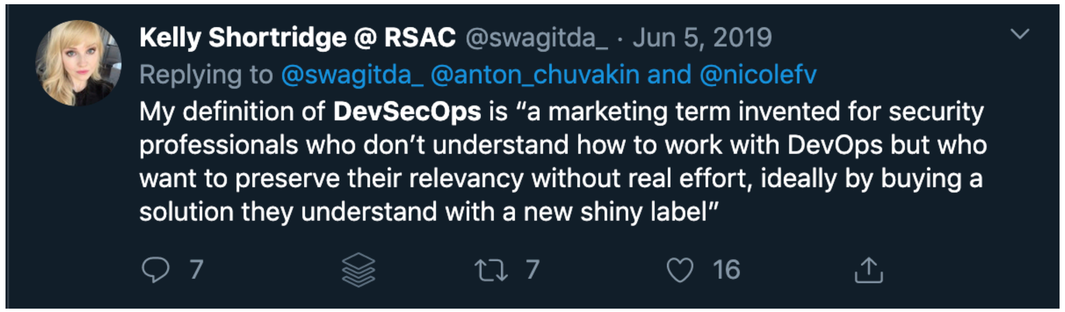
DevSecOps





Not DevSecOps





What DevSecOps isn’t

These are Security Pros.

But who is DevSecOps meant to serve ?

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Control & Governance functions

Engineering organisation

DevOps Security Archetype model - Characters

Quality + Speed

Stu, The Security Unicorn

Focus on quality

Rick, The Gatekeeper

Focus on speed

Dave, The Rainbowmaker

DevOps Security Archetype model - Organisations / Teams

The Security Unicorns

The Gatekeepers

The Rainbowmakers

Meet Dave and his team of Rainbowmakers

Dave and the teams aren’t negligent or stupid.

They lack **situational awareness** to do better.

Process, social practice and cognitive load considerations are failing THEM

Meet Dave and his team of Rainbowmakers

Essential characteristics:

- No integrated security telemetry
- Avoids engagement with Compliance
- No secure baselines or modelling of threats
- Limited automated testing overall
- No product level security reporting
- Security is someone else’s job, or output of pentests/audits

Meet ~~Rick~~ and his team of Gatekeepers

Dick and the teams aren't thick or business averse

They **lack understanding of control reliance** in a DevOps world and have **inertia due to past success** of their current model

Team Topologies and poor traceability from technical checks to Compliance objectives are failing THEM

Meet Rick and his team of Gatekeepers

Essential characteristics:

- Gated processes supported by committees and Review Boards
- Limited understanding and trust of modern development practices & engineers
- Policies and standards developed outside of Engineering context
- Lack of technical knowledge, or worse, outdated threat models

Meet Stu and his team of Security Unicorns

Stu and the teams are..... OK :)

They have a great Engineering culture and are a learning organisation.

Compliance colleagues **don't work in silos**, but **collaborate to establish process and then trust** that the teams are focused in developing quality software

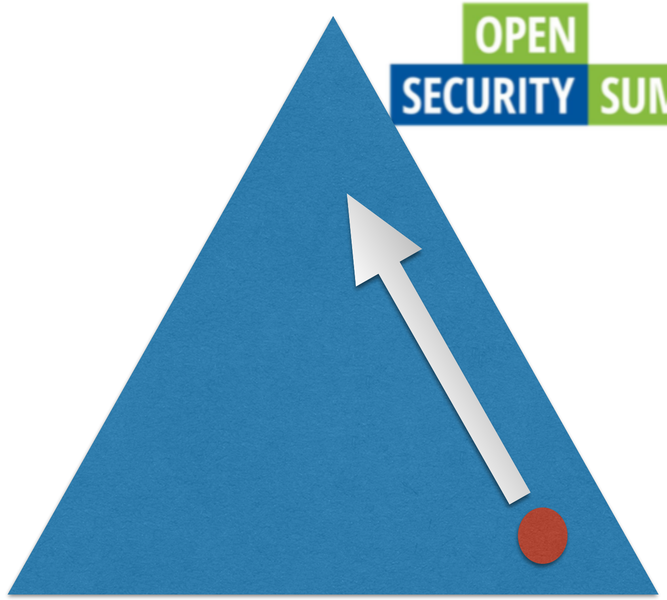
Meet Stu and his team of Security Unicorns

Essential characteristics:

- Security is embedded into DevOps practices
- Security is an element of product/service quality
- Teams keep up to date threat models of what they build
- Their process has the right security at the right time.
- Compliance IS Code
- Less Command and Control from Compliance, more collaboration

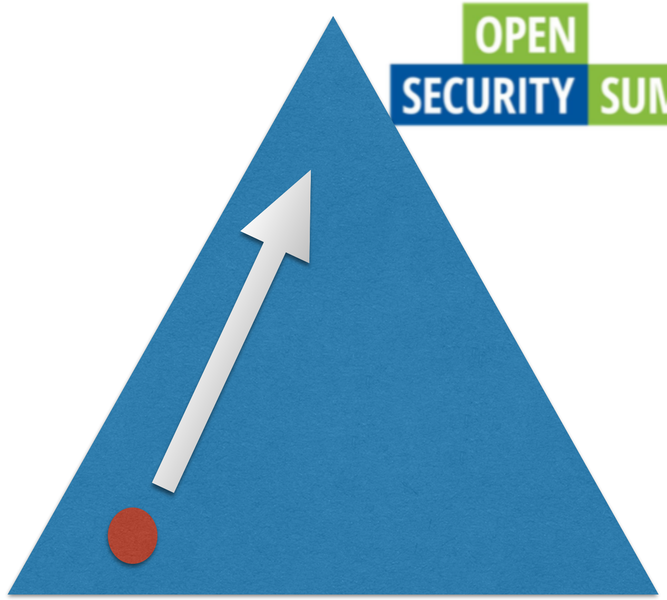
But in their current practices, all are affected by Bottlenecks

Bottlenecks to going up the triangle



- Lack of Security Telemetry
- Product Management security prioritisation
- Security Expertise by DevOps and Software Engineers
- Poor Process assurance and practices
- Low sense of agency and ownership for security

Bottlenecks to going up the triangle



- Assignment of security responsibilities
- Spending money on the wrong things
- Gated processes and out-of-band approvals
- Control reliance mismatches
- Policy ISN’T Code or Stories
- Command and control culture
- Inertia due to past success

Further Challenges

Communication

Traceability & Process

Learning journey and Mental Models

Evolution of Practices

Team Topologies

The Communication Challenge

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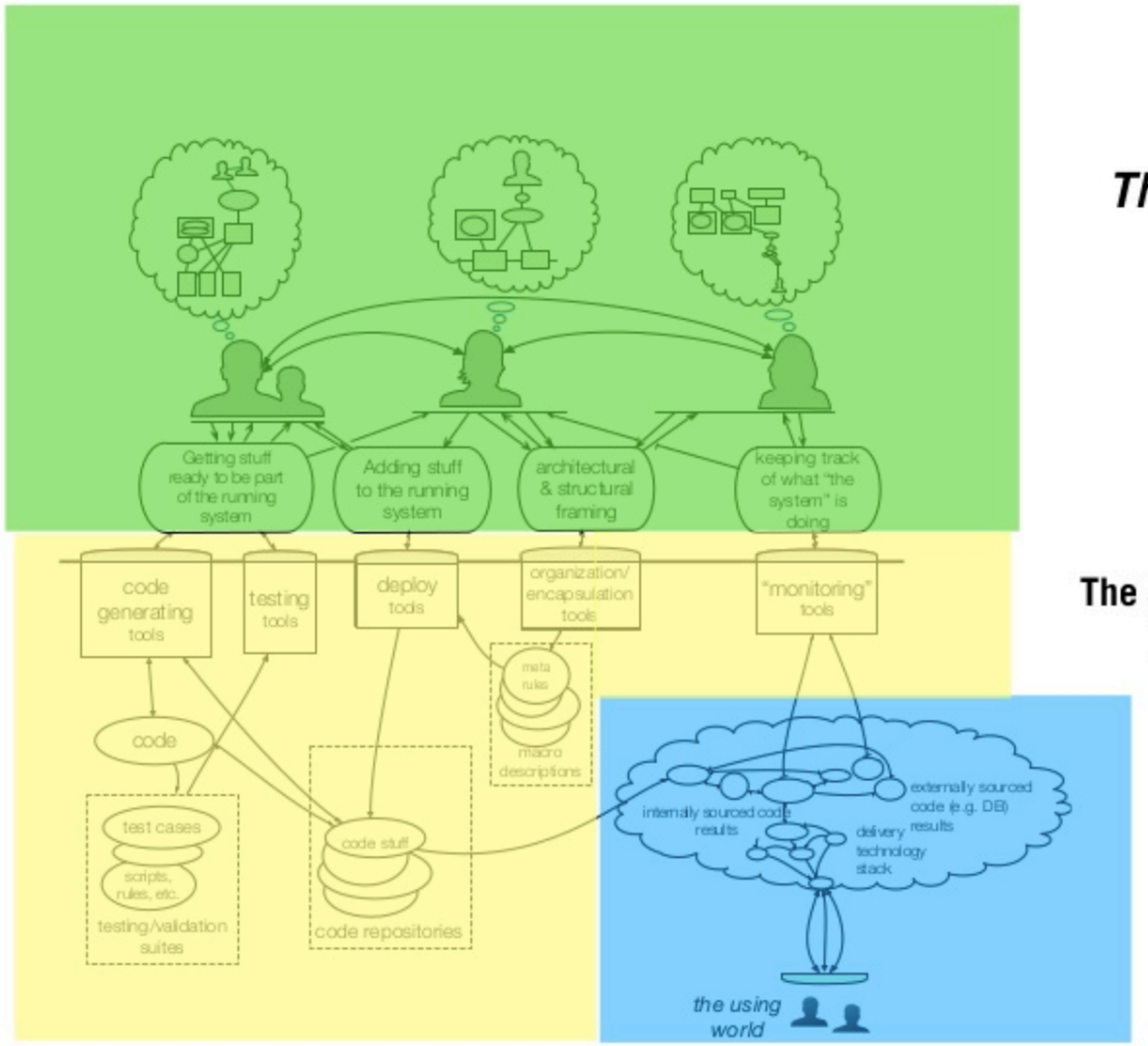
Their management systems

The Stories they tell and understand

The language used to communicate concerns

They see the system differently.

They say the same names, but they mean different things



Credit: @allspaw https://www.slideshare.net/jallspaw/resilience-engineering-a-field-of-study-a-community-and-some-perspective-shifting

Complexity of decisions vs Scope of responsibility

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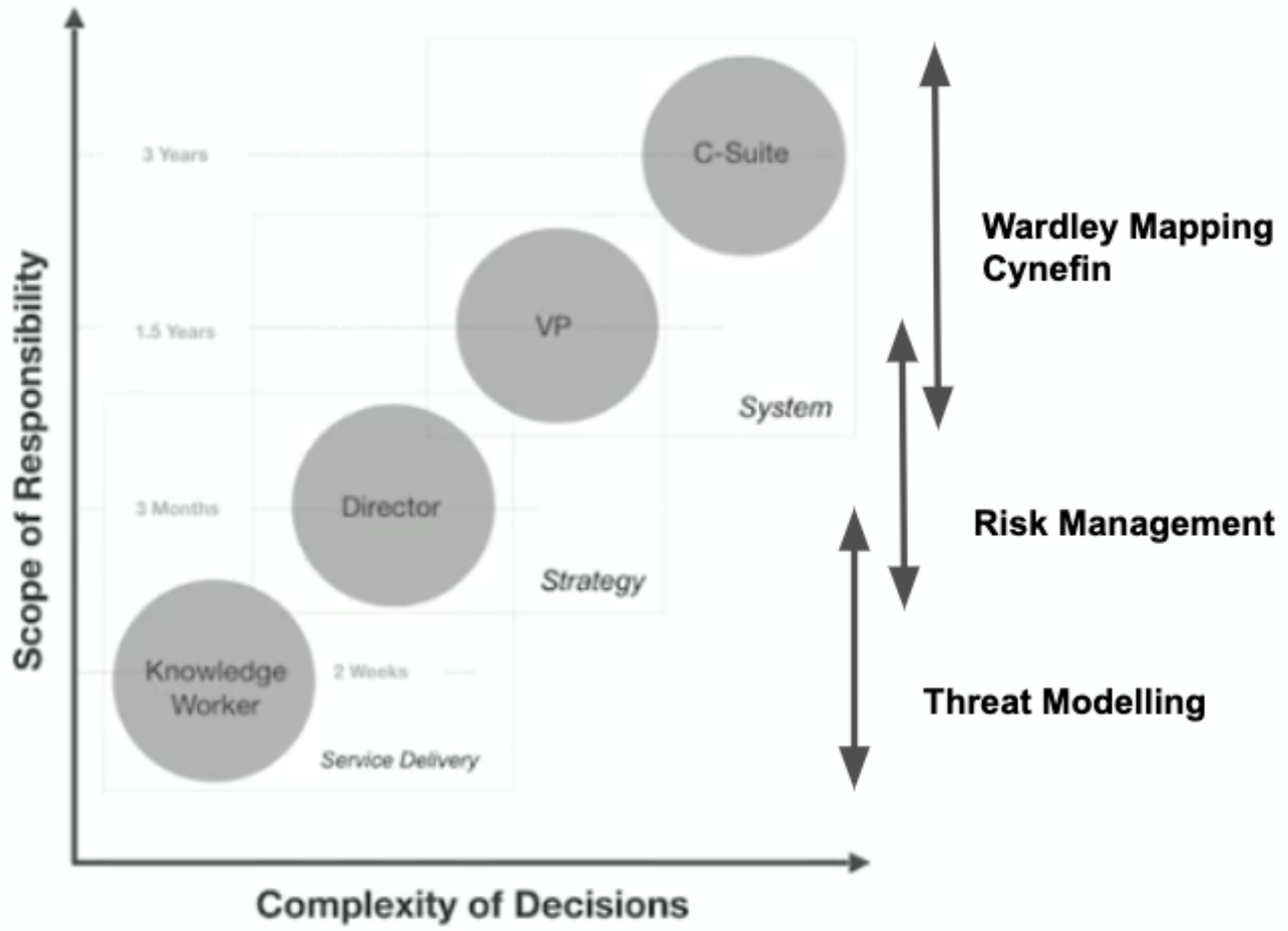
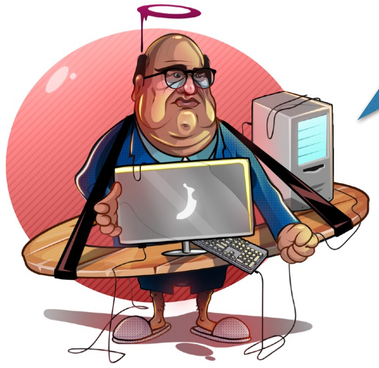
The timespan of their narratives are different.

Sprints vs managing risks



And the language is different too

Control… blah blah …..
control…. Blah….
Governance… blah… Risks….
Blah… Compliance….blah blah
Boogey man at the door



Control testing
Testing procedures
Evidence review
Checklists and spreadsheets
Compliance to
Risk analysis and uncertainty

Wall of Confusion and Despair

Features… bah blah… that looks cool…. Blah blah…
Speed…. Argh can't get that function to work blah blah
They won't get out of the way…

Code
Tools
Processes and procedures
Delivery artefacts
Specifications
Sprints and Stories

New Regulation Syndrome

‘It depends’

‘I can’t build without a spec’

Uncontextualised Policies Syndrome

I've written policies
They're really good because I was technical a decade ago

Which policies and where ?
Those patterns don't make sense anymore. What are you on about ?

DoD Enterprise DevSecOps Reference Design

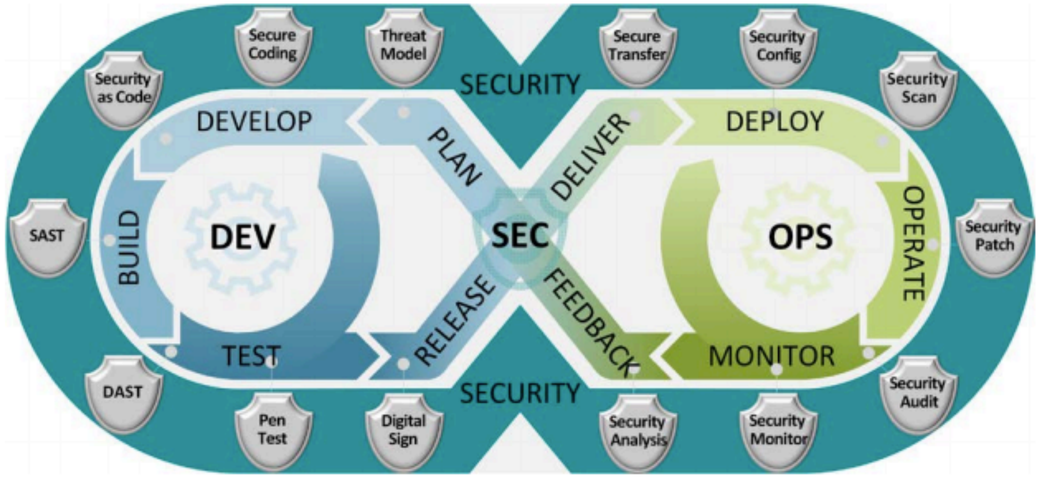
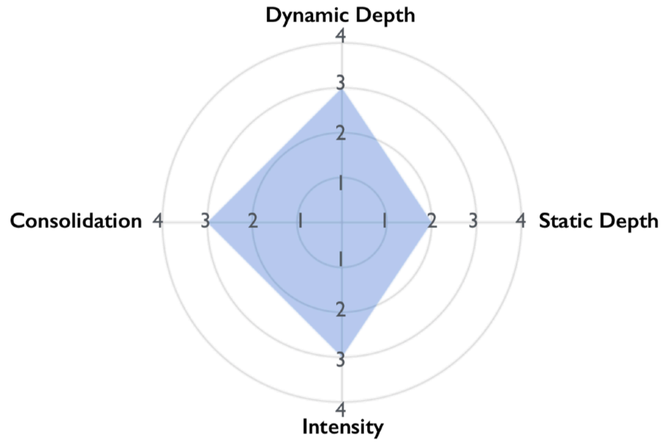
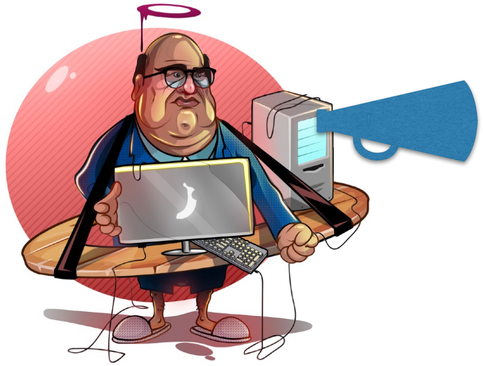


Figure 3: DevSecOps Software Lifecycle

Hysn DSOMM





Helping communicate between different mental models

Mapping and traceability

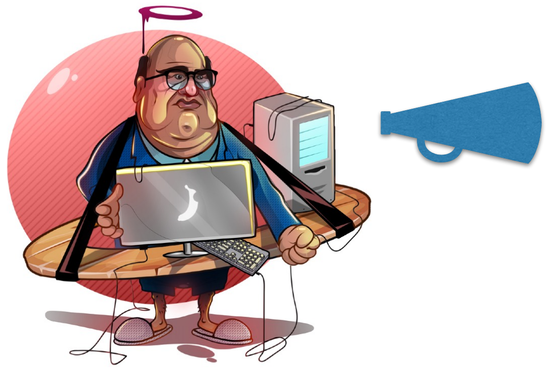
Requirements

Application Security Verification Standard 4.0

Implementation

OWASP CHEAT SHEET SERIES PROJECT

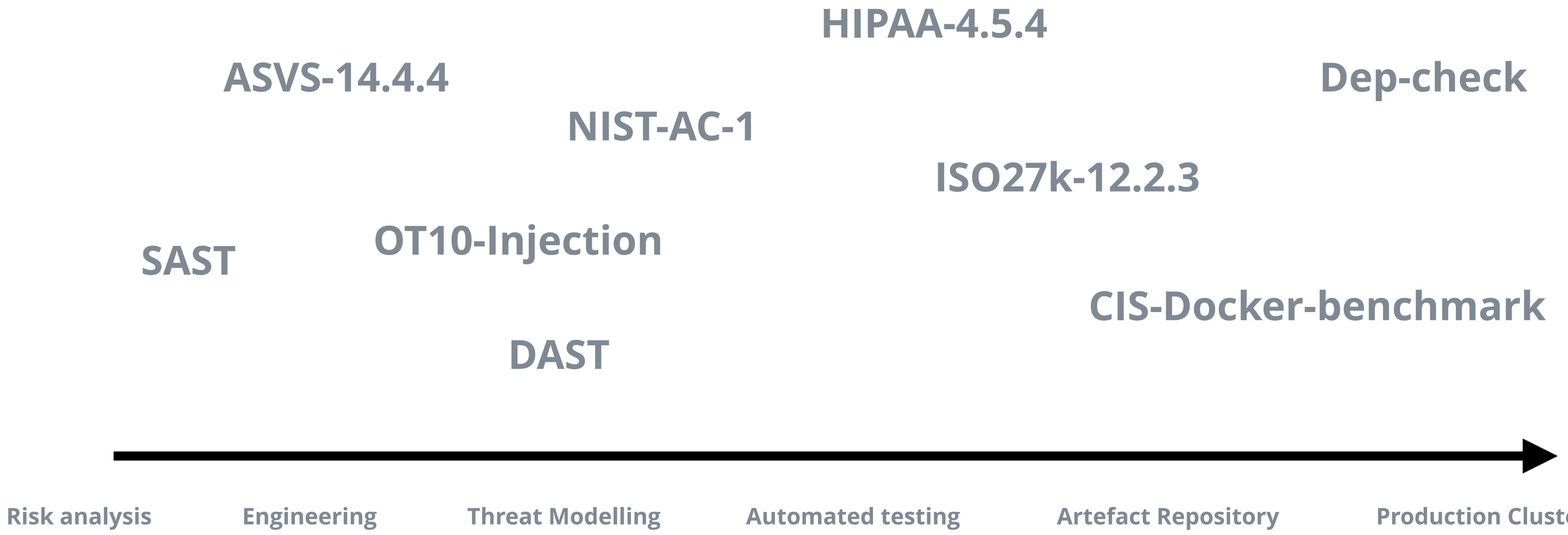
Life is too short - AppSec is tough - Cheat!



Helping communicate between different mental models

Mapping and traceability

Use metadata for traceability glue

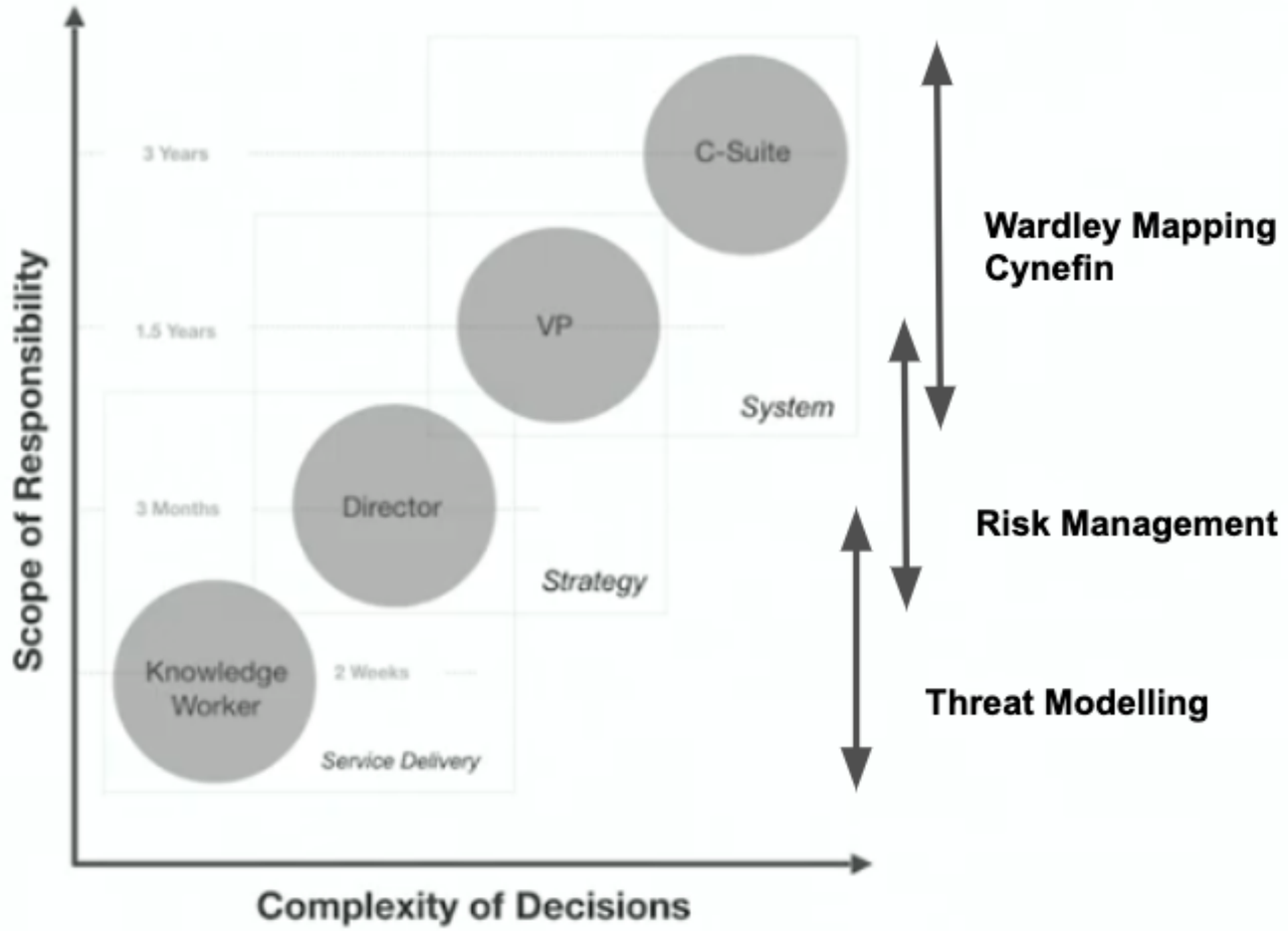


But how do we connect them ?

Threat Modelling

Risk Management

???



Jabe Bloom - 'Whole Work: Sociotechnicity & DevOps' - https://www.youtube.com/watch?v=WtfncGAeXWU

https://medium.com/@marioplatt/social-practices-and-timespan-of-discretion-in-cyber-security-cef4fdc16663

Strategies & Systemic Risk **C-Suite and VP**	**Strategic Risk**	**Trusted**	**Reputable**
Risk Management **VP and Directors**	**Product / Service Risk**	**Hardened**	**Recoverable**
	Key Risk Indicators	**Confidential system components > 65% baseline met**	**Confidential systems without tested recovery plan > 2**
Threat Modelling **Directors and Knowledge Workers**	**Threat**	**Security misconfiguration**	**Service recovery**
	Mitigation	**Develop and apply baseline**	**Define and test recovery plan**
	Validation	**Compliance as Code**	**Scheduled testing with post-mortem**

And process to connect them

Risk Analysis

Risk Management, Infosec and Technical Managers collaborate to identify Risks and Hazards

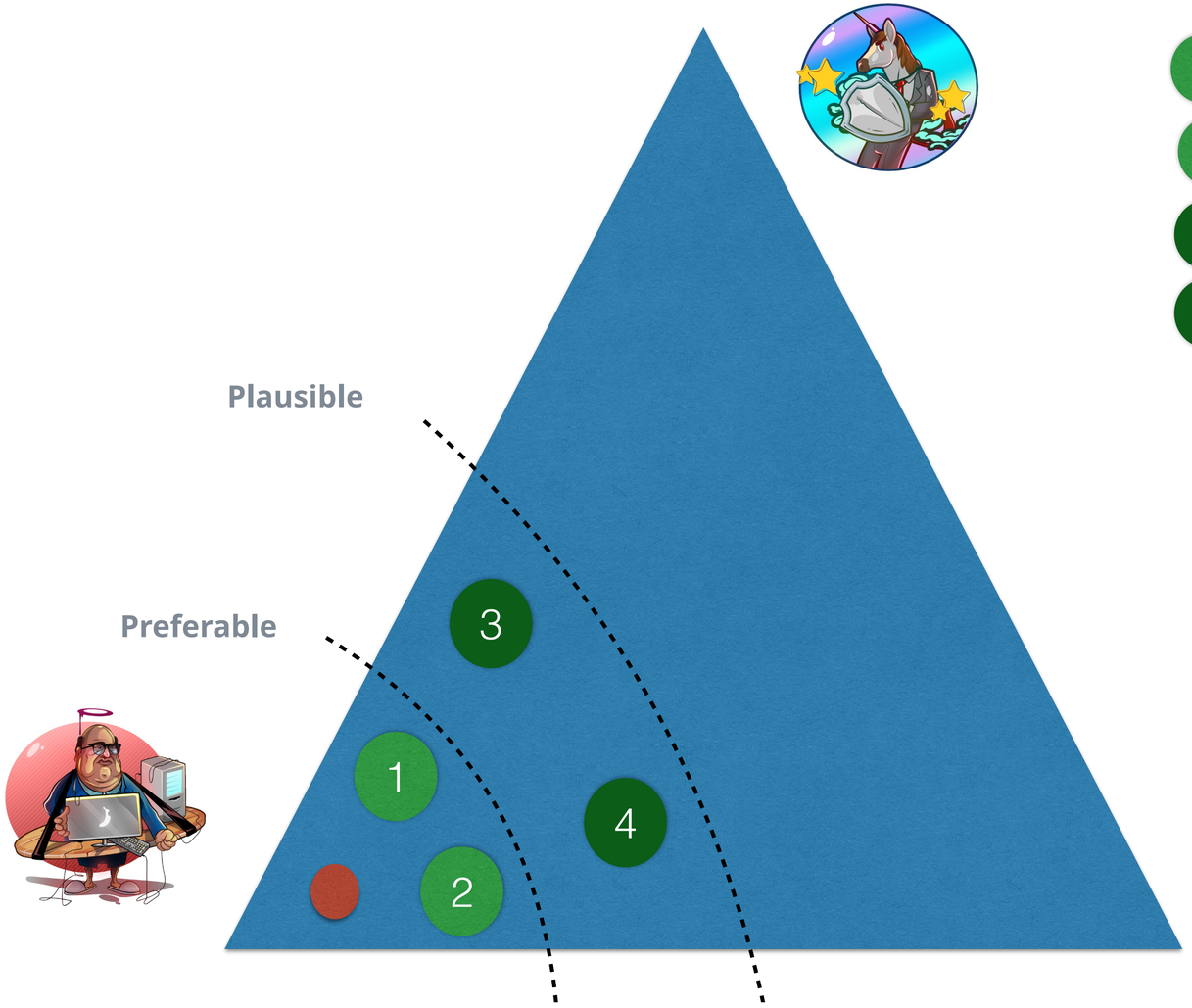
Engineering Story

Technical Managers and Product Owners collaborate on a Story to mitigate identified risks and hazards

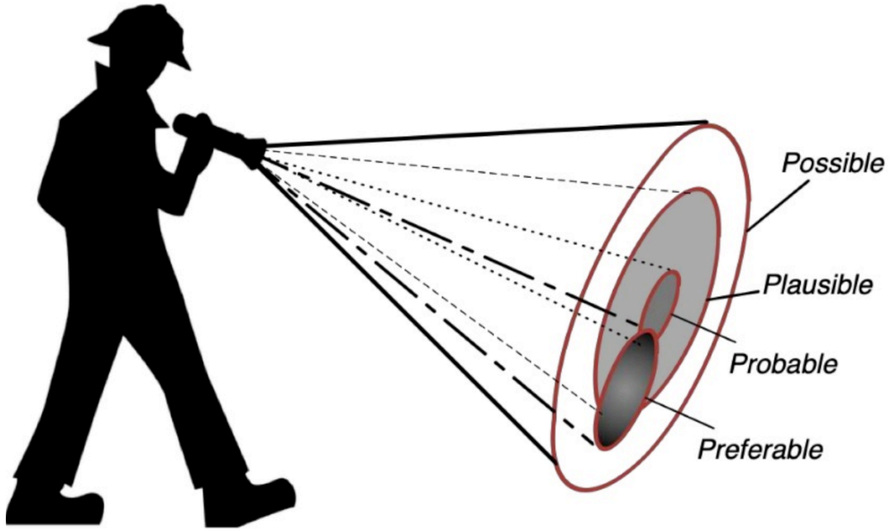
Threat Modelling

Technical Managers and Engineers perform a Threat modelling session, focusing on identifying & mitigating threats in accordance to risks identified

Meet them where they are



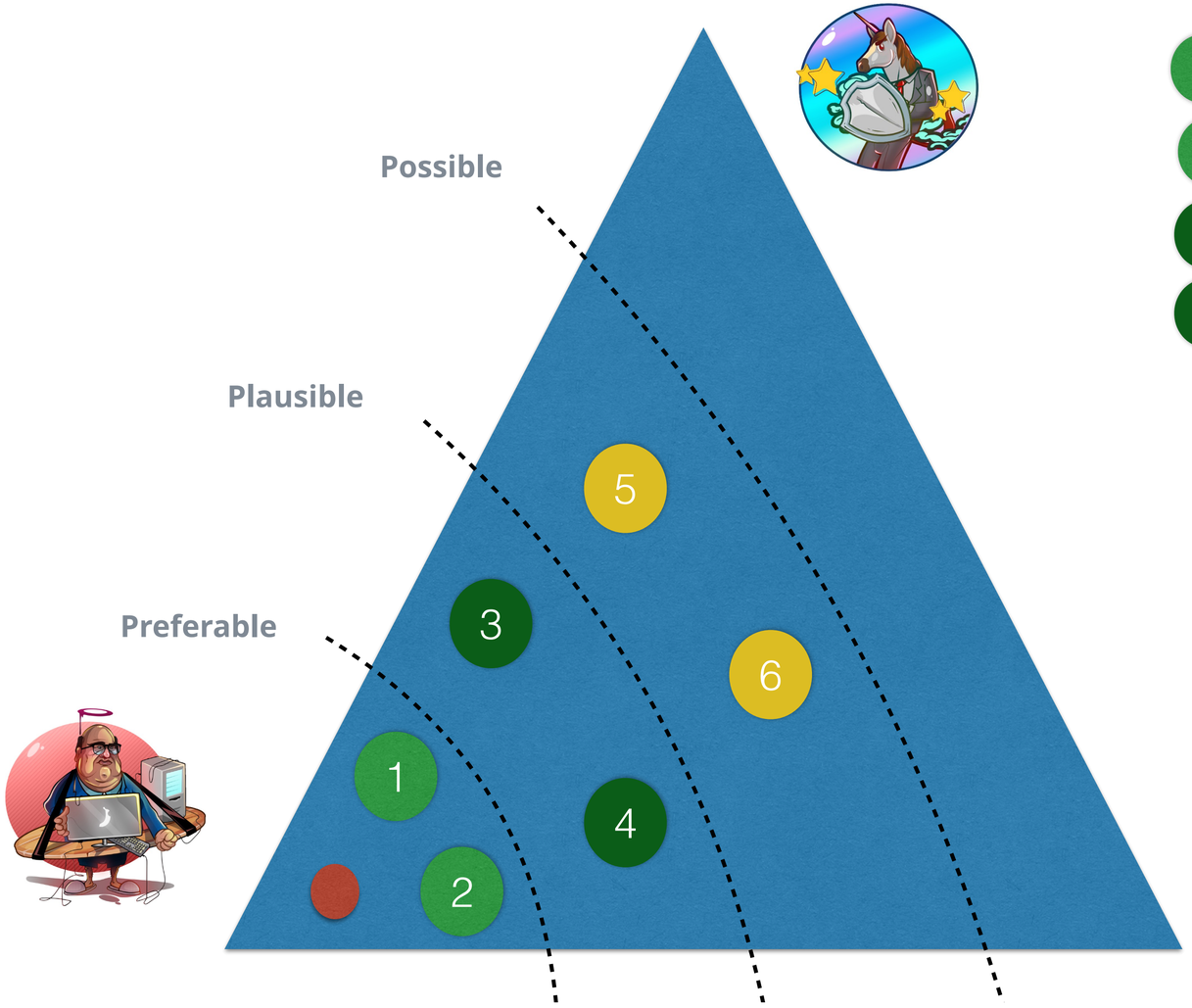
1. Pentest
2. Code review
3. Threat modelling
4. Policy-as-Code



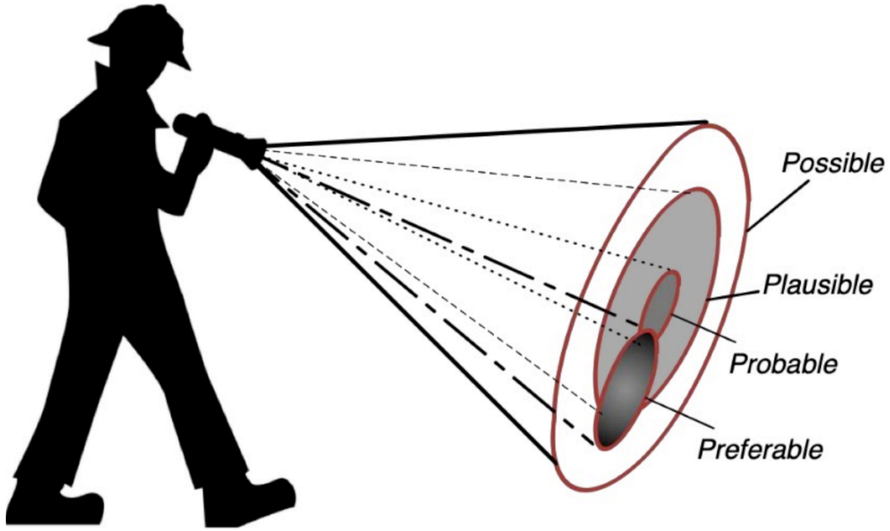
Constraint is TRUST in both teams and process/ automation

Jabe Bloom @cyetain https://www.slideshare.net/cyetain/three-frames-devopsdays-atl

Meet them where they are



1. Pentest
2. Code review
3. Threat modelling
4. Policy-as-Code
5. Integrated DAST/SAST
6. GRC integration



Constraint is TRUST in both teams and process

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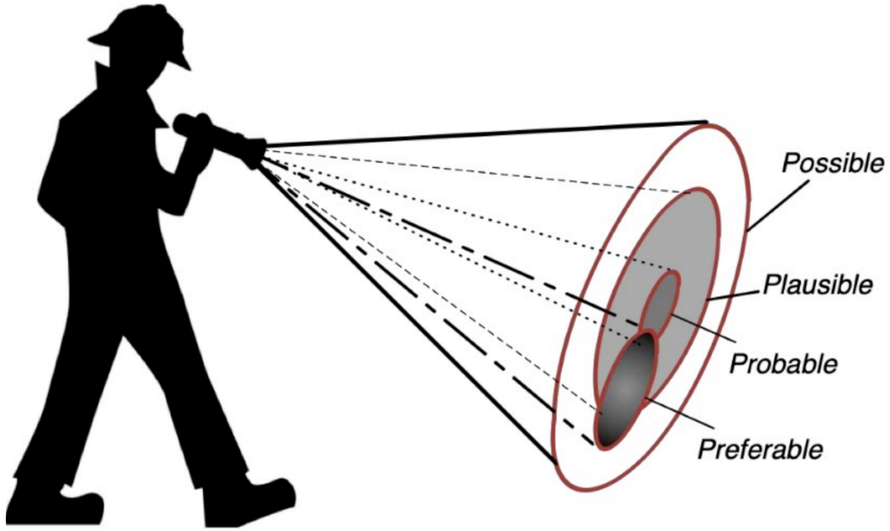
Meet them where they are

1. Pentest
2. Code review
3. Threat modelling
4. Policy-as-Code
5. Integrated DAST/SAST
6. GRC integration
7. Blameless post-mortems
8. Chaos Engineering



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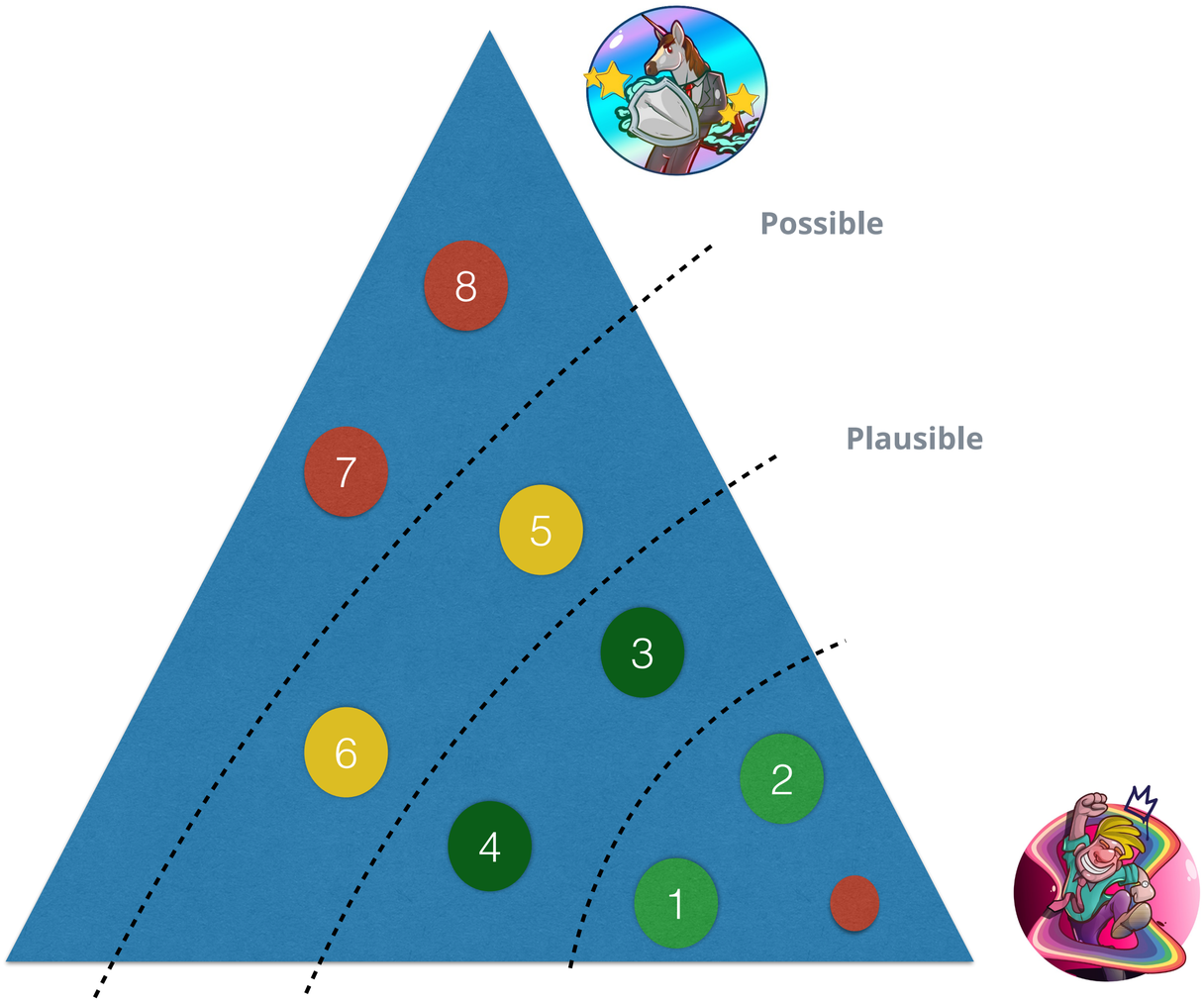
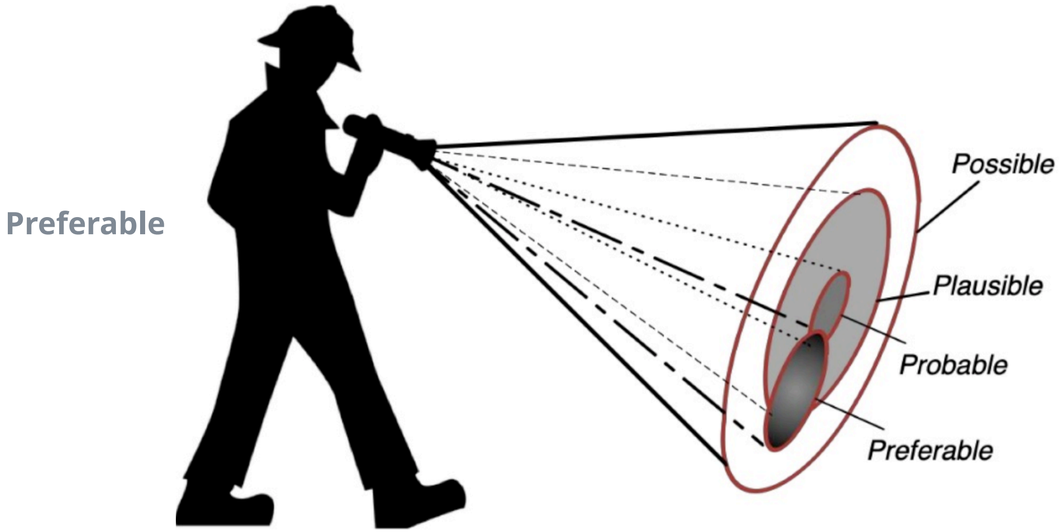
Meet them where they are



1. TM with STRIDE
2. Process assurance
3. Baseline tooling
4. Policy-as-Code
5. TM w/ methodology
6. Scenario Testing
7. Risk analysis
8. Security backlog ownership



Constraints are Agency and Ownership

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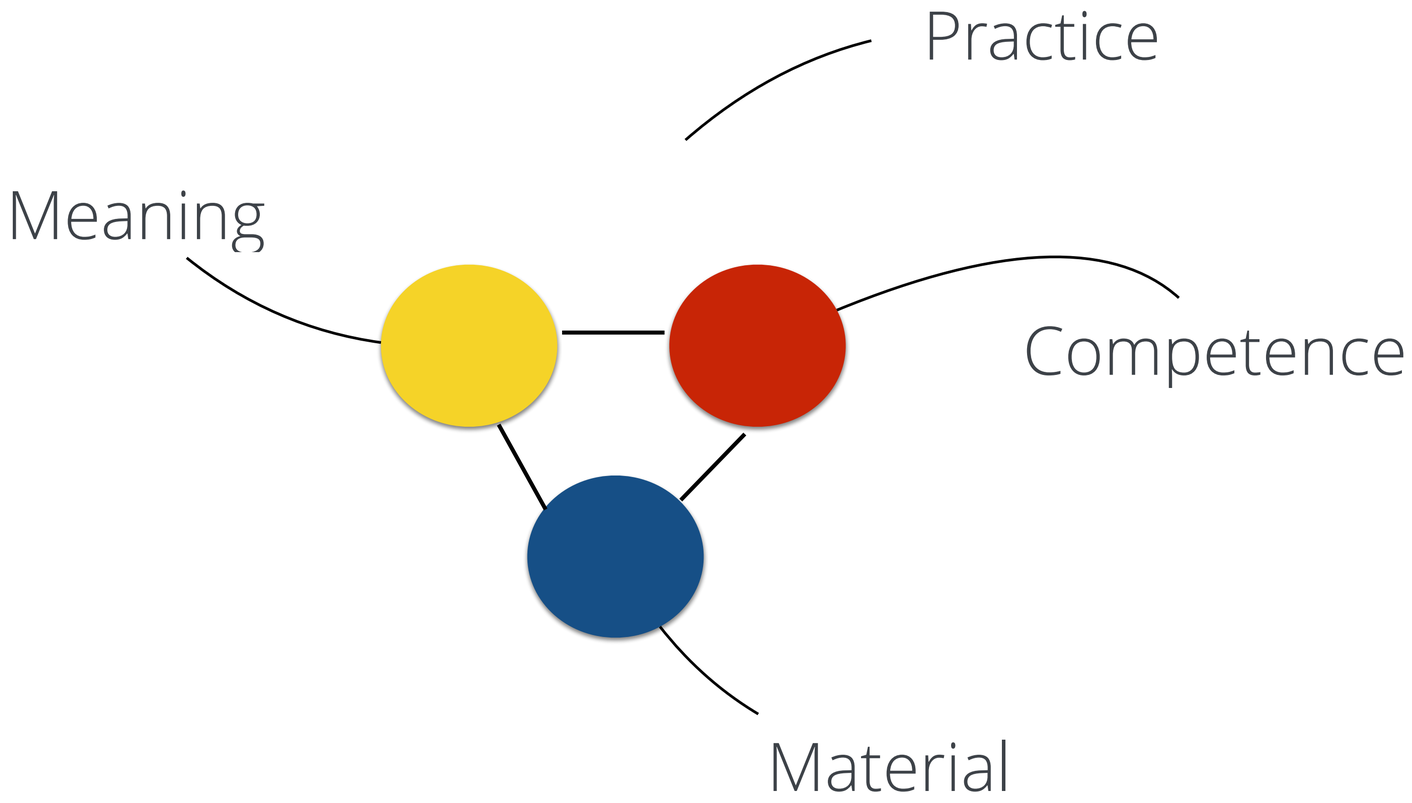
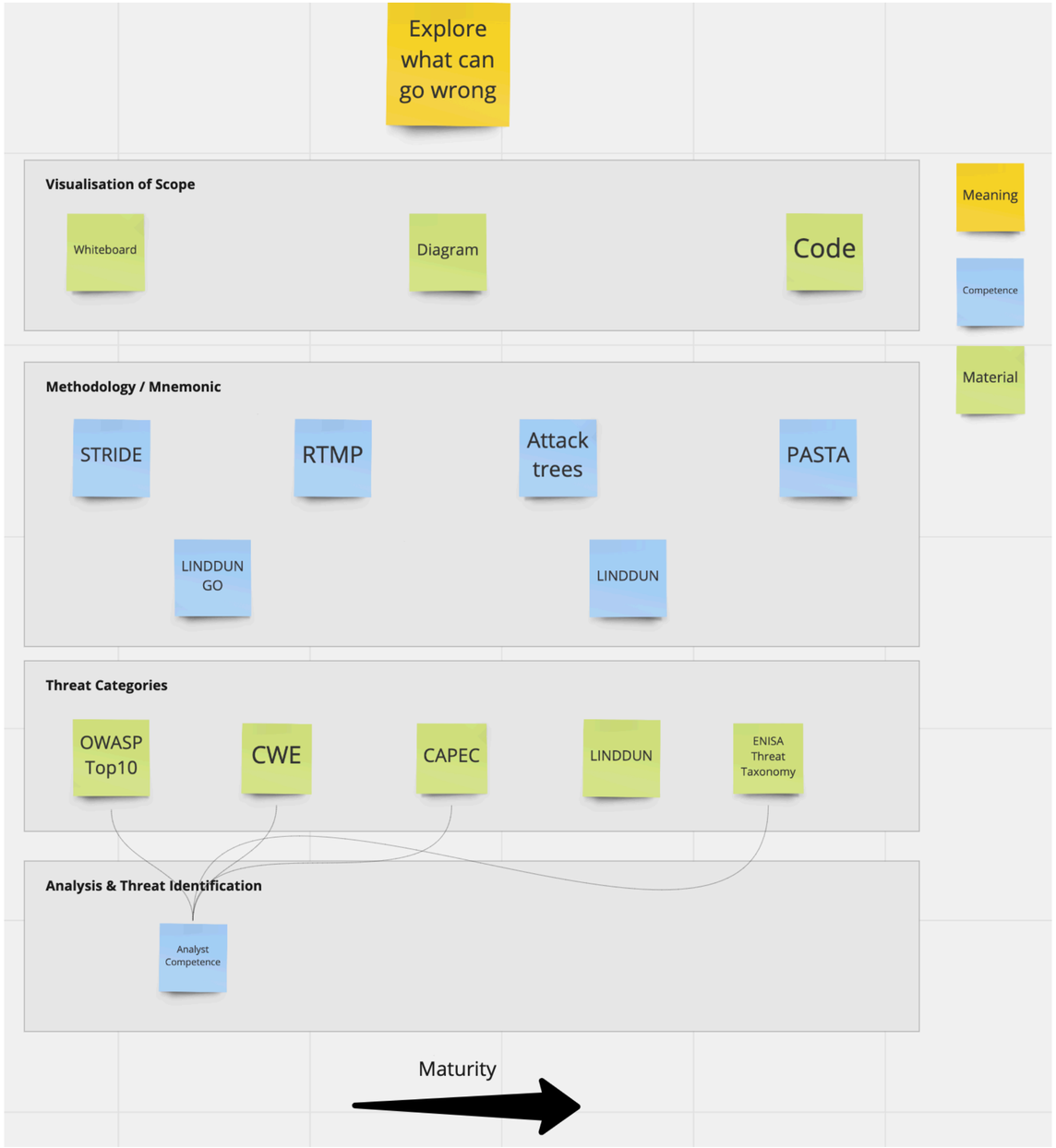
But looking at the artefacts is not enough

We need to understand their interactions



“material, meaning and competence are **not just interdependent, they are also mutually shaping**” Elizabeth Shove



https://medium.com/@marioplatt/social-practice-theory-and-cyber-security-a59364c8e732

Evolve the Meaning of Practices

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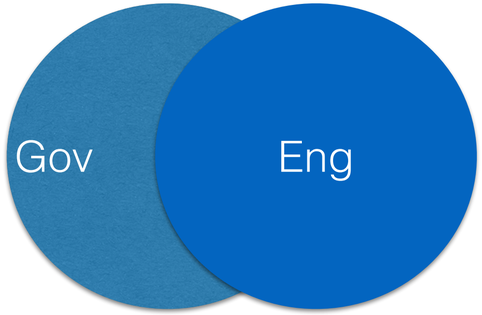
“In a DevOps world, a Pentest is not for finding security issues.
It’s to improve process”
Mohammed A. Imran

Team interactions also evolve

We need to change our “Team Topologies” based on effectiveness and maturity of our practices

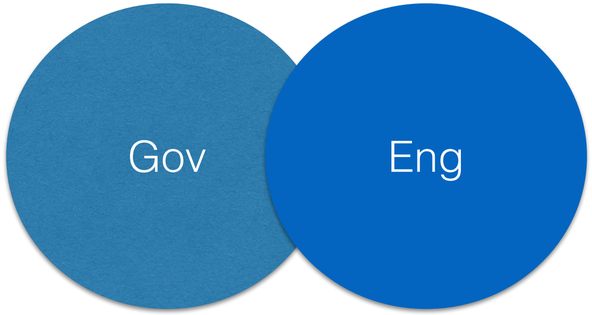
Most fail as they assume shared mental models where they don’t exist yet

‘Team Topologies’ applied to Cyber Security



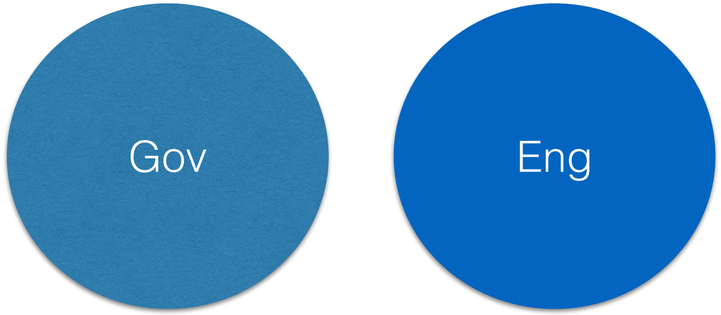
Collaboration

- Governance mapping (metadata management)
- Joint Threat modelling and Risk assessments
- Visibility and Reporting
- Management system updates



Facilitation

- Focus on cross-team training and contextual guidance
- Separate Threat modelling and Risk assessment sessions
- Boundary spanning more active between domains



X-as-a-Service

- Fully defined interfaces (Team or actual APIs)
- Informed/Supportive roadmaps
- Exception Management

Team Evolutionary Path

So, should YOU DevSecOps or not ?

TRUST + AGENCY = (SECURE) DEVOPS

Naive to assume practices exist to make secure systems

But at some point, calling it something other than DevOps may be detrimental to culture and ownership

To DevSecOps or not ?

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DevOps

An issue of meaning, not necessarily practice

DevSecOps

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Use the ‘label’ strategically and whilst it provides value

Develop situational awareness to understand when it’s right time to move on

If your strategy mentions the word ‘DevSecOps’ or Security in Devops and you’re not

- helping your Governance teams benefit from short feedback loops and training them to understand DevOps
- Not increasing the agency and ownership of security across your Product or Project teams in THEIR language, not YOURS
- Not enabling the best possible Developer and Engineering Experience of Security you can afford
- Not actively trying to breakdown silo-ed barriers and connect governance systems

You’re probably doing it wrong!

Q&A

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