



NSC42

cloud
CSAUK security
United Kingdom alliance®

The Security Phoenix raises from DEV-OPS ashes

A Modern Approach on DevSecOps Focused on People

DevOPS.com webinars - White Source Webinars

NSC42

Agenda

About the Francesco

Context

Security Phoenix – Maturity matrix

Appsec & Breaches in numbers

Visibility Problem

The cake and traceability problem

The Security Phoenix – Appsec Program

Security Phoenix Program – People & Trust + Verify

Security Phoenix – Scanners Triage and Visualizers

Security Phoenix – Maturity Matrix & Education

Conclusions

Q&A



Francesco Cipollone

Founder – NSC42 LTD

I'm a CISO and a CISO Advisor, Cybersecurity Cloud Expert. Speaker, Researcher and Chair of Cloud security Alliance UK, Researcher and associate to ISC2.

I've been helping organizations define and implement cybersecurity strategies and protect their organizations against cybersecurity attacks



@FrankSec42



Fracipo Linkein



Email



Website



Articles



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Security is everybody's job

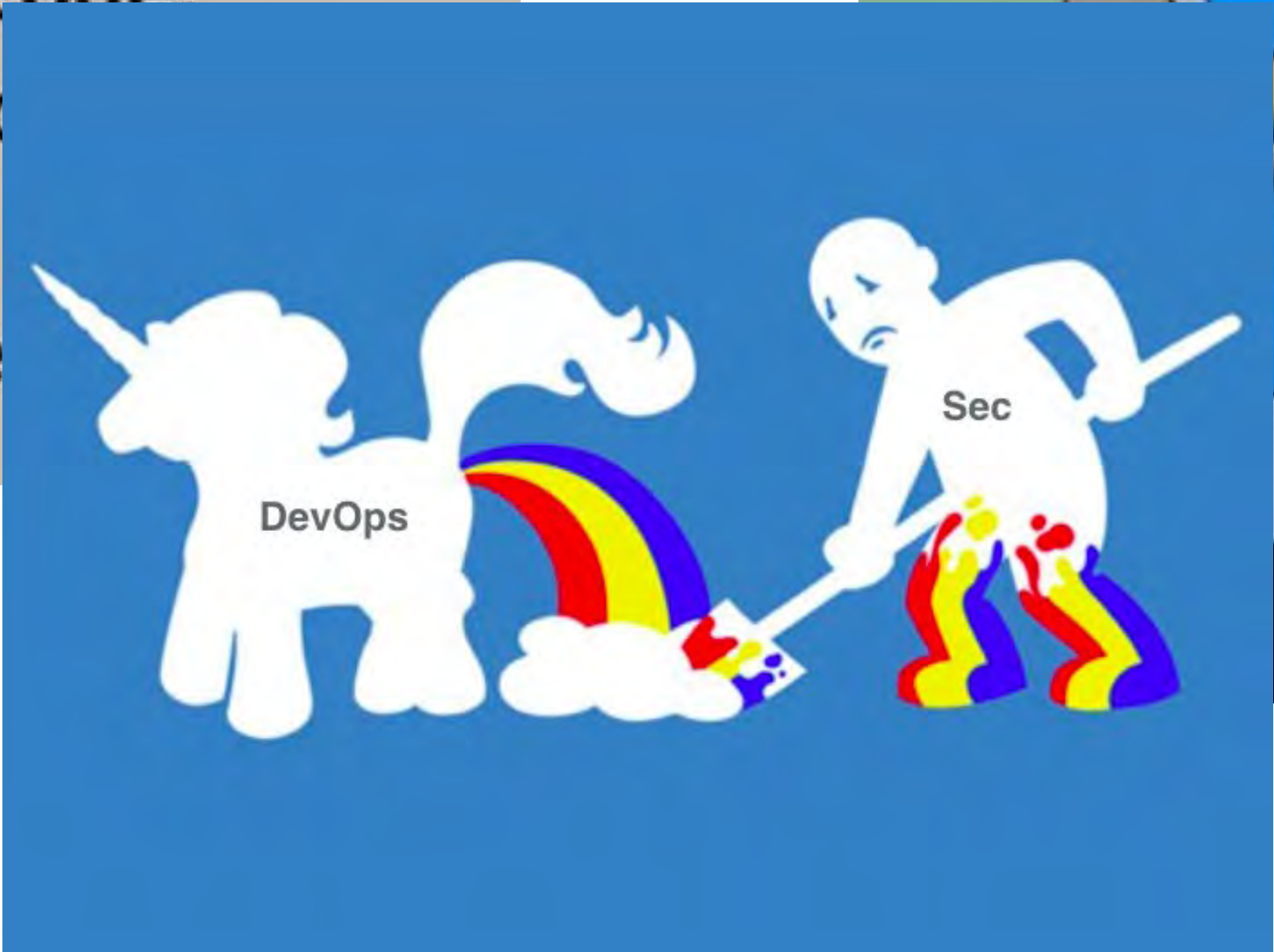
We need to make security cool and frictionless

Appsec

Cloud Sec



99 little bugs in the code.
99 little bugs in the code
Take one down, patch
127 little bugs in the



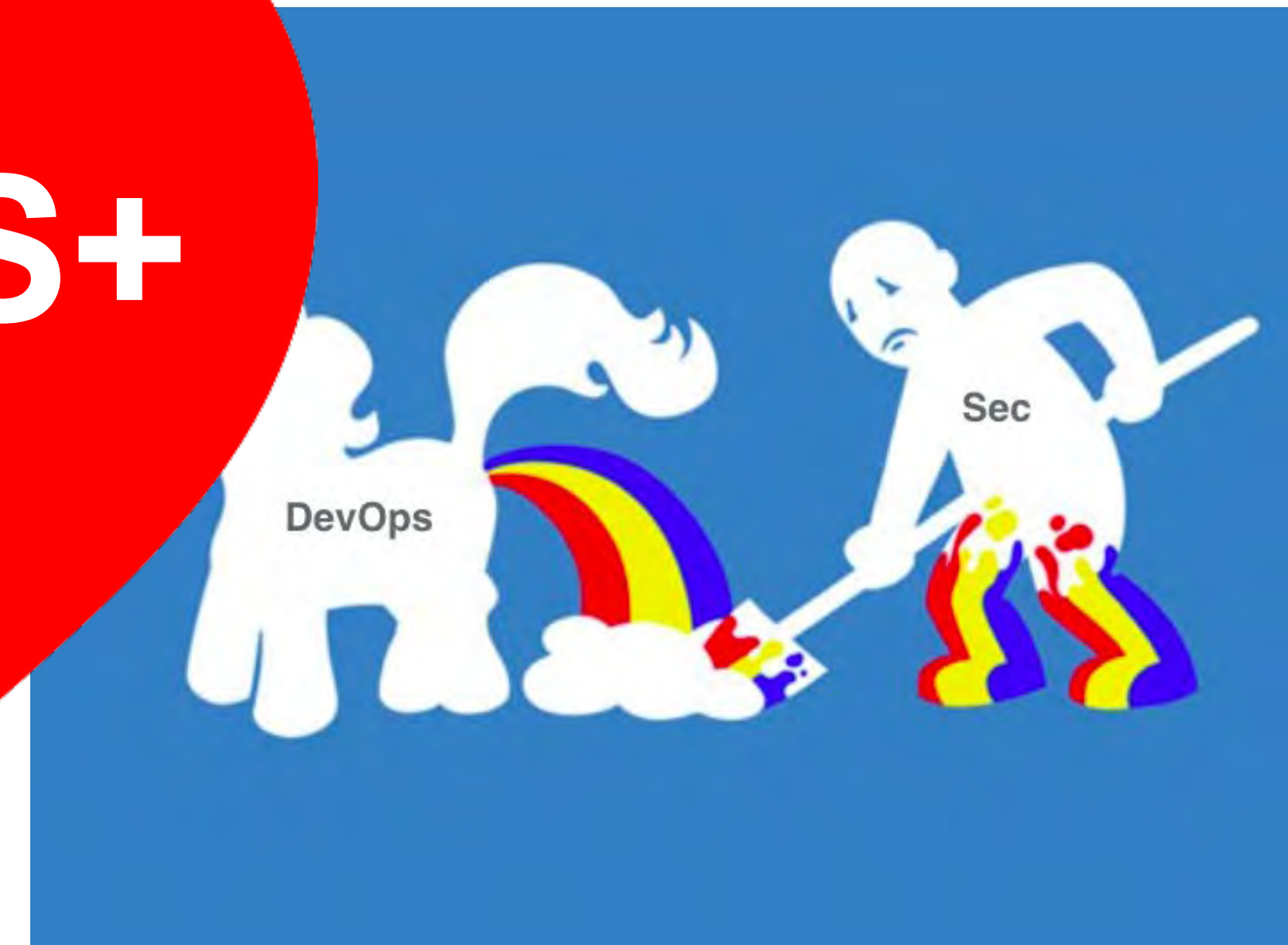


What kind of animal is the DEV-SEC-OPS?

Integrate security into the OPS team (and add a spark of RISK)



DEV-OPS+
SEC



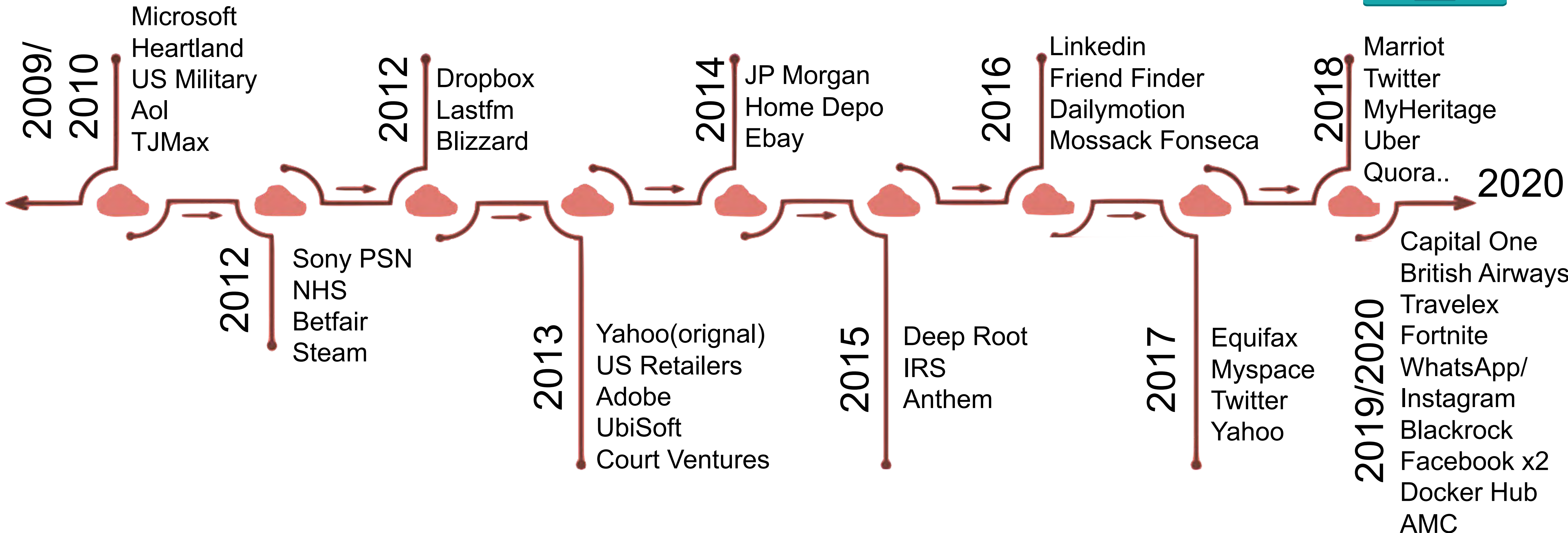


The Problem Landscape: Numbers behind the breaches

Why do we worry about security?



Why fixing Security Vulnerabilities is everybody's job? ...because we all get affected by it



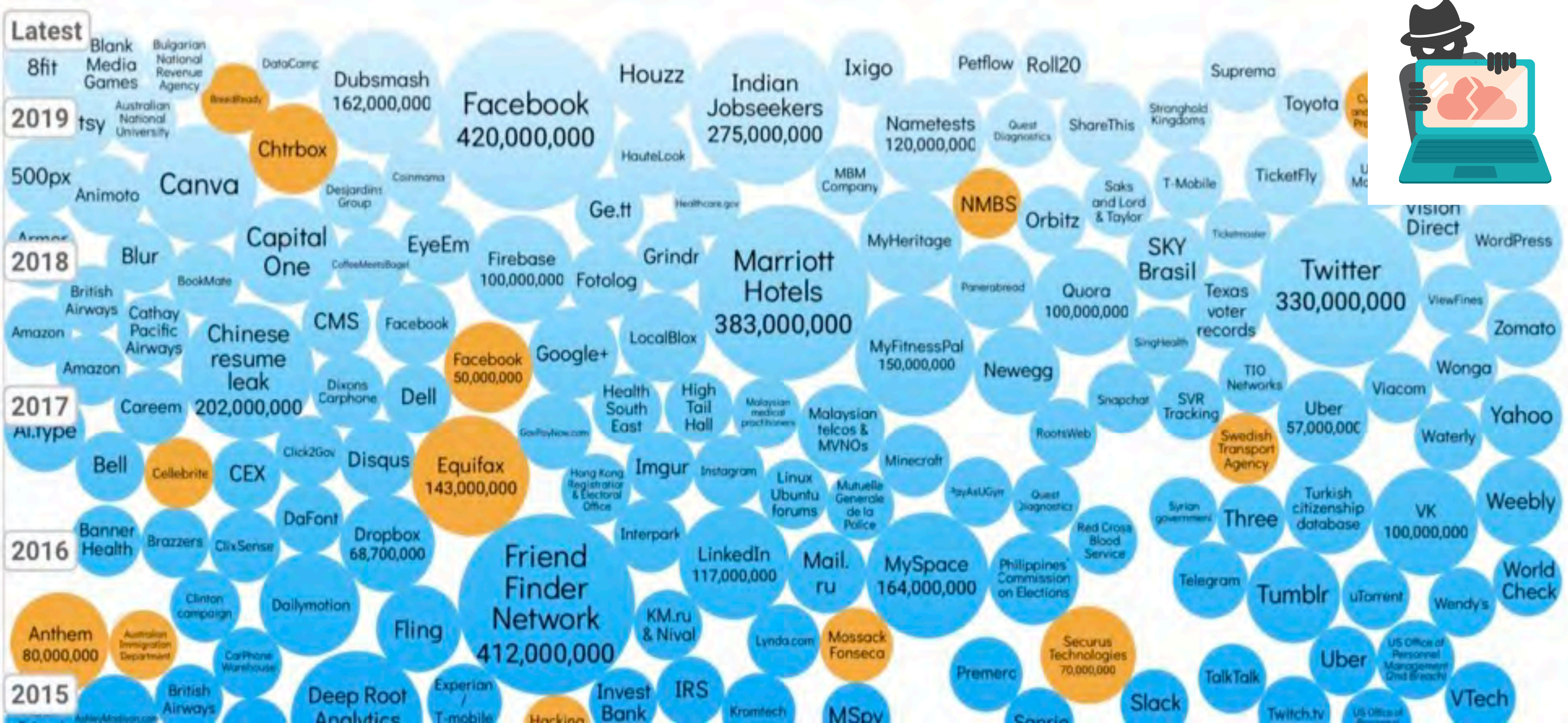


Image Credit Information is Beautiful

TOP 5 Security Breaches



WhiteSource

Capital One (2019)

Misconfiguration of WAF (web application Firewalls) – 106 mil records

Marriott (2018/2020)

Second time access breach after 2018 hack

Nintendo (April 2020)

Credential stuffing from previous hack

British Airways (Sept 2018)

Injection of code in a library

Microsoft & Facebook (2018-19)

Data found in unprotected DB (public access) + Misuse of API (facebook)

1

2

3

4

5

Common Mistakes

The common theme around all those breaches are

1. Misconfiguration
2. Open Source Libraries Injection/Vulnerabilities
3. Common Vulnerabilities (OWASP Top 10)
4. Public Storage (data left unauthenticated)
5. Easy to guess credentials (cred Stuffing) - Collection X anyone?
6. No MFA on critical accounts
7. Unchecked Open source software
8. Break of logic (API abuse)

Scale of Equifax breach

The Equifax data breach was one of the largest in history. The company announced the data breach in September 2017, eventually reporting that 147 million consumers were affected. Hackers were able to get access to a multitude of consumer private information, including names, Social Security numbers, dates of birth, credit card numbers and even driver's license numbers.

Well Known/Hacktivism



Anonymous, Lizard
Squad, LulzSec,
Chaos Comp Club,
Syrian Elect Army

Financially motivated

Gold Southfield-
ReEvil, Magecart,
Lazarus group ...

Less visible more
dangerous

Adversaries don't need many vulnerabilities - ONE is enough.

Is your business equipped with the right tools to react fast enough?

Av Cost of data Breach

3.03 m

Every

36 minutes

A new security vulnerability is identified

It takes

150-180 days

To fix a vulnerability

N. Of Vuln per year

1400 vuln

As disclosed vulnerabilities

It takes

3-15 days

To exploit a vulnerability

Total cost of breaches

5 trillion \$ / 4 trillion GBP

Adversaries don't need many misconfiguration ONE is all it takes.

Is your business equipped with the right tool and trusted partner to address it?

Every min

62K record disclosed

Record per minute disclosed

N. Of Vuln records

33 billion

Disclosed records over 1 year

Data breaches

80% due to misconfiguration

Cloud misconfiguration is dominant

Av. Cost per record

150\$ per record

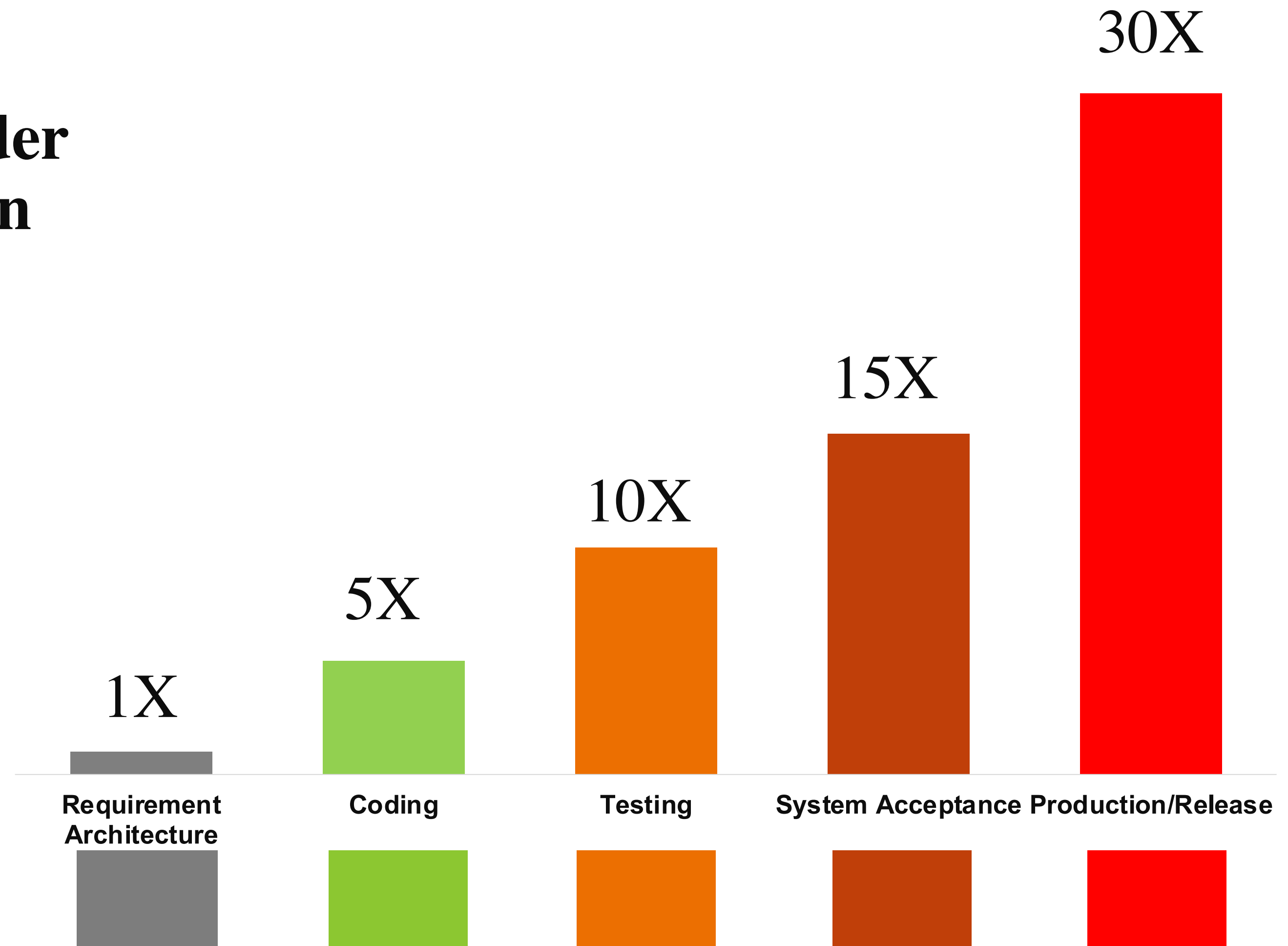
Average cost per loss record



Cost to Fix vulnerabilities

Fixing vulnerabilities gets harder and harder the more they are in production

The earlier they are identified and fixed the less costly/time consuming the fix becomes

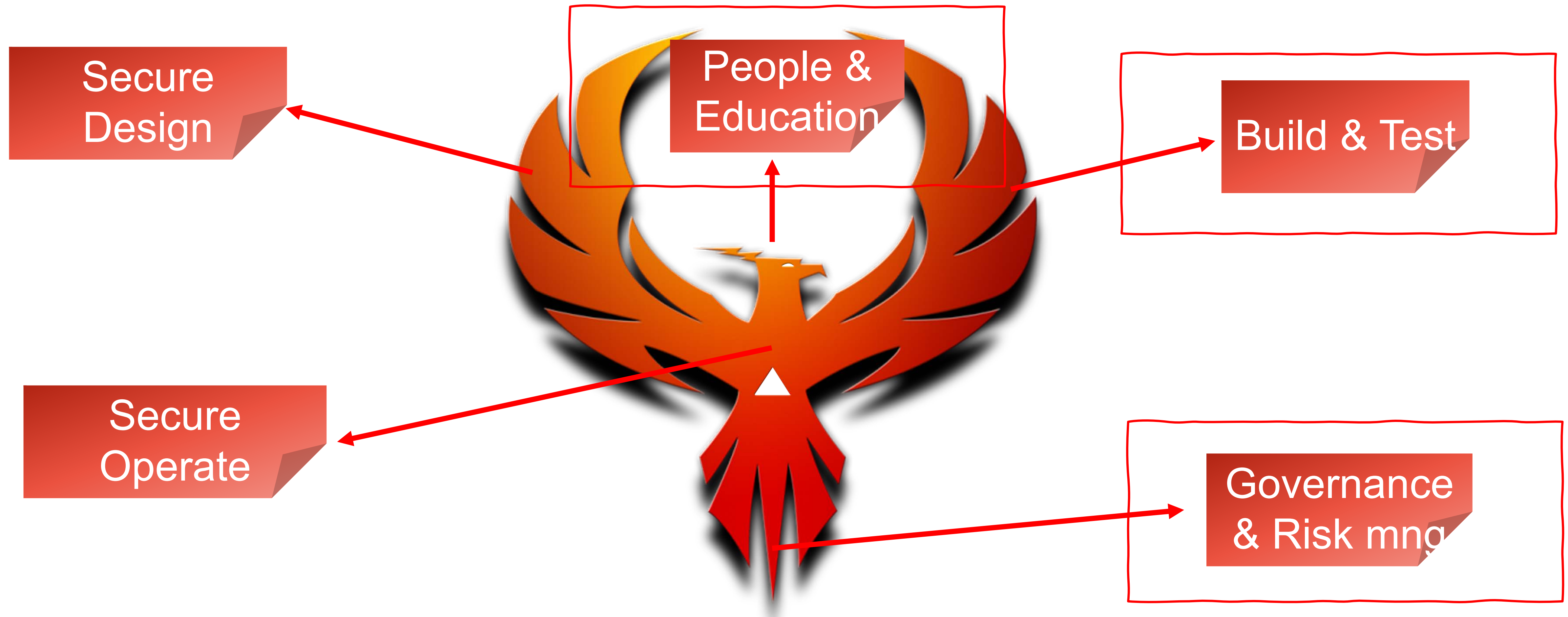




The Security Phoenix

Appsec Program based on Data and People

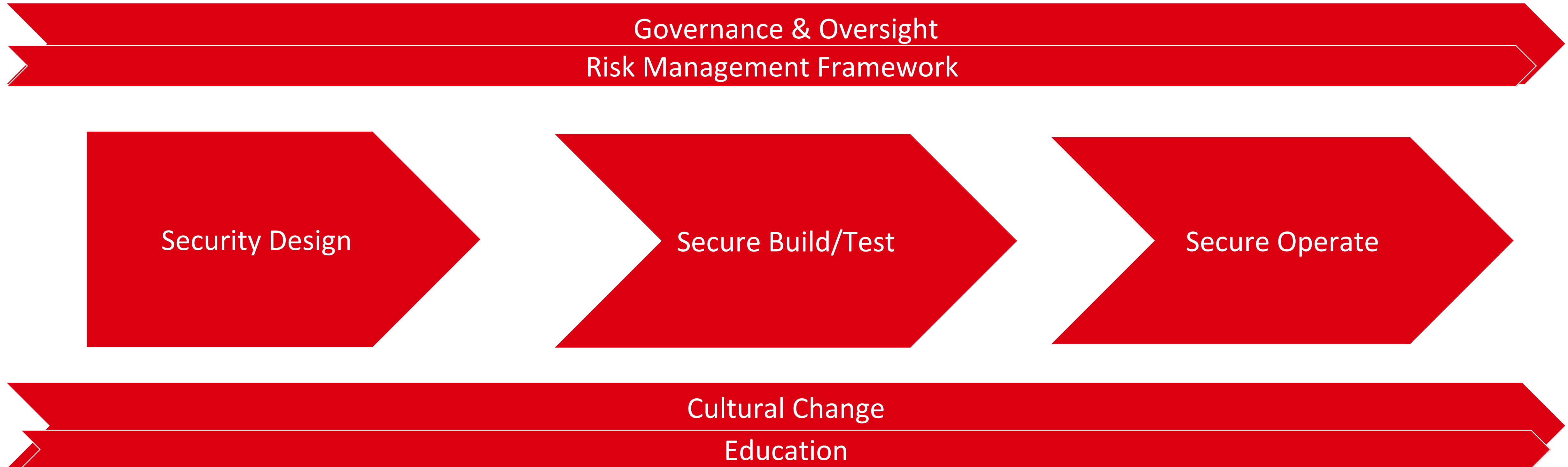
What Are the core pillars of Security Phoenix



How do we get better and measure it?



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AS-IS					
Time	2019				
	Level 1	Level 2	Level 3	Level 4	Level 5
	Initial	Managed	Defined	Quantitatively Max	Optimized
Security Design	AS-IS				
Security Design Governance	AS-IS				
Security Build & Test	AS-IS				
Security Operate		AS-IS			
Security Education		AS-IS			
Application Security Risk Management		AS-IS			



TO-BE					
Time	2020				
	Level 1	Level 2	Level 3	Level 4	Level 5
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Security Design		TO-BE			
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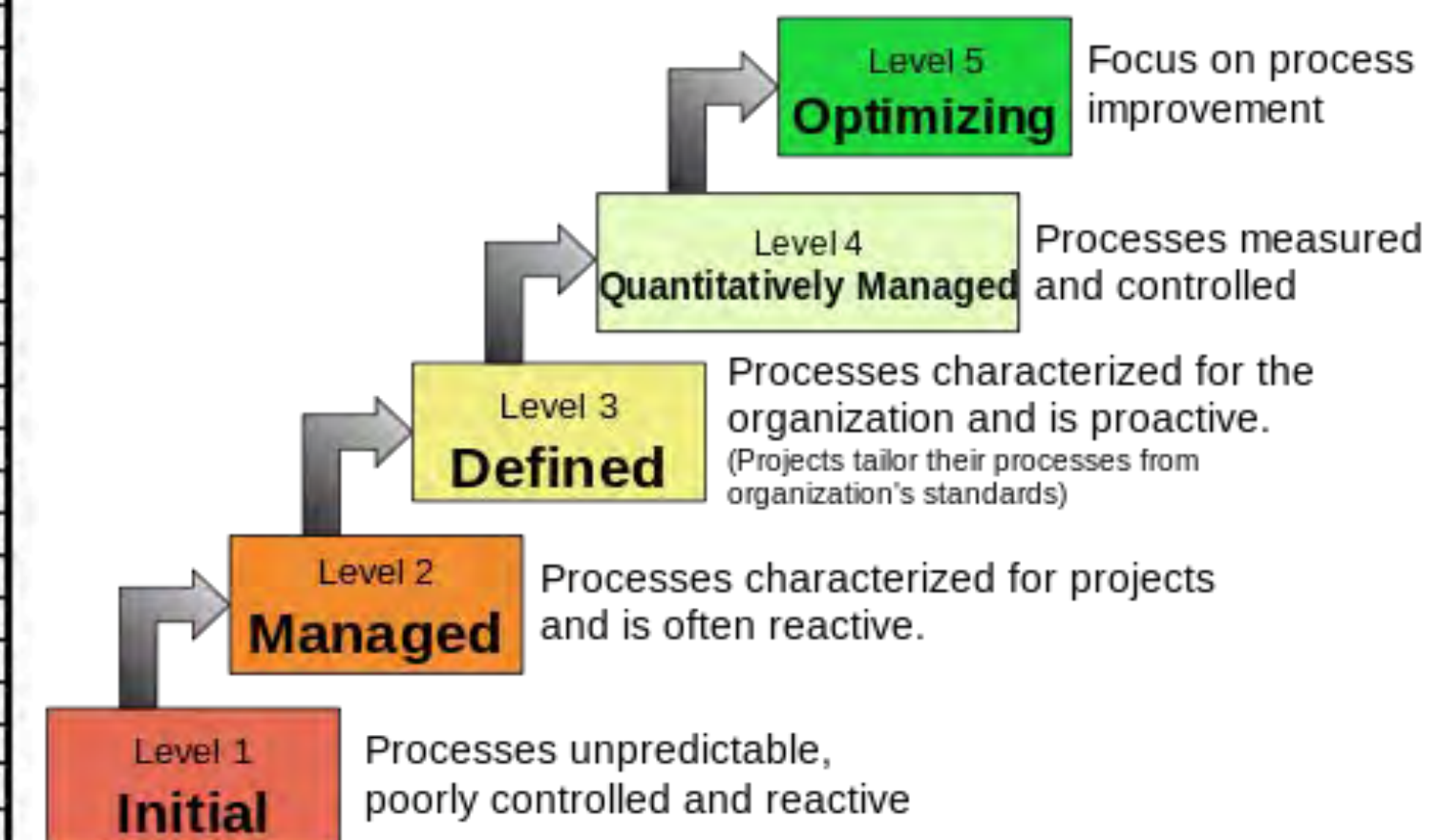
Importance of Maturity Models/Matrix - NSAMM



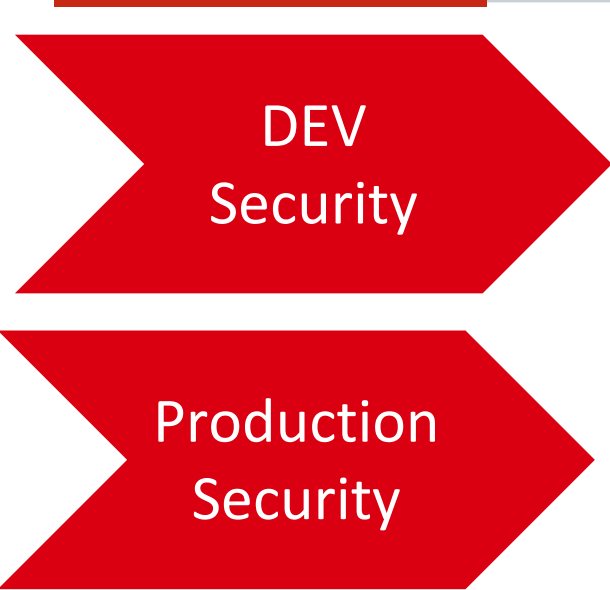
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[illegible]

Characteristics of the Maturity levels



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Overall Maturity

	Level 1	Level 2	Level 3	Level 4	Level 5
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Application Security Risk Management	AS-IS	TO-BE			

Maturity Steps

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1	No visibility on vulnerabilities	
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2	Adoption Dashboard	
3	Peer Review with Toolset	
3	Updated Teams and asset register	
3	Basic Triage of vulnerabilities	
3	Code Scan with Pipeline Break & Basic SLA	
3	Adoption Dashboard (advanced) Per A.C. and Per Region	
3	Risk Assessment from code scanning with record in Risk management	
3	Register	
3	Automated Licence to operate: Code Scanning, Libraries, Internal	
3	Training	
4	Fix time of vulnerabilities recorded	
4	T-Shirt Sizing of fixes and Adaptation of SLA based on fixes	
4	Visualization of pod to fix	
4	segmentation dev and prod	
4	Fix ticket in Jira & Build vs Fix Concept	
4	Fuzzing (basic with generic per app)	
4	Automated Licence to operate: Code Scanning, Libraries, Internal	
5	Training, Build Vs Fix	
5	Automated Fuzzing & Library of tests	

KCI

			Reporting Frequency
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	1	Team On-boarded on scanners (per pod)	Monthly
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	4	Fixes per thematic in SLA	Monthly
	4	SLA for Fixes (breached/achieved)	Monthly
	4	Team Achieving Licence to operate and Out of the licence	Monthly
	5	Build vs fix	Monthly
	5	Licence to operate	Monthly



The Visibility Problem

From Dev to prod and cakes





Better to have full visibility



WhiteSource





The Problem Traceability Problem

The software security cake

So how we do it? Easy as baking a cake



WhiteSource



Road to Production: the cake analogy



WhiteSource



Design

The Objective of the various areas are

- **Ingredients**
- **Recipe**
- **Stock List (asset Register)**

Security Design

Act as Health Inspector

- **Verify Ingredients** are not mouldy
- **Verify Recipe** does not contain poison
- **Stock List (asset Register)** – verify the component used in the cake are genuine



Build/Test

The Objective of the various areas are

- **Combine ingredients (libraries+Code)**
- **Bake the cake**
- **Test the cake**

Security Build & Test

Act as Health Inspector

- **That the cake is made up of genuine ingredients (from asset register)**
- **Test the cake for mould**



Operate

The Objective of the various areas are

- **Sell The cake**
- **Restock the cake on the shelf**

Secure Operate

Act as Health Inspector

- **Verify Cake** on the shop are made of genuine ingredients (from asset register)
- **Verify expiry** data of Cake
- **Test the cake** for mould

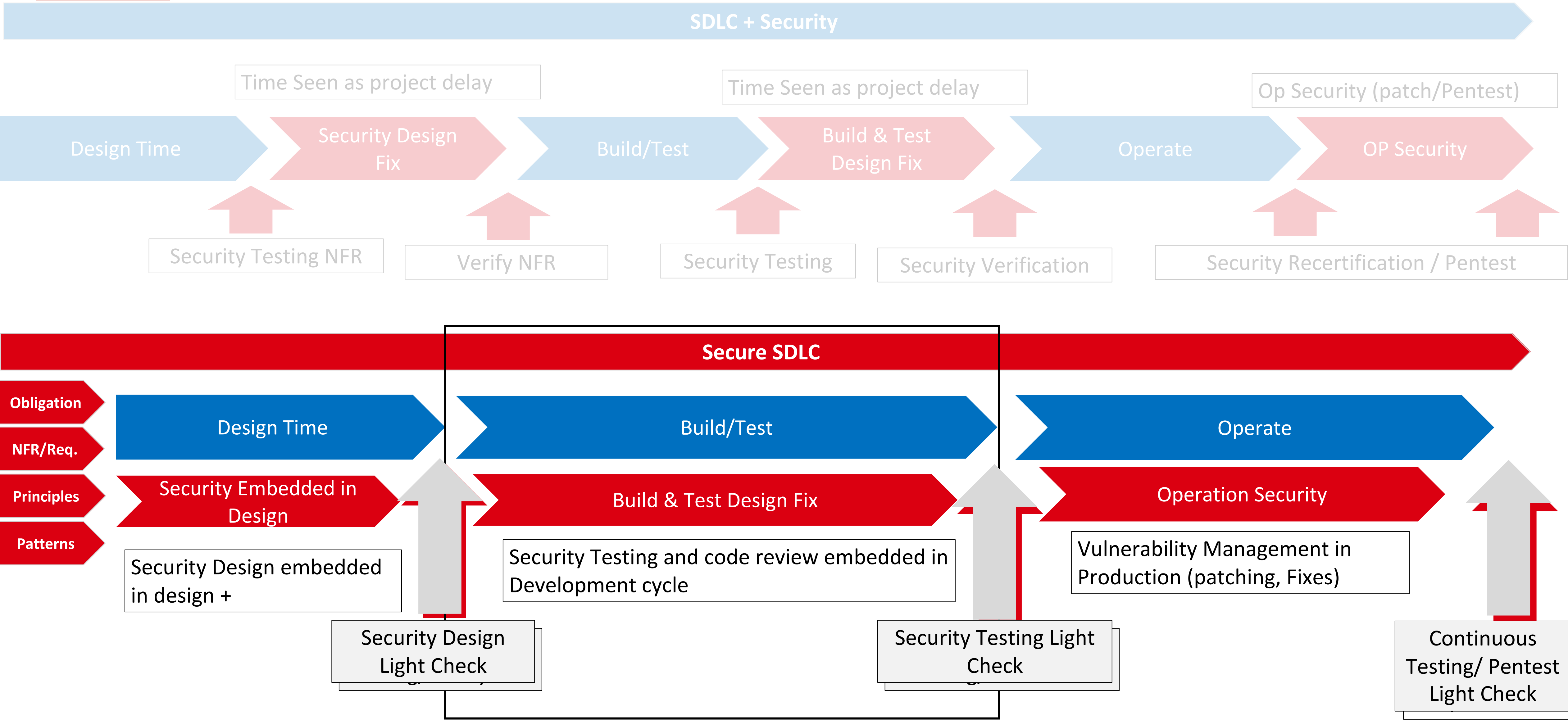




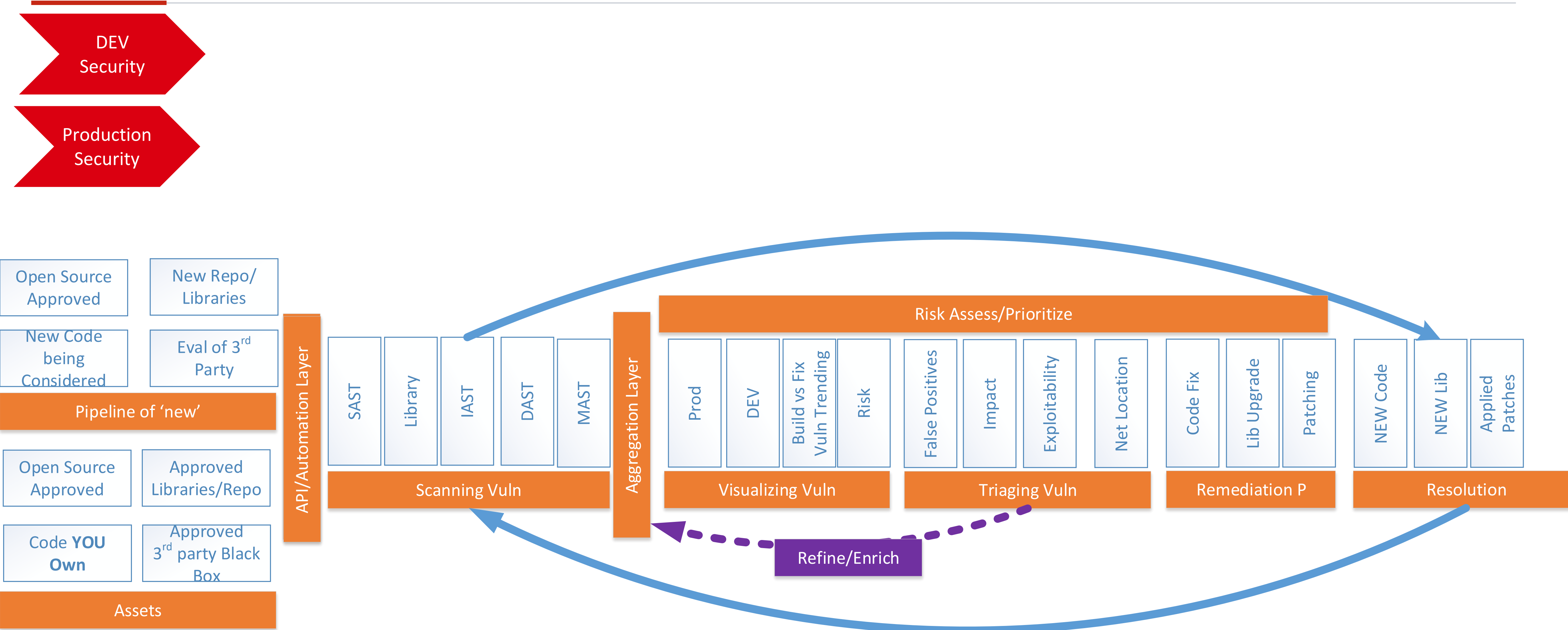
The Appsec Lifecycle & Shift Left

The Software Asset Register

Shift Left - Meaning



Lifecycle Explored





Solving Visibility and Traceability Problem

Vulnerability management

“**Vulnerabilities** can be discovered with a vulnerability scanner, which analyses a code or system system in search of known vulnerabilities, such as code defect, insecure open source libraries, insecure software configurations, unpatched systems”

Vulnerability Assessment (VA) is not a scan, it is a one-time project with a defined start and end date.

Vulnerability Management (VM) is an ongoing process

Unlike a vulnerability assessment, a comprehensive vulnerability management program doesn't have a defined start and end date but is a continuous process that ideally helps organizations better manage their vulnerabilities in the long run.

Software Asset Register
Scan Code/Infra/network

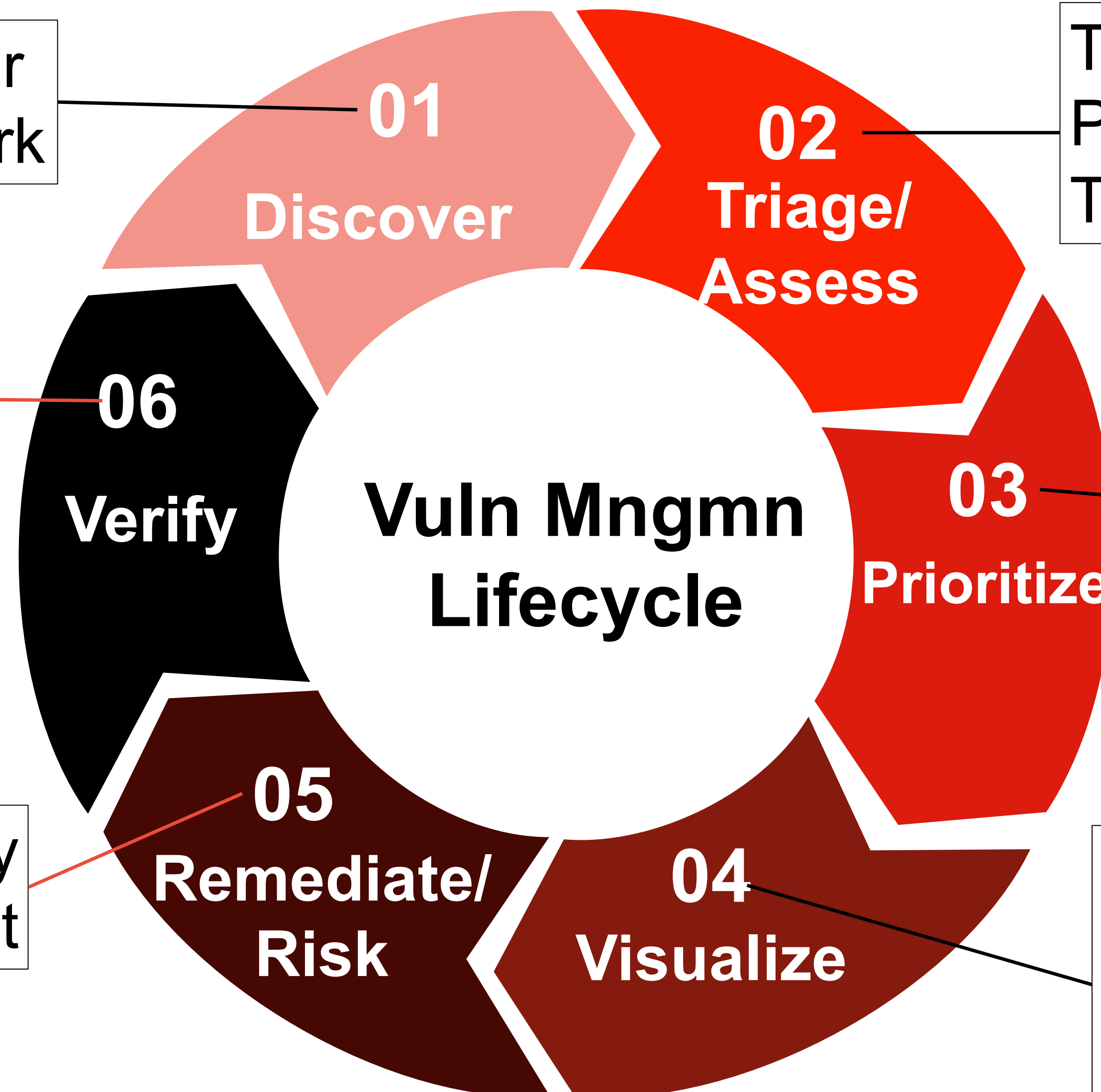
Triage & identify False
Positives
Tweak Scan Profiles

Test implemented
Fix

Prioritize vuln
(Start Easy)
Network Location
Exploitability
...

Fix Code and redeploy
in test

Graph –
Up/down trending of prj
Build vs FIX
Time to Fix





Outcome

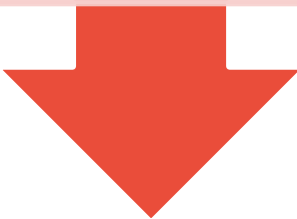
Asset Register for

A - IDentify (Software Asset Register)

Software you build (repositories)

Software You buy

Trace Completeness across all the application you have

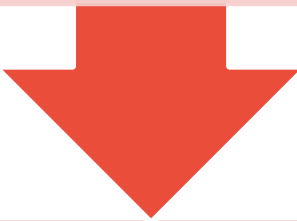


B – Detect (Scan Code)

Select Team Leads and identify security champions

Get security Scanners (SAST/DAST)
Onboard and teach how to triage

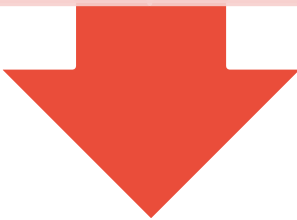
Create a Vulnerability Data lake (results of the vulnerabilities)



C – Visualize Vulnerabilities (Display)

Reporting Dashboards (based on the maturity & KPI)

Link the trending to Build vs FIX, Vuln trending,



D – Respond/recover (Fix Vulnerability)

7 – Schedule Vuln Fixes (Jira)

7 – Fix Vuln & measure (quarterly)

Prioritizing & Vulnerability Reduction



The Traceability & People

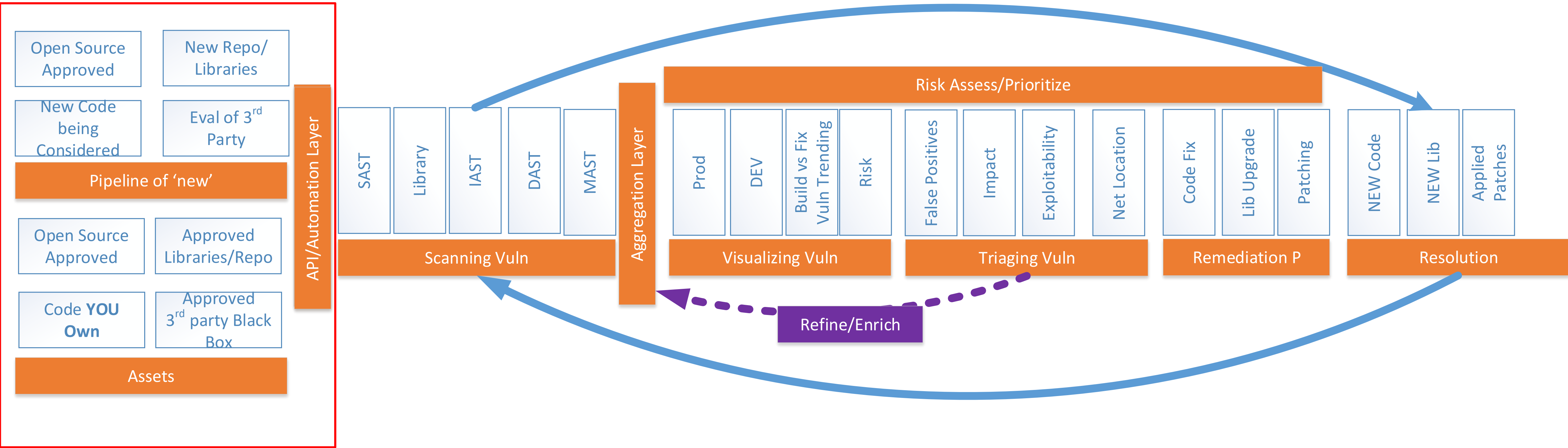
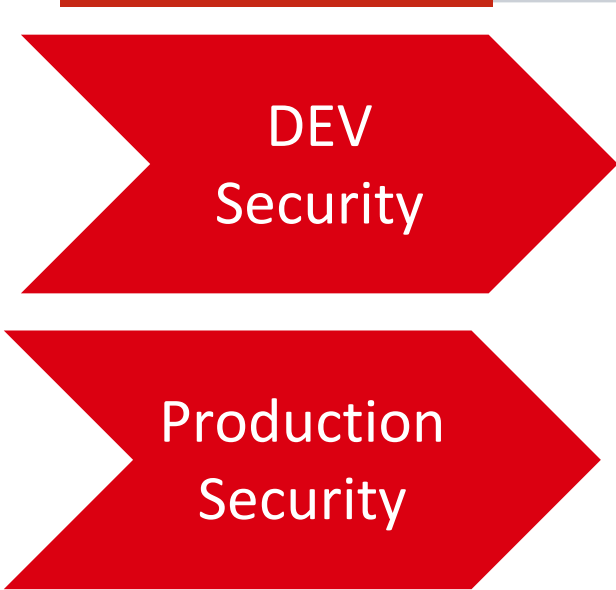
Visualization & Accountability without finger pointing

1. Visualize and Fix Vulnerability at scale and pace
(DEV & Ops)
2. Trust the Product team but keep them accountable:
Trust & Verify & License to Operate
3. Maturity & Recap

Why do we need to build a strong asset register?



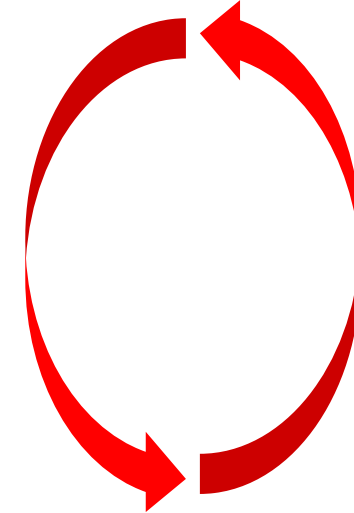
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DEV
Security

Production
Security

For Every Repo

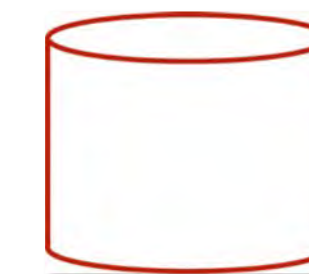


```
git ls-tree -r -z --name-only HEAD -- update-  
tools-mac.sh | xargs -0 -n1 git blame \--line-  
porcelain HEAD |grep "^author "|sort|uniq -  
c|sort -nr
```

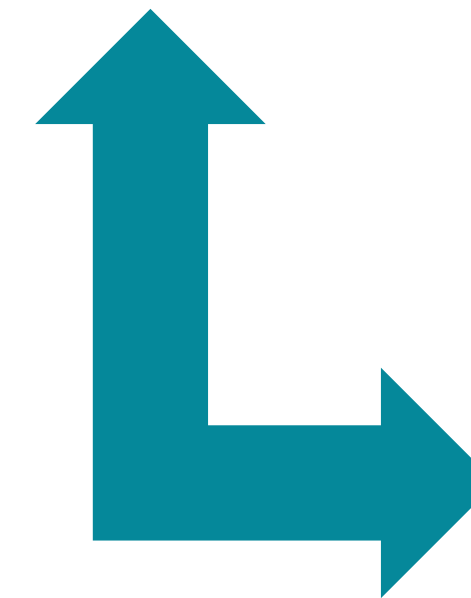


App scan?

List of committers

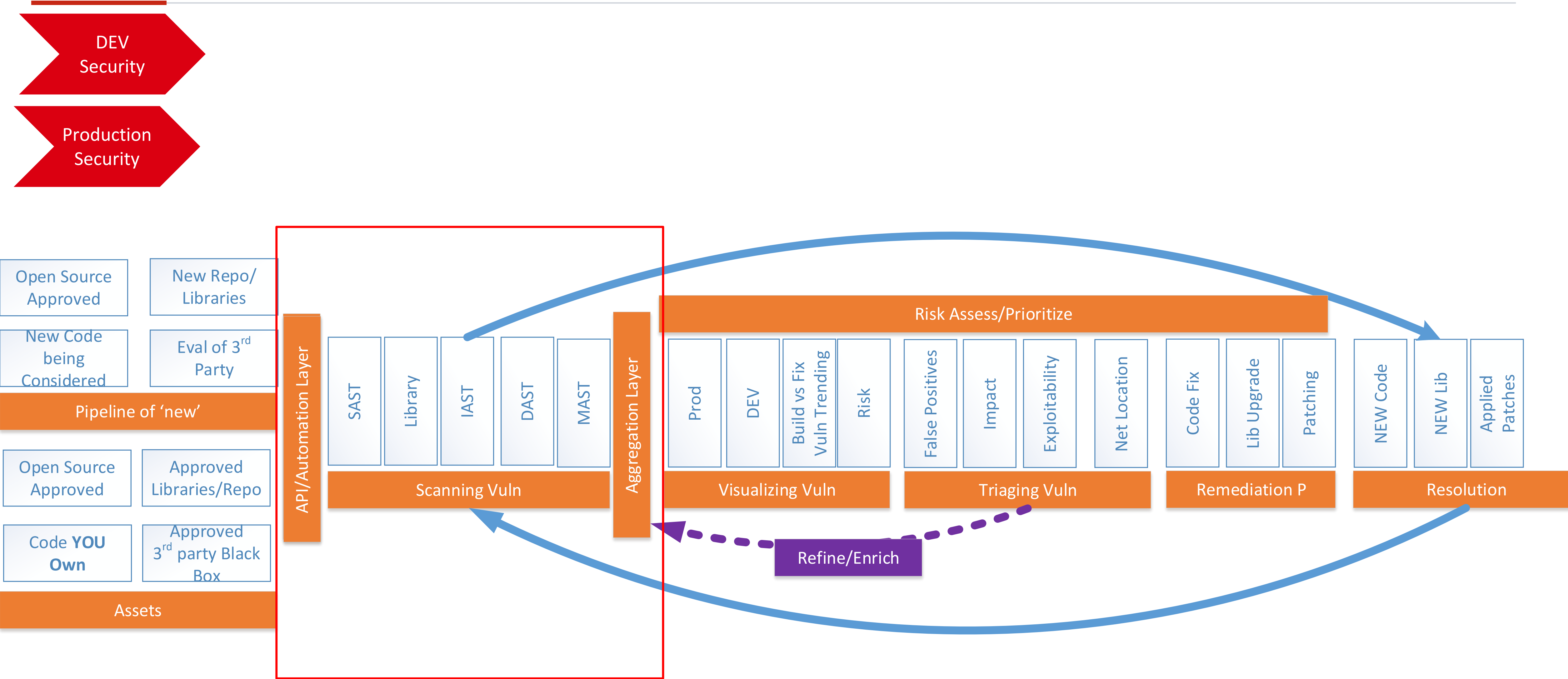


Build vs FIX
&
Tickets



E-Mail/HR DB

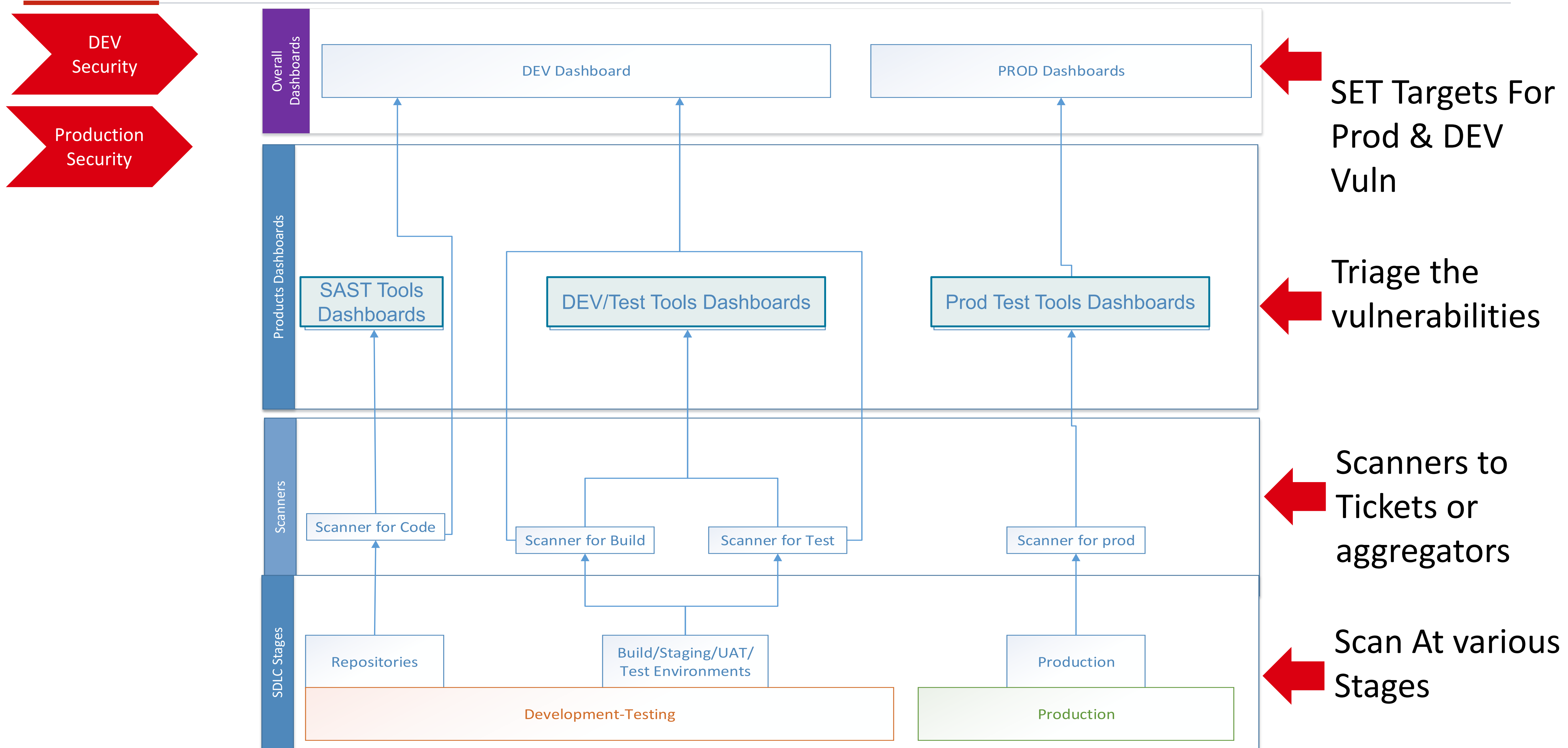
Dashboard for Code Defects – Part B

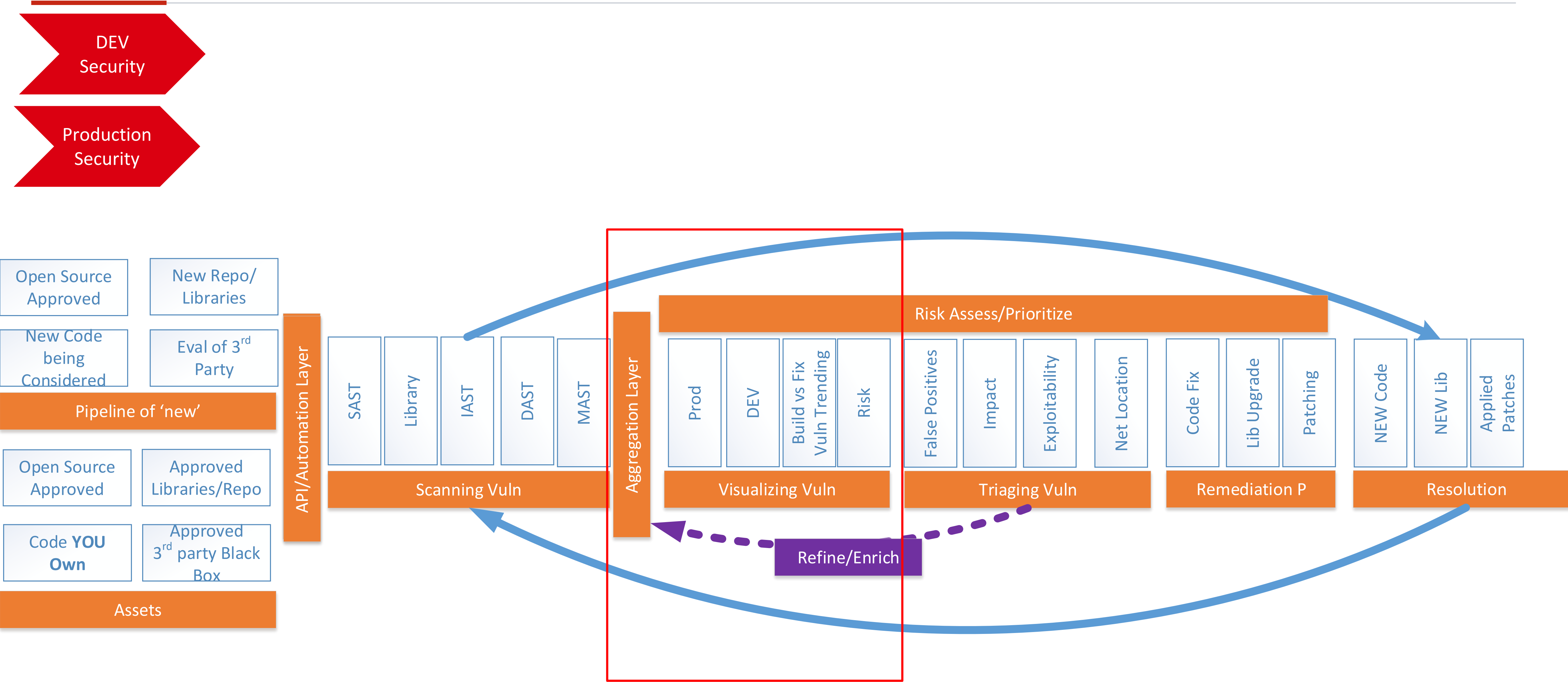


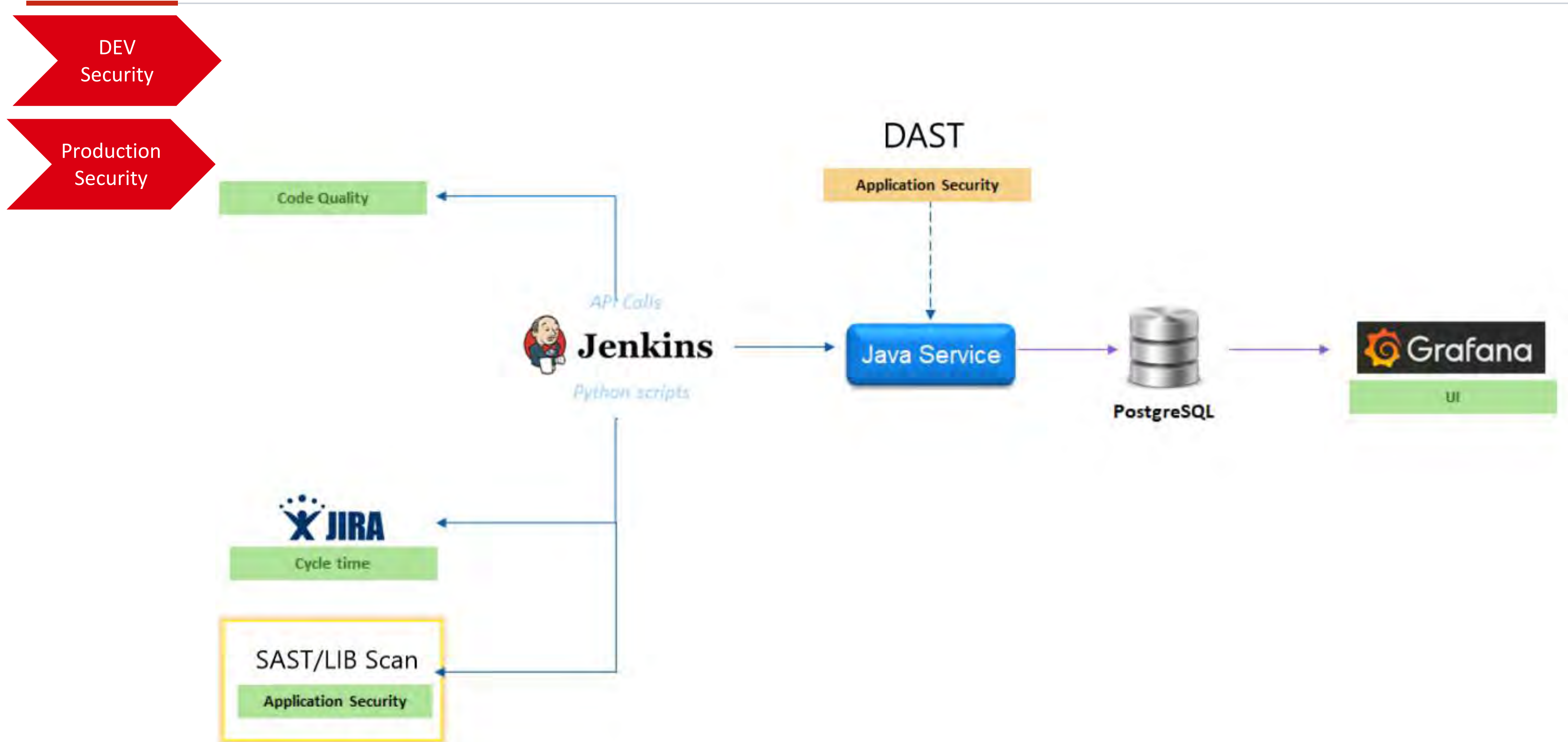
Dashboard for Code Defects -> Under the hood



WhiteSource





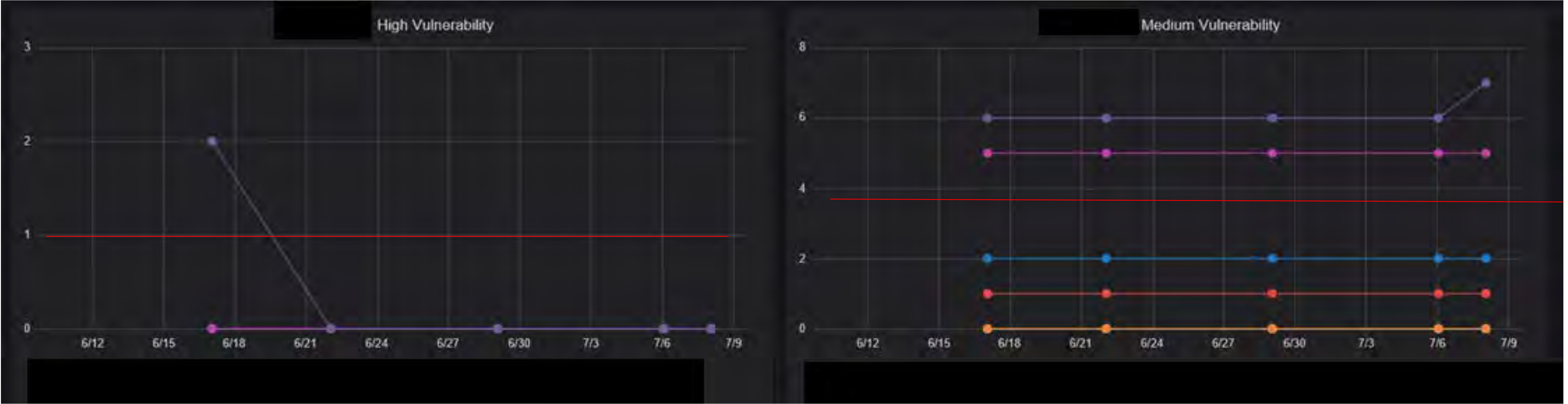


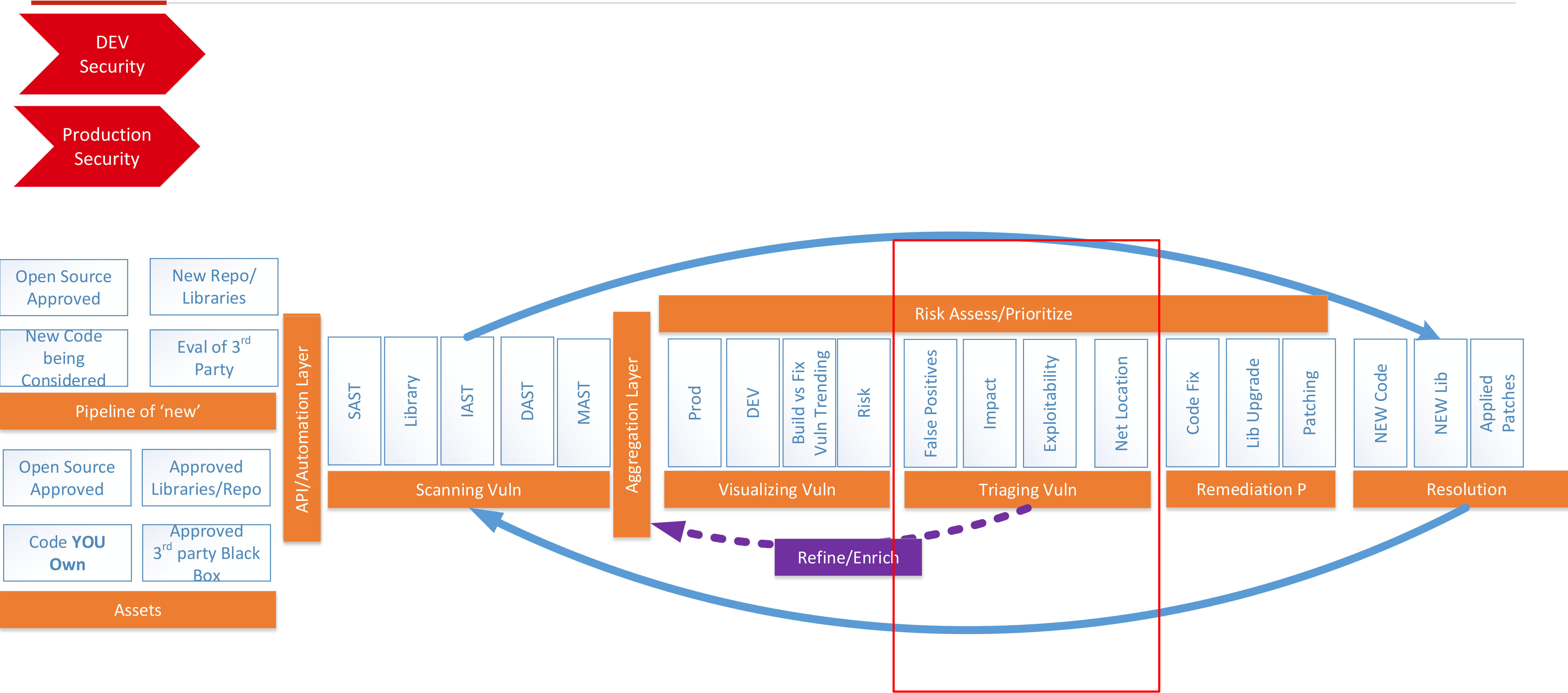
Example of a dashboard for Vulnerability Visualization

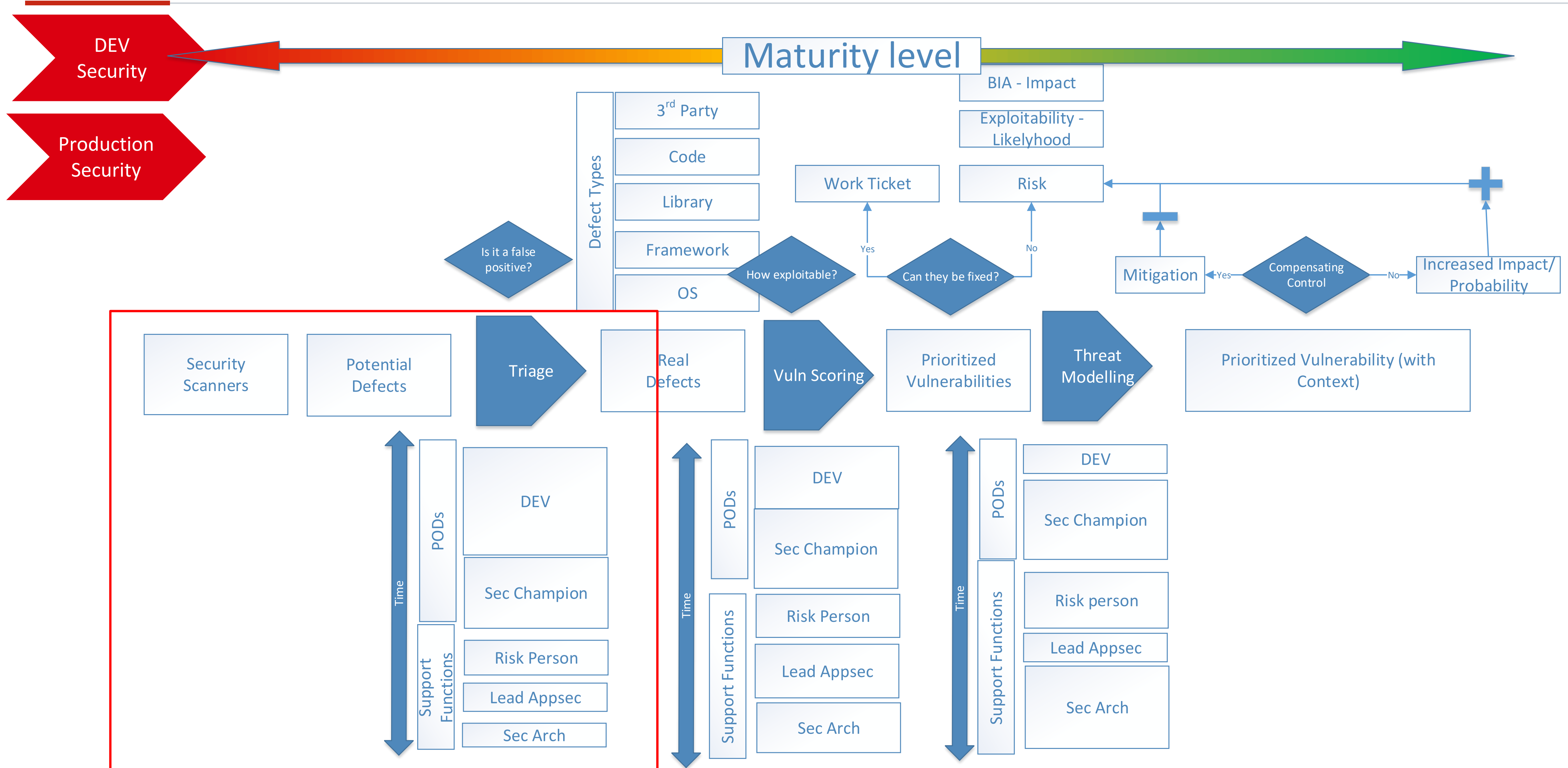


DEV Security

Production Security







1. Visualize and Fix Vulnerability at scale and pace
(DEV & Ops)
2. Trust the Product team but keep them accountable:
Trust & Verify & License to Operate
3. Maturity & Recap

Going fast but with confidence (SEC)

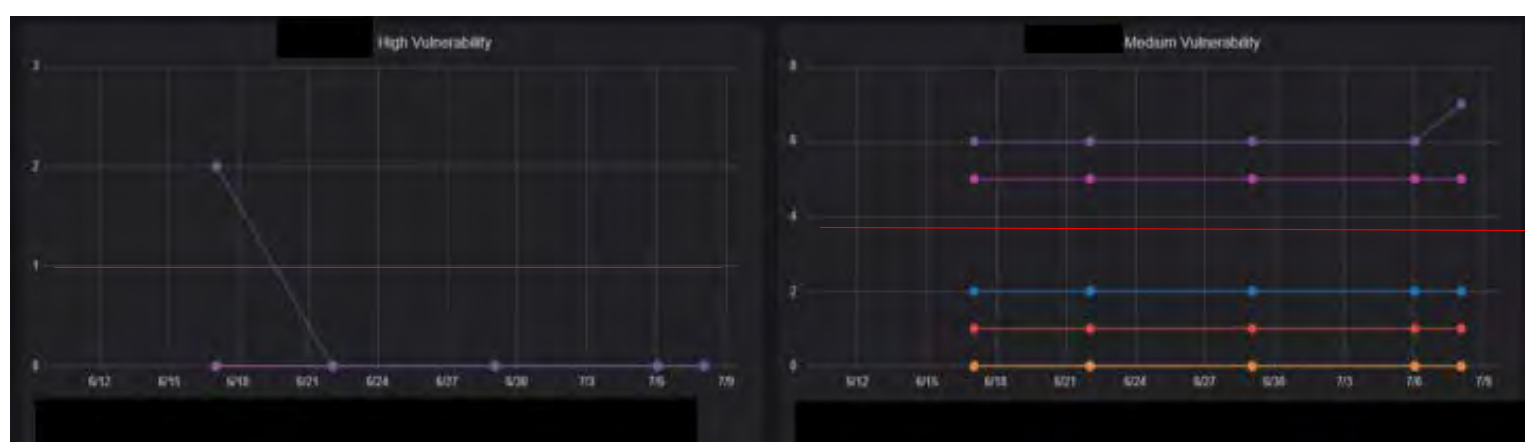
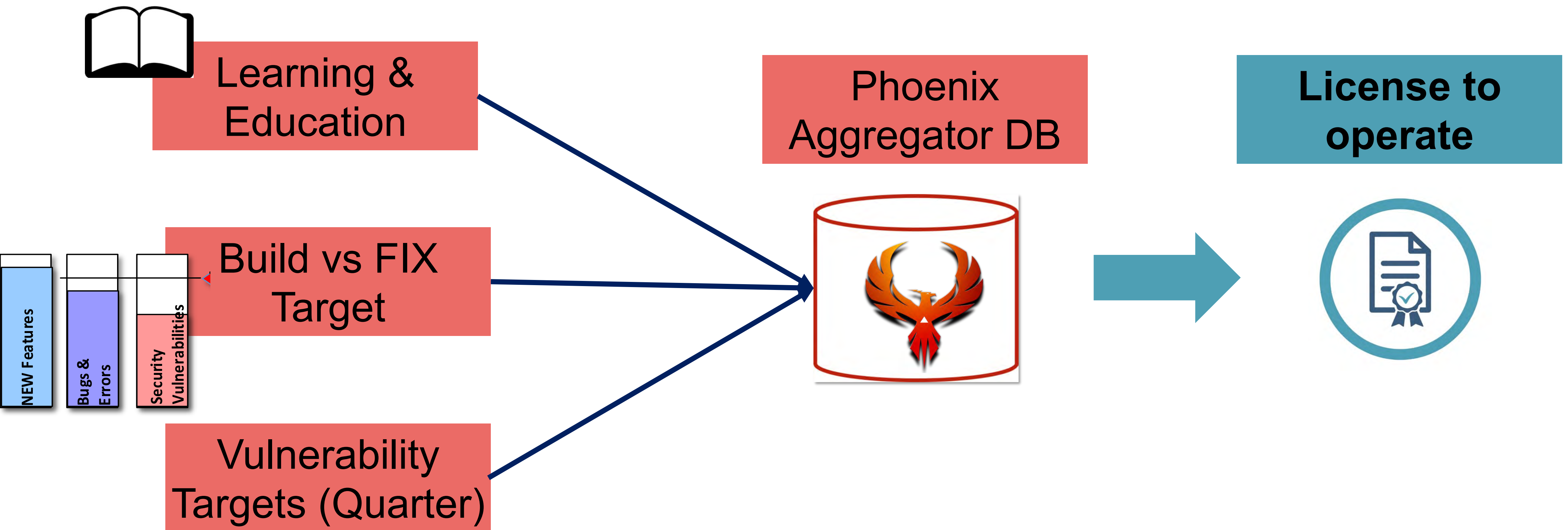
1. Trust & Verify

2. License to operate/code

People &
Education



>> Set Thresholds: Bild vs Fix, Vulnerability trending



Education:

1. Awareness Training For your users
2. Craft Training based on the scanner (faults) data
3. Education on the job – What good looks like
4. Make the training entertaining (CTF and Rewards)



Maturity Model & Recap

Bringing all together

1. Visualize and Fix Vulnerability at scale and pace
(DEV & Ops)
2. Trust the Product team but keep them accountable:
Trust & Verify & License to Operate
3. Maturity & Recap

To Achieve High Maturity what do you do



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DEV

Security

Production

Security

Overall Maturity

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Outcome

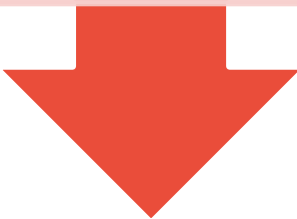
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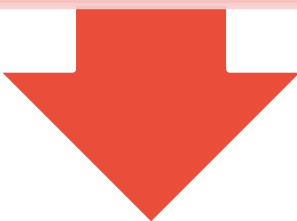


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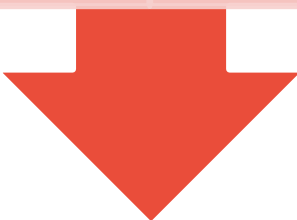
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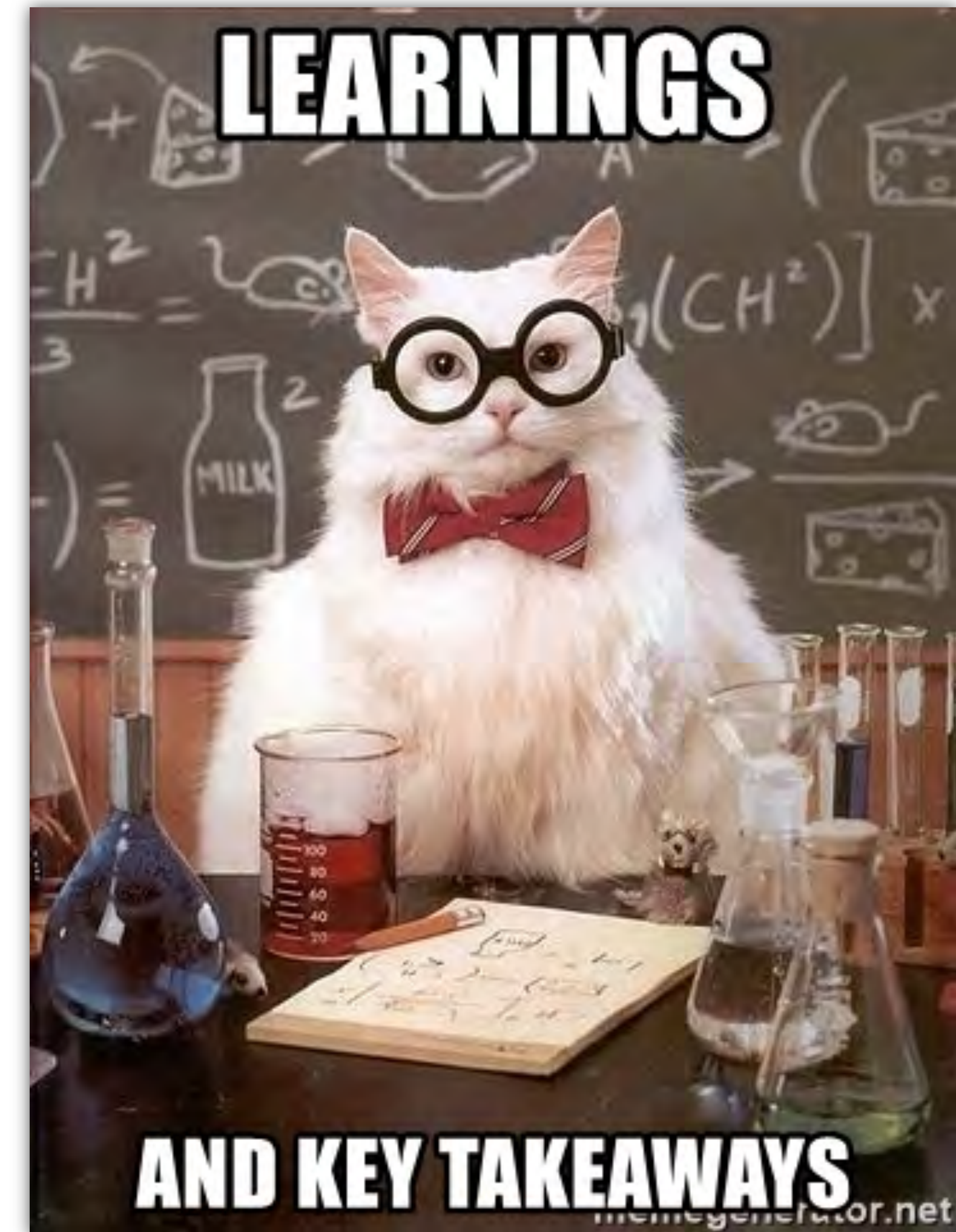
Vulnerability Data Lake

KPI Reporting & Dashboard

Prioritizing & Vulnerability Reduction

Security is everybody's job DEV and OPS?

- Maturity Model – Measure and define success
- Trust And Verify
- Identify and assess code and production
- Vulnerability Management every day life
- Automation vs people aspect – is a transformation
- Data Driven Education



Our Other Services

We believe in an all rounded set of services built on the need of our clients over the years and recognized by the Cloud Security Alliance.

What differentiates our company from other consultancies is that we do what we love and are customer focused.

Our company goes the extra mile in order to deliver solutions that are fit for purpose, effective and cost-effective for your organization's risks appetite.



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We offer a range of products within cybersecurity.



VCISO/INTERIM CISO



CYBER SECURITY STRATEGY



CYBER SECURITY CONSULTANCY



CLOUD SECURITY



TRAINING/COACHING & EDUCATION



APPSEC/DEVSECOPS CONSULTANCY

NSC42

WHEN YOU ARE CYBERSAFE WE ARE CYBERHAPPY

Thank you
Get in touch:



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Communications@nsc42.co.uk



www.nsc42.co.uk



Cyber Security & Cloud Podcast

By Francesco Cipollone

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Cyber Security Awards



Cyber Security Awards 2020

Cloud Security Influencer of the Year

Submission – 10 of May 2020 (TBD)

Ceremony 4 July 2020

#CYSECAWARDS20

<https://cybersecurityawards.com/>

<https://cloudsecurityalliance.org.uk>

Submit: info@cybersecurityawards.com

Info: Francesco.Cipollone@cloudsecurityalliance.org.uk





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WHEN YOU ARE CYBERSAFE WE ARE CYBERHAPPY

Thank you
Get in touch:



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<https://uk.linkedin.com/in/fracipo>



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