CYBER SECURITY DIVISION

2013 PRINCIPAL INVESTIGATORS'

Code Pulse: Dynamic Augmented Static Analysis

Secure Decisions

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Sept. 16th, 2013

Homeland Security

Science and Technology

Secure Decisions

SECURE DECISIONS
A DIVISION OF APPLIED VISIONS, INC.

We help you **make sense of data**

- Analyze security *decision-making* processes
- Build *visual analytics* to enhance security decisions and training

Our expertise starts where automated security sensors and scanners leave off

We **transition** our R&D into **operational use**, in government and industry

Secure SCOPE

VIASSIST

MeerCAT

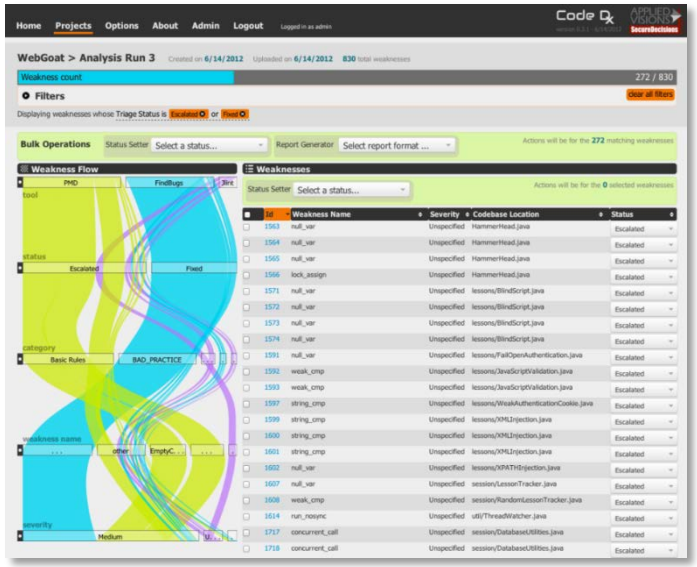
Grounded in commercial software and product development

- Division of Applied Visions, developer of commercial software
- 40 people, most with clearances, and secure facilities

Secure Decisions SwA Tools

Code Dx

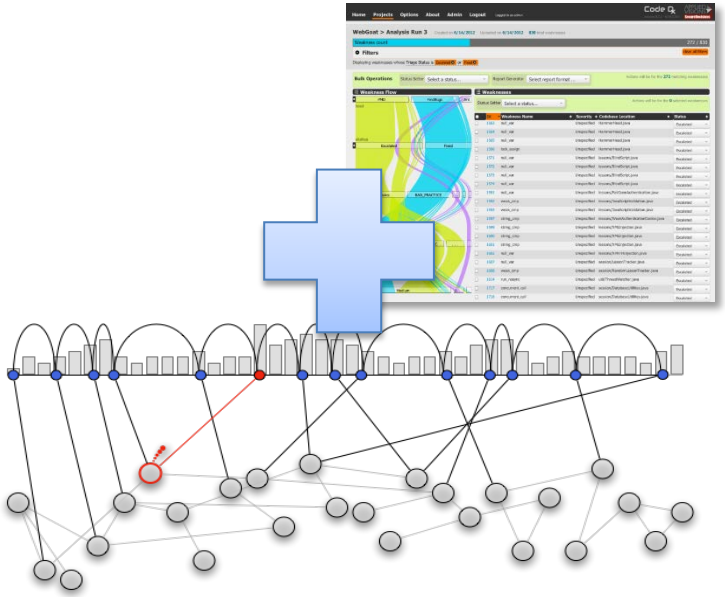
DHS funded Phase II SBIR
Currently TRL 7



Converged static source analysis

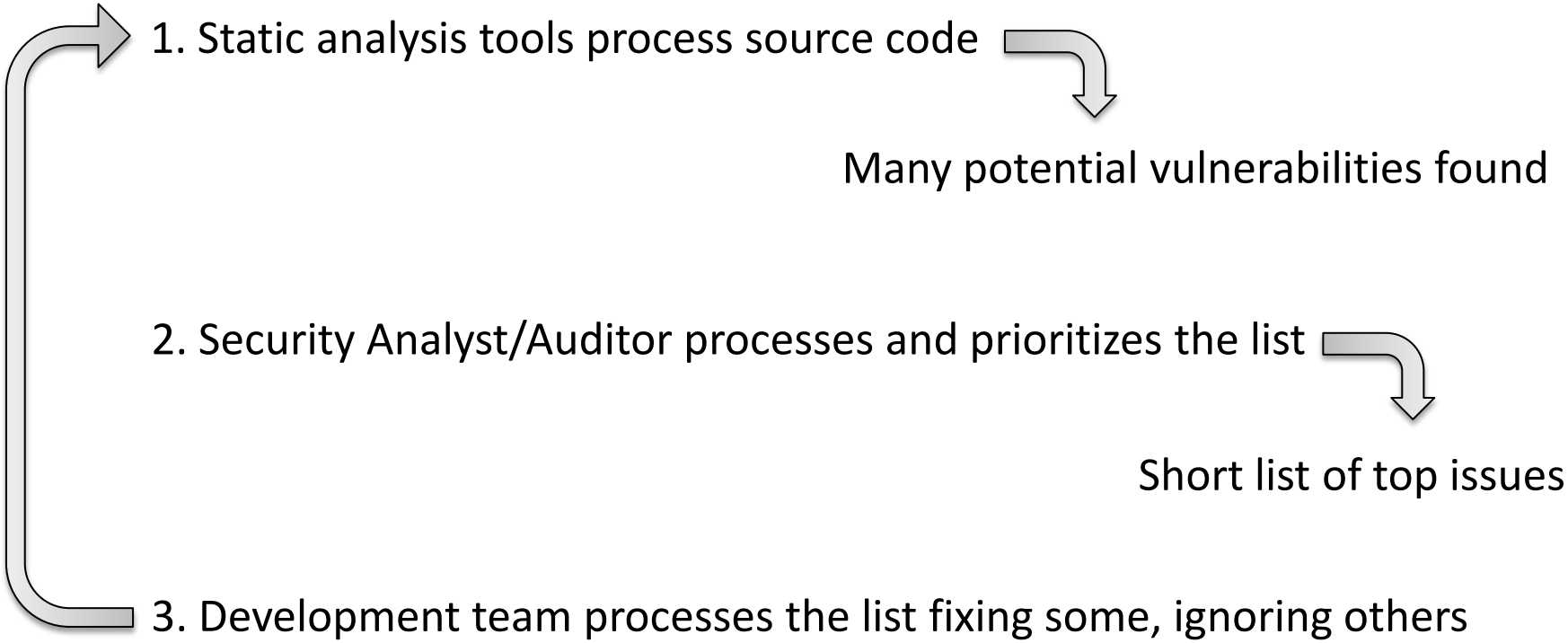
Code Pulse

DHS CSD funded BAA
20 month project, PoP through April '14

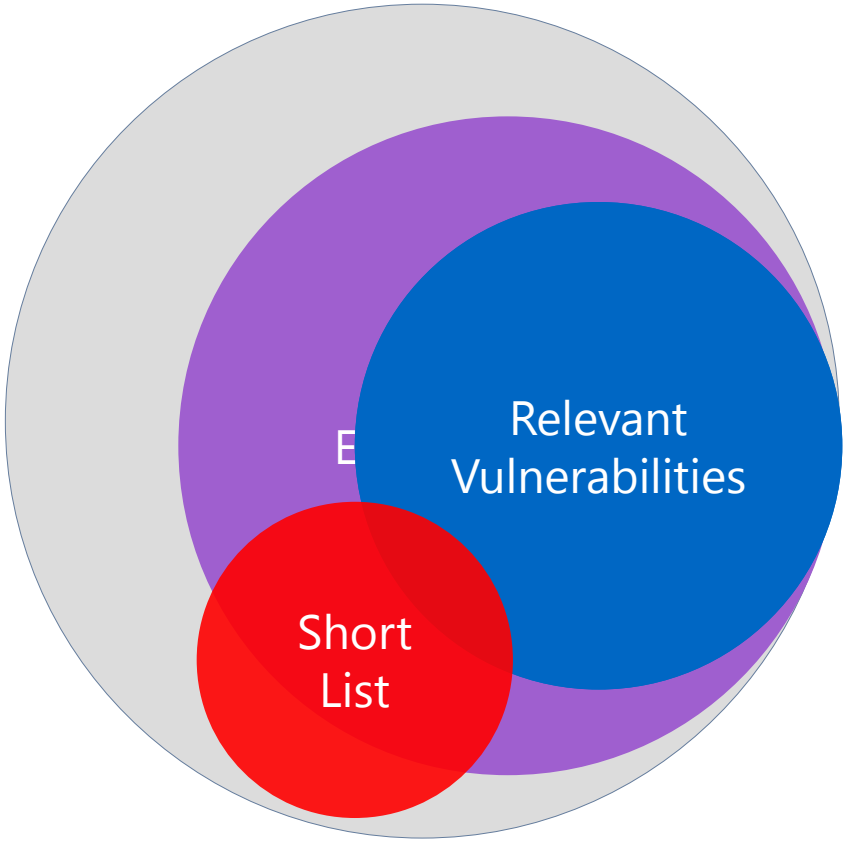


Dynamic augmented static source analysis

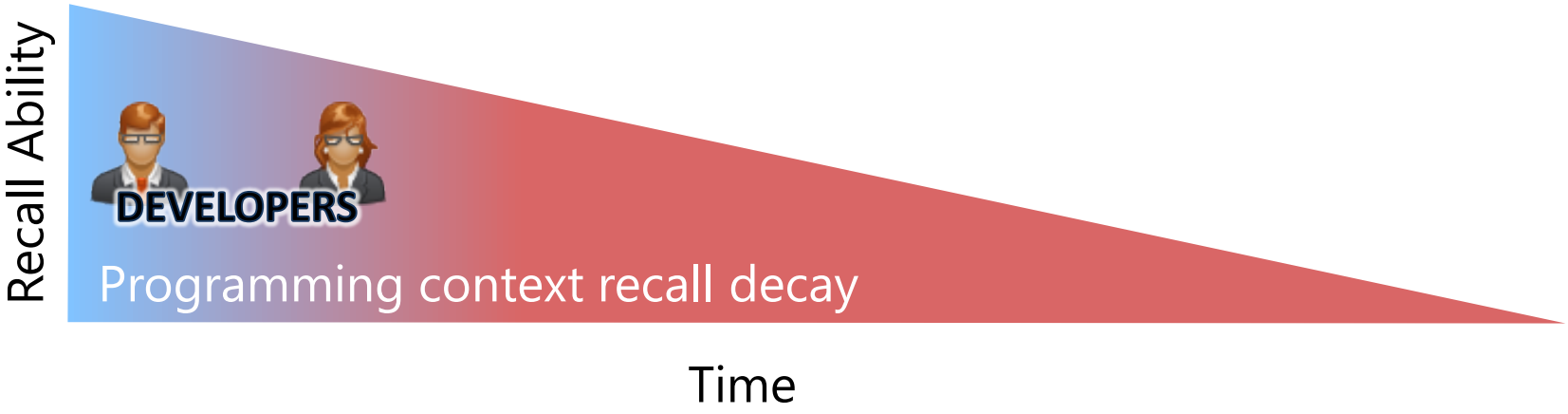
Typical Static Analysis Workflow



Need: Relevant Vulnerabilities



Need: Remediation Context



Developers fixing a bug/vulnerability when the source context is still fresh will be quicker and less error-prone

As time progresses their speed and ability to ensure system integrity with new changes diminishes

Terminology

Static Analysis

- At the source or binary levels
- Scans to detect potential vulnerabilities
- No runtime context

Dynamic Analysis

- In SwA used to describe the process to detect potential vulnerabilities at runtime (A.K.A. Penetration Testing, Black Box Testing)
- Source code context not available

Dynamic Tracing

- Monitor runtime execution
- Used by profiling tools
- Identify which methods are called and when to observe: call graph, call durations, and call frequencies

Code Pulse Scope

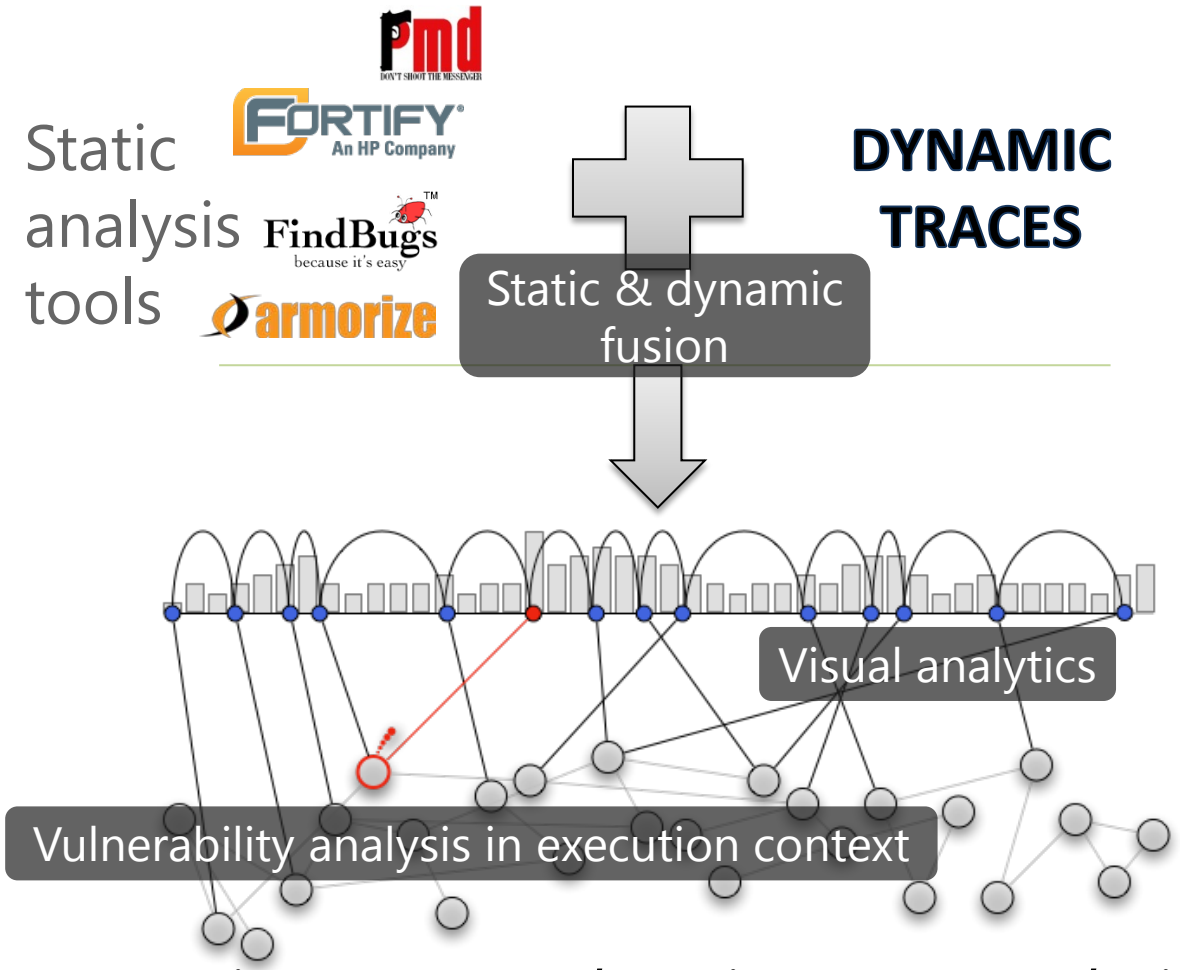
Static source analysis

= Code Pulse

Dynamic tracing

for Java

Approach



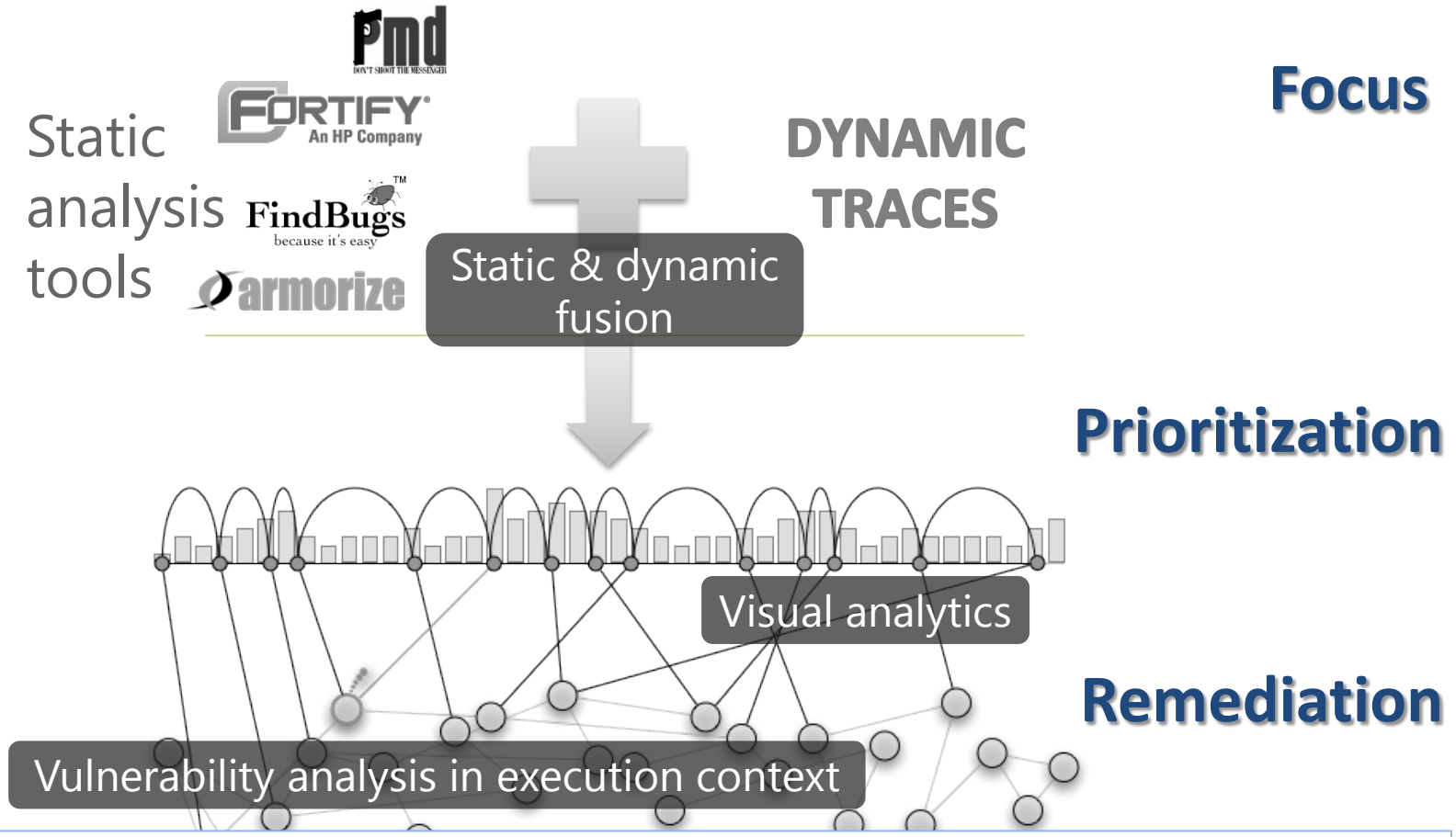
Dynamic augmented static source analysis

Use Cases

3 primary high-level use cases

Dynamic trace collection	Prioritization	Remediation
		
		

Benefits

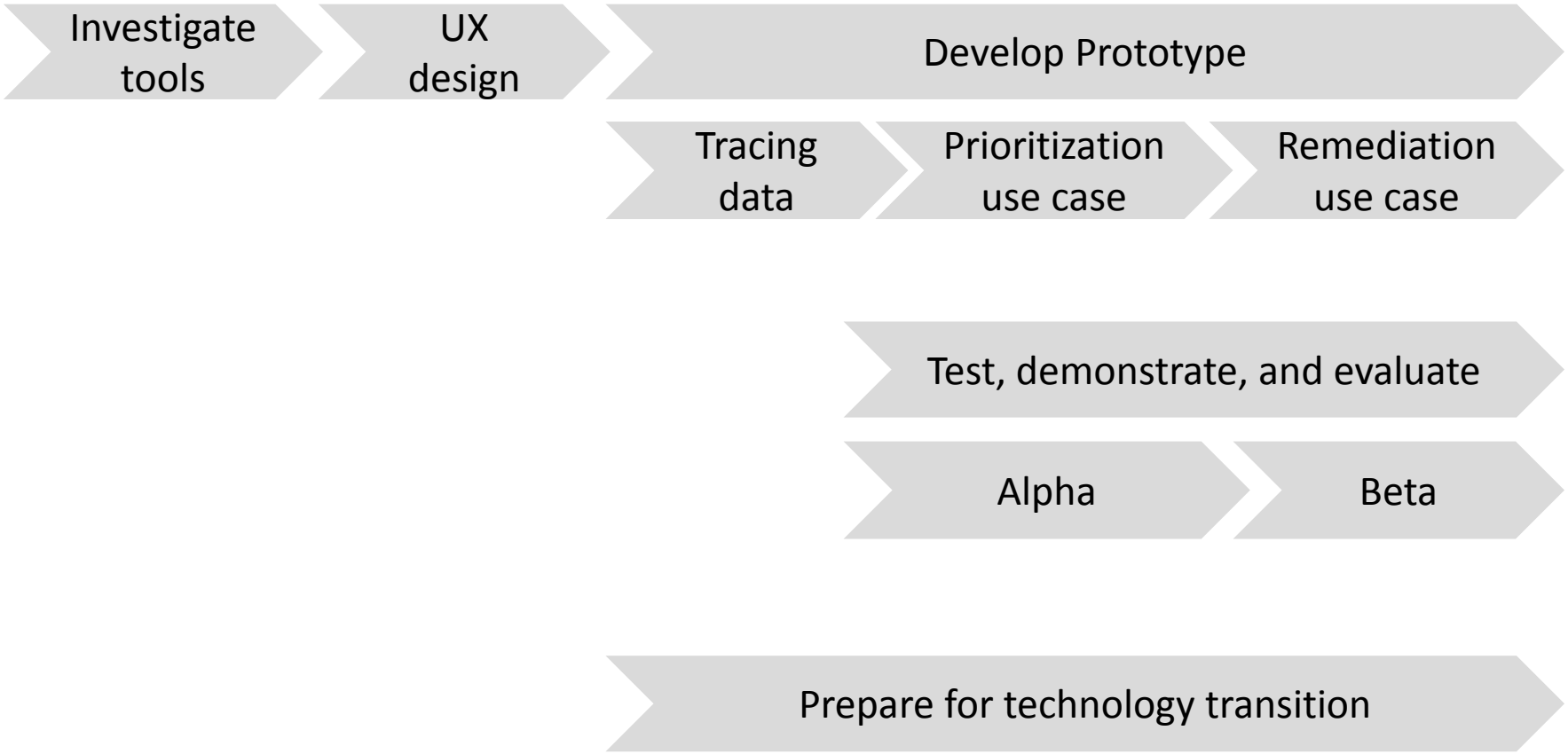


Focus the prioritization and remediation of static software analysis

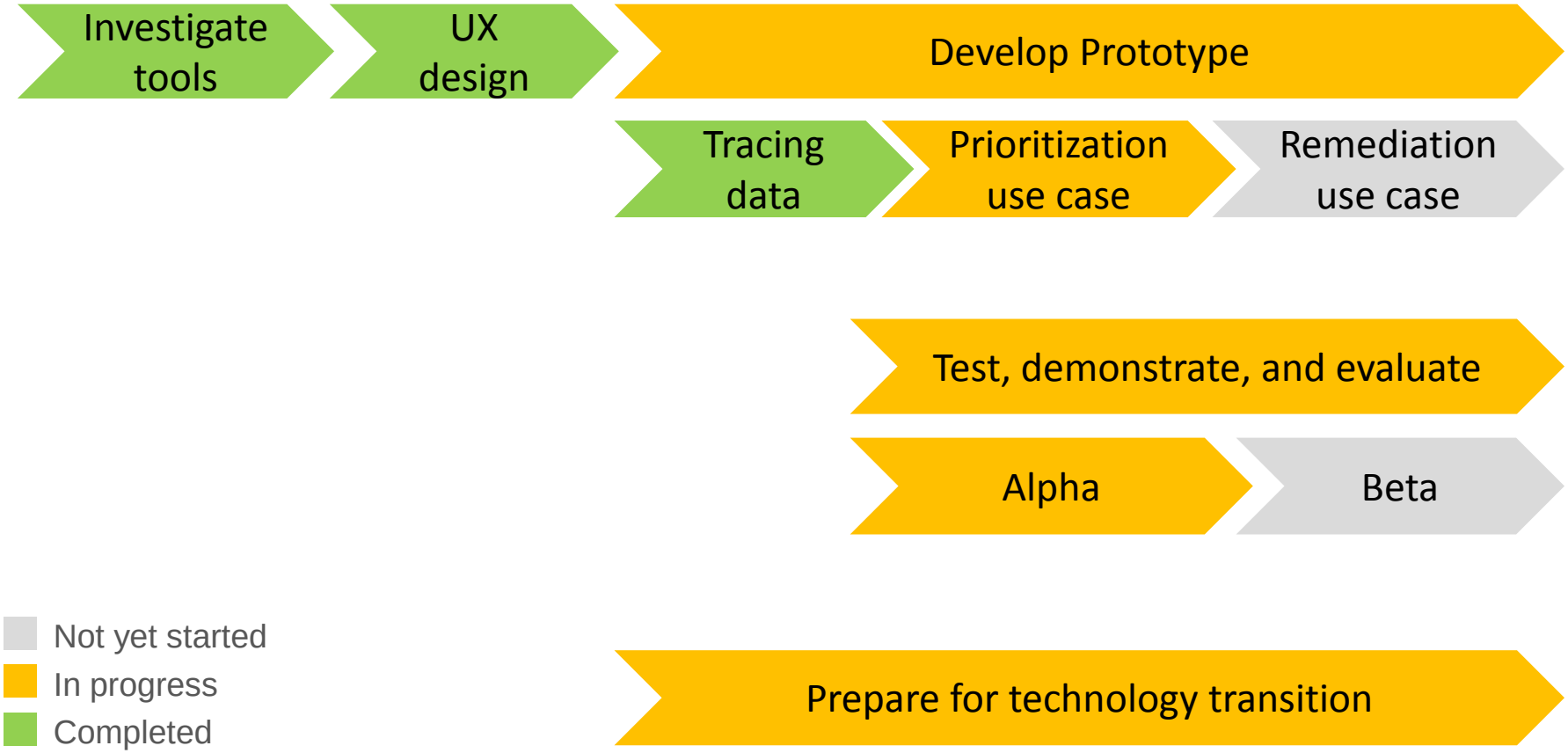
Competition

- Dynamic application security testing
  - Black box testing
  - Little insight into the internals of the target software
- Hybrid application security testing
  - Combination of static and dynamic testing
  - Better security coverage
  - **But** static analysis results still need to be processed using traditional techniques without runtime context
- No existing solution for automated runtime correlation with static analysis results

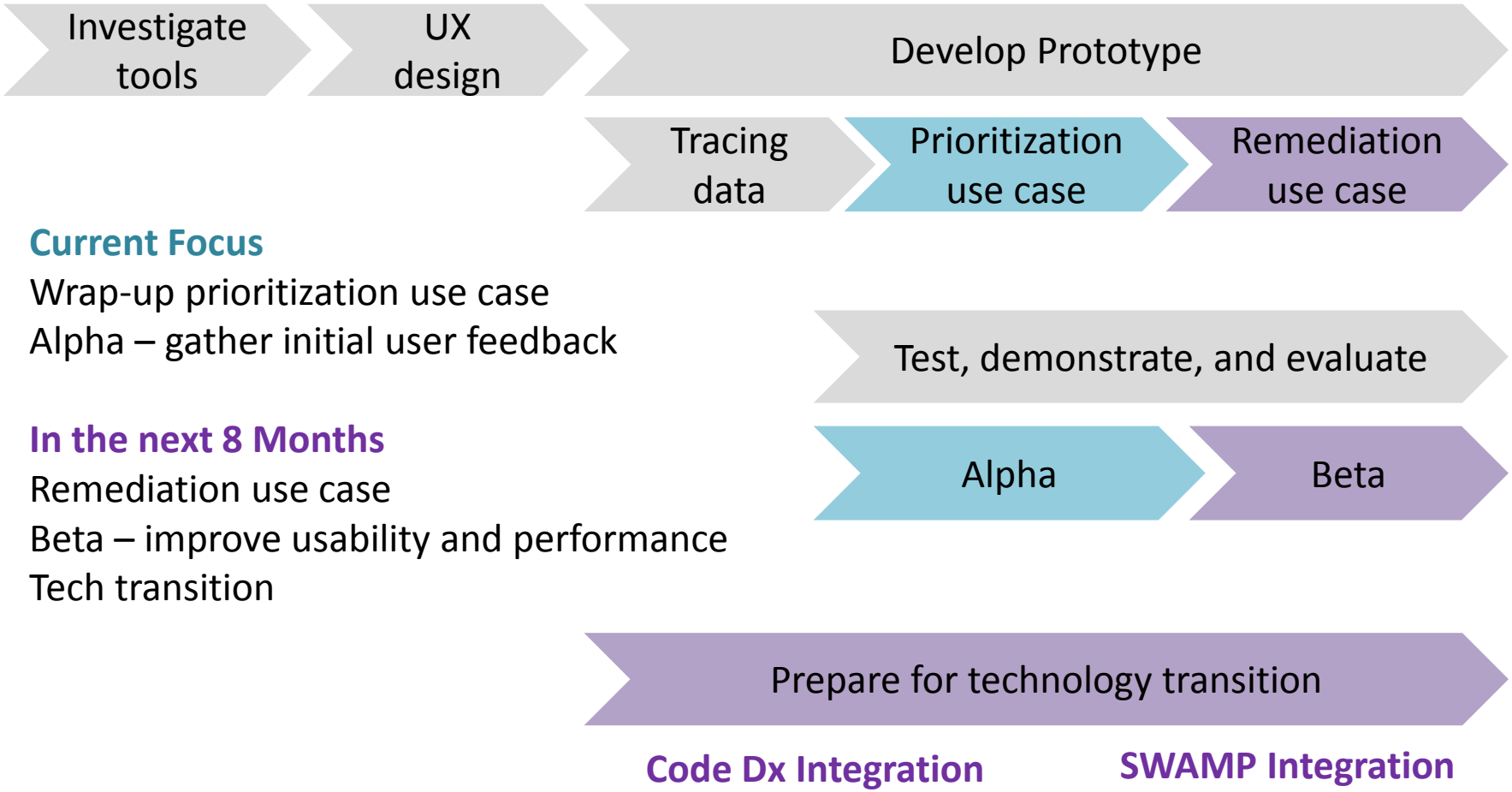
Task Overview



Current Status



Next Steps



Current Focus

Wrap-up prioritization use case

Alpha – gather initial user feedback

In the next 8 Months

Remediation use case

Beta – improve usability and performance

Tech transition

Contact Information

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