SAP Bug Bounty Program for SAP S/4HANA

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Agenda

The Security of SAP S/4HANA

What is Bug Bounty?

Why Bug Bounty?

Where to report security issues to SAP?

Bug Bounty @S/4HANA

The Security of SAP S/4HANA

Confidence in SAP S/4HANA Security through a holistic approach

Security is integrated into SAP Company Processes

Secure Cloud Software Development

Leading Security and DPP Products & Features

Secure Operations & Landscape Architecture

Security Products

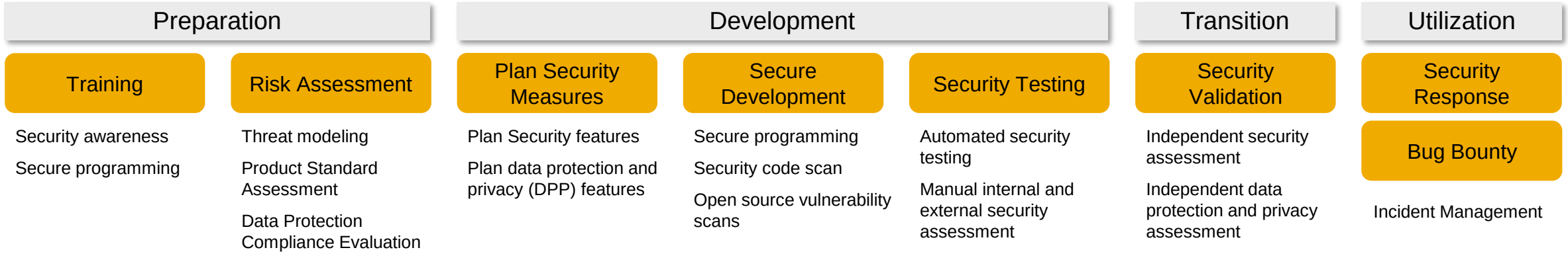
- Risk based approach aligned to ISO 27034
- Threat modelling
- Code scans
- Data Protection & Privacy assessment (DPCE)
- Internal & external security assessment
- Continuous security fixes and enhancements
- SAP S/4HANA Bug Bounty Program
- Digitally signed code
- Security validation

SAP Secure Software Development and Operations Lifecycle
From Risk Assessment to Security Validation

The Secure Software Development and Operations Lifecycle is the framework at SAP to develop software that fulfills both Security and Data Protection & Privacy requirements.

SAP follows a risk-based approach to efficiently achieve security within economic boundaries:

- Product teams first identify security risks by conducting security risk assessments
- Performing security activities to embed security in the product and verify its effectiveness for the identified risks



Common denominator: Product standard security as knowledge base across all phases

What is Bug Bounty?

Bug bounty history and basics

Software provider

Security researcher

A means to expose software in a controlled way to security researchers

A vulnerability reward program

”Crowdsourced Penetration Testing”-
Ethical hackers are rewarded for finding vulnerabilities

- Strict rules for what is in scope and what is out
- Responsible disclosure of findings
- Rewards (bounties) are paid according to criticality of the finding based on CVSS (Common Vulnerability Scoring System)

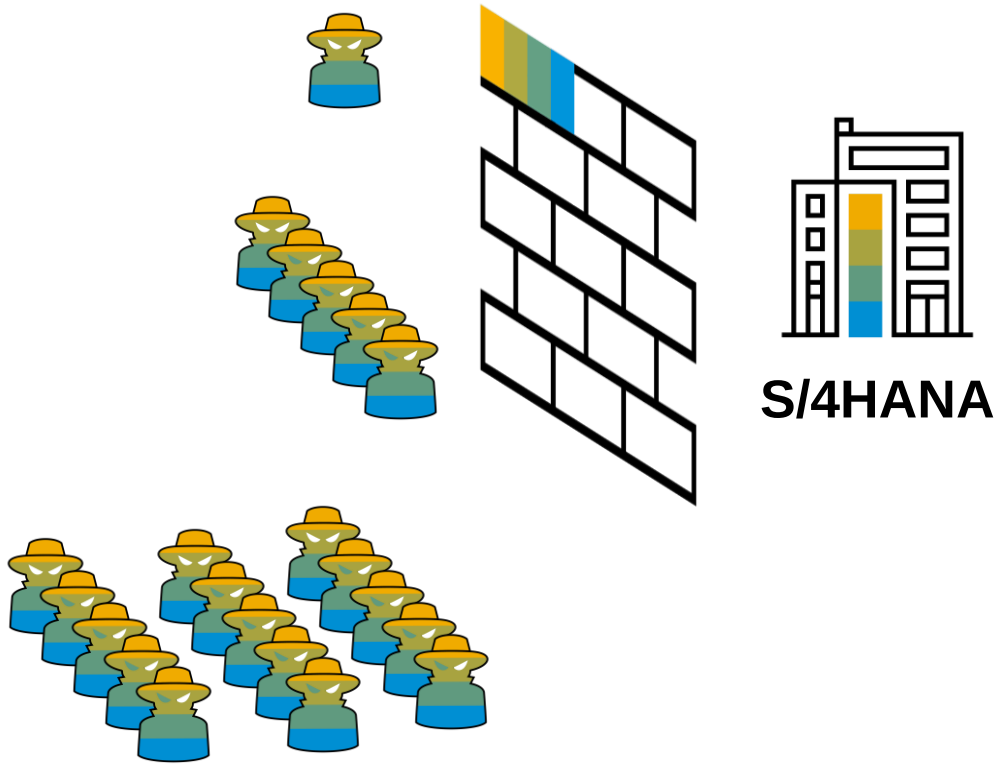
Why Bug Bounty?

Offensive Security Testing

Penetration Tests

Hacking Simulations
(Red Team)

Bug Bounty



SAP’s journey to bug bounty program

2016	2017 - 2021	2022 onwards
Public “Hall of Fame” for security researchers submitting vulnerabilities to SAP Secure Inbox	Set up and continuous evolution of bug bounty programs at SAP	General availability of bug bounty programs for all interested applications at SAP

- One of the main sources for vulnerability findings beside general vulnerability reports and customer disclosures
- 75% true positive rate
- 17% of disclosures rated with CVSS higher than 7.0
- Reward range between $100 and $4000 to submissions with CVSS scores between 2.9 and 9.6
- Average payout **$983** per vulnerability
- Findings range from simple vulnerabilities to design flaws

Bug Bounty vs Conventional Security Testing

Bug Bounty

- After product release
- Defined scope (in / out of scope definition)
- Ongoing
- As many testers as you like
- Regular scope extensions
- Private and public programs

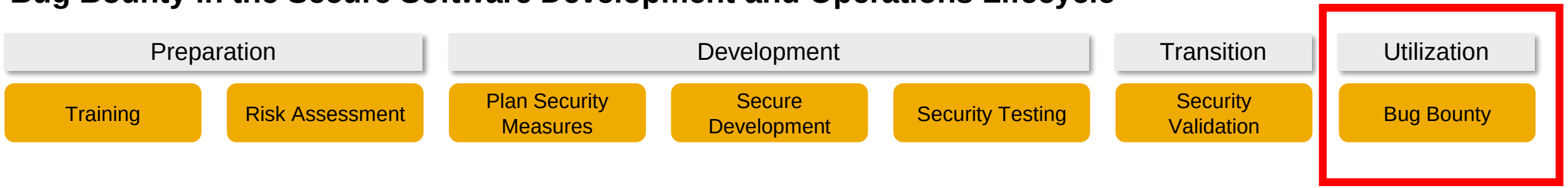
  Private: Invited hackers only

  Public: All hackers who are registered with the bug bounty platform service provider

Conventional security testing

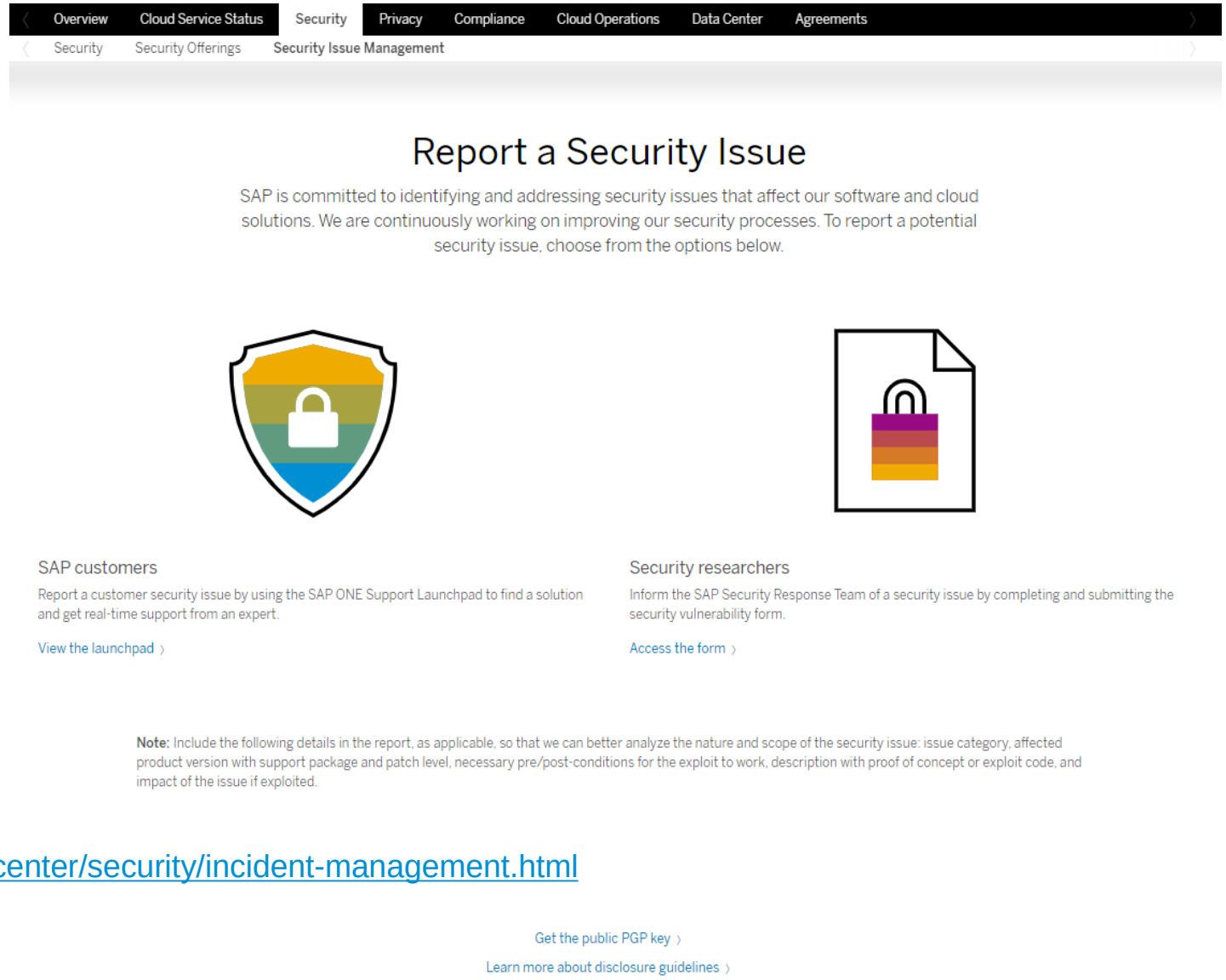
- During the development lifecycle of a product
- Narrow scope
- One time activity at a set point in time with limited pen testers

Bug Bounty in the Secure Software Development and Operations Lifecycle



Where to report security issues to SAP?

Product Security Findings



https://www.sap.com/about/trust-center/security/incident-management.html

SAP Security Patch Day and Researcher Acknowledgement

SAP Trust Center – Security – Security Issue Management

Bug Bounty @ S/4HANA

SAP S/4HANA Bug Bounty Program – Overview

Goal

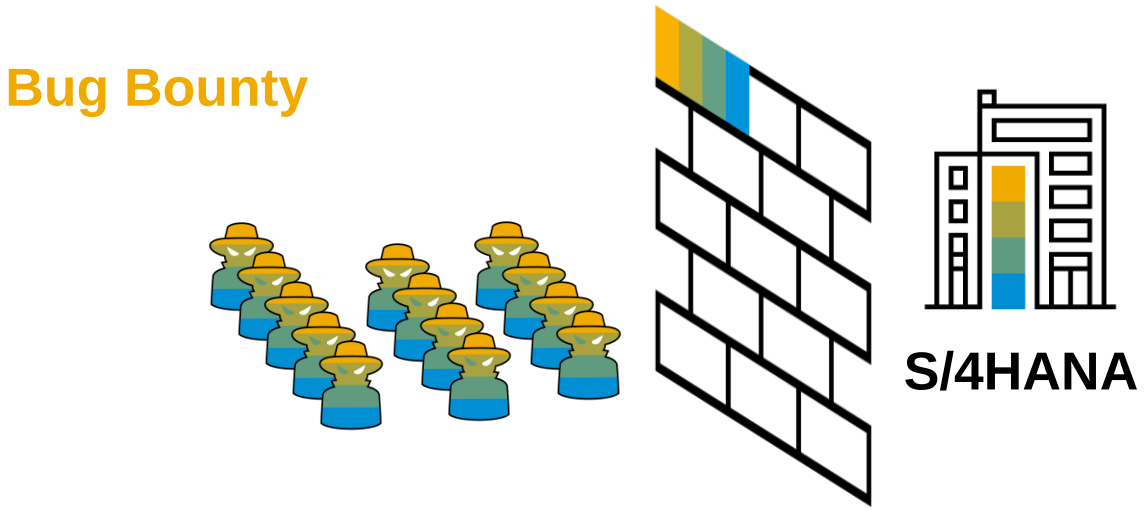
To establish an **external security verification platform** for **S/4HANA** to **financially incentivize** responsible disclosure by external security researchers and **leverage** synergy of **crowdsourced security testing**

Collaboration

Launched through **SGS Bug Bounty** Service and Operated by **BugBounty Platform Provider**

Advantage

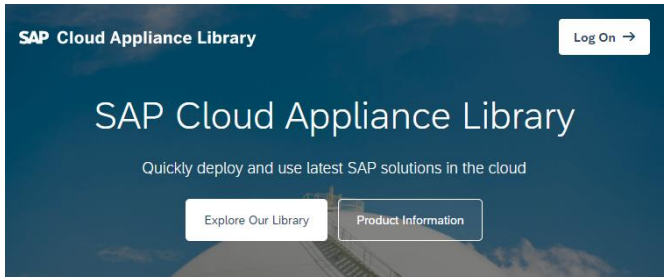
Continuous external security verification **post General Availability** (GA) of S/4HANA with **high external visibility**. Reported findings **improve the security of S/4HANA** (**On Premise & Cloud)**



SAP S/4HANA Bug Bounty Program – Focus On-Premise

Systems

- S/4HANA On-Premise is used based on the Fully Activated Appliance from SAP Cloud Appliance Library (CAL), e.g. https://cal.sap.com/catalog#/solutions/a0b63a18-0fd3-4d88-bbb9-4f02c13dc343



Scope

- First release in 2019
  – S/4HANA On-Premise 1809 FPS01 with activated functional scope: SAP Finance
- Second release in 2020
  – S/4HANA On-Premise 1909 FPS02 with activated functional scope: SAP Finance and SAP Transport Mgmt
- Current release in 2022
  – S/4HANA On-Premise 2020 FPS01 with activated functional scope: SAP Finance, SAP Transport Mgmt, Logistics & Sales and Distribution

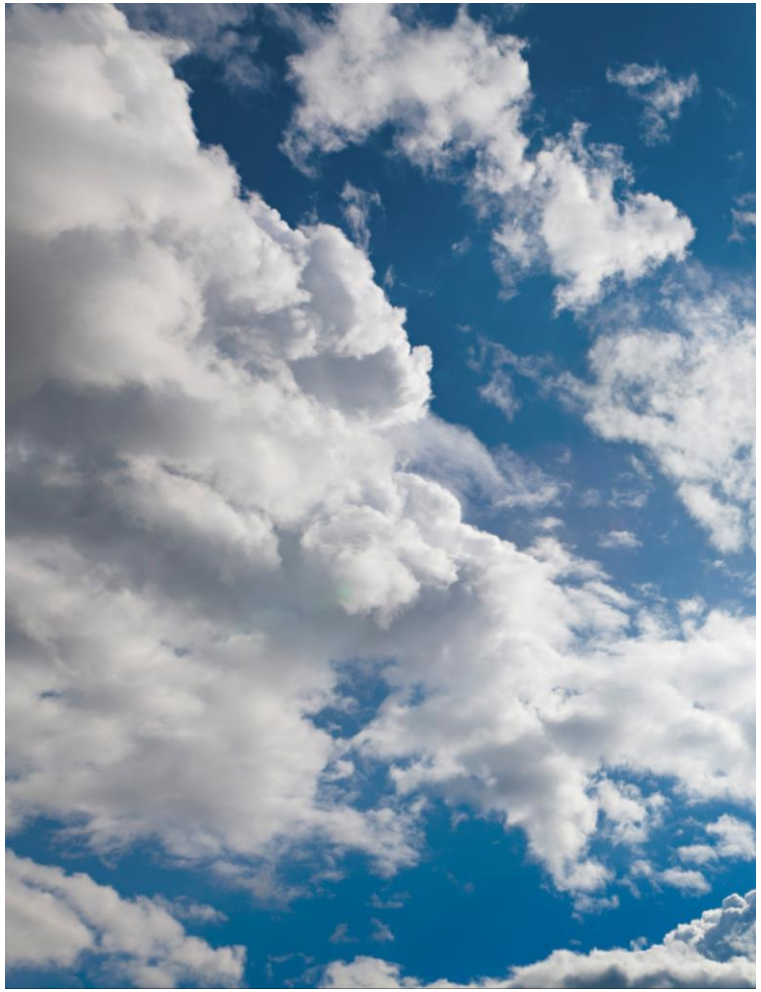
SAP S/4HANA Bug Bounty Program – Focus Cloud

Systems

- S/4HANA Cloud is an isolated tenant in the production landscape based on the S/4HANA Cloud Starter Edition

Scope

- First release in 2022 (S/4HANA Cloud 2202) with selected scope in certain areas
  - Accounts Payable
  - General Ledger
  - Master Data
  - Post Goods Movement



SAP S/4HANA Bug Bounty Program – Highlights & Challenges

Highlights

- High value findings (P1 & P2)

42	$ ~1900	400+	72%
Total submissions	Average reward	Security researchers	True positive rate

Standard Reward Ranges

- P1| $(4000-5000)
- P2| $(2000-3500)
- P3 |$(1500-700)
- P4| $(500-250)

Promotional Reward Ranges (Live-S/4H OP)

- P1| $(6000-8000)
- P2| $(4000-5000)
- P3 |$(1000-2000)
- P4| $(350-600)

Challenges

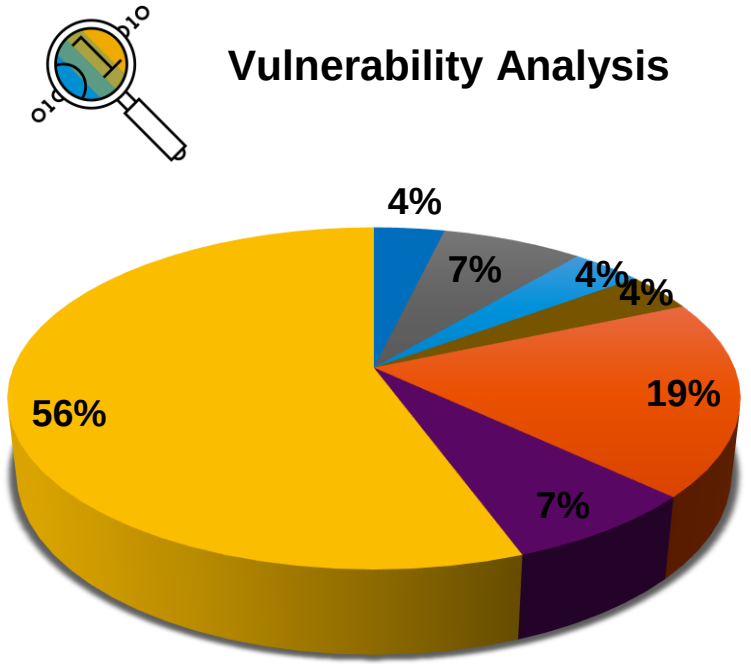
- **Tailored** Application scope
- **Test-Data** for the applications
- **Managing** / **Verifying hardening** for every layer (Application, Platform, DB, OS, IaaS)
- **Compliance** to SAP Global Security checklist
- Regular **Maintenance & Monitoring**
- **Budget** for Bug Bounty
- Managing **continuous traction**
- **Sustaining** the Bug Bounty program
- **Running a bounty service** for S/4HANA On-Premise

SAP S/4HANA Bug Bounty Program – Learnings & Vulnerability Overview

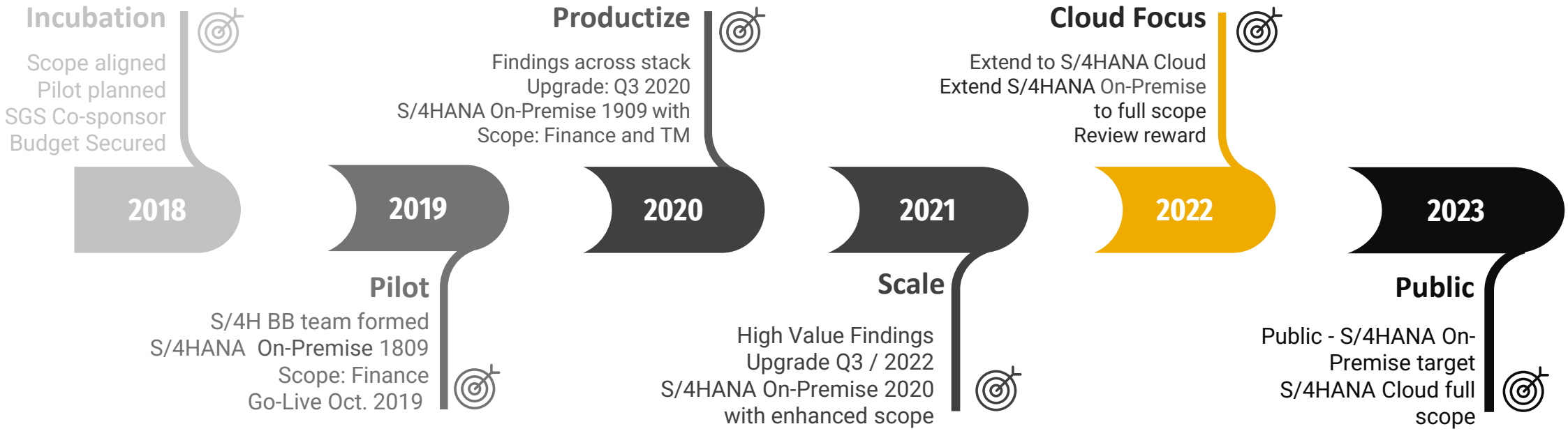
Learnings

- **Start with small scope** & plan for fill scope enablement via roadmap
- **Invest in application knowledge**
- Managing **continuous traction** via onboarding researches, scope, enhancements, reward structure
- **High True positive** rates of findings
- Researches provide **new vulnerability patterns / ideas**

Vulnerability Analysis



SAP S/4HANA Bug Bounty Program – Roadmap



Thank you.

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