An Analysis of the Role of Situated Learning in Starting a Security Culture in a Software Company

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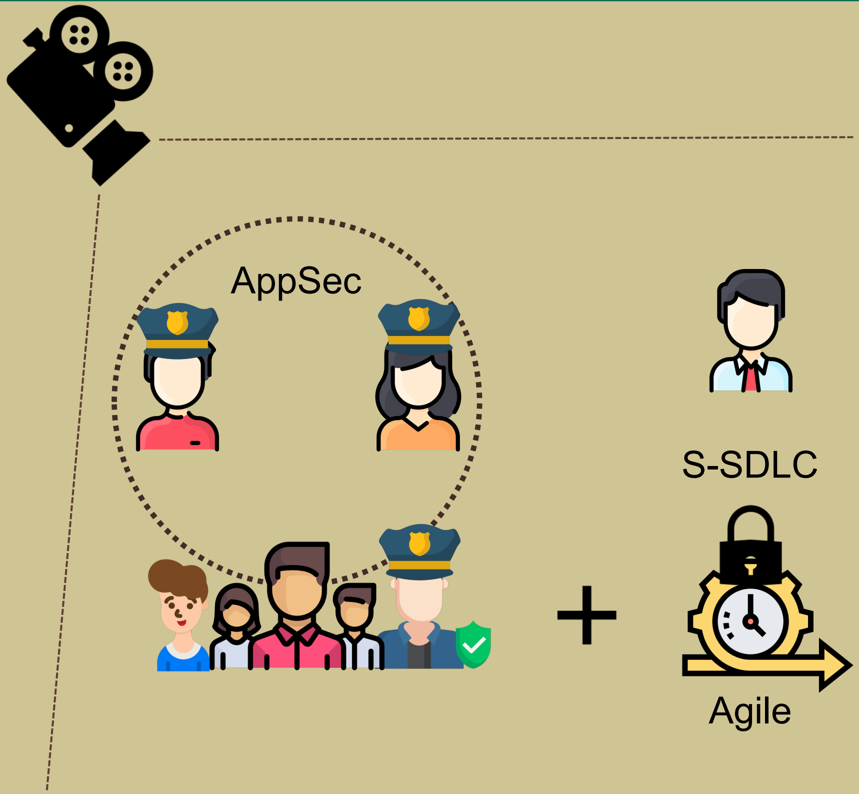
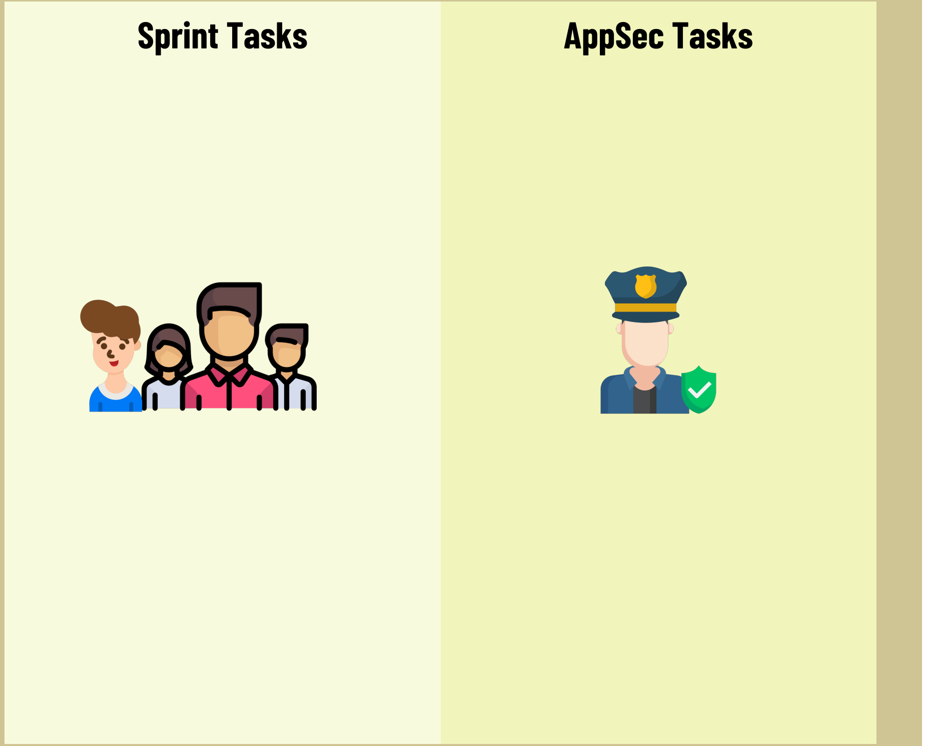
Introduction

- Goals
  - Obtain first-hand understanding of software development and security in the real world
  - Adopt a holistic approach to study software development – Collective effort of the whole software development team
- Anthropological research method of Participant Observation
  - Studying developers in their **“native habitat”**
  - Studying the problem **within the context** of where the process happens
  - Observe software engineers as a **collective**

The Company

- Development team
  - 5 software engineers (1 with extensive background in security)
  - 1 quality assurance (QA) engineer
- Network engineers
  - Managing internal infrastructure
- Support engineers
- Virtual application security (AppSec) team
  - At least 1 software engineer from each product team assigned
  - Responsible for security of the product





Sprint Tasks

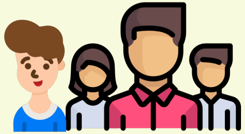
AppSec Tasks

Months 1 - 3

- AppSec Tasks
  - Cybersecurity Framework (CSF)
  - Application Security Verification Standard (ASVS)
- Sprint + AppSec tasks
- “**Burning cycles**”
  - *“I knocked off a couple of CSF tickets.”*
  - *“My changes are in PR. I will next work on ASVS tickets while I wait for reviews.”*

Months 4 - 5

Sprint Tasks



AppSec Tasks

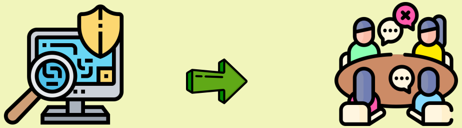
- Threat modelling

Threat Modelling

Months 4 - 5

Sprint Tasks | AppSec Tasks

- Threat modelling
- **Security Scrum Poker**



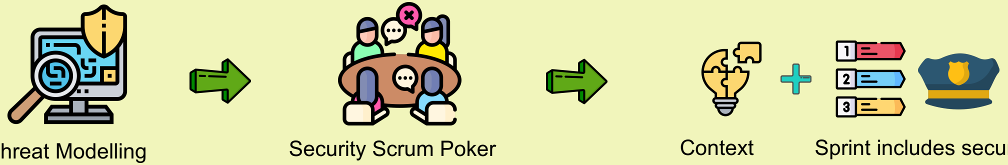
Threat Modelling

Security Scrum Poker

Months 4 - 5

Sprint Tasks
+ AppSec Tasks

- Threat modelling
- **Security Scrum Poker**
- Contextual analysis of security
- Inclusion of security tickets within the sprint

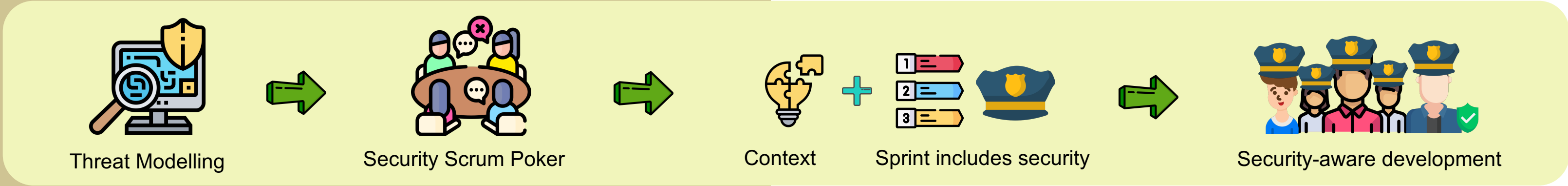


Sprint Tasks + AppSec Tasks

Security-aware development

Months 6 - 8

- Whole team involvement in security
- Security considerations made in other tickets
  - During design
  - Security driven code refactor
- Customer requested feature postponed as security issue was identified
- Total 20 security related tickets filed



Threat Modelling → Security Scrum Poker → Context + Sprint includes security → Security-aware development

What was Driving the Change?

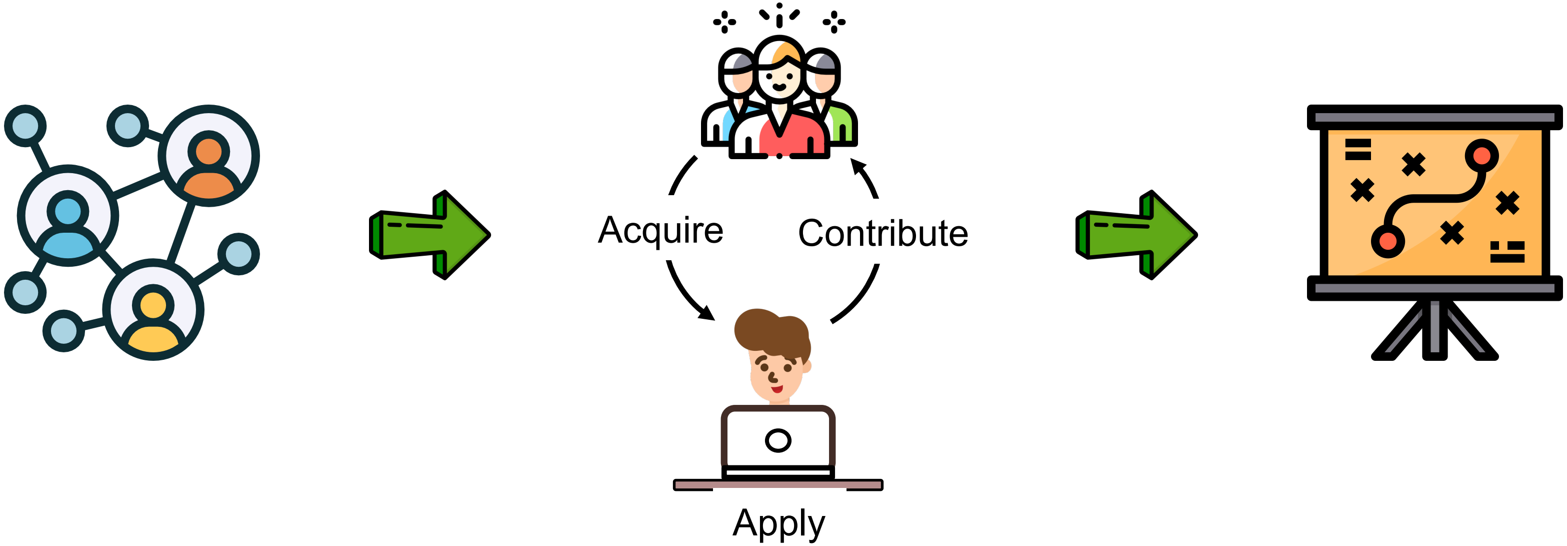
The Role of Management

Management

- Established processes S-SDLC
- Established AppSec structure
- Access to resources: Black Duck, SonarQube, ZAP
- Set security as a deliverable

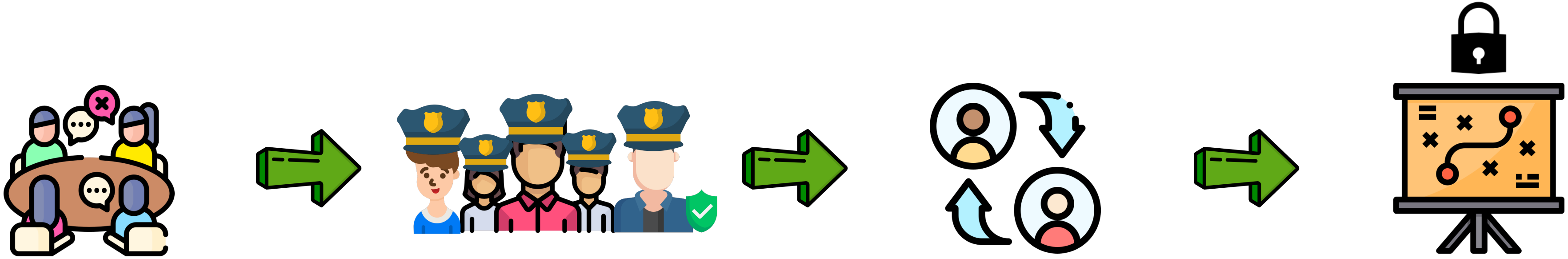
The Role of Situated Learning

- Role of Subject Matter Experts (SMEs)
  - Knowledgeable developers
  - Learners
- Existence of **Preferred Practices**



Co-creation + Situated Learning

- Co-creation can leverage the situated learning environment to establish **secure preferred practices**.



Security
Scrum Poker

Applying Security Knowledge
In
Practice

Learning Cycle

Secure
Preferred
Practices

Beginning of a Security Culture

Thank you !

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