Agile and Secure
Can we do both?

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OWASP
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The OWASP Foundation
http://www.owasp.org

Quick Security Overview

http://example.com/search?q=Alessandra+Ambrosio

```
<html>
<body>
You searched for Alessandra Ambrosio
  <li>...</li>
</body>
</html>
```

Quick Security Overview: XSS

http://example.com/search?q=<script>/*evil*/
</script>

```
<html>
<body>
You searched for <script>/*evil*/</script>
  <li>...</li>
</body>
</html>
```

Quick Security Overview

<img src="http://mail.example.com/logo.gif">

Quick Security Overview: CSRF

<img src="http://mail.example.com/logo.gif">

<img src="http://mail.example.com/
deleteAllMsgs?confirm=true">

Quick Security Overview

http://example.com/viewStatement?
custid=123153

Quick Security Overview: Access Control

http://example.com/viewStatement?
custid=123154

SELECT * FROM statements WHERE
CustomerID=123154

Quick Security Overview: SQL Injection

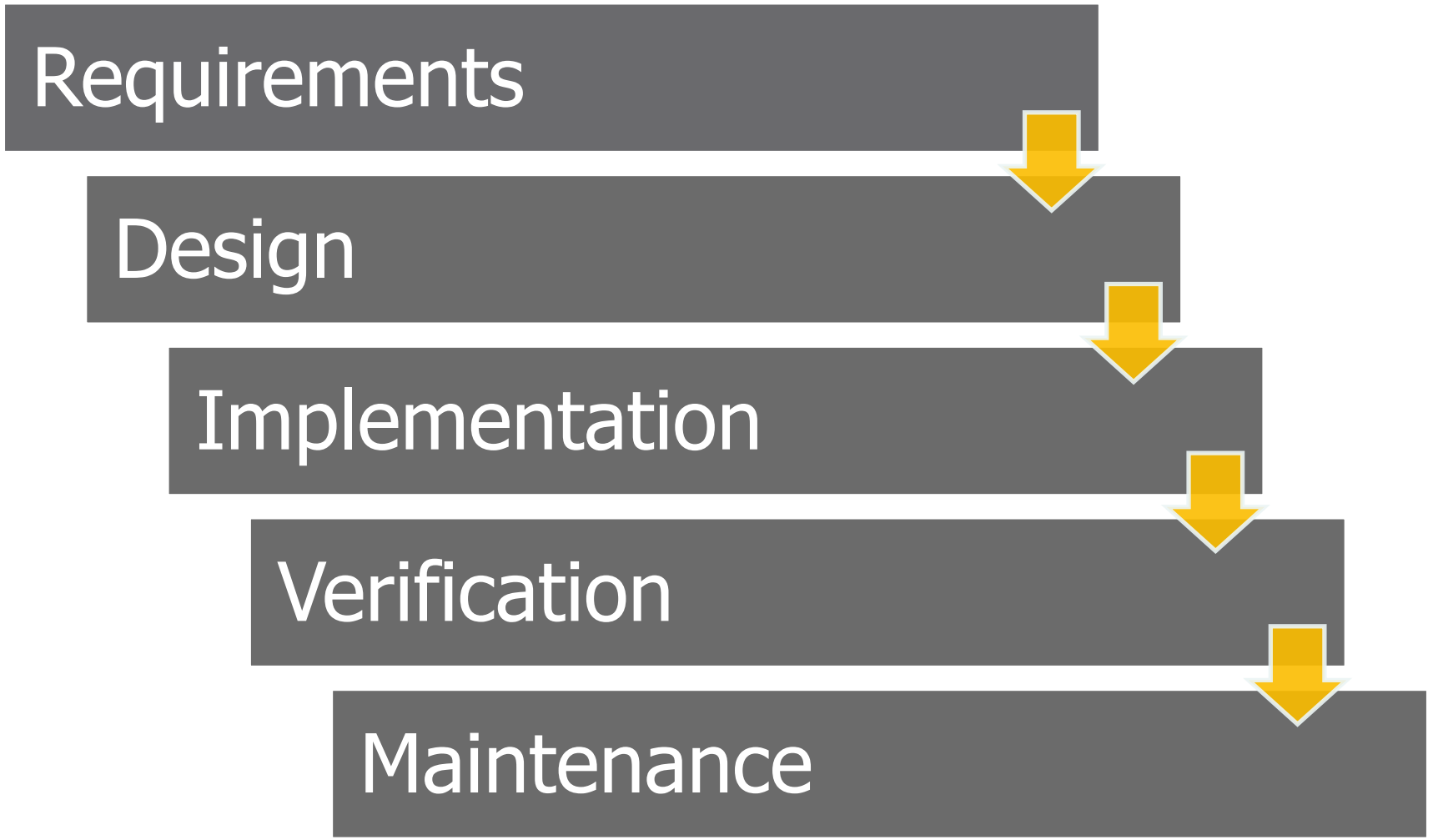
http://example.com/viewStatement?custid=1;
DROP TABLE statements;

SELECT * FROM statements WHERE
CustomerID=1; DROP TABLE statements;

Agenda

- About Us
- Waterfall Process Background
- Agile Process Background
- Leveraging Agile Characteristics
- Accounting for Agile Traits
- Putting It All Together

Traditional Waterfall Process



Security in the Waterfall Process

Requirements	• Security Requirements
Design	• Security Architecture Review
Implementation	• Secure Code Review
Verification	• Application Vulnerability Testing
Maintenance	• External Application Security Testing

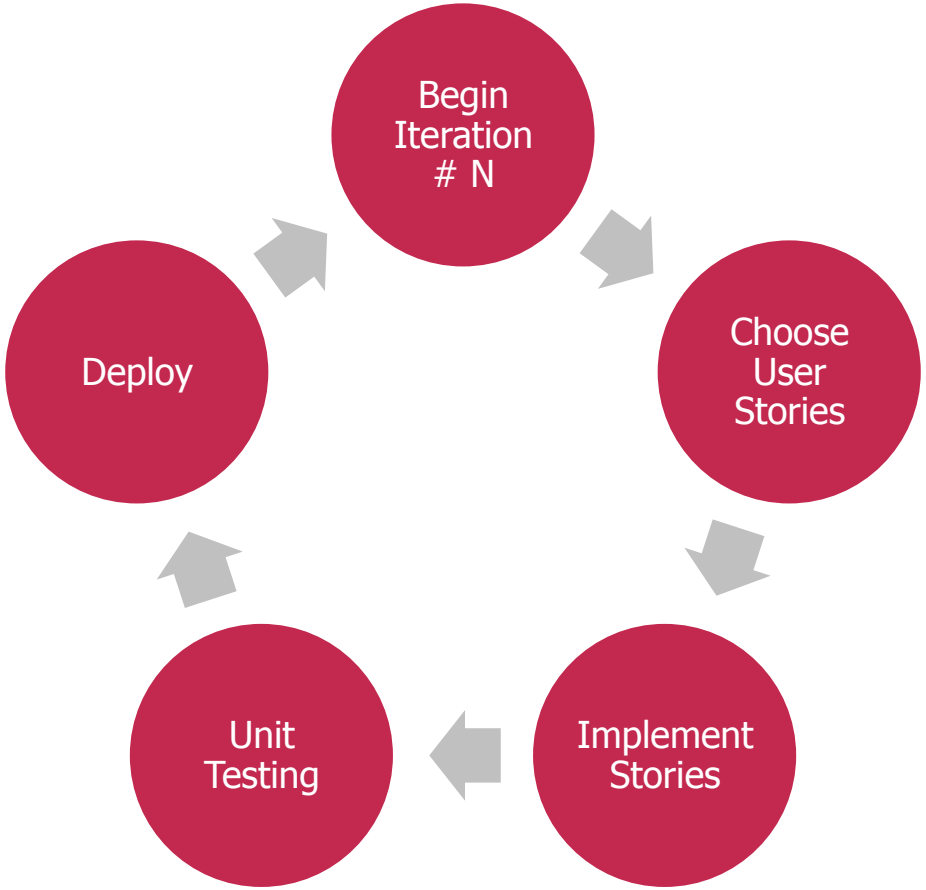
Advantages:

- Well understood process
- Leverages subject matter experts to identify security concerns

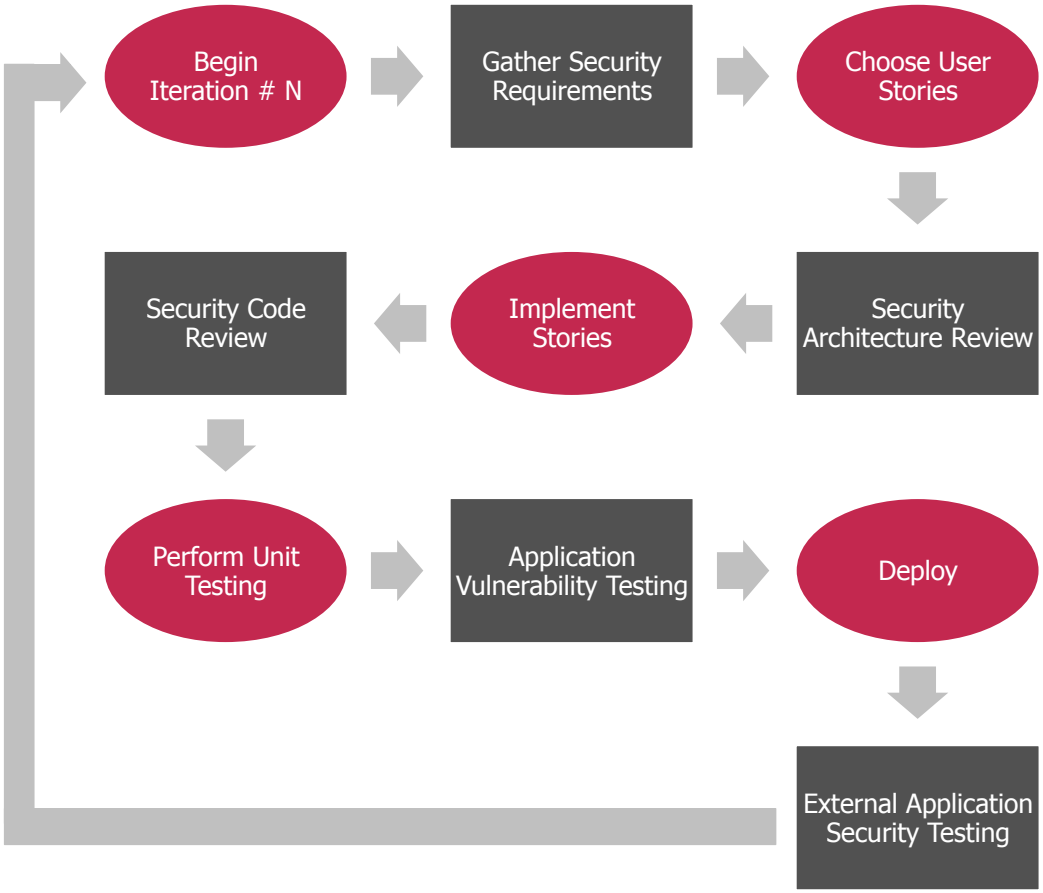
Disadvantages:

- Findings from early security reviews are often ignored as "theoretical"
- Costly to go backwards in the development timeline

Agile Process

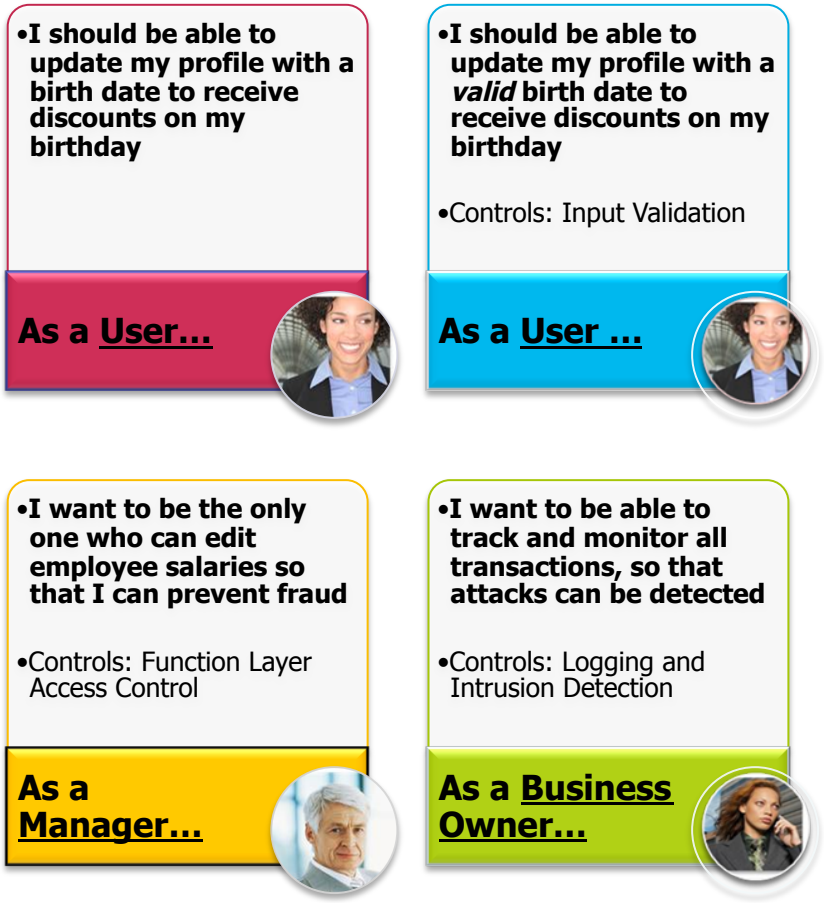


Traditional Security + Agile Process?



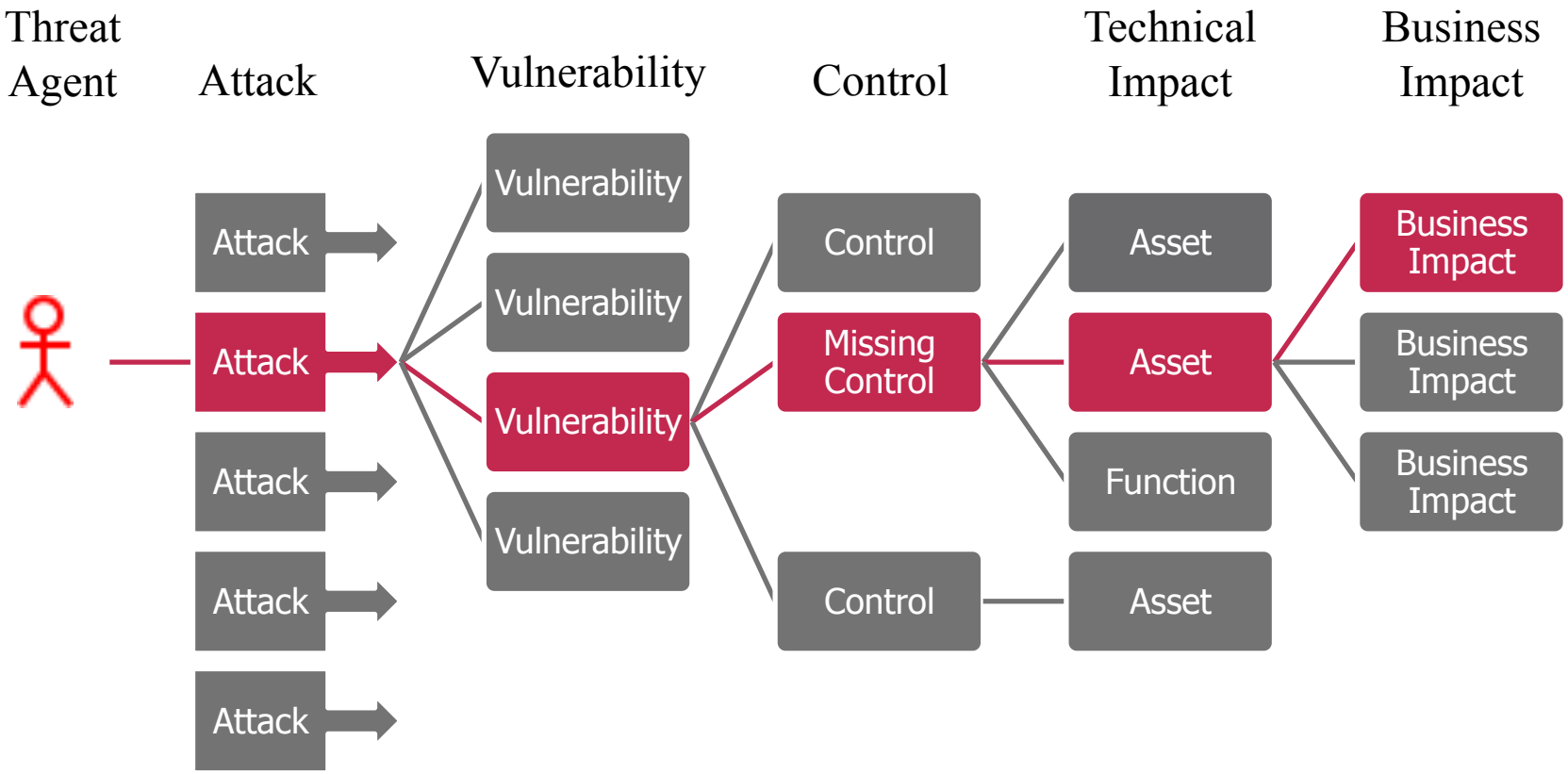
Traditional Security + Agile Process?

Leverage User Stories



- User stories useful for access control, encryption, logging, and several other security areas
- Some technical risks need extra consideration to be represented by user stories
  - XSS
  - CSRF

Creating User Security Stories



Require Security Training

Attacks continuously evolve

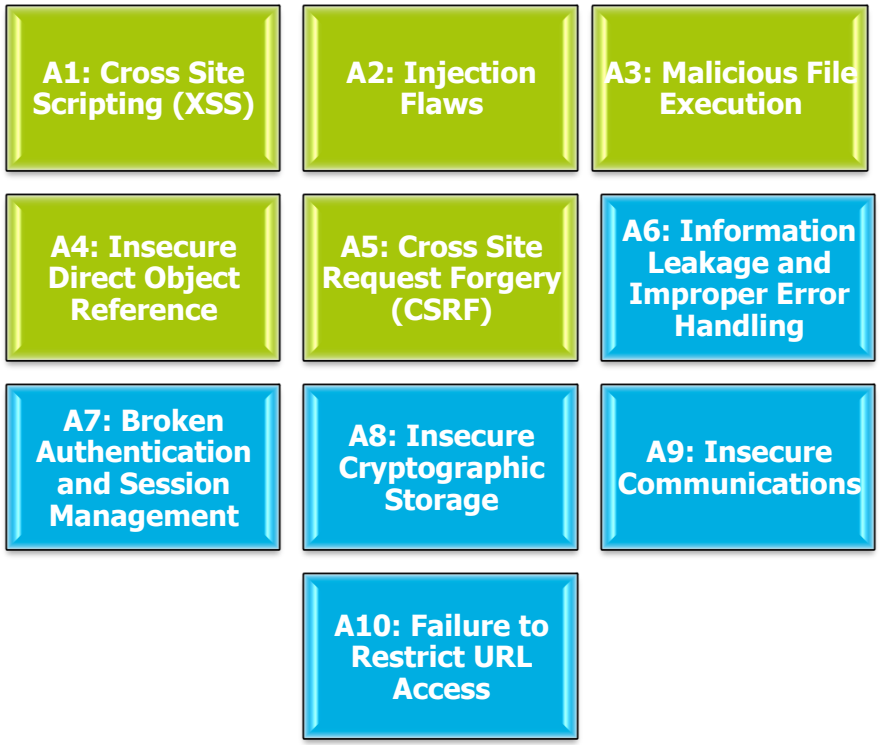
- Developers must understand the attacks and controls to properly mitigate the threats

Agile developers write their own tests

- Must test security adequately

Ultimately, everyone on the team responsible for security

- Therefore, all developers should have a background in web application security



OWASP
The Open Web Application Security Project
http://www.owasp.org

Leverage Unit Testing

Continuous testing done by all team members

- Unit tests should include security mechanisms
- Integrate peer code reviews

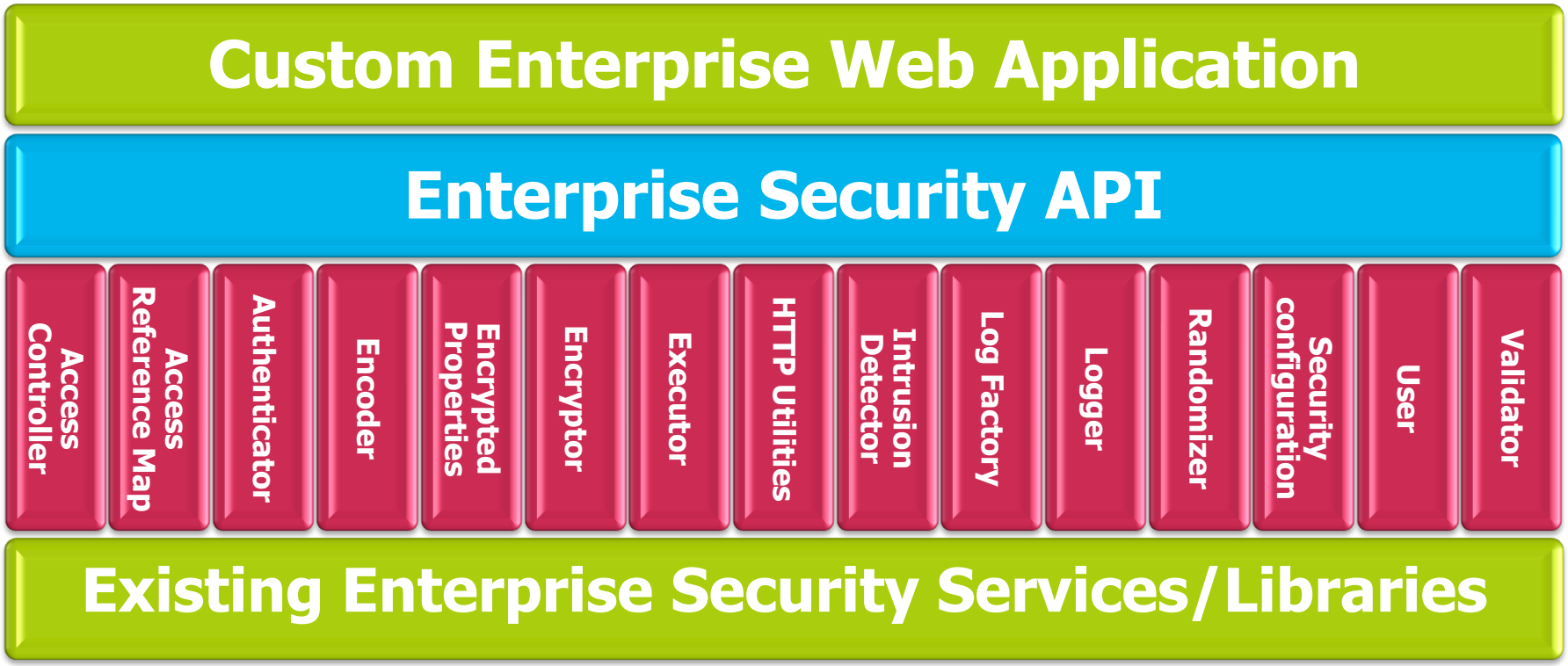
Check for common security flaws

- Test input validation by verifying behavior in edge cases
- Test access control by verifying behavior from multiple roles

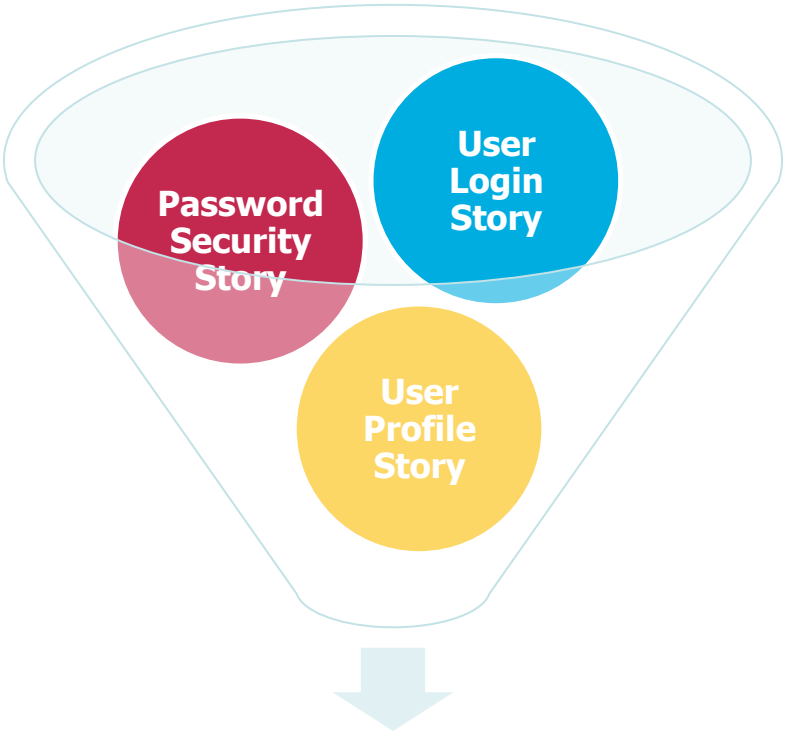
Use Standard Security Controls

OWASP Enterprise Security API (ESAPI)

http://www.owasp.org/index.php/ESAPI



Leverage Sprints



Sprint # N

Putting It All Together

Create Threat Model	• Capture key threats to the application
Define Security Stories	• Encapsulate threat model in user stories
Create Unit Security Tests	• Test edge cases for inputs • Verify use of security controls
Consolidate Sprints	• Combine related security stories

Putting It All Together

Use Standard Security Controls	• Developers should use standard controls • See the OWASP ESAPI Project
Secure Coding Standards	• Avoid patterns that lead to security flaws • How to use security controls correctly
Provide Security Training	• Developers need application security awareness • Train developers to use your controls
Leverage Security Experts	• Even with training and standard, security is hard

References

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Questions?

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