# ITMC411

# Security in mobile computing

## LECTURE 7

## Mobile Application Security Verification Standard

## MASVS

# Mobile Application Security Verification Standard

The **MASVS** can be used to **establish** a level of confidence in the security of mobile apps.

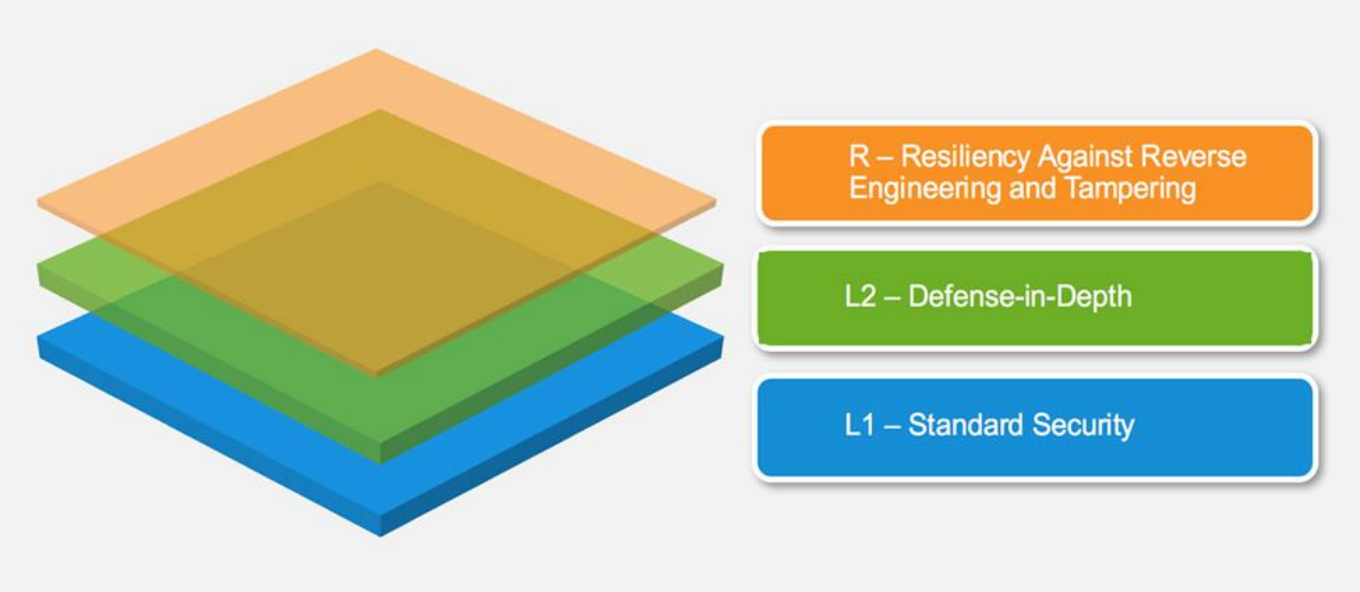
The **requirements** were **developed** with the following objectives in mind:

- **Use as a metric** - To provide a security standard against which existing mobile apps can be compared by developers and application owners;
- **Use as guidance** - To provide guidance during all phases of mobile app development and testing;
- **Use during procurement** - To provide a baseline for mobile app security verification.

# Mobile AppSec Model

The MASVS defines two security verification levels (**MASVS-L1 and MASVS-L2)** and set of reverse engineering resiliency requirements (**MASVS-R**)

1. **MASVS-L1** contains generic security requirements that are recommended for all mobile apps.
2. **MASVSL2** should be applied to apps handling highly sensitive data.
3. **MASVS-R** covers additional protective controls that can be applied if preventing client-side threats is a design goal.



# Verification Levels in Detail

**MASVS-L1: Standard Security**

A mobile app that achieves **MASVS-L1** adheres to mobile application security best practices. It fulfills basic requirements in terms of :

- code quality,
- handling of sensitive data,
- interaction with the mobile environment.
- A testing process must be in place to verify the security controls.

**This level is appropriate for all mobile applications**.

# Verification Levels in Detail

**MASVS-L2: Defense-in-Depth**

**MASVS-L2** introduces **advanced security controls** that go beyond the standard requirements. To fulfill **MASVS-L2**,

- a threat model must exist,
- security must be an integral part of the app's architecture and design. Based on the threat model,
- the right **MASVS-L2** controls should have been selected and implemented successfully.

**This level is appropriate for apps that handle highly sensitive data, such as mobile banking apps.**

# Verification Levels in Detail

**MASVS-R: Resiliency Against Reverse Engineering and Tampering**

The app has state-of-the-art security, and is also resilient against specific, clearly defined client-side attacks, such as

- **tampering**,
- **modding**
- **reverse engineering** to extract sensitive code or data.

**MASVS-R** is applicable to apps that handle **highly sensitive data** and may serve as a means of protecting intellectual property or tamper-proofing an app.

# Using the OWASP Mobile Security Testing Guide (MSTG)

The **OWASP MSTG** is a manual for testing the security of mobile apps.

- describes the technical processes for verifying the requirements listed in the **MASVS**.
- includes a list of test **cases**, each of which map to a requirement in the **MASVS**.
- While the **MASVS** requirements are **high-level** and generic, the **MSTG** provides **in-depth** recommendations and testing procedures on a per-mobile-OS basis.

# Document Structure

The requirements have been grouped into eight categories (V1 to V8) based on technical objective / scope.

The following nomenclature is used throughout the **MASVS** and **MSTG**:

- **V1: Architecture, Design and Threat Modeling Requirements**
- **V2: Data Storage and Privacy Requirements**
- **V3: Cryptography Requirements**
- **V4: Authentication and Session Management Requirements**
- **V5: Network Communication Requirements**
- **V6: Platform Interaction Requirements**
- **V7: Code Quality and Build Setting Requirements**
- **V8: Resilience Requirements**

# Document Structure

The requirements have been grouped into eight categories (V1 to V8) based on technical objective / scope.

The following nomenclature is used throughout the **MASVS** and **MSTG**:

- **MASVS-STORAGE:** Secure storage of sensitive data on a device (data-at-rest).
- **MASVS-CRYPTO:** Cryptographic functionality used to protect sensitive data.
- **MASVS-AUTH:** Authentication and authorization mechanisms used by the mobile app.
- **MASVS-NETWORK:** Secure network communication between the mobile app and remote endpoints (data-in-transit).
- **MASVS-PLATFORM:** Secure interaction with the underlying mobile platform and other installed apps.
- **MASVS-CODE:** Security best practices for data processing and keeping the app up-to-date.
- **MASVS-RESILIENCE:** Resilience to reverse engineering and tampering
- **MASVS-PRIVACY:** Privacy controls to protect user privacy.

# Mobile_App_Security_Checklist