

ASA Certified Cybersecurity Tester

— Introductory Presentation



Agenda

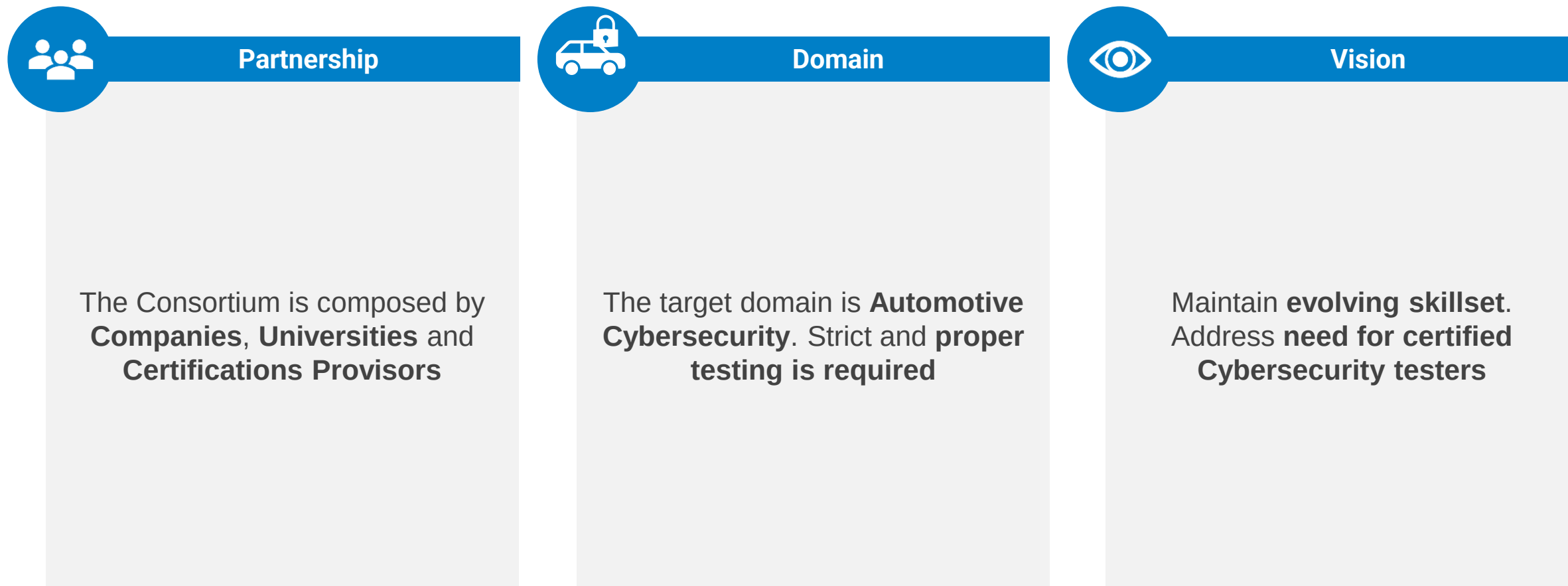
- **Project Overview**
- **Project Motivations**
- **Project Status**
- **Project Technical Focus**
- **Project Results**
- **Project Impacts**





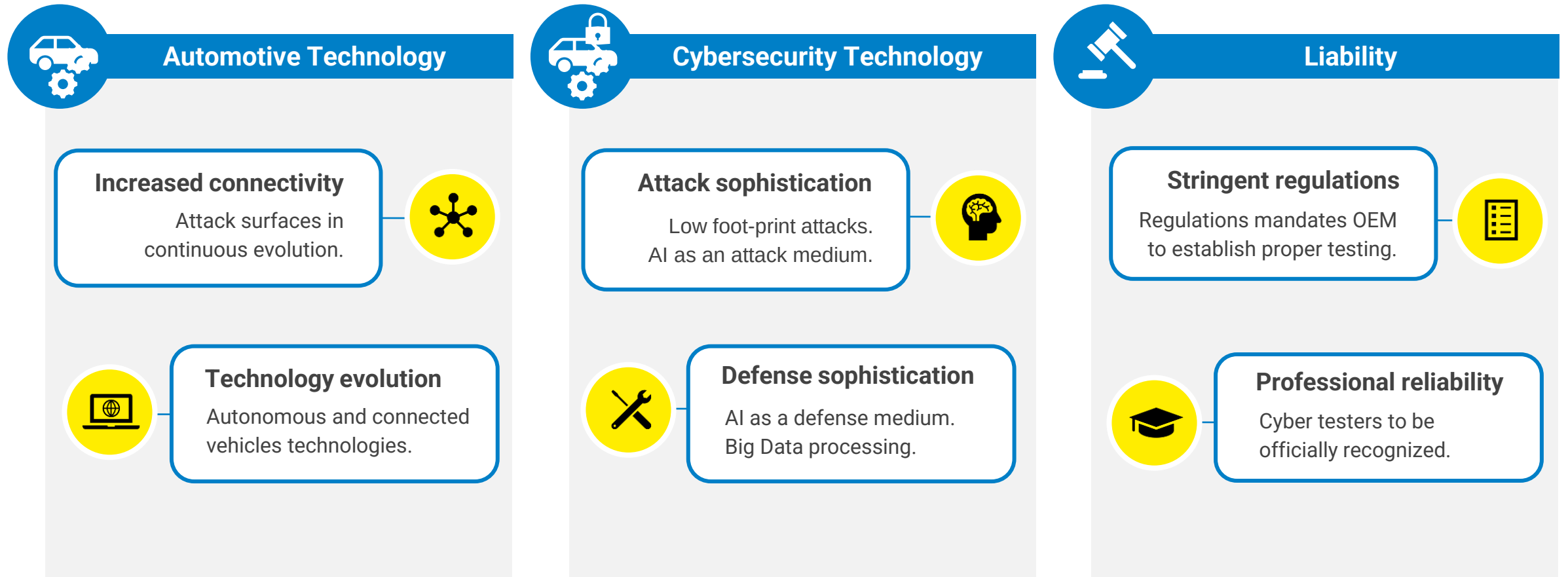
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Overview



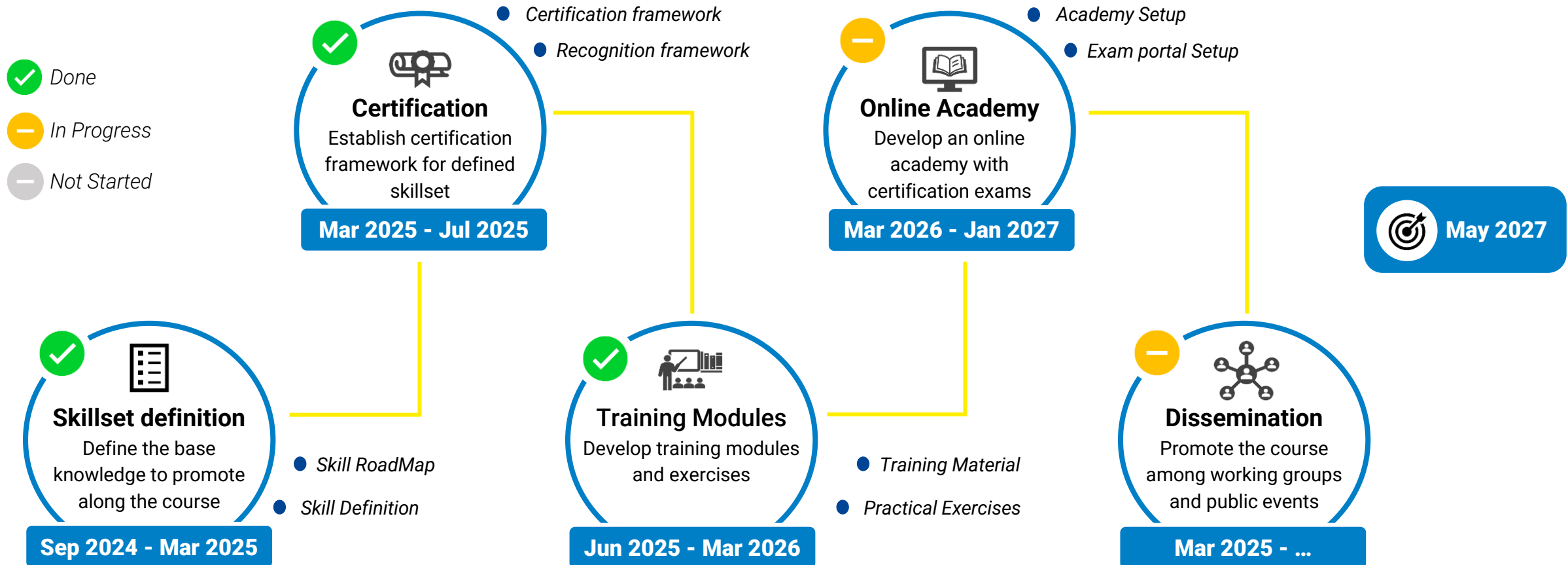
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Project Motivations



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Project Status



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Project Technical Focus

Curriculum Structure

Norms and Vehicle Architecture

- Automotive Standards for Cybersecurity
- Modern Vehicle Architectures
- Typical HAD 3-5 (Highly Autonomous Drive) vehicle assumptions and vulnerabilities

Essentials for Cybersecurity

- Cryptography essentials
- Automotive recommendations and guidelines (NIST)
- Intrusion Detection Systems (IDS) & Firewall

Cybersecurity Architecture

- Communication at ECU & HPC Level
- Defense-in-Depth Architectures at ECU & HPC Level
- Norm for Security Certificate of a vehicle PKI at ECU & HPC Level

V&V Approach

- Verification Strategy
- Test Case Design
- AI driven test case generation

V&V Methodologies

- Verification at SW coding level
- SW/System Integration Verification for Cybersecurity Use Cases
- Linux architecture - - Service Layer specific verification approach
- Verify SW Build of Material (SUMS) - - SW Update Verification
- Verification and Validation Reporting
- Typical Verification Environments (different examples, awareness level)

Learning by doing!! 😊

Training Materials

Training
Modules

Exercises

Certification

Exams

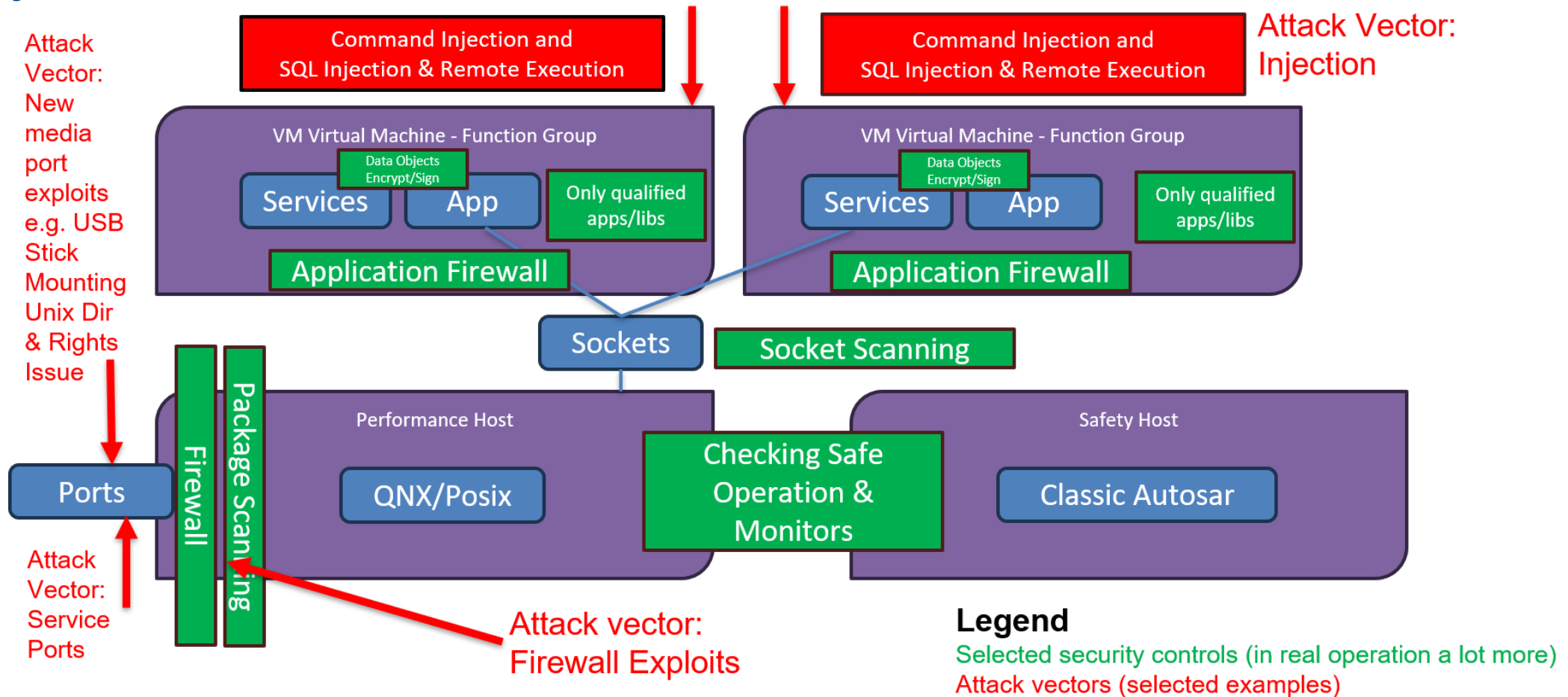
Practical
Tests

Free training available at European level

Full certification course upon subscription

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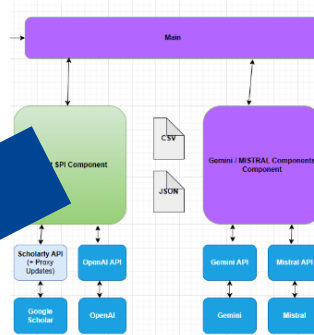
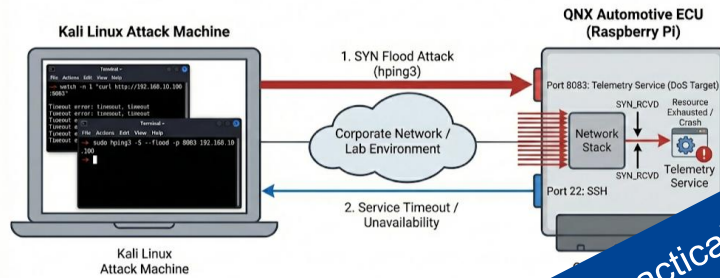
Project Technical Focus



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Project Results

Automotive DoS Lab Setup: Service Availability Attack



Learning Platform

My courses 4 EN

Cybersecurity Tester – Linux architecture – Service Layer approach

My courses > Cybersecurity Tester – Linux architecture

Course Grades More

Development of Learning Components

General

Welcome to the EuroSPI/ASA Certified Automotive Cybersecurity Tester MOOC |

Linux architecture – Service Layer specific verification approach

Central vehicle servers have a different architecture than controller ECUs in the vehicle. A vehicle server runs adaptive

Part 1: Foundations & Symmetric C

The Case of the Compromised CAN Bus - In

Kai, a skilled automotive cyber... Kineton Automotive, is auditing the cryptographic impleme... encryption used for communic... al Electronic Control Units (ECUs). He's heard rumors of poten... network and recommend stronger... to protect safety-critical commands.

1.3 Symmetric Encryption Demo - The Shared Secret

Kai is testing the basic encryption between the Engine Control Unit (ECU) and Transmission Control Unit (TCU). We'll see a command get encrypted and then successfully decrypted, showing the core concept of secure communica

Encryption:

Plaintext: EngineCMD: SetIgnitionTiming-Adv

Key (hex): 97c28fdae0db80e5729b6c00aa12ce98

IV (hex): 5646207f59e7800bcdfeb1ad38261fd0

Ciphertext (hex): 31d062a5b9f55ef85d8db495f0a8e1970cc752fb8d0ef9a30fa6cb0ec72b67a6a8923f68335718492103b6dfdbc56

Decryption:

Decrypted: EngineCMD: SetIgnitionTiming-Adv

Decryption successful!

Pentester Note: Extracting the shared key from one ECU compromises the entire bus.

Project impacts

Benefits and dissemination strategy

Expected Benefits



Offer new career opportunities with certified skills for future professionals



Automotive cybersecurity will benefit from qualified personnel



A new standardized approach for training with a focus on hands-on methodology

Dissemination



Publication of the produced documents on the Erasmus+ Platform



Publication of **Massive Online Open Course** at the European level



Dissemination through conferences, papers and among working groups

Stay tuned

- Project Link, access the project results and monitor for progress. Interact with us if any proposal
- How to be involved, keep in touch to get pilot phase trials and initial free access for testing and refining
- Contacts

THANK YOU

Reach Out

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