THE IAMTS APPROACH TO AUTOMOTIVE CYBER SECURITY TESTING

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TRANSFORMATION OF MOBILITY

**Past**
- Individually owned, stand alone car
- Mainly mechanical, some electronics
- Driver assistance systems (DAS)
- Vehicle safety – HW oriented
- Periodical (homologation & inspection)

**Future**
- Shared Mobility-as-a-Service (MaaS), connected, intermodal
- More (micro)-electronics, more and more SW defined
- Automated Driving Systems (ADS)
- Secured safety – HW, SW, data, updates
- Continuous (digital & remote)
MISMATCH:
FAST TECHNOLOGY DEVELOPMENT—REGULATION LAGS BEHIND

Technology
Rapid development of enabling technologies for Autonomous Vehicles

Business/Markets
Many new business opportunities, and markets

Policy/Society
Regionally different regulatory requirements evolve slowly

How to manage time-to-market of much more complex products/services while meeting the moving target of different regulatory requirements?
INTEGRATED APPROACH FOR AV VALIDATION – 3-PILLARS

- Physical Certification Test
  - Public road
  - Proving ground
  - Vehicle in the loop
  - MIL/SIL simulation
  - Cloud simulation

- Audit and Assessment

- Real World Test Drive

Bottom up approach
CHALLENGES TO REGIONAL SPECIFIC TESTING

**What to test/validate?**

- Specific traffic rules
- Specific road types
- Specific environmental conditions
- Specific agent behavior
- Specific infrastructure
- As much as possible?
- Etc.

**How to test/validate?**

- Testing license, test area accessibility
- Test- & reporting rules
- Data analysis & reporting, recording, data privacy
- Simulation fidelity
- Test data portability and compatibility
- Comparability, replicability of tests across testbeds

... needs **global approaches and global collaborations**
WHAT IS IAMTS

INTERNATIONAL ALLIANCE FOR MOBILITY TESTING AND STANDARDIZATION
VISION

Create a **global community** comprised of advanced mobility testing service providers and companies, organizations and agencies in need of such services.

Develop and **share best-practices** to ensure consistent, replicable and reliable testing.

Maintain a **global directory** of physical, virtual and cyber-physical testbeds and service providers and their audited capabilities.

Support **global harmonization** of standards and certifications to ensure the timely deployment of advanced mobility systems and services.
CURRENT IAMTS MEMBERSHIP – GROWING FAST

***: permanent observing seat on Executive Committee as strategy partner

**ASAM**

Velodyne Lidar

Tilke Engineers & Architects

Cybellum

Humanetics

Ottawa L5

3D Mapping Solutions

metamoto

circuit-booking.com

it's your turn.

HART Consult

Unique

ir retrospect

GreenTec Campus

Smart Mobility Norway

Tallinn University of Technology

Virginia Tech

Florida Polytechnic University

University of Michigan

University of Duisburg-Essen

Center for Automotive Research

KIAPi

iTic

ASAM

IEEE

VdTÜV

Society of Automotive Engineers

International

TUV

CTA

DIN

AVL

TNO

DLR

Virtual Vehicle

Smart Mobility

Norway

Norway
IAMTS STRUCTURE

- Executive Committee (EC)
- Technical Leadership Committee (TLC)

<table>
<thead>
<tr>
<th>Working Group 1</th>
<th>Working Group 2</th>
<th>Working Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test scenarios definition and harmonization</td>
<td>Testbed capabilities and assessment</td>
<td>Integrated physical/virtual testing</td>
</tr>
</tbody>
</table>
CURRENT FOCUS OF WORKING GROUPS

WG1-Motivation & Challenge

Knowledge of WHAT and HOW to test for validation and certification.

Driving behavior and regulations are globally different!

What can be done virtually, what has to be done physically?

WG2-Motivation & Challenge

Physical Testing in ADAS/AD will remain very important and you will need special proving grounds for these tests.

Which proving ground offers the features which are needed for my tests?

Whom to contact at the proving ground?

WG3-Motivation & Challenge

Virtual Testing in ADAS/AD will not only increase the efficiency in development, it will be MANDATORY FOR APPROVAL and Validation!

How to validate the virtual testing toolchain and models?

How to know what needs to be covered in the virtual world?
AUTOMOTIVE CYBERSECURITY TESTING

NEW WORKING GROUP
THE LEGALIZATION LANDSCAPE / THE CHALLENGE 1

- UN WP29: Draft proposal to introduce regulation for Cyber Security and Software Updates
- ISO 21434
- Cybersecurity Act
- GDPR
- NIST Directive
- BSI PAS 1885:2018
- VDA QMC AK ACSMS
- Cybersecurity Law
- Draft Encryption Law
- SAC/TC 114/SC 34/WG Cyber
- NHTSA Cybersecurity Guidelines
- Draft SELF DRIVE Act
- Draft AV START Act
- Technical Reference 68
Testing stakeholders mapping / The Challenge 2

- Proving grounds
- Public roads
- Vehicle / driver in the loop
- Virtual test
- Scenarios
- KPIs
- Methods
- Test regions
- Proving grounds & public roads
- OEMs
- Tiers
- Tool suppliers
- Testing organizations
- Big industrials, start-ups

Standardization bodies
Regulatory bodies
THE OPPORTUNITY

Setting the benchmark for Cybersecurity Testing...
THE PROJECT – COMPREHENSIVE BEST PRACTICES

- Map existing best practices
- Analyze the current and future testing trends
- Provider guidelines for harmonized cyber testing
CROSS WG-PROJECT

Mapping

WG1
CyberSec test scenarios

WG2
Testbed capabilities for CyberSec testing

WG3
Simulation/SW analysis based CyberSec testing

Analyzing

Guide lines

Automotive Cyber Security Testing in IAMTS
Let’s create safety and trust in tomorrow’s world of smart mobility together.
sustainable. integrated. leading.
Q & A

For further information please contact eddie@cybellum.com