IMPACT ASSESSMENT

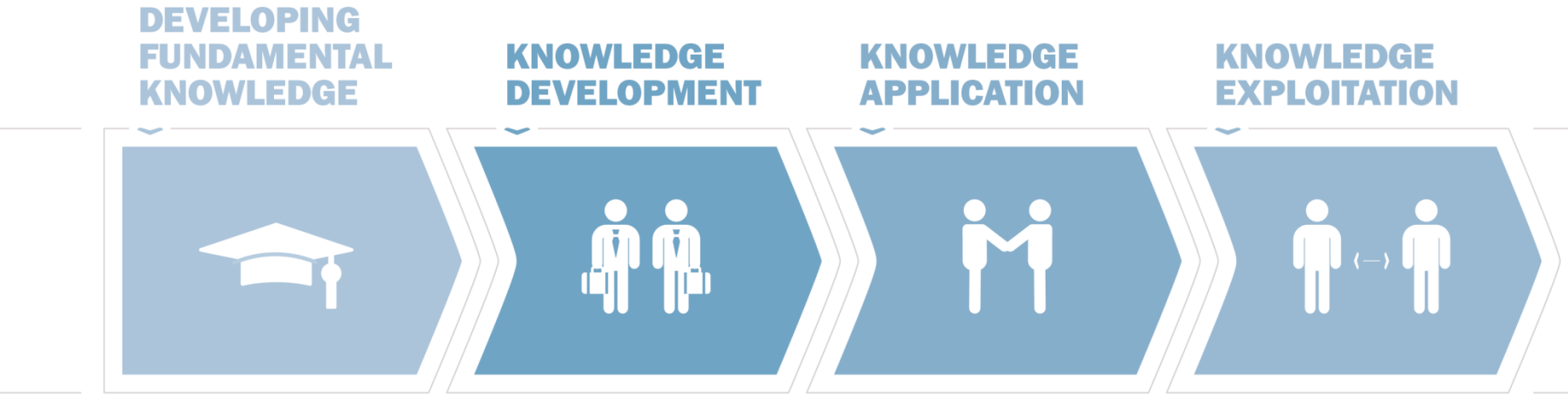
Getting in front of statistics

Ir. L.J.J. Kusters, Managing Director TNO Urbanisation
SIP ADUS, 27-10-2015, Tokyo

TNO innovation for life

THE POWER OF TNO

FROM IDEA TO INNOVATION



TNO AND VEHICLE AUTOMATION

WHAT ABOUT IMPACT?

- Automation promises improvement in:
  - Safety
  - Throughput
  - Environmental impact
  - Personal comfort and (travel) efficiency

WHAT COMES WITH IT?

- Automation also promises some challenges:
  - many technological challenge need to be solved
  - as well as the non technical issues (legal, acceptance, …)
  - a harmonized deployment strategy
  - methodological approach to learn while doing
  - ROBUSTNESS, COMPLEXITY AND FLEXIBILITY TO THE NEXT LEVEL

WHAT DOES THAT MEAN?

- large testing effort
- adaption / update of product in service
- availability of large amount of (self-generated data)

- CAN WE USE THESE DATA FOR ASSESMENT PURPOSES?
- CAN WE USE THESE DATA FOR EARLY AND PREDICTIVE (VIRTUAL) ASSESMENT?

LEARNING FROM “SIMPLE” APPLICATIONS

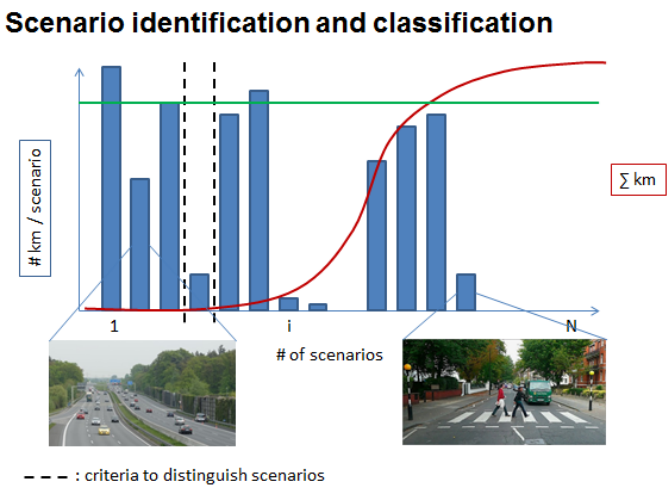
Accelerating deployment of automated driving systems

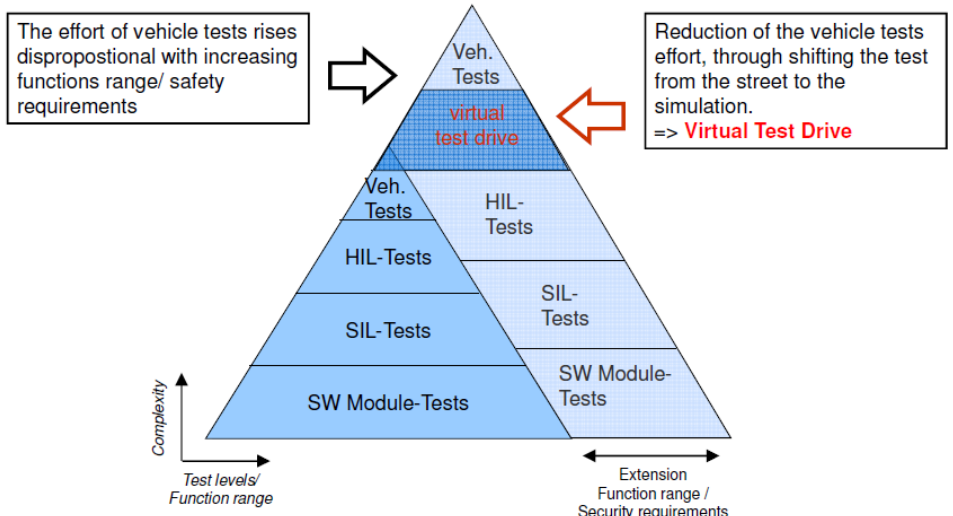
- Innovation Program for Automation:
  - Industry driven multi year program with international stakeholders
  - Commitment of industry, R&D and authorities (multi-level)
  - Committed roadmap for Cooperative Automation
  - Focus on all the enablers (technical and non-tech) for Automation
  - Deployment horizon <5 years

Private mobility | Public & Commercial transport | Logistics

WHAT DO WE NEED TO BE ABLE TO LEARN?

- Methodological and integrated approach**:**
  data enrichment, data condensation, and intelligent random generation is needed.
- Simulation enforced with big data leading to steps in virtual homologation
- Both taking along assessment





ADDING TWO LEVELS

Virtual homologation

9. Realtime statistics (deployment level)

8. Realtime homologation (large scale pre-deployment testlevel)

1. ITS Modeller (Simulation on network-level)

7. DITCM test-site (Validation on network-level)

6. VeHIL laboratory (Vehicle HW in the Loop

2. PreScan platform
ulation on system-level)

5. PreScan HIL (Controller HW in the L

3. iVSP platform
Rapid Prototyping HW + SW)

4. GRACE HIL (Comm. HW in the loop)

4
3
2
1

EXAMPLE 2- TRUCK PLATOONING (A 5 YEAR APPROACH)

2015 | 2016 | 2017 | 2018 | 2019 | 2020

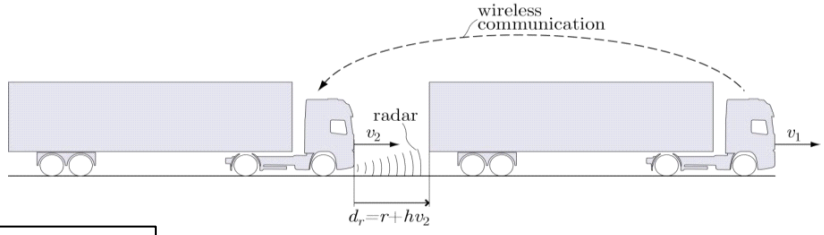
Develop tech … on N270 … ety case.

completed

Towards technical feasibility; simulations on logistics & traffic impact; evaluate safety case; draft type approval method & legal framework

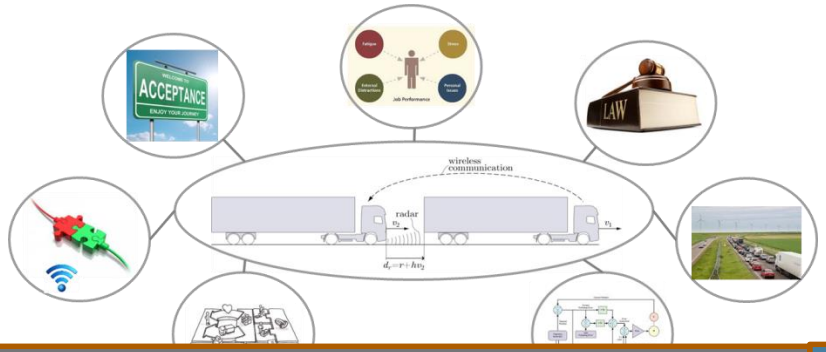
Next step

… scaling towards logistical exploration a … EU-TPC … ilot, updated proposal type approval method & legal framework



Up-scaling towards implementation in pilot, multivendor interoperability analysis, final proposal type approval & legal framework

Towards commercial implementation: type approval and legal framework in place: commercial start Truck Platooning



1 2 3 4

EXAMPLE TO COME: C-ACC

Our ambition, the Netherlands in 2025

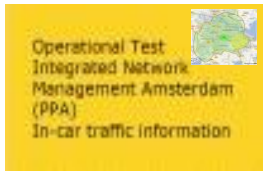
- 80% of all traffic jam disappeared, 8 Billion EUR saved (annually)
- Logistical sector most innovative and competitive in Europe
- Smart mobility, strongest growing export product
- Talking cars regulate traffic!

The car communicates with other cars and the infrastructure, regulates traffic and drives automatically where possible (cooperative automated driving).

CONCLUSIONS

- Next step will be integrated (and real time) assessment
- Products are updated and adapted in service, assessment should follow
- Data should be available for assessment purpose
- Automation will bring data handling and assessment to the next level
- Lets get in front of statistics!

THANK YOU FOR YOUR ATTENTION



The Cooperative ITS Corridor NL-DE-AT