Self-driving vehicle activities at VTI, EU project BRAVE, and possibilities with co-simulation

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Driver and Vehicle group

Automation, connectivity and fossil-free propulsion

- Sensor and algorithm development → **Automated** Driving
- **Connectivity** enables (collaborative) ”Intelligent transport system” C-ITS
- **Electric** drive lines

But:

”The best way to predict the future is to create/invent it” (Lincoln? Alan Kay at Xerox PARC)

AD already in operation in mines, cordoned-off areas in ports, warehouses

Strong business cases for platooning (”electronic vehicle trains”)

What does the future hold?

Anna Pernestål, Lars-Göran Mattson, KTH/ITRL

Ida Kristoffersson, VTI

Automation, ITS and traffic safety

Position paper by WG, *Forum of European Road Safety Research Institutes* (FERSI)

1. How can AD/ITS improve traffic safety?
2. Which TS issues are not addressed? Areas or groups left out unless special action taken?
3. Which TS issues may AD/ITS actually cause?
4. How should methods for testing, certification, validation etc. be developed?

www.fersi.org

vti

EU Automation projects at VTI (examples)

CoEXist (Johan Olstam)

Preparing road administrations for the transition phase when automated and conventional vehicles need to co-exist

BRAVE (Anders Lindström, coordinator)

Assess and take measures to increase AD acceptance in society, with drivers, other road users (incl. vulnerable) through HMI and detection development

ADAS&ME (Anna Anund, coordinator)

Driver-state-dependent transition handling

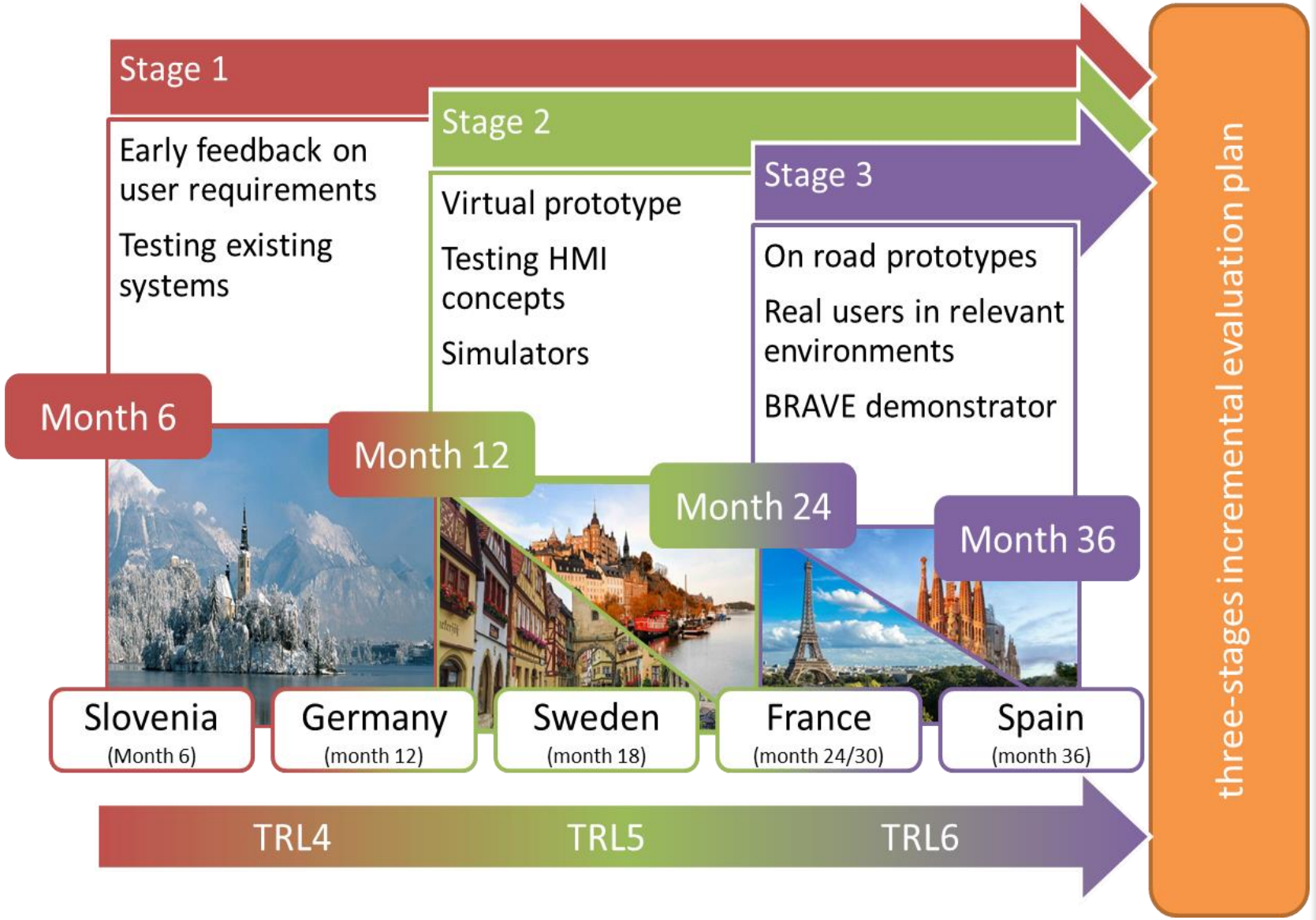
BRAVE: test-driven

3 M€

3 years

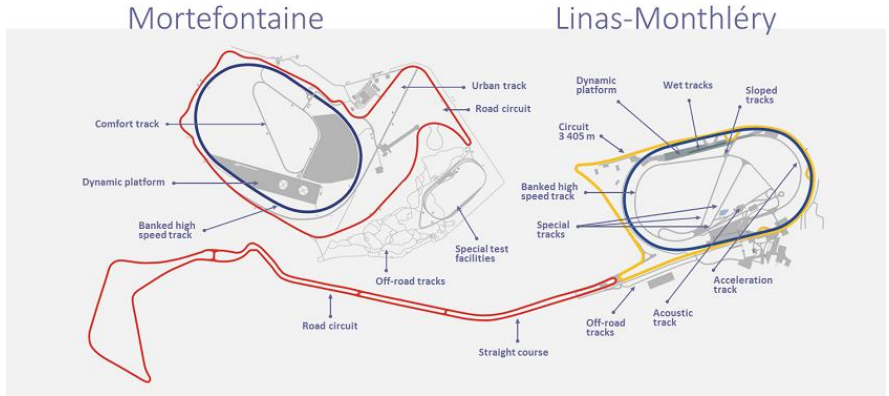
11 partners from France, Germany, Slovenia, Spain, Sweden; Australia; United States

- Attitudes and acceptance
- Develop HMI and VRU detection



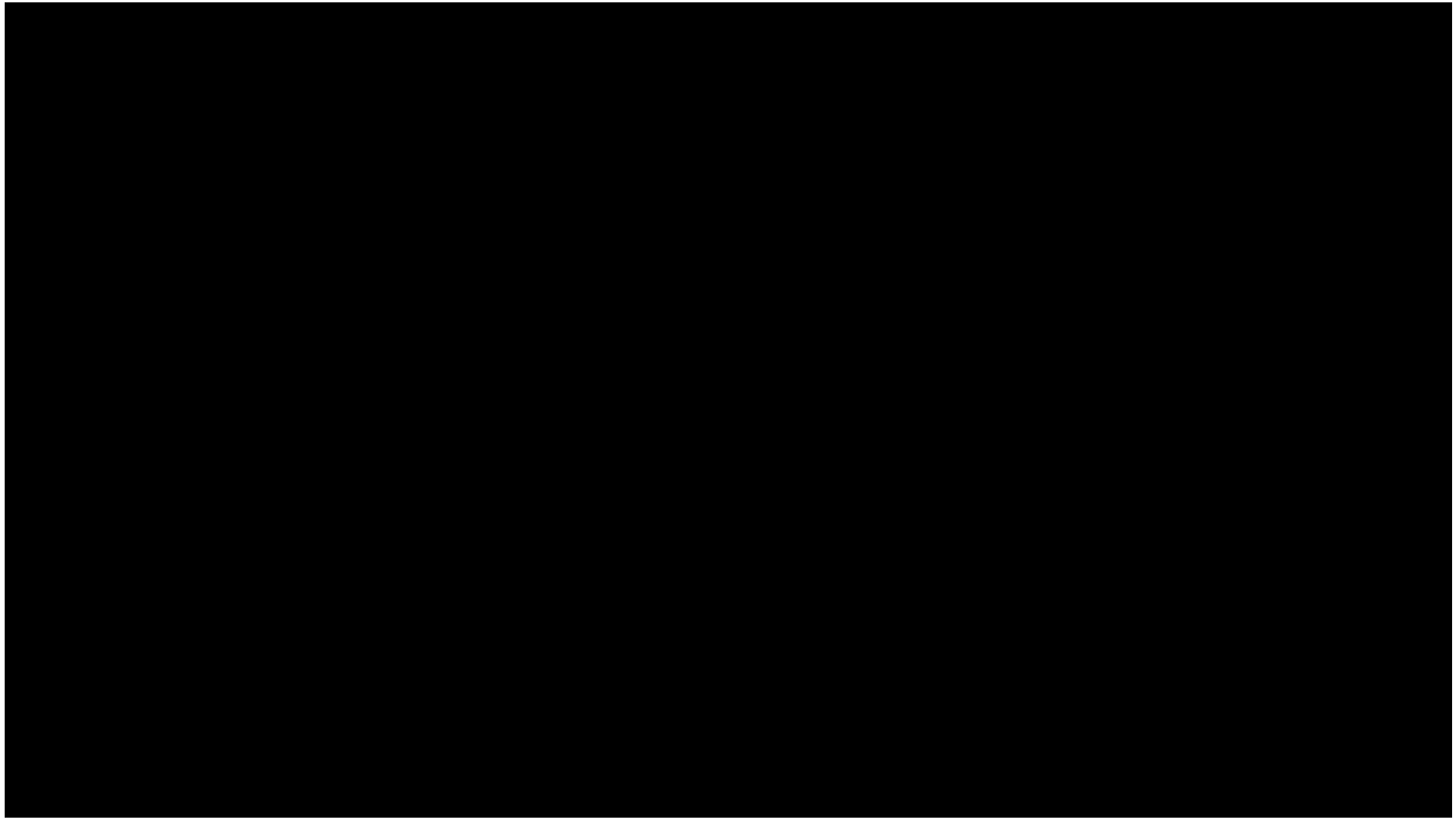
Simulation, test track and real-road testing

Test track & proving ground



VR and moving-base simulators

VRU detection and external HMI



Co-simulation a useful tool

Bike simulator (VINNOVA/FFI)

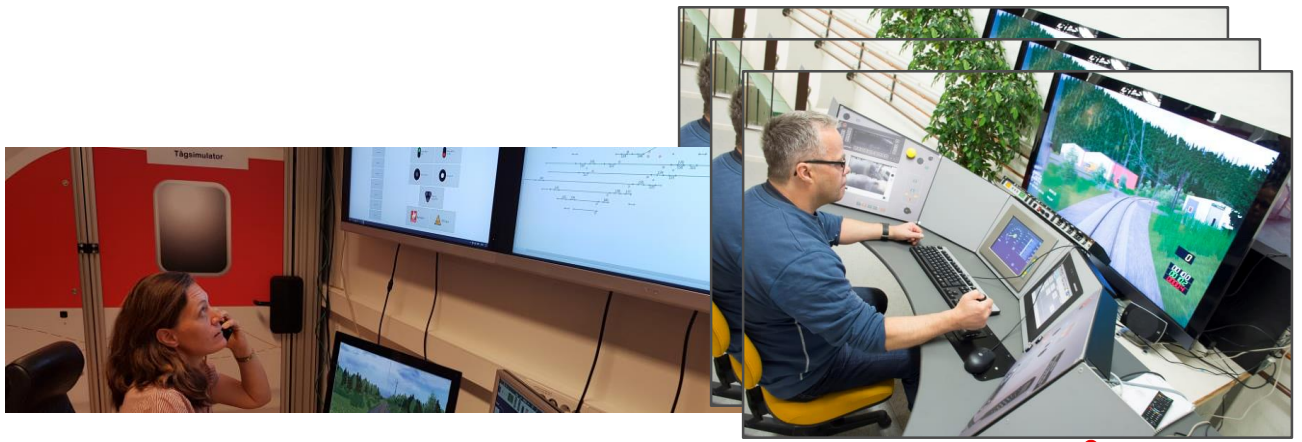
Projects: Smarta gator (VINNOVA), interaktion cyklister/infrastruktur (VINNOVA/FFI med Ramböll), MULTIPLAYER (VINNOVA/FFI proposal)

Walking simulator (EU H2020 BRAVE, Road admin.)

- Testing external HMIs, attitudes and acceptance

Train driving simulator (Road admin.)

- Connecting traffic management with train drivers in a multi-train setup



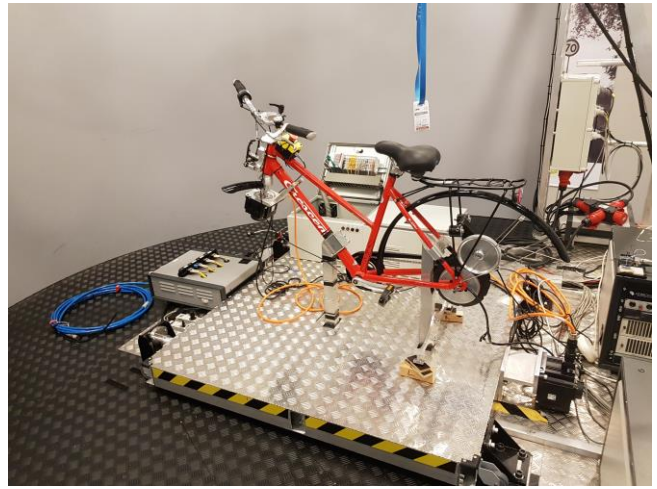
Co-simulation a useful tool

Allows for co-simulation between walking simulator, bicycle simulator and car/truck/bus driving simulator

Open architecture

Useful in all stages:

- design, test, user studies, education, training, screening, evaluation, driveabilitiy analysis



2019 – 2023
Self-driving ”pod” Vallastaden – LiU - VTI

1 M€ in committed funding from the City of Linköping, the County of Östergötland, VTI and Linköping University

Questions?