

AI Enabled Mobility – our project takes new steps Ulrika Holmgren, CLOSER and Ellen Grumert, VTI

Agenda 13.45-14.00

- AI Driven Mobility – phase one, short intro, Ulrika 1 min
- An Example of one initiative Reducing risks of Near-incidents - Ellen Grumert 7 min
- AI Enhanced Mobility phase two and our project takes new steps, Ulrika 7 minuter

AI DRIVEN MOBILITY

- phase 1
2021-2022

SAFER
VEHICLE AND TRAFFIC SAFETY CENTRE AT CHALMERS

CLOSER

DRIVE : SWEDEN

AI
SWEDEN

AI DRIVEN MOBILITY phase one

- AI-driven mobility phase one
 - managed by Drive Sweden, AI Sweden, SAFER and CLOSER
 - we wanted to merge AI experts and mobility actors together
 - together with 20 organizations, financed by Vinnova
- The goal was to create a network for organizations and individuals that could drive change in sustainable mobility, increase knowledge and awareness of AI and its potential for the mobility sector.
 - We did this by forming a new concept and methodology to develop cross-sectoral project ideas.
 - The methodology was also used to form interest groups resulting in three focus groups that we now brought further in phase two.
- One of the prestudies that was conducted in the project was “Reducing risks of Near-incidents” which Ellen Grumert from VTI will present



AN EXAMPLE OF ONE INITIATIVE REDUCING RISKS OF NEAR-INCIDENTS

Ellen Grumert

vti

WORKFLOW

Spring 2021:
Initiation

AI Driven Mobility workshops:

Focus group Traffic safety

Activities and focus areas

Around 8 suggestions on activities/focus areas

*Reducing risks of near-incidents -
identify patterns, near-incident
situations from large data-sets*

Intrested partners:

- Safer/Chalmers
- Viscando
- Zenseact
- Kista science center
- Trafikverket
- (Volvo cars)

Fall 2021: Pre-study

Scaning of areas:

1. One-to-one discussions with the once that wanted to be actively involved
2. Contact with project groups/partners within existing initiatives related to the area.
3. Discussions on a workshop within the AI Driven Mobility network – focus group Traffic safety
4. Literature scanning

Formlation of a project idea

- Overall project idea
- Define use case
- Project activities

Proposed use case:
Weaving behaviour at merging locations



Foto: Mostphotos

vti

MERGING IN DENSE TRAFFIC RESULT IN...

- Inefficient traffic flows (capacity drops, breakdowns)
- Increased risks of incidents
- Increased environmental impacts



Source: Mostphotos/VTI Transporten

WHAT IS THE REASON FOR A TRAFFIC BREAKDOWN?

- Speed deviations and increased number of (unnecessary) lane-changes

- Frequent accelerations/breakings at instable traffic situations

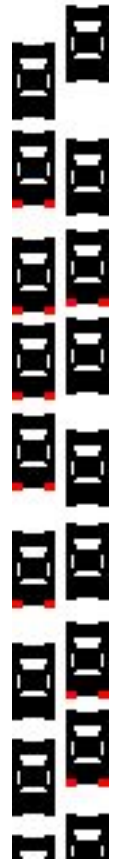


Source: [SCIENCE HOBBYIST: Traffic Wave Animation \(trafficwaves.org\)](http://SCIENCE.HOBBYIST.TrafficWaveAnimation(trafficwaves.org))

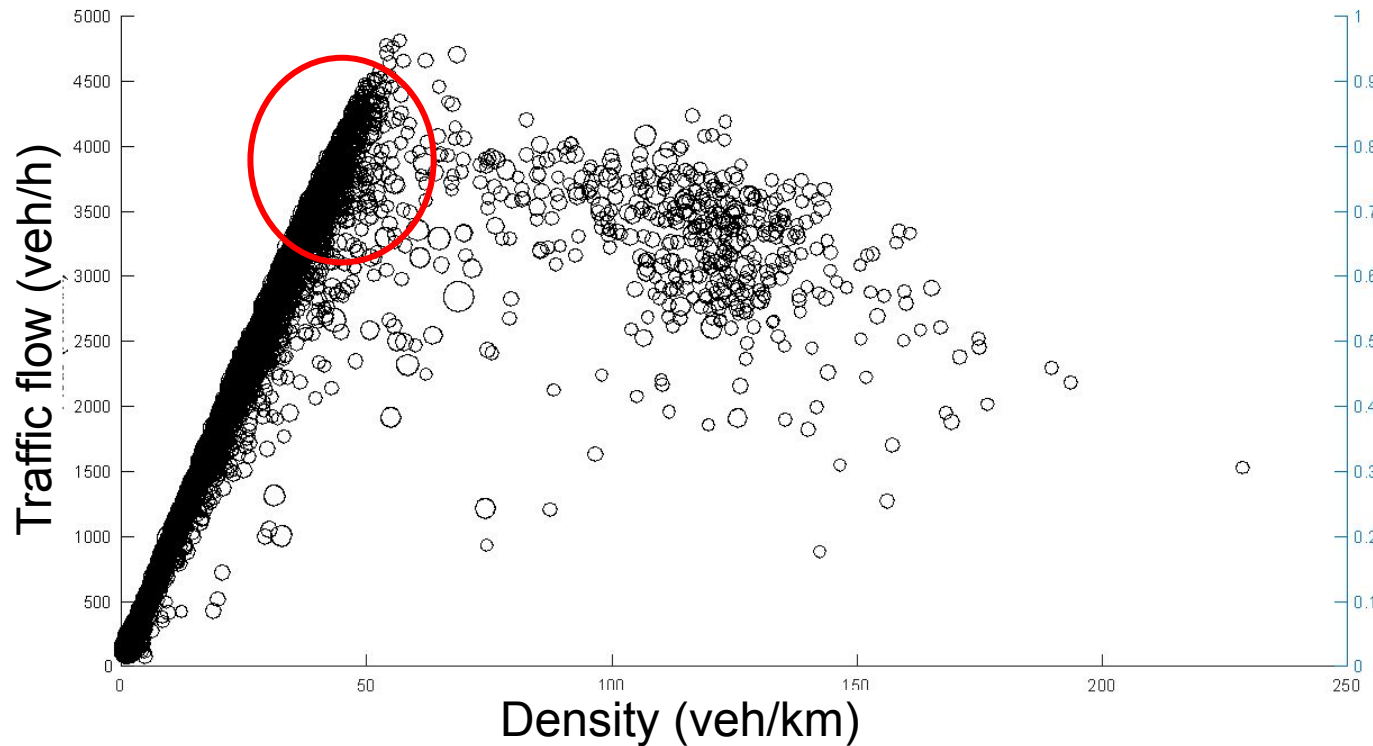
- Stop-and-go at high traffic flows



Source: [SCIENCE HOBBYIST: Traffic Wave Animation \(trafficwaves.org\)](http://SCIENCE.HOBBYIST.TrafficWaveAnimation(trafficwaves.org))



CONTROL OF TRAFFIC FLOWS TO IMPROVE THE TRAFFIC SYSTEM



1. Understand the overall traffic performance and impacts of lane-changes

2. Understand the driver behavior

DETECTION AND DATA ANALYSIS!

3. Assign control measures to improve traffic efficiency and safety

INVESTIGATION OF TRAFFIC PERFORMANCE!

**UNDERSTAND
USER-ACCEPTANCE/BEHAVIOR!**

WHAT NOW?

Ongoing discussions to initiate possible future research activities/projects with



INTERESTED TO KNOW MORE?



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Photo: VTI/Elsa Bolling-Landtblom



AI ENHANCED MOBILITY

- phase 2
2022-2023

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CLOSER

DRIVE : SWEDEN

AI
SWEDEN

From phase one to phase two...

From phase one we see great interest in the project to initiate collaborations and networks. But, there is need for support in the field of AI, both in project generation and finding the right partners.

To succeed we continue the project in phase two – AI Enhanced mobility with three defined success factors

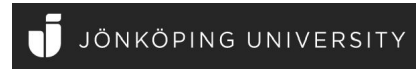
1. For every focus group we provide structured AI support from the experts
2. Throughout the project we have an advisory board supporting the groups from ideas to pre-studies
3. We have a methodology with KPI's that helps the focus groups to form viable, novel and sustainable projects.

36 partners

T Technolution



Svanberg & Svanberg AB



PROJECT MANAGEMENT TEAM



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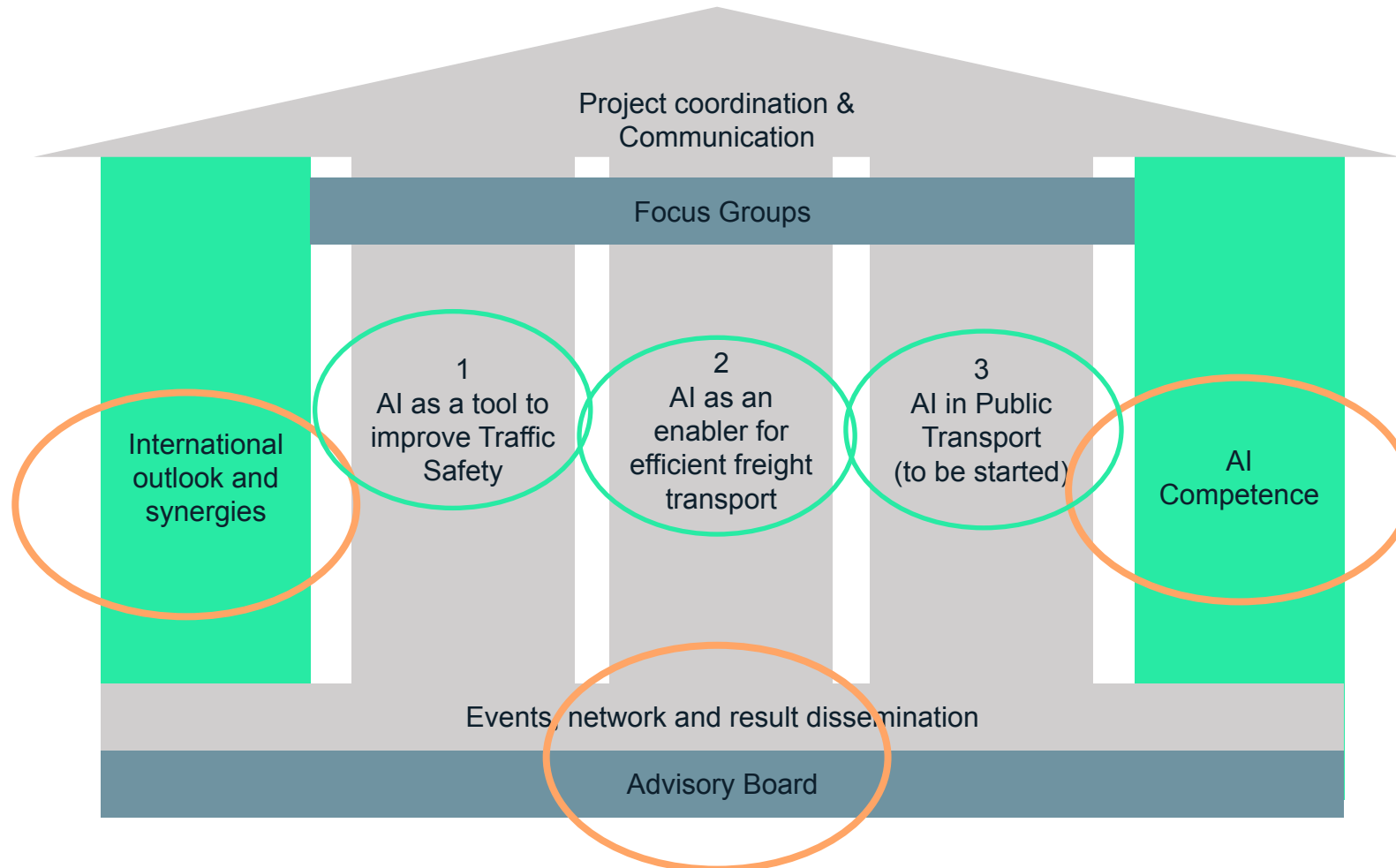
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The AI enhanced mobility project shall:

- Create increased knowledge and awareness of AI and its potential for the mobility sector
- Develop a long-term plan for the continuation including financing and partners, etc.
- Conduct a structured international outlook connected to relevant actors and projects to create possible synergies
- Develop a methodology for AI competence support for mobility actors

ORGANISATION AND STRUCTURE



FOCUS GROUP 1: AI as a tool to improve Traffic Safety

Participants:

- Asymptotic AB, Chalmers Tekniska Högskola, China Euro Vehicle Technology AB, Consenz AB, Embedl AB, Halmstad University, Institute of Transport Economics, Jönköpings kommun Stadsbyggnadskontoret, Lund University, Malmeken AB, RISE AB, Smart Eye AB, Svanberg och Svanberg, Swedish National Road and Transport Research Institute, Trafikverket, Jönköping University, University of Skövde, Viscando AB, Volvo Cars, Volvo Group, Zenseact, Örebro University

Our purpose:

- To explore and utilize AI as a tool to increase road safety with reduced fatalities and injuries.

Our targets:

- Generate at least 2 applications to create larger projects out of the pre-studies that have already been carried out during the first phase of the projects.
- Generate at least 3 additional pre-studies.

Potential areas for AI: understand the driver, develop dynamic maps of the reality, identify patterns and near-incident situations, predict intention, optimise road maintenance, understand the traffic environment etc



FOCUS GROUP 2 - AI as an enabler for efficient freight transport

- **Focus group leader:** Ulrika Holmgren, CLOSER
- **Participants:**
 - Region Jönköping, Jönköpings kommun, Region Örebro, The Train Brain, Iboxen, AFRY, RISE, Univrses, Viscando, VTI, Volvo Group, Linköping Universitet, DB Schenker, University of Borås, Technolution AB, Trafikverket, SSPA

Purpose in general:

- Generate projects that create efficient freight transport for a future sustainable freight transport system.
- Examples of thematic areas:
 - Urban and regional road transport for goods
 - Charging infrastructure
 - E-commerce deliveries in urban environments
 - Long-distance freight transport
 - Infrastructure planning support
- Generate at least 2 pre-studies.
- Generate at least 1 major project, based on the pre-studies carried out.

Focus groups arrange 6 workshops each to generate project ideas and pre-studies, to inspire and to share knowledge.

Workshop dates:
28 september kl 13.00-15.00
16 november kl 13.00-15.00

FOCUS GROUP 3 - AI in Public Transport (to be started)

- **Focus group leader:** Paul Davidsson
Malmö University
- **Participants:**
- Västtrafik, The Train Brain

Purpose in general:

- Build a focus group interested in using AI to improve public transport, e.g. with respect to efficiency and service quality

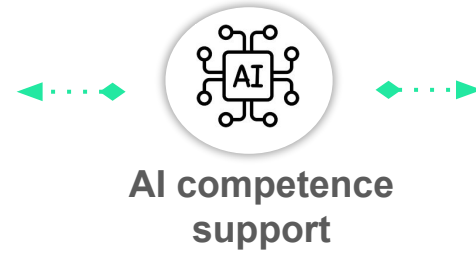
Including

- estimating the current and future state of the public transport system
- resource allocation, incl. planning, scheduling, and disturbance management
- decision support for travellers

Hopefully conduct at least one feasibility study.

- Focus groups arrange 6 workshops each to generate project ideas and pre-studies, to inspire and to share knowledge.

Workshop dates:



Focus group workshops to
identify project ideas
LONG LIST

Fous group workshops to
identify project ideas
SHORT LIST



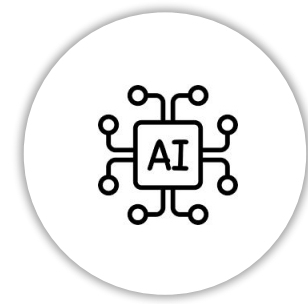
Decision from Advisory board on which projects receive pre-study funding



Pre-study execution



Present project ideas to Advisory board.



AI competence support



**Applications to main
projects**

**Project agreements on
specific projects**



**Apply for funding
(external programs/agencies)**



Please contact us to participate or for more information



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