

iQMatic- FFI resultatkonferens 2018-09-27

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SAAB



SCANIA

FFI

FORDONSSTRATEGISK
FORSKNING OCH INNOVATION

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FORSKNING OCH INNOVATION

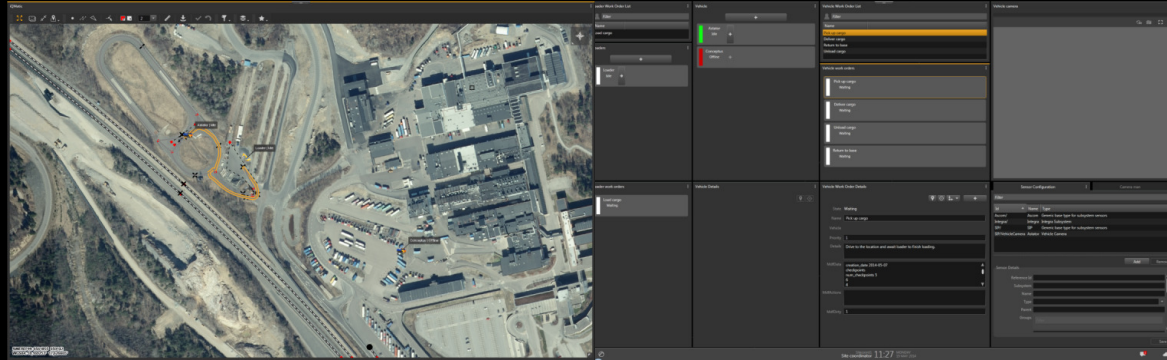


SAAB



Linköpings universitet

iQMatic (2013-2017)



Project Summary

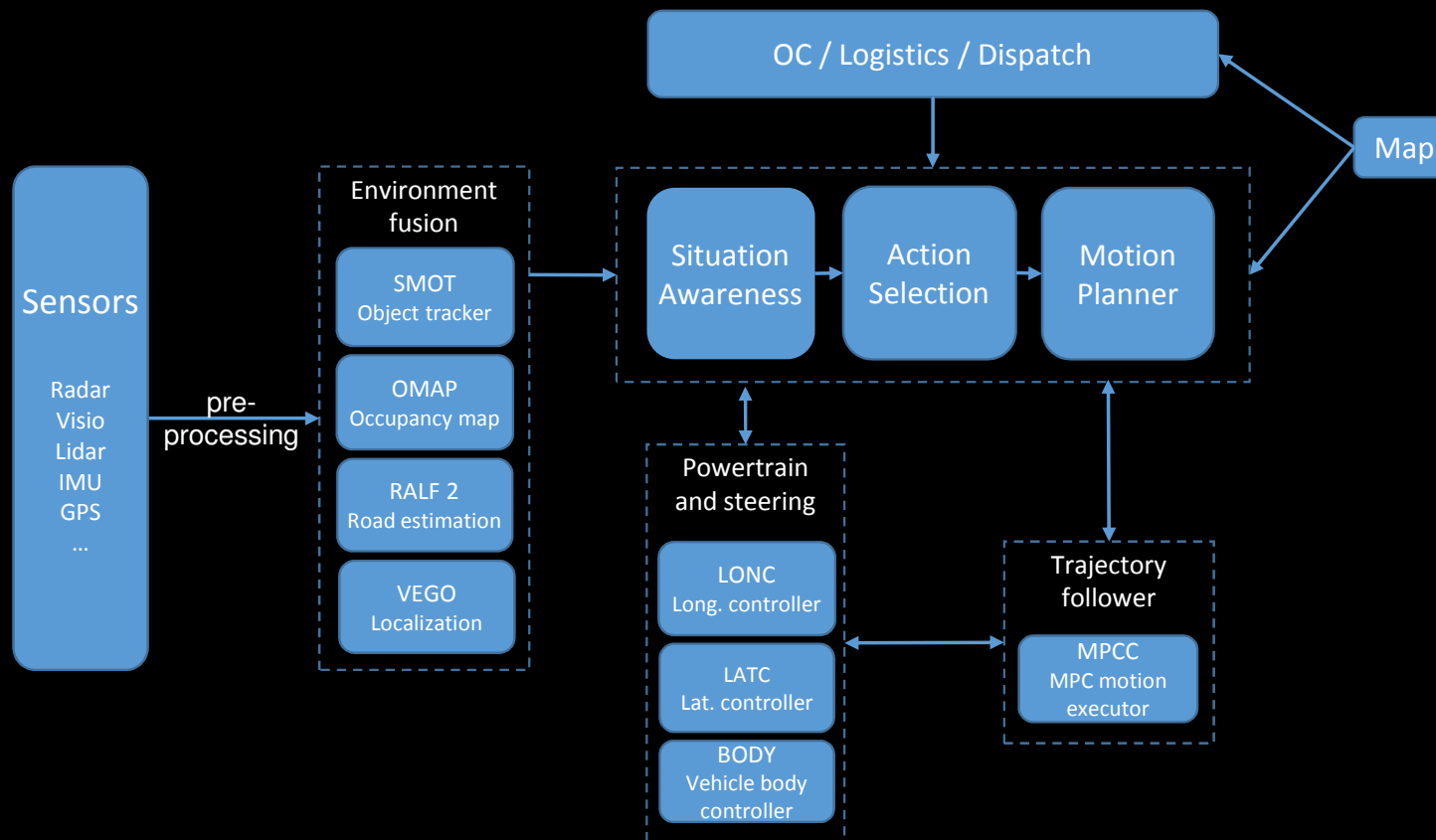
- Autonomous driving on closed-off areas with two trucks
- Command centre based monitoring and dispatching
- Very close integration between industri and academia



SCANIA



Research platform architecture



SAFE – the Control Centre



Vehicle incidents Incident list Alerts

Video Cam. selection V. details AI details

Cargo delivery List

Vehicle details Inc. details Vehicle - Deliveries Source - Deliveries Vehicle - Drive... Vehicle - Action...

State Name Vehicle id
Idle Astatore YS2G8X4000204

Heading Speed Weight
359 0 -1

Load type Load Max load
Pebbles 10 10

Lat Long
59° 9' 57.787" 17° 37' 9.738"

Measurement time
Today 16:42 STOP

New incident issue New action request New drive request

Alerts
AI-646 Vehicle 'Astatore' Faulted

Vehicle Incident

Astatore
Idle
10
Pebbles

moln1
Offline
0
Pellets (Sim)

moln2
Offline
0
Pebbles (Sim)

NuvoTank
Offline
0
Pebbles

Vehicle - Drive requests

Astatore
Idle
10
Pebbles

moln1
Offline
0
Pallette (Sim)

moln2
Offline
0
Pebbles (Sim)

NuvoTank
Offline
0
Pebbles

Create and edit... Create and edit...

Astatore New drive request

iQMatic Scania test area Incident attachments Vehicle attachments

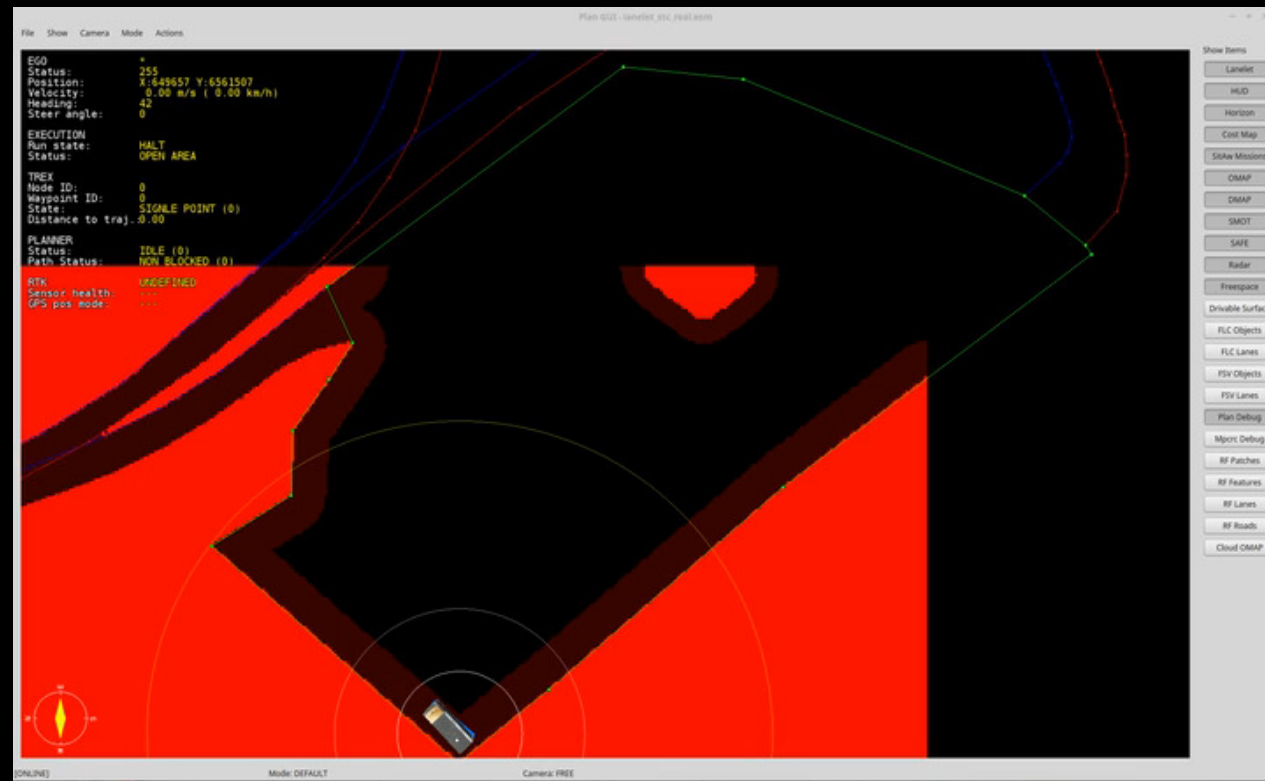
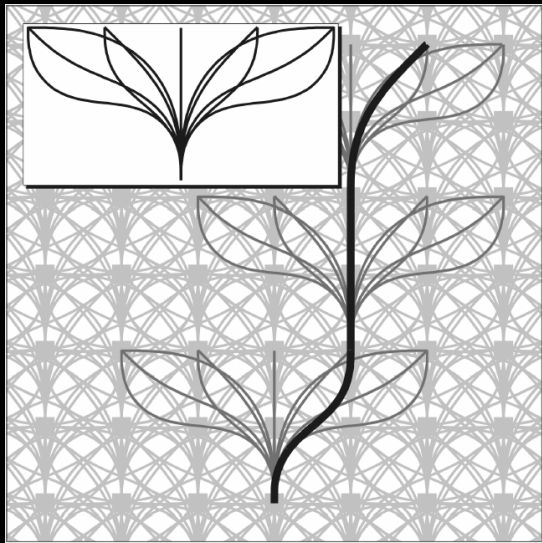
WGS84: 59.168035° 17.627270°

Administrator 16:41 TUESDAY 12 MAY 2015



Motion planning

- Lattice-based planner (for off road)
- Planning algorithms based on graph search
- Apt at solving complex pose-to-pose maneuvers



Autonomous vehicle driving



Localization



File Panels Help

Reset | **Left-Click:** Rotate. **Middle-Click:** Move X/Y. **Right-Click:** Zoom. **Shift:** More options.

24 fps

video speed 4x







Much work left to do...

Many open research problems:

- Prediction of movements and intention of other traffic participants
- Robust, redundant systems
- Methods for test and validation according to standards (ISO/IEC)
- Interaction between humans and autonomous vehicles
- many more!



Summary

- Very tight collaboration between academia and industri:
 - 3 successful Ph.D. defenses, now working within the discipline
 - iQMatic has triggered large-scale development of autonomous transport solutions at Scania
 - Very high interest from industri, academia and society for demonstrations.
- iQMatic has inspired several new projects:
 - Reversing with trailer project
 - iQPilot – Autonomous busses
- Research platform reused by several students from the WASP-program.

Questions?

