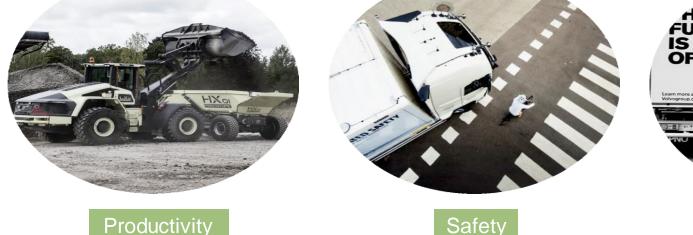
Volvo Group on Automation

Peter Wallin Technology Research Manager Volvo Construction Equipment



Major benefits with automation – for customers and society





Energy Efficiency



Ivo Group related business areas

Autonomous vehicles and sites

Driverless Predefined mission

Driverless Predefined Routes

Remote Supervision

Remote Control

Driver support

Machine Control

Automated safe & green driving & vehicles

Highly automated driving, & "Platooning" like concepts

Volvo Construction Equipment

Partly automated driving & vehicles, e.g. C-ACC Scenario based automation of

driving "tasks", e.g. queue assist Low speed control and maneuvers

Active safety & Driver assistance

Time

Public roads

Controlled environments entry introduction - (e.g. workyard, harbour, construction sites)



Peter Wallin

3 2017-05-12

Automation by Volvo Buses

- Safety systems for driver assist, such as Volvo Dynamic Steering (VDS)
- Bus Stop Docking for automatic positioning of buses at bus stops
- Depot operations
- Platooning



ELECTRIC HM

Automation areas

On road - ADAS towards Autopilot



Platooning

Confined Area/Terminals





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Platooning

Customer & society Values

- Fuel savings & environment, traffic flow

Definition

- Communication between trucks for cooperative driveline control and safety

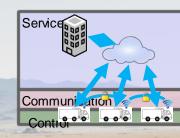
Technology

- V2X communication
- High integrity safety

Challenges

- Vehicle to Vehicle introduction cross brand
- Safety sets the limits on timegap
 - User and society acceptance (timegap and
 - platoon length dependant)

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On Road ADAS towards Autopilot

Customer Value

- Safety, Productivity, Convenience

Technology

- Environment perception sensor and sensor fusion
- Vehicle control and decision

Challenges

- Environment perception
- Safety
- Human factors

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VOLVO

Confined Area & Terminals

Customer Value

- Productivity, Safety and Energy Efficiency

Definition

- Automated hauling systems
- Low speed scenarios

Technology

Fully autonomous vehiclesSite management & control

Challenges

- Localisation

- Site production system integration

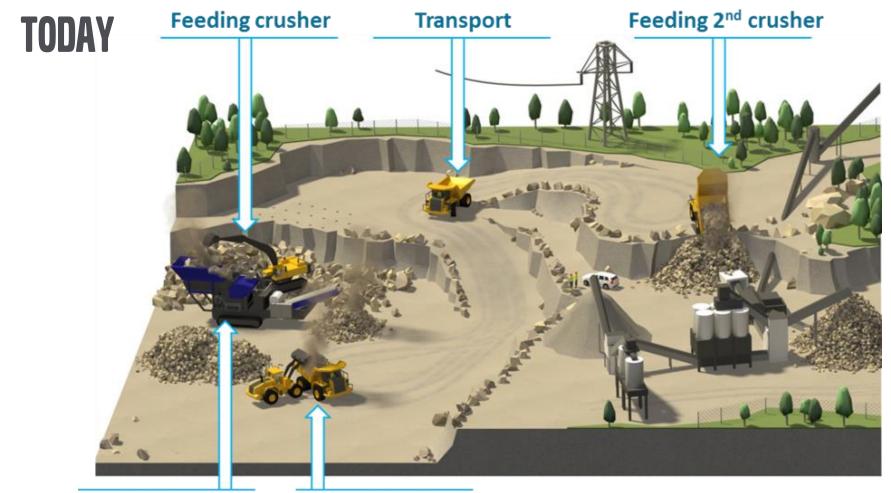
Volvo Group Trucks Technology











Stockpiling (small) Tr

Truck loading



Volvo Concept Lab

TCO

25%

HE AUTOMATED ELECTRIC SITE

BY COMBINING CLEAN ELECTRIC MACHINES AUTOMATED MACHINES AND CONNECTED MACHINES

CO2 95%

The Automation Puzzle

Customer needs & application scenarios

User acceptance, liability & legal framework



Technology, opportunities, limitations & dependability



Working together

