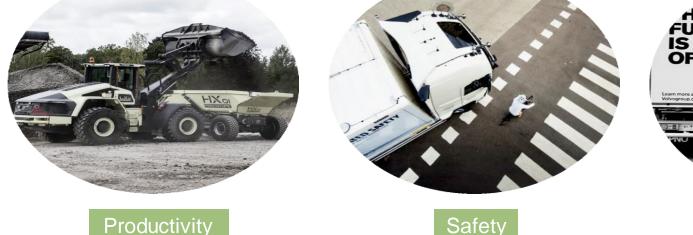
# **Volvo Group on Automation**

## **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)



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## **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

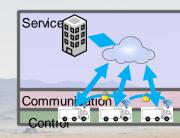
## Technology

- 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

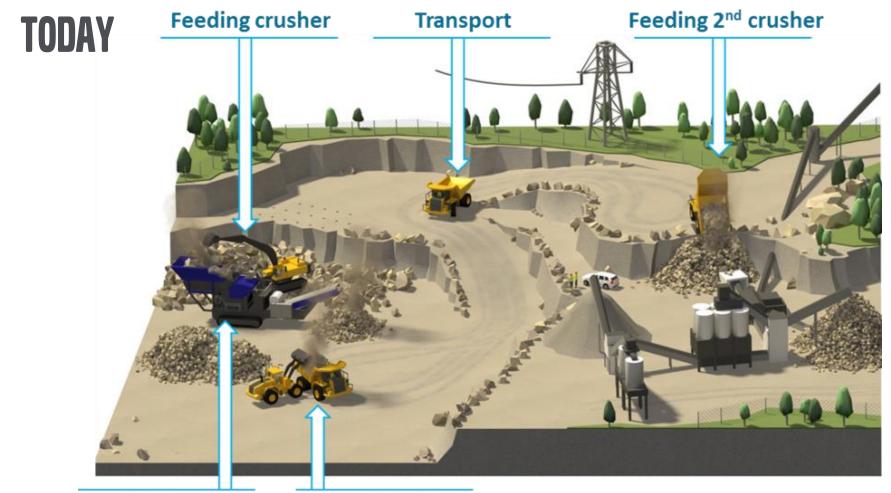
Volvo Group Trucks Technology











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

