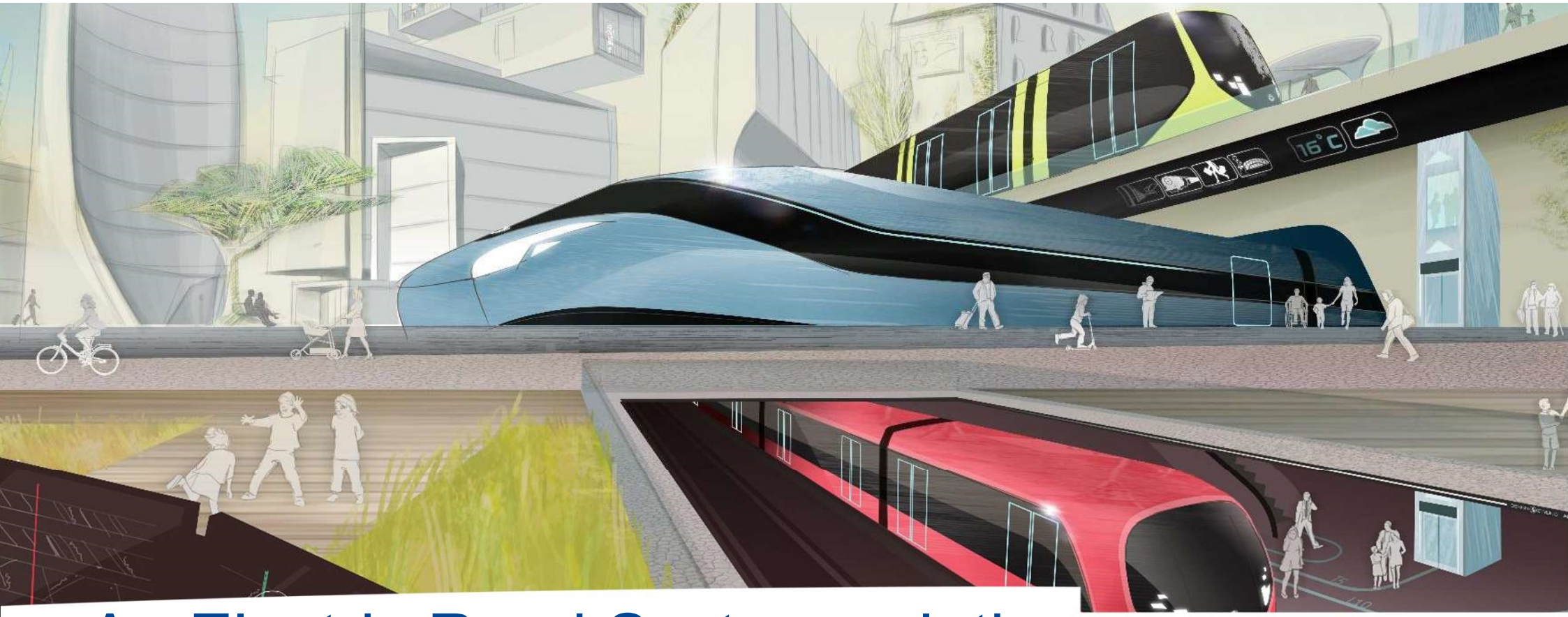

An Electric Road System solution based on the railways experience

Patrick DUPRAT

FSW French-Swedish Workshop on Research, Innovation and Education 2019

ALSTOM Designing fluidity

First ERS P.O.C.: Slide-in project in Sweden

- Strategic Vehicle Research and Innovation program launched by the Swedish Energy Agency (SEA) in 2011

- Criteria requested by the SEA:
  - Power loss data
  - Economical data
  - Maintenance related data
  - Vehicle power requirement data

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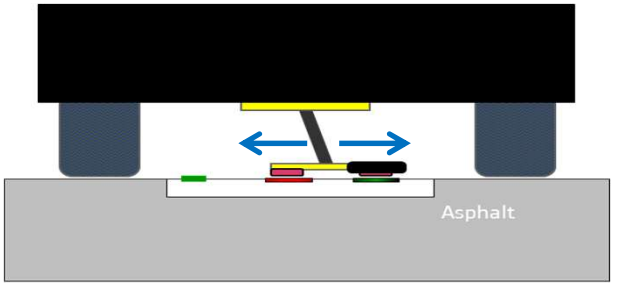
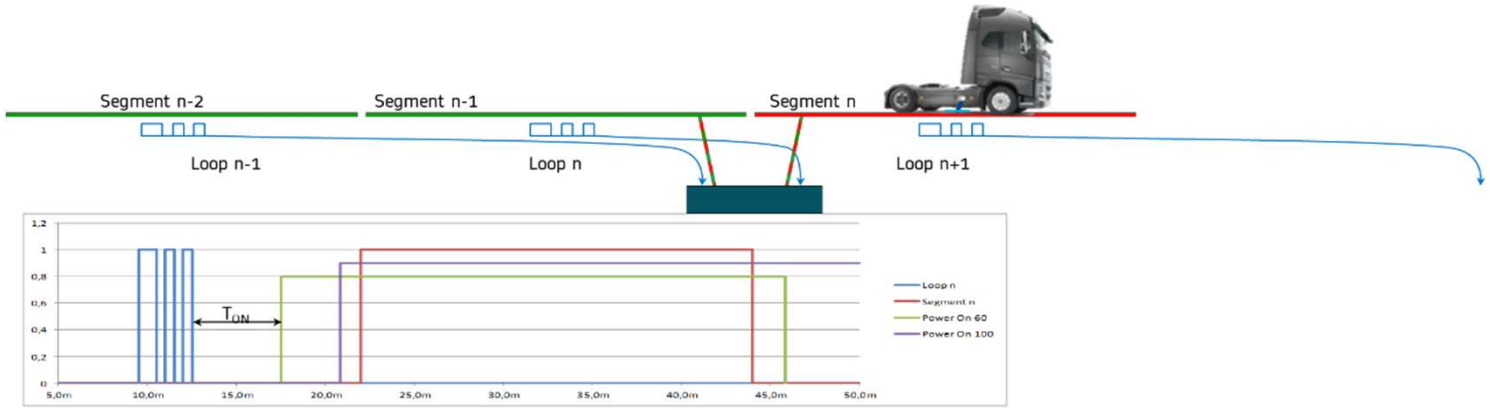
Why use APS technology on the road?

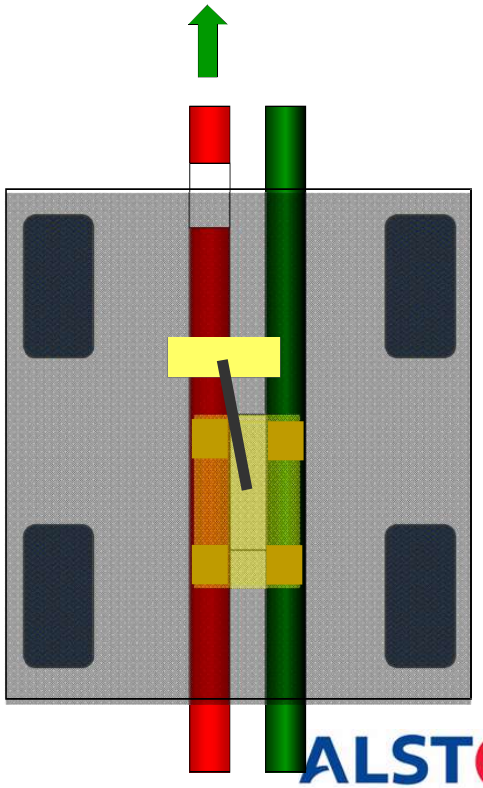
APS in operation since 2003 in Bordeaux, more than 40 millions km run in the 7 network equipped with this technology

The safety has been approved by 5 different Independent Safety Assessors and is demonstrated all the days in operation

P.O.C. in Sweden with Volvo



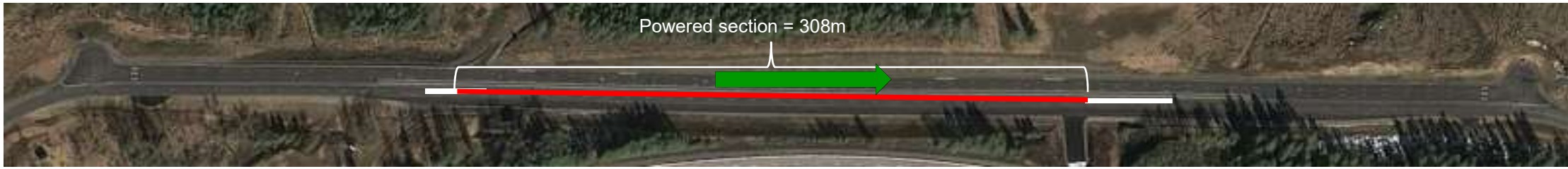


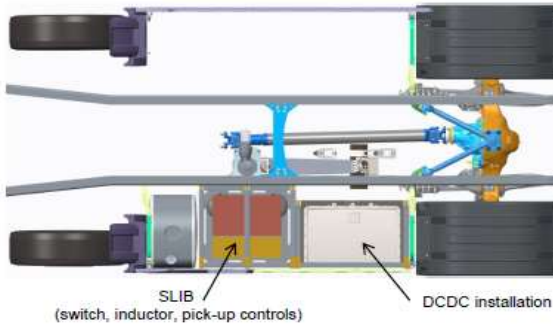


Top
view

P.O.C. in Sweden with Volvo

- **Construction on Volvo's test tracks in 2 phases (2012 & 2014)**





- **Test results**

Current collection test	Result
126kWatts 180Amps 690VDC transfer	✓
Truck speed more than 80km/h	✓
20km of continuous power transfer	✓
Rainy conditions	✓
Short circuits tests	✓
Track adherence tests	✓

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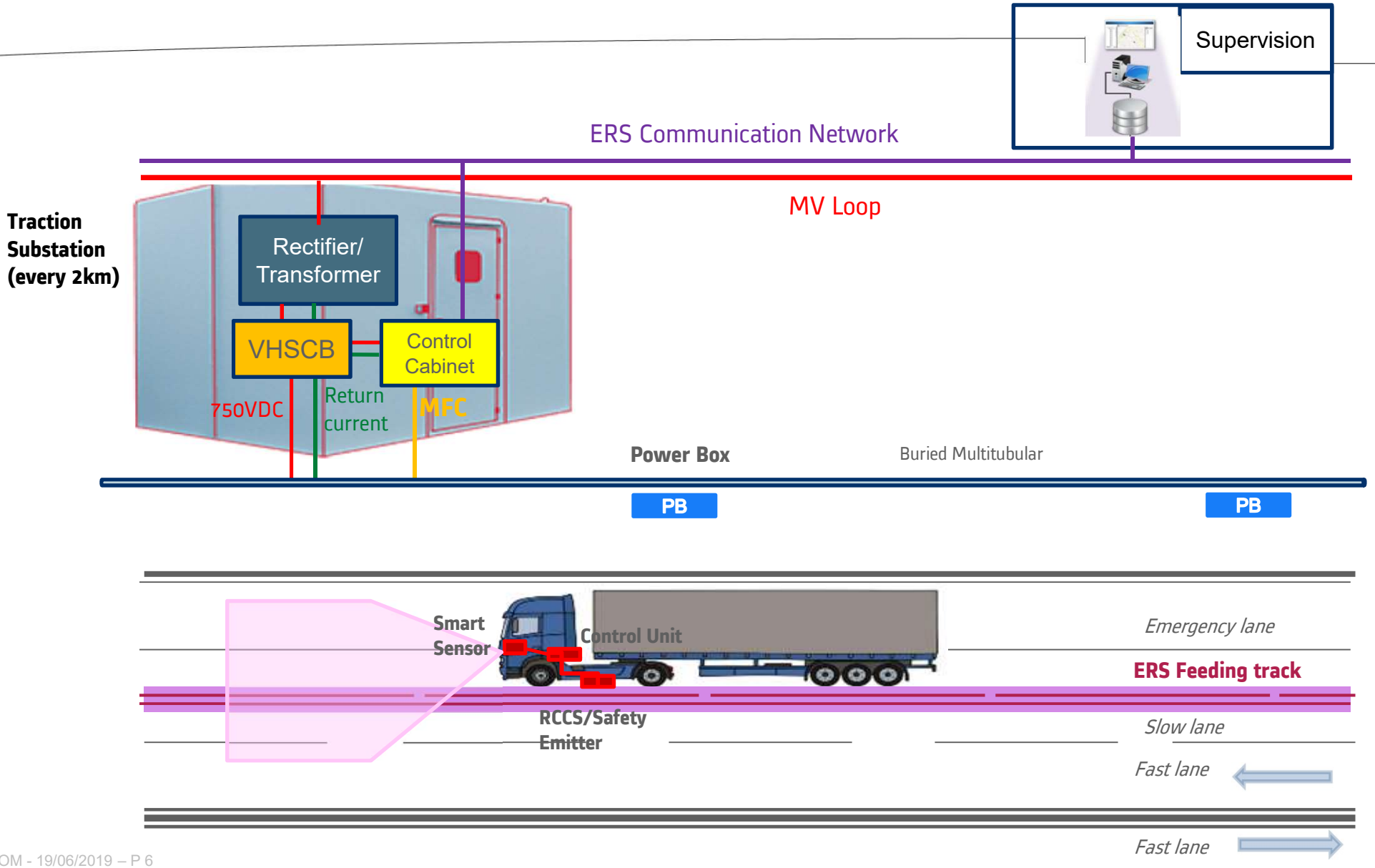
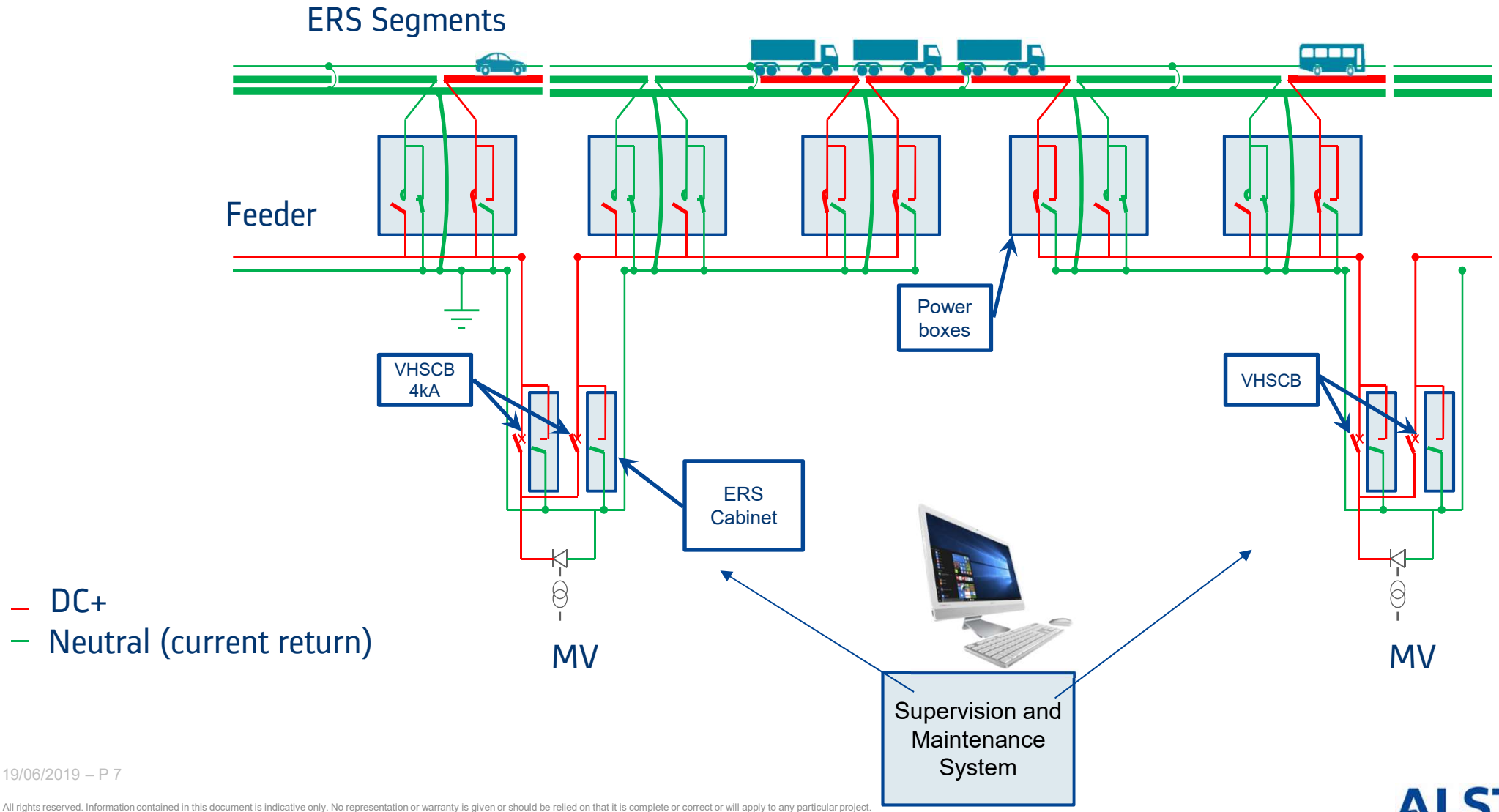
ERS Architecture



ERS Power Supply Architecture



Conclusion

- **Strengths of this ERS solution:**
  - Experience from tramway application and System approach
  - 100% safe
  - High power transfer
  - High efficiency (97% for the power transfer)
  - Compatible with all type of vehicles (from HDV to LDV and cars)
  - Aesthetic (no obstacle)
  - No gauge limitation
  - Easy integration in the road and in the vehicles
  - Very low maintenance needs
  - Standardization in progress (CENELEC)

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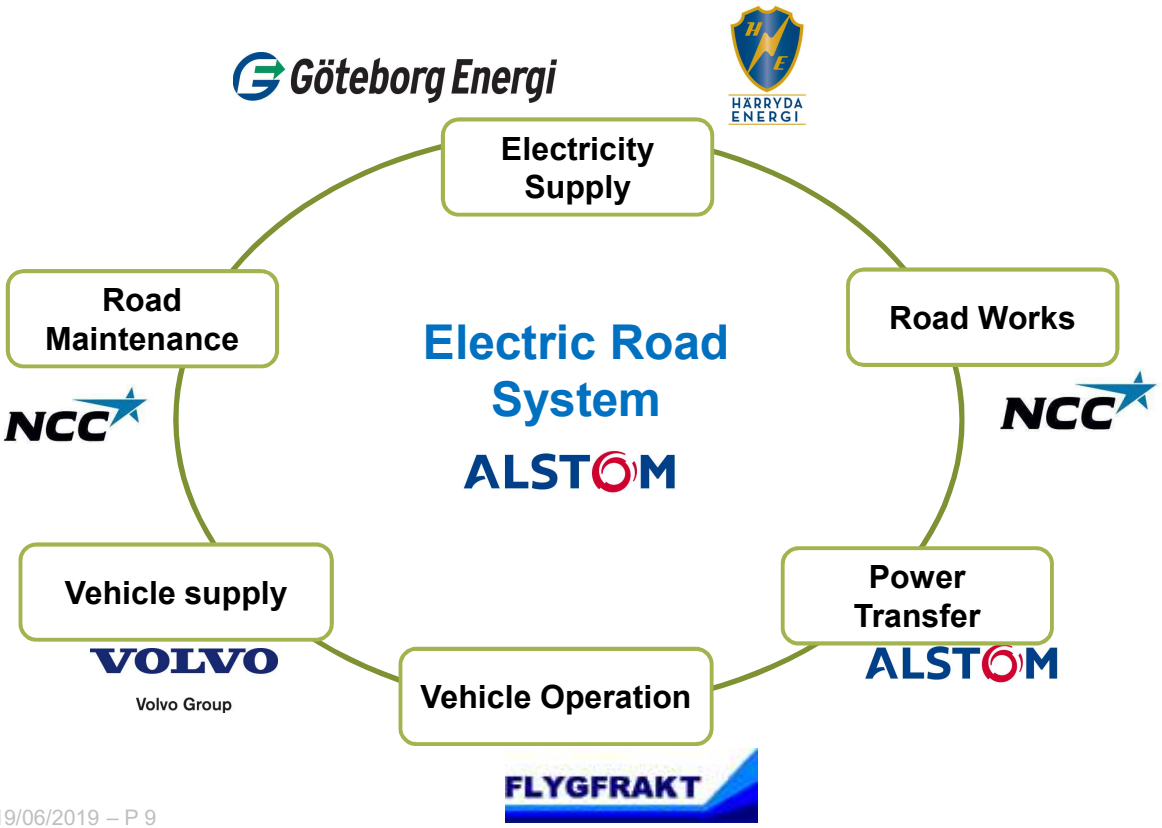
Demonstration project in Sweden (Trafikverket)

- **Project Organization:**
  - **Answer within a consortium via a Swedish legal entity called "VästSvenska Elvägar AB" equally shared by Alstom, Volvo and NCC**



Other main Swedish Partners:

- **RISE**: Project evaluation
- **Business Region Goteborg** (Marketing/ Communication)
- **Azta Zero** (Test Road Operation)
- **Chalmers**

Alstom's subcontractors:

- **IFSTTAR**: Infrastructure
- **FAAR Inductry, Mersen:** on-board equipmer
- **Doshin Rubber:** ERS track
- **CEREMA:** Winter Maintenance

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Demonstration project in Sweden (Trafikverket)

- **For the demonstration, we have chosen an authentic road environment for the road freight transport. It will be on an highway section with a significant volume of traffic and with a very visibility for the visitors:**

2000 m uphills

Conclusion

Thank you very much for attention

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