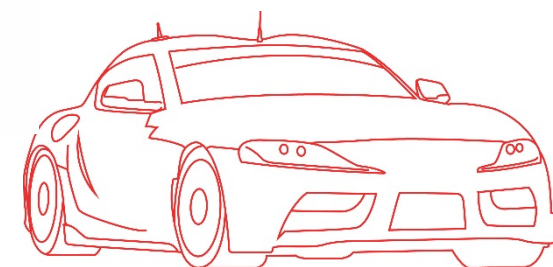
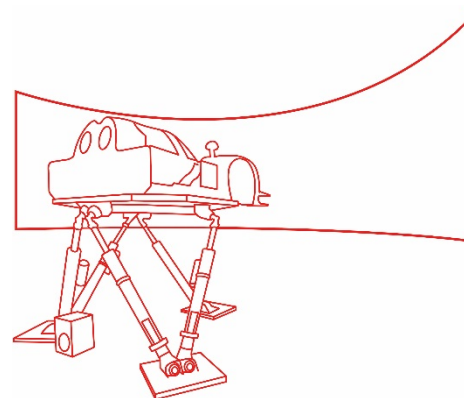
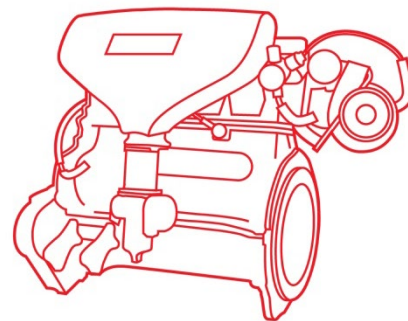
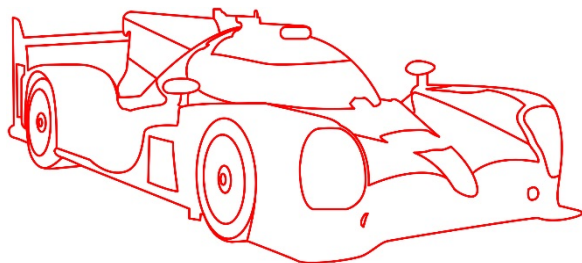


Dynamic Power Transfer as a Feature Interoperability of S- and D-WPT

Andreas Wendt

TTC Toyota Motorsport GmbH

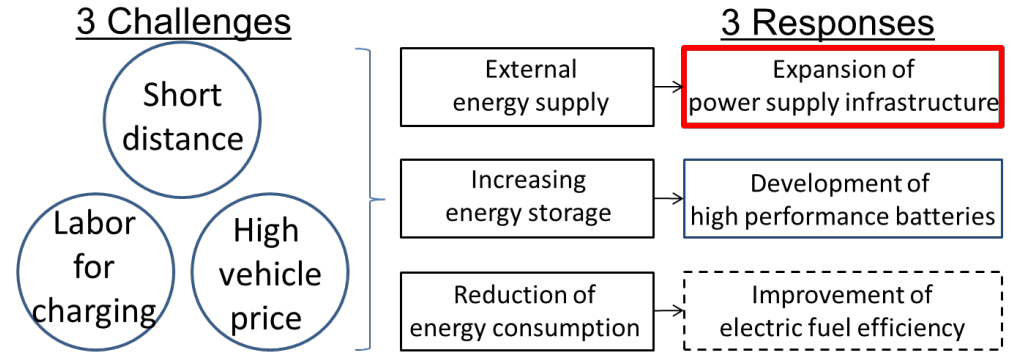


2020 CERV Conference Session 4

Perspectives on light duty vehicles:
projections, needs, solutions

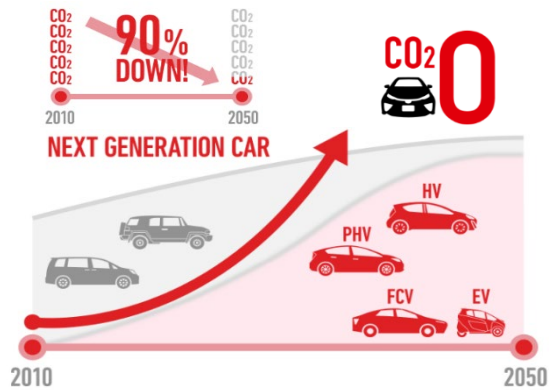
1. TOYOTA's motivation for WPT
2. Technical Background at TOYOTA
3. Benefits of interoperability between S-WPT and D-WPT
4. DWPT as a feature – an interoperability study

Motivation



CASE

(Connected, Autonomous, Shared, Emission-free)



(Source: TOYOTA MOTOR CORP <https://global.toyota/en/newsroom/corporate/>)

Technical Background



STILLE

Standardisierung induktiver
Ladesysteme über Leistungsklassen

- R&D since 2011
- Tech. support of Strd since 2015
- Practical experience in S-WPT interop. validation
- Generic description of Interoperability

Benefits of interoperability

Current situation of S-WPT:

- First proprietary systems in the market
- Standardization close to being finished
- Standardized systems **could** enter market within a few years



Current situation of D-WPT:

- Various demonstrators existing
- Standardization just started
- First large-scale demonstrations started
- Roll-out as public infrastructure: **unclear**

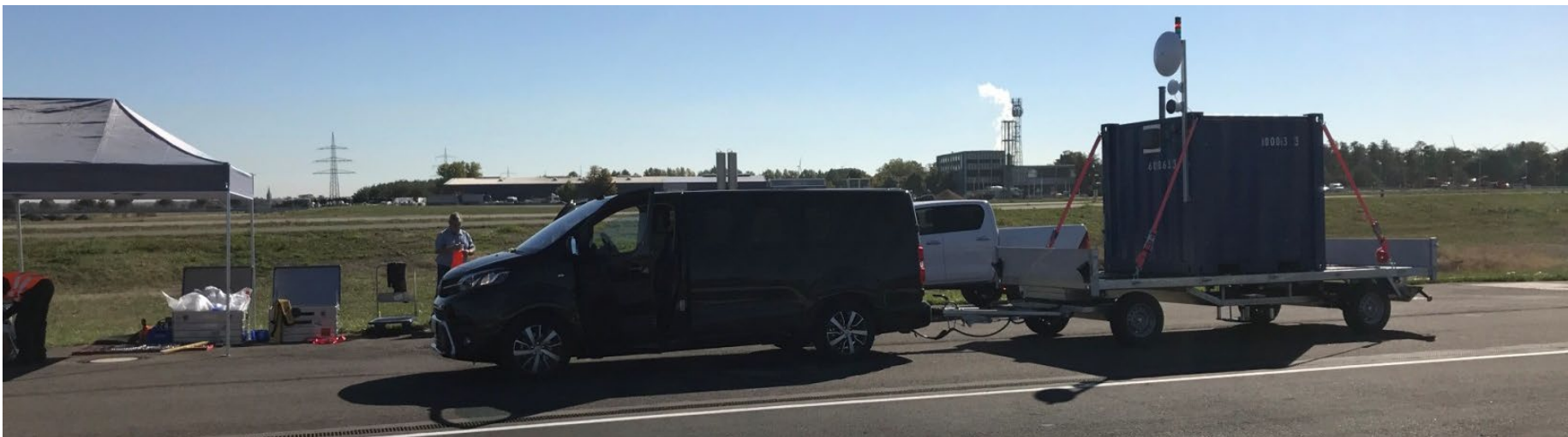


My Question:

What do you think about the **Interoperability** between the (various) proposed **D-WPT** designs and the well-established **S-WPT**?



Demonstration of interoperability



D-WPT Demonstrator ,vehicle'



4 coils,
6 m power
transfer section,
11 kW nominal,
No active ctrl.

SAE J2954
WPT3 Z2
Circular coil
140 mm GC



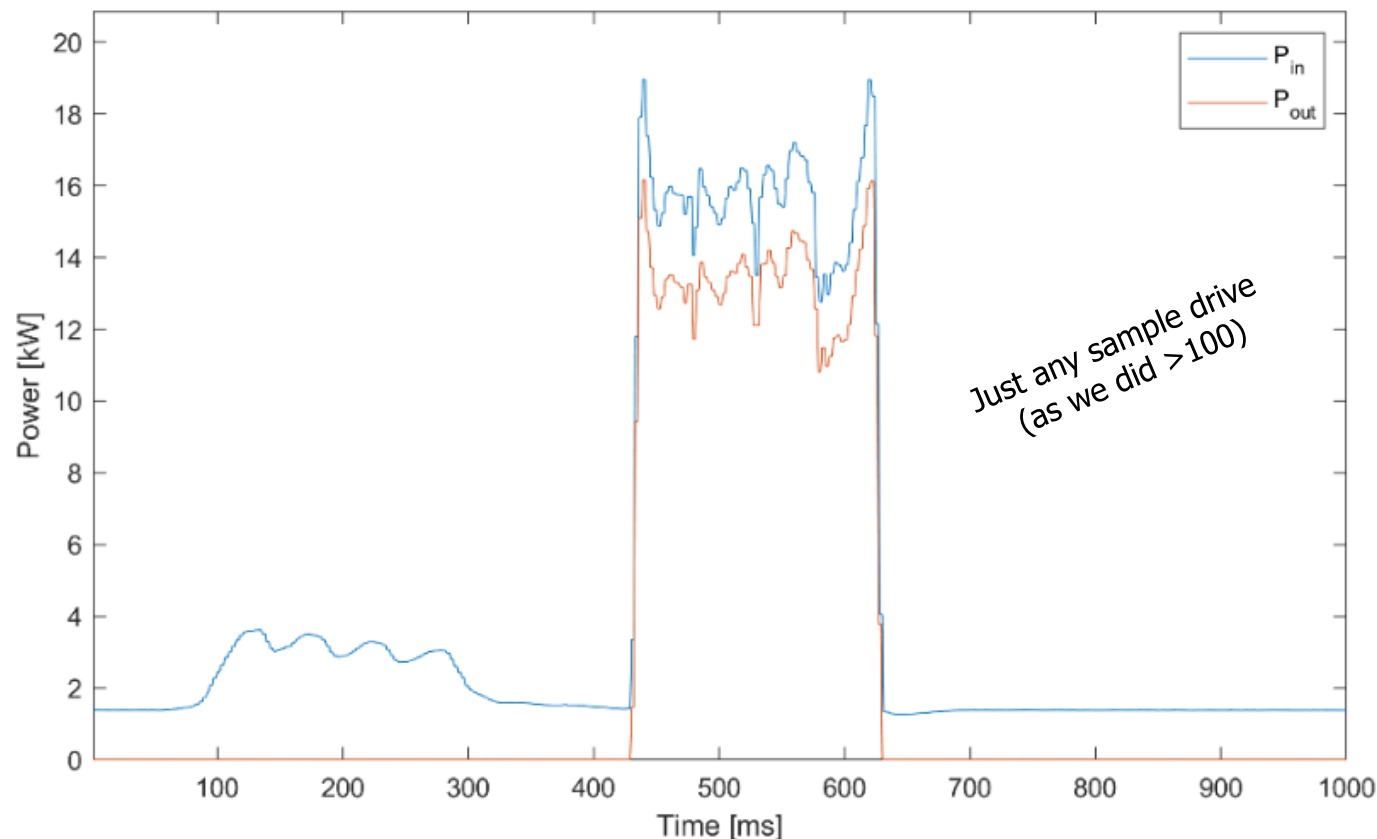
Interoperability **is possible!**

Demonstrator Targets:

- Standard S-WPT receiver coil
- Speed 30...100 kph (20...60 mph)
- Misalignment -100...100 mm
- Nominal output power: 10 kW

Next steps:

- Higher Power
- In-ground infrastructure



Speed: 98kph / 59 mph
Alignment: -30 mm (left)

Average P_{out} : 13 kW
Transmission ϵ_{DCDC} : 92 %
Section ϵ_{DCDC} : 85 %



Questions?

Thank you for listening!