FABRIC

Feasibility analysis and development of on-road charging solutions for future electric vehicles

Supply chain factors

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Purpose of the task

Assessment of the future supply chain for on-road charging for its maturity, reliability, efficiency and stability.

Identify **risks or bottlenecks** such as lack of sufficient production capacity of certain components required for on-road charging.

Challenge: As this technology is not yet deployed, components are either:

- off-the-shelf (used for other applications), or
- need to be specially built (production capacity is currently low and no industrial supply chain exists)

Approach: Collect views of component suppliers and other stakeholders on:

- Supply chain issues
- Potential bottlenecks
- Expected level of competition and prices

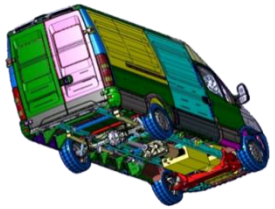
Scope

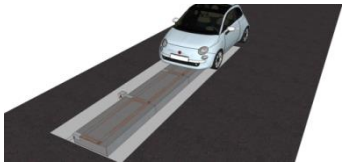
Main focus is on the Italian Wireless Power Transfer solution in FABRIC, as components are known.

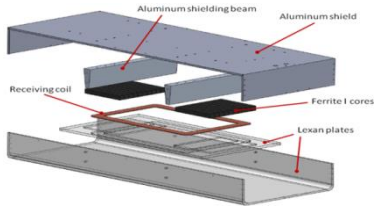
But supply chain issues for other solutions (wireless & conductive) will be included where components are known and can be analysed.

The Politecnico di Torino solution includes the following main elements:

- Transmitter (road)
- Receiver (vehicle)
- DC/DC converter (vehicle)
- Supercaps box (power room)
- AC/DC converter (power room)







Questionnaire

A questionnaire was developed (aimed at component manufacturers) as a basis for discussion, including:

- Which components are manufactured, current production, expected evolution.
- Length of manufacturing process and capacity to cope with different production increases.
- How many suppliers are used for raw materials (or components), their location, their capacities to respond to changes in demand.
- Any components that make use rare earth metals or expensive materials.
- Expected evolution of unit prices.
- Current and expected future level of competition.

Questionnaire issues and responses

Few were able to respond, as the questionnaire dealt with future scenarios and demand that does not currently exist

A key bottleneck identified was the availability of highly qualified engineers:

- Current engineers are fully deployed on static wireless charging.
- The decision to recruit more engineers for further development of dynamic charging will be dependent upon definitive signs that there will be a thriving market for dynamic charging.

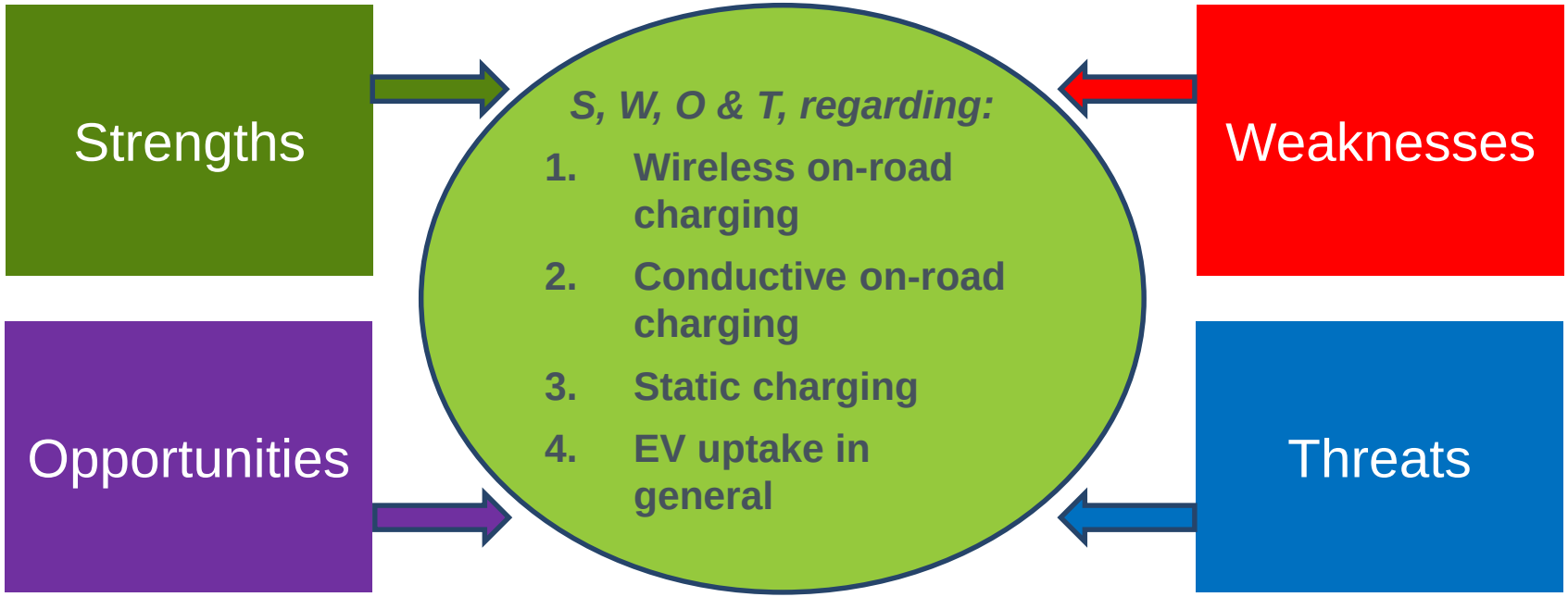
Level of competition currently low, expected to increase to a medium (stable) level by 2020 and one respondent expecting high competition by 2030.

No rare earth or other difficult to obtain materials were identified.

One manufacturer expected:

- DC charging control unit: 50,000 per year, to increase by 200% by 2020
- Wireless charging control unit: 5,000 per year, to increase by 1400% by 2020
- Wireless communication control unit: 5,000 per year, to by 1400% by 2020
- No major supply chain problems were envisaged
- Unit prices were expected to fall by 10-20% by 2020 and by 35-55% by 2030.

Discussion: SWOT



Likelihood of happening:
Low: <40% / Medium: 40-60% / High >60%

Impact:
Low / Medium / High

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Thank you!

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