Defining ERSO
The Electric Road System Operator

Stefan Tongur, RISE
Håkan Sundelin, RISE
ERS Conference 2019 in Frankfurt
Background

• A transition to ERS challenges established
  – System interfaces
  – Actors
  – Funding and business models
Research questions

1. How can the architecture and interfaces of ERSO be described?
2. How could ERSOs role be analysed in a small-scale ERS deployment?
3. How could ERSOs role be analysed in a large-scale ERS deployment?
<table>
<thead>
<tr>
<th>Methodology</th>
<th>Users</th>
<th>Policy actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews, 2018-2019</td>
<td>Sveriges åkerier (2)</td>
<td>Näringsdepartementet (2)</td>
</tr>
<tr>
<td></td>
<td>Transportföretagen</td>
<td>Trafikverket (3)</td>
</tr>
<tr>
<td></td>
<td>Ernst Express</td>
<td>Energimyndigheten</td>
</tr>
<tr>
<td></td>
<td>DB Schenker Concluting</td>
<td>Trafikanaly</td>
</tr>
<tr>
<td></td>
<td>Elektroskandia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Närkefrakt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suppliers</td>
<td>Suppliers</td>
</tr>
<tr>
<td></td>
<td>EON</td>
<td>Ellevio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vattenfall</td>
</tr>
<tr>
<td>Workshops</td>
<td>Trafikverket (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pilot discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blekinge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Örebro</td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>Trafikverket</td>
<td></td>
</tr>
</tbody>
</table>
ERSO (ERS Operator) – the role that connects ERS users with energy supply of the electric road
ERSOs role in small-scale ERS deployment
Who is ERSO?

• suppliers of power transfer technology

• vehicle OEMs offering vehicle as a service (VaaS)

• energy suppliers that offer subscriptions to users and possibly also pick-ups
ERSOs relationship with suppliers?

- Strong relationship with one ER provider and one/two energy providers
- Payment for ERS usage
- Simplified access control and metering
ERSOs relationship with users?

- Important developing relationships with local goods owners
- Collaboration between haulage companies and goods owners
- Ensuring availability of electric supply and attractive services
ERSOs role in large-scale ERS deployment
Who is ERSO?

- ERSOs from different sectors
- Competition on a mature and standardized ERS market
- Differentiation through unique business models
ERSOs relationship with suppliers?

• Relationship with multiple ERS suppliers and owners over different regions
• Standardized contracts and metering systems to allow for roaming
• Facilitating interoperability between different ERS alternatives
ERSOs relationship with users?

- ERSOs compete on a market to attract users, mainly forwarding market
- Focused on multimodal transportation
- Integration with other disruptive technologies such as autonomous transportation
Implications

• The role of ERSO will evolve with different 1G, 2G, 3G etc.
• Policy makers need to create conditions for investments in infrastructure and in ERS adapted vehicles
• Standardized interfaces and fees could enable ERSO competition and freedom for users to choose
Innovative business model could facilitate ERS market

E-Commerce / Marketplace
- Amazon
- Zappos
- zalando

On-Demand
- Uber
- Lyft
- Airbnb
- Etsy

Subscription-Based
- Netflix
- Salesforce

Free - Freemium Model
- Mailchimp
- Dropbox
- Spotify

Hidden Revenue Generation
- Google
- Facebook

Peer-To-Peer, two-sided Marketplace
- HyreCar
- Uber
- LinkedIn

Ad-Supported
- Google
- Facebook
- Twitter
- Quora

Open Source Model
- GitHub
- Red Hat
CONTACTS

Stefan Tongur
stefan.tongur@ri.se
+46 704 182 065
SHIFT – Sustainable Horizons for Transport

Håkan Sundelin
Hakan.Sundelin@ri.se
+46 730 278 493
CollERS – German and Swedish collaboration on ERS

RISE Research Institutes of Sweden
Viktoria
Electromobility