

**EV Forum**

**“EV Stakeholders Meeting”**

April 28, 2017

## **Morning session**

1. Summary (30 minutes)
2. Partnership Priority (1 hour): What? and Why?
3. Organizational Arrangement (1 hour): Who? and Where?

## **Afternoon session**

4. Action Plan (1 hour) : How to overcome bottlenecks and how to create critical mass to continue?
5. Milestone (1 hour): When?
6. Wrap-up (15 minutes)

# Partnership Priority

Partnership proposed	Rationale
Software and ICT solutions for electricity charging billing system linked to energy management	Essential for network management capacity, commercial locally and globally
Dynamic and inductive charging system for public transport in EECi and smart city	As a competitive advantage for mega city like BKK.
Collaborative R&D projects for EV parts: Electric drive and battery system customized for E-Tuk Tuk, E-motorbike, E-bus	
Conversion from combustion engine to electrical engine for short distance logistics in local community	Can be achieved in a short time, sample for collaboration platform
Battery recycling management, recovery businesses	Inevitable

# Potential stakeholders

	Thailand	Germany and Fraunhofer
Software and ICT solutions for electricity charging billing system linked to energy management	<ul style="list-style-type: none"> <li>• Software companies (Software Park), Telecom firms</li> <li>• Research institutes: NECTEC, Drive Center</li> <li>• Regulatory bodies: MEA (billing), ETDA (data security)</li> </ul>	<ul style="list-style-type: none"> <li>• Architecture &amp; specifications: IFF</li> <li>• Software Tec &amp; Communication: FOKUS, IAO</li> </ul>
Dynamic and inductive charging system for public transport in EECi and smart city	<ul style="list-style-type: none"> <li>• Road construction: BMA</li> <li>• Inverter companies: Delta, ABB, FORTH</li> <li>• Energy provider: EGAT</li> <li>• Energy management companies: MEA, PEA</li> <li>• Auto manufacturers: TEV, Golden Buffalo</li> <li>• charging system companies: Schneider, PTT</li> <li>• Research and HR: NECTEC, Universities</li> <li>• Ministries for EECi and smart cities</li> </ul>	<ul style="list-style-type: none"> <li>• IFAM (car)</li> <li>• IFF (electric integration)</li> <li>• IVI (bus)</li> </ul>
Collaborative R&D projects for EV parts: Electric drive and battery system customized for E-Tuk Tuk, E-motorbike, E-bus	<ul style="list-style-type: none"> <li>• Auto part suppliers,</li> <li>• universities,</li> <li>• Drive Center, TAI, EVAT</li> </ul>	<ul style="list-style-type: none"> <li>• Electric Drive System: IFAM, Power electronics / inverter : IISB</li> <li>• Fraunhofer battery alliance</li> </ul>
Conversion from combustion engine to electrical engine for short distance logistics in local community		
Battery recycling management, recovery businesses		

# Proposed organizational arrangement

- With benchmarking of Fraunhofer collaboration center experiences, Fraunhofer proposed Thai/German EV Project Excellence Center.
- The center is conceptually an international public and private partnership institution, for which government, private companies (large and SMEs) and public institutes from both sides are requested to participate in the whole process of institution building and management, project selection and implementation (including commercialization).
- As it takes long time, a few pilot projects are recommended to be designed and implemented as demonstration.

# Bottlenecks/challenges and strategies

Bottlenecks/ Challenges	strategies
Same NSTDA?	Mission or project-based oriented to overcome fragmentation and to decrease uncertainty and complexity, and to generate common goal and strategies for Thai context
Participation of large and technology companies?	Policy alignment of short, mid and long term with private company diversification strategies
Government commitment	As you do vs. As we propose Consensus among Thai public and private sectors
Coordinated implementation	Industry consortium in partnership with Fraunhofer
No clear goal defined	Concrete goal measured in quantitative

# Milestone

- Q2 and 3 2017 TFT creation to build domestic partnership and to draft proposal of the collaborative center and pilot projects, linked with high-impact program and to articulate demand policy and tax incentives esp for battery (current 40%)
- Q3 2017 Fraunhofer Partnership development trip to Germany, linked with automotive fair visit
- Q4 2017 two to three joint pilot projects launched
- 2018 Center established including battery lab
- 2019 Project implementation