



# **National Mission for Electric Mobility**

## **Technology Platform**

**Road is the biggest infrastructure; it can become intelligent – sense & communicate. Calm Traffic.**



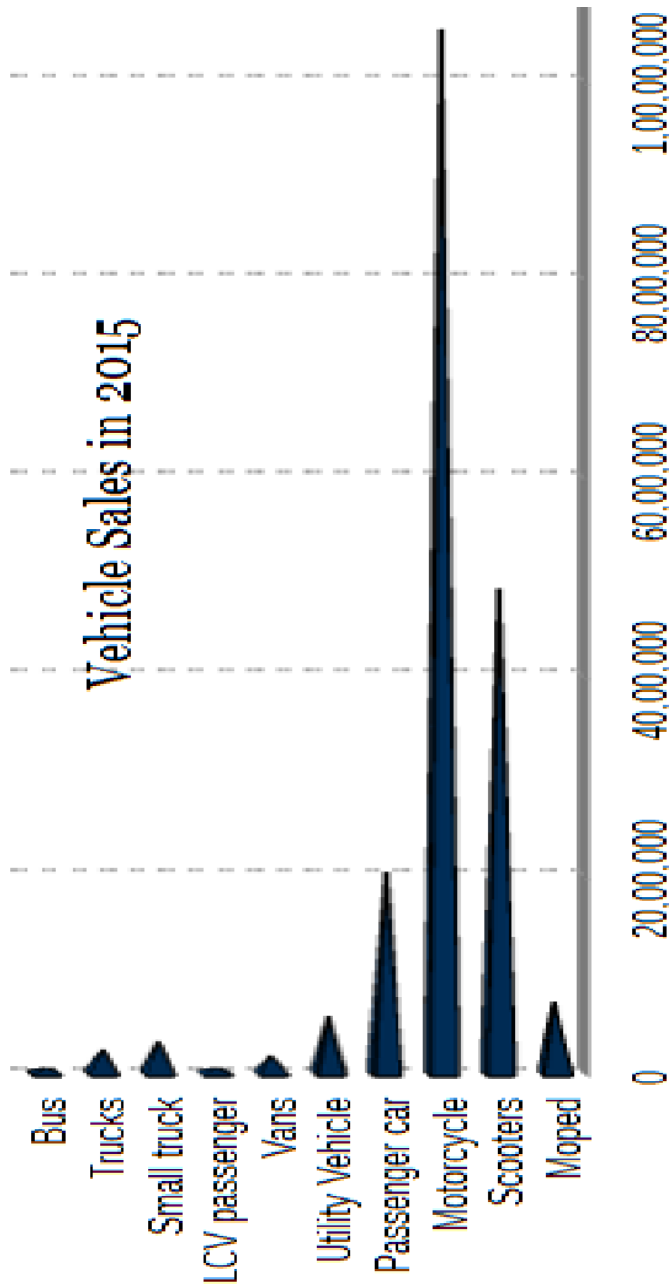
# Congestion & pollution are related; but need not any longer



# Electric Mobility is difficult in rural areas but is good for hills.

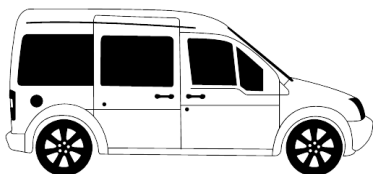
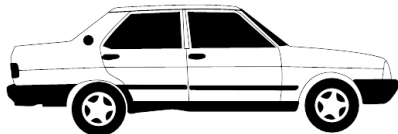
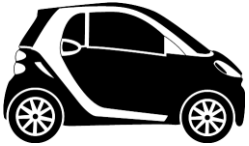


# DHI-DST Technology Platform for Electric Mobility

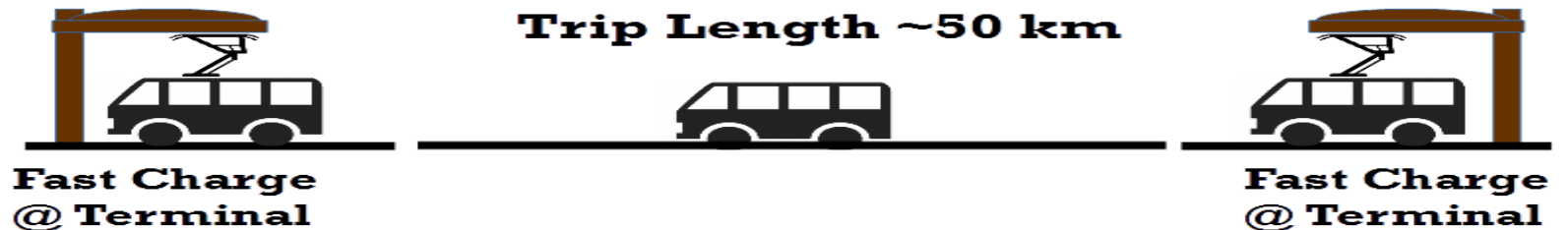


- Inter-ministerial Technology Platform for Electric Mobility
  - ~20% of funds of National Mission for Electric Mobility is for Technology Development
- Program outsourced to DST by DHI ~5 years
  - Public-Private Partnership in R&D
  - Industry led Technology Projects, co-shared funds
  - Three Technology Readiness Levels to achieve
  - Innovation Program for Excellence

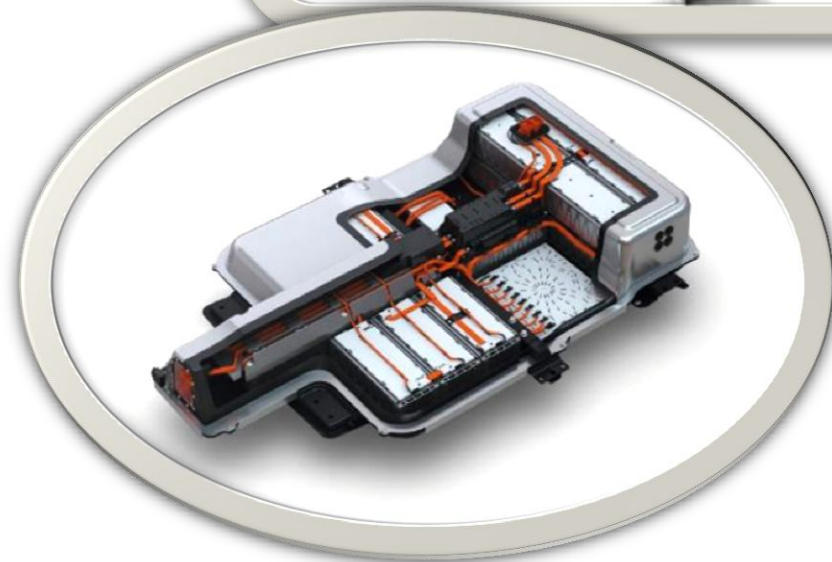
# Reference Vehicles under TPEM



	2W	3W	Small Car	Sedan	Mini Bus	Full Bus
Weight	100-150 kg	400-600 kg	1-1.5 Ton	2-3 Ton	5-6 Ton	10-12 Ton
Voltage	Low < 60V			High 300V - 800V		
Power (kW)	2 kW	7 kW	20-60 kW	80-100 kW	50-60 kW	>100 kW
Battery	1-3 kWh	5-10 kWh	10-15 kWh	25-50 kWh		100 kWh
Range	50-100 kms		100-200 kms		50-100 kms	
Slow Charging	AC Low Power, Single Phase			AC High Power Type-2 charger		
Fast Charging	Fast: DC low-voltage			Fast: DC high-voltage		

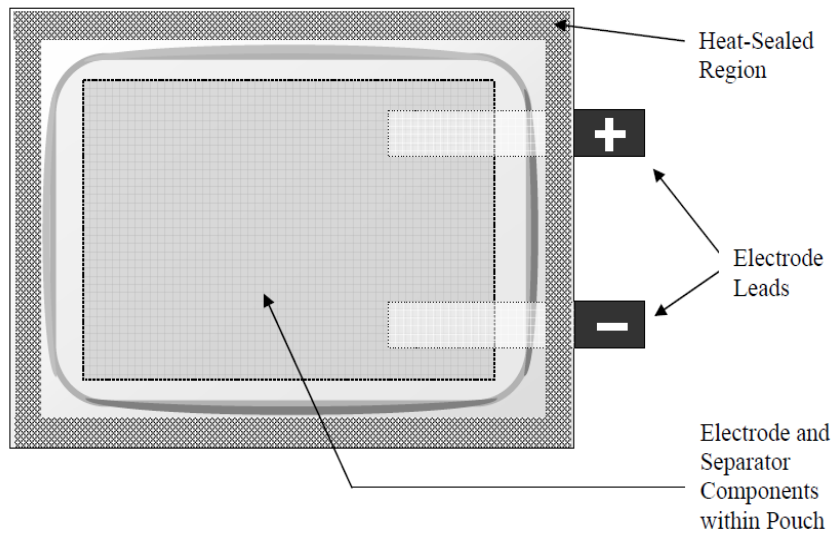


# Battery – how can we get the best? Make in India?

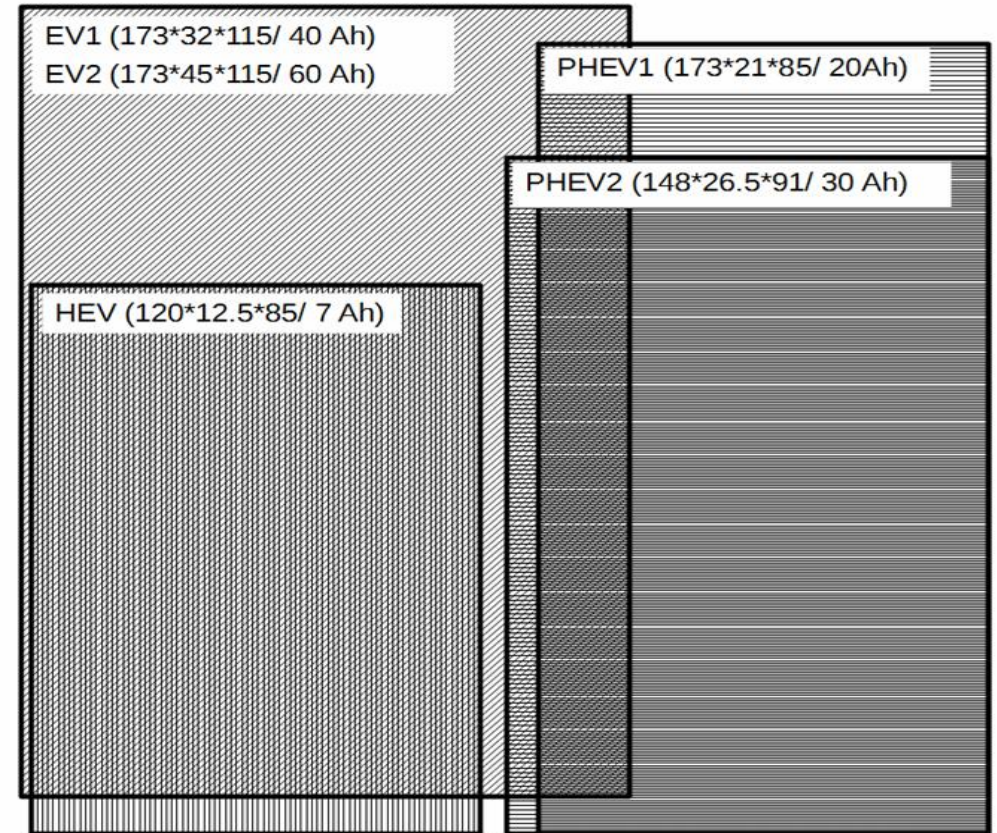


# Universal Lithium ion Battery modules ?

1. Light EV (2W / 3W / Quadricycle)
2. Cars, SUVs, Vans
3. Mini Bus, Urban EV Bus



VDA standard	L Mm	T Mm	H mm	Volume dm <sup>3</sup> *	Capacity Ah**
EV1	173	32	115	0,64	40
EV2	173	45	115	0,90	60
PHEV1	173	21	85	0,31	20
PHEV2	148	26,5	91	0,36	30
HEV	120	12,5	85	0,13	7



VDA standard	LTO kWh/dm <sup>3</sup> *	LFP kWh/dm <sup>3</sup> *	NMC kWh/dm <sup>3</sup> *
EV1	0,14	0,19	0,21
EV2	0,15	0,20	0,22
PHEV1	0,15	0,19	0,21
PHEV2	0,19	0,25	0,28
HEV	0,12	0,16	0,18