

OVERVIEW

Comprehensive management (i.e., discharging, charging, temperature and monitoring) of large-scale batteries with the joint consideration of peak power, operation time, and battery lifetime for vehicle electrification



Tesla Model S
7,104 cells;
Capacity : 85 KWH
Battery Cost : \$ 35000

Driving range 426 Km
(Efficiency 5.011 m/wh)

Battery capacity delivery 20% ↑
→ \$ 7,000

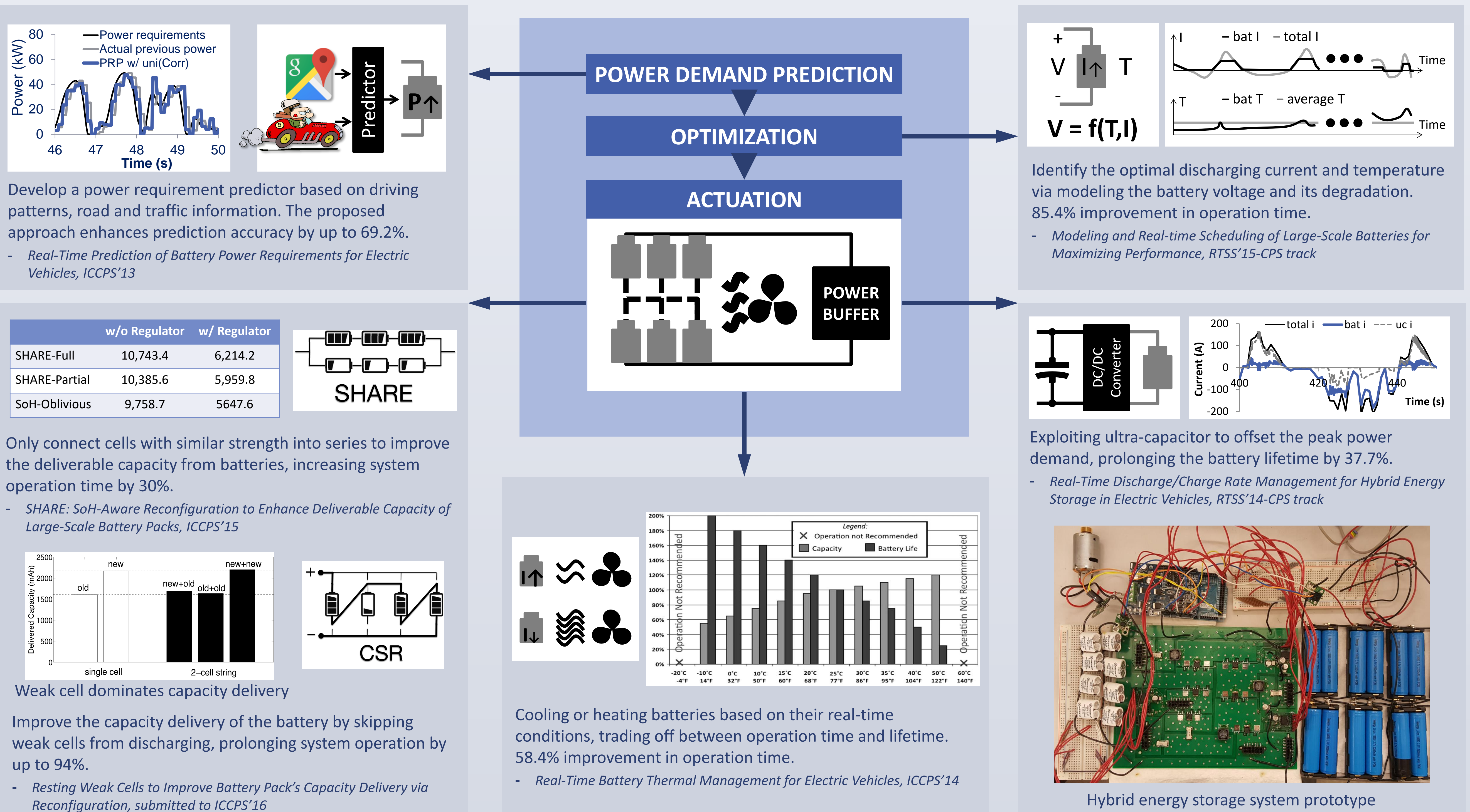
Warranty period 8 year
(70 % of its original capacity)

Battery degradation 30% ↓
→ additional 2.4-year warranty

Max power
278 KW

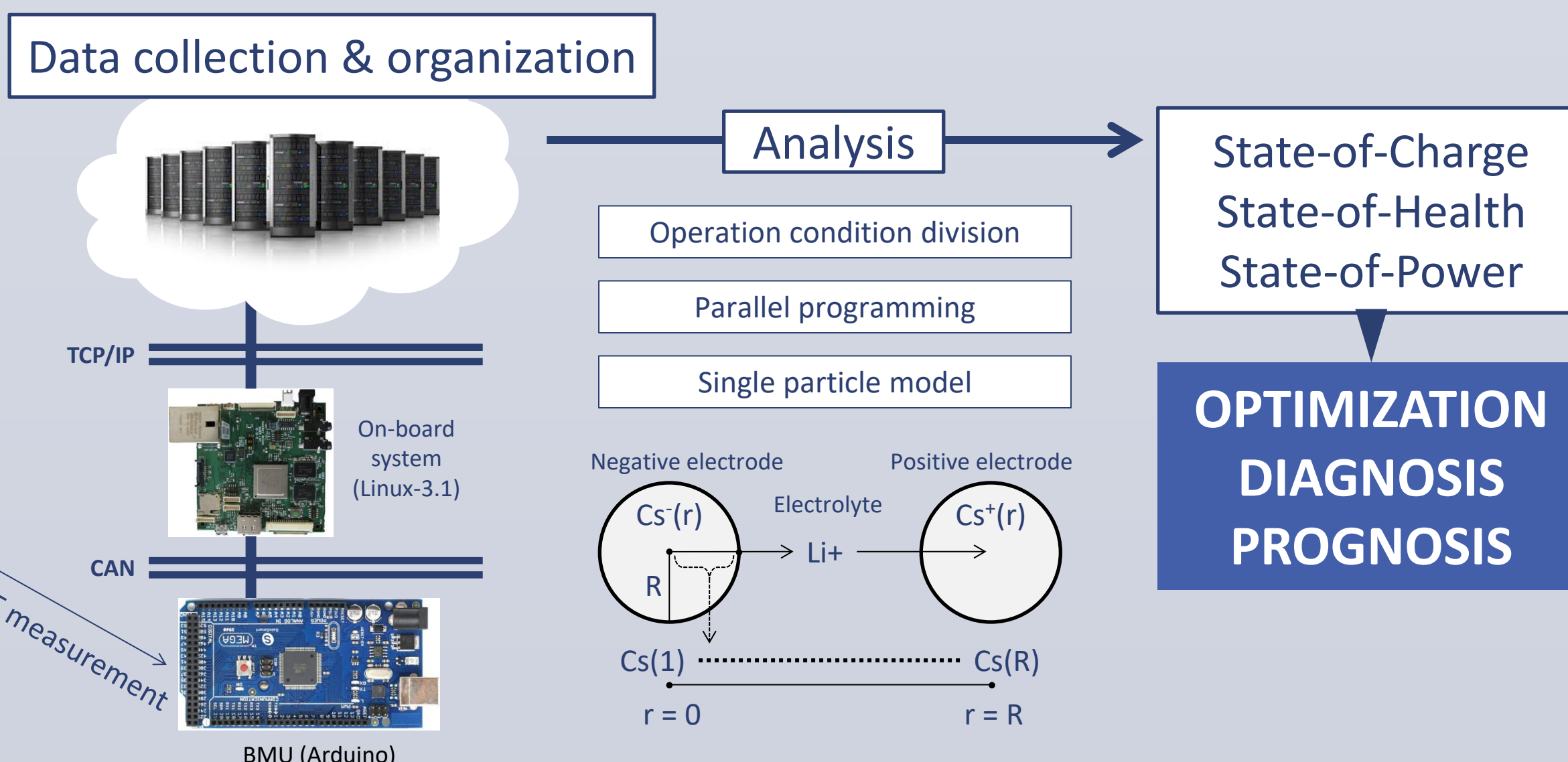
UC (130F 62.1V)
→ Max power ↑ (250 KW)

REAL-TIME ENERGY STORAGE MANAGEMENT SYSTEM



ONGOING WORK

- Remote diagnostics of batteries involves both on-board system and remote service center



Provide an offline power-supply guarantee such that every power-demand operation completes its execution in time while total power demand does not exceed the power capability of the energy storage system at any time
- Offline Guarantee and Online Management of Power Demand and Supply in Cyber-Physical Systems, RTSS'16-CPS track