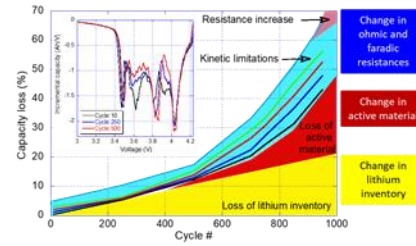


Hawaii Natural Energy Institute Battery activity 2018

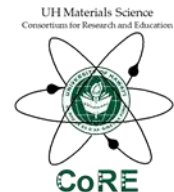
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The complexity of battery diagnosis

Path dependence of the degradation

Traffic



Road type



Driving habits



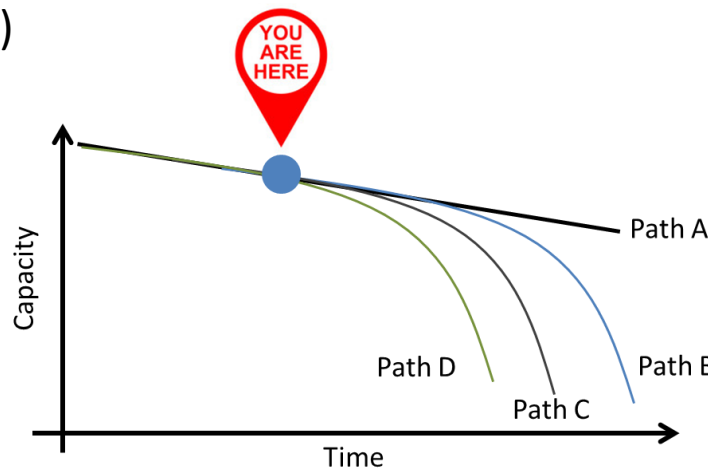
Charging habits



Temperature



Grid ties (V2G / G2V)



Different paths will lead to different degradation

Every battery is different

HNEI developed accurate diagnosis using onboard parameters

HNEI battery activity 2018/2019

Operando Diagnosis and prognosis

Incremental capacity analysis

Mechanistic modeling

Online state of charge and state of health monitoring

New methodologies

BESS modeling

Inhomogeneities inter modules

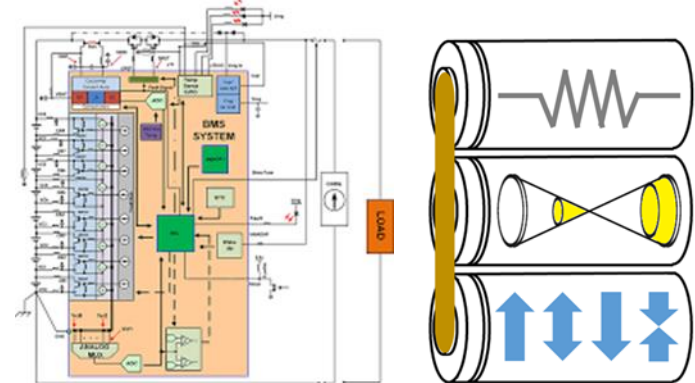
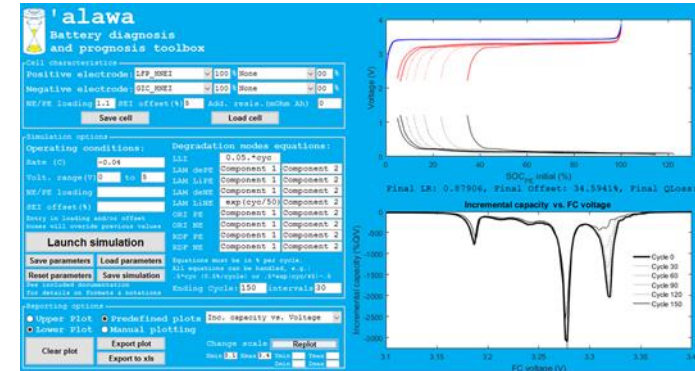
Applications to commercial batteries

BESS

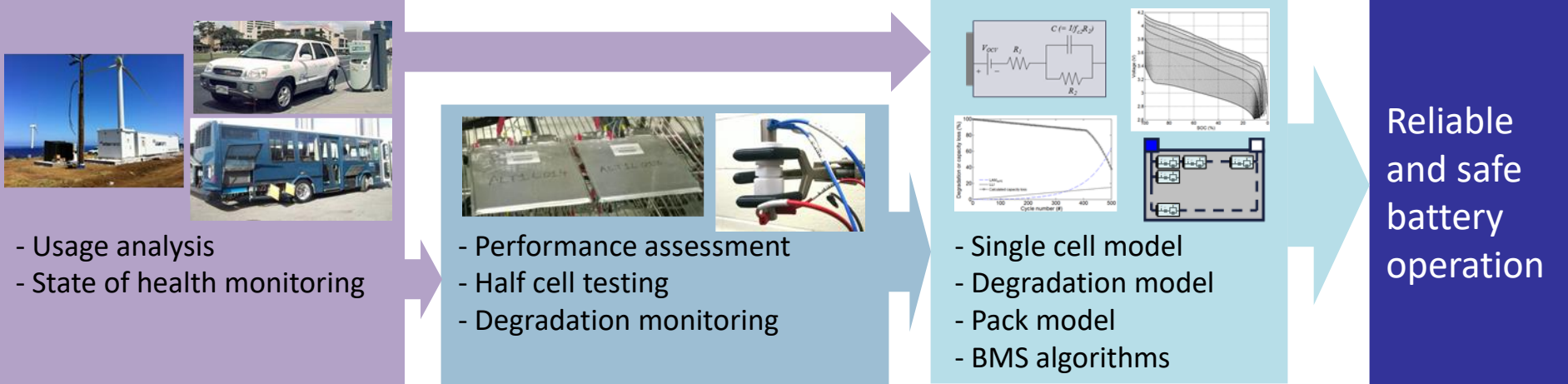
V2X / X2V

Second use (To be started)

Recycling (To be started)



Hawaii Natural Energy Institute Battery activity



Field Testing

Laboratory Testing

Modeling

Reliable and safe battery operation

Funding



Collaborations

