Reliability Science Symposium
Spring 2023
March 22, 2023

calce

Center for Advanced Life Cycle Engineering

Electronic Product and Systems Consortium

FY24 Project Proposals
March 22, 2023

http://www.calce.umd.edu

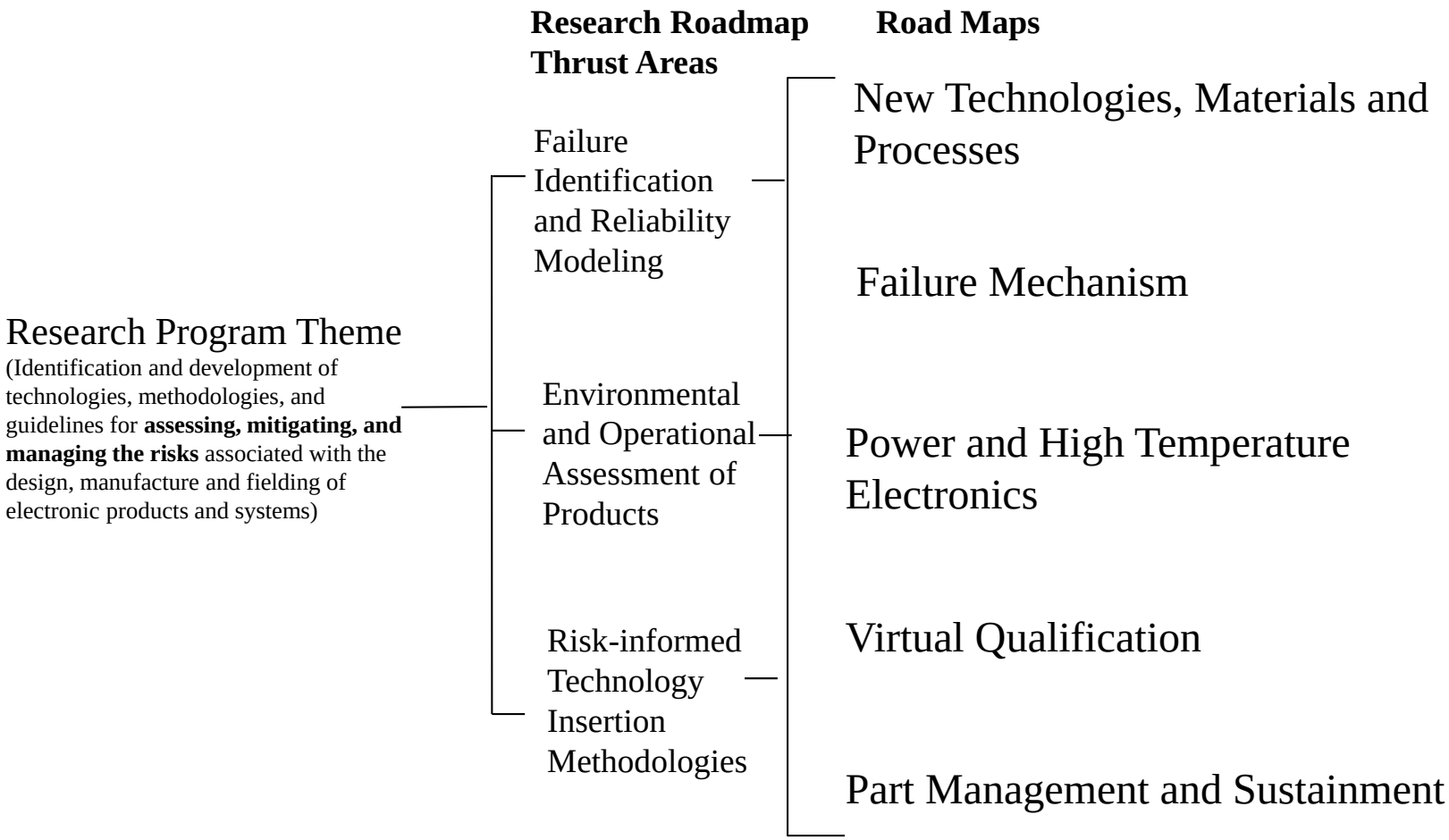
University of Maryland
College Park, MD

CALCE EPS Consortium

The CALCE EPS Consortium provides a forum for ***defining*** fundamental research needs, ***conducting*** research, and ***sharing*** research findings among participating organizations. The research focus for the CALCE EPS Consortium includes risk assessment, mitigation, and management of electronic products and systems. Output from the consortium activities includes

- design and manufacturing methods,
- simulation techniques,
- models,
- experimental methods,
- guidelines,
- instructional information, and
- future engineers and technical leaders.

CALCE EPS Consortium Research Program



FY24 Project Development Schedule

https://web.calce.umd.edu/members/projects/2023

- Provide project ideas to CALCE staff (February)
- Present “Proposals” at CALCE Consortium Spring Planning Meeting
- Solicit and review feedback from interest survey[2] (March)
- Update project proposals on CALCE Web Site (May)
- Send out a “last request” for project comments[3] (July)
- Post projects on website (September)
- Provide “Adopted Projects” for the Fall Planning Meeting (October)

Members may select one project proposal as “Member Critical”
Projects are adopted based on level of interest feedback and “Member Critical” designations.

FY24 Project Proposals

https://web.calce.umd.edu/symposiums/RS/2023/Spring/proposals/

P24-M1: 3D Printed Power Packaging for Harsh Environment Electronics
P24-M2: Machine Learning for Robust and Reliable Power Electronic Systems
P24-A1: Effect of Aging and Recrystallization on Performance of Oligocrystalline SAC Solder Joints
P24-A2: Paint Delamination and Scratch Resilience for Electronic Products
P24-D1 Evaluation of long-term stored components for manufacturability and reliability
P24-D2 Assessment of compromised component supply chain
P24-D3 Uprating tools for selected component types
P24-D4 Simulation platform for component reliability assessment
P24-Z1: Evaluation of Multilayer Ceramic Capacitors (MLCCs) for Use with Ripple Current (Continuation of C23-19)
P24-Z2: Fretting Wear and Lubrication of Polymer/Metal Contacts (Continuation of C23-22)
P24-Z3: Development of a PHM Methodology for Printed Circuit Board Assemblies
P24-P1: Swelling Behavior in Lithium-ion Cells
P24-P2: Development of Derating Guidelines for Lithium Ion Batteries
P24-P3: Thermal Runaway of Lithium-Ion Batteries
P24-P4: Observing How Dendrites Penetrate Separators in Li-Batteries
P24-O1: Reliability of Lead-free High-Performance Solder Interconnects
P24-O2: Reliability of Low Temperature (i.e. BiSn) Solder Interconnects
P24-O3: Mechanical Loading of 3rd Generation Lead-free Solder Interconnects