

# System Architecture Process and Modeling in the Development of an Innovative Battery System

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**Abstract.** A prototype Aluminum-air battery system was developed for exploration of the use of the technology in future electric vehicles. A system engineering process was applied to architecture the system that included hazard analysis and the application of the resulting safety constraints. The system development was also modeled in SysML up to handoff to the component domain specific developments. This article describes the broad lines of the development direction and choices and the accompanying modeling. The modeling approach can permit gains for reuse in subsequent projects, and can also aid the quick communication of the choices that were made in case new needs call them in question. We show how heterogeneous external models can be constructed around a central SysML model.