Optimization of scala**B**le r**E**altime mode**L**s and funct**I**onal testing for e-drive **C**oncept**S**

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Publishable Executive Summary

The HV battery forms a key component of the electric powertrain. Testing and development of the battery is a time consuming process and needs about 2 to 5 years from concept to production phase. Accelerating this development process would therefore quicken the production of the vehicle. Adoption of model-based battery development methods reduces the effort and time and consequently increases efficiency of battery production.

The document provides a detailed description of three industrial prospective uses cases from Tier 1 supplier and research institutes defined as the reference use cases of cluster 3 "Battery design and testing for improved safety and reliability". Main purpose of this cluster 3 is the improvement of safety by taking the electrical and the mechanical reliability into account. This cluster targets to reach within objectives of OBELICS: increased safety of battery system by a factor of 10 and reduction in development and testing efforts for battery systems by 40%.

This cluster supports the development of methods to increase the safety from cell level to pack level, especially from an industrial point of view. The demonstration of the methods to a certain use case will help to understand the application and will support the development the next generation of batteries for electrified passenger cars.