

## **Assessment of the implementation of the EFL time-randomised cache in the NGMP architecture**

The increasing performance need in critical real-time systems leads to difficulties to estimate the Worst-Case Execution Time (WCET) of complex software running on high performance (complex) hardware. Measurement-Based Probabilistic Timing Analysis (MBPTA) offers an industrially-viable alternative to tackle this challenge, but it relies on hardware exhibiting specific properties. Industrial prototypes based on the LEON architecture with those properties have been shown to be implementable in practice, but so far they do not include solutions to enable the use of shared (non-partitioned) L2 caches, which have otherwise been proven compatible with MBPTA on performance simulators. In this study, an implementation of a shared (non-partitioned) L2 cache compatible with WCET estimation for critical real-time systems, commonly referred to as the Eviction Frequency Limiting technique, is realised. In particular we describe the modules and interfaces needed for its successful implementation in the NGMP architecture, as well as the results of the experimental validation of this platform via benchmarking.