



MORPHEUS

Abstract of D5.5.2: Phase 2 specification of application test case subset

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In the next sections, we provide details concerning the specification of the four case studies that will be used as testing vehicle for the final MORPHEUS platform and the associated toolset. Based on the experience gained from the implementation on COTS platforms during phase 1, the end users of the MORPHEUS consortium have selected appropriate subsets of their application in order to take advantage of the MORPHEUS state of the art technology.

For ICOM's case study, the functionality targeted in phase 2 of the MORPHEUS project focuses on a part of the physical layer of IEEE 802.16j standard. During phase 2, ICOM will simulate on MORPHEUS simulator a number of blocks in the Mobile Station receiver chain front-end. The blocks of interest are the components handling continuous stream of complex time-domain data.

Details are provided in section 3. Regarding the case study of ALU/TUC in phase 2, besides a summarization of the implementation done in phase 1, the specification of the network routing application for phase two has been described in a first approach. Further details will be worked out in the upcoming months. Challenges like the limited area of the 4K embedded FPGA macro have been addressed. While most parts of the phase 1 demonstrator have already been synthesized for the macro, some parts being specifically needed in phase 2 are still under development. The parts being used in phase 2 are the Ethernet MAC, the loop function and the filter function. The storing of the received configuration data, the software controlling the entire process, the CRC32 calculation for the configurations stream and the reconfiguration mechanism will be adapted towards the options being offered by MORPHEUS platform.

In phase 2, TOSA intends to simulate the MORPHEUS phase 1 motion detection test case application on the MORPHEUS chip simulator using the MORPHEUS toolset, and to take detailed measurements in order to assess the performance of the final MORPHEUS chip against the COTS based implementation. The selected subset of phase1 test case is composed of the whole motion detection algorithm adapted to the processing of two images instead of video processing. This small adjustment allows being very close to the phase1 implementation and allows comparisons with phase1 implementation. Additional details regarding TOSA's case study are provided in section 5.

Finally, the professional film/video application provided by DTO and TUBS for the 2nd phase of the project is described, motivated, and characterized. The selected application implements typical algorithms for video and picture processing as Motion Estimation / Compensation and Direct Wavelet Transformation. For this reason this application was chosen as one of the two MORPHEUS applications that finally will be mapped onto the MORPHEUS silicon platform. Further, based on the experiences of the 1st project phase some performance and reconfiguration requirements are specified for the implementation on the MORPHEUS chip.

