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## Improving the efficiency of highly predictable wireless sensor platforms with hybrid scheduling

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### ABSTRACT

We focus on increasing the execution efficiency and flexibility of fully predictable embedded platforms, with direct applications in wireless sensor networks. The proposed technique is a hybrid scheduling mechanism, which combines the high predictability of a non-preemptive cyclic scheduler with the efficiency of a modified version of the Earliest Deadline First algorithm. Implementation details on ARM7-based platforms are provided, along with a case study of real-time wireless communication driver for sensor networks. The experimental results prove that this method achieves the proposed goals: an increased execution efficiency and flexibility while preserving the required real-time predictability of the systems.

### INDEX TERMS

#### • IEEE Terms

Context , Kernel , Prediction algorithms , Processor scheduling , Real-time systems , Scheduling , Wireless communication

#### • Author Keywords

Hard real-time (HRT) , hybrid scheduling , predictability , smart sensors , wireless communication

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