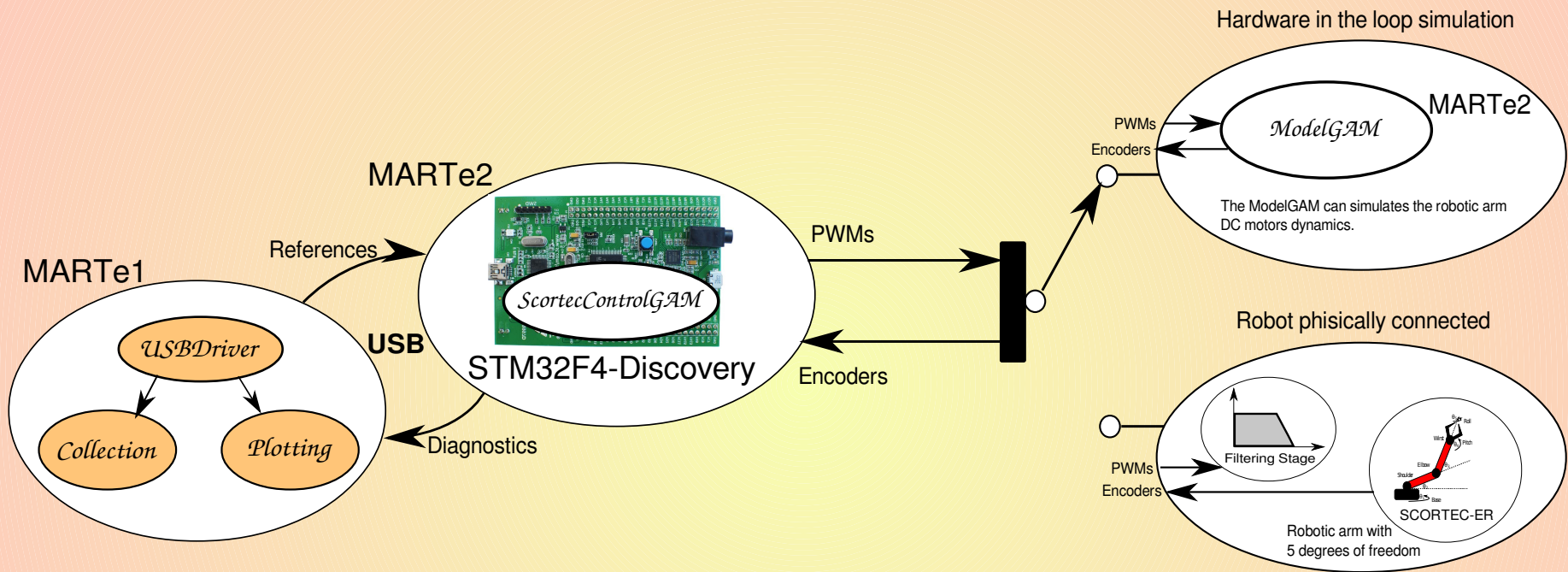


# Embedded implementation of a real-time switching controller on a robotic arm



Two applications have been developed:

- **Application-1:** The ScortecControlGAM is directly linked to the hardware encoder counters and PWM signal sources.
- **Application-2:** Performs a hardware-in-the-loop simulation including a ModelGAM interconnected with the ScortecControlGAM to simulate the robot arm.

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## EMBEDDED IMPLEMENTATION OF A REAL-TIME SWITCHING CONTROLLER ON A ROBOTIC ARM

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The work leading to this publication has been based on a project performed in Fusion for Energy under the Contracts F4E-CP-361-06 and F4E-CP-620-01. This publication reflects the views only of the author, and Fusion for Energy cannot be held responsible for any use which may be made of the information contained therein.



## Poster Session 2

Abstract

System Architecture

Performance Results

Control System and Results

Conclusions

**System Architecture**

Hardware in the loop simulation

Robot physically connected

**System Performance**

**Filtering Stage**

**MARTE2 State Machine**

**DC Motor Control System**

**Home Procedure**

**Input Voltage (mV)**

**Joint Position (encoders)**

**Conclusions**

- FreeRTOS performance figures similar to Bare-Metal.
- Switching proportional controller can improve the transient response performance (less overshoot, higher convergence speed).
- The same infrastructure can be used to develop similar real-time applications using this ecosystem.

Filtering Stage

Home State

Control State