Horizon 2020 Program (2014-2020)

**D2.1**

**Table of Contents**

[1 PRELIMINARY EVALUATIONS ON TECHNOLOGIES, PROTOCOLS AND TOOLS 3](#_Toc129177201)

[1.1 Performance measurement tools in a CPSoS context 3](#_Toc129177202)

[1.1.1 Profiling safety-critical systems 3](#_Toc129177203)

[1.1.2 METrICS architecture 3](#_Toc129177204)

[1.1.3 METrICS intrusiveness 4](#_Toc129177205)

[1.1.4 Profiling Design Space 5](#_Toc129177206)

[1.1.5 METrICS in the TEACHING project 5](#_Toc129177207)

# PRELIMINARY EVALUATIONS ON TECHNOLOGIES, PROTOCOLS AND TOOLS

### METrICS in the TEACHING project

Whereas METrICS has only be used so far for hardware and software characterization using statistical analysis techniques, the TEACHING project is an opportunity to couple METrICS and AI systems to learn the nominal behaviour of applications with regards to the hardware usage, allowing us to detect safety or security issues as deviation towards this nominal behaviour.

Some effort will be dedicated to port METrICS to the specific project hardware board and operating system. The hardware monitor driver being ported to a classical Linux driver to fulfil the correct privilege requirements to configure the PMCs, and the collector partition being tuned into a Linux process that will collect the traces and, during the learning phase, feed them to a potentially external AI systems to perform the learning of a “nominal behaviour”. During the operational phase, the real time trace will feed the embedded AI system that should perform the corresponding inference to detect safety / security anomalies.