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Digital Twins for Cyber-Physical Systems

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In a series of externally funded project we focus on how digital twins can be created from models developed during the engineering of a Cyber-Physical System (CPS), and can be used during its deployment. The digital twin will be calibrated and run with data coming from the sensors of the CPS.

The overall system (including the environment) is evaluated during the development phase by collaborative simulation (co-simulation), that is, by coordinating the simulators specialised in each of the constituent models [2]. The coordination of the simulators is done by an orchestration engine [4].

We mostly use the Functional Mock-up Interface standard, originally developed for the automotive domain [1]. In addition, Machine Learning techniques can be used to approximate dynamical systems as constituent components [3].

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