Use Case Definition

D6.1

Publishable Executive Summary

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1 Publishable Executive Summary

The open and cooperative nature of CPS poses a significant new challenge in assuring dependability. The DEIS project[1] addresses this important and unsolved challenges by developing technologies that form a science of dependable system integration. In the core of these technologies lies the concept of a Digital Dependability Identity (DDI) of a component or system. DDIs are composable and executable in the field facilitating (a) efficient synthesis of component and system dependability information over the supply chain and (b) effective evaluation of this information in-the-field for safe and secure composition of highly distributed and autonomous CPS. This concept shall be deployed and evaluated in different use cases.

Target of this deliverable is the definition of the use cases as well as their rationale and constraints from the perspective of the use-case owners. During the project, four use cases are considered: two for automotive, one for railway domain and one for healthcare.

From the automotive point of view, two separate use cases are analysed: (a) a stand-alone system for intelligent physiological parameter monitoring, focusing on the security aspects of the information generated, and (b) the driver simulator for automated driving functions, focusing on the impact of (cyber-)security threats impacting safety.

The railway use case focuses on the European Train Control System (ETCS): Today, the European railway domain has to cope with the challenging situation of heterogeneous systems of systems with different standards and system qualities (e.g. interoperability between train side and track side systems).

For the medical device domain, the primary goal is to demonstrate how the overall quality of the dependability assurance case will be improved by using the developed novel methods which will provide a better semantic integration of dependability information while allowing developers to work with heterogeneous tools.

Target of the analyses of the use cases is to better understand the constraints of the different use-cases and needs of the use-case owner. This aims for a clearer depiction of the actual situation in the different domains and thus more concrete vision of the requirements the development of a dependability concept and its engineering by the proposed DDI approach and respective tools must satisfy.

The document states the specifics (context, constraints and rationale) of the use cases (Section 'Context of the Use Case'), a description of industrial use cases in which DDIs are used within the DEIS project (Section 'Use Case Description') and opportunities for the usage of DDI in the specific domain use-case (Section 'Opportunities for the use of DDI') which also links to the project requirements stated in Deliverable D2.1 (DEIS Consortium, 2017). Also a first analysis of the impact of DDI usage for the domain use-case and path for exploitation are sketched in the final section of each individual use-case chapter.

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[1] www.deis-project.eu