

## Motivation

Cyber-Physical Systems (CPS) harbour the potential for vast economic and societal impact in domains such as automotive, health care and home automation. At the same time, if these systems fail, they may cause harm and lead to temporary collapse of important infrastructures, with catastrophic consequences for industry and society. Therefore, in order to realise the full economic and social potential of CPS, it is an indispensable prerequisite to assure the dependability of CPS.

The open and cooperative nature of CPS poses a significant new challenge in assuring dependability. The DEIS project will address the challenge by developing technologies that form a science of dependable system integration.

## Project Overview

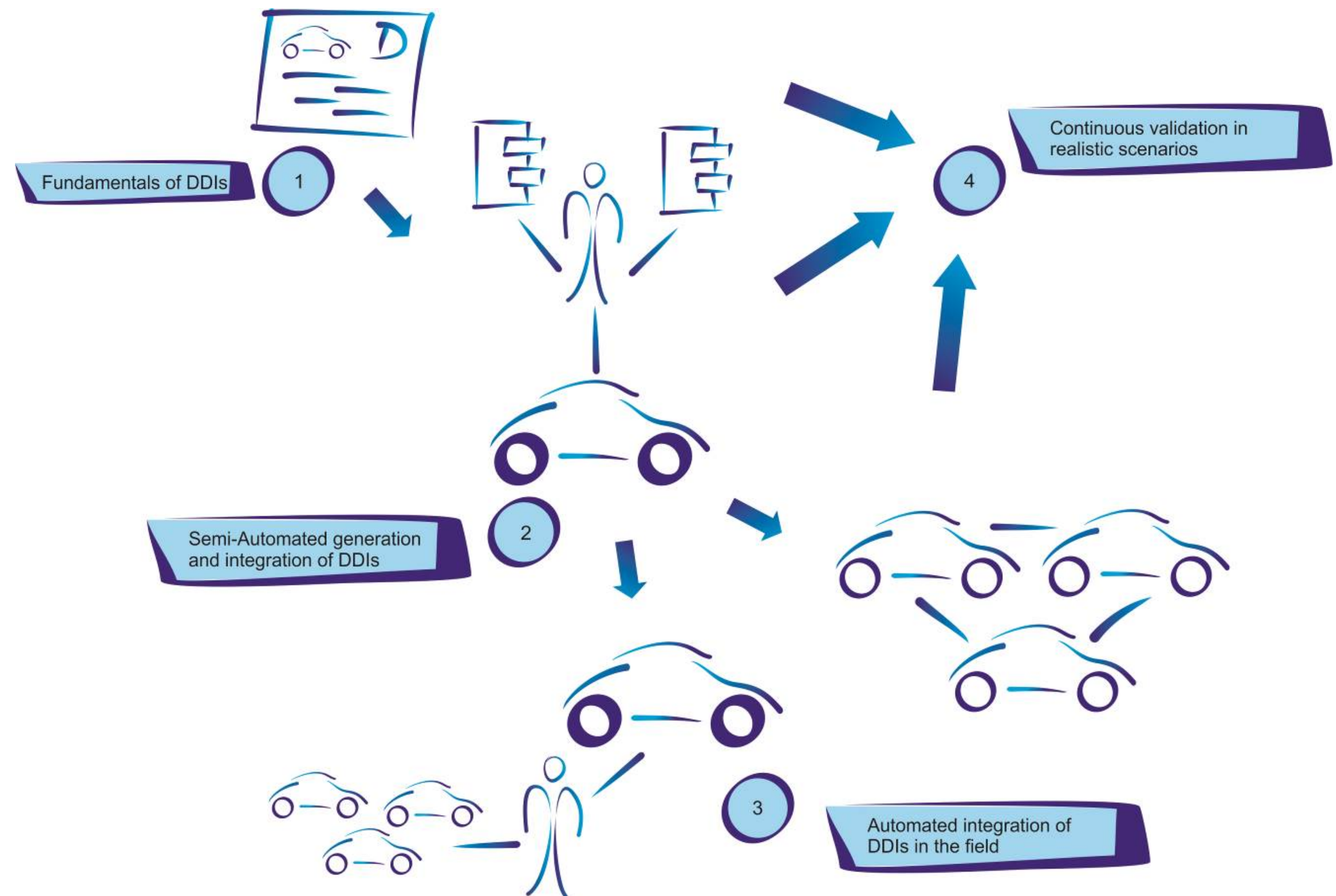
The key innovation in the approach of the DEIS project is the concept of **Digital Dependability Identity (DDI)**. A DDI contains all the information that uniquely describes the dependability characteristics of a CPS or a CPS component. This includes two key aspects: (a) attributes that describe the system/component dependability behaviour, such as faults and possible fault propagations through the CPS architecture, which can be described using concepts from the theory of safety contracts; and (b) requirements on how the component interacts with other entities in a dependable way, described in terms of the level of trust and assurance. A DDI is therefore an evolution of current modular dependability assurance models for systems. It is produced during design, issued when the component is released, and then continuously maintained over the complete lifetime of a component or system.

DDIs are used for the integration of components into systems during development as well as for the dynamic integration of systems into systems of systems in the field. Based on the concept of DDI, the DEIS project seeks to provide a modelling and integration framework that lays the foundation for assuring the dependability of CPS.

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## Project Concept



## Technical Objectives

- An open dependability exchange (ODE) metamodel and a universal format for specifying DDIs;
- A framework for the creation and modular synthesis of DDIs;
- A framework for the in-the-field dependability assurance in CPS;
- Development of autonomous and connected CPS use cases for different application domains, and validation of applicability and scalability of the DDIs.

## Project Identity

- **Project type:** Industrial Leadership - Leadership in enabling and industrial technologies - Information and Communication Technologies (H2020-EU.2.1.1)
- **Total Cost:** €4,889,290
- **Grant No.:** 732242
- **Project start date:** 30/01/2017
- **Project duration:** 36 months

## Consortium

