CIL4Sys engineering

TITLE :
1. Sim4Sys, an agile MBSE process and tooling, to accelerate AR/VR scenarios preparation time * Name of the company and author : **CIL4Sys Engineering, Philippe GICQUEL, CEO** * Address: **34 rue Godot de Mauroy 75009 Paris, France** * e-mail: **philippe.gicquel@cil4sys.com** * Technical theme: **Reduction of the AR/VR scenarios preparation time**

1. Short Description

Philippe Gicquel is the founding CEO of **CIL4Sys Engineering (Customer In the Loop For Systems Engineering)**. Throughout the last 15 years, he introduced **UML modeling in design processes**, for vehicle functional architecture, first in the automotive industry, and later in several other domains.

In early 2000's he experienced the deployment of digital mockup and thought that a **functional digital mockup** would be needed too. Since 2015, CIL4Sys has developed a virtual environment in which the engineers can verify and validate the functional description of systems as early as the project starts. The systems behaviors are described in UML/SysML, **the preparation of operational scenarios just take a few days before the engineers are able to play the systems behavior in the virtual world**.

While designing on-board electronics has raised the complexity level, traditional industries still use textual specifications to design logical behavior of embedded systems. This costs a lot of time and money and is not fully reliable. To move to Model Based Systems Engineering MBSE and to use a functional digital mockup is absolutely necessary.

CIL4Sys offers Sim4Sys, an **agile methodology and toolchain** that proposes an **efficient design of complex systems** using UML/SysML models. The creation of AR/VR scenarios in common tools like Unity requires to invest time in coding the scenarios in these tools. With Sim4Sys, the **code is automatically generated** from the model, which is a great help to **accelerate the scenario preparation**.
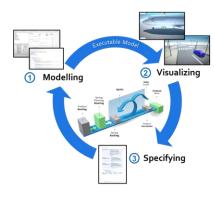
CIL4Sys has also developed an **interface between Sim4Sys Virtual Bench and Unity** that allows to draft virtual scenarios in a 2D environment and automatically get a similar scenario in Unity.

One other interesting property of the proposition is that the **behavior executed** in the **AR/VR** is **consistent with** the **systems design**. The AR/VR scenarios are both a **digital mockup of the future systems** and **test scenarios for the ongoing design**.
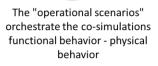
2. Images

FUNCTIONAL DESIGN

① Modelling ② Visualizing

Executable Model

③ Specifying

The documentary view is preserved
for the processes that use it
(purchasing, certification, etc.)

The "operational scenarios"
orchestrate the co-simulations
functional behavior - physical
behavior

PHYSIC DESIGN

The virtual world reacts according
to the designed behavior