Papyrus Use Case Story

" WE CUT THE NUMBER OF SYSTEM ENGINEERS HOURS BY MORE THAN HALF "

[Innovation]

CIL4Sys turned to CEA List to bring the open-source Papyrus UML modeler to its Sim4Sys® systems engineering toolchain.

The Business

Sim4Sys® toolchain(CIL4Sys) brings two software engineering best practices - test-driven development and continuous integration - to system engineers.

The Challenge

Text-based tools cannot effectively address the growing complexity of today's embedded systems. CIL4Sys Engineering was seeking a solution to make its engineers' jobs easier while giving them the tools they need to use the Agile methods of continuous integration and testing.

The Solution

The company customized Papyrus to enforce the use of a strict methodology designed to guarantee efficiency, robustness, and the ability to execute models in a web app where test scenarios can be executed in industry-specific virtual worlds.

The Benefits

CIL4Sys Engineering has cut the number of system engineers hours by more than half and achieved a measurable quality improvement, with less than half the number of bugs at the initial prototype stage. A group of students working with CIL4Sys Engineering recently used Papyrus and Sim4Sys® to prototype an autonomous valet parking solution in just a few weeks.

list cea tech

CIL4Sys engineering

The Business & The Challenge

« The solution had to allow engineers to verify their work immediately and produce designs efficiently. »

The Business

CIL4Sys Engineering leverages a proprietary toolchain solution and third-party methods and technologies to bring its customers substantial improvements in design efficiency.
The company offers consulting services at two stages in the product development lifecycle:
• During the innovation phase: Achieve convergence in the expression of user needs; bring use scenarios to life in virtual worlds; and deliver fast prototyping services, from design to execution.
• During the development phase: Write specifications at all levels of the system (system, subsystems, and components; functional specifications); execute models to continuously test and validate the design.
CIL4Sys Engineering also offers management consulting services, including change management for customers introducing Agile model-based systems engineering into conventional development cycles. Finally, the company sells its proprietary Sim4Sys® toolchain with training, support, and maintenance:
• Modules that enhance engineers efficiency in Papyrus;
• Online access to the simulation tool.
CIL4Sys Engineering is also a partner in innovation and educational projects that help the company to continuously improve Sim4Sys®.

The Challenge

Increasingly, manufactured products contain electronics. And the electronics need software to run. These embedded systems have become pervasive in recent years - and requirements management and design have grown much more complex as a result.
The behavior of the target product is often described using thousands of textual requirements. And, given the level of complexity of today's embedded systems, it is becoming virtually impossible for systems engineers to validate their work effectively. When initial prototypes are integrated and tested, the number of bugs is often overwhelming. And, at this relatively late stage in the product lifecycle, bugs are costly and time-consuming to fix.
CIL4Sys Engineering wanted to bring systems engineers a simple, intuitive solution capable of responding to today's fast-paced product development environment. The solution had to allow engineers to verify their work immediately and produce designs efficiently.

The Solution

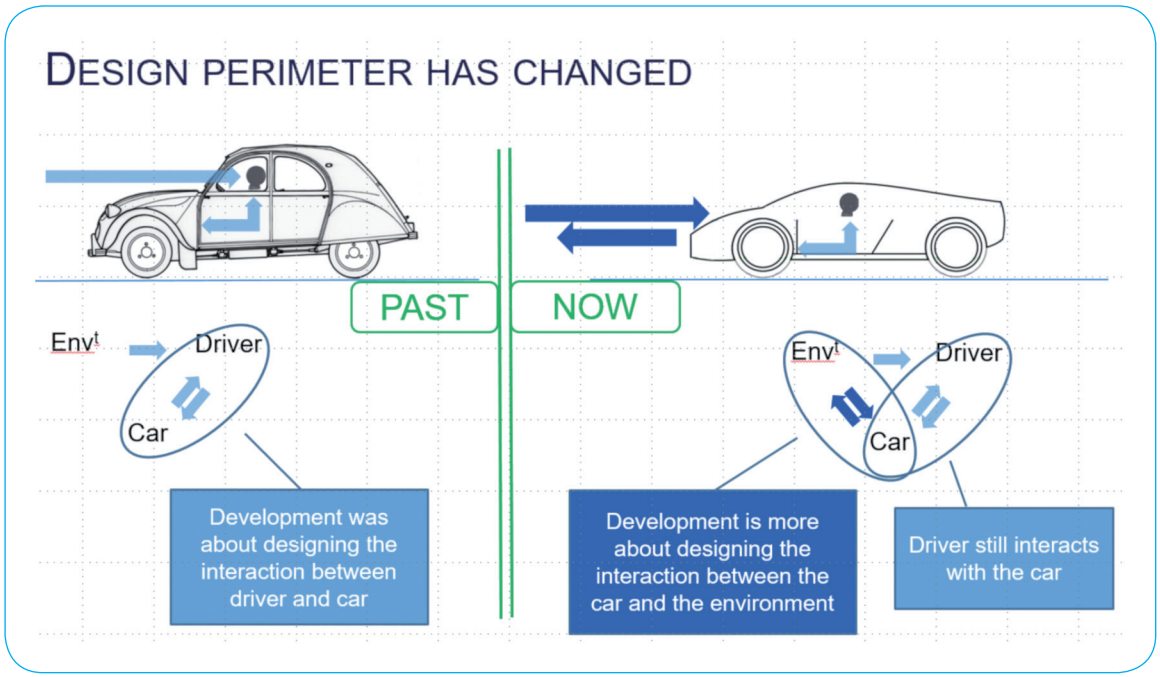
« Speeding up product design and increasing robustness. »

[CIL4Sys Engineering customized Papyrus by simplifying the overviews, including popups and dialog boxes to guide systems engineers through all design processes, and automating operations.]

The Solution

CIL4Sys Engineering created the Sim4Sys® toolchain to address these new challenges and speed up product development. The solution encompasses modelling, simulation, and automated generation of design documents, providing customers with an Agile development framework that speeds up product design and increases robustness.
The company chose Papyrus as the UML/SysML tool in Sim4Sys®, due to the many advantages it offers:
• Rapid development and upgrades to Papyrus;
• Developed in France and supported by the CEA;
• Fast and easy communication with the support team;
• Flexible and configurable to adapt to the company's needs.
CIL4Sys Engineering developed a profile using Papyrus to guide systems engineers through all processes through to simulation. The company customized Papyrus by simplifying the overviews, including popups and dialog boxes to guide systems engineers through all design processes, and automating operations (e.g. automatic generation of a state machine with a set of sequence diagrams).

CIL4Sys Engineering also made the following modifications:
• Code generation from the models (the code generated can be executed in the Sim4Sys® web app to verify and validate the model);
• Automated generation of design documents.



CIL4Sys Engineering • Website: http://cil4sys.com • Type of organization: R&D Center • Domain: Systems engineering • Number of employees: 12

The Benefits

« Less than half the number of bugs at the initial prototype stage. »

The Benefits

As an open source solution, Papyrus is flexible enough to adapt the tool to the target process and methodology to effectively respond to new industry challenges. Papyrus is an excellent tool for transitioning to Agile systems engineering.

The implementation of Papyrus in Sim4Sys®:

- Positions CIL4Sys Engineering to address new customers seeking open source solutions
- Creates an opportunity to offer Sim4Sys® to students for free and to run student hackathons, for example

As Papyrus is a tool in the Eclipse environment, it facilitates integration with other software in the open source constellation, including fast prototyping software. Development efficiency has increased dramatically. CIL4Sys Engineering has cut the number of system engineers hours by more than half and achieved a measurable quality improvement, with less than half the number of bugs at the initial prototype stage. A group of students working with CIL4Sys Engineering recently used Papyrus and Sim4Sys® to prototype an autonomous valet parking solution in just a few weeks.

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