Contribution ID: **55** Type: **not specified**

Python-based, flexible testbench for a spacecraft payload

Friday 23 May 2025 09:00 (25 minutes)

Testing an FPGA design is complex and time consuming. Testing the main payload of an ESA mission spacecraft much more so. While modern HDL languages have powerful test capabilities, they can hardly match the unbounded facilities provided by Python. We have thus devised a flexible, cocotb-based framework for the task, in which JSON files are used both to allow a high degree of configurability, and to have easily-composable test sequences.
The whole testbench revolves around a set of invariants cast in a publisher-subscriber architecture, and is so flexible that performing hardware-in-the-loop tests just required a low-cost hardware interface and some glue logic.
We will share our experience with the different tools adopted and the issues we have encountered in our journey.

Talk's Q&A

During the talk

Talk duration

15'+7'

Will you be able to present in person?

Yes

Authors: DASSATTI, Alberto (HES-SO/HEIG-VD); PETRAGLIO, Enrico (HES-SO/HEIG-VD); RIGAMONTI, Roberto (HES-SO/HEIG-VD)

Presenter: RIGAMONTI, Roberto (HES-SO/HEIG-VD)

Session Classification: Verification

Track Classification: HDL verification and simulation tools