

## ***Support to ESA Flight Computers***

*Presenter: Jorge Lopez (ESA)*

Programming languages have to be compiled to be executed on the microprocessor. The understanding of the level of optimization provided by new compilers is fundamental to generate safe and reliable applications at all levels. Compilers should also be aware of the underlying hardware and generate code that minimizes the effect of unpredictability due to the new features introduced in the new microprocessors.

GNU GCC is the default compiler used for nearly all software development in the European space community these days. However, it has a 25-year old monolithic codebase which presents a very difficult maintenance. Conversely the LLVM compiler is built with a modular-based architecture that makes it very easy to adapt and apply novel techniques to improve compilation in numerous ways.

This presentation introduces the LLVM compiler system and, in particular, the use cases enabled by this new technology.