Automatic code generation in the scope of a model-based development process

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Using a model-based development approach is generally considered as an interesting option for the future of software production in the space industry. There is little practical experience in operational projects, but a lot of preparation work has been done on this field in the recent years. GNC teams have shown that at subsystem level, it was possible to model and simulate extensively control laws, and then generate the code for integration in on-board software. Software teams are on their side developing new engineering frameworks that are capable of supporting a complete software-system development lifecycle, including modelling, verification and code generation starting from the early system definitions. This paper presents the state of the art in this area, the tools that are developed and evaluated, and most important the process that is put in place to make sure that actors and roles are well defined, and that there is consistency all along the lifecycle.