Functional Modelling of Embedded Systems with OSRA and TASTE

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Outline

1. Quick introduction to TASTE
2. Demo
3. The SAVOIR Onboard Software Reference Architecture (OSRA) and TASTE foundations
4. Modelling and working with a PUS-C execution platform

Quick intro to TASTE and functional modelling

GOALS

Simplify the development and **improve the quality of software** using

- **Mature** modelling languages
- Tools to ensure **correctness by construction**
- **Free** and open-source software

Make software engineering better integrated into System activities

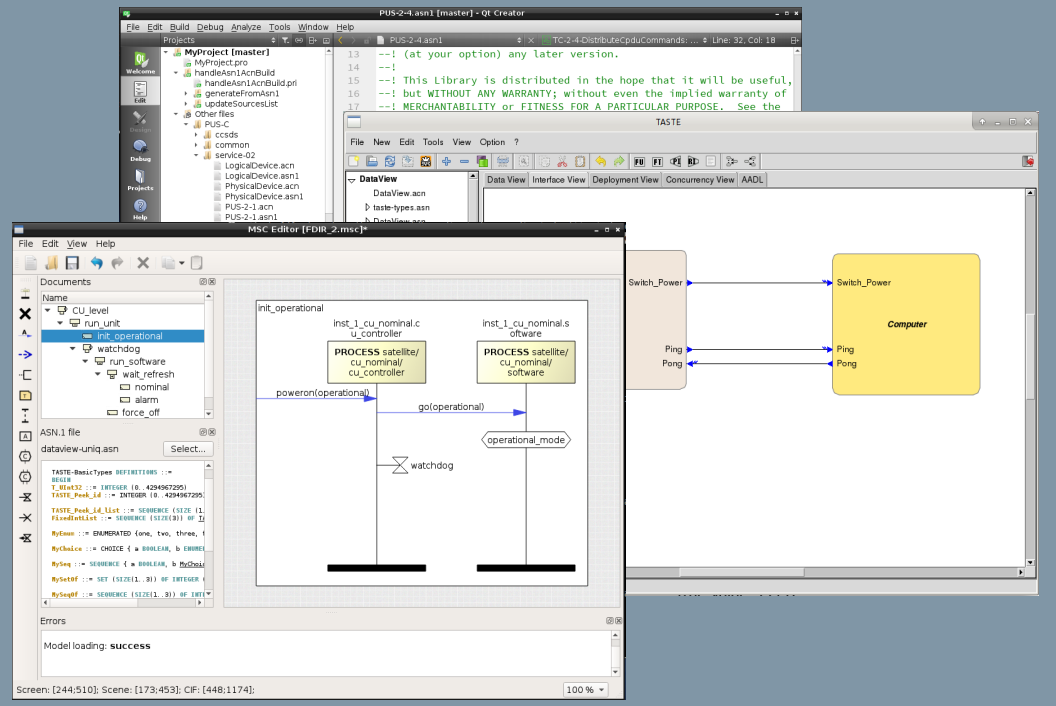
TARGETS

Real-time, distributed embedded systems (flight and ground)

Cover the complete development lifecycle

SPECIFICATION

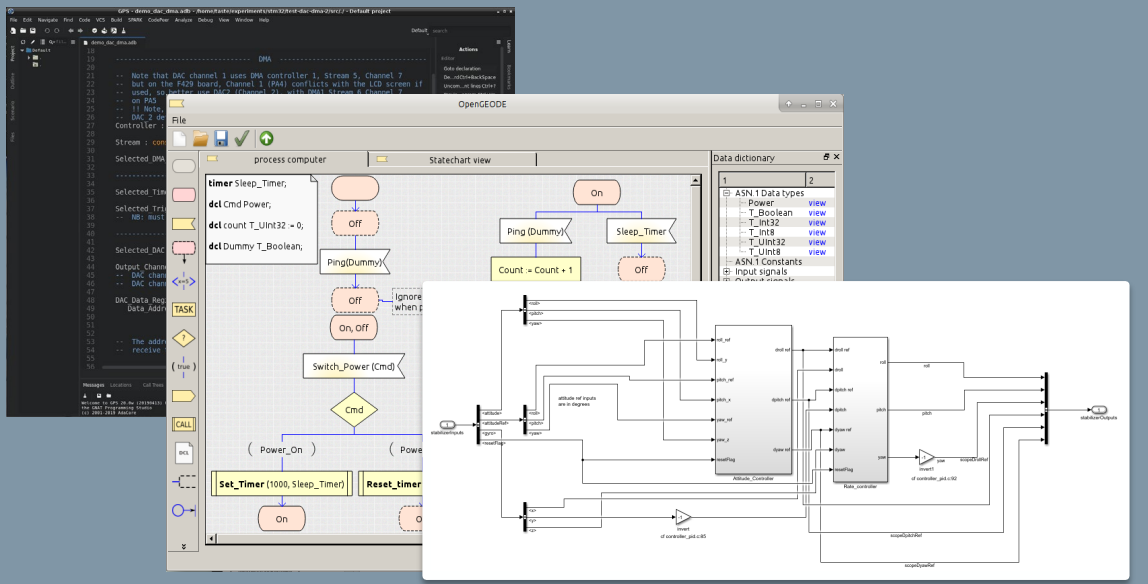
Architecture – Data - Dynamics



DESIGN AND CODE

Mix models with code

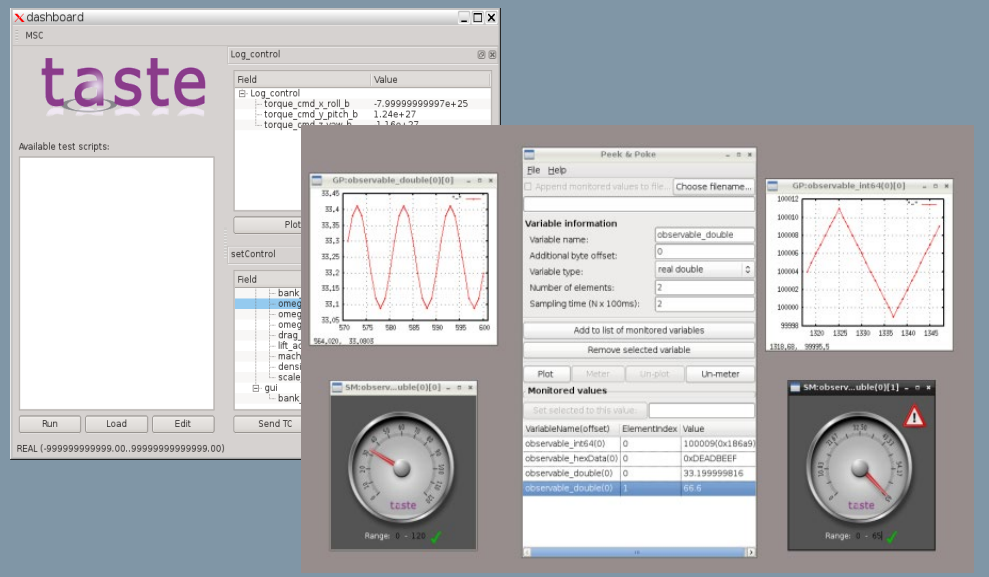
C, C++, Ada, Simulink, SDL, VHDL



Verification, deployment and documentation

SIMULATION AND TESTING

...As early as possible...

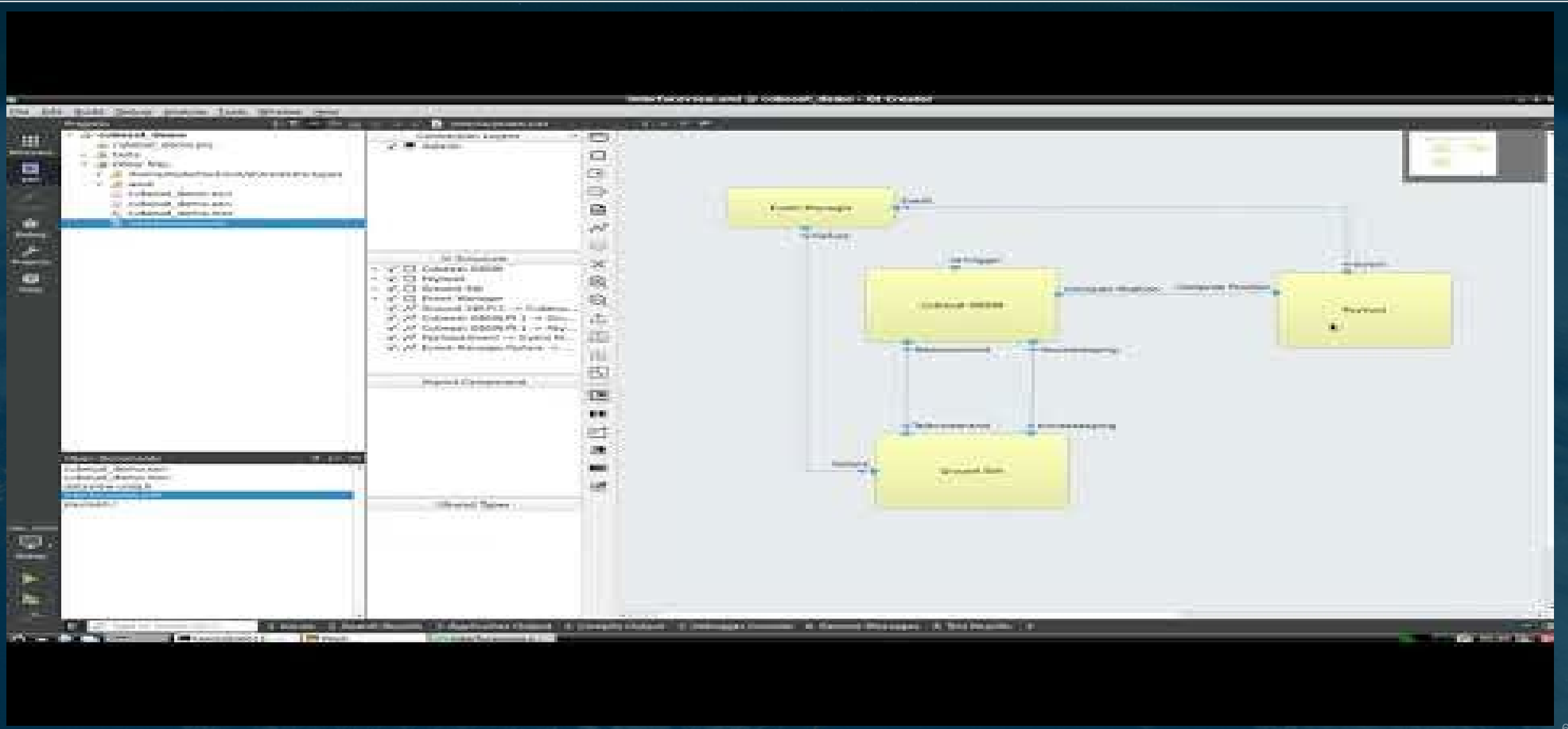


GENERATION OF CODE, TESTS, AND DOCUMENTATION

On Proba-3, 300 pages of ICD:

BSW-TM-SourceData (CHOICE)					Min: 0 bytes	Max: 1030 bytes
List representing all possible data structures contained by TM. Only single item from this list can be present in TM at once. Present item is determined by reporting service type and sub-type.						
No	ACN Parameters			Type		
1	type			UInt8		
2	subType			UInt8		
No	Field	Comment	Present	Type	Min Bits	Max Bits
1	ackSuccess	Data in PUS(1,1) report - Telecommand Acceptance Report - Success.	type=1 AND subType=1	TM-PUS-1-1-AckSuccess	32	32
2	ackFailure	Data in PUS(1,2) report - Telecommand Acceptance Report - Failure.	type=1 AND subType=2	TM-PUS-1-2-AckFailure	40	40
…	…	…	…	…	…	…
11	connectionReport	Data in PUS(17,2) report - Link Connection Report.	type=17 AND subType=2	TM-PUS-17-2-LinkConnectionReport	0	0

Demonstration (video)



Conclusion & Contact

https://taste.tools