ASN.1/ACN modelling tools IDE

Contractor(s): N7 Space (PL), WUT (PL), Spacebel (BE)				ESA Budget:	172 k€
				Co-funded Budget:	N/A
Programme & Reference			YoC: 2018	TO: M. Perrotin	
TRL	Initial: 2	Current: 5	Target TRL: 6 Date: Q2 2019		

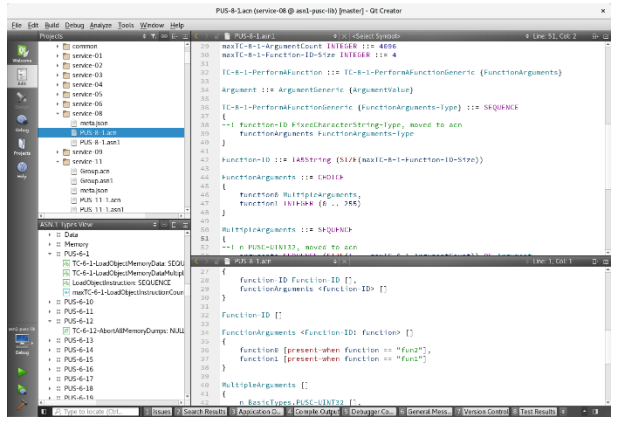
Background and justification:
Proper modelling and description of data exchange between complex systems is one of the keys to a good design. Especially when different systems are manufactured by different companies, which is a common case in the space industry. ESA provides ASN.1 asn1scc compiler as part of TASTE technology demonstrator that allows to create high level TC/TM models, which can be used to create consistent Interface Control Documents, flight software, and testing tools.

Objective(s):
Develop Integrated Development Environment (IDE) supporting edition of ASN.1/ACN models.
Create ASN.1/ACN models of ECSS PUS-C standard and integrate it with IDE to simplify future models reuse.
Perform dependability evaluation of asn1scc.

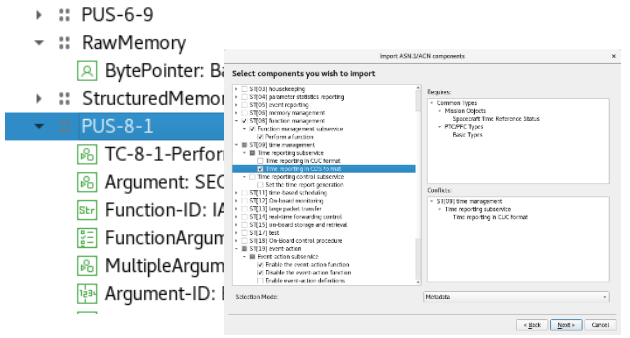
Achievements and status:
IDE was created as a plugin to Qt Creator – existing C/C++ oriented tool. It integrates with asn1scc V4.
PUS-C Library was prepared and provides users with highly customizable ASN.1/ACN components, easily for reuse.
Proof-of-concept of a fuzzer application was prepared to show additional potential of ASN.1/ACN modelling.
Dependability and security report of asn1scc was prepared and provided to compiler's team, helping future development.
All tools were released and made public on GitHub, including source code, contributing to community-building process.

Benefits:
User-friendly and freely available IDE should not only benefit existing ASN.1/ACN users, but also help extend popularity of ASN.1/ACN data modelling and asn1scc compiler.
PUS-C library can lower costs of future missions development by code and models reuse. It also can help in popularization of the new ECSS standard (version C).

Next steps:
Tools were made public and are now available to community for review. During warranty period potential bugs reported by users will be fixed, and by the end of Q2 2019 tools should be considered stable. IDE could be further enhanced with new features, depending on reported user experience and new contracts. ESA can integrate tools into TASTE as required.



Qt Creator with ASN.1/ACN Plugin



PUS-C library in Qt Creator Plugin