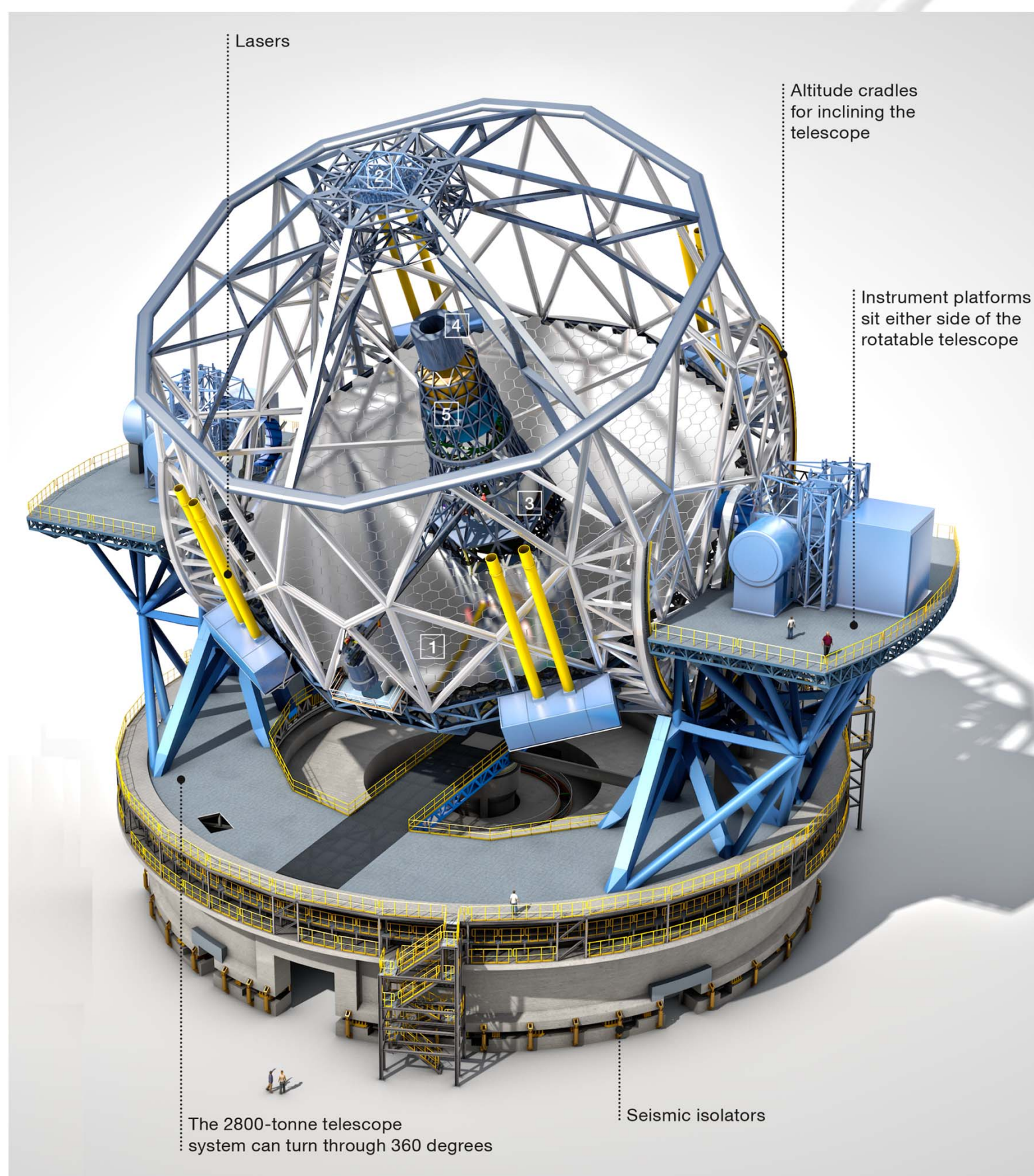




ESO
European Organization
For Astronomical
Research in the
Southern Hemisphere

Designing and managing software interfaces for the ELT

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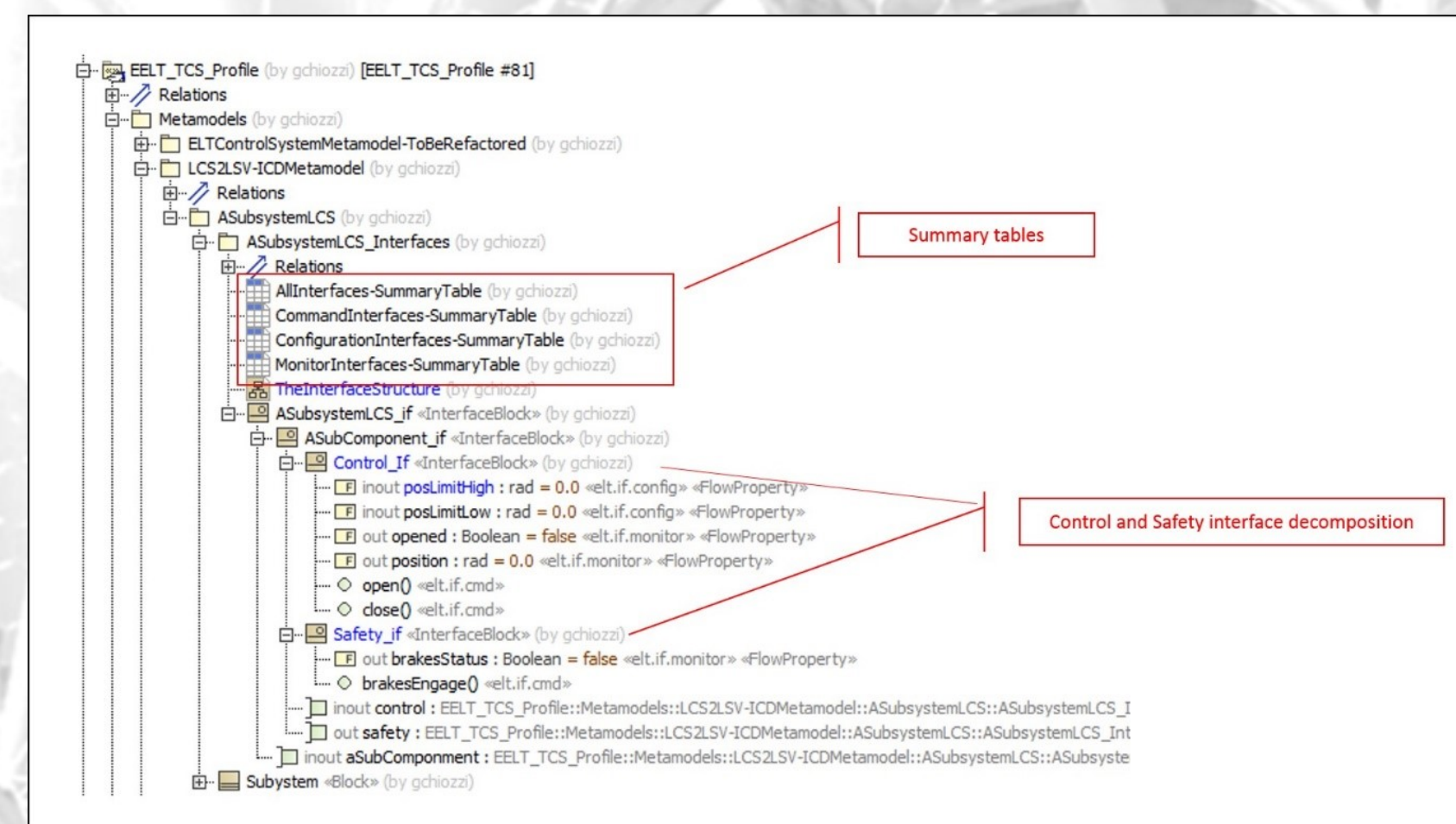


The ELT

- 39 meters optical telescope
- Under construction: 3000m in the Chilean Atacama desert.
- Five-mirror scheme, adaptive optics mirrors.
- M1 consists of 798 segments, each 1.4 meters wide.
- Control system architecture in layers and high number of subsystems developed by different parties.

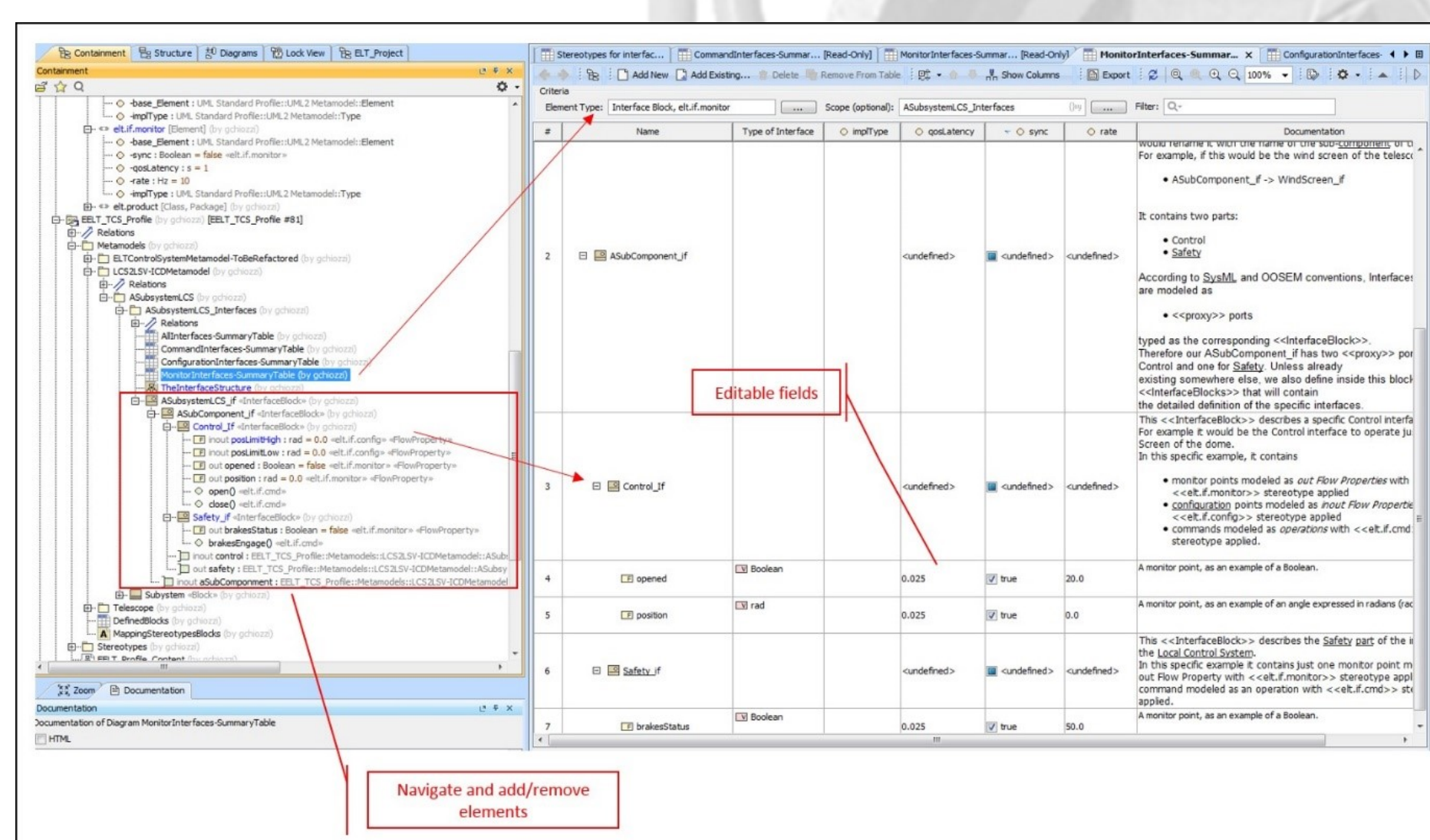
→ High number of interfaces that must be designed and maintained under configuration control, to ensure a flawless integration of the different parts.

Use SysML ELT Profile and cut&paste templates



Design interfaces in the model

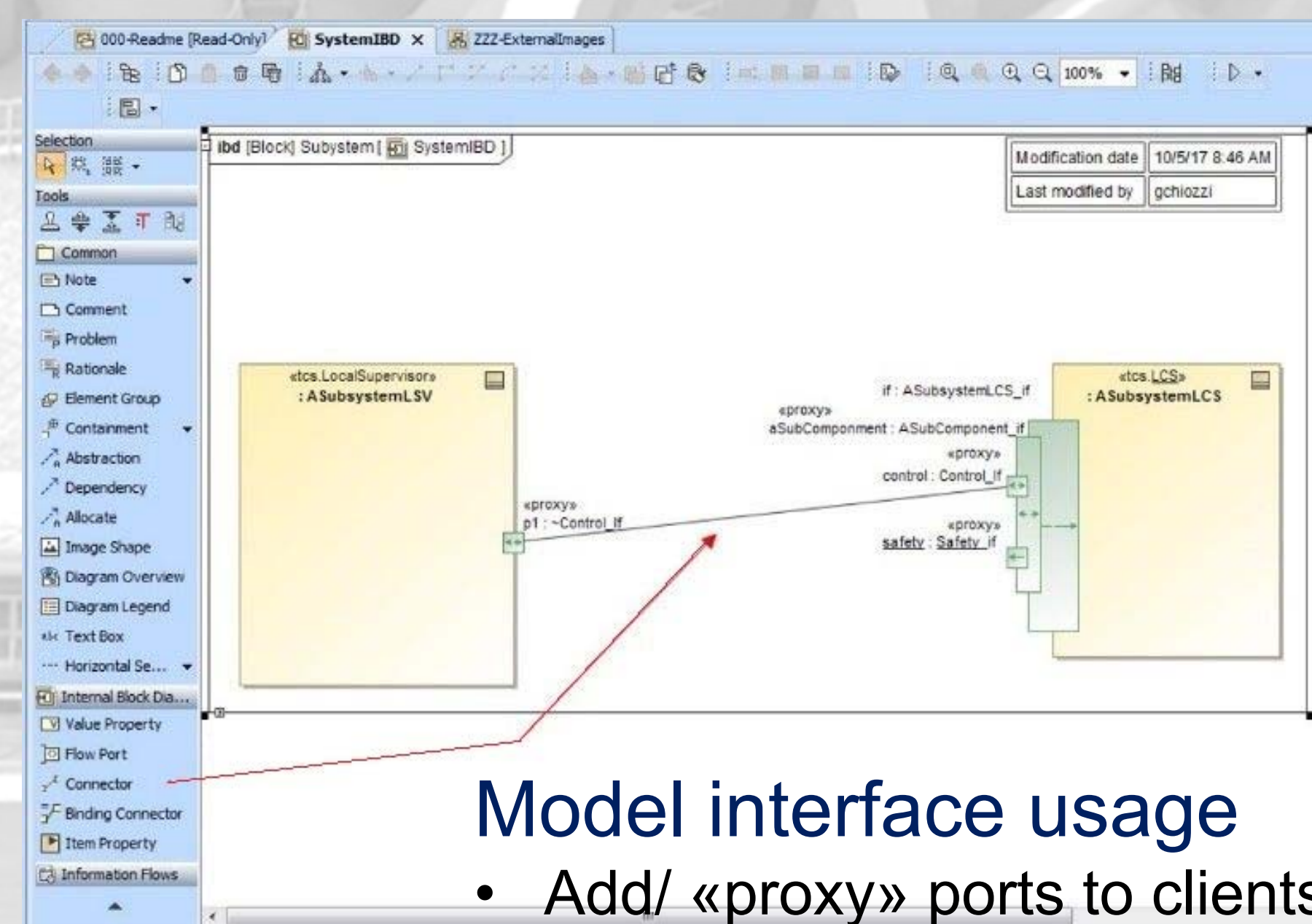
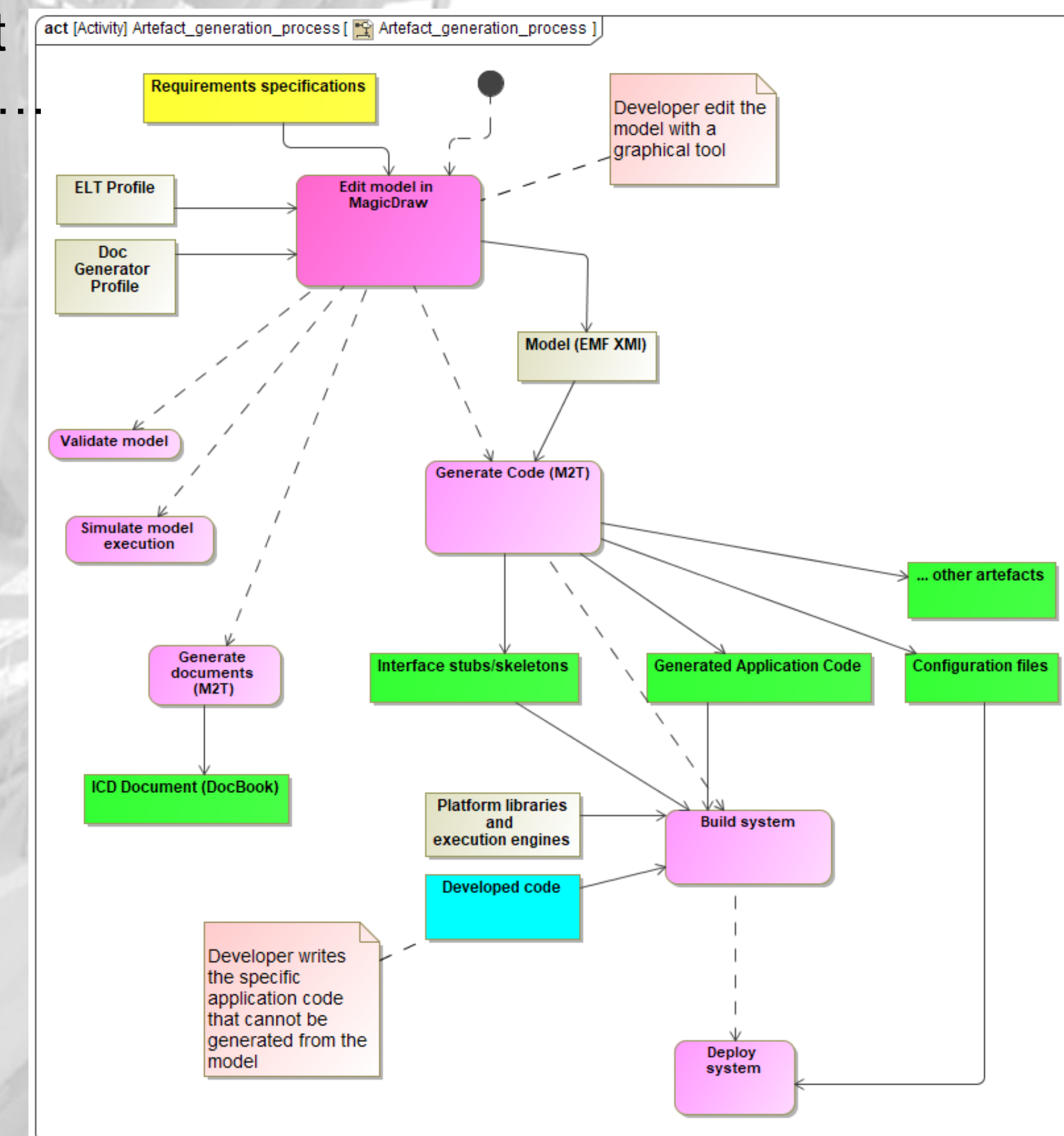
- Add/remove/edit interfaces in tree
- Edit structure in diagram
- Edit details of interfaces in tables



#	Name	Documentation
1	elt.if.cmd	This stereotype shall be applied to all elementary ELT command interface elements (to be represented as "operations"). It adds a number of tags used to qualify the characteristics of the command interfaces. It is a specialization of DirectedAssociation and therefore featureDirection shall be used to specify if the command is provided/required. InterfaceElements shall be owned by SysML InterfaceBlocks.
2	elt.if.config	This stereotype shall be applied to all elementary ELT configuration interface elements (to be represented as "input/output properties", i.e. Flow Properties with input direction, since we can both read and change the value). It adds a number of tags used to qualify the characteristics of the configuration interfaces. The multiplicity of the Flow Port can be used to specify how many properties are specified (for example for arrays); a multiplicity of {0..1} make the Property optional. The tag impType (if set) is used to specify an design level the specific implementation type. For example an angle can have has type rad (radians, the physical units specified at an abstract level) and has impType a float or a double or some other implementation specific representation. Notice that also the impType shall be a valid Type object. InterfaceElements shall be owned by SysML InterfaceBlocks.
3	elt.hasAsPrecondition	This stereotype is applied to relations between Use Cases, to mark the execution of a Use Case as a pre-condition for the execution of another one.

Generate artefacts

...from the model for Interfaces and other structures like state machines, application executables, deployment information...



Model interface usage

- Add/ «proxy» ports to clients
- Assign type
- Conjugate the port
- Connect

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