

Name(s):	<b>Saulius Pavalkis, Ph.D.</b>
Title(s):	Product Manager
Company/ Organization Name:	No Magic Europe
Paper Title:	<b>MBSE in Telescope Modeling: European Extremely Large Telescope – World’s Biggest Eye on the Sky</b>

The most ambitious project of the European Southern Observatory’s (ESO) is the construction of the European Extremely Large Telescope (E-ELT) which will be by far the world’s largest optical and near-infrared telescope, and will provide images 15 times sharper than those from the Hubble Space Telescope. Such a project poses continuous challenges to systems engineering due to its complexity in terms of requirements, operational modes, long operational lifetime, interfaces, and number of components. Since 2008, the Telescope Control System (TCS) team has adopted a number of Model Based Systems Engineering (MBSE) practices in order to cope with the various challenges ahead.

We will overview the MBSE application for this project as the core method which was managing the complexity.

MBSE and SysML were chosen to model the Telescope Control System (TCS). The TCS includes all hardware, software and communication infrastructure required to control the telescope. Many sub-systems will be contracted and require proper integration. Therefore, TCS includes the definition of interfaces, requirements, standards for the field electronics, software, and hardware of sub-systems.

This is one of the largest publicly available MBSE information sources. This includes: the complex, interdisciplinary real world sample model (<http://mbse.gfse.de/extdocs/ape.html>), recommendations, findings, issues, Open-Source MBSE Plugin for creating the model structure, extracting model variants, and supporting model based document generation based on DockBook, and multiple publications on: requirements modeling, variants modeling, model based documentation generation, etc.

We will overview the MBSE application for this project. We will summarize core method which was managing the complexity of this project. And we will look one step ahead how technologies and standards evolve further supporting similar engineering needs.