

Assignment	<b>MBE using Dezyne</b>
Language/technology	C++, Dezyne
Target	MSc, PDEng
Difficulty	Medium/Hard
Description	
<p><b>Context:</b></p> <p>At Philips Image Guided Therapy, we make the difference in minimally invasive treatment to improve patient outcomes and save lives. With our image-guided therapy systems we aim to remove barriers to safer, more effective, and more reproducible treatments. Philips Azurion is the next generation image-guided therapy platform. Azurion is designed to consistently and efficiently help the user navigate equipment (such as catheters) inside arteries or veins, as well as to help visualize in three dimensions the anatomic regions of interest. Together, we open doors to new procedures and techniques that truly make a difference to people's lives.</p> <p>The context of this assignment is within the Software group of the Mechatronics Department. Being able to correctly position and orient the X-ray beam of the Azurion system in any angulation and rotation combination, with respect to the region of interest in the patient body, is the main responsibility of our department. Look at the link below to get an impression:  <a href="https://www.youtube.com/watch?v=E3Us_kox5Ac">https://www.youtube.com/watch?v=E3Us_kox5Ac</a></p> <p><b>Problem description:</b></p> <p>When a system is powered on an initialization sequence is triggered. This initialization sequence performs checks that determine the health of the system. The checks include: checking that the system is in expected (valid) positions, the correct amount of power is fed to it, that the sensors are operational, etc. The outcome of the initialization sequence is used to determine the health and safety of our systems, hence it must be fast, reliable and correct. Your assignment consists on: isolating the initialization sequence, modelling it using a formalism (e.g. Dezyne) and guaranteeing that all checks are performed fast and their results are evaluated accurately.</p> <p><b>Assignment:</b></p> <p>Following an Agile/Scrum fashion and using supervisory control methods, model the system initialization of the Azurion systems.</p> <ul style="list-style-type: none"> <li>• Acquire the requirements for system initialization</li> <li>• Formalize all the requirements for the system initialization</li> <li>• Implement the requirements in a tool that supports verification and code generation (e.g. Dezyne)</li> <li>• Create a test suite that validates your model against the requirements</li> <li>• Thoroughly test and validate your models integrated in the system</li> <li>• Document the changes</li> <li>• Demonstrate the implementation to the users</li> </ul>	