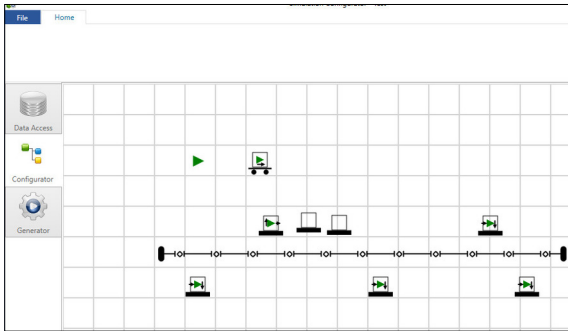




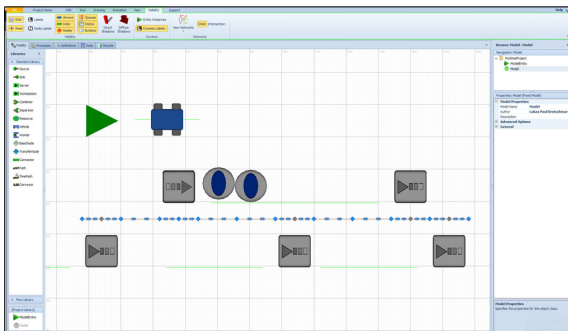
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Subject Area	Innovation in Products, Processes and Materials - Business Engineering and Productions

Design and Development of a semi-automatic, software-based Transformation Process of PLM-Data using SysML



The configuration workspace showing an example of instances. Symbols represent features and types of instances.

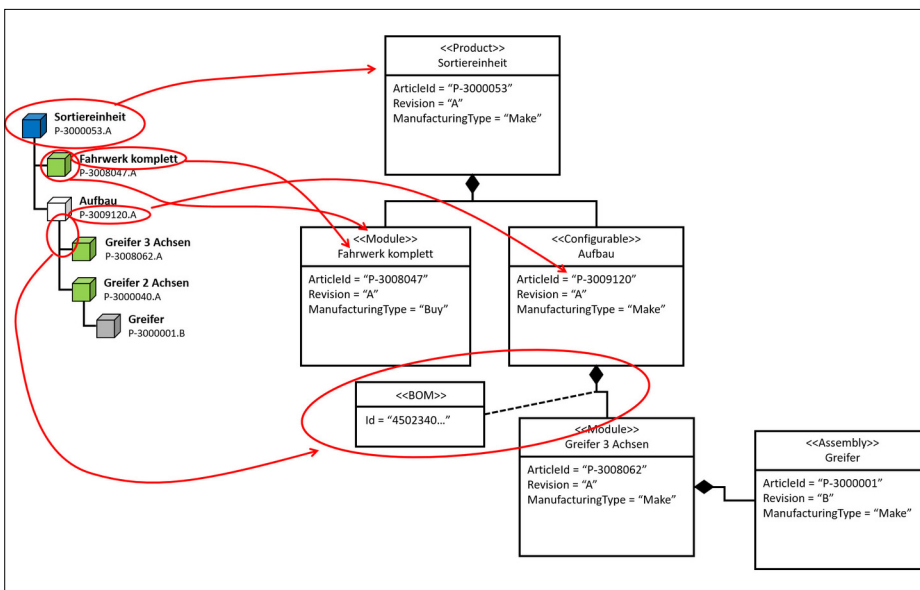


The generated simulation model in Simio showing the configured instances.

Introduction: Computer aided engineering (CAE) is already widely applied in the development process. There are many tools supporting the developers in various ways. Usually, one vendor offers multiple tools, sometimes bundled as platform, to provide a smooth and consistent experience for the user in all tools. Throughout the tool chain some functionality might not exist and then it could get hard to introduce it. For example, support for discrete event simulation (DES) is usually not provided.

Objective: We want to develop a proof of concept on how we can bring PLM and DES together. The products are imported from Aras and as simulation engine we will target Simio. These two tools are already in use at our school and thus provide a real world use case. As basis for our proof of concept we rely on a Lego Robot example developed and utilized at our school for educational purposes. We also want to rely on SysML as our basis of the model. And introduce concepts that will help us reach our goal of generating simulation models.

Solution: We developed an approach on how we can generate simulation models based on previously designed products. We provided our own configurator that ensures the required information to generate simulation models. These requirements were conceptualized, designed and integrated into our model using notations and structures from SysML. Since we used SysML as underlying modeling language, our model could be made available for purposes other than simulation. We were able to show what could be done and provided a working solution within our boundaries. Since it's a proof of concept, we also included an outlook of what could be possible and looked at next.



The concept how we mapped a product structure on SysML blocks. We used special stereotypes to attach existing information to their corresponding blocks.