Simulation Based Implementation of Flexible Task Oriented Robot Controls Using the System Entity Structure and Model Base Approach

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The paper introduces a new method used for the development of Flexible Task oriented robot Controls (FTC) using the System Entity Structure (SES). Task oriented robot controls are based on the composition of atomic tasks with the aim of achieving a previously specified goal. Flexible task oriented controls differ in that the composition of atomic tasks is not predefined fixedly but is composed during the operation of the control on basis of actual process states and with respect to any constraints according to the sequence of tasks. The System Entity Structure is an ontology, which can be used for the hierarchical representation of existing or imagined systems. It is shown how to automatically generate and execute FTCs for cooperating robots specified by a SES and an associated model base (MB).