Structured Electronics Design and SLiCAP

On what it is based	What do you do	Use SLiCAP
A structured design method helps you to define when what to do	Define the (next) design problem	Create a python script for each design problem to solve
A structured design method helps you with orthogonolization of your design	Define relevant performance parameters and cost factors for the solution and derive child-level budgets for these performance parameters and costs factors from parent-level budgets	Store budgets and target values in a design database
A structured design method helps you to create circuit concepts	Define solutions for the design problem (concepts and possible implementations)	Put drawings and text in your design document
Relevant design parameters follow from the physical operation and its technological implementation in electronic devices	Define design parameters of these implementations to be determined	Define symbolic variables
A structured design method helps you to define circuit models Albert Einstein: "Everything should be made as simple as possibe, but not simpler" G.P. Box: "All models are wrong, but some are useful"	Create network models of solutions (simple but complete enough) that relate relevant performance parameters and cost factors to these design parameters	Create a KiCAD schematic with SLiCAP symbols and generate a circuit object from it
Keep the number of symbolic parameters in expressions as small as possible	Import values of design parameters defined at an ealier stage	Import parameter values from the database and assign them to circuit parameters
Circuit performance analysis is what we learned at school	Yield expressions that relate performance parameters and/or cost factors to design parameters of interest	Perform one out of 16 predefined mixed symbolic/numeric analysis types
Determine ranges rather than valid values for design parameter of interest	Solve these expressions for assigned performance and/or cost budgets	Use a sympy or numpy solvers to obtain numeric values, ranges of values or relations between design parameters and store them in the database
Only take design decisions if necessary	Select values for design parameters	Let the designer assign (input) final values and store them in the database