

OPTIMIZATION MODULE FOR COMPACT/MACRO-MODELING

UTMOST IV

UTMOST IV represents the next generation in SPICE model optimization software. Building on many years experience, UTMOST IV provides powerful tool for developing SPICE models. UTMOST IV provides an easy to use tool for the generation of accurate, compact models and macro-models for analog, mixed-signal and RF applications.



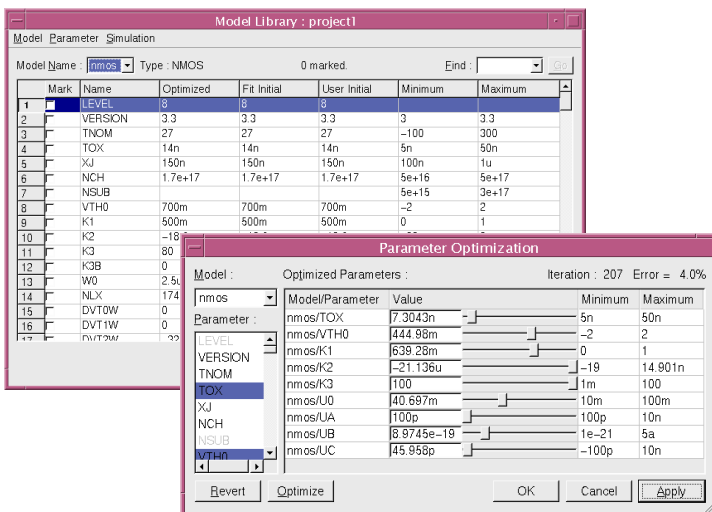
- **Data storage and organization based on Firebird 64 bit relational database**
- **High speed interface to SmartSpice provides rapid simulation without sacrificing the power and accuracy of a full SPICE simulator**
- **With unlimited model or macro-model complexity, UTMOST IV is capable of modeling any device**
- **Scalable compact and macro-models, for passive or active devices is made easy using UTMOST IV**
- **Easy data import from UTMOST III logfiles, or competitor data files**
- **Family of advanced optimizers, including genetic type optimizers, makes extraction of even the most complicated models an easy task**
- **Any combination of data can be used during any optimization, e.g. multiple temperature, dc and capacitance, etc.**
- **Silvaco's strong encryption is available to protect valuable customer and third party intellectual property**

Family of Advanced Optimization Algorithms

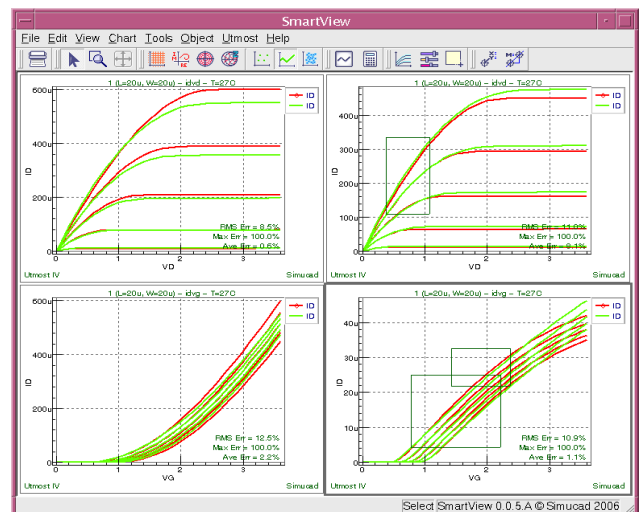
- Select from a library of local and global optimizers
- Local (traditional) optimizers are faster but need a good initial condition and the full time dedication of an experienced model developer
 - Levenberg-Marquardt
 - Gauss-Siedel
 - Hooke-Jeeves
- Global optimizers (next generation) take longer to run, but require less user interaction and can start from the poor initial condition
 - Genetic
 - Parallel Tempering
 - Simulated Annealing
 - Differential Evolution

Unlimited Multi-Target Selection for Optimization

- Flexible, unrestricted multi-target optimization can use any combination of directly measured or calculated data
- Any combination of data can be simulated and optimized
 - DC, Capacitance and AC data at the same time
 - Data from different batches, wafers, etc.
 - Multiple Temperatures at the same time



Rubberband optimization of any number of parameters.



View and optimize any number of targets.

Rubberband Optimization of Compact Model or Macro-Model Parameters

- Rubberband interactive parameter optimization enables direct observation of the effects of model parameter variations on device characteristics
- Supports multiple model, macro-model and binned-model Rubberband optimization
- Rubberband optimization on any combination of multi-target data
- Use rubberband optimization to create good initial condition and immediately proceed using local or global optimizer

Optimization Sequence for Automated Model Extraction

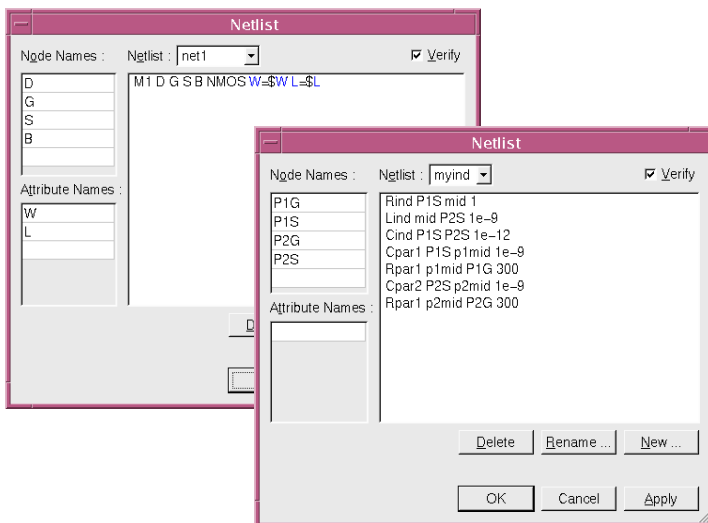
- Automation of multi-target, multi-parameter model and macro-model optimization provided through an easy to use optimization sequence

Supports All Technologies

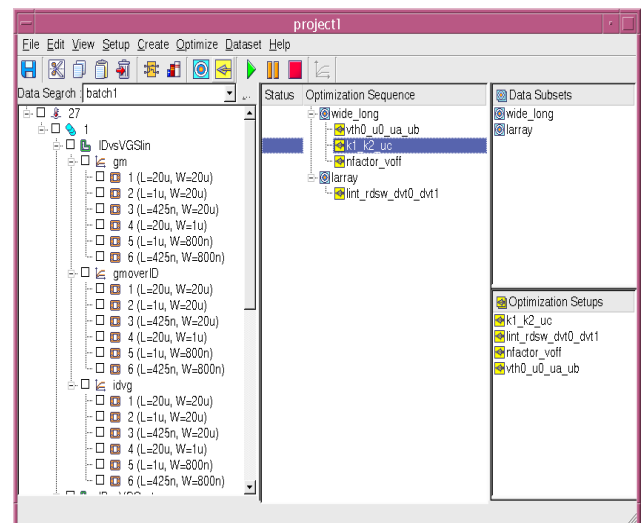
- Supports all types of semiconductor devices
- Unlimited number of nodes and node names for a device description
- Optimization Module supports all technologies (no more UTMOST III-like product split along MOS, Bipolar, etc. technology lines)

Relational Database Organizes Your Work

- Multi-user, multi-access database allows easy storage, retrieval and sharing of measured data and UTMOST IV projects
- Flexible import of UTMOST III logfiles and UTMOST IV data files
- The underlying database is the proven Borland Firebird 64bit relational database and available on Linux and Solaris



Define SPICE netlist of any complexity.



Organize your work in projects.

Integrated Macro-Model Support

- Supports definition of SPICE netslists of any complexity
- Supports both compact model binning and macro-model binning

Simulation Provided by SmartSpice with high-speed API Interface

- Power and flexibility of SmartSpice
- Fast simulation times achieved with high-speed API interface
- No loss in performance whether simulating compact model or macro-model netlists
- Simulate a user-defined netlist of any complexity, derived in an open, user-friendly environment (no more hard-coded internal equations)
- Ability to define any model parameter as an equation for scalable model development

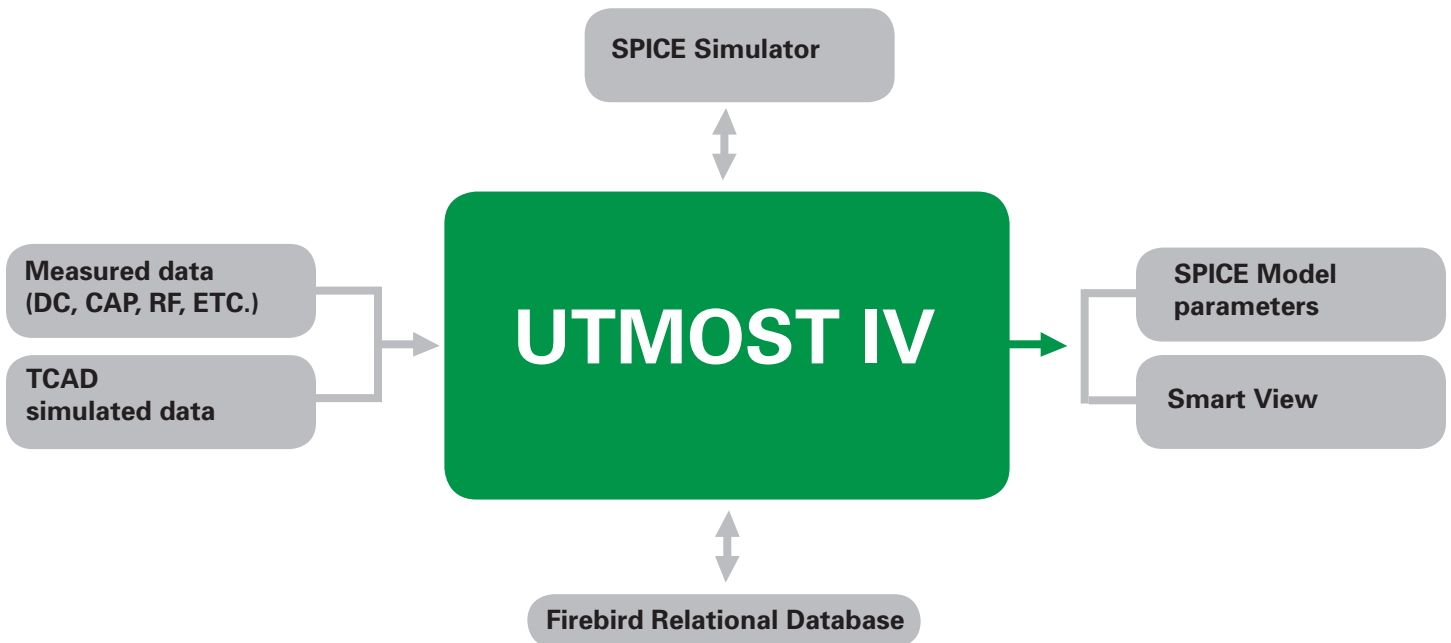
Flexible Data Format

- Data set can be generated as a linear or a logarithmic sweep or simply as a list of values
- There is no restriction for data spacing (equal steps are no longer required)

Transitioning to UTMOST IV

- UTMOST III customers will have no problem transitioning to UTMOST IV as legacy measured log files will be supported
- UTMOST III-maintained customers will be able to trade-in UTMOST III when buying UTMOST IV
- We also have a trade-in program for competitive products

UTMOST IV Inputs/Outputs



SILVACO

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