GTS TCAD Framework

A Suite of Tools Providing the Answers You Need

Optimization • Reliability & Variability • Path-Finding • DTCO

GTS FRAMEWORK

| DOE | OPTIMIZATION | RELIABILITY | VARIABILITY |

Working Environment, Project Management, DOE

Process Simulation

PROEMU

Advanced topology simulation (level-set)

Anisotropic epi-growth through surface diffusion models

Dopant implantation and diffusion model

Realistic geometries

Inclusion of parasitics

Physical process models
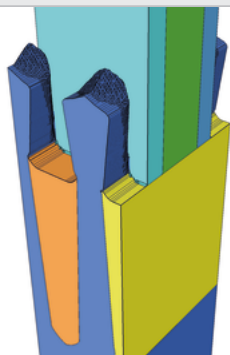
Device and Circuit Simulation

MINIMOS-NT

General-purpose semiconductor device simulator

Reliability (BTI, HCD, SET, SEU, SER, etc.)

Variability (RDD, MGG, LER, etc)

NVM (FG, SONOS, 3D-NAND)
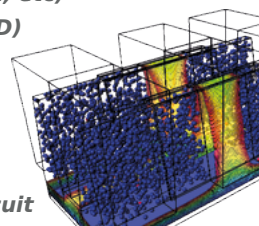
FinFET, Nanosheet, CFET
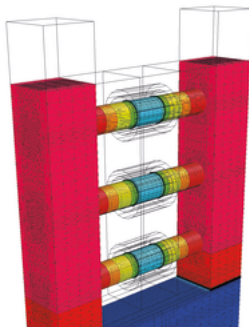
DTCO

MIXED MODE   MATERIALS

Mixed Mode: Device in circuit

### Structure Generation / Editing

STRUCTURE

Template-based structure generation

3D device CAD for geometry and doping

Unstructured meshes for modeling true geometry

Automatic refinement

Customizable templates

Import of 3rd-party files

Nano Device Simulator

VSP

Physical device simulation

FinFET (14/10nm nodes)

Stacked nanosheets (3/2/1.5 nm nodes)

Tunneling FETs

Novel channel materials

Stress, strain

Crystal orientation

Import ab-initio data
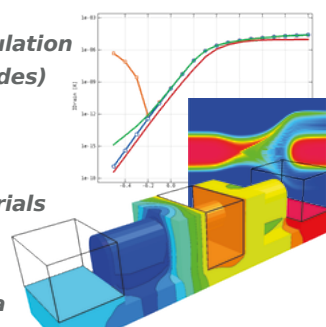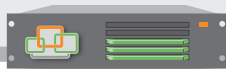
Compatible

3RD PARTY

Integration of 3rd-party software

Import / export of industry-standard files with native grid (full accuracy)

Fully Customizable

SDK

SDK for easy implementation of custom models with full access to internal models and solvers
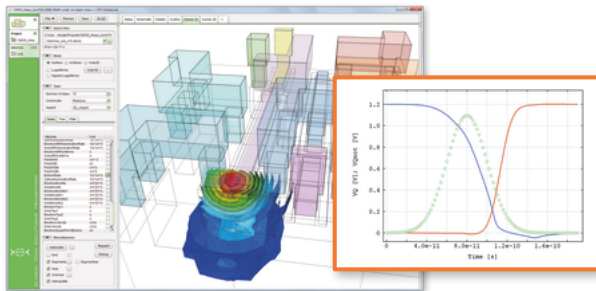
Tools integrable in 3rd-party workbenches
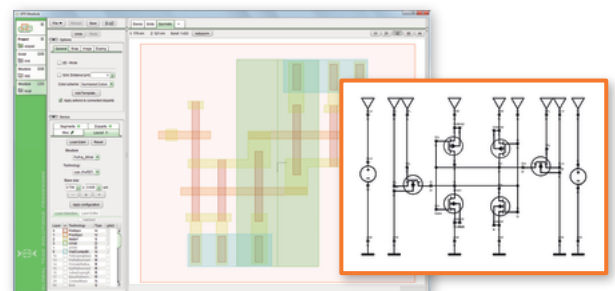
Powerful Computational Infrastructure

GTS JOB SERVER

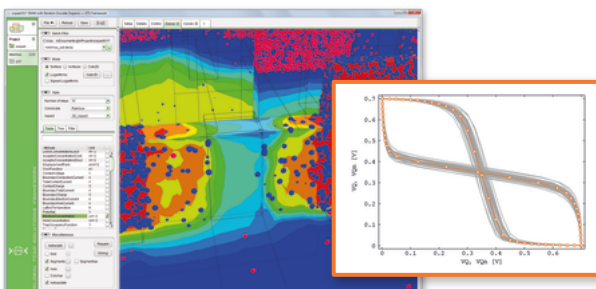*Automatic optimization of resource assignment in grid and cloud environments*

GTS

Predictions based on physics.

Profound TCAD,
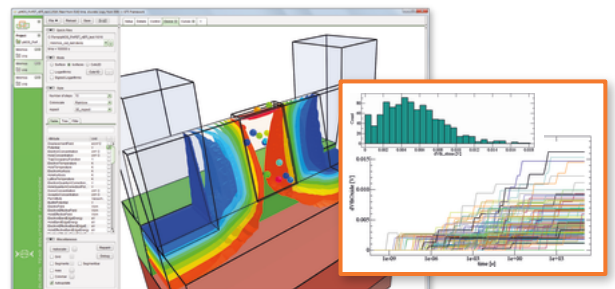# Based on Research and Physics

GTS GLOBAL TCAD SOLUTIONS

2D/3D Device & Process Simulation
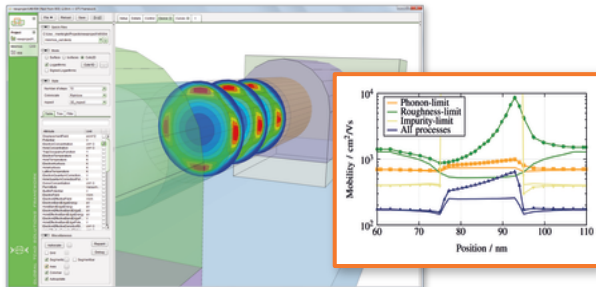*Planar CMOS, FD-SOI, FinFET, Nanosheet transistors*

Circuit / Mixed Mode Simulation
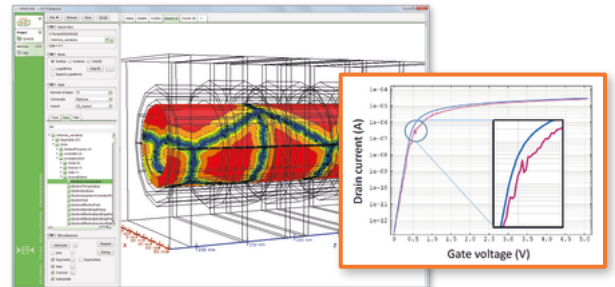*Compact model extraction, SRAM, full-cell analysis*

Variability (RDD, MGG, LER, GER, Process)
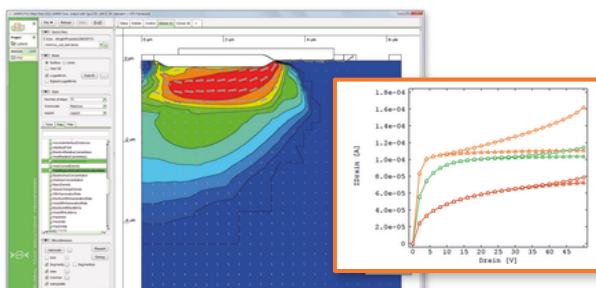*Statistical device & circuit analysis and optimization*

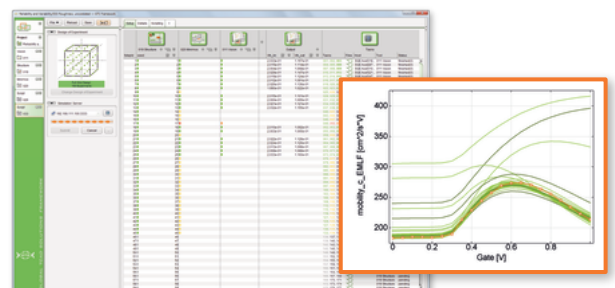## Reliability (BTI, HCD, TDDB, RTN)
Radiation effects (SET, SEU, TID)

Emerging Devices / Path Finding
*Nano-wire transistors, novel materials (SiGe, III/V, GeSn), TFETs; **Physical device simulation** (SB-BTE, BTBT)*

Non-Volatile Memory
NOR Flash, NAND Flash, SONOS, 3D-NAND
Program / erase, endurance, data retention, variability

Analog Devices, RF Applications, TFTs, Power Devices, Wide band-gap (SiC, GaN)

DOE, Optimizer, Scripting, Distributed Computing (Grid & Cloud)

Global TCAD Solutions GmbH (GTS) is developing next-generation TCAD tools for industrial applications based on innovation and scientific research – with over 150 relevant publications. GTS's mission is to provide powerful and efficient, yet easy-to-use solutions based on models well-founded in physics helping our clients to create and optimize outstanding semiconductor devices.