

## FEATURES

- Accurate capability analysis on ELESIS instruments.
- Model library allows the evaluation of “what-if” strategies without integration in EDA environment.
- Fast system simulation time due to use of high abstraction models for ELESIS IP.
- Addresses simulation of dependability test features.

## TEST INTERFACE

- Supports SPI, I2C and ELESIS test interface as test protocol to ELESIS IP.

## MODEL LIBRARY

- ELESIS instruments
  - Dependability monitors
  - User can add own process specific model parameter set.
- Tester Platforms
  - Supports all major tester vendors: Teradyne, Credence, Verigy, ...
  - Supports AWG, PSU, digital drive/sense, Digitizers, ...

## INTEROPERABILITY

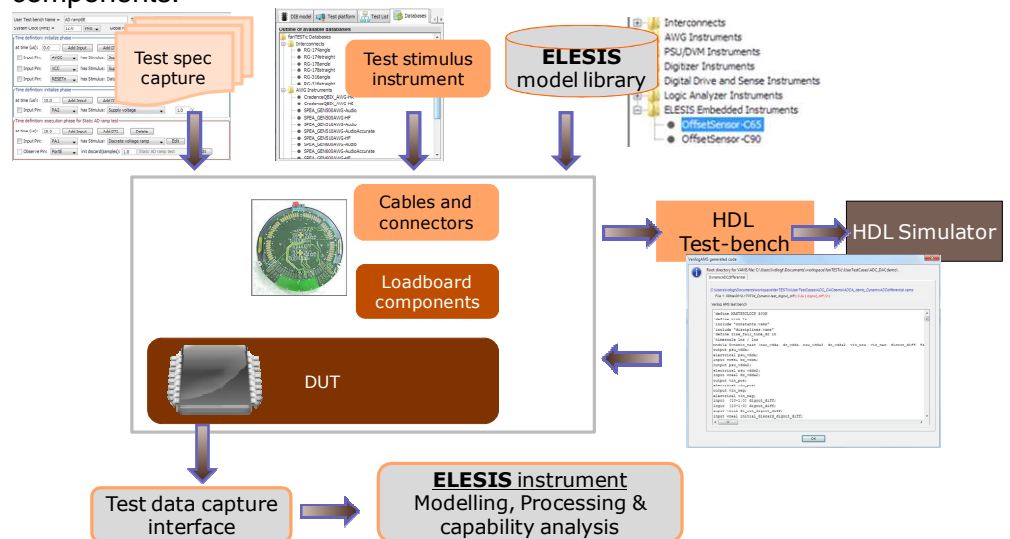
- Supports VCD, STIL, CSV as test data format to import/export from/to third party tools.
- Supports UI control to set user test parameters
- Supports XML and proprietary format to store system setup.
- Supports VerilogAMS to interface to third party simulators.

## OVERVIEW

With Dependability Model Simulator, the customer can validate the capability of multiple ELESIS IP monitors on his target DUT. DMS performs instrument modelling and processing of the ELESIS IP, and allows for quick “what-if” scenario testing to find the best matching IP for the target DUT. The instrument properties are embedded in the DMS tool library. The user does not need to worry about the model functionality and parameter set. The tool operates independent of the EDA environment.

## DESCRIPTION OF THE TOOL ARCHITECTURE

DMS applies a model driven development approach. It encompasses different components, all defined in different abstractions of electrical and physical models to evaluate the instrument, in-circuit statistical performance. The tool flow aims to generate a full system setup including all critical components.



The tool is composed of the following main modules:

### ➤ TEST STIMULUS DATABASE

A set of instruments embedded as model in the tool, which makes it possible to select a specific stimulus instrument for real stimulus traces.

### ➤ TEST DATA CAPTURE INTERFACE

Data capture is modelled as in-circuit signal sensing by the ELESIS IP.

### ➤ ELESIS INSTRUMENT MODEL LIBRARY

User extendable model library with all properties and parameters pre-defined for the specific ELESIS IP instrument.

### ➤ TEST SPECIFICATION AND OPERATIONAL SETTINGS

User defined test conditions for the operation of the IP in the DUT. It includes test mode control as well as processing and statistical settings for the capability analysis.

**DELIVERABLES**

- DMS is offered as an add-on to the D4T Systems tool framework.
- DMS offering comes with the model database, the capability analysis and the statistical processing toolbox.

**LIMITATIONS**

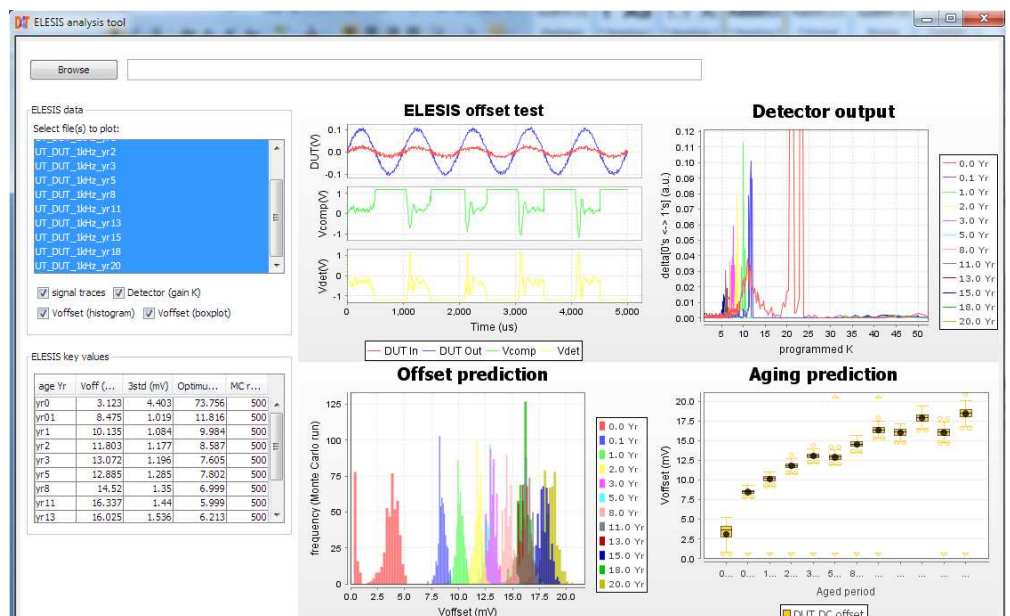
- ELESIS model database is currently only available for dependability instruments
- DMS simulates the ELESIS instrument, not the DUT.

**OS & PLATFORMS**

- Requires JAVA 6 or higher
- Runs on PC/Linux/UNIX

**VALIDATION RESULTS**

An example screenshot of the tool add-on with processed results for an ELESIS DC offset sensor applied to a DUT with 20 aging steps is shown. The dependability sensor aims to detect DC drifts due to aging in analog circuits. The detector output graph indicates the sensor model sensitivity to detecting an optimal DC response. The histograms and boxplot indicate the predicted offset drift with variation for the DUT during 20 years of aging using an extensive sensor model.



**INFORMATIVE REPORTING**

- Model test violation reporting: tool flags on several simulation violations, such as: out-of-range data, instrument settling, bandwidth limiting, etc and sets limits according to model specs.
- Statistical reporting: Monte Carlo analysis with natural and non-linear parameter variations. Estimating 3 sigma responses. Example data for ELESIS sensor

ELESIS aging year:	0	1	2	3
Mean (mV):	0.7	3.8	6.2	7.2
Maximum (mV):	1.0	3.8	6.4	7.8
Minimum (mV):	0.5	3.7	5.9	6.7
Q1 quartile (mV):	0.5	3.7	6.0	7.1
Q3 quartile (mV):	0.9	3.8	6.2	7.6

TEST PROCESSING finished. (8167 ms)