Isight 3.5

A desktop product for creating flexible simulation process flows, consisting of a variety of applications, in order to automate the exploration of design alternatives and identification of optimal performance parameters.

Interfaces

Isight has been designed with ease-of-use in mind. Highly visual and intuitive interfaces, wizards, and drag-and-drop capabilities allow you to work quickly and efficiently.

Design Gateway

The Design Gateway is the main entry point to build Isight simulation process flows. It provides drag-and-drop process flow creation, parameter mapping, and problem formulation, and simulation process flows can be published in a version-controlled library. Utilities such as model search, model content, parameter search, and parameter grouping are also supported.

Runtime Gateway

The Runtime Gateway enables execution of engineering process flows and creation of graphs and tables to visualize results. In the desktop execution mode, all job results are saved automatically to a locally managed MySQL database.

Generator

The Generator allows users to create components to allow applications to communicate with each other in the Isight environment. It includes the ability to add custom design driver techniques including DOE, approximation, approximation error analysis, optimization and Monte Carlo sampling methods, and random variable distributions.

Visualization and Postprocessing

Isight supports the creation of visual tools for real-time postprocessing of data such as tables, 2D and 3D plots, and statistical analysis. The Correlation Map tool provides a quick method of visualizing parameter relationships.

Localization

Interfaces, components, and messages have been localized for Japanese language support.

Process Integration

Isight includes a number of valuable base activity components that are included with all package levels. These components are most commonly used for building simulation process flows and exchanging data with external sources. In addition to these base activity components, there are also add-on components available for purchase. Please visit www.simulia.com for more information.

Data Exchanger

The Data Exchanger component allows for easy data exchange between ASCII-based files.

Excel™

This component enables the integration of Excel spreadsheets with Isight to allow parameters to be read from or written to cells. It also allows Excel macros to be automatically executed.

Word™

With the Word component, you can send Isight parameter values and results directly to a pre-formatted Microsoft Word document. This provides an excellent way to quickly share results with others in the organization.

MATLAB®

This component allows you to integrate MATLAB® files with Isight to allow parameters to be read from or written to MATLAB® scripts.

Email

With the Email component, you can send Isight parameter values and results directly to a pre-formatted email message that will be automatically sent at a predetermined point in a process flow.

COM (Microsoft Component Object Model)

The COM component enables direct communication with COM objects.

Simcode

With the Simcode component, you can write to ASCII input files, run an executable, and read results from output files. This component offers easy-to-define communication through an interactive GUI.

OS Command

Automatically execute operating system commands and scripts, as well as operating system commands on a grid controlled by Platform LSF or using ssh.

Pause

The Pause component enables a break in an automated process flow to allow user intervention.

Script

With the Script component, you can execute a script of Java commands to manipulate parameters, interact with files, or invoke other programs.

Calculator
The Calculator component allows you to perform calculations, unit conversions, and data transformations as part of the process flow.

iSIGHT Component
The iSIGHT component allows an “iSIGHT classic” application to be executed from Isight.

iSIGHT File Parser Component
The iSIGHT File Parser is a new component that enables execution of parsing commands in the “iSIGHT classic” Advanced File Parser. It primarily aids in the migration from “iSIGHT classic” to Isight.

Loop
The Loop component is used to specify a repeating and/or conditional path in a process flow.

Database Component
The Database component provides an interface with a SQL-compliant relational database (Oracle, DB2, Access, or MySQL Server 2000) to support retrieval and storage of input and output data.

Grid Support
The Grid Support component allows parallel submission of optimization, Monte Carlo, and DOE jobs on multiprocessor machines or with Platform LSF batch submission on Windows and Linux clusters.

Design Optimization
Isight includes a number of process components that are made available depending on package configuration. These components are used to optimize the simulated behavior characteristics in terms of performance, performance variance, and reliability. These techniques can be used individually or in an automated plan that can execute design studies sequentially.

Optimization
The Optimization component gives you the ability to define your optimization problem in terms of variables and multiple weighted and scaled objectives and constraints using the following algorithms: NLPQL, Hooke-Jeeves, Downhill Simplex, MMFD, Adaptive Simulated Annealing, MOST, LSGRG, Multi-Island Genetic Algorithm, Multi-Objective Genetic Algorithm (AMGA, NSGA II, NCGA), Stress-Ratio Method, and Pointer Automatic Optimizer. It includes the Engineering Data Mining Interface for the viewing of multivariable/multiresponse plots. This can be extended to other techniques through the design driver plug-in framework.

Design of Experiments (DOE)
The Design of Experiments component provides a full suite of methods including Central Composite, Data File, Full Factorial, Latin Hypercube, Optimal Latin Hypercube, Orthogonal Array, and Parameter Study. This component also supports the handling of failed runs, and is easily extendable to other techniques through the design driver plug-in framework.

Monte Carlo Analysis
The Monte Carlo Analysis component provides simple random sampling, descriptive sampling, eight standard distributions, and truncated distributions. It is easily extendable to other distribution methods through the design driver plug-in framework. The distributions supported are: normal, log-normal, Weibull, Gumbel, uniform, and exponential. You can also define your own distribution as a plug-in. This component also includes Stochastic Design Improvement (SDI), an iterative procedure for improving a design.

Six Sigma
The Six Sigma component uses probabilistic analysis to measure the quality of a design given uncertainty or randomness of a product or process. The reliability analysis can be performed with the mean value method, the first order reliability method, a DOE sample, or a Monte Carlo Analysis. It can be used in combination with optimization and approximation techniques to perform fast Six Sigma optimization.

Taguchi Robust Design
The Taguchi Robust Design component is designed to improve the quality of a product or process by not only striving to achieve performance targets, but also minimizing performance variation. We support both the regular Taguchi dynamic and the dynamic-standardized system.

Approximations
An approximation model can be created for any task, any activity component, or from a data file. Response surface modeling (RSM) is available with four term selection techniques: Sequential replacement, Efroymson’s stepwise regression, Two-at-a-time replacement, and Exhaustive Search. We also have a proprietary Radial Basis Function approximation method with variable power Spline function tuning and user-specified smoothing. Both approximations methods support automatic cross-validation with easy-to-understand visual error analysis. The Visual Design Driver (VDD) interface allows users to visualize approximation surfaces in 2D or 3D with overlaid constraints, and to make real-time changes or launch a design improvement strategy. The VDD calculates both the global and local effects of the design variables on an output.

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