



## SigmaPlot 12.0 Development and Testing Procedures

Systat Software Inc. is committed to developing state-of-the-art software that enhances and improves the quality of scientific research. Systat Software Inc. is the only scientific software company that offers a full range of scientific and engineering tools designed to meet the special needs of research scientists and engineers. Below is a summary of the procedures used by Systat Software Inc. for developing and assuring high quality software for SigmaPlot 12.0 and related products.

Project

SigmaPlot 12.0 for Windows

Project Manager

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Description of SigmaPlot

SigmaPlot goes beyond financially oriented spreadsheets and the "bells and whistles" of business graphing software by making technical features the highest priority. A user can choose from a full range of graphing options: technical axis scales, multiple axes, multiple intersecting 3D graphs, and much more.

SigmaPlot offers an intuitive Microsoft Office and Windows compatible interface. To start, users just need to click the graph type and style buttons on the graph toolbar and select their data; SigmaPlot automatically creates a graph. For interactive graph creation, the Graph Wizard leads users quickly through each step. All graph attributes are customizable by double-clicking on the graph and choosing properties from the easy-to-read bitmapped selection on the Graph Properties dialog box. To help users see complex interactions in their 3-D data, the program powerfully renders multiple intersecting 3-D graphs with hidden line removal. A Regression Wizard automatically determines initial parameters to help fit data.

New Features and Improvements Implemented in SigmaPlot 12.0

- Microsoft Office style ribbon interface
- Property browser consisting of an object tree and associated properties list
- New user interface with tabbed windows, docking panel guides, vertical and horizontal tab grouping, object-specific mini-toolbars and customizable quick access toolbar
- Improved graph page navigation with multiple zoom, pan and drag controls and quick window scrolling with the middle mouse wheel.
- Worksheet improvements with mini-toolbar, zoom enabling, middle mouse wheel scrolling and formatted text in worksheet cells (super, subscript, Greek font)

- Report improvements with new multiple-style tables, new report engine giving enhanced PDF export and drag and drop Word 2007/2010 content to the report page
- Curve fitting improvements with generalized weight variables, parameter covariance and confidence interval report output and implicit function curve fitting
- New statistics features with the nonparametric one sample t-test, Deming regression, normal distribution comparison, parallel line analysis and the Bland-Altman method comparison technique
- The Enzyme Kinetics Module, previously sold separately, is now an integral part of SigmaPlot
- Radar and dot histogram graph types and a ScaleGraph macro for scrolling through time-series data

## Software Methodology

Software functionality is segmented into features, and features are grouped into architectural releases. These “arc” releases are used to organize the project as well as to track the project. The most important features appear in the first arc releases, while the last arc release is synonymous with the product’s release.

From start to finish, the product planning and development cycle includes:

1. Concept (marketing and feasibility)
2. Requirements (Statement of Requirements, SOR)
3. Design (external and internal specifications)
4. Planning (definition of architectural releases)
5. Development (implementation of arc releases)
6. Testing and documentation of features for each arch release (at the end of each arc release)
7. Product release

## Programming Languages Used

Visual C++, Microsoft Visual Basic

## Development Tools Used

- Microsoft Visual Studio 2005
- Wise for Windows installer 6.0
- IBM/Rational ClearCase
- Framemaker 7.0
- Robohelp 6.0
- Arbortext Editor 5.2
- MathType 5
- Elementool Bug Tracking System

## Product Compatibility

- MS Windows Vista
- MS Windows XP
- MS Excel
- MS Word
- SPSS (up to ver. 13)
- IE 5.01 and up, for use with the SigmaPlot WebViewer
- JAWS (Job Access With Speech)

## Software Quality Assurance

Systat Software Inc. is committed to ensuring high quality software by using the SQA process, a planned and systematic set of activities that ensures that software processes and products conform to requirements, standards, and procedures. It includes the following disciplines:

- Quality assurance
- Quality engineering
- Verification and validation
- Error detection and reporting
- Error tracking, Corrective action and further error regression

## Test Procedures

Manual tests are executed to exercise and evaluate SigmaPlot to demonstrate that it satisfies the specified requirements. These tests also identify differences between expected and actual results by using a broad set of test procedures.

Test procedures are derived from external specification documents and are guidelines to follow while testing the product.

A SigmaPlot macro is used to run the NIST nonlinear regression equations and data sets to compare to published results.

## Applications Used for Verification

- SYSTAT
- SigmaStat
- SPSS
- Adobe PhotoShop
- Adobe Illustrator
- GS Tools
- Corel Draw
- JAWS (Job Access With Speech)
- MS Office products (Word, Access, Excel)

## Hardware and Operating System Testing Platforms

SigmaPlot 12.0 is tested on the in QA Lab on Pentium 4 and higher personal computer systems.

SigmaPlot 12.0 is designed and verified to work properly with the following operating systems:

- Windows 7
- Windows Vista
- Windows XP

## Independent Verification and Validation

Systat Software Inc. is committed to providing a beta testing process whereby the products of the software development life cycle phases are independently reviewed, verified, and validated by organizations that are completely independent of the Systat Software Inc. Approximately 20 to 50 scientists and engineers have participated in beta testing of each release of SigmaPlot, including version 12.0 and their feedback is invaluable for the increase of overall quality of the product.