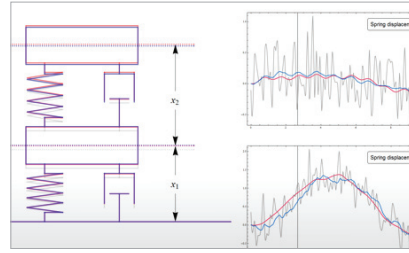


**INTEGRATED ANALOG AND DIGITAL SIGNAL PROCESSING**

Filter and analyze signals—sound, images, and multidimensional data—and instantly design and deploy interactive filters. Supports Wolfram *SystemModeler*™.

**BUILT-IN SYMBOLIC TENSORS**

Efficient support for symbolic arrays, from simple vectors to arrays of any rank, dimension, and symmetry.

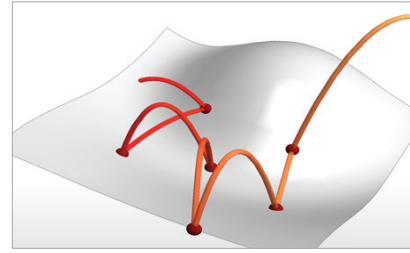


**ENHANCED CONTROL SYSTEMS**

Create models including time delays and algebraic equations and use them with *Mathematica*'s full control systems suite. Automatically create PID controllers to meet your design criteria.

**NEW AND IMPROVED CORE ALGORITHMS**

New special functions, enhanced capabilities for linear and polynomial algebra, and major performance improvements across the system.



**MAJOR ENHANCEMENTS TO DIFFERENTIAL EQUATION SOLVING**

Solve differential equations with discontinuities, hybrid discrete/continuous dynamical systems, parametric differential equations, and differential algebraic equations.

**OTHER NEW IMPROVEMENTS**

- Vector analysis support including vector calculus and coordinate systems
- Built-in business date/calendar support

**EXPANDED VISUALIZATION AND CONTROLS**

Highly customizable interactive gauges for dashboards and controls, systemwide support for automatic legends for plots and charts, and new specialized visualization for signal processing.

**NEW IMPORT AND EXPORT FORMATS**

Extensive support for new data formats in areas such as molecular biology, high dynamic range image processing, and chemical spectroscopy.

**FULL RANGE OF WEB ACCESS SUPPORT**

Full client-side web access for exchanging data with remote servers and for interacting with web APIs. Asynchronous connection for AJAX-style programming.

**NEWLY DESIGNED SLIDE SHOW TEMPLATES**

Updated look for slide shows with new style templates and support for background images.

**OTHER NEW IMPROVEMENTS**

- Low-level input and output stream operation support
- Enhanced documentation with featured examples and learning resources
- Redesigned default stylesheet and new templates

LEARN MORE ABOUT *MATHEMATICA 9*

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# What's New in Wolfram *Mathematica*® 9

# What's New in Mathematica 9

Mathematica 9 adds major new areas—further expanding Mathematica's unrivaled base of algorithmic, knowledge, and interface capabilities.

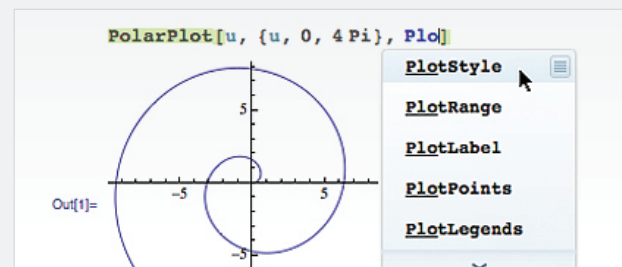
## Introducing the Wolfram Predictive Interface™

Optimizing your workflow by predicting what you'll want to do next



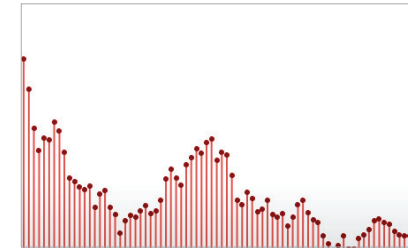
### NEXT-COMPUTATION SUGGESTIONS BAR

As soon as you finish a computation, you will get optimized suggestions about what to do next. Press a button to evaluate a new function or bring up an interactive wizard. It's a new interface paradigm that lets you navigate and discover functionality throughout the Mathematica system.



### CONTEXT-SENSITIVE INPUT ASSISTANT

Intelligent autocompletion and highlighting for functions, options, and other elements of Mathematica, integrated with Mathematica's unrivaled documentation system.



### COMPREHENSIVE SUPPORT FOR RANDOM PROCESSES

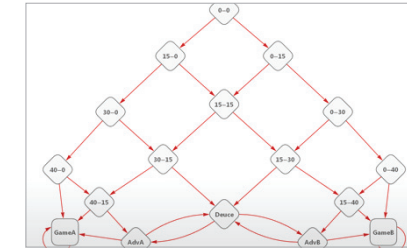
Generalized framework for modeling systems that evolve randomly over time, with support for simulation, estimation, slice distributions, and mean and covariance functions.

### RELIABILITY ANALYSIS

A complete suite for reliability analysis, with functionality for reliability block diagrams, fault trees, standby models, and importance measures.

### ENHANCED GRAPHS AND NETWORKS

New and optimized random graph distributions, capabilities for network flows, and performance improvements across the board.



### MARKOV CHAINS AND QUEUES

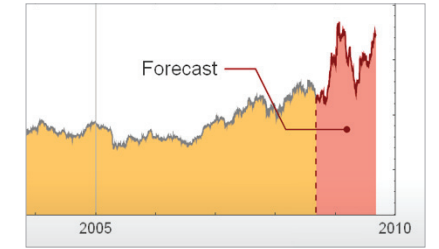
Automated support for discrete- and continuous-time Markov chains and networks of queues. Compute performance measures and design processes for applications like call centers or server architecture.

### SURVIVAL ANALYSIS

Broad support for censored data, optimized parametric and nonparametric survival modeling frameworks, and a range of generalized hypothesis-testing functions.

### BUILT-IN INTEGRATION WITH R

Integrate R code into your Mathematica workflow, exchanging data between Mathematica and R and executing R code from within Mathematica. Includes automatic download for R runtime.

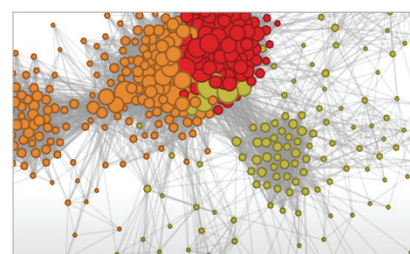


### TIME SERIES AND STOCHASTIC DIFFERENTIAL EQUATIONS

Automatic estimation of time series models from data and forecasting from models. Computation of symbolic properties for stochastic differential equations in finance, signal processing, and other areas.

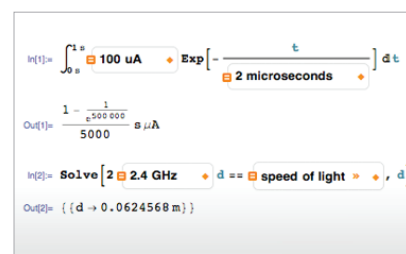
### ENHANCED PROBABILITY AND STATISTICS

Expanded capabilities in probability and statistics, including dependency measures, new hypothesis tests, weighted data, and new parametric and derived distributions.



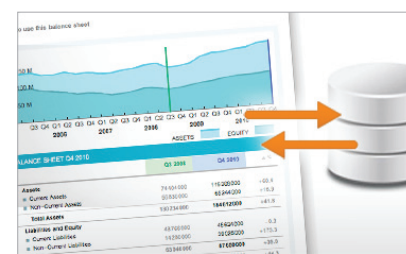
### SOCIAL NETWORK ANALYSIS

A full suite of social network analysis functionality, including community detection, cohesive groups, and centrality measures, plus built-in links to Facebook, LinkedIn, Twitter, and more.



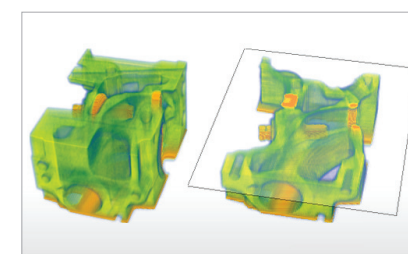
### SYSTEMWIDE SUPPORT FOR UNITS

Highly integrated support for more than 4,500 units—including free-form linguistic entry, conversions, and dimensional consistency checking across graphics and numeric and symbolic calculations.



### ENTERPRISE COMPUTABLE DOCUMENT FORMAT™ (CDF) DEPLOYMENT

New Mathematica Enterprise Edition enables direct CDF deployment with live data at runtime and other enhanced features. Preview modes emulate Wolfram CDF Player™ and Wolfram Player Pro™.

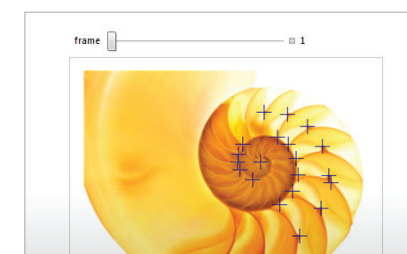


### 3D VOLUMETRIC IMAGE PROCESSING

Image processing engine now supports 3D volumetric imaging such as pixel operations, local filtering, and morphology. Includes 3D surface and volume rendering.

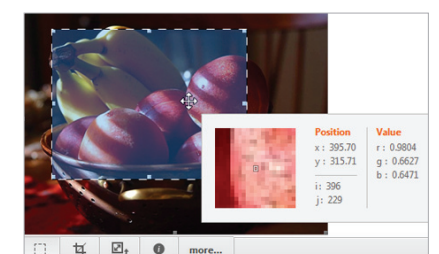
### LARGE IMAGE SUPPORT

Using out-of-core technology, Mathematica 9 scales up performance to very large 2D and 3D volumetric images.



### NEW ADVANCED IMAGE PROCESSING ALGORITHMS

Use feature tracking, face detection, image enhancements, and other highly optimized algorithms to perform comprehensive analysis of images.



### INTERACTIVE IMAGE ASSISTANT

A new way to discover image processing capabilities, with point-and-click access—all within the notebook environment.

### HDR IMAGE SUPPORT

Import of high dynamic range (HDR) images and color profile data, plus improved support for JPEG and PNG formats.

(continued on back...)