

Diagra™ Graphics Server

Batch charts and drawings for web and print

Features

Advanced Graphics Model

- Primitive shapes and high-level widgets
- Paths, clipping and coordinate transformations
- Advanced Font Handling

Multiple Output Formats

- Bitmaps for web
- EPS output for professional printing
- PDF – standalone or embedded
- Other graphics formats on demand

Business Chart Library

- Pie, bar, line and scatter plots
- Powerful time series charts
- Arbitrary Type-1 fonts

Unlimited Extensibility

- Develop custom data graphics
- Design your own widgets
- Custom chart markers
- Barcodes and other components

Multiple Data Sources

- ODBC
- Files
- Programming APIs

Platform-independence

- Windows XP, 2000, NT, ME, 98, 95
- Mac OS 8.x, OS 9.x, OS X 10.x
- Most variants of Unix, including Solaris, AIX, Linux

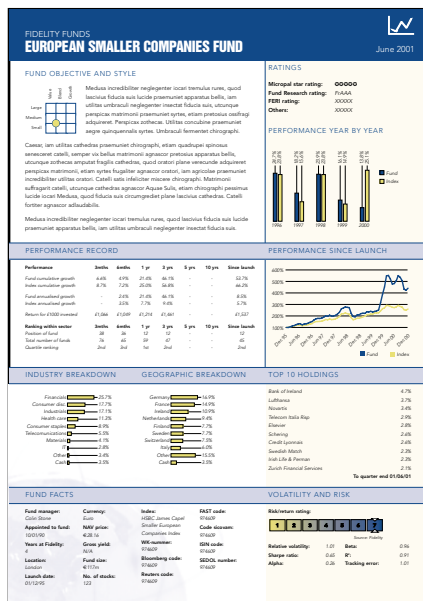
Documented and Maintainable

- Comprehensive Manuals
- Tools to document YOUR Drawings
- Integrates with version control and content managers

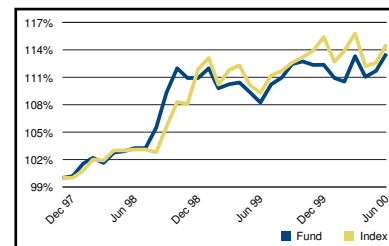
Diagra™ is a chart and diagram server. It lets you create batches of charts, diagrams and barcodes from dynamic data – either as single charts in real time, or as large batches at high speeds. It outputs color-separating EPS graphics for professional printing, bitmaps for the web, and standalone PDFs for portable delivery, as well as being the "graphics engine" for ReportLab's direct-to-PDF reporting tools. Best of all, it lets you deliver the same charts in all of these media.

Diagra has been designed to meet the exacting standards of professional designers working with financial and other complex data. Every attribute of every item in a drawing can be controlled. This is essential when arranging multiple charts on a diagram, or aligning chart content with an enclosing Quark document or web page. You can control individual data points or axis labels, as well as setting the rules by which axes are scaled and data is handled.

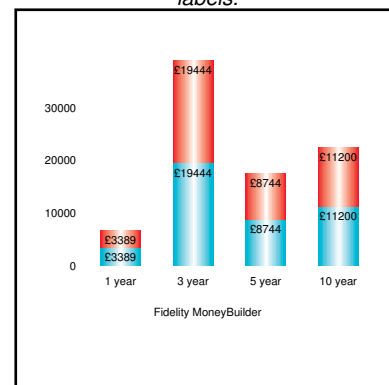
Diagra runs on almost all operating systems and can be integrated in many ways: as a web application responding to HTTP requests; from the command line; via COM, CORBA, Java or C APIs; or it can be customized to meet your requirements.



Fidelity Investments Ltd. Investments uses Diagra to generate all charts and custom graphics in their professionally printed chartbooks



Line chart showing configurable axis labels.

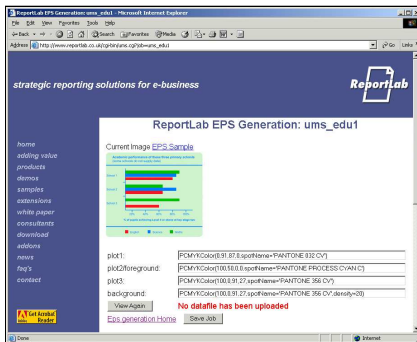


custom chart widgets

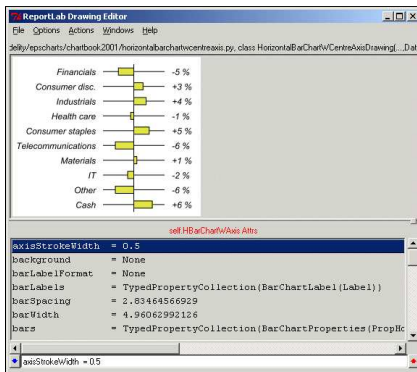
There are three core uses for Diagra:

EPS output for professional publishing There are many excellent database publishing products which allow you to create batches of documents from data sources, typically in Quark XPress. Publishers need a way to create batches of EPS drawings, with precise control over inks and fonts. Until now, there has been a limited choice of charting tools able to output color-separating EPS files. Diagra is the solution.

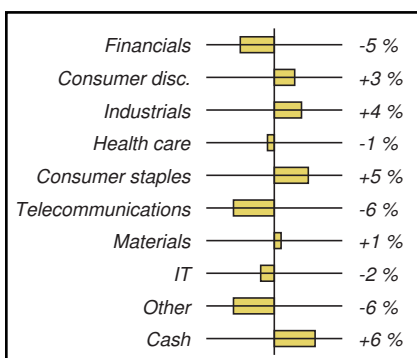
Web Graphics on demand Web development teams need charts on demand as well, especially in financial services. These can be generated in batches or in response to user requests, from file-based or relational data sources. But Diagra can serve many more needs, creating any content that needs to come out in a bitmap. It can even serve as a master "button wizard" which generates consistent bitmap buttons for sites, given a list of strings in a file or database table. What is more, it is "future proof" – the imaging model is SVG compatible and we will output SVG when browsers are ready for it.



UpMyStreet.com uses Diagra as a web-based bureau service, generating batches of thousands of EPS drawings on a weekly basis.



The Drawing Editor allows complete control over all drawing attributes at design time and maps them to dynamic data



Fidelity Investments Ltd. Investments Ltd. uses Diagra™ as part of their monthly chartbook workflow, producing X,000 charts for XX different publications (Rimas?)

PDF Data Graphics and Charts Many special purpose applications need to create data graphics. PDF is an ideal delivery format for custom graphics – it offers more advanced graphics capabilities than any GUI, and is already on everyone's desktop. Diagra drawings integrate smoothly with Report Markup Language and the ReportLab PDF Library produce crisp and precise charts and graphics within the body of a PDF document. Full-sized Diagra drawings can also be output as single-page PDFs.

Many enterprises need all three. Financial, pharmaceutical and oil companies in particular depend critically on data visualisation and need to deliver the same information in different media at different times. Diagra is a consistent and extensible platform for standardising graphics across the Enterprise.

How it works

Diagra consists of server and design-time components. The server can run on almost any operating system; the drawing editor works on Windows, Macintosh and X-Windows based desktops. The server hosts a number of "drawings", which can be thought of as job specifications; each lives in a file. These can be created using our graphical editor (see Figure 1), or hand-coded by trained programmers. We are also developing import filters for common vector graphics formats.

Drawings are based on an "object graphics library" and can contain both primitive shapes (strings, lines, rectangles and so on) and high level "widgets". These have properties affecting their appearance. For example, a pie chart will have a 'data' property accepting a list of numbers. Chart widgets are provided out of the box, and programmers can create new widgets if needed.

Drawings also support a 'data source' concept. They can accept a tabular block of data such as that returned from a database query. Any drawing element can be associated with a column in the data set. Thus, database values will typically be mapped to the 'data' and 'labels' properties of a pie chart; but dynamic data could be associated with a chart title, the filename, or even something abstract like the color of an element or the length of an arrow.

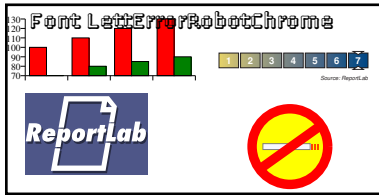
The server can accept requests from many sources. These include (a) which drawing to use, and either (b) one or more tabular blocks of data or (c) query criteria used to go and fetch such data. Diagra can retrieve tabular data from delimited files or from ODBC connections. So a simple request from a web form can say 'plot the chart for fund X', and it can fetch the data; or an application might feed it the data directly. The result is either a single chart or a batch of charts written to disk or returned to the caller.

Deployment Options and Case Studies

Server Deployment Diagra Graphics Server is available as a software component for server-side use in corporate environments. There are a range of available options, and we are expanding this to include "through-the-web" design and configuration of drawings. Fidelity Investments Ltd. Investments Ltd. is the largest Diagra Graphics Server user, and it generates all of the charts in their fund fact sheets and other publications each month, as well as GIF versions of some charts for their web sites. We would like to publicly thank Fidelity Investments Ltd. for their support and encouragement in the development of this product.

Bureau Service Many small publishing firms or teams don't have the Information Technology resources to support server applications or simply don't want the hassle. We can host jobs as a "bureau" or Application Service Provider. The top figure on the left shows just such an application. UpMyStreet.com delivers postcode- specific information throughout the UK, and their print edition needed to create thousands of charts at high speed on a weekly basis. In tandem with Electric Word, a digital publishing firm, we developed the charts they needed, and now run them as a hosted service. The users upload CSV files of data, wait a few minutes, and download zipped EPS output. They have the freedom to redefine and create new jobs, modify colors and get print testing samples entirely through the web.

Technology Licensing This technology is available for inclusion in products for either a fixed fee or on a royalty basis. We're already developing a plug-in component in tandem with MC Research, whose LinkUp Quark XTension is in our opinion the best Quark XPress database publishing tool available at present; LinkUp users will be able to control the querying within their existing tools and the charts will appear at the right time in the finished documents.



custom fonts, complex widgets, paths and grouping

Features

Benefits

Advanced Graphics Model

Primitive shapes and high-level widgets

- Standard shapes and grouping constructs
- Standard high-level widgets for charts, arrows, barcodes and more
- Write your own widgets in our extension language, or ask us to develop them for you

Paths, clipping and coordinate transformations

- Predictable results for both, viewing and printing
- Full freedom to lay out your document as you like
- No HTML graphics black art knowledge needed

Advanced Font Handling

- Type-1 font renderer allows identical text metrics and appearance in web and print
- Fonts can be included 'by reference' and loaded on the printer for maximum speed; embedded in EPS or PDF for maximum portability; or converted to curves for advanced text effects

Multiple Output Formats

Bitmaps for web

- Predictable results for both viewing and printing
- Use any bitmap format you like

EPS output for professional printing

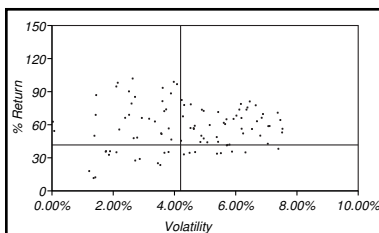
- CMYK and Spot/Density Color models

PDF – standalone or embedded

- Generate crisp, precise and portable vector graphics
- One-page stand-alone files
- Rectangular drawings within documents from the Reportlab product range

Other graphics formats on demand

- The image model is close to SVG, and SVG export will be added soon
- Proprietary or industry-specific formats can be added easily on request (e.g. for CAD drawings). Once we can import your format, it can be outputted in any of the standard file formats



Scatter Plot

Business Chart Library

Pie, bar, line and scatter plots

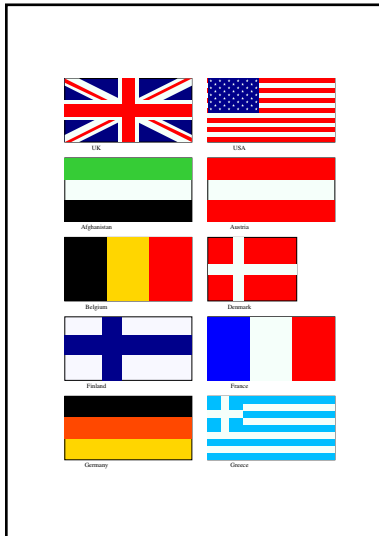
- Standard chart types are provided with a wide range of options.
- Reuse familiar concepts like frames, paragraphs, templates, styles, pages and a document story.

Powerful time series charts

- Time series charts are demanding. There are a host of common rules and adjustments – treatments for missing data, ensuring axes stay within ranges – which are easy with one chart but harder to control in a batch. Diagra has extensive properties to deal with the most complex time series charts.
- Write your own flowables, e.g. for barcodes (already available as a third party extension!)

Arbitrary Type-1 fonts

- Use any Type-1 font you like by providing only the Adobe AFM and PFB font files.
- Stick to the standard 14 Adobe PostScript fonts if sufficient.



Some of our example widgets – you can design your self.

Unlimited Extensibility

Develop custom data graphics	<ul style="list-style-type: none"> By following our standard API, you can quickly design new static and dynamic chart types and data presentations in an object-orientated style. Unlimited aggregation and reuse of graphical widgets.
Design your own widgets	<ul style="list-style-type: none"> You aren't limited to the widgets that come in the box – design and re-use your own!
Custom chart markers	<ul style="list-style-type: none"> Mark the points on your line charts and timeseries graphs with custom chart markers – filled or hollow squares, diamonds, circles, crosses...
Barcodes and other components	<ul style="list-style-type: none"> Drawings don't have to be charts. Barcodes are just one example; we support most popular symbologies out of the box.

Multiple Data Sources

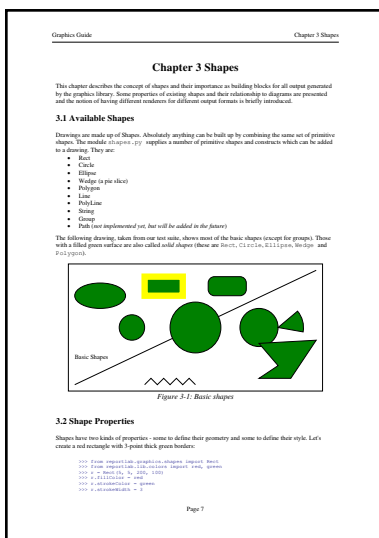
ODBC	<ul style="list-style-type: none"> Use SQL to connect to databases Able to use SQL which is as complex as you need to retrieve the data in exactly the format you want.
Files	<ul style="list-style-type: none"> Extract data from CSV (Comma Separated Values) files Export CSV files from Excel or any other program that can handle tabular data Additional file formats on request
Programming APIs	<ul style="list-style-type: none"> COM and other programming interfaces allow you to request a designated graphic and pass in the data to be used - for single charts or batches

Platform-independence

Windows XP, 2000, NT, ME, 98, 95	<ul style="list-style-type: none"> Reduce versioning frenzy because of unforeseen upgrades. Be independent of magic Windows DLLs.
Mac OS 8.x, OS 9.x, OS X 10.x	<ul style="list-style-type: none"> Postpone your migration decision to OS X if needed.
Most variants of Unix, including Solaris, AIX, Linux	<ul style="list-style-type: none"> We also port as needed for specialist platforms like AS/400, OS/2, BeOS, Sony PlayStation and Windows CE.

Documented and Maintainable

Comprehensive Manuals	<ul style="list-style-type: none"> The user guide and programmer's guide are all written in ReportLab's own tools and are full of examples.
Tools to document YOUR Drawings	<ul style="list-style-type: none"> JavaDoc-style tool will generate a complete manual from your own collections of drawings, with a complete reference to all editable properties, sample drawings, and as many illustrative examples as you wish.
Integrates with version control and content managers	<ul style="list-style-type: none"> Drawings are defined in readable, text oriented formats and can be version-controlled with all popular systems; you can easily track changes or additions to drawings.



A page from our documentation



Who should use this?

- Digital publishers creating either personalized data-driven documents, or the same documents on a regular basis.
- Web development teams wanting a single, consistent tool for creating, managing and generating graphics, charts, logos and bitmap buttons.
- Industries and applications who need to incorporate custom graphics into a standard reporting or document-generating workflow.
- Anyone seeking the ultimate in flexible, real-time reporting tools – using Diagra alongside our RML2PDF™ direct-to-PDF reporting tools.

System Requirements

- There are no special hardware requirements. ReportLab will liaise with you to determine the best deployment techniques for your platform and environment.
- We build and install as needed on Unix platforms; standard installers are available on Windows and Mac.

Support and Related Services

ReportLab offers support directly or through a network of trained resellers and consultants. 24x7 support is available for critical server installations. Successful support involves site analysis, staff training, and continual review of performance against targets.

We can log in remotely to debug, upgrade or maintain your systems, and will make site visits where feasible.

We offer training as needed. The best approach is usually for us to deliver an initial application, then to work together with your staff to transfer both development and support skills, until you can develop new applications without depending on us.

All products come with comprehensive illustrated manuals and numerous examples.

The Making of...

These datasheets and white papers are, of course, generated from ReportLab's own software. Here's how we do it:

- we defined a little XML document type to hold the required information for product datasheets and white papers.
- we are then free to use many of the excellent XML editing tools such as XML Spy (www.xmlspy.com) to input the data. These check that the data complies with the required format as you type.
- we designed a template in a mixture of static RML and short dynamic expressions in our PREPPY preprocessor (much like JSP or ASP). This is compiled on first use (or whenever the design changes) into a program which can merge the dynamic input and create a "fully-expanded" RML document.

- drawings and charts come from our Diagra Charting and Graphics framework. As well as generating crisp vector drawings in PDF, Diagra can output EPS for professional publishing and bitmaps for the web.
- any "page miniatures" you see are brought in using our PageCatcher product, which lets us import existing content from other PDF documents. A single tag in the input tells it which page to load from which PDF. These are the exact pages from the sample application – zoom in and look! (*This does make the PDF files larger*).
- RML2PDF then converts the fully expanded RML into a PDF document.

The program can be run on demand, but is also run on our web server each night to regenerate all the documents. And we could easily produce HTML versions from the original XML if we wished.

For More Information

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