

Using Inkscape and Scribus to Increase Business Productivity

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Businesses are under continuous pressure to cut costs and increase productivity. In modern businesses, computer hardware and software and ancillaries are a major cost factor. It is worthwhile for every business to investigate how best it can leverage the power of open source software to reduce expenses and increase revenues.

Businesses that restrict themselves to proprietary software like Microsoft Office get a raw deal. Not only do they have to pay for the software but they have to factor-in the cost incurred in every instance the software becomes corrupt. This includes the fee required to be paid to the computer technician to re-install the software. All this creates a vicious environment where cost and delays keep mounting. It should be a primary aim of every business to develop a system where maintenance becomes automated to the maximum possible extent.

This is where open source software like LibreOffice, Apache OpenOffice, Scribus, GIMP, Inkscape, Firefox, Thunderbird, WordPress, VLC media player, etc. come in. My company, MultiSpectra Consultants, uses open source software to the maximum possible extent thereby streamlining business processes. It makes updating the software and maintenance very easy. These software can be freely downloaded from the internet and updates to the software can also be applied by simply downloading the updated version of the relevant software.

Wikipedia defines free and open source software (FOSS) as computer software that can be classified as both free software and open source software. That is, anyone is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software. This is in contrast to proprietary software, where the software is under restrictive copyright and the source code is usually hidden from the users. The benefits of using FOSS can include

decreasing software costs, increasing security and stability (especially in regard to malware), protecting privacy and giving users more control over their own hardware.

Key open source software are LibreOffice, Apache OpenOffice, Scribus, GIMP, Inkscape, Firefox, Thunderbird, WordPress, VLC media player, etc.

Inkscape. Inkscape is a free and open source vector graphics editor; it can be used to create or edit vector graphics such as illustrations, diagrams, line arts, charts, logos and complex paintings. Inkscape's primary vector graphics format is Scalable Vector Graphics (SVG), however many other formats can be imported and exported. Inkscape can render primitive vector shapes (e.g. rectangles, ellipses, polygons, arcs, spirals, stars and 3D boxes) and text. These objects may be filled with solid colours, patterns, radial or linear colour gradients and their borders may be stroked with adjustable transparency. Embedding and optional tracing of raster graphics is also supported enabling the editor to create vector graphics from photos and other raster sources. Created shapes can be further manipulated with transformations, such as moving, rotating, scaling and skewing.

Initial release November 2, 2003

Stable release 0.92.5 (April 9, 2020)

Preview release 1.0rc1 (April 9, 2020)

Repository gitlab.com/inkscape/inkscape

Written in C++ with gtkmm, Python (extensions)

Operating system FreeBSD, Linux, macOS and Windows

Platform IA-32 and x64

Size 81.6 MB

Available in 90 languages

Type Vector graphics editor

Licence GPLv3+

Website inkscape.org

Inkscape is a free and open-source vector graphics editor. This software can be used to create or edit vector graphics such as illustrations, diagrams, line arts, charts, logos, icons and complex paintings. Inkscape's primary vector graphics format is Scalable Vector Graphics (SVG); however, many other formats can be imported and exported.

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manipulated with transformations, such as moving, rotating, scaling and skewing.

Inkscape began in 2003 as a code fork of the Sodipodi project. Sodipodi, developed since 1999, was itself based on Raph Levien's Gill (GNOME Illustration Application).

The Inkscape FAQ interprets the word Inkscape as a compound of ink and scape. The name is made up of the two English words 'ink' and 'scape'. Ink is a common substance for drawings, and is used when the sketched work is ready to be permanently committed to paper, and thus evokes the idea that Inkscape is ready for production work. A scape is a view of a large number of objects, such as a landscape or ocean-scape, and thus alludes to the object-oriented nature of vector imagery.

Four former Sodipodi developers led the fork; they identified differences over project objectives, openness to third-party contributions and technical disagreements as their reasons for forking. With Inkscape, they said they would focus development on implementing the complete SVG standard, whereas Sodipodi development emphasised developing a general-purpose vector graphics editor, possibly at the expense of SVG.

Following the fork, Inkscape's developers changed it greatly: they changed the programming language from C to C++; adopted the GTK (formerly GIMP Toolkit) toolkit C++ bindings (gtkmm); redesigned its user interface and added a number of new features. Notably, Inkscape's implementation of the SVG standard, although incomplete, has shown gradual improvement.

Up until the end of November 2007, Inkscape's source code repository was hosted by SourceForge. Thereafter, it moved to Launchpad. In June 2017, it moved to GitLab.

SVG (acronym for "Scalable Vector Graphics") is a free and open, standardised file format for vector graphics. It is maintained and developed by the W3C (World Wide Web Consortium), the main international standards organisation for the web. It is based on XML (Extensible Markup Language), also a W3C standard format, which is a generic markup language developed to represent arbitrary data in human- and machine-readable format. The SVG file format uses these structures to represent visual data. The tags, elements and attributes which can be used and understood by vector graphics editing and viewing programs are determined in the SVG specification. The currently (March 2015) valid specification is SVG 1.1, with SVG 2.0 on the way, and many of the new features are already implemented in Inkscape and many viewers (like web browsers).

The features of SVG 1.1 include paths, basic shapes (like circles and polygons), text, fill, stroke and markers, colour, gradients and patterns, clipping, masking and compositing, filter effects,

interactivity, linking, scripting, animation, fonts and metadata. The W3C also makes a point of backwards compatibility and extensibility of the format.

SVG is a human-readable format that can be edited using just a text editor, it can be searched and compressed, it can be automatically created and manipulated, mixed into (X)HTML it can be an integral part of a web page, it can be animated and it can be used to create desktop environments. Also, SVG allows for easy embedding of editor metadata. The Inkscape program is a heavy user of this feature, using it to store the raw data that goes into things like star shaped paths, and to save its own settings for the specific file right inside it. But foremost, and in addition to being user- and developer-friendly and versatile, it is an open standard, which can be used as-is in many different applications. Standard-conformity was one of the reasons for the formation of the Inkscape project.

The Inkscape project does not only use SVG as its native file format, it also takes part in the further development and refinement of SVG features by delegating a representative to the W3C SVG Working Group.

Inkscape prides itself on being a fully standard-compliant SVG editor. As of March 2015, it even supports rendering of SVG properties which are not yet officially part of the standard, but have reached a stable state in the SVG Working Group's draft for SVG 2.0. Those include hatched patterns, the fill/stroke painting order and CSS blending modes. Currently, those are not yet editable via the GUI, but can be changed by editing the attributes in the XML editor, of course.

Mesh gradients are also already implemented in the development version of Inkscape, but not available in 0.91 yet. The standardisation process for this feature stabilised only recently and there is still a lot of work to be done on the user interface to make editing mesh gradients comfortable. Work has already started on the implementation of CSS-based text in a shape. Although all these functionalities make Inkscape nearly a complete reflection of the current and drafted SVG standard, there are also a few features which are 'missing' for various reasons. Inkscape does not implement the tiling filter, there is no animation, nor is there current work ongoing to make Inkscape an editor for SVG animations which would require a very large amount of work on the GUI and the underlying animation functions. SVG fonts, which are part of the SVG 1.1 specification, have been dropped from the draft for SVG 2.0. They will be replaced by SVG inside OpenType fonts.

The only thing in Inkscape which currently is not standard-compliant is flowed text. This is because the standardisation process for SVG 1.2, where flowed text was supposed to be included, was interrupted. But by then, the feature was already in the software, and it was useful for many users. As a result, the Inkscape developers did not just take it away again, but

rather kept it in, so people can dynamically edit their texts from within Inkscape.

Inkscape workflow is based around vector objects. Included tools allow manipulating primitive vector shapes—e.g. rectangles, ellipses and arcs—and more complex objects, like 3D boxes with adjustable perspectives, stars, polygons and spirals. Inkscape also has rendering feature that can create objects like barcodes, calendars, grids, gears or roulette curves (using spirograph tool). These objects may be filled with solid colours, patterns, radial or linear colour gradients and their borders may be stroked, both with adjustable transparency. All of those can be further edited by transformations—such as moving, rotating, scaling and skewing—or by editing paths.

Other tools allow creating Bézier curves, freehand drawing of lines (pencil), or calligraphic (brush-like) strokes which support a graphics tablet.

Inkscape is able to write and edit text with tools available for changing font, spacing, kerning, rotation, flowing along the path or into a shape. Text can be converted to paths for further editing. The program also has a layers (as well as an objects) feature that allows the user to organise objects in a preferred stacking order in the canvas. Objects can be made visible/invisible and locked/unlocked through these features.

Symbol libraries enable Inkscape to use existing symbols like logic-gate symbols or DOT pictograms. Additional libraries can be included by user.

Inkscape supports image tracing, the process of extracting vector graphics from raster sources.

Clones are child objects of an original parent object. Different transformations can be applied to them, such as: size, position, rotation, blur, opacity, colour and symmetry. Clones are updated live whenever the parent object changes.

Object manipulation

Every object in the drawing can be subjected to arbitrary affine transformations: moving, rotating, scaling, skewing and a configurable matrix. Transformation parameters can be specified numerically. Transformations can snap to angles, grids, guidelines and nodes of other objects, or be aligned in specified direction, spaced equally, scattered at random.

Objects can be grouped together. Groups of objects behave similarly towards objects. Objects in a group can be edited without having to ungroup them first.

The Z-order determines the order in which objects are drawn on the canvas. Objects with a high Z-order are drawn on top of objects lower in the Z-order. Order of objects can be managed either using layers, or by manually moving the object up and down in the Z-order. Layers can be locked or hidden, preventing modifying and accidental selection.

Create Tiled Clones tool allows to create symmetrical or grid-like drawings using various plane symmetries.

Appearance of objects can be further changed by using masks and clipping paths, which can be created from arbitrary objects, including groups.

The style attributes are 'attached' to the source object, so after cutting/copying an object onto the clipboard, the style's attributes can be pasted to another object.

Operations on paths

Inkscape has a comprehensive tool set to edit paths (as they are the basic elements of a vector file):

Edit Path by Node tool: allows for the editing of single or multiple paths and or their associated node(s). There are four types of path nodes; Cusp (corner), Smooth, Symmetric and Auto-Smooth. Editing is available for the positioning of nodes and their associated handles (angle and length) for Linear and Bézier paths or Spiro curves. A path segment can also be adjusted by dragging (left click + hold). When multiple nodes are selected, they can be moved, scaled and rotated using keyboard shortcut or mouse controls. Additional nodes can be inserted into paths at arbitrary or even placements, and an effect can be used to insert nodes at predefined intervals. When nodes are deleted, the handles on remaining ones are adjusted to preserve the original shape as closely as possible.

Tweak tool (sculpting/painting): provides whole object(s) or node editing regions (parts) of an object. It can push, repel/attract, randomise positioning, shrink/enlarge, rotate, copy/delete selected whole objects. With parts of a path you can push, shrink/enlarge, repel/attract, roughen edges, blur and colour. Nodes are dynamically created and deleted when needed while using this tool, so it can also be used on simple paths without pre-processing.

Path-Offsets; Outset, Inset, Linked or Dynamic: can create a Linked or Dynamic (unlinked) Inset and or an Outset of an existing path which can then be fine tuned using the given Shape or Node tool. Creating a Linked Offset of a path will update whenever the original is modified. Making symmetrical (i.e., picture frame) graphics easier to edit.

Path-Conversion; Object to Path: conversions of Objects; Shapes (square, circle, etc.) or Text into paths.

Path-Conversion; Stroke to Path: conversions of the Stroke of a shape to a path.

Path-Simplify: a given path's node count will reduce while preserving the shape.

Path-Operations (boolean operations): use of multiple objects to Union, Difference, Intersection, Exclusion, Division and Cut Path.

Inkscape includes a feature called Live Path Effects (LPE), which can apply various modifiers to a path. Envelope Deformation is available via the Path Effects and provides a perspective effect. There are more than a dozen of these live path effects. LPE can be stacked onto a single object and have interactive live on canvas and menu-based editing of the effects.

File formats

Inkscape's primary format is Scalable Vector Graphics (SVG) version 1.1, meaning that it can create and edit with the abilities and within the constraints of this format. Any other format must either be imported (converted to SVG) or exported (converted from SVG). The SVG format is using the Cascading Style Sheets (CSS) standard internally. Inkscape's implementation of SVG and CSS standards is incomplete. Most notably, it does not support animation natively. Inkscape has multilingual support, particularly for complex scripts. Formats that used the UniConvertor library are not supported in the upcoming 1.0 release. A workaround is to have a parallel installation of version 0.92.x.

Inkscape file format support

Adobe Illustrator Artwork (AI), CorelDRAW (CDR), Microsoft Visio Drawing (VSD), Portable Document Format (PDF), compressed SVG (SVGZ), JPEG, PNG, GIF, BMP, Computer Graphics Metafile (CGM), Encapsulated Postscript (EPS), PostScript (PS), SK1, Xfig (FIG), Flash XML Graphics (FXG), Hewlett-Packard Graphics Language (HPGL), HTML5 canvas element, LaTeX (TeX), Synfig (SIF) and Extensible Application Markup Language (XAML).

Other features

XML Editor for direct manipulation of the SVG XML structure

Editing of Resource Description Framework (RDF), a World Wide Web Consortium (W3C) metadata information model

Command-line interface, exposes format conversion functions and full-featured GUI scripting

More than sixty interface languages

Extensible to new file formats, effects and other features

Mathematical diagramming, with various uses of LaTeX

Experimental support for scripting

lib2Geom is now also external usable.

Scribus. Scribus is a desktop publishing (DTP) application and is a free software. It is

available for Microsoft Windows, Linux and Mac OS. Scribus is designed for layout, typesetting, and preparation of files for professional-quality image-setting equipment. It can also create animated and interactive pdf presentations and forms. Example uses include writing newspapers, brochures, newsletters, posters and books. Since its humble beginning in the spring of 2001, Scribus has evolved into one of the premier Open Source desktop applications. Encouraged by professionals and beginners alike, the Scribus Team, with support from a large and growing number of enthusiastic contributors from all over the world, is dedicated to develop and improve “one of the most powerful and useful open-source projects out there”. Underneath a user-friendly interface, Scribus supports professional publishing features, such as CMYK colours, spot colours, ICC colour management and versatile PDF creation. Scribus has many unexpected touches, such as powerful vector drawing tools, support for a huge number of file types via import/export filters, emulation of colour blindness or the rendering of markup languages like LaTeX or Lilypond inside Scribus. The Scribus file format is XML-based and open. Unlike proprietary binary file formats, even damaged documents can be recovered with a simple text editor.

Developer(s) The Scribus Team

Initial release 26 June, 2003

Stable release 1.4.8 / 3 March, 2019

Preview release 1.5.5 / 2 August, 2019

Repository www.scribus.net/websvn/listing.php?reponame=Scribus

Written in C++ (Qt)

Operating system Linux/UNIX, macOS, Windows, OS/2 Warp 4/eComStation, FreeBSD, PC-BSD, OpenBSD, NetBSD, Solaris, OpenIndiana, GNU/Hurd, Haiku

Available in Multilingual

Type Desktop publishing

Licence GNU LGPL 2.1, MIT, 3-clause BSD, Public domain

Website www.scribus.net

Scribus is free and open-source desktop publishing (DTP) software available for most desktop operating systems. It is designed for layout, typesetting, and preparation of files for professional-quality image-setting equipment. Scribus can also create animated and interactive PDF presentations and forms. Example uses include writing newspapers, brochures, newsletters, posters and books.

Scribus is written in Qt and released under the GNU General Public License. There are native versions available for Unix, Linux, BSD, macOS, Haiku, Microsoft Windows, OS/2 and eComStation operating systems.

Many free programs are included in this DTP package. Books about Scribus are available in

several languages, including an official manual for v1.3.

General feature overview

Scribus supports most major bitmap formats, including TIFF, JPEG and Adobe Photoshop. Vector drawings can be imported or directly opened for editing. The long list of supported formats includes Encapsulated PostScript, SVG, Adobe Illustrator and Xfig. Professional type/image-setting features include CMYK colours and ICC colour management. It has a built-in scripting engine using Python (actual 2.7.13 in 1.5.4). It is available in 60 languages.

High-level printing is achieved using its own internal level 3 PostScript driver, including support for font embedding and sub-setting with TrueType, Type 1 and OpenType fonts. The internal driver supports full Level 2 PostScript constructs and a large subset of Level 3 constructs.

PDF support includes transparency, encryption and a large set of the PDF 1.5 specification including layers (OCG), as well as PDF/X-3 and PDF/X-4 (since 1.5.1), including interactive PDFs form fields, annotations and bookmarks.

The current file format, called SLA, is XML. Old versions of SLA were based on XML. Text can be imported from OpenDocument (ODT) text documents (such as from LibreOffice Writer), OpenOffice.org XML (OpenOffice.org Writer's SXW files), Microsoft Word's DOC, PDB, and HTML formats (although some limitations apply). ODT files can typically be imported along with their paragraph styles, which are then created in Scribus. HTML tags which modify text, such as bold and italic, are supported. Word and PDB documents are only imported as plain text.

Initially, Scribus did not properly support complex script rendering and so could not be used with Unicode text for languages written in Arabic, Hebrew, Indic and South East Asian writing systems, even though it supported Unicode character encoding. In August 2012, it was announced that a third party had developed a system to support complex Indic scripts. In May 2015, it was announced that the ScribusCTL project had started to improve complex layout by integrating the OpenType text-shaping engine HarfBuzz into the official Scribus 1.5.1svn branch. In July 2016, it was announced that the text layout engine had been rewritten from scratch in preparation for support of complex scripts coming in Scribus 1.5.3 and later. In December 2016, Scribus announced they got support for OpenType advanced feature in 1.5.3svn, as well as complex script and RTL direction.

As of June 2018, Scribus stable release 1.4.7 did not have OpenType alternative glyph support, so ligatures, for example, are not inserted automatically. This is available with 1.5.3+.

Support for other programs and formats

Scribus cannot read or write the native file formats of other DTP programs such as QuarkXPress or InDesign; the developers consider that reverse engineering those file formats would be prohibitively complex and could risk legal action from the makers of those programs. Support for importing Microsoft Publisher is incorporated into version 1.5, and QuarkXPress Tag files, InDesign's IDML, as well as InCopy's ICML formats were added to the development branch.

Due to licensing issues, the software package does not include support for the Pantone colour matching system (PMS), which is included in some commercial DTP applications. Pantone colours can be obtained and incorporated within Scribus without licensing issues. Scribus is shipped with more than 100 colour palettes (more than 300 since 1.5.3) most donated by various commercial colour vendors, but also including scientific, national, and government colour standards.

While open source software can be obtained free, there are some issues at stake also. One is the frequency of updates. This depends solely on the developers. It is desirable that there be frequent updates so that the software becomes more useful at the earliest. Another issue is the stability of the software. Business-critical software must be stable and bug-free. Compatibility with proprietary software used by business-partners is another issue. My company, MultiSpectra Consultants, must be able to open a document sent by another company that uses proprietary software.

My company, MultiSpectra Consultants, has developed what it calls the MultiSpectra OS. This basically consists of Ubuntu Linux with LibreOffice, Scribus, GIMP, Inkscape, Firefox, Thunderbird and VLC media player.

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