Technical Writing and Presentation

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Outline

- Technical Writing
- Vector Graphics using Inkscape
- References

Technical Writing and Presentation

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Tech. Writing

LYX

Beamer

Inkscape

Inkscape

Usually there are two categories of word processing software packages

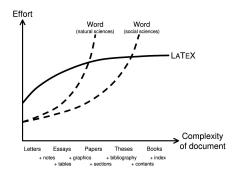
What You See Is What You Get (WYSIWYG)

▶ What You See Is What You Mean (WYSIWYM)

WYSIWYG	WYSIWYM
Microsoft Word LibreOffice Writer	₽ТЕХ
AbiWord Calligra Words	L _Y X

Roughly, you can compare LATEX to Word as you compare Matlab to Excel

LATEX vs Microsoft Word



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Tech. Writing

LETEX LYX

Beamer

Inkscape



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 - LyX
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Tech. Writing

L_YX

Beamer

Inkscape

- Simply you can think of it as similar to HTML*
- ▶ In order to create a document in LATEX, a .tex file must be created using some text editor
- ▶ The .tex file is then compiled to produce the document
- ATEX can generate several document formats including "pdf"

^{*(}HyperText Markup Language)

Although being free is an advantage, but it is a drawback at the same time

- Slow download server
- No clean official documentation
- Several alternatives to do the same thing

However; LATEX is very mature and widely used by professional/enterprise publishers

- ► Also it has a big user community
 - when you encounter a problem, google it. Most likely you will find others had encountered it and found a solution



LATEX 2€ Cheat Sheet

Document classes Default is two-sided book

report No \mart divisions No \part or \chapter divisions. Letter (?).

slides Large sans-serif font Used at the very beginning of a document: \documentclass{closs} lise \hegin{document} to start contents and \end{document} to end the document

Common documentclass options

10pt/11pt/12pt letterpaper/a4paper Paper size. twocolumn Use two columns twostde

Set margins for two-sided Landscape orientation. Must use dvips landscape -t landscape. Double-space lines.

Usage: \documentclass[opt.opt]fclass}.

Packages

fullpage Use 1 inch margins. anysize Set margins: \marginsize{l}{r}{t}{b}. multicol Use n columns: \begin{multicols} Hn}. latexsyn Use I&TeX symbol font.

graphicx Show image: \includegraphics[width=x]{file}. Insert URL: \url{http://...}. Use before \begin{document}. Usage: \usepackage{package}

Title

\author{text} Author of document. \titleftext} Title of document. \date{text} Date. These commands go before \begin{document}. The

declaration \maketitle goes at the top of the document. Miscellaneous

\pagestyle-fempty\ Empty header, footer and no page num-\tableofcontents Add a table of contents here.

Document structure

\subsubsection{title} \chapter{title} \paragraph{title} \section(title) \subparagraph{title} \subsection{title} Use \setcounter{secnumdepth}{x} suppresses heading

items will also not appear in the table of contents. Text environments

numbers of depth > x, where chapter has depth 0. Use a *, as in \section*{title}, to not number a particular item—these \begin{comment} Comment (not printed). Requires verbatim package

\begin{quote} Indented quotation block. \beginfquotation\Like quote with indented paragraphs. \begin{verse} Ouotation block for verse.

Lists

\begin{enumerate} Numbered list. \begin{itemize} Bulleted list \hegin{description}Description list

\item text Add an item \item[x] text Use z instead of normal bullet or number Required for descriptions.

References

\label{marker} Set a marker for cross-reference, often of the form \label{sec:item}. Give section/body number of marker.

Effect

\ref{marker} \nageref{marker} Give page number of marker \footnoteftext\ Print footnote at bottom of page.

Floating bodies

\begin{table} [place] Add numbered table. \begin{figure} [place] Add numbered figure. \begin{equation} [place] Add numbered equation. \cantion{text} Caption for the body The place is a list valid placements for the body. t=top, h=here, b=bottom, p=separate page, !=place even if ugly. Captions and label markers should be within the environment.

Text properties

Font	face
Comm	and
\textr	nftext}

{\rmfamily text} Roman family \+ovenessout} {\sffamily text} Sans serif family {\ttfamily text} Typewriter family \textmd{text} {\mdseries text} Medium series {\bfseries text} Bold series \text\f{text} {\upshape text} Unright shape \textit(text) {\itshape text} Italic shape \textslftcxt} {\slshape text} Slanted shape \textscftext} {\scshape text} SMATT CARE SHARE \emphftext} {\en_text} Emphasized \textnormal{text}{\normalfont text}Document font \underline{text} Underline The command (tttt) form handles spacing better than the declaration (tttt) form Font size

Marge Large \scriptsize scriptsize VLARGE LARGE \footnotesize footnotesize \small normalsize \normalsize large These are declarations and should be used in the form (\small

...), or without braces to affect the entire document. Verbatim text

\begin{verbatin} Verbatim environment. \begin{verbatin*} Spaces are shown as ...

Text between the delimiting characters (in this case '!') is verbatim.

Justification

Environment Declaration \begin{center} \centering \begin{flushleft} \raggedright \begin{flushright} \raggedleft

Miscellaneous

\linespread{x} changes the line spacing by the multiplier x.

Text-mode symbols

Symbols

1.0 \ldots \texthullet . 1-0 12 \textbar \textbackslash ~ \'-ñ % \% Accents

à \'o | 6 \'o 1 ô \~o 1 ô \~o ó ۱.۰ ö \"o 0 10 0 0 10 0 5 19 6 c \c c 0 \4 0 0 10 0 60 \t 00 cc \ oe Œ \OE ic \ae Æ \AE ā \aa À \AA 0 10 Ø \0 1 \1 L \L 1 \1

1 \1 Delimiters

> \textgreater Daches

NameSource Example Usage In words en,dash Retween numbers Yes-or no? Punctuation em-dash ---

Line and page breaks

Begin new line without new paragraph. Prohibit pagebreak after linebreak \kill Don't print current line. \pagebreak Start new page. \noindent Do not indent current line.

Miscellaneous

\todav February 25, 2014 \$\sim\$ Prints ~ instead of \"{}, which makes ". Space, disallow linebreak (W.J. Clinton). ۱.0 Indicate that the , ends a sentence when following an unpercase letter \hspace{l} Horizontal space of length l (Ex: l = 20pt). \vspace{l} Vertical space of length l.

Tabular environments

\rule(w)(h) Line of width w and height h.

tabbing environment

\= Set tab ston > Go to tab stop Tab stops can be set on "invisible" lines with \kill at the end of the line. Normally \\ is used to separate lines.

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L_VX

Beamer Inkscape



tabular environment

\begin{array} [pos] {cols} \hogin{tabular}[nos]{cols} \begin{tabular*}{width}[pos]{cols}

tabular column specification

Left-justified column. Centered column Right-instified column pfwidth} Same as \parbox[t]fwidth} @{decl} Insert decl instead of inter-column space.

tabular elemente

Horizontal line between rows \cline{v-u} Horizontal line across columns v through u \multicolumn{nHcolsHtert}

A cell that spans n columns with cols column specification

Math mode

A \Lambda

Υ \Upsilon Φ \Phi

For inline math, use \((...\) or \$...\$. For displayed math, use \[...\] or \begin{equation}.

Superscript* -{x} Subscript_x _{x} \frac{x}{v} \sun {k=1}^n \sort[n]{v} \nrod {k=1}"n

Math-mode symbols

\leq ≈ \approx 1450 ± \pm "f\circl o \circ ··· \cdots \prime V \vee ∞ \inftv - \neg ∧ \wedge ¬ \supset ∀ \forall → \rightarrow ∃ \exists ∉ \notin ⇒ \Rightarrow ∪ \cup □ \cap \mid ⇔ \Leftrightarrow à \dot a â \hat a ā \bar a ā \tilde a \alpha β \beta γ \ganma δ \delta \epsilon C \zeta n \eta ∈ \varepsilon κ \kappa θ \vartheta \theta ι \iota λ \lambda u \mu ν \nu ρ \rho σ \sigma τ \tau π \pi v \upsilon ø \phi χ \chi ψ \psi ω \omega Γ \Gamma A \Delta ⊖ \Theta

Bibliography and citations

II \P1 Ψ \Psi When using BESTpX, you need to run latex, bibtex, and latex twice more to resolve dependencies.

Σ. \Sigma

Ω \Omega

Citation types

Full author list and year. (Watson and Crick

\citeAfkcu} Full author list. (Watson and Crick) \citeN{kcy} Full author list and year. Watson and Crick (1052)

\shortcite{keu} Abbreviated author list and year. ? \shortciteAfkev} Abbreviated author list. ? \shortciteN{key} Abbreviated author list and year. ? \citeyear{key} Cite year only. (1953) All the above have an NP variant without parentheses; Ex.

BibTeX entry types

\citeNP.

Garticle Journal or magazine article. @book Book with publisher @booklot Book without publisher. @conference Article in conference proceedings @1 nhook A part of a book and/or range of pages. @incollection A part of book with its own title.

Onico If nothing else fits @phdthesis PhD thesis Oproceedings Proceedings of a conference.

Otechreport Tech report, usually numbered in series. @unpublished Unpublished.

BIBTeX fields address

Address of publisher. Not necessary for major publishers

author Names of authors, of format booktitle Title of book when part of it is cited. chapter Chapter or section number. edition Edition of a book Names of editors editor institution Sponsoring institution of tech. report.

Journal name. journal Used for cross ref. when no author. kev Month published. Use 3-letter abbreviation. Any additional information. number Number of journal or magazine. organization Organization that sponsors a conference. pages Page range (2,6,9--12).

publisher school. Name of school (for thesis) Name of series of books. title Title of work Type of tech, report, ex. "Research Note". type volume Volume of a journal or book year

Year of publication. Not all fields need to be filled. See example below Common BuT-X style files

abbrv	Standard	abstract	alpha with abs
alpha	Standard	apa	APA
nlain	Standard	mart	Unsorted

The IATpX document should have the following two lines just before \end{document}, where bibfile.bib is the name of the BiBTpX file.

\bibliographystyle{plain} \bibliography{bibfile}

BibTeX example

The BigTrX database goes in a file called file, bib, which is processed with bibtex file.

@String(N = {Na\-ture}} @Article(WC:1953. author = {James Watson and Francis Crick}. title = {A structure for Deoxyribose Nucleic Acid}. journal = N, volume = {171}, pages = {737}. year = 1953

Sample LATEX document \documentclass[11nt]{article}

\usepackage{fullpage} \title{Temmlate} \author{Name} \begin{document}

\naketitle

\subsection*(subsection without number) text \textbf{bold text} text. Some math: \$2+2=5\$ \subsection(subsection) text \emph{emphasized text} text. \citefWC:1953} discovered the structure of DNA

A table: \begin{table}[!th] \begin{tabular}{|1|c|r|} \hline first & row & data \\ second & row & data \\

\caption{This is the caption} \labelfex:table} \end{table}

\end{tabular}

The table is numbered \ref{ev:table} \end{document}

Copyright © 2014 Winston Chang http://www.stdout.org/~winston/latex/

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Tech. Writing

LAT⊨X L_VX Beamer

Inkscape



LATEX Editors/IDE

- ► To write C/C++ code, any text editor can be used
 - But using a good IDE can greatly ease your job
- ► LATEX is similar
 - Any text editor is OK, but a dedicated LATEX editor/IDE is strongly recommended
- ► A dedicated LATEX editor/IDE
 - ► can highlight and auto complete LATEX keywords
 - has several LATEX templates for several types of documents
 - ► facilitates compiling and debugging
 - **•** . . .
- ► Sample LATEX editors are:

Texstudio; cross-platform Kile; for Linux and many others Ahmed Rashed



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LYX

Beamer

Inkscape



Thanks to the "Arabi" package, Arabic and Farsi languages are supported with the "Babel" package.

- ► However, since arabic users are few, "Arabi" package is not mature enough and some minor bugs do exist
 - Googling about these bugs, usually you find the same of similar bugs do exist in other languages, and hence you can infer solutions/workarounds

^{*}Thanks to GOD at first of course

Keep Concentrating

Due to its WYSIWYM nature, I feel more concentrating

while using LATEX as compared to Ms-Word.

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Inkscape

are:

Inkscape

*Download the full MiKTEX. This is done using the "Net Installer". First, download the full MiKTEX. After download completes, run the downloaded installer and install the full MiKTFX.

► Install LATEX implementation. Notable implementations

► Install TFX/LATEX editor/IDE. Notable examples include:

▶ MiKTFX Windows only* ► **TFX Live** cross-platform[†]

► Texstudio cross-platform[†]

► Kile for Linux

[†]Available for MS-Windows, Mac OS and Linux

Porting LATEX Documents

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Usually .tex files often reference other files (images, bibliography databases, ...).

► Hence, if you want to copy a LATEX document to another computer, you have to copy all the referenced files as well

Tech. Writing

LAT⊨X

LvX

Beamer

Inkscape

Technical Writing

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 L_YX is a graphical front-end to L_TFX .

- ► You can think of the L_YX-LAT_FX relationship as similar to the Visual Studio-C++ compiler relationship
- ► Unlike LATEX, LyX comes with tidy and very good documentation
- Also it has a big community, i.e.,
 - it is mature enough
 - when you encounter a problem, google it. Most likely you will find others had encountered it and found a solution

Keep your concentration

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Tech. Writing

Due to its WYSIWYM nature, I feel very concentrating while using LyX as compared to Ms-Word.

LyX

Beamer

Inkscape

Arabic Support

Arabic is supported in LyX.

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Tech. Writing

L_YX

Beamer

Inkscape

Installing LyX

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Tech. Writing

References

LAT⊨X LvX

Beamer

Inkscape

Install LyX

1. Install Inkscape

The following installation sequence is recommended:

environment variable

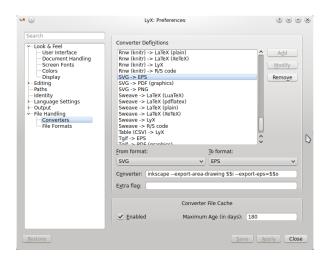
2. Install the *full* MiKT_FX (or T_FX Live)

Confirm path to inkscape.exe is added to the "PATH"

SVG is the file format used by the Inkscape graphing SW. Therefore, confirm that LyX uses Inkscape* to convert SVG files as follows:

- ▶ Tools > Preferences > File Handling > Converters >[†]
 - SVG -> EPS > Converter > inkscape \$\$i --export-area-drawing --export-type="eps"
 - ► SVG -> PDF > Converter > inkscape \$\$i --export-area-drawing --export-type="pdf"
 - SVG -> PNG > Converter > inkscape \$\$i --export-type="png"
 - ► GIF -> PNG > Converter > magick convert '\$\$i[0]' \$\$o[‡]

Configuring Converters II





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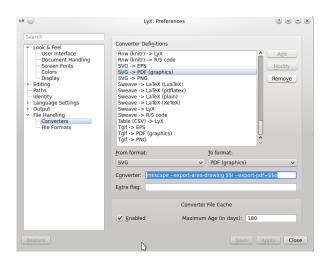
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Beamer

Inkscape

Configuring Converters III





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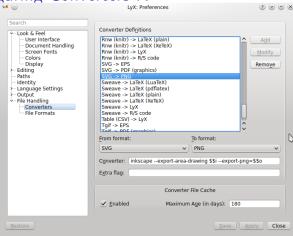
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LγX

Beamer Inkscape



Configuring Converters IV



*Make sure that the Inkscape is installed, and the path of "inkscape.exe" is added to "path" environment variable. You can test this by executing "inkscape" from the command prompt.

†Note that Inkscape CLI has changed since version 1.0 [https://wiki.inkscape.org/wiki/index.php/Using_the_Command_Line#Changes_from_0.92]





Tech. Writing

LTEX

LYX

Beamer

Inkscape

- Explore style-list, menus and toolbars.
- ▶ Help menu includes *very good* manuals.
 - ► Manuals themselves are LyX documents
 - ► So they are essentially very good L_YX examples
 - You may begin with:
 - Introduction
 - Tutorial
- C:\Program Files (x86)\LyX 2.3\Resources folder contains wide variety of very good examples

Porting LyX Documents

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Similar to LATEX documents, .lyx files often reference other files (images, bibliography databases, ...).

Tech. Writing

L_YX

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Inkscape

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Beamer

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Beamer

Inkscape

References

Beamer is a LATEX class for creating professional presentation slides.

▶ Beamer can also be easily used within L_YX

Including Videos

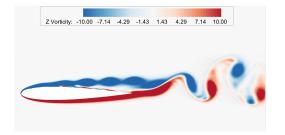
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Use the multimedia package. For example, the following animation is produced using:

\movie[externalviewer]{\includegraphics[width=0.7\textheig



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LAT⊨X LvX

Beamer

Inkscape

Including Gif Animations

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Inkscape

References

► Refer to https:

//tex.stackexchange.com/questions/240243/ getting-gif-and-or-moving-images-into-a-latex-presentation for details





Presentation Handouts

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Beamer

Inkscape

References

*like A4 or letter

Beamer-Article is a LATEX class that renders Beamer slides on a standard sized paper* to create *professional* presentation handouts

- Frame titles are used as paragraph titles
- Slide layout/colors are not rendered
- Sectioning is kept
- ▶ Beamer-Article can be easily used within L_YX

Keep your concentration

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Tech. Writing

Letex

Lex

Beamer

Inkscape

References

eterences

Installing Beamer

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References

▶ Beamer class is usually installed by default with MiKT_EX, T_EXLive

► Also templates for both Beamer-presentation and Beamer-article are included by default with LyX

► From L_YX

Help >Specific Manuals>Beamer Presentations Explore the styles list and Insert menu*

- Beamer User Guide explain creating Beamer presentations in plain LETEX and LYX as well
- ► For customization of Beamer presentations, check the "BEAMER appearance cheat sheet" at http://science.thilucmic.fr
- ► For various **themes** of Beamer presentation, check http://www.hartwork.org/beamer-theme-matrix/
- Also a very good variety of presentations are attached to this course

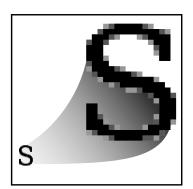
^{*}Styles will be available after you set the current document type to Beamer. This is done from the menu command "Document>Settings>Document Class>Beamer"

References

Technical Writing

Vector Graphics using Inkscape

Raster vs Vector Graphics I



Raster .bmp .jpeg .png



Vector .emf .svg .pdf .eps

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Inkscape

Interesting Plug-ins Learning Inkscape



Raster vs Vector Graphics II



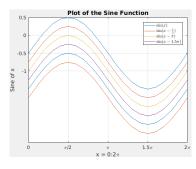
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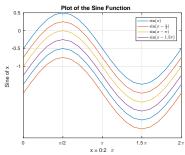


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Inkscape

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Raster vs Vector Graphics III



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Inkscape

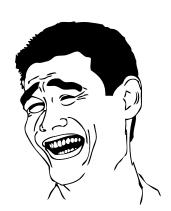
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Raster vs Vector Graphics IV





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Graphics Formats

Raster		Vector	
.bmp	Uncompressed	.pdf	Compressed
.png	Loose-less compression	.eps	
.jpg	Lossy compression	.emf	Compatible with MS office
		.svg	
:		:	

Vector Graphics Editors

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- ► Adobe Illustrator (de facto cross-platform and standard; bloated)
- Corel Draw (bloated)
- Inkscape (light, open source, free,

popular; my favorite)

- LibreOffice Draw

Tech. Writing

Inkscape

Interesting Plug-ins Learning Inkscape





Tech. Writing

Inkscape

Interesting Plug-ins Learning Inkscape

- ► Free
- Open source
- Cross platform
- Has a big community, i.e.,
 - it is mature enough
 - when you encounter a problem, google it. Most likely you will find others had encountered it and found a solution
- Much much powerful than MS-Word or MS-Power point sketching capabilities
- Has several plugins that greatly expand its capabilities

Inkscape Capabilities

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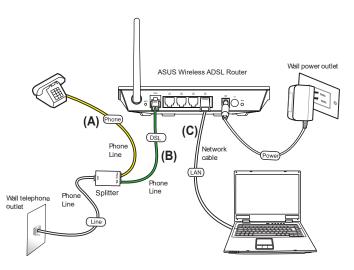


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- Inkscape is based on brazier curves
 - Defines a curve using four information, start, end, start tangent and end tangent
- Additionally, you can draw and edit:

 - text

Import Graphics from pdf



➤ You can import vector graphics from pdf files, and even edit them



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Interesting Plug-ins Learning Inkscape



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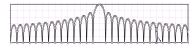
Tech. Writing

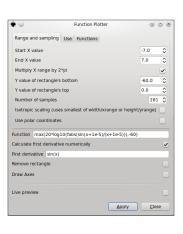
Inkscape

Interesting Plug-ins

Learning Inkscape

- It uses Bézier curves, same as Inkscape
- It calculates the function derivative and use it to adjust the curve slope
 - It produces very smooth curves using much less points than Matlab
 - You can still modify the end/control points







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Inkscape

Interesting Plug-ins Learning Inkscape



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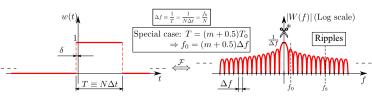
Tech. Writing

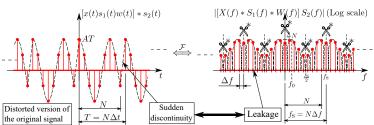
Inkscape
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Inkscape Interesting Plug-ins

Learning Inkscape References

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Inkscape
Interesting Plug-ins
Learning Inkscape

- Explore menus and toolbars
- Official manual [1] is very good and detailed
 - Chapters 1 includes 10 examples
 - ▶ The first 3 examples are enough for a good start
 - ► Chapters 5 explains editing
 - Surf it fast
- ► Help menu includes tutorials, FAQ, ...
- http://inkscapetutorials.org/

Outline

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References

T. Bah, *Inkscape*. Prentice Hall, 2011. [Online]. Available: http://www.ebook.de/de/product/14765413/ tavmjong bah inkscape.html