

TYPST

A *USER'S* PERSPECTIVE

Dr Eberhard W Lisse

2023-07-14

el@lisse.NA

INTRODUCTION

BACKGROUND

- Obstetrician & Gynecologist
- Medical School
 - University Bonn 1981-1982
 - IBM Shop
 - PDP Unix
 - Technical University Aachen 1983-1987
 - DEC Shop (VMS)
 - CDC
- \LaTeX 1985
- Private Practice 2004
- [LyX](#) 2005

(COMMAND LINE) TOOLS

- Perl
- Bash
- (GNU) Make
- {My,Postgre}SQL{lite}
 - [SQL-Ledger](#)
- [CSV2OFX](#)
- [QSV](#)
 - [MILLER](#)
 - [CSVQ](#)
 - [DATAMASH](#)
- [CSVVIEW](#)
- [CSVLENS](#)

PRACTICE WORKFLOW

- Mac (both Intel and Silicon)
- Scripting
 - Perl
 - Bash
 - Simple
 - Well Commented
- Simple Dialog/Menu
 - [Pashua](#)
- Templating
 - [Template Toolkit](#)
 - [LyX](#)

WORKFLOW DIALOG (PASHUA)

File Selector 4.53

Please Enter a File Number

Cancel Look Up

Martha N Lisse 479

LMP

ICD-10

Please Select the Activity

- Booking
- Forms
- Imaging
- Letters
- Referrals
- Pathcare
- Prescription
- Theatre Reports
- MPS Tracking

Done Continue

Martha N Lisse 479

Please Select the Prescription

- Augmentan
- Autrin
- Bactroban
- Betadine
- BV
- Candida
- Clomid
- Cyclocapron
- Folate
- Fosfomycin
- Generic
- Loop
- Metoclopramide
- Micronovum
- Mypaid
- Nuristerate
- Ponstan
- Scopex
- Tramacet
- Tramal
- Trichomonas
- Triphasil

Back Continue

PRESCRIPTION TEMPLATING

DR. EBERHARD W. LISSE

State Examination (Aachen)
Obstetrician & Gynaecologist

PO Box 8421, Bachbrecht 10007 Telephone: 081 124 6733 (cell)
Swamed Centre, John Meinert Str, Windhoek 061 236403 (practice)
Practice Nr: 016-000-0141135 Date: [% TODAY %]

Name: Ms [% FIRSTNAME %] [% SURNAME %]
Birthdate: [% BIRTHDATE %]
Medical Aid: [% MEDICALFUND %] [% MEDICALFUNDID %]
Address: [% ADDRESSA %] [% ADDRESSB %] [% ADDRESSC %]
ICD-10: [% ICDCODE %]
Diagnosis: [% ICDTEXT %]

R_X

1. [% MED %] [% DOSE %] [% ROUTE %] * [% FREQ %] ([% TOTAL %])

Repeat * 3 prn

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Swamed Centre, John Meinert Str, Windhoek 061 236403 (practice)
Practice Nr: 016-000-0141135 Date: 2023-07-05

Name: Ms Martha N Lisse
Birthdate: 19##-##-##
Medical Aid: Fund ###-###-###
Address: P.O. Box ##### Windhoek 10001
ICD-10: M54.5
Diagnosis: Backache

R_X

1. Paracetamol 500 mg p.o. * 8 hourly p.r.n. (30/thirty)

Repeat * 3 prn

PRESCRIPTION TEMPLATING

Enumerate

~/dns/tug2023/martharezept.lyx - LyX

DR. EBERHARD W. LISSE

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Practice Nr: 016-000-0141135 | Date: 2023-07-05

Name:	Ms Martha N Lisse
Birthdate:	19##-##-##
MedicalAid:	Fund ###-###-###
Address:	P.O. Box ##### Windhoek 10001
ICD-10:	M54.5
Diagnosis:	Backache

Rx

1. Paracetamol 500 mg p.o. * 8 hourly p.r.n. (30/thirty)

Repeat * 3 prn

Vertical Space (Vertical fill, protected)

No Responsibility Taken for Generic Substitution | Dr Lisse

Font: Default RCS lock

TEMPLATING/SCRIPTING

VAT PAYABLE

TOTAL OUTPUT TAX DUE: N\$ 60000.14
LESS INPUT TAX CLAIMED N\$ 15000
AMOUNT DUE/REPAYABLE N\$ 45000.14
INTEREST N\$ 0
PENALTY N\$ 0
TOTAL PAYABLE N\$ 45000.14

Return Information

TIN: #####
Tax Type: Value Added Tax
Period From: 2023-03-01
Return Period: 2023 04
Due Date:
EFT Ref No: 10# ##### 15 2023 04

Taxpayer Name: Demo Internet Services (Pty) Ltd
Return Type: Value Added Tax Return
Period To: 2023-04-30
Receive Date:

VAT DECLARED AND VAT CLAIMED

VAT DECLARED (Outputs)	Tax Categories (Namibian Dollars only)			TOTAL OUTPUT TAX DUE
Sales Figures (excluding VAT)	Exempt	Zero-Rated	15%	
Trading: Sales/Fees, etc	N\$ 0	N\$ 0	N\$ 400000.9	N\$ 60000.14
Capital goods sold	N\$ 0	N\$ 0	N\$ 0	N\$ 0
Output adjustments	N\$ 0	N\$ 0	N\$ 0	N\$ 0
TOTALS	N\$ 0	N\$ 0	N\$ 400000.9	N\$ 60000.14

VAT CLAIMED (Inputs)	Tax Categories (Namibian Dollars only)			Total Input Tax Claimed
Purchasing Figures (excluding VAT)	Exempt	Zero-Rated	15%	
Local Purchases	N\$ 0	N\$ 0	N\$ 100000	N\$ 15000
Capital goods purchased locally	N\$ 0	N\$ 0	N\$ 0	N\$ 0
Imported purchases	N\$ 0	N\$ 0	N\$ 0	N\$ 0
Imported capital goods	N\$ 0	N\$ 0	N\$ 0	N\$ 0
Input adjustments	N\$ 0	N\$ 0	N\$ 0	N\$ 0
TOTALS	N\$ 0	N\$ 0	N\$ 100000	N\$ 15000

IS T_EX READY FOR PRIME TIME?

L^AT_EX PRESCRIPTION

```
\documentclass[a5paper,11pt,DIV=15]{scrartcl}
\usepackage[medium]{noto}
\usepackage{scrdate}
\usepackage{array}
\usepackage{setspace}
\pagestyle{empty}
\setlength{\parindent}{0mm}
\headsep0pt
\providecommand{\Rx}{\Large R\kern-0.1em\lower0.7ex\hbox{x}}
\setstretch{0.9}
\renewcommand{\arraystretch}{0.8}

\begin{document}

\begin{spacing}{1.2}
\begin{center}
\textsc{\LARGE}Dr. Eberhard W. Lisse\\
{\footnotesize}State Examination (Aachen)\\
Obstetrician & Gynaecologist
\end{center}

\end{spacing}
\vspace*{-1em}
\begin{center}
\textsf{%
\footnotesize%
PO Box 8421, Bachbrecht 10007\hfill{}
Telephone: 081 124 6733 (cell)\!
Swamed Centre, John Meinert Str, Windhoek\hfill{}
061 236403 (practice)\!
Practice Nr: 016-000-0141135\hfill{}
Date: \textbf{2023-07-05}
}
}\!
\footnotesize{\textbf{\rule{1\linewidth}{2pt}}}\!
\end{center}
```

```
\begin{spacing}{1.2}
\small{
\begin{tabular}{ll}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%                               Template Toolkit                               %
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
{Name:} & \textbf{Ms Martha N Lisse}\!
{Birthdate:} & \textbf{19\#\#-\#\#-\#\#}\!
{Medical-Aid:} & \textbf{Fund}{ \#\#\#-\#\#\#\#-\#\#\#\#}\!
{Address:} & \textbf{P.O. Box \#\#\#\# Windhoek 10001}\!
{ICD-10:} & \textbf{M54.5}\!
{Diagnosis:} & \textbf{Backache}\!
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\end{tabular}
}
\end{spacing}
{\Large}\Rx
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%                               Manual                               %
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\begin{enumerate}
\item Paracetamol 500 mg p.o. {*} 8 hourly p.r.n.
(30/thirty)
\end{enumerate}
\end{enumerate}
Repeat {*} 3 prn
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\vfill
\textsf{
{\tiny}No Responsibility Taken for Generic Substitution}
\hfill{}Dr Lisse\hspace{1cm}
}
\end{document}
%
% $Id: marthatex.tex,v 1.3 2023/07/05 13:39:57 el Exp $
%
```

AFTER 45 YEARS...

- Short Answer
 - No
- Difficult
 - Complicated / Arcane
 - Powerful
- GUI?
 - Not really
 - [LyX](#)
- Dictation Impractical/Impossible
- Slow
 - PDF \LaTeX
 - Lua \LaTeX

NOW, THEREFORE...

TYPST

- Masters Theses
 - [Mädje / Haug](#)
- Gap between
 - *Advanced tools like T_EX/L^AT_EX*
 - *Simpler tools like Word or Google Docs*
- *Build a typesetting tool that is*
 - *highly capable and a pleasure to use*
- Speed
 - (near) WYSIWYG
 - Auto-Reload
- [Rust](#)

TYPST

- Markup Language
 - Outputs PDF
 - Very fast
 - Simpler than \LaTeX
 - Nontrivial
 - Less powerful than \LaTeX
- On Line Tool
- Github
- Documentation

COMMAND LINE TOOL

`typst` creates PDF files from `.typ` files

Usage: `typst [OPTIONS] <COMMAND>`

Commands:

`compile` Compiles the input file into a PDF file [aliases: `c`]
`watch` Watches the input file and recompiles on changes [aliases: `w`]
`fonts` List all discovered fonts in system and custom font paths
`help` Print this message or the help of the given subcommand(s)

Options:

`--root <DIR>` Configure the project root [env: `TYPST_ROOT=`]
`--font-path <DIR>` Add additional directories to search for fonts [env: `TYPST_FONT_PATHS=`]
`-v, --verbosity...` Sets the level of logging verbosity: `-v` = warning & error, `-vv` = info, `-vvv` = debug, `-vvvv` = trace
`-h, --help` Print help
`-V, --version` Print version

FONTS

```
typst fonts | grep 'Serif' | pr -2 -t
```

IBM Plex Serif

IBM Plex Serif Text

Libertinus Serif

Libertinus Serif Display

Libertinus Serif Initials

Microsoft Sans Serif

Noto Serif

Noto Serif Ahom

Noto Serif Balinese

Noto Serif Hmong Nyiakeng

Noto Serif Myanmar

Noto Serif Yezidi

PT Serif

PT Serif Caption

Roboto Serif

Source Serif Pro

HELLO WORLD!

```
\documentclass{scrartcl}
\usepackage{noto}
```

```
\begin{document}
```

Hello World!

```
\end{document}
```

```
#set text(font: "Noto Serif")
```

Hello World!

```
real 0m1.940s/0m0.871s
user 0m1.703s/0m0.811s
sys 0m0.190s/0m0.049s
```

```
real 0m0.150s
user 0m0.092s
sys 0m0.053s
```

SECTIONING

```
#set page(columns: 2)
= Section
#Lorem(30)
== Subsection
#Lorem(30)
=== Subsubsection
#Lorem(30)
```

```
#set heading(numbering: "1.1")
= Section
#Lorem(30)
== Subsection
#Lorem(30)
=== Subsubsection
#Lorem(30)
```

SECTIONING

Section

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

Subsection

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

Subsubsection

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

1 Section

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

1.1 Subsection

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

1.1.1 Subsubsection

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

MARKUP COMPARISON

Element	LaTeX	Typst
Bullet list	itemize environment	- List
Citation	<code>\cite{humphrey97}</code>	@humphrey97
Emphasis	<code>\emph{emphasis}</code>	<code>_emphasis_</code>
Equation	<code>\$x\$</code> , align / equation environments	<code>\$x\$</code> , <code>\$ x = y \$</code>
Figure	figure environment	figure function
Label	<code>\label{intro}</code>	<intro>
Link	<code>\url{https://typst.app}</code>	https://typst.app/
Monospace / code	<code>\texttt{print(1)}</code>	<code>`print(1)`</code>
Numbered list	enumerate environment	+ List
Reference	<code>\ref{intro}</code>	@intro
Strong emphasis	<code>\textbf{strong}</code>	<code>*strong*</code>
Table	table environment	table function
Term list	description environment	/ Term: List

TYPST SOURCE

```
#let results = csv("latexypst.csv")
#align(center,
  table(
    columns: 3,
    fill: (_, row) =>
      if row = 0 { rgb( 255, 231, 230 ) }
      else if calc.odd(row) { rgb( 228,234,250 ) },
    align: (col, row) =>
      if row = 0 { center } else { left },
    ..results.flatten(),
  ),
)
```

TYPST TABLE

Element	LaTeX	Typst
Bullet list	itemize environment	- List
Citation	<code>\cite{humphrey97}</code>	@humphrey97
Emphasis	<code>\emph{emphasis}</code>	<code>_emphasis_</code>
Equation	x , align / equation environments	x , $x = y$
Figure	figure environment	figure function
Label	<code>\label{intro}</code>	<intro>
Link	<code>\url{https://typst.app}</code>	https://typst.app/
Monospace / code	<code>\texttt{print(1)}</code>	<code>`print(1)`</code>
Numbered list	enumerate environment	+ List
Reference	<code>\ref{intro}</code>	@intro
Strong emphasis	<code>\textbf{strong}</code>	*strong*
Table	table environment	table function
Term list	description environment	/ Term: List

ON-BOARD RESOURCES

LaTeX Package	Typst Alternative
<code>graphicx</code> , <code>svg</code>	<code>image</code> function
<code>tabularx</code>	<code>table</code> , <code>grid</code> functions
<code>fontenc</code> , <code>inputenc</code> , <code>unicode-math</code>	Just start writing!
<code>babel</code> , <code>polyglossia</code>	<code>text</code> function: <code>#set text(lang: "zh")</code>
<code>amsmath</code>	Math mode
<code>amsfonts</code> , <code>amssymb</code>	<code>sym</code> module and syntax
<code>geometry</code> , <code>fancyhdr</code>	<code>page</code> function
<code>xcolor</code>	<code>text</code> function: <code>#set text(fill: rgb("#BF101D"))</code>
<code>hyperref</code>	<code>link</code> function
<code>bib{la}tex</code> , <code>natbib</code>	<code>cite</code> , <code>bibliography</code> functions
<code>lstlisting</code> , <code>minted</code>	<code>raw</code> function and syntax
<code>parskip</code>	<code>block</code> and <code>par</code> functions
<code>csquotes</code>	Set the <code>text language</code> and type " or '
<code>caption</code>	<code>figure</code> function
<code>enumitem</code>	<code>list</code> , <code>enum</code> , <code>terms</code> functions

ON-BOARD RESOURCES

Code Mode			
Name	Example	Name	Example
Variable access	x	Any literal	1pt , “hey”
Code block	{ let x = 1; x + 2 }	Content block	[* Hello *)
Parenthesized expression	(1 + 2)	Array	(1, 2, 3)
Dictionary	(a: “hi”, b: 2)	Unary operator	-x
Binary operator	x + y	Assignment	x = 1
Field access	x.y	Method call	x. flatten ()
Function call	min (x, y)	Unnamed function	(x, y) => x + y
Let binding	let x = 1	Named function	let f(x) = 2 * x
Set rule	set text(14pt)	Set-if rule	set text(..) if ..
Show-set rule	show par: set block(..)	Show rule with function	show raw: it => {..}
Show-everything rule	show : columns.with(2)	Conditional	if x == 1 {..} else {..}
For loop	for x in (1, 2, 3) {..}	While loop	while x < 10 {..}
Loop control flow	break , continue	Return from function	return x
Include module	include “bar.typ”	Import module	import “bar.typ”
Import items from module	import “bar.typ”: a, b, c	Comment	/* block */, // line

ADDITIONAL & ON-BOARD RESOURCES

```
#set text(11pt, font: "Noto Serif")
#import "@preview/tablex:0.0.4": *
#align(center,
  tablex(
    columns: 4,
    header-rows: 2,
    fill: (col, row) =>
      if row in (0,1) { rgb( 255, 231, 230 ) }
      else if calc.odd(row) { rgb( 228,234,250 ) },
    align: (_, row) =>
      if row in (0,1,4) { center } else { left },
    colspanx(4)[#text(size: 1.125em)[*Code Mode*]], (), (), (),
    [Name], [Example], // Up to here: manual
    [Name], [Example], // From here: Pandoc'ed from CSV
    [#text(fill: rgb("#BF101D"))[*Variable access*]], [x],
    [Any literal], [*1pt*, *"hey"*],
    [Code block], [{ *let* x = 1; x + 2 }],
    [Content block], [\[*Hello*\]],
    /*
    Shortened to fit on slide
    */
    [#text(fill: rgb("#BF101D"))[Import items from module], [*import* "bar.typ": *a*, *b*, *c*],
    [#text(fill: rgb("#BF101D"))[Comment]], [*\\/* block *\\/*, *\\/* line],
  ),
),
```

ADDITIONAL RESOURCES

- [Package System](#)
- [typst-tablex](#) (*almost* drop-in table replacement)
 - Header Rows
 - No footer rows (yet)
 - Multi-Columns/Rows
 - Format by *Content*
- [typst-slides](#) (not tried yet)
- [gloss-awe](#) (not tried yet)

ADDITIONAL RESOURCES

- [Sublime Text](#) (Mac/Linux/Windows)
 - Typst [syntax highlighting](#)
 - *Build* system
- *Watching* PDF Viewers
 - Mac
 - [Skim](#)
 - Linux
 - [Evince](#), [Okular](#)
 - Windows
 - [Sumatra PDF](#)

WATCH.{TYP,PDF}

The image shows two windows side-by-side. The left window, titled 'watch.typ', displays a text file with the following content:

```
1 #set text(12pt, font: "Noto Serif")
2 #set heading(numbering: "1.1")
3
4 = Section
5
6 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor
7 incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequo
8 doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si
9 aliquod aeternum et infinitum impendere malum nobis opinemur. Quod idem licet
10 transferre in voluptatem, ut postea variari voluptas distinguere possit,
11 augeri amplificarique non possit. At etiam Athenis, ut e patre audiebam facete
12 et urbane Stoicos irridente, statua est in quo a nobis philosophia defensa et
13 collaudata est, cum id, quod maxime placeat, facere possimus, omnis voluptas
14 assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut
15 officiis debitis aut rerum necessitatibus saepe eveniet, ut et voluptates
16 repudiandae sint et molestiae non recusandae. Itaque earum rerum defuturum,
17 quas natura non depravata desiderat. Et quem ad me accedis, saluto: 'chaere,'
18 inquam, 'Tite!' lictores, turma omnis chorusque: 'chaere, Tite!' hinc hostis mi
19 Albuций, hinc inimicus. Sed iure Mucius. Ego autem mirari satis non queo unde
20 hoc sit tam insolens domesticarum rerum fastidium. Non est omnino hic docendi
21 locus; sed ita prorsus existimo, neque eum Torquatium, qui hoc primus cognomen
22 invenerit, aut torquem illum hosti detraxisse, ut aliquam ex eo est
23 consecutus? - Laudem et caritatem, quae sunt vitae.
24
```

The right window, titled 'watch.pdf (page 1 of 1)', shows the rendered PDF output of the typist file. It features a section header '1 Section' and the same paragraph of Latin text, which is rendered with underlines. The PDF viewer interface includes navigation controls and a zoom level of 100%.

At the bottom of the typist window, a status bar indicates: Line 24, Column 1 | 152 misspelled words | Spaces: 3 | Typst

OPINIONATED SUMMARY

NICE TO/SHOULD/MUST HAVES

1. Floats
2. Index
3. Interaction with Environment
 - 3.1 Variables
 - 3.2 *shell-escape?*
4. Label / Reference
 - 4.1 Unnumbered Items
 - 4.2 *... on page #*

NICE TO/SHOULD/MUST HAVES/SEE

5. *Enumerate-Resume*
6. *Un-Scoped #include*
7. [Citation Style Language](#) (CSL)
8. See the [Roadmap](#)
9. See the (community) [Wiki](#)
10. Barrier Free PDF

BRILLIANT EFFORT!

- Very, Very Promising
 - Very Fast
 - Early Beta
 - 0.6.0
- Small(er) Projects
- Complex Projects?
 - *Beta*
 - Circumvent Missing Features
- Could be a *Gateway Drug* to \LaTeX
 - Pandoc
- Further Links

COLOPHON

- [Homebrew](#)
- MacT_EX
 - `basicTEX` v2023.0314
 - `tlmgr` (update -all)
- [LyX](#) v2.3.7
 - Lua_AT_EX v1.17.0
 - Beamer vv3.70
 - Metropolis Theme v1.2
- `typst` v0.6.0
- [Template Toolkit](#) v3.101
 - CPAN
- Pandoc v3.1.4
- Listings:
 - `typst #raw`
 - [pdfcpu](#) v0.4.1 dev
 - `\includegraphics`
- (GNU) Make v4.4.1

Questions?