

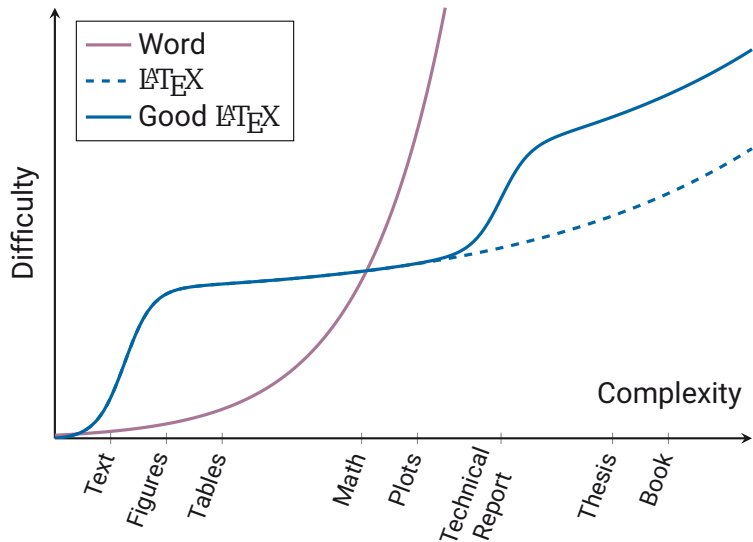
# Advanced L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> Workshop

Naoki Pross – np@ohm.ch

OST FHO Campus Rapperswil

Spring Semester 2022

# I lied to you <sup>sorry</sup>



# Goals for today

- Organize your  $\text{\LaTeX}$  2<sub>ε</sub> code because your last document was an *absolute fucking mess*
- Consume your precariously short existence trying to learn to draw pictures with a terrible programming language called *TikZ*

# Do yourself a favor

## Use the International US Keyboard Layout

~	! 1	@ 2	# 3	\$ 4	£ 5	% 6	^ 7	& 8	* 9	( 0	) 1	+ 2	÷ 3	← Backspace													
Tab ↵	Q	Å	W	Ä	E	É	R	T	Þ	Y	Û	Ü	Í	Í	O	Ó	P	Ö	{	}	[	«	»	]	\		~
Caps Lock ⬆	A	Å	S	Š	D	Đ	F	G	H	J	K	L	Ø	:	°	"	"	:	¶	'	'	↵ Enter					
Shift ⬆	Z	Æ	X	C	¢	V	B	N	Ñ	M	<	Ç	>	?	Shift ⬆												
Ctrl	Win Key	Alt	Alt Gr										Win Key	Menu	Ctrl												

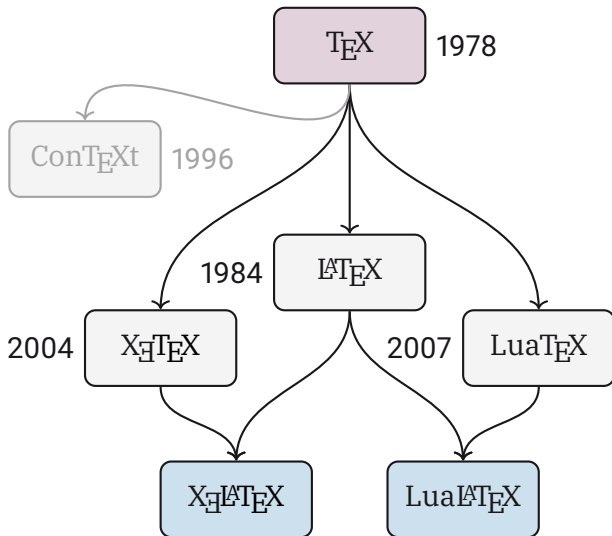
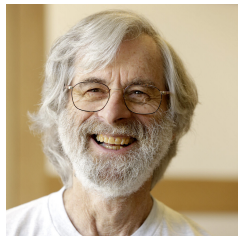
# Table of Contents

**1** Absolute Basics to not ruin the typesetting

2 Packages and classes

3 TikZ ist kein Zeichenprogramm

# Please enter the 21<sup>th</sup> century



A: Use X<sub>E</sub>L<sup>A</sup>T<sub>E</sub>X, it has UTF-8 support! (ä, ü, ô, ...)

## Stop putting line breaks everywhere.

### Don't

`%% wrong`

```
This is a sentence in the first paragraph. \\
This is another paragraph.
```

### Do

```
This is a sentence in the first paragraph.
```

```
This is another paragraph.
```

Use `\\` only in tabular

# Don't do manual styling

## Don't

I want that `\textbf{this part}` stands out.

There is an *emphasis* macro

## Do

I want that `\emph{this part}` stands out.

[Click here](#) if you want to change how `\emph` looks like.



# Don't do manual styling, again!

## Never manually create headings

Yes, I've seen it done.

### Don't

```
% NEVER do this  
\textit{\textsf{My custom heading}} \\[1em]
```

# Customize headings

## With the titlesec package

```
% in the preamble
\usepackage{titlesec}

\titleformat{\paragraph}[hang]
  {\normalfont\itshape\sffamily}
  {\theparagraph}{1em}{}

% later in the document
\paragraph{My custom heading}
```

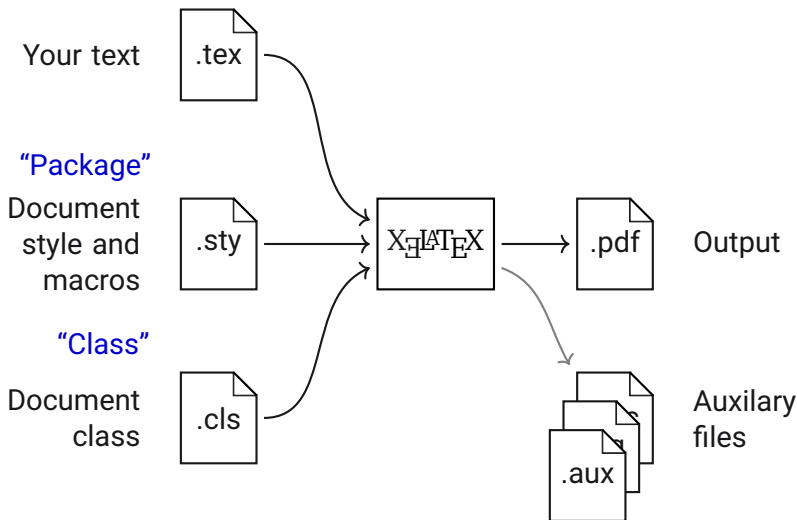
KOMA classes have their own customization commands

# Stop making ugly tables

# Table of Contents

- 1 Absolute Basics to not ruin the typesetting
- 2 Packages and classes**
- 3 TikZ ist kein Zeichenprogramm

# What is a package?



# Table of Contents

- 1 Absolute Basics to not ruin the typesetting
- 2 Packages and classes
- 3 TikZ ist kein Zeichenprogramm**

## TikZ = TikZ ist kein Zeichenprogramm

```
\usepackage{tikz}  
\usetikzlibrary{calc, positioning, ...}
```

```
\begin{figure}  
  \centering  
  \begin{tikzpicture}[  
    % global settings / styles  
  ]  
  
    % drawing commands  
  
  \end{tikzpicture}  
  \caption{... \label{fig:...}}  
\end{figure}
```

## Basics

- `\coordinate (name)at (x,y);`
- `\node[options] (name)at (x,y){label};`
- `\draw[options] commands;`
- `\fill[options] commands;`

## Drawing commands

- Line (A) -- (B)
- Horiz. then vert. line (A) -| (B)
- Vert. then horiz. line (A) |- (B)
- Quadratic Bézier (A).. controls (P)and (Q).. (B)
- Advanced curve (A) to[options] (B)
- Nodes `node[options] (name){label}`
- Shapes (A)rectangle (B), (A)circle (2cm)



# Basic example

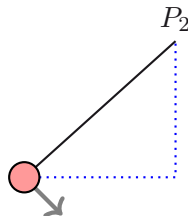
```
\begin{tikzpicture}
  \coordinate (O) at (0,0);
  \coordinate (A) at (2cm,18mm);
  % no units = cm

  \draw[thick] (O) -- (A);
  \draw[thick, dotted, blue]
    (O) -| (A);

  \draw[ultra thick, ->, gray]
    (O) -- ++(5mm, -5mm);

  \fill[thick, draw = black,
    fill = red!40] (O) circle (2mm);

  \node[above] at (A) {\(P_2\)};
\end{tikzpicture}
```



# Example with nodes

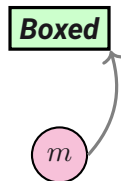
```
\node (A) at (0,0) {A node};

\node[
  rectangle, very thick,
  draw = black, fill = green!20,
  font = \bfseries\slshape,
  % positioning library
  below = 5mm of A,
] (B) {Boxed};

\node[
  circle, thick,
  draw = black, fill = magenta!20,
  below = 1cm of B,
] (C) {\(m\)};

\draw[very thick, gray, ->]
  (C.east) to[bend right] (B.south east)
  ;
```

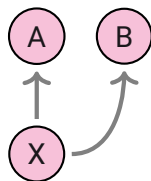
A node



# TikZ V: Matrix and scope

```
\matrix (M) [ % node with table of nodes
  row sep = 8mm,
  column sep = 4mm,
  nodes = {
    circle, thick,
    draw = black,
    fill = magenta!30,
    outer sep = 1mm,
  },
] {
  \node (A) {A}; & \node (B) {B}; \\
  \node (X) {X}; \\
};

\begin{scope}[ultra thick, gray, ->]
  \draw (X) -- (A);
  \draw (X) to[out = 0, in = -90] (B);
\end{scope}
```



# THE END

It wasn't worth the time I know, but hey,  
at least now you know how to draw pretty pictures