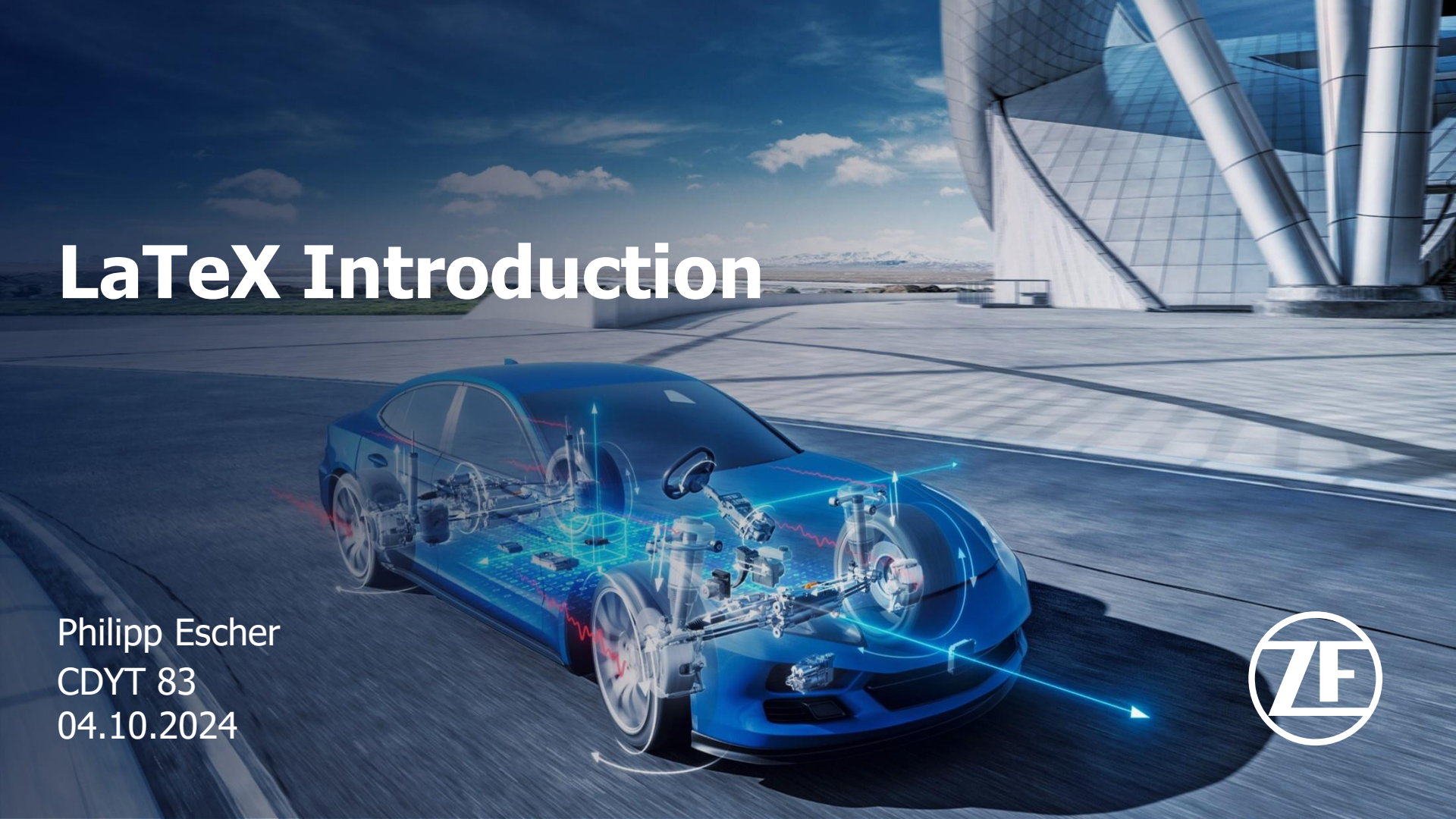
LaTeX Introduction



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Idea

- Giving the opportunity to write a thesis in LaTeX
  - Alternative to Microsoft Word

- Prepared a thesis layout in LaTeX
  - CDYT8_DigitalVehicle / Trainees_Training / Thesis_Template_LaTeX · GitLab
  - Most challenging part for beginners

- Small example with
  - Graphics
  - Tables
  - Listings
  - Abbreviations
  - Equations

History

- Based on TeX
  - Developed by Donald E. Knuth 1978
- LaTeX was developed by Leslie Lamport 1984
  - **La**mport **TeX**

Difference to classical word processors

- No WYSIWYG (What you see is what you get) principle
  - Text is written in LaTeX language (`\emph{Text}` → *Text*)
  - WYSIWYAF (What you see is what you asked for)
  - Plain text files that can be edited with any program

- Text files have to be converted to a document
  - Text files can be tracked with version control system like git
  - Images in document are always updated
  - References and table of contents are always updated

- Big projects can be seperated to several files
  - Main file creates a big document
  - Each subfile can create a small document

- More focus on the writting than on the design

Software preparation

- LaTeX distribution
  - MiKTeX
- IDE (Integrated development environment)
  - Visual Studio Code with LaTeX Workshop extension
  - TeXworks (included in MiKTeX)

- Bibliography management (optional)
  - JabRef

- Diagrams and sketches
  - Dia
  - draw.io

Thesis file overview

- `Thesis.tex`
  - Main file for document
  - Creates main document
- `sf_*.tex`
  - Subfiles from main file
  - Can create own documents with only content
- `sf_Abkuerzungsverzeichnis.tex`
  - Definition of abbreviations
- `Demo.bib`
  - Definition of bibliography
- `tex_packages.tex`
  - Packages that are used in main file
- `tex_Environments.tex`
  - Definition of macros
- `tex_Header_normal.tex`
  - Header and footer for normal pages
- `tex_Header_title.tex`
  - Header and footer for title page
- `.vscode`
  - Preferences for Visual Studio Code
- `figures`
  - Folder for figures
- `snippets`
  - Folder for listings
- `tables`
  - Folder for tables

Figures

- Try to use vector graphics

- `\myfigure{Wuff.png}{Hund}{hund}{8cm}`
  - Name of picture in folder figures
  - Caption below picture
  - Reference name (fig:hund)
  - Width of picture

Tables

- `\input{Tables/Tab_Tierlaute.tex}`

  - `\mytable{|cc|}{Tierlaute}{tierlaute}`
    - Vertical line, centered content, centered content, vertical line
    - Caption under table
    - Reference name (tab:tierlaute)

Conclusion

- You should try it for one thesis and then decide which way suits you best
- Very steep learning curve
- Feel free to merge improvements to the repository