

Report for Systems Engineering

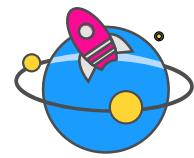
Typst Template Example



HES-SO Valais//Wallis
Systems Engineering - Infotronics
Digital Design - Silvan Zahno
Fall Semester 2025 - S1fα

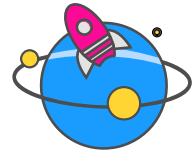
Silvan Zahno, Axel Amand

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Contents

- 1 Introduction 3
 - 1.1 Basic markup 3
 - 1.2 Images 3
 - 1.3 Tables 4
 - 1.4 Boxes 4
 - 1.5 Citations, Glossary and Acronyms 4
 - 1.6 Code 5
- 2 Analysis 6
- 3 Design 7
- 4 Implementation 8
- 5 Validation 9
- 6 Conclusion 10
- Glossary 11



1 Introduction

Your introduction serves to introduce the topic and to arouse the reader's curiosity with an overview. Why it is important and how it is structured, we explain here. You can consider an introduction as a teaser for your work. You arouse interest and give a foretaste by presenting your motivation, your method and the state of research in your introduction. Convince your examiners already in the introduction that your work will be exciting. If your professor starts reading your work with anticipation and interest, the chances of getting good grades are higher. Pay particular attention to the following in your introduction:

- **Introduce the topic** - What characterizes the topic?
- **Introduce the goal** - What do you want to achieve with your thesis?
- **Make the reader curious** - What motivates the reader to read on?
- **Describe the relevance** - Why is this bachelor thesis scientifically relevant?



Welcome to the template's introductory chapter! Instead of boring you with lorem ipsum, here's a quick guide to what you can do in Typst and, more specifically, in this template.

Need more? Check out the Guide to Typst.

1.1 Basic markup

Typst lets you create bold, italic, or monospaced text with ease. You can also sprinkle in equations like $e^{i\pi} + 1 = 0$ or even inline code like `fn main() { println!("Hello, World!") }`. And because life is better in color: pink, blue, yellow, orange, green, and more! **Boldly colorize!**

You can also write numbered or unnumbered lists:

- First item
- Second item
 1. First Subitem
 2. Second Subitem
- Third item

Need equations? Sure! They look great as blocks too:

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1} \quad (1)$$

1.2 Images

As they say, a picture is worth a thousand words. Let's add one:

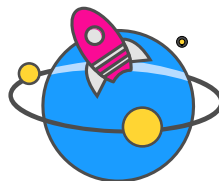
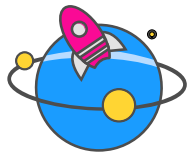


Figure 2 - Project logo



1.3 Tables

Tables are great for organizing data. From simple to complex, Typst handles them all:

Name	Age	City
Albert Einstein	25	Bern
Marie Curie	22	Paris
Isaac Newton	30	London

Table 1 - Simple table

[31:27]			[24:20]		[19:15]	[14:12]	[11:7]	[6:0]
funct5	aq	rl	rs2	rs1	funct3	rd	opcode	
5			5	5	3	5	7	

Table 2 - Complex table

1.4 Boxes

Highlight key points with these fun boxes (and more):



Infobox: For highlighting information.



Ideabox: Share a brilliant idea.



Warningbox: Proceed with caution!



Firebox: This is 🔥!



Rocketbox: Shoot for the moon!

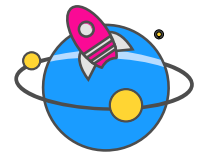


Todobox: Just do it!

1.5 Citations, Glossary and Acronyms

Add citations with @ like [1] (stored in `/tail/bibliography.bib`).

Glossary terms like Rust Programming Language (Rust) expand on first use and abbreviate after Rust. Use Rust is a modern systems programming language focused on safety, speed, and concurrency. It prevents common programming errors such as null pointer dereferencing and data races at compile time, making it a preferred choice for performance-critical applications. to show a description. Acronyms and glossary entries auto-generate at the document’s end (defined in `/tail/glossary.typ`).



1.6 Code

Besides writing inline code as such `fn main() { println!("Hello World") }` you can also write code blocks like this:

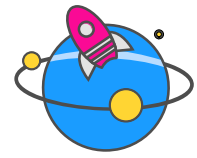
```
1 fn main() {
2     let ship = Starship::new("USS Rustacean", (0.0, 0.0, 0.0));
3     let destination = (42.0, 13.0, 7.0);
4     let warp = ship.optimal_warp(ship.distance_to(destination));
5
6     println!("👉 {} traveling to {:?} at Warp {:.2}", ship.name, destination, warp);
7     if warp <= 9.0 {
8         println!("🚀 Warp engaged!");
9     } else {
10        println!("⚠️ Warp failed!");
11    }
12 }
```

Listing 1 - First part of the USS-Rustacean code

or directly from a file

```
1 struct Starship {
2     name: String,
3     position: (f64, f64, f64),
4 }
5
6 impl Starship {
7     fn new(name: &str, position: (f64, f64, f64)) -> Self {
8         Self {
9             name: name.into(),
10            position,
11        }
12    }
13    fn distance_to(&self, dest: (f64, f64, f64)) -> f64 {
14        ((dest.0 - self.position.0).powi(2)
15         + (dest.1 - self.position.1).powi(2)
16         + (dest.2 - self.position.2).powi(2))
17        .sqrt()
18    }
19    fn optimal_warp(&self, distance: f64) -> f64 {
20        (distance / 10.0).sqrt().min(9.0)
21    }
22 }
```

Listing 2 - Second part of the USS-Rustacean code from `/resources/code/uss-rustacean.rs`



2 | Analysis

*In the analysis part a so called "State of the Art" research is done. It describes the knowledge about the studied matter through the analysis of **similar or related published work**. It provides a comprehensive overview of what was done, what has been done in the field and what should be further investigated.*

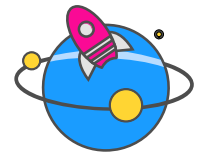
A State of the Art is done in multiple phases:

- 1. Problem formulation (Research questions)*
- 2. Literature search*
- 3. Literature evaluation*
- 4. Analysis and interpretation*
- 5. Presentation*

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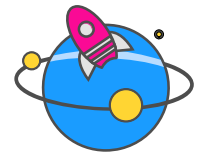


3 | Design

In the design section of your work, you have the opportunity to provide a detailed blueprint of the system you intend to develop or analyze. This section serves as the foundation upon which your implementation will be built. Here's how you can enrich and expand upon this section:

- **System Overview:** Begin by providing a comprehensive overview of the system under consideration.
- **Requirements Specification:** Outline the specific requirements that your system must fulfill.
- **Architecture and Design Principles:** Delve into the architectural design of your system, elucidating the underlying principles and design decisions that govern its structure.
- **Technology Stack:** Detail the technologies and tools that will be employed in the development of your system.
- **Data Management and Storage:** If your system involves the management or manipulation of data, provide insights into how data will be structured, stored, and accessed.
- **User Interface (UI) Design:** If applicable, describe the user interface of your system, focusing on usability, accessibility, and user experience (UX) design principles.
- **Integration and Interoperability:** Address how your system will integrate with existing systems or external services, if relevant.

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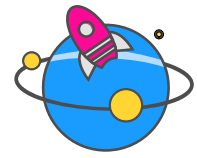
4 | Implementation

In the implementation phase of your work, you translate the design specifications into tangible, functional artifacts. This section offers insights into the practical execution of your research, detailing the steps taken to realize the proposed system. Here are some ways to enhance and elaborate on this section:

- **Development Methodology:** Describe the methodology or approach employed in the development process.
- **Prototyping and Iterative Development:** If applicable, discuss any prototyping or iterative development techniques utilized during the implementation phase.
- **Coding Practices and Standards:** Provide insights into the coding practices, standards, and conventions adhered to during development.
- **Testing and Quality Assurance:** Detail the testing strategies and quality assurance measures employed to validate the correctness and robustness of the implemented system.
- **Performance Optimization:** Address any performance considerations or optimizations made during the implementation phase.
- **Deployment and Configuration:** Describe the deployment process and configuration management practices involved in deploying the system to production or testing environments.
- **Documentation and Knowledge Transfer:** Highlight the importance of documentation in facilitating knowledge transfer and ensuring the sustainability of the implemented system.

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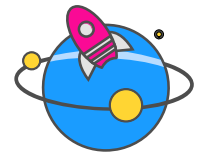


5 | Validation

In addition to presenting the results of your research in relation to your research question, it is imperative that the validation section of your bachelor's thesis adheres to certain principles to ensure clarity, coherence, and rigor. Here are some additional considerations to enhance the validation process:

- **Objective Description of Data:** Provide an objective and detailed description of the data used in your analysis.
- **Utilize Graphs and Tables:** Visual aids such as graphs, charts, and tables can greatly enhance the clarity and impact of your results presentation.
- **Link Results to Research Questions:** For each result presented, explicitly link it back to the corresponding research question or hypothesis.
- **Ranking Results by Importance:** Prioritize your results by ranking them in order of importance or relevance to your research objectives.
- **Confirmation or Rejection of Hypotheses:** Evaluate each result in light of the hypotheses formulated in your thesis.

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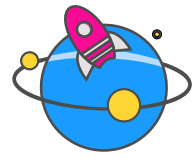
6 Conclusion

In the concluding section of your bachelor's thesis, you consolidate the essence of your research journey, encapsulating the most pivotal insights garnered throughout your study. Here's how to enhance and structure your conclusion:

- **Project Summary:** Offer a succinct recapitulation of the core elements of your project, including its objectives, methodologies employed, and the main findings obtained.
- **Comparison with Initial Objectives:** Reflect upon how your research outcomes align with the initial objectives set forth at the outset of your thesis.
- **Encountered Difficulties:** Acknowledge and address any challenges or obstacles encountered during the course of your research.
- **Future Perspectives:** Offer insights into potential avenues for future research or practical applications stemming from your findings.

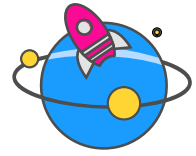
While you keep the conclusion of your bachelor thesis short and to the point, you deal with your results in more details in the discussion. There is no new informations in the conclusion.

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Glossary

***Rust* – Rust Programming Language:** Rust is a modern systems programming language focused on safety, speed, and concurrency. It prevents common programming errors such as null pointer dereferencing and data races at compile time, making it a preferred choice for performance-critical applications. 4



Bibliography

- [1] S. Zahno *et al.*, “Dynamic Project Planning with Digital Twin,” *Frontiers in Manufacturing Technology*, vol. 3, May 2023, doi: 10.3389/fmtec.2023.1009633.