

# C++ Software Design

Design Principles and Patterns in Modern C++

---

Klaus Iglberger

March, 3rd-4th, 2025

C++ Software Design @ O'Reilly

# 1. Introduction

---

Klaus Iglberger

March, 3rd-4th, 2025

# Content

---

1. Introduction of the Trainer
2. Motivation
3. Scope of the Training
4. Content of the Training
5. Schedule
6. Miscellaneous
7. Guidelines
8. Programming Tasks

# Introduction of the Trainer

---

C++ Trainer since 2016

Author of “C++ Software Design”

(Co-)Organizer of the Munich C++ user group

(Co-)Chair of the Software Design at CppCon

Regular presenter at C++ conferences



**Klaus Iglberger**

# Motivation

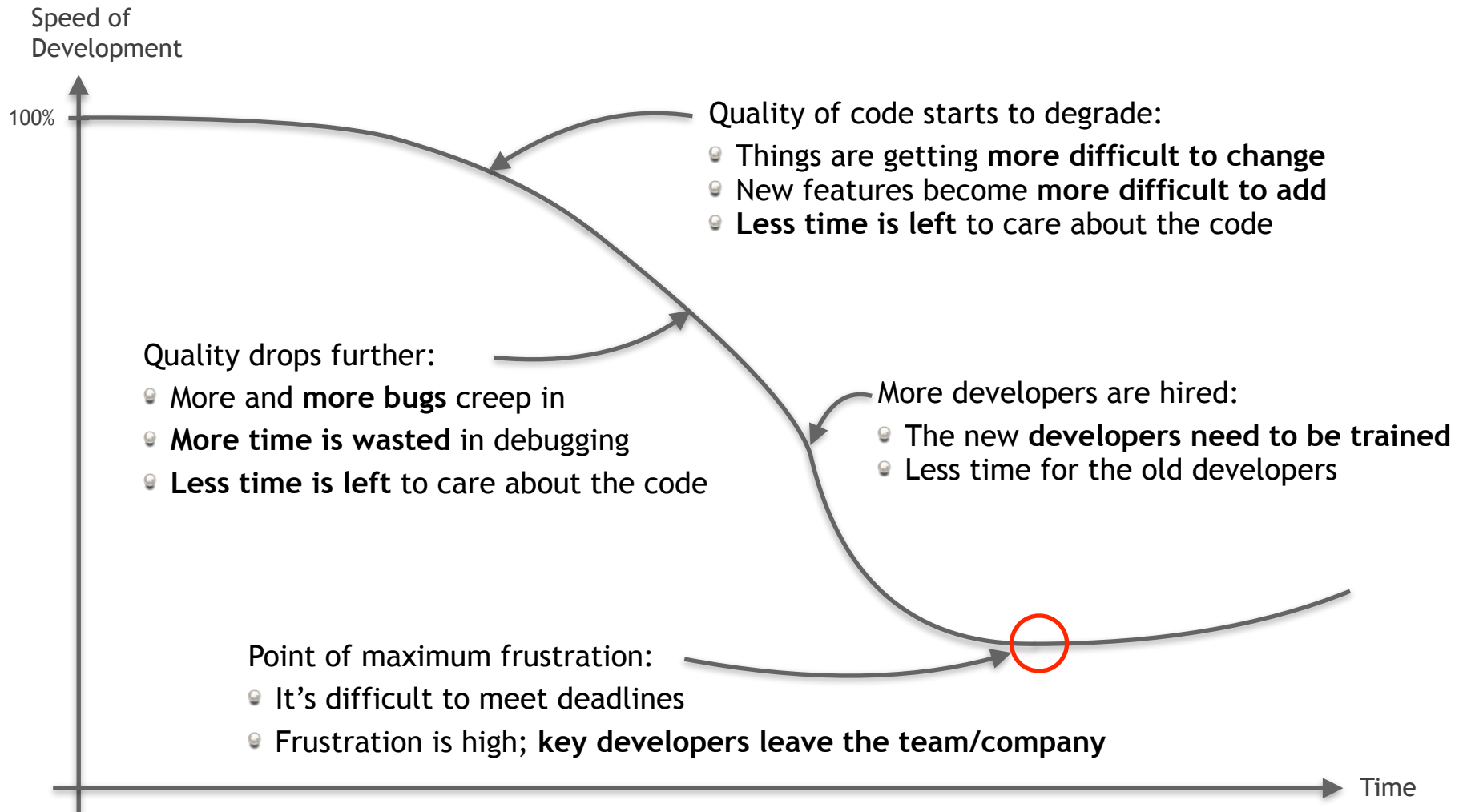
---



*“There is no point in developing software unless you care about doing it well.” (Andrew Hunt, David Thomas, The Pragmatic Programmer)*

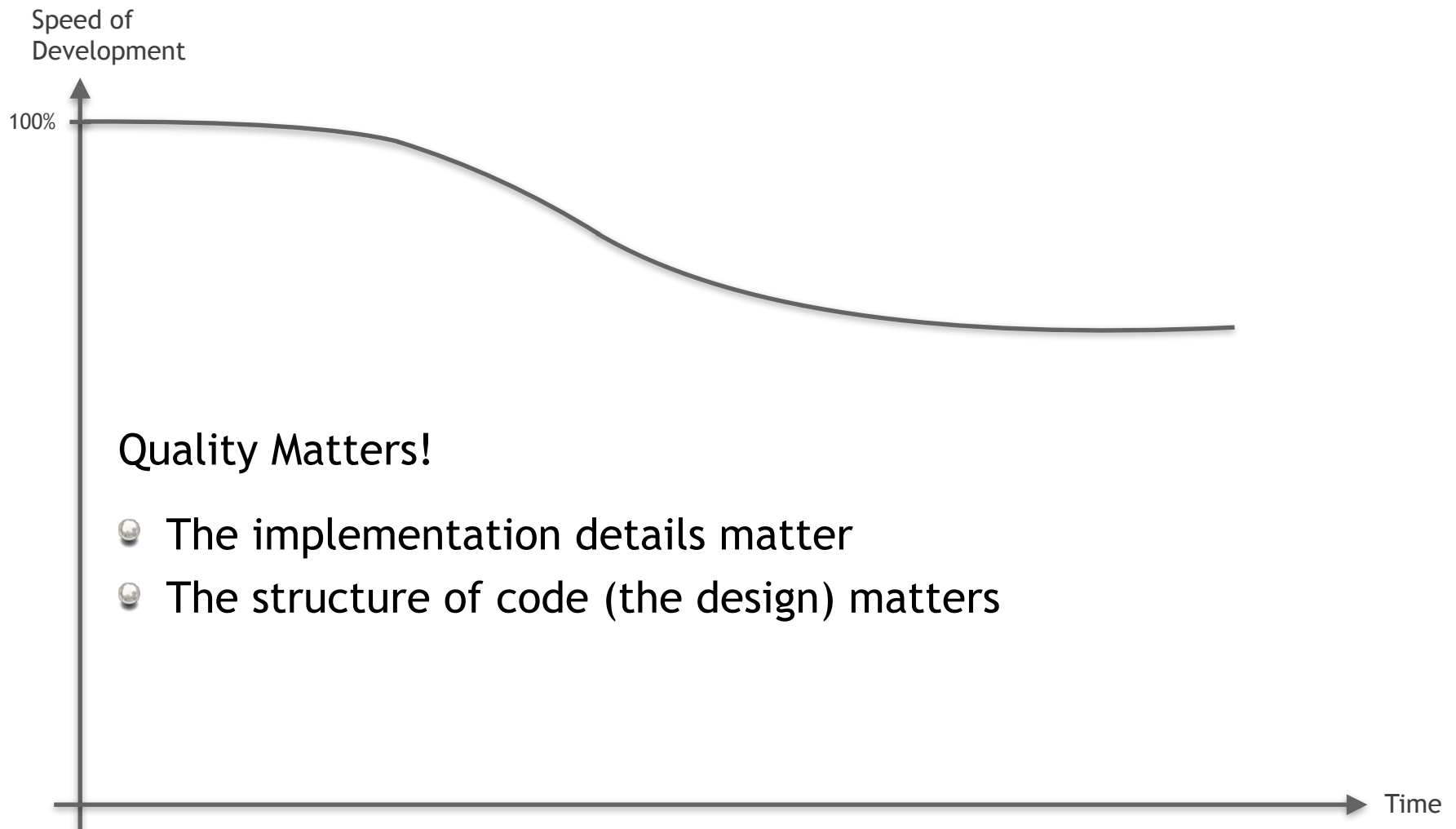


# Motivation



# Motivation

---



# Scope of this Training

---

In this training I will address ...

- ... software design principles and patterns;
- ... design patterns in a multi-paradigm programming language;
- ... classic and modern design patterns;
- ... the philosophy of “Modern C++”.



# Scope of this Training

---

In this training I will NOT address ...

- ... all possible (classic and modern) design pattern;
- ... all variations of design patterns;
- ... all implementation details of modern design patterns.

# Content of this Training

---

1. Introduction
2. C++ Software Design
3. Design Pattern Cheat Sheet
4. Summary/Literature

# Schedule

---

Monday, March, 3rd, 2025 (EDT time zone)

<i>10:00am - 10:10am</i>	<i>Introduction</i>
<i>10:10am - 11:00am</i>	<i>Understanding Software Design and Patterns</i>
<i>11:00am - 11:10am</i>	<i>Break</i>
<i>11:10am - 12:00pm</i>	<i>The Visitor Design Pattern</i>
<i>12:00pm - 12:10pm</i>	<i>Break</i>
<i>12:10pm - 1:00pm</i>	<i>The Visitor/Strategy Design Patterns</i>
<i>1:00pm - 1:10pm</i>	<i>Break</i>
<i>1:10pm - 2:00pm</i>	<i>The Strategy Design Pattern</i>

# Schedule

---

Tuesday, March, 4th, 2025 (EDT time zone)

<i>10:00am - 10:10am</i>	<i>Recap</i>
<i>10:10am - 11:00am</i>	<i>The External Polymorphism Design Pattern</i>
<i>11:00am - 11:10am</i>	<i>Break</i>
<i>11:10am - 12:00pm</i>	<i>The Type Erasure Design Pattern</i>
<i>12:00pm - 12:10pm</i>	<i>Break</i>
<i>12:10pm - 1:00pm</i>	<i>The Prototype and Bridge Design Patterns</i>
<i>1:00pm - 1:10pm</i>	<i>Break</i>
<i>1:10pm - 2:00pm</i>	<i>Type Erasure without Dynamic Memory</i>

# Miscellaneous

---

I assume you have some experience with C++. If something remains unclear or somewhat vague, **please ask!**

# Miscellaneous

---

Also remember: **You are in control!**

# Guidelines

---

**(Core) Guideline: ...**

The green boxes represent ...

- ... the most important take-aways;
- ... common idioms and best practice;
- ... markers in the slides.

# Programming Tasks

---

**Task (Subchapter/Name): ...**

The yellow boxes represent ...

- ... hands-on programming tasks;
- ... links to the provided source code examples.



email: [klaus.iglberger@gmx.de](mailto:klaus.iglberger@gmx.de)

LinkedIn: [linkedin.com/in/klaus-iglberger-2133694/](https://www.linkedin.com/in/klaus-iglberger-2133694/)

Xing: [xing.com/profile/Klaus\\_Iglberger/cv](https://www.xing.com/profile/Klaus_Iglberger/cv)