

# C++ Software Design

Design Principles and Patterns in Modern C++

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Klaus Iglberger

June, 17th-18th, 2025

C++ Software Design @ O'Reilly

# 1. Introduction

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# Content

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# Introduction of the Trainer

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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

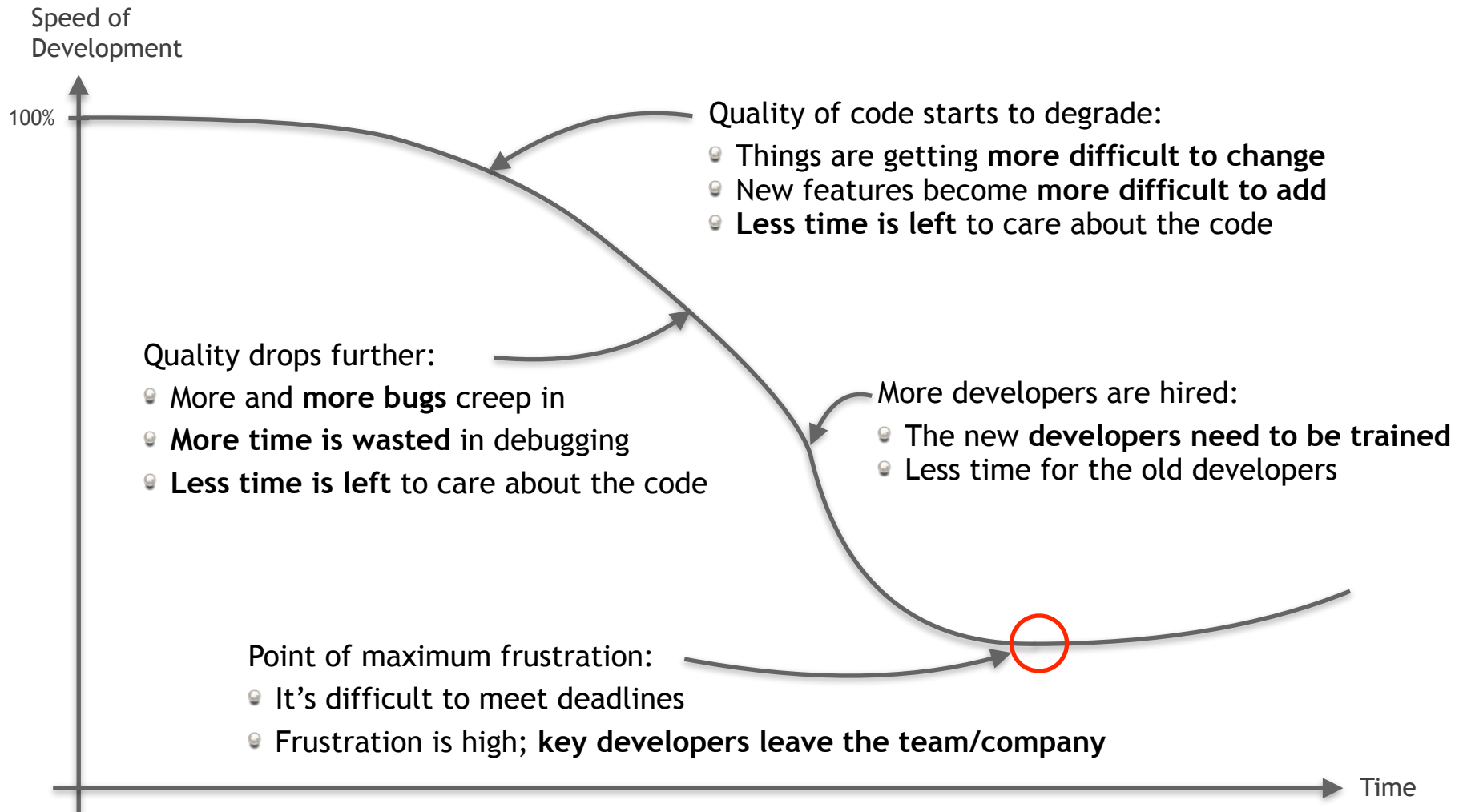
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*“There is no point in developing software unless you care about doing it well.” (Andrew Hunt, David Thomas, The Pragmatic Programmer)*

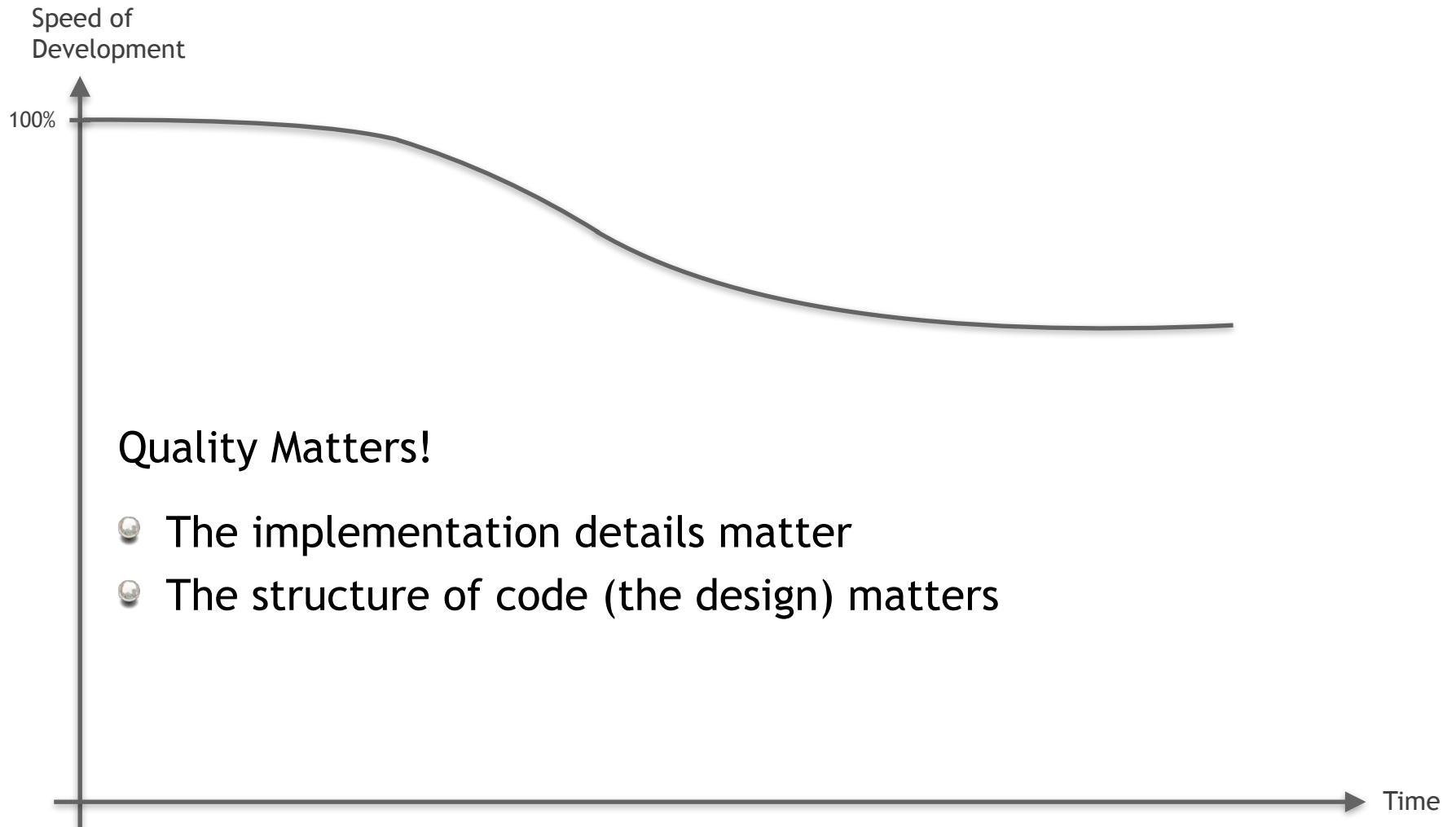


# Motivation



# Motivation

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# Scope of this Training

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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

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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

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

# Schedule

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Tuesday, June, 17th, 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

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Wednesday, June, 18th, 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

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

# Miscellaneous

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

# Guidelines

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

The green boxes represent ...

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

# Programming Tasks

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

The yellow boxes represent ...

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



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