

C++ Software Design

Design Principles and Patterns in Modern C++

Klaus Iglberger
December, 5th-6th, 2024

C++ Software Design @ O'Reilly

1. Introduction

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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

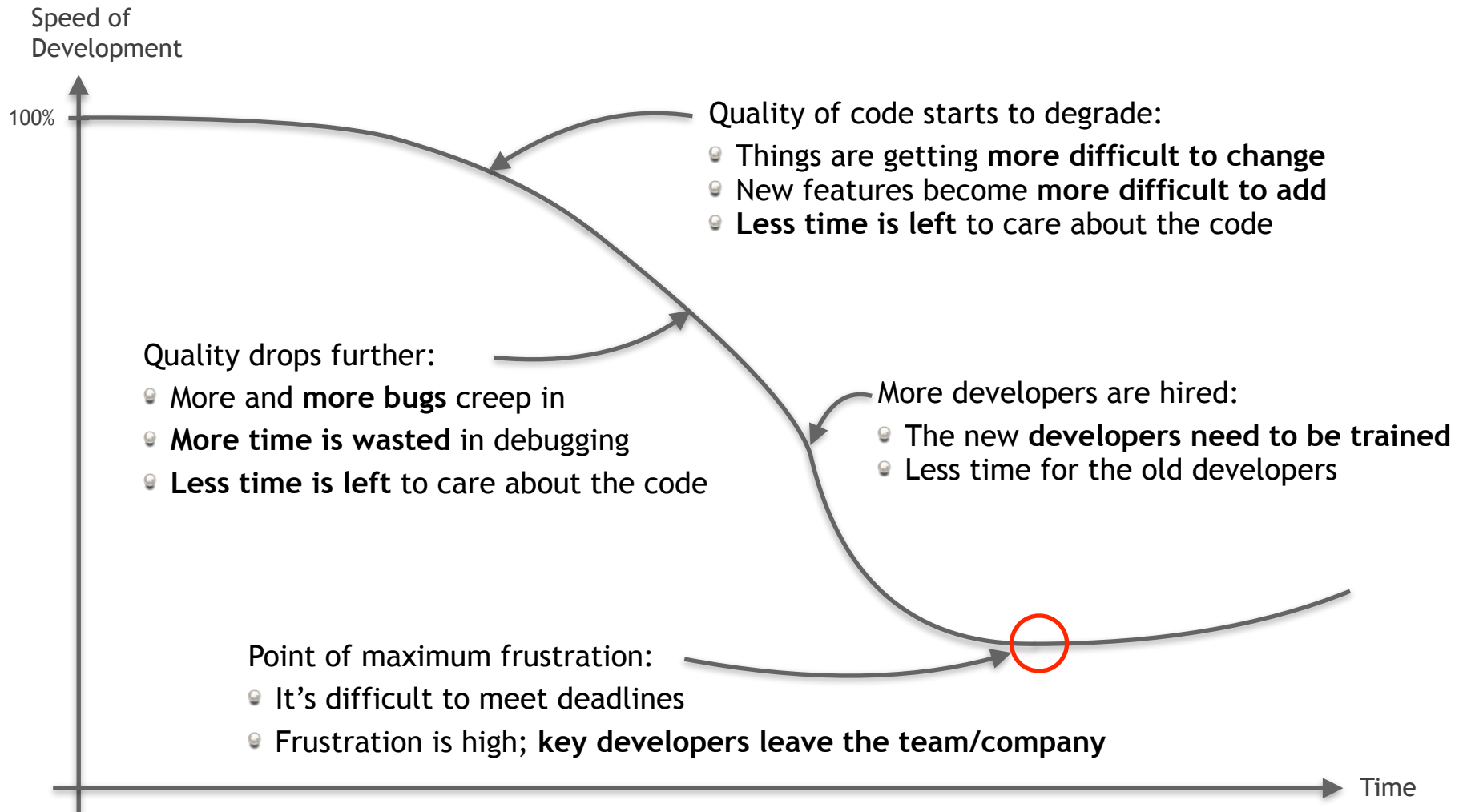
Motivation



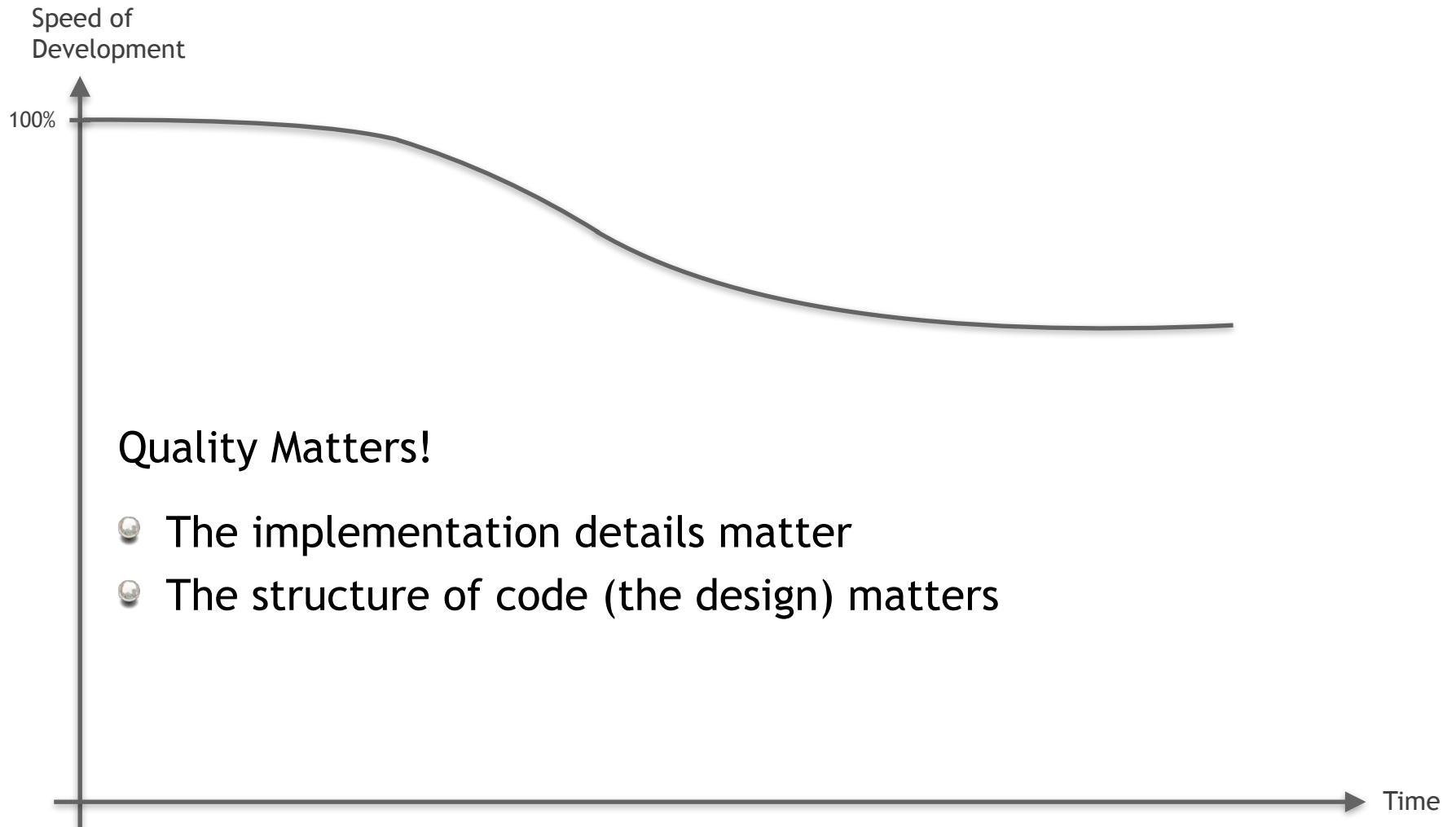
“There is no point in developing software unless you care about doing it well.” (Andrew Hunt, David Thomas, The Pragmatic Programmer)



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;
- ... classical and modern design patterns;
- ... the philosophy of “Modern C++”.

Scope of this Training

In this training I will NOT address ...

- ... all possible (classical 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

Thursday, February, 8th, 2024 (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

Friday, February, 9th, 2024 (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.

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