



**CHALMERS**  
UNIVERSITY OF TECHNOLOGY



UNIVERSITY OF GOTHENBURG

# Time to Pay Up

## Technical Debt From a Software Quality Perspective

### Survey

Terese Besker

Computer Science and Engineering  
Chalmers University of Technology  
Göteborg, Sweden  
[besker@chalmers.se](mailto:besker@chalmers.se)

Antonio Martini

Computer Science and Engineering  
Chalmers University of Technology  
Göteborg, Sweden  
[antonio.martini@chalmers.se](mailto:antonio.martini@chalmers.se)

Jan Bosch

Computer Science and Engineering  
Chalmers University of Technology  
Göteborg, Sweden  
[jan.bosch@chalmers.se](mailto:jan.bosch@chalmers.se)

# The following slides presents the online survey

- **The survey consists of three different sections:**
  - **Information and instructions to the participants**
  - **Background data**
  - **Quality issues and Challenging issues**

# Invitation published on LinkedIn

## Survey on Technical Debt

At Software Center in Sweden we are rolling out a world-wide global survey on software quality and with a focus on technical debt and how much extra time we spend on fixing issues related to poor software quality.

I would like to invite You all (developers, testers, architects, project/product managers) to participate in the survey and as thanks, all respondents will be able to take part of the results and be entered into a prize draw to win an iPad Air.

<https://www.surveymonkey.com/r/LinkedIn1A>



## Software Development and Technical Debt

1. Thank you for participating in our survey. Your feedback is important.

**When answering the questions, please think about a system that you are (or have recently been) actively involved in. It is important for the validity of the answers that you have a deep knowledge and understanding of the system(s) that you refer to.**

As a "thank you" for your participation, once you have completed the survey, you will participate in a lottery for winning an **iPad Air**. Also, you will be able to receive the **results** of the survey and to know the answers from many other software practitioners.

The survey takes about **10 minutes** to complete and is **anonymous**: your name will not be connected to any of the results (it will only be used for the lottery and **only if you decide so**).

We appreciate the time you take to fill it in!

Contact details:

[besker@chalmers.se](mailto:besker@chalmers.se)

[antonio.martini@chalmers.se](mailto:antonio.martini@chalmers.se)

# Software Development and Technical Debt

## 2. Background

\* ① How many years of experience in the Software Development area do you have?

- < 2 years
- 2 - 5 years
- 5 - 10 years
- > 10 years

\* ② What is your job role?

- Project Manager
- Product Manager
- Software Architect
- Developer/Programmer/Software Engineer
- Tester
- Expert
- Other (please specify)

\* 3 What is your gender?

- Female
- Male
- Other / Don't want to share

\* 4 What is the highest level of education you have completed?

- No University education
- Bachelor degree
- Master degree (or Civilingenjör)
- Ph.D. degree
- Other:

\* 5 How big is your software development team?

- 1-5 team members
- 6-10 team members
- 11-20 team members
- 21-40 team members
- > 40 team members

6 What type of software system are you developing?

- Real-time system
- Data management system
- Embedded system
- Web 2.0 / SaaS system
- Data analysis system
- Modeling and/or simulation system
- System Integration
- Other (please specify)

7 How many employees work at your organization (all countries and divisions)?

- < 50 employees
- 51-250 employees
- 251-1000 employees
- 1001-5000 employees
- >5000 employees

\* 8 How big is the size of the software system you are developing? (LOC = Lines of code)

- < 100 k LOC
- 100-1 M LOC
- 1 M- 10 M LOC
- 10 - 50 M LOC
- >50 M LOC
- Don't know

\* 9 How old is the software you are developing (from initial design)?

- < 2 years
- 2-5 years
- 5-10 years
- 10-20 years
- >20 years



Which of the following challenges generate the most negative impact on your daily software development work?

Please **rank** them from 1 to 11 (map one impact to each number)

*(do not consider fixing and managing the issues, just if they hinder you when you add/change/understand the system)*

	1. Least negative impact	2.	3.	4.	5.	6.	7.	8.	9.	10.	11. Most negative impact
Lack or low quality of testing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low code quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack or low quality of requirement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack or low quality of documentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dependency violations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex architectural design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too many different patterns and policies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dependencies to external resources/software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uneasy/Tensed social interactions between different stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of adequate environment and infrastructure during development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of reusability in design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During the software life cycle, you might encounter some of the following **issues**.

## How often do you experience them?

	Very Frequently	Frequently	Occasionally	Rarely	Never
I experience <b>restricted reusability</b> of the software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience <b>maintenance difficulties (analyzing and fixing defects)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience a limited <b>ability to add</b> new features <b>and change</b> the existing system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience <b>performance degradations</b> of the software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience <b>poor reliability</b> of the software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)