SOFTWARE ENGINEERING IN PRACTICE

Marc Hofer
WHO IS TALKING?

• MARC HOFER, SOFTWARE DEVELOPER
• SWITZERLAND: SWISSCOM, ZUEHLKE
• UK/INDIA: THOUGHTWORKS
• THOUGHTWORKS UNIVERSITY COACH
• CONTRACTOR @ POST (NEMO)
AUTOMATED TESTING & CONTINUOUS DELIVERY
AUTOMATED TESTING
... AND MY PERSONAL JOURNEY WITH TESTING AND CONTINUOUS DELIVERY

- MOTIVATION FOR THIS TALK
- MY PERSONAL EXPERIENCE WITH TESTING
- EXPERIENCE FROM MY CURRENT PROJECT
- THE FUTURE OF TESTING?
- WHAT IS IN FOR YOU?
MOTIVATION FOR THIS TALK

ALL THE AUTOMATED TESTS HAVE CRASHED

THAT'S NORMAL
“THIS IS GREAT. SURELY THERE AREN’T THAT MANY COMPANIES WITH SUCH A HIGH DEGREE OF TEST AUTOMATION!”

- anonymous client
TESTING IS STILL SEEN AS A SECOND CLASS CITIZEN (EVEN FROM DEVS!).

A LOT OF LOW QUALITY SOFTWARE IS BUILT. HELLO SWITZERLAND?

ORGANISATIONS STILL DON’T SEE TESTING AS A INVESTMENT.

LACK OF LONGTIME INVESTMENTS DURING PROJECT PHASE AND HIGH COSTS IN THE LONG RUN.
“THIS IS GREAT. WE WISH WE WOULD HAVE DONE IT THIS WAY FROM THE VERY BEGINNING!”

- developer
PERSONAL EXPERIENCE WITH TESTING

 HAVE YOU TESTED YOUR CODE UNDER STRESS?

 NO, BUT I’VE WRITTEN IT UNDER STRESS
MY “TESTING JOURNEY”
• C/C++ CODEBASE
• NIGHTLY BUILD / FULL INTEGRATION ON WEEKENDS
• NO AUTOMATED TESTS
• NO REAL CONTINUOUS INTEGRATION
• WATERFALL WITH DEDICATED TESTING TEAM
DEDICATED TEST TEAM
• INTRODUCTION TO UNIT-TESTING (WITH JUNIT)
• VERY LITTLE FOCUS ON SOFTWARE TESTING OR SOFTWARE QUALITY IN GENERAL
• JAVA CODEBASE
• STARTED WITH UNIT-TESTING
• UNIT-TESTING WAS INTRODUCED BY DEVELOPERS FRESH FROM UNIVERSITY
• SLOWLY STARTED TO RUN TESTS ON THE BUILD SERVER
• A LITTLE BIT OF CONTINUOUS INTEGRATION
Microservices?

- 53 Services
- 450 Modules
DEDICATED TESTING-TEAMS (PARTLY OUTSOURCED)
2010

• First contact with Scrum
• First real need for automated testing because of shorter delivery cycles
• Continuous integration server runs tests and quality metrics
• Build monitor / Lava Lamp
• First usage of mocking frameworks (e.g. Mockito)
Build some features

Feedback

Working software

Build some features

More working software

Build some features

Even more working software

Time
2012

- Fully Agile Projects
- Different Levels of Testing (Testing Pyramid)
- TDD (and Some BDD)
- Build Pipelines, Continuous Delivery, Blue-Green-Deployments, Canary Deployments
- Metrics
- A/B-Testing
- Performance Testing
FEEDBACK LOOP!
FEEDBACK LOOP!

UNIT-TEST

INTEGRATION TEST

ACCEPTANCE TEST
BUILD/DEPLOYMENT PIPELINE
X-FUNCTIONAL TEAMS

PRODUCT MANAGER  UX  DEV  QA  DBA  SYS ADMIN  NET ADMIN
CURRENT PROJECT

HAVING A GREEN HUDSON/JENKINS ...

... IS ...

DIDN'T KNOW IT CAN CHANGE ITS COLOR

... A GREAT EXPERIENCE
Ändern der Fußzeile: Im Reiter «Post-Menü» den Befehl «Kopf- und Fußzeile» wählen.
22 APPS
6 TEAMS
FEEDBACK LOOP!

PARALLEL TESTING

INTEGRATION TEST

ACCEPTANCE TEST
SELENIUM TESTS
LEARNINGS

• WRITE TESTS FROM THE START OF YOUR PROJECT (TDD)
• MOBILE TESTING IS DIFFERENT
• KEEP FEEDBACK LOOPS SHORT
• INVEST IN FUTURE STABILITY OF YOUR PRODUCT
THE HISTORY OF COMMUNICATION

I predict that in 170 years we'll be able to send 140 characters at a time.

You're kidding.

1836: The first telegraph was invented.
FUTURE OF TESTING

• DEPLOYMENT CYCLES ARE GETTING SHORTER. COULD WE GO WITH LESS OR DIFFERENT KIND OF TESTS?

• TESTING IN PRODUCTION? MORE SEMANTIC MONITORING?

• MORE CANARY DEPLOYMENTS AND MORE METRICS INSTEAD OF MORE TESTS?
“YOU BUILT IT, YOU RUN IT!”
- Werner Vogels (CTO Amazon)
FUTURE ROLE OF A TESTER?
WHAT IS IN FOR YOU?
WHERE SHOULD YOU FOCUS?

- PRACTICE TDD
- UNDERSTAND THE TESTING PYRAMID AND BUILD PIPELINES
- LEARN AND PRACTICE CONTINUOUS DELIVERY (ZERO DOWNTIME AND E.G. BLUE GREEN DEPLOYMENT).
FRAMEWORKS & TOOLS

• JUNIT, MOCKITO
• BDD E.G. WITH CUCUMBER
• SELENIUM TESTS
• BUILD PIPELINES: GO-CI, SNAP-CI
CONTINUOUS DELIVERY & LEAN ENTERPRISE
Our goal is to write bug-free software. I'll pay a ten-dollar bonus for every bug you find and fix.

Yahoo!

We're rich!

Yes!!!

I hope this drives the right behavior.

Yes!!!

I'm gonna write me a new minivan this afternoon!
GOOD DEVELOPERS ARE GREAT ... TESTERS!
THANKS FOR LISTENING
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