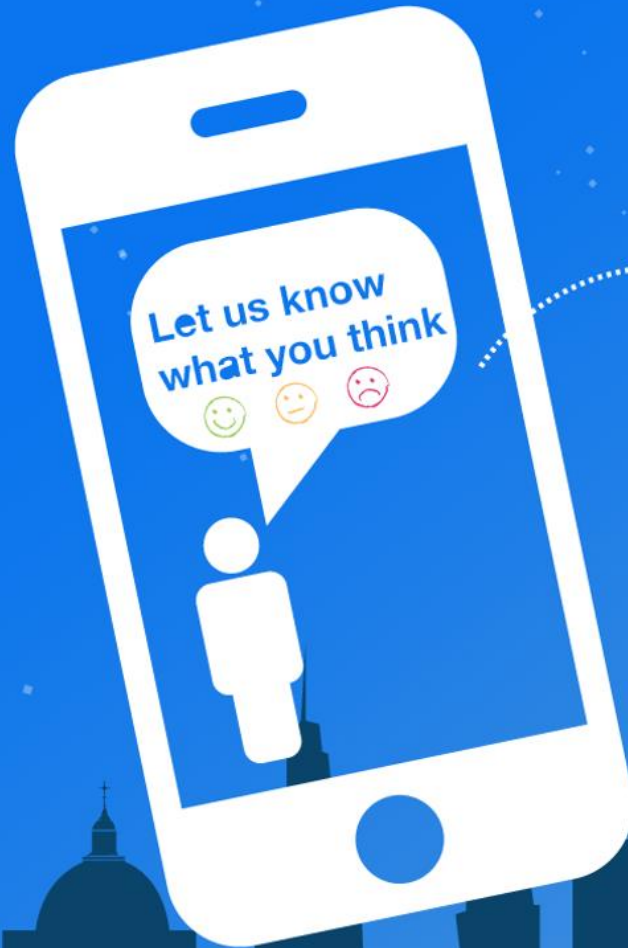




# Automated testing in 3Shape

Steen Frost Tofthøj - 3Shape, Copenhagen 2017

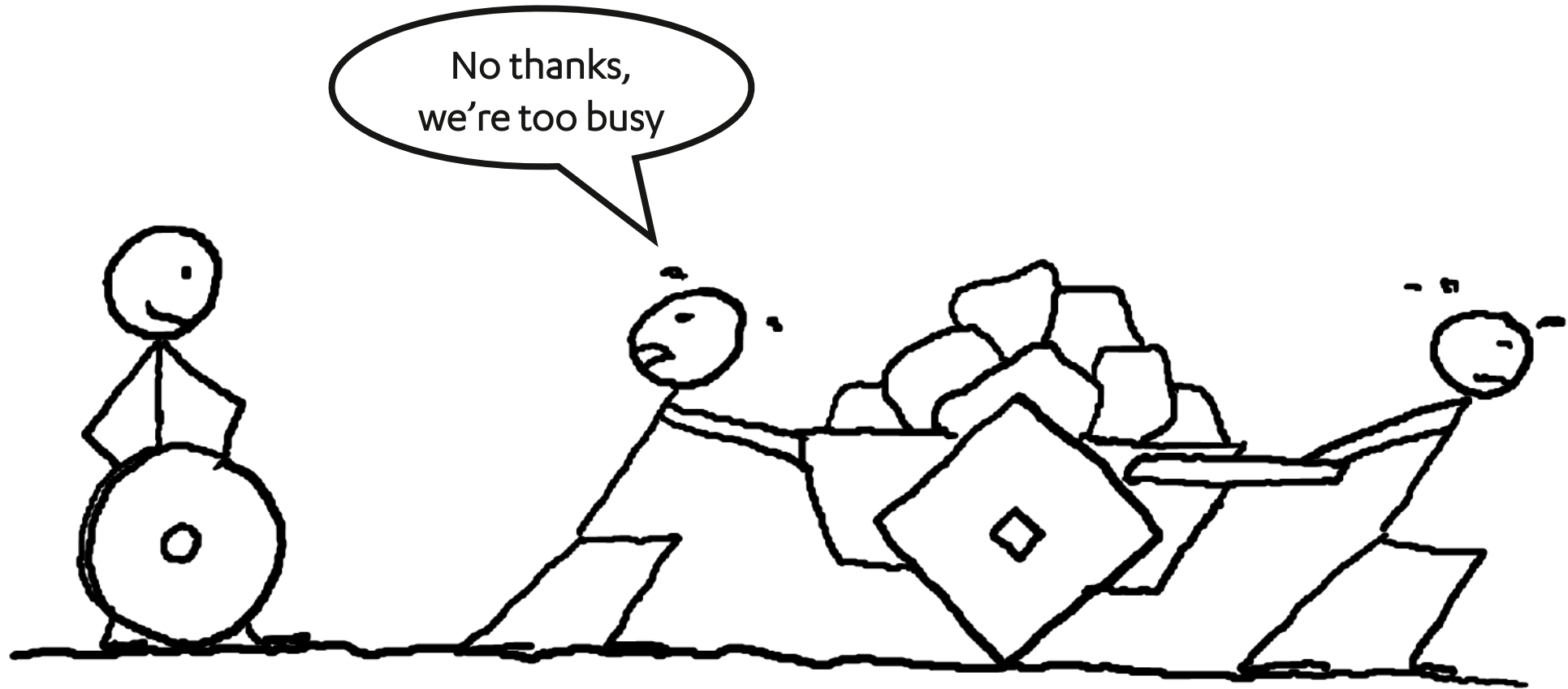
3shape 



**Click 'Rate Session'  
to rate session  
and ask questions.**



This presentation is about...



# Presenter



**Steen Frost Tofthøj**  
M.Sc. DTU 2001  
Software Developer  
Scrum Master  
Project Manager

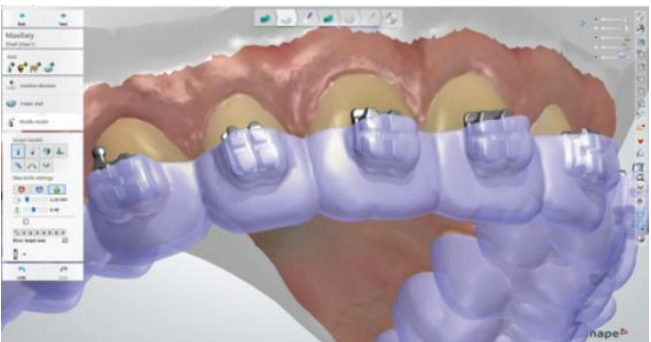
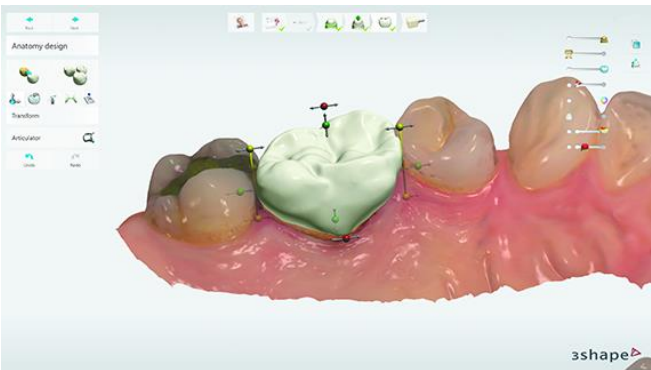


Ask Søren

# 3Shape products and customers



3D scanners

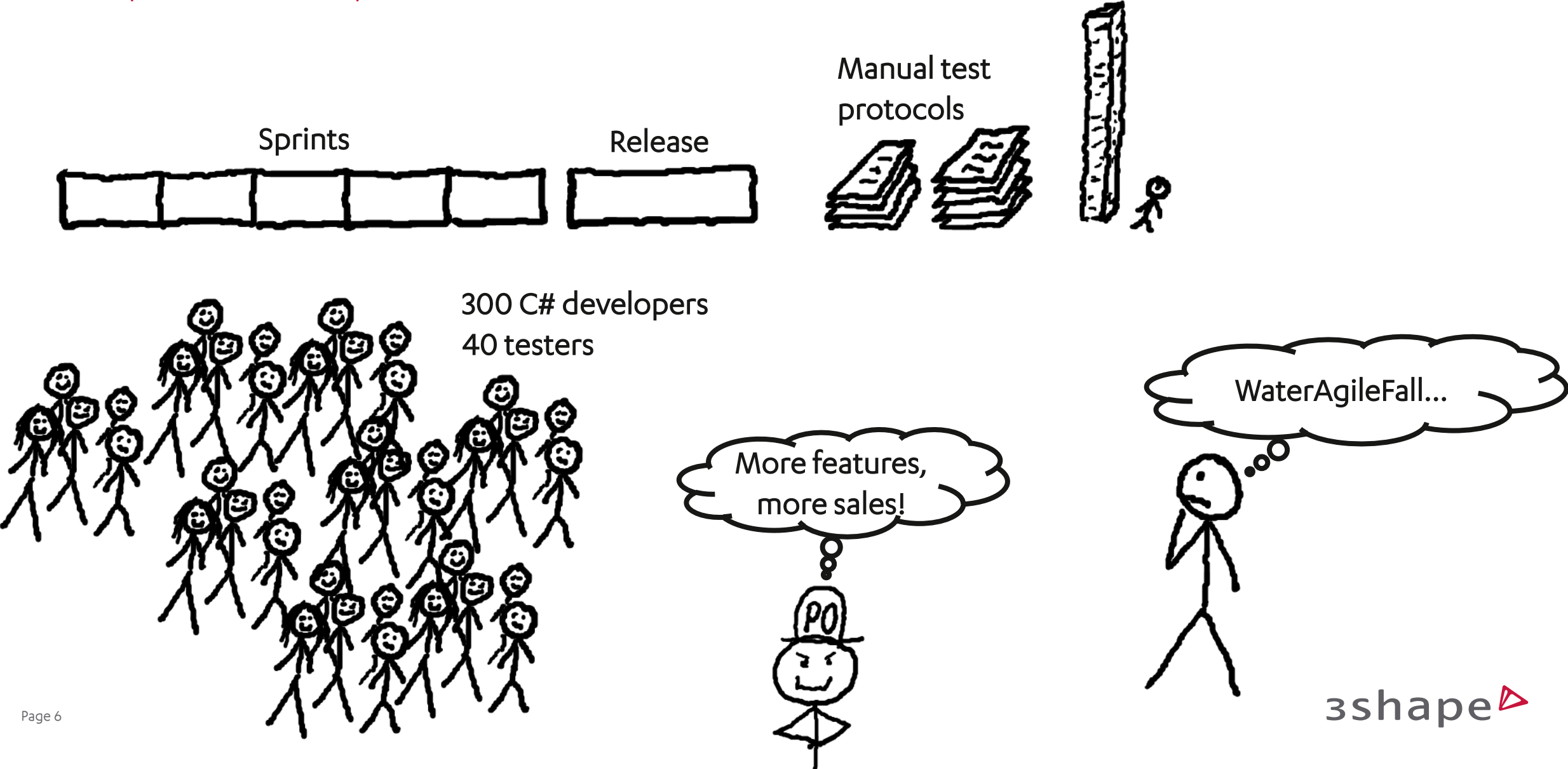


CAD/CAM software

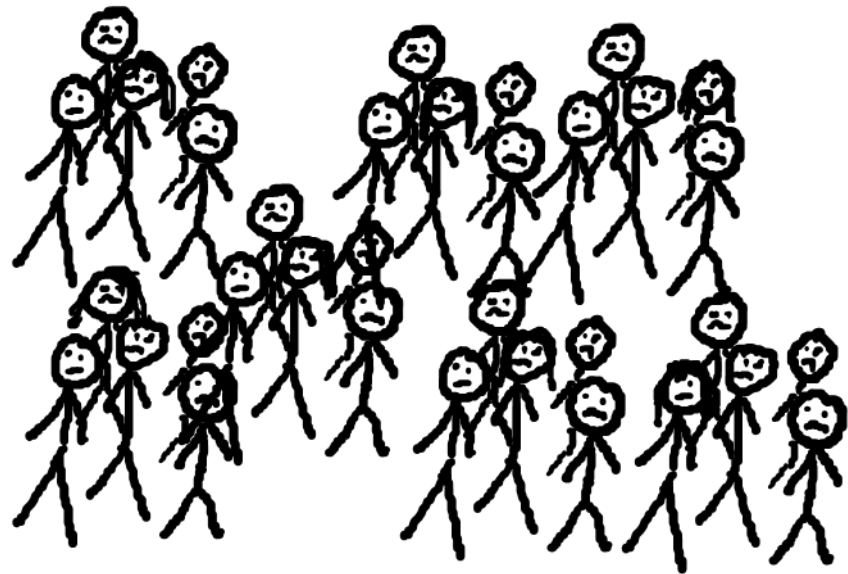




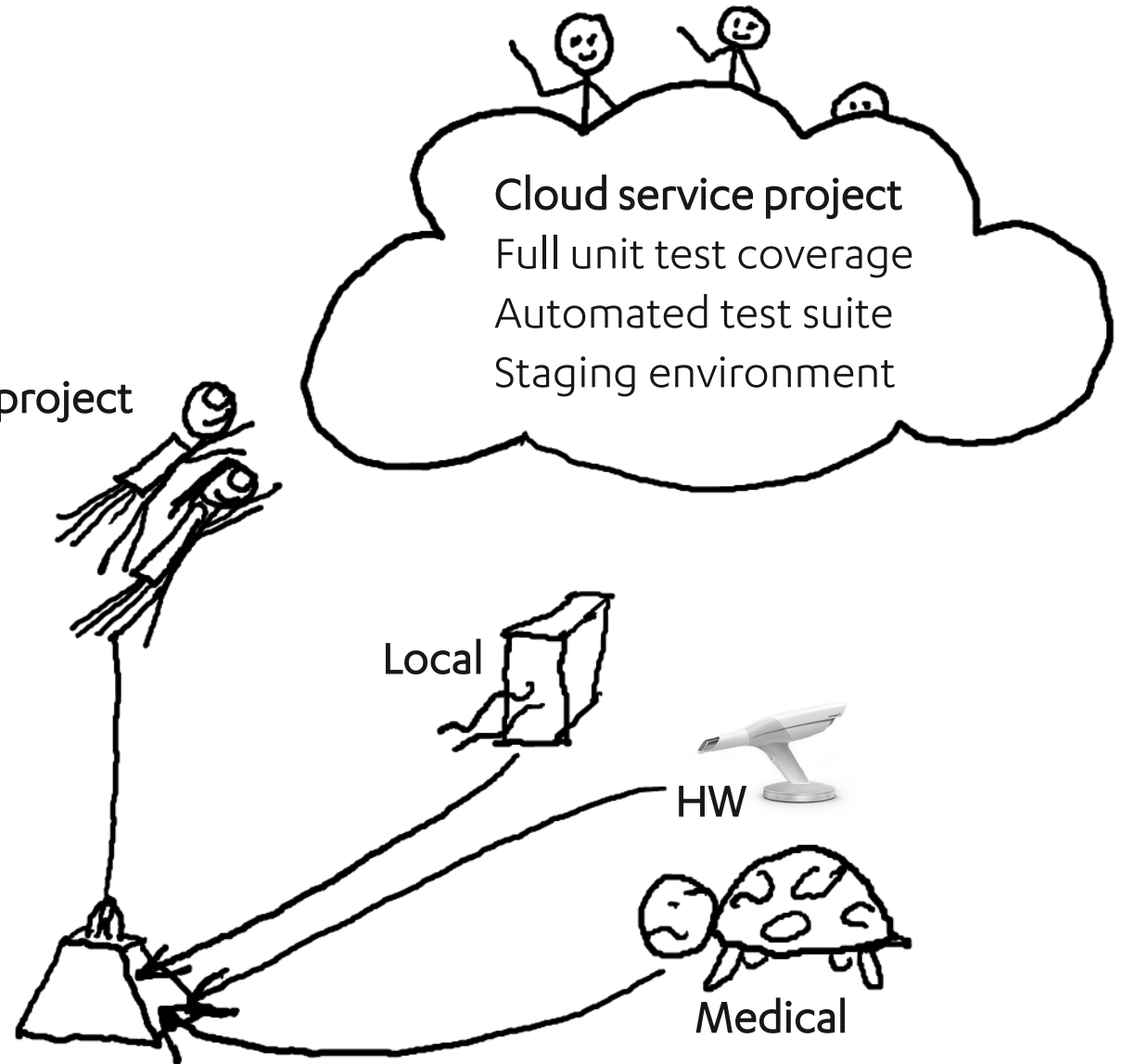
# 3Shape development



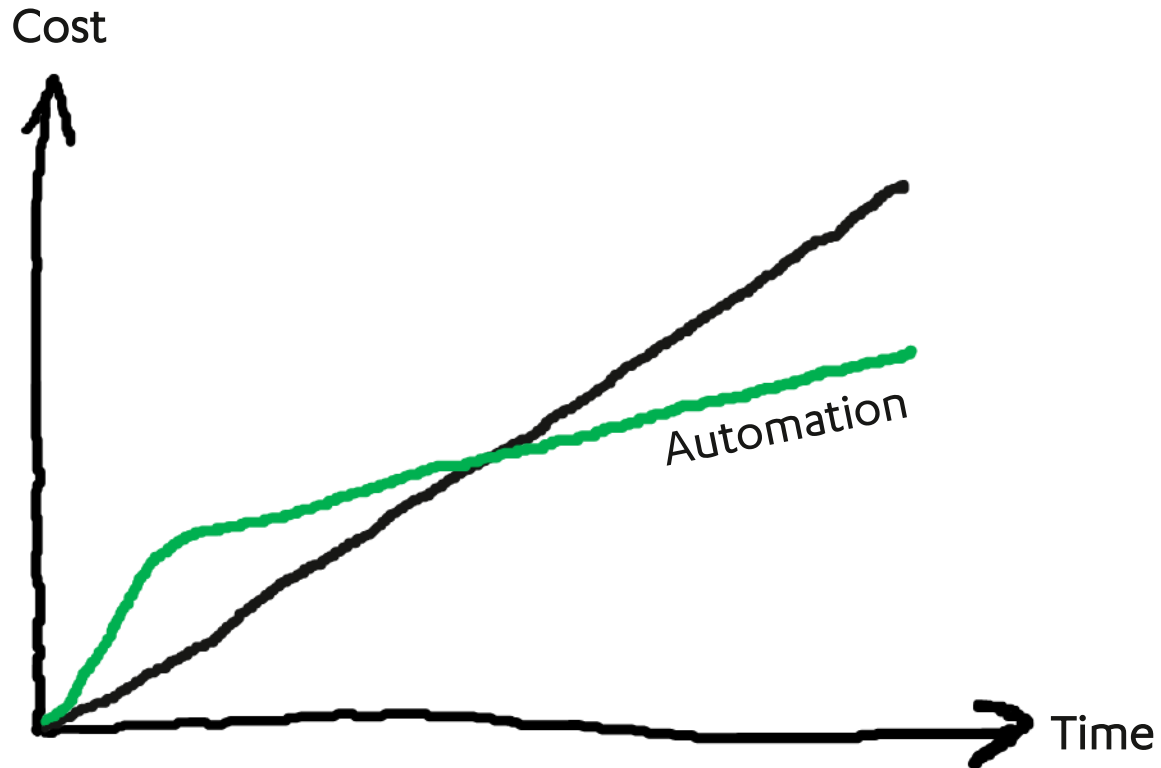
# How to get started?



Pilot project



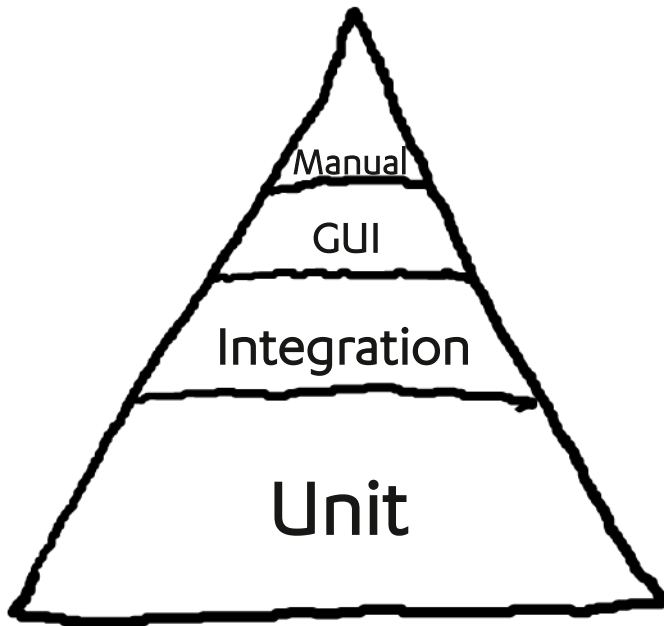
# Strategy - Return On Investment



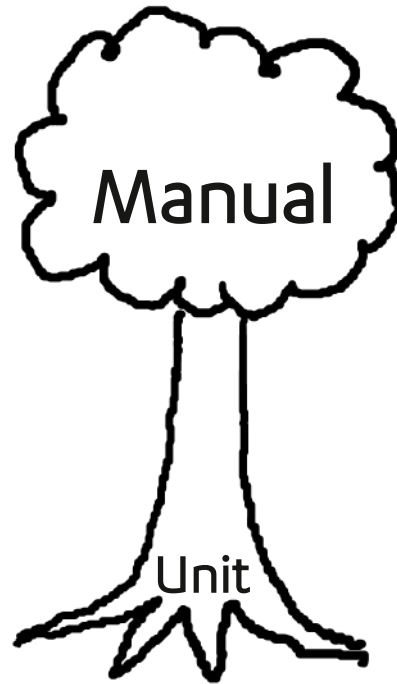


# Strategy - What to test?

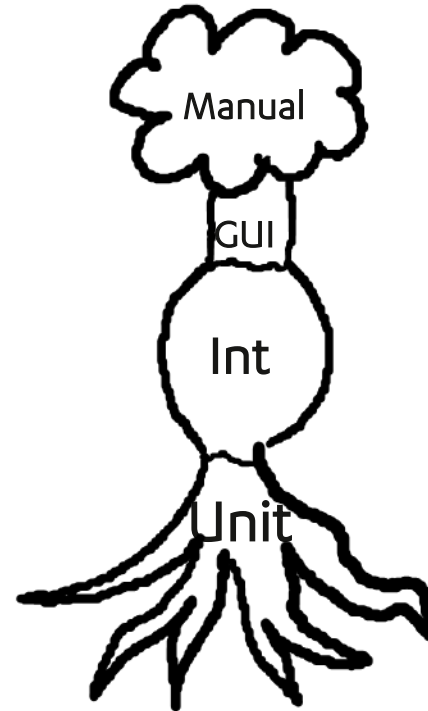
Recommended



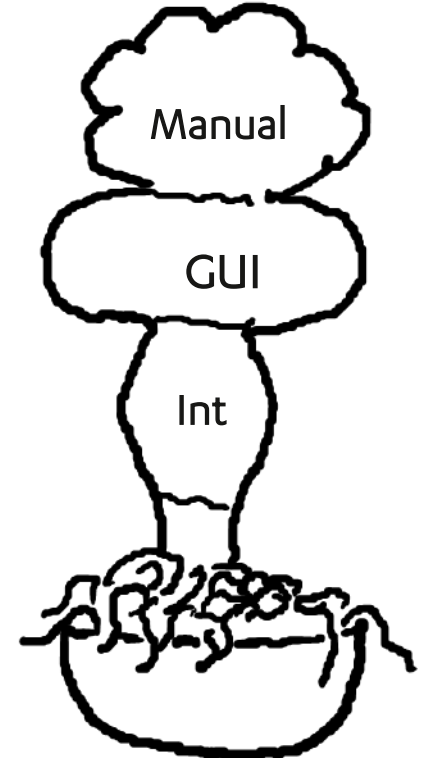
Reality



Goal



Goal... pragmatic

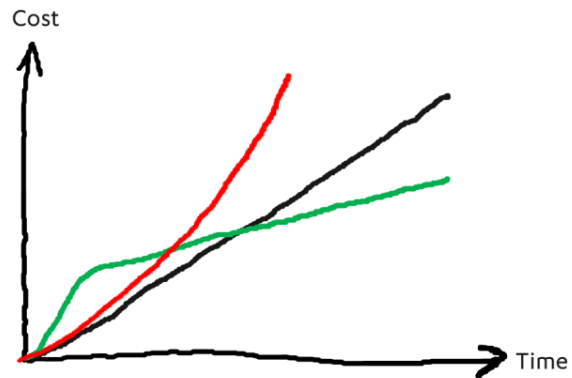
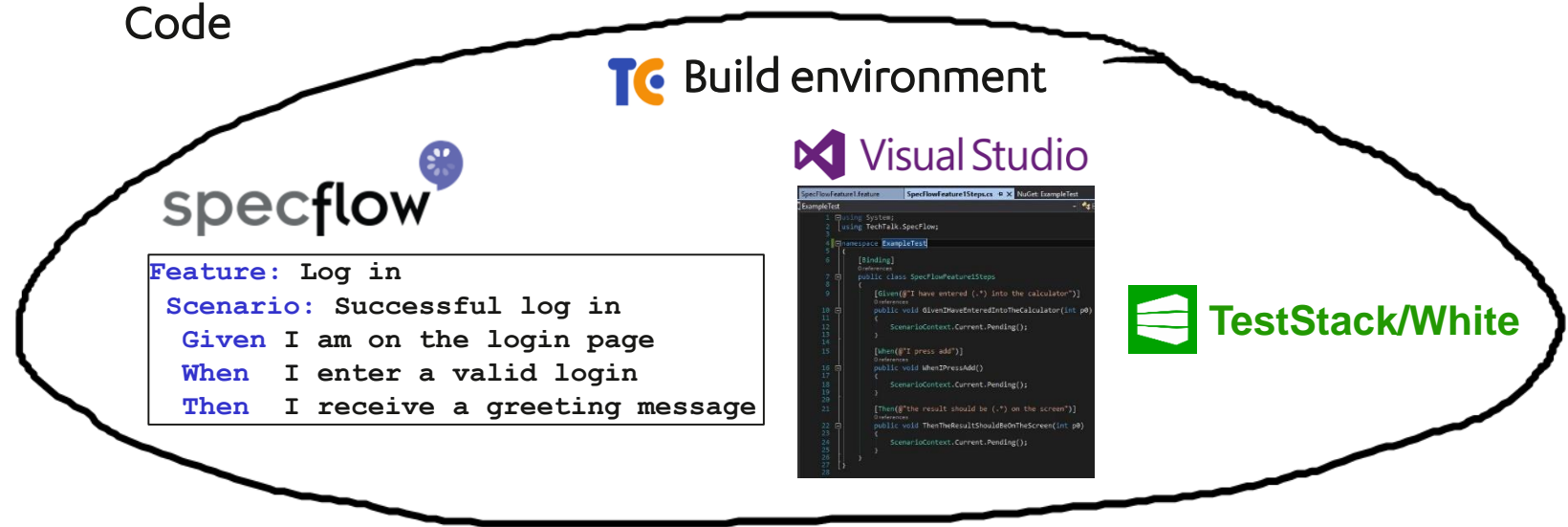


# Strategy - Tools

Record and playback



Code



It's just like writing  
unit tests!

I made a nuget that  
saves screenshots



# Tools to use

Common framework = Easy to get started

 Build environment

  
specflow

Feature: Log in  
Scenario: Successful log in  
Given I am on the login page  
When I enter a valid login  
Then I receive a greeting message

 Visual Studio

```
using System;
using TechTalk.SpecFlow;

namespace ExampleTest
{
    [Binding]
    public class SpecFlowFeatureSteps
    {
        [Given("I have entered (.*?) into the calculator")]
        public void GivenIHaveEnteredDataTheCalculator(int pk)
        {
            ScenarioContext.Current.Pending();
        }

        [When("I press add")]
        public void WhenIPressAdd()
        {
            ScenarioContext.Current.Pending();
        }

        [Then("The result should be (.*?) on the screen")]
        public void ThenTheResultShouldBeOnTheScreen(int pk)
        {
            ScenarioContext.Current.Pending();
        }
    }
}
```

 TestStack/White

WhateverWorksForYou-Land



# Case Studies

Accessing a legacy application

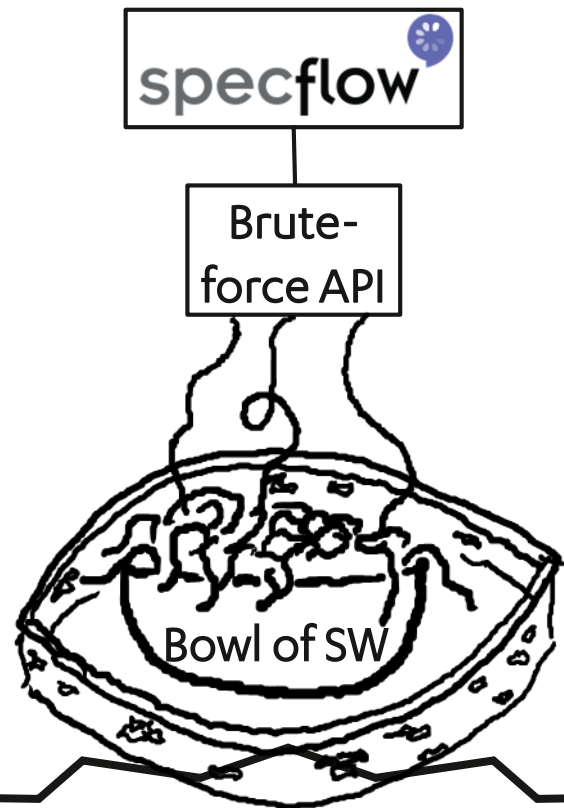
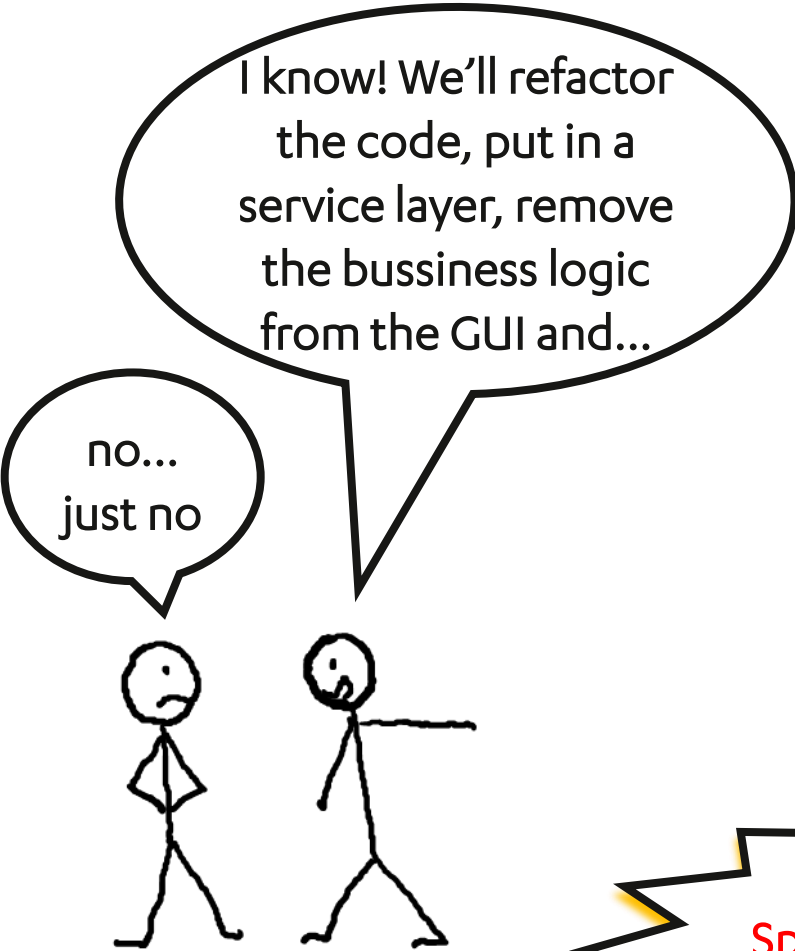
Virtual test environments

Testing hardware

Automated documentation



# Accessing a legacy application

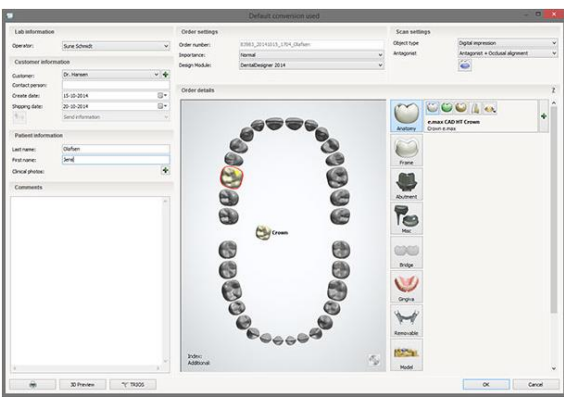


Spent: 150 dev days  
Saved per year: 60 test days

Data



GUI & logic



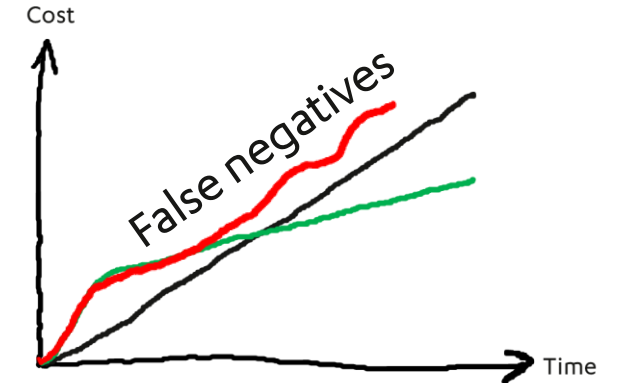
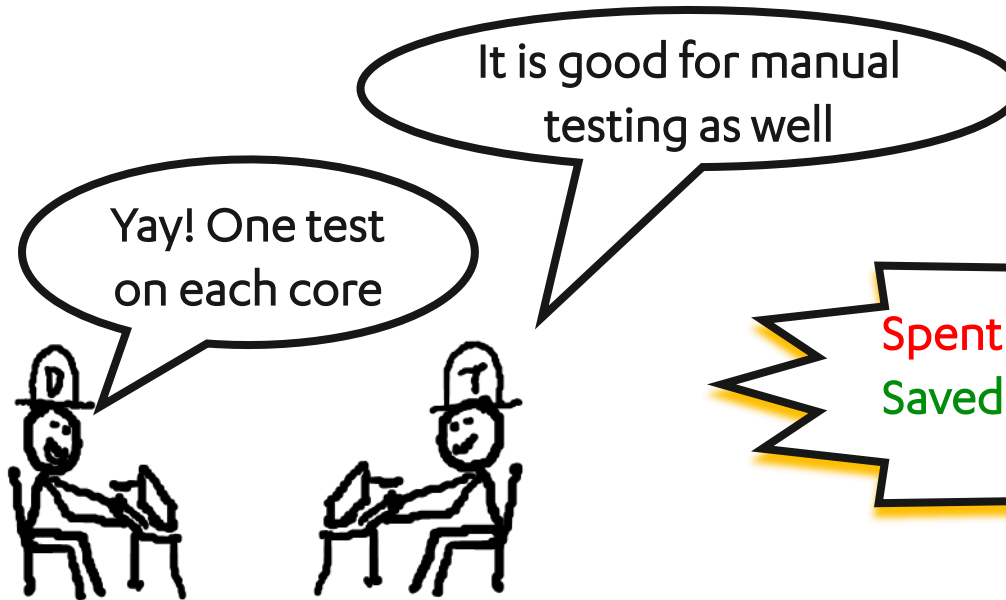
3D



# Virtual test environments



Microsoft Azure  
Hyper-V

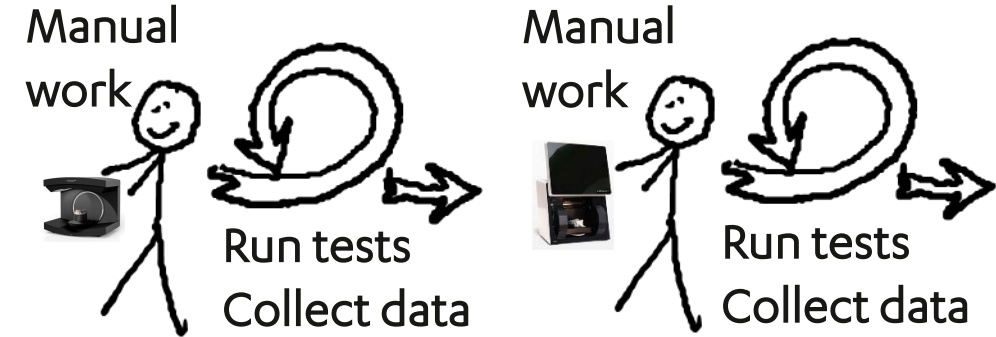


Spent: 200 dev days  
Saved per year: 20 test days  
50 setup days



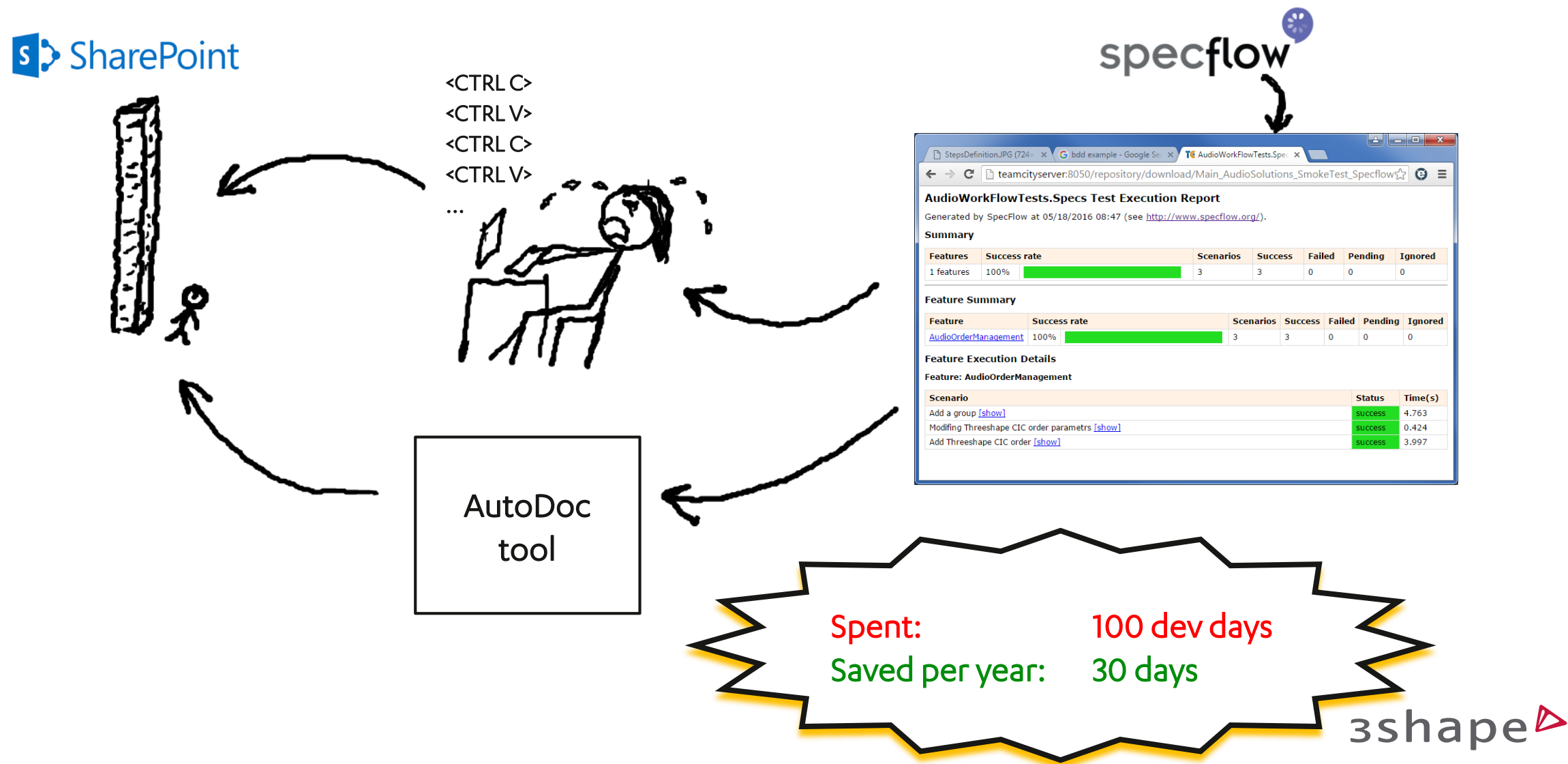
# Testing hardware

## Scanner Reproducibility



Spent: 20 dev days  
Saved per year: 15 test days

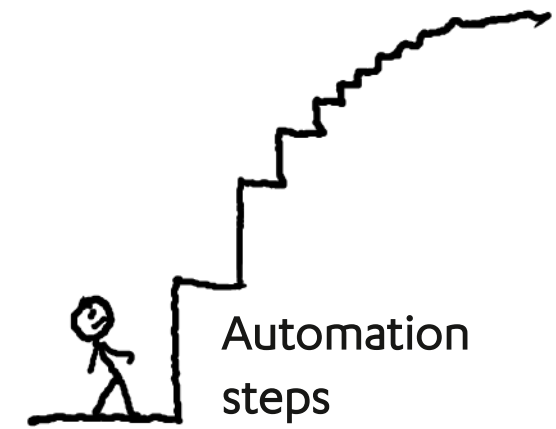
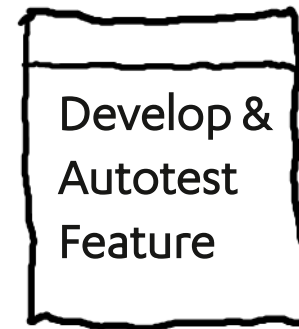
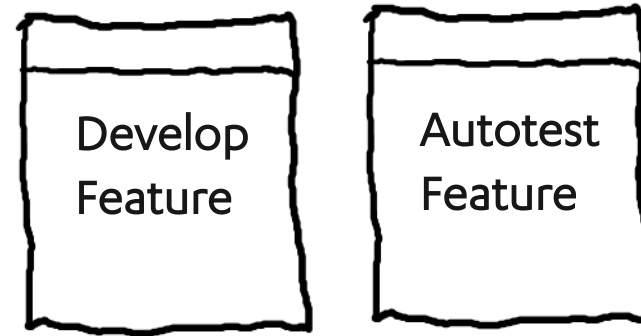
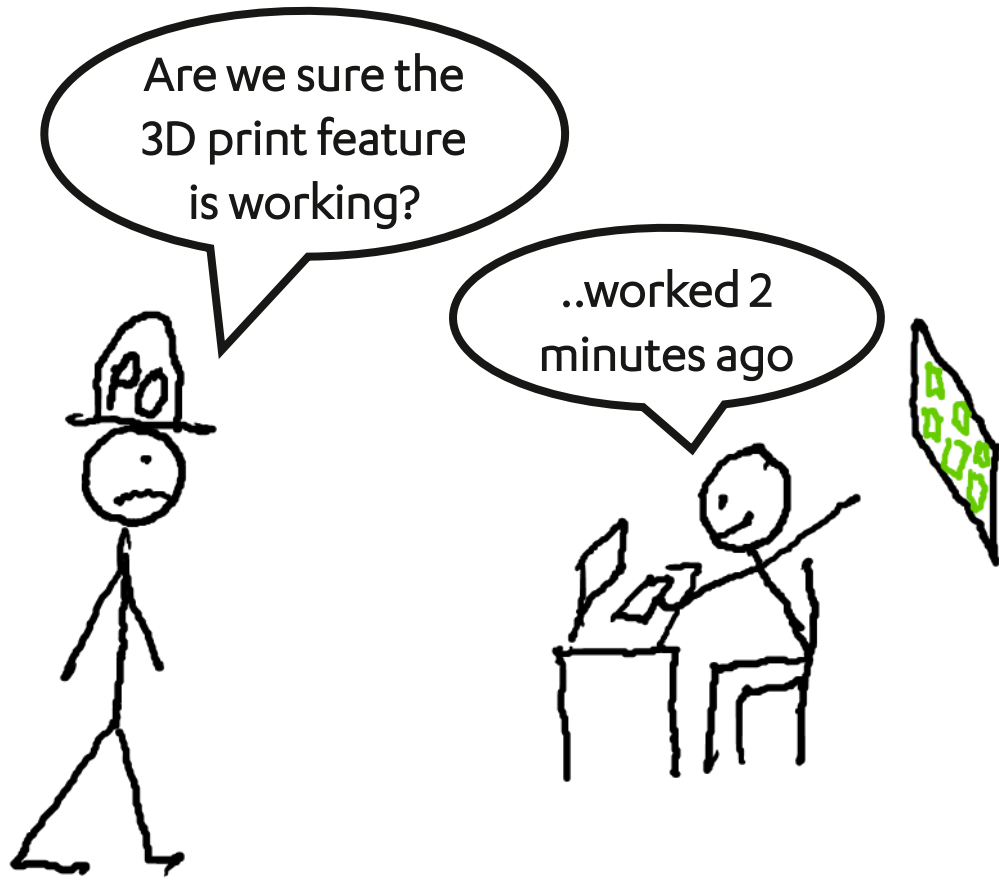
# Automated documentation



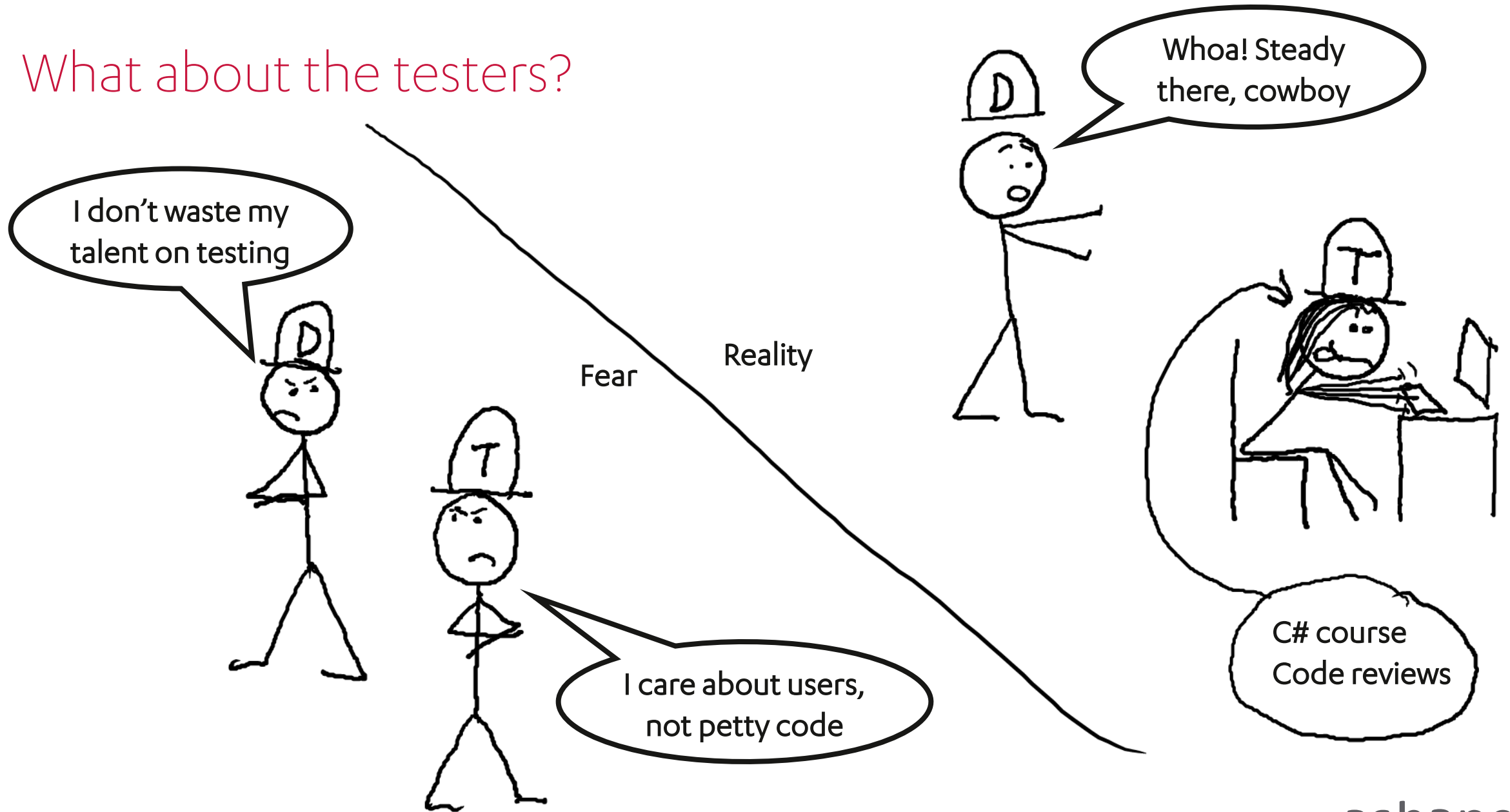
Done with the pilots,  
how to proceed?



# Prioritizing automation



## What about the testers?



# Quality

## Parameterized tests

```
Feature: GroupCreation
  In order to use RegClient
  As a ShellManager user
  I want to be able to create and delete groups

Background:
  Given RegClient is running and main form is shown

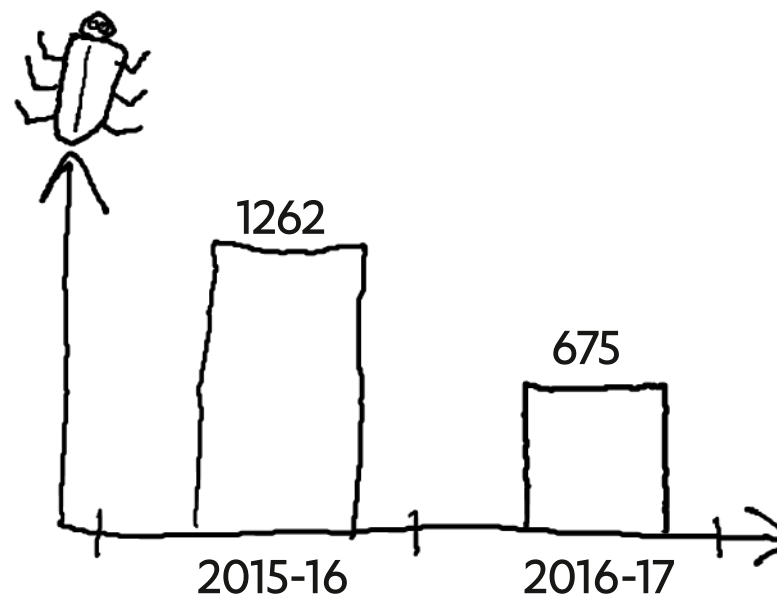
@SS2.1
Scenario: Create new group
  When I click create a group and create a new group
  Then A group is created with correct name and comment

@SS12.1
Scenario: Delete group and confirm
  Given I create a group
  And I create the following orders
    | OrderNumber | Side | ShellID | Category |
    | 1           | Left | Shell11 | ITC      |
    | 1           | Right| Shell12 | ITC      |
    | 2           | Left | Shell13 | ITE      |
    | 2           | Right| Shell14 | ITE      |
  And I import a scan and change status
  When I press delete group and confirm deleting the group and files
  Then the group does not exist
  And the group files do not exist
```

Better (and  
continuous) coverage



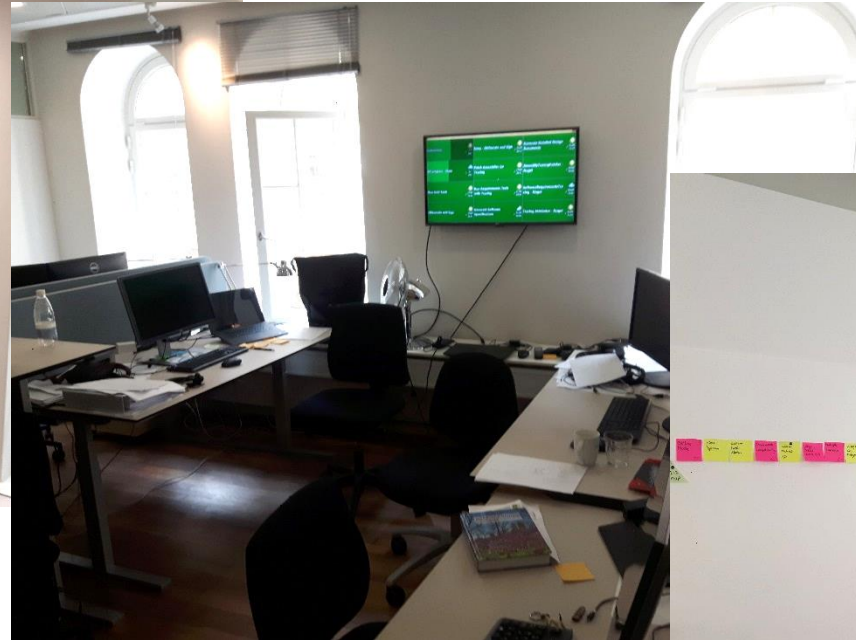
## Bugs



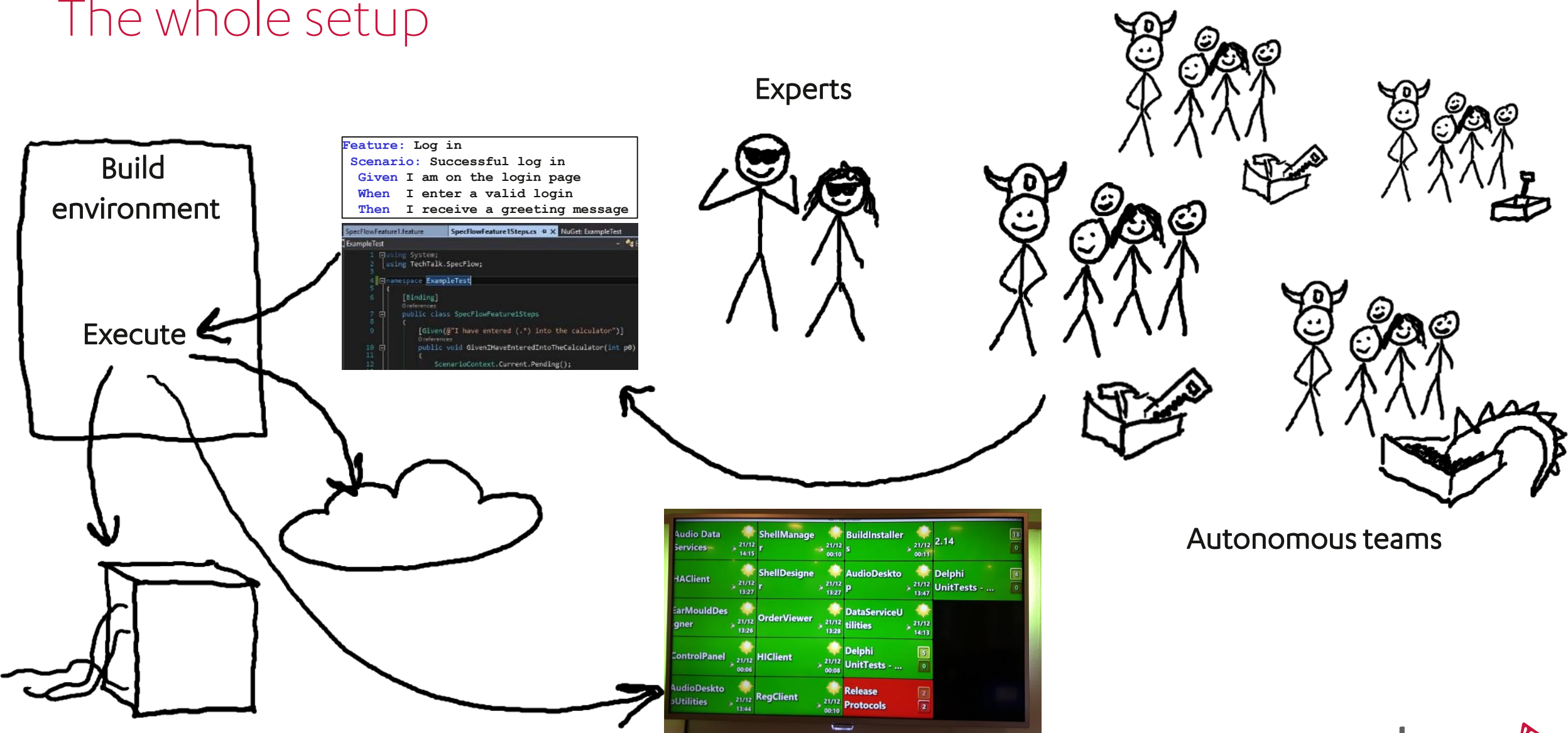
Fewer bugs at  
the customer



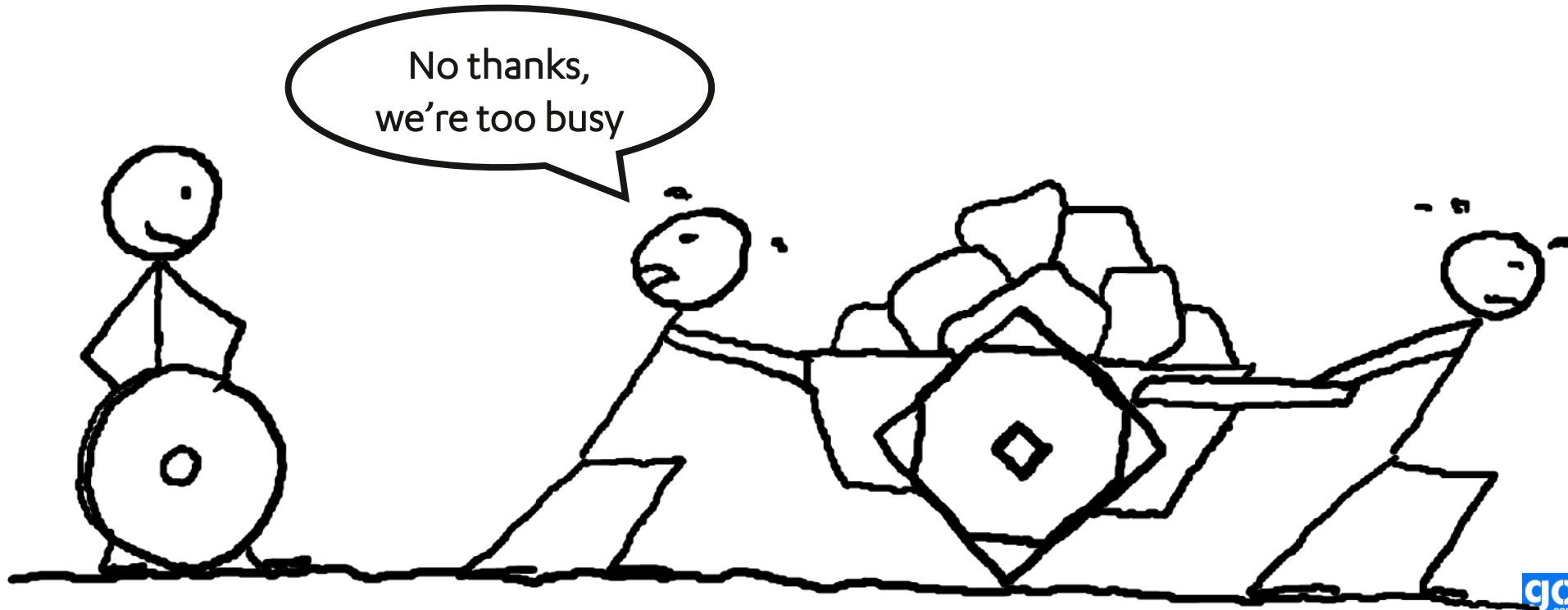
# Mindset – continuous feedback



# The whole setup



## Steps in the right direction



# Thank you for your attention!

