Test driven development

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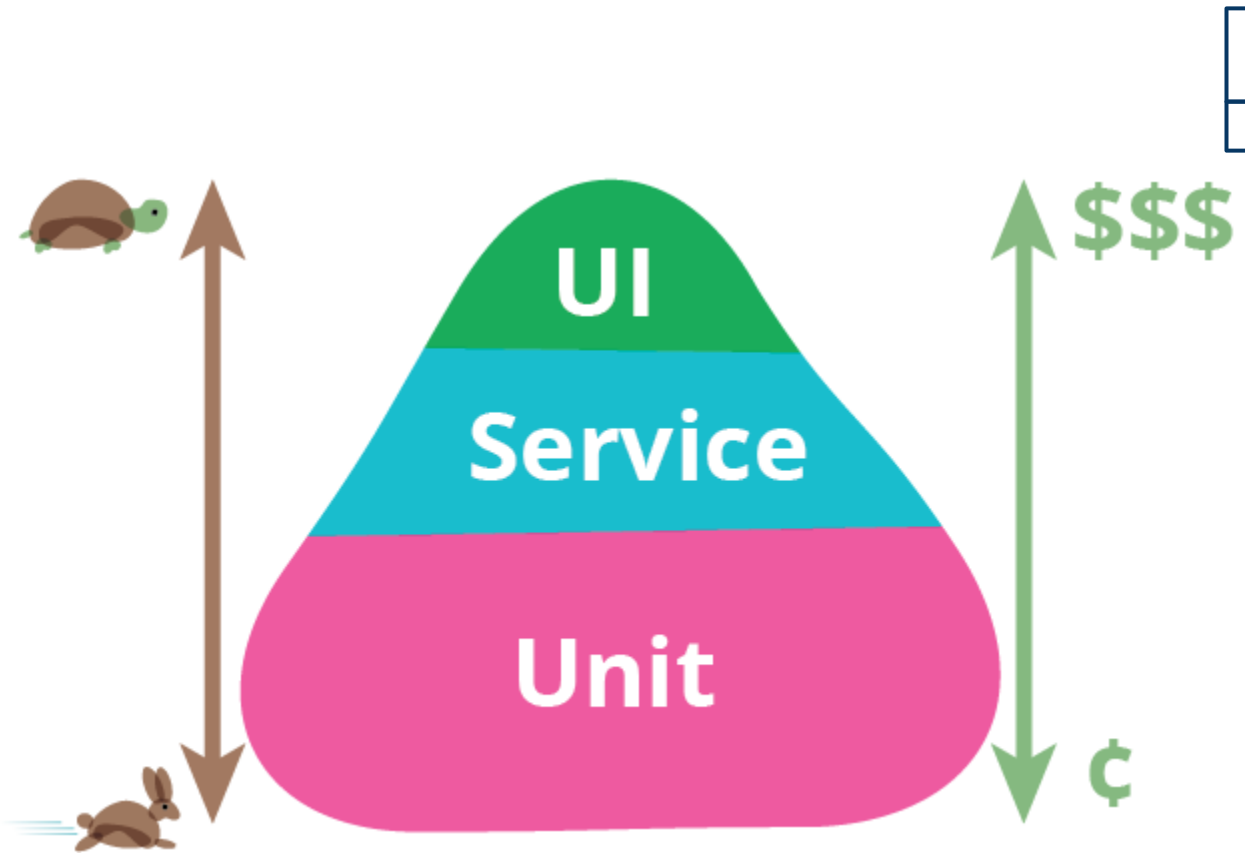
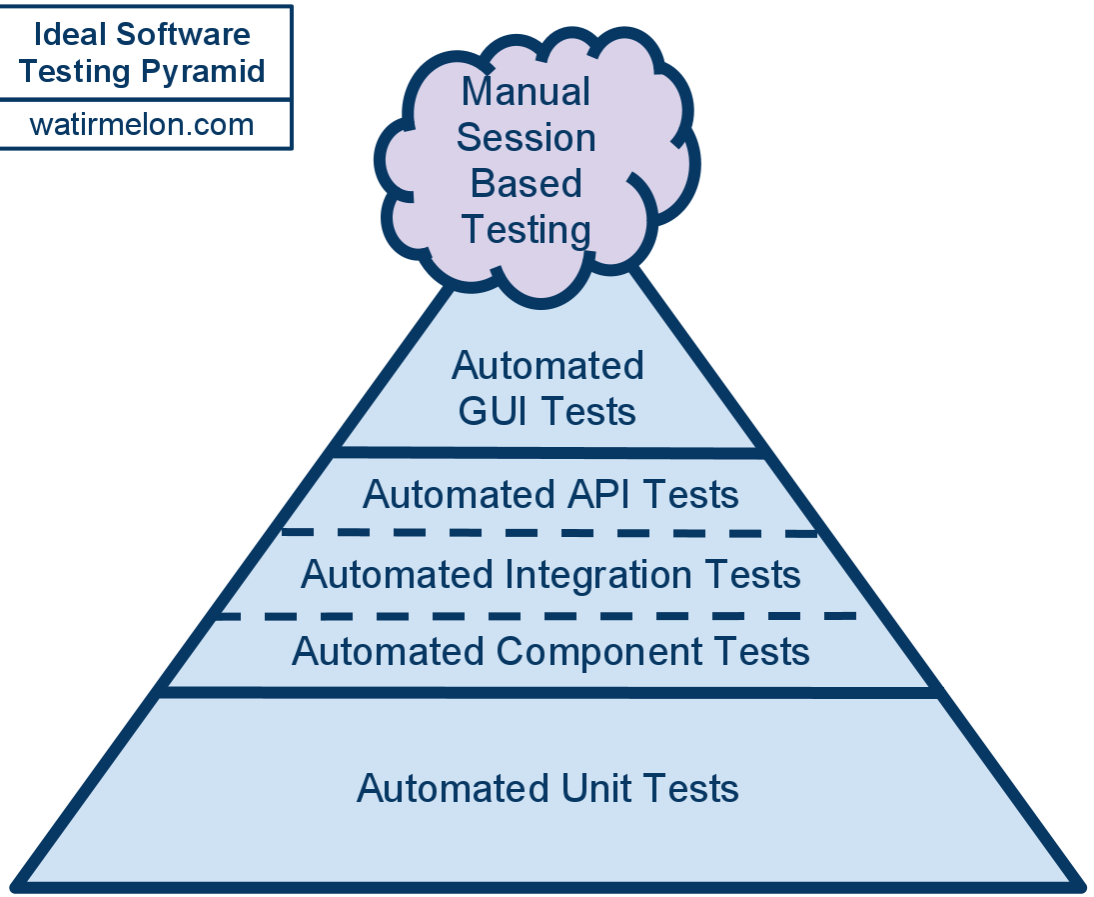
Outline

- Extreme programming
- What is TDD and how it is practiced
- Unit testing
- Installing NUnit
- Coding katas

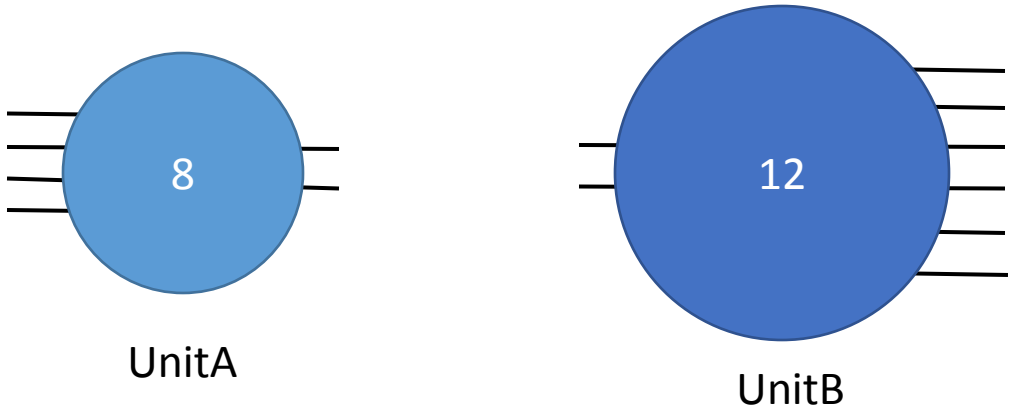
Test pyramid



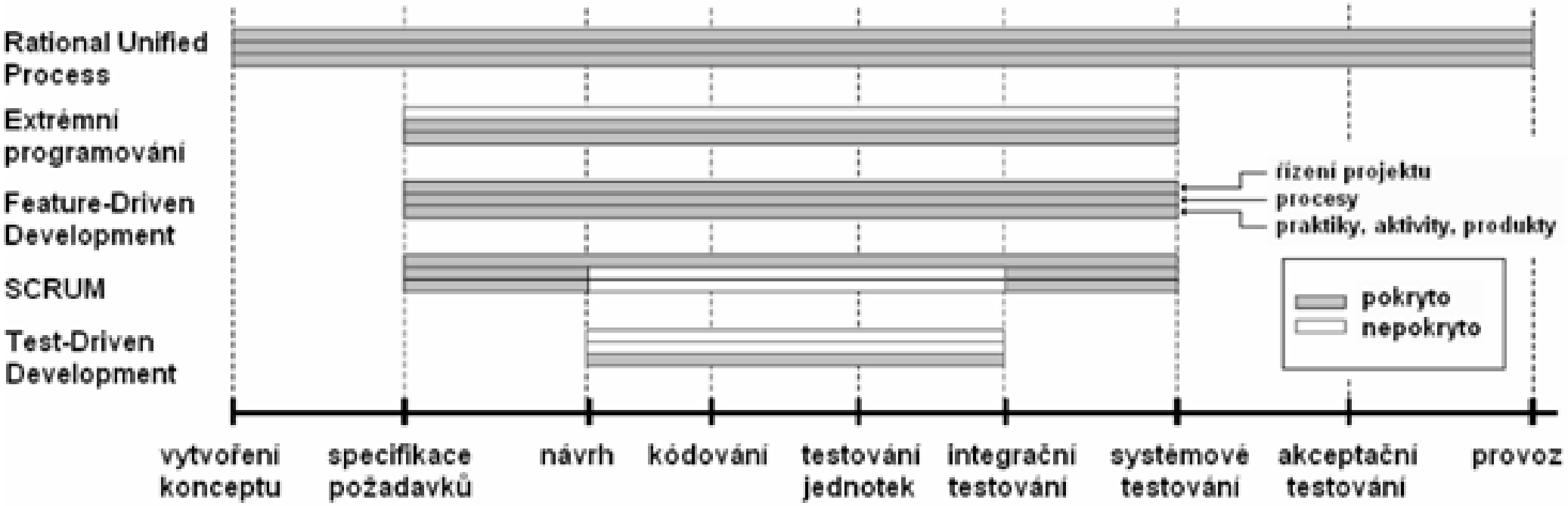


https://martinfowler.com/bliki/TestPyramid.html

Unit vs integration testing



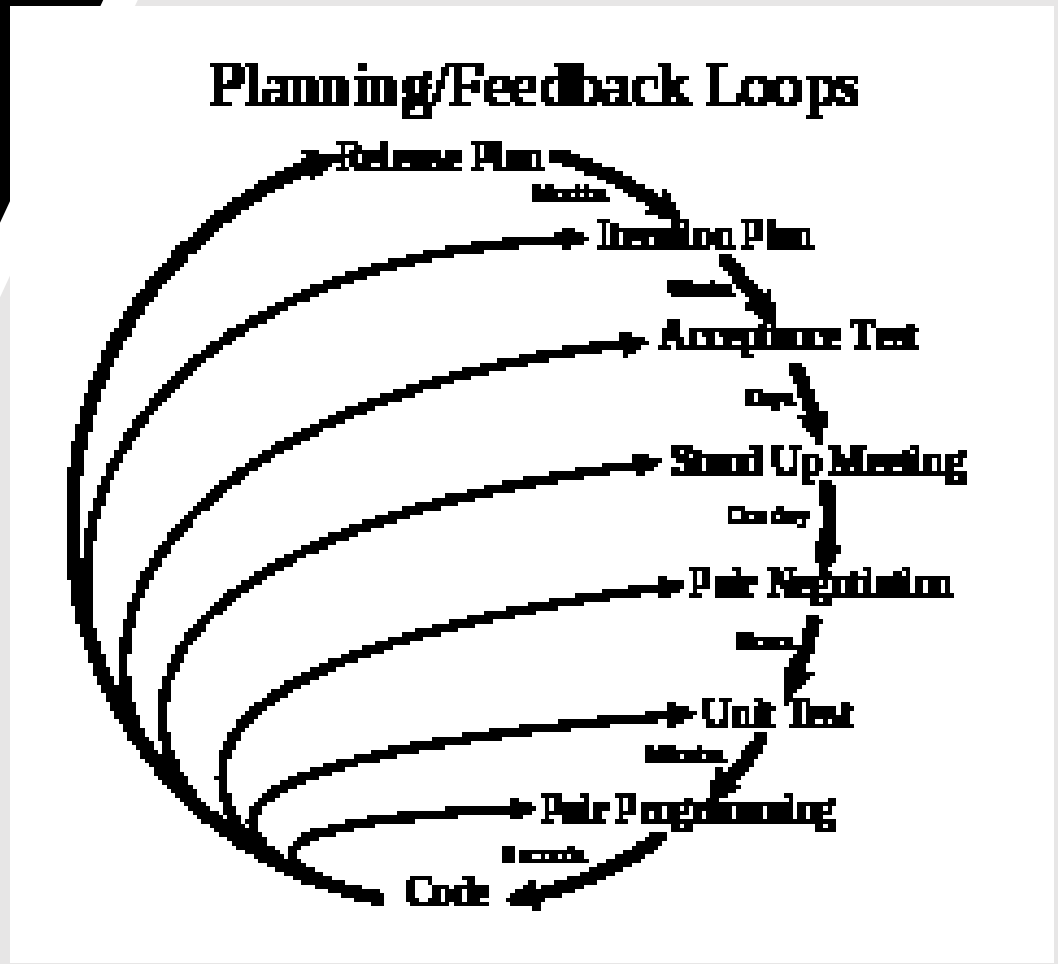
Srovnání metodik z pohledu životního cyklu SW



J. Ráček, Analýza a návrh systémů

Extreme Programming

- Stand ups
- Planning game
- Pair programming
- TDD
- Collective code ownership
- Continuous integration
- Code is everythink
- No useless analysis
- No useless documentation



Naming conventions

- Project naming
  - <ProjectUnderTest>.Tests
- Class naming
  - <ClassUnderTest>Tests
- Test method naming
  - Given_When_Then
  - <methodUnderTest>_Given_Then

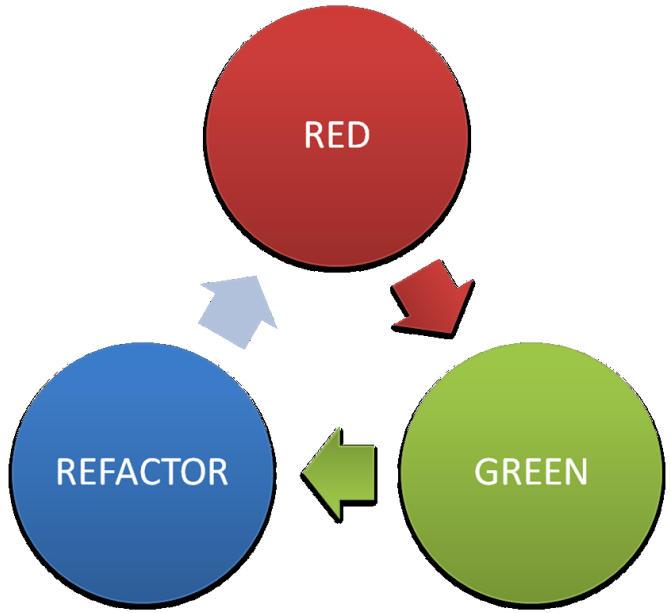
Unit test structure

- Arrange
- Act
- Assert

- One Assert per test (ideal situation)
- More assert per test
  - Could be refactored (e.g. custom assert method)
  - Only if it doesn’t make sense to divide test into several others

TDD

- Kent Beck – reinvented TDD, invented XP
- Software development process
- Pair programming
- Rules:
  - Write failing test
  - Write simplest implementation to pass the test
  - Refactor your code
  - Repeat



Coding katas

- Is a way to
  - exercise your brain
  - exercise TDD
  - learn new language

Leap year excercise

- Write a function that returns true or false depending on whether its input integer is a leap year or not.

- A leap year is divisible by 4, but is not otherwise divisible by 100 unless it is also divisible by 400.

- 2001 is a typical common year
- 1996 is a typical leap year
- 1900 is an atypical common year
- 2000 is an atypical leap year

Fizz buzz

- Fizz Buzz is a mathematical game which is played with a group of people. Each person says a number in sequence, but when the number is a multiple of 3, they have to say "Fizz", when it is a multiple of 5 they have to say "Buzz", and if it is a multiple of both 3 and 5, "FizzBuzz". If someone makes a mistake and it is noticed, they are out.

- A typical game might start like: 1, 2, Fizz, 4, Buzz, Fizz, 7, 8, Fizz, Buzz, 11, Fizz, 13, 14, Fizz Buzz, etc.

```
string FizzBuzz(int start, int count)
```

Events

- http://codingdojo.cz/
- http://globalday.coderetreat.org/