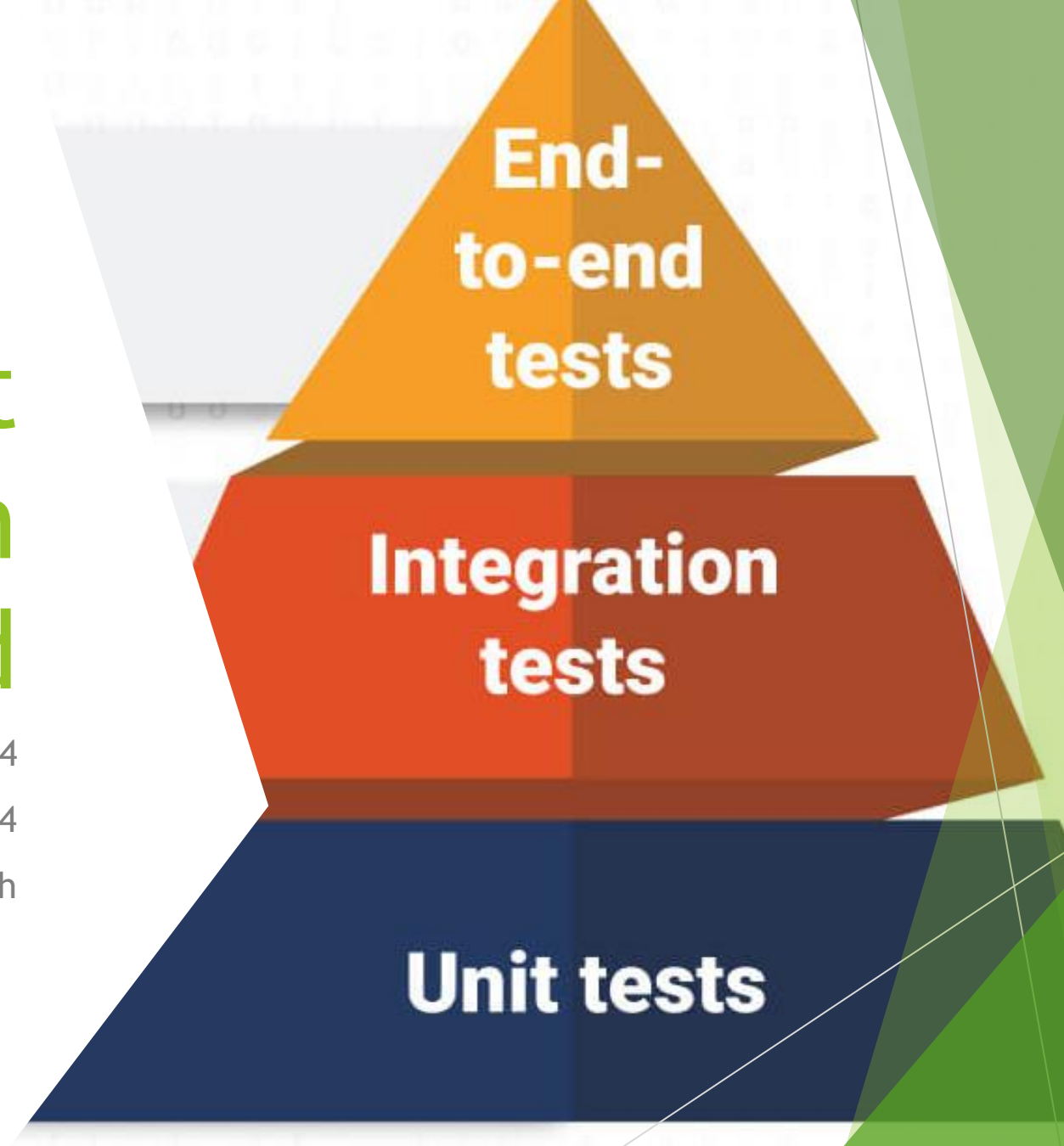


Test Automation Pyramid

ISE Project WS 23/24

1st March 2024

Selina Breitenbach



Content

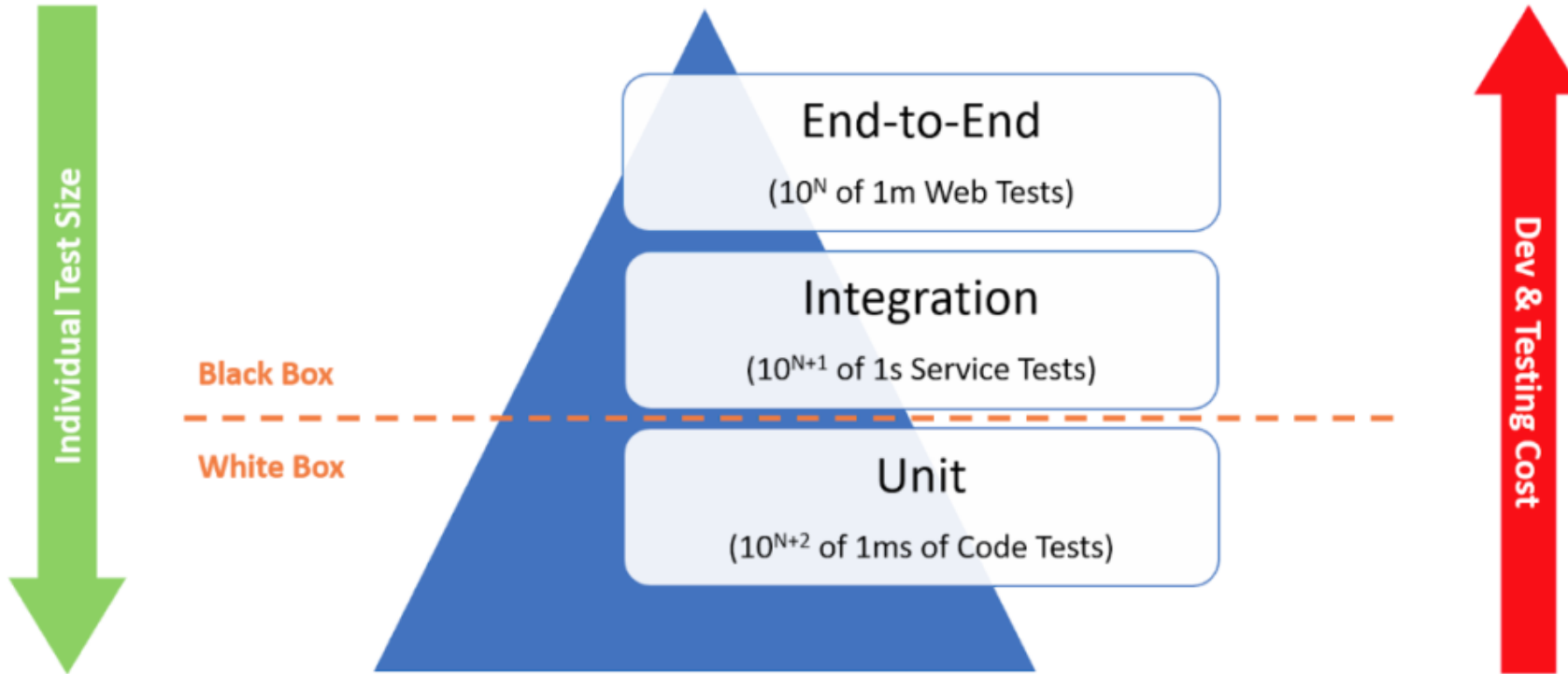
- ▶ Why is testing important?
- ▶ Test Automation Pyramid
 - ▶ Unit Tests
 - ▶ Integration Tests
 - ▶ System/UI Tests
- ▶ Conclusion

Why is testing important?

- ▶ High quality-software
 - ▶ External quality
 - ▶ Internal quality
- ▶ Developer tests to verify code
- ▶ Acceptance tests to verify functional requirements and expectations

Developer Testing

- ▶ **Goals:**
 - ▶ Validate expectations
 - ▶ Find or prevent bugs -> absence cannot be proven
 - ▶ Support problem analysis
- ▶ **Tools:**
 - ▶ Tight integration
 - ▶ Fast turn-around



Test Automation Pyramid

Unit Tests

- ▶ Fast
- ▶ Short
- ▶ Precise
- ▶ Allow checking for details
- ▶ No external dependencies
- ▶ Effort scales linearly
- ▶ All the time

Example: JobsControllerTests (flinkjobjar)

```
static final String[] params = {"jobName", "email", "4.279,48.829,16.419,53.495", "5", "leisure=park"};

@Test
void getJobNameTest() {
    assertThat(jobConfiguration.getJobName()).isEqualTo(expected: "AlertJob_" + params[0]);
}
```

Integration Tests

- ▶ Intersection between two dependencies
- ▶ Interaction with external components
- ▶ Communication efficient
- ▶ Retrieving accurate data
- ▶ If necessary

Example: MailSenderIntegrationTests (flinkjobjar)

System/UI Tests

- ▶ Multi-step integration tests
- ▶ Interaction like a real user
- ▶ Many dependencies
- ▶ High Effort
- ▶ As little as possible

Example: Website Tests (webapp)

Conclusion

- ▶ Testing is very important
- ▶ Test Automation Pyramid framework can increase quality
- ▶ Partially implemented in our project



Thank you for your Attention!

Questions?

Resources

- (1) <https://www.headspin.io/blog/the-testing-pyramid-simplified-for-one-and-all>
- (2) [TestAutomation.pdf](#) (Accessed 29.02.2024)
- (3) <https://automationpanda.com/2018/08/01/the-testing-pyramid/>
- (4) <https://github.com/GIScience/osmalert>