# SOFTWARE DEVELOPMENT PROCESS

E2E — End-to-End
Component
Unit

## CONTINUOUS INTEGRATION & DELIVERY

This concept of CI/CD puts an end to separating the development and integration phases. Frequent integration of small changes allows the customer to see if the features are what they want in their product. They can test it and give quick feedback. To ensure that those features are stable and reliable, the software team will write Unit tests before writing the code. Once the code is written and the test have passed, it will be integrated into a topic *branch, that bundles dev. activity. E2E tests test behavior of the software; Component tests test software subsystems; Unit tests test low-level functionality.

### Test Driven Development

### GOAL

The conditions of good software are:
- have a stable system with no crashes
- show good performance
- have a high release frequency

## 8 STEPS OF HANA DEVELOPMENT

1. Local Testing
2. Component Testing
3. Masks Code Line Testing
4. Daily Testing
5. Exploratory Testing
6. Weekly Qualification
7. Monthly Qualification
8. Major Release Qualif.

Main Codeline Integration:

integration → builds → tests → release branch — time

Once there are no more failures in the topic branches*, they will be merged into the release branch.

### Tools

Build Testing
Code Quality
Code Management and Review
Development Environment
Issue Tracking

coverity™
git
Jenkins
MEDIAWIKI
JIRA

## RISK-BASED TESTING

Experiences in the SAP HANA development team have shown that the number of test executions has exponential growth over time. Around thousand servers are dedicated to running tests. Therefore the risk-based testing approach has been introduced to reduce the test effort to linear growth. "Test budgets" are allocated to each software component and tests are run prioritized according to their efficiency in detecting issues and the code coverage that they produce. This approach has halved the test run-time.
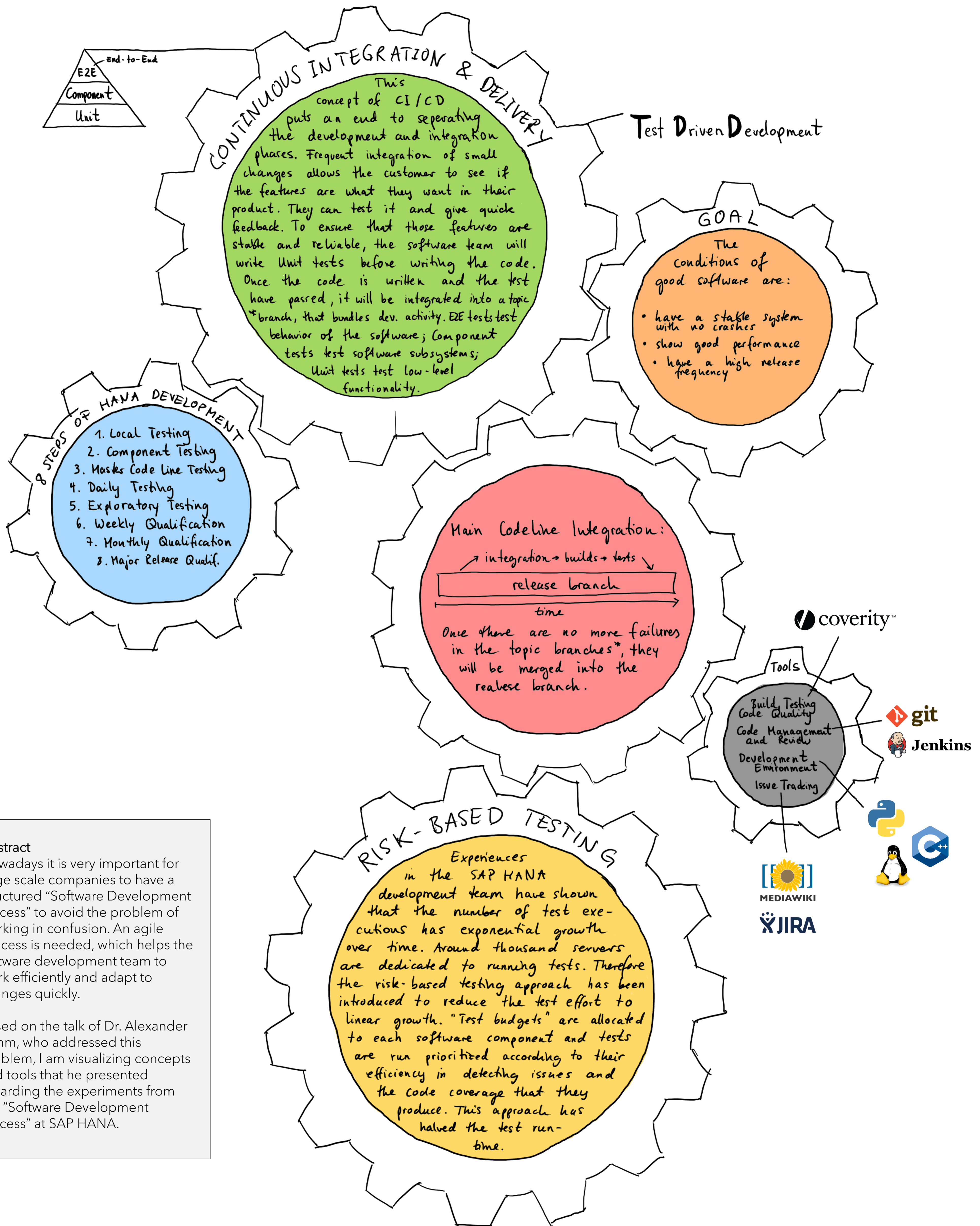
Abstract
Nowadays it is very important for large scale companies to have a structured "Software Development Process" to avoid the problem of working in confusion. An agile process is needed, which helps the software development team to work efficiently and adapt to changes quickly.

Based on the talk of Dr. Alexander Böhm, who addressed this problem, I am visualizing concepts and tools that he presented regarding the experiments from the "Software Development Process" at SAP HANA.

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