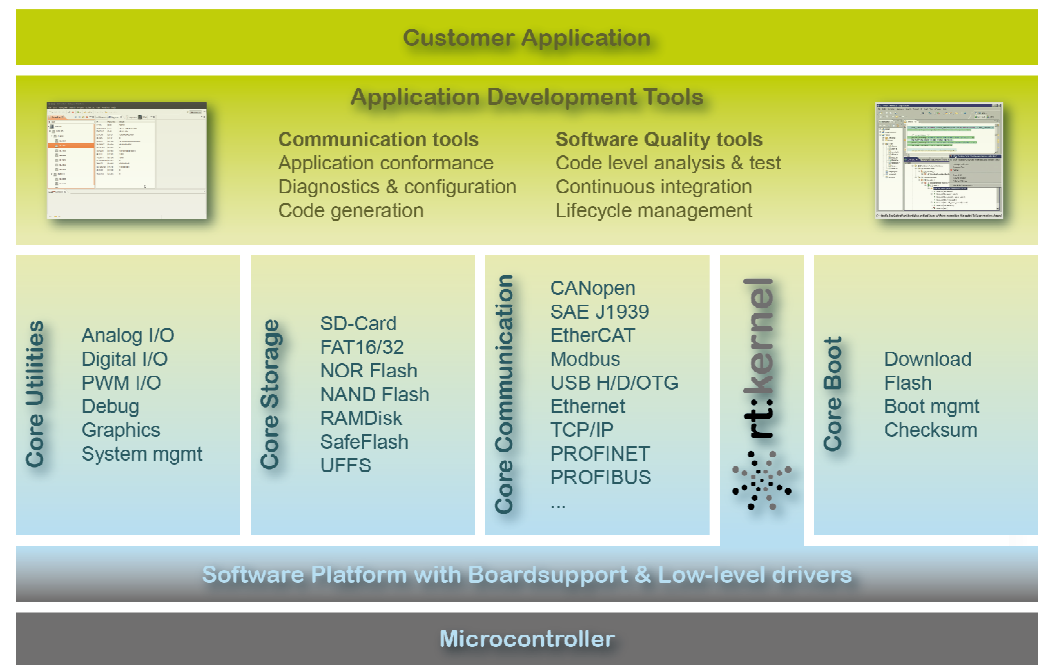# rt-labs

embedded systems with fieldbus support

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Products and solutions for embedded systems
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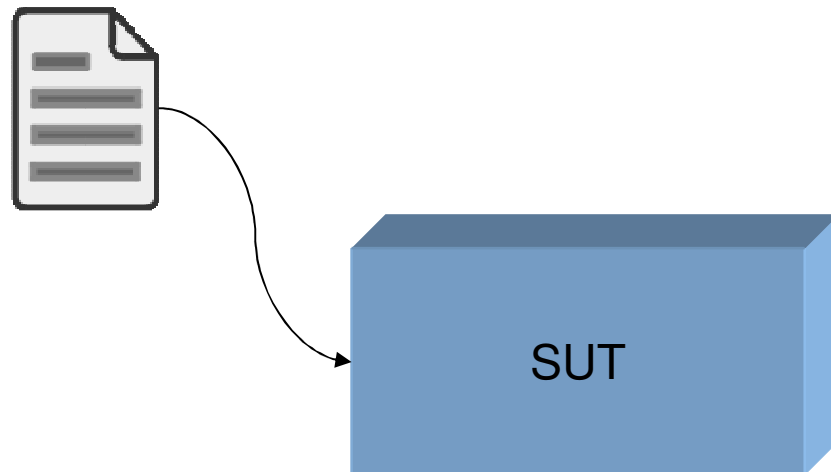
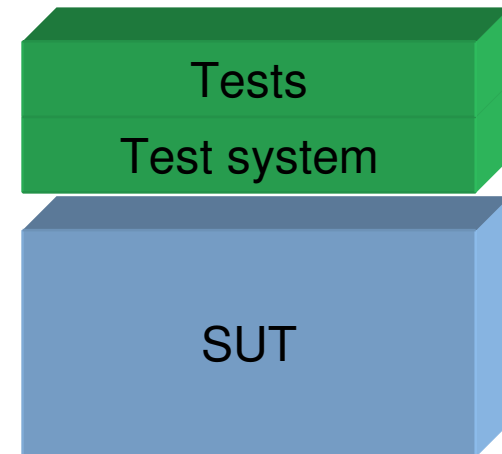# Acceptance-Test-Driven Development Using Robot Framework

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Approaches to system testing

- **Manual testing**
  - Word/Excel specification
  - Testing is time consuming (and boring)
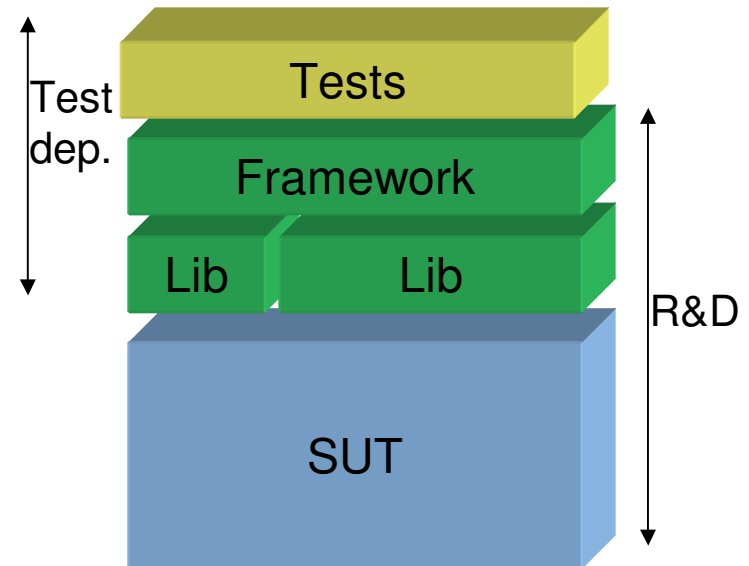 - Testing is infrequent

SUT

Approaches to system testing

- **Automatic (first attempt)**
  - Intern builds a test system
  - Test tend to be tightly coupled to test system
  - Difficult to maintain
  - Bit rots over time
  - Testing is infrequent

Tests

Test system

SUT

Approaches to system testing

- **Automatic (lessons learned)**
  - Tests are clearly separated from test system.
  - Tests run continuously via automation tools, such as Jenkins.
  - Test system is maintained using state-of-the-art programming methodolgies; libraries should be unit tested, etc.

Test dep.

Tests

Framework

Lib   Lib

SUT

R&D

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Robot Framework

- Keyword based langauge
    - Resolved as another keyword, Python or Java.
- Rich toolset
    - IDE (RIDE)
    - Easy-to-read reports and logs in HTML format.
- Many extensions and plugins
    - Selenium for web testing
    - Jenkins integration
- Remote execution
    - Testing can be performed by remote servers via xml-rpc calls.
- Active community

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Robot Framework

- Keyword-driven testing
  - Test cases are concise
  - Test cases are readable for the stake holders
  - Test cases are easy to modify
- Example

Test Case	Action	Argument	Argument
User can create an account and log in	Create Valid User	fred	P4ssw0rd
	Attempt to Login with Credentials	fred	P4ssw0rd
	Status Should Be	Logged In	
User cannot log in with bad password	Create Valid User	betty	P4ssw0rd
	Attempt to Login with Credentials	betty	wrong
	Status Should Be	Access Denied	

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Data-driven test

- Separate test logic from test data
- Test data can be stored in file

Data-driven testing example

Setting	Value	Value	Value
Test Template	Login with invalid credentials should fail		

Test Case	User Name	Password	
Invalid User Name	invalid	${VALID PASSWORD}	
Invalid Password	${VALID USER}	invalid	
Invalid User Name And Password	invalid	whatever	
Empty User Name	${EMPTY}	${VALID PASSWORD}	
Empty Password	${VALID USER}	${EMPTY}	
Empty User Name And Password	${EMPTY}	${EMPTY}	

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Case study:
Kollmorgen VART

Situation

Manuell testning med fem testare och en testledare. Dyrt och ledtid på 5-7 dagar.

Lösning

Testautomatisering baserat på Robot Framework för system som använder fältbuss.

Effekt

Regressionstest varje natt, ingen manuell testning => **billigare testning**

Hög tillgänglighet till test - inte längre en exklusiv resurs => **effektivare produktutveckling**

Precision i felrapporter, loggar och tidssynkronisering => **bättre kvalitet i slutprodukt**

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