

ALLES IM GRÜNEN! SPECIFICATION BY EXAMPLE MIT GREENPEPPER 4

16.04.2015,
ANDREAS FALK UND DIETER BAIER,
STUTTGARTER TEST TAGE 2015



Alles im Grünen! Specification By Example mit Greenpepper 4



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AGENDA

1. Introduction: Specification By Example
2. GreenPepper



SPECIFICATION BY EXAMPLE

Specification By Example – Key Patterns

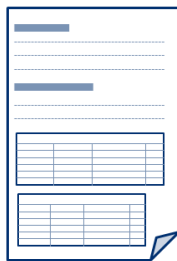
Evolve a living documentation system



Automate validation & Validate frequently



Refining the specification



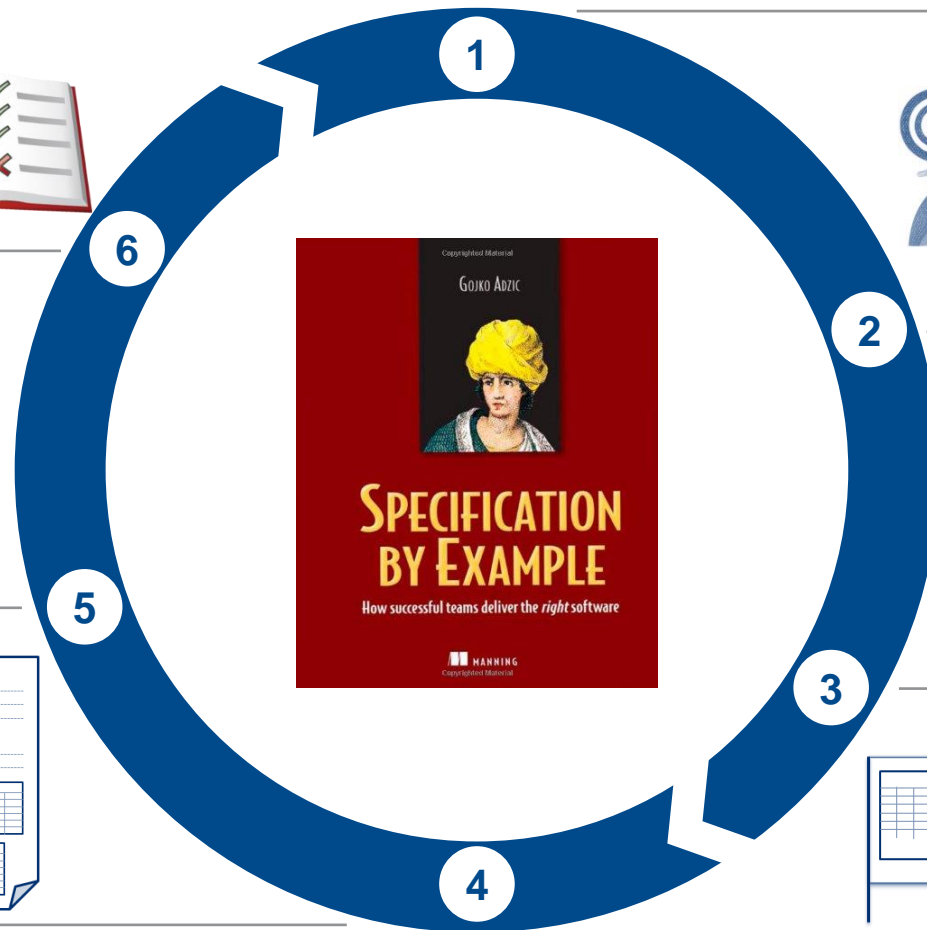
Derive Scope from Business Goals



Specifying collaboratively



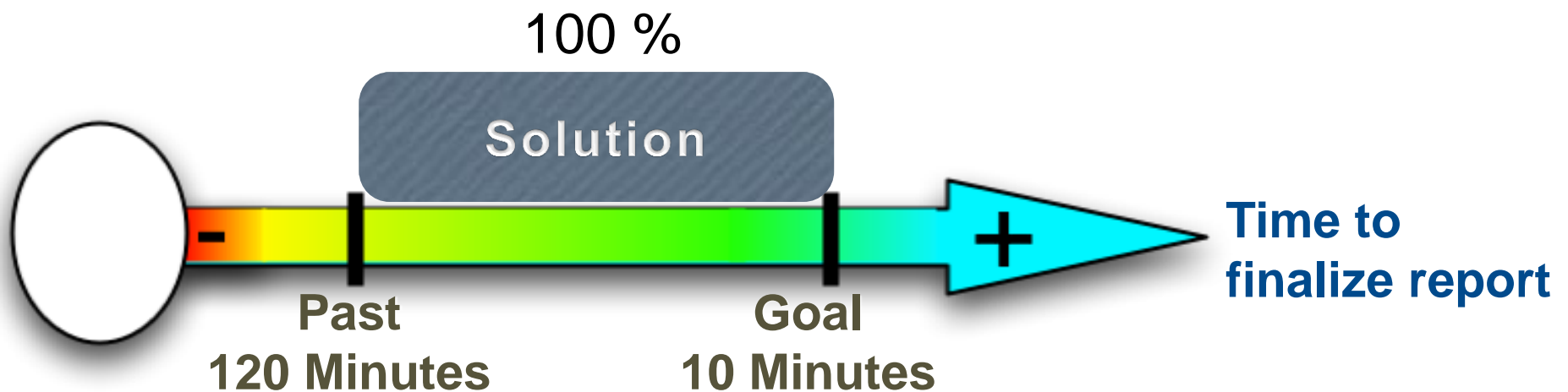
Illustrating using examples



1 - Derive Scope from Business Goals

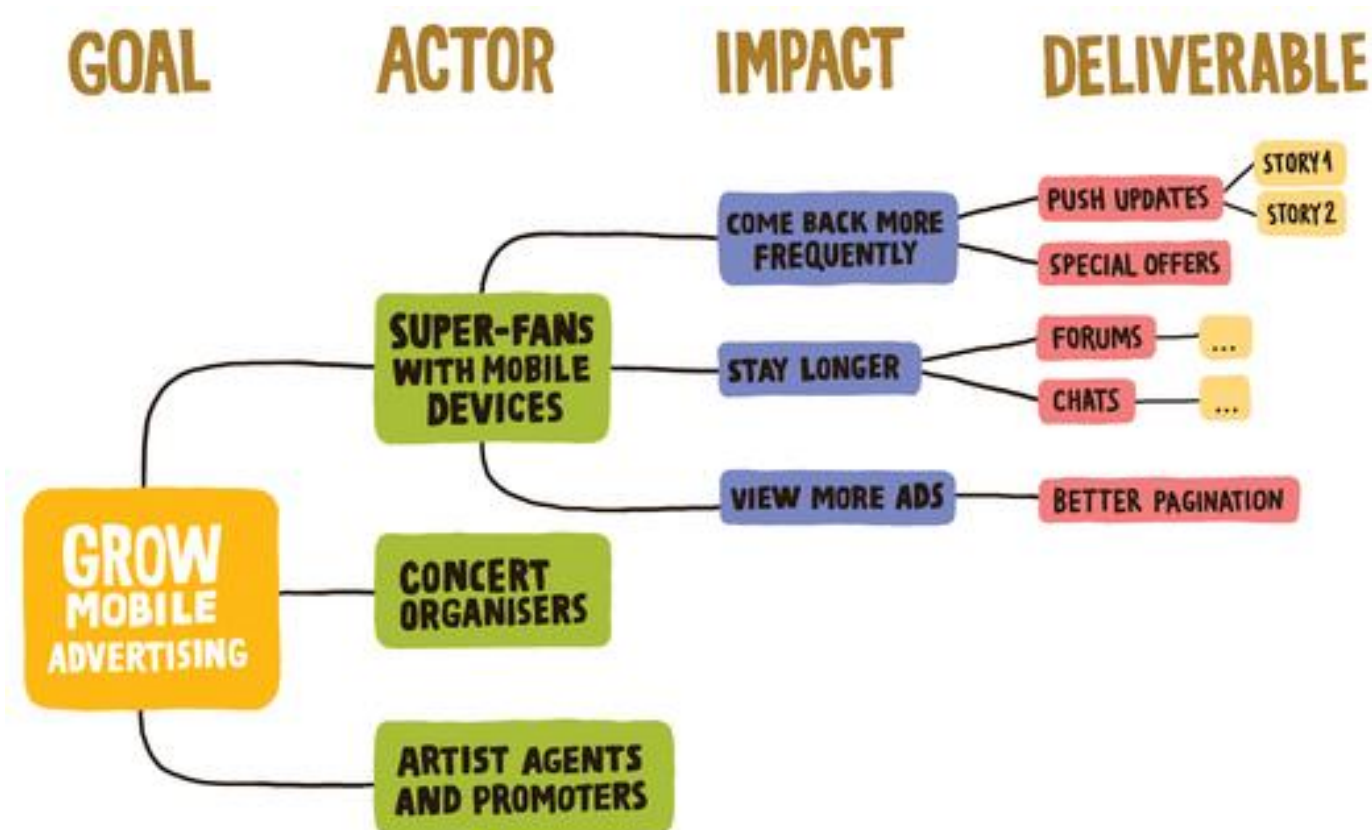
Value Requirements Engineering (Tom Gilb)

Functions → Values → Solutions



1 - Derive Scope from Business Goals

Impact Mapping



Why? (Goal)

Who? (Actor)

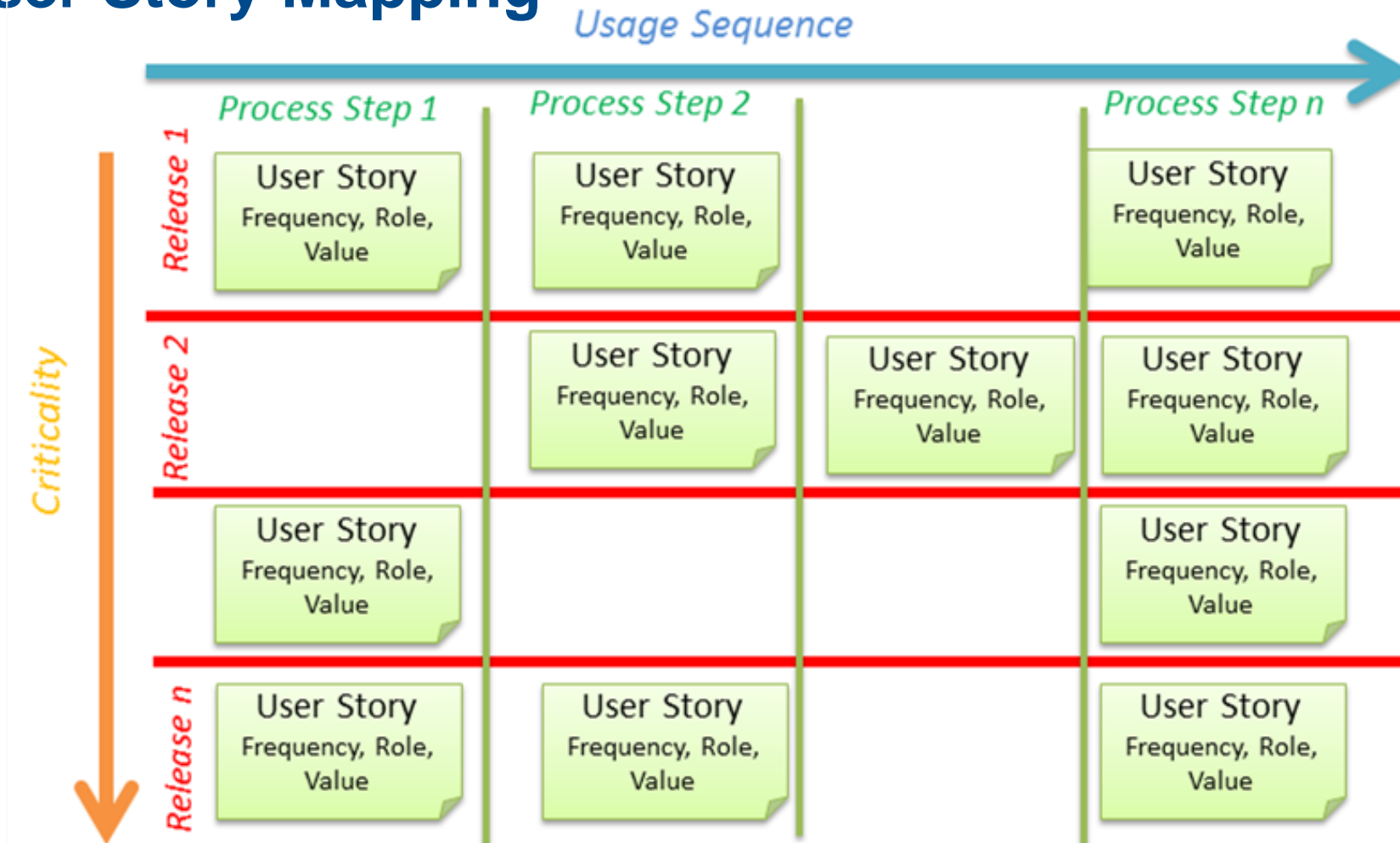
How? (Impact)

What? (Deliverable)

(Quelle: 50 Quick Ideas to improve your User Stories)

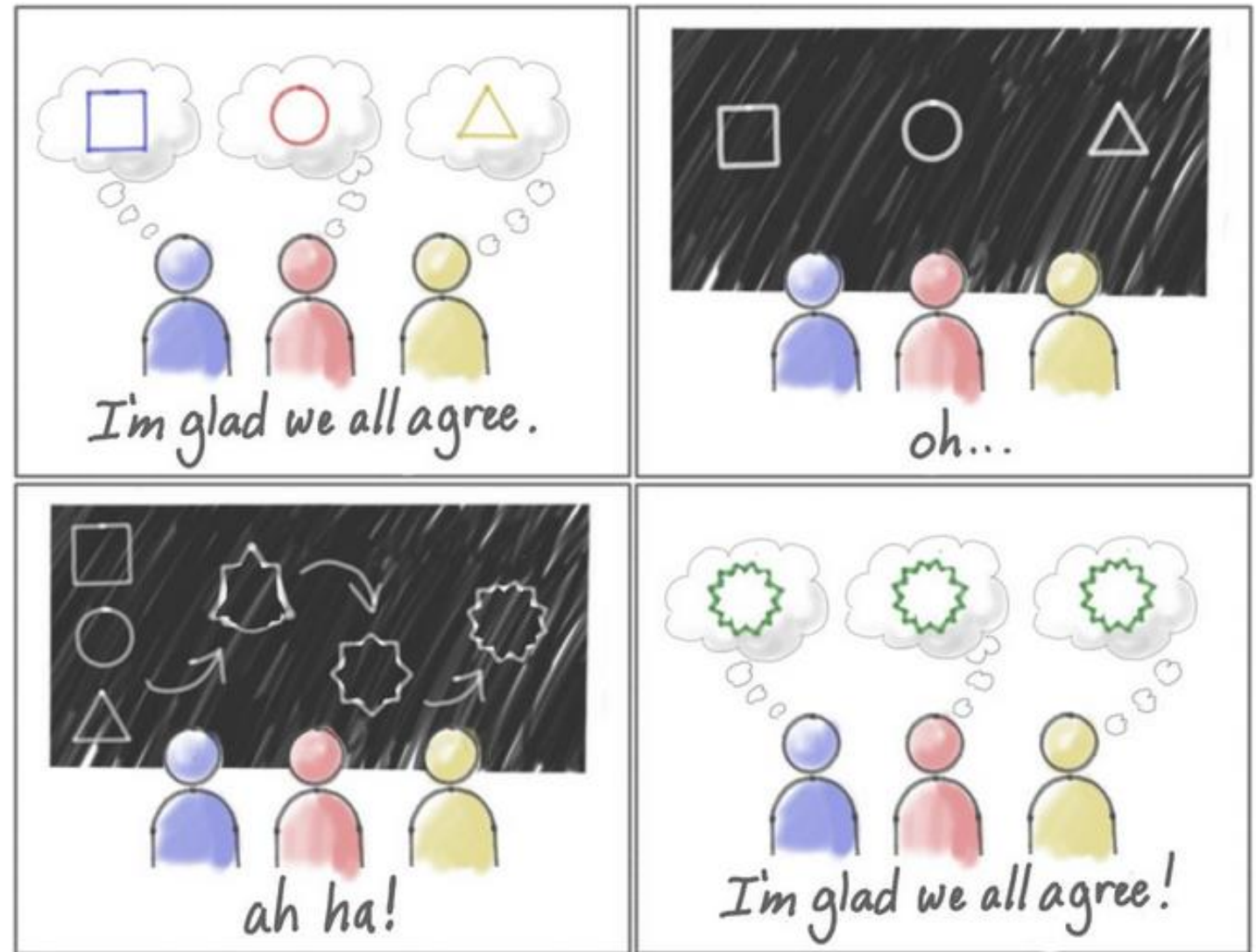
1 - Derive Scope from Business Goals

User Story Mapping

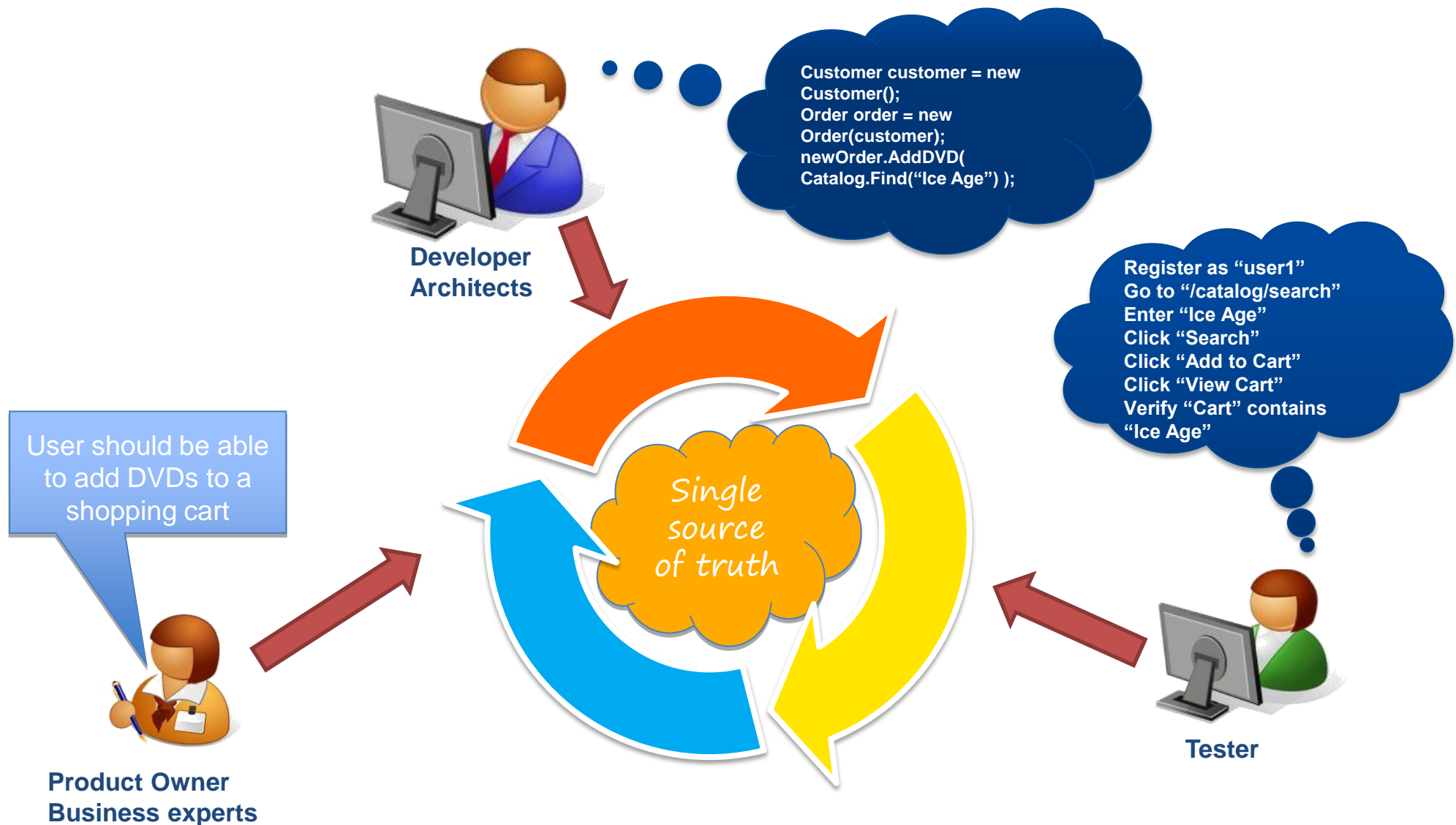


2 - Specifying collaboratively

Shared understanding?



2 - Specifying collaboratively



2 - Specifying collaboratively

Also known as...

- „Three Amigos“ (Gojko Adzic)
- „Power of Three“ (Janet Gregory & Lisa Crispin)



Goals

- Develop a shared understanding of the requirements
- Identify *business bugs*

How

- Start with all-team workshop („Big“)
- Continue with smaller workshops („Three Amigos“)

3 - Illustrating using examples

Examples should be...

- ...precise
- ...concrete, not abstract
- ...complete (key examples)
- ...realistic
- ...given/validated by customers

3 - Illustrating using examples

Example: Simple time tracking system

Key examples:

- Total work time of 6 hours/day is valid
- Total work time of 5 hours/day is not valid
- Total work time of 10 hours/day is valid
- Total work time of 11 hours/day is not valid
- Work time from 09:00 until 15:00 is valid (Core working time)
- Work time from 10:00 until 16:00 is not valid

4 - Refining the specification

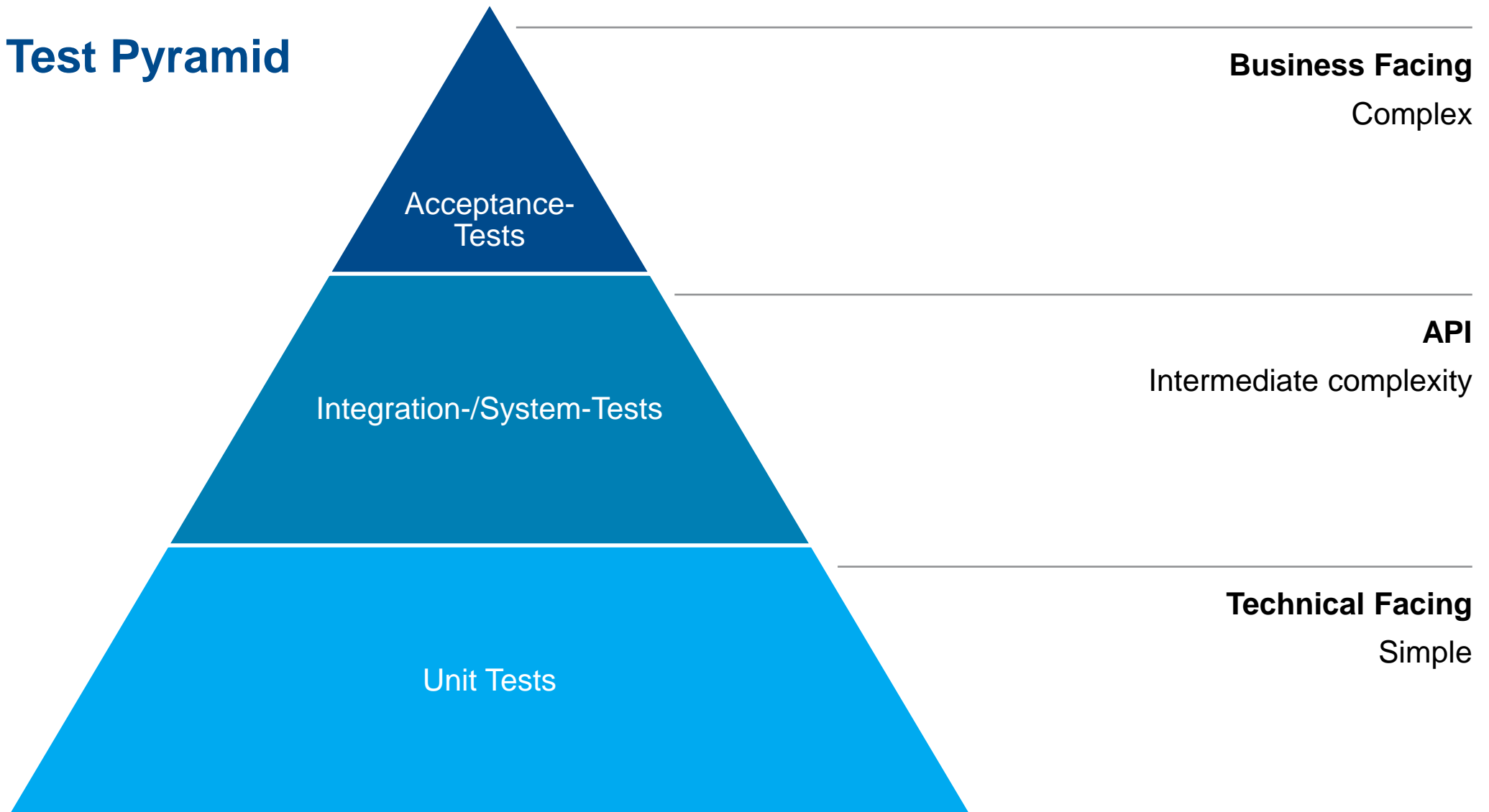
Example: Simple time tracking system

Start Time	End Time	Lunch Break ¹	Holiday	Total	Valid
08:00	17:00	1:00	--	08:00	Yes
09:00	20:00	1:00	--	10:00	Yes
09:00	20:01	1:00	--	10:01	No
09:00	15:00	--	--	06:00	Yes
08:00	14:00	--	--	06:00	No
09:00	15:00	1:00	--	05:00	No
09:00	15:00	1:00	4:00	09:00	Yes
10:00	18:00	--	--	08:00	No
--	--	--	8:00	08:00	Yes

1) What about required minimum lunch time?

5 - Automate validation & Validate frequently

Test Pyramid



5 - Automate validation & Validate frequently

Available Tools

Different formats

- Table based
- Text based
- Wiki based
- Script based

Tools

- Greenpeper
- FitNesse
- JBehave
- Robot Framework
- Cucumber
- Concordion
- Twist



5 - Automate validation & Validate frequently

The screenshot shows a web application specification page. It includes a header with navigation links, a title 'Vorgangsübersicht', and a description. Below the description, there are 'Akzeptanzkriterien' (Acceptance Criteria) and 'Beispiele' (Examples).

Akzeptanzkriterien

- Folgende Filter müssen angeboten werden:
 - Kunde
 - Kennzeichen
 - Auftragsnummer
 - Betrieb
- Alle Spalten müssen alphanumerisch sortierbar sein

Beispiele

rule for	Vorgangsuebersicht				
	Kunde	Kennzeichen	Auftragsnummer	Betrieb	Anzahl?
Eilig	RT-XX	7533	10061A457533	1A4570636	1
		RT-XX	7533	10061A457533	1
			B2110061A457	1A4570636	
			7533	1A4570636	0

**The Specification
including Examples &
Scenarios**

The screenshot shows an IDE with a Java test fixture class named 'VorgangsuebersichtFixture.java'. The code includes package declarations, imports, and a class definition that extends 'R'. The class has several private fields and methods for setting up test data.

```
12 package com.daimler.retacc.ri.erepko.operations;
13 import declarations;
14
15 import java.util.ArrayList;
16
17 /**
18  * Fixture for JobList-Operations.
19  * @author Anis Ben Hamidene (NovaTec GmbH)
20  */
21 public class VorgangsuebersichtFixture extends R
22 {
23     /**
24      * The remote reference to the bean.
25      */
26     private JobListOps jobListOperations;
27
28     private
29     private
30     private
31
32     /**
33      * Runs
34      */
35     @Before
36     public void
37     {
38         filter
39         sort
40         subC
41     }
42
43     /**
44      * Sets
45      */
46 }
```

**The Fixture as
Glue Code**

The screenshot shows a web browser displaying the system under test. The URL is 'http://my.systemundertest.com/uebersicht'. The page has a navigation bar with links for 'Home', 'Vorgangsübersicht', 'Benutzerdaten', 'Hilfe', and 'Betrieb'. Below the navigation bar, there is a table with columns for 'Kunde', 'Kennzeichen', 'Auftragsnummer', and 'Betrieb'. The table contains three rows of data.

Kunde	Kennzeichen	Auftragsnummer	Betrieb
Heinz Eilig	RT-XX-7533	1006A4573	1A4570636
Frank Müller	TN-XX-75	100644545	1A570656
Antonio Tagliate	IT-TG-1	989z09z8798	1B57886

The System Under Test



*You can find the manual of the
application here...*


*...but be aware that it is a bit
outdated!*



6 - Evolve a living documentation system

Important factors

- Focus on business-process documentation
- Consistent information, in sync with software system
- Organized for easy access
 - Current iteration
 - Features implemented previously

**Executable artifacts of
Specification By Example**  **Living Documentation**

GREENPEPPER 4

GreenPepper - History

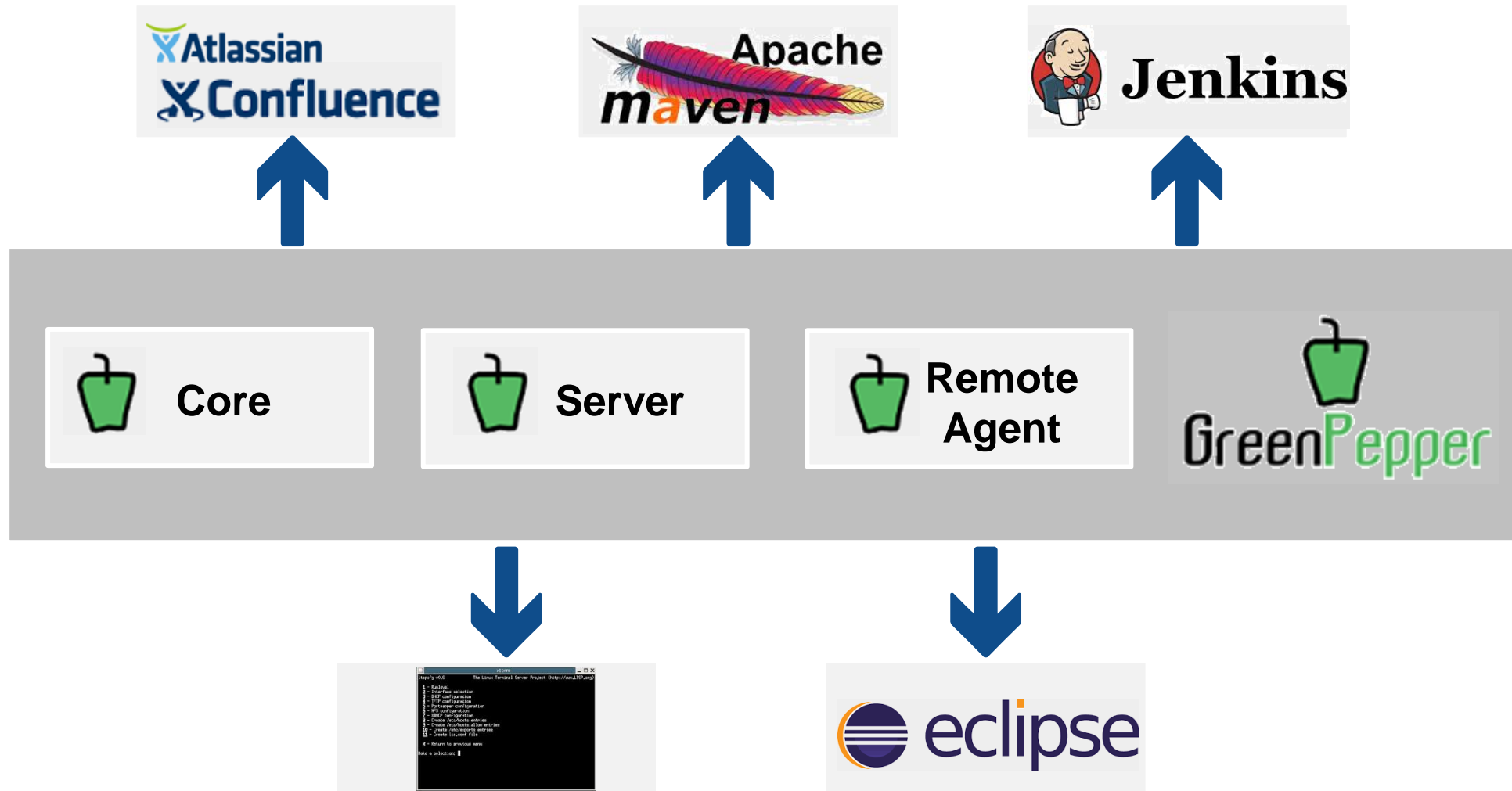
Version 1.0	Version 1.1...	Version 3.0	Version 4.0
<ul style="list-style-type: none">▪ Initial Release Juli 2006▪ Greenpepper Server▪ Confluence Plugin	<ul style="list-style-type: none">▪ 2nd release 2007▪ Eclipse Plugin▪ Maven Plugin▪ Improved documentation	<ul style="list-style-type: none">▪ Last release 2012▪ Confluence 4.x plugin	<ul style="list-style-type: none">▪ Updated plugin for Confluence 5.x▪ Updated eclipse plugin▪ Release planned for April 2015

"GreenPepper promises to deliver optimal investment in documentation by easily turning it into executable tests."



<https://github.com/greenpeppersoftware>

GreenPepper – Architecture and Components



GreenPepper – Calculator Example

GreenPepperized ☒ - [CONFIGURE](#)

Implemented version: [v.1](#)

Source Requirements: (None) - [EDIT](#)

Execute

For [[Demo](#) [EDIT](#)]

Rights: 19 Wongs: 1 Errors: 0

Calculator Example

The main purpose of this example is to show you :

- [How to handle business rules using the 'Rule For' Interpreter](#)
- [How to use the keyword 'error' to handle exceptions](#)

The simplicity of the Calculator example allows to avoid confusion between the system context and the specific behavior of GreenPepper Software.

Rule for	calculator				
x	y	sum?	product?	quotient?	difference?
0	0	0	0	error	0
1	0	1	0	error	Expected: 2 Received: 1
0	1	1	0	0	-1
1	1	2	1	1	0
10	2	12	20	5	8

Rule validation („Rule for“)

- Express concrete and measurable business rules

List validation (“List of”, “Set of”, “Superset of”, “Subset of”)

- Express any kind of groups, lists or sets of values

Workflow validation („Do with“)

- Express interactions with the system under development performed in a particular order (business flow)

Scenario specification („Scenario“)

- Express interactions with the system under development performed in a particular order (business flow)

Context definition („Setup“)

- Simplify creation of a particular state for the system under development

Advanced („Bullet List“, „Number List“)

- Expression of rules in bullet list format or number list format

GreenPepper – „Rule for“ interpreter

Calculator Example

The main purpose of this example is to show you :

- How to handle business rules using the 'Rule For' Interpreter
- How to use the keyword 'error' to handle exceptions

Rule for		calculator			
x	y	sum?	product?	quotient?	difference?
0	0	0	0	error	0
1	0	1	0	error	1
0	1	1	0	0	-1
1	1	2	1	1	0
10	2	12	20	5	8

GreenPepper – „Do with“ interpreter

Account Management Example

do with	Bank				
open checking account	12345-67890	under the name of	Bart		Simpson
check	that balance of account	12345-67890	is	\$0.00	
deposit	\$100.00	in account	12345-67890		
check	that balance of account	12345-67890	is	\$100.00	
withdraw	\$50.00	from account	12345-67890		
check	that balance of account	12345-67890	is	\$50.00	
reject	withdraw	\$75.00	from account	12345-67890	
check	that balance of account	12345-67890	is	\$50.00	
accept	withdraw	\$25.00	from account	12345-67890	
display	the balance of account	12345-67890	\$25.00		
end					

GreenPepper – „Scenario“ interpreter

Account Management Examples

Scenario	Bank
I have a checking account 12345-67890 under the name of Bart Simpson	
The balance of account 12345-67890 is \$0.00	
I deposit \$100.00 in account 12345-67890	
The balance of account 12345-67890 is \$100.00	
I withdraw \$50.00 from account 12345-67890	
The balance of account 12345-67890 is \$50.00	
I can't withdraw \$75.00 from account 12345-67890	
The balance of account 12345-67890 is \$50.00	
I can withdraw \$25.00 from account 12345-67890	
Show the balance of account 12345-67890	\$25.00

end

GreenPepper – „List of“ and „Subset of“ interpreters

List Of Example

We list all PhoneBookEntry found in the PhoneBook in the same order as it was added to the list.

list of	phone book	
First Name	Last Name	Number
Fred	Flintstone	(123) 456-7890
Barney	Rubble	(123) 321-7666
Great	Gazoo	(123) 989-4455

Subset Of Example

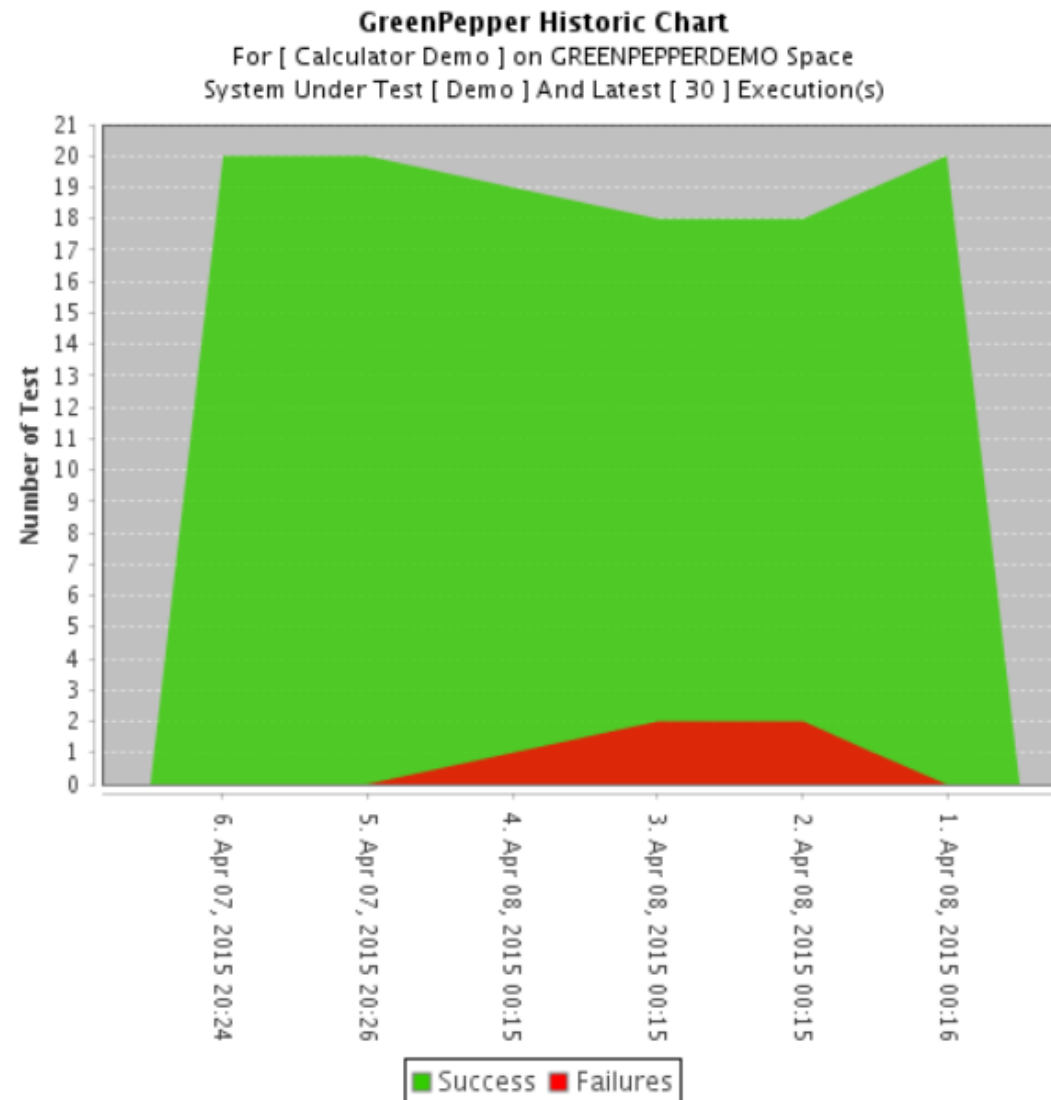
We confirm using the subset of interpreter that Wilma Flintstone now belong to our list of contact.

subset of	phone book entries	
First Name	Last Name	Number
Wilma	Flintstone	(123) 567-8904

Setup Example

setup	phone book
contact	
Fred, Flintstone, (123) 456-7890	<i>Entered</i>
Barney, Rubble, (123) 321-7666	<i>Entered</i>
Great, Gazoo, (123) 989-4455	<i>Entered</i>

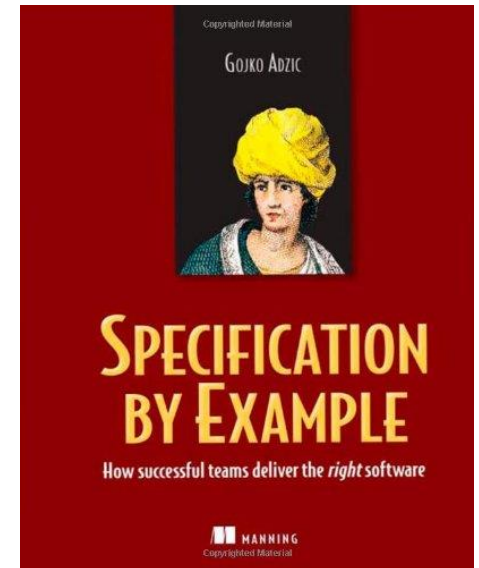
GreenPepper – „Historic Chart“ Macro




Summary

Specification By Example

- Blog von Gojko Adzic
<http://gojko.net>
- Trainings bei NovaTec:
<http://www.novatec-gmbh.de/trainings/specification-by-example>



GreenPepper

- Release 4.0 voraussichtlich im April 2015
- <http://blog.novatec-gmbh.de>
- @NT_AQE 



Questions?



...See you at the Workshop!

VIELEN DANK FÜR IHRE AUFMERKSAMKEIT

WWW.NOVATEC-GMBH.DE

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