



# SPECIFICATION BY EXAMPLE

**BUILDING THE RIGHT THING THE RIGHT WAY**

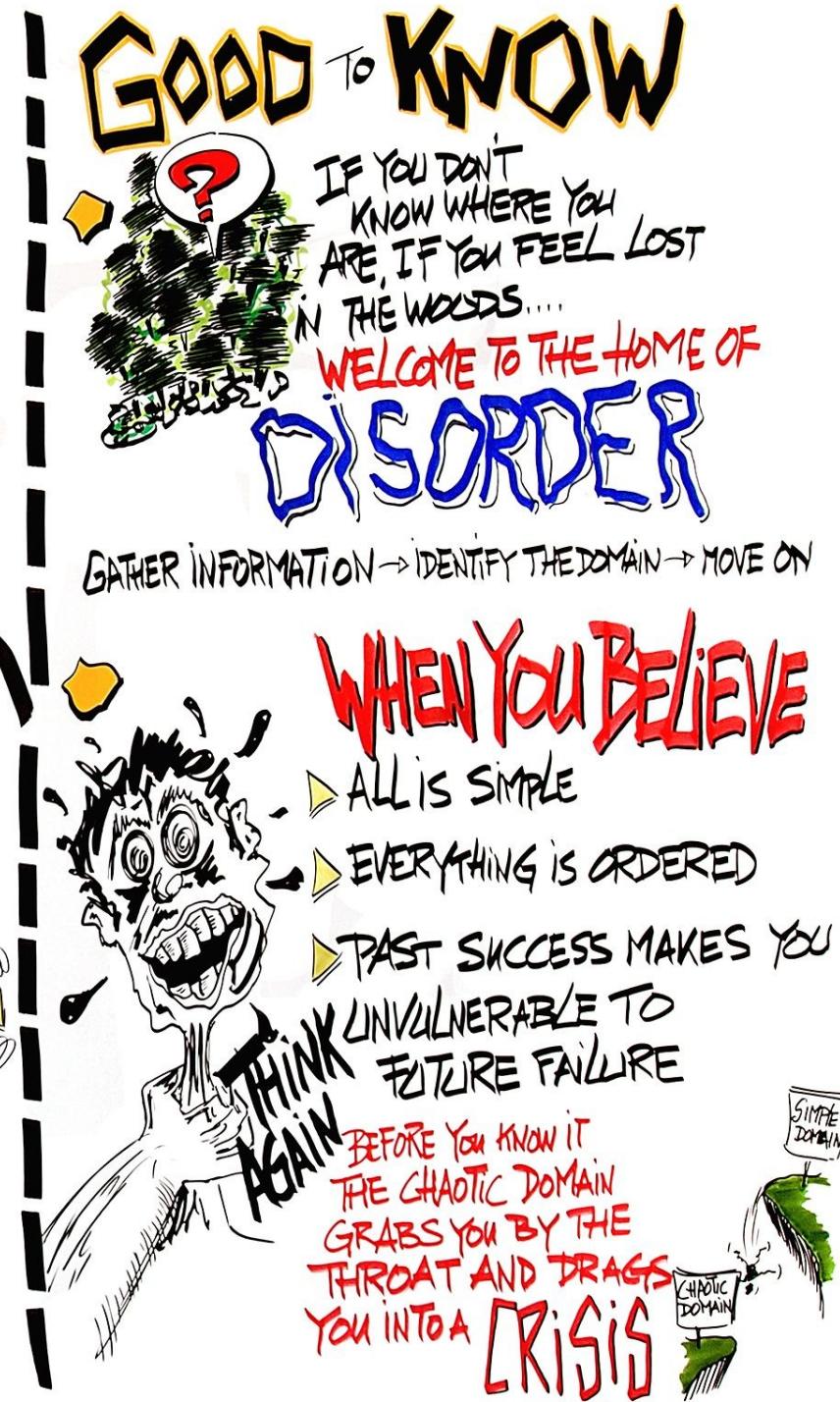
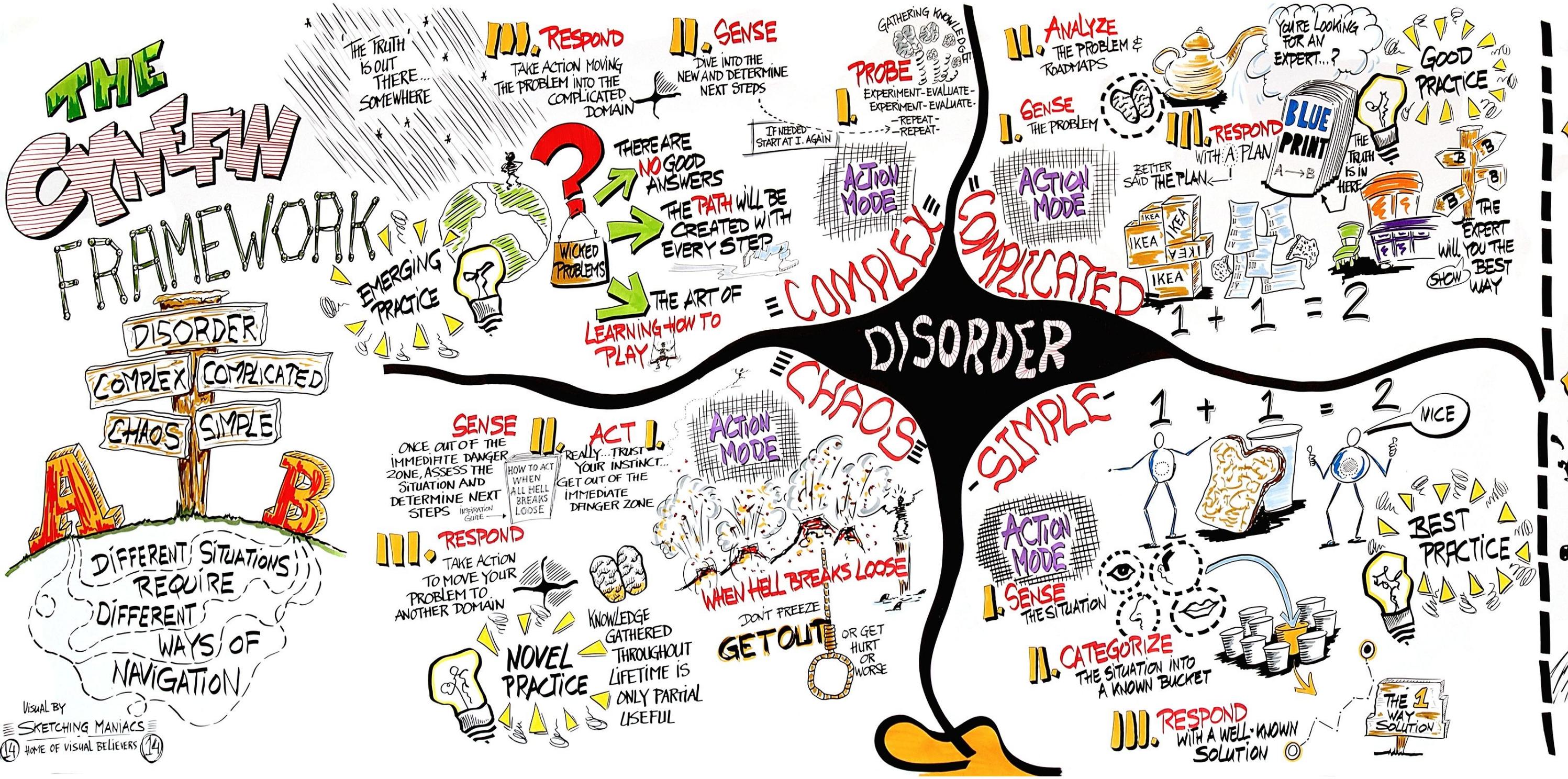
# WIE BEN IK?

- Jacob Duijzer, 43 jaar, uit Vught.
- Helping developers, teams & organizations build better software.
- Agile Coach | Principal Software Engineer | Team Lead | Consultant @ [Team Rockstars IT](#)
- Organiseer graag Coding Dojo's, Code Retreats en workshops.
- Lees veel boeken (een paar favorieten: [Team Topologies](#), [Accelerate](#), [Sooner Safer Happier](#), [Turn the Ship Around!](#)).



A black and white photograph of a middle-aged man with a shaved head and dark-rimmed glasses. He is wearing a dark pinstripe suit jacket over a light-colored button-down shirt. He is looking down and slightly to his left, with his hands clasped together in front of him. The background is plain and light-colored.

**WAAROM IS SOFTWARE  
ONTWIKKELEN ZO MOEILIJK?**





**WAT ALS...**



# **SPECFLOW DEMO**

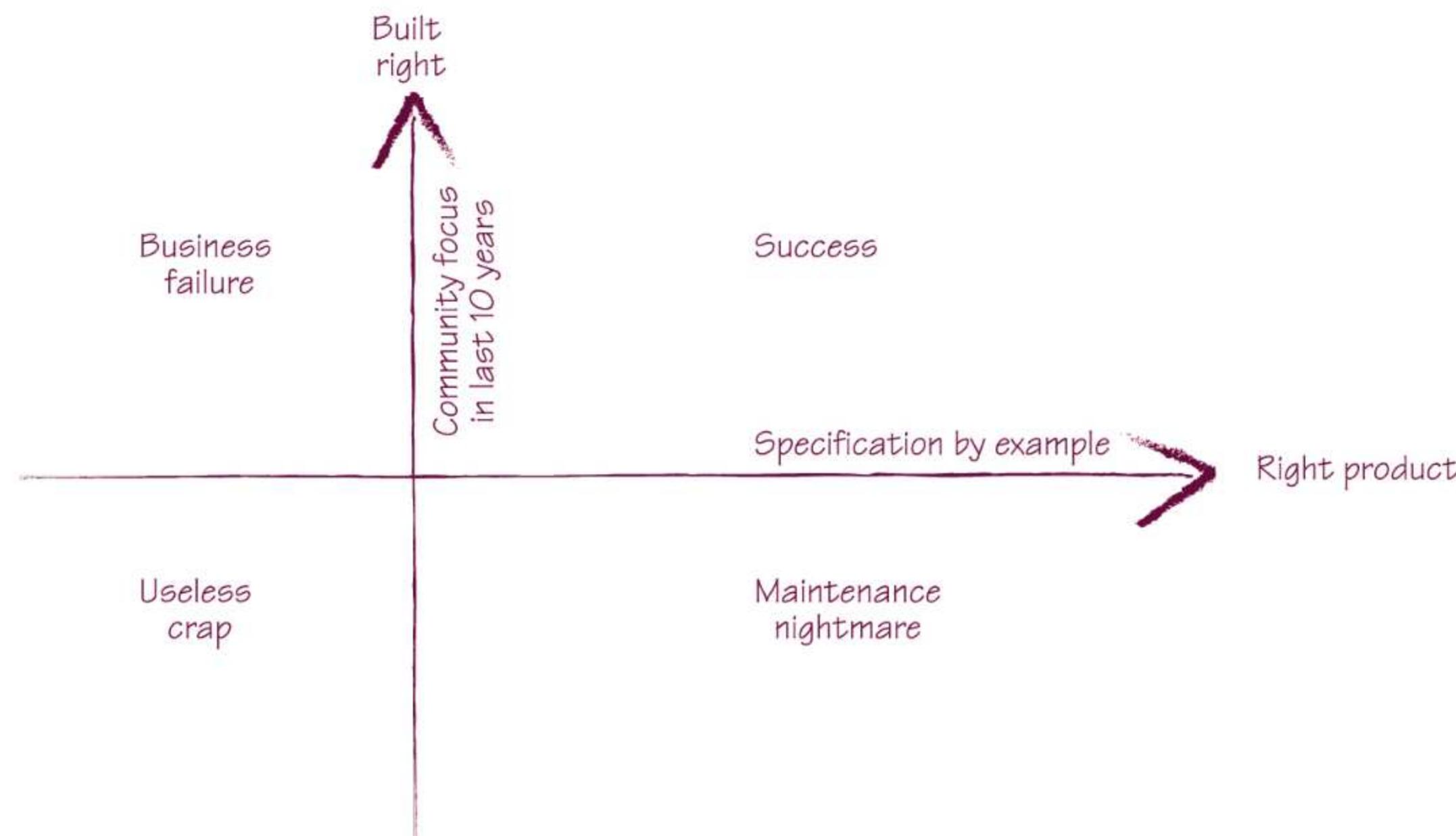
**DAT ZIET ER EENVOUDIG UIT MAAR  
BIJ ONS PROJECT...**

# SPECIFICATION BY EXAMPLE



Specification By Example is a set of **process patterns** that **facilitate change** in software products to ensure the **right product is delivered effectively** - Gojko Adzic

# BUILDING THE RIGHT THINGS THE RIGHT WAY



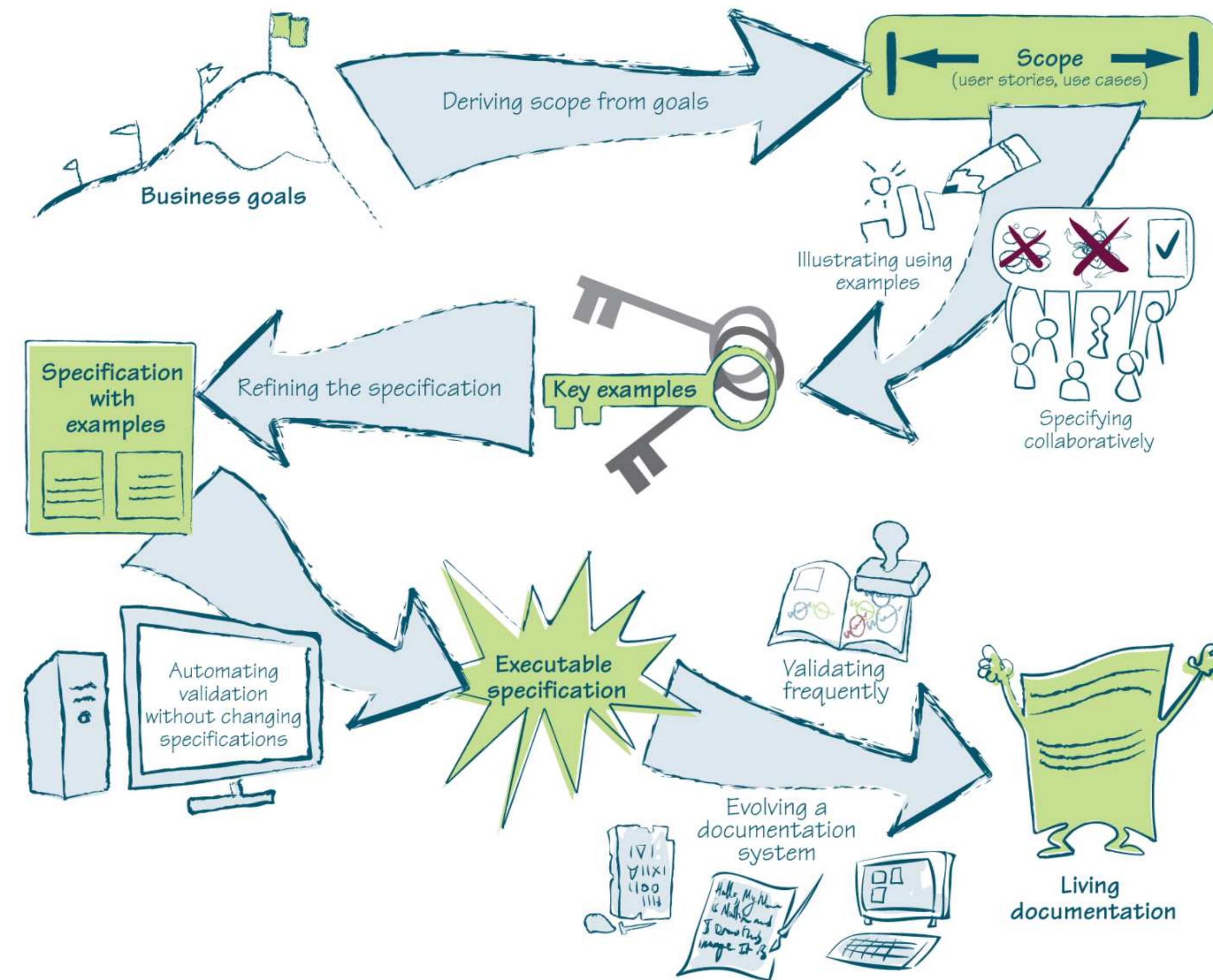
# WAAROM?

- Alle betrokkenen (Product Owner, Stakeholders, Development team) weten wat er geleverd moet worden
- Preciese specificaties, geen onnodig werk of aanpassingen achteraf
- Een objectieve manier om te meten of het werk compleet is
- Documentatie om verandering te ondersteunen

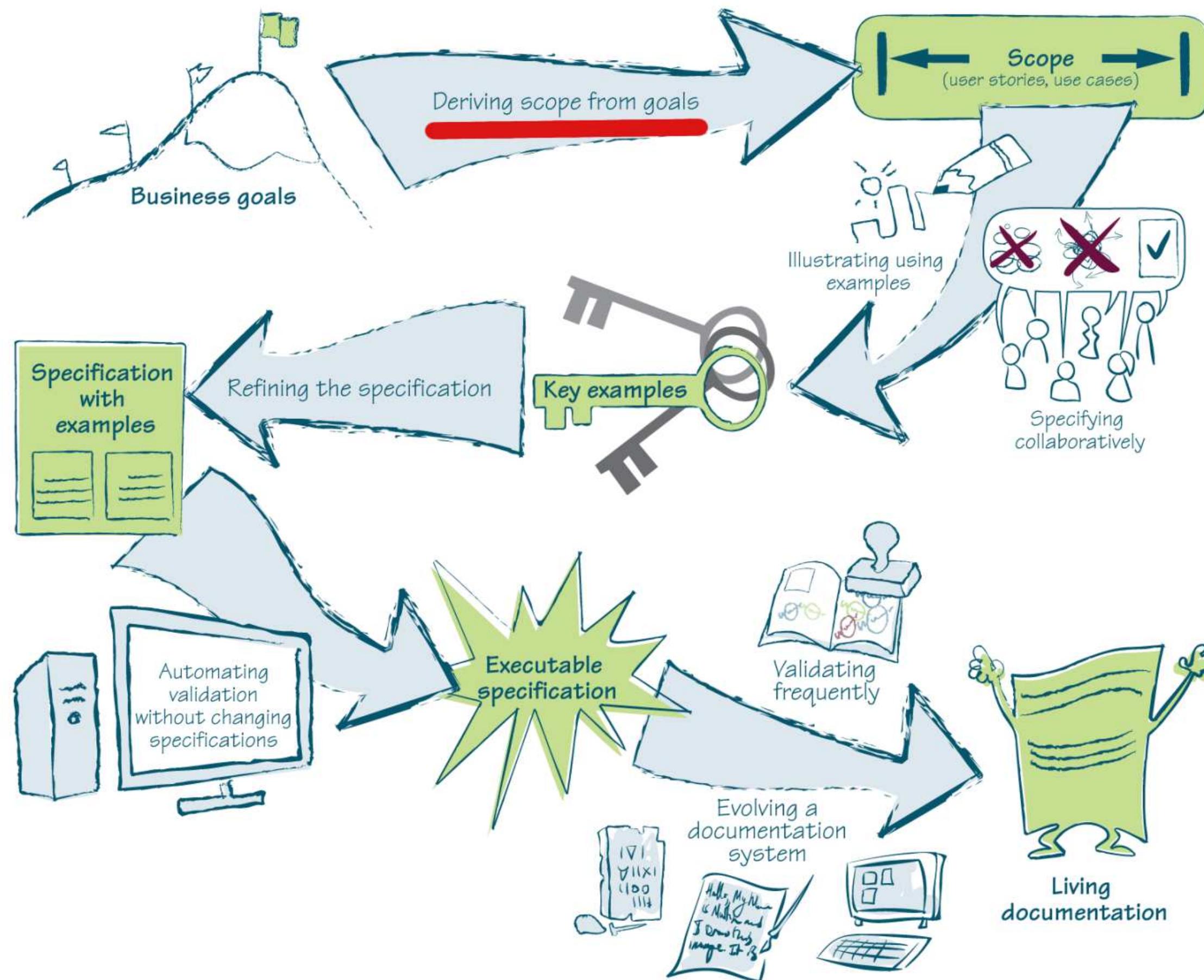
# KEY PROCESSES



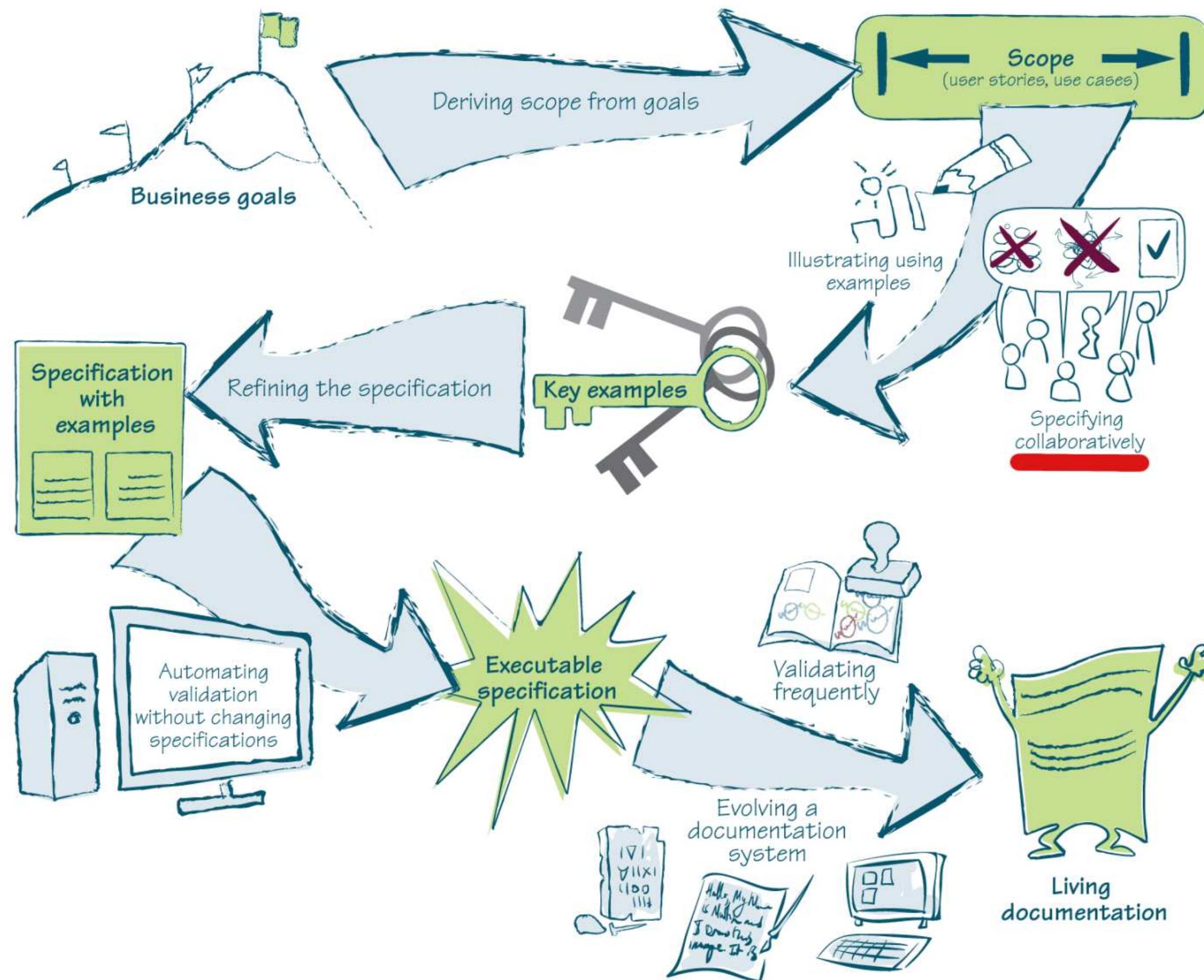
## Key process patterns of Specification by Example



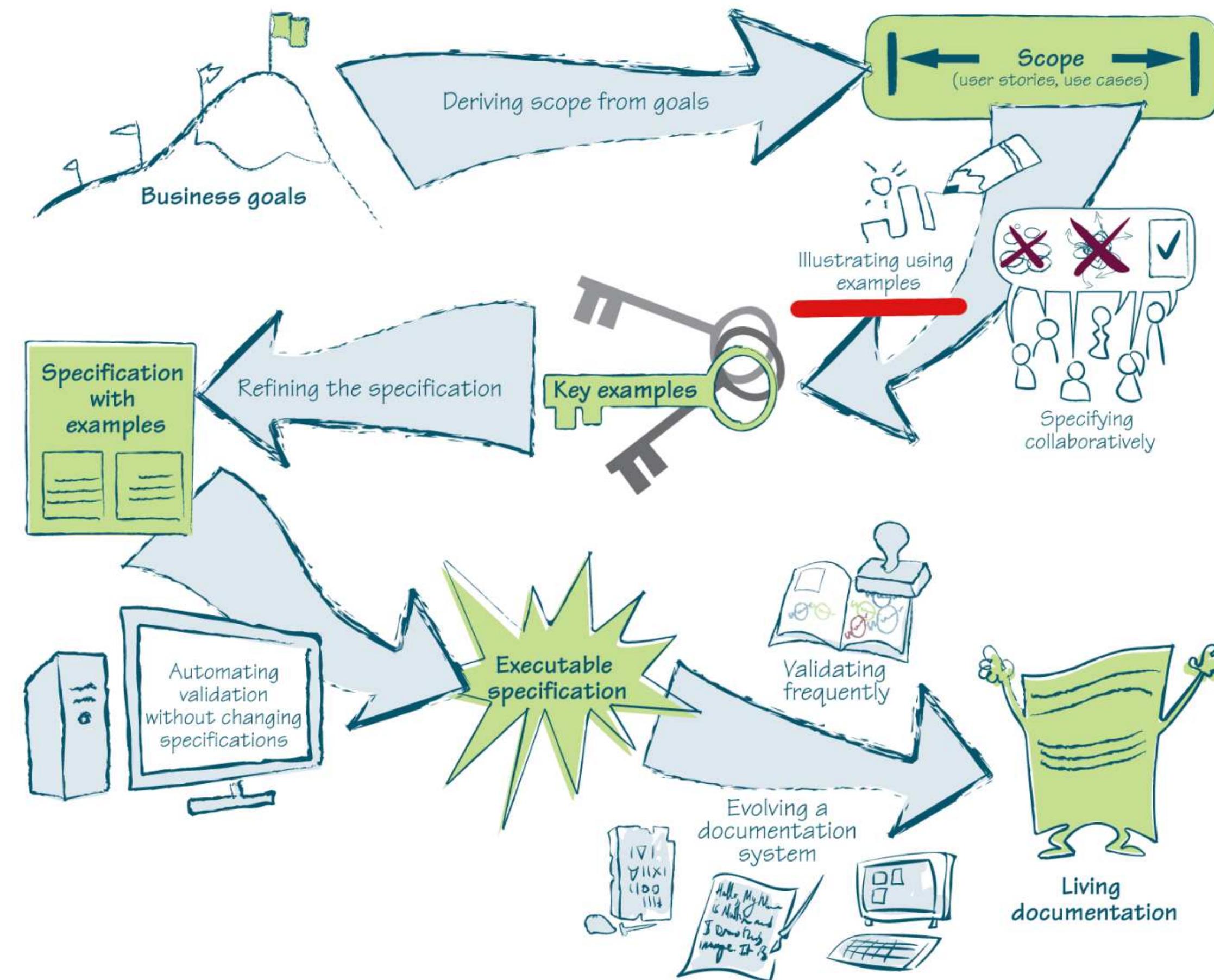
## Key process patterns of Specification by Example



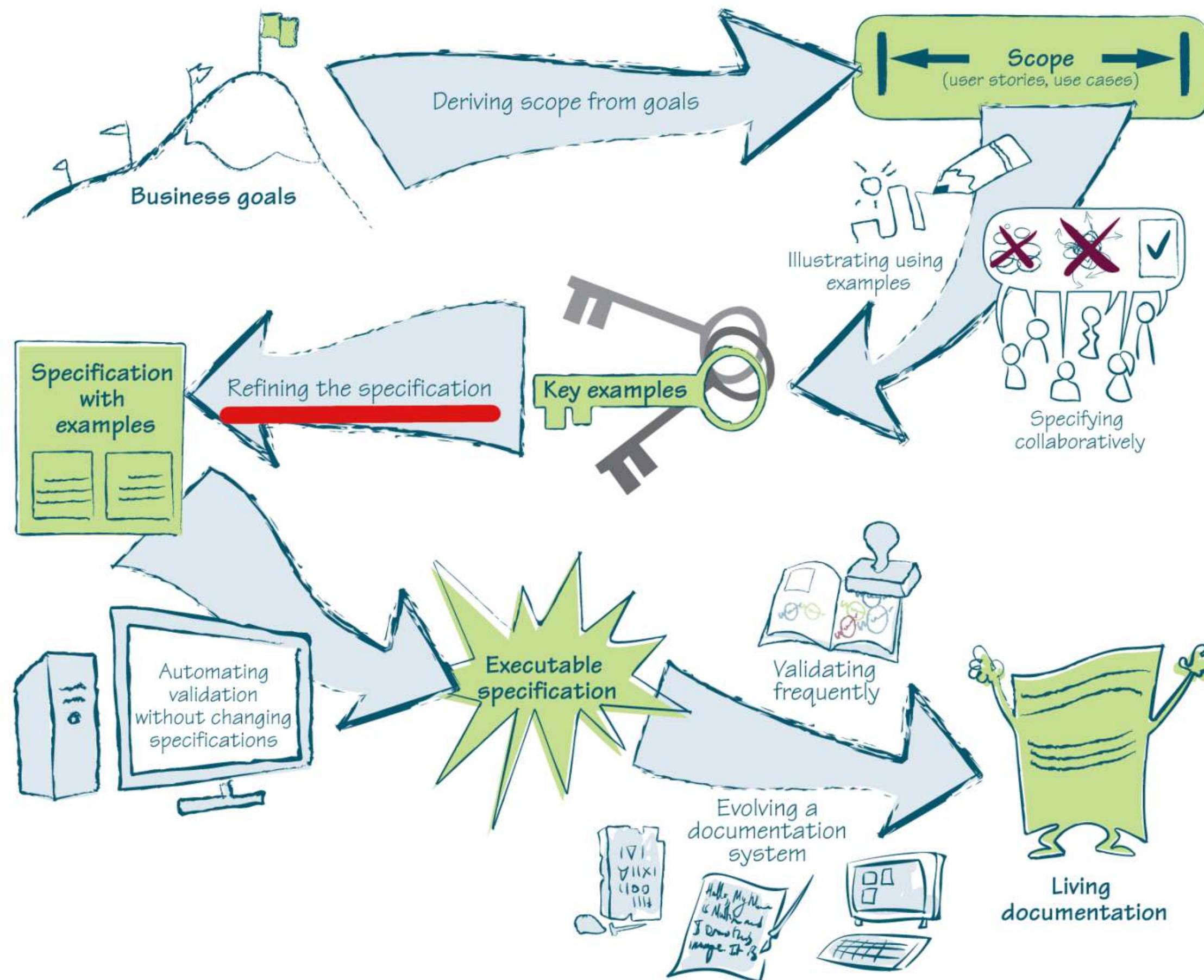
## Key process patterns of Specification by Example



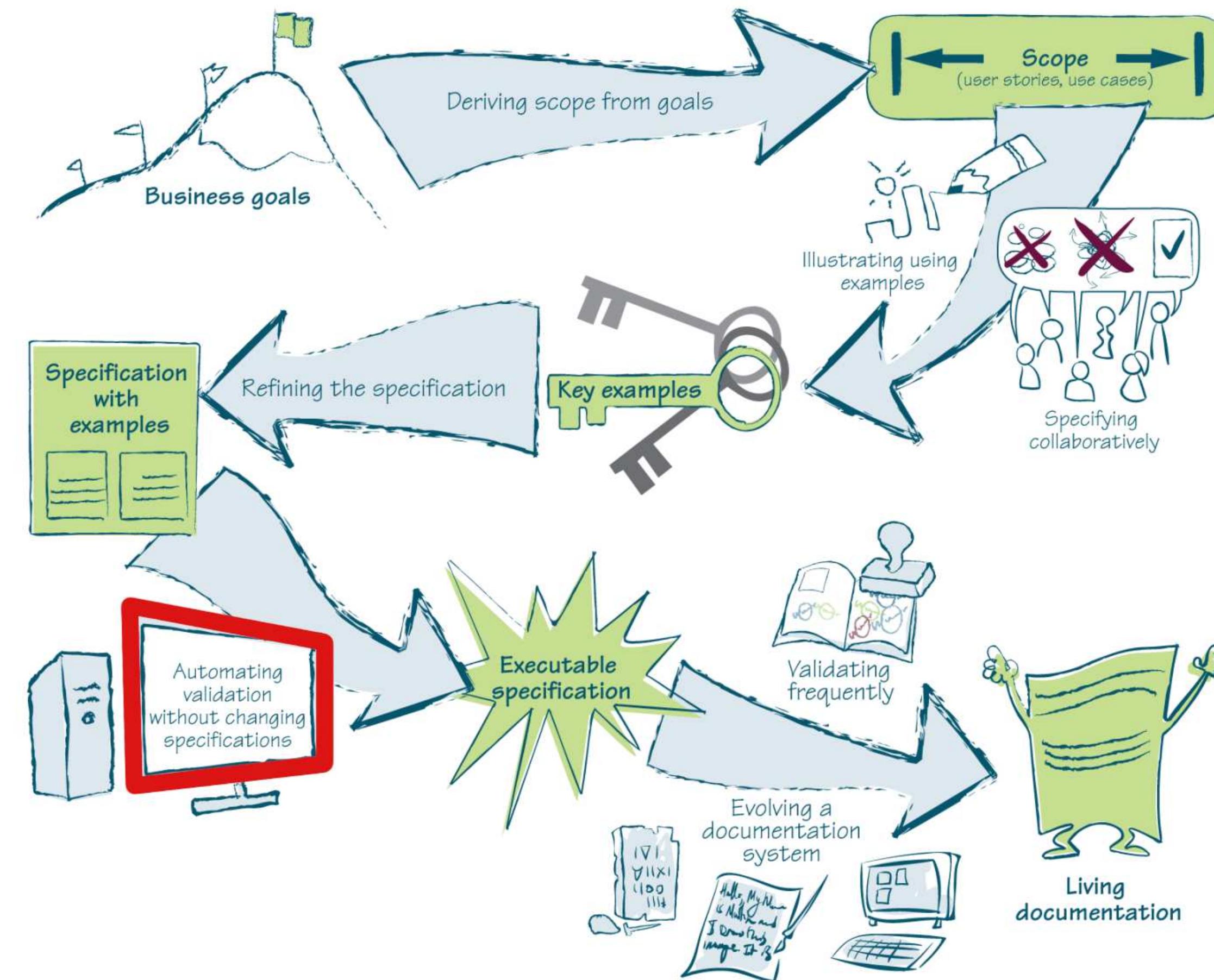
## Key process patterns of Specification by Example



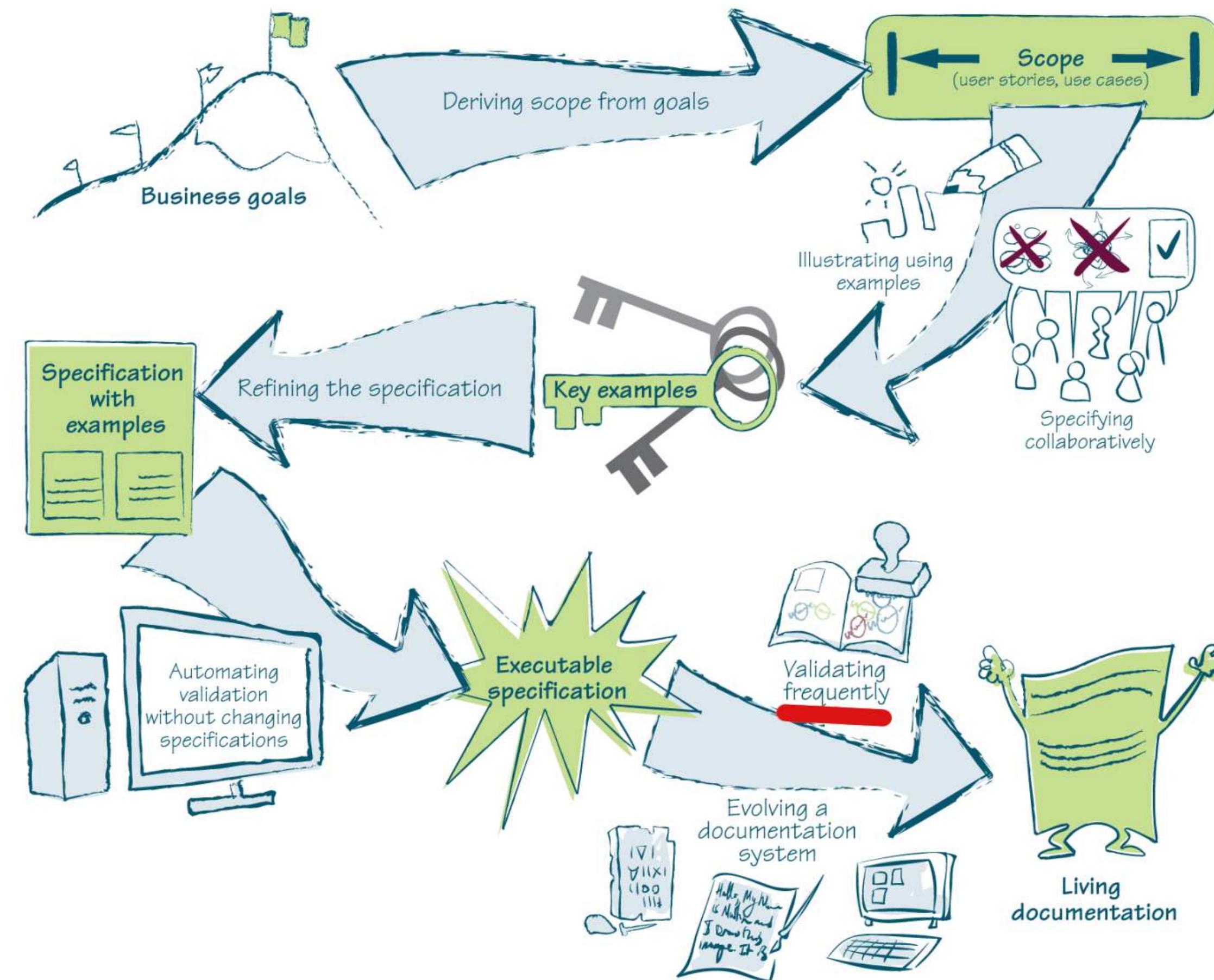
## Key process patterns of Specification by Example



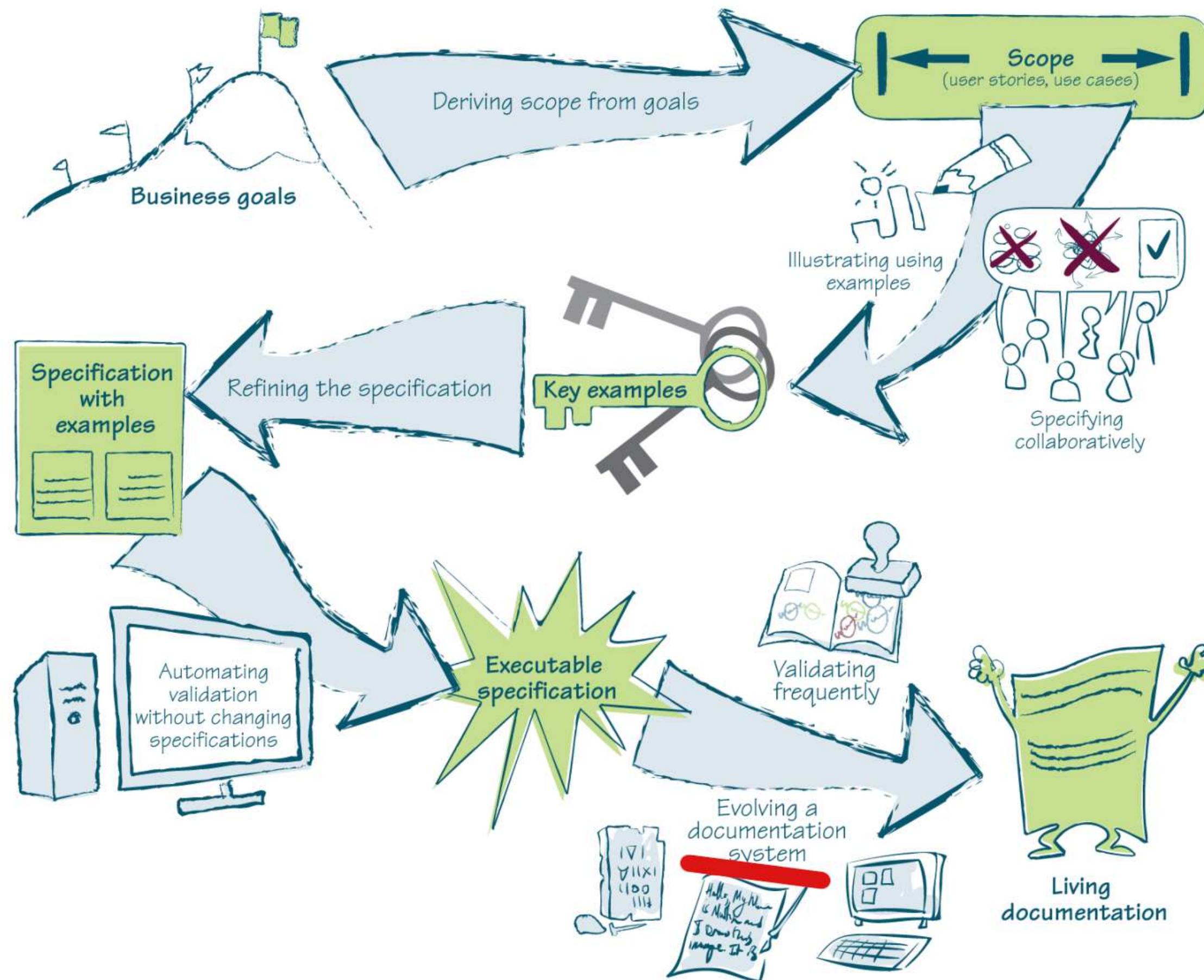
## Key process patterns of Specification by Example



## Key process patterns of Specification by Example



## Key process patterns of Specification by Example





# SPECIFICATIONS

area evangelism - Potter  
- Connection → Relationships → Evangelism  
Community Meeting  
Audience: Doghouse, Other Meeting  
Principle: Trust, Good relationships  
Take message & belief

## Free delivery

- Free delivery is offered to VIP customers once they purchase a certain number of books. Free delivery is not offered to regular customers or VIP customers buying anything else than books.
- Given that the minimum number of books to get free delivery is five, then we expect the following:

## Examples

Customer type	Cart contents	Delivery
VIP	5 books	Free, Standard
VIP	4 books	Standard
Regular	10 books	Standard
VIP	5 washing machines	Standard
VIP	5 books, 1 washing machine	Standard

# IMPLEMENTED IN GHERKIN

```
Feature: Delivery methods
  Scenario: Different orders, different shipping methods
    Given Jan is a <CustomerType> customer
    When he puts <Products> in his cart
    He will get the delivery options <DeliveryOptions>

    Examples:
    | CustomerType | Products           | DeliveryOptions |
    | VIP          | 5 books             | Free, Standard  |
    | VIP          | 4 books             | Standard         |
    | Regular      | 10 books            | Standard         |
    | VIP          | 5 washing machines | Standard         |
    | VIP          | 5 books, 1 washing machine | Standard |
```

# GHERKIN

Keyword	Synonyms	Description
Feature	Business Need, Ability	Begins a Gherkin file
Background		Runs steps before scenarios
Scenario		Starts a new scenario
Scenario Outline	Scenario Template	Starts a new scenario with multiple examples
Given	*, And, But	Puts the system in a predefined state
When	*, And, But	Performs an action
Then	*, And, But	Tests for consequences
Examples	Scenarios	Lists examples for scenario outlines

**Gherkin:** a Business Readable Domain Specific Language (DSL)

# NEDERLANDSE SPECIFICATIES!

```
# language: nl-NL

Functionaliteit: Zoeken in de product catalogus

Als klant van de boekenwinkel
Wil ik kunnen zoeken naar boeken
Zodat ik boeken kan bestellen

Scenario: Een boek zoeken met een titel en in een bepaalde categorie
Gegeven Simone wil een boek kopen met de titel "Specification By Example"
En ze selecteerd de categorie "SoftwareDevelopment"
Als ze gaat zoeken
Dan krijgt ze de keuze uit de volgende boeken
| Titel           | Auteur      | Formaat |
| Specification By Example | Gojko Adzic | PDF      |
| Specification By Example | Gojko Adzic | Hardcover |
```

# NICE SPECIFICATION

Feature: Checkout

Scenario Outline: Processing purchases at checkout

```
Given <prerequisite>
When checkout proceeds
Then the contents of the cart should be <bought?>
And the credit card should be <charged?> for it
```

Examples: The happy path

prerequisite	bought?	charged?
John adds an item to the cart	bought	charged

Examples: The angry path

prerequisite	bought?	charged?
the item is in stock	bought	charged
the item goes out of stock	not bought	not charged

Examples: The embarrassing path

prerequisite	bought?	charged?
John can pay	bought	charged
John can't pay	not bought	not charged

Examples: The delinquent path

prerequisite	bought?	charged?
minors try to buy an R rated movie	not bought	not charged
adults try to buy an R rated movie	bought	charged

# BAD SPECIFICATION

```
Feature: Reviews

Background:
  Given customers:
    | id | name           | email          |
    | 1  | Dominic Advice | doad@example.com |
  And items:
    | id | name           | price   | type  |
    | 1  | Writing Great Specfifications | $44.99 | book   |
  And publishers:
    | id | name           |
    | 1  | Manning Publications |

Scenario Outline: Reviewing sold items by customers

  Given customer <user_id> bought item <item_id>
  When the customer gives the item <rating> stars
  Then we should <outcome>

Examples:
  | item_id | user_id | rating | outcome      |
  | 1       | 1        | 0       | ask_how_we_can_improve |
  | 1       | 1        | 1       | ask_how_we_can_improve |
  | 1       | 1        | 2       | ask_how_we_can_improve |
  | 1       | 1        | 3       | do_nothing      |
  | 1       | 1        | 4       | ask_for_recommendation |
  | 1       | 1        | 5       | ask_for_recommendation |
```

# GOOD SPECIFICATION

Feature: Reviews

Scenario Outline: Reviewing items by customers

```
Given Dominic bought "Writing Great Specifications"
When he rates it with <rating> stars
Then we should <ask> for <feedback>
```

Examples:

rating	ask	feedback
0	ask	tips to make it better
1	ask	tips to make it better
2	ask	tips to make it better
3	don't ask	no feedback
4	ask	a recommendation
5	ask	a recommendation

# SPECFLOW

```
Feature: AddingNumbers
  Simple calculator for adding two numbers

Scenario: Add two numbers
  Given the first number is 50
  And the second number is 70
  When the two numbers are added
  Then the result should be 120
```

```
[Binding]
public class AddingNumbers
{
    private int _number1;
    private int _number2;
    private int _result;

    [Given(@"the first number is (.*)")]
    public void GivenTheFirstNumberIs(int number1) => _number1 = number1;

    [Given(@"the second number is (.*)")]
    public void GivenTheSecondNumberIs(int number2) => _number2 = number2;

    [When(@"the two numbers are added")]
    public void WhenTheTwoNumbersAreAdded() => _result = _number1 + _number2;

    [Then(@"the result should be (.*)")]
    public void ThenTheResultShouldBe(int result) => Assert.Equal(result, _result);
}
```

# LIVING DOCUMENTATION

## SpecificationByExample.Calculator.Specs

generated Nov 29, 2022, 02:24 PM GMT+1

Living Documentation Analytics

The screenshot shows a user interface for managing test specifications. On the left, there is a navigation bar with tabs for "Living Documentation" (which is selected) and "Analytics". Below the tabs is a search bar labeled "Filter by Keyword" and a "Test results" toggle switch. The main area displays a hierarchical tree structure:

- + -
- SpecificationByExample.Calculator.Specs
  - Features
    - AddingNumbers
      - Add two numbers

Next to each node, there are statistics: "1 Passed", "0 Failed", and "0 Others".

On the right, a specific feature and its scenarios are detailed:

**Feature: AddingNumbers**  
Simple calculator for adding two numbers

**Scenario: Add two numbers 3ms**

- Given the first number is 50
- And the second number is 70
- When the two numbers are added
- Then the result should be 120



**ZELF AAN DE SLAG**

# TIPS

- Overtuig management, product owners en opdrachtgevers
- Lees de boeken Specification By Example en Writing Great Specifications
- Begin klein
- Specificaties schrijven is een vak, verdiep je er in, oefen
- Geef niet te snel op
- Je gaat (en mag) fouten maken
- Specification By Example gaat over communicatie, niet over development

# VALKUILEN

- Management, product owners en opdrachtgevers zijn niet overtuigd
- Niemand heeft de boeken gelezen
- Technische specificaties
- Achteraf specificaties schrijven (dat is geen Specification By Example)
- Slecht test data management
- Developers specificaties laten schrijven

A close-up photograph of a woman's face. She has dark hair pulled back and is wearing a light-colored t-shirt. Her right hand is raised to her forehead, with her index finger touching her brow. She is looking directly at the camera with a neutral expression. The background is a plain, light color.

**VRAGEN?**

# BRONNEN

- [Specification By Example - Gojko Adzic](#)
- [Writing Great Specifications - Kamil Nicieja](#)
- [Sooner Safer Happier: Patterns and Antipatterns for Organizational Agility: Antipatterns and Patterns for Business Agility](#)
- [ACCELERATE: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations](#)

Afbeeldingen:

- Thinking: [Jasob Strull](#)
- Fail: [Mike van Schoonderwalt](#)
- Specifications [Glenn Carstens-Peters](#)
- Key processes [UX Indonesia](#)
- Gherkin: [Aaron Burden](#)
- Getting Started: [Vitolda Klein](#)
- Questions: [Afif Ramdhasuma](#)



# BEDANKT!

**NEEM GERUST CONTACT MET ME OP ALS JE VRAGEN HEBT!**

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 [github.com/jacobduijzer/specification-by-example-devconf](https://github.com/jacobduijzer/specification-by-example-devconf)

