



Requirements Out in the field

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24.05.2022

itestra
be excellent

In this lecture: field report and opinions on ...

How does Requirements Engineering take place in practice?

Differs significantly from the textbooks

Much more difficult than expected

Why is that – challenges and root causes?

Capacities, religion, other disciplines, tools and domain complexity

Ways forward – what can we do?

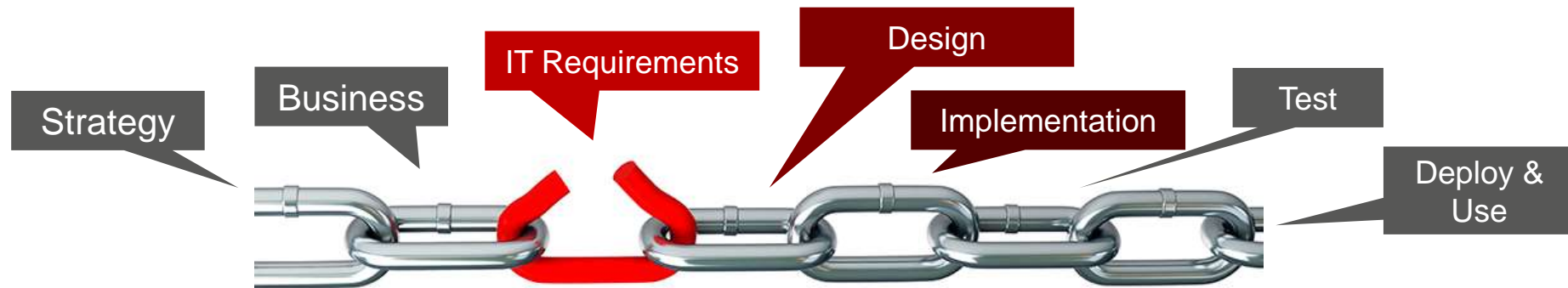
Our contribution as computer scientists



Disclaimer

I do not consider myself an RE expert (in scientific terms)

I observe RE practices for 20 years in countless projects



Proper requirements are of paramount importance!

Otherwise: no reasonable testing, no customer satisfaction, business value but excessive cost/time or failure.

Requirements are often a particularly weak link in the chain

About itestra

Founded in 2004

Background in computer science research

Financially and technologically independent

100 staff members (internal FTEs)

100% Computer Science („Informatics“)

12 locations

90+ Customers in 11 Countries

18 Mio € (2021)



 DE München itestra GmbH Destouchesstr. 68 80796 München	 DE Stuttgart itestra GmbH Heßbrühlstraße 7 70565 Stuttgart	 DE Köln itestra GmbH Hansaring 20 50670 Köln	 DE Hannover itestra GmbH Hildesheimer Str. 265-267 30519 Hannover
 DE Nürnberg itestra GmbH Südwestpark 37-41 90449 Nürnberg	 DE Dresden itestra GmbH Schweriner Str. 1 01067 Dresden	 DE Passau itestra GmbH Wittgasse 7 94032 Passau	 DE Tutzing itestra GmbH Bräuhausstr. 2 82327 Tutzing
 DE Aachen itestra GmbH Oppenhoffallee 143 52066 Aachen	 ESP Madrid itestra GmbH Calle de Méndez Álvaro, 20 28045 Madrid	 EST Tallinn itestra GmbH Väina 7-17 11612 Tallinn	 SWE Stockholm itestra GmbH Gustav III:s Boulevard 34 169 73 Solna



Roots: Research

80+ international publications

Software Reengineering, High Performance Computing

Most Influential Paper Award 1

Software Maintenance and Evolution (ICSME), 2017, Shanghai
An Activity-Based Quality Model for Maintainability

Most Influential Paper Award 2

International Conference of Program Comprehension (ICPC) 2015, Florenz
Concise and Consistent Naming

Keynote ICMSE 2018, Madrid

Inside Software Renovation

Research cooperations + itestra Student-Lab

Technische Universität München



Specialist for differentiating IT

Legacy Software Renovation

Transformation

– Optimization, Correction, Redesign, Migration

Managed Service

– Extension, Application Management

Software comprehension, cost reduction, increase of value

Solution Engineering

(Agile) Design and Implementierung of Custom Solutions
for innovative business processes

Projects – Information Systems/ERP



B2B2C Banking – Core System



Production Planning and QA



Material Maintenance (SAP)



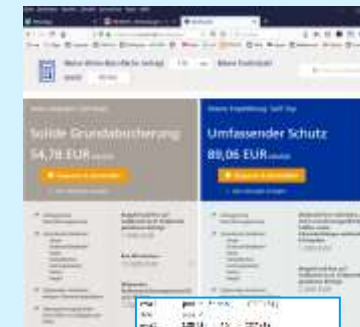
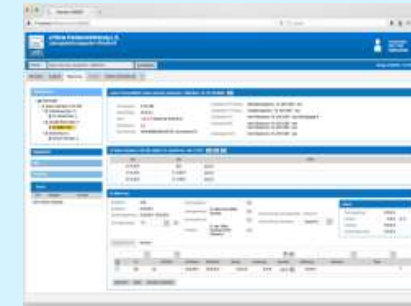
Insurance: Full-scale Reengineering



Omni-Channel Sales Solution



Mobile / GIS Claims Management



Information and Enterprise Resource Planning (ERP) Systems Particularities

Most functionalities rather trivial by itself

Store the name and address of a person

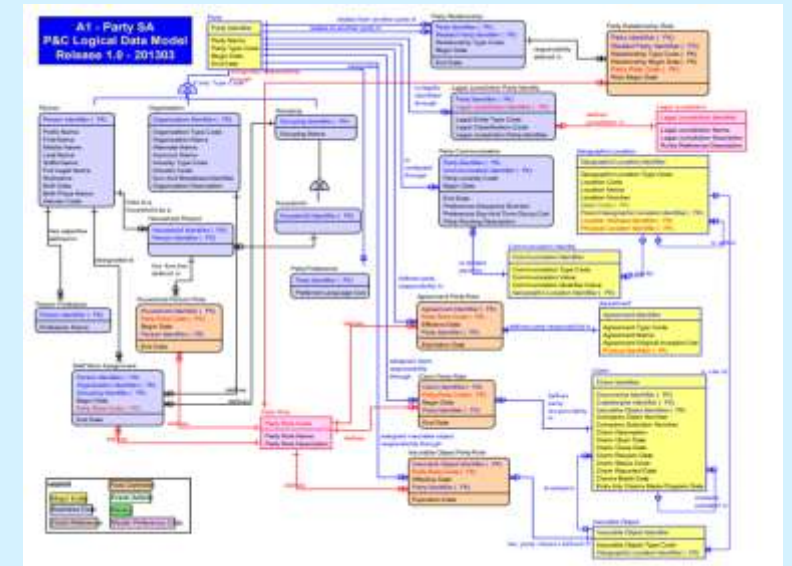
100s/1000s of objects, processes, functionalities

Dates, places, availabilities, contact possibilities, rooms, changes, ...

Dependencies between the objects

What happens to the overall schedule if a date or location is updated?

“Forgetting” and adding things later: expensive!



Part of OMG P&C, insurance data model
Full realistic model ~ 300 – x.000 classes

How do we (itestra) perform RE?

We are delivery consultants and providers

Often, requirements engineering is / has to be performed by others

We (have to) comply and apply customer standards

Many large organizations have their own development processes

Significant differences

- User stories, pure business level concepts or nothing

Currently often applied (based on available tools, not method research)

- Jira user stories, epics and other tickets

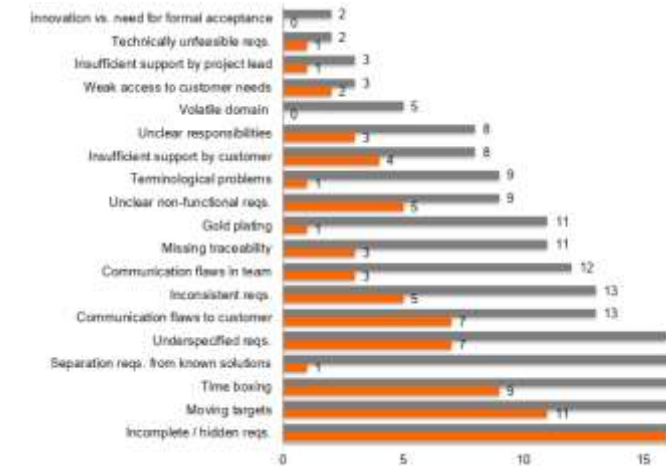
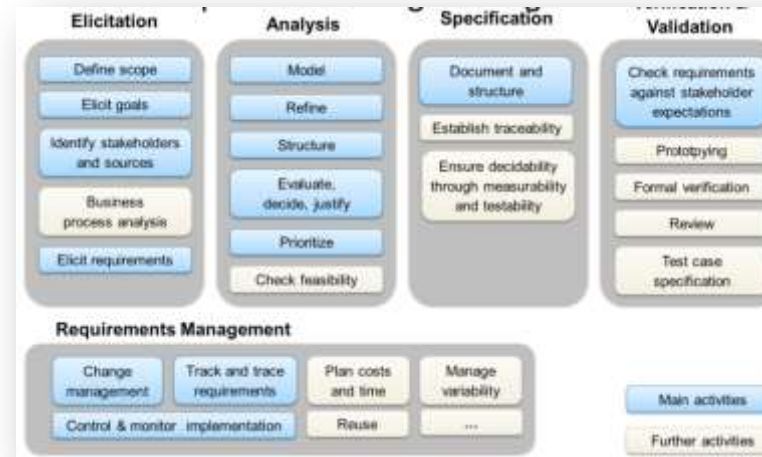


*Varying
software
development
process
standards*

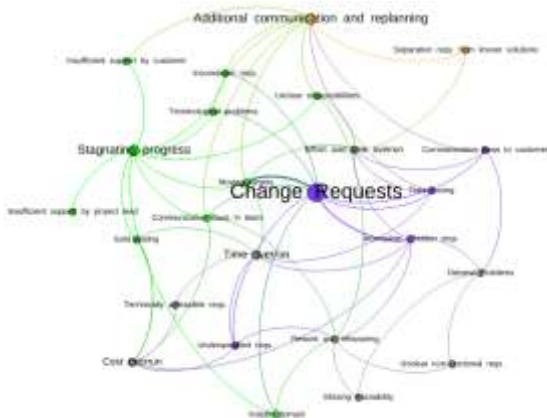


You already learned ...

- **Requirement artifact:** o
- A **stakeholder** (in RE) is created
 - e.g. user, administrator, se
 - and thus a potential **source**
- A **requirement source**



Terms



Practices

IEEE Recommended Practice for Software Requirements Specifications

Standard
Software Engineering Standards Committee
of the
IEEE Computer Society

Approved 28 June 1988
IEEE-SA Standards Board

Abstract: The content and quality of a good software requirements specification (SRS) are discussed and several sample SRS outlines are presented. This recommended practice is aimed at specifying requirements of software to be developed but also can be applied to assist in the selection of in-house and commercial software products. Guidelines for compliance with IEEE Std 12287-1-1988 are also provided.
Keywords: contract, customer, prototyping, software requirements specification, supplier, system requirements specifications

Standards

Typical Problems

From Stakeholders to Requirements

The needs and requirements of the stakeholders need to be „elicited“. The result of the elicitation is a **requirement candidate**.

Challenges:

- Finding the stakeholders
- Some stakeholders are not available for discussions (e.g. legislation,
- Stakeholder are not able to express their expectation:
„Well, I don't know what I imagined, but certainly not that!“
- Stakeholder might know what they want, but not what they actually need:
„I want a Ferrari to go on safaris in the jungle.“
- Hardly any separation of problem and solution:

Consequences

The fuzzy challenge „elicitation“

Brainstorming, design thinking, ...

My first experiences (Investment Banking)

Encounter 1

Q: „When and how are large (>10m €) credits approved“

A: „We have the folders where we collect the signatures over there“

... rules for amounts, kind of investment, expiration, etc. in heads only.

Encounter 2

Q: „How are the percentages of the criteria combined into the overall rating?“

A: „Weighted sum of all percentages“

.... i.e. -30% risk possible.

Learning: business departments – of course –
don't think in (math. modeled) requirements

Requirements might be stated or not and be useful, incomplete or just plain wrong!
Business experts are business experts(!) ... not modeling experts.



Example: Real-Life

```
falls WTERM(1) + L(MM) >= ZW-UEBBEG2:
```

```
falls (WTERM(1) + L(MM)) (MM) = ZW-  
UEBBEG2(MM) zu LVTTYP = 01 oder ZERLSCHL  
= 0080,0280,0281,0282:
```

```
falls (ZERLSCHL =  
0036,0037,0038,0039,0070,0080,0130,  
023x,0246,0270,0280,0281,0282):  
UEBASID zu Art 7 # 0:
```

{Kosten-Überschußanteil auf
Deckungskapital}

Aufruf von "Überschußanteilsatz ermitteln,"
(XXXXXX) mit den dort angegebenen
Parametern und

```
ÜS-UEBASID(1) = UEBASID zu Art 7,
```

```
ÜS-ANFKZNRE = E-ANFKZNRE,
```

```
ÜS-ALTZUTKZN = 0,
```

```
ÜS-SCHICHTNR = SCHICHTNR
```

```
Falls ZERLSCHL # 0080;0280;0281;0282:
```

```
falls ZERLSCHL = 023x:
```

```
ZW-XVT1 = E-XVT1 + E-XVT1MON / 12 (N,3.6,R)
```

```
S = max(min(35;t;75 - XVT1);0) * ZW * ZERLBTG,  
(N,9.1,R) falls ZERLSCHL = 0035  
(N,9.2,R) falls ZERLSCHL = 0037,0038,0039,7038  
023x,0246,
```

```
= max(min(35;t;75 - ZW-XVT1);0) * ZW * ZERLBTG,  
(N,9.2,R) falls ZERLSCHL = 023x
```

```
= min(35;t) * ZW * ZERLBTG  
(N,9.1,R) sonst; ZERLSCHL # 0036,0130  
(N,9.2,R) sonst;
```



80s Style

Specification defines implementation

Origin

Idea: programmer needs precise
description

Math. department (here within
insurance)

Facts

Zero abstraction, rationale, explanation

„Programmer“ can not add much value

Low performance

Enormous duplication

>200 pages A4

Is still done in 2010+

1.1.1 Get Assignment cost Text

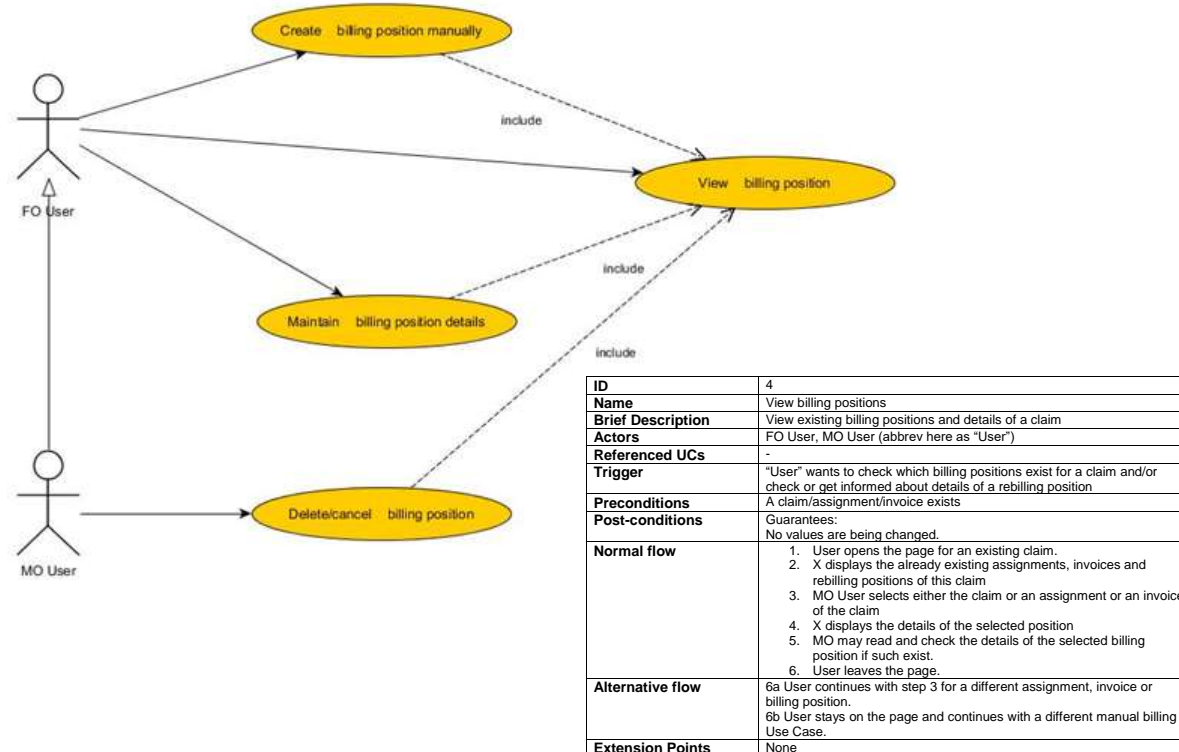
// determine and display assignment cost:

```
calculateBenefitInvoiceAmount:  
  benefitInvoiceSum = 0  
  IF VATON = [J] THEN  
    benefitInvoiceSum = SUM of (  
      IF entry exists in <TAUFTRAG_HWB> for <TAUFTR_E  
<TAUFTRAG>.<<FREMDWAERUNG>> = <TAUFTRAG>.<<FREMDWAERUNG>> f:  
        <TAUFTR_ELEMZUS>.<<NETTOBETRAG>>  
    ELSE  
      <TAUFTR_ELEMZUS>.<<NETTOBETRAG>> * <TAUFTR
```



> ctd. over mutiple pages ...

Transition to Use Cases started ...



Value	Calculation rule
Gross amount	Net amount * (100+ VAT rate)/100
Rebilling amount (Net amount)	Gross amount * 100 / (100 + VAT rate)

Involved

Training

Analysis and re-modelling of the specifications

Use Cases, Business Rules, UI, ...

First results considered useful

Aborted

Large gap to current practices

High costs for change

- Analysis and rework of existing material
- **Intense modelling training**

Another problem: delta documentation

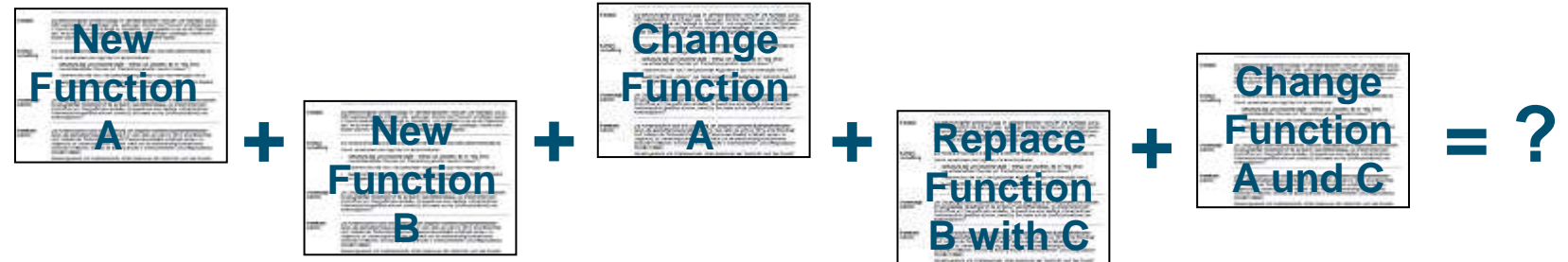
3.2.2 Bildschirmmaske
3.2.2.1 Selektionsmaske
Die Bildschirmmaske bleibt unverändert.

3.2.2.2 Folgemaske
Die Felder

- Anzahl P-Behälter
- Anzahl M-Behälter
- Anzahl Pakete
- Anzahl M-Beutel/Rollenpck.

sind künftig in der Maske nicht mehr eingabebereit.

Typical situation over time:



Nowadays, most requirements entail changes of existing software.

What is the right approach to elicit and document these requirements?

Duplication: study of 28 commercial specifications

Table 1: Study Objects

Spec	Pages	Words	Spec	Pages	Words
A	517	41,482	O	184	18,750
B	1,013	130,968	P	45	6,977
C	133	18,447	Q	33	5,040
D	241	37,969	R	109	15,462
E	185	37,056	S	144	24,343
F	42	7,662	T	40	7,799
G	85	10,076	U	n/a	43,216
H	160	19,632	V	448	95,399
I	53	6,895	W	211	31,670
J	28	4,411	X	158	19,679
K	39	5,912	Y	235	49,425
L	535	84,959	Z	n/a	13,807
M	233	46,763	AB	3,100	274,489
N	n/a	103,067	AC	696	81,410
Σ				8,667	1,242,765

© Jürgens et al, TUM/itestra, 2010

Table 2: Study Results: Cloning

Spec	Clone cov.	Clone groups	clones	blow-up relative	blow-up words
A	35.0%	259	914	32.6%	10,191
B	8.9%	265	639	5.3%	6,639
C	18.5%	37	88	11.5%	1,907
D	8.1%	105	479	6.9%	2,463
E	0.9%	6	12	0.4%	161
F	51.1%	50	162	60.6%	2,890
G	22.1%	60	262	20.4%	1,704
H	71.6%	71	360	129.6%	11,083
I	5.5%	7	15	3.0%	201
J	1.0%	1	2	0.5%	22
K	18.1%	19	55	13.4%	699
L	20.5%	303	794	14.1%	10,475
M	1.2%	11	23	0.6%	287
N	8.2%	159	373	5.0%	4,915
O	1.9%	8	16	1.0%	182
P	5.8%	5	10	3.0%	204
Q	0.0%	0	0	0.0%	0
R	0.7%	2	4	0.4%	56
S	1.6%	11	27	0.9%	228
T	0.0%	0	0	0.0%	0
U	15.5%	85	237	10.8%	4,206
V	11.2%	201	485	7.0%	6,204
W	2.0%	14	31	1.1%	355
X	12.4%	21	45	6.8%	1,253
Y	21.9%	181	553	18.2%	7,593
Z	19.6%	50	117	14.2%	1,718
AB	12.1%	635	1818	8.7%	21,993
AC	5.4%	65	148	3.2%	2,549
Avg	13.6%			13.5%	
Σ		2,631	7,669		100,178

Excessive prose

13.2	Standard-Schnittstelle Meldung.....	997
13.2.1	Datentypänderungen.....	997
13.2.2	Semantische Nachrichtenänderungen.....	997
13.2.3	Entfallene Attribute.....	998
13.2.4	Schnittstellentoleranz.....	998
13.2.5	Migrationen in Nachbarsystemen.....	998
13.3	Schnittstelle zum System.....	998
13.3.1	Grundsätzliche.....	999
13.3.2	Ausgetauschte.....	1000
13.3.2.1	Schnittstelle.....	1000
13.3.2.2	Schnittstelle.....	1001
13.3.2.3	Schnittstelle.....	1002
13.3.3	Ablaufbeschreibung.....	1003
13.3.3.1	Schnittstelle.....	1003
13.3.3.2	Schnittstelle.....	1005
13.3.3.3	Schnittstelle.....	1008
13.3.4	Betriebsfunktion.....	1012
13.4	Schnittstelle zum System.....	1013
13.5	Weitere fachliche Details einzelner Schnittstellen.....	1013
13.5.1	Lieferantenanbindung.....	1013
13.6	Stammdatenchanges.....	1013
13.6.1	Entwicklungsbezeichnungen und Module.....	1014
13.7	Parametrisierte Links.....	1014
13.7.1	Link zum Objekt Problem.....	1014

Describes rules and calculations but provides not tables or alike.

Tooling and Teamwork – MS-Word

Historie

Version	Stand	Autor	Änderungen
1.0	25.09.2006	G	Erstellung nach Besprechung am 13.09.2006 bei P-12
1.1	07.02.2007	S	Beantwortung der Fragen (ToDo) und Ergänzungen auf Basis des Workshops am 02.02.07 (blaue Schrift)
1.2	23.02.2007	S	Geringfügige Ergänzungen (grüne Schrift)
1.3	30.03.2007	D	Geringfügige Abweichung bei Motorrad (violette Schrift)
1.4	11.04.2007	S	Ergänzungen aufgrund Rückmeldung aus Erstellung der Testfälle von Hr. B (orange Schrift)
1.5	29.04.2007	D	Ergänzungen Abweichung bei Motorrad (violette Schrift + gelber Hintergrund))

Bei MC würde nur Planungsebene „Modell“ zielführend sein), die auch per Default so eingestellt wird. Der Baum in der Produktauswahl kann nur bis zur Ebene Baureihe aufgeklappt werden, auch die Selektion der Produktebene kann maximal nur bis zur Tiefe der Planungsebene „Baureihe“ „Serie“ erfolgen (höhere Produktebenen oberhalb „Baureihe“ können selektiert werden). Eine Mehrfachauswahl ist möglich. Bei einer Selektion der Produktebene „Baureihe“ ist auch gleichzeitig die Selektion der Planungsebene auf dieser Ebene möglich

Colors

Track changes

What is the current state?

Often virtually unreadable.

A modern project ... with Confluence / Jira












Ca. 25 areas
1000s of pages














Structure unclear

Some parts valuable,
others not

The Wiki Messy problem.

- A) Many people „contribute“
with their personal style
- B) There IS NO STRUCTURE
→ It gets quite chaotic.

Bereich	
	Backend ~ Release-Historie
	Business Development
	Campaign & Online Marketing
	CSS
	Frontend Some UI Drafts
	HR
	IT Platform Support ITPS
	J Do
	Key Account Management Abteilung
	Marketing
	Office IT

	OPS
	PROCESS
	Product Management
	Projektmanagement
	Qualitätsmanagement
	Salesforce
	Software Development
	The Handy Guide To Confluence
	
	e 2.0 empty
	e 3.0 - Introduction of new core system
	eAre
	ePay

Nice lists but details?

Seiten / Product Management / Knowledge Base

☆ Favorit 👁 Beobachten ➦ Teilen

Collection of user stories covering all minimum requirements to earn cashback

Erstellt von Benutzer-5ef47, zuletzt geändert von Benutzer-4c299 am Mär 22, 2018

I want to find relevant shops where I intend to buy something now.

- I want to search for shops
- I want to search for brands and find the shops which sell the brands
- I want to search for shopping categories, topics, product ranges and find shops which are relevant
- When I don't find what I have been looking for, I want to get useful alternatives and suggestions

I want to remember my favourite decisions

- I want to mark shops which I like and access them quickly
- I want to see relevant news from shops I like
- I want to be informed about really exciting promotions from my favourite shops

I want to browse through categories to find the right shop

- I want to see a list of all categories
- I want to be able to search for topics and find the right category (cf. find story)
- I want to search for relevant keywords in a category
- I want to refine my search if there are too many results or if I am looking for something very specific

I want to be inspired to buy something

- For special events (Christmas, Valentine's Day) I want to see shop ideas
- I want to be informed about trends and lifestyle and media-related product recommendations
- The recommendations I see should be related to my favourite shops or recent purchases (e.g. similar categories)
- I also want to see shops where other users who are similar to me were satisfied
- I don't want to see anything that does not interest me
- I want to tell the website when I am no longer interested in something

I want to see all details of the shop which encourage my buying decision

- I want to see the experience of other users with this shop
- I want to see how this shop ranks on the website and in its own category

For all of this:

A) HOW?

Note: getting „search“ right, was the match winner für Google

B) What does it mean precisely?
„relevant“, „useful“, ...

The „As a ... I want to ...“ is far from enough. You need:

- Business rules
- Maybe an outstanding UI idea
- Maybe an object model

Templates - most times clones or empty

Notification Low Deposit

Erstellt von Benutzer-5647, zuletzt geändert von Benutzer-40299 am Jul 26, 2017

Ziel & Strategic Fit

Händler aktiv darauf hinweisen, dass das bestehende Deposit zur Neige geht.

Scope & Stakeholder

In Scope	Out of Scope	User	Stakeholder

Assumptions

Requirements

#	Title	User Story	Importance	Notes
1	Händler informieren	Aktiv den Händler darauf hinweisen, dass das Guthaben demnächst aufgebraucht ist.		*
2		Händler per E-Mail darauf hinweisen. Popup schalten mit weiterleitungs Button zu Aufladungen.		

User interaction and design

Mockup	Wording	Screenshots

Questions

Question	Outcome
Ab welchem Betrag soll man die Händler informieren?	

Not Doing

#	Title	User Story	Importance	Notes
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?

Frequent abuse

Functional Requirements

User Stories

EPE-00001 setup DEV environment

As [REDACTED] the company

I want a configured development environment
so I can develop and test the EPE application on it.

Details:

- * hint: hardware and OS are setup and maintained by TO
- * hint: developers have user account without special permissions (temporarily)
- * scope: setup HDFS, Zookeeper, sftp-server

Certainly no “**User Story**”

Further lists in other formats

Product requirements

Angelegt von Benutzer-Sek47, zuletzt geändert am Juli 18, 2017

RED	YELLOW	GREEN	GREY	BLUE	Add Product requirements				
Must	Should	Could	Won't	Done					
Überschrift	Feature Priorität	Details	Development since / %	GrobK/FeinK.	Komplexität	Status	Target release	Label	
[w.0036] PIN Eingabe bei Zahlung									
[w.0001] E-Mail Marketingtool									
Bildanforderungen	DONE			100% / 80%	1	DONE	01 Jun 2017		
Preload P1	MUST	As a dealer i want to order cards with amount	03-Apr-2017 / 50%	100% / 70%	1	DONE	30 Jun 2017		
Kunden Synchronisation	DONE	Manche Kundendaten werden zwischen synchronisiert Als FC Mitarbeiter kann ich die Daten der von mir geworbenen Kunden in sehen		100% / 100%	25 AT	DONE	19 Jul 2017		
Datenbereinigung w	MUST	Da sich viele Daten im neuen System angesammelt hat und diese auch die Auswertung verfälschen, wäre es sinnvoll die nicht benötigten Daten zu filtern, zu markieren und gegebenenfalls zu löschen.	16-Jul-2017 / 0%	50% / 0%	15 AT	PLANNED	31 Jul 2017		
Kartenzuweisung mit zufälligen Nummern aus einer vordefinierten Menge	SPRINT	Kartenzuweisung mit zufälligen Nummern aus einer vordefinierten Menge.		0% / 0%	0 AT	IN PLANUNG	04 Aug 2017		
Partner- Sponsor Änderung	GREEN			0% / 0%	1		01 Sep 2017		
wee Apps Offline Modus	MUST	Besseres Handling von API Downtimes und Verbindungsproblemen		0% / 0%	1	NEW	01 Sep 2017		1
Salesforce Sync	MUST	Synchronisation mit Salesforce		30% / 0%	1	NEW	01 Sep 2017		
Zurück 1 2 3 4 5 6 7 Weiter									

With project management in Confluence

And more in Jira (=Task Management)

10.995 Issues

Epics, Stories, Tasks and others

Requirements fragments in Issue descriptions

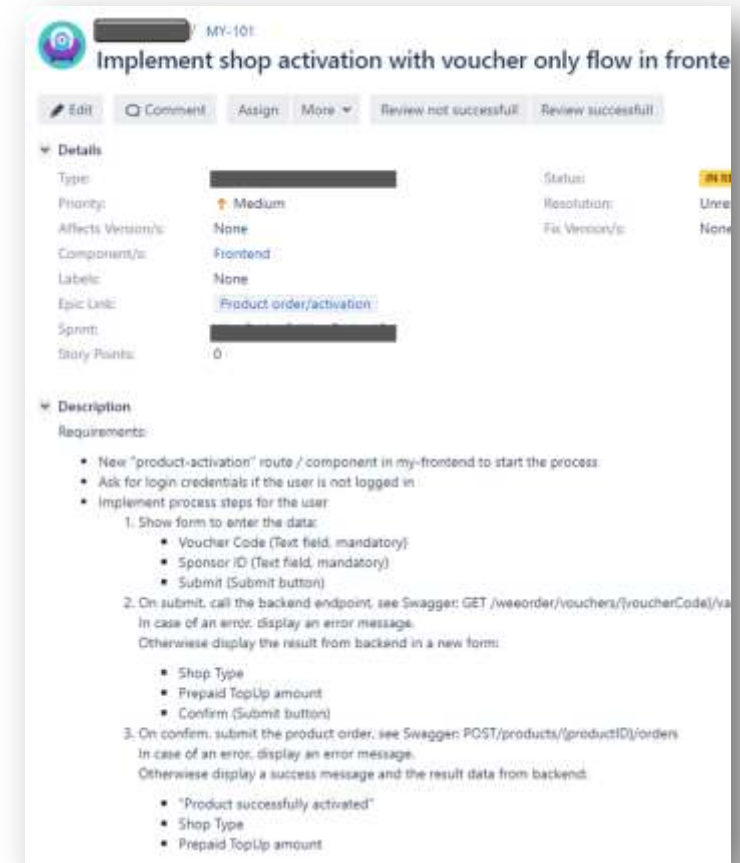
Jira (=TM) does not provide structuring

Links between issues and labels but no breakdown structure (w/o addons)

Epics do not significantly improve structuring of requirements either

- Epics add at most one level of abstraction
- Jira Epic are work packages, not to complete slices of business aspects.

Jira should not be **abused** for RE content.



Beyond Methods

Challenges so far

Methods

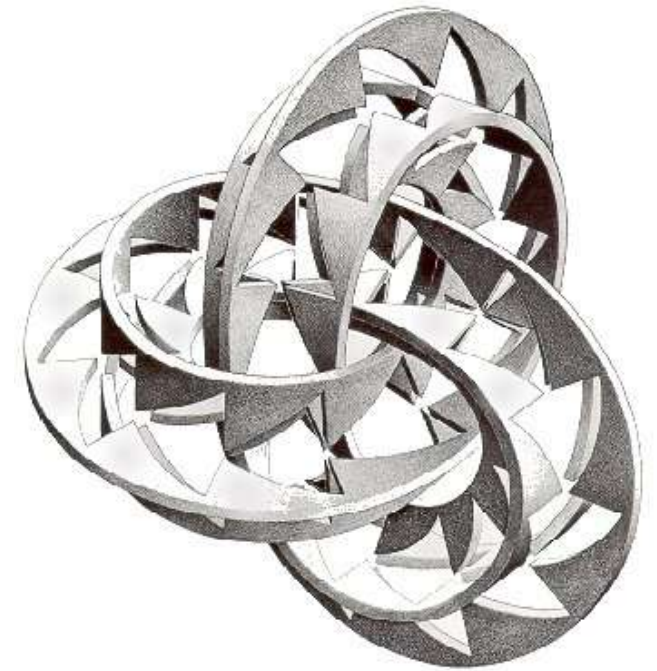
Skills ~ Knowing and correctly applying the methods

Even more difficult: the content!

I.e. „**elicitation**“ or **finding the right requirements**

A) Deep understanding of a domain of business; it always gets complex

B) Delivering **Innovation**



Deep business understanding is mandatory

E.g. a new incentive & commission (dt. “Provision”) solution for an insurance

How does the insurance business work?

What is the role of incentives and commissions within an insurance?

Who gets it? For which products? How high? What are the rules?

When are they being paid?

What happens in case of cancellations or retrospective changes? E.g. “factoring”

Substitutes, handovers between sales staff members, ...



Sales is at the heart of insurance business

Usually, there is no-one who just knows, has time and tells you the requirements

For RE one has to be a true **EXPERT IN THIS FIELD!**

Ask other experts? ... Yes, but who?

Always a good idea to let
others solve the problem 😊

Business Department

→ performs business, doesn't model it,
doesn't know IT possibilities

Development team

→ know methods but not the business

Product owner

→ is also looking for someone who know ;-)

Head/Guru of business

→ if he/she exists, no time 😊 !

Business analyst

→ in rare cases possible; but often not available

Workshop

→ expensive joint learning 😊

Even „small“ things get complex

Example: Import of a brochure

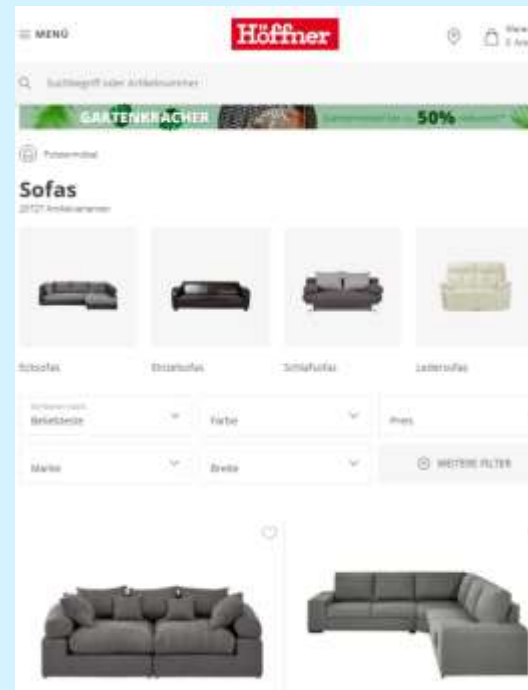
Setting

International Furniture Retail Business

Entering product information is time consuming

(Simple) Requirement

„Import IDM files published by producer“



100.000s of products
and variations



Brochures
with 1000s of pages



XML format

A more closer look – not so trivial

Product variations can be specified by provider in different ways in IDM

As options (e.g. color) or as combinable building blocks (e.g. feet)



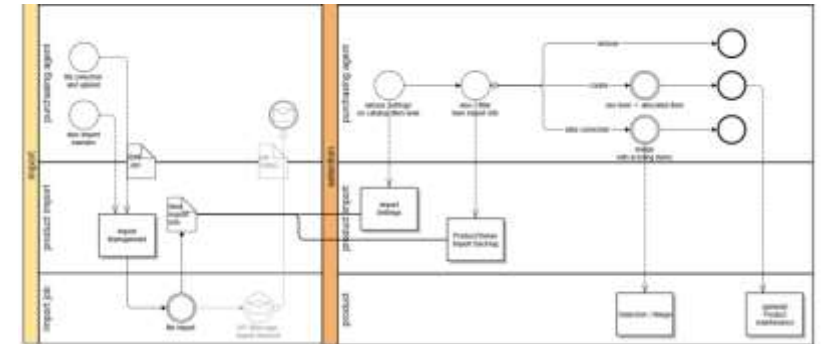
There might be ill-formated information and that break imports and imports might take long

You need some asynchronous processing

A possibility to see the state of imports, what went right and wrong and why and fix it

The user might only want to import selected products

E.g. some options don't sell well, others are just irrelevant.



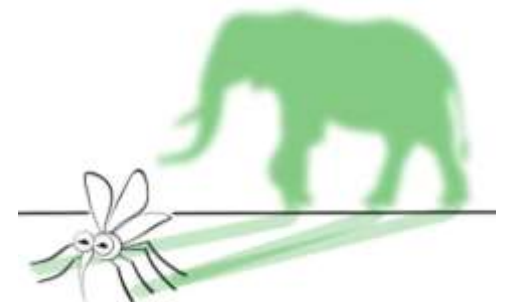
The IDM file might deliver updates for existing products

Corrections but also new versions with a certain start date

Product information might have been manually added or changed meanwhile

E.g. prices, delivery times in different regions, user ratings or standard names „brick light red“ → „red“

The user must be allowed to **view which information is affected and define what to keep, what to overwrite**



Requirements for Requirements Engineers

Take a really broad and deep dive into the topic

Understand the current **business** and the economics behind it

Know how others in the **market** handle this topic

Know suitable **technical options**

Proper use of RE **methods**

Think creative and **economically**



And one step further: Innovation

New systems are built to gain an advantage

More (incl. new) business

Lower costs

New features must be better than in the past

What do the most successful sales folks expect or dislike?

What are cost drivers and how can they be reduced with technology?

Requirements can not be “collected”

Systems requirement must be **creatively shaped!**

By combining knowledge about business, technology, law, psychology, ...



Summary 1: what makes RE in practice hard?

Capacities / shortage of skilled staff

- In business
- In IT

Broad skills needed

- Numerous Methods
UCs/USs, Business Rules, UML, UX, Data Models, ...
- Domain Expertise

Fashions & Misbeliefs

- Agile, Jira tickets, Team pulls tickets
... not much todo with RE
- Later changes with refactoring
- “Collecting” requirements

Insufficient Tools

- Word
- Wikis incl. Confluence
- CASE Tools did not succeed either

Methods are premature

- High volatility
- Structured methods, Use Cases, Storycards, User Stories, ...
- What is it?

Other disciplines

- Economics
 - Cost / benefit of solutions
 - RE as a source of revenue
- Law: what is allowed?
- Politics: who wants what why?

Example for misleading fashions

Bedingungen zum Einsatz von Fremdkräften in der agilen Produktentwicklung im [REDACTED] – nachfolgend [REDACTED] genannt.
(Bedingungen der agilen Produktentwicklung)

1. Geltungsbereich

- 1.1.** Die nachstehenden Bedingungen gelten für die Anwendung der agilen Produktentwicklung unter gleichzeitigem Einsatz von Fremdkräften, wie im Folgenden

2. Vertragsbestandteile

- 2.1.** Die vorliegenden „Bedingungen zum Einsatz von Fremdkräften in der agilen Produktentwicklung“ (Bedingungen der agilen Produktentwicklung) ergänzen die

Das Product Backlog ist eine geordnete Liste von allem, von dem bekannt ist, dass es im Produkt enthalten sein soll. Es dient als **einzigste Anforderungsquelle** für alle

Eine User Story ist eine in Alltagssprache formulierte Anforderung. Sie ist bewusst kurz formuliert, besteht in der Regel nur aus wenigen Sätzen und umfasst dabei das gewünschte Ziel inklusive bestimmter Akzeptanzkriterien. Der Product Owner verantwortet die User Stories und fügt diese dem Product Backlog hinzu.

Current legal contract

Agile method required by contract

Short, colloquial User Stories are the only source of requirements allowed!

Summary 2: what can we do?

If you like it, learn it in-depth: business understanding and methods

As CS (masters) we are trained in modelling and have to be involved.

Apply core RE principles

Suitable requirements **can't be collected** and often not „known“ by others. They need to be created or developed.

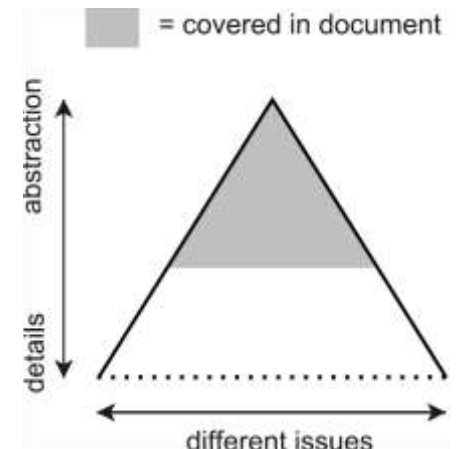
Always go strict **Top-Down**: what is the stated goal, what is the actual intention? What is possible for this?

Fully **understand the business**

Use and combine various techniques **as the topic requires it:**

- Business Process Models (explains the context and some rationale)
- Use Cases / User Stories
- Business Rules
- UI Prototypes
- Object Models (in particular for structuring complicated information), selected UML diagrams, ...

Convince others! 😊



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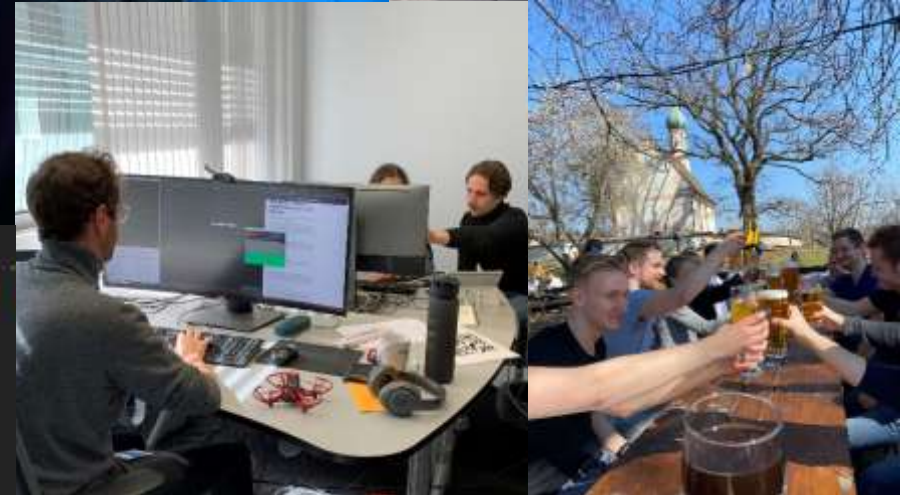
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