

# Do we have an up-to-date project documentation?

Experiences with model-driven system documentation in practice

Dr. Udo Nink



**NINKIT-CONSULTING**  
*architecture advisory services*

# Content

- Episode III:  
Why project documentation becomes outdated
- Episode IV:  
How MDDoc is used to keep system documentation up-to-date
- Episode V:  
Limitations of MDDoc and how to cope with
- Episode VI:  
Best practices, continuous improvement, outlook

# Episode III - Revenge of the Sith

Many impacts on project documentation



Only to name a few

# Project documentation becomes outdated because of changes



- Redundant documentation  
(stored in various places / versions / tools, varied naming)
- Time windows  
(history, present, near future, future)
- Frequency of changes  
(requirements, defects, changing requirements)
- Missing process hooks  
(DoR, DoD, QA in general)

## Some rather odd effect



People simplify things even more:

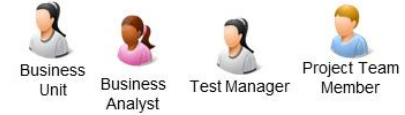
- “We don’t need to document, we are agile now!”
- “Documentation is in the code, right?”

Correct interpretation

- Working software is more important than
- ...but still comes with comprehensive documentation
- ...though streamlined or just in time

# A solid documentation approach deals with enterprise requirements

Small project Project Program  
Simple service Complex service  
**Backend engine**  
Small team Mid-size team  
**Big team**



**Scalable**

**Development  
approach  
agnostic**

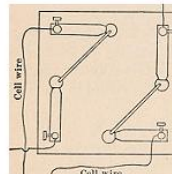
**Reach**

## REQUIREMENTS

**Integrable**

**Traceable**

**Reusable /  
Extendible**

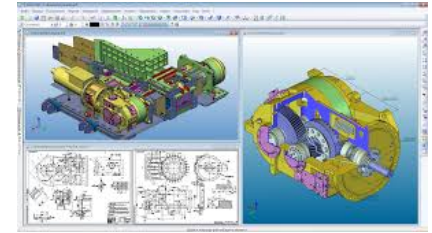
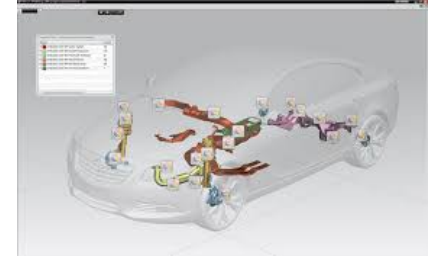


# Trade-off between office-based and repository-based approaches



Single Point of Truth  
Consistency  
Maintainability  
Refactorability  
Reportability  
Sustainability  
Traceability

Initial setup  
Flexibility  
Needed skills





# Episode IV - A New Hope



<https://pixabay.com/de/figur-star-wars-freigestellt-2802650/>

- The force is everywhere
- Find a Jedi master
- Train a Padawan
- Accomplish a mission
- Improve a little everyday

And bring your light saber!




# Model-Driven Documentation keeping system documentation up-to-date

## MDDoc / Model-Driven Documentation

  
**Model-driven**

  
**Tracing**

  
**Design-Implement-  
Test Loop**

### Domain Specific Languages (DSL)

arcunit

Customer DSL

reusing and adapting concepts from



TOGAF®

<http://www.opengroup.org/subjectareas/enterprise/togaf>

Customer  
projects

implemented in



# Theory & Practice of Model-Driven Documentation

- **OMG: MDA® - Model Driven Architecture®**. 2001 ff.
  - Method of **developing** applications **and writing** specifications
  - Based on a platform-independent model (PIM) or specification's business functionality and behavior.
- **Arc42**: Process-agnostic, lean, agile open-source architecture framework
- **TOGAF**: The Open Group Architecture Framework
- Philippe Desfray: **Model-Driven Documentation** – The art of authoring model-driven documentation. SOFTEAM, 2009.
  - Model-Driven Documentation = specialized discipline derived from MDA
  - Focus on how to use and extend MDA for documentation purposes
  - MDA itself does not provide “enough information for intention and use, and cannot be understood by all project participants.”
- Robert Pagel: **An Introduction to Model-Driven Documentation**. Transentis, 2012.
  - “How to make your models available to a wide audience by automatically converting them into documents, posters or websites that are easy to distribute and understand.”
- Stephan Bueren, Dr. Udo Nink, Oliver Lukas: **Model-Driven Documentation in a European Project Set-up** (Modellgetriebene Dokumentation im Härtetest - Durchgehender Einsatz von Magic Draw in einem paneuropäischen Projekt-Set-up). msgGillardon NEWS 03/2017.
  - Case study, Automotive
  - Larger project in Sales & Marketing
  - Best practices & pitfalls

# Experience with MDDoc in various projects

- Automotive Manufacturer, Sales & Marketing  
Classic IT, software development projects
- Finance, Wealth Management  
Enterprise Architecture
- Automotive Engineering, Supplier  
Enterprise Architecture
- Automotive Manufacturer, Product & Price  
Management  
Classic IT, software development projects
- Automotive Manufacturer, Product Engineering  
Embedded hardware & software development  
(upcoming)

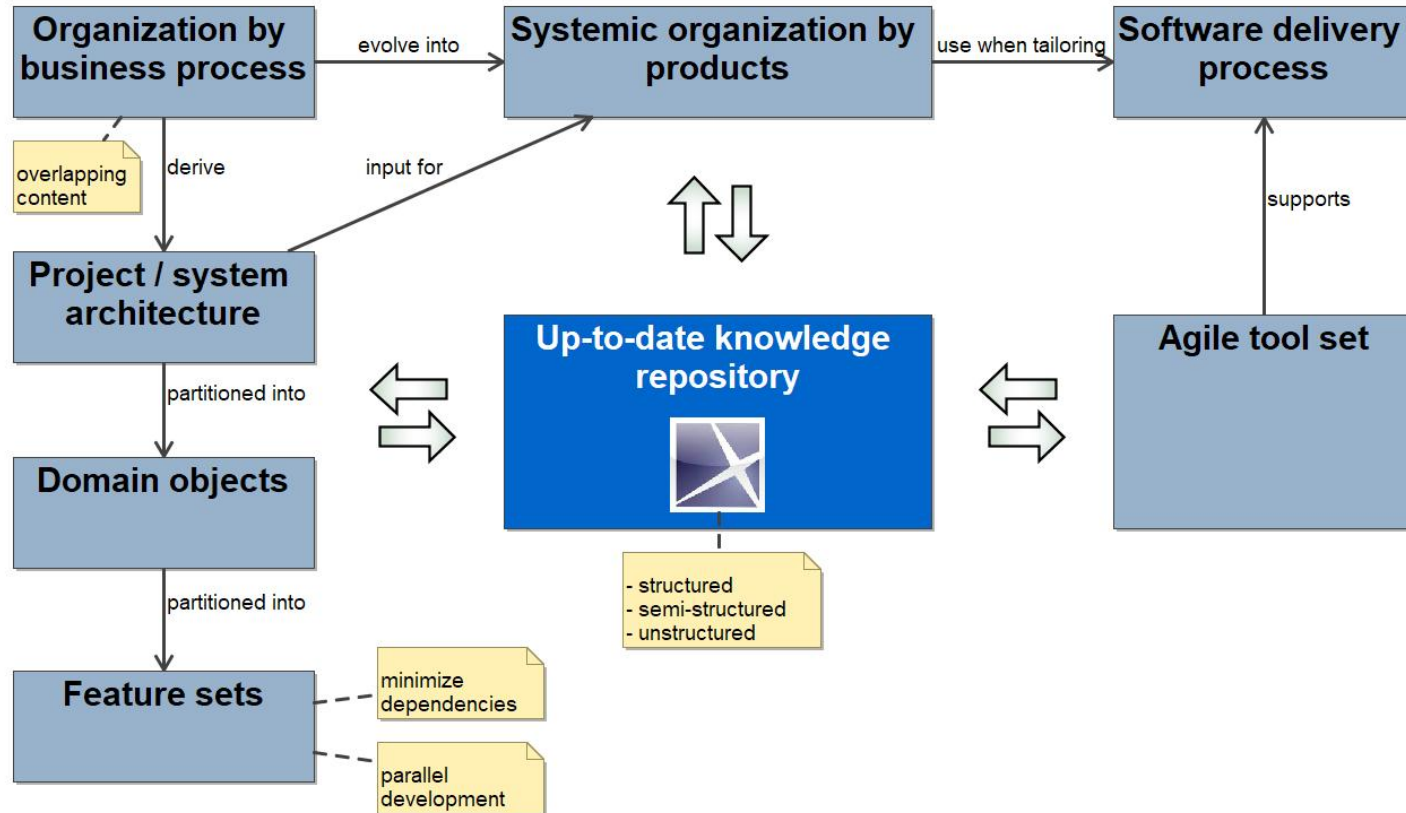
What is specific?

- Domain-specific languages
- Abstraction levels
- Skill levels

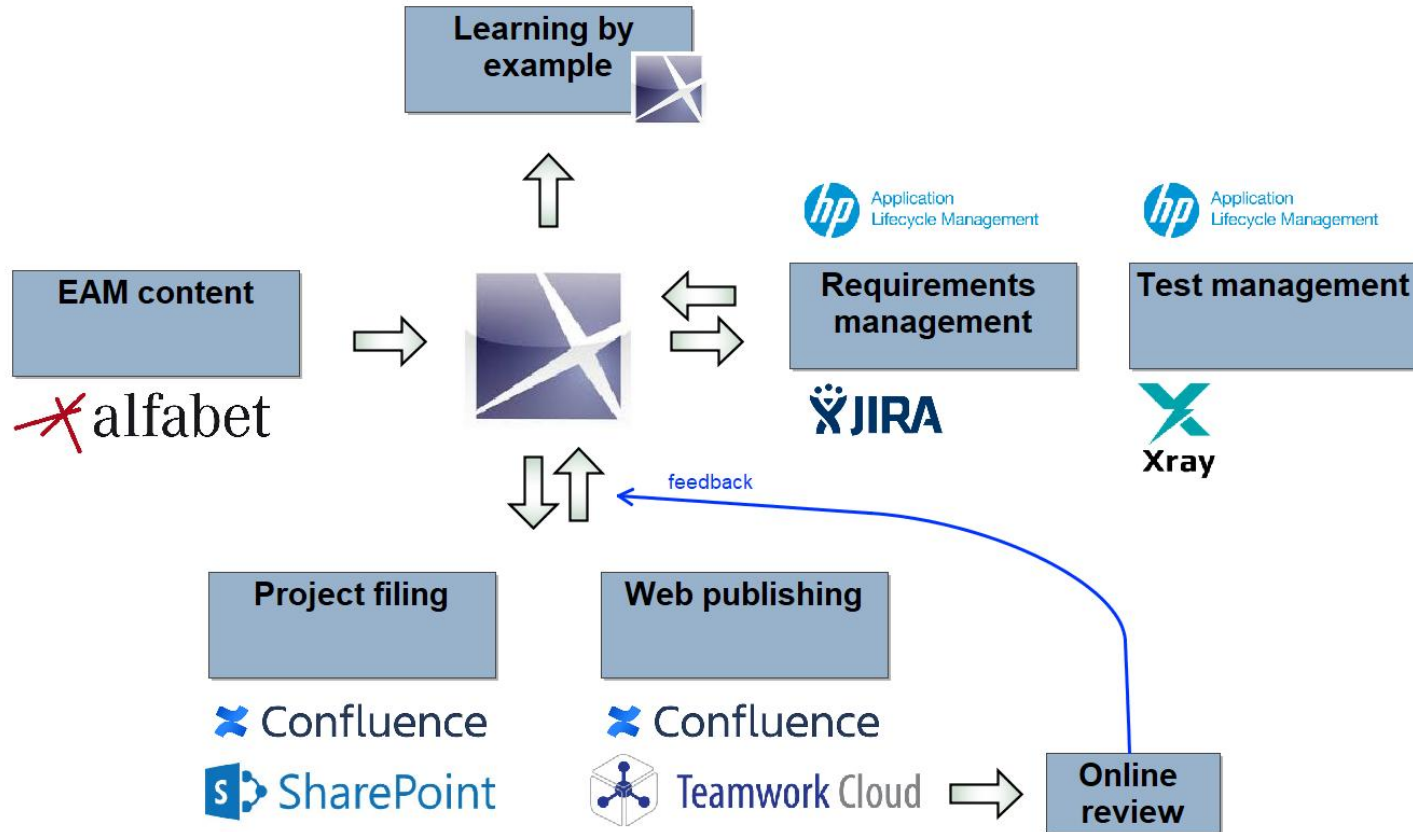
And what is not?

- Marketing vs reality
- Tracing between abstraction levels
- Mix of development approaches
- Agile transformation and impact on quality

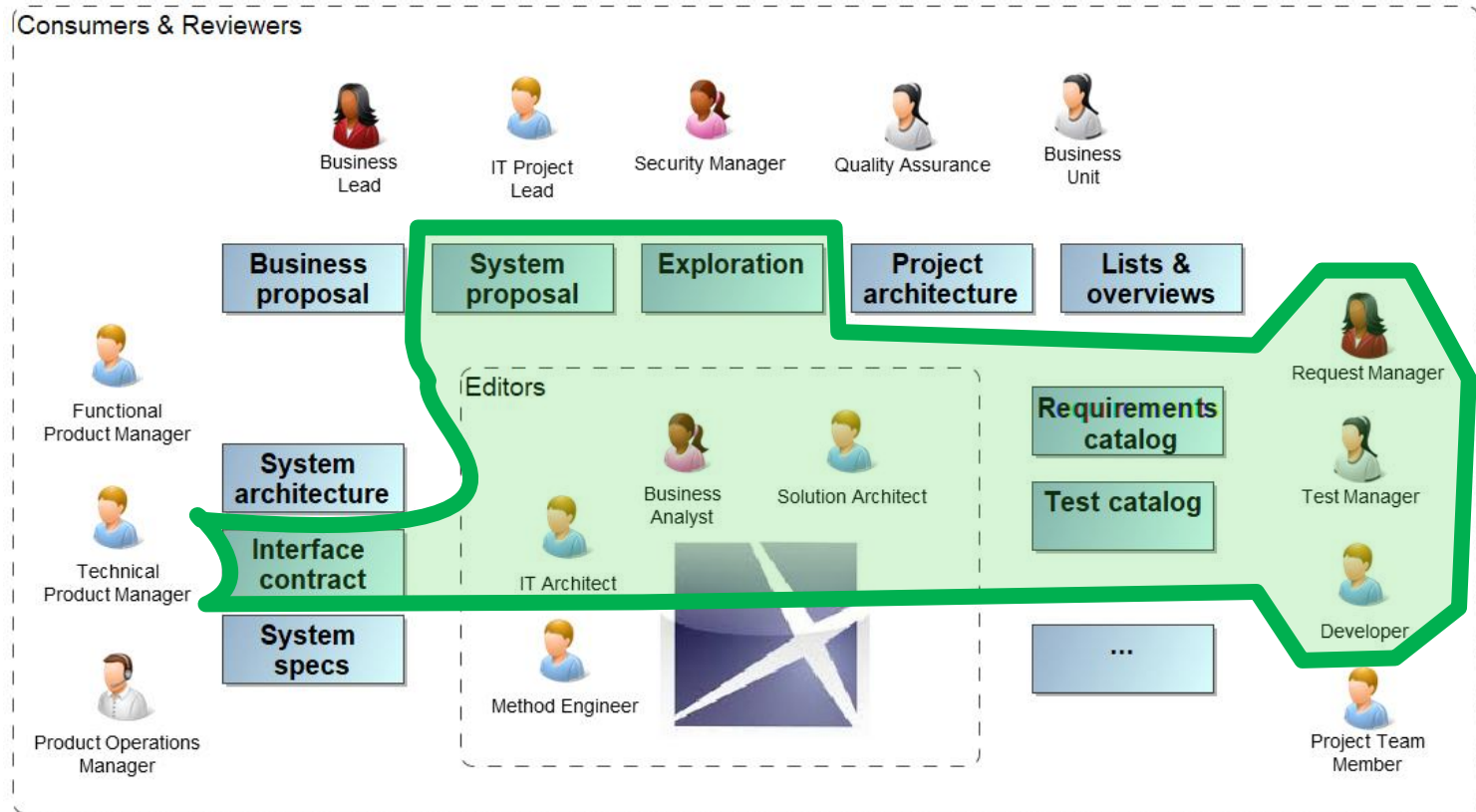
# Success factors for up-to-date project documentation



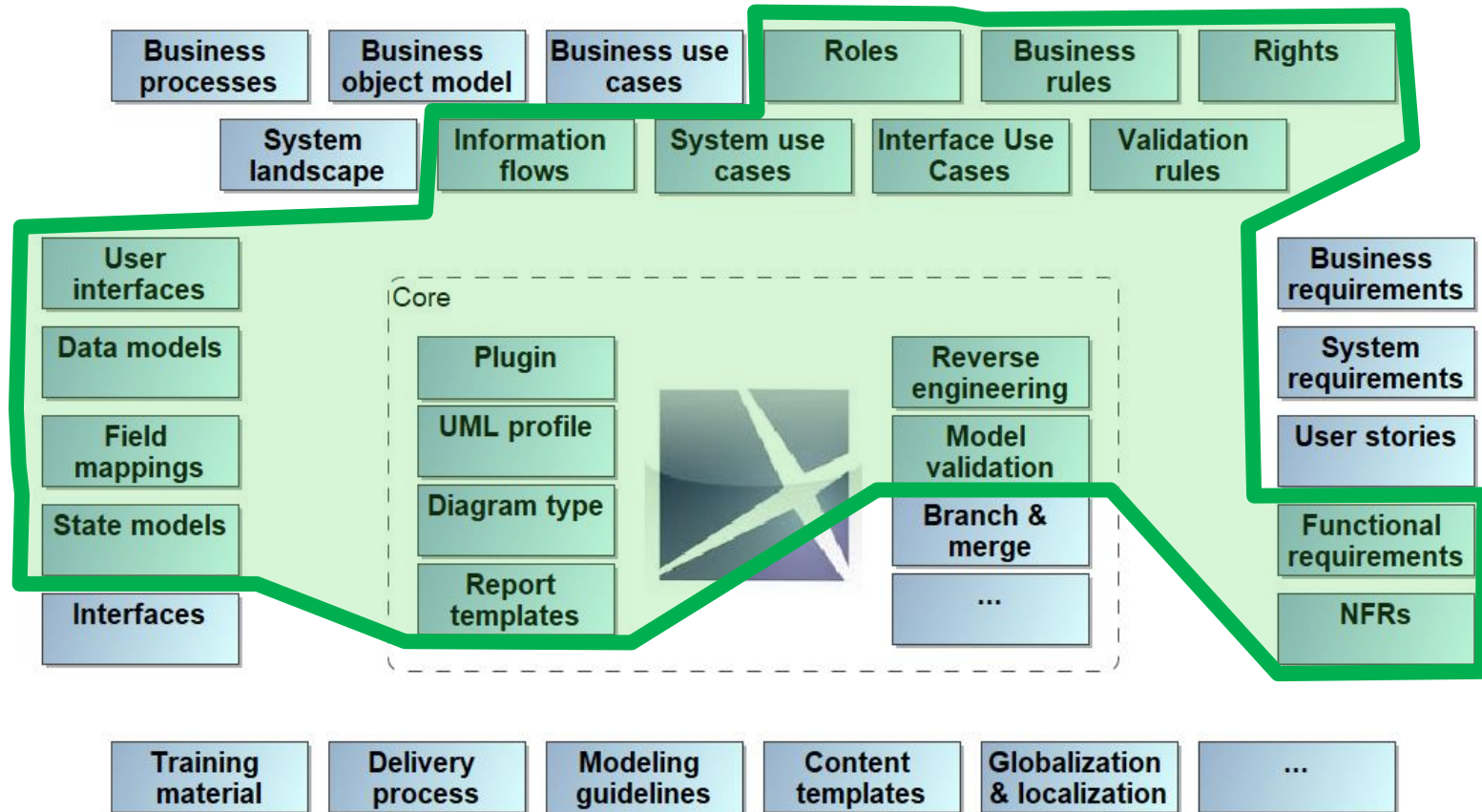
# Typical tools used in software development projects



# Benefits of MDDoc for Requirements Managers, Business Analysts, Developers and Testers



# Documents are redundant assemblies of modular fragments





## UC-04.42 View Contract [UseCase]

Created by Udo Nink (ext.), last modified by RSP\_CRM\_MD\_Confluence APP-114036 on 08 May 2018

A user has the system display a contract in RSP CRM.

### Properties

Goal	Display of a contract in detail mode.
PreCondition	At least one contract is present in RSP Retail CRM. The user has selected a contract.
PostCondition	RSP Retail CRM displays the contract in detail mode.
Releases	Release 1.0
Markets	WORLD
Specializations	UC-16.04 View FS Contract Details
Complexity	Average Complexity

### Scenarios

Basic Flow	Documentation	Expected Result
1. Select contract data record and request detail view	The user selects the matching contract data record from the search result list. By clicking on the contract number (Hyperlink), he requests RSP Retail CRM for display of the details.	
2. Display detail view of the contract data record	RSP Retail CRM displays the details of the contract data record in read mode.	The system shows the contract in detail view to the user.

### Used by Roles

<a href="#">Sales Manager [Actor]</a>	Head of a sales organization (Vertriebsleiter, Verkaufsleiter)
<a href="#">Sales Consultant [Actor]</a>	A salesperson at the point of sales. (Verkäufer)
<a href="#">Backoffice [Actor]</a>	A backoffice employee works behind the scenes that is the point of sales and supports processes like assigning a service employee to a customer depending on brand and other criteria. (arbeitet im Hintergrund von Vertriebspunkten und unterstützt Prozesse wie die Zuordnung von Serviceangestellten zu Kunden abhängig von Marke und anderen Kriterien)
<a href="#">Dispatcher [Actor]</a>	A dispatcher is a backoffice employee supporting processes where a salesperson is involved. (Der Disponent unterstützt Verkäufer im Vertrieb bei Planung bzgl. Produktion und Auslieferung)

### Included Use Cases and Rules

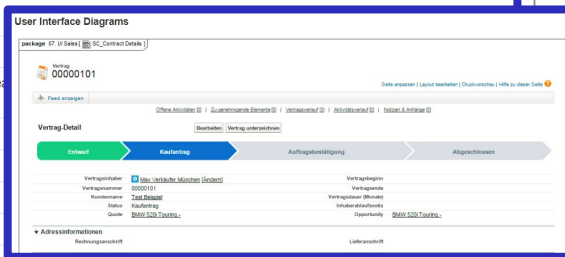
Name	has Variants	Goal
<a href="#">BR-04.0003 Contract Types [UseCase]</a>		
<a href="#">BR-04.0020 Check for legacy Contract [UseCase]</a>		
<a href="#">BR-04.0021 Contract name [UseCase]</a>	has variants	

### Data Usages

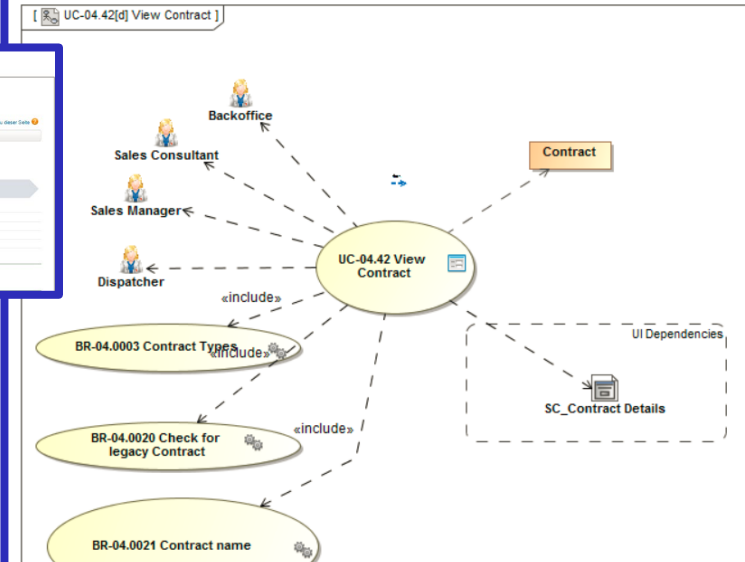
Name	CRUD	Documentation	Object Documentation
: Contract	[Read]		LastSync: 20180427

### User Interfaces

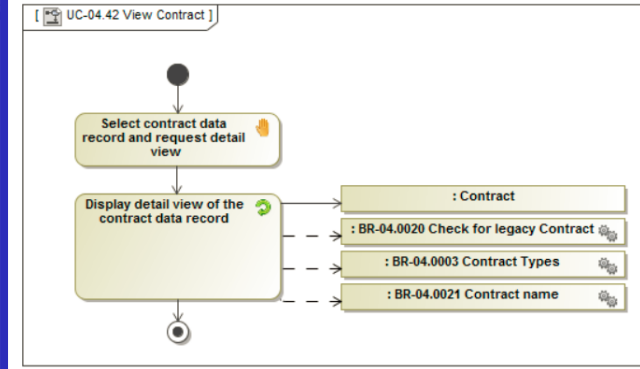
[SC\\_Contract Details \[Diagram\]](#)



## Use Case Diagram: UC-04.42[d] View Contract

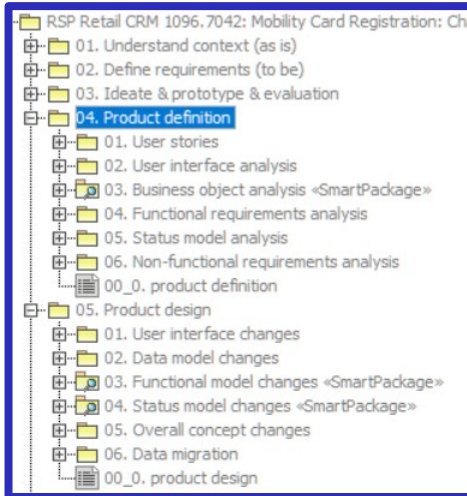


## Activity Diagram: UC-04.42 View Contract



# How to handle changes

Exploration document  
per UserStory



A Change  
describes impact  
of UserStory on  
UseCase or Rule

Properties  
of a Change

Change Type	update
Description Short	
Is Abstract	<input type="checkbox"/> false
Key	
Last Modified	
Last Modified By	MWO
Last Modified For	
Markets	
Name	CL.CDM 000111
Owner	CustomerDataManag
Realized Interface	
Release Info	
Released	<input type="checkbox"/> false
Releases	Release 1.4

UseCase /  
BusinessRule

A ChangeSet  
aggregates N Changes

As a Retail CRM User I want  
customer and vehicle data to be  
transferred to the Road Assist Tool  
to ensure the Mobility Card Process

UserStory  
imported from  
ReqMgmt tool

Documentation  
of a Change

## What:

For the vehicle  
Estimated Repurchase date  
  
For Keeper / User / Owner  
Post Box  
Customer Main Type

For Keeper / Owner  
All contact data as now available for User  
Mail (private and/or business)  
Phone (private and/or business)  
Mobile (private and/or business).  
  
need to be added to the extract.

## Why:

To ensure the Mobility Card Process for B1-BE the  
extracted data fields need to be extended

**Constraint:** n/a

# A generated test case for a test management tool

ils
















■ Design Steps

■ Parameters

Test Configurations

Attachments

Req Coverage



Step Name	Description	Expected
1. Select contract data record and request detail view	<b>Action Type:</b> User Action <b>Own documentation:</b> The user selects the matching contract data record from the search result list. By clicking on the contract number (Hyperlink), he requests RSP Retail CRM for display	
2. Display detail view of the contract data record	<b>Action Type:</b> System Action <b>Parameters:</b> <<<: Contract>>> <b>Own documentation:</b> RSP Retail CRM displays the details of the contract data record in read mode.	<b>Own expected result:</b> The system shows the contract in detail view to the user. <b>Depends on UI pages:</b> SC_Contract Details; <b>Depends on rules:</b> BR-04.0003 Contract Types ( WORLD ) BR-04.0020 Check for legacy Contract ( WORLD ) BR-04.0021 Contract name ( WORLD ) Market variant for : BR-04.0021.B1 Contract name Market variant for : BR-04.0021.B6 Contract name

TC-0000\_UC-04.21 Search Quote

TC-0000\_UC-04.22 View Quote

TC-0000\_UC-04.41 Search Contract









TC-0000\_UC-04.42 View Contract

Details

■ Design Steps

■ Parameters

Test Co













New Parameter

Sort By: Order[Ascending]

Used	Parameter Name	MagicDrawId
✓	: Contract	_18_0_3_8f1028e_143

Description

Default Value



**Parameter Type:**  
Contract  
**Access Rights:**  
[Read]  
**Object Documentation:**  
LastSync: 20180718

© Dr. Udo Nink, 2018. all rights reserved

## Episode V - The Empire strikes back



<https://www.flickr.com/photos/bagogames/14382149571>

- There are limitations, mostly due to
- Limited skills
- Missing tools continuity

Don't be religious, be flexible!

# Overcome limitations with training, publishing and tool integration

## Training

- Requirements management vs engineering skills
- MS Office mindset vs repository thinking
- Next contract, next team please

## Publishing

- Various output formats (docx, pptx, xlsx, web)
- Varying granularity (e.g. per use case, per document)
- Varying appearance-content-ratio (depending on delivery type and involved people)

## Tool integration

- Out-of-the-box tool integration is not sufficient
- It is not a matter of missing standards – there are more than enough (XMI, MOF, ReqIF, SpecIF, OTA, eCore, ...)
- Tools only implement selected standards – limited continuity along tool chains
- Consequently, companies integrate tools specific to their needs – and projects too

## Episode VI - Return of the Jedi



- Do some marketing
- Initiate community
- Continuously improve
- The team = the requester
- ... and never give up

Trust the force of modeling!

# Some best practices in making MDDoc successful

- Switch from process- to design-thinking when reaching critical mass → stay close to reality
- Invest in interface to project portal → acceptance by project team
- Create PowerPoint report → acceptance by managers, meetings
- Provide interface for Excel / CSV → initialization, reviews of lists
- Provide interface for XML / JSON → alleviate tool integration
- Provide list of elements like interfaces and components → project planning, test planning
- Integrate reverse engineering into use case modeling → stay close to reality



# Outlook on future activities

- Integrate with Xray in JIRA for test case generation
  - Reengineer integration with ALM
- Extend reverse engineering
  - Salesforce metadata regarding layouts
  - Analytics metadata regarding datasets, lenses, dashboards
- Handle changes using branch & merge of models
  - Introduce TeamWork Cloud
  - Branch per user story, trunk reflects present implementation
- Integrate online reviews
  - Introduce Cameo Collaborator for TeamWork Cloud
  - Review cycle = Publish → Comment online → Iterate model → Publish

## Some links

- <https://arc42.org/>
- <http://www.opengroup.org/subjectareas/enterprise/togaf>
- <https://www.omg.org/mda/>
- <http://www.softteam-rd.eu/publications/model-drivendocumentationtheartofauthoringmodel-drivendocumentation>
- <https://www.gernotstarke.de/>
- <https://www.martinfowler.com/>
- <https://www.transentis.com/an-introduction-to-model-driven-documentation/>
- <http://msggillardon.de/images/pdf/fachartikel/2017/NEWS-2017-03/Modellgetriebene-Dokumentation-NEWS-2017-03.pdf>



Thank you

Questions?