



TECHNISCHE
UNIVERSITÄT
DRESDEN

Generating Image Descriptions for SmartArts

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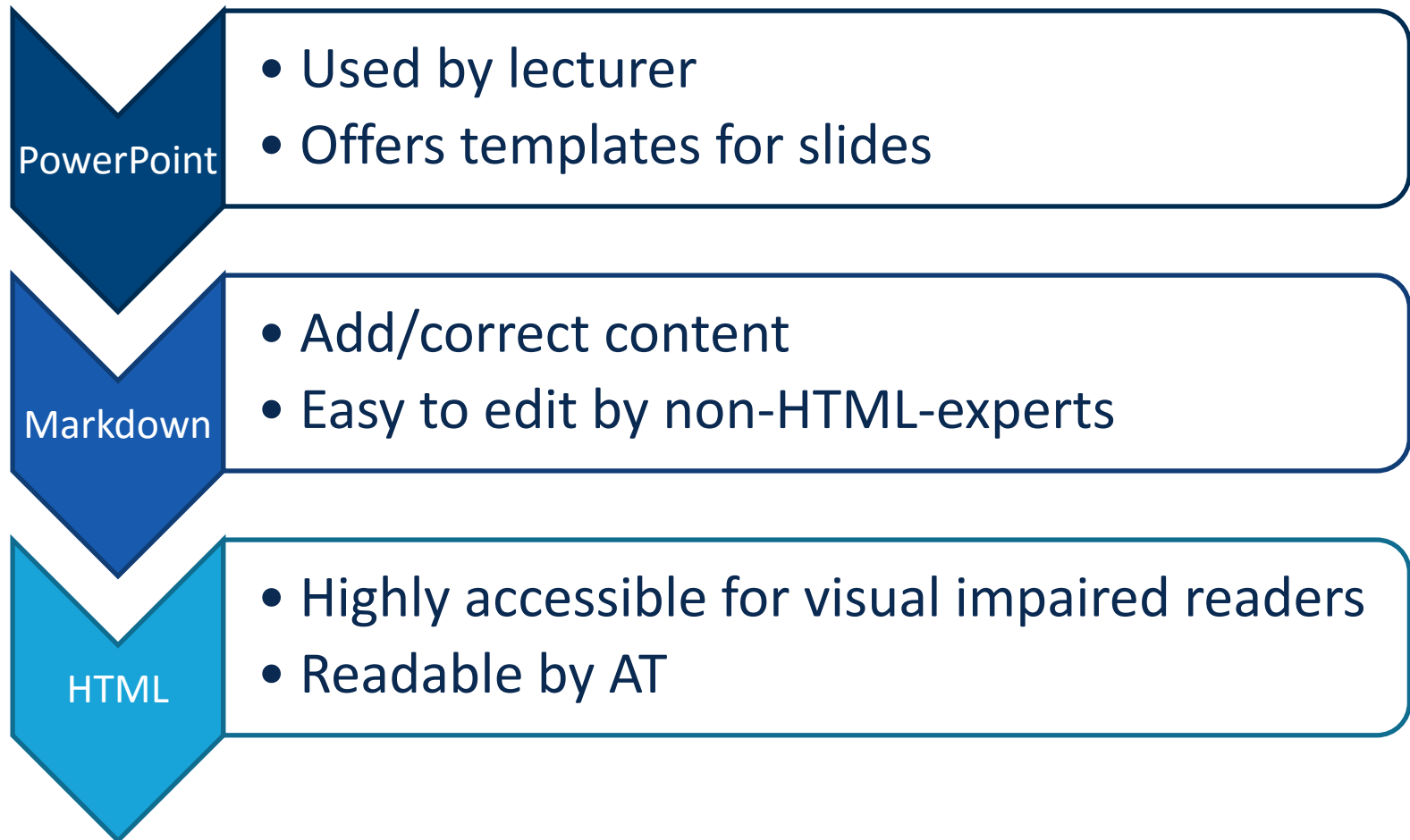
Authors: Jens Voegler, Julia Krause
& Gerhard Weber

Linz, 15.07.2016

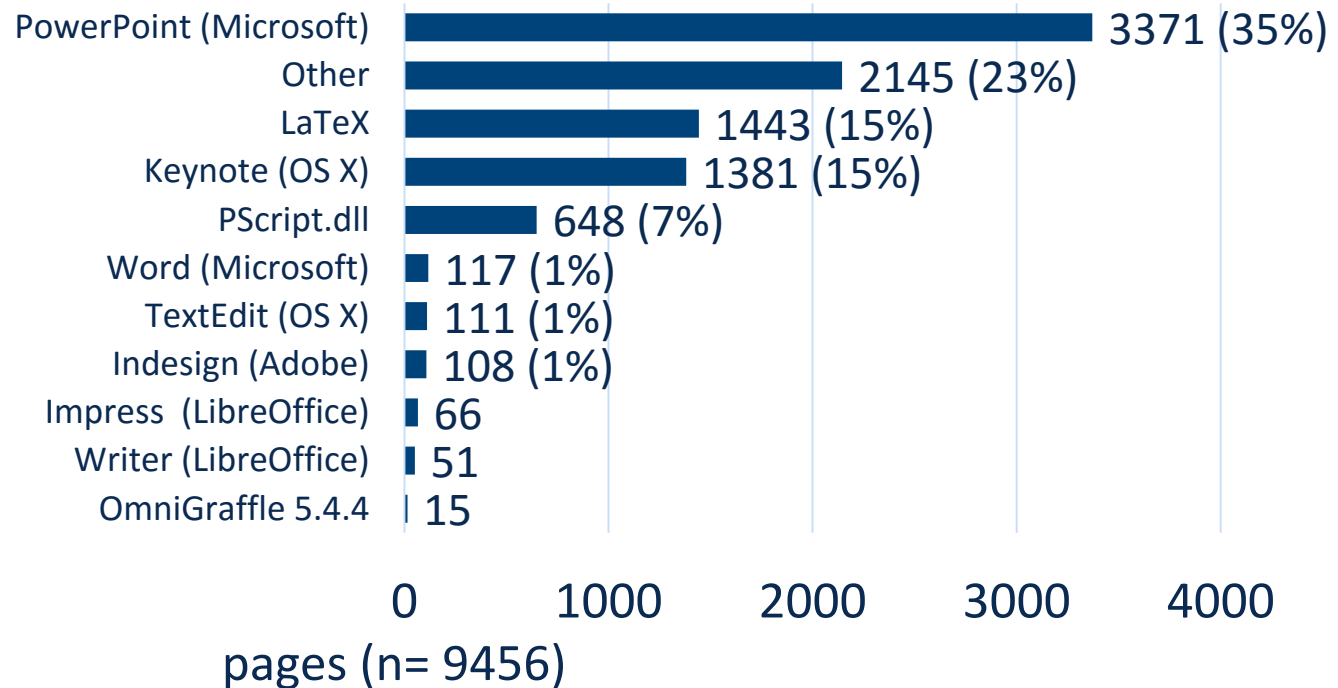


DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur

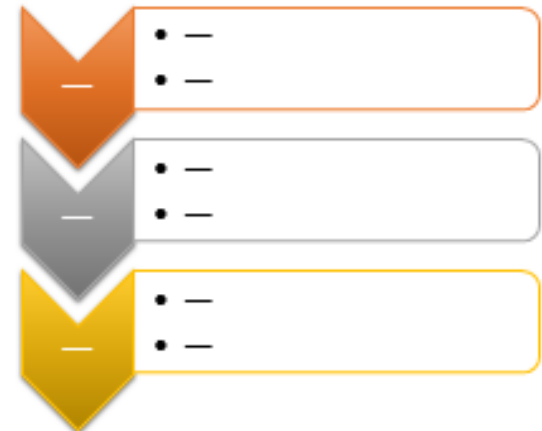
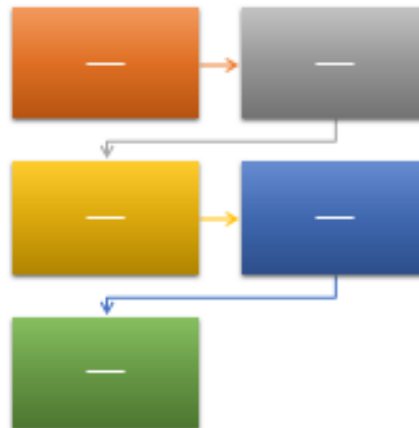
- Analysis of existing materials
- What are SmartArt-Graphics?
- Markdown and SmartArt converter
- Example of a SmartArt
- Short and long description
- Concept of SmartArt converter
- Evaluation
- Conclusion & Outlook

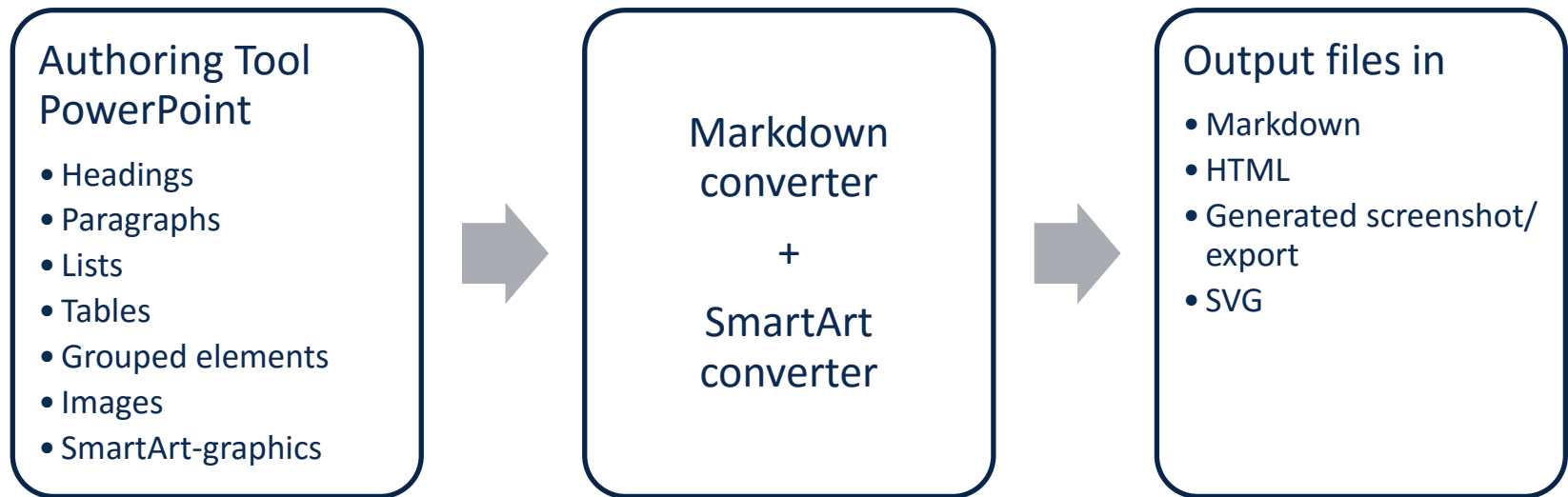


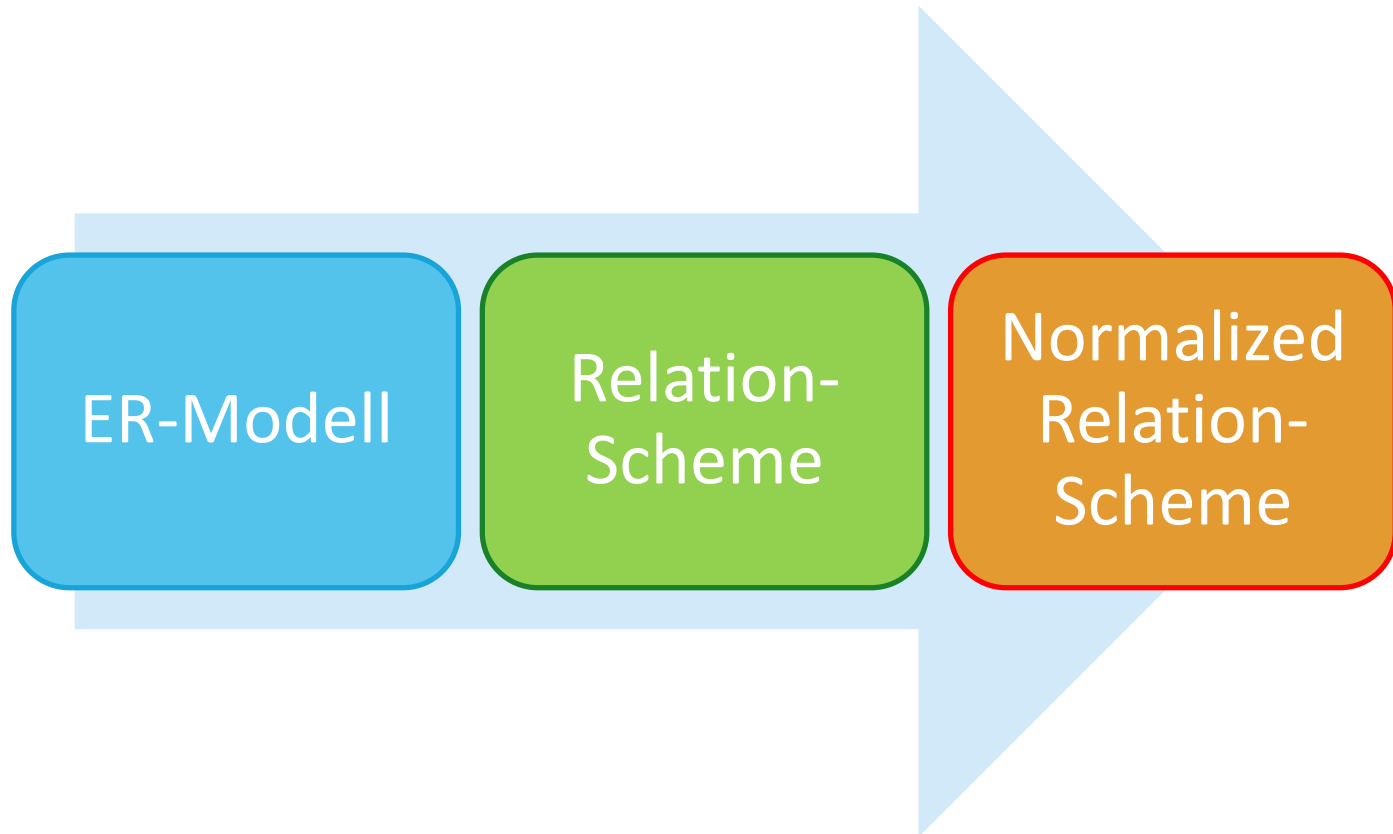
- Analysis was semiautomatic
 - metadata of the PDF files by a script
 - PowerPoint files were counted manually if no PDF files available

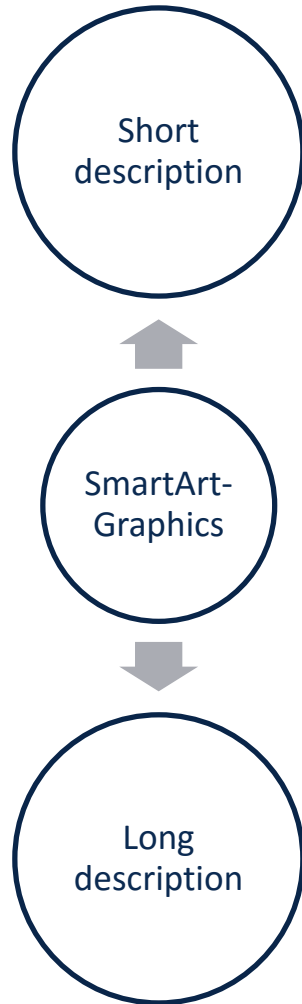


- Feature of Microsoft since PowerPoint 2007
- Help to illustrate processes, hierarchies, workflows, lists, ...
- Easy use via templates and GUI for creation









Short description

- Category & name of SmartArt
- Number of main points
- Short sentences
- list of content

Long description

Content of short description
+ more detailed information

Text with Placeholder:

category: #CategoryName#

subcategory: #SubcategoryName#

This graphic has #CountMainPoint# main points
#with/withoutCP# child elements.

Text with replaced Placeholders:

category: process

subcategory: running block process

This graphic has 3 main points without child elements.
The listing describes a horizontal process.

1. ER-Modell
2. Relation-Scheme
3. Normalized Relation-Scheme

Text with Placeholder:

category: #CategoryName#

subcategory: #SubcategoryName#

This graphic has #CountMainPoint# main points
#with/withoutCP# child elements.

<!-- long description of Author -->

The #numberOfMP# main point is a #color# colored rectangle with rounded edges. The text content is #ContentOfMP#.

Text with replaced Placeholders:

category: process

subcategory: running block process

This graphic has 3 main points

without child elements.

The listing describes a horizontal process.

The 1st main point is a bluish colored rectangle with rounded edges.

The text content is ER-Model.

The 2nd main point is a greenish colored rectangle with rounded edges. The text content is Relation-Scheme.

The 3rd main point is a orange colored rectangle with rounded edges. The text content is Relation-Scheme.

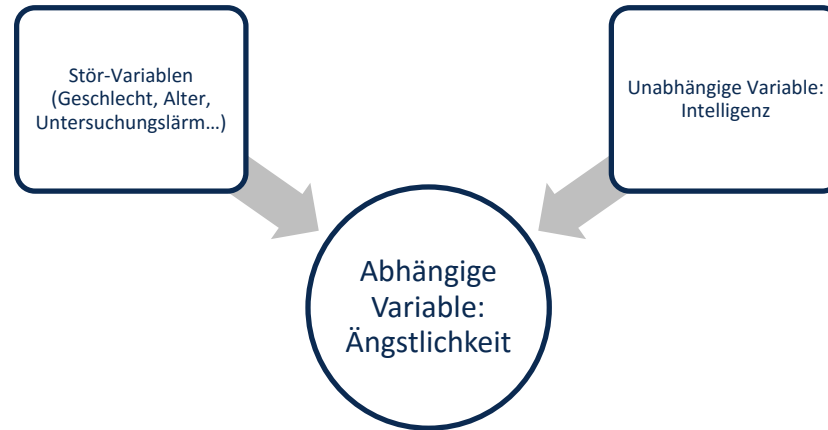
1. Validation (semiautomatic)
 - a. Are all required descriptions available?
 - b. User Feedback – enter missing descriptions
2. Creation of descriptions (automatic)
 - a. Filtering of all SmartArt-graphics
 - b. Replacement of placeholder
 - c. Export SmartArt-graphics as pictures
3. Export of descriptions

- 4 blind subjects
- 3 Phase Evaluation
 1. Questionnaire about current situation
 2. Task: rebuild 5 SmartArt-graphics
 1. Automatic description
 2. Rebuild
 3. Manual Description
 4. Refine
 3. Feedback about the quality of descriptions

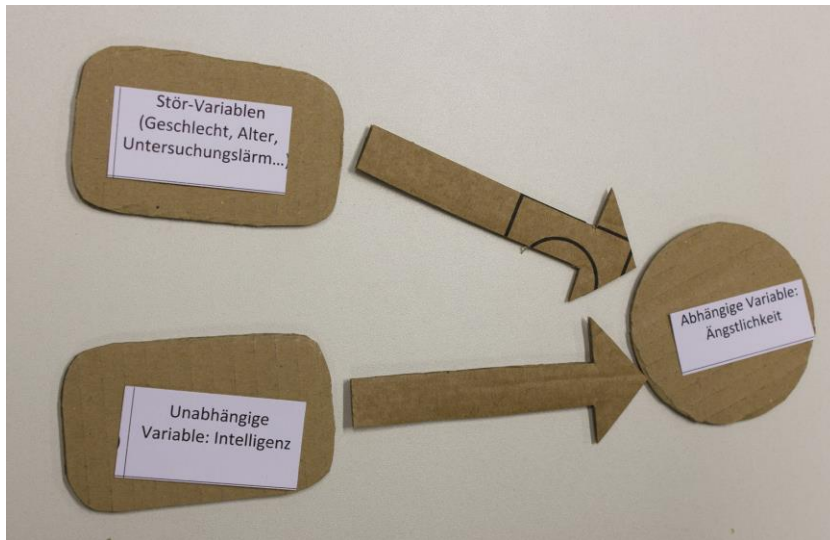
- 3 of 4 have no knowledge about SmartArt
- 4 of 4 do not read alternative description during a lecture
- 4 of 4 evaluate the quality of conventional descriptions from "adequate" to "good"

	Very important	Less important	neutral	rather unimportant	unimportant
Structure of the description	x x x x				
Textual content	x x x	x			
Description of the relation between the elements	x x x	x			
Color information		x	x	x x	
Description of the geometric shapes	x	x x x			
Description of the foreground	x x x	x			
Description of the background	x			x x x	

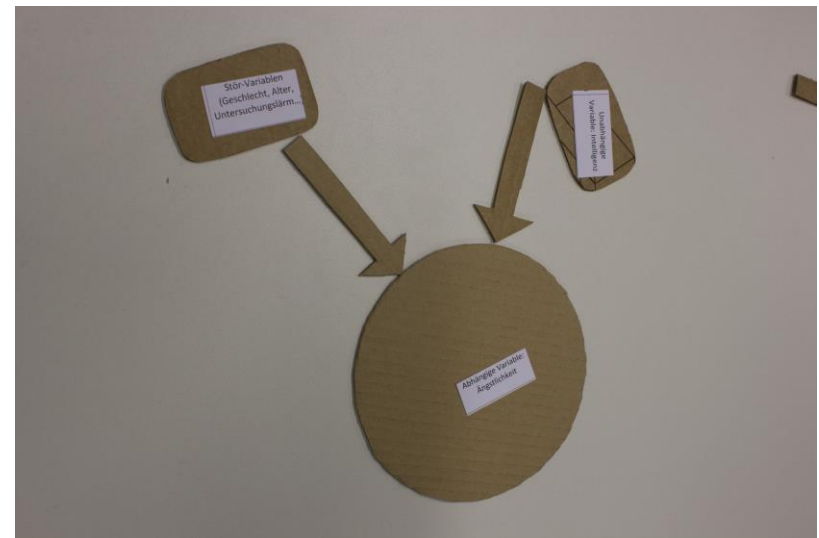
Evaluation Example 1

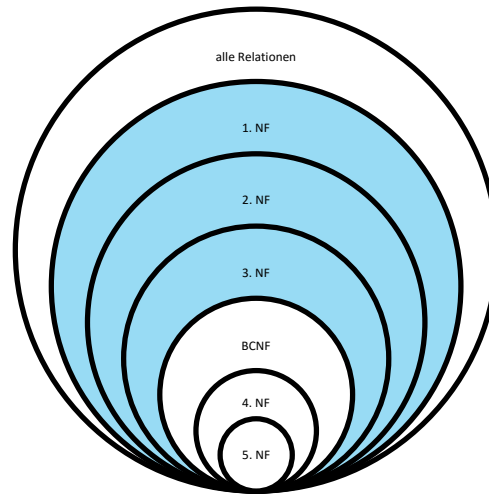


After automatic desc.



After refinement (man. desc.)



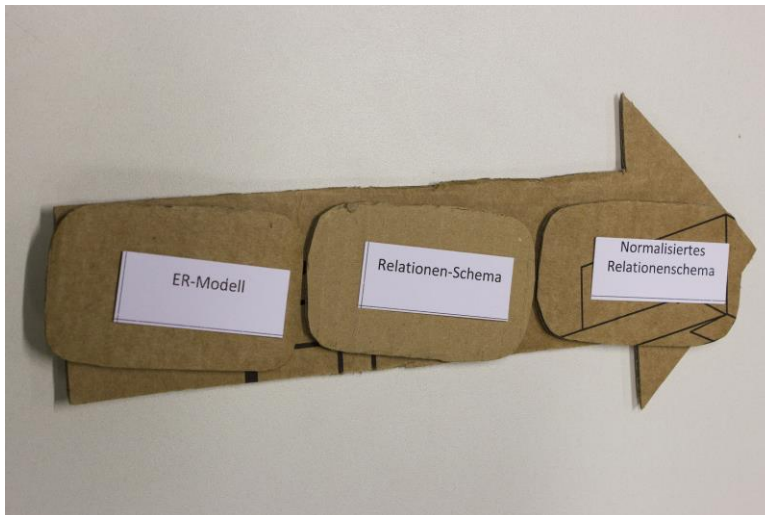
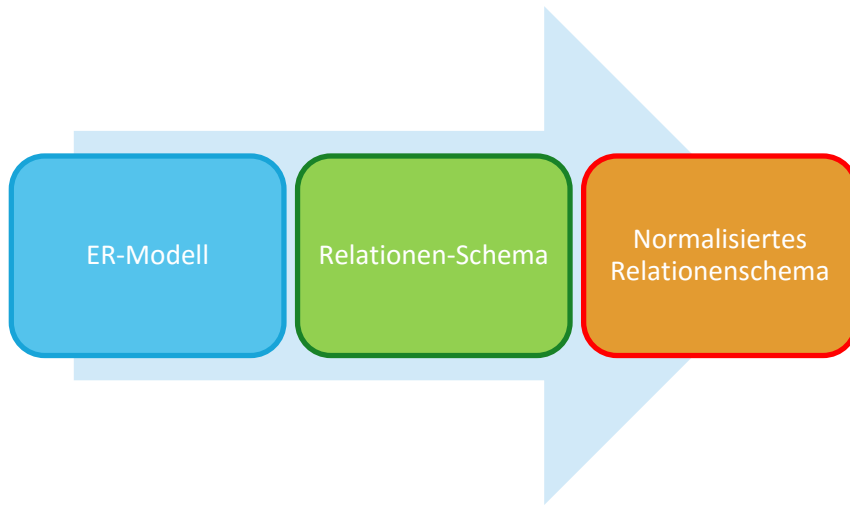


After automatic desc.



After refinement (man. desc.)





No refinement needed

- 3 of 4 - short descriptions would be read during lecture
- 2 of 4 - structure is helpful
- 2 of 4 - prefer the manual description

- Changeable descriptive texts
- Unification
 - “Pattern” recognition (mapping the title to the layout)
- Rapid creation
 - Faster access for students
 - Less effort (compared to manual desc.)

- Improve the use of articles, plural and singular of words
- Iterative process of producing description templates in cooperation with blind students
- Development of a concept of sharing created SmartArt descriptions

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Thanks for your attention