Coding Manual

The goal of the coding is to assign specific *coding attributes* to feedback that is collected over the app "smartFEEDBACK" in the context of the SMARTAGE research project. Feedback can either be an answer to a question or a message. The coder conducts the coding over an excel sheet that is provided by the supervisor. The excel sheet is provided in the repository[1].

1. Reading the feedback and feedback context

The first part of coding feedback, whether it is an answer or a message, is reading the feedback itself and its context. The columns in the excel sheet that represent the feedback and its context are highlighted blue.

The data that is relevant for an answer and its context is described in Table B.1.1. The table lists the data along with an explanation, examples and the columns of the excel sheet that contain the data.

Table B.1.1**:** Data that is given to the coder for coding freetext answers

Data	Explanation	Example	Column
All subquestions and the answers to all subquestions of a question.	A question can be divded into two subquestions. A subquestion can either be a selection (e.g. choosing "Very good") or a freetext. All answers are provided, but only the freetext answer is coded.	Question: Wie gut finden Sie das Anzeigen von Links zu Webseiten in smartVERNETZT? Warum? Subquestion 1: Wie gut finden Sie das Anzeigen von Links zu Webseiten in smartVERNETZT? (Selection:) Subquestion 2: Warum? (Freitext)	subquestion_1 answer_for_subquestion_1 subquestion_2 answer_for_subquestion_2
App	The app that the question belongs to.	smartVERNETZT	app
Non-functional requirement (NFR) that the question addresses	The NFR which the question addresses. If the question does not address an NFR, the field is empty.	Question: Wie leicht fiel es Ihnen smartFEEDBACK zu erlernen? NFR: Learnability (Product Quality Model – Usability)	associated_nfr
System Function (SF) that the question addresses	The SF which the question addresses. If the question does not address an SF, the field is empty. SFs for the app smartFEEDBACK are listed in Table B.1.5. SFs for the app smartVERNETZT are listed in Table B.1.7.	Question: Wie gut finden Sie das Anzeigen von Links zu Webseiten in smartVERNETZT? Warum? SF: Display Links	associated_sf

[1] https://github.com/lradeck/appendix/coding_template_and_examples.xlsx

Table B.1.2 lists example questions and answer options.

Table B.1.2: Example questions and answer options

Example Question	Answer options
How good do you find the history function in SF? Why?	Likert scale selection (Very good, good, etc.) Freetext
Are there any problems with displaying the history in SF? If yes, which ones?	Yes/No selection Freetext
Can the display of the history in SF be improved? If yes, how?	Yes/No selection Freetext
Are you concerned about the security of your data in smartVERNETZT? Why?	Yes/No selection Freetext
What is the reason that you have not looked at a question in SF in the last week? How could the app be im-proved so that you use it more often?	Freetext Freetext
I can well imagine using SV regularly. Why is that?	Likert scale selection, Freetext

The data that is relevant for a message and its context is described in Table B.1.3.

Table B.1.3: Data that is given to the coder for coding messages

Data	Explanation	Example	Column
Title	The title of the message	„Löschen von Neuigkeiten“	title
App	The app that the question belongs to.	smartVERNETZT	app
Description	Freetext of message	Question: Wie leicht fiel es Ihnen smartFEEDBACK zu erlernen? NFR: Learnability (Product Quality Model – Usability)	description
Contains voicemessage?	The message can contain a voice message (Yes/No)	Yes	contains_voicemessage
Transcript	If the message contains a voice message, the transcript is stored here.	“Ich wünsche mir …”	transcript

2. Coding

The coder assigns the *coding attributes* of Table B.1.4 to the feedback. The columns in the excel sheet that represent the *coding attributes* are highlighted orange. Some coding attributes only need to be coded under certain conditions. Excel automatically colors cells that are not necessary in gray.

Table B.1.4: *Coding attributes* that are generated by the coder during the coding of feedback.

Data	Format	Explanation	Example	Column
Feedback is comprehensible	Yes/No	The comprehensibility of the feedback is checked. The feedback can either be comprehensible or not. Comprehensible means, the coder understands the feedback syntactically and semantically.	Example for syntactically incorrect feedback „Dihj tut mir nicht gbn" Example for semantically incorrect feedback: "Das Design ist mein Haus"	comprehensible
The following data is coded for comprehensible feedback				
Extracted statement 1..n	One or more subsequent sentences. A sentence can also be divided into subordinate clauses ("Nebensätze")	The feedback is split into statements if it contains multiple parts that can be associated to different classes (see Table B.1.9).	See excel tab "Beispiele": Row 9	statement[N] – where N is number of statement
The following data is coded per statement				
Class (see Table B.1.9)	Selection from predefined set (see Table B.1.9)	(see Table B.1.9)	(see Table B.1.9)	class[N]
The following data is coded for each statement that is class: • **Positive, neutral or negative statement about app or app context** • **Actionable change request** • **Non-actionable change request** • **Problem**				
Associated requirement(s)	Selection from predefined set (Table B.1.5, Table B.1.6, Table B.1.7, Table B.1.8). The associated SF or NFR of the question is listed as the default value in excel for Req1.	In general: Map the statement to a NFR, UT, ST, SF, W. <u>For NFR</u>: Map the statement to an NFR if it addresses mainly non-functional aspects. **Example**: Excel Row 10 In the case the statement addresses a non-functional aspect about a SF or W, map it as well to the SF or W. **Example**: Excel Row 11 <u>For UT, ST, SF & W</u>: Map the statement always to the most technical requirement (SF & W > ST >UT) where ">" means "more technical than".		Req[N]

		Explanation: Map the statement to a system function (SF) if it addresses mainly functional aspects. **Example**: Excel Row 6 Map the statement to a workspace (W) if it addresses mainly aspects about the user interface, even if a system function is mentioned. **Example**: Excel Row 7 Map the statement to a SubTask, (ST) if (1) it mainly addresses new or existing aspects about the SubTask (**Example**: Excel Row 12) or (2) it is a change request that a) wishes for changes of the system support for this SubTask (**Example**: Excel Row 4) or b) is actionable and wishes for new system functions/workspaces to be added to the SubTask (**Example**: Excel Row 5) Map the statement to a UserTask (UT), if it addresses aspects about the app or app context which cannot be associated with an existing Sub Task (ST). **Example**: Excel Row 3		
The following data is coded only for statements that have the class "Actionable change request" or "Non-actionable change request"				
Reason for change request		The coder gives a reason for why the statement is a change request	See excel tab "Beispiele": Row 4,5,6,7	Reason CR[N]
Reason for choosing "Actionable change request" oder Non-Actionable	Freetext	Actionable: The coder gives a reason for choosing why he/she thinks the change request is actionable. Please give an explanation of how the change looks like. Non-actionable: The coder gives a reason for choosing why he/she thinks the change request is non-actionable. Please give an explanation of	See excel tab "Beispiele": Row 4,5,6,7	Reason (Non)Actionable[N]

		why it is not clear how the change looks like.	
Reason for associated requirement	Freetext	The coder gives a reason for choosing why he/she thinks the requirements is associated and not another (e.g. Workspace vs. System Function). (**Example**: Excel Rows 6,7) If the requirement is a SubTask: Indicate the reason why it is mapped to a SubTask: (1) it mainly addresses new or existing aspects about the SubTask (**Example**: Excel Row 12) or (2) it is a change request that a) wishes for changes of the system support for this SubTask (**Example**: Excel Row 4) or b) is actionable and wishes for new system functions/workspaces to be added to the SubTask (**Example**: Excel Row 5)	Reason Req[N]

Table B.1.5: smartFEEDBACK: User Tasks (UT) and Subtasks (ST) and System Functions (SF)*

Requirement
UT1: Older Adults Give And Manage Feedback
UT1S1: Express Own Feedback
SF: Navigate To SMARTAGE Portal
SF: Display Question
SF: Skip Question
SF: Display Feedback Form
SF: Display Application Information
SF: Add File
UT1S2: Discuss Given Feedback
SF: Display Comment
SF: Add Comment
SF: Add Audio Recording
SF: Filter Private Answer And Feedback
SF: Display Private Answer And Feedback
UT1S3: Review Given Feedback
SF: Display History Details
SF: Filter History
SF: Display History

Table B.1.6: smartFEEDBACK: Workspaces (W) and non-functional requirements (NFR)*

Requirement
W1: Question View
W3: Private Answer And Feedback View
W4: Feedback View
W5: History View
W6: Instruction View
W7: Comment View
W8: SMARTAGE Portal View
W9: Detail View
W10: Sidebar View
W11: Public Answer And Feedback View
NFR: Time Behaviour
NFR: User Error Protection
NFR: Accessibility
NFR: Modifiability
NFR: Compatibility
NFR: Security
NFR: Learnability
NFR: Operability
NFR: Comfort
NFR: Pleasure
NFR: Trust
NFR: Usefulness, Effectiveness, Efficiency

* The listed requirements have been revised in Section **Fehler! Verweisquelle konnte nicht gefunden werden.**. See excel sheet tab “Info” for a mapping of requirements.

Table B.1.7: smartVERNETZT: User Tasks (UT) and Subtasks (ST) and System Functions (SF)

Requirement
UT1: Older Adults Inform Themselves About Various Topics
UT1S1: Get Information About Health Related Topics
SF: Navigate To SMARTAGE Portal
SF: Display Link
SF: Add Personal Link
SF: Display Personal Link
SF: Delete Personal Link
SF: Display Categories
SF: Display Application
SF: Display external Website
UT1S2: Get Information About Leisure Activities
[Same SF as UT1S1]
UT1S3: Get Information About News
[Same SF as UT1S1]
SF: Display News Notifications
SF: Delete News Notification
SF: Add Event To Calendar
UT1S4: Get Information About The Weather
[Same SF as UT1S1]
SF: Display Weather Information

Table B.1.8: smartVERNETZT: Workspaces (W) and non-functional requirements (NFR)

Requirement
W1: Home View
W2: Category View
W3: Link View
W4: External Website View
W5: SMARTAGE Portal View
W6: Native App View
NFR: Modifiability
NFR: Accessibility
NFR: User Error Protection
NFR: Time Behaviour
NFR: Compatibility
NFR: Security
NFR: Learnability
NFR: Operability
NFR: Comfort
NFR: Pleasure
NFR: Trust
NFR: Usefulness, Effectiveness, Efficiency

Table B.1.9: Classes for feedback coding

Class	Explanation	Example
Irrelevant statement	Statement that does **not** describe the app or app context and is thus not relevant for coding. **Definition of app context:** smartFEEDBACK: • Older adults (OAs) give and manage feedback smartVERNETZT: • OAs inform themselves about various topics • OAs entertain themselves • OAs communicate with people	"Es regnet heute"
Positive, neutral or negative statement about app or app context	Statement that describes the app or app context in a positive, neutral or negative way. OAs organize their everday life	Positiv: "smartFEEDBACK finde ich gut" Neutral: "smartFEEDBACK ist eine App zum Abgeben von Feedback" Negative: „Ich gehe nicht gerne joggen" "smartFEEDBACK ist blöd"
Actionable change request	Statement explicitly or implicitly requesting a change. The coder can derive a requirement improvement or a new requirement based on the statement.	Explicit: "Ich will Funktion X" Implicit: "Ich finde die Schriftgröße sehr klein"
Non-actionable change request	Statement explicitly or implicitly requesting a change. The requirements engineer needs more information to derive a requirement improvement or a new requirement based on the statement.	Explicit: "Ich will, dass ich Dinge schneller finde" Implicit: "Aus meiner Sicht kann man Dinge nicht schnell finden"
Problem	Statement describing that an existing functionality **does not work**.	„Es ist nicht möglich zu filtern"
Cannot answer question	Statement indicating that the question could not be answered.	„Ich kann die Frage nicht beantworten" oder „Ich verstehe die Frage nicht"
Reference to other answer	Statement indicating that the question has already been answered by another response.	„Das habe ich schon bei der vorherigen Antwort beschrieben"

3. Examples

Further examples for coding are given in the tab "Beispiele" of the Excel sheet. The excel sheet can be found in the repository.