

Content

1	Who, Why and How Often? Key Elements for the Design of a Successful Speech Application Taking Account of the Target Groups	1
1.1	Introduction	3
1.2	Quality Assurance for the Development of IVR Systems – a Procedural Model	5
1.2.1	Analysis of Requirements and Specification.....	6
1.2.2	Implementation and Production	7
1.2.3	Delivery	8
1.3	How to Collect the Key Information for Design for a Target Group	9
1.3.1	Speaker Classification: Parameters and Methods ...	11
1.3.2	Maturity of Speaker Classification.....	13
1.4	How to Design Dialogues for a Target Group.....	16
1.4.1	How to Consider the Caller’s Ability to Interact	16
1.4.2	How to Fulfill the Caller’s Expectations and Needs	18
1.4.3	How to Consider the User’s Linguistic Background	20
1.5	Eleven Recommendations for Design for a Target Group	20
1.5.1	Mixed Initiative vs. Directed Dialog	20
1.5.2	Strategies for Feedback and Confirmation	24
1.5.3	Structuring the Menu Tree	27
1.5.4	Escalation- and Help-Strategies	28
1.5.5	Degree of Automation	29
1.5.6	Politeness-, Motivation- and De-Escalation-Strategies	30
1.5.7	Wording, Phrasing.....	30
1.5.8	Persona Design.....	31
1.5.9	Background Music, Jingles	33
1.5.10	Content	34
1.5.11	Multilingual Services	34
1.6	Discussion and Conclusion.....	35
	Acknowledgements.....	37
	References.....	37

2	Experiences of Designing a Speech User Interface for a Smart Home Environment.....	41
2.1	Introduction	43
2.2	Basic Requirements	44
2.2.1	Aim of the System – Cornerstones.....	44
2.2.2	Expected User Groups.....	45
2.2.3	Corporate Design	46
2.2.4	Persona of the System	47
2.2.5	System Output.....	47
2.3	Dialog Strategies	49
2.3.1	Keywords	49
2.3.2	Information Gathering Strategy	49
2.3.3	Standard Dialog Handling.....	51
2.3.4	Exceptional Dialog Handling.....	52
2.3.5	Additional Modalities.....	58
2.4	Technical Realization	59
2.4.1	Components of the INSPIRE System.....	59
2.4.2	System Extension	61
2.4.3	Performance	62
2.5	Final Check.....	62
2.5.1	System Improvement	62
2.5.2	Alternatives	63
2.6	Basic Advices	64
2.7	At a Glance	65
	References.....	66
3	Automatic User Classification for Speech Dialog Systems	67
3.1	Introduction	69
3.2	Automatic Information Retrieval and Adaptation	71
3.3	User Features and Log Files	75
3.4	Testing and Findings	77
3.5	Summary and Outlook.....	78
	Acknowledgements.....	79
	References.....	79
4	A new Testbed for Semi-Automatic Usability Evaluation and Optimization of Spoken Dialogue Systems	81
4.1	Introduction	85
4.2	Basic Information Related to Quality and Usability.....	87
4.2.1	Information on the Signal Level.....	88
4.2.2	Information on the Symbolic Level	90

4.3	Data Acquisition	91
4.4	Data Analysis.....	92
4.4.1	Analysis with Respect to User Groups.....	92
4.4.2	Signal Level Parameters and Recognition Performance	93
4.4.3	Vocabulary Characteristics and Recognition Performance	95
4.4.4	Relationship Between User Judgments and Parameters	96
4.5	Testbed Integration	98
4.6	Discussion and Conclusions	100
	Acknowledgements.....	102
	References.....	102
5	Stylus Meets Voice – a Practitioner’s View on Multimodal Input and Output.....	105
5.1	Preface	107
5.2	Basics of Multimodal Applications	108
5.2.1	Components of Multimodal Applications	108
5.3	Designing Multimodal Applications	112
5.3.1	Consideration of External Circumstances	113
5.3.2	Clear Communication on all Levels.....	115
5.4	Summary and Conclusion.....	120
	Acknowledgements.....	121
	References.....	121
6	More Than Words: Designing Multimodal Systems	123
6.1	Multimodal User Interfaces	125
6.2	Multimodal Input and Interaction Behavior	127
6.3	Multimodal Output and Perception	129
6.4	Making it Real: the Design Process.....	132
6.4.1	Phase 1: Analysis – Current State	135
6.4.2	Phase 2: Analysis – Weak Points	136
6.4.3	Phase 3: Interaction Concept – Choice of Modalities	136
6.4.4	Phase 4: Interaction Concept – Combination of Modalities.....	136
6.4.5	Phase 5: User Interface Concept – Detailed Designs	137
6.4.6	Phase 6: User Test/Review – Formative Evaluation	138
6.4.7	Phase 7: Integration.....	139

6.4.8 Phase 8: User Test/Review – Summative Evaluation	139
6.5 Summary	140
References.....	140
7 Sound Branding and Corporate Voice – Strategic Brand Management Using Sound	147
7.1 The Importance of the Auditory Dimension.....	149
7.2 The Sound of a Brand.....	150
7.3 The Sonic Equivalents of Brand Values.....	151
7.4 The Building Blocks of Corporate Sound	151
7.5 The Power of the Voice.....	152
7.6 Brand-Specific Application	152
7.7 Vocal Character	154
7.8 Voice Applications	154
References.....	155
8 Speak to the Target Audience – Some Observations and Notes on the Pragmatics of Spoken Dialog Systems.....	157
8.1 Introduction	159
8.2 A Long, Long Time ago in a far Away Galaxy... ..	160
8.3 Identify Key Players	162
8.4 Understand Decision Makers	164
8.5 Encourage Decisions	166
8.6 Live with it – but Keep up the Effort!	168
References.....	170
Acknowledgements.....	171
Index	173