

Contents

Foreword .....	V
Preface .....	VII
Overview .....	IX
Contents.....	XIII
Figures .....	XIX
Tables .....	XXI
Abbreviations .....	XXIII
Part I – Introduction .....	1
1 Research Motivation.....	3
2 Research Paradigm.....	11
3 Research Background .....	16
3.1 Virtual collaboration in communities .....	16
3.2 Knowledge sharing in communities.....	18
3.3 Boundary objects for communities .....	21
3.4 Shared understanding in communities .....	23
4 Research Structure .....	27
Part II – Exploring the Relevance of Boundary Objects for Collaboration	35
1 Needs and Objectives.....	37
2 Theoretical Underpinning.....	41
2.1 Collaboration technology as boundary object.....	41
2.2 Knowledge management in communities .....	43
2.3 Organizational communities .....	45

<b>3</b>	<b>Method and Data .....</b>	<b>47</b>
3.1	Research background .....	47
3.2	Research design.....	49
3.2.1	Data analysis.....	50
3.2.2	A priori constructs from the literature review .....	51
3.2.3	Inductive categories from the data .....	54
<b>4</b>	<b>Findings.....</b>	<b>59</b>
4.1	Existing knowledge boundaries .....	59
4.1.1	Syntactic knowledge boundaries .....	59
4.1.2	Semantic knowledge boundaries .....	60
4.1.3	Pragmatic knowledge boundaries.....	61
4.2	Boundary spanning activities to lower knowledge boundaries.....	62
4.2.1	Competence for boundary spanning.....	63
4.2.2	Access to information for boundary spanning.....	63
4.2.3	Motivation to learn for boundary spanning.....	64
4.3	Boundary objects to mediate boundary activities .....	65
<b>5</b>	<b>Summary.....</b>	<b>67</b>
 <b>Part III – Defining Objectives of Boundary Objects for Collaboration ..... 69</b>		
<b>1</b>	<b>Needs and Objectives.....</b>	<b>71</b>
<b>2</b>	<b>Theoretical Framework.....</b>	<b>75</b>
<b>3</b>	<b>Method and Data .....</b>	<b>77</b>
3.1	Research design.....	77
3.2	Understanding boundary objects.....	79
<b>4</b>	<b>Findings.....</b>	<b>83</b>
4.1	Boundary objects’ impact on the virtual collaboration process .....	83
4.1.1	Task .....	83
4.1.2	Technology.....	86
4.1.3	People.....	90
4.1.4	Structure .....	94
4.2	Defining boundary objects’ effective use in communities.....	99

**5 Summary..... 102**

**Part IV – Principles for Boundary Objects’ Use in  
Innovation Communities ..... 105**

**1 Needs and Objectives..... 107**

**2 Theoretical Underpinning..... 110**

2.1 Shared understanding in innovation communities ..... 110

2.1.1 Establishing shared understanding .....110

2.1.2 Collaboration in innovation communities .....111

2.2 Objectives of boundary objects ..... 112

2.3 Community learning behaviour for shared understanding..... 114

2.3.1 Towards community effectiveness .....114

2.3.2 Construction and co-construction of shared understanding .....116

2.3.3 Constructive conflict for shared understanding.....116

**3 Method and Data ..... 117**

3.1 Research background ..... 117

3.1.1 Field setting .....117

3.1.2 Background on the studied innovation communities .....119

3.2 Research design..... 120

3.2.1 Data analysis.....120

3.2.2 Design of the boundary objects .....123

**4 Findings..... 127**

4.1 Boundary objects’ use for shared understanding ..... 127

4.1.1 The boundary object business model canvas.....127

4.1.2 The boundary object business ecosystem.....129

4.1.3 The boundary object hypotheses .....130

4.1.4 The boundary object prototype.....131

4.2 Suggesting principles for boundary objects’ use ..... 133

4.2.1 Syntactic boundary objects to construct meaning and transfer knowledge .....133

4.2.2 Semantic boundary objects to co-construct meaning and translate knowledge.....134

4.2.3 Pragmatic boundary objects for constructive conflict to transform knowledge .....136

4.3 A framework for boundary objects’ use to establish shared understanding ..... 138

<b>5 Summary.....</b>	<b>141</b>
-----------------------	------------

## **Part V- The Use of Boundary Objects in Virtual Innovation Communities..... 143**

<b>1 Needs and Objectives.....</b>	<b>145</b>
------------------------------------	------------

<b>2 Theoretical Underpinning.....</b>	<b>149</b>
--	------------

2.1 Virtual innovation communities and knowledge boundaries .....	149
---	-----

2.2 Boundary objects in virtual innovation communities .....	150
--	-----

2.3 Establishing shared understanding .....	151
---	-----

<b>3 Method and Data .....</b>	<b>153</b>
--------------------------------	------------

3.1 Research background .....	153
-------------------------------	-----

3.1.1 Post-its .....	154
----------------------	-----

3.1.2 Links .....	154
-------------------	-----

3.1.3 Comments .....	155
----------------------	-----

3.1.4 Colors & symbols .....	155
------------------------------	-----

3.1.5 Chat .....	155
------------------	-----

3.2 Research design .....	156
---------------------------	-----

3.2.1 Participants .....	156
--------------------------	-----

3.2.2 Research process .....	157
------------------------------	-----

3.2.3 Data sources .....	159
--------------------------	-----

3.2.4 Data analysis .....	160
---------------------------	-----

<b>4 Findings.....</b>	<b>161</b>
------------------------	------------

4.1 Boundary objects on the studied virtual whiteboard .....	161
--	-----

4.2 Boundary objects for conveyance of information .....	163
--	-----

4.3 Boundary objects for convergence on meaning .....	165
---	-----

4.4 Achieving shared understanding .....	166
--	-----

<b>5 Summary.....</b>	<b>168</b>
-----------------------	------------

**Part VI – A Discussion on Relevance and Rigor ..... 171**

**1 Needs and Objectives..... 173**

1.1 Structure of the discussion ..... 173

1.2 Overall discussion ..... 174

**2 Discussing the Problem Identification ..... 177**

**3 Discussing the Objectives of the Solution ..... 181**

**4 Discussing the Designed Artefact ..... 185**

**5 Discussing the Evaluation of the Artefact ..... 190**

**Part VII – Conclusion ..... 195**

**1 Summary of Studies..... 197**

**2 Managerial Implications ..... 206**

2.1 When and how to use syntactic boundary objects to transfer meaning? ..... 206

2.2 When and how to use semantic boundary objects to exchange meaning? ..... 207

2.3 When and how to use pragmatic boundary objects to transform meaning? ..... 208

**3 Limitations and Directions for Future Research..... 210**

**References ..... 215**

**Annexes..... 229**



<http://www.springer.com/978-3-658-15385-4>

Designing Boundary Objects for Virtual Collaboration

Marheineke, M.

2016, XXIII, 249 p. 44 illus., Softcover

ISBN: 978-3-658-15385-4