
Contents

Introduction	xi
Chapter 1. Innovation Ecosystem: Definitions	1
1.1. Introduction.	1
1.2. Definitions of innovation.	1
1.3. Innovation clusters, business ecosystems, innovation ecosystems: what are the differences?	3
1.3.1. The innovation cluster: in favor of continuous innovation.	3
1.3.2. The business ecosystem: an anchor in the value proposition	4
1.3.3. The innovation ecosystem: co-creation for innovation	6
1.4. Towards an understanding of the innovation ecosystem through four concrete examples	9
1.4.1. The university innovation ecosystem	9
1.4.2. The university–industrialist innovation ecosystem	12
1.4.3. The university–industrialist–commercial innovation ecosystem	14
1.4.4. The start-up–industry–financier innovation ecosystem.	17
1.4.5. Towards a non-universal definition of the innovation ecosystem.	20
1.5. Strengths, drawbacks and boundaries of the innovation ecosystem	22
1.5.1. The strengths of the innovation ecosystem	22
1.5.2. The drawbacks of the innovation ecosystem	22
1.5.3. The porous boundaries of the innovation ecosystem	23
1.6. Conclusion	24
Chapter 2. Innovation Ecosystem and Innovation Processes	27
2.1. Introduction.	27
2.2. A tangle of concepts in the innovation ecosystem	28
2.2.1. Ecology as the origin of the innovation ecosystem	28
2.2.2. The commercial ecosystem	32

2.2.3. The innovation ecosystem	34
2.2.4. The knowledge ecosystem	36
2.2.5. The roles of Valkokari's three ecosystems in innovation	36
2.3. The innovation process: from discovery to innovation	40
2.3.1. Discovery, invention, innovation: what are the differences?	40
2.3.2. Definition of the innovation process.	42
2.3.3. The innovation process in the innovation ecosystem	43
2.4. Ecosystems and innovation processes	44
2.4.1. Certain phases of the innovation process forgotten in ecosystems	44
2.4.2. Example 1: "graphene" innovation process	46
2.4.3. Example 2: "carbyne" innovation process	47
2.4.4. The links between innovation ecosystems and innovation processes.	49
2.5. Conclusion	51
Chapter 3. Modeling: Combination of Three Ecosystems	53
3.1. Introduction.	53
3.2. The roles of the actors and their activities: examples	54
3.2.1. Example 1: from the atom to the graphene bulb	54
3.2.2. Example 2: from carbon atoms to carbyne material.	56
3.3. The roles of the three ecosystems of the innovation ecosystem	57
3.3.1. Roles of scientific ecosystems	57
3.3.2. Roles of technological ecosystems.	58
3.3.3. Roles of commercial ecosystems.	58
3.4. Foundations of innovation ecosystem modeling	58
3.4.1. The basis of the modeling: the combination of the three ecosystems	58
3.4.2. Affiliation: birth of the iterative network	60
3.4.3. Transfers: the birth of the integrated value chain	61
3.5. Modeling the "graphene" innovation ecosystem	62
3.5.1. "Graphene" innovation ecosystem, its iterative network and its integrated value chain	62
3.5.2. The roles of the iterative network and the integrated value chain.	64
3.6. Modeling the "carbyne" innovation ecosystem.	65
3.6.1. "Carbyne" innovation ecosystem, its iterative network and its integrated value chain.	65
3.6.2. The roles of the iterative network and the integrated value chain.	66

3.7. Modeling the innovation ecosystem	67
3.7.1. Modeling anchored on the iterative network and the integrated value chain.	67
3.7.2. Modeling the innovation ecosystem	69
3.8. Conclusion	70
Chapter 4. The Actors of the Innovation Ecosystem	73
4.1. Introduction.	73
4.2. The actors of the ecosystems	73
4.2.1. Four profiles of actors: the “contrib-actors”	73
4.2.2. Logics beyond technological standards	76
4.2.3. The roles of the actors within the innovation ecosystem	77
4.3. Activities of actors in the innovation ecosystem	80
4.3.1. Communities of actors.	80
4.3.2. Innovation activities	81
4.3.3. Coordination through digital platforms	82
4.3.4. Towards hub and spoke ecosystems	82
4.4. Coexistence of multiple dependencies	83
4.4.1. Co-specialization	83
4.4.2. Coordination.	86
4.4.3. Co-evolution.	89
4.5. Conclusion	90
Chapter 5. Coherence and Interdependencies	91
5.1. Introduction.	91
5.2. Towards a search for coherence between design situations and capabilities	92
5.2.1. Design situations and capabilities	92
5.2.2. From capabilities held to capabilities to be acquired	92
5.2.3. Complementary capacities: relational capacities	94
5.3. Pool and reciprocal interdependencies	95
5.3.1. The perception of interdependence	95
5.3.2. Creation of pool interdependence	96
5.3.3. Creation of reciprocal interdependencies	100
5.3.4. A combination of pool and reciprocal interdependencies	104
5.4. Towards a search for coherence.	105
5.5. Conclusion	106

Chapter 6. The Iterative Network: Collaboration and Typology . . .	107
6.1. Introduction.	107
6.2. Networks and ecosystems: a brief overview	108
6.3. The network: an anchor for collaboration	109
6.3.1. Definition of collaboration	109
6.3.2. Expectations of collaboration.	110
6.3.3. Barriers to collaboration.	111
6.4. “Small worlds” and interdependencies.	114
6.4.1. The emergence of “small worlds”	114
6.4.2. Interdependencies and collaboration.	116
6.5. Typology of collaborations.	117
6.5.1. The three types of collaborations.	117
6.5.2. Strong collaboration: pool and reciprocal combination.	118
6.5.3. Medium collaboration: pool and reciprocal articulation	119
6.5.4. Weak collaboration: asymmetry between pool and reciprocal	120
6.6. The innovation ecosystem network: definition and criteria.	121
6.6.1. Definition of the iterative network of the innovation ecosystem	121
6.6.2. The “small-world” actors of the network	122
6.6.3. Dimensions of the iterative network.	124
6.6.4. The evolution of the iterative network	125
6.7. Conclusion	126
Chapter 7. Asset and Knowledge Transfers: The Integrated Value Chain	129
7.1. Introduction.	129
7.2. Traditional value chain, focal actor, limits	130
7.2.1. The traditional value chain	130
7.2.2. The value chain anchored on the focal actor and niches	131
7.3. Integrated value chain: an anchoring in knowledge	132
7.3.1. Definitions of the knowledge value chain	132
7.3.2. The KVC: a sequence of cognitive tasks	133
7.3.3. The KVC: a chain of processes.	134
7.3.4. Identification of the knowledge processes of the innovation ecosystem	136
7.4. Transfer processes.	136
7.4.1. Definition of the knowledge transfer process	136
7.4.2. Content transfer processes.	137
7.4.3. Transfer processes in context	139
7.5. The integrated value chain of the innovation ecosystem	140
7.5.1. A combination of assets and knowledge	140
7.5.2. The objectives of transfers in the integrated value chain.	143

7.5.3. The roles of the actors in the integrated value chain	147
7.5.4. Towards an integrated value chain modeling	150
7.5.5. Transfers via interdependencies	152
7.6. Conclusion	154
Chapter 8. Ecosystems and Strategies	157
8.1. Introduction.	157
8.2. Innovation creates value	158
8.2.1. Open innovation at the heart of innovation strategies.	158
8.2.2. The challenges of innovation	158
8.3. Profound strategic changes.	159
8.3.1. The evolution of strategies	159
8.3.2. A strategic foundation rooted in collaboration	162
8.4. Collaborative strategies.	163
8.4.1. Two main collaborative strategies	163
8.4.2. Experience-based strategy.	164
8.4.3. Strategy based on exploration and reflection.	165
8.5. Conclusion	167
Chapter 9. Ecosystems and Value Creation	169
9.1. Introduction.	169
9.2. A search for a balance between opportunism and reciprocity	169
9.2.1. The production of value	169
9.2.2. The limits of the focal firm	170
9.2.3. Between opportunism and reciprocity.	172
9.3. Creating value through collaboration.	174
9.3.1. Value creation through value constellations	174
9.3.2. Value creation through the network and value chain	174
9.4. Value creation through net value	175
9.4.1. Definition of net value	175
9.4.2. Evolution of the value chain towards net value	176
9.4.3. Net value characteristics.	177
9.5. A combination of decontextualization and recontextualization of knowledge	179
9.5.1. Decontextualization of value-creating knowledge.	179
9.5.2. Recontextualization of value-creating knowledge.	179
9.6. Conclusion	180
References	183
Index	207