

---

## Contents

---

<b>Foreword</b> . . . . .	xi
Dominique PON, Stéphane OUSTRIC, Jérôme BÉRANGER	
<b>Acknowledgements</b> . . . . .	xv
<b>Introduction</b> . . . . .	xvii
Jérôme BÉRANGER and Roland RIZOULIÈRES	
<b>Part 1. The Health System and Digital Technology: Challenges, Issues, and Transformations</b> . . . . .	1
<b>Introduction to Part 1</b> . . . . .	3
Roland RIZOULIÈRES	
<b>Chapter 1. Digital Integration and Healthcare Pathways in the Territories</b> . . . . .	5
Roland RIZOULIÈRES	
1.1. Introduction . . . . .	5
1.2. What lessons can be learned from integrated American and Swiss models? . . . . .	8
1.2.1. The cradle: the United States . . . . .	8
1.2.2. The Swiss model of the Delta network . . . . .	13

1.3. Digital technology as a challenge for territorial integration in the context of healthcare in France . . . . .	16
1.3.1. Healthcare territories: starting from the patient-user rather than from the offer of health and medico-social actors? . . . . .	17
1.3.2. An exemplary structuring of the territory? The TSN program and the E-Parcours . . . . .	20
1.3.3. What lessons can be learned? . . . . .	23
1.3.4. PTAs and CPTS: the Alpha and Omega of healthcare territory structuring? . . . . .	23
1.3.5. Launch of SNAC in regions. . . . .	25
1.4. Digital integration and aging in France: from health pathway to life pathway. . . . .	26
1.5. Conclusion . . . . .	27
1.6. References . . . . .	28
 <b>Chapter 2. Digital Technology in a Cancer Patient's Primary-Secondary Care Journey . . . . .</b>	 35
Marie-Ève ROUGÉ-BUGAT	
2.1. Introduction . . . . .	35
2.2. Organization of cancer care . . . . .	36
2.2.1. Cancer plans . . . . .	36
2.2.2. Primary care actors . . . . .	36
2.3. Regional health organization for patient management. . . . .	38
2.3.1. Healthcare supply . . . . .	38
2.3.2. Transmission of information . . . . .	40
2.4. Theoretical pathway of a cancer patient . . . . .	41
2.5. Cancer announcement . . . . .	44
2.6. Management of treatment-related adverse events . . . . .	45
2.7. Patient follow-up . . . . .	47
2.7.1. After cancer . . . . .	47
2.7.2. Alternating monitoring. . . . .	48
2.8. Ethics to support the primary to secondary care journey . . . . .	49
2.8.1. Deontology . . . . .	50
2.8.2. Ethical questioning . . . . .	51
2.8.3. Impacts and consequences of digital technology on the healthcare pathway. . . . .	52
2.9. Conclusion . . . . .	53
2.10. References . . . . .	54

---

<b>Chapter 3. A Smart Health Record for Better Coordination: A Sociological Analysis of the Organizational Dynamics of the Calipso Project . . . . .</b>	<b>57</b>
Valentin BERTHOU	
3.1. Solving health problems through better coordination . . . . .	57
3.1.1. A context conducive to home automation technologies in healthcare . . . . .	57
3.1.2. A digital liaison notebook to facilitate the transmission of information . . . . .	59
3.2. Historicity of the Calipso project . . . . .	62
3.2.1. A bundle of information for thinking about the digital liaison notebook . . . . .	62
3.2.2. Territorial anchoring of the project in an already established network of actors . . . . .	63
3.3. Collaboration as an object of study and theoretical framework . . . . .	64
3.3.1. A multidisciplinary team to carry out a project “in Living Lab mode” . . . . .	64
3.3.2. What theoretical framework for dealing with complex situations? Knotworking, the core of reflection on the activity . . . . .	66
3.4. Identifying specific coordination problems to propose a general technological solution . . . . .	68
3.4.1. Building on problems identified in the field . . . . .	68
3.4.2. A design for experimentation, functionalities for the needs of professionals . . . . .	69
3.4.3. Through the projection of professional standards in the tool, misunderstanding of coordination and collaboration . . . . .	70
3.4.4. Technology, neutral ground for cooperation? . . . . .	72
3.5. Methodological course of the tailor-made experimental device . . . . .	73
3.6. (Preliminary) results and conclusions . . . . .	74
3.7. References . . . . .	78
<b>Part 2. Digital Technology and Transformations in the Relationships between Professionals and Patients . . . . .</b>	<b>81</b>
<b>Introduction to Part 2 . . . . .</b>	<b>83</b>
Roland RIZOULIÈRES	

---

<b>Chapter 4. Use of AI Systems in the Care Relationship, Redefining Patient and Physician Roles . . . . .</b>	<b>85</b>
Anthéa SÉRAFIN	
4.1. Progressive affirmation of individualized healthcare in the service of patient autonomy . . . . .	86
4.1.1. Reinforcing the patient's responsibility in the healthcare relationship . . . . .	86
4.1.2. Increasingly personalized medicine . . . . .	91
4.2. Integration of digital and ethical concepts in the training of health personnel and in the education of citizens . . . . .	93
4.2.1. Global challenge of developing citizens' digital skills . . . . .	93
4.2.2. Issues specific to the training of healthcare professionals . . . . .	96
4.3. References . . . . .	100
 <b>Chapter 5. Artificial Intelligence Ethics in Medicine . . . . .</b>	 <b>103</b>
Loïc ÉTIENNE	
5.1. Artificial intelligence in question . . . . .	103
5.2. The doctor-patient relationship . . . . .	106
5.3. Digital medicine ecosystem . . . . .	109
5.4. Medicine 4.0 . . . . .	112
5.5. Question of ethics . . . . .	113
5.6. What lessons can be learned? . . . . .	115
5.7. Real benefits of artificial intelligence . . . . .	117
5.8. References . . . . .	118
 <b>Chapter 6. Digital and Public Health in West Africa . . . . .</b>	 <b>119</b>
Alpha Ahmadou DIALLO	
6.1. Introduction . . . . .	119
6.2. Context and questions . . . . .	120
6.3. Theoretical framework of analysis and associated concepts . . . . .	125
6.4. Practical illustrations . . . . .	128
6.5. Challenges and capitalization of experiences and potential for transformation . . . . .	134
6.6. Conclusion and lessons learned . . . . .	135
6.7. References . . . . .	136

---

**Part 3. Supporting Digital Healthcare . . . . .** 139**Introduction to Part 3 . . . . .** 141

Jérôme BÉRANGER

**Chapter 7. Designing and Innovating in Digital Healthcare:  
Co-design for Taking Patients' Needs into Account . . . . .** 143

Corinne GRENIER, Rym IBRAHIM and Susana PAIXÃO-BARRADAS

7.1. Introduction . . . . .	143
7.1.1. New approaches to healthcare innovation . . . . .	145
7.2. Methodological approach of co-design in healthcare . . . . .	147
7.2.1. Co-design in healthcare . . . . .	147
7.2.2. A grid for analyzing the processes of co-design in healthcare . . . . .	148
7.3. Illustrations . . . . .	154
7.3.1. Service design workshops to envision collective and smart housing for the elderly . . . . .	154
7.3.2. Designing digital tools to improve the performance of athletes by taking their emotions into account . . . . .	159
7.4. Conclusion . . . . .	164
7.5. References . . . . .	165

**Chapter 8. Ethical Governance and Responsibility in Digital  
Medicine: The Case of Artificial Intelligence . . . . .** 169

Jérôme BÉRANGER

8.1. Introduction . . . . .	169
8.2. Artificial intelligence applied to the world of healthcare . . . . .	170
8.3. Problems and ethical risks specific to digital technology . . . . .	172
8.4. Ethical and moral questions related to AI . . . . .	176
8.5. Framework based on general ethical principles associated with AI . . . . .	180
8.6. Algorithmic responsibility . . . . .	186
8.7. Conclusion . . . . .	187
8.8. References . . . . .	189

<b>Chapter 9. Legal Focus on the Notions of Telemedicine and E-Health . . . . .</b>	<b>191</b>
Lina WILLIATTE	
9.1. Introduction . . . . .	191
9.2. Telehealth: a different adoption depending on the country . . . . .	192
9.2.1. A word with different meanings in different countries . . . . .	192
9.2.2. E-health: a service provision . . . . .	200
9.3. Standard applicable to data. . . . .	201
9.3.1. General framework . . . . .	203
9.3.2. Rights of the data subject: founding principles of personal data processing . . . . .	205
9.3.3. The accountability principle . . . . .	207
9.4. Conclusion . . . . .	209
9.5. References . . . . .	209
<b>List of Authors . . . . .</b>	<b>211</b>
<b>Index . . . . .</b>	<b>213</b>