

Contents

<i>List of Contributors</i>	xvii
<i>List of Abbreviations</i>	xxi

I. CLOUD COMPUTING ESSENTIALS

Introduction	1
1. Cloud Technologies and Services	3
<i>W Kuan Hon, Christopher Millard, and Jatinder Singh</i>	
1. What Is Cloud Computing?	3
2. Cloud Computing Resources and Technologies	8
3. Cloud Supply Chain: Key Concepts	18
4. Concluding Remarks	26
2. Control, Security, and Risk in the Cloud	27
<i>W Kuan Hon, Christopher Millard, and Jatinder Singh</i>	
1. Introduction	27
2. Control and Flexibility in Practice	28
3. Confidentiality	34
4. Integrity	42
5. Availability	43
6. Insurance as a Tool for Managing Cloud Risks	44
7. Concluding Remarks	45

II. CLOUD COMPUTING TRANSACTIONS

Introduction	47
3. Standard Contracts for Cloud Services	49
<i>Johan David Michels, Christopher Millard, and Felicity Turton</i>	
1. Introduction	49
2. Methodology	51
3. Findings	57
4. Concluding Remarks	93
4. Negotiated Contracts for Cloud Services	100
<i>W Kuan Hon, Christopher Millard, Ian Walden, and Conor Ward</i>	
1. Introduction	100
2. Methodology and Scope	102
3. Cloud Providers' Perspectives	105
4. Cloud Customers' Perspectives	105
5. Cloud Contract Terms: Detailed Analysis	113
6. Concluding Remarks	142

5. Information Ownership in the Cloud	145
<i>Chris Reed</i>	
1. What is Ownership?	145
2. Ownership Rights in Information	150
3. Information Provided or Generated by the Customer	157
4. Information Provided by the Cloud Provider	164
5. Information Generated by the Cloud Provider which Relates to the Customer's Information	167
6. Data Sharing and Data Trusts	171
7. Concluding Remarks	175
6. Digital Assets in Clouds	177
<i>Johan David Michels and Christopher Millard</i>	
1. Introduction	177
2. Property Rights in the Cloud	179
3. Legal Implications, Part 1: Access to Data	190
4. Legal Implications, Part 2: Succession	203
5. Concluding Remarks	215
7. Consumer Protection in the Cloud	218
<i>Chris Reed and Laura Edgar</i>	
1. Introduction	218
2. The EU Scheme of Individual Consumer Contractual Rights	224
3. Entrenching Consumer Rights	236
4. The Failure of Individual Rights	241
5. Control of Trading Practices	244
6. Conclusion	252

III. DATA PROTECTION AND CYBERSECURITY IN CLOUDS

Introduction	255
8. Protection of Personal Data in Clouds and Rights of Individuals	257
<i>Dimitra Kamarinou, Christopher Millard, and Felicity Turton</i>	
1. Introduction	257
2. Who and What are Protected?	258
3. Processing Principles, Transparency, Purposes, and Lawful Processing	264
4. Rights of Access, Rectification, and Erasure	274
5. Right to Data Portability	281
6. Right to Object to Processing	286
7. Right not to Be Subject to Automated Decision-Making, Including Profiling	287
8. Remedies and Compensation for the Data Subject	290
9. Concluding Remarks	292
9. Responsibilities of Controllers and Processors of Personal Data in Clouds	294
<i>Dimitra Kamarinou, Christopher Millard, and Felicity Turton</i>	
1. Introduction	294
2. Controllers, Processors, and Joint Controllers	295
3. The Relationship between Controller and Processor	310

4. Compliance and Enforcement	334
5. Concluding Remarks	337
6. Appendix—Control and Joint Control in Various Cloud Scenarios	339
10. Regulation of International Data Transfers in Clouds	340
<i>Ulrich Wuermeling and Isabella Oldani</i>	
1. Introduction	340
2. The Application of the GDPR to Cloud Services	341
3. The Consequences of Applying the GDPR	350
4. Third Country Transfer of Personal Data with Protection	353
5. Derogations from the Need to Ensure Protection	371
6. Concluding Remarks	379
11. Cybersecurity, Cloud, and Critical Infrastructure	382
<i>Johan David Michels and Ian Walden</i>	
1. Introduction	382
2. The NIS Directive	383
3. Cloud Providers under the NIS Directive	393
4. Wider Legal Framework of Cybersecurity Obligations	404
5. Evaluating the Cybersecurity Legal Framework	409
6. Concluding Remarks	414

IV. CLOUD REGULATION AND GOVERNANCE

Introduction	419
12. Placing the State in the Cloud: Issues of Data Governance and Public Procurement	421
<i>Niamh Gleeson and Ian Walden</i>	
1. Introduction	421
2. Public Sector Data and the Cloud	423
3. Public Procurement Law in the EU and the Cloud	430
4. State Aid and Cloud Computing	438
5. Conclusion	439
13. Accessing Data in the Cloud: The Long Arm of the Law Enforcement Agent	441
<i>Ian Walden</i>	
1. Introduction	441
2. Forensic Challenges in the Cloud	443
3. Law Enforcement Powers	445
4. International Cooperation	449
5. Notification	465
6. Law Enforcement and Data Protection	471
7. Cloud-derived Evidence	473
8. Conclusion	475
14. Facilitating Competition in the Cloud	477
<i>Niamh Gleeson and Ian Walden</i>	
1. Introduction	477
2. Identifying Market Power in the Cloud Services Market	479

3. Application of EU Competition Law to Cloud Computing	484
4. Interoperability	493
5. Demand-side Measures	497
6. Conclusion	499
15. Cloud Computing, Standards, and the Law	501
<i>Niamh Gleeson and Ian Walden</i>	
1. Introduction	501
2. Why Standards are Important for Cloud Computing	502
3. Problem Identified with Cloud Standards	507
4. Standards as Law	518
5. Conclusion	523
16. International Tax Implications of Cloud Computing	525
<i>Vasiliki Koukoulioti and Chris Reed</i>	
1. Introduction	525
2. Direct Tax Treatment of Cross-border Profits	527
3. Cloud Computing Income Classification for International Tax Purposes	531
4. Jurisdiction to Tax	544
5. Indirect Tax Treatment	553
6. International Tax Policy	557
7. Concluding Remarks	570
<i>Table of Terms of Service Documents</i>	573
<i>Table of Cases</i>	579
<i>Table of Legislation</i>	585
<i>Index</i>	603