Personal Data-Smart Cities: How Cities Can Utilise Their Citizen's Personal Data to Help Them Become Climate Neutral

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Contents

Foreword **xiii**

Preface **xv**

Acknowledgements **xvii**

List of Contributors **xxi**

List of Figures **xxiii**

List of Tables **xxv**

List of Abbreviations **xxvii**

Introduction **1**
Shaun Topham, Paolo Boscolo, Michael Mulquin

1 Peril on the Road to Utopia – Opportunities and Risks of Infusing Personal Data into the Smart City Ecosystem **5**
Haydee S. Sheombar and Joseph V. Sheombar

1.1 Introduction 6
1.2 Broken Promises. 6
1.2.1 The smart city is finally coming of age 6
1.2.2 Is the internet broken? 9
1.3 Promising Responses 10
1.3.1 European legislation 10
1.3.2 Taking back control with data vaults 11
1.4 Think! 12
1.5 Personal Data Vaults Matter 13
1.5.1 Capturing and influencing the citizen journey. 13
1.5.2 Who will help us? 14
1.5.3 Personal benefits of the PDV 15

1.6 Utopia or Dystopia? A Scenario Analysis 16
1.6.1 Scenario drivers 17
1.6.2 Four scenarios 19
1.6.3 Strategies to reach Utopia 20
1.7 Personal Data: "Fragile, Handle with Care" 21

2 The Principal Projects Underpinning This Work 25
Ana García Garre, John Kaldis and Elena Palmisano
2.1 Project Overviews 25
2.2 DataVaults 28
2.3 KRAKEN 28
2.4 Safe-DEED 29
2.5 DUET Project 30
2.6 InteropEHRate 31
2.7 RUGGEDISED 33
2.8 DataPorts 34
2.9 EUHubs4Data 34
2.10 i3-MARKET. 35
2.11 AURORAL 36
2.12 REPLICATE. 37
2.13 PIMCity 38
2.14 smashHIT 39
2.15 PolicyCloud 40
2.16 IRIS: Co-creating Smart and Sustainable Cities 42
2.17 SmartEnCity 43
2.18 The MyData Global Initiative 44
2.19 The SOLID Initiative 45

3 Best Practice in the General Use of Data in a City 47
Annina Autero, Michail Bourmpos, Iván Carrillo Quero, Emanuele Geri, Hervé Groléas, Alisa Jashari, Christina N. Karaberi, María Jose Lopez Osa, Sari Maenpaa, Esben Pejstrup, Elena Palmisano, Fabio Pazzaglia and Minna Sapyska
3.1 Flanders, Belgium 48
3.2 Pilsen, Czech Republic 49
3.3 Camden, London, United Kingdom 50
3.4 Trikala, Greece 52
3.5 Umeå, Sweden. 52
3.6 Tampere, Finland 54
3.7 Cities with Universities: KRAKEN and Students 55
3.8 Rotterdam, Netherlands 57

3.9 Athens, Greece 58
3.10 City Health Organisations and the KRAKEN Health Application. 59
3.11 Sofia, Bulgaria. 61
3.12 Piraeus, Greece 62
3.13 Grand Lyon (Metropolis of Lyon), France 63
3.14 Prato, Italy 64
3.15 Eilat, Israel 65
3.16 Florence, Italy 66
3.17 SmartEnCity: Vitoria-Gasteiz, Spain 67
3.18 SmartEnCity: Tartu, Estonia. 68
3.19 Helsinki, Finland 69
3.20 Glasgow, Scotland 70

4 Case Studies Involving the Use of Personal Data in a Smart City **71**
Paolo Boscolo, Michail Bourmpos, Ilesh Datani, Ana García Garre, Vincent Keunen, Borja Molina-Ríos, Elena Palmisano and Christina Tsiligkiri
4.1 MIWenergia in the DataVaults Project 72
4.2 Prato's Usage of a Citizen's Personal Data 78
4.3 Piraeus's Use of Personal Data 82
4.4 Olimpiacos: Interaction with the Fan-Base 85
4.5 Olimpiacos: Athletes Sports and Activity Data Sharing. . . . 87
4.6 Andaman7 Health Application 91
4.7 Smart City Graz 94

5 The Local Data Economy **97**
Shaun Topham
5.1 Introduction 97
5.2 i3-MARKET. 101
5.3 AURORAL 102
5.4 The smashHIT Project. 105
5.5 The smashHIT Methodology 106
5.6 Conclusion. 108

6 Technical Components **111**
Sotiris Koussouris and Yury Glikman
6.1 Introduction 111
6.2 Data Owners and Subjects Controlling their Own Data. . . . 112
6.2.1 User personas 113

6.2.2 Direct anonymous attestation (DAA) 114
6.2.3 Access control policies 115
6.2.4 Data owners consent management 116
6.3 Preserving Data Privacy and Data Quality Simultaneously . . 117
6.3.1 Data anonymisation 117
6.3.2 Secure data analytic services 118
6.3.3 Data management technologies 119
6.3.4 Data models and interoperability 121
6.3.5 Digital twins for privacy preservation 123
6.3.6 Cryptographic solutions for data privacy 124
6.3.7 Artificial intelligence threat reporting and response systems 125
6.4 Information Delivery on Privacy Metrics and Data Content and Value 126
6.4.1 Privacy metrics and risk management and privacy metrics for personal data 126
6.4.2 Personal data analytics 127
6.4.3 Data valuation 128
6.5 Data Platforms 128
6.5.1 Secure and trusted data communication channels . . . 129
6.5.2 Immutable ledgers and smart contracts 130
6.5.3 Crypto wallets 131
6.6 Other Supporting Initiatives 132
6.6.1 EUHUBS4DATA 132
6.6.2 MyData 133
6.6.3 Solid flanders 133
6.6.4 Big value data association (BDVA) 133
6.7 Looking into the Future 134

7 Interoperability and the Minimal Interoperability Mechanisms 135
Michael Mulquin
7.1 The Context – The Local Data Sharing Ecosystem 135
7.2 Interoperability 136
7.3 The European Policy Context 138
7.4 Minimal Interoperability Mechanisms 140
7.5 The Individual MIMs 144
7.5.1 MIM1 context information management 144
7.5.2 MIM2 shared data models 146
7.5.3 MIM3 finding and using the data 146
7.5.4 MIM4 personal data management 147

7.5.5 MIM5 fair and transparent AI 147
7.5.6 MIM7 geospatial information management 148
7.6 MIMs Plus 148

8 Health Data in a Smart City **151**
Vincent Keunen
8.1 Is Health Data Important for a Smart City? 151
8.2 The Conflict of Interest 151
8.3 Maybe Anonymisation is a Solution? 152
8.4 Health of Citizens and Health of the City 153
8.5 Health Data Interoperability 153
8.5.1 Why is it hard? 154
8.5.2 Unstructured data 154
8.5.3 Structured data. 154
8.5.4 Is the situation different in the USA? 156
8.6 The InteropEHRate Project 157
8.7 Data Ownership and the Distributed Approach 157

9 Personal Data Management and MIM4 **161**
Michael Mulquin
9.1 The Fragmented Marketplace 161
9.2 MIM4 162
9.2.1 Capabilities 163
9.2.2 Requirements 165
9.3 The Link with National ID/Citizen Cards 166

10 Standards for Citizens **169**
John Ketchell
10.1 Introduction 169
10.2 The Background 170
10.3 Citizen Standards in Smart Communities 171
10.4 Looking Ahead 173

11 Business Models **175**
Shaun Topham
11.1 Introduction 175
11.2 Business Models and Smart Cities 177
11.3 Smart City Networks Creating Best Practice Repositories . . 178
11.4 SmartEnCity Project. 178
11.5 Urban Data Platforms 180
11.6 REPLICATE Project. 180

11.7 IRIS Project 181
11.8 IRIS Study and the Smart City Business Model Canvas (SC-BMC). 181
11.9 REPLICATE Project. 183
11.10 RUGGEDISED Project 185
11.11 Safe-DEED 188
11.12 The Safe-DEED Tools. 189
11.13 DUET Project 190
11.14 DataVaults Project. 191
11.15 Viewpoint from a DataVaults SME's Perspective 192
11.15.1 Assentian 192
11.15.2 Andaman7 194
11.16 Digital Twins and Business Models. 194
11.17 Conclusion. 195

12 (Digital) City Financing Platforms **197**
Juergen Ritzek
12.1 Introduction 197
12.2 Role of Financing Platforms. 198
12.3 But Who are These Digital Financing Platforms – Or Where are They? 199
12.3.1 Examples of digital financing platforms 199
12.3.2 Credit/loans. 199
12.3.3 Re-financing 200
12.3.4 Challenge project pipeline: the chicken and egg problem. 201
12.4 Conclusion. 202

13 The Governance of Personal Data for the Public Interest: Research Insights and Recommendations **203**
Marina Micheli
13.1 Introduction 203
13.2 Alternative Models for Data Governance 205
13.3 City Administrations' Access to Personal Data of Public Interest 208
13.4 A Few Recommendations for Cities 212

14 Data Valuation and Its Applications for Smart Cities **217**
Mihnea Tufiş
14.1 Introduction 217

14.2 Defining the Value of Data 220
14.2.1 Data through an economic lens – trading data . . . 220
14.2.2 The price of personal data – a chaotic landscape 222
14.2.3 Challenges defining the value of data – beyond financial value 225
14.3 The Data Valuation Process 228
14.3.1 Data contexts 228
14.3.2 Data quality assessment 233
14.3.3 Data quality metrics and dimensions 234
14.4 Aggregating and Reporting the Value of Data. 236
14.5 Takeaways for Cities 240

15 Does Everything Conform to Legal, Ethical, and Data Protection Principles? 245
Marina Da Bormida in Cugurra
15.1 Introduction 245
15.2 The Evolving Regulatory Framework Relevant to the Personal Data Sharing Platforms 246
15.3 Existing Regulatory Framework. 248
15.4 The Regulatory Reforms Under Development 254
15.5 Main Legal and Ethical Challenges and Technology-enabled Opportunities to Tackle with Them 259
15.6 The Need to Avoid Consent Fatigue and to Develop and Use User- and Data-Protection-Friendly User Interface . . . 259
15.7 Risk-based Approach and Risk-Exposure Dashboard 263
15.8 Personas and Digital Twins 264
15.9 Challenges Related to Smart Contracts, the eIDAS Regulation, and the Self-Sovereign Identity. 270
15.10 DataVaults as a Flagship Initiative for Personal Data Sharing Under User Control and Benefitting All the Actors Involved: Experiences and Lessons Learnt 273
15.11 Case Study: Approach and Legal and Ethical Requirements for DataVaults Ethical Policy 274
15.11.1 Ethics and data protection impact assessment methodology 278
15.12 Conclusion. 280

16 Data-Driven and Citizens' Inclusive Smart Cities: Top-Down and Bottom-Up Approaches to Tackle Societal and Climate Challenges **283**
Maria Sangiuliano
16.1 Introduction 283
16.2 Sharing and Networking on Citizen Engagement in Europe. Resources and Lessons Learnt from the Citizen Focus Action Cluster of the Smart Cities Marketplace 284
16.3 Good Practices. Citizen Generated Data to Improve Urban Innovation and Smart Cities Policies. Top-Down and Bottom-Up Approaches 288
16.3.1 Harnessing open data for evidence-based urban policies – the Camden and Sofia use-cases 289
16.3.2 Crowdsourced data for enhancing safety perception in public space and transport 291
16.4 Envisioning the Future of Citizens' Intelligent Cities and the Role of Citizen Engagement. 295

17 What Next? **299**
Paolo Boscolo, Michael Mulquin and Shaun Topham
17.1 Moving Towards a European Model for the Data Economy . 299
17.2 The Focus for Follow-up Activity 300
17.3 The Story of Data 301
17.4 Business Models. 302
17.5 A "Personal Data-Smart Cities" Group 304
17.6 Citizen Engagement 306
17.7 Governance 307
17.8 Interoperability 308
17.9 Legality 309
17.10 On the Horizon 310
17.11 Contracts to Have Data Plan. 312
17.12 Concluding Remark 312

Index **313**

About the Contributors **321**

About the Editors **327**

Foreword

Johan Bodenkamp, Policy and Programme Officer at the European Commission, and DataVaults Project Officer

It is widely acknowledged that data has an enormous potential to contribute to better-informed decisions and to create new services and products for the benefit of all.

Every day, we generate an unprecedented amount of data, which is increasingly harvested and used to foster innovation and sustainable economic growth as well as to improve the overall wellbeing of society. Despite the current sanitary, economic, and geopolitical context, studies confirm this positive trend in the data economy. Having reached 440 billion euros in 2021, the latest European Data Market Study[1] estimates that the value of the EU27 data economy will reach 600 billion euros in 2025 and 1 trillion euros in 2030. It is, therefore, not surprising that stakeholders regularly refer to data as the new oil or electricity of our modern society.

The EU is fully committed to setting a framework to help ensure that the benefits of the ongoing data revolution are fully reaped. To this end, the European data strategy[2] aims to make the EU a leader in a data-driven society and to create a single European data space. This space would be a genuine European single market for data, open to data from across the world, in which an almost infinite amount of high-quality personal and non-personal data is secure and can be used in an ethical and trusted way to create value and boost growth, while minimising the environmental footprint related to its use.

To create the right conditions and gradually realise this bold vision for Europe, ambitious legislative, research, innovation, and deployment actions at EU and national level are underway. In particular, the recently adopted Data Governance Act[3] and the proposed Data Act[4] are key EU legislative measures to enhance data availability and use in line with EU rules and values.

Despite this positive trend, the use and sharing of personal data is still limited. This is partly due to hesitations on how to benefit from such sensitive data in a trusted and secure way, ensuring respect of data protection legislation and allowing data subjects and data holders to remain in control of their

data and its use. Fortunately, several EU-funded and national projects, some of which have been actively involved in the preparation of this work, concretely show how this can be done through the use of appropriate secure and privacy-preserving techniques.

This book provides valuable insights into how smart cities could use citizens' personal data in a trusted and ethical way. It makes it an extremely useful source of information for city and municipal staff as well as for other interested stakeholders.

The hope is that it will inspire smart cities to engage more actively in using relevant data, and in particular citizens' personal data, to support important local policy objectives, notably to become climate neutral as quickly as possible.

Brussels,
July 20 2022

Preface

This book was produced in order to help grow a data economy in Europe, which reflects European values. It is argued that by adding a citizen's personal data, under their own control, to current and developing use of data in a smart city, a major contribution can be made to realising the ambition of many European cities of becoming carbon-neutral by 2030. And further, to contribute to building a mechanism for replicating the lessons which will be learned as cities utilise personal data and progress towards achieving both their environmental and smart city targets.

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Major Cities of Europe[5]

Major Cities of Europe is a European independent organisation of local government CIOs, heads of departments, and policy-makers. They co-operate with academia, public and private organisations focused in that domain. They promote the development of new services for citizens and local businesses. They facilitate exchanges of strategies, experiences, ideas, and

[5] https://www.majorcities.eu/

solutions for the use of information and communication technology. Many of their members are also amongst those 100 cities selected by the Commission to lead, in becoming climate-neutral by 2030.

Open & Agile Smart Cities[6]

Open and Agile Smart Cities bring together smart cities and communities worldwide to shape the global market for digital services. It is a network that connects cities and communities worldwide to learn from each other and exchange digital, data-driven solutions based on minimal interoperability mechanisms (MIMs). They are creating sustainable impact for their member cities by working towards a common technical ground for cities and communities – based on open standards, open APIs, and shared data models. As with Major Cities, many members are seeking to be climate-neutral by 2030.

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We can confirm that there are no conflicts of interest to report.

[6] https://oascities.org/

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List of Figures

Figure 1.1 A smart city as a bounded "system of systems". . . . 7
Figure 1.2 The Urban Data Platform, personal data vaults and the smart city ecosystem (based on RUGGEDISED). 8
Figure 1.3 A citizen journey reveals points of sensing and actuation using personal data vaults. 13
Figure 1.4 Reasons for companies and companies to engage citizens differ (source: RUGGEDISED study).. . . . 16
Figure 1.5 What is the impact of personal data on individuals and on the city? 17
Figure 1.6 The future impact of personal data (vaults) in terms of four scenarios. 20
Figure 7.1 Interoperability framework categories. 137
Figure 7.2 Distance to integrate. 141
Figure 7.3 Minimum interoperability mechanisms. 142
Figure 7.4 NIST pivotal points of interoperability.. 143
Figure 8.1 Variety of health data.. 155
Figure 9.1 Shared access.. 166
Figure 13.1 Summary of emerging data governance models. Source: Micheli et al., 2020, p. 6 206
Figure 13.2 Summary of the approaches adopted by local administrations to access private sector data of public interest. 210
Figure 14.1 Data value network as illustrated by Attard *et al*.. . . 227
Figure 14.2 Overview of the components of the data valuation process. 229
Figure 14.3 The aggregation of the scores generated from the different sub-components of the DVC into the data value scorecard.. 238

Figure 14.4 Data value scorecard. A combined view over the general data quality score and its composing data quality metrics. 238
Figure 14.5 Data value scorecard. A multi-dimensional view of the contextual score. 239
Figure 17.1 Role for a group of personal data-smart cities. 306

List of Tables

Table 1.1 Highlights of both the negative and the positive impact on the individual and the city.. 18
Table 7.1 MIMs 1-10. 145

List of Abbreviations

ABAC	Attribute-based access control
ABE	Access-based enumeration
AI	Artificial intelligence
API	Application programming interface
B2G	Business to government
CERTs	Computer emergency response (or readiness) team
CIM	City innovation models
CRUD	Create, read, update, and delete
CSIRT	Computer security incident response team
DGA	Data governance act
DLT	Distributed ledger technology
DMA.	Digital markets act
DQA	Data quality assessment
DQD	Data quality dimension
DQM	Data quality metric
DSA	Digital services act
DVC	Data valuation component
DVP	Data valuation process
EEA	European economic area
eIDAS	Electronic identification, authentication and trust services
EOSC	European open science cloud
ESCO	Energy service company
EU	European union
FAIR	Findable-accessible-interoperable-reusable
GDPR	The general data protection regulation
GIS	Geographic information system
GPS	Global positioning system
HMRC	Her majesty's revenue and customs service
ICT	Information and communications technology
IoT	Internet of things

ITU	International telecommunication union
JRC	Joint research centre
MIM	Minimal interoperability mechanisms
NSO	National statistics organisation
PDV	Personal data vault
PIMS	Privacy information management system
PSI	Public sector information
PV	Photovoltaics
R&D	Research and development
SME	Small- and medium-sized enterprise
SSI	Self-sovereign identity
TPM	Trusted platform module
UDP	Urban data platform
USD	United states dollar
VAT	Value added tax
WIMAX	Worldwide interoperability for microwave access