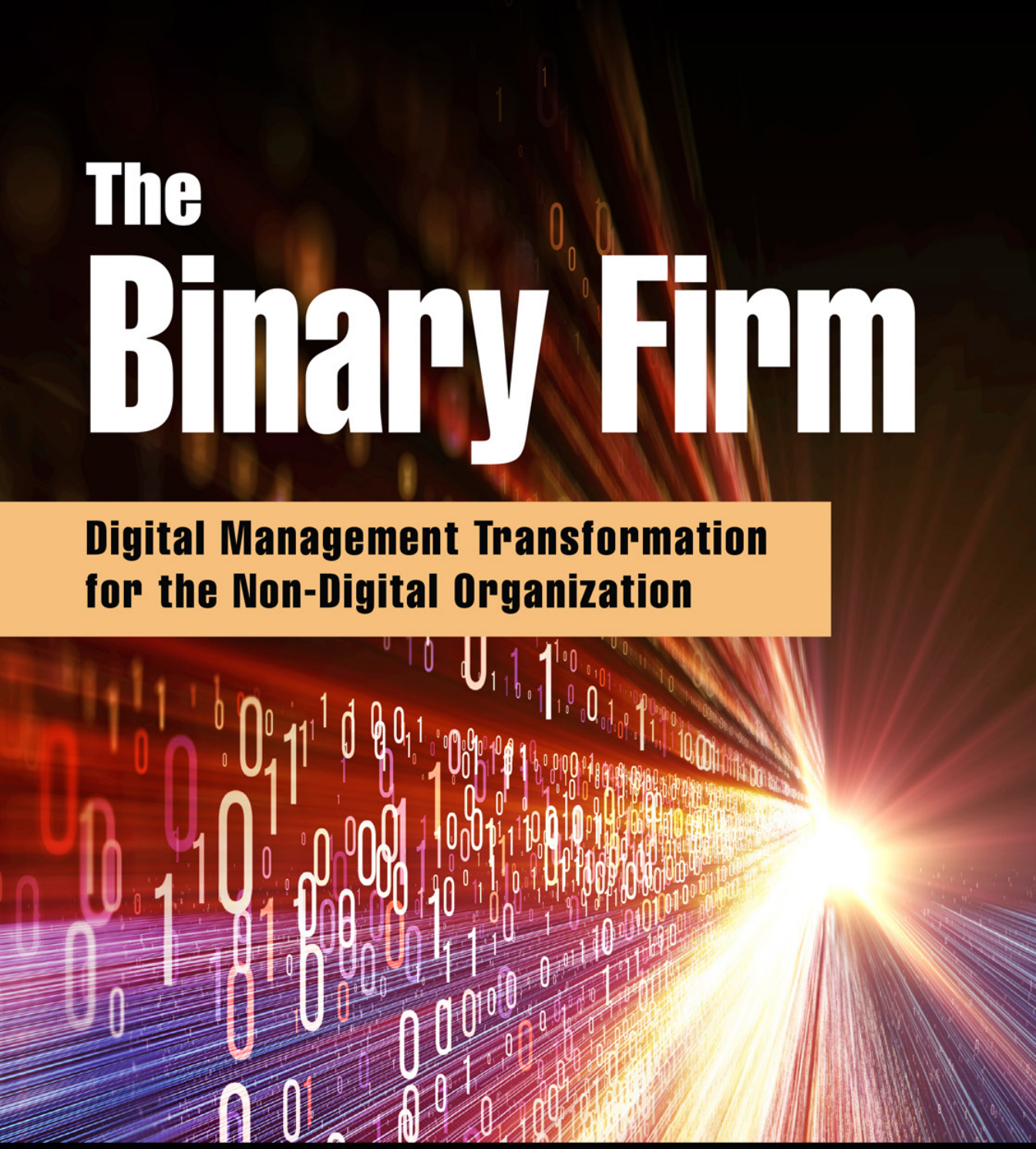
The Binary Firm

Digital Management Transformation for the Non-Digital Organization



Steven J. Keays, M.A.Sc., P.Eng.

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This book is dedicated to our daughter, Gabrielle, and our son, James. She taught me what adversity truly is and how to survive it with integrity. He taught me the meaning of independence of thought and inner strength from conviction. I dare say, because of them, I have become a better human being.

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Contents

List of Figures xiii
List of Tables xvii
Acronyms and Abbreviations xix
Preface xxiii
Acknowledgements xxvii
Author xxix
Intoduction: Chapter Summaries xxxi

PART I TERRA DIGITA

1 Introduction: A Brave New World 3
A Preliminary Perspective 3
Columbus' Fifth Voyage 3
A Modern Mythical Spice Trade Route 8
A Brief History of Then 13
The Existential Business Questions 13
A New Hegemon 14
Who Is in Charge Here? 17
To Be or Not to Be, the Eternal Question 23
Why This Book? 23
The Point 23
Bibliography 24

2 The Symbiocene Age 27
A Brief History of Now 27
Weaving a Tapestry 27
Change of the Guard 29
Impacts of the Age 30
The Circle of Ignorance 30

The Rise of the Datum 33
Functional Sentience 34
A New Continent 36
Tectonic Shifts 36
Digital Magma 38
The Power Chip 39
The Symbiocene's Power Plant 39
The Niche Plays 40
Artificial Intelligence 43
The Game Changer 43
To Think or Not to Think 46
The Niche Plays 47
Blockchains 52
The Superstar Neologisms 52
The Hacker-Free Ledger 53
The Energy Lattice 56
Dumping the C 56
To the Infinite Grid and Beyond! 61
Business Opportunities Galore 62
The Internet of Things (IoT) 62
The Quiet Revolution 62
The Autonomous Paradigm 63
The Need for Speed 64
Delegation of Authority 64
Transformation Strategy 66
The Holobiome 67
The Digital Commercial Ecosystem 67
Understanding the Holobiome 67
Bibliography 69

3 The Nature of Data 71
The Spectrum 71
An Imperative, Not a Choice 71
What Is Information? 74
The Operational Set 75
The Knowledge Spectrum 75
The Classification System 77
Sentience Spectrum 80
The Transformation Toolbox 84

The Tricorder Kit....84
The Unit Transformation Process....85
Direct Accountability....86
The Ugly Side of Data....87
Second Cambrian Explosion....87
Stranded Assets....89
Transformation Challenges....90
Moving on to the Next Step....94
Bibliography....94

PART II THE JOURNEY

4 Data Demands....97
Why Undertake the Transformation?....97
The Meaning of a Strategy....97
Binary vs Data Strategy....98
The Sequence of Events....99
The Transformation Team....100
Baseline....102
The First Milestone....102
Getting to "What Is"....104
Getting to "What Is Not"....106
Getting to "What Must Be"....108
The Analog Opportunity Cost....109
Parsing the Baseline....109
The Second Milestone....110
Planning the Transformation....111
An Example....111
The Third Milestone....115
Getting Ready for Part II....117
Bibliography....118

5 The Business Model....119
What a Business Model Is....119
Show You the Money....119
Vision and Mission Are Not Business Models....121
To Bit or Not to Bit....123
Defining the "Want"....124
Reading the Cards....124
The Exogenous Model Calls....127

Endogenous Model Calls 132
Execution Guidelines 135
Setting the Digital Construct for Success 135
Silos or Beaches 136
In or Out 137
Own, Lease, or Subscribe 137
Security 138
Final Words of Caution 138
Bibliography 139

6 Binary Tools 141
The General Approach 141
Form Follows Function 141
Solution Evaluation 143
Post-Solution Processing 144
Plik Solutions 146
The Prime Plik Directive 146
Low Hanging Fruits 148
Advanced Plik Solutions 150
Numer Solutions 155
Could vs Should 155
Sentience at the Edge 156
Internet of Things 158
Data Lakes 160
Business Intelligence 161
Distributed Ledger Technology 161
The Big Deal with DLT 161
Levels of Decentralization 163
Dangers and Pitfalls 164
This One Can Wait 165
Intelligence Solutions 166
The Big Deal about Big Data 166
A Fickle Proposition 167
The Opportunity Domains 170
Preparing the Grounds 172
Bibliography 175

7 Engagement 177
Implementation Strategy 177
The Digital Construct 179

The Organization's Holobiome Landscape 179
The Prime Hardware Challenges 180
The Prime Software Challenges 181
The Construct Manifest 183
Corporate Digital Governance 184
One Framework to Rule Them All 184
Governance Policy 185
Pilot Implementation 186
The Right and Wrong Way to Proceed 186
Where to Begin 188
What about the Digital Construct? 189
The Learnings 189
Post-Mortem Assessment 190
Full Implementation 191
The Plan 191
The Missing Keystone 192
Bibliography 193

PART III THE BINARY ORGANIZATION

8 People Digital 197
The New Labor Landscape 197
The Binary Worker 197
The Mechanics of Symbiosis 199
The Importance of Being Gray-est 201
Managing the Binary Firm 202
Weaving the Proper Fabric 202
Make the Covenants Make You Money 205
Managers, Leaders, and Leaderers 206
Management Framework 207
Dual Structure 207
Construct Management 210
A Few Words about Document Control 212
A Few Words about Data Control 213
The New Specialists 213
Terra Incognita 213
The Jobs 214
A Brave New World 219
Bibliography 219

9 Project Digital.....223
Capital Projects as Test Cases.....223
A Different Kind of Pilot Transformation.....223
The Opportunity.....225
First, the Empire Must Fall.....230
About This Business of Asset Physical Configuration.....231
The Building Blocks.....233
The 3D Kernel.....233
Visualization Templates.....236
Autonomous Progress Metrics.....236
Construction Tracking.....237
Intelligent Tracking.....237
Performance Assessment Metrics.....238
Reality Visualization.....238
Materiel Management.....239
Storage Strategies.....241
Managing a Binary Delivery.....242
The Importance of the Directrix.....242
The Final Frontier.....243
Bibliography.....245

10 Conclusion.....247
The Tectonic Shifts Are Marching.....247
Nothing Is Inevitable, until It Is Done.....247
You Have Control over Your Destiny.....248
Bibliography.....252

Index.....253

List of Figures

Figure 1.1 Mexican Riviera vacation, igeedee style. Photo taken by the author in January 2018 at a resort on the Mexican Riviera 21

Figure 2.1 The gonogo decision-tree for AI projects. Artificial intelligence projects are uniquely constrained in the innovation space. Faith, hope, funding, or visions are not enough to succeed; one must first reconcile the facts of his reality to the reality of the AI facts 47

Figure 2.2 Distinguishing features of the DLT network. Historically, large databases have been centrally operated, as shown on the left. The internet broke this model and decentralized the network into a set of regional hubs (middle image). The blockchain does away completely with any node or hub (right image). The internet is still there but running as the plumbing beneath the DLT 54

Figure 3.1 The digital tsunami. The unceasing arrival of digital innovations into the marketplace can overwhelm the casual observer who stands on the shore, pondering how to get into the game. It is not possible to take it all in at once and make business sense out of it. It is always best to retreat far inland and wait to see which ones will be carried onward by the crashing wave. (Original artwork by Margaret Keays and Agnieszka Bak.) 73

Figure 3.2 The knowledge spectrum. The "value" of information is a function of its contents, context, and capability to yield an assessment from which a decision can be made 75

Figure 3.3 The sentience structure. The structure illustrates the increasing complexity of a transformation process of inputs into outputs across seven layers. Because this structure is fractal, and therefore replicable at all scales, it can be defined once and applied to the simplest of nodes (like a single point sensor) to an entire installation.....81

Figure 3.4 The unit transformation process functionally. A node is an activity designed to map sets of inputs into sets of outputs, against pre-defined constraints and targets, and within the scope of enablers supplied by the network.....85

Figure 3.5 The directrix at work. The directrix comprises the accountable party (AP), the responsible party (RP), and the probate party (PP). Each one is assigned specific roles in the execution of a UPT, without overlap 87

Figure 4.1 The transformation team. The functions of each crew are defined in terms of the skillsets needed by the tasks of each part 101

Figure 4.2 Corporate hierarchy of Industrial Fabrication Ltd (IFL)..... 112

Figure 4.3 Reporting structure of the Neufchâtel division 113

Figure 5.1 The information asset universe 123

Figure 6.1 Solution selection. The design principle *form follows functions* is embedded into the unit transformation process..... 145

Figure 8.1 The Gaussian portrait. The generic form is shown on the left. The insights are shown on the right.....204

Figure 8.2 The framework structure.....208

Figure 8.3 Construct management. The organizational structure of the digital construct's management is best erected upon the physicality of the construct's features. The function "M&M" refers to the mechanics and mechanisms which document the processes, procedures, standards, and templates employed by the construct management's personnel to carry out their duties..... 211

Figure 9.1 The asset development sequence. Development unfolds in two phases, conceptualization and realization, jointly divided into eight lifecycle stages matching the fundamental definition of a project as "the development of a profitably performing asset (PPA)". 228

Figure 9.2 The lifecycle stages. Conceptualization comprises that go on before a shovel even breaks ground (aka the "pre-shovel works"). Realization spans everything afterwards, until such time as the profitability performance of the asset has been properly assessed 229

Figure 9.3 The traditional project folder structure. The most common schema for organizing project files relies on labor as the organizing principle. The schema is near useless in organizing the contents of the asset that is being developed. Note for instance the redundancy between folders 157 and 180 232

Figure 9.4 The 3D kernel ecosystem 234

Figure 9.5 The binary project management team 243

Figure 9.6 The binary project delivery framework 243

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List of Tables

Table 1.1 The Life and Times of Mother Earth Timelines Expressed in Million Years Ago (MYA) 19

Table 2.1 Energy Densities of Common Energy Sources 57

Table 2.2 The Futility of C-Free Sources 59

Table 3.1 The Classification System 78

Table 9.1 The Plik Warts "All Is File" Sums up the Character of the Information Ecosystem Created by a Typical Project Delivery Schema 226

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Acronyms and Abbreviations

AI	Artificial Intelligence
aka	Also Known As
AP	Accountable Party
AR	Augmented Reality
BDaaS	Big Data as a Service
BFT	Byzantine Fault Tolerance
BIM	Building Information Management
BRICS	Brazil, Russia, India, China, South Africa
CAD	Computer Aided Design
CCD	Close-Couple Device
CDO	Chief Data Officer
CEO	Chief Executive Officer
CERN	Conseil Européen pour la Recherche Nucléaire
CIO	Chief Information Officer
COO	Chief Operating Officer
CMMI	Capability Maturity Model Integration
CRM	Customer Relationship Management
CSO	Chief Security Officer
DAMA	Data Asset Management Association
DCAM	Data Capability Assessment Model
DCM	Digital Construct Manager
DCO	Digital Construct Officer
DLT	Distributed Ledger Technology
EDM	Electronics Data Management
ERP	Enterprise Resource Planning
GDPR	General Data Protection Regulation
GHG	Green House Gas
GPS	Geo-Positioning System or Global Positioning System

GUI	Graphical User Interface
HaaS	Hardware as a Service
HTTP	HyperText Transfer Protocol
ICIPM	*Investment-Centric Innovation Project Management*
ICPM	*Investment-Centric Project Management*
IDC	International Data Corporation
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IFL	Industrial Fabrication Ltd
Igeedee	Instant-Gratification Device
IIoT	Industrial Internet of Things
IoT	Internet of Things
ISO	International Standards Organization
IT	Information Technology
ITT	Invitation To Tender
KPI	Key Performance Indicator
LHC	Large Hadron Collider
MBA	Master Business Administration
MDA	Multiplatform Data Architecture
MRI	Magnetic Resonance Imaging
MTBF	Mean-Time-Between-Failure
MTTF	Mean-Time-To-Failure
NAIA	Numeric and Analog Information Assets
NP	Nondeterministic Polynomial time
OECD	Organization for Economic Cooperation and Development
OHS	Occupational Health and Safety
OPEC	Organization of Petroleum Exporting Countries
OS	Operating System
PaaS	Processing as a Services
PAM	Performance Assessment Metrics
PC	Personal Computer
PCB	Printed Circuit Board
PECO	Project Ecosystem
PLC	Programmable Logic Controller
PMT	Project Management Team
PP	Probate Party
QA/QC	Quality Assurance/Quality Control
RFP	Request for Proposal
ROI	Return on Investment

RP	Responsible Party
RTU	Remote Terminal Unit
SaaS	Software as a Service
SCADA	Supervisory Control and Data Acquisition
SWOT	Strength, Weakness, Opportunity, Threat
TCO	Total Cost of Ownership
TPM	Traditional Project Management
UTP	Unit Transformation Process
VB	Visual Basic
VDC	Voltage Direct Current
VR	Virtual Reality
W5H	What, Why, When, Where, Who, and How

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Preface

A fad isn't a fad when it's no longer a fad.

"All art is quite useless". Thus spake Oscar Wilde in his preface to *The Picture of Dorian Gray*. Wilde went on to explain his famous declaration by juxtaposing the uselessness of art against the uselessness of a flower. A flower simply is, without reason or purpose. It is in the act of observing it, of appreciating it, of caring for it that a meaning, if not a purpose, percolates to the surface of our senses. Wilde was indisputably right in regarding art's aim as "simply to create a mood". Waxing poetic in the context of a book whose nature is, by its very name, technocratic, may strike the reader as unexpected, to say the least. Nevertheless, it was this quote from Wilde that inspired this book, the third installment of the investment-centric series initiated in 2017 with the publication of *Investment-Centric Project Management*. That, coupled with the intriguing signs that were sprouting, also in 2017, in the popular, academic, and business literature about the advent of powerful software everywhere. Software that mimicked human intelligence and inference, that was capable of driving cars, of animating nightmarish humanoid robots (from the geniuses at Boston Dynamics), and even of catching people in the act of lying. The prospects of this new digital machinery began to sweep across corporate boardrooms and governments alike. Venture capital was quick to join the party; it continues to hunt far and wide for the next killer app. Simultaneously, books began to appear in rapid order and painted various landscapes of this new art of the digital. Their form follows the classic script of past novating movements such as the art of management, of quality, of engineering, of the deal. Some of these books have yielded important insights that have found their way into this one, especially *Data Strategy* (2017, Kogan Page) by Bernard Marr and *The Fourth Industrial Revolution* (2017, Crown Business) by Klaus Schwab.

It would seem, generally speaking, that books on the art of the digital, for lack of a better expression, excel at describing the new digital world

and the promises it holds for those who hop on the train. One can only describe, comment, and admire the Art of anything, since the artist is the only one possessed of the skills to create. The same goes for the current crop of books on the digital era (which will be referred in this book as the *Symbiocene age*); readers are encouraged to hurry up and join the party for dibs to the choicest pieces off the buffet table. This weak form of proselytizing is reminiscent of the 1980s management fad to "work smarter, not harder", focusing always on describing all that can be smarter but never *prescribing* how to do so. The digital transformation message resonates intrinsically well with large, digitally savvy organizations with a built-in capacity to undertake the journey. Unfortunately, this niche audience excludes the vast majority of other businesses and organizations that go about their daily affairs with varying degrees of digitalization. Hence, this overwhelming majority is effectively shut out of the conversation, be it on account of insufficient scale, primitive numeric literacy, or superficial relationships with the internet. For these organizations, being told to "work smarter, not harder" as they contemplate the coming digital revolution amounts to naught.

The impetus for this book was, and remains twofold: 1) *prescribe*, in concise yet actionable details, the means of undertaking one's own, bespoke digital transformation; and 2) target the silent majority of organizations that stand to benefit from such a transformation, regardless of their starting point. Getting to the "working smarter" part is done quickly at the book's outset. The rest of the text will dwell on the mechanics and mechanisms of doing so. The reader will find practical, sensical techniques, methods, and tools for figuring out an organization's current digital acumen (or lack thereof); for determining what makes sense for this organization (as opposed to buying into the latest whizbang technology just because everyone's talking about it); and how to plan, strategize, and implement the digital solutions that will permanently transform the organization, *always with the overriding objective of maximizing the organization's long term return-on-investment performance*. As a matter of fact, the reader will find a recurring caution throughout the text against blindly embracing the latest and greatest. Instead, the text is orchestrated along a linear progression from current state to opportunities then to business cases and finally, to finding and implementing the most suitable solutions for satisfying the business cases.

Finally, the human element in all this human maelstrom is kept front and center to all aspects of a digital transformation journey. Again and again, the reader will hear that the key to succeeding in this journey isn't about

picking the right technology; it is about molding the human-machine interface into the best synergy possible to make the former excel by making the latter perform. It is why this book speaks of digital *management* transformation, rather than the more common expression *digital transformation*. In the Symbiocene age, neither can thrive without the other.

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Third time's a charm.

This third installment of the *investment-centric* series came about through osmosis with my professional interactions over the past two years. As before, my wife Margaret was instrumental in creating and maintaining an environment in which the selfish act of writing can flourish, which speaks volumes about the special person that she is. It behooves me to reiterate the sentiment expressed in the previous two books: *I would not be me, without you with me.* She also lent her artistic touch to the creation of Figure 3.1 jointly with Agnieszka Bak.

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Steven James Keays, M.A.Sc., P.Eng., is an international-selling author, keynote speaker, management consultant in major projects, modularization and construction, and technology development. He is a 35-years veteran of the aerospace, defense, energy, manufacturing and Oil and Gas sectors. He is a professional engineer, a graduate of the Royal Military College of Canada, founder and CEO of both *NAIAD Company Ltd* and *The Institute of Advanced Management*. Mr. Keays has written extensively on project management, innovation and technology, and digital strategies. His published works include *Le Big Bang Canadien, Investment-Centric Project Management* (2017, J. Ross Publishing), *and Investment-Centric Innovation Project Management* (2018, J. Ross Publishing). Mr. Keays and his wife Margaret are proud parents of three children, Michael, Gabrielle, and James, and resides in Calgary, Alberta, Canada.