

Driving Digital Transformation through Data and AI

Driving Digital Transformation through Data and AI

*A practical guide to delivering data science and
machine learning products*

Alexander Borek and Nadine Borek-Prill



Publisher's note

Every possible effort has been made to ensure that the information contained in this book is accurate at the time of going to press, and the publishers and authors cannot accept responsibility for any errors or omissions, however caused. No responsibility for loss or damage occasioned to any person acting, or refraining from action, as a result of the material in this publication can be accepted by the editor, the publisher or the authors.

First published in Great Britain and the United States in 2020 by Kogan Page Limited

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms and licences issued by the CLA. Enquiries concerning reproduction outside these terms should be sent to the publishers at the undermentioned addresses:

2nd Floor, 45 Gee Street
London
EC1V 3RS
United Kingdom

122 W 27th St, 10th Floor
New York, NY 10001
USA

4737/23 Ansari Road
Daryaganj
New Delhi 110002
India

www.koganpage.com

© Alexander Borek and Nadine Borek-Prill 2020

The right of Alexander Borek and Nadine Borek-Prill to be identified as the authors of this work has been asserted by them in accordance with the Copyright, Designs and Patents Act 1988.

ISBNs

Hardback 978 1 78966 541 3
Paperback 978 1 78966 539 0
Ebook 978 1 78966 540 6

British Library Cataloguing-in-Publication Data

A CIP record for this book is available from the British Library.

Library of Congress Cataloguing-in-Publication Data

[to follow]

Typeset by Integra Software Services, Pondicherry
Print production managed by Jellyfish
Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

CONTENTS

List of figures viii

List of tables ix

01 Introduction 1

- Learning objectives for this chapter 1
- What you can expect from this book 1
- A new competitive playing field driven by data and AI 2
- What makes a machine intelligent? 8
- How digital players use machine learning to their advantage 13
- Why many digital transformation initiatives struggle 17
- How to scale data and AI across the organization 23
- Summary and conclusion 27
- Notes 28

02 Strategy and vision for data and AI 30

- Learning objectives for this chapter 30
- Key principles for creating the strategy and vision 30
- Reinventing the corporate strategy and business vision 34
- Creating the data product strategy 42
- Deriving the capability strategy 50
- Developing the transformation strategy 54
- Lessons learned and pitfalls for strategy and vision 66
- Template for a transformation roadmap 67
- Summary and conclusion 68
- Notes 69

03 Data product design 70

- Learning objectives for this chapter 70
- Key principles for designing data products 70

Ideating data products	74
Designing data products	81
Validating data products	88
Checklist for data product design	97
Summary and conclusion	99
Note	100

04 Data product delivery 101

Learning objectives for this chapter	101
Key principles for delivering data products	101
Planning the delivery of data products	105
Developing and deploying data products	112
Operating and scaling data products	121
Lessons learned and pitfalls for data product delivery	131
Checklist for data product delivery	132
Summary and conclusion	134
Note	135

05 Capabilities and agile organization 136

Learning objectives for this chapter	136
Key principles for capabilities and agile organization	136
Determining core capabilities for data and AI	140
Defining roles and responsibilities to implement capabilities	145
Setting up the agile organization	151
Implementing and adapting processes	158
Lessons learned and pitfalls for capabilities and agile organization	164
Summary and conclusion	167
Note	167

06 Technology and governance 168

Learning objectives for this chapter	168
Key principles for technology and governance	168
Building the data platform	172

Setting up the architecture and development standards	181
Implementing data and AI governance	190
Lessons learned and pitfalls for technology and governance	202
Checklist for technology and governance	204
Summary and conclusion	205
Notes	206
07 Transformation and culture	207
Learning objectives for this chapter	207
Key principles for transformation and culture	207
Growing a data and AI driven culture	213
Successfully managing transformational change	220
Implementing the strategy and vision	227
Lessons learned and pitfalls for transformation and culture	234
Checklist for transformation and culture	238
Summary and conclusion	239
Notes	239
<i>Index</i>	241

LIST OF FIGURES

FIGURES

- Figure 1.1 How to train, test and apply a machine learning model 12
- Figure 1.2 Four perspectives of driving digital transformation through data and AI 24
- Figure 2.1 The four phases of developing a strategy and vision for data and AI 31
- Figure 2.2 The relationship between product, capability and transformation strategy 62
- Figure 3.1 The three phases of designing data products 71
- Figure 4.1 The three phases of delivering data products 102
- Figure 4.2 How to create functional requirements for a data product 110
- Figure 4.3 How to define non-functional requirements for the data product 111
- Figure 5.1 The four phases of establishing capabilities and agile organization 137
- Figure 5.2 Example set-up of an agile cross-functional data and AI organization 154
- Figure 5.3 Processes for data and AI 159
- Figure 6.1 The three phases of technology and governance 169
- Figure 7.1 The three phases of transformation and culture 209
- Figure 7.2 How a data and AI organization will transform the whole organization over time 230

LIST OF TABLES

TABLES

Table 2.1	An illustrative dependency list between milestones in a consumer goods company	64
Table 2.2	A simplified transformation roadmap in a consumer goods company	65
Table 2.3	Template for milestone tracking of transformation roadmap	68
Table 6.1	What are the differences between the four popular NoSQL database types?	176
Table 7.1	Examples of regulations, legislations and guidelines concerning data and AI governance	219

