

THE PEARSON DIGITAL ENTERPRISE SERIES FROM THOMAS ERL



*"...a comprehensive,  
easy to understand  
perspective that is grounded  
in practical ways to get a  
head in this complex area."*

—Matt Armstrong-Barnes,  
Chief Technologist,  
Hewlett Packard Enterprise

*"...solid and comprehensive  
overview of the Why,  
How, and What, striking  
a perfect balance between  
the human, technical,  
and data aspects."*

—Coen de Bruijn,  
Program Director Data & Analytics, Nike;  
author of *Key Performance Illusions*

# A Field Guide to Digital Transformation



Co-authored and Edited by Best-Selling Author Thomas Erl  
Co-authored by Roger Stoffers

## Advance Praise for *A Field Guide to Digital Transformation*

*“By far the most thorough and well-structured guide to digital transformation I have come across. It’s an invaluable resource to businesses at all stages of the process, providing insight into digitalization and working with data in a clear and engaging way.”*

—Jiri Kobelka, CEO, Tatum

*“This book explains, in simple language and with an abundance of examples, what digital transformation is all about. The reader is taken through a journey supported by a rock-solid technology and business content, while also learning about the risks and benefits. A must read.”*

—Gabriele Rossi, Enterprise Architect, ABN Amro Bank

*“This book is like a good architecture: It explains a really complex subject like Digital Transformation in plain English! It does this by discussing the constituent parts and how these parts interact and strengthen each other. All this is supported by beautiful, easy to understand graphics. This book helps a lot in navigating where you stand as a company in your Digital Transformation. Thomas and Roger, job well done!”*

—Brian Lokhorst, Lead Architect SOA Competence Center,  
Dutch Tax and Customs Organisation

*“This is the book that needs to be read by anyone that wants to understand where contemporary business and technology are going.”*

—Eric Barceló Monroy, Head of Technology Architecture Consulting,  
Entra a la Gran Nube, SA de CV

*“In this book the authors pulled off a small miracle—to demystify ‘digital transformation’ and make it tangible and understandable—as it’s so much more than technology, it’s about people, culture, data and putting customers into the center of the game.”*

—Clemens Utschig, CTO Boehringer Ingelheim

*“Organizations struggle implementing digital transformation initiatives successfully. A Field Guide to Digital Transformation is a perfect recipe and a reference model to guide teams on concepts, technologies and solutions to deliver digital transformation efforts in a standard and more effective way.”*

—Ramesh Aki, Staff VP – Digital Platforms and Engineering, Anthem, Inc.

# A Field Guide to Digital Transformation

## Table of Contents

Cover

Half Title

Title Page

Copyright Page

Contents at a Glance

Contents

Acknowledgments

Register Your Book

About This Book

### PART I: DIGITAL TRANSFORMATION FUNDAMENTALS

#### CHAPTER 1: Understanding Digital Transformation (What is Digital Transformation?)

Business, Technology, Data and People

Digital Transformation and Business

Digital Transformation and Technology

Digital Transformation and Data

Digital Transformation and People

Digital Transformation and Organizations and Solutions

#### CHAPTER 2: Common Business Drivers (What Led to Digital Transformation?)

Losing Touch with Customer Communities

Inability to Grow in Stale Marketplaces

Inability to Adapt to Rapidly Changing Marketplaces

# **Table of Contents**

Cold Customer Relationships

Inefficient Operations

Inefficient Decision-Making

## **CHAPTER 3: Common Technology Drivers (What Enables Digital Transformation?)**

Enhanced and Diverse Data Collection

Contemporary Data Science

Sophisticated Automation Technology

Autonomous Decision-Making

Centralized, Scalable, Resilient IT Resources

Immutable Data Storage

Ubiquitous Multiexperience Access

## **CHAPTER 4: Common Benefits and Goals (Why Undergo a Digital Transformation?)**

Enhanced Business Alignment

Enhanced Automation and Productivity

Enhanced Data Intelligence and Decision-Making

Improved Customer Experience and Customer Confidence

Improved Organizational Agility

Improved Ability to Attain Market Growth

## **CHAPTER 5: Common Risks and Challenges (What Are the Pitfalls?)**

Poor Data Quality and Data Bias

Increased Quantity of Vulnerable Digital Data

Resistance to Digital Culture

Risk of Over-Automation

Difficult to Govern

## **CHAPTER 6: Realizing Customer-Centricity**

What Is a Product?

What Is a Customer?



# **Table of Contents**

Product-Centric vs. Customer-Centric Relationships

Transaction-Value vs. Relationship-Value Actions

Customer-Facing vs. Customer-Oriented Actions

Relationship Value and Warmth

Warmth in Communication

Warmth in Proactive Accommodation

Warmth in Customer Rewards

Warmth in Exceeding Customer Expectations

Single vs. Multi vs. Omni-Channel Customer Interactions

Customer Journeys

Customer Data Intelligence

## **CHAPTER 7: Data Intelligence Basics**

Data Origins (Where Does the Data Come From?)

Corporate Data

Third-Party Data

Creating New Corporate Data Intelligence

Common Data Sources (Who Produces the Data?)

Operations Data

Customer Data

Social Media Data

Public Sector Data

Private Sector Data

Data Collection Methods (How Is the Data Collected?)

Manual Data Entry

Automated Data Entry or Collection

Telemetry Data Capture

Digitization

Data Ingress

Data Utilization Types (How Is the Data Used?)

Analysis and Reporting

Automated Decision-Making

# **Table of Contents**

- Solution Input
- Bot-Driven Automation
- Model Training and Retraining
- Historical Record Keeping

## **CHAPTER 8: Intelligent Decision-Making**

### **Manual Decision-Making**

- Computer-Assisted Manual Decision-Making

### **Conditional Automated Decision-Making**

### **Intelligent Manual Decision-Making**

### **Intelligent Automated Decision-Making**

- Direct-Driven Automated Decision-Making

- Periodic Automated Decision-Making

- Realtime Automated Decision-Making

Intelligent Manual vs. Intelligent Automated Decision-Making

## **PART II: DIGITAL TRANSFORMATION IN PRACTICE**

## **CHAPTER 9: Understanding Digital Transformation Solutions**

### **Distributed Solution Design Basics**

### **Data Ingress Basics**

- File Pull

- File Push

- API Pull

- API Push

- Data Streaming

### **Common Digital Transformation Technologies**

## **CHAPTER 10: An Introduction to Digital Transformation**

### **Automation Technologies**

### **Cloud Computing**

- Cloud Computing in Practice

- Common Risks and Challenges

### **Blockchain**

- Blockchain in Practice

# **Table of Contents**

Partial Business Data Capture

Full Business Data Capture

Log Data Access Capture

Partial Business Data Store

Ledger Export

Common Risks and Challenges

## **Internet of Things (IoT)**

IoT Devices

Common Risks and Challenges

IoT in Practice

## **Robotic Process Automation (RPA)**

RPA in Practice

Common Risks and Challenges

## **CHAPTER 11: An Introduction to Digital Transformation Data Science Technologies**

### **Big Data Analysis and Analytics**

The Five Vs of Big Data

Big Data in Practice

Common Risks and Challenges

### **Machine Learning**

Model Training

Machine Learning in Practice

Common Risks and Challenges

### **Artificial Intelligence (AI)**

Neural Networks

Automated Decision-Making

AI in Practice

Common Risks and Challenges

## **CHAPTER 12: Inside a Customer-Centric Solution**

### **Scenario Background**

Business Challenges

The Original Customer Journey

Business Objectives

# Table of Contents

## Terminology Recap

Key Terms from Chapter 6: Realizing Customer-Centricity

Key Terms from Chapter 7: Data Intelligence Basics

Key Terms from Chapter 8: Intelligent Decision-Making

Key Terms from Chapter 9: Understanding Digital Transformation Solutions

Key Terms from Chapter 10: An Introduction to Digital Transformation Automation  
Technologies

Key Terms from Chapter 11: An Introduction to Digital Transformation Data Science  
Technologies

## The Enhanced Customer Journey

Supporting Data Sources

Step-by-Step Business Process

Step 1. Customer Visits Dealership

Step 2. Customer Makes Inquiry

Step 3. Options Shown to Customer

Step 4. Price Shown to Customer

Step 5. Customer Places Order?

Step 6. Customer Leaves

Step 7. Customer Accesses Profile

Step 8. Dealership Follows Up

Step 9. Process Order and Update Customer Account

Step 10. Production Scheduling Change?

Step 11. Customer is Notified

Step 12. Manufacturer Ships Car

Step 13. Dealership Provides Car

Step 14. Dealership Offers Plan

Step 15. Customer Accepts Plan?

Step 16. Customer Takes Unmonitored Car

Step 17. Process Order and Update Account

Step 18. Sensor Installed in Car

Step 19. Customer Takes Monitored Car

Step 20. Dealership Follows Up

Step 21. Dealership Offers Trade-in

Step 1: Customer Visits Dealership (Again)

## Future Decision-Making

## About the Authors



# **Table of Contents**

Thomas Erl

Roger Stoffers

Index