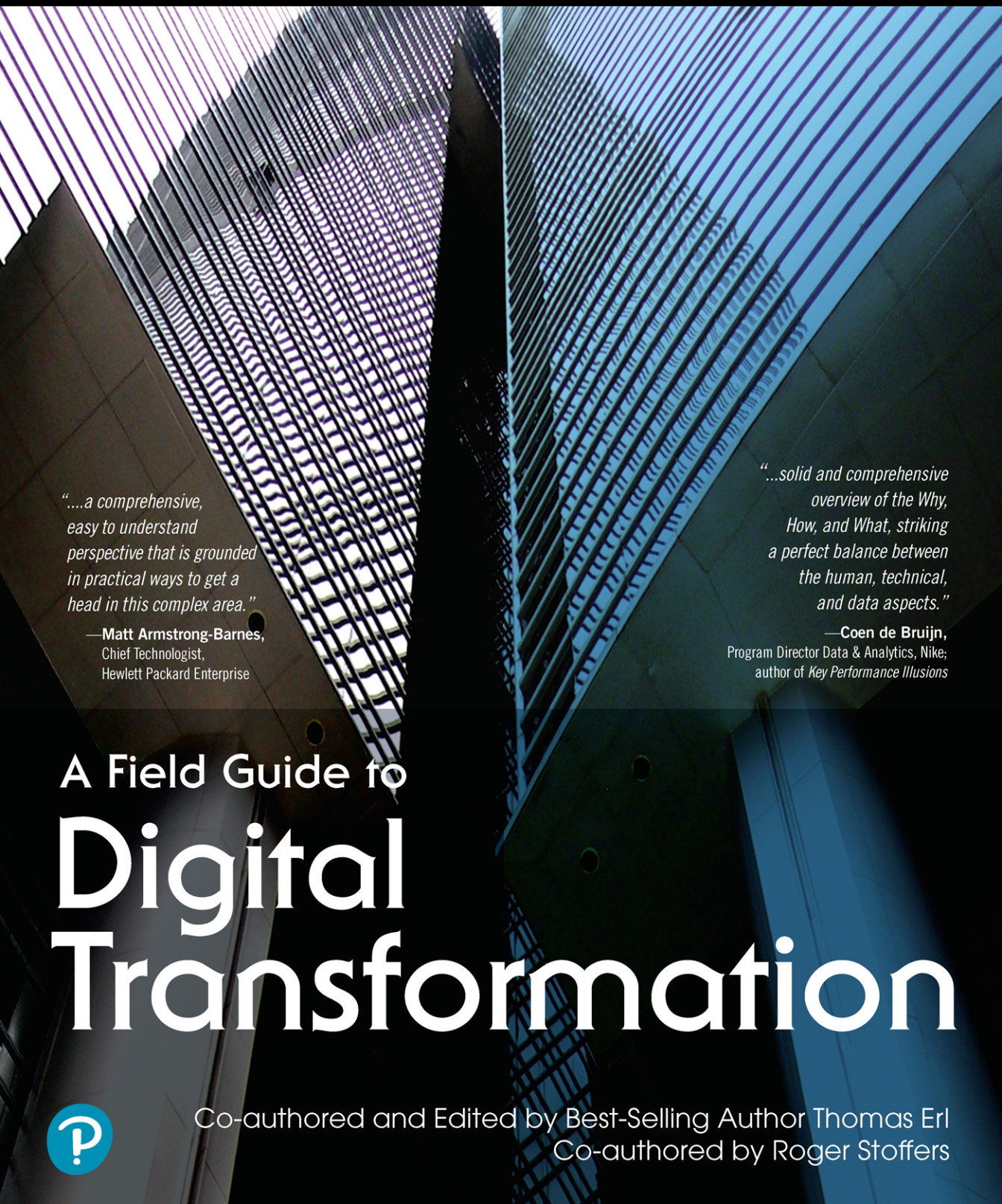
THE PEARSON DIGITAL ENTERPRISE SERIES FROM THOMAS ERL



"....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

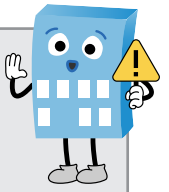
"In this book the authors pulled off a small miracle—to demystify 'digital transformation' and make it tangible and understandable—as it's so much more than technology, it's about people, culture, data and putting customers into the center of the game."

—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.

Poor Data Quality and Data Bias



CAUTION
An added danger is the fact that it can sometimes take a long time before inaccurate or biased data results are discovered. By that time, the organization may have already made a series of poor decisions based on flawed data intelligence.

As previously explained, digital transformation solutions are heavily data-driven. The data intelligence utilized and produced by these solutions ends up influencing or even determining the outcome of key business decisions. The quality and success of the decision-making is directly proportional to the quality of the data intelligence upon which the decisions are based.

A constant, overarching concern associated with digital transformation is the completeness, accuracy and orientation of the data used to produce data intelligence. If the quality of the data is poor or sub-par, it can lead to misleading analysis results or missed opportunities to discover new insights (Figure 5.1). Another related concern is data bias, whereby some factors within the data are more heavily weighted than others, leading to skewed results and analytical errors.

This challenge is mitigated by ensuring that data scientists working with the data have the necessary skills and proficiency to identify and filter out "bad" data. Sound quality assurance practices are also necessary.

Increased Quantity of Vulnerable Digital Data

A digital transformation initiative will introduce higher volumes of business data and will often encourage a greater digital presence online. This can expose significantly greater amounts of an organization's business data to the outside world. This can, consequently, increase the risks that such data is accessed and manipulated by unauthorized parties (Figure 5.2).

Cybersecurity technologies and practices provide increased protection for organizations with a large online presence. Some cybersecurity systems utilize data science technologies to more effectively profile attackers and counter malicious activity.

NOTE

Blockchain technology can be also utilized to improve the security and immutability of storage for select data. However, the bulk of digital data will likely continue to remain stored in standard repositories that will need to be carefully secured.

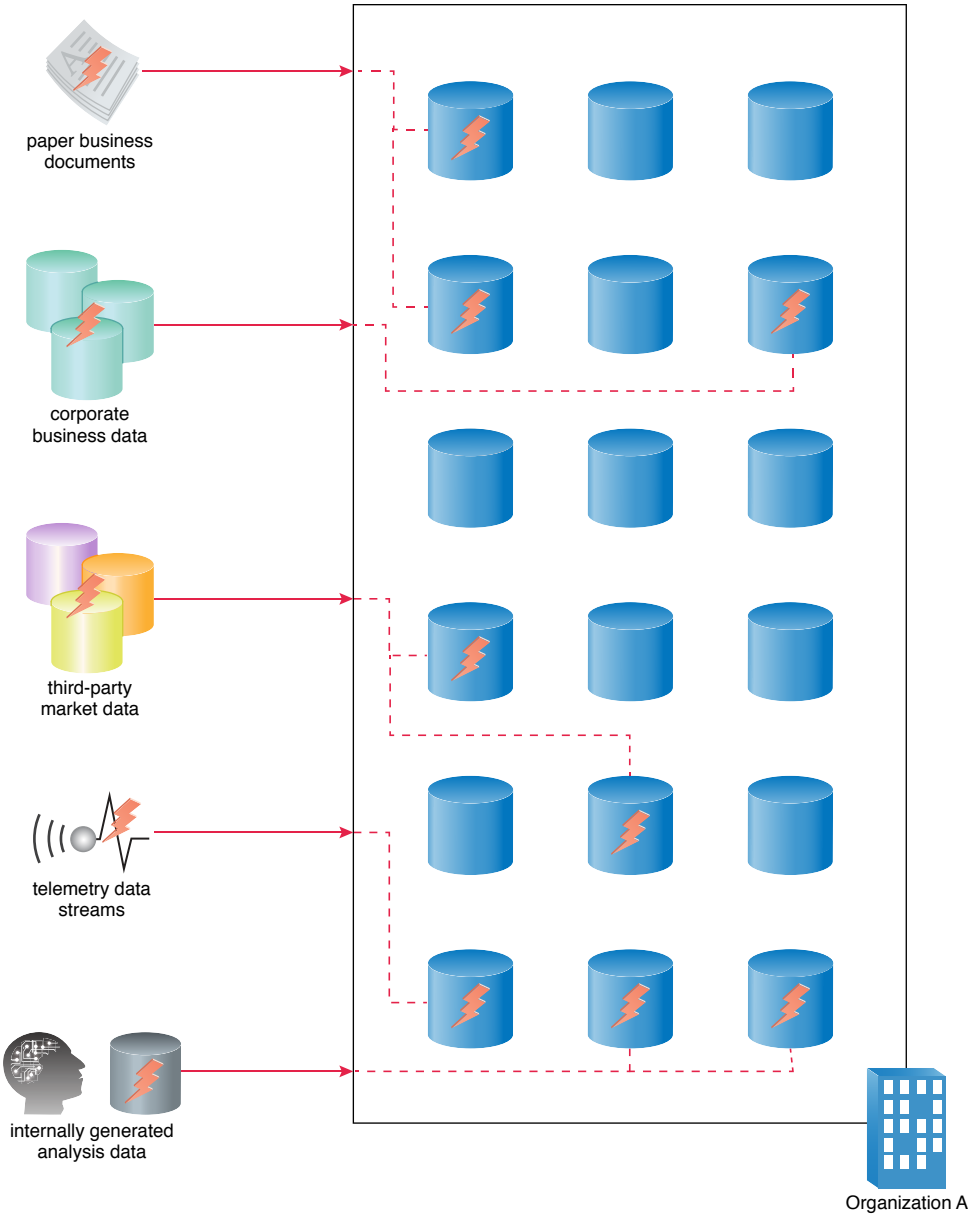


Figure 5.1

Low-quality data and data bias can creep into almost any type of data collected by an organization. If undetected, it can make its way into a range of internal corporate repositories where it can influence data intelligence used as input for both manual and automated decision-making.

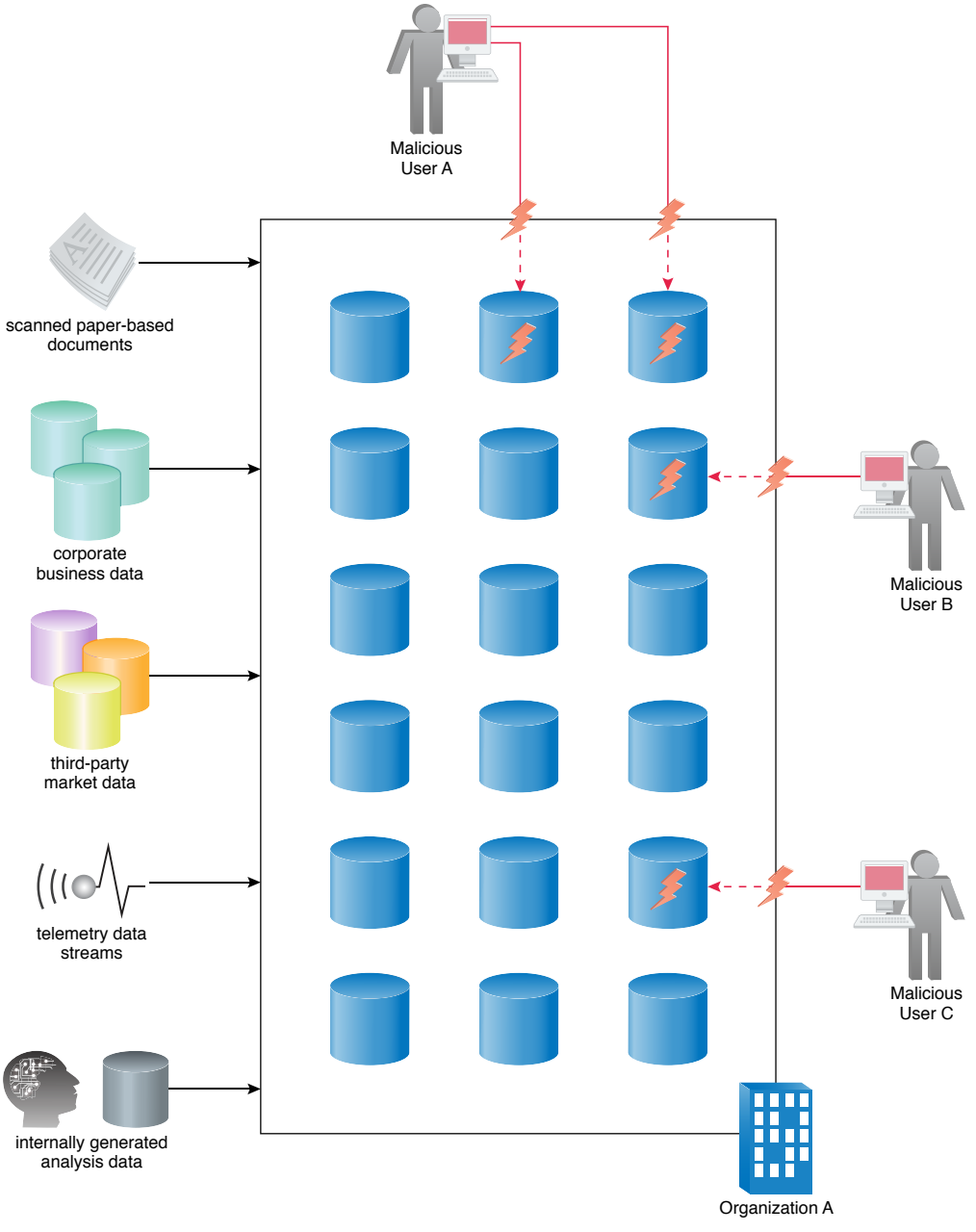


Figure 5.2
The increasing quantity of data flowing into an organization can correspondingly increase the opportunities for malicious users to gain unauthorized access.

Resistance to Digital Culture

A digital transformation aims to change and improve an organization as a whole. This can include transforming:

- the nature and scope of an organization's business
- how humans work and what tasks they are assigned
- how organizations carry out their day-to-day operations
- the extent to which automation becomes part of an organization's operations

Such an initiative will naturally also transform the overall culture of an organization.

For example:

- groups and departments that previously did not need to communicate often may now need to collaborate on a regular basis
- departments that had full authority over their respective business domains may now lose or need to share that authority
- employees that previously performed manual tasks may be replaced with new automation technology capable of performing those tasks faster and at a lower cost (Figure 5.3)

These are just some of the scenarios that can lead an organization's workforce to resist the introduction of digital transformation.

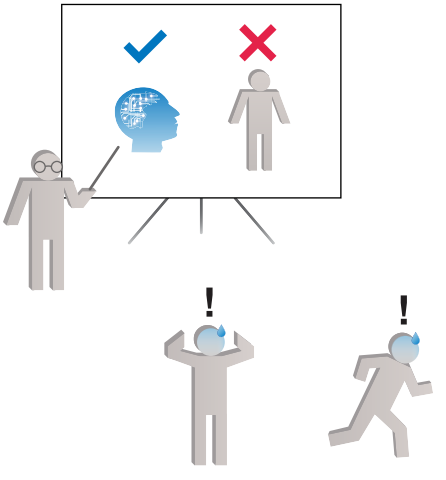
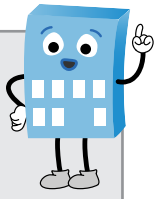


Figure 5.3
Various staff may initially resist digital transformation. It is common for there to be concerns about job loss and a move toward a culture that can appear to be "colder" and more calculating when it comes to decision-making.

Quality leadership can provide pre-emptive efforts, along with new organizational models, to help mitigate resistance and help foster greater support for digital transformation. Management can ensure that the organization is transformed with the most positive outcomes, for both the business and the human workers.

For example, many organizations do not simply lay off employees whose prior contributions are superseded by new automation; they invest in the retraining and reallocation of those employees to further contribute to the organization at a greater and more meaningful capacity.



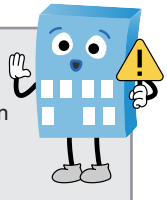
TIP
A communications campaign is often one of the first steps to beginning a digital transformation. The sooner awareness is raised and concerns are addressed, the sooner a healthy digital culture can begin taking shape.

Risk of Over-Automation

The digital transformation market offers a variety of new opportunities to introduce automation into business operations. In many cases, the benefits are clear and tangible, especially in relation to cost savings and improved time-to-value benefits. However, there are often reasons as to why some automation options may simply not be suitable, either now or in the future.

For example:

- Many of the new automation opportunities are driven by the availability of analytical data that is used to feed into new solution logic. The quality or maturity of the data itself may not yet be sufficient to warrant replacing manual tasks with automation (Figure 5.4). This is a case where the automation of certain tasks may need to be delayed until the necessary input data is assessed and considered ready.
- The organization itself may not have reached a sufficient level of maturity to establish some forms of automation on a broader scale. Perhaps the necessary levels of collaboration have not yet been achieved to create the required level of organizational alignment, or perhaps there is too much resistance to the "digital culture." Another consideration is the quality of existing business processes. Automating poor business processes does not address their shortcomings and can even reduce the motivation to fix their problems once new automation is in place.



CAUTION
Recovering from an over-automation can be painful, as it may require reversing recent changes to workflow, human worker allocation and digital transformation solution logic. To avoid this, it is best to carefully assess, in advance, each new automation opportunity.

The technology innovations introduced by digital transformation can be powerful and impactful and can change the landscape of an IT enterprise. Their introduction therefore needs to be carefully planned and phased in as part of the greater digital transformation initiative.

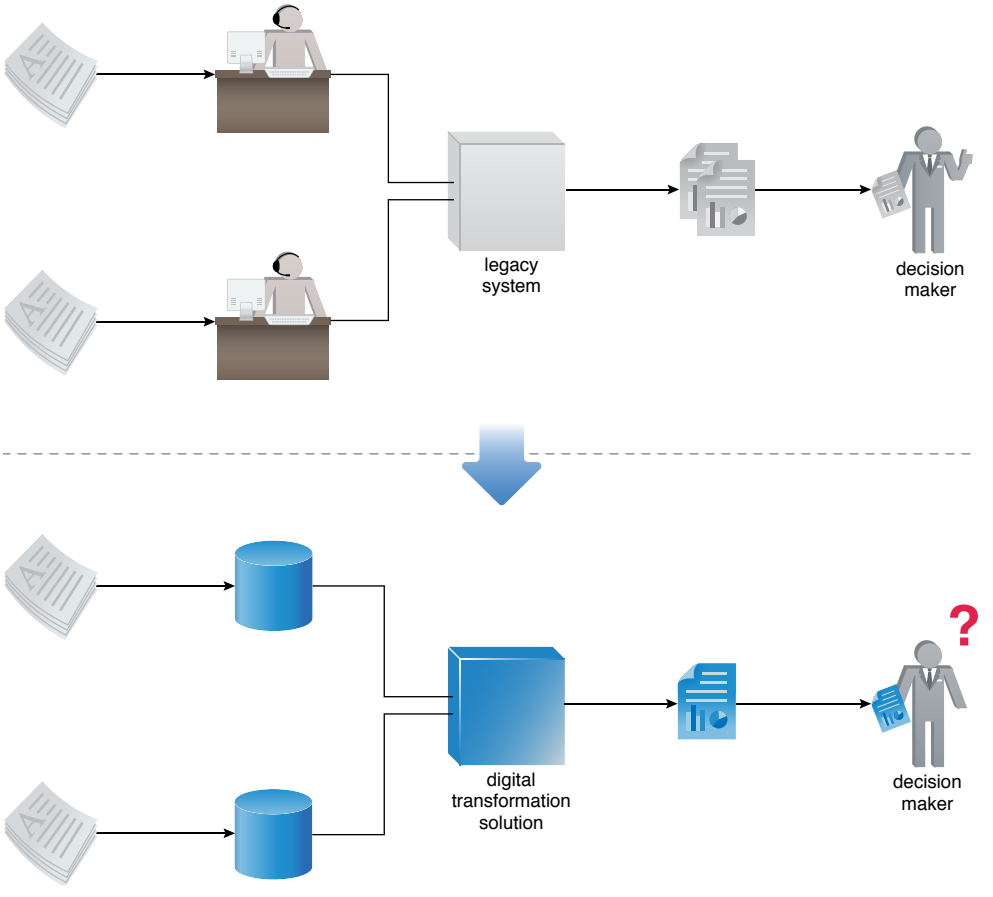


Figure 5.4

A legacy accounting system that previously relied on the manual processing of paper business documents is replaced with a fully automated digital transformation solution. However, the resulting reporting produced is not valuable because the solution was unable to replicate the quality of the human data entry. A better solution may have been to still digitize the paper business documents while retaining the involvement of the human resources.