

White Paper

# Leveraging AI/ML to drive commercial success in Canada

*How Artificial Intelligence and Machine Learning can improve customer engagement, drive sales and lower costs*

**HANS HANSEN**, Principal, Commercial Effectiveness Services, IQVIA

**GILBERT MERARIU**, Senior Principal, Technology Solutions, IQVIA



# Table of contents

|                              |    |
|------------------------------|----|
| An overview of AI/ML         | 4  |
| Where AI/ML can help         | 6  |
| Precision targeting          | 6  |
| Multichannel Marketing (MCM) | 9  |
| About the authors            | 11 |

# Introduction

Despite the significant potential, only one in ten Canadian pharmaceutical companies believe they are effectively using Artificial Intelligence and Machine Learning (AI/ML) to improve commercial effectiveness.

There has been a lot of talk in the media about AI/ML recently. These technologies are – deservedly – receiving much attention because of the significant potential they bring to many industries and disciplines. However, despite AI/ML's potential to improve customer engagement, drive sales and lower costs, few pharmaceutical companies are using it effectively to inform commercial strategy and operations. In fact, according to a recent IQVIA survey, only 13% of Canadian pharmaceutical companies regularly use AI/ML in commercial analytics and 90% believe they are not making the most of AI/ML to improve commercial effectiveness.

The lack of adoption in the pharmaceutical industry relates not only to the need for data and deep domain expertise but also the complexities involved in properly integrating AI/ML into business processes.

This paper will discuss where AI/ML has the most potential in terms of commercial applications for the pharma industry, with particular focus on precision targeting and Multichannel Marketing (MCM).

First of all, let us define what we mean when we talk about AI/ML.



# An overview of AI/ML

## MACHINE LEARNING IS A SUBSET OF AI THAT IMPROVES OUTCOMES THROUGH LEARNED EXPERIENCE

While often used interchangeably, there is a distinction between Artificial Intelligence and Machine Learning. Artificial Intelligence (AI) refers to any technique which allows computers to mimic human intelligence, while Machine Learning (ML) is a subset of AI that uses statistical methodologies to improve an outcome through learned experience.

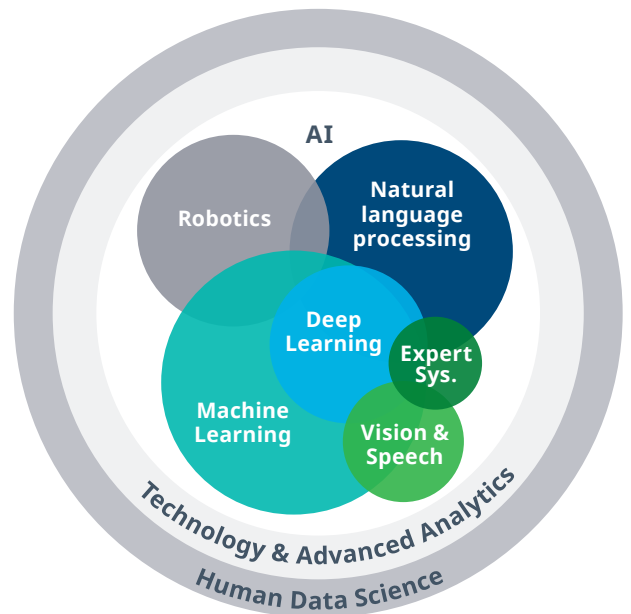
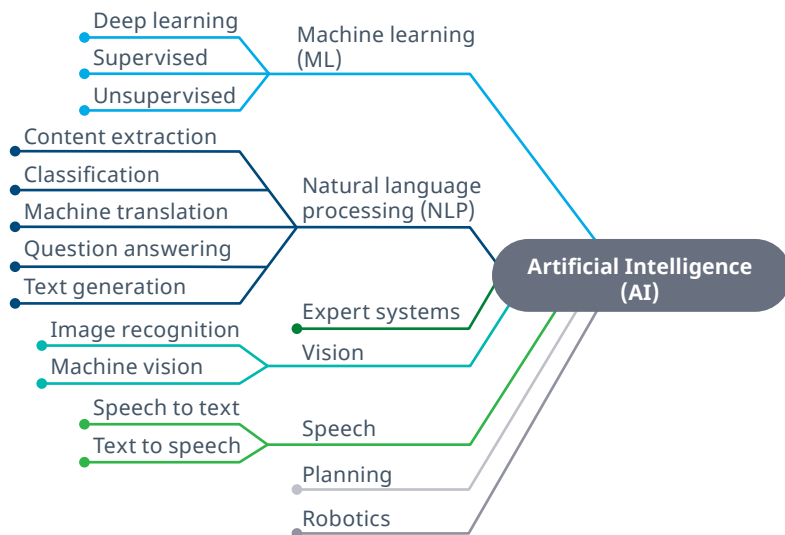
Among impressive recent breakthroughs are other branches of Artificial Intelligence, such as NLP – Natural Language Processing. Once NLP seemed a far-fetched idea but it has now become a commonplace feature in consumer products.

The main focus within this paper will be machine learning since that is where the majority of current AI/ML applications for commercial precision in pharmaceuticals occur.

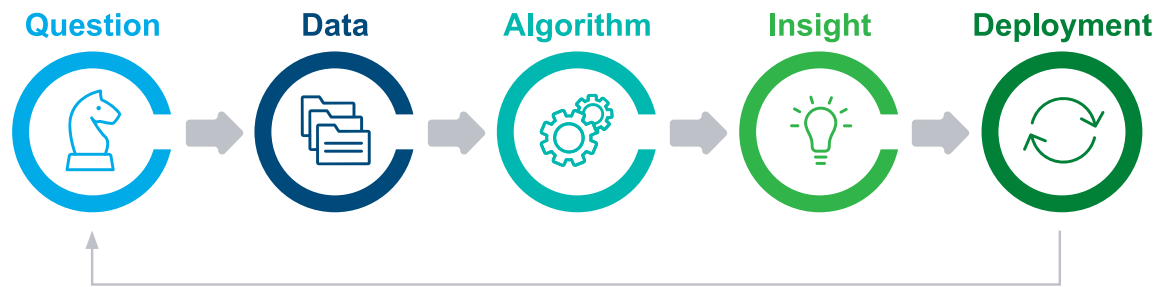
---

### Overview of AI/ML and individual branches

AI/ML is the new way to do analytics and automation in the digital age.



## Key steps in the AI/ML process



From a pragmatic point of view, there are five key steps in the AI/ML process. First, a clear business **question** must be formulated. Examples include:

- A territory manager wants to increase his sales performance. The specific question is which healthcare professionals (HCPs) are connected with the most patients who can benefit from the therapy, thereby enabling patient access and driving sales.
- A marketing manager wants to increase the number of patients who benefit from an existing or new therapy in a market where many patients remain undiagnosed and/or untreated. The question is how many undiagnosed or untreated patients exist based on real world data, and which HCPs have any history of treating those patients.

Once the core business question is formulated, availability and quality of **data** needs to be assessed. While the amount of data overall continues to increase, sources of data are fragmented and the quality varies significantly. Access to relevant, clean data, and ability to understand its potential applications and limitations, are essential.

It is when these two fundamental conditions are met – i.e., there is a clear business question and there is data to answer that question – that pharmaceutical companies can take advantage of AI/ML. Having the right domain expertise is paramount for this part of the process.

The next step involves development of an **algorithm**. In simple terms, this is a technical way of formulating the business question. Once this has been done and the selected data are integrated, the machine learning process can begin. Technological advances mean that what would have previously taken weeks can now be done in a matter of hours. These efficiencies also make it easier to apply multiple machine learning models to compare and validate outcomes.

Finally, **insights** can be derived from the output of the model, whether that relates to a ranking of physicians based on predicted potential, or sales response assessment by channel and individual physician. These insights are valuable on their own, but what is truly unique about AI/ML, compared to more conventional approaches, is the dynamic process of learning and potential calibration which requires a fundamentally different way of integrating analytics with commercial operations.

This pivotal change management component is another factor which often prevents companies from taking full advantage of AI/ML. A recent article<sup>1</sup> highlights the importance of company culture in overcoming challenges of adopting AI/ML, in particular the need to break down silos, enable data-driven decision making on the front lines (e.g. sales), and allow a more agile and experimental approach to problem solving.

<sup>1</sup> HBR, The AI-Powered Organization, July-August 2019

## Where AI/ML can help

Some of the most commonly asked business questions where AI/ML can help relate to HCP targeting, multi-channel marketing, digital engagement, and message content.

In the following section, we will provide specific examples of HCP targeting and multi-channel marketing which remain at the core of commercial effectiveness.

### Precision Targeting

One of the core premises for commercial effectiveness is precision targeting. In a time where many newly launched products are targeting increasingly smaller patient populations, it is important to quantify the number of patients with unmet need and understand which physicians are able to help address this need. For companies active in primary care, the challenge is how to effectively drive behavior change in a large and expanding physician universe. Interestingly, the physician universe in Canada has continued to increase, with the number of physicians per capita now at the highest level ever recorded<sup>2</sup>.

In addition to this evolution in physician demographics are fundamental changes to the healthcare system, service innovation and cost containment. Consequently, target groups of physicians are becoming more dynamic than ever before, with churn in key targets potentially exceeding 20% per year depending on the therapeutic area.

In the face of these challenges, AI/ML enables marketers to generate actionable targeting insights from large, as well as limited, data sets. In the example of a specialty drug with a significant undiagnosed or untreated patient population, AI/ML can detect patterns in target patients' treatment history. This can be used to predict which other patients have a high probability of being diagnosed with that same disease. Compared to previously used models, such as logistic regression, new machine learning techniques allow better accuracy than ever. In the following example, AI/ML was applied and validated to correctly predict 99 out of 100 patients, with accuracy maintained also at much higher recall rates (i.e. % of actual patients flagged by the model).

---

### Business questions where AI/ML can provide insights

#### Multi-Channel Marketing

- Is the level and mix of my spend right?
- Can I reduce my F2F interactions?
- Does my digital engagement pay off?
- What is the next best (customer, channel, timing)?

#### Digital Engagement

- What drives digital engagement?
- When and how often shall I send emails?
- How to optimize digital strategy?
- Which physicians are likely to opt out?

#### HCP Targeting

- Who are important HCPs for my market?
- Do I visit high potentials?
- What is their attitude to my treatment?
- What drives their treatment decision?

#### Message Content

- Which content best resonates with my HCP?
- Which content best fits HCP segments?
- What is the next best content to drive adoption?

<sup>2</sup> In 2017, the number of physicians per 100,000 population in Canada was 234; [https://www.cihi.ca/sites/default/files/document/physicians\\_in\\_canada\\_2017.pdf](https://www.cihi.ca/sites/default/files/document/physicians_in_canada_2017.pdf)

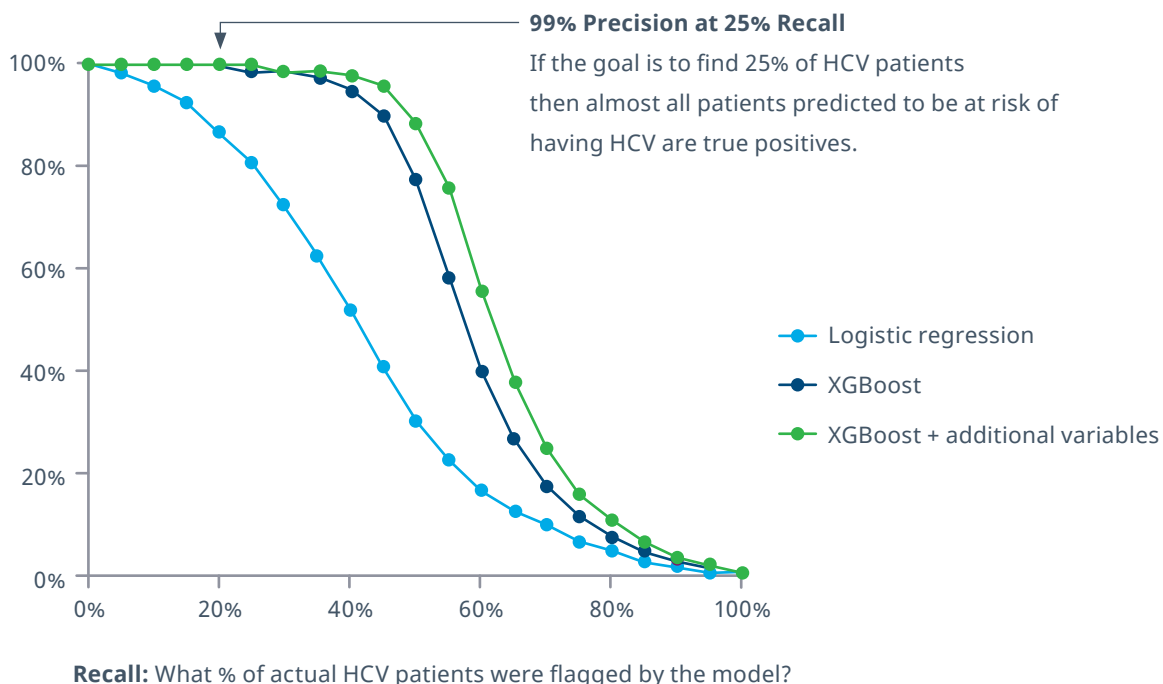
A similar type of approach can be applied to address other targeting questions e.g., predicting which patients are most likely to switch from one therapy to another. In provinces where doctor-level data are available, these patient-level insights can be linked to physicians, enabling a new degree of precision targeting for pharma marketers.

In provinces such as British Columbia (BC), where doctor-level prescribing information is not available, AI/ML has also added concrete value. As mentioned earlier, one of the strengths of AI/ML is the ability to detect weak signals in smaller and more limited data sets. As a result, the accuracy of predictive modelling using machine learning has increased considerably in the past few years. The machine learning model is trained and validated on richer data sets in other provinces, ultimately enabling more robust and nuanced targeting options. Similar approaches are possible in specialty, oncology or new markets, such as medical cannabis, where data are scarce.

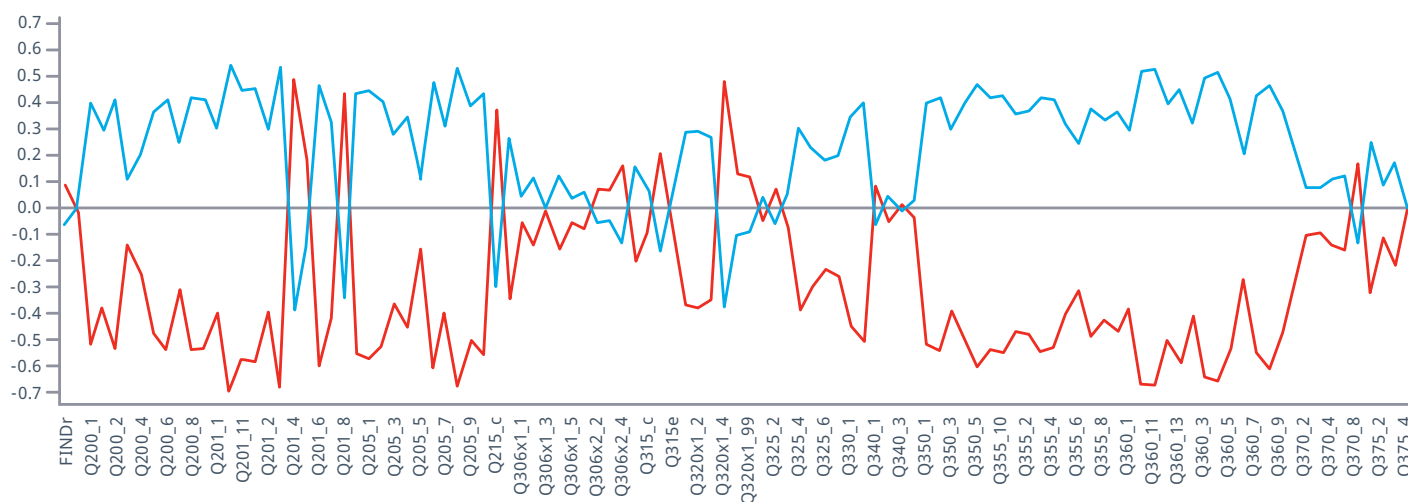
Another example demonstrating the value of AI/ML is attitudinal segmentation of HCPs. When marketers conduct primary market research to understand physician attitudes and perceptions relevant to a new launch product, for example, it can be complicated and time consuming to identify the most relevant and distinct clusters of HCPs based on their responses. Multiple machine learning techniques can be applied to this data set to identify and validate those clusters more quickly and effectively. Below is a concrete example of responses by two distinct physician segments (blue and red), quantified for each of the questions from a survey along the x-axis on the graph. The results clearly demonstrate the differences between these two segments, allowing for an effective engagement and communication strategy for both sales and marketing teams.

**Comparison of ML and conventional tools in predictive analytics; example from identification of undiagnosed patients**

**Precision:**  
Of all patients who were flagged, what % went on to receive a diagnosis of HCV?



## Example of HCP attitudinal segmentation clustering results using AI/ML



In addition to effective clustering in such actionable HCP segments, AI/ML can take this one step further by projecting those clusters to the entire physician universe across Canada. This is done by integrating data from the primary market research with secondary data available at the physician level and training the model to predict cluster membership for physicians who were not part of the original survey. The advantages for companies include the increased reliability of data-driven decision making, and the savings in terms of effort and time for sales and marketing teams to apply more traditional typing tools.

As the above examples illustrate, AI/ML can be a powerful tool to achieve precision targeting and secure competitive advantage regardless of the therapy area. The dynamic nature of AI/ML, with its inherent ability to improve outcomes through experience, also means that the traditional approach to segmentation and targeting will fundamentally change in the years to come. While in the past many marketers have relied on a core pre-launch segmentation with ad hoc updates along the product life cycle, the future will see a much more dynamic process of targeting, constantly updated and linked to execution through technology.

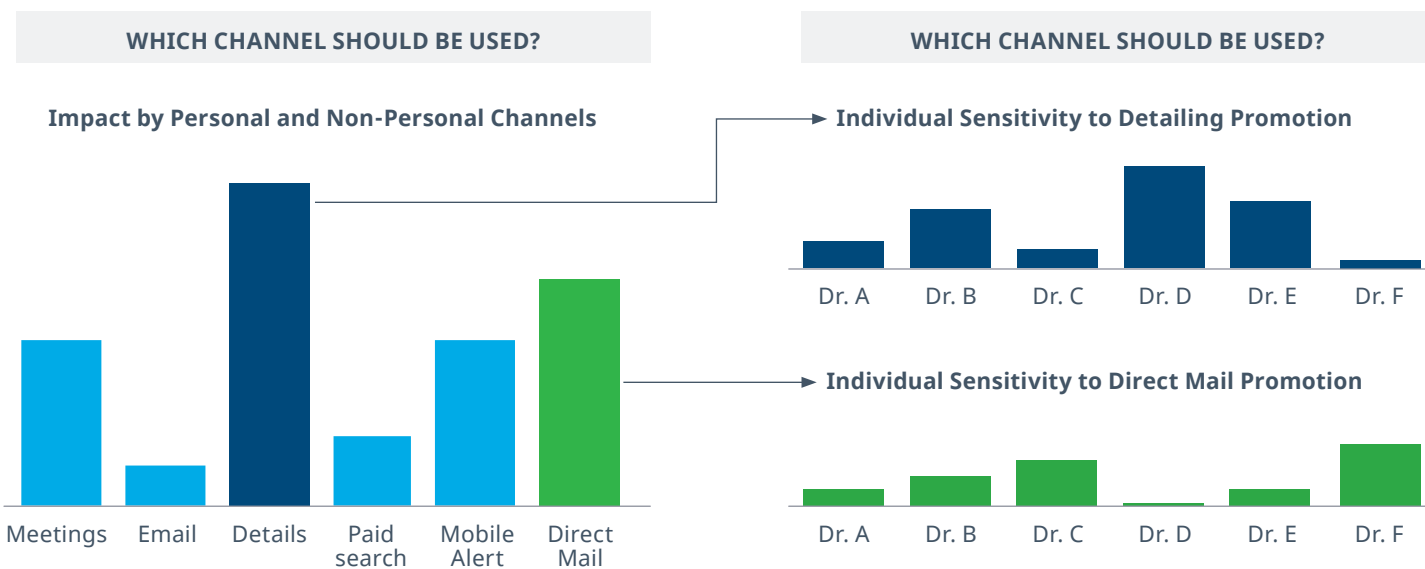


# Multichannel Marketing (MCM)

Having identified the most valuable target physicians based on behavior or specific target patient profiles, it is essential to also ensure engagement with the right content at the right time and through the right channel. While promotional mix optimization has been applied for many years, AI/ML is offering new opportunities to improve commercial brand execution.

In the following example from the respiratory market, comprehensive data on prescriptions and promotional activity were integrated to measure individual physician responsiveness to promotional channels.

## AI/ML helps address questions on channel choice and individual promo sensitivity

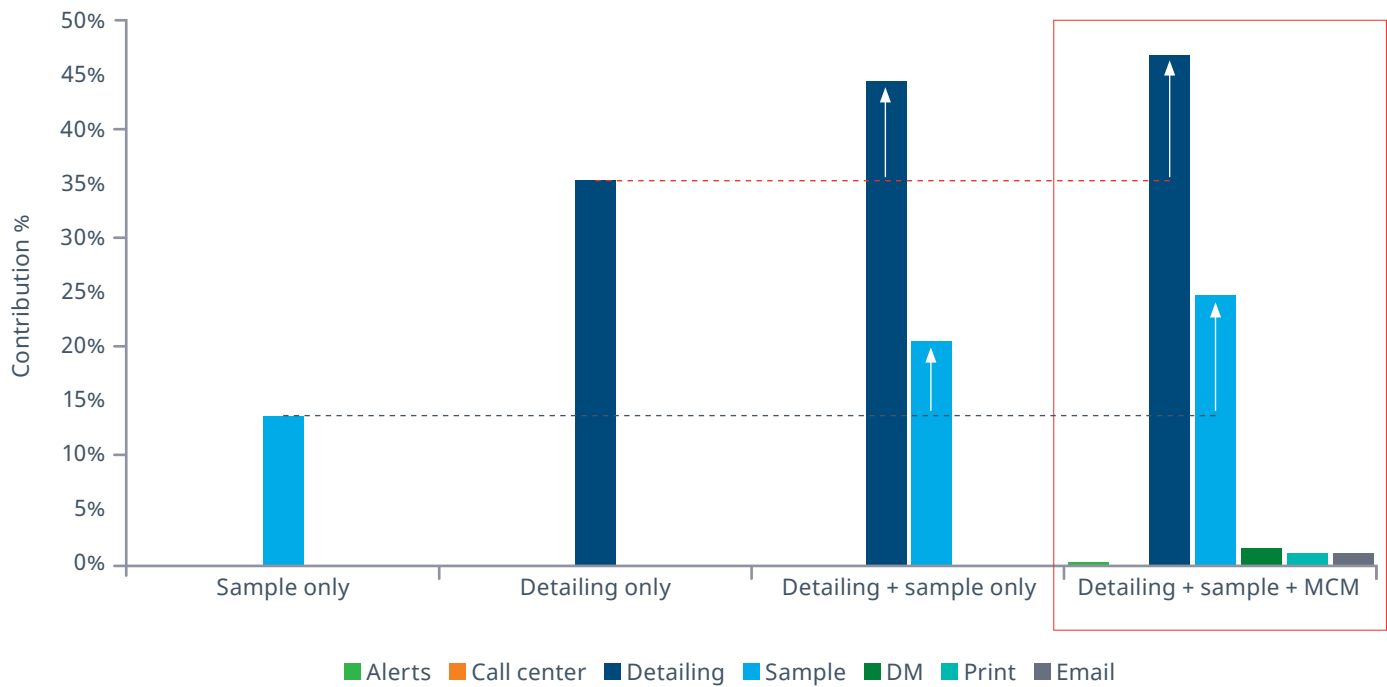


The machine learning platform also provided insights to specific channel synergies, showing for example that the sales contribution of a rep detail was augmented when physicians were also engaged through other channels, including digital.

An important additional element unique to the use of AI/ML is the ability to leverage the generated sensitivity scores to identify the “Next Best” customer and action. This ongoing calibration of resource allocation enables optimization of physician engagement to an extent which was never possible before.

In summary, while the adoption of AI/ML in pharmaceuticals generally lags that of other industries, there is an abundance of opportunities to drive commercial success, whether for precision targeting, multi-channel marketing or other activities. In order to take advantage of the benefits provided by AI/ML, companies must ask a clear business question, make sure they have access to the right data as well as the fundamental domain expertise to address that question, and the capability to deliver timely insights to their front lines. Ultimately, the most successful pharma companies in Canada will be the ones who understand what is necessary to fully embrace the culture of an agile, data-driven organization – and act accordingly.

### Example of channel synergies identified with AI/ML



# About the authors



**HANS HANSEN**  
Principal,  
Commercial Effectiveness Services,  
IQVIA

As part of IQVIA's Canadian consulting team, Hans partners with large and emerging biopharma clients to leverage key insights from data and maximize value of commercial operations. He has more than 18 years of pharmaceutical industry experience from strategic and operational roles in sales, marketing, and general management across Europe, Canada, and Asia Pacific. He holds an M.Sc. in International Business from Copenhagen Business School and has completed executive education at INSEAD in Finance, Sales Management and Negotiations. Among his areas of expertise are Launch Excellence, Multi-Channel and New Commercial Models.



**GILBERT MERARIU**  
Senior Principal,  
Technology Solutions,  
IQVIA

Gilbert joined IQVIA in May 2000 as lead application development. In 2010, he was promoted to Principal, Technology Solutions where he led the tech and commercial development, launch and marketing of the first-ever dashboard and iPad application for the pharmaceutical sales force.

Currently, Gilbert is Senior Principal, Technology Solutions where he is responsible for building innovative technology offerings to help clients achieve excellence in Compliance, Master Data Management, Data Warehousing, Business Intelligence and Multichannel Marketing solutions across all customer segments in Canada, including Pharma, Payers, Government and Pharmacy.

Gilbert holds a bachelor's degree in Information Management systems from Concordia University.

---

## CONTACT US

[iqvia.com/canada](https://iqvia.com/canada)

## LOCATIONS

16720 Trans-Canada Highway, Suite 100  
Kirkland, Quebec H9H 5M3  
514-428-6000

535 Legget Drive, Tower C, 7<sup>th</sup> floor  
Kanata, Ontario K2K 3B8

6700 Century Avenue, Suite 300  
Mississauga, Ontario L5N 6A4  
905-816-5000