



## EXECUTIVE BRIEF

# Enterprise artificial intelligence and machine learning with Infor OS

## Infor OS

Over the last several years, artificial intelligence (AI) and machine learning (ML) have been at the leading edge of the enterprise software hype circle. The promise of embedding predictive capabilities into operational value chains such as analytics, order and inventory accuracy, and reduced maintenance downtime generate a lot of excitement in improving the value of each investment dollar spent on solutions, and rightly so. The ability to harness those innovations is part of a greater movement in IT and software spending interests to generate higher workflow and system productivity ROI.

Infor's approach to artificial intelligence and machine learning looks to tackle these challenges directly, using the layered ecosystem of Infor® OS. Infor OS unifies otherwise siloed ERP products to ensure that users are making decisions in sync with the state of operations elsewhere. This technology can be a crucial tool in today's business context, where recent advancements have made AI an invaluable source of value—when used correctly.

AI, as a concept, is hardly new, but with 21<sup>st</sup>-century enterprises graduating their investments to the cloud for both SaaS and IaaS-based systems, it's worth looking at the role of AI as a technology today and evaluating how to best layer these rapidly evolving—and often still emerging—technologies as a means of creating real, tangible value. Usually, organizations that want to adopt AI have no problem finding reasons why it might help their business, but face challenges with how to best implement and leverage it. Let's start to peel back the layers behind AI to understand better how AI and machine learning (ML) can help operationalize insights based on data.

In a general sense, AI is a broad term that encompasses fields such as mathematics, computer science, psychology, philosophy, and linguistics. There are two categories of AI: General AI and Narrow AI. General AI is a type of adaptable intelligence based on intelligence that humans exhibit. It's often depicted in movies where computer systems are capable of learning how to solve problems and carry out a vast array of specialized tasks on their own. Narrow AI is an intelligence associated with a specific task, where a system has been trained explicitly against a specific data set and does not deviate from that task. Examples of Narrow AI in the world today include voice/facial

recognition, self-driving cars, chess bots, drone infrastructure analysis, predictive maintenance, and so on. The process of training these narrow AI systems and the basis for almost all AI that exists today is often referred to as applied machine learning. This training process allows a system to “learn” from a problem by exposing it to substantial training data and adding a feedback loop that will enable it to identify mistakes and failure cases, increasing accuracy and effectiveness over time.

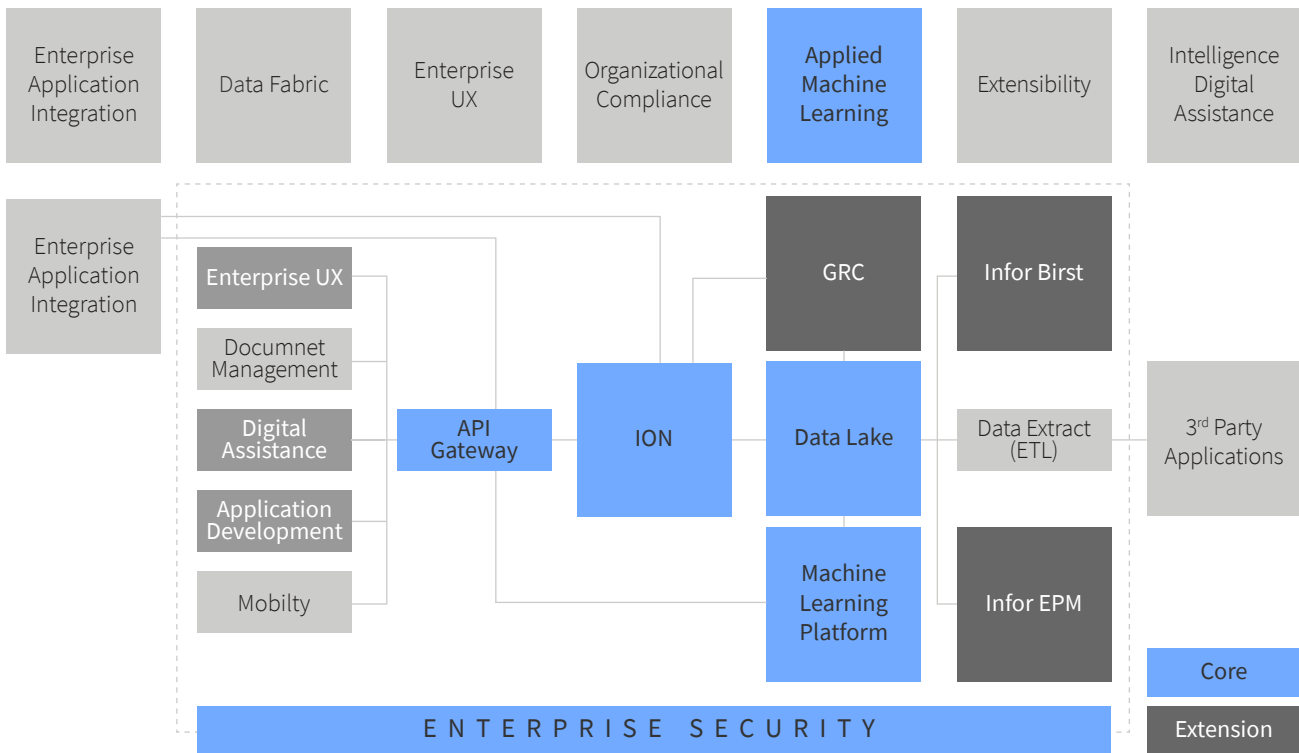
While the promises of machine learning are high, they come with significant challenges. Because ML processes are data-dependent and often focus on singular business processes, implementations can require years of forethought and planning. Traditionally, data scientists were required to load enormous volumes of raw data into local development environments and clean, analyze, and refine them for accuracy.

Significant investments in infrastructure and hardware were also required to help scale the data capture, storage, and processing steps. Infor Coleman’s Machine Learning application lowers the barrier to entry to ML insights by providing predictive modeling experiences through an existing ecosystem of applications within the Infor OS platform. This layered ecosystem addresses needs such as application integration, data processing, and decision making. Below we will explore three components of Infor OS and how they work together to provide a complete AI story.

### Infor ION

The first component is Infor OS’s Intelligent Open Network (ION). Infor ION® is an integration platform that allows users to build reliable, scalable, and secure application integration networks. ION comes equipped with a suite of technology connectors that expands the number of integrated interfaces between both Infor CloudSuite™ and third-party applications.

### Applied ML Architecture



Simplified architecture for applied machine learning with Infor OS.

This means that if there is a data source that needs to be accessed, ION can connect to it. This is critical to machine learning, as data sources are often spread across several different applications. Furthermore, ION's hybrid connectivity means that customers who still run on-premises applications can ensure that the data ecosystem is not fractured or incapable of benefiting from SaaS technologies.

A major part of ION's integration platform is the API Gateway. It allows users to securely deploy, manage, and test APIs for both Infor and non-Infor applications. This means that whether you're using an Infor CloudSuite application, third-party vendor, or in-house application, APIs can be leveraged for integration, reporting, application development, and data acquisition for machine learning inputs. Additionally, the API Gateway can be a consumption medium for Coleman™ ML models that allows for rapid deployment and testing across all connected business applications. The consumption of machine learning models, in the form of APIs, is critical to Infor OS's AI strategy because it dramatically reduces implementation time by eliminating the need for custom development across each business application.

## Infor Data Lake

The second component of Infor OS is the Infor Data Lake. Data lakes are essential to machine learning platforms because they house the most important piece—data. A rich history of transactions and executed business operations are essential to the accuracy, and therefore usefulness, of any ML prediction. Data lakes store raw business data, but unlike data warehouses, they do not need the data to be formatted in any particular way and are infinitely scalable. Often, businesses will only capture a subset of the data they produce and use that data to drive specific metrics and key performance indicators, but this assumes the organization already knows the question it wants to answer. What about tomorrow when additional insights are needed? By cheaply storing all the enterprise data produced, data lakes enable powerful insights and give a huge head start on tomorrow's requirements.

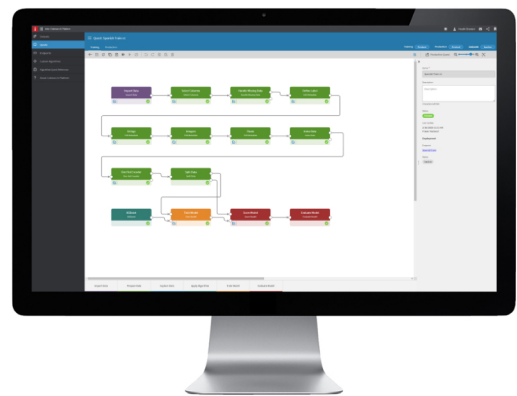
The Infor Data Lake uses ION and the API Gateway to connect to both Infor CloudSuite and third-party applications, tying all of these data sources into a single location. Once stored in the data lake, massive amounts of data are intelligently categorized by the Data Catalog, and give users insights into properties like data types and timestamps. Compass tools also allow business users to query the data and begin the data exploration process quickly. These tools pay huge dividends, and allow less technical users to build and clean data sets when creating machine learning models.

## Infor Coleman

The third component of Infor OS is the Infor Coleman AI platform. Coleman is an applied machine learning platform built for both data scientists and business users. The overall goal of Coleman is to simplify the ML model building process by abstracting data science concepts and providing an intuitive modeler that allows business or data analysts to import, clean, train, and evaluate data sets. By making use of ION, Data Lake, and the API Gateway, Coleman reduces ML implementation times from a process that takes months or years to a process that takes days or weeks. For organizations that have data science personnel on hand, Coleman allows for custom algorithms to be defined and scripting to be injected into the data transformation process.

Because Coleman models are deployed as an API endpoint within the API Gateway, CloudSuite users can consume these models in several ways.

### Coleman Quest

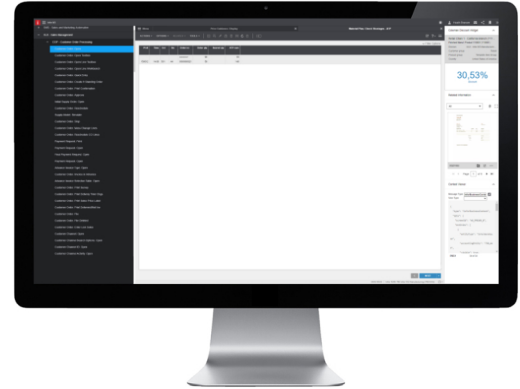


Coleman Quests are built by chaining activity blocks together, keeping the data flow simple and easy to follow.

Infor CloudSuite applications are building their own Coleman models and calling them from directly within the application, so if you are an Infor customer, you might already be using Coleman. Third-party applications can also use the API definition in the API Gateway to call and consume models for their own purposes. Also, the API endpoints can be used as part of a custom contextual application, i.e., an application that runs beside an Infor CloudSuite app and provides predictive services based on real-time inputs. Imagine you have a salesperson who is trying to close a sale but needs to come down on the price to do so. A Coleman model, trained with months or years of sales data, could recommend a discount percentage that wins the deal and maintains margins.

The orchestration of these data platform components, in combination with robust consumption options, provides the necessary tools for solving the complex challenges that arise when looking to operationalize artificial intelligence and applied machine learning. As more and more businesses look to ask more meaningful questions and understand more about the data they produce, these technologies will become necessary staples in everyday business operations. The shared infrastructure and combination of Infor OS technology working together with industry-specific applications gives Infor a unique position to offer an easy-to-use, repeatable machine learning experience across all industries.

## Coleman Recommendation



Infor and third-party applications can use Coleman's Recommendations within their own applications via the Coleman Prediction API.

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