



The Dawn Of Digital Decisioning

New Software Automates Immediate Insight-To-Action Cycles Crucial For Digital Business

by John R. Rymer and Mike Gualtieri

April 19, 2018

Why Read This Report

A key challenge in digital business: deciding what to do in the customer's moment of need — and then doing it. Digital decisioning software capitalizes on analytical insights and machine learning models about customers and business operations to automate actions (including advising a human agent) for individual customers through the right channels. Read on to learn about the requirements driving these new use cases, their potential to improve customer experiences, and the challenges application development and delivery (AD&D) pros face in building them.

Key Takeaways

Digital Business Requires Digital Decisions

The speed, volume, and individuality of digital business operations demand automated, real-time decision making. Digital decisions spur actions to offer a price, solve a fulfillment issue, and take other operational actions for individual customers with consistency and speed humans can't match.

Focus On Decisions First, Insights Second

Decisions are required to complete any insight-to-action cycle; either people or software make a decision to perform an action. Yet the decisions that determine any action are too often hard-coded in software apps that emphasize data and process. Designing decisions first focuses investments in data and process on measurable business outcomes.

Digital Decisions Require New Platforms

As the number of data sources and factors required to take decisions rises, conventional platforms can't keep up. Older decisioning platforms operate in background using static business rules and segregate data science and app development. Digital decisioning software relies on close cooperation of data science, process, and rules technologies as well as associated specialists.

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Problem: Customer Experience Demands New Speed And Capacity

Our customer is waiting — what should we do now? This basic decision is the foundation of digital customer experience (CX) — and digital business itself. Digital transformation strategies that focused on great mobile and web experiences must progress to the operational decisions and processes behind the customer interface, using software to understand each customer's situation, make decisions about what to do or say, and then take actions in the moment of need — with little or no human intervention.

Such digital decisioning applications provide a growing, but underappreciated, opportunity for AD&D to advance their businesses. Digital decisioning software:

- › **Revolutionizes insurance sales and service for Prudential.** Prudential Corporation Asia's next-best-action (NBA) sales (deployed in Hong Kong) and claims (deployed in Indonesia) applications strip out weeks of people, process, and paper. Agents handle the final customer negotiation, but automated selling decisions and actions (automated underwriting is on the road map) make the customer experience accurate, immediate, and personalized — and generates higher incremental revenue.
- › **Enables online, self-service sale of complex products.** Many products are customized by decisions about eligibility, price, rates, and features that consider age, income, payment history, and many other factors. The complexity of products like these has made customer self-service almost impossible — until now. New self-service financial firms like Bento for Business (employee credit accounts and spend management) and NetCredit (personal loans) leverage digital decisioning software to bring the convenience and speed of online self-service to complex products. How? The software automatically renders the required decisions in real time.

For a US health insurer, digital decisioning software allows institutional clients to know immediately why claims were denied, a first for its business partners.

- › **Continually balances patient care at a major US healthcare provider.** A critical decision for healthcare providers: prioritizing cases during crowded periods to prevent long, and potentially dangerous, wait times. A big hospital and clinic operator in the US uses a digital decisioning application to continually assess *and predict* caseloads, severity, staff, and other factors to prioritize triage and care in response to at-the-moment situations. The software makes dozens of decisions based on constantly changing situations to drive effective care actions.
- › **Ensures supply chain links remain unbroken.** Manufacturers must keep complex production lines operable or else risk their ability to meet customer demand. Many machines and processes make it difficult to predict any one failure that could result in a line shutdown. A maker of industrial washing machines uses internet of things (IoT) data from devices to create machine learning models to predict failure and devise rules to decide what actions will best prevent downtime.

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Solution: Digital Decisioning Software

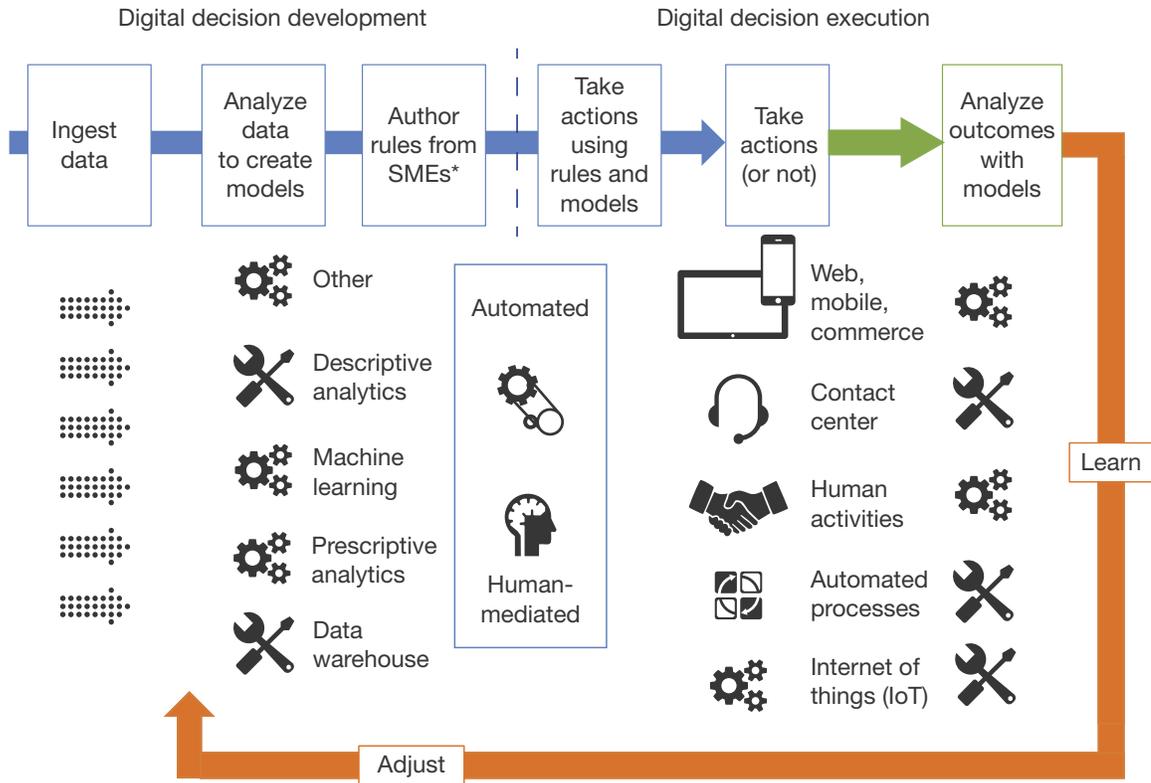
Digital decisioning software is the next step by AD&D pros who use advanced analytics such as machine learning, business rules, and process technologies to turn insights into effective, individual, and immediate customer actions and measurable business results. Banks (customer onboarding, fraud detection), insurers (underwriting and claims processing), logistics (route optimization), telecommunications firms (marketing campaign management and churn management), retailers (campaign management and personalization), travel (offer management), and manufacturers (product configuration and supply chain management) have long relied on decisioning software to run their operations. Digital decisioning raises the bar. How? Each of the above examples shares five defining characteristics. The software:

- › **Automates operational decisions that lead to actions.** Each use case automates an action to achieve a tactical business result. Businesses like global payments firm Worldpay (formerly known as Vantiv) already operates this way, making 1 million decisions per second; digital decisioning brings this scale of digital operations to all enterprises. Digital decisioning software aims to aid planning or strategy actions and can provide data useful to planning.
- › **Operates in real time and at scale.** Digital decisioning software automates the choices at the heart of cycles that begin with data analysis to gain an insight and context about customers and end with actions for individuals in the moment. Each cycle unfolds in real time — not nightly, weekly, or monthly, as earlier generations of software to automate decisions did. As the number of data sources and factors within decisions rises, techniques like predictive analytics and machine learning become crucial to meeting time constraints.¹
- › **Seeks completely automated decisions and actions.** The primary reason for digital decisioning software: Using automation to take actions fast enough for mobile moments and similar quick digital business interactions. Many firms can automate complete insight-to-action cycles, but even firms that still require people to make the final call can make those decisions in a smart, consistent, individual, and immediate manner with support from digital decision software.
- › **Continually improves through feedback loops.** Digital decisioning applications measure the effect of decisions on operational results and outcomes to ensure decision models improve. By capturing potentially millions of decisions per second, this post-action analysis helps to ensure that analytical and decision models keep up as the world changes — continually. Digital decisioning software is a set of activities bracketed by analytics (see Figure 1).
- › **Runs on platforms that integrate analytics, rules, and process.** AD&D pros build most digital decisioning software on platforms of their own design, which integrate multiple technologies. These platforms integrate insight-decision-action-evaluation flows, sometimes but not always providing services for all four phases. Some use business rules for all four phases. These development approaches are expensive, and efforts to integrate a variety of analytics technologies with business rules by Logical Glue and SAS Institute presage a new generation of platforms for digital decisioning software.

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FIGURE 1 Decisions Are The Heart Of Insight-To-Action Cycles



*Subject-matter experts

Digital Decisioning Extends And Relies On Strategies Rooted In Insights

The digital decisioning concept extends Forrester's systems of insight, real-time interaction management (RTIM), and digital intelligence concepts. How? With recognition of decision logic with the insight-to-action cycles those concepts define. Here's how these concepts relate to each other:

- › **Systems of insight rely on decisions to spur executable insights.** Systems of insight implement an "agile insights-to-execution process," a goal that drives investments in data and analytics architectures toward business actions and outcomes.² These applications are typically built by AD&D pros that specialize in data warehouses and lakes, and applications using analytical technologies including Hadoop/Spark, predictive analytics, and machine learning. Digital decisioning extends systems of insight with the logic that bridges between an insight and execution of an action, as well as the need to continually revisit and revise analytical models to account for business results (see Figure 2 and see Figure 3). If "digital insights are the new currency of business," decisions are what that currency buys.

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- › **Real-time interaction management manages decisions about customer interactions.** Real-time interaction management (RTIM) addresses the difficult problem of how to best interact with customers through digital and other channels and methods.³ The concept helps B2C marketing pros. These systems often require complex decision logic to select the right formats) methods, and right channels for individual customers based on dynamically assembled context. RTIM also illustrates that some digital decisioning problems require specialized expertise and platforms.
- › **Digital intelligence.** Digital intelligence is “the practice focusing of the use of data and insights relating to customer digital engagement for the purposes of improving business decisions, actions and customer experiences.”⁴ This helps customer intelligence professionals. Digital decisioning is a broader concept, addressing not only digital customer engagement cycles, but operational processes, as well. It is also aimed at AD&D pros.

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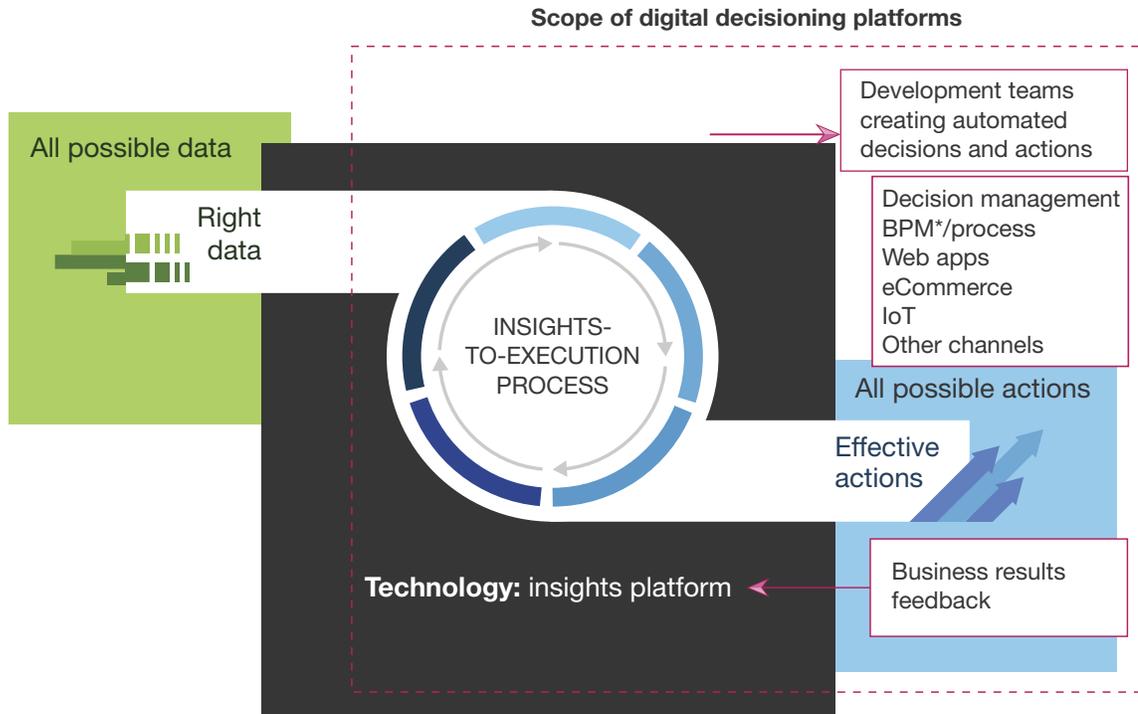
FIGURE 2 The Relationship Of Digital Decisioning To Systems Of Insight

	Previous approaches	Systems of insight	Digital decisioning
Goal	<ul style="list-style-type: none"> • Big data: Generate insights from data. • Agile business intelligence (BI): Put data into employees' hands. • Customer insights: Understand customers. 	Find, test, and implement digital insights to improve a specific business outcome.	Automate the decisions (choices) required for business actions that respond to customer context, opportunity, and constraints in the moment of need.
Business alignment	<ul style="list-style-type: none"> • Managed by function (e.g., marketing) • Seen as cost centers assisting in operational efficiency 	Part of a business organization generating revenue	Part of a business organization generating revenue
Sponsorship	<ul style="list-style-type: none"> • Marketing for customer insights • IT for big data and BI 	Chief marketing officers and CIOs share responsibility for insights teams, tech, and process.	Business, analytics pros, and developers collaborate on digital decisioning solutions.
People	<ul style="list-style-type: none"> • Customer insights is a separate team. • Big data and BI owned by IT • Pockets of expertise in different groups 	Small insights teams include business, tech, and analytics skills drawing on shared resources for specialized data skills.	Agile teams include analysis and development pros required to deliver insights-to-action solutions.
Technology	<ul style="list-style-type: none"> • Big data management • Analytics • BI 	Plus: <ul style="list-style-type: none"> • Insights visualization • Collaborative environment • Links to software execution • Feedback loop 	<ul style="list-style-type: none"> • Analytics • Decision management • Machine learning • Business process

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FIGURE 3 Digital Decisioning Is An AD&D View Of Systems Of Insight



Source: "Insight Platforms Connect Data To Action" Forrester report

*Business process management

Digital Decisioning Software Depends On Big Data Architectures

The relationships between digital decisioning, systems of insight, RTIM, and digital intelligence illustrate a key shared dependency: big data architectures. Organizing multiple data feeds from enterprise applications and external sources for analysis is a prerequisite for digital decisioning applications. The data architecture must be flexible enough to accommodate new data sources and analytics methods such as machine-learning algorithms, as well as new use cases.⁵

For a large US financial services company, each data platform for digital decisioning is an organic, evolving shared asset that has supported a growing portfolio of digital decisioning apps for seven years and counting.

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Platforms For Digital Decisioning Applications Are Emerging

Platforms for digital decisioning applications are just starting to emerge. Most of the firms we researched integrate multiple products to create the platforms for their projects. These collections typically include predictive analytics, machine-learning solutions (PAML) and other new big data tools, as well as business rules, business-process management, and data warehouses.⁶ Do-it-yourself platforms are typical in the early stage of a new software concept. Within 12 months, vendors will respond to digital decisioning requirements with comprehensive platforms. Today, the market for digital decisioning platforms is characterized by:

- › **Software-as-a-service (SaaS) and solution buying for specific use cases.** Firms in banking and retail can choose packaged solutions to advance their decisioning applications in fraud, lending, next-best-offer, and other scenarios. Dozens of software firms sell customer acquisition and onboarding solutions to firms of all descriptions. These solutions may or may not expose their underlying platforms for extensive customization by AD&D pros. Profitect's solution for retailers and consumer packaged goods (CPG) firms, for example, exposes its underlying platform so its customers can add new data sources, new machine learning algorithms, and new rules.
- › **AD&D pros rolling their own digital-decisioning platforms.** The composition of these platforms varies, but it usually reflects the backgrounds of the team doing the work. AD&D pros focused on big data, business analytics, and PAML — already huge markets — typically add rules, digital process automation (DPA), or both to their platforms to implement actions.⁷ AD&D pros building applications tend to start with business rules and/or DPA and integrate with big-data environments, data APIs such as Facebook's, and analytical sources, including PAML and streaming analytics.⁸

Often in custom platforms, single technologies play multiple roles. For example, analytical tasks often use business rules (scoring cases, cleansing data, and integrating data), but business rules also automate selection and initiation of actions. AD&D pros sometimes use DPA platforms, which are best at automating flows of tasks and actions, to automate decision logic.

- › **Early examples of integrated digital-decisioning platforms.** Integrated platforms are starting to emerge from vendors like Experian, FICO, IBM, Logical Glue, and SAS Institute. These platforms address the digital decisioning cycle with a suite of rules, PAML, and process services to simplify integration of functional modules, development, and administration. Profitect exemplifies an advanced digital decisioning platform, a completely turnkey offering focused on specific industries: CPG and retail.

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Recommendations

Act Now On Digital Decisioning

Enterprises waste time and money on unactionable analytics and rigid applications. Digital decisioning can stop this insanity. It is the highest-value next step for firms that wish to complete the insight-to-action cycle necessary for a successful digital transformation. Start your journey now by:

- › **Instituting a culture of digital decisions-first design thinking.** Decisions correlate to business outcomes. As a design center for software, digital decisions help developers, business intelligence pros, business analysts, and data scientists focus on the most valuable elements of the customer journey, business processes, and operations. Instead of starting with the data, analytics, the code, digital decision-first thinking will ensure that these teams are all working toward data- and analytics-informed actions that lead to the best possible business results.
- › **Extending Agile processes to overcome team tribalism.** Digital decisioning software requires close cooperation between data science teams building models and application development teams building applications (actions and processes). In most organizations, these are separate teams that don't work well together. The multidisciplinary team concept of Agile methods will help bring the teams together, fostering first a shared understanding and then the short lines of communication vital to modern software delivery and digital transformation.

Think of digital decisioning as the nexus of business rules, data, analytics, and machine learning models. Business intelligence pros create analytics. Data science teams create machine learning models. Business analysts create rules. Digital decisioning software provides a common repository for these critical components of digital decisions. Developers can consume these digital decisions in a uniform manner that also makes the insight-to-action cycle much smoother.

- › **Delivering quick decisioning wins.** Digital decisioning may seem overwhelming because many teams and the artifacts they produce must come together in unison. However, one smarter, automated decision can be worth millions in terms of customer acquisition, retention, and/or operational efficiency. For example, a machine learning model that predicts customer churn can be combined with business rules to decide what personalized actions to take to prevent customers from churning. Business leaders can identify a few decisions that they know impact business outcomes to prove out the value of digital decisioning.

A major tech vendor's analytics group offers a "one-day solution program" to its business leaders. Most of the people approach the program seeking an analytical model as the solution to the problem they're working on; the team guides them to the decision at the heart of a solution. According to the group's leader, after the first solution, business leaders never turn back.

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- › **Making subject-matter experts part of digital decisioning teams.** Subject-matter experts have the domain knowledge that will make digital decisioning projects successful by offering insight into the business rules and data that can be used by the technical team to formulate the key elements of the digital decision.

What It Means

Improved AI Will Power Digital Decisions

Artificial intelligence (AI) is not one technology. Rather, it is made up of one or more building block technologies, including knowledge engineering, machine learning, deep learning, and others. Ultimately, it is about understanding the situation in a particular domain and deciding the best action to take or not to take. Digital decisioning software already incorporates a key AI technology: machine learning. As AI technology research heats up in both commercial enterprises and the open source community, the accuracy and scope of AI will be a boon to digital decisioning software. It will cover more use cases — already happening with the ability of deep learning models to analyze images, video, and voice in real time. We believe that emerging AI platforms such as CognitiveScale Cortex 5, IBM Watson, and Infosys/EdgeVerve Nia share the characteristics of digital decisioning software.

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Supplemental Material

Companies Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

Arago	FICO
Bento for Business	Forth
Decision Management Solutions	GoodData
Enova Decisions	IBM
Equifax	InRule
Experian	Insight Enterprises

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ISIS Papyrus

Red Hat

Logical Glue

Sapiens Decision

NetCredit

SAS Institute

Pegasystems

Software AG

Profitect

Sparkling Logic

Progress Software

Syntel

Prudential

Vantiv, now Worldpay

Endnotes

- ¹ For primary research on the growing importance of real-time decisions, as well as the development challenges posed by use of dozens of data sources and multiplying numbers of factors. Source: “Step Into the New Era of Digital Decisioning Platforms,” a commissioned Forrester Consulting study on behalf of Inrule, August 2017.
- ² For a summary of Forrester’s stream of research on systems of insight, see the Forrester report “[Digital Insights Are The New Currency Of Business.](#)”
- ³ For more on RTIM, see the Forrester report “[Brief: Demystifying Real-Time Interaction Management.](#)”
- ⁴ Forrester describes digital intelligence as a modern competitive approach to analytics that customer insights (CI) professionals can use to combine insights from existing, new, and emerging channels to enable timely, customer-obsessed decision making. To learn more, see the Forrester report “[Optimize Digital Intelligence For Your Insights-Driven Business.](#)”
- ⁵ For specific examples and research on big-data architectures, see the Forrester report “[Transform Customer Experiences With Systems Of Insight.](#)”
- ⁶ Forrester defines predictive analytics and machine learning solutions as software that provides enterprise data scientist teams with 1) tools to analyze data; 2) tools to build predictive models using statistical and machine learning algorithms; and 3) a platform to train, deploy, and manage analytical results and models. See the Forrester report “[The Forrester Wave™: Predictive Analytics And Machine Learning Solutions, Q1 2017.](#)”
- ⁷ One large US financial services firm that started from an analytics perspective was using Data Stage, Hadoop, Kognitio, MicroStrategy, Netezza, Platfora, Tableau, and SAS.
- ⁸ Forrester defines streaming analytics as software that provides analytical operators to orchestrate data flow, calculate analytics, and detect patterns on event data from multiple, disparate live data sources to allow developers to build applications that sense, think, and act in real time. See the Forrester report “[The Forrester Wave™: Streaming Analytics, Q3 2017.](#)”

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