McKinsey & Company

Insurance Practice

Rewriting the rules: Digital and AI-powered underwriting in life insurance

COVID-19 reinforces the urgency to make life insurance purchasing simpler and more digitally enabled.

by Ramnath Balasubramanian, Ari Chester, and Nick Milinkovich

July 2020

To many consumers, buying life insurance can be painful. Despite insurance companies' substantial investments over the past several years in digitizing customer onboarding and policy binding, progress has been slow and incremental and, for many companies, has fallen short of expectations. Many companies have failed to meaningfully scale their efforts to modernize underwriting.

The recent COVID-19 lockdowns and ongoing physical-distancing protocols reinforce the need to rethink underwriting. More than ever, insurance companies must address customer and agent frustration with the still lengthy, high-touch, manual process. With COVID-19, paramedic home visits to conduct medical exams have become highly undesirable—especially for a "pushed" product that is not immediately crucial to the customer. In this environment, risk assessment must shift toward more remote, data-driven models, while distribution must shift from in-person interactions to more online interactions.

To stay relevant, life insurance companies need to accelerate their builds of digitally enabled, data-augmented, life-product purchasing journeys. In this article, we outline the barriers facing the modernization of underwriting, offer a perspective on the primary factors required for success, and describe four concrete steps to accelerate transformation efforts.

Limited ambition: The state of accelerated underwriting today

The traction of many companies' accelerated or automated underwriting programs has been limited, largely because insurers have taken a cautious, incremental approach to scaling automated decision making. These companies opt for small improvements to their risk frameworks and processes rather than considering the potential to rebuild and take a more modern approach to underwriting.

Indeed, most accelerated pathways today are limited to simple products like term and final-expense insurance policies. In addition, fluidless options are available only to a relatively narrow set of customers who fit age and face-value requirements (Exhibit 1). In many cases, these limitations are compounded by significant medical criteria (that is, insurers will accelerate only high-quality risks), resulting in many customers beginning an accelerated journey but becoming frustrated when, before the end of the journey, they must move back into a traditional underwriting process.

In addition, consumers who opt for accelerated underwriting often don't qualify for the preferred rates that are accessible to those who undergo full medical underwriting, including paramedical exams and lab tests. The differences can be significant: going from a standard to a preferred or preferred-plus rating can cut annual rates in half.

Especially given the changes brought on by the COVID-19 environment, insurers can no longer afford to be so cautious. A few companies offer examples of a bolder approach, launching new platforms and attempting to innovate from the ground up. For example, John Hancock recently introduced its eApp platform, which enables an end-to-end digital process across policies of all face values. The company provides instant decisions for applicants up to 60 years old for some products with up to $3 million in face value.[1]

In a sample of eight insurers that launched streamlined underwriting programs, the companies saw a median rise in sales volumes of 14 percent over a two-year period (Exhibit 2). Of course, additional factors, including pricing and distribution dynamics, also affect sales, but it's clear that

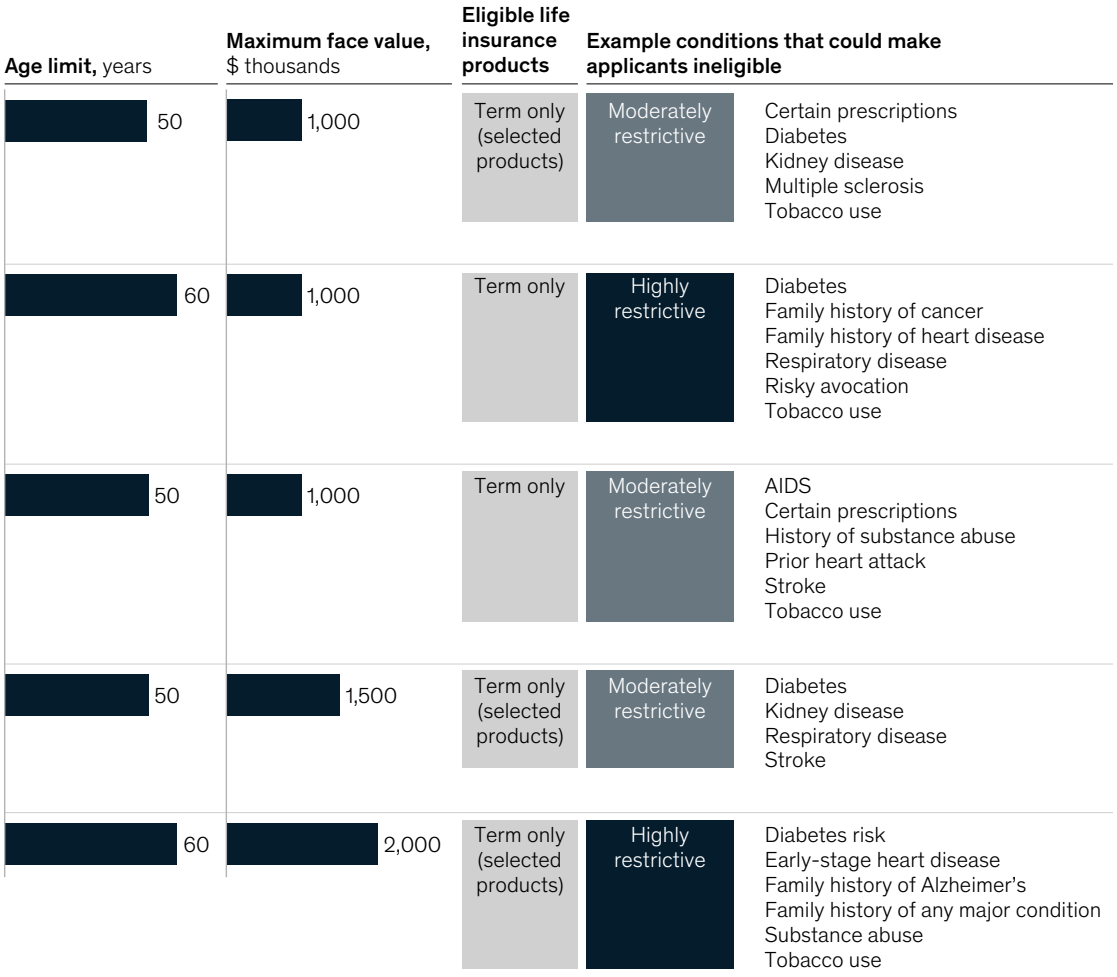
[1] "John Hancock Launches Electronic Application Platform to Streamline Life Insurance Sales Process," June 23, 2020, johnhancock.com; and "Drop tickets and John Hancock ExpressTrack®: Reference guide," October 2019, johnhancockinsurance.com.

Exhibit 1

Existing accelerated underwriting programs tend to be moderately or highly restrictive.

Characteristics of five fluidless, digital products released by insurers in the past three years

No medical exam required for eligibility



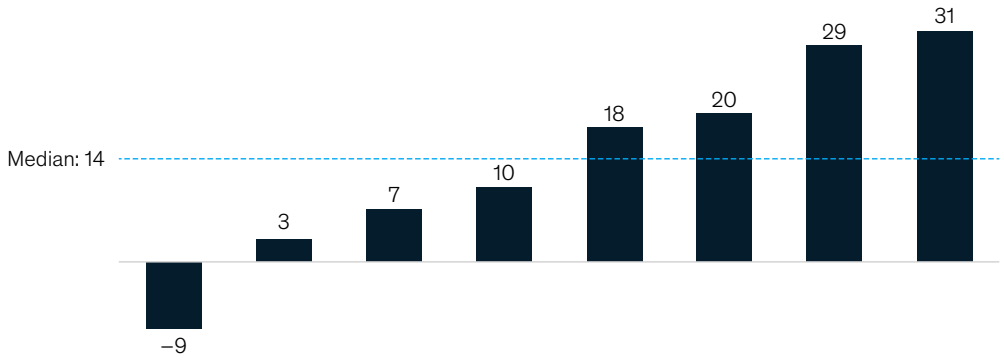
Source: McKinsey research

Exhibit 2

Within two years of launching a streamlined underwriting program, companies saw a 14 percent median increase in sales volume.

Rise in new business premiums, %

Sample of 8 US companies; all programs began in 2017 or 2018



Source: McKinsey analysis

faster underwriting was a key component of these companies' successful transformations.

Underwriting transformation requires new mindsets

Even at insurers that have accelerated their underwriting, the end-to-end process to purchase life insurance can still be manual, paper-based, and lengthy. Often the process still requires a wet signature on a physical document, lacks digital payment and fulfillment, and can take several weeks to complete.

Companies that successfully accelerate underwriting—and, more broadly, transform the life insurance purchasing journey—have five actions in common: they overcome legacy technology, embrace customer-centricity, incorporate new data, constructively engage regulators, and maintain a conviction about the value-creation potential of the new process.

Technology: Establish end-to-end automation despite constraints of legacy technology

On the surface, it appears that the life insurance industry has developed cutting-edge, digitally enabled, and data-driven underwriting. In reality, however, much of the purchasing journey remains analog and manual due to the legacy technology stack at most companies. All of the top reinsurance companies, as well as several technology vendors, have developed automated underwriting platforms in which the underwriting manual is embedded as automated rules. These platforms typically include a workbench to support workflow, application programming interfaces to incorporate third-party data, and visualization and reporting tools. Increasingly, these platforms are built on modern standards (for example, cloud deployment and microservices architecture). On some platforms, 90 percent or more of applications are processed within minutes, and fewer than 5 percent of applications require human touch. These platforms may also include modules that use cutting-edge

AI (for example, natural language processing and text mining).

However, these platforms have only superficially helped insurers build a truly end-to-end, automated process. Insurers still face entrenched, legacy technology for which no quick fixes exist. Modernization generally requires either using new vendors to replace current technology or implementing work-arounds. In either case, employing agile approaches will help companies iteratively find ways to make progress in fast bursts.

In one instance—reflecting the agile principles of speed and fast bursts—an insurer manually extracted product rules from its legacy administrative system into an Excel file and reviewed it every day against the new policies being submitted, which allowed a five-day reduction in the time to bind new policies. This manual effort to extract logic and review each policy added near-term expense and complexity, but those considerations were greatly outweighed by the incremental speed that was delivered to advisers and customers. And, despite the additional expense and complexity, the process was still cheaper and much faster than waiting to fully modernize the legacy technology.

Whether replacing technology or using work-arounds, insurers must adopt a mindset that accepts a minimum viable product as a way forward. Instead of focusing on the perfect technology solution, industry leaders are rapidly delivering bare-bones improvements to the field.

Customer-centricity: Base design of new experiences and platforms on explicit and specific feedback from distribution partners and customers

New digital journeys need to be anchored in what matters to customers and advisers. To start, insurers must go beyond mapping journeys and building generic customer archetypes to understanding customers' hands-on, tactical experience, as they log on to websites, pick up the phone, send documents, and read brochures. Instead of making decisions based on infrequent or anecdotal feedback, insurers must actively seek customer input that tactically translates into functional product requirements. They also need to consider the tone and feel of the product at each critical customer interaction: *Why are my data being collected? What should I expect? How long will the process take?* They can use the answers to these questions to inform concrete ways to optimize the customer journey throughout each customer's step-by-step, moment-to-moment experience.

Insurers must also involve their distribution partners, such as agents and brokers, as critical sources of customer insight. These partners should be heavily involved in the process redesign, including simplifying the questionnaire, changing the evidence-collection process, and prioritizing the road map of new technology's functionality. Insurers that involve their partners understand the systems and application landscape within an agent's office, for example, and have a deep understanding of how the agent prefers to transact business.

Of course, given many agents' long-standing use of paper application forms, new digital journeys are sometimes at odds with the architecture of current systems and require significant behavioral changes on all sides. Channel migration becomes critical. Insurers must invest in change management, communication, and training to promote agents' and advisers' adoption of new interfaces.

In the past few years, a fast-growing cohort of direct marketers and digital managing general agents has been creating new avenues to the end customer. For example, in the first few months of 2020, Policygenius saw volumes that were up

[2] Alex D'Amico, "US insurance market trends during the pandemic," April 27, 2020, McKinsey.com.

to 50 percent higher than those of the prior few years.[2] While penetration of the direct-marketing/aggregator channel has been low in US markets (at least compared with European and Asian markets), this channel is expected to grow rapidly as digital-native agents and aggregators build superior front-end customer experiences—and as consumers increasingly demand fast, remote interactions in light of COVID-19. Customers in these channels demand experiences on par with their experiences with other commonplace technology platforms, which in turn require insurer-provided underwriting and fulfillment that are much faster than they are today.

Data: Use new information sources to inform and reshape risk paradigms

Data can transform the industry in two ways: they can provide new sources of insight to simplify and streamline current underwriting, and they can enhance the understanding of risk to enable more refined, granular categorizations of risk.

Many companies started their underwriting innovation programs by automating existing rule sets to bring about less-complex policies. They then moved on to incorporate external sources of data, some of which are now widely used. For instance, prescription histories are now used as an underwriting input on more than 90 percent of life insurance policies. In addition, credit-based insurance scores have proved to be predictive of mortality and policy lapses, and several reinsurance companies partner with the credit agencies to provide scoring. TransUnion, for instance, offers TrueRisk score, which has been validated by Reinsurance Group of America.[3]

New data have also enabled a more granular understanding of risk. For example, mortality outlook can be meaningfully informed by factors such as charitable giving, pet ownership, fitness protocols, and a range of other behavioral indicators. Looking ahead, insurers could consider a number of promising new digital sources of health data, ranging from electronic medical records (an increasingly common underwriting input) to new and innovative sources like telemedicine, used to conduct interviews and visually measure the body mass (BMI) of applicants.

In addition to using new sources of data, insurers have an opportunity to reinvent the paradigm that underlies today's underwriting process. The current process translates information about age, gender, and tobacco use into a relatively narrow set of rating categories—standard, standard plus, preferred, and preferred plus. For applicants with more acute risk factors, insurers make table-rating adjustments to these categories, which can increase premiums by 300 percent or more. As companies critically examine their underwriting, many have observed that the 80/20 principle holds true: much less information is required to place applicants into the current rating categories, especially when new data and analytical techniques are employed. Yet the industry continues to adhere to the status quo, using a sledgehammer to crack a nut.

Some companies have taken a clean-sheet approach to simplify risk assessment, incorporate new data sources, and increase deployment of AI-driven techniques. This has led to much simpler application forms (for example, question sets reduced by more than 70 percent), removal of invasive requirements for more of the population, and pricing differentials that are lower than those of fully underwritten products.

To be successful, insurers will need to overcome the tensions between traditional actuarial models and newer data science techniques. Sometimes machine-learning decisions appear to be at odds with the output of traditional rules engines. Some companies have built strong analytics models—but only a few have moved from the lab to the field and shifted meaningful decision-making power to those models. To overcome this challenge, actuaries and data scientists must collaboratively answer this question: For which segments is the model strong

[3] "Smarter life insurance risk decisions with TrueRisk Life," Transunion, transunion.com.

On the surface, it appears that the life insurance industry has developed cutting-edge, digitally enabled, and data-driven underwriting. In reality, however, much of the purchasing journey remains analog and manual.

enough to go live? At the same time, companies must accept some degree of risk and uncertainty in making the transition to newer models.

Regulators: Ensure new models are explained, understood, and accepted

Tension sometimes exists between regulators and insurance companies because there is not yet a well-established regulatory approach for using machine learning or AI techniques in the life product purchasing journey. As such, regulatory oversight is sometimes viewed as a hurdle, and, in response, insurance companies favor a more conservative, risk-averse approach.

To move forward, companies must constructively reframe their approach to engaging with regulators. This starts with appreciating that regulators are not averse to innovation in itself but are concerned with its unintended consequences. Regulators have a mandate to ensure good market conduct and solvency. As such, they need to ensure that data-driven underwriting does not discriminate and that new models are as adequate—that is, "actuarially equivalent"—to current models. As long as these conditions are true, regulators will more likely accept underwriting innovation. They may even view it favorably and encourage it, since this innovation could help the industry grow, improve its resilience, and give a broader set of consumers more access to products.

To get there, insurers need to provide regulators with visibility into the inner workings of new models and data-driven output. Doing so may require, for instance, that companies increase documentation of various subsegments that are identified by machine-learning algorithms—even if the factors are not intuitive—and then provide the side-by-side comparisons of aggregate output with other modeling techniques to demonstrate the models' equivalence.

Value creation: See the forest for the trees

The return on investment for underwriting modernization is not immediately obvious. Even when a company takes an agile approach and makes rapid and focused progress, value may not be readily apparent for several years. There could also be unintended consequences: mortality experience, particularly when based on less evidence or new sources of information, could deteriorate. Persistency may also decrease if underwriting and customer journeys are easier and faster and customers have more options. The risk that a successful transformation will not translate into greater volumes of business also exists, especially if other companies in the industry are able to transform as well.

That said, successful companies acknowledge and accept such risks, understanding that if they fail to modernize, they will eventually be left

behind. Successful companies also have prudent and measured acceptance of the potential deterioration of results—with the conviction that they will test and calibrate new models that eventually will perform on par with, if not better than, current models. Successful companies also see the manifold types of value that improving processes (Exhibit 3) will generate and appreciate that the long-term potential for transformation justifies the investment. In one large US carrier, this manifested in a new budgeting approach that funded multiyear investments rather than incremental quarterly funding cycles (which had been the norm). In another multiline carrier, the approach has been to invest in talent acquisition up front—ensuring access to enough new technical and analytical talent early in the process to support the multiyear evolution of the program.

Discovery South Africa is among the leading global examples of this transformative potential,[4] with a 20 to 30 percent increase in market share, a 20 percent better claims experience, 50 percent-plus lower mortality on high-engagement cohorts, a 15 percent lower lapse rate—and, overall, a total impact twice the value of new business (VNB). These outcomes were the result of many years of test-and-learn experimentation, and this model has not yet had the same level of impact in other markets—but these results indeed illustrate the art of the possible.[5]

Delivery of underwriting modernization requires operating differently: Four steps

Successfully modernizing the underwriting and customer onboarding process requires rewiring the organization and adopting agile principles—essentially, disciplined project execution. Four of the most important factors for success include embracing systems thinking, breaking down silos,

[4] "Results and cash dividend declaration for the year ended 30 June 2018," Discovery, 2019, discovery.co.za.
[5] Simon Rowles, "Vitality is coming to New Zealand—look (actually be) busy," Customer Strategy Network, January 22, 2019, customerstrategynetwork.com.

Exhibit 3

Underwriting innovation programs have a wide range of potential benefits.

New sales	**Increased number of applicants**	☑ Marketing advantage of a less invasive process
		☑ Simplified, shorter process for agents and brokers
	Increased conversion rates	☑ Significantly improved consumer and agent/broker experience
		☑ Fewer dropouts because of simpler process and easier gathering of requirements
	Increased value per customer	☑ Consideration of higher-value products by agents, brokers, and customers, a result of simpler requirements
Cost	**Decreased nonlabor cost**	☑ Replacement of high-cost data sources (eg, blood, urine, attending physician statements) with lower-cost external data sources
	Improved labor efficiency	☑ Simplified underwriting case evaluation
Loss ratio	**Improved claims experience**	☑ More granular and accurate classes of risk, leading to improved claims experience and greater pricing specificity
Other benefits	**Shorter turnaround time**	☑ Faster decision cycles, which improve customer and broker experience
	Greater persistence	☑ Higher revenues from lower post-binding lapse rates (often due to use of analytics-based customer profiles for ongoing engagement and portfolio management)

Source: McKinsey analysis

getting top management's commitment, and accelerating the pace of change.

1. Embrace systems thinking
Innovation in the life product purchasing journey has often focused on underwriting with no consideration of the end-to-end customer experience, the distribution dynamics, and the full technology landscape. Companies need to adopt systems thinking to be able to deeply understand how the constituent parts interrelate—and how individual systems work within the context of larger systems. These are the most critical elements of the transformation program:

— *Submission and requirements gathering.* The process must be redesigned to be simple and intuitive; the question set must be streamlined so that only the most salient information is collected and as many fields as possible are automatically populated.

— *Underwriting decision process.* Insurers must prioritize underwriting criteria to collect the minimum necessary amount of data needed to assess risks and make decisions. As many decisions as possible should be automated, and the human judgment in nonautomated cases needs to be fast and seamless. Robust audit and risk controls, as well as test-and-learn feedback loops, should ensure ongoing effectiveness.

— *Digital issuance.* Paper files and analog processes should be digitized with the use of electronic or voice signatures, electronic delivery of policy documents, and card or automated-clearing-house payment methods.

— *Product development and rate filing.* Companies must consider how to shift the one- to two-year product development cycle (relying on legacy systems and waterfall queues) to a months- or weeks-long process to get new products into market.

Accelerating progress requires an integrated road map and sequencing across all of these elements—among others—while also considering how the different parts of the system interact.

2. Break down silos
Successful transformation requires the coordination of multiple departments and roles: underwriting, actuarial, product development, distribution, IT, risk, legal, and compliance. Often newer functions, such as data science and advanced analytics, are represented as well. Operating in traditional silos, with handoffs across departments, will not work. A dedicated, cross-functional team is required to deliver a successful transformation program. The team needs to be jointly accountable for program objectives, with some portion of compensation and career progression tied to the broader program's success.

Getting this team right is more easily said than done. The right people may not perfectly fit into a traditional organizational structure and hierarchy; team members could be a mix of lower-level, midlevel, and senior leaders. There may also be clashes of perspectives and personalities; the team needs both actuaries to represent business and be realistic and data scientists to bring new skills and fresh, unconstrained thinking. It is difficult to staff such teams and to encourage constructive tension. Appointing employees who already have full plates and are in demand might mean that other projects suffer. (Hint: if taking someone from a current job to put on the team doesn't feel uncomfortable, that person is probably the wrong choice.)

Above all, this team needs to be managed differently. Sponsors need to take an "eyes on, hands off" approach and empower the team to make decisions and propel change. If every decision needs to be escalated to a C-level leader, the pace of change and the willingness to innovate will suffer. Risk and governance members are included on the team to ensure that their views are consistently embedded in solution design and to smooth the passage of new solutions through risk committees.

3. Commit to transformation from the highest level
Even with a fast pace, an underwriting-driven transformation can take most insurers two years or more. There will be false starts. Some releases

might be a few weeks or months late. Project elements will run over budget.

Maintaining momentum, resourcing, and conviction requires true sponsorship from the company's top executives. Treating the effort as a typical project or pilot program will not provide the conditions for true innovation. Executives need to be convinced that the transformation represents a fundamental shift in how underwriting and onboarding will be delivered, no matter what. Without strong conviction, clear aspirations, and explicit communication from the top, the program will struggle to get traction.

4. Accelerate the pace

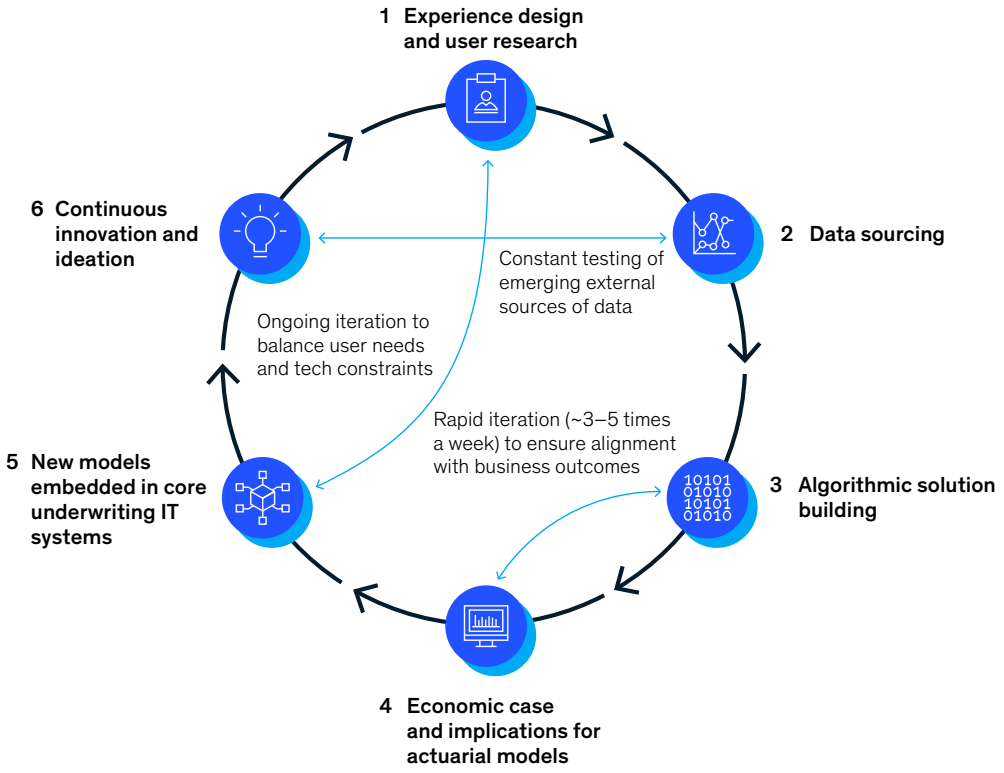
Road maps and other plans should focus on demonstrating clear wins for the field and customers each quarter. Longer-term initiatives (for example, legacy system migrations and data lake efforts) should be broken down to fit into these release cycles. Bite-size features need to be delivered to the market and then rapidly course-corrected if something isn't working.

In addition, the product-development cycle needs to be shortened from years or months to weeks. In Canada and the United States, we have observed that the most efficient companies reduce the soup-to-nuts development cycle, from conception to launch, to as few as 16 weeks.[6] The project cycle is not linear; it includes several fluid feedback loops to keep processes moving simultaneously and to skip forward and quickly share learnings with different functional teams (Exhibit 4). Successful execution

[6] It will take longer than 16 weeks if there are regulatory filing or refiling requirements.

Exhibit 4

The target operating model for an underwriting innovation program includes multiple feedback loops.



Source: McKinsey analysis

demands a pace of change that is much faster than the pace of typical large-scale projects at most insurance companies.

Streamlined underwriting is only the beginning

Algorithmic underwriting will increasingly become a prerequisite for staying on the shelf and maintaining current positions in the market. And with COVID-19 only making today's life product purchasing experience more difficult, many companies increasingly recognize that underwriting transformation is all the more urgent.

But this is only the beginning. Many current efforts to modernize underwriting are only digitally enabling yesterday's products. Today's consumers have different preferences and needs than they did several decades ago—yet the content of life insurance policies remain much the same.

Streamlined underwriting will set the stage for future innovation in the industry. It will enable the improvement of collection techniques, assisted by new technology for gathering and analyzing biometric data. Insurance product sales will shift from low-engagement, one-time transactions to an ongoing relationship between the customer and the insurance agency; this engagement will be defined by continuous underwriting and a greater focus on health and wellness. Increasingly, market segmentation will reach the level of individuals, with a richer understanding of each person in the risk pool. Assisted by these innovations, streamlined underwriting is the first foundational step that will lead to the broader reinvention the industry needs.

Ramnath Balasubramanian is a senior partner in McKinsey's New York office, **Ari Chester** is a partner in the Pittsburgh office, and **Nick Milinkovich** is an associate partner in the Toronto office.

The authors wish to thank Terrence Cummings, Jennifer Ellinas, McGregor Faulkner, Preye Okah, and Karthi Purushothaman for their contributions to this article.

Contact

To connect with someone on this topic in your region, please contact:

Americas

Ari Chester
Partner, Pittsburgh
Ari_Chester@McKinsey.com

Ramnath Balasubramanian
Senior partner, New York
Ramnath_Balasubramanian@McKinsey.com

João Bueno
Senior partner, São Paulo
Joao_Bueno@McKinsey.com

Asia

Bernhard Kotanko
Senior partner, Hong Kong
Bernhard_Kotanko@McKinsey.com

Africa

Umar Bagus
Partner, Johannesburg
Umar_Bagus@McKinsey.com

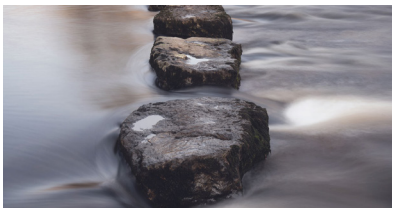
François Jurd de Girancourt
Partner, Casablanca
Francois_Jurd_de_Girancourt@McKinsey.com

Europe

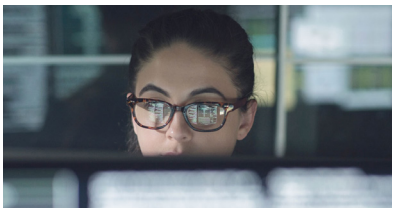
Diego Mattone
Partner, Zurich
Diego_Mattone@McKinsey.com

Further insights

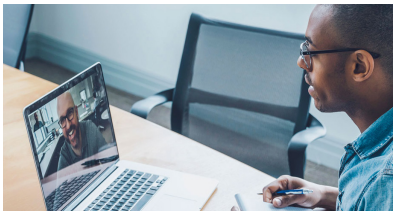
McKinsey's Insurance Practice publishes on issues of interest to industry executives. Our recent articles include:



Implications of coronavirus for North American life and annuities writers



Restore and reimagine: Digital and analytics imperatives for insurers



How insurance can prepare for the next distribution model

From art to science: The future of underwriting in commercial P&C insurance