VIZURI

THE INSURANCE HANDBOOK TO DIGITAL MODERNIZATION

INTRODUCTION

The fact is that this industry, traditionally slow to change and adapt, is now in a time of great transition.

Each insurance C-suite is investing in digital transformation efforts. The decisions they make will surely affect which of today's companies are tomorrow's leaders.

Over time, our team has developed insights on effective change at the intersection of business and IT. *The Insurance Handbook to Digital Modernization* features our best articles on the subject over the last year. We are pleased to make it available to customers, partners, and other leaders at this important time.

Vizuri is the innovation hub for AEM Corporation. We help leading companies to make better decisions, mitigate risk, and enhance customer experience. In the best sense, we are not bound by the "lore" of the insurance industry. We bring deep technical expertise and a fresh perspective based on digital transformation efforts with Fortune 500 companies across multiple industries.

Our knowledge of insurance is hard-won. Through work with an increasing number of insurance companies, including a Fortune 100 insurer, insurance companies have become our most important customers. We have developed novel solutions for underwriting and API modernization. We consult on other needs in insurance that require IT expertise, offering tailored solutions for unique business challenges.

If you take one idea from this book, I'd challenge you to this: start immediately with incremental innovation and integration. Do not tackle everything at once, or you risk inefficient spending that doesn't keep pace with your business processes and your employee knowledge base. Do not just adapt to the status quo, or you risk losing market share in the face of nimble competitors who use technology for actual strategic gain.

As you review, I welcome your feedback, comments, and questions.
Reach out to me directly at any time at jdickman@vizuri.com.

May you always stay ahead of the pack!

Joe Dickman

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THE RISK FOR INSURERS IS TOO HIGH WITHOUT DIGITAL MODERNIZATION

By the time one of our recent insurance customers walked through our door, they had nearly been defeated by their own digital transformation efforts. They were frustrated with high spending, several simultaneous and challenging projects, and no clear return on investment to show for their efforts.

The race to move from legacy core systems to more efficient and agile approaches is placing a strain on many small and medium-sized insurance carriers. Modernization requires new technologies, skills, and processes. There are a lot of ways to go wrong in a market where hiring talent is quickly becoming costlier and technologies are rapidly advancing.

There is a path forward that allows small and medium-sized insurance carriers to meaningfully benefit from digital transformation. In our experience, it looks different than the one that many firms seem to take based on their own instincts.

FOLLOW THESE 4 STEPS

We get excited about the value of new technologies for insurance customers, but our core recommendation is straightforward: embrace an agile approach to transforming your existing talent and technical assets.

1. **Look to expert help.** Without outside guidance, there is an opportunity cost of delay and a higher risk of costly mistakes. Benefit from skilled consultants or advisers who have solved your problems before.

2. **Develop a clear-eyed assessment of your gaps.** Understand where you shine and where you need to grow. Determine what technologies may or may not be needed.

3. **Create and implement a training plan.** Instead of hiring new people, emphasize a plan for training your existing staff. They already have a deep knowledge of your business. Prioritize the skillsets you need.

4. **Set realistic goals for change.** Adopt a phased approach to transformation through proofs of concept that allow your organization to adapt and provide a hands-on opportunity for your staff to apply and develop new capabilities.

It sounds simple. As always, the challenge is in the details.

FOCUS ON THESE 3 KEY AREAS

While your needs may vary, we tend to recommend that insurance firms prioritize the following initial investments. These efforts naturally build on each other, and collectively, they allow you to build a solid foundation for growth.

01

APPLICATION PROGRAMMING INTERFACE (API) GATEWAY

Add a security layer that exposes an API framework for inter-system communication and standardized interface that is utilized by all stakeholders (internal, external). For example, this would allow an insurer to directly receive a driver's records from the Department of Motor Vehicles.

02

DECISION MANAGEMENT

Adopt a comprehensive business automation platform for rules management and resource optimization. For example, this would provide an insurer the ability to instantly pass a policy decision based on their predetermined thresholds to their underwriting team or directly to the end consumer. Please note that the third article in this handbook expands on this approach.

03

MICROSERVICE DESIGN

Use this distinctive method of developing software systems that focuses on building single-function modules with well-defined interfaces and operations. This breaks a currently monolithic application into individual functional pieces, providing greater agility and the foundation for gradual adoption of modern software architectures.

We dedicate the remainder of this article to explaining the value of these investments in the context of the approach above.

01

APPLICATION PROGRAMMING INTERFACE (API) GATEWAY

API GATEWAY ACCESSES EXTERNAL INFORMATION SERVICE AND DATA PROVIDERS

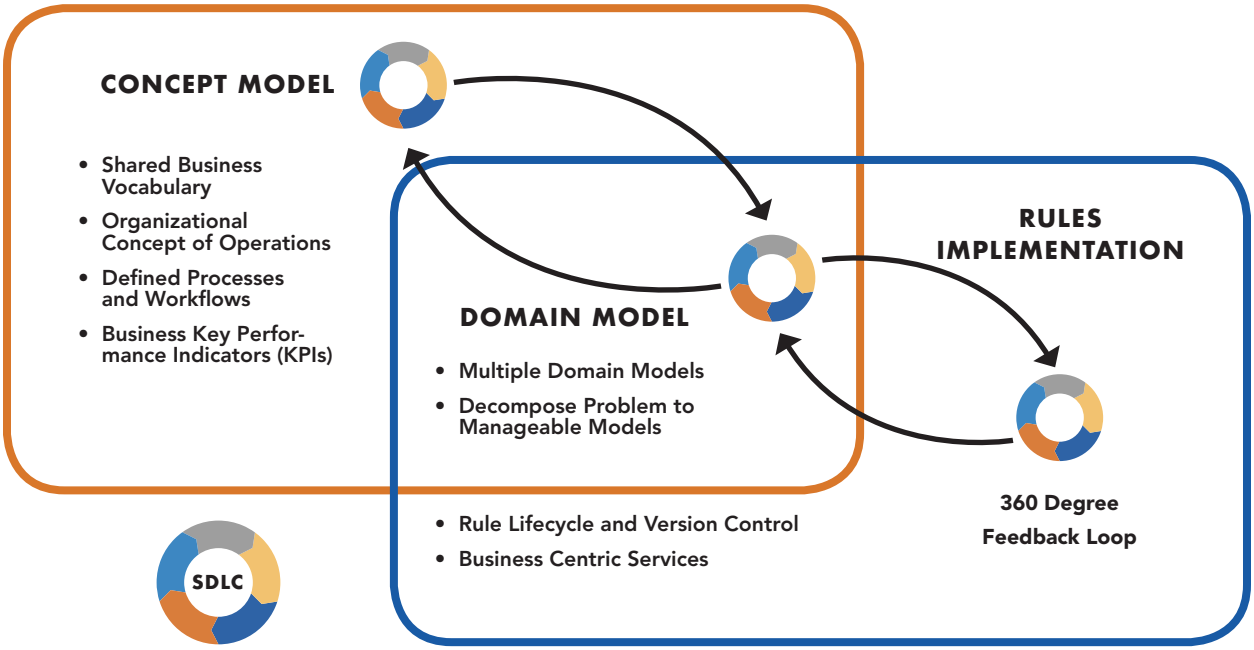
Our insurance customers tend to look inward for data from their core or CRM systems to make underwriting decisions. This feeds into the larger problem of data inconsistency.

Information is typically scattered into multiple data stores, databases, or files and is sometimes duplicated, which prevents or severely impedes automated decision making. Restricted access to pertinent external information sources also limits actuaries, agents, and brokers from making accurate underwriting decisions. This can introduce losses resulting from adverse selection.

In today's interconnected world, new private and public suppliers of information make data available, but carriers need to adopt a new strategy for accessing and incorporating it into the underwriting lifecycle process. This means transitioning from the standard green or amber screens to integrated and modern systems.

The API gateway and microservice architecture provides a scalable framework to make public and private information consumable to IT systems that can improve and automate the underwriting process with greater accuracy. Examples of this include information from Motor Vehicle Reports (MVR), the Medical Information Bureau (MIB), lab results, and prescriptions.

02 DECISION MANAGEMENT
ADD TRANSPARENCY TO BUSINESS PROCESS AND DECISION MANAGEMENT SYSTEMS



Knowledge Management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers that focuses on collecting and managing a "single source of truth" with respect to organizational processes and decisions.

Most insurance carriers fully understand the benefits that come from centralizing knowledge. Separating processes and decisions from their underlying technology (e.g. application programs, database stored procedures, scripts, etc.) and providing uniform access enables carriers to change business rules (i.e. underwriting, claims processing/adjudication, etc.) easily while ensuring compliance and avoiding risk.

Centralization gives transparency to business process and decision management systems.

Insurance companies tend to have internal groups that operate as individual silos, each with their own systems and hidden sets of rules. Some of these overlap with corporate-wide defined rules. As an organization, it becomes very difficult to make new business decisions or change existing decisions. It makes sharing complex business rules almost impossible and becomes a coordination nightmare.

To overcome this dilemma, business decisions should live in a separate centralized repository, rather than in the heads of subject matter experts or scattered across multiple systems buried in code or otherwise obscured and hidden. Policy decisions often incorporate many customer dimensions, each of which are governed by equally varied underwriting thresholds, concealed in code. Therefore, we propose bringing all these thresholds and guidelines out into the open to be collected into centralized systems.

Centralized systems will lead to informed policy decisions that are as open and visible as possible by all stakeholders-- from the most technical developers and architects to the underwriting users themselves. These include risk decisions made based on your established underwriting guidelines, so transparency will give all users the capacity to dissect and understand decisions. For example, in the case of a dispute, an analyst would be able to work backwards to audit and defend the logic that contributed to a decision.

Overall, centralization of business process and decision management systems produces many pronounced benefits:

Promotes common understanding of policy decisions and faster decision-making through a well-defined, consistent vocabulary

Avoids decision ambiguity

Avoids the replication of the same decision, which is common when rules are implemented in multiple systems that all need to make the same decision

Facilitates cohesive security measures to protect your unique underwriting guidelines and retain your competitive advantage

Generates greater business agility by standardizing the creation and editing process for individual underwriting guidelines

Standardizes the underwriting process and reduces inconsistencies by utilizing this "single source of truth"

Reduces adverse selection and improves your bottom line by allowing for A-B testing simulations that can be used to alter underwriting risk rating rules in the organization's favor

03

MICROSERVICE DESIGN

MICROSERVICES ARCHITECTURE INCREASES AGILITY AND READINESS FOR CHANGE

No one needs a singular (terrifying and very risky) overhaul that requires a complete rewrite or start from scratch. Rather, we suggest an incremental approach where the solution can be implemented piece by piece. Gradually, microservices will replace parts of an original rigid monolithic application. At the end of this process, these pieces can be deployed in a scalable cloud or hybrid environment, dissipating the strain that we have seen insurers experiencing as they transition from legacy core systems to modern cloud-based services.

A microservice design simplifies an organization's solution architecture by dividing software components into small, well-defined, and single-purpose services. This design approach also improves the quality of the software by promoting reusability and composability while improving the maintainability of the code.

For example, an underwriting microservice may be responsible for aggregating mortality, motor vehicle information, and medical records that will be used to provide a risk rating. A single microservice would be created that would aggregate one or more microservices (i.e. composability). Each set of information may also come from a different data source with some of them coming from external providers. The microservice interface provides abstraction and enables access to and management of decentralized data.

Implementing this design approach aggregates knowledge into discernible and discrete functions to be performed. The single-purpose microservice or Function-as-a-Service (FaaS) design provides a platform allowing insurers to develop, run, and manage business functionalities without the complexity of building and maintaining an entire application that consumes this complete knowledge. Microservices with a single responsibility can be utilized by many consumers and it can be modified with minimal impact on other microservices that compose the system. This is where modern software architecture design creates business agility and the ability to respond to market events.

> *There is a path forward that allows small and medium-sized insurance carriers to meaningfully benefit from digital transformation.*

MODERNIZING CORE INSURANCE SERVICES

Insurers are often stuck with legacy code and systems. These monolithic systems run on mid-range and mainframe computers. They use dated technologies that do not provide access to third-party information providers or leading-edge Insurtech technologies. They present an immense cost of modernization in terms of time, personnel, and money.

The good news is that insurers have started to recognize that these legacy systems are weighing them down with technical debt and preventing them from capitalizing on new market opportunities. Their systems have existed past the point of diminishing returns and it's not worth investing further into maintaining dated systems that utilize legacy languages, databases, and architectures.

Insurance CIOs face the dilemma of modernizing legacy policy administration systems and core services to keep pace with competitors while avoiding the disruption of existing services and day-to-day operations.

These core services include policy administration (i.e. CRM), underwriting, billing, finance, quoting (i.e. risk selection, pricing), and claims processing. These services form the insurance company's competitive edge, so to survive in a changing environment, insurers must focus on modernizing these core systems as they provide the potential to generate new revenue sources and help to control costs.

WHAT ARE THE INDIVIDUAL INSURANCE BUSINESS DRIVERS IMPACTING MODERNIZATION EFFORTS?

Consumer preferences and demands are shifting the way insurance is marketed, underwritten, distributed, and serviced. This has caused the insurance industry to rush to innovate and prosper vs. stagnate and lose market share to new entrants and innovation leaders.

In response to consumer demands, insurers are actively pursuing strategies for simplifying and automating insurance interactions along the whole customer experience from application to underwriting, rate selection, and claims processing to provide modern digital experiences.

As a result, in our experience, most insurers focus their modernization efforts on these areas which are contained in insurance core services and provide the greatest return on investment due to new market penetration or reduced operational costs.

Key business drivers for insurance modernization strategy:

Create new business lines and respond quickly to market/consumer changes.

Increase top-and bottom-line profit by leveraging leading-edge technologies and third-party data providers that drive business value and consumer satisfaction.

Reduce client acquisition costs.

Turn data into knowledge that drives business strategy via data science that incorporates artificial intelligence (AI) and machine learning into capture and adjudication processes.

Avoid adverse selection.

Efficiently manage the claims settlement process with minimal/managed risk.

Turn data into knowledge that drives business strategy via data science that incorporates artificial intelligence (AI) and machine learning into capture and adjudication processes.

An invisible but integral consideration in any modernization strategy should also be to alleviate the issues that prohibit innovation and lock the organization into proprietary legacy technologies. As mentioned earlier, a common problem is that companies feel stuck with their legacy code and systems. A future-forward modernization strategy should address this issue and minimize the chance of it happening again down the road. The strategy should also facilitate incremental modernization that does not require the company to pause for renovations.

Therefore, insurers must make a choice that is difficult to fully inform. What approach should be taken to minimize disruption within the organization but that will still add the functionalities that will produce new revenue sources and cost control?

3 APPROACHES FOR MODERNIZATION AND TRANSFORMATION

There are numerous ways to modernize and transform legacy information systems, but at a high level, we can simplify the choices down to three approaches:

01

Fully custom-developed systems

02

Cloud-based software-as-a-service (SaaS)

03

Hybrid of custom-developed software coupled with the integration of SaaS components

Each option has tradeoffs that can affect technical and business operations. More importantly, each option sets a strategy for modernization that manages the tradeoff of time, cost, and business risk.

> *The good news is that insurers have started to recognize that these legacy systems are weighing them down with technical debt and preventing them from capitalizing on new market opportunities.*

01 APPROACHES FOR MODERNIZATION AND TRANSFORMATION
FULLY CUSTOM-DEVELOPED SYSTEMS

In a perfect world, having a process or information system completely customized to your organization's business requirements would be ideal, but this is not realistic. Businesses do not have the time, personnel, or resources for taking this approach, which also has the highest propensity for overruns in both time and cost. It is also the option that carries the most technical debt.

What does this mean exactly? Insurers that create a fully customized system assume the entire opportunity cost for innovation as technology, industry, and consumer demands change. Custom-developed systems are time-and labor-intensive processes where insurers must develop a comprehensive plan for business agility, technology enhancements, and skills assimilation throughout their IT lifecycle.

In any company, resources are scarce. Resources include time, money, knowledge, and proficiency whether that is within their line of business (i.e. insurance, retail, etc.) or their internal operations (i.e. sales, marketing, IT, finance, etc.). To get the highest return on investment, organizations must make the decision whether to "build vs. buy."

Beyond the resource investments it takes to develop a custom system in the first place, the opportunity cost of supporting, modifying, testing, and integrating it with existing systems will become largely your company's responsibility.

Sometimes, getting something off-the-shelf and paying any licensing fees is an easy price to pay for not having to maintain, enhance, add new functionality. "Fully custom" sounds great, but it will be heavy to implement and continually update as needed. By choosing this approach, you commit to paying potentially huge sums down the road in the form of technical debt.

If your requirements can be met with a commercial off-the-shelf or SaaS product that already exists, then it makes sense to purchase it and integrate.

02 APPROACHES FOR MODERNIZATION AND TRANSFORMATION
CLOUD-BASED SAAS PRODUCTS

So, if getting something off-the-shelf is going to solve the issue of technical debt, then the next logical place to look is at a piece of software that does it all, right? The answer isn't quite yes.

Choosing a cloud-based SaaS product is tempting for many organizations since these software platforms are ready "out-of-the-box," offer a set pathway toward purported business goals, etc. But the simplicity they offer sacrifices choice.

SaaS insurance products deliver centrally hosted applications over the Internet through a one-size-fits-all approach. This approach commoditizes the core functions that comprise the policy lifecycle. This sacrifices your innovative edge since you must conform to the vendor's structured implementation. It also limits the ability to specialize functions and maintain competitive differentiation.

If you can't easily keep and wield the things that make you competitive—the knowledge and experience housed in your core insurance systems, then using this type of product could end up costing you anyway.

It's not just the loss of competitive edge that you stand to lose by going with a SaaS product for core insurance system modernization. You will be at the vendor's mercy for changes, producing that same issue of being stuck. Conformance to their structure and schedule can stifle future innovation. Also, conformance to proprietary SaaS-based workflows bars entrance into markets that the vendor has not previously designed for or considered.

Furthermore, even if your desired change is in the vendor's product roadmap, it will take several weeks or months to be implemented, which may limit you from capturing new business or expanding within the insurance marketplace at a competitive speed.

So, what if you customize your SaaS product yourself to make it perform like a custom solution? You end up reproducing your technical debt problem. Any customization that is applied to a base version of the SaaS application creates a specialized version that carries technical debt. Any customization performed against a previous version of the product must be reapplied to the next version, compounding the resource expenditure you sought to minimize by choosing a SaaS product in the first place.

If these issues resonate, then a SaaS solution may just not be the right fit.

That being said, a SaaS product may be right for your organization if you are able to adapt your current processes within the vendor's framework and if you are using it to perform a standard function that doesn't need to provide competitive differentiation. General and administrative (G&A) functions are prime candidates for core systems modernization utilizing SaaS-based systems. The functions of policy servicing (i.e. CRM), billing, and collections are also fine candidates for SaaS offerings.

03 APPROACHES FOR MODERNIZATION AND TRANSFORMATION
CUSTOM AND CLOUD-BASED SOLUTIONS

Specialization is what creates differentiated services and delivers value. Otherwise you are confining the proprietary elements that make you competitive to a vendor's framework. It's easy to see why companies might want a fully custom solution, but as we discussed above, it's less than ideal. On the opposite end, choosing a SaaS product sacrifices those proprietary elements.

Here are the problems insurers face with the system approaches we've discussed thus far:

LEGACY SYSTEMS

- Mounting technical debt
- Can't modernize as-is to remain competitive
- Vendor lock-in prohibits flexibility for incremental improvements

CUSTOMER SYSTEMS

- Entire burden of development and maintenance on you
- High likelihood that resources are inadequate to fully meet business needs

CLOUD-BASED SAAS

- Can't maintain competitive differentiation
- Customizations create technical debt
- Vendor determines direction and schedule for improvements

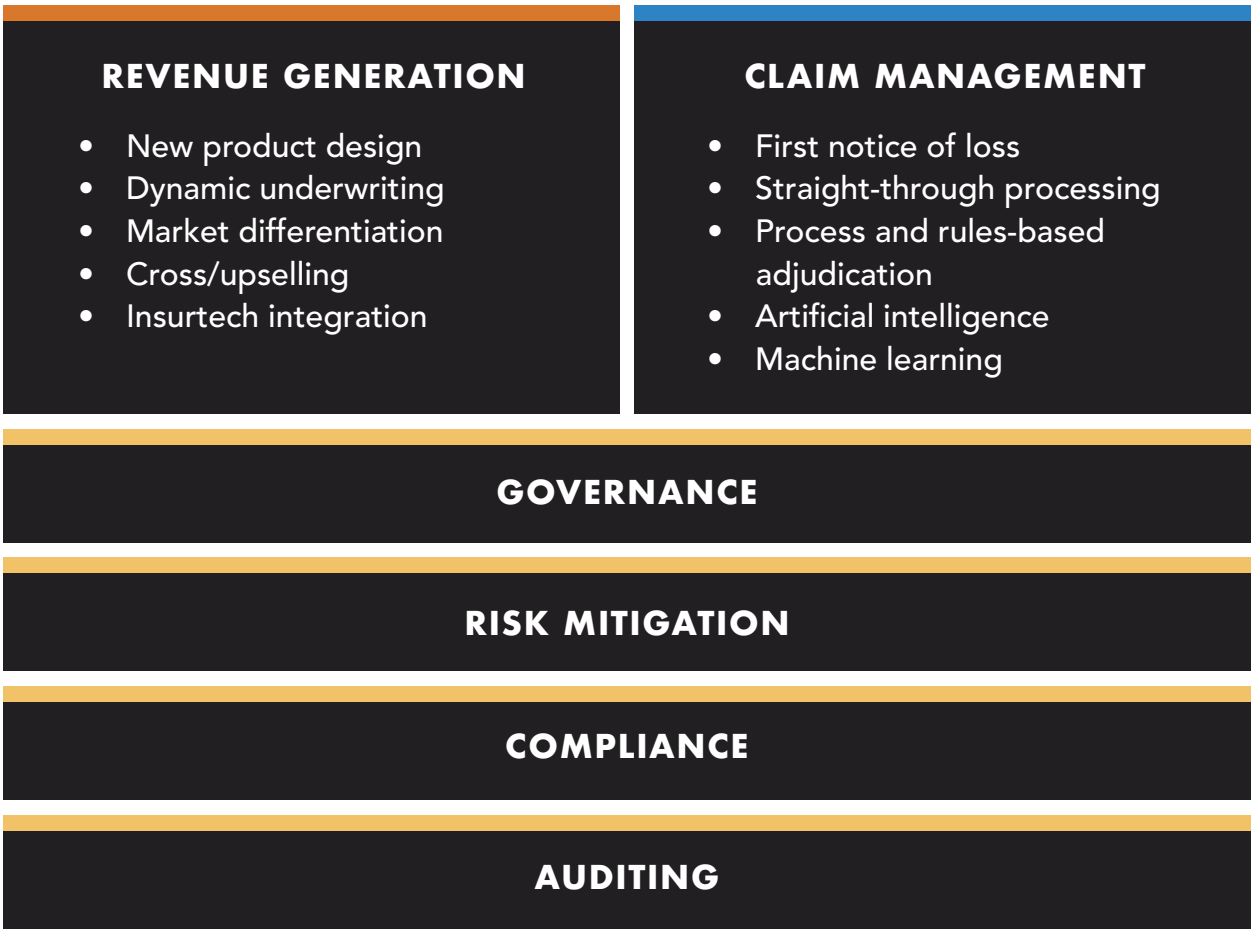
How can insurers with legacy systems, inflexible architecture, and pressure from next-generation competitors who use leading-edge solutions avoid these issues while incrementally improving their systems on their own schedules?

The answer is to leverage technology for innovation, not operations.

Use modern software architectures such as microservices to deliver innovation and provide incremental improvement for core systems modernization. The beauty of this approach is that the incremental steps toward modern functionalities are built in. In addition, these architectures can be combined and integrated with new cloud-based SaaS offerings, third-party data providers (e.g. DMV records, risk raters, MIB records, etc.), and legacy systems. In this manner, modern software architectures become the foundation for a hybrid solution for incremental innovation.

This hybrid design can gradually bring you valuable modernized core functions while not compromising your day-to-day activities. In the future, when you want to switch out individual system components for more modern ones that will keep you on the leading edge, this approach will make that easy. Vendor lock-in will cease to be a barrier.

Meanwhile, you can build or buy any individual service or function that you want without having to worry about being stuck with it. Furthermore, by having the flexibility to combine individual services across multiple sources instead of committing to a single platform, you can invest fewer resources in developing and maintaining changes that suit your business. Modern software architectures pave the way for modernized core insurance functions because they provide the basis to pick and choose moving forward. The image below depicts an idealized version of this. It would not be possible without the agility of this approach.



Modern software architectures put insurers in an ideal place to improve core insurance systems since those systems are also often informed by buried expertise from around the organization, such as in the heads of experienced underwriters. A microservices approach, for example, will provide the foundation to build upon the collective institutional knowledge of the organization, which must be managed and treated as a cornerstone in your transformational strategy planning.

AUTOMATE INSURANCE UNDERWRITING WITH CASE MANAGEMENT AND RULES

While insurance companies strive for streamlined business workflows, the reality is that they often come up short. Of course, workflows are often slowed by complex decision-making requirements, and further delayed by time-consuming manual tasks. At the same time, human processes at the policy decision level affect the uniformity of those decisions, and unpredictability of risks can uproot whole workflow management processes.

We will take a closer look at how case management and rules-based decision management can help insurers face these challenges and improve their workflows.

FIRST, WHAT IS CASE MANAGEMENT?

To define case management, let's start with the definition of business process management (BPM). BPM is a management practice for automating a sequential set of tasks that are repeatable and have a common pattern.

To effectively use BPM, the components of the task sequence must be very predictable and represent an end-to-end flow of work and data. This results in clearly defined paths that lead to a business goal.

Case management is an extension of BPM and allows for the management of adaptable and composable business processes. It recognizes that many real-world applications cannot be described completely from start to finish in a predictable manner.

Case management provides problem resolution for non-repeatable, unpredictable, or ad hoc processes. In essence, it manages one-off situations where the process cannot be predicted in advance. It usually consists of loosely coupled process fragments that can be connected directly or indirectly to lead to certain milestones (KPIs) and ultimately a business goal. The process is managed dynamically in response to changes that occur during run time.

Process fragments flow together to result in policy decisions, leading into different milestones. Tasks and subprocesses can be dynamically removed, replaced, or relocated at any point to change the overall process and reflect new points of control, new risk thresholds, and to collect new and changing information to inform risk rating.

MICROSERVICES FACILITATE CASE MANAGEMENT

Applications must be developed, tested, and released faster than ever before. Methodologies such as Agile and DevOps help break down the code into deliverable sizes to help speed up teams' sprints through features and new services. This allowed developers and architects to reimagine their application design — and that has led to a natural, incremental introduction of microservices.

Microservices directly facilitate case management by breaking down a monolithic application into individual functions that can be used and manipulated both easily and independently of one another. Without this flexibility, case management would not be possible as business rules would remain locked in place and only usable in very specific, planned-out circumstances.

In addition to facilitating case management, microservices produce many benefits for a future-minded insurer:

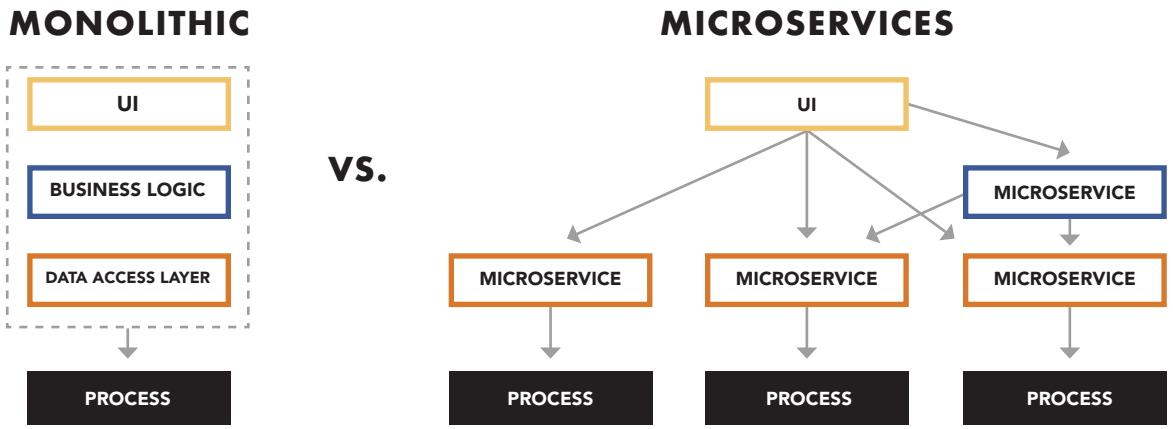
They allow for instant auto-scaling of business rules.

They facilitate integration of new tech offerings.

They can easily integrate into existing agency management systems.

They can provide support to online third-party data providers, such as MIB, DMV, MVR, etc.

See the illustration below for a representation of how microservices operate to feed into multiple processes behind one UI, as opposed to a monolithic application that can only facilitate a single, predetermined process.



FINE TUNE BUSINESS RULES WITH A/B TESTING

A/B testing, also known as split testing, allows the use of the same data set to simulate multiple different outcomes. It can be used to fine tune business rules, such as risk thresholds, to produce the most desired outcome/results. However, this would be impossible to accomplish if the rules were embedded in an application (unable to easily manipulate them) or spread over multiple systems and databases (inaccessible).

To conduct effective A/B testing, a microservices architecture must come first.

> *Case management provides problem resolution for non-repeatable, unpredictable, or ad hoc processes.*

INCORPORATE RULES-BASED DECISION MANAGEMENT TO AUTOMATE POLICY DECISION MAKING

With the introduction of automated decision technology based on decision logic drawn from rules, compliance measures and determination of policy eligibility can become largely automated. This consistent use of rules helps to control risk.

Furthermore, information collection and data validation steps via dynamic questionnaire can be introduced along the way to continually improve and inform decisions, again, without laying the burden of collection on underwriters or agents. Customers also benefit from an improved experience with much faster turnaround times.

By using decisions AI based on rules, decisions are fully traceable, meaning that the reasons for why a decision was made are completely transparent. This allows for easier auditing with rules immediately available in human language, not buried in code or complex algorithms.

PIECING TOGETHER THE BIG PICTURE

To review, case management, as an extension of business process management, contributes to insurers' future-proofing efforts by predicting unpredictability and treating each case as potentially different from those that came before it. To accommodate this, subprocesses remain loosely coupled and able to easily move, change, and be replaced.

However, to facilitate this loose coupling, computing based on individual functions, not monolithic applications must precede it. This is where a microservices architecture comes in.

Microservices also allow for A/B testing where business rules can be tested against one another to come up with the optimal combination that balances risk and revenue. Decision management systems and rules-based AI introduce automation from policy application to approval/denial notifications, freeing underwriters to personally handle the more nuanced policy processes that demand their attention.

VIZURI

Vizuri is the commercial business unit of AEM Corporation, one of America's fastest-growing private companies. Our industry experts help our insurance customers to solve challenging business problems with the creative use of technology. We design solutions that pay for themselves by focusing on enhancing core business operations.

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