Are Insurers with Legacy IT Landscape Ready for Industry 4.0?

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The objective of this paper is to highlight the readiness of insurers in line to industry 4.0, and the opportunities that it brings for the Insurers. Most of the insurers in India face a definite challenge due to the legacy elements in their IT landscape. The paper outlines and highlights the solution options for insurers so that they may take timely decisions on modernization. The traditional transformation journeys were typically IT-driven, and the author from his learning has highlighted the elements that the Insurers need to consider for successfully achieving this transformation.

Keywords:

Industry 4.0, Legacy Modernization, Digital Transformation, Layered Application Strategy, Api-fication, Implementation Considerations, Legacy Modernization Solution Options, Legacy IT Landscape Challenges, Industry 4.0 Opportunities, Industry 4.0 for Insurance

Executive Summary

Most of the private insurance companies in India started their businesses only after 2001 and have now been in operation for more than 12-15 years. This means that they would have at least seen a cycle of legacy modernization, or have definitely initiated one, and are now contemplating a digital transformation to be implemented soon.

It is getting tougher to retain an existing customer, increase wallet share and cross sell to him, than to get a new customer. It is therefore extremely important for insurers to transform the existing customer base to a loyal customer base. A question then arises: "What could possibly help improve customer retention and customer loyalty?", and, the simple answer is: "whatever makes them interested in your products and keeps them happy with your services." In other words, insurers

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need to be ready with relevant offers at the channel of customers' choice and be prompt to serve them at all the customer touch points. Gone are the days when the insurers sold products; it is time now to sell the experience and meet the customers' unmet needs not only in insurance related needs but also extend it to other related areas like investment, financial services and so on. The need and urge to make yourself digitally relevant is evident and ever increasing. Some of those drivers and factors are mentioned below:

1. Today's customer is constantly attuned to online transactions; they just cannot wait; if you are not available on the channel of their choice and cannot serve them, they will look for an alternate supplier source.

2. Relevant marketing content and offers are what customers' love; if they are backed by stories of customers similar to them, your job is half done. Insurance is a product that a customer, specifically an Indian customer, will buy only after a lot of deliberation and discussion with peers.

3. Customers prefer a one-stop shop where they can obtain all their insurance needs, and, it would further delight them if banking, insurance and investment as a portfolio can be made available at the same point of sale.

4. Customers need real-time information about their policy, claim processing and answers to queries made to insurers, and also prefer self-service; no one today appreciates any delays. Lots of innovative solutions offered by other industries, such as AI-powered virtual agents, video illustrations and gamification of products, are what is also expected by insurance customers.

5. IoT and connected products bring their own set of benefits. At the same time challenges are posed for the insurance industry and in turn for P&C insurers as well. To be ready for the next revolution, the insurers need to make sure that the base on which the entire enterprise stands, i.e. the core insurance business and IT capabilities, are modern and capable enough to interact, exchange information and make meaningful contribution.

The author wishes to emphasize on the importance of insurers' readiness for Industry 4.0, the opportunities present ahead and the challenges that need to be mitigated. The author then explains what technology limitations are present in a legacy IT landscape and provides options available for the insurers for legacy modernization using Gartner's PACE layered application strategy framework. The author also explains an approach to compare the possible solutions and the best options. There are several elements that the insurers need to consider while they embark upon this modernization journey.

Industry 4.0 for Insurance - Opportunities Ahead and the Challenges

As mentioned in 'Wikipedia', "Industry 4.0 is a name for the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the internet capabilities, cloud computing and cognitive computing. Industry 4.0 is commonly referred to as the "Fourth Industrial Revolution". It is very important for the modern day insurers to understand 'What' Industry 4.0 implies for their business and 'How' it affect the insurance industry.

This revolution is primarily driven by technical connectivity, machines and devices sharing real time information with each other. Alongside there emerge some of the inherent risks of the 'Internet facility' or the interconnected world - business continuity risk or interruptions, information security risk and cyber risk. Another major risk is the ever diminishing boundaries between the partnerships of ecosystems that bring about the loss of ownership eventually leading to brand reputation-related risk.

This fourth wave of industrial revolution also brings with it manifold opportunities for the insurance industry. It is time that the traditional insurers start looking at models that highlight clients' risks and be ready with products that offer them monetizing opportunities for managing these risks, i. e. moving from a model of risk of loss-based insurance to offering managing risk-prevention. Examples of such models being tried in general insurance, e. g. Telematics-based vehicle insurance packages and health monitoring bands-based pricing.

There is a huge amount of meaningful and valuable information that the Insurers can extract out of the wealth of data that can be made available to them through interconnected and wearable devices, digital footprint of customers, connected ecosystems, etc. Some of the examples use cases that incentivize clients using predictive analytics to proactively conduct preventive maintenance, and to predict the likelihood of customers churn or surrender their insurance policy within a defined time span.

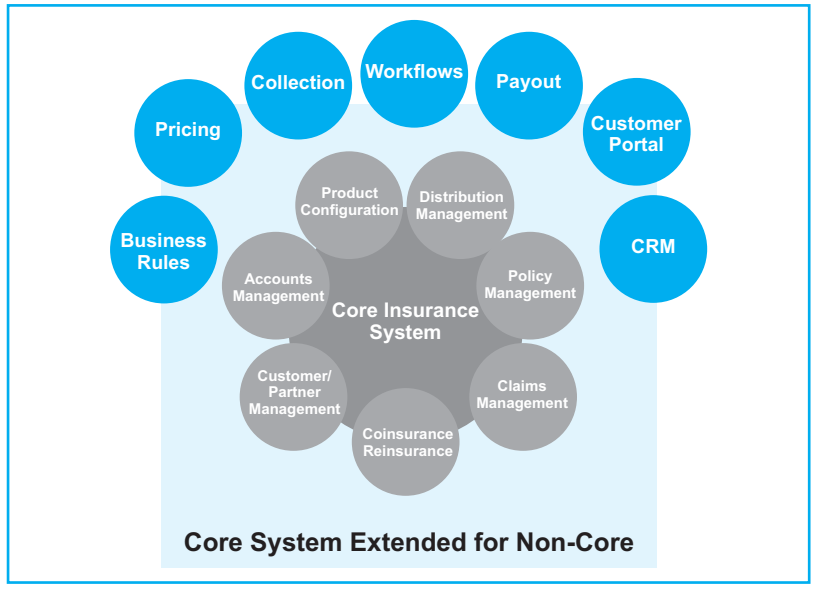
There are immense challenges for the insurers in today's world; some are internal to the organization due to their inherent weaknesses, while others, like competition from new age InsurTech and changing customer preferences, are threats which are external. It is important for the insurers to identify their weaknesses and work out a corrective methodology to improve and bring everything within their control, the most important aspect being the enterprise IT landscape. For anything outside of their control, they need to be alert and flexible enough to either adapt to the changing industry norms quickly or be ready to withstand the challenges posed and subsequently adapt.

Legacy IT Landscape and its Limitations / Challenges

This article focuses on the IT landscape that most of the current insurers possess and how it limits the digital transformation that the insurers are envisioning for facing the onslaught of the coming IT revolution.

A typical IT landscape comprises of a legacy core insurance system performing most of functions, i.e. product configuration, new business, policy issuance, policy servicing, renewals, commission sharing and reporting. For some insurers even claims, actuarial and coinsurance are part of the same system. Legacy insurance platforms were considered great when the businesses started, because the components were then tightly controlled and it was easier to maintain and manage. Then the IT staff could easily manage the business logic because the rules and regulations were residing in the database in form of packages and procedures. Over time, the real challenges started appearing as (i) the systems became manifold and complicated, (ii) the systems were customized to meet the ever-evolving regulatory landscape, (iii) the changing business requirements called for innovation, and (iv) the introduction of newer and complex insurance products. Figure 1 represents the complex and confused IT landscape, with core and non-core components built into, added on or extended on a single large legacy platform.

Figure 1
Typical Legacy Core Insurance System Burdened with Non-Core Components



In some of the cases, it was observed that even the customer portals and interactions with customers form part of the core insurance platform. At best, they are extended from the core using services. Any new business capability or feature, such as analytics or new channel, like intermediaries, are usually extended by one-to-one integration, further increasing the complexity and the load on the core system. One set of the challenge is the risk of business discontinuity due to tightly coupled components.

Another important aspect that is hindered by this complexities in the IT landscape is the digital ambitions of the enterprises. Any change that needs to be brought into the existing landscape carries the risk on the currently running components. The maintenance costs or run-the-business cost is ever increasing, with the knowhow of these complex systems. Maintaining and utilizing the old technology is now becoming a rare skill within the industry.

Further, the challenging scenario for such insurers appears to be a huge task when they need to extend information-sharing with partners or intend to leverage the services of new generation technology service providing InsurTechs that offer the cutting-edge solution across the insurance value chain.

The backbone of any decision making in any business is its captive data. It is extremely important for insurers to realize the potential of the vast store of internal data available to them in the form of customer information, and abundant external data in the form of customers' credit-worthiness information (multi-bureau) reports, customers' web and social footprint, etc. Moreover, with the aid of connected devices, there is an ever-increasing volume of data exchanged between devices, machines and enterprise systems. However, what most of the current Insurers lack is the IT capability to make business sense of this virtual wealth, with no analytical models but only primitive analytical tools. It is exactly like the tendency of many traditional Indian families to keep their money in banks' in savings accounts or keeping large sum of cash at home, without realizing the real potential of opportunities available in equity, and other investment funds.

Many insurers have currently started investing in data lakes, analytics tools, analytical models and visualization tools which will help them make decisions (both strategic and tactical) based on predictive and prescriptive analytics; but majority of them are still pondering how this will fit within their legacy IT landscape. Most of the insurers are keeping data from being connected to smart devices, like telematics, separated from core insurance tools because on the one hand they are unsure how to use this data and on the other technology limitations in integrating with the current landscape pose further constraints. With such limitations in their current IT landscape, the insurers who are yet to tune into the new IT scenario are definitely NOT Industry 4.0 ready and

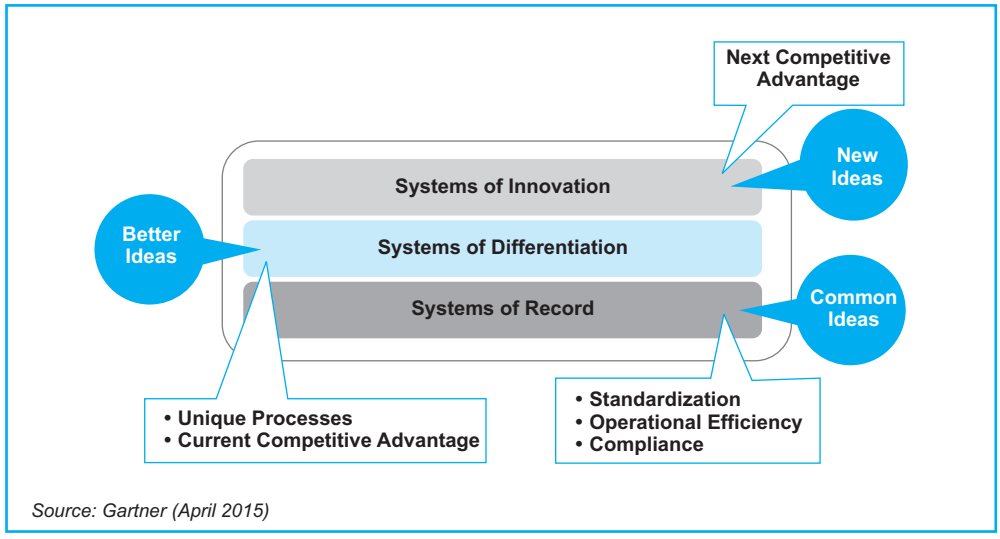
will later have to propel with extraordinary effort to catch up with the coming IT revolution.

Options Available for Insurers

The next set of questions that arise for the business and IT are 'what needs to be done to achieve the digital ambitions?' 'What are the optimum changes required in the IT landscape?' and 'What are options available?'

As per Gartner's Pace Layered Application Strategy, depicted in Figure 2, various applications are categorized into three layers as per their strategic impact. "System of Record" cater to about 80% of the business processes and are more or less standardized across the industry or non-core to the insurer, e. g. Finance, HR, etc. These applications do not differentiate one insurer from another. But it is the remaining 20% of the core business processes that effectively differentiate one insurer from another in the eyes of the discerning customers; compare between industry competitors as part of the "System of Differentiation" process. Then there are systems that enable the insurers to innovate and ideate for the next leap, i.e. "System of Innovation".

Figure 2
Gartner's Pace Layered Application Strategy



Source: Gartner (April 2015)

It is here that the insurance businesses and IT need to mutually identify which of their business capabilities and processes may help differentiate them with regard to competition, e.g. which of the two is unique to them - client interaction while generating new business vis-a-vis policy

issuance; or which of these two is a standardized process in the industry - claims' settlement vis-a-vis claims' management and routing.

Digital capability is the first step that the insurers need to align to, i.e. they need to react to market dynamics promptly and be ready to utilize customer data for producing actionable insights. Insurers therefore need to identify the IT capabilities that offer them this flexibility. Today's customers want to pay insurance linked to usage and want flexibility in selecting services linked to products of their choice. In fact they want only contextual interactions with the insurers. They also expect transparency coupled with instant information hence, they are inclined to prefer insurers who offer personalized, user friendly and self-service features on their web/mobile applications. The digital features when segregated at various levels, i. e. API Gateway separating all channel interactions with business application; or product and rules engine segregated from the core insurance platform, offers the flexibility to easily adapt to the changing customer preferences.

The challenge now is to identify the business capabilities and matching processes which will be unique to the insurer and in turn identify the IT capabilities and solutions for "System of Differentiation". The insurers need to realize that any business/technical capability that offers them a competitive advantage is where they need to spend the maximum effort in designing their business processes, implementing the systems and defining its user experiences. Majority of the customer interactions and customer transaction-related capabilities, including marketing, sales, service, products, offer opportunities to showcase the company's ability to face the competition from rivals. Other areas like the use of analytics to strategize or identify claims and fraud detection, are equally relevant. It is in this area where the modern-day Insurers need to spend the maximum time to bring about a difference in their business.

An example for another industry would be the intuitive and simple user-experience on Uber App, especially their customer self-help section which is artificial-intelligence powered to guide the customers to the right query. Another example is the Paytm where the merchant network integration is differentiating them from a dozen other digital wallet / payment banks. The use of analytical models for identifying customers likely to surrender policies or the use of advanced risk models to identify miss-sell or fraudulent claims or guess the customer requirements and proactively offer tailor-made products to suit their life-stage requirements, would be the differentiators for sustaining long-term relationship with the insurance industry. The customer today is extremely sensitive and busy and they need contextual information with a meaningful conversation. Gone are the days of carpet bombing an entire customer segment with a standardized and rigid offer.

The next step is more relevant for the IT section to decide: What is that magic solution that would

make sense of the identified "Systems of Record? Do they want to stick to the current IT landscape fully knowing the risk they are sitting on? Do they want to replace their legacy core with a commercial off-the-shelf (COTS) product for implementation? Another option they may want to consider is a bespoke development or re-engineering of the existing legacy systems to create a futuristic core package of their own. But then the question is: Why boil the ocean and innovate a system which is a standard product readily available in the market. Additionally, in-house product innovation will never keep pace with the vendor's product innovation capabilities, and in a few years' time, this in-house innovation may become yet another legacy to be abandoned.

Since most of the functionalities come as part of the package provided by COTS providers, it does not make sense to spend more precious time in reinventing the wheel. A sample comparison is represented in Figure 3 that depicts the legacy modernization options and how they can be compared with each other and at the same time get benchmarked with the ambitious business objectives and drivers. For each of the comparison element, superiority of an option over the other options can be highlighted as marked in the figure.

Figure 3
Comparison of Options with Respect to Business Objectives and Drivers

Modernization Drivers	Comparison Parameters	Solution Option 1 (Re-engineer)	Solution Option 2 (Hybrid – Part replace by COTS)	Solution Option 3 (Replace Fully with COTS)
Reduce Cost	Total Cost of Ownership (5 years)	$ 1.3 m	$ 1.5 m	$ 1.1 m ✓
	Timelines	36 months	30 months	24 months ✓
Simplify	Complexity	✓		✓
	Aligned to Business Objectives			✓
Enable Growth	Functional Strength	Low	Medium	High ✓
Reduce Business & Operational Risk	Technical Strength	Low	Medium	High ✓
Become more Agile	Agility / Configurability for Compliance	Low	High ✓	High ✓

The other IT capabilities, such as the use of APIs and micro-services for both internal and external information exchange within and outside the insurer's ecosystem are equally important for the insurer's IT section to finalize, as these will form the pre-requisites for any digital innovation. Api-fication offers capability to the business to go beyond their own enterprise and leverage the best features, products and methods available across industries, e.g. credit check using multi-bureau data or selling one's product with a bancasurance partner. Today's BPM and BRE tools are

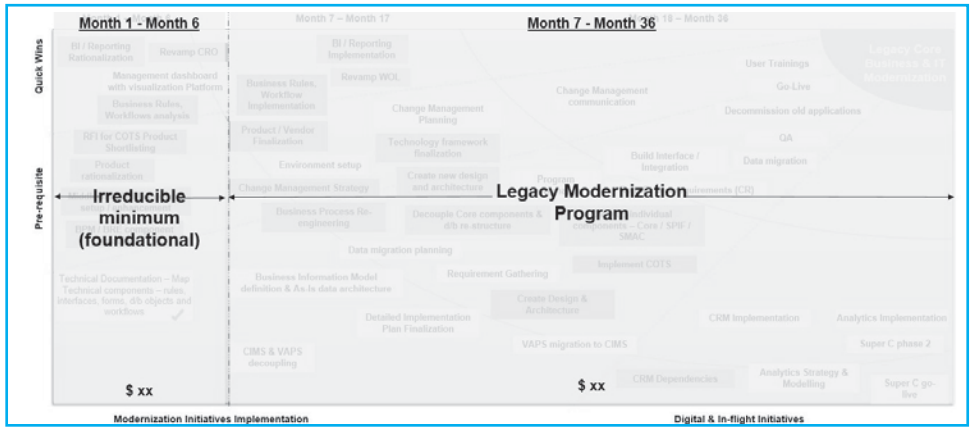
providing capabilities to business stakeholders to configure and manage business rules and workflows quickly on their own without any dependence on IT. Bundled products, any new product introduction or changes in the product/service can be configured quickly using product configurators. Today with ample information readily available from multiple sources, an analytics engine is easily available for making a well-informed decision. This has now become a necessity. Relevant and contextual messaging can be conveyed to the potential customers through a well-designed content management system, which will address all the marketing and customer self-service requirements over all the digital channels.

The next set of usage for all areas of action across the value chain, such as applicability of Block Chain for KYC and insurance contracts management, prescriptive analytics for fraud detection, etc., need to be constantly evaluated and prototyped to come out with the future "Systems of Differentiation", or the current "Systems of Innovation". This is an area for further research and innovation. There are InsurTech technology and start-up insurance providers available across the entire value chain. It is recommended to evaluate them, conduct proof-of- the concept for a potential long-term association.

Modernization Considerations

While identifying the initiatives to be implemented, it is vital in the modernization journey to define a roadmap based on prioritization of these initiatives, with irreducible minimum to begin with. A simple implementation roadmap, depicting timelines, activities and cost is shown in Figure 4.

Figure 4
Sample of Legacy Modernization Roadmap



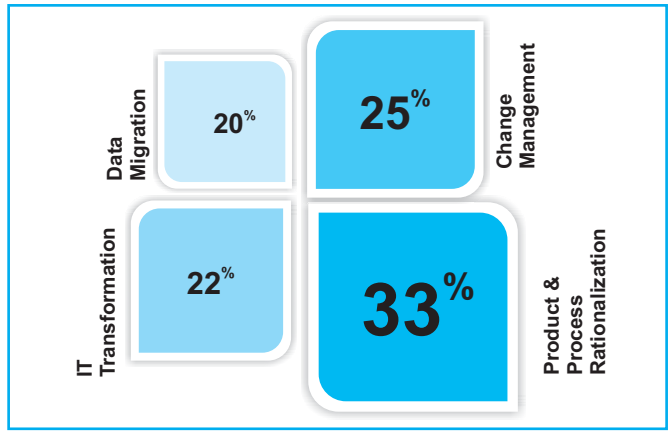
Experience has shown that most of the IT modernization journeys begin with high business imperatives and executive sponsorship, but lack leadership commitment. It is critical for the leadership to timely interject in the modernization journey, for quality outcome within planned time schedule and budget allotment.

Some of the additional important considerations for the insurers are:

1. *Product and Process Rationalization* - Identify the right product mix, categorize and follow the industry's best business processes and practices when embarking upon a modernization journey.
2. *Change Management* - Timely and focused people-change management is the key to success in the entire transformation journey, i. e. timely change strategy, effective communication system , need-based staff training, appropriate change branding and marketing, so that the entire staff, impacted by the change is prepared well in advance to expect what new changes are coming their way.
3. *IT Transformation* - The focus must be on adapting the COTS products' processes and trying to minimize the customization of it. The effort must be rather spent on upskilling on the products and technology installed.
4. *Data Migration* - Start early to strategize and plan ahead for the data migration in order to avoid any duplication at a later stage.

A break-up of what percentage of effort must go into each of the above highlighted considerations is depicted in Figure 5.

Figure 5
Legacy Modernization - Critical Success Factors



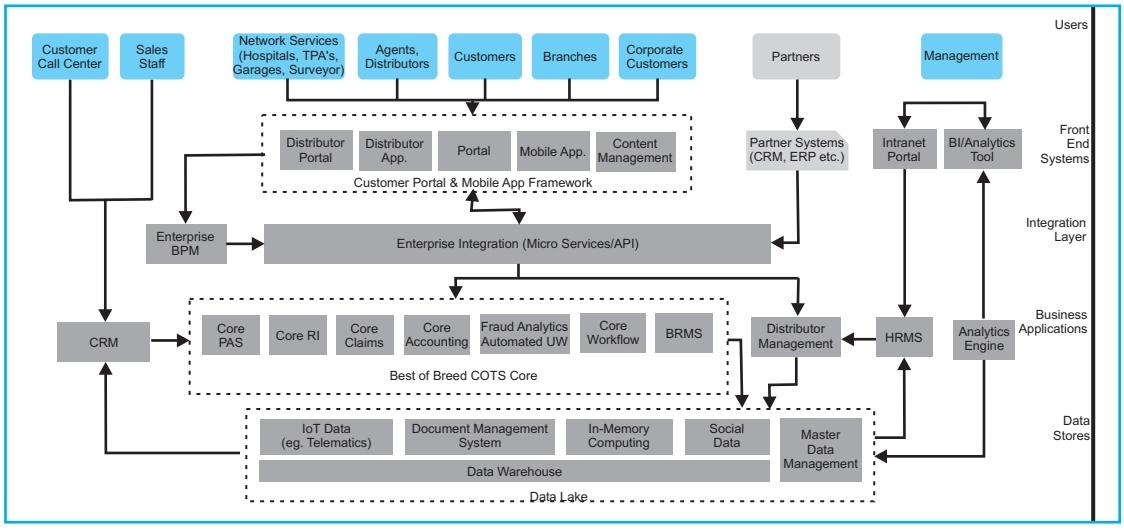
Conclusion

Blessed with the manifold opportunities offered by the technological innovations, these are exiting times ahead for the insurance industry. At the same time, insurers need to take stock and measured steps, and adopt optimum IT changes to reap the benefits thereof. Sometimes the individual departments and units are too busy thinking inwards and limiting themselves to a siloed-decision making situation. For instance, analytical models are being used for customer analysis, customer segmentation and cross selling, but not for predicting the number of customers likely to surrender their policies or the possible reasons for committing frauds or in identifying fraudulent claims. Often due to budget crunch and risk averse tendency, the investment in acquiring the right technology is either passed over or get delayed and even shelved due to improper implementation focus.

The stunning pace at which technology is evolving these days is mind boggling such that IT strategies last for 3-5 years only. Moreover, technology, or digital-tech specifically, offer to insurers' newer business models and growth avenues which were unthinkable a couple of years ago. For example, who could foresee that a car insurance can be bought for just a few hours or that drone-based site survey is possible for corporate site-insurance assessment. It is therefore important for the organizations to have a re-look at their digital and IT strategies every year to be in tune and in-line with their business strategies and industry requirements.

A simple representation of a typical insurer in today's scenario is presented in Figure 6.

Figure 6
Layered Application Architecture for an Insurance Provider



The representation above depicts a layered application architecture for an insurance provider, with different interaction layers represented with a gray band. The top layer represents the end-users who use the front-end systems, i.e. portals and mobile apps. All interactions with the core insurance system happens via an API-gateway. The API-gateway also allows business applications to exchange information with the external entities like bureaus, partners and corporate customers. The architecture is powered with configurable rules engine, business process management system and strong analytics and a data management platform.

The heart of the architecture is represented by the COTS core, which offers a packaged-core solution with loosely coupled components for flexibility, modularity and scalability. The core contains the entire core insurance components, such as policy administration, re-insurance formalities, underwriting procedures, claims and accounting practices. Additionally, it may be powered by frauds-analytic modules.

The enterprise integration must be designed in such a way that it offers inter-operability, so that it is device-friendly and technology independent. This will enable partners to simply extend API consumption capability to start sharing the information.

It is time for the committed and dedicated insurers to realize the reality of the constant changes taking place in every aspect of their profession and the urgency the drivers are highlighting for modernization of their technology

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