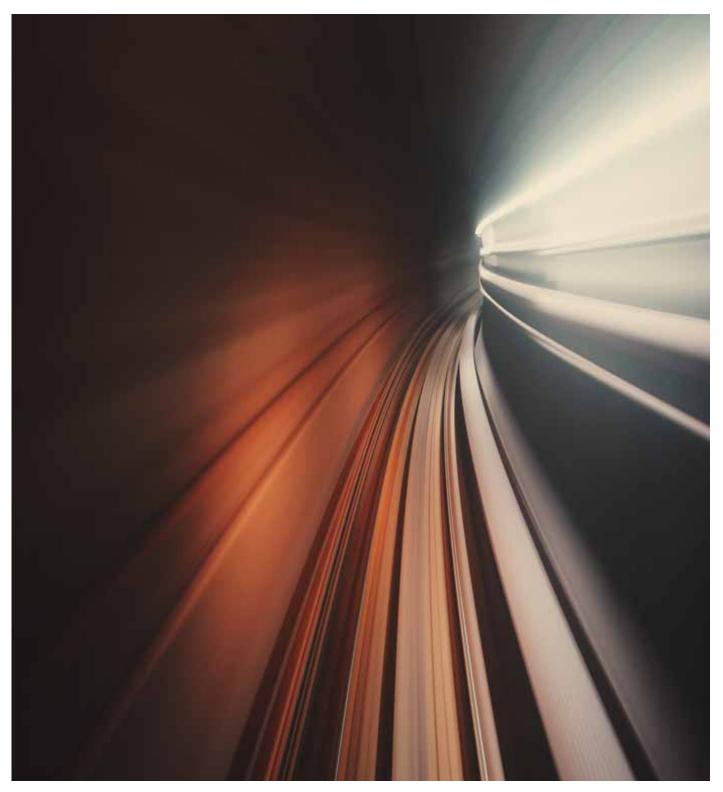


Illustrious Life and Annuity on Cloud

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Inside Story

The Life Insurance & Annuity (L&A) industry is marching towards digitalization at a breathtaking speed. All the players in this industry must vigorously adapt to the vibrant and modern-day changes to sustain and evolve.

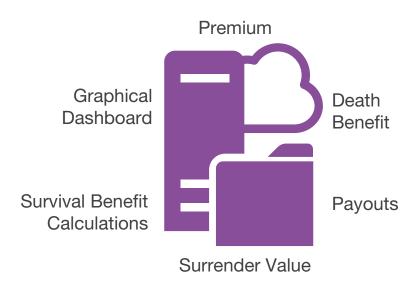
It, therefore, becomes obligatory to move away from the legacy business models of illustrations and step up to embrace the cloud age. The key focus is to ensure the business strategy and objectives align with life insurance carriers and distribution channel partner.

1. Why Digitalizing Illustration?

A **L&A policy illustration** is a set of projections created keeping the potential customer in view. The sales and marketing, customer servicing and actuarial functions of the carrier, jointly work

in getting the illustrations designed by the product actuary, based on the key features. The illustration depicts how the policy will perform over the lifetime of the contract including year-wise financial projections. It is primarily used by the distribution channels to sell and service products of the L&A carriers.

The new age customer demands a clear and transparent view of the product that they wish to purchase, with no tolerance to delays, errors



or less than ideal experiences. This requires the insurance carriers and distribution channels to modernize their existing illustration business models, to meet and enhance the customer experience in the competitive market place.

This whitepaper outlines the importance and approach to modernizing the legacy illustration.

2.

Life & Annuity North America Persona

Industry reviews say that the life and annuity insurance industry in North America is poised for steady growth in the forthcoming years. However, the findings also project that considering the dynamics of the global market, carriers must move towards efficient resource allocation, improvement in productivity and modernization of existing legacy systems to sustain the steady state.

According to the NAIC (National Association of Insurance Commissioners), below are the ten largest life insurance companies in the U.S. and Canada, by their share of the total market.

Company Name	Market Share
Metropolitan	6.53%
Northwestern Mutual	6.33%
New York Life	5.63%
Prudential	5.50%
Lincoln National	5.30%
Mass Mutual	4.13%
Aegon	2.92%
John Hancock	2.80%
State Farm	2.78%
Minnesota Mutual	2.66%

Empower customers and channel partners through digital collaboration.

How to Empower Customers and Channel Partners Using Illustrations?

With wider and faster access to information, today's customers have indicated a clear preference for digitalized and real-time experience from the insurance carriers next-gen platforms such as cloud significantly enhance agent/broker collaboration with carriers, by allowing easier document sharing, faster support and turnaround and end-to-end customer lifecycle management.

Life carriers have an opportunity to empower their distribution channel partner productivity by modernizing the legacy illustration systems. Illustrations are a good means to improve customer engagement and enable distribution channel partners to focus on selling the most appropriate products, by freeing themselves from time-consuming operational activities.

Rather than creating a gulf between insurers and their channel partners, illustrations provide a better collaboration, helping the channel partners to continuously interact with their prospects, and in turn convert these into selling and servicing opportunities.

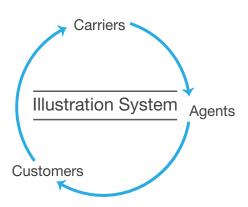
3.

Key Capabilities of Next-generation Illustration Systems

Revamping of the illustration systems is focused on achieving seamless customer-distribution channel-carrier collaboration.

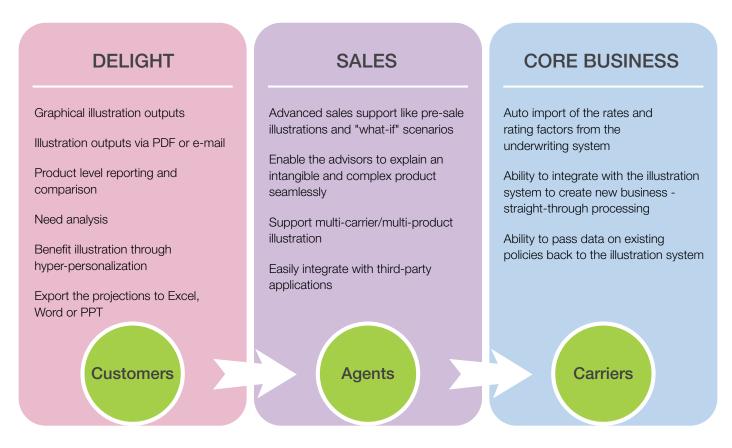
Data from a study conducted on online public portals which provide insurance quotes reveals

that the customers don't fully understand their own insurance coverage, and whether it satisfies all their financial needs. Therefore, channel partner's role becomes highly crucial here in guiding the prospect to buy the most personalized product, based on his/her need or specific demands. In turn, the carrier must enable and support the channel partner by providing real-time data and statistics on the features and exclusive properties of the suitable products.



The modern illustration system should be designed in such a way that it can be easily integrated with the policy admin

systems of the carrier, third-party calculation and documentation engines, so that a request for new business can be submitted directly from the illustration system. This enables straight-through-processing sprucing up customer experience and faster servicing.



4.

Omnichannel Experience (OCX) with Illustrations

According to the legacy beliefs, low-frequency interactions regarding policy renewals were enough to sustain customer relationships and serve customers. However, the digital transformation era made it clear that the insurance industry is in high demand for omnichannel servicing.

Omnichannel is an approach that enables life insurers to provide integrated experiences to their users across the value chain, starting from engagement to claims. The users, both internal and external, could use different mediums to derive value, regardless of the entry point.

Having multiple devices and channels available within an arm's reach, prospects switch between channels in an extraordinary fashion – and the online and offline experiences are rapidly converging into one. Along with multiple distribution channels, the current trend is to have online portal, mobile, app, social media, live chat, SMS, etc., for interaction purposes. Omnichannel is an approach that enables life insurers to provide integrated seamless experience to their users across the value chain, starting from engagement to claims. The users, both internal and external, could use different mediums such as Face to Face (branch), Contact Center and Digital (mobile, desktop, tablet) to derive value.

Omnichannel integration also helps in cross-selling and upselling.

To implement omnichannel, the insurer needs to undergo the following strategic transformations:

- Integrating the channels online, agent, product, claims, etc.
- Enabling data analytics and mining
- Supporting digital interfaces, apps, etc.
- Interfacing with legacy systems

For successful omnichannel integration, the insurers must have the below mentioned core capabilities:

Organization - Product-centric delivery and DevOps

Technology - Rapid application development platform, cloud, APIs

Process - Agile, lean, research, teamwork and spirited learning

Omnichannel integration with illustration system comes with the below options in the portal.

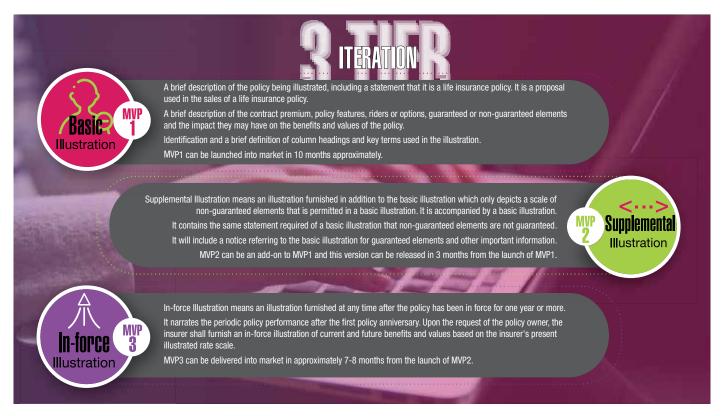
Financial Need Analysis (FNA)

FNA is the assessment performed by carriers or financial planners to assess the needs, ability and willingness to pay premium of the customer, before recommending a suitable life insurance policy. For this purpose, various questions are asked to the customer and depending on the answers provided, the illustration software gives back the recommended products leveraging rule-based algorithms. Implementing omnichannel ecosystem requires an approach which includes well-synchronized effort from multiple stakeholders within the organization, to achieve a unified, customer centric, multi-platform experience.

5.

Revamping Illustration System – Minimum Viable Product (MVP) Approach

A minimum viable product represents one of the major stages in the software product discovery process, which is focused on getting the products to market fast.



Essentially, it is the set of minimum necessary features that an illustration software must possess, so that it can be used by channel partners.

The illustration software ideally should be able to pull up the basic projections for a single policy, and this could be a three-tier iterative process - basic, supplemental and in-force. This can be considered as the smallest version of the illustration software to get the feedback from the market.

6. KPIs for Measuring Business Operations

The following are the indicative KPIs to measure implementation of the new illustration system:

Stakeholder	Business Drivers	KPIs
Customer	Product Level Reporting, Graphical Illustration Output	Products Written - No. of Products Written Per Lead
		Repeat Visitors
Distribution	Product Level Reporting, Graphical Illustration Output, What-if Scenarios, Advanced Sales Support	Monthly Bind Rate - The % of Quotes Given to Leads that are Converting into Bound Policies (Product Wise)
		New Commission Revenue
Channel Partner		Renewal Commission
Partner		Ratio of Net New Commissions to Renewal Commissions
		Common Book of Business by Producer Revenues by Lines of Protection
		Complete New Rates
		Near Ratio (Ratio of Estimates to Closes)
		Closes by Guide Supply
		YTD Profits Progress (and Calendar Year in Excess of Year)
		Profits by Employee
Carrier	Seamless Integration Using API	Items Written Per Marketing Source - The Number of Items within a Policy You've Written from Lead Vendors vs. from SEM/SEO Sources vs. from Facebook/Social Media Sources vs. Direct Mail
	Auto Import from Eapp, Auto Import from PAS, Basic/Complex Illustration Calculation	Cost Per Quote - How much it Costs You to put Your Quote in Front of a Consumer
		Premium Written- \$ Amount that the Consumer Policies and Items are Worth

		Revenue Per Policyholder
	Average Cost Per Claim	
		Average Time to Settle a Claim
		Return on Surplus
		Loss Ratio
		Frequency
		Severity
	Components of Claim Costs	
		Expense Ratio
		Renewal/retention
		Sales or New Business
		Strike Rate
Corrier	Revenue Reports, Claims Reports,	Quota vs. Production
Carrier New Sales Reports, Underwriting Reports		Average Policy Size
		Underwriting Speed
		Number of Referrals
		Average Cost Per Claim
		Policy Sales Growth
		Average Insurance Policy Size
		Claims

7. Methodologies - Modernization of Illustration System

The best practices, approaches and methodologies for modernizing the illustration system includes:

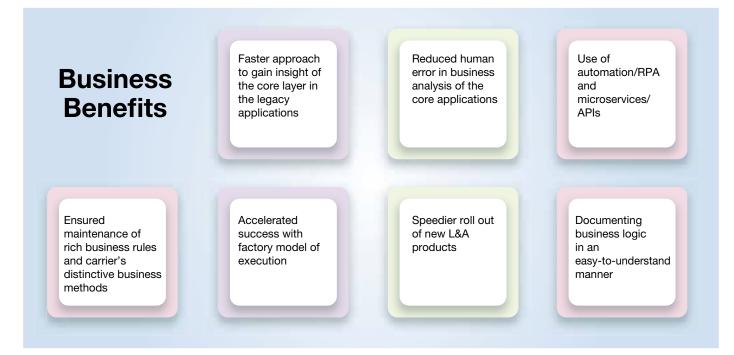
Business Rules Extraction – Implemented in the System of Records to enable build of API/microservices

Adoption of ACORD Data Standards – To enable data flow from UX Layer to the System of Records

Front2Back™ Transformation of existing legacy systems to 'Illustrious' illustrations

8. Business Rules Extraction

The business benefits of Business Rules Extraction:



Business rules extraction is the process of isolating the code segments which are directly related to business processes. This reverse-engineering approach reads through the legacy code to understand underlying business methods. It helps catalog embedded business logic and dependencies to improve the accuracy of IT systems, and documents technical rules so they can be validated and preserved.

Various business APIs and rules extraction tool kits are available in the market. One such business rules extraction tool is detailed below:

Ib-ARM – Can be used to perform reverse engineering on the System of Records. It organizes the System of Records to perform a detailed reverse engineering of the current system.

Ib-BRX option of Ib-ARM can group and classify the business rules identified in the code components. These rules can be transformed to microservices that are maintained outside the core layer.

Micro Focus COBOL Analyzer - COBOL Analyzer provides a complete array of analysis, intelligence and reporting tools designed for Micro Focus COBOL applications. It enables developers, analysts and executives to achieve a deeper understanding of the application portfolio, providing business and technical insight across applications with information stored in a secure, centralized repository. Its key features include:

- Supporting new business cases by isolating valuable business logic into reusable components
- Restoring knowledge and subject matter expertise using easy-to-use tools, to visualize application relationships, analyze data flows or create documentation

- Delivering application analysis at enterprise scale and meeting the demands of the most complex applications—up to millions of lines of code
- Providing web access to application intelligence using an intuitive, zero-footprint web-based client

9. ACORD's Next-gen Digital Standards

According to ACORD (Association for Operations, Research and Development, a nonprofit insurance association), implementing standards improves data quality and flow, increases efficiency and realizes billion-dollar savings to the global industry. ACORD members worldwide include hundreds of insurance and reinsurance companies, agents and brokers, software providers, financial services organizations and industry associations.

ACORD TXLife is the XML standard for the Life, Annuities and Health vertical. It is used for both internal and external integrations among various players in the insurance industry. ACORD has also introduced next-generation digital standards across technologies and all lines of business.

According to ACORD, "The next-generation digital standards facilitate omnichannel information exchange for carriers, brokers and consumers alike; provide streamlined functionality across distribution channels ACORD TXLife standard, the ACORD next-generation digital standards, is used for submission of an insurance application to a carrier and for sending, receiving orders, status and results of underwriting requirements.

and technology interfaces such as mobile apps, IoT and other emerging technologies; and enable more efficient, easily consumable data transfer."

ACORD's objective is to enable efficient and effective flow of data among all stakeholders across the insurance value chain. All insurance transactions rely upon timely and accurate exchange of data, and with ACORD Standards, the insurance industry can operate optimally and provide the best experience for its consumers.



Data standards serve the same purpose as all other standards, including those created for everyday household objects, such as appliances. For example, electrical standards allow an appliance power cord, regardless of the manufacturer, to be plugged into a compatible outlet. In a similar manner, ACORD Standards allow industry stakeholders to exchange and use data for their own needs regardless of how it was created or collected. They are then able to focus on the differentiating factors that give them real competitive advantage, with the confidence that their products and processes will be compatible with the industry standard.

ACORD Standards are Available for:

- Life, annuity & health
- Property & casualty/surety
- Reinsurance & large commercial
- Cross-domain specifications and documentation

ACORD XML Standards

Provides a foundation for real-time exchange of data between producers, insurers, reinsurers, distributors rating bureaus and solution providers. Ensures unprecedented consistency and re-usage across all messages.

ACORD L&A Standard includes:

- 17,500+ dictionary entries
- 370+ objects
- 470+ code lists
- 200+ unique messages

Forms

- 782 forms (723 for P&C; 59 for L&A)
- Fillable/e-labeled/eForms: 664 P&C, 17 L&A
- E-label mappings: 620 P&C

ACORD standards allow industry stakeholders to exchange and use data for their own needs regardless of how it was created or collected. They are then able to focus on the differentiating factors that give them real competitive advantage, with the confidence that their products and processes will be compatible with the industry standard.

10. Why Migrate Illustrations to Cloud?

Earlier, anyone who wanted to build a web application, had to own the physical hardware required to run a server, which was cumbersome and expensive. Today, cloud computing delivers computing services—including servers, storage, databases, networking, software, analytics and intelligence—over the Internet to offer faster innovation, flexible resources and economies of scale. We pay only for the services we use, which lowers the operating costs, runs the infrastructure more efficiently and scales as the business demands.

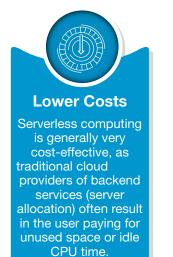
Cloud infrastructures provide environmental proactivity, powering virtual services and reducing dependency on paper waste, improving energy efficiency and (given that it allows access from anywhere with an internet connection) reducing commuter-related emissions. A Pike Research report predicted data center energy consumption will drop by 31% from 2010 to 2020 based on the adoption of cloud computing and other virtual data options.

With cloud computing, fixed numbers of servers or amounts of server space could be rented remotely. Application owner who rent these fixed units of server space generally over-purchase to ensure that a spike in traffic or activity wouldn't exceed their monthly limits and break their applications.

While the L&A carrier's application team is spending countless hours solving business problems with code, the ops team spend countless hours in - first, figuring out how to get the code that developers write, up and running on whatever computers are available and second, making sure those computers operate smoothly. The second part is a continuous task.

Serverless computing allows application team to purchase backend services on a flexible 'pay-as-you-go' basis, which means that the team has to only pay for the services they use. The term 'serverless' is somewhat misleading, as there are still servers providing these backend services, but all the server space and infrastructure concerns are handled by the vendor. Serverless means that the application team can do their work without having to worry about servers.

Following are some of the advantages of serverless computing:





Application team using serverless architecture don't have to worry about policies to scale up their code. The serverless vendor handles scaling on demand.





Simplified Backend Code

With Function-as-a-Service (FaaS), the application team can create simple functions that independently perform a single purpose, like making an API call.

Quicker Turnaround

Serverless architecture can significantly cut down time-to-market. Instead of a complicated deploy process to roll out bug fixes and new features, developers can add and modify code at granular level.



11. KPIs for Measuring Cloud Operations

Stakeholder	Business Drivers	KPIs
Carrier	Service/System Availability	Percentage of Time that a Service or System is Available
	Reliability	Mean Time Between Failure and Mean Time To Repair
	Response Time	Time it takes for any Workload to Place a Request for Work and to Complete the Request
	Security	Adherence to Regulatory Compliance Rules and Protect Information, Data Applications and Infrastructure
	Throughput	Performance of Tasks by a Computing Service or Device over a Specific Period
	Capacity	Size of the Workload Compared to Available Infrastructure to Balance Supply and Demand
	Scalability	Degree to which the Service or System can Support a Defined Growth Scenario
	Latency	Time Interval Between Submitting a Packet and Arrival at its Destination
	Service and Helpdesk	Tracks the Times at which Assistance is Provided, which Support Methods are Applied or how many Calls are Received Per Week, as well as the Duration of the Support Instance
	Cost Per Customer	Measures how much it Costs to Deploy the Cloud for Each Customer

12. Front2Back[™] Transformation of Existing Legacy Systems to 'Illustrious' Illustrations

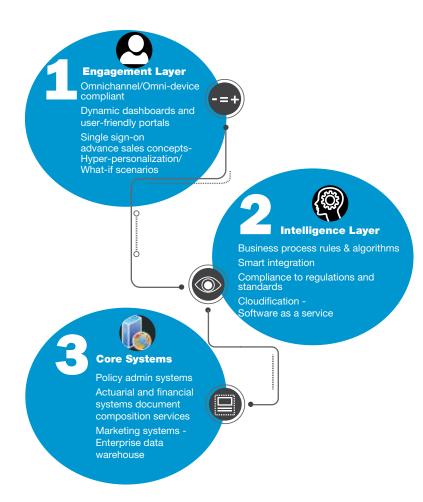
The L&A illustration modernization aspirants must look beyond the immediate needs of the market and seek to create more innovations in their offerings.

A liberating approach to legacy transformation is to focus on supreme technology, agility, moving anything to cloud and power everything with cognitive. This helps innovate faster, and come up with new and relevant propositions to meet the needs of today's and future customers.

The adoption of Front2Back[™] (F2B) transformation of legacy illustration systems steers up the business growth and retain customers, with the prime focus on the areas given below:

- Happier and healthier customers clubbed with channel partner outreach
- Security
- Time-to-market
- Cost efficiency
- Innovative and technology-centric solutions
- Easy maintenance due to a single system that will support all product lines across life and annuity

The Front2Back[™] transformation of legacy illustration systems can be



aligned under three major milestones. The front represents the client-centric approach and includes interaction with clients, advisors and underwriters.

1. Engagement Layer

This layer interacts with the customer and the opportunity here lies in introducing the following features:

Login and Security – Through a front-end web portal, channel partners can view their data in real-time, accessing multiple providers with role-based authentication and single sign-on capability.

Advisors no longer visit each insurance carrier's website. The data may be secured according to the regional data protection laws. A customer controlled blockchain having verification of customer's personal information like identity, health data, etc., can speed up the on-boarding process, and relieve the customer from the fear of losing their personal information and the hassle of entering this data time and again.

Modern and User-friendly Portals – Enhance the customer experience (CX) by introducing user friendly landing page, consolidated view of status, logical flow and presentation of information, limited tabs. Ability to compare the illustration outputs of multiple products of multiple carriers on need basis.

Omni-device/Omnichannel Support – Same UI to be delivered to all customer screens from a smart phone to desktop monitor. Enables the agents to use hand-held devices to pull up the illustrations in front of the prospect. Provides ability to sync data from disconnected to connected modes.

Advanced Sales Concepts (Hyper-personalization) – Know your customer well, analyze the client's L&A insurance priorities, needs, health data and other financial requirements and recommend products (combination of riders if required) in a personalized manner to the customer. Leverage the cognitive and IoT ecosystem to enable insurers to offer personalized products.

2. Intelligence Layer

Efficient – Introduce cognitive models to drive personalization to distribution channels. The data exchange supports the new business and servicing of all kinds of L&A products of multiple carriers. Eliminates manual paper-driven processes and follow-ups. It also provides the channel partners with a single view of their data across multiple insurance carriers. Front represents the client-centric approach and includes interaction with clients, advisors and underwriters.

Modernization and Cloudification – The business processes and models of the application are deployed on the cloud and offered 'as a service'. Cloud solutions are cost-effective as they eliminate the need to support multiple data services and connections. Illustration business owners do not have to pay the maintenance cost of multiple, disparate hardware and applications.

Compliance – Supports industry standard data formats (e.g. ACORD) and regulatory changes including NAIC model regulation and Department of Labor fiduciary rule, driving increased transparency.

3. Core Systems

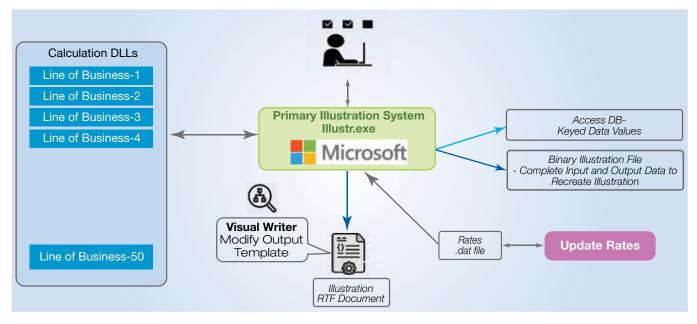
Core System Revamp – Illustration systems are fully integrated with the policy administration systems to obtain the original data. This enables the illustration systems to project robust cash flow models and real-time calculations using the current rates that the carriers offer. This also helps the advisors to trigger new business, if the customer is interested in the product. It enables secure and tamper-proof submission of customer data back to the carrier.

However, lightweight approaches are also preferred as they minimize data transfer and server workload, and proper fail-over mechanisms between the illustration and core systems.

Current Application Architecture

Legacy multi-tier illustration applications built using multiple legacy technologies can be executed on different platforms. Application views of typical illustration applications are shown below:

1. Sample Windows desktop application supporting multiple lines of business through DLLs to generate illustration document in Rich Text Format (RTF):



Input and Application UI

The input screens and application UI for the desktop application would be implemented using Visual Basic, PowerBuilder, Delphi or Microsoft Foundation Class.

Illustration List and Saved Illustrations

The illustration list comprises of all illustrations running on the current computer by the local user. Data for illustrations that are saved by the user are available to two parts. Key data values for the illustration list are stored into an access database using ODBC APIs. The complete input and output data needed to recreate the illustration are serialized to a binary illustration file.

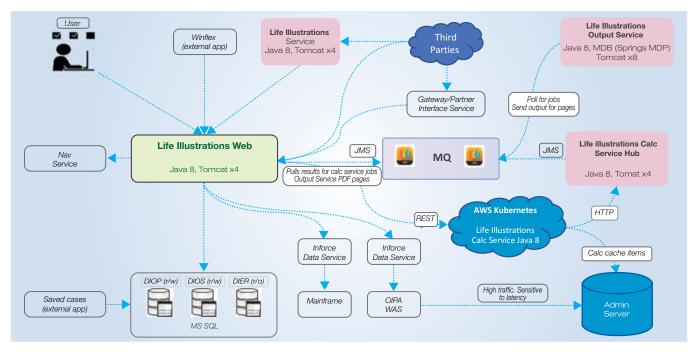
Calculation DLLs

Calculations for each line of business are separated into several calculation DLL files.

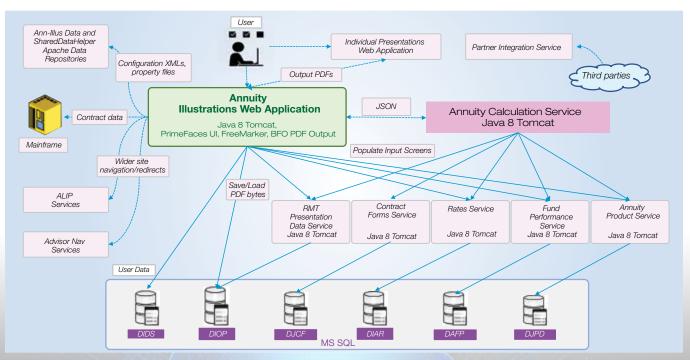
Output Generation

Output is generated using RTF-formatted text in conjunction with editing tools which provide OLE components for viewing and editing RTF files. Application code shared across all products illustrated in desktop application substitute data values for markers in the RTF documents to present printable output to the user.

2. Below application ecosystem describes web-enabled illustration application specific to Life with calculation services hosted in Amazon Web Services:



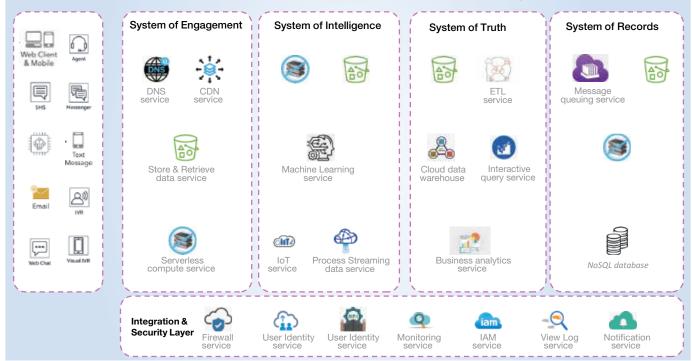
3. Following web-enabled Annuity illustration application with calculation services hosted in Tomcat and interfacing with mainframe application:



Front2Back[™] (F2B) Target Application Architecture Using Serverless Microservices Managed by AWS

Gartner estimated that by 2020, 20% of the world's organizations would have gone serverless. A serverless architecture is a way to build and run applications and services without having to manage infrastructure. Applications still run on servers, but all the server management is done by the cloud service provider. Application owner no longer have to provision, scale and maintain servers to run the applications, databases and storage systems.

Serverless Microservices Application - Target State



13. Conclusion

The vendors who adopt Illustrious illustrations could evolve as the biggest sales disruptors to carriers or agents, who depends on homegrown legacy illustration systems.

As modernization is happening at a tremendous pace in the insurance industry, it is more likely for the insurers to invest in illustration systems which possess the capabilities of the Front2Back[™] (F2B) model. This, along with the transformative power of the cloud, enables them to provide enhanced customer experience, at lowered cost without compromising on the quality.

Serverless computing offers many advantages over traditional cloud-based infrastructure. Serverless architecture ensures better scalability and flexibility, and faster time to release. Also, the application developers do not need to worry about purchasing, provisioning and managing infrastructure.

The modern illustration systems grow and expand beyond a mere front-end point-of-sales tool to a support system. This helps the customers to purchase the most appropriate L&A products to meet the uncertainties of their life.

Authors



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Business Analyst

Krishna has 14+ years of experience in design, development, maintenance and business analysis of various Policy, Billing and Claims Insurance applications. Her technical and domain expertise revolves around Mainframe Technologies, Property & Casualty and Life Insurance.



Subramanian Balraj

Enterprise Architect

Subramanian has 27+ years of experience in web, legacy, cloud and distributed technologies. He has expertise in end-to-end migration and consulting in legacy modernization, core banking, policy administration systems, capital markets and treasury products. Subramanian led the migration of core application for a large international bank and policy administration system for a life insurance company, and did a portfolio assessment for an Indian life insurance giant.



Selva Ganapathy

Offshore Program Manager

A technical program manager & SME (L&A) with 17+ years of experience, Selva has a proven record of success in L&A PAS implementations & legacy modernization and testing. In the recent past, he led the transformation and modernization project for a North American insurance carrier.



Shrinivas Sathya Susarla

Vice President and Delivery Head

Shrinivas has about 25 years of cross insurance industry experience in leading delivery teams, strategic program management, new product conceptualization and business development. He has led operations teams in insurance organizations and application delivery teams in IT product organizations.

About Mphasis

Mphasis (BSE: 526299; NSE: MPHASIS) applies next-generation technology to help enterprises transform businesses globally. Customer centricity is foundational to Mphasis and is reflected in the Mphasis' Front2Back[™] Transformation approach. Front2Back[™] uses the exponential power of cloud and cognitive to provide hyper-personalized (C = X2C[™]_{Ins} = 1) digital experience to clients and their end customers. Mphasis' Service Transformation approach helps 'shrink the core' through the application of digital technologies across legacy environments within an enterprise, enabling businesses to stay ahead in a changing world. Mphasis' core reference architectures and tools, speed and innovation with domain expertise and specialization are key to building strong relationships with marquee clients. To know more, please visit <u>www.mphasis.com</u>

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