Whitepaper

What can IBM Watson do to reshape the Insurance Business?

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Abstract

Insurance companies are experiencing unprecedented disruption from a number of market forces such as rapid digitization, rising customer expectations, changing demographics, changes in economic environments, sophisticated fraud amongst others. To rise above the disruption, Insurance companies can benefit from focusing on Superior Customer Engagement, Optimized Operations and Transformed Legacy Operations.

These capabilities can be realized at scale with demonstrated value through Cognitive/AI applications.

The IBM Watson Ecosystem, along with IBM BlueMix Cloud, enables the rapid development and deployment of Cognitive Applications including that on Cloud, Mobile and Web, to suit a variety of use cases.

IBM Watson-based Cognitive Applications

IBM Watson-based Cognitive Applications learn and interact naturally with people to extend what either humans or machine could do on their own. They help human experts make better decisions by penetrating the complexity of big data. They do so by implementing the capabilities of Understanding, Reasoning, Learning and Interacting with a variety of actors.

Cognitive Applications have technical foundations in Deep learning/Machine learning, natural language processing, reasoning & inferences and semantic contextual understanding, while leveraging relevant content and incorporation of deep subject matter expertise. These capabilities enable the foundational capabilities in a graduated way as shown below:

<table>
<thead>
<tr>
<th>Capability</th>
<th>Required</th>
<th>Advanced</th>
<th>Ultimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand domain deeply</td>
<td>Has task-specific knowledge</td>
<td>Has contextual knowledge relevant to asks</td>
<td>Has common sense and general knowledge</td>
</tr>
<tr>
<td>Reason towards specific goals</td>
<td>Uses-specific approaches, deductive/inductive reasoning</td>
<td>Explanations-based</td>
<td>Adaptive, combines multiple approaches</td>
</tr>
<tr>
<td>Learn continuously from experience</td>
<td>Uses explicit training, Supervised Learning</td>
<td>Uses Implicit training, Unsupervised learning</td>
<td>Uses feedback from environment, Reinforcement Learning</td>
</tr>
<tr>
<td>Interact naturally with conversational applications</td>
<td>Transactional Request-Response</td>
<td>Session-oriented contextual affective interactions</td>
<td>Life-long conversational interactions</td>
</tr>
</tbody>
</table>
The IBM Watson Product Ecosystem, as shown above, offers a complete end-to-end capabilities from API services, Data Science/Machine Learning Services, Advanced Data Management and Analytics and Development Platforms, including DevOps services. There are also reusable solutions that can be leveraged for similar use cases in Marketing, Customer Insights, IoT, Industry solutions in verticals such as Financial Services/Insurance etc and Horizontal solutions such as Supply Chain, Predictive Monitoring etc. The product ecosystem also supports the Data Management, Cognitive/AI and Domain specialization capabilities that is a common denominator for any new Cognitive Application as shown below.
IBM Watson-based cognitive applications are often appropriate for challenges regarding data and decision making processes, whose characteristics are enumerated below:

- **Large volumes of unstructured data** that must be analyzed to make timely and effective decisions.
- **Decisions** that must be made using continuously changing data, new sources and forms of data.
- **A significant amount of knowledge** about the domain is transferred from senior experts to trainees through a mentoring and training process.
- **Decision making** requires the analysis of a variety of options and solutions to a problem. Individuals often have to quickly weigh the relative risks and benefits of each alternative, and may have to decide based on confidence rather than certainty.
Benefits of IBM Watson-based Cognitive Applications

Cognitive Applications can help us realize the following benefits:

- Accommodation of the new realities of business viz. Insights and Intelligence should align with disruptive business models
- Insight generation is no longer constrained by human limits
- Help companies anticipate the actions their customers might take
- Facilitate democratization and sharing of knowledge based insights
- Handle the volume and complexity of business knowledge
- The need—and ability—to gain business value from expanded varieties and larger
- Help businesses analyze more business-relevant information, and to plan more accurately without completely relying on knowledge about past business performance
- Align with a shift in the thinking of how business are engineered – shift from a business process view to learning, and leveraging best practices and experiential knowledge
IBM Watson in Insurance

Policyholders are increasing their demands for real-time access to a variety of insurance products and services which is an unavoidable trend. This underlines the importance of the provider-customer relationships, and why it is important to maintain positive interactions, experiences, and satisfaction. IBM’s Watson allows users to analyze insights, track their policyholders to anticipate future needs, and provide them services that they want. You can also analyze weather conditions and social data to provide further tailored policies. With the use of real-time data, you can respond faster to catastrophes, and Watson will even help you select the best course of action.

IBM Watson can help with need analysis. When discussing client needs and services, it is necessary to match products to their individual needs. Automated solutions allow agents to ask a series of questions conversationally that Watson would translate into product advice. This will make things more efficient and smoother when discussing complex products with clients. The next big move in the mobile world will be voice-interfacing with the web, and your insurance clients. IBM Watson enables the more sophisticated technology that will be needed to interpret and respond to customer requests. In order to accurately respond to customer questions, such as “what is the renewal date of my policy?” will require platforms that can understand language, relationships, and concepts.

IBM Watson helps in the development of multi-channel conversational applications, and accommodating the important changes that can affect the way insurance is renewed, client acquisition and research take place. Implementing these technologies will be the key to being able to keep up with future demand.

Cognitive Application implementations demonstrate the potential for offering superior customer experience, transformed legacy operations and disruptive applications.

Superior Customer Experience

The image below shows a self-service agent application that helps customers choose the right insurance product. The application interacts with customers through a conversational interface. Through a step-by-step guide, the Virtual agent serves, guides and advises through customer-preferred interaction channel. The application leverages on-demand access to experts, domain-specific information on web, or mobile-based platform. It engages with customers with natural language dialog and industry-specific insights. A customer session is transformed with personalized recommendations, thereby creating an ultimate experience with personalized assurance and mentoring.
What can IBM Watson do to reshape the Insurance Business?

**Personalized Automated Self-Service**

The above snapshot shows how a Cognitive Application helps in the filing of claims and speedy examination & adjudication of claims and property damage. An IBM Watson-based Cognitive Application sets into an existing process that allows for a dialog-driven interaction with the customer, and guides the user to transaction completion. This application also aids in the completion of forms and process-specific, point-in-time questions that customers may have during the self-service interaction.

**Cognitive Agent – Agent Assisted Insurance Claims Processing**

Fig 3: Cognitive Application – Customer Experience (1)

Fig 3: Cognitive Application – Customer Experience (2)
The above example shows a Cognitive Application for Contact Center support, that analyzes and discovers new insights to enhance the quality of each interaction with the customer. The application is designed to improve the agent productivity by analyzing extracted and mined call logs to identify patterns, quality issues, similar phrases, topics and trends. Common customer issues are identified, collated and categorized, so that agents can be prepared for answers to frequent queries, thereby improving training and overall call center processes. It enables agents to better respond to customer requests and improve call conversion rate.
The above image shows a Cognitive Claims solution implemented using IBM Watson services. The Cognitive Claims solution demonstrates the application of Artificial intelligence in claims operation that can bring significant changes the way claims are handled today. Claims operation can be automated to the extent that it will reduce mundane activities done by surveyors, adjusters, and give more facilities to customer in terms of self-services and transparent claims process. It improves risk assessment models by uncovering unexpected patterns and associations between data sources.
The above image shows a new disruptive application to analyze Hail Damage to properties through drone images, and gives an automated estimate of property damages. Working the usual way, site inspections and documentation of damage have high costs and take weeks or months to complete. The Hail Analytics Cognitive Application analyzes drone images of properties and identifies damaged roof areas, measures areas of roof damage, overlays Watson-analyzed damage onto captured images, estimates claims based on the measurements of damage.

With this new solution, insurance companies can lower costs, accelerate assessment of damaged areas, and process claims in only hours – improving your overall customer satisfaction.
Define the value

- Define the right opportunity through use case identification, requirements definition and prioritization
- Define a value proposition, business case and capability roadmap for Cognitive initiatives within the organization
- Set realistic expectations regarding value realization and ROI with stakeholders and sponsors

Prepare the foundation

- Invest in human talent
- Build and invest in building a quality corpus
- Be aware of regulations, policy, process requirements and organizational impacts

Implementing Cognitive Applications

As with any new enterprise capability, a core set of techno-functional capabilities are required to design, develop and implement Cognitive Applications as shown below.

<table>
<thead>
<tr>
<th>Cognitive Strategy</th>
<th>Foundational Data &amp; Analytics</th>
<th>Cloud Infrastructure</th>
<th>IT Infrastructure</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine what data is needed</td>
<td>Collect and curate data assets – internal and external, structured and unstructured</td>
<td>Handle code, APIs and diverse data sets</td>
<td>Infrastructure tuned to AI/Cognitive workloads</td>
<td>Secure every transaction, interaction and data attribute</td>
</tr>
<tr>
<td>Which experts will train systems</td>
<td>Apply Cognitive/AI to data assets to analyze adapt and learn</td>
<td>Agile development culture and DevOps</td>
<td>Harmonize technologies from public, private and hybrid clouds with distributed devices, IoT and existing systems</td>
<td>Establish trust in entire data ecosystem</td>
</tr>
<tr>
<td>Areas which need human engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which services, products, processes and operations need to be infused with Cognitive/AI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage unstructured data assets and “dark” data assets</td>
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<td></td>
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</tbody>
</table>

**Fig 7: What is required to develop Cognitive Applications**
Manage the change

- Ensure stakeholder buy-in and executive involvement early on in the Cognitive journey
- Communicate the Cognitive vision at all levels
- Continually raise the Cognitive IQ of the organization

In order to realize value and return on investment from Cognitive application development initiatives, consider the following leading practices:

Careful planning

- Determine where cognitive capabilities are most suited to the organizational business units
- Implement tightly focused pilot projects to learn the capabilities of IBM Watson product ecosystem, and build confidence and insights into its pros and cons
- Create an enterprise data management initiative to acquire and source data needed for cognitive insights

Prepare thoroughly

- Cognitive Applications need to be iteratively trained and results refined, as they learn with interactions, results and new information that let insurers scale expertise
- Identify those areas where competitive advantage can be demonstrated such as augmented workers, operational efficiency improvements and self-service capabilities
- Using hybrid-based and/or cloud-ready product models, costs can be controlled, and flexible deployments with advanced architectures can be achieved

Progress continually

- Monitor progress to be sure that cognitive computing matches organizational strategy
- Internal innovation and growth hacking can help teams and business units develop competencies in non-linear ways
- Incorporate agile development and design thinking in addition to business service composition skills so as to be nimble to respond to changing market forces.
Conclusion

Cognitive Applications are increasingly showing demonstrable results in realizing tangible and actionable insights from data and enabling confidence across various dimensions to stakeholders as shown below.

Confidence in data and drawing impactful insights from it are key in achieving business goals

Confidence in Accelerating Value
Right Data @ Right Time to Right Process

Confidence in Your Data
Insights to Action at the speed of Value

Confidence in Skills
Scale, Accelerate, Adopt

Fig 8: Changing Definition of Success

In addition to enabling confidence, Cognitive Applications are a critical component for the realization of a Smarter, Dynamic enterprise, along with Digital Transformation, Business Remodeling and Next Generation Infrastructure operations as shown below.

Smarter Adaptive Enterprise

Enabling Infrastructure
- Machine Learning Algorithms
- Natural Language Processing
- Cognitive Analytics
- AI

Cognitive Applications
- Economic Choices
- Value Chains
- Services & Platforms

Business Re-Modeling
- Mobile & Social
- Customer Value Chains
- Omni-Channel
- Digital Operations

Digital Transformation
- IT Infrastructure
- Cloud
- Big Data
- Integration
- Security & Resilience

Fig 9: Enabling the Smarter Adaptive Enterprise
About the Author

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Harsha has 18+ years of experience in Information Technology. His functional and technical expertise ranges from Applied Data Sciences, Big Data Management, Large Scale Analytics, Machine Learning, Deep Learning, Sensor Analytics, Customer Analytics, Fraud/Spend Analytics, In-Memory Computing and Voice Applications. He has consulted for and worked with many top tier Fortune 50 companies across Communications, Hi-Tech, Financial Services, Retail and Healthcare industry verticals.

Harsha has a Masters in Engineering from Indian Institute of Science, Bengaluru and a Masters in Information Systems from University of Illinois, Urbana-Champaign. He is currently enrolled in a Ph.D. program at the University of Colorado, Colorado Springs. Harsha has five publications in the IBM Systems Journal, has co-authored a book titled, “Big Data Imperatives”, and also has to his credit two Data Product patents.