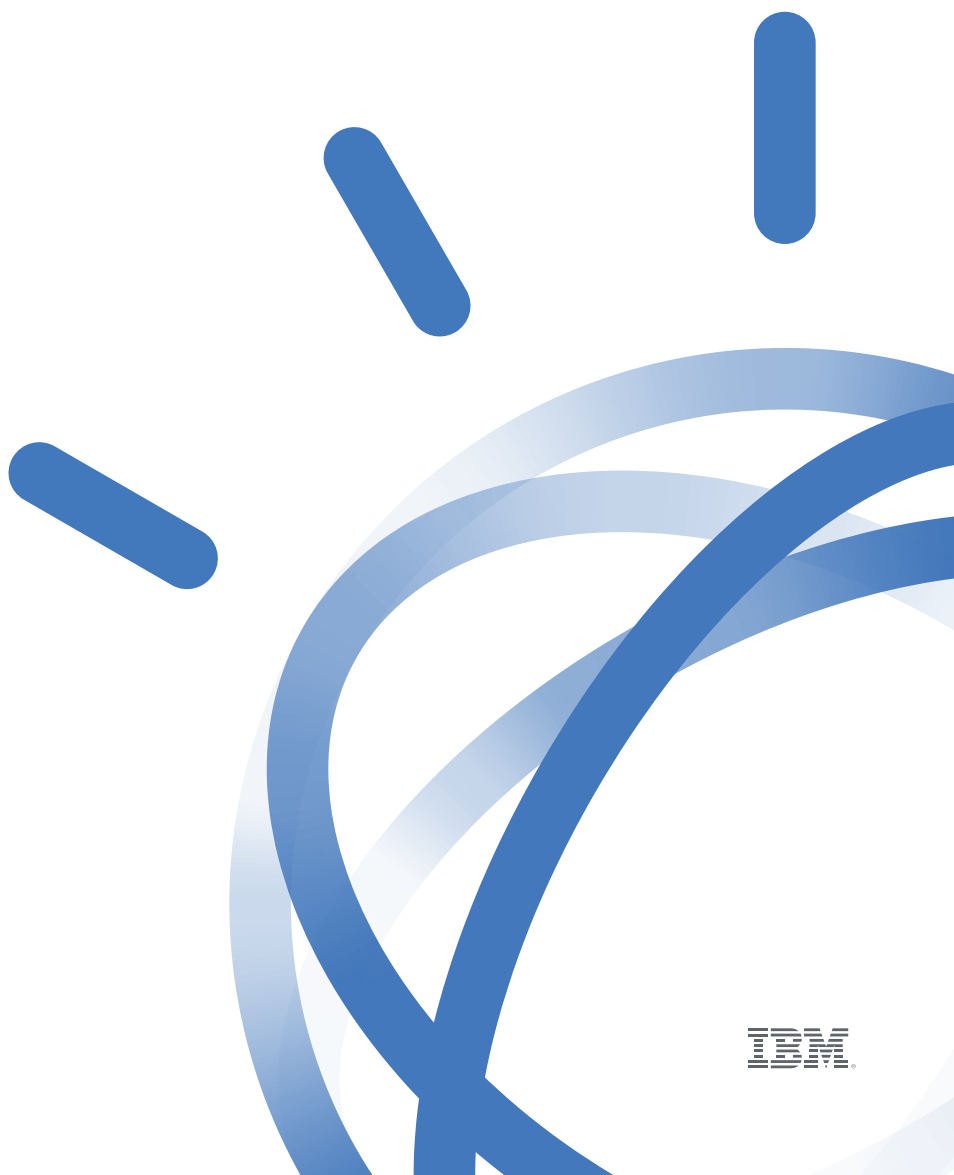


The future of compliance

How cognitive computing
is transforming the banking
industry



Contents

- 02 Paradigm shift in financial services regulatory compliance
- 03 Cognitive computing for compliance
- 04 Regulatory requirements management
- 05 Requirements categorization
- 05 Harmonization of frameworks
- 06 Reporting
- 07 Conclusion

Paradigm shift in financial services regulatory compliance

The compliance landscape has changed rapidly and dramatically over the past 15 years, with the volume and complexity of new regulations rising unabated. Financial institutions have strained to keep pace with the onslaught of legislative and regulatory changes that arose in response to improper business practices and criminal activity. These changes caused the erosion of public confidence in global credit and financial markets and in the security of our banking system.

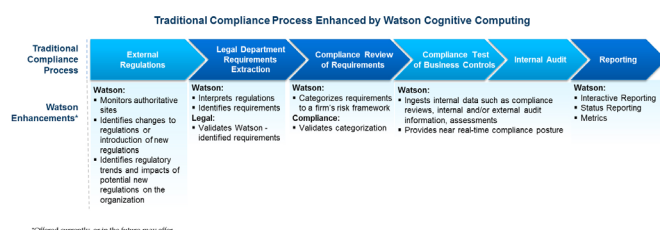
After the financial crisis of 2008, there was a sharp increase in enforcement actions brought by federal and state regulators in a broad range of cases involving financial and securities fraud, economic sanctions violations, money laundering, bribery, corruption, market manipulation, and tax evasion, leading to violations of the Bank Secrecy Act and OFAC sanctions.¹ According to Forbes, Inc., aggregate fines paid by the largest global banks from 2008 through August 2014 exceeded USD 250 billion.² A February 2016 report issued by Bloomberg revealed that the toll on foreign banks since the 2008 crisis has been colossal with 100,000 jobs lost, USD 63 billion in fines and penalties, and a staggering USD 420 billion dollar loss in market capitalization.³

In the wake of these enforcement actions and record-breaking penalties, financial institutions are under pressure to rethink, restructure, and retool their risk and compliance function to operate in the current environment. With regulators, investors and boards demanding increased global transparency, risk and compliance can no longer be tackled in geographical silos. Transforming the way compliance departments operate to meet the new reality requires an investment in talent and technology. Spending on talent continues to rise as institutions hire more and more staff to shore up already sizeable compliance teams. At the end of 2014, Citigroup reported a compliance staff of 30,000.⁴ Some boards, analysts, and investors question the exploding costs of compliance yet recognize that any effort to reduce staff without demonstrable and measureable improvements in compliance processes and technology would almost certainly be viewed negatively by regulators. Headcount alone cannot solve today's compliance challenges. One possible solution lies in transformative technology that enables a shift in the focus of compliance staff from that of information gatherers to information analyzers. In other words, it is time for a paradigm shift in the financial services industry and the way regulatory compliance departments operate.

Cognitive computing for compliance

Cognitive systems are trained by humans and learn as they ingest and interpret new information.⁵ Rather than being explicitly programmed, they learn and reason from their interactions with us and from their experiences with their environment.⁶

IBM® Watson® technology represents a new era in computing called cognitive computing, where systems understand the world in a way more similar to humans: through senses, learning and experience. Watson uses natural language processing to analyze structured and unstructured data, uses natural language processing to understand grammar and context, understands complex questions and proposes evidence-based answers, based on supporting evidence and the quality of information found.



Watson technology helps enable streamlining and automation of a traditional compliance process.

Cognitive computing is a natural fit for the regulatory compliance space because it can be used to accomplish the significant amount of analysis required to read and interpret regulations. The traditional process of distilling regulations into distinct requirements is a demanding and continuous undertaking. Compliance professionals must read hundreds of regulatory documents and determine which of the thousands of lines of text constitute true requirements. Given the same document to assess, different staff can arrive at different conclusions. In a manual environment, this adds another layer of issues to track while the parties resolve whether the identified text is or is not a requirement.

This work is usually performed on a continuous cycle and under the pressure of deadlines. The end-to-end process of identifying and finalizing the requirements inventory can be demanding and tedious. It is also traditionally encumbered by the heavy use of spreadsheets for tracking of regulations, requirements, internal decisions and statuses. Together, these conditions have the potential to negatively impact the work environment and can result in low morale and high turnover.

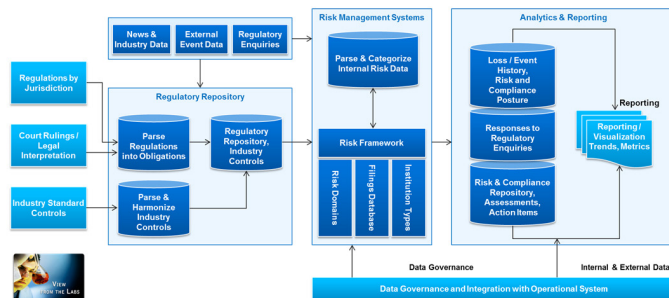
Only when the human effort can shift from the tedium of manual processes (collect regulations, identify requirements, and track compliance issues through spreadsheets) to an automated solution will end-to-end visibility and transparency be realized. Cognitive computing technology can help an institution realign its approach from outdated information processing techniques to a state-of-the-art solution that enables this transformation.

IBM Watson Regulatory Compliance puts the power of cognitive computing into the hands of compliance professionals, giving them the capabilities needed to leverage data to help them manage risk and compliance requirements, and optimize data for more effective analysis.⁷ It is specifically tailored for compliance departments and offers, or in the future may offer, core functionalities that include:

- Document ingestion
- Requirements parsing and identification
- Requirements decisioning and management
- Categorization of requirements
- Mapping of controls to requirements
- Harmonization of risk frameworks*
- Interactive reporting and analytics*
- Automated audit trail*
- Automated requirements catalog
- Centralized document library

* Indicates potential future capability

Watson Regulatory Compliance is designed to help organizations use cognitive technology to transform key portions of their regulatory compliance processes that are traditionally performed manually (see Figure 1). These enhancements, enabled by Watson, can potentially help an organization to reallocate resources to more value-added compliance and analytic activities for improved transparency across the compliance function. A conceptual end-to-end approach for cognitive compliance and requirement management, to categorization, mapping of controls and standards, and analytics and reporting is presented in Figure 2.



The end-to-end solutions, powered by Watson, can provide near real-time risk and compliance posture across the organization.

Regulatory requirements management

Today, compliance professionals spend many intense hours manually reviewing thousands of regulations trying to make sense of the incoming demands and requirements for their businesses. What does this new regulation mean for my organization? How do I identify and mitigate emerging risks across geographies? How do I ensure that employees are efficient and effective in carrying out their compliance responsibilities? These are just some of the many questions on the minds of compliance officers today.

With the increased compliance burden that organizations face, there is a pressing need to gain a better understanding of industry regulations and to do so more quickly than ever before.

Watson Regulatory Compliance can automate and streamline the process of parsing regulations into requirements to help organizations achieve a comprehensive view of regulatory compliance across jurisdictions, business operations and risk disciplines.

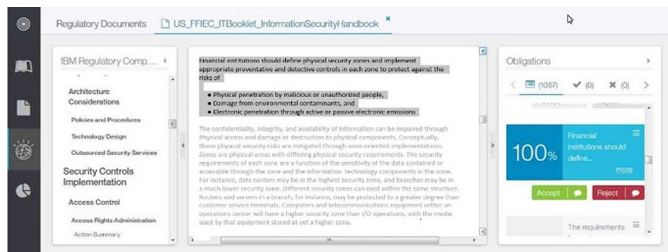
The first step is Watson ingesting regulatory or internal risk and compliance policy documents. Watson then reads and parses this unstructured data and identifies potential requirements.

After individual requirements have been parsed from regulations, the organization's compliance team finalizes the requirements inventory by validating the decisions made by Watson and consequently training Watson. With each acceptance or rejection of a requirement identified by Watson, Watson learns and adapts its understanding of what constitutes a requirement, thus establishing a document-level ground truth set of requirements. Watson applies the knowledge gained from past user responses to new parsing activities. It uses linguistic patterns and statistical algorithms to become smarter and return more accurate results in the requirements identification process. As users accept or reject the parsing results of more regulations, their feedback is incorporated into the machine learning process, improving the cognitive ability of Watson to understand and interpret regulatory text.

In addition to accepting and rejecting a requirement, users are able to perform other actions to further fine-tune their requirements inventory such as promoting non-requirements to requirements, merging or splitting sentences to form requirements; and earmarking and attaching document narrative to serve as guidance for one or more requirements. The final output is a centralized repository of regulatory requirements that allows an institution to more quickly and efficiently understand its obligations and manage its efforts to maintain global compliance with regulatory mandates and firm best practices.

Watson Regulatory Compliance is a cognitive solution designed specifically for regulatory compliance. The solution enables organizations to enhance their regulatory compliance and governance processes by automating steps that are traditionally manually intensive and demanding (see Figures 1 and 2).

An illustrative example of parsing results can be seen in Figure 3, which shows a requirement identified by Watson contained in the US FFIEC Information Security Handbook that was ingested and analyzed by Watson. As presented, requirements are highlighted and boldfaced while text that does not represent requirements is displayed in a gray font.



US FFIEC Information Security IT Booklet as parsed by Watson Regulatory Compliance.

Requirements categorization

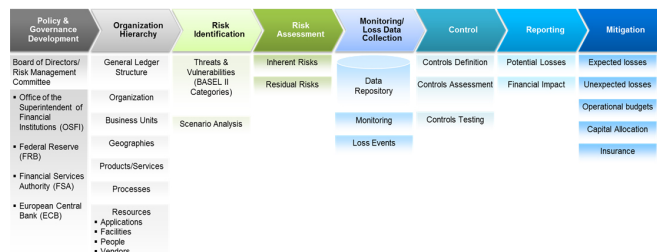
Compliance officers also spend a considerable amount of time mapping requirements to their internal risk framework. Where there are multiple reviewers of the same mapping decision, there are often inconsistencies in their conclusions. Lack of guidance from regulators and differences in interpretations made by colleagues can impede the ability of the institution to implement new policies or procedures in a timely manner.

With a comprehensive catalog of regulatory requirements spanning jurisdictions, geographies, risk domains, products, and services, a compliance department could potentially benefit from cognitive technology that could categorize requirements based on a firm's risk framework and to that of other industry frameworks such as Basel Committee on Banking Supervision (BCBS), COBIT or NIST. This feature could make it possible for compliance professionals to easily group, compare, report on, and respond to new or revised regulations. Figure 4 shows a sample risk framework.

Automatic categorization of requirements can help alleviate the time-consuming and manual effort required to sift through large quantities of data, looking for correlations, and mapping consistently to the correct category. Just as Watson learns from user decisions to accept or reject requirements, it also learns from user feedback on the automatic mapping of requirements to risk categories by Watson. Standardizing the classification of requirements using cognitive technology can enhance a firm's compliance risk management process.

Cognitive technology can also be leveraged to assess an organization's level of compliance against its best practices. Requirements can be grouped by internal risk themes such as governance, data privacy, fraud, and in turn, these categories can be mapped against the organization's risk control framework.

As a result, the firm's internal controls may be compared to an industry-standard framework, thereby determining whether the firm is adhering to industry best practices. Visibility into the risk framework categories to which individual requirements are classified, and in turn, which controls are mapped to those requirements could help streamline the effort a firm must undertake to quickly interpret and digest the information and make actionable, proactive and insightful decisions.



This sample illustrative risk framework shows some classifications that firms can use to categorize their risk processes.

Harmonization of frameworks

It is not unusual for the different lines of businesses in an institution to develop risk frameworks unique to their business unit. With each unit intently focused on its own compliance demands, there is usually insufficient time and resources to pause and align one unit's framework with that of another or across industry standards.

Analyzing the various frameworks manually is not an efficient approach. The obstacles to comparing the controls of each business unit can be daunting. To be effective, compliance professionals would require deep knowledge of each business unit, which potentially becomes an impossible task as the volume of regulations grows.

Cognitive technology can be leveraged to harmonize risk frameworks and create a horizontal matrix view of all frameworks in use at an institution. It offers a high degree of standardization in categorization and controls across different regulations as well as the entire institution. An organization can have an enterprise-wide view of controls across risk frameworks, which can help increase a firm's ability to identify commonalities and differences in business unit controls.

Transparency into the relationships between requirements, controls and risk frameworks permits compliance professionals to make more informed decisions on the steps an organization should take to rationalize controls. Using Watson technology to harmonize risk frameworks also helps address the need to quickly understand the business impact of new and current requirements. Additionally, demands on compliance resources and time can potentially be measurably reduced.

As an organization develops greater consistency in its frameworks, management can be better informed and able to adjust and make decisions faster.

Reporting

Watson Regulatory Compliance provides an interactive reporting experience. Organizations can leverage the cognitive ability of Watson to help them analyze a vast array of unstructured risk and compliance data cultivated from various sources.

While not currently an available feature, imagine a future where your smartwatch or Watson could receive a proactive alert about an issue you asked it to monitor or respond to questions such as: Are we in compliance in our Latin America operations? Are there any new issues in our anti-money laundering (AML) program? As cognitive computing evolves and advances reporting capabilities beyond the traditional data warehouse, this vision may become a reality.

Watson can help deliver greater value by offering hypotheses on enterprise-wide risk assessments, policies, risks and control structures, and a view of its risk and compliance posture without requiring additional resources to program custom reports. Current risk assessment processes are complex and manually intensive, and laws continually evolve. A detailed assessment is required to determine or interpret if an organization can meet the regulations, and if they align with their respective policies and risk appetite.

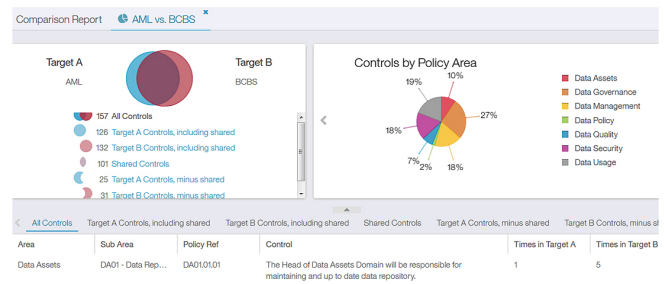
For example, by investigating requirements across different jurisdictions to examine the impact of entering new countries or introducing new products, Watson can provide decision support beyond typical risk management assessments techniques.

Watson can help you identify gaps in the control environment and assist in control rationalization based on its ability to understand, reason and learn through the automated mapping process discussed in earlier sections. Subject matter experts no longer have to sift through layers of reports or look at outdated dashboards, and can be in a position to ask questions of Watson in order to make or support business decisions. As a result, the business could potentially require fewer IT resources to generate and consume analytics.

Consider an organization that is doing business in a particular country and looking to expand its operations to another country. Before venturing forward, the compliance department would have to assess myriad applicable regulations in order to recommend proceeding with the launch. The complexities, for example, involved in studying data privacy laws or credit card issuance that vary dramatically by country, would take weeks if not months to sift through and then opine upon. Based on pilot results, Watson can perform these analyses and return its findings in less time with fewer resources. As a result, the compliance department can be relieved of the laborious and time-consuming task of reviewing regulations and instead focus on validating potential obligations identified by Watson. If variances identified by Watson are too substantial, Compliance may recommend that the business not pursue the venture.

In summary, there may be less reliance on reporting from a traditional data warehouse and more interactive conversations with Watson to help organizations understand the impact of the ever-changing regulatory landscape in a near real-time manner. Data warehouses are not going away anytime soon. However, there will be a paradigm shift to cognitive computing that will help lessen the reliance on traditional reporting, as organizations will have the ability to simulate various scenarios as regulations are being proposed or are changing. In the future, cognitive technology could be used to crawl the internet for specific regulations and automatically ingest and categorize the information. A compliance professional would then have the ability to interact with Watson in a manner that lends itself to effective interpretation of the potential impact of proposed regulatory changes to the organization.

Figure 5 depicts an illustrative dashboard showing a comparison of control overlaps and differences of two regulatory initiatives, AML and BCBS. This view of gaps and overlaps provides great insight to organizations for interpreting and absorbing the information and making decisions in a more time-efficient way.



This interactive Comparison Report compares two regulatory initiatives across justifications and shows control overlaps and differences and how the information is categorized in Watson Regulatory Compliance.

Conclusion

With increasing regulatory scrutiny, financial institutions face difficult challenges in maintaining compliance, maximizing resources effectively, and avoiding reputational damage and significant fines. Manually intensive compliance processes are more difficult to scale, lead to a greater rate of errors and higher operational costs, and deprive an organization of valuable time needed to respond to new regulations.

Maintaining the status quo of traditional labor-intensive compliance processes is not viable over the long term. Nor is hiring more staff an answer by itself. Both are stopgap measures that cannot deliver the changes needed to transform the way an organization consumes and interprets regulations and manages requirements. Watson Regulatory Compliance is designed to help achieve lasting change.

Watson Regulatory Compliance is designed to help financial institutions efficiently identify and effectively manage their global compliance requirements. It leverages Watson cognitive technology to help organizations achieve efficient and cost-effective change by streamlining the efforts associated with understanding and interpreting regulations, thereby helping to transform the compliance dynamic from reactive to proactive.

Watson Regulatory Compliance is just the beginning. IBM continues to advance cognitive technology applications. New solutions such as semantic audit analysis and IBM Surveillance Insight for Financial Services are allowing cognition to become an integral part of a financial institution's operations. The rapid evolution of Watson enables organizations to realize smarter processes that position organizations to adapt and thrive as they take on the challenges of ever-increasing and complex regulatory changes.

For more information

To learn more about about Watson Regulatory Compliance, read the solution brief at ibm.biz/WRC-solution or visit: ibm.com/regtech

Additionally, IBM Global Business Services can help you better manage projects and programs and acquire the software capabilities that your business needs in the most cost-effective and strategic way possible.

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