Addressing Financial Services Challenges with Cognitive Analytics

From personalizing customer experiences to pinpointing undetected fraud to identifying business efficiencies, Intel's Saffron Natural Intelligence Platform* helps financial institutions increase revenue and prevent loss.

Executive Summary

Financial institutions are under increasing regulatory and compliance scrutiny, competing in a growing atmosphere of disruptive technology and customer churn, and searching for ways to drive efficiencies in their business operations. To solve these problems, banks and insurance companies are turning to artificial intelligence technologies to decrease the overhead of regulatory compliance, better understand customer needs, and more effectively and efficiently manage the business.

Intel's Saffron Natural Intelligence Platform* unleashes the next wave of artificial intelligence with memory-based reasoning for cognitive analytics. Using associative learning techniques, Saffron's solution mimics our natural ability to learn, remember, reason, and act. The Saffron Platform unifies heterogeneous data sets in an associative memory store to learn and represent the knowledge inherent in the data. Coupled with a memory-based reasoning engine, this approach provides a more accurate and adaptable alternative to data modeling, especially when data sources are sparse and dynamic.

The Saffron Platform is architected end-to-end with Intel® technologies for high-performance cognitive analytics, customization toolkits, and ease of workflow integration. By providing businesses with an analytics solution that learns and adapts automatically, the Saffron Natural Intelligence Platform helps financial institutions benefit from the knowledge in their data to win in a business environment that is increasingly competitive, changing, and complex.

Saffron* Memory-Based Reasoning

Figure 1. Intel's Saffron Natural Intelligence Platform* delivers cognitive analytics by replicating the human ability to learn, remember, reason, and act.
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Business Challenge:
Plenty of Data but Not Enough Insights

The financial services industry faces three primary challenges: increasing governance, risk, and compliance (GRC) costs; an increasing urgency to develop stronger customer relationships and personalized services; and an ever-present need to increase operational efficiency (Figure 2). In each case, there is no lack of data—but legacy systems and processes are ill-equipped to learn from the new forms and sources of data, transform the data into knowledge, and extract rich insights with efficiency and scale. Existing analytics tools and methods simply cannot keep up with the increasing amount and complexity of challenges facing banks and insurance companies.

Governance, Risk, and Compliance Costs
Financial services is one of the most heavily regulated industries, with compliance costing some banks up to USD 4.5 billion per year. GRC costs account for 15 to 20 percent of the total “run the bank” cost base of most major banks. Much of this GRC cost is associated with preventing fraud, such as money laundering. An estimated USD 800 billion to USD 2 trillion is laundered each year. Banks are highly motivated to curb fraud and meet increasingly strict regulatory requirements—in 2014, banks paid USD 351 million in non-compliance fines (about seven times the fines levied in the previous year). More than ever, banks are expected to “know their customer” and provide the infrastructure, processes, and policies to detect and prevent issues like money laundering. To increase compliance and decrease fraud, banks must deploy advanced analytics platforms that can handle both structured and unstructured data, and quickly identify and respond to new schemes that fraudsters are taking to hide anomalies.

Customer Engagement
Emerging players in the financial services market are using disruptive technology to provide consumers with direct access to services such as loans, insurance, and stock brokering, cutting the bank out of the picture. The Internet, mobile computing, and cloud-based services all make it very easy for consumers to bypass traditional financial services in favor of specialized offerings. To counter this trend, banks and insurers must find a way to attract and retain customers with new, personalized services that differentiate themselves from “fintech” companies. Mining customer relationship data, which can include a wide range of data types including voice, social media, email, browsing habits, and product and service preferences can enable banks to increase customer engagement. But this type of data mining requires cognitive analytics to achieve the rich and individualized insights banks and insurers need to deeply engage with their customers.

Business Efficiency
In the face of the rising cost of operations, competition from innovators and start-ups, and customer demand for new services, financial institutions must find ways to optimize their processes, control their cost structure, and explore new operating models. According to Deloitte research, banks that have achieved continuous improvements in efficiency have also generally experienced far greater gains in their share prices. Cognitive analytics can help discover inefficiency and drive streamlined operations and discover new sources of value.

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Memory-Based Reasoning Can Solve Financial Institutions’ Most Pressing Problems
The Saffron Natural Intelligence Platform* and its memory-based reasoning deliver a cognitive analytics solution that addresses the business challenges facing financial institutions today. Here are some examples of those challenges:

- **Risk and compliance.** Fast, comprehensive analysis of heterogeneous data can lead to greater accuracy, lower false positives, and prevent unforeseen fraud and money-laundering actions. In one project, the Saffron Platform examined over one-hundred thousand insurance claims and within ten hours it uncovered a previously unknown fraud ring that cost USD 2 million per year to the insurer.

![Figure 2. The financial services industry faces constant pressures from regulatory scrutiny, customer churn, and rising operating costs.](image-url)
• **Customer engagement.** With a large and diverse customer base and thousands of products and services, banks and insurance companies are challenged to understand their customers’ needs and respond in a timely manner. A business can truly customize each interaction and more deeply engage with their customers only by building an associative memory store of all customer profiles and preferences across the entire portfolio of products and services. In one pilot project, the Saffron Platform improved accuracy rates by 70 percent for product recommendation across 160 different products and 8,000 distinct services. All the while, the Platform accomplished these results in 10 weeks, compared to traditional modeling efforts that took over 18 months and with less accuracy.

• **IT operational efficiency and business operations.** The opportunities to apply memory-based reasoning to IT operations are numerous. For example, Intel's Saffron Natural Intelligence Platform can be used to more quickly find and resolve defects for software development, maintain an expertise directory for sales staff, and provide talent management for the human resources department. For example, in one project, the Platform enabled a 10- to 15-percent increase in business operational efficiency by accelerating software testing, with a 50-percent test script deduplication.

### Solution Value: Putting Data to Work

Financial institutions wanting to increase their competitive capabilities in the market can turn to the Saffron Natural Intelligence Platform. Analyzing data like the human brain does, and with the ability to learn, remember, reason, and act, Saffron's knowledge store and memory-based reasoning engine deliver distinct value to financial businesses:

• **Unify heterogeneous data sources** (structured and unstructured), leading to deeper insights and more accurate predictions.

• **Improve the productivity** of financial crime investigators by reducing false positives and generating results faster than machine learning and deep learning solutions.

• **Slash time to insight** and resolution by learning instantly and continuously, often reducing investigation times from months to days and decreasing financial losses due to fraud and compliance fines.

• **Provide transparent, explainable,** and auditable results to move beyond black-box models and enhance the organization's decision-making confidence.

The Saffron Natural Intelligence Platform is deployable out of the box—no data modeling or training is necessary. It can be easily integrated with existing applications, processes, and workflows to accelerate deployment.

### Solution Architecture: Associative Memory Store with a Memory-Based Reasoning Engine

The software solution stack for Intel's Saffron Natural Intelligence Platform is schema-free and can comprehend disparate data types—it connects all the data points regardless of source or structure. Source connectors and extractors enable feature extraction using machine learning, deep learning, and other artificial intelligence techniques from Intel, third-party vendors, or the customer. Leveraging Saffron's patented associated learning algorithms, the Platform creates an associative memory store, which can then be queried using its powerful memory-based reasoning engine and library of thought processes. Third-party data visualization and other applications can be integrated into the software stack for seamless decision analysis.

The software stack runs on a high-performance Intel® architecture server platform, including the Intel® Xeon® processor E5 and Intel Xeon processor E7 families, Intel® Solid State Drives (Intel® SSDs), and Intel® Ethernet adapters (see Figure 3). Other Intel technology integrates into the solution stack to further optimize performance and security, including the Trusted Analytics Platform (TAP) and the Intel® Scalable System Framework (Intel® SSF).

The Platform can operate independently, integrate into an existing on-premises infrastructure, or be delivered as a cloud-based solution.

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**Figure 3.** Intel's Saffron Natural Intelligence Platform is designed end-to-end and built on a high-performance foundation of Intel® architecture.
Conclusion

Artificial Intelligence technology is transforming the way business is done and how enterprises create and deliver value to their customers. The financial services industry has always been at the forefront of adopting and implementing state-of-the-art technologies. Intel’s Saffron Natural Intelligence Platform is the next wave of artificial intelligence, offering a new approach to advanced analytics through memory-based reasoning. Inspired by human intelligence, it transforms data into knowledge, giving financial institutions the insight to understand, the confidence to act, and the evidence to explain the decisions used to tackle their biggest challenges.

Find the solution that is right for your organization. Contact your Intel representative or visit intel.com/FSI.

Learn More

You may also find the following resources useful:

• Saffron Technology Website
• Intel® Artificial Intelligence
• Intel® Scalable System Framework
• Trusted Analytics Platform (TAP) Website