

# Reducing IT Chaos Through Operational Intelligence

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## Introduction

Businesses today live or die based on the ability of their software to satisfy their constituents. Customer expectations have never been higher; if an application loads slowly, the user may simply switch to a competitor's offering. Organizations need the ability to not only quickly deliver new services, but also ensure the performance of those services provides an outstanding customer experience. The myriad of systems that support these new services generate vast amounts of performance data, but current IT management software and manual approaches can no longer keep up with the growing complexity and volume of data. AI-driven operational intelligence is the only way to consistently support the demands of today's constantly changing technology and business landscape.

## Real World Scenario

Take the example of a large, regional bank that had built a robust consumer business over decades. The company began to get frequent requests from its most lucrative customers for new types of services. It quickly became clear that these customers were being lured away by competing banks that were now offering innovative services such as mobile peer-to-peer payments and check deposits. They didn't care about the technical challenges, regulatory concerns or integration into back end systems – they just wanted new leading-edge services. Rather than watch customers leave for the competition, the bank created a new set of modular and flexible software services that seamlessly connected to backend services. The IT Operations team provided an environment that enabled a variety of applications across the mainframe, public and private cloud services, and networks to act as though they were one unified, connected environment. This dramatically improved environment allowed the bank to move quickly to deliver new services. In fact, the team was able to offer much more innovative services that encouraged existing customers to buy even more banking services. Customers who had never done business with the bank began to open accounts because of the impressive services and the bank's ability to respond to changing needs. This new software environment armed the IT team with the flexibility to continuously add new services that kept the bank ahead of competitors in a cutthroat market.

What did it take to transition from a rigid software environment to one based on agility? At first glance, it may appear that the bank was forced to abandon decades of investment in software, hardware and business logic. However, rather than get rid of its existing environment and replace it with something completely new, the company used a much more pragmatic (and cost effective) approach, based on refactoring many of its existing software services using modern technology such as containers and microservices. By packaging valuable software intellectual property into containers with well-defined services and APIs, the company was able to make this software much more flexible. New microservices could be added in to the platform to support changing customer

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experience requirements. On the back end, the company took advantage of an operations management platform that brought together networks and a variety of deployment models (on premises, private, and public cloud) to manage in a predictable way. To manage the complexity of this hybrid environment, the IT team embedded operational intelligence and machine learning as part of the IT management environment. This solution enabled them to resolve issues faster, optimize resources, adapt to change, and ensure that high levels of performance and availability could be sustained.

## Key Challenges to Improve the Customer Experience

Reinventing the customer experience is not straightforward. On one hand, the bank had to offer inventive new technology services but on the other hand, it had to maintain the personal touch with its customers at each branch. Providing a level of flexibility in the interactions with their customers is at the heart of the company's differentiation. The only way to ensure customer satisfaction is to rethink the way IT Operations can support innovation.

The requirements to support flexibility and innovation mean that IT Operations leaders must manage not just the progressively complex physical environment but also increasingly large volumes of data – without a larger staff. Data comes from a variety of disparate systems, including transactional management systems, data from both line of business and Software as a Service applications, and machine generated log data. In addition, businesses are collecting more and more information about customer usage so they are in a better position to be proactive. Advanced analytics and machine learning algorithms make it possible to search for the hidden patterns in this complex data to determine if improvements in IT performance will improve the customer experience.

In addition to the data generated about customers' experiences, each underlying system produces a massive amount of data about the health and operations of a software and hardware environment. However, this machine data is rarely used because there is simply too much information to easily gain actionable insights.

This data is generated by numerous systems spanning mainframes, virtual servers, cloud environments, storage devices networking devices, and various sensors. Combining this data can provide context so that it can be used to take the best action to improve performance. In discussions with many IT Operations leaders, it is clear they have a mandate to better support both internal and external users by ensuring that applications and services work quickly and predictability within defined Service Level Agreements (SLAs). Users will not tolerate interruption in the operational performance that impedes their ability to get their jobs done.

There is a risk that if IT Operations cannot manage all of this data there will be chaos. Chaos is the enemy of the customer experience. Without a good IT Operations foundation the staff finds itself straining to identify the cause of

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problems. No individual or group wants to be blamed for a problem. The result of this finger pointing is that the organization is unable to be proactive in maintaining the customer experience and staff productivity suffers.

## The Benefits of Moving from Reactive to Predictive Operations

For decades, IT Operations management had been an art rather than a science. The smartest IT Operations professional relied on their years of experience to understand the way the systems they supported operate. These experienced professionals knew the signs of a potential problem by leveraging the insights generated by monitoring tools and they knew how to quickly fix issues. However, with the advent of cloud-based computing models, new applications are not well understood. Many of these new applications are cloud-based Software as a Service applications where IT Operations has no control. In addition, many business units use software and systems out of the control of centralized IT Ops team. Ironically, management assumes that the IT Operations team can still ensure smooth operations. In reality, it is not humanly possible for the operations team to analyze all of this system, software, and log data in real time in order to proactively support customer expectations.

## Leveraging Machine Learning

The most effective way to deal with the complexity of a computing environments of today is to select IT management solutions that apply advanced analytics and intelligent automation to guarantee smooth IT Operations. Solutions based on machine learning can apply machine learning data models to massive amounts of information in order to spot patterns and anomalies and correct problems before they impact customers.

The best solutions are those that can bring together data from many different sources. Machine learning-based models can be used to analyze and correlate data in order to understand what has happened, what might happen, and how to remedy a situation. For example, if there is a problem with a system or a network outage, the data model has been trained to identify the issue and suggest a correction or automatically implement corrective actions.

## The Value of Augmented Intelligence

Advanced analytics and machine learning are becoming mandatory in forward-looking companies planning to address the increasing complexity of IT Operations. Using a machine learning approach leads us to what we call augmented intelligence. What is augmented intelligence? It is a form of artificial intelligence and machine learning that enables the collaboration between human experts and trained data models. The machine learning based system helps IT Operations staff identify potential problems and offers suggested best practices to solve problems. Routine and repetitive tasks can be fully automated

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to free up staff to handle more complex problems. By embedding machine learning into an IT Operations solution, IT operators can focus on supporting the business's innovative projects.

What are the capabilities that need to be incorporated into a solution? We believe that there are three characteristics that organizations need to look for in an augmented intelligence solution. They include:

- **Managing Complex Data** -- A solution must be able to aggregate, model and analyze data from a variety of platforms including mainframe, cloud services, servers, networks, databases, storage devices and applications. In addition, it should also be able to ingest different types of data across these platforms such as metric, log, wire and topology.
- **Pre-Built Algorithms** -- A solution should have out of the box, pre-tested, machine learning algorithms. By using pre-built algorithms, the IT team can focus their attention on the most complex challenges rather than learning how to implement new technology.
- **Open Framework** -- A solution has to be based on open standards in order to exist in this complex, multi-vendor, multi-cloud world. This has to be achieved based on a scalable architectural framework so that the solution can grow and scale as the opportunities to better support customer requirements grow. Flexibility is imperative since there is no guarantee that we can anticipate the future of the data that will be available to support changing customer expectations.

## Conclusion

With all of the changes and innovations in software and deployment models, one team will never be able to manually manage all of the complexity. By implementing machine learning based analytics solutions, it is possible to apply best practices and algorithms to automate many of the operational processes opening up time for people to focus on the complexities based on their understanding of business change. Skilled employees must be able to analyze data in context with changing situations and exploding data sets. In addition, companies need their most skilled employees working on complex problems focused on the customer rather than correcting routine errors. IT Operations has to be armed with solutions that anticipate problems and correct them before customers are impacted.

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## About Hurwitz & Associates

Hurwitz & Associates is a strategy consulting, market research and analyst firm that focuses on how technology solutions solve real world customer problems. Hurwitz research concentrates on disruptive technologies, such as Big Data and Analytics, Security, Cloud Computing, Service Management, Information Management, Application Development and Deployment, and Collaborative Computing. Their experienced team merges deep technical and business expertise to deliver the actionable, strategic advice clients demand. Additional information on Hurwitz & Associates can be found at [www.hurwitz.com](http://www.hurwitz.com).



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