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CASE STUDY

BETTER, FASTER, SMARTER: POWERING TODAY'S DIGITAL SERVICE PROVIDERS WITH AUTOMATION, OPTIMIZATION, AND INTELLIGENCE

Digital service providers are turning to next-generation technologies in key business areas to accelerate their digital capabilities and deliver state-of-the-art services.

Fueled by growth in the digital economy and changing consumer demands, the telecommunications industry is enjoying unprecedented demand for network services. This massive traffic growth is primarily driven by video, and forecasts indicate this trend will continue with the introduction of 4K and 360 video. Investment is crucial to the industry's ability to keep pace. Technologies such as 5G, artificial intelligence (AI) and the Internet of Things (IoT) bring the potential for service providers to create new services and revenue streams, more loyal customers, and solid competitive advantage for years to come.

But according to an analysis published by the World Economic Forum, "so far, the role that ... operators have played in accelerating digital business and service models has not translated into new value for the operators themselves."[1] Operators' share of the industry profit pool has in fact been in decline over the past decade.

"Pressure on traditional revenues means that it is increasingly important for operators to look at new digital business models," says the Forum report, as well as their own digital transformation to ensure that they take advantage of these gains and improve their cost structure, particularly in the areas of automation and ways of working.

To make this happen, digital service providers are turning to next-generation technologies in key business areas to accelerate their digital capabilities and deliver state-of-the-art services. The following are examples of how forward-looking digital service providers are embracing the digital revolution within key areas of their internal operations to deliver more rapid and responsive service to customers, both on-site and virtually.

[1] Digital Transformation Initiative: Telecommunications Industry, World Economic Forum, January 2017.



Automation: Delivering Superior Customer Experience

Customers want and need to embrace digital services, and rely on their service providers to deliver these. As technology grows more connected using machine learning and IoT devices, it changes the ways in which customers are engaging with their digital providers on a day-to-day, hour-by-hour, or even minute-by-minute basis. To respond to customers as rapidly as possible, service providers are turning to automated help desk technology, so customers and employees can seek help over multiple channels—interactive voice response system, social media, email, chat, or service kiosk.

Automated help desk is a key solution for overcoming the frustrations customers encounter with today's service desks. Too often, service desk calls are plagued by long wait periods. Once customers do reach the help center, engagements can be long and tedious. Representatives need to wade through deductive analysis and resolution involving a variety of services and equipment, such as modems, routers, and set-top boxes. Adding to the aggravation, customers frequently need to repeat themselves, describing the entire problem each time as they go through a series of steps for resolution. Along with customer frustration, this results in high costs for help desk staff, who require extensive training in equipment supported.

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Digital service providers are increasingly turning to automated help desks not only to supplement their service staff, but also to provide more rapid problem resolution. Greater help desk automation not only increases customer satisfaction, but also eliminates redundant activities. As an added bonus, employee satisfaction will rise, and turnover will be reduced. Such systems can provide answers to common issues automatically, furnish updates on service disruptions, capture customer feedback that is instantaneously given to service desk staff, automatically route tickets to the right teams, and escalate more challenging issues.

Data-Driven Optimization: Automated Software Release Planning

Automated and intelligent software delivery is enabling streamlined IT and network operations. Previously, software delivery could be a slow, laborious, and uneven process, even under the best of circumstances—taking weeks or months. Even with Agile and DevOps methodologies, operations' abilities to get software into production could be too slow to meet demands in a competitive market.

Increasingly, operations staff are turning to tools that automate software release planning and activity. Such tools provide the ability to conduct objective, or scientific, analysis of software release patterns—based on rules and weighted models, rather than subjective factors based on hunches, speculation, or even persuasion.

Analysis tools now available to IT and network planners enable them to develop scoring matrices to help map project dependencies and optimize the release plan. These tools include data-driven features and release cycles prioritization, and factor in capacity, scope dependency, transitive dependencies, and various other parameters. In addition, such tools provide the ability to override the data-driven prioritization with manual priorities for certain individuals, such as supervisors or superusers.

Digital service providers now have the opportunity to impart continuous software delivery when and where it is required, to meet the demands of increasingly complex networks of services and markets. In addition, optimized software release tools enable a continuous software delivery capability that frees staff from the repetitive and often manual tasks that bog down software development—and enable the service provider to more quickly design, create, and ship enhanced or new services to customers.



Optimization and Real-Time Intelligence: Well-Orchestrated Field Service

The front line of any operation is its field service teams. As connected smart devices and highly connected smart cities are now being planned and may be the norm in the future, there is a greater need to prioritize and optimize the field service that maintains these devices and the networks that connect them. As a result, field service technicians will increasingly take on expanded roles, moving beyond the cable box to devices and connected appliances, industry observers predict.[2]

The challenge for a service provider is to deliver proactive and predictable service when and where required by customers while reducing operating costs. For expansive digital service provider operations with significant field forces, the more intelligence that can be built into engagements, the better. Activities need to be scheduled, and personnel dispersed. Providers must also have the ability to predict and react to disruptions.

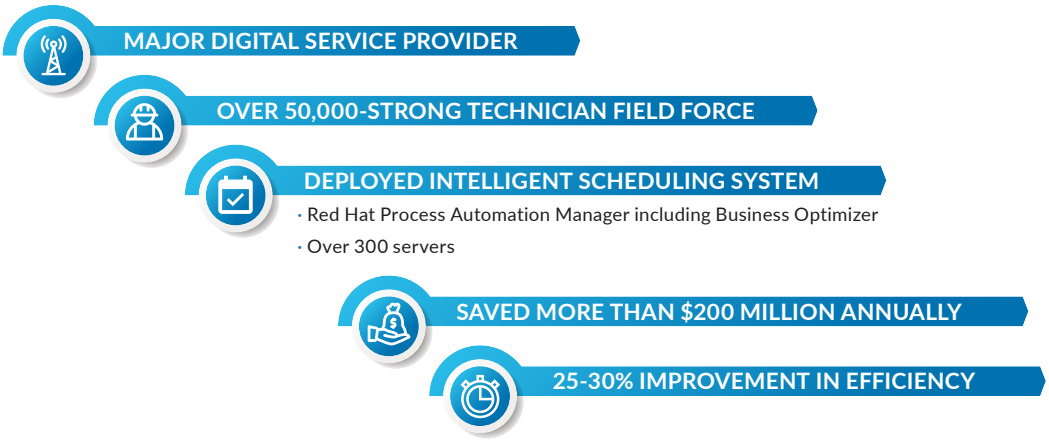
Implementing Business Optimizer, customers see improvements on average over human scheduling by at least 15 percent less travel time.

At the core of the enhanced role of field service technicians is Vehicle Route Optimization and Field Service Scheduling. In a typical scenario, service technicians visit customers for a variety of purposes—installation and troubleshooting being leading reasons. Technician skill sets will differ, depending on the ticket; and similarly, the way vehicles are configured will differ. The key is to ensure the vehicle has the correct parts and tools for the job, as well as to allocate technician time and resources to reduce travel time and optimize technician/vehicle productivity.

Intelligent scheduling systems will enable skills matching to conform to scheduling demands—for example, the availability of staff skilled on the internet, and some in cable. In addition, an intelligent scheduling system will factor in legal compliance, such as maximum working hours and lunch breaks.

An intelligent scheduling system will also factor in variables such as the location of the technician to determine the optimal commute, the time window during which the job has to start, and the approximate time for a job to be completed. There is also the real-time impact of a variety of unexpected events that need to be accounted for, including weather, traffic, driver availability, vehicle breakdowns, delays in resolution at one location, and even ad-hoc changes to service orders. Implementing Business Optimizer, customers see improvements on average over human scheduling by at least 15 percent less travel time.

Case Study: Vehicle Route Optimization and Field Service Scheduling



One major digital service provider—offering a range of products and services including voice, streaming, compute services, and mobile—had the challenge of better organizing and prioritizing the activities of its over 50,000-strong technician field force. The provider rolled out an intelligent scheduling system that enabled it to move technicians and equipment to work sites optimized using real-time data.

[2] "6 Trends Transforming the Telecom Industry in 2019," CSG.



The scheduling system—built on Red Hat Process Automation Manager including Business Optimizer—optimized field service planning to do more business with a limited set of constrained resources (employees, assets, time, and money), commonly known as constraint satisfaction programming.

Deployed countrywide on over 300 servers, Business Optimizer solves constraint satisfaction problems with construction heuristics and metaheuristic algorithms.

A planning problem has at least two levels of constraints. Hard constraints are "musts" and soft constraints "should be" supported.

- A (negative) hard constraint must not be broken. For example: one technician cannot work on two different tasks at the same time.
- A (negative) soft constraint should not be broken if it can be avoided. For example: Technician A would like to be home by 6 p.m.

Using hard and soft constraints, Business Optimizer can optimize planning problems such as maximize customer satisfaction while minimizing total travel distance; limitations such as time and technicians; and constraints such as skills and total working hours.

These constraints define the score calculation (fitness function) of a planning problem. Each solution of a planning problem can be graded with a score. With Business Planner, score constraints are written in an object-oriented language, such as Java code or Drools rules. Such code is easy, flexible, and scalable.

A planning problem has a number of solutions. Business Optimizer supports several optimization algorithms to efficiently wade through the incredibly large number of possible solutions.

To date, this large telecommunications provider has been able to save more than $200 million annually, resulting in a 25-30 percent improvement in efficiency through its intelligent scheduling system. This savings is in addition to the corporate environmental benefits of improving the company's carbon footprint. The key is that the system now automatically matches optimization goals (like maximizing customer satisfaction while minimizing total travel distance) against resource limitations (such as time and technicians) and constraints (such as skills and total working hours). Not only has the provider achieved substantial cost savings and improved its employees' experience, it now provides faster, more agile and reliable service.

Successful digital service providers can deliver greater customer satisfaction and gain operational efficiency with intelligence, automation, and optimization woven into their operations to deliver rapid, seamless customer experiences.

Conclusion

Successful digital service providers can deliver greater customer satisfaction and gain operational efficiency with intelligence, automation, and optimization woven into their operations to deliver rapid, seamless customer experiences. Many industries—including transportation, retail, oil and gas, automotive, energy, healthcare, government, and manufacturing—can also benefit from these capabilities. The ability to add intelligence and real-time data to ongoing operations to optimize outcomes improves the customer experience, enhances employee satisfaction and productivity, and can save companies millions of dollars annually.

For more information on intelligence, automation, and optimization solutions that will help your organization compete in the digital economy, contact Red Hat.

Red Hat Process Automation Manager, Including Business Optimizer

Red Hat® Process Automation Manager, formerly known as Red Hat JBoss® BPM Suite, is a platform for developing containerized microservices and applications that automate business decisions and processes. It includes business process management (BPM), business rules management (Decision Manager), complex event processing (CEP) technologies and business optimizer (OptaPlanner), and is compliant with popular industry standards like business process model and notation 2.0 (BPMN 2.0) and decision model and notation 1.2 (DMN 1.2) for process and decision management. Process Automation Manager gives users the ability to capture business policies and procedures, create applications that automate business operations, and measure the results of business activities. It includes easy-to-use graphical tools that foster collaboration between IT and business users and provide better visibility into the rules and procedures that govern business applications.

Red Hat Process Automation Manager is produced using Red Hat's open development model and by the many members of the Drools and jBPM communities. It includes a rich set of application programming interfaces (APIs) that enable straightforward integration with a wide range of complementary solutions. In particular, Process Automation Manager interoperates with Red Hat's portfolio of middleware products, including Red Hat Integration with external applications and Red Hat Runtimes for faster app development. Red Hat Middleware supports a powerful, unified application development, delivery, integration and automation environment with capabilities that have been engineered together to develop, deploy and cost-effectively run hybrid and multi-cloud business applications at scale, supporting IT and business leadership concerns.

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RTInsights is an independent, expert-driven web resource for senior business and IT enterprise professionals in vertical industries. We help our readers understand how they can transform their businesses to higher-value outcomes and new business models with IoT real-time analytics. We provide clarity and direction amid the often confusing array of approaches and vendor solutions. We provide our partners with a unique combination of services and deep domain expertise to improve their product marketing, lead generation, and thought leadership activity.

Red Hat

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