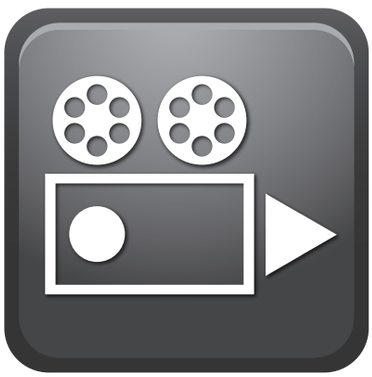
CHAPTER 5 **IT INFRASTRUCTURE AND EMERGING TECHNOLOGIES**

CASE 1

Rockwell Automation Fuels the Oil and Gas Industry with IoT



SUMMARY An industrial manufacturer, Microsoft, and the Internet of Things combine to provide innovative improvements to the worldwide oil and gas supply chain.

Rockwell Automation fuels the oil and gas industry with IoT

URL https://www.youtube.com/watch?v=eg8URrKkf7Y; L=2:15

CASE Rockwell Automation, Inc. is the world's largest provider of industrial automation and information solutions headquartered in Milwaukee, Wisconsin. Rockwell employs over 22,500 people and serves customers in more than 80 countries. Rockwell is part of the Fortune 500 and reported $6.6 billion in revenues in 2018. The company is organized into two major business segments: Architecture and Software, and Control Products and Solutions. Rockwell offers a diverse array of products, including information software for manufacturing intelligence, control systems for process automation, safety technology, sensors and switches, and network technology. The company also offers services associated with these automation products, including repair, asset management, and remote support.

Rockwell's products are essential to many areas of the global oil and gas supply chain. Companies involved in the mining, moving, refining, and selling of oil and gas depend on Rockwell's products and services to keep their equipment running smoothly and with a minimum of maintenance. Many oil and gas drilling sites are in remote, inhospitable areas, making continued maintenance difficult and placing extra emphasis on reliable products that rarely malfunction. With challenges like these and with such a diverse array of clients and customers, performing repair and support services was a

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difficult undertaking for Rockwell. To make matters worse, many tasks associated with the maintenance and repair of Rockwell products had traditionally been paper-based.

Today, Rockwell uses Microsoft Azure to dramatically improve their efficiency and to revolutionize the petroleum supply chain. Like Amazon Web Services and Google Cloud Platform, Microsoft Azure is a cloud computing platform and infrastructure created for building, deploying, and managing applications and services through a global network of Microsoft data centers. These technologies are known as infrastructure-as-a-service (IaaS), and are increasingly popular among companies of all shapes and sizes. Because Microsoft, Amazon, and Google operate at a larger scale than nearly any other company, and because computing resources have become more powerful and less costly over time, they have the technological capability to provide server space and computing power to thousands of other companies, including those with significant needs like Rockwell.

Another advantage of these IaaS platforms is that they are centralized via the cloud, which makes it a perfect hub for the Internet of Things. The Internet of Things (IoT) refers to the growing network of objects equipped with sensors and connectivity to the Internet. These objects are accessible via other connected devices and generate a steady stream of data over time that can yield valuable insights into how resources are used and how they can be optimized. “Smart” appliances, medical and healthcare systems, various methods of transportation, and infrastructure equipped with sensors such as roads and bridges are all examples of the growth of the Internet of Things. These items are constantly communicating information which is increasingly stored on the servers of the major IaaS providers like Amazon and Microsoft.

For Rockwell, the Internet of Things represents a way to provide unprecedented service for their automation products. The most important services Rockwell offers customers who buy its automation products are repair, asset management, and remote support. Using the Internet of Things, the company is able to provide these services more efficiently and successfully than ever before. Using Microsoft Azure as its data warehouse, Rockwell products now generate data in real time via sensors that allow the company to predict and even prevent problems before they happen. For example, Rockwell electrical pumps, oil-transfer platforms known as “skids”, and fueling station appliances all send data to the cloud, where Rockwell can analyze and act on that data using Azure IoT services. Rockwell can monitor the performance and inventory of these systems remotely, improving operational performance for its customers.

Rockwell’s IoT services have strengthened the company’s competitive advantage in the oil and gas industry and have reduced downtime and maintenance for its products via predictive analytics and preventive maintenance. When individual pump failures can lead to losses of hundreds of thousands of dollars per day at a typical oil-drilling platform, any advantages in maintenance pay off very quickly. And when those savings are passed on to individuals at the gas pump, everyone wins.

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VIDEO CASE QUESTIONS

1. What is Rockwell Automation's relationship with the oil and gas industry?
2. How has the Internet of Things changed the oil and gas industry?
3. Why was Microsoft Azure a good choice for Rockwell?
4. What business problems did Rockwell's partnership with Microsoft and implementation of IoT technologies solve or alleviate?
5. What are some other common applications for the Internet of Things?