

NEXT-GEN Life Sciences Organization Modernization using the Power of Cloud

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Abstract: Over the last few years, life sciences companies are increasingly investing in cloud infrastructure to improve productivity, resilience, and competence. From making new medicines to medical devices and vaccines, companies generate, manage, and analyse a massive amount of data to secure breakthroughs. Digital technology transformation through cloud in patient-centric healthcare and adaptive analytic systems can empower physicians and improve patient's experience. With cloud, businesses can deliver new services in less than six months, decrease the time to market from quarterly to weekly, and cut down the deployment lead times from days to hours.

Keywords: Cloud Data Lake, Digital Twin, Data Driven Factories, Model Based Definition, AI/ML

1. Introduction

While all the benefits of cloud are widely understood, migrating content, files and database is not always a smooth transition. Below are the key challenges associated with data migration to public cloud.

- Selecting the right cloud partner (For IaaS, PaaS and SaaS Capabilities)
- Regulatory policies, data security & data governance
- Storage selection for different types of data sets (files, objects and database)
- Data preparation-filtering unnecessary data and prioritizing
- Information validation-before and after migration

Pharma companies leveraging cloud to reduce the go to market time

Life sciences companies are realizing the value of cloud in shrinking innovation cycle and thereby reducing the time to market. It is helping the leading pharma organizations across the world's Research & Development teams to collaborate and drive clinical trials.

For instance, Moderna was able to deliver its first COVID-19 vaccine candidate to the US National Institute of Health for Phase I trial in just 42 days after the initial stage sequencing of the virus with the help of cloud technology. As per the Healthcare Information and Management Systems Society analytics survey report, more than 83% of pharma companies are already leveraging cloud services. Many large

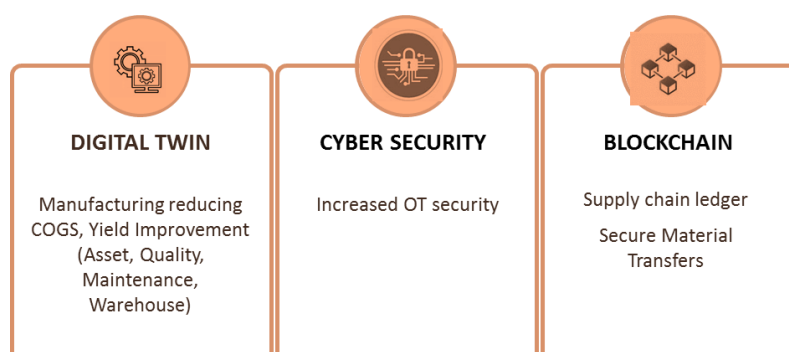
and mid-sized pharma companies have already implemented cloud for long-term content storage.

There are several reasons why customers are even migrating their application and data workloads to the cloud. Some are migrating to cloud to increase the productivity of their workforce, while others are migrating due to data center consolidation or rationalization projects. Additionally, there are companies that are looking to completely re-imagine their business using modern cloud technology as part of a larger digital transformation program.

Cloud Enabled Data Lake for Pharma Customers

Data Lake solves the problem of managing a large set of datasets coming from new sources of data such as sensors, social media and website interactions in different type of formats and sizes. To enable storage and analysis of semi-structured and unstructured data sets, a new system was needed to process data with speed and intelligence. This blog talks about the current trends in life sciences industry, which has made it important to setup industry specific Data Lakes with enormous use cases that can be solved by three biggest public cloud provides AWS (Amazon Web Services), Microsoft Azure Cloud and GCP (Google Cloud Platform).

- Cloud Data Lake helps pharma organizations analyze industry trends, inferences and TCO (total cost of ownership) to identify right solution for themselves.
- It supports global health care and pharma organization to improve quality of life.
- It also offers life sciences organization to provide better insight of patient data and hospitals usage.



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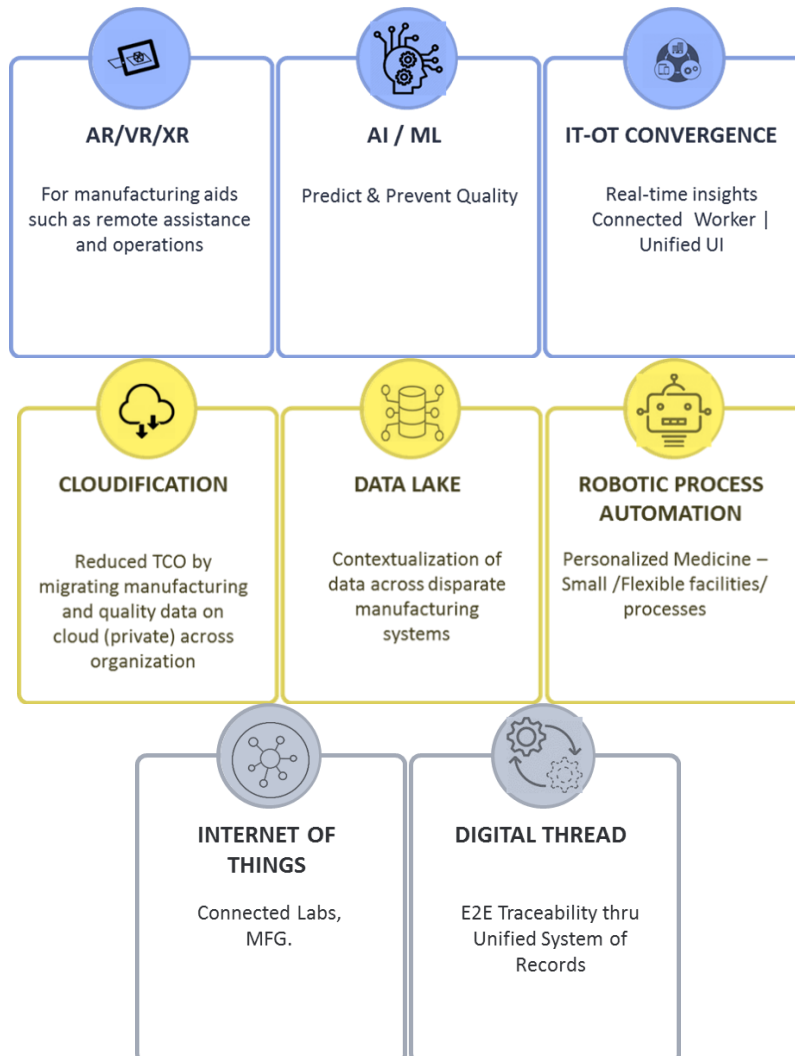


Figure 1: Cloud Enabled

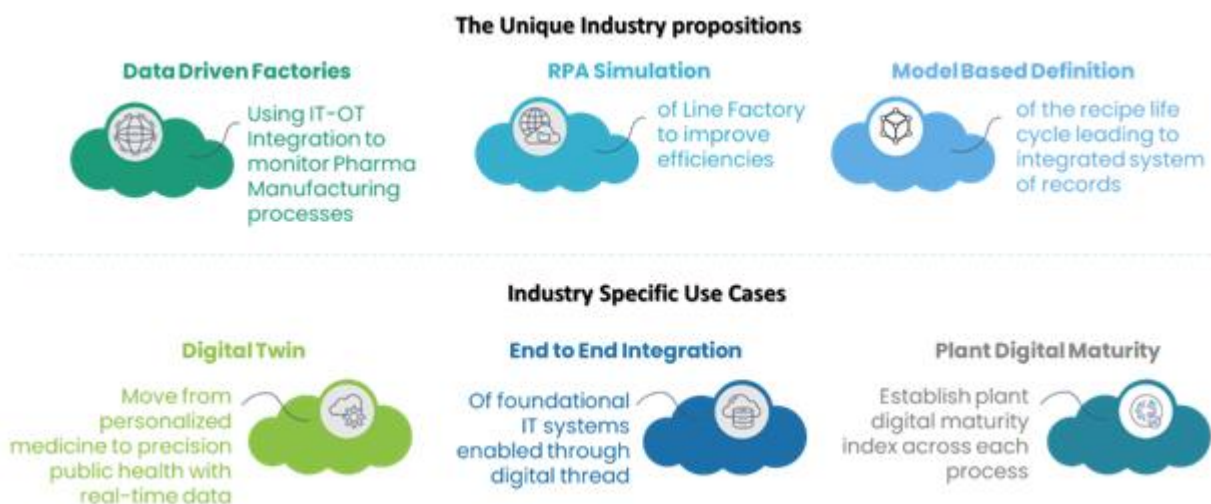


Figure 2: Key Industry trends and transformation journey of Pharma Manufacturing with Cloud

Most pharma manufacturing organizations because of on-premises infrastructures and applications are over expensive, complex structured, have scalability challenges, and hardware that needs to be replaced or upgraded frequently. Cloud service providers are increasingly offering cloud-based solutions for production and management, while

delivery pharma manufacturing organizations are turning to the large web-scale cloud players.

There have been a few high-profile use cases for cloud adoption where pharma organizations have shifted from traditional IT infrastructure in owned on-premise and operated data centers to the public clouds. Pharma

manufacturing organizations have adopted modernized cloud native architectures on public multi-cloud technologies.

To enable advanced analytics the owners have the choice to either turn organizations into a world-class data center operations company or move the service to the public cloud.

Cloud connectivity ecosystem enables equipments in the factory seamlessly connect to cloud services. This solution helps service line managers to focus on conducting analytics on factory equipment data.

2. Conclusion

This paper describes how digital transformation is driving profound changes in the way businesses operate, compete, and generate value for all the clients. To put it simply, cloud is not a future aspiration, rather it's an urgent need for the life sciences industry. Cloud will empower a more resilient enterprise and culture, which companies need to address the challenges and opportunities in this fast-changing world. Most Life Sciences organizations have on-premises applications burdened with high capital expenses, complex management, scalability challenges, and hardware that needs to be replaced or upgraded every 3-5 years. With these on-premises challenges, cloud service providers are increasingly offering cloud-based solutions for production and management while delivery life sciences organizations are turning to the large web-scale cloud players.

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Author Profile



Rohit Malik-Cloud Chief Architect (Life Sciences and Healthcare Domain Strategic Capability Group of TCS), is an accomplished professional delivering over 22 years' managerial and functional career success in driving Futuristic IT Ecosystems, IT Solution Delivery, Innovation, Business Process Reengineering/Benchmarking using Digital Technologies. He has mastered the administration of establishing businesses, managing IT program, articulating technology market developments, invigorating businesses, and service delivery. He has a strong expertise in AWS Cloud Platform with a good knowledge of Azure and GCP Cloud Platforms, Application Migration & Modernization, Microservices, Big Data, Application and Hybrid Integration.