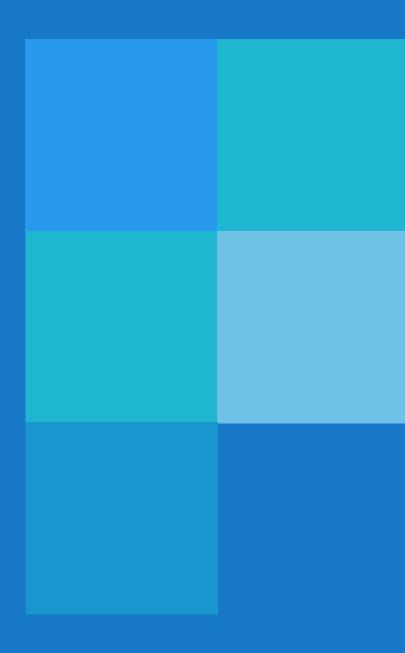# Data Integration
in Healthcare

How iPaaS is Revolutionizing the Healthcare Sector?

APPSeCONNECT

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Introduction

With the growing rate of global digitalization across all sectors of income, data acquisition, maintenance and management is now an utmost importance. The world economy sectors are flooding with digital data and the need to keep them all streamlined together is necessary.

> *The accurate communication and transfer of data from and with external systems, which is extremely important to companies, requires seamless application integration. However, the stakes are higher in the Healthcare Industry.*

With the rise of collective data that is being generated by the public in the healthcare industry, maintaining the data is posing to be a huge challenge. The amount of total data in the healthcare industry that is still waiting to be analyzed is enormous.

> *Healthcare data , till now, is unstructured and is often difficult to extract - medical data may go back years.*

This hints at a considerable threat to the industry and the need to employ data integration in the healthcare industry seems the best option. Data integration refers to the process of connecting various data/data points from different sources into one unified set. During this process, data is cleansed, communicated with and transformed to ensure precise analysis.

Analyzing this data proves to be lucrative - this can identify effective preventive strategies in the healthcare industry, eliminate inadequate care and even expose fraud. With the rise in the level of security, introduction of new financial and medical policies, time constraint and increased attention for data management only, it has become crucial to pay heed towards the data integration and application harmony and plan the strategies that need to be applied in order to achieve them. Therefore, it goes without saying that the implementation of the integration of the platform and services that are utilized by the hospitals, pharmacies, and other healthcare centers should be such that protection of a patient's information can be ensured. This integration also ensures that when needed, significant use of the data can be made from the gigantic information that is present in the system along with the changes that constantly take place in the healthcare ecosystem to help smooth functioning.

Integration Platform as a Service (iPaaS) is a platform where cloud-based solutions are connected with one another to talk within themselves and provide integration solutions that help in data processing, transfer, management, and various such other issues. An iPaaS helps in the real-time integration of various applications of a business to get hold of required records efficiently.

> *By 2021, it is expected that iPaaS will take up the highest segment of application integration middleware because organizations these days look for potent and convenient ways to integrate data. With various such applications coming up, iPaaS happens to be making a move into the healthcare sector.*

The State of Healthcare Data Integration:

Top Predictions in 2020-21

As we enter 2020, we step into the new decade of business expansion and data surge. With this, one of the major shifts we would witness in the healthcare industry would be the heavy adoption of consumerism. The healthcare industry would gain a retail-like experience and this would mainly be drawn by the patients.

> *It is believed that in 2020, there would be opportunities to expand health services and cater to more global consumers. Among this, the introduction of the COVID-19 pandemic has perhaps accelerated these industries in their strife.*

Aiming at recalibrating the healthcare strategies and planning for the upcoming decade, consumer-driven care delivery such as telehealth services, e-pharmacy, retail care, D2C tests, care-on-point, etc. will gain high market attention and adoption. New digital technologies, introduction of electronic medical records, increase in resource-taxing applications - all add up to the combined strain on the existing healthcare infrastructure. On top of this, mobile adoption and the extensive use of tele-medication technologies are increasing data generation across the industry.

All of this data needs to be securely stored and managed. To do this, the introduction of an integration platform in the healthcare sector seems inevitable. It is this integration platform that will seek to connect all the disparate applications being used by the healthcare industry and efficiently organize data.

"Today, more than 5 billion consumers interact with data every day — by 2025, that number will be 6 billion, or 75% of the world's population. In 2025, each connected person will have at least one data interaction every 18 seconds. Many of these interactions are because of the billions of IoT devices connected across the globe, which are expected to create over 90 ZB of data in 2025."

—The Digitization of the World

According to Fog Computing World :

By the end of 2022, the global market for Integration Platform as a Service is estimated to reach US$ 1.2 valuation. The study anticipates that during the five-year forecast period, 2017-2022, the global iPaaS market will have soared robustly at a CAGR of 11.9%. The report also projects that North America will be the largest market for iPaaS in the immediate future.

It is estimated that the healthcare industry will be one of the fastest adopters of iPaaS solutions.

Pharmaceutical organizations are keen to implement iPaaS for increased efficiency of manufacturing applications and integrating production data with sales registries.

Why is Data Integration in Healthcare so Crucial?

The healthcare industry is teaming with professionals who are forced to work under pressure and delivery quality service every time! Added to this is the fact that the healthcare employees are burdened with time-taking administrative tasks and applications that hinder in maintaining the healthcare facilities on priority. Also, with growing concerns for a healthy body, the need to innovate is high in the healthcare industry - consumers nowadays are more mobile and digital-friendly and providing the best experience to them matters the most!

With a humongous amount of data being generated by the wide consumer base, managing the data and keeping it highly accessible is the key to perpetual growth.

One big challenge that the healthcare industry is known to face is the complete and seamless data integration of its applications. This integration not only connects apps and information but also makes it highly accessible in times of need. In the healthcare industry, this sounds to be the one true innovation.

1

Data is Flooding Infrastructures

We all know that the number of users of the internet in its first 10 years doubled in the next 10 years. This shows an incredible upward movement of the demography adopting digital and depending on the digital services more than ever. With the increasing influence and adoption of digital applications and services in the industry, the healthcare data usage seems to be growing at a very rapid rate. With tech-savvy consumerism on the prowl, healthcare institutes, employees and infrastructure are made to take more load than which they can efficiently deliver.

According to the Economic Times, there are now close to 400,000 health apps that monitor a variety of health data - heart rate, blood pressure, sleep patterns, calories intake, physical activity, blood glucose, cholesterol levels, etc.

New innovative medical advancements, introduction of electronic medical records, data generation from mobile apps and the growing use of telemedicine technologies, online and door-to-door medical services, all are the prime contributors to the vast amount of data being generated and stored in the healthcare industry. All this data is sourced from various systems and applications and is unique to each individual, depending on the levels of sophistication, accessibility, transparency and quality.

While all this data needs to be managed safely, it also needs to be thoroughly analyzed so as to treat the patients and bring valuable insights to prevent future diseases. Having the data in control improves the patient care rate and the financial results significantly. But there lies the problem - the process of integrating applications, communicating with them and managing digital data is still very fragmented in the healthcare industry.

In order to effectively manage their operations and carry out the daily medical responsibilities, the healthcare industry is forced to use multiple applications for a legion of services. Also, legacy systems are still the core and base of the healthcare sector which not only causes delays in pulling and working with data, but also makes data complicated in its own nature - which increases with the increasing data. To make matters worse, several medical employees and professionals are always too stuck up in the administrative tasks and cannot properly guide patients; on the other hand, the whole organization falls back in identifying inefficient processes, improving operations, and tracking and studying patients and diagnoses for future references. To cater to the growing demands of the online consumers and being all data accessible at one place, it is now important for the healthcare industry to successfully implement data integration which would consequently give them more time to attend to the patients rather than think about compliance and security of data.
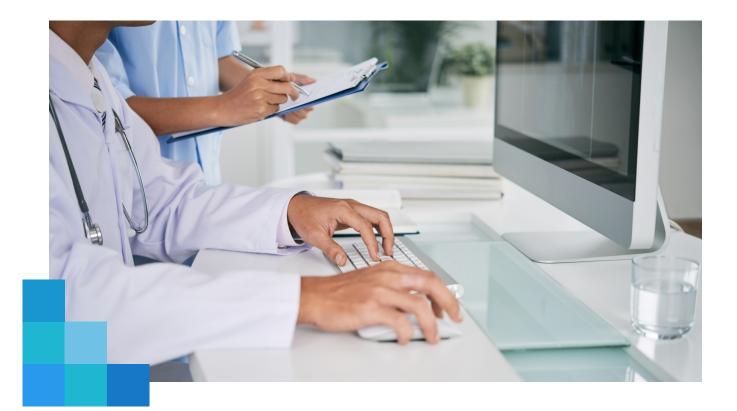
APPS e CONNECT

2

Healthcare applications don't talk to each other.

It is evident that the healthcare industry is employing various innovative solutions everyday to cater to the customers and a huge portion of investment goes into this too. With the rise in the mobile and digital usage, it is now up to the organizations to provide out-of-the-box facilities. Oftentimes, the new applications and solutions being used in the industry do not communicate with each other and nor with the legacy systems that are being used. Due to this, the data is broken in the back-end and so is the customer experience. The ROI of the organization comes into the question too because of this - it decreases over time!

Each of the systems that is being used by the healthcare industry may contain information that is codified to its specific language, with no other way to translate or work with the data. THis makes the data integration process more tiresome.

With more solutions being deployed in the currently overloaded scenario, the situation and process of maintaining it becomes difficult. Furthermore, most of the healthcare IT teams face hindrances in customizing and personalizing software to make all the applications work simultaneously - a feat that requires excessive coding.

Without a single, unified solution that securely integrates all the disparate data and brings all information under the same roof, the ability to automate business processes and efficiently leverage the power of big data diminishes significantly. This is where an iPaaS solution caters to help the healthcare industry. With its ability to connect applications, information, data and technologies, an integration platform offers a central hub of information keeping and accessing that brings out the full power of any organization in automating their critical processes.

3

Healthcare's Future will be rife with Data.

According to a recent IDC study,

> *The amount of data used by the healthcare industry, given both current and future advances in imaging and analytics platforms, is primed to grow in leaps and bounds by the year 2025.*

Yet, despite this rapid growth, the healthcare industry struggles with data readiness and management. According to Mr. Robert Havasy, MS, managing director of the Personal Connected Health Alliance at HIMSS, one reason for this is that the clinical and business sides of the house are often at odds with just how data can and should be integrated.

> " *Data scientists who are running many of the business analytics platforms want every field perfectly structured so everything can be perfectly archived, computed, and moved,"* he said. *"Clinicians want all of their notes in open fields. There's a tension there that is difficult to manage."*

With growing digitalization, newer and more innovative healthcare solutions are coming up in the market, along with game-changing mobile medical devices and patients' personal data sources.

With these data in hand, the capability to analyze them and use the rich information to enhance patient support is easily feasible. It is important to note that this data analysis and execution reduced the overhead healthcare costs to a huge extent. However, data management, consolidation and analysis is only possible when there is a smart integration platform working with the organization to streamline their operations - data integration is the only way to make use of the valuable medical information.

According to Teri Burley, Managing Senior Program Director at Leidos Health said that

> *"Both electronic and manual components must be aligned together to ensure seamless patient data transfer."*

Healthcare is set to be one of the key industries that will show a surging growth in terms of adoption of iPaaS solutions. Pharmaceutical companies and medical organizations are more probable to implement iPaaS solutions for improving the efficiency of manufacturing

Data Integration Challenges faced by the Healthcare Sector

It is needless to say that the healthcare industry faces a lot of challenges in its quest for data integration and management. One of the most significant challenges faced is the lack of a standard data format across the industry - over the years of innovation, the healthcare industry has gathered tons of data from various sources and formats that some of them are incompatible with the current systems. This poses a huge threat to the loss of a patient's data amidst the clutter. Another huge challenge is the maintenance of data that is being generated 24/7 due to IoT. Failure in securely maintaining this data results in compliance and privacy concerns. Below are some of the major challenges that the healthcare industry is facing on its way to data integration:

■ **Medical errors:**
Medical errors are one of the major mishaps that take place in the healthcare sector. Due to the presence of vast information in the system, many times the wrong   aved within the database of a healthcare unit of extreme importance but at the same time it's highly confidential. This very confidentiality tends to attract many hackers towards this system which has led to the healthcare breach data statistics to be on a constant high every year.

■ **Investment towards IT development costs in healthcare:**
Due to different information being out in different systems 24/7, in order to maintain the system, the cost of developing such a platform becomes very high.

■ **Payment processing and invoicing:**
With payments getting processed every minute, it becomes problematic to sync so many payments and constantly connect them with the patient profile in case there are multiple payments.

■ **Compatibility:**
Be it any platform, it is essential that it gels in well with the software that is already existing. With so many complex strings already existing in the healthcare sector, it more than often becomes a challenge to integrate the cloud service provider with the existing software which leads to glitches in the system.

■ **End-user services:**
With the presence of vast information in the system, many times, the customer doesn't receive information on time which leads to delay in services. Lack of proper end-user services can become a huge problem especially in a sector like healthcare.

■ **Data Validation:**
Many times, the information that is put into the system manually or even through an automatic system can be faulty which can cause huge problems. This can cause a major issue in terms of finding the fault since it is humanly impossible to find a fault in the presence of such a huge pile of information.

■ **Data Privacy and Sharing:**
One of the major obstacles to successful data integration within the healthcare industry is the misconception surrounding the updated data privacy and sharing policies. Some organizations have negligible knowledge regarding the confidentiality and privacy of the patient's information. It is obvious that data must be protected from illegal access but also be readily available to be shared with specific individuals.

With the era of digital transformation unfolding and changing how the healthcare industry works, the requirements in this sector in terms of integration have also changed.

Robotic Process Automation (RPA) in Healthcare

Business Process Automation (BPA) refers to the act where an organization employs various tools and solutions in order to automate and streamline their ongoing operations.

Robotic Process Automation (RPA) is a kind of business process automation technique which allows organizations to understand and integrate human interactions and behaviour within digital systems so that they are able to carry out those functions much more efficiently and handle the business processes in a much more coherent manner.

As said by CIO -

Using RPA tools, a company can configure software, or a "robot," to capture and interpret applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. RPA scenarios range from something as simple as generating an automatic response to an email to deploying thousands of bots, each programmed to automate jobs in an ERP system.

When compared to the traditional and legacy IT solutions, RPA offers organizations the ability to automate processes and consolidate data at a much lesser cost and time. Being non-intrusive in nature, RPA blends into the existing infrastructure of any organization without disturbing any ongoing systems.

One of the most common use cases of RPA involves the movement of critical medical-related information from the business frontend to the deeper backend where all the business processes are maintained. These offer help to the healthcare companies by making medical and clinical data more accessible.

Some of the other RPA use cases in the healthcare industry can be:

- *Self Service for Hospitals:*
  RPA tools can be implemented within healthcare organizations to transform an employee-driven service into an automated one to help patients and customers.

- *Healthcare Credentials and Payroll Processes:*
  When an RPA tool is used within the organization along with all the other systems, the payment information and the employee credential data can be processed more efficiently. This brings uniformity and structure to the data.

Benefits of Data Integration in Healthcare

We now know how burdened the healthcare industry is with the growing amount of digital data every second. For the smooth functioning of the entire industry and organizations alike, these healthcare units need to mobilize their data, communicate with them frequently, analyze them and keep them accessible for a long time. All this is acheived by the seamless integration of healthcare applications and software with each other that cater to specific business needs. This is what an integration platform seems to cater. Following are the benefits of using data integration within the healthcare industry.

- *Adaptability:* With a flexible structure of data management, customers easily adapt to this to the various systems even when constant changes take place in the business requirements.

- *Cost-Effectiveness:* Data integration platforms are not too expensive and can be availed within the organization's resources.

- *User- Friendliness:* Predifienc integration processes that connect systems seamlessly are critical constituents of an iPaaS platform. These help integrate platforms easily and efficiently.

- *Improved Decision Making and Rule Implementation:* With the help of a robust integration platform, organizations can easily define and implement business rules in order to sequentialize the uninterrupted flow of data

- *Real-time Integration:* An iPaaS consolidates and processes data in real-time, thus ensuring transparency of data in a timely manner.

To have a more elaborate understanding of the benefits of iPaaS one can also refer to the link: bit.ly/ipaas-benefits

Overcoming Healthcare Data Integration Challenges with iPaaS.

As we know, the healthcare industry faces a lot of challenges in maintaining data and making data integration successful. These challenges in the healthcare sector are one of the major reasons why this industry is lagging. Therefore, very careful thought needs to be given in terms of the cloud computing platform that should be used to overcome these challenges. An iPaaS that caters to solve these problems can be developed to fit the requirements of the healthcare sector.

> *Here is a beginners' guide one can refer to know more about iPaaS:*
> *bit.ly/ipaas-for-beginners*

Here are a few reasons as to how iPaaS is revolutionizing the healthcare sector and streamlining data integration:

■ **Reduction in errors:**
With iPaaS one does not have to constantly keep entering data in every system. You simply enter data once and keep updating it whenever needed. This, in turn, ensures that there are next to no mistakes when information is put into the system. Also, one does not have to constantly look for information from various software since iPaaS compiles all the information in one place. This helps one to look for the necessary information easily and readily extract information whenever needed.

■ **Presence of all information at a single platform:**
As mentioned before, the amount of information that is entered into a system is huge in the healthcare industry and managing such information is of extreme importance. iPaaS ensures that all the information that is entered into various systems gets synchronized automatically using an automated template which helps one to easily manage such data

- **High level of security:**
  The information that is present on iPaaS can only be accessed by those who have access to this cloud platform. This ensures that such information does not fall into the wrong hands. Also, the level of security in iPaaS consists of various layers which ensures that there is no leakage of data outside the platform.

- **IT Development Costs:**
  The cost of integrating the various software programs with iPaaS is comparatively very low. You can simply make a monthly or yearly subscription. At the same time, the number of personnel required to manage this platform is also very low and this platform is also very time efficient. Therefore, investing in this platform would fit in well within your budget.

- **Payment processing and invoicing:**
  As soon as the information regarding a patient, it keeps a record regarding all the activities that take place about the said patient. Therefore, when payment processing takes place, even multiple times, iPaaS records the same under the patients' names so that all the information stays in one place, thereby, avoiding any confusion.

- **Compatibility:**
  iPaaS allows you to easily integrate all your different platforms without any hassle. Therefore, one simply does not need to worry about iPaaS being compatible with your existing features.

- **End-user service:**
  With iPaaS ensuring that all the data gets synchronized, it also ensures better customer service. How? iPaaS also integrates the customer care software with the entire system which ensures that whatever complaints or feedback the management has can easily reach the management and they can answer the same easily.

- **Validation of data:**
  iPaaS has a feature in which let's say, you enter an incorrect piece of information, it automatically checks in with the existing information regarding the particular case and informs the person about the mistake that has been made thereby, keeping errors as minimum as possible.

- **Artificial Intelligence:**
  In recent times, iPaaS in terms of healthcare has developed a new feature. Whenever you enter the problems faced by a patient, it automatically studies the various cases existing in the system and lists the symptoms of the problems as well as the solutions for the same.

iPaaS is considered to be the latest of cloud computing platforms which will soon revolutionize the healthcare industry with the features that have been introduced by it. Calling it a game-changer for this industry would be accurately describing its effect in terms of the features that it will offer, its competence and its user efficiency.

Ways in which Healthcare and iPaaS will go and in hand

Healthcare organizations are struggling with the immense amount of data that is being generated in the industry. With rapid digital transformation, healthcare data integration is becoming more cloud-reliant and organizations are seeking support from integration platforms to connect applications. While integrating legacy applications can be difficult otherwise, an iPaaS platform easily streamlines the processes and builds a fool-proof data integration

By 2021, iPaaS is expected to make up the largest segment of application integration middleware as organizations seek a robust and manageable way to integrate data, according to Gartner's latest IPaaS report.

Healthcare organizations can easily churn the advantages of a semaless data integration with an iPaaS solution. These solutions may include full lifecycle API management, B2B ecosystem management, and Internet of Things (IoT) integration to cater to the consumerist demands With the help of an iPaaS, healthcare employees and professionals who depend on digital tools and applications will experience a lesser downtime even if they are unreachable. This, in turn, makes the integration process a lot faster. Once the organizations have created a healthcare data integration plan around their requirements, they can choose a vendor and begin quickly and successfully migrating their data and systems to the cloud.

Combining the capabilities of the existing on-premise technologies and applications with cloud solutions, healthcare providers can further optimize and increase the effectiveness of their efforts for a healthier world.

Below mentioned are some of the use cases where iPaaS will go hand-in-hand with the healthcare sector:

1

Dashboard Analytics:

The healthcare industry deals in big data where professionals take into consideration the user behaviour, patients recommendations and the overall progress in medical terms. Added to this is the data that is being generated by the hundreds of health apps and wearables that rule the IoT market today.

An iPaaS is important in this context since it is the only platform that can combine the offline information and the online data to present a coherent and consolidated report. With this, healthcare professionals are able to deeply explore and study the data while saving data storage cost and management at the same time. Furthermore, healthcare practitioners are advised to make use of the APIs of various health dashboards and data management solutions to diagnose ailments that the existing systems fail to find.

2

Connected Experiences:

In the modern times where the internet rules the day, staying connected and available is the key to growth and success. With connected experiences, an iPaaS offers a great level of engagement and trust to the customers of the healthcare industry. Apart from clinical visits and the simple social platforms, there are hordes of opportunities within the iPaaS platform that help a patient or a customer interact with the healthcare industry and avail their need of service.

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Conclusion

With the efficient and effective deployment of an iPaaS solution in the business processes, the healthcare industry can achieve disruptive breakthroughs within weeks. Crucial data can be stored in the cloud for frequent and easy access which ensures reduced data compromise, breach and overhead costs.

Apart from storage, an iPaaS platform also helps in data management and communication. Connecting systems and applications via APIs facilitates the healthcare professionals in having a deeper knowledge and understanding of the patients' requirements. On a whole, this cloud platform provides the healthcare industries with the agility that is required to steer through the applications and the challenges and empower employees with flexibility and efficiency across the entire sector.

An integration platform like **APPSeCONNECT** addresses these challenges. APPSeCONNECT is a smart and robust Integration Platform as a Service (iPaaS) solution that seamlessly integrates data, information and technologies across the industry and communicates with the various systems used by organizations. With APPSeCONNECT, organizations witness a rapid growth in their data integration process as it bridges the gap between various applications, communicates and transfers data and brings them under the same roof.

APPSeCONNECT data integration for the healthcare industry is based on hands-on working experience with hundreds of healthcare organizations. By providing tools and technologies that connect various cloud data sources, on-premise/legacy systems and hybrid solutions, APPSeCONNECT accelerates the digital transformation process in the healthcare industry and caters to the growing need of innovation and data management in the market.

Your Turn!

What do you think about these considerations? Do you think iPaaS has the potential to change how data is managed in healthcare?

Learn more about our Integration by emailing us at
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