ESKADENIA SOFTWARE

The Merits of Full-scale Integration in the Healthcare Sector

Executive Summary

I t has been over a year since the beginning of the pandemic that turned the world upside down. And if the demand for a more efficient and resilient healthcare system was already increasing before COVID-19, then the pandemic only added more fuel to the fire. Thus, the healthcare industry is becoming even more demanding than it ever was. This entails finding new ways to bridge the gap between supply and demand, all the while coping with the new requirements brought about by the pandemic. Global healthcare spending is projected to increase, along with growing care needs and rising healthcare costs. As such, the healthcare industry is in a race against time in transforming its processes and further optimizing its productivity.

This reality appears clearly when we look at the numbers. According to recent statistics[1], Health care spending is expected to rise at a CAGR of 4% over 2020–24, up from 2.8% in 2015–19. This increase reflects higher demand for more investment in healthcare technology. For example, as per the same report, %65 of healthcare providers in the EU stated that their organization had invested more in the adoption of digital technology to support its medical staff's ways of working.

The other challenge that continues to pose itself is that healthcare facilities are juggling the need to advance their systems and processes while at the same time staying within the allocated budget. Rising costs for hospital employees and rising life expectancy are also affecting the way hospitals work, therefore adding the tightness of this challenge.

Furthermore, the Deloitte report also highlights that issues such as cybersecurity and fast, agile system development and integration continue to be among the biggest concerns in the healthcare industry.

In spite of that, many hospitals today remain unequipped with the right tools nor the resources to take care of the changes at stake. Limitations of finding access to all essential healthcare facilities and services make it difficult to get the job done, in addition to managing all medical bills, employees, and health insurance processes. Most hospital management measures remain manual and decentralized, making it fairly difficult to meet the expectations of today's healthcare growth.

Advanced technological solutions are becoming the main option for these increased demands and expectations; yet that does not solve all problems, such as the decentralization of hospitals. Integration is a crucial part of trying to meet these expectations. A lack of integration between healthcare facilities and business processes creates difficulties in producing the most optimal services.

The right hospital information system with powerful integration capabilities is the best option in supporting these changes in the healthcare industry. ESKADENIA's HIS, ESKA® Carenet, works as a great example for this option. It provides a fully integrated system amongst other healthcare facilities, along with internal enterprise departments. ESKA® Carenet here is used

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[1] Source: Deloitte.

as a relevant sample of the type of HIS (Hospital Information System) needed in today's healthcare world.

ESKA® Carenet is ESKADENIA's hospital management system that consists of a clinic, radiology, laboratory, and pharmacy management systems, in addition to its seamless integration with HR, financial, insurance and other relevant systems. By creating a system that can cater to all business needs of hospitals, this will eliminate time and cost while still maintaining efficiency.

Along with an integrated system, such systems also need to support flexibility; one that can cater to specific hospital needs. This will help reduce any cost for resources and fulfil all specific business needs at once. ESKA® Carenet functions as another example of full-fledge flexibility by allowing their users to pick and choose the required criteria and integration.

This whitepaper outlines the need for integration amongst hospitals and the healthcare industry in general. By using the ESKA® Carenet as a case study of the type of system required, the whitepaper highlights how the correlation of an integrated HIS, in this case the ESKA® Carenet system, can truly help the developments of the healthcare industry.

Introduction

The last few decades have witnessed a grand revolution in how data and information are stored, secured, and shared. In the past, all data was stored in paper folders that were often kept in large filing rooms. Consequently, they required very high upkeep to preserve them in order and prevent damage or misplacement of important documents. This heavily demanding process hinders the overall speed, productivity, and accuracy of accomplishing tasks, thus costing large sums of money that could otherwise be invested in more productive ways.

Especially in the healthcare sector, it is of paramount importance to find ways to make this process as smooth and seamless as possible. The aim is to pay the highest attention on actually providing patients with the healthcare service they need and anticipate. A 2008 SWOT analysis mentions "lack of system integration", "user resistance", and "slow IT adoption" as the three main weaknesses in IT implementation in the U.S[2].

These weaknesses are key factors of the traditional paper intensive systems. Additionally, the high upkeep required to keep these documents and order and protect them from damage or loss makes the need towards a radical shift towards integrated information systems ever more pressing.

Furthermore, the adoption of integrated systems can help boost the overall quality of healthcare services in several ways as it provides a direct channel of communication between the doctor and the patient through tools including, but not limited to, internet portals and smart access applications.

This paper aims to provide the reader with detailed insights into the merits of system integration, through the implementation of advanced information technology solutions, in the healthcare sector. First, it introduces 7 notable benefits of an integrated information system.

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[2] Source: Helms, Marilyn & Moore, Rita & Ahmadi, Mohammad. (2008). Information Technology (IT) and the Healthcare Industry: A SWOT Analysis. IJHISI. 3. 75-92. 10.4018/jhisi.2008010105.

Then, it goes on to discuss the aspects of how these benefits may reflect on the healthcare sector in specific. Finally, the paper introduces ESKA® Carenet as a highly recommended product that is built with intricate attention to all these significant details so as to cater to all your healthcare service needs.

Business Benefits of an Integrated Information System

1. ### Information unification and intelligibility:
   In large organizations with separate or loosely connected systems for the different departments, keeping track of information can be cumbersome. Each of the actors has their own different language, methods, and tools. As such, establishing a common ground between them all may not be an easy task.

   A fully integrated system, however, provides a unity of processes and information, thus, allowing the different actors to cooperate in harmony and cohesion. It establishes a unified system of language, tools, and processes among all actors.

2. ### Processes and resources optimization
   For large organizations, careful process and resource planning are vital for maintaining a smooth and efficient workflow. This gets harder and harder to achieve as the size of the organization expands, thus making meeting the expectations of customers and stakeholders a considerably complicated ordeal.

   A closely-knit and integrated system, however, assures a centralized and optimized management of the various processes and resources; thus, allowing you to focus on implementation and creating value rather than on tedious system maintenance.

3. ### Eliminating redundancy and error
   One of the merits of implementing a fully-integrated and centralized management system is being able to align standards such as policies, objectives, processes, or resources. It therefore enables you to handle several tasks through less procedures, thus, ensuring a smoother, faster, and less bureaucratic workflow.

   For instance, you may be able to take care of tasks involving training, document control, management reviews, and perform internal audits or improvements all though one single platform, consequently saving your organization a great amount of time, and therefore money.

4. ### Time and cost reduction
   One of the golden rules in business operations is that time is money. The more you reduce the time it takes to handle the different processes and transactions in your organization, the more this translates to reduced costs of operation, thus, saving your budget more money, and therefore achieving more profit.

   An integrated management system allows your organization to optimize all of its processes and transactions by providing a system that connects all the different departments of your organization under one platform.

5. ## Efficient Ownership

An integrated management system allows your organization to optimize all of its processes and transactions through a system that connects all the different departments of your organization under one platform.

It also enables you to create necessary audits, assessments, and inspections in order to detect errors, monitor quality control, and ensure that the system is working with clockwork precision. This is all done under one comprehensive, inter-connected platform, thus saving time and reducing costs.

6. ## Traceability

In a system composed of loosely connected components, it can be very difficult to trace different information. This makes it harder to keep track of the different activities in your organization. This is especially important for error tracking and handling.

A fully integrated system, on the other hand, enables you to trace and track all information in order to handle errors and maintain quality control. All data and processes can be traced and examined so that the cause of an error can be determined and sorted out.

7. ## Smoother user experience

In the old paper-intensive systems, keeping track of all the little details is a very tricky matter. Since all information is stored in paper folders, they must be handled with intensive care so as to avoid loss and misplacement of valuable documents. This process takes its toll on the overall quality and speed of service.

The integrated information system, however, offers more than just high quality of service. It offers user experience. Under that system, your clients will be able to access their own information, book appointments, and even provide feedback that could be used to improve the quality of service, all in little to no time.

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Hospital Information System

- Inpatient Care
- Clinics
- Laboratory
- Radiology
- Pharmacy
- Emergency Management
- Operation Theatre
- Patient Administration
- EHR
- Revenue Management
- Portals
- Mobile App

How System Integration Helps Hospitals

It is important to understand how an integrated system can help hospitals and its business processes. Below are the insights to be gained from adopting an HIS suite with full integration.

Benefits	Technical Benefits
Hospital care & safety	• Improve accuracy • Record full patient information • Ensure patients' safety • Accurate & efficient care services
Time-efficient & coordinated care	• Organized operation between departments • Constant updates • Less time with more efficiency • Full record of operation or activities
Simplifying readmission	• Reduce time consumption for patient admission • Full record of patients' history & information • Automatically calculate billing & claims made

Improve hospital care and patient safety

In order to accurately provide your patients with the right services and ensuring they have a safe and comfortable experience, hospitals must maintain large numbers of cases along with insurance claims. Doing this is no easy task; some hospitals still face the challenges of handling these tasks manually. With the amount of patients and claims made, many hospitals are more prone to mistakes and mix-ups. This is not an ideal state, especially for institutions dealing with human life. The use of HIS with full scale integration allows healthcare providers and departments to connect with each other digitally. This means everything will be recorded through an electronic database and can be automatically transferred between internal departments or institutions.

Having digital records of your patient's information also means there will be less fear of having that information being misplaced or missing. All data will be available via an electronic platform. These records are easily accessible and less time-consuming, ensuring hospitals know each case accurately and efficiently. This will ensure the most suitable care needed for the patients along with guaranteeing their safety. As a patient's care is the core work of a hospital, ensuring they receive the most efficient care is crucial. Utilizing an integrated system will maintain patient safety in this matter.

Time-efficient and coordinated care

Making sure your patients get the best care is crucial. Time wastage is not an option when it comes to hospital care, which is why automating each process may help to speed the steps involved, as well as provide organization. Having all your hospital activities and data stored within an electronic system will grant you easy access and tracking 24/7. This will help in coordinating and staying on top of your employees' tasks, not to mention an automated means of doing things will also result in less time and more optimization.

Dealing with various cases and patients can be overwhelming at times. With many hospitals in certain parts of the world still depending on manual work, it will be very hard to accurately coordinate for the right services. By utilizing an automated operation you can easily record each case and service involved. Integration amongst healthcare institutions and departments will also cut the time of coordinating patients in half. Being able to directly connect with any hospital party via a virtual platform means you can contact and manage each step in a unified manner. Be it taking care of the patients' medical bills, filing their claims, informing relevant doctors, and more. An integrated HIS will coordinate everything step by step in a matter of no time.

Simplifying hospital readmission process

Providing good customer care is also an important aspect when it comes to hospital care. Ensuring your patients will receive the best treatment and service is one of the keys to success. Developing an efficient operation for handling your patients and admissions is needed to ensure all is organized and done correctly. A number of hospitals still struggle with manual admissions. With increasing patients and cases, it becomes more difficult to manage patient admissions. Undocumented and tedious, manual processing tends to lead to lost files and mistakes. Limited hospital staff also makes it difficult to handle piling cases and patients.

Having an integrated digital system can help reduce the hassle in readmission processes. By having a digital database for patients, readmission can be handled with ease. A fully integrated HIS will unify a patient's sessions every time they were discharged, as well as any claims made from their insurance. Creating a direct and simple process that will automatically update any relevant departments will save time and complications on readmissions. Thanks to full integration, all billing activities can also be automatically processed for each visit made. An integrated HIS will simplify and reduce your readmission complications.

What is ESKA® Carenet?

ESKA® Carenet is an all-in-one, feature-rich hospital management suite that caters to all aspects of hospital management. From patient admission to patient discharge and everything in between, ESKA Carenet covers all aspects of healthcare operations through its out-of-the-box healthcare systems:

- ESKA® Clinics
- ESKA® Pharmacy
- ESKA® Labs
- ESKA® Radiology

ESKA® Carenet is designed to make medical practices management easier for the doctors, save the patients' records and make them available at any time to the authorized health staff. It also aims to facilitate the communication between the patients and their doctors. It also provides doctors with a unified and user friendly interface to simplify the major demands from their patients from admission to discharge.

ESKA® Carenet aims to enhance and build long-term relations between medical providers and seekers for an improved doctor-patient relationship. ESKA® Carenet provides many features including appointments management, health case management, billing automation, claims management, referral management, as well as smart access interface equipped with easy-to-use communication tools and ongoing notifications.

How does healthcare system integration work?

Hospital Information Systems should have the ability to integrate with various enterprise, insurance, and provider systems. This is most effective by allowing flexibility for customization. The most important aspect of integration, however, include integration with insurance, finance, human resources (HR), and other units and/or institutions.

Below is a general look into how HIS integration works. This observation is based on ESKADENIA's hospital management system, ESKA® Carenet, which is applicable for other hospital information systems.

The need for a panoptic HIS

In order to accurately provide the best care and maximize profits, a hospital should have convenient and easy access to various healthcare facilities. This includes access to clinical, radiology, laboratories, and pharmacy needs. The ideal HIS should support these features along with any updated industry standards required. By providing a system that can follow through with multiple healthcare needs, hospitals can increase productivity while reducing time consumption. The ESKA® Carenet system provides an example for these features, working as a complete suite that covers their range of healthcare systems; ESKA® Clinics, ESKA® Radiology, ESKA® Labs, and ESKA® Pharmacy.

Full inpatient support

In Hospital Information Systems, it goes without saying that inpatient support is the defining characteristic that must be available in any hospital. Simply put, the inpatient service is what makes a hospital different from an individual clinic. As such, the absence of support for inpatient activities makes the hospital information system in question rather inadequate.

ESKA® Carenet, however, has this point covered. Through its ESKA® Inpatient platform, it is fully capable of handling all your inpatient needs of admission, discharge and transfer (ADT). It also augments the management of all your hospital's facilities including beds, wards, rooms, and operation theatres. In addition, ESKA Inpatient also handles the creation of accommodation pricelists, material and resource management, organizing nurses along with many other vital tasks. Finally, ESKA Inpatient coordinates your patients' information and needs in the aim of helping you achieve full efficiency.

Access to Clinics

Clinics will continue to be a quintessential part of any hospital. Most hospitals today either have their own clinics or have formed partnerships with outside ones. As demand for healthcare services increases, hospitals alone may not be able to provide for it. Clinics are becoming more important as many patients nowadays consider them their main destination for their healthcare needs. As such, in order for an HIS solution to be fully reliable, it needs to be equipped with the ability to integrate with separate stand-alone clinics management systems.

As with the example of ESKA® Carenet, this HIS works in unison with their clinics management system, ESKA® Clinics. This allows hospital employees to manage a patient's clinic cases, referrals, and visits. It also tracks medicines, labs, imaging, and consultation orders, as well as a full medical analysis of the patient's current status. This integration allows direct processes of transferring data between hospitals and clinics.

Access to Radiology Centres

Many hospitals today struggle through the process of manually transferring data from one facility to the other. Radiology centres are also a crucial part in the way hospitals work. Hospital staff need to receive quick and accurate PACS results, which is why full integration with radiology centres is ideal. ESKA® Carenet also works together with their radiology management system, ESKA® Radiology to ease communication between facilities.

Through integration with radiology centres, hospitals can directly receive orders from other units as well as create external orders for outpatient services. It also provides direct view or access to all PACS results, as well as the attachment of medical images for reporting

purposes. Receiving all radiology results through one electronic means accelerating all hospital operations.

Access to Laboratories

The ESKA® Carenet system integrates with labs through their laboratory management system, ESKA® Labs. All hospitals are in need of the full set of healthcare facilities, including labs. Through the observation of ESKA® Carenet, hospitals can increase efficiency and speed up patient care by providing direct access to lab results and orders. In order for an HIS to fully utilize its capabilities, integration with all healthcare facilities, including labs, is a must. Through thorough integration with laboratories, hospitals can send unit orders directly to labs, conduct external orders, track samples, post test results, audit test results through an automated approval system, and fully integrate with unidirectional and bidirectional machine interfaces; all through one digital platform. Creating integration for lab results will help to reduce inaccuracy and increase your patient's safety.

Access to Pharmacies

Many hospitals today, especially large corporations, would usually include a pharmacy, if not partner with one. As pharmacies and hospitals go hand-in-hand, hospital operations require an easy and fast way to provide medicine to their patients. Through the use of HIS, facilitating patients to medicine can be done through direct and efficient means. Through integration with pharmacy management systems, hospitals can manage all types of prescriptions, whether internal or external, automatically produce e-prescriptions and keep a detailed record of a patient's prescription history and renewals. For hospitals with pharmacies themselves, integration between HIS and pharmacy management systems can also help in processing retail transactions and purchasing history, as well as track inventory levels, orders, sales, and deliveries. Such features of these unified systems may be seen through the use of ESKA® Carenet and its operation with ESKA® pharmacy, its pharmacy management system.
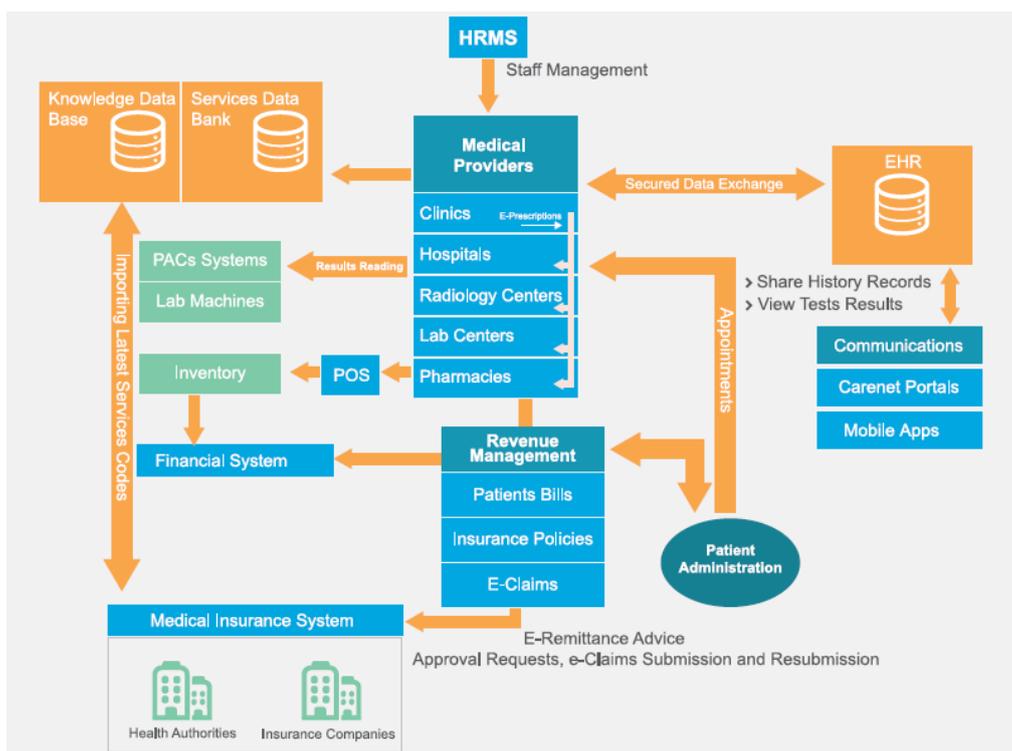
Integration with Finance

Manual management of cases can be an overwhelming process for most hospitals. In some countries, there may not even be enough staff to handle most cases, leading to disorganization or even overcharging. Going digital can help to overcome this issue by automatically processing any hospital bills through a financial management system. Once a patient has received the services required and is ready to be billed, the payment will be processed from the POS where all sum will derive from a revenue management system. Through integration with a financial management system, a patient's invoice will be automatically calculated along with any insurance claims. Providing the hospital staff with accurate end results, all payment calculations and processing may be directly calculated through integration with finance.

Integration with Insurance

Managing medical insurance is also a crucial part hospitals have to deal with. As with the example of ESKA® Carenet, this HIS integrates with their medical insurance management system, ESKA® Medical; it may also connect with other third-party insurance systems, however. By integrating with the insurance side of things, once the billing is being processed, the HIS should integrate with both a financial management system, as well as a medical insurance system in unison. Any e-claims made will be passed over to the financial management system.

Revenue management and medical insurance work together to calculate accurate invoices and payments, all done automatically. This will save cost and time when issuing any payments and medical bills.

Integration with HR

Hospital staff should be handled with care. With more demands from the hospital industry, this will result in either the need for more resources or more efficient management for employees. With a digitalized system, tracking employees can be done through coordinated processes. The ESKA® Carenet system integrates with their human capital management system, ESKA® HR, or other third-party systems, to manage all staff.

Managing employees is a crucial part of making sure hospital operations run smoothly and accurately. As an integrated system, an HIS should connect with other healthcare institutions, as well, including clinics, radiology centres, laboratories, and pharmacies. By integrating with an HR management system, all employees involved, whether from hospitals themselves or other healthcare facilities, can connect and receive clear communications. Be it related with company information or patient information, all staff will consistently stay updated.

Integration with other providers

One key feature of a successful HIS is its ability to communicate and work friendly with other third-party systems. Lacking this vital ability can result in the HIS being cloistered within the limited boundaries of infrastructure and incapable of handling tasks that require collaboration with other organizations that use a foreign system.

Aside from integration with other ESKADENIA systems, ESKA® Carenet is built so that it can integrate smoothly with other third-party tools and systems. These may include, but are not

limited to, third-party insurance or medical information systems, as well as other tools such as Google Maps.

Abiding by the standards

Focusing on medical HIS, support and compliance with the different standard medical languages is a must. Lacking sufficient support for these standards, the medical HIS may suffer being simply incomplete, and therefore unreliable.

ESKA® Clinics is designed to offer ample support for many standard medical languages, such as HL7, ASTM, DICOM among others. It is built to ensure efficient and clockwork-like flow of communication between all healthcare providers.

Conclusion

This paper provided a detailed discussion of the merits and advantages of introducing fully integrated information systems in hospitals. The main points discussed can be summarized as follows.

- With the rapid growth in global healthcare spending, and the expansion of the healthcare industry throughout the years, there became an increasing insistent necessity to adopt digital solutions that save time and costs, maximize security and speed, and also boost overall quality of service.
- Integrated digital systems have proven to be an optimal solution to the ever-growing issues and challenges facing the international healthcare sector.
- Some of the main benefits of integrated systems include: eliminating error and redundancy, facilitating efficient ownership, enabling traceability of processes and information, and consequently boosting patient satisfaction.

Finally, the paper introduced and recommended ESKA® Carenet, a fully-integrated hospital management built with the mission to provide a platform for handling all aspects of the healthcare service.

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About ESKADENIA

ESKADENIA® Software is a three-time MENA Award Winner & a holder of the CMMI® Level 5 certification. It is active in the design, development and deployment of a range of software products in the Telecommunications, Insurance, Enterprise, Education, Healthcare, and Internet application areas. The company is based in Jordan and has sales activities in Europe, the Middle East and Africa; more than 85% of its sales are exported to the global market. ESKADENIA Software is a customer-oriented organization that assists enterprises and promotes businesses by use of highly effective IT strategies, solutions and tools. With customers in more than 25 countries and a retention rate of over 95%, ESKADENIA endeavors as a team to augment quality and customer gratification, build up perseverance, and foster innovation. ESKADENIA Software positively contributes and strongly believes in the crucial role of businesses in the development of their communities.

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