

# **PARAS: M-HEALTH BRIDGES THE HEALTHCARE GAPS AND DEFINES THE FUTURE STATE OF IMPROVED HEALTHCARE**

## **FOREWORD**



## **Addressing the issue**

1. Growth of Mobile technology and its accessibility by people
2. Why healthcare chooses mobile technology to meet the growth

## **LIMITATIONS AND CHALLENGES**

1. Address the limitations of traditional tools; then the key challenges faced by organization.

## **OBJECTIVES**

1. Usage of mobile technologies
2. Key benefits and advantages (graphical representation)

## **PARAS FUNCTIONALITY**

1. Introduction of the product and highlighting the usage of m-health.
2. Research on various platforms.
3. Key insights
4. Developments based on key insights
5. Changes after m-health implementation (graphical representation).

## **CONCLUSION**

## **ABOUT THE COMPANY**

## PARAS: M-HEALTH BRIDGES THE HEALTHCARE GAPS AND DEFINES THE FUTURE STATE OF IMPROVED HEALTHCARE

For decades, healthcare industry witnessed constant struggles in achieving better patient care. With less of technological developments in early 80s, healthcare industry witnessed limited care with a number of deaths, errors and inconvenience. Time that is an important factor in healthcare industry was not managed properly due to unsystematic approach in treatment and care plans. Clinicians were assigned with multiple cases of various patients paving way for confusions and errors. Important case-studies of our hospital clients, before the implementation of mobile technology proved the relevance of mobile technology.

### CASE 1:

Sometimes even the multispecialty hospitals witness the shortage of doctors when they encounter many emergency cases at a time. There was an incident reported from one of our client. During an emergency, very less doctors were there to attend multiple emergency cases at that point of time. It was a winter night when Dr. Satya and Dr. Vinod were treating their cardiac patients. The treatment was smoothly going on, when two other emergency patients, one of 52 years and another of 65 years were rushed to the hospital. One was suffering from massive cardiac arrest and another had acute stomach ache. Both the cardiac specialists had to attend these cases immediately as it was a matter of life. Though there were few more doctors in the hospitals, they were busily occupied with other cases. Immediately Dr. Satya was asked to attend the 65 year old lady who was suffering from severe stomach ache. With feeble knowledge in attending other cases, Dr. Satya failed to treat her with no demographic history of her.



In these chaos, with only few doctors in the hospital, that night hospital witnessed 25 more patients with just 5 casual doctors. Hence, the hospital incurred 3 deaths that night as a result of errors and unorganized treatment plans. Considering the inefficiency, PARAS team was asked to work on these kinds of emergency cases and develop functionality. PARAS, with its enhanced m-health introduced alert and dashboard mechanism geared up for this issue. With PARAS aid the doctors in their absence can treat the patients as well, tracking the vital status through their cell phones. With the help of nurses, doctor can prescribe treatments over the phone while accessing the vital details of

the patient. And besides this patients can also track the availability of doctors and their appointment plans with the help of unique dashboards and can decide their visiting plans based on the availability. Hence, the doctors with their systematic appointment schedule, with assigned cases can save millions of life.

## **CASE 2:**

Another incident that took place in remote corners of Meerut narrated the same story with different problem. Most of the hospitals lack the digitalization in emergency care. Usage of mobile technology in emergency departments is mandatory; failing which results in an incident like this. A woman suffering from severe cardiac arrest had to be taken to a hospital immediately. Her pulse rate was 20 and her condition was very critical. The hospital lacked the facility of mobile technology, hence serious monitoring of this patient was a mandatory job. Hence the woman was monitored by the two doctors' one from the ambulance and another from the hospital continuously ignoring other critical cases.



The vital status of the woman was constantly monitored through a mere phone call ignoring other patients. Hence other critical cases suffered with many problems. With the use of mobile technology, the doctors need not waste their time assessing the vital and critical status of the patient constantly in the ambulance from the hospital. The software functionality is developed in such a way that the doctors keep getting the notification

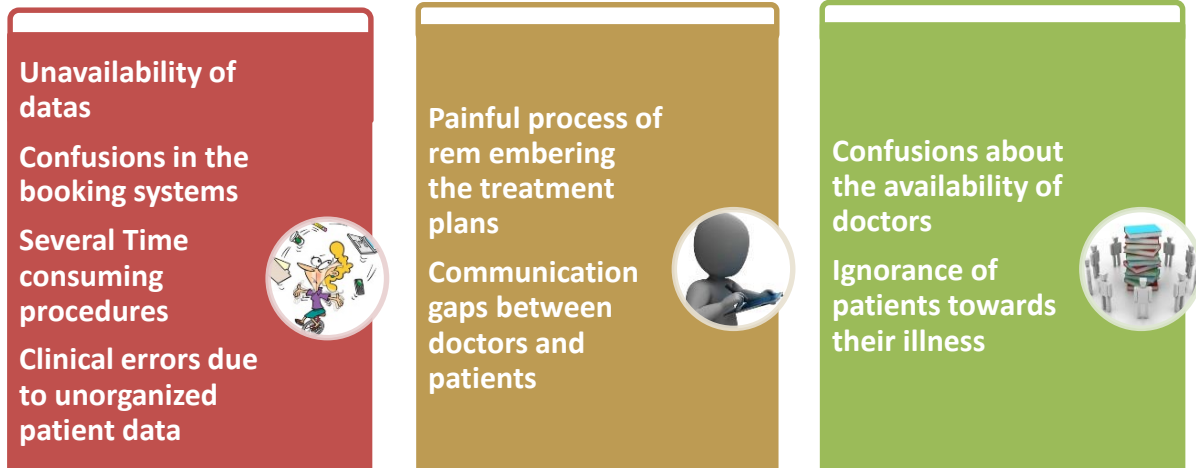
from the ambulance. The doctors get alerts in the hospital immediately once the patient is rushed into the ambulance. Hence, it not only saves the manual time and resource of the doctors, but also reduces errors and manipulation.

These were two among the many cases that proved the urge of mobile usage in hospitals. Another important need of mobile usage was streamlining the appointment system. Earlier, the patients had to spend all their time in hospitals to get their reports and other appointment details. Besides, the patients had no opportunity to learn and understand their illness and other treatment plans mounting healthcare inefficiency. The limitation of traditional tools questioned the capability of better functionality in decision making support, better access of data and other treatment plans. With all these limitations, healthcare industry made various efforts to bring drastic changes in their point of care. With revolutionized change in healthcare sector, endeavors are not only made to cause convenience but also made to save the lives of many.

Healthcare IT made several innovations to bring in drastic change. Mobile phones have turned to be the prime source of relief and usage, so efforts are taking place in every sector innovatively to explore the usage of mobile phones. Mobile phones, I-pads that has become integral part of our lives has played a greater role in bridging the communication gaps across long distance. Besides, the latest technological innovations in smart phones has improved the lifestyle and increased the convenience paving way for progressive change.

Healthcare industry that requires spontaneity opted to choose mobile technology as their point of care to bring in quality change in their patient centric approach. With the technological innovations, usage of mobile phones in healthcare industry is growing rapidly meeting all the traditional limitations of healthcare scenario.

### Some of the traditional limitations were:



Hence with all these traditional limitations, there was strong urgency of technological functionality that can bridge the healthcare gaps and optimize the efficiency of patient centric approach. With the rapid technological growth, mobile health that took giant strides from the year 2010 made considerable inroads in optimizing care in healthcare scenario. As discussed in previous page, we now know that the absence of mobile technology can cause inconvenience including the appointment system.

### CASE 3:

There was a time, when Mr. Muniyappa suffering from cancer had to visit his doctor. Being a resident of Venkatapura village, Muniyappa had to travel all the way to the nearest city Mysore for his treatment. It takes 1 night and half a day for Muniyappa to visit the city, and Muniyappa helplessly had to leave all his important work to visit his doctor. As always doctor fixed Muniyappa's appointment on Thursday. As a habitual fact, Muniyappa spent his penny and came to Mysore. Muniyappa enters the front door of the hospital and asks the nurse about his routine appointment system. But to his shock he is acknowledged with the fact that the doctor was out stationed for some emergency case for a day. Muniyappa waited for a whole day but in vain. He then returned to his village disappointed, this kind of situation can help us to infer about the use of



mobile technology. With mobile technology in use, not only are the appointment systems are scheduled but also the notifications are sent about the rescheduling of the appointments. Hence the cancelling of appointments, notifying about the exact time and dates of the appointments enhances patient centric approach.

## **AN ABILITY TO IMPLEMENT BETTER CARE BY ADDRESSING THE KEY CHALLENGES OF HEALTHCARE SCENARIO**

Under present day health scenario, these were some of the challenges that were considered, analyzed while introducing the usage of mobile technologies.

- Growing population.
- Increase number of diseases and chronic illness.
- Lack of understanding of treatment plans.
- Unavailability of doctors, due to shortage of doctors.
- Hospitals expanding in various locations.
- New appointment and booking systems.
- Increasing life expectancy.
- Urbanization

To avoid some of these key problems, many healthcare providers made some interesting innovations to overcome these challenges. And one of the innovations that brought a significant change was usage of mobile technologies in hospitals.

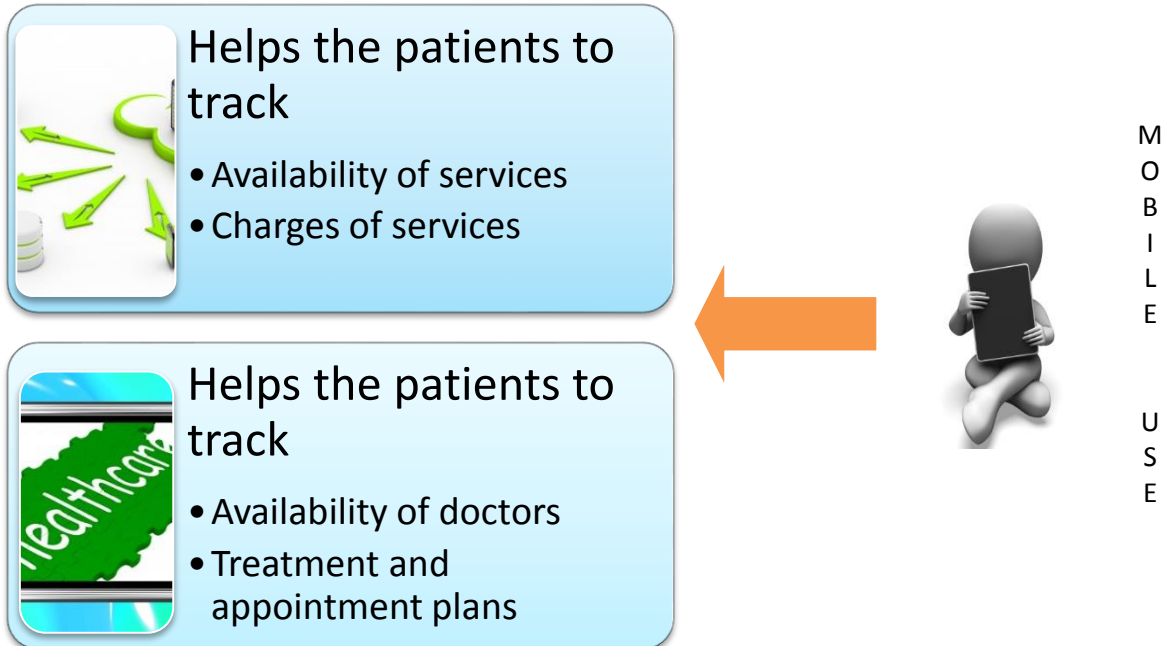
### **CASE 4:**

Another incident that narrates the importance of mobile technology was with Mr. Salem. Mr Salem, the co-director of ANR group was suffering from kidney failure. He had to undergo frequent dialysis and frequent diet changes plan. But his time constraints always obviated him to visit the doctor frequently. But without the routine visit he will not be able to understand his treatment plans and frequently change in his diet's routine. Hence he was pretty anxious about this problem. But now, Mr. Salem is absolutely stress-free with the introduction of mobile technology. He frequently gets his diet plans in his cell phone and also gets the updates of treatment plan. With this, Mr. Salem can also understand his treatment plan in the cellphones itself. Hence mobile technology made Mr. Salim's lifestyle a convenient one.



## MOBILE TECHNOLOGY CHANGES THE CONDITIONS OF THE HOSPITAL AND IMPROVES THE PROCESS OF HEALTHCARE DELIVERY BY

### Streamlining the operations of the hospitals



#### CASE 5:

One day, Teena, daughter of an IT professional Mr. Rajan, met with an accident. Teena, a 5 year old kid was playing in her lane, when a motor cycle crammed her leaving Teena badly injured. Teena's parents realized that her left leg is fractured and she has to be taken to the hospital.

But Mr. Rajan had no idea where a proper orthopedic care is available. Being new to city, he went to one of the nearest nursing home for the daughter's treatment. But after reaching the hospital he realized that the nursing home had no orthopedic department. Hence, if Ranjan was introduced to usage of mobile technology; he would have immediately been notified about availability of services with charges and details of the consultant, thus leading for scope of better patient care.

#### CASE 6:

Dr. Indira a consultant of one of the reputed hospitals had to treat her patients in various hospitals. At one instance when Dr. Indira was looking at one of her patient's demographic details to update it, she got an emergency call from Satya hospitals. Indira had to rush to the hospital leaving these work incomplete and hence, she lost the track of her patient demographic detail and had to start it all over again next day.

But if she had used mobile technology, Dr. Indira can immediately access her data from the cell phone after closing her PC; thereby not wasting the manual time of just redoing the work again. Mobile technology helps in continuing the work even after leaving the office.



## Helps Doctors to track

Patient  
demographics  
Hospital reports

Appointment  
Schedule  
Other lab reports

Patient status  
Reasons of Chronic  
illness

Insights of  
diseases and other  
illness



#### CASE 7:

AoP group is one of the reputed hospitals in south India. With its accomplishing steps not only the hospital achieved success but also won many awards. But after a while AoP hospitals started to witness many unnatural deaths in the hospital. AoP then checked with their clinical team and with other doctor, but they were unable to know what the cause of this problem is. They improved their hygiene process and increased the sterilization still they were unable to know what is prime factor of increasing deaths.





They worked on the medication processes spending 6 months of their time and sufficient amount of revenue, yet their problems were unsolved. PARAS team after knowing this problem ventured their solution through mobile technology. The moment they implemented mobile technology, not only the quality reports were generated time to time, but also medications were improved through healthcare analytics in mobile phones. Hence, in 6 months AoP group improved tremendously leading to better patient care.





### Case 8:

Dr. Santhosh was one of the reputed doctors in Myn hospital. He was more of a casual doctor than a regular doctor. Dr. Santhosh had a small clinic near Myn hospitals. Patients who were visiting the clinics were directed to Myn hospitals for further treatment plans.

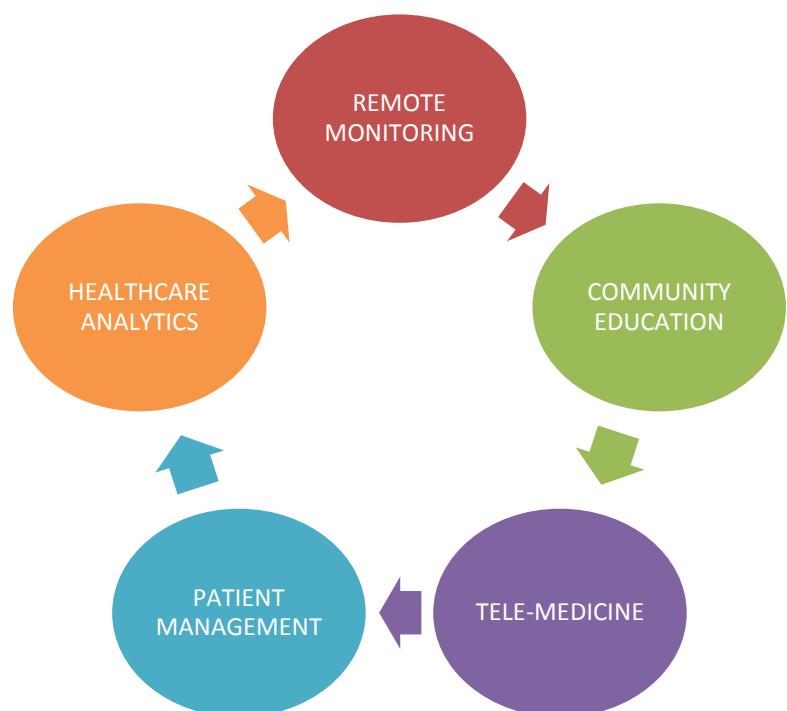


Dr. Santhosh was using the hospitals assets like cotton, syringes etc. to treat his patients without the knowledge of hospital's authority. Thereby the hospital witnessed adequate amount loss not from one doctor but from many doctors doing the same thing. Hence, with the use of mobile technology hospitals can track the assets and other details.

## HEALTH THAT ENGAGES INDIVIDUALS FOR BETTER HEALTH

Professor Robert Istepanian who coined the term m-health in the year 2010, made significant strides in improving the conditions of hospitals with the help of mobile technology. M-health that offers the opportunity to individuals at remote locations gain access to the best quality services, increases access to researchers of clinical health data by collecting information and other data. M-health does real-time monitoring of patient's criticality thereby improving the care and quality of the hospital.

This white paper highlights the usage of mobile technologies in hospitals to streamline their performance. It accentuates the usage of m-health in various areas with the help of PARAS. PARAS which is an enterprise class Hospital Management Information System (HMIS) of Srishti Software is built on



robust architecture offering rich functionality and flexibility for large and SMB enterprises. Hospitals across the regions, whether private or public, have gained substantial enterprise wide integration, streamlining of activities and operational efficiencies by implementing PARAS.

PARAS team, with an efforts to change the landscape of healthcare scenario gained adequate insights on m-health and implemented in various hospitals both in private and public sector with successful results.



## **INTRODUCING PARAS - AN END TO END SOLUTION ROLLING OUT EXCELLENT M-HEALTH IN HOSPITALS**

PARAS making considerable inroads in healthcare sector have now made some interesting innovations in usage of mobile technologies in hospitals to deliver better patient care. With its advanced functionality, PARAS has enabled handheld devices to maximize efficiency of hospitals. PARAS m-health helps clinicians and practitioners to deliver better patient care. PARAS m-health provides opportunities to connect information in the real world via wearable sensors. M-health that does real time access of patient's data helps clinicians and nurses to monitor patient's vital status. It also engages individuals to participate by helping them to access their own data including treatment plans, appointments and other demographic details. The data that are generated can also have the potential of yielding new insights into the various factors leading to diseases. M-health not only enables direct provision of care but also helps in improving the revenue through statistical data of the past.

## **TO UNDERSTAND THE NEEDS OF THE HOSPITALS AND USAGE OF M-HEALTH, PARAS REACHED OUT TO**

- Hospitals
- Health centers
- Diagnostic centers
- Small community hospitals

## **LEVERAGING WITH THE GROWTH OF HEALTHCARE SCENARIO WITH KEY INSIGHTS ON M-HEALTH**

With relevant interactions with customers and hospitals, PARAS gathered some key insights about usage of mobile technologies in different hospitals to increase the efficiency in patient centric approach.

Key insights gathered during interaction and research included

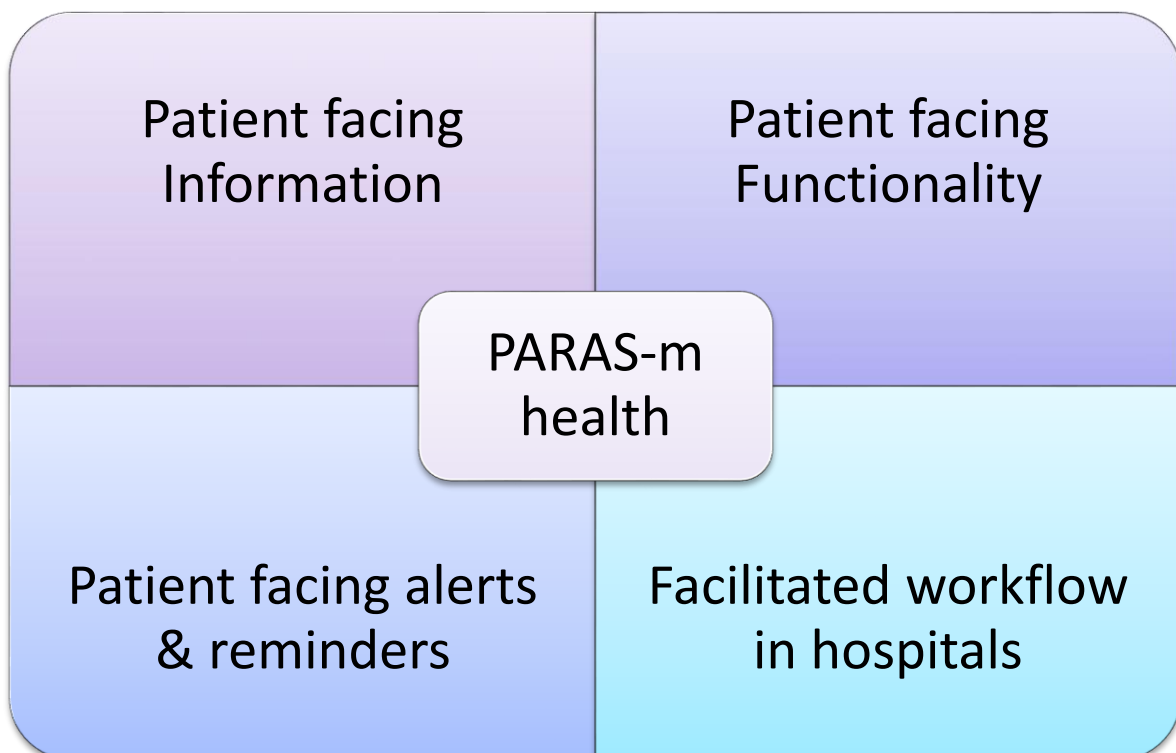
- Challenges faced by the use of traditional tools.
- Role of mobile health in healthcare scenario.
- Trends of m-health enabling patient centric approach.
- Future state of healthcare IT with usage of mobile technologies.
- M-health enabling eco-friendly approach.

Hence with the various key insights, PARAS developed functionality for m-health that catered the needs of patients. PARAS believe in delivering better patient centric approach.

PARAS broadly classified m-health into 4 categories based on the various insights.

1. Patient Facing Information
2. Patient Facing Functionality
3. Patient Facing alerts and reminders
4. Facilitated workflow in hospitals (Internal workflow)

**ICT FACILITATED- A NEW GENERATION OF HEALTH INFORMATION TECHNOLOGY  
ENABLING BETTER USAGE OF MOBILE TECHNOLOGY IN HEALTH SCENARIO**





## 1. PATIENT FACING FUNCTIONALITY

PARAS HMIS with its cutting edge technology makes clear about growing importance of technology in hospitals. With its advanced HMIS in place, PARAS, ensures improvements in workflow efficiency, communication and patient centric approach. Catering to the needs of its patients, hospitals have now introduced handheld devices with the help of PARAS.

The hand held devices helps patients in accessing the data from anywhere across the world. The patients need not travel to hospitals time to time to know their reports. With the tablet or mobile in their hand, patients can get the information of their health reports including prescriptions, appointments and treatment processes thereby reducing the cost of papers, time and travel. Besides helping patients, PARAS also helps healthcare providers to access the details of their patients from anywhere across the world. The doctors with the help of hand-held devices can access the patient's history; track their demographic details instantly, saving the manual time of searching the patient's data.

### MAJOR ROLE OF PATIENT FACING FUNCTIONALITY

## MAJOR ROLE OF PATIENT FACING FUNCTIONALITY

Helps in improving patient care through seamless integration. The integration of various workflows has enabled easy access of datas to patients and doctors

Helps in tracking of availability of services, doctors, beds etc

Updates the patients about the charges of services

Efficiently manages smooth flow of patient journey from registration to discharge time.

Improved clinical pathway achieving clinical uniformity across various departments and locations.

Helps patients understand their conditions and treatments, facilitating secured communication across multiple channels.

The real time access via wireless connections has helped the patients and doctors to access their reports and datas, saving the manual time of searching for datas.

## 2. PATIENT FACING INFORMATION

We know that paperless hospitals have taken firm step in the healthcare industry today. With its cost flexibility, paperless hospitals today have become the integral part of technology discarding the old and worn-out methods. With PARAS HMIS embarking on new wave of innovations, hospitals are ahead in using them for beneficial use of their patients. One of the prime areas of technology is usage of mobile technologies to maximize the efficiency of hospitals. PARAS, an innovative solution has enabled tablet computing, which has been the fastest growing component in all its hospitals. The tablet computing developed by PARAS has enhanced the patient care by reducing errors and inefficiency.



PARAS, with the flow of changing trends, have set a broader range of objective in mobile and tablet computing. Their new approach to manage chronic system illness, complexity in preventive medicine and innovations to improve the medication and cure of the disease, optimizes the operational and clinical decision resulting positive outcomes. The data analyzed with the help of mobile can also provide insights in surgical, service line profitability and revenue cycle management helping hospitals to meet organizational goals.

With its unique solution, PARAS provides mechanism that can identify and predict some of the chronic illness and diseases and discover drugs that can prevent them. Data compiled and provided by PARAS, aids health care providers to disseminate information educating the public about the causes, results and preventive measures for some of the chronic illness in many community programs and workshops.

### MAJOR ROLE OF PATIENT FACING INFORMATION

Provides opportunity to disseminate information via wireless technologies

Captures patient's compiled information such as patient's demographics, history, clinical encounters and diagnostics reports.

Helps in hassle free billing, differentiating between insurance/corporate information workflow

Helps in collecting hospitals reports,

Improves the decision making process based on the available data and reduces the errors based on the reports

Educates the patients about their causes and their treatment plans through m-health

Helps physicians in arriving at statistical analysis but also enables them to take appropriate decisions, related to evidence based medicine & preventive health care.

Helps in analyzing the datas, determinants, yielding new insights into the factors leading to diseases

Improves the public and community health, addressing many issues and enhancing the quality care and treatment plans

Helps in collecting clinical health data, and overcomes the major challenges in decision making and tracking the outcome of those decisions

Facilitates every point of care by retrieval of available data and its impacts

Aids in redirecting operation and facilitates in quality improvement processes.

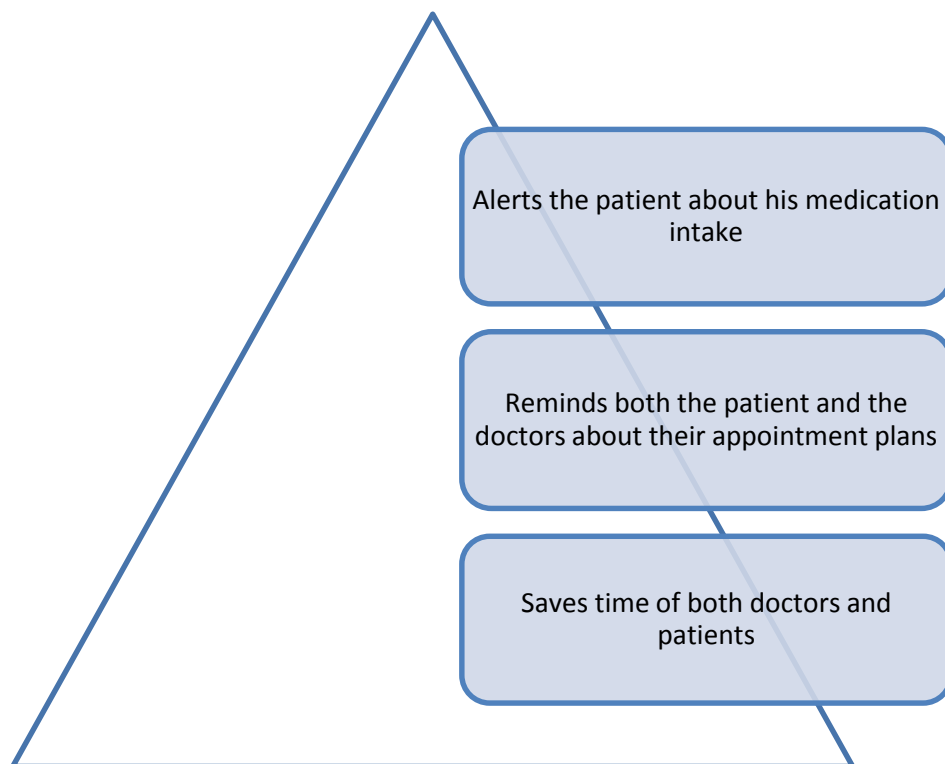
### 3. PATIENT FACING ALERTS AND REMINDERS

Change is inevitable. Hospitals should constantly update themselves with the latest technology to be a forerunner in the industry. Riding on a veritable success story, PARAS has tremendously shown significant improvements for a decade now. PARAS keeping the pace with the latest healthcare trends have introduced a unique alert mechanism that can act as a reminder for both patients and doctors. With the help of their mobile phones, the patients get frequent reminders about their upcoming appointments and treatment plans. Besides, the patients can also receive constant notifications about their food and medication intakes helping them to keep a track of their medication plans.



With the help of alert mechanism the healthcare providers get the alert of expiry dates of various drugs and also help them to reorder medications. Besides this, the color code mechanism makes patient identification easy and error free. The classification of diseases is done by color coding mechanism that enables appropriate treatment for patients.

#### MAJOR ROLE OF PATIENT FACING ALERTS AND MECHANISM



## 4. FACILITATED WORKFLOW IN HOSPITALS

As there is a rapid rise in the number of mobile, laptop and tablet users, there emerges a strong urgency to update the technology in order to increase the convenience and address several issues in today's world. With growing technology numbers of innovations have taken firm steps in the market. One of the innovations that has maximized efficiency and has reduced unnecessary work and time is m-health.



With the right mix of technology and innovation, PARAS has enhanced the functionality of m-health. From doctor's prescription stage to discharge stage, PARAS takes care of every single aspect of hospital flow. Bringing innovation in its technology, PARAS has enabled m-health in internal flow of the hospital. The doctors can now handle multiple treatment plans with the help of m-health. The doctors can continue and complete their course of action from their mobile phones immediately after leaving their partially completed work in hospitals. The m-health also enables doctors to monitor and guide their nurses in their absence. The functionality focuses on patient centric values and reflects its enhanced m-health implementation by enabling nurses to deliver better quality care. Now with the help of m-health, Nurses are easily able to refill their prescriptions, fill the patient's chart and immediately access them whenever necessary with the help of EHR. Hence nurses spend valuable time with patients without wasting their time in refilling and updating reports and prescription constantly.

With this the concept of m-health is not just limited to clinical workflow; it stretches usages even in para-clinical and non-clinical workflows. PARAS that has integrated its various modules retrieves reports from blood bank, labs instantly over the phone to its patients and doctors.

The reports of annual revenue, budgeting plans can be displayed through mobile phones helping CXO's & CFO's to take decisions about their revenue generation. Besides, PARAS also enables cross consultation or multidisciplinary team discussion over the revenue and assets of the hospital strengthening.



## MAJOR ROLE OF INTERNAL WORKFLOW



## CONCLUSION

This white paper has shown many benefits of m-health with the help of PARAS. This analysis and information of m-health is shared to increase the performance of your hospital with help of cost cutting, flexible and adaptable solution like PARAS. These powerful benefits will enable hospital to maximize their care, improve their operational efficiency and optimize their patient centric approach.

## ABOUT SRISHTI SOFTWARE APPLICATIONS PVT. LTD.

Srishti Software is a leading product development company providing cutting edge technology solutions in the Healthcare domains anchored around its product PARAS. Srishti's objective is to enable health care providers deliver required services to care recipients by implementing best in class administrative and clinical practices, processes and controls and helps in running the hospitals profitably.

Over the years, Srishti has built a unique culture that combines the flexibility and swiftness of a niche firm with the significant technological breadth and process orientation of large organizations. Our key strengths includes, In-depth functional understanding of healthcare domains with particular emphasis on knowledge processes.

Srishti's product PARAS is a Patient Centric Comprehensive & Integrated Healthcare Delivery Platform conforming to best clinical and administrative practices. PARAS cover the complete spectrum of patient care. Fully integrated Enterprise class solution is designed to suit the needs of all kind healthcare providers like hospitals, clinics, laboratories, day care centers, diagnostics etc. This helps in creating a totally paperless and filmless hospital that can run profitably and compete in the markets

### Overview

- Began operations in 2005
- Current Employee strength 154, including partner's team strength will be around 375
- Single domain (Healthcare) focused company with global reach.
- eINDIA Health Summit Award 2012 in the category 'ICT initiative in Healthcare by the Private Sector'
- EDGE (Enterprises Driving Growth & Excellence) Award for our customers (Rajiv Gandhi Cancer Institute, Centre for Sight & SUT Hospital) who have implemented PARAS Healthcare solution as the best end-user organization for successful HMIS implementation and rollout overall business integration at multiple locations
- Honoree in the Technology Fast 500 Asia Pacific 2009 Program conducted by Deloitte
- Honoree in the NASSCOM EMERGE 50 Software category for the year 2009
- Honoree in the Technology Fast 50 India 2009 Program conducted by Deloitte
- "Consistently among the top 100 IT innovators in India" - NASSCOM Survey, 2007
- Rated SE 1A by ONICRA Performance and Credit rating

