ThoughtWorks®

Developing and Deploying
Software for the
Social Sector

Client: Jan Swasthya Sahyog (JSS) Hospital
Project: Hospital Management and
Information System (HMIS)
Testimonial: Dr Yogesh Jain,
Co-Founder, JSS Hospital
Vendor: ThoughtWorks
Industry: Healthcare IT

"When we started to work with clients in the social sector, our strategy was that we are a global technology company, and this is the value we bring to the sector. Today, after a few years of working with clients in this space, even how we approach the problem is different. Although technology is still the largest part of what we do, we also look at the other aspects that need to be in place to make that technology successful."

Pradipta Kundu, Client Principal, ThoughtWorks

Supporting a truly ambitious mission

Jan Swasthya Sahyog (JSS) is a voluntary, non-profit, registered society of health professionals running a low-cost health program in the rural areas of Bilaspur, Chhattisgarh. For 14 plus years, they have been providing healthcare services through a community health programme in a rural health centre, which includes a 55-bed hospital. They operate village outreach centres in three other villages that are not easily accessible. The team at JSS researches ways to minimise the cost of healthcare and influence policy makers. They also advocate for the poor in various areas of public health.

Patients at JSS typically wait one full week to see a doctor – in spite of the outpatient department accommodating 300 patient visits per day, including emergency cases. Many of these patients live on site during this time. They sleep in corridors and cook on makeshift wood-burning stoves, while waiting patiently in 47°C temperature. The cost of transportation and the opportunity cost of lost wages for patients and their families are not insignificant. And yet, they choose to make the long journey to JSS because they have the utmost faith that they will be cured there.

The staffs at JSS feel the burden of these expectations. They wanted a Hospital Management and Information System (HMIS) that would make their processes more efficient. Apart from benefits like improved documentation and effective decision and advocacy support, an Electronic Medical Record (EMR) coupled with an HMIS could help save time - their most constrained resource. Patients themselves would benefit the most, as they would be able to receive treatment hours or even days sooner, allowing them to return to their homes and jobs that much quicker.

Developing an integrated, flexible and infrastructure-appropriate solution

Jan Swasthya Sahyog had tried to put a system like this in place a few times in the past, with little success. They deployed a number of siloed applications in registration, billing, and laboratory, but nothing came close to what they had in mind. As a result, their staffs were skeptical about new companies offering solutions and products.

JSS started working with ThoughtWorks in December 2012. Since then, an open source, integrated HMIS and EMR has been developed that aims to meet the needs of hospitals like JSS in low-resource settings - one that can manage information across different departments, allow for the hospital's unique workflows and processes, and be hosted and operated at the hospital site (requiring no Internet dependency). Several software releases have been deployed till date - the final features and modules should be released by mid-year. Registration, billing, laboratory, radiology, pharmacy, the outpatient department, and the inpatient department are already using the new system.

> "There are many criticisms of technology, indicating that it can take away the human element of health care. ThoughtWorks has shown us how technology can help, and still remain very human".
>
> Dr Yogesh Jain, Co-Founder, JSS Hospital

Harnessing the benefits of an intuitive and adaptable system

There are a number of visible outcomes from these early releases, almost all relating to the improved efficiency of care delivery. The system can be used on a variety of devices at the point-of-care, including mobiles, tablets, and laptops, with minimal staff training required due to the system's intuitive design.

Earlier, individual laboratory report generation went on until past 6 p.m. on a daily basis. The lab technicians and assistants now complete their daily workload by 4:30 p.m., no matter how many patients there are, even as their daily patient caseload has increased from 120–150 to 180–200 patients per day. In the past, the team could only run their electrophoresis machine once a week, in an area of the country where the incidence of sickle cell anemia is high. After the laboratory system came online, they are able to run the machine three times per week, thanks to the extra time available to lab staff. Time savings have also been deployed to bring previously outsourced tests in-house, saving patients both waiting time and money.

Time spent searching for existing patients' files or redoing previous tests like x-rays has drastically reduced. Staff can go through their patients' history, pull up past prescriptions, and more, within five minutes. The same task used to take them up to a few hours, especially when patients had forgotten to bring their JSS registration card with them or if the quality of their physical reports had deteriorated. Similarly, time previously invested in hand-counting and reporting patient visit numbers, disease incidence, etc., is now redeployed into direct patient care activities like patient counselling because of automated report generation.

Ensuring adoption success through better development and deployment

There is something very rich happening at the intersection of developers and end-users at JSS, something core to Agile software development philosophy. Through a combination of constraint and desire, developers are working side-by-side with the end-users of the software, and as a consequence, the software is much richer for it. For example, doctors requested a "my patients" tab so that they could review their cases for the day. The development team has been very Agile in what they plan for – securing wins where this new digital system can provide functionality that the previous paper-based one could not, thereby increasing physician buy-in.

Moreover, working with JSS inspired ThoughtWorks to go beyond being just a software solution provider. Apart from traditional solution delivery and train-the-trainer training, the team got involved in other areas like:

- owning and handling the solution completely, including thinking through future design (e.g., integrating with a community health worker system)
- setting up servers, upgrading operating systems, procuring hardware, and training the local IT staff
- working with the staff directly to help them overcome their fear of using new devices and a new system
- facilitating business process reengineering, helping establish new processes and managing the transition from one to the other

If the software development team had not taken on this ownership – the responsibility to make the software work – the deployment would not be at the stage where it is today.

There are many tried and tested models out there for technology deployment in a traditional corporate environment. Software in the social sector space is at a juncture where one is trying many new things. For this to work, both parties need to realize that something is being ventured for the first time and have the mind-set that this experimentation is part of the process. To introduce something so substantial into a hospital while not disrupting the actual flow of operations in spite of low computer literacy has been a challenge but also wonderful. ☺