The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

YEAR:
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STATUS:
Laureate

Organization:
Dr Lal PathLabs (P) Ltd.

Organization URL:
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Project Name:
S-2-R (Sample to Report)

What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?

As a healthcare diagnostic chain, we have been working towards a goal of delivering quality healthcare and ensuring availability for patients in urban areas as well as remote geographical locations in India. In order to balance cost and drive capacity utilization of super specialty testing equipment, labs have been set up in different regions of the country. To enable patient care, a network of trained phlebotomist with sample collection infrastructure has been developed, resulting in a hub-and-spoke model for enabling patient care. This model drives capacity utilization and helps optimize cost for super specialty testing labs (SSTL). Usually SSTL would receive samples from distances ranging from less than 50 KMS to 450-500 KMS. Given the current logistics infrastructure, the travel time for samples ranged from less than 2 hrs. to nearly 20 hrs. Given the geo-spread, earlier TRF (Test Requisition Form hard copy) were traveling from the point of origin to the test lab destination along with the sample. Samples had to wait for capture of patient demographics, commercial details and tagging before testing could commence. The waiting time at the lab for transaction data entry and lack of visibility in likely volume for particular testing equipment were leading to higher total TAT (turnaround time). For patients reaching SSTL, details of TRF get filled directly using online data entry screen of the Patient Registration module in ERP. This process requires manual filling of preprinted TRF form at the remote sample collection centers. This form will have a barcode sticker which enables linkage between the document and samples. Two controllable TAT factors were identified in the above

process: 1. Queue time ranging between 30-120 min. at the sample received at SSTL 2. Queue time ranging between 15-45 min. at the super specialty testing equipment.

Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.

Centrally deployed solutions: 1. ERP (Enterprise Resource Planning) application, i.e., Microsoft Dynamics AX 2009. 2. DMS (Document Management System) application, i.e., Infotree, a product of CIMCON. 3. LIMS (Lab Information Management System) application, i.e., ULTRA 4.1, a product of GE Healthcare Technology Platform Microsoft Integrations - ERP with. DMS & LIMS (considering HL7 protocol) DMS-ERP integration: Considering the business-critical need and solution adoption in up-country locations, where IT adoption and skills are low, detailed documentation was done to eliminate process gaps. Robust integration architecture design was prepared by joint team (DMS and ERP), considering all scenarios and field-level validations. To reduce probability of data entry error, TRF document was logically split to create context-specific tiles. Context-specific tile of scanned TRF gets displayed to the ERP user, who uses the details to capture patient demographics, requested tests and barcode details. Rigorous testing was conducted to ensure rollout of stable solution. To manage skill gaps in up-country locations and smooth transition to new process, the following actions were put in place. Both online and offline training of team members at remote locations. User manual was created and delivered at all user locations. Help desk for assisted trouble shooting was set up. Common problem and resolution repository was created and updated version was circulated at periodic intervals. Infrastructure at point of origin scanning device and Internet connectivity with the client of DMS application only.

Please list the specific humanitarian benefits the project has yielded so far. (In 300 words or less.

1. Bringing healthcare facility closer to home even for the population residing in up-country locations. 2. Enabling skill development and ensuring availability of trained paramedical workforce for healthcare in up-country locations. 3. Generation of gainful work opportunity in up-country locations thereby contributing towards reduction in migration to larger cities. 4. Making healthcare affordable, as the total cost gets reduced because now the patient is not expected to travel to nearby SSTL location. 5. Use of communication medium as an efficient, convenient and accurate way to publish test results and speed up patient care decisions. 6. Automation helps reduce TAT without compromising quality.

Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.

Now at the point of origin TRF is manually filled and test samples drawn/collected. The TRF is scanned and saved in the central server. The scanned image is used by the operators at destination lab for data entry in ERP. This has resulted in following benefits: 1. TAT between sample collection and result publication enables reduced gap between diagnosis and specific curative care. 2. Optimizing cycle time by minimizing process time in SSTL has enabled business expansion through wider geo-coverage. Initially we had taken the load of 60,000 TRFs per month and now it doubled to 122,000 TRFs per month. 3. Improved planning in utilization of human resources and equipment, thereby optimizing cost and better team moral. 4. More predictable timelines in publishing results, meeting service level expectations of patients/doctors. 5. Lab documents related to accreditation compliance, e.g., ISO, NABL, CAP would be stored and maintained in a common repository. This enables easy retrieval of records for validations,

verification, etc. 6. No misfiles or out-of-files. Only authenticated person(s) would have rights to add/view/access files inside the file vault. 7. Multiple people can access and view the same document at the same time no matter where they may be located. 8. Automation has eliminated probability of mistakes in linking of samples, ordered tests and the patients which are basic, but critical for patient care. This has also made possible for the organization to make operation scalable and cost effective. Ever since this has been implemented, the testing loads of samples ranging from 8,000 per day to 42,000 per day have been managed efficiently. 9. Queue time at SSTL for testing samples from remote locations, which earlier ranged from 45 to 165 minutes, is now below 45 minutes.