Canadian Pharmacy Builds US Drug Order System

A small Canadian pharmacy chain builds a new Order Management System (OMS) so US residents can buy prescription drugs on line.

Created by concerned Canadian doctors who could not stand by while their US neighbors were unable to pay for treatments they needed, SMI was formed in partnership with pharmacists willing to challenge US Pharma. Their mission - sell quality drugs to patients at realistic prices. The resulting websites were so successful that the ordering systems were overwhelmed and, despite increasing staff, orders were delayed and long telephones waits blocked the service SMI wanted to provide. Pressure on staff was intense.

Overview

The need
With rising prescription costs in the US, SMI could not keep up with the volume of calls for Canadian prescriptions they were facing. They could not find a way to scale operations to meet the rapidly growing need for cross-border drugs.

The solution
A full blown analysis was done of operations and the management team. A new customer built OMS was recommended as the solution to provide extension, scale, and longevity.

The benefit
The solution provides a highly flexible OMS that each agent can gear to their own work style and a clear method of adding, changing, suppliers to provide the best quality drugs at the lowest possible price.

The Root Cause

The intense pressure to perform reached a peak when key technical staff left the company. Much of the company's IP knowledge walked out the door with them. Despite executive attempts to re-engage at the IT management level, the IP was lost. Operations became fire-driven. Poor documentation habits and insufficient IT compliance oversight made it impossible to recover. SMI was unable to implement recommendations from its key transitional staff about compliance and system management.

SMI lacked IT investment road maps and strategy, instead depending on the accountant to make decisions via a common break-fix mode of investment at the system level. Continual process improvement planning was not part of IT. The system was unable to adapt to new ideas.

An attempt to replace failed IT systems with manual labor failed to offset the costs of a rebuild. Many points where the system's need for manual labor actually prevents growth.

SMI had two directions - sell the company or reinvest and grow. To grow meant change. Big change.

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"We needed to either build or buy. For this app there was no future. There wasn't much to save. Once the analysis revealed that less than 60% of the database was usable it was clear that this forest was so neglected, it simply need to be cut down and regrown. "

—Terry Hannon, Data Consultant

The Severity of the Problem

Three key systems powered the company: the fax order system, the call center, and the database.
Each of these had little or no documentation. The company did not have a roadmap or IT strategy. As a result changes were ad-hoc, each new change breaking something else. The technological was costing them sales.

The Fax Order System

The current fax process pipe took excessive amounts of time to process what automation would have reduced to seconds. Verification of Rx, ID, and cheque took 6.5 minutes, a loss of 51 orders per hour. That delay cost $61,000 per day and was only one of 37 processes it took to run the on-line pharmacy.

The Call Center – Inbound Challenges

- The call centre's pipeline suffered in two areas; screen overload and network latency.
- Overloaded screens increase page load time. That created dead air time and increased hold time. The result was high rates of call abandonment.
- Hold time was 45 seconds. System latency accounts for 30% of that time. Fixing the screens would reduce hold time to 30 seconds, a productivity gain of 33%.
- Call length averages 8 minutes per call. Approximately 38% (3 minutes) of those 8 are used waiting for the system to respond.

The Call Center – Outbound Challenges

- Proactive sales or refills faced both bad database triggers and error-prone processing events. The key issues included:
- Refills came in as new orders causing both sales challenges and customer service rework
- Current prescriptions overwrote older valid prescriptions which required an entire work-around to correct the data.
- Poor note-taking and flagging systems resulted in lost sales opportunities.

"We built for the future. The new system allows our call center staff to work the way they want with the information at their fingertips.

We manage by measurement which means we know when to scale and when to hold back based on more than the balance sheet."

—David Kreighron, President

The Database

- The database did not have the benefit of a trained database administrator. As a result the relationships between tables were inaccurate, the data had little integrity, indexes were out of date, backups were incomplete, metadata was absent, and foreign key management was abandoned.
- Lack of real-time monitoring prevented action on critical metrics. Much of the key data was hidden from staff who could have acted had they known.
- Database problems required key staff to turn from their normal jobs to solve problems that could be controlled with well-defined data management strategies.

Database Driven Business Intelligence

- The business had a neglected data warehouse that could not manage its source of truth and as a result was unable to serve the management team with data to drive business intelligence.
- The infrastructure was enmeshed, so that development affected production and production inhibited testing. As a result production systems were continually at risk. One example revealed that it took over 48 IT man-hours to branch and merge code - a process that in a controlled environment would have taken less than 30 minutes. Changes ground to a halt during that period because any attempt to continue in any environment affected production.

- The data was not clean. Lack of regular pruning meant key data was not readily available. The absence of a data dictionary meant the same word had multiple meanings. Status management devolved into strings of sub statuses overlapping and preventing accurate reporting. There was no strategy to handle late arriving dimensional data so it was impossible to measure changes in customer behaviors.
- 41% of the production database was unusable. The absence of profiling has made custom service searches less than 70% successful for terms that exist in production as misspellings.
- To summarize the severity of the system - it had gone past its capacity and was putting the business at risk. The infrastructure had critical single points of failure. Production halted with each server failure. In connection to the overall goal of empowering the company to take on new ideas, the system could not accommodate any large changes.

Solution components

Software

- MS .Net Framework
- MS Sql Server
- InRule Business Decision Engine
- PimCore Content Management System
- Continuous Integration strategy

Services

Project Management and Design by
Smart Guys With Smart Pens Inc. (SGSP)
Offshore Development by
Shinetech Software Inc.
Training and Prototype Production by
Eggwhite Entertainment Inc. (EEI)

Solution - Execute a Well Defined Strategy

SMI needed to balance limited resources with their unlimited ability to generate new ideas. They took control over competing ideas by choosing ROI as the deciding factor.

1. SGSP brought in the Strategyzer Business Canvas to model ideas and evaluate how they stacked up against other ideas. Resources were only assigned to ideas chosen for their business canvas. This approach reduced 'spin' and helped choose whether any investment was worth the cost.

2. EEI introduced Axure Prototyping to move an idea from an intellectual idea to an interactive example able to clarify the vision.

3. Design practices changed to an atomic design approach. This allowed designers to take the prototype and fit it with objects that had been already been approved for brand, functional consistency, and user acceptance. It reduced design time by 60% allowing next day turn-around on the idea.

4. Functional Specifications were chosen to communicate ideas among all stakeholders.

Process

Projects given a green light needed protection from poor documentation. Writing waterfall documentation was not an answer. SGSP introduced the Agile methodology to train SMI to create stories that could be shared between developers and business.

1. Using stories to store business requirements in a product backlog and assigning a product owner to the project gave them the ability to adapt to unforeseen requirements without going back to the beginning of the design process.
2. Continuous integration was adopted so that processes could be improved quickly with less impact to the call center flow.

IT Management

IT needed flexibility in headcount. Under the new model development teams needed to expand and contract based on sprints. An off-shore model was chosen and ShineTech was the vendor selected through a rigorous selection process. They met the challenge.

1. Their teams could be expanded within days and reduced by the end of a sprint. Costs were favorable to the kinds of business decisions that were made by SMI.

2. The current IT staff was trained to work using Agile with the ShineTech off-shore development team and the business formed a User Acceptance Testing model to approve work as it was built.

Technology

The system was replaced with a new design, one that fit the culture. Because US drugs are a market that changes quickly and easily, SMI needed to be able to compete without being encumbered by painful code changes. So they implemented key decisions:

1. Their web interfaces were made dumb – empty containers that just do whatever they're told.

2. Their database was fortified– bring master data management to it and keep it within the 3rd normal form. Security was tightened.

3. All their business decisions were remove from the code and InRule, a decision engine, was integrated. Employees were able write rules, run it through business-driven algorithms, and send it to a content management system that drove the web.

4. Engineers no longer needed to adjust embedded code for the business.

ShineTech engineers built the system to spec under the guidance of SGSP and the internal IT team. The side-effect of a business writing its own business rules was that they needed to understand their own data and how it was to be used. Changing IT into data custodians rather than stewards meant data was driving decisions at the base level for the first time. Days of debates resulted in changes in perception. IT was not a scapegoat, it was a real partner.

For more information

To learn more about how ShineTech Software can help you please contact:
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