US HealthCare
[Insurance Management Platform]

1. Audience

Healthcare and Insurance companies that provide their insurance products across a variety of industries. The company that creates a platform to connect it's clients and their members with various pharmacies.

2. Abstract

During a multi-year engagement with the client, VAST provided an end-to-end solution designing and developing the Healthcare Insurance Management platform using cutting edge open source technologies.

In this document, we provide details about how we implemented Health Insurance Portability and Accountability Act (referred as HIPAA) as a vendor and at the software application level. We also provide details about HIPAA related soft configuration options that are available when our application is deployed at a client site making Eligibility a priority as healthcare provider profit margins continue to be threatened by unprecedented industry changes. It's more important than ever to focus on the details of the revenue cycle - especially eligibility verification.

Abstract - Client Management

"VAST Healthcare Insurance Management (**Client Management**) Application offering pharmacy benefits management services, third party administration and consulting services."

3. Introduction

As a Vendor: Internal Policies & Procedures
At VAST we take HIPAA related security and privacy responsibilities very seriously. Our HIPAA policies are procedures and are routinely communicated to all employees. All new and existing employees go through a rigorous HIPAA training program. All employee access to Protected Health Insurance (referred as PHI) is logged and monitored. Special procedures are in place for all System Administrators and Help Desk professionals who typically have direct exposure to PHI. Breach reporting mechanisms are in place and are strictly followed by all employees.

HIPAA at Software Development:
The following are details of HIPAA implementation and compliance at different security levels.
1. **Employees & Organization Level:** VAST has HIPAA policies and procedures in place for all its employees and subcontractors. These policies are rigorously followed and enforced.
2. System Physical Security: Our Applications and Data reside on servers that are hosted on site at the customer, HIPAA implementation 2 environment or other third-party vendors who provide HIPAA compliant hosting solutions with Business Associates Alike (referred as BAA) protection. All these servers are hosted in the special data centers specifically designed for high availability and for highly secured healthcare customers. These servers are physically inaccessible to anyone except the vendor's employees.
3. Network & Server Security: Our solutions are hosted in redundant data centers. They are also placed in a private secure subnet accessible to our customer's employees only. Except for the HTTP and

HTTPS ports (80, 443), all access to this subnet is restricted at the IP level and all remote access to this subnet is logged. All OS level access is done through an RDP/Linux Bastian host. Direct remote OS level access is strictly prohibited except for system updates and patch management. All help desk support is done using a tool that can directly communicate with the OS level. Patches and security updates are updated at regular intervals, depending on the specific security requirements.

4. Data at Rest Security: All our customer's data is stored in a Relational Database Management System (an RDBMS). No direct access to the RDBMS files is allowed except to the system administrator. All OS level remote access is screen captured. All data stored in the RDBMS is in an encrypted format and all access is controlled through an RDBMS authentication and authorization mechanism.

5. Application Server Security: All access to the RDBMS is served through an application server. Role based security is implemented at the application server level and all access is authenticated and authorized using (LDAP / AD) services or other authentication frameworks. All user access is logged in the RDBMS.

6. Application Client Security, Smart Phone level: For clients who have a mobile client application, we have additional security built in to the client application to secure data from theft and loss of these movable devices.

7. Data in Transit Security: All VAST Healthcare applications can be deployed over HTTPS, with SSL encryption.

8. Security Options in the Customer Environment: We provide second and third level helpdesk support to our healthcare customers. We also have extensive helpdesk support security mechanisms and procedures in place.

Prioritizing Eligibility:

Today's continually changing, and increasingly complex healthcare environments require close attention to validating coverage, benefits, co-payments and deductibles. Failure to prioritize these seemingly small steps in the patient access process has huge implications for providers and patients alike.

-   Inadequate verification of eligibility and plan-specific benefits puts healthcare organizations at risk for claim rejections, denials, and unmanageable debt. Ineligible patient insurance coverage is the second most common cause of all claim rejections and denials by payers.

-   Not understanding coverage and benefit specifics leaves patients financially exposed, fearful and frustrated. In fact, studies show that 95% of all patients want a full understanding of coverage and costs involved in a given medical procedure.

As benefits become more granular and coverage more unpredictable, providers are recognizing the need to take measures—including implementing workflow automation and data optimization—to help them tackle the increasingly intricate eligibility process.

By approaching eligibility verification right from the start, and managing it closely on a continuous basis, providers can reduce financial risk, increase revenue, improve patient relationships, and streamline staff workflow.

Claims Processing:

The objective of this is to digitalize the highly manual insurance claims processes that currently exist in the company, which will;

- Reduce the work load of entering and maintaining the manual insurance claims related documentation for all the members of the client company.
- Give more insight to the insurance company in day to day claims processes like Claims Preparation Data, Unit Cost Calculation, Reimbursement Calculation, Claims Pricing Updates, etc. Also, operations of the insurance company such as decision making efficiency & the mitigation of risk and ensuring the predictive output for claims being processed.
- Enable calculation, storage, access and claims processing records & documents through minimizing the need for paperwork.

Introduction - Client Management

The objective of this is to digitize the highly manual processes that currently exist in Healthcare Insurance companies with regard to Client Management which will,

- Establish and service clients, organize, setup, and manage client information.

4. The Problem

The previous problem:
Ten years ago, eligibility verification was a relatively inconsequential administrative task. Patients presented their insurance cards; a copy was made, and the assumption of coverage was valid for the next 12 months.

- Providers counted on a card's validity, and for insurers to pay most of the cost of care.
- Patients, with little fiscal responsibility and minimal understanding of costs involved, had confidence that care was covered.

The existing problem:
With the advent of the Affordable Care Act, and subsequent high deductible health plans, patients can stop/start/change coverage according to their health and financial situation, meaning the card presented or the existing patient record isn't always an accurate indication of coverage.
- Providers risk not getting paid and incurring additional downstream collection expenses unless they are able to definitively determine date-specific eligibility and benefit levels.
- Patients may be confused about their coverage and, without the right information, surprised by their level of finacial responsibility.

Claims processing

Healthcare insurance companies face many steps in the processing of claims. The claims are received from various registered pharmacies on a day to day basis. These claims need to adhere to the specifications provided in any given client management configuration. Also claims needs to be priced before the claims get processed. The claims need to be validated and stored for future reference. This is very time consuming for the companies who deal with claims pricing and processing manually. Also pricing and processing the claims and keeping the status of the progress of the number of claims getting processed at any point in time is inefficient as the claims data which is received on a day to day basis is inconsistent. There is also often a large day to day amount of claims data received that needs to be processed. To validate, calculate, price, and process, is also very time consuming and laborious.

The Problem - Client Management

Additionally, healthcare services and insurance companies experience other challenges such as;

- Incomplete information

- Inflexible Client hierarchies

- Inconsistent Usage

- Limited functionality

- Limited call and communication tracking

- Limited aggregation and dashboards for leadership to analyze client performance

- Complex processes to aggregate invoicing at multiple levels

- Incomplete integration with other systems

- General inefficiency of current systems and reporting capabilities

5. The Solution

VAST Solutions: Aligning with HIPAA Objectives

VAST has been involved with major healthcare software providers to make their solutions HIPAA compliant since early 2017. We have intimate knowledge of HIPAA privacy and security regulations and their local implementation/interpretation. We have pre-developed a software framework that help us quickly deliver HIPAA compliant solutions. All our healthcare software goes through a rigorous HIPAA check list process. We have HIPAA policies implemented throughout our organization and we will gladly sign a HIPAA Business Associate Agreement for software development and related support service contracts.

Also, the need to reduce healthcare expenses is driving employers to choose new health plans as often as annually and driving individuals to switch plans frequently as well. This trend has put hospitals and health

systems at risk and requires new and innovative ways to adapt: Never before has accurate, efficient eligibility and benefits verification been as important to the financial health of healthcare organizations.

Providers adopting best practices that prioritize validation of patient co-pay, benefits and deductible information at all points throughout the billing process are realizing significant advantages over their competitors. They are experiencing fewer claim rejections and denials and have a new-found ability to provide patient financial counselling programs that help ensure payment while maintaining positive provider/patient relationships.

Best practices:
1. Assure electronic access to eligibility information from virtually all US carriers
2. Enrich payer data with additional information
3. Employ automated quality control techniques
4. Automate coordination of benefits (COB)
5. Enable personalized and normalized presentation of payer response data
6. Incorporate accurate reporting

What does it take to prioritize eligibility verification?

The following are key criteria for achieving the expertise needed to quickly, accurately, consistently and frequently verify patient eligibility, and directly impact the success of a provider organization.

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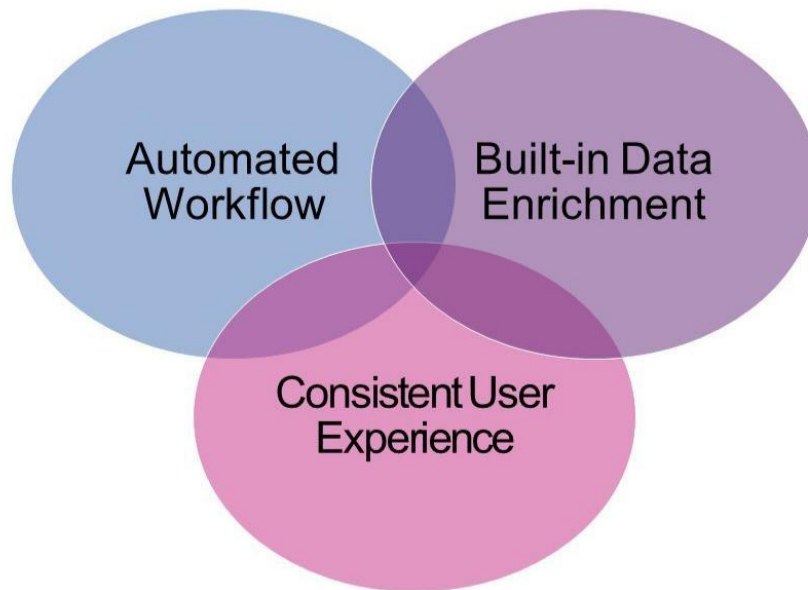
- Automated Workflow: Automated eligibility verification eliminates ambiguity that may be present in a payer's EDI; reliance on sticky note reminders; and other errors associated with manual data

collection. With an emphasis on exception-based intervention, sophisticated automated eligibility verification tools minimize the need for end-user intervention and ad-hoc decision-making. Instead, the patient access team easily obtains information that allows for a comprehensive understanding of the intricacies of each patient's benefit plan, and assures benefits are applied correctly.

- Built-in Data Enrichment: Relying only on payer information is a short-sighted approach to effective eligibility verification. Without the ability to automatically augment the original standard payer response with critical information extracted from multiple sources, patient eligibility processes can't be optimized. Users are either executing additional manual processes to fill in the data gaps or making decisions without the complete picture. Data from web enrichment, additional non-payer sources, and data translations to user-friendly message segments provides significantly more detail and adds the value that delivers maximum benefits.

- Consistent User Experience: The ability to normalize and modify results so benefit information is consistently represented across all payers makes it easier for users to understand. A consistent user experience enables faster adoption, elevated levels of usability—and better results.

Claim Processing

The web application will be hosted at the worksite and accessible from a browser.

Claim Data Preparation

1. Access post adjudicated claims.
2. Identify claims transactional information.
3. Identify claims drug information and claims drug cost information.
4. Identify claims pharmacy information.
5. Identify claims pricing information.
6. Identify claims client information.
7. Access client pricing.
8. Determine drug information.
9. Determine pharmacy type.
10. Reconcile and link reversals to paid claims.
11. Determine group category.
12. Determine paid balance, average wholesale price, wholesale acquisition cost, ingredient cost and co-pay information.
13. Calculate dispensing fees, processing fees and special processing fees for palliative drugs.

- **Calculate Unit Cost**
    1. Calculate mark-up unit cost.
    2. Calculate discount unit cost.
    3. Handle high mail order drug cost.

- **Calculate Reimbursement**
    1. Handle reimbursement amounts.
    2. Calculate reimbursement on reversal claims.
    3. Calculate possible claim losses.
    4. Handle high reimbursement amounts.

- **Update Claims Pricing**
    1. Handle essential health benefits.
    2. Update claims pricing for mail orders and non-mail orders.
    3. Update claims tax value.
    4. Update access fees.

The Solution - Client Management

The VAST Healthcare Insurance Management (**Client Management**) web application will be hosted at the worksite and accessible from a browser. The application will have different modules with the following features;

- Client Relationship Management

- Client Configuration (Contacts, Demographics, Benefit Hierarchies, Preferences and Contracts)

- Client information Updates

- Client Services – Client communications, Report delivery, Self Service Portals, Client Inquiries, and Support
- Consistent and Flexible Client Hierarchy
- Complete Client Configuration
- Enhanced Client Portal providing additional self-servicing options
- Enriched Dashboards with Analytics to review client performance
- New Call Center Management System
- Integrated Call Center, CRM and VAST Healthcare Insurance Management (**Client Management**) systems to provide optimized service capabilities
- Newly effective Integration with other applications
- Aggregated dashboard information for optimized analytics

Overall Workflow

- Administrator will add users and assign roles

- Process Engineer (PE) will load all the masters in the application. PE can set batch size. Batch size is 3000. If production quantity is 4000, then there will be 2 batches, Batch1: 3000 and Batch2: 1000

- Supervisor will create and edit the order. The order will have an order start date, factory order number, job and machine details etc.

- Operator will see today's job when logged in. Operator will click on job and start job execution. For each batch, operator will enter initial and final observations. Certified operator needs to approve/reject observations. If observations are rejected, operator is forced to take back the observations. Once all batches in a job are done, job will be completed.

- If a supervisor/operator wants to put a job on hold for the reasons such as a shift ending/running out of material/or any other reason, he can take final observations and enter reduced quantity at any point in time during production. The new batch will be created for the remaining job production and the job will be put on hold. The operator can then resume the job with supervisory approval.

- Supervisor can cancel a job or order at any point in time. Once all the jobs in an order are completed, the order will be completed.

Claims Processing:

- Pharmacies and Clients register themselves with the healthcare/Insurance company.

- Members are the employees of the client company and customers of the registered pharmacies.

- Claims records from various registered pharmacies and clients will be received.

- Unit cost calculations like mark-up, discount, etc. will be processed by the system as per the specific client configurations.

- Reimbursement amounts and claims losses will be calculated.

- Claims pricing will be updated according to the above configurations, calculations and appropriate taxes will be added.

- Claims will be processed and processing status will be applied as per the claims status.

- Claims processing will be done for all the claims.

Claims pricing will be done for both Paid and Reversal claims.

Overall Workflow - Client Management
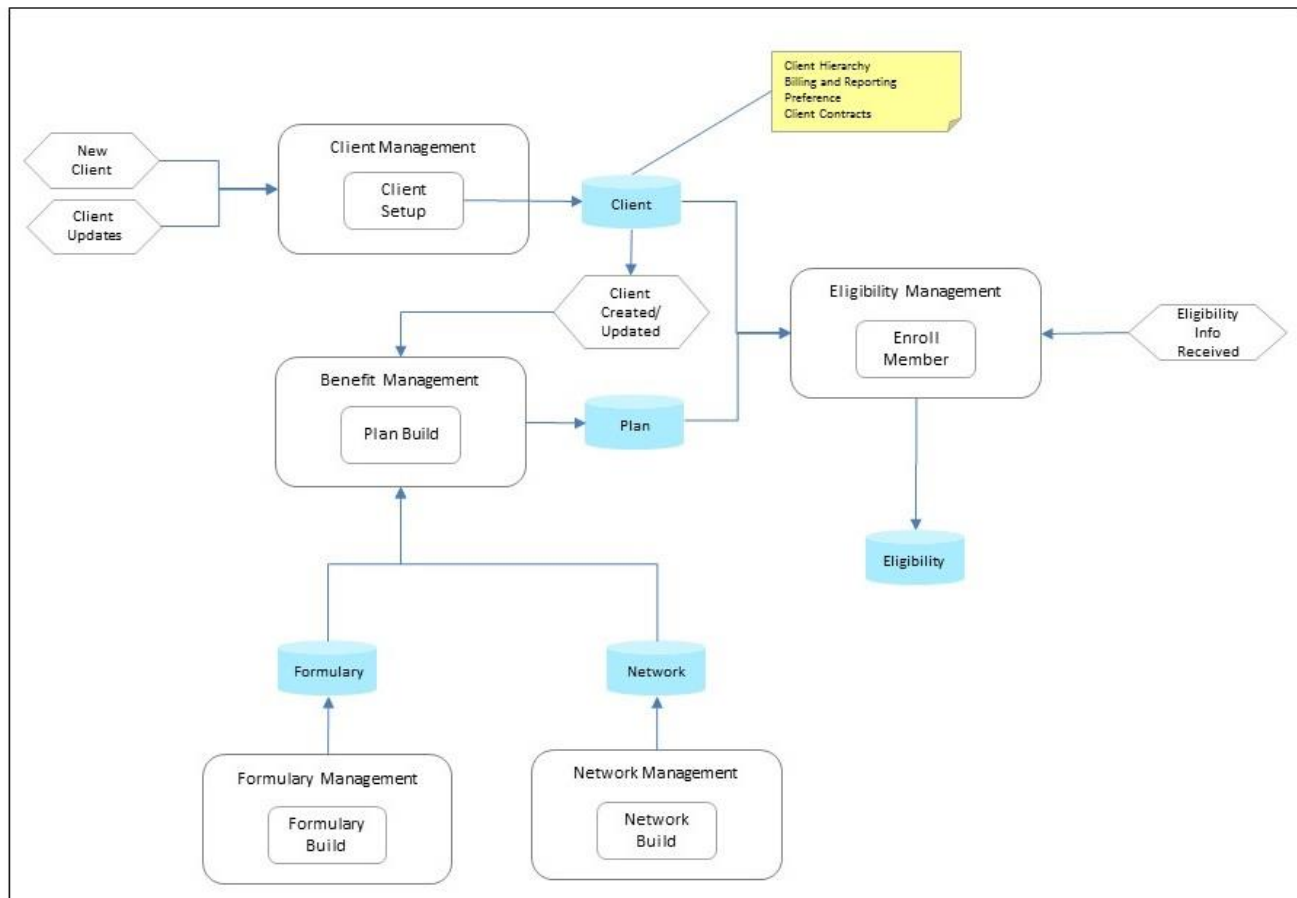
6. Conclusion

Prioritizing eligibility verification from the start and throughout the patient access process is imperative in today's "in-flux" coverage environment. Taking the steps needed to keep up with changes is essential to a providers' continued ability to succeed.

The landscape continues to change rapidly for health insurers. There is no question that the changes in a providers' compensation, data sharing, and cost reduction will present both significant risk and opportunity for many insurers. It is up to healthcare providers and payers to evolve and adapt in order to succeed in the

face of these future opportunities. Their success and survival depend on having insight, agility and operational efficiency. For insurers to maximize their outcomes they need viable solutions that include systems that provide support for value-based payment models, data analytics and cloud delivery models. Oracle provides health insurers with flexible, modern technology to accelerate speed to market, reduce overall risk and prepare for all new business paradigms.

Whether or not major federal changes to the Medicaid program are made in the near term, state Medicaid programs are still at an important crossroads, with states facing increasing fiscal pressure as Medicaid costs absorb a greater proportion of already tight state budgets. Failure to act to control these costs could put pressure on states to make cuts in other important spending areas. The current administration's signals in favor of greater flexibility suggest that states may have new opportunities to innovate as they try to control the growth in Medicaid spending while improving care delivery for vulnerable populations. The path each state chooses to pursue these objectives will depend heavily on its existing Medicaid system, population needs, and the general healthcare McKinsey & Company 18 landscape. Given the likely diversity of state actions, payors and providers would be well served by beginning to build capabilities now.

Conclusion - Client Management

- Complete client information can be captured in the new system.
- Client contracts will be available in the system.
- New client hierarchy can address some of the current inefficiencies of the current system.

Invoicing and reporting could be done at a different level.

7. Technical Landscape

Technology Stack

Software	Purpose	License Type
Microsoft SQL Server Management Studio v13.0.16106.4	Database. Document database to store system data	AGPL
Node.js v9.x	Javascript software platform to develop backend services for the solution	MIT
ReactJS v0.16.x	UI component library	MIT
BootStrap v4.0	UI Component Styling	MIT
Loopback.js v3.0	REST API framework for node.js	MIT
Passport.js v0.4.0	Authentication library	MIT

- Spring Boot Project - v1.5.6

- Java 8

- Maven 3.3.9

- Redis Cache.
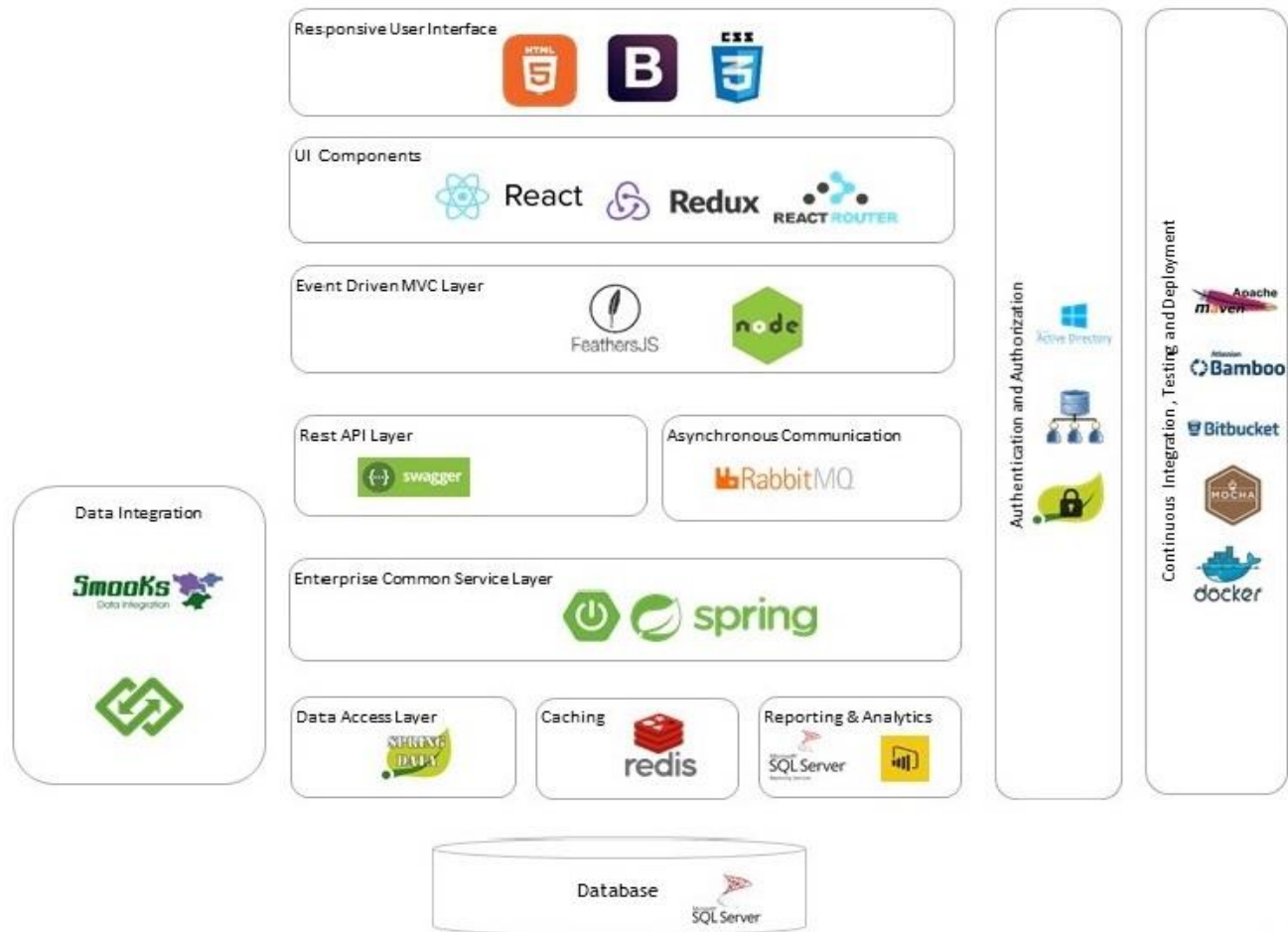
8. Benefits

- Less time wasted in manual recording
- Paper free – no space issues
- Quick access to real time production progress
- Generation of real time as well as historical data for analysis
- Ease in decision making and mitigation of risk
- 24x7 access to the system
- Intranet application that works without Internet connectivity
- Ease in claims pricing and processing.
- Easy calculation and processing of claims.

We have worked very closely with the Healthcare Insurance company during the implementation of this application.

Challenges:

- We worked very closely with the company to understand their existing manual workflows, internal processes and standards.
- We conducted interviews with the business and technical teams to define solutions.
- Claims pricing calculations were challenging as the calculations are done differently for different clients.

VAST Team's Role:

- Requirements gathering, analysis and validation
- UX design
- Technology selection and architecture
- Implementation and Quality Control
- Deployment
- Technical specifications

Deliverables:

1. Manual Deployment Document
2. Administrators' Guide
3. Data Model
4. UI Screens
5. Mongo Database Collection Details
6. Release Notes
7. Source Code Zip File.