

Testing-Requirements Traceability

HEALTHCARE SELF-INSURANCE & CONSULTING GROUP

REPRICING CLAIMS

Group No. : 6

Group Name : Critical Analyzers

Mentor : Janak Ashok Khilnani

Meeting Time : Tuesday 2:30-4:00 PM

Venue : Bird Library

RACI Matrix

Topic	Responsible (BA)	Accountable (BO)	Consulted (SME)	Informed (All Stakeholders)
Context, Items to be tested, Items not to be tested	Rashmi Polepalli	All team members	Anuj Jayaswal Ruchi Shah Rajith Jayadevan Pradeep Raja	Mentor (Janak Khilnani), Professor Caplash
Issues Action log, Data dependency chart	Anuj Jayaswal	All team members	Rashmi Polepalli Ruchi Shah Rajith Jayadevan Pradeep Raja	Mentor (Janak Khilnani), Professor Caplash
IT Test cases, Performance/ Stress/Load testing	Ruchi Shah	All team members	Rashmi Polepalli Anuj Jayaswal Rajith Jayadevan Pradeep Raja	Mentor (Janak Khilnani), Professor Caplash
Business Unit Test cases, Vendor Integration Testing	Rajith Jayadevan	All team members	Rashmi Polepalli Anuj Jayaswal Ruchi Shah Pradeep Raja	Mentor (Janak Khilnani), Professor Caplash
Requirements Traceability	Pradeep Raja	All team members	Rashmi Polepalli Anuj Jayaswal Ruchi Shah Rajith Jayadevan	Mentor (Janak Khilnani), Professor Caplash

Context

Healthcare Self Insurance Consulting Group (HCG) a third party administrator (TPA) offers self-insurance services to a wide variety of clients. The Repricing process at HCG is currently tedious and time consuming. This leads to lot human errors and data loss. Requirements Traceability is performed to improve the overall quality of the process, wherein test case scenarios are based on the basic flow of each system use case.

This document describes the following sections

- **Items to be Tested & Items to be not tested:** List of all the items in the Repricing System that need to be tested for errors
- **BU and IT Test Cases:** List of all the use cases of the Repricing system when sent to other units for further processing.
- **Vendor Integration Testing:** List of all the possible test cases when Repricing system interacts with external vendors
- **Performance/Stress/Load Testing:** List of all the test cases of the Repricing system that need to be performed to understand the behavior of the system under a specific load.
- **Requirements Traceability:** Scenarios based on a specific use case in the Repricing System.
- **Issues Action Log:** List of all possible issues and respective solutions that are identified in the Repricing system.
- **Data Dependency Chart:** represents the data flow to outside systems

Items to be tested & Items to not be tested in the Repricing System

Repricing of Claims	Items to be Tested	Items to be Not Tested
Test for Data Accuracy	<ul style="list-style-type: none"> • Missing Data • Patient Information • Provider Network (in network/Out Network) 	Duplicate bills
Test for Discount Verification	<ul style="list-style-type: none"> • Claim Source • Contract Details • Discount Type • If the discount applied is correct. 	NA
Test for Compliance	<ul style="list-style-type: none"> • Newly Repriced Claims • Contract Details 	Original Claims received from the Claims department
Review the Final Reports	<ul style="list-style-type: none"> • Data Accuracy • Missing Data 	NA

Business Unit Test Cases

Our repricing system becomes a business unit when we send data to outside system for further processing. We send data to other units for further processing in two situations:

- 1) Repriced claims to be sent to claims processing department IT system to be forwarded to employers and hospitals /labs /pharmacies.
- 2) Sending original claims, repriced claims and contract details to auditing team IT system for auditing purpose.

Use Case	Business Unit	IT Unit	Test Case	Test Scenario	Test Data Set	Expected Result
Dispatching repriced claims	Repricing unit	Claims processing IT system	Claims IT system should send repriced claims sent from our repriced business unit to employers, hospitals, pharmacies and labs	1) Original claims get repriced at repricing claims system 2) This system send repriced claims to Claims unit for dispatching	Repriced claims	All repriced claims should reach the appropriate receivers through email and post
Compliance & Auditing	Repricing Unit	Compliance & Auditing IT system	Compliance & Auditing IT system will display all repriced claims to auditors for auditing purpose	1) Original claims get repriced based a particular contract details 2) Auditors should be able to login to audit website and view	Repriced claims	Auditors will be able to view repriced claims based on From Date and To Date

				repriced claims		
Compliance & Auditing	Repricing Unit	Compliance & Auditing IT system	Compliance & Auditing IT system will display all original claims to auditors for auditing purpose	<p>1) Original claims get repriced based on particular contract details</p> <p>2) Auditors should be able to login to audit website and view repriced claims and corresponding original claims</p>	Repriced claims and Original Claims	Auditors will be able to view original claims and repriced claims based on From Date and To Date
Compliance & Auditing	Repricing Unit	Compliance & Auditing IT system	Compliance & Auditing IT system will display all contract details to auditors for auditing purpose	<p>1) Original claims get repriced based a particular contract details</p> <p>2) Auditors should be able to login to audit website and view repriced claim, original claim and contract details</p>	Repriced claims, Original Claims and Contract details	Auditors will be able to view original claims, repriced claims and contract details based on a particular search criteria. Contract details can be searched based on Source and Provider Network.

IT Test Cases

Our repricing system becomes an IT Unit when other systems use our system to meet their business requirements. Other systems which use Repricing system include Claims processing department and auditing department.

Use Case	Test Case ID	Test Case	Test Scenario	Test Data Set	Expected Result
Data Verification	TC_1	Verifying the validity or the claim data	When a new claim enters the system for repricing.	Original claims, validation algorithms, provider list.	The incoming claim should have no missing data, claim should be valid, and claim should belong to a valid provider network.
Discount Verification	TC_2	Claim source verification	After the data of the original claim has been verified, the discount needs to be calculated for repricing. Before applying the discount, claim source verification is required to get the discount amount.	Original claim, valid source list.	If the source is valid, discount should be applied else claim should be rejected for repricing.
Discount Verification	TC_3	Contract Validity	After source verification, contract validity needs to be verification.	Original claim, contract details, patient details.	If the contract is valid, discount should be applied else claim should be rejected for repricing.
Discount Verification	TC_4	Correct discount	The system checks for the discount type which is associated with the contract. There are two	Original claim, contract	The system should apply the discount amount correctly

		type is applied.	types of discounts: absolute and percentage and depending upon the claim amount, the discount would be applied. A contract might not have any applicable discounts available.	details, patient details.	depending on the type.
Repricing Claims	TC_5	Repriced claim amount validation	After the discount has been calculated, it should be applied correctly and the repriced amount should be accurate and valid.	Repriced claim, original claim, and discount amount.	The repriced amount calculated by the system should be correct.
Repricing Claims	TC_6	Valid coupons applied.	If a patient is applicable for coupons, it should be added to the discount amount.	Repriced claim, Original Claim, coupon details	The system should add valid coupons only.
Repricing Claims	TC_7	Loyalty points added correctly.	After the repricing amount has been calculated, loyalty points should be added correctly to the patients account.	Repriced claim, Original Claim and loyalty details.	As per the membership and repriced claim amount, loyalty points should be added correctly to the patient's account.

Vendor Integration Testing

Vendor integration testing is done when our system interacts with systems provided by external vendors or suppliers. In our system, repriced claims are sent to employers, hospitals, pharmacies and labs for further processing.

Use Case	Business Unit	Test Case	Test Scenario	Test Data Set	Expected Result
----------	---------------	-----------	---------------	---------------	-----------------

Repricing claims	Repricing Unit	All repriced claims should be readable by hospitals/pharmacies/labs	After repricing, hospitals/pharmacies/labs should be able	Repriced claims	Hospitals/Labs/Pharmacies should be able to process and understand the repriced claims and
			to process the claims		corresponding contract details
Repricing Claims	Repricing Unit	All repriced claims should be readable by employers	After repricing, employers should be able to process the claims	Repriced Claims	Employers should be able to process and understand the repriced claims and corresponding contract details

Performance/Stress/Load Testing

Performance testing is the process of determining the speed or effectiveness of our repricing system. This process can involve measuring the response time of calculating the repriced amount for a claim, number of claims repriced in a particular time, etc.

Qualitative attributes such as reliability, scalability and interoperability may also be evaluated. Performance testing is often done in conjunction with stress testing.

Use Case	IT Unit	Measurement Attribute	Test Case	Test Scenario	Test Data Set	Expected Result
Repricing Claims	Repricing Unit	Response Time	Response Time for repricing	After the discount has been applied, the response time taken for a claim to be repriced.	Original Claims, Discount amount and Contract details	The system should respond in an average of 0.72 seconds once the discount has been applied.

Repricing claims	Repricing Unit	Efficiency	Processing Time taking for a claim to be repriced.	After the discount has been calculated, the time taken for the discount to be applied and calculate the repriced amount.	Original Claims, Discount amount and Contract details	The system must be able to process, apply discounts and reprice a claim in 1 second. Maximum delay allowed should be 0.5 seconds.
Repricing Claims	Repricing Unit	Reliability	Automatic failover database	During a breakdown of the system due	Entire data cluster.	The system should automatic failover
			cluster check	to power failure or overload.		database cluster during breakdowns.
Repricing Claims	Repricing Unit	Reliability	Load testing to process 3000 claims in an hour.	In scenarios where maximum claims are expected to be repriced.	Original claims, and contract details.	The system should be able to process and reprice 3000 claims per hour.

Requirements traceability

S.No	Requirement	Test Scenario	Expected Result	Test Data Set	Actual Result	Pass/Fail	Rectification strategy/ Next steps
------	-------------	---------------	-----------------	---------------	---------------	-----------	---------------------------------------

1	System shall provide User id and password text boxes for users to authenticate	User enters incorrect user id and password	The user should NOT be given access to the website	User Id = "test" Password = "test#"	The user is shown empty textboxes and navigated to the same login page	Fail	The user should be prompted with a message saying "Incorrect id/password, please reenter the credentials"
2	System shall provide User id and password text boxes for users to authenticate	User enters correct user id but enters incorrect password more than 3 times	The user should be prompted with security questions	User Id = "testid" Password = "test#"	The user is prompted with security question	Pass	Next step should be to get answers from users and email the password if the answers are accurate
3	System shall provide User id and password	User enters correct id and password	The system should log in to the website	User id = "testid"	The user has been logged in	Pass	The user is provided with the home page

	text boxes for users to authenticate			Password = "testid#"	to the system		with information about the company where he can choose to navigate to different pages
--	--------------------------------------	--	--	----------------------	---------------	--	---------------------------------------------------------------------------------------

4	System shall provide different department links like Finance, Marketing, Accounting, Claims, Compliance & Auditing	User navigates to the Claims link and selects the Reporting link	The user should be navigated to the reporting page	User click to claims tab and then the reporting page	The user is navigated to Stop loss page	Fail	Rectification would be to change the hyperlink settings of Reporting page to point to the right page
5	System shall provide different department links like Finance, Marketing, Accounting, Claims, Compliance & Auditing	User navigates to the Claims link and selects the Reporting link	The user should be navigated to the reporting page	User click to claims tab and then the reporting page	User is navigated to the reporting page	Pass	Provide the user with information provider network, loyalty points and coupons applied
6	System shall provide information about network provider used, coupons and	User verifies information about discount applied	The discount applied should be accurate	Network provider, claim amount, coupons applied, loyalty points	User finds the discount applied to be inaccurate	Fail	User should be allowed to raise an issue to the system admin about incorrect data

	loyalty points used, discounts applied						
--	----------------------------------------	--	--	--	--	--	--

7	System shall provide information about network provider used, coupons and loyalty points used, discounts applied	User verifies information about discount applied	The discount applied should be accurate	Network provider, claim amount, coupons applied, loyalty points	User finds the discount applied to be accurate	Pass	User can now generate report
8	System shall provide information about network provider used, coupons and loyalty points used, discounts applied	User tries to click on the report generation page	The user should be navigated to the report generation page	User click to button called report generation	The user is navigated to report generation page	Pass	The user will be provided with two options, repriced claims report and money saved report
9	System shall provide users with two option for reports, repriced claims report, money saved report	User tries to select repriced claims report radio button and click on generate report and	The user should be able to generate report and download the repriced claims report	User selects appropriate radio button, clicks on report generation page	A pdf of Repriced claims report is generated	Pass	The user can verify the repriced amount and other details with respect to claim in the report
		download as pdf					

10	System shall provide users with two option for reports, repriced claims report, money saved report	User tries to select money saved report radio button and click on generate report and download as pdf	The user should be able to generate report and download the money saved report	User selects appropriate radio button, clicks on report generation page	A pdf of money saved report is generated	Pass	The user can verify the money saved information and other details with respect to claim in the report
11	System provides with the pdf of repriced claims on button click, generate report and download as pdf	User verified information given in the report	The user should find the information accurate	User selects appropriate radio button, clicks on report generation page	Incorrect calculation for repriced claims	Fail	User should be allowed to raise an issue to the system admin about incorrect data

Issues & Action log

Use Case	Issue	Status	Owner	Priority	Due Date	Resolution
Data Verification	A new data is supposed to be checked in the original claims that is provider network type	Closed	Developer	High	12/04/2015	Include network provider type check as part of data verification before repricing
Data Verification	Source is not checked as part of data verification	Open	Developer	High	12/04/2015	Include source check as part of data verification before repricing

Discount Verification	Expiry Date is not checked before applying discount	Open	Architect	Medium	12/10/2015	Expiry date has to be checked as part of discount verification
Compliance & Auditing	Search criteria To Date is not working in Original claims and repricing claims search	Closed	Developer	Medium	11/09/2015	Include range search in Original and Repriced claims
Compliance & Auditing	Search criteria gives data only for past 3 months. It should give data of last 6 months	Closed	Architect	High	12/12/2015	Change the code in software to access data for past 6 months
Repricing Claims	Decimal issues after applying discount	Open	Developer	High	12/15/2015	Improve the accuracy of decimal calculation using appropriate coding
Report Generation	Reports for customer are not getting generated	Closed	Technical Lead	Low	11/15/2015	Analyze the reason for nongeneration of reports by system and then solve the same

Data dependency Chart

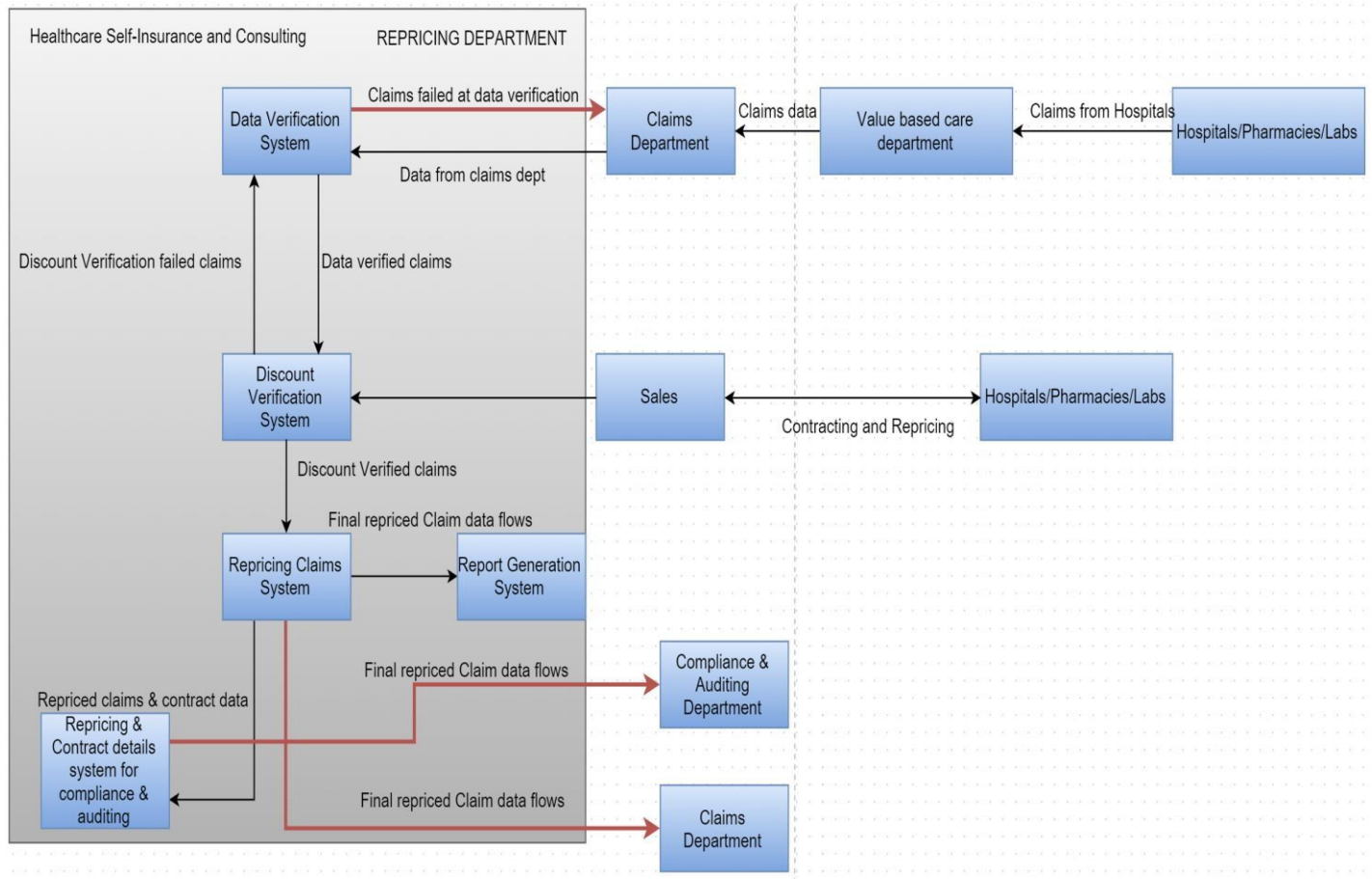


Figure 1- Data flow diagram

Red lines in above diagram represent data flow to outside systems and hence, in such cases our system become business unit.