HealthCare Group of Consulting

FEASIBILITY Analysis

IST 654

INFORMATION SYSTEM ANALYSIS & DESIGN

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GROUP MEETINGS- 20:00 PM, HINDS HALL

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Comments Table.

Integrator	Components	Created by	Reviewed by	Modified by	Comments
Sargam Gupya	Operational Feasibility	Dhvaja Shikare	Sai Pravin	Sai Pravin	Include number of claims to be processed with the increased efficiency
	Political/Cultural Feasibility	Saurabh Jape	All Team Members	Will	Include potential issues with relevant stakeholders
	Technical Feasibility	Sai Pravin	All Team Members	All Team Members	No Comments
	Schedule Feasibility	Sargam Gupta	All Team Members	All Team Members	The number of employees using the product on the product release date should be higher.
	Legal Feasibility	Will Bianchini	All Team Members	All Team Members	No Comments
	Economic Feasibility	All Team Members	All Team Members	All Team Members	No Comments

Overview.

In today's health care scenario, when a customer is hospitalized or visits a doctor to get treatment, he/she submits a claim with the health provider company. The company then checks if the customer is insured with the company. The company then goes on to check the coverage that the employee is under. Ex: Some treatments like dental treatments are not covered. After checking the coverage, companies check for how the coverage may apply i.e. did you go in network or out network? This is then followed by checking and matching the ICDM-9 () diagnosis code currently ICDM-9 to the CPT (current procedural terminology). Each of these assign numbers to diagnoses and medical procedures.

If the claim has broken toe proximal phalanx great toe code as the diagnosis and the procedure is open reduction internal fixation of the humerus as the procedure the claim will be refused. You simply can't treat a broken toe by operating on the arm. So the diagnosis must match the treatment.

The claim that the patient submitted is verified by the claim processing system and if successful the amount is deducted since the patient's employer had registered the patient while availing the self insured health plan.

The steps involved in the claim process can be summarized as follows:

1. The insured individual seeks medical attention from a healthcare provider including affiliated hospitals or nursing home etc.
2. The hospital submits charges to the insurer using a health insurance claim form.
3. Claim forms are sent electronically using a series of codes. The charges are received by the insurance company with each claim having a dedicated date and code to ensure timely payment.
4. The health insurance company reviews the charges to make sure they follow their policy guidelines.
5. Once the claim is verified, the selected claims are paid and notified to the customer.

The various services offered by the claim processing system include-

- Verification of claims submitted
- Claim code identification
- Claim code conversion
- Processing of claims
- Sending alerts to individuals about the claim status
- Calculating final claim amount
- Tracking claim status
- Claim report generation

Feasibility Studies- Introduction

Feasibility studies can be used in many ways but primarily focus on proposed business ventures. Farmers and others with a business idea should conduct a feasibility study to determine the viability of their idea before proceeding with the development of a business. A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

A well-designed feasibility study should provide a historical background of the business or project, a description of the product or service, accounting statements, details of the operations and management, marketing research and policies, financial data, legal requirements and tax obligations.

This document describes about the feasibility study and evaluates the project's potential for success; therefore, perceived objectivity is an important factor in the credibility of the study for potential investors and lending institutions. This study was conducted with an objective, unbiased approach to provide information upon which decisions can be based.

This document talks in length about the following different feasibilities,

- Schedule Feasibility
- Political and Cultural Feasibility
- Technical Feasibility
- Operational Feasibility
- Economic Feasibility
- Legal Feasibility

Candidate Matrix.

	Weight	Candidate 1 Retain and modify current manual system	Candidate 2 In House Development of Claims Processing Application	Candidate 3 Outsource Development
Cultural	10%	Remain mostly unchanged *Score / Reason:* *80 / work environment is not currently ideal and work environment will stay generally the same.*	Staff will react and adapt varyingly. *Score / Reason:* *75 / The cultural effect of an automated system depends on employees perception of technology and process change*	Staff will react and adapt varyingly. *Score / Reason:* *70 / Same as candidate 2 except outsourced vendor will not be as sensitive to company culture*
Economic	20%	Claims processing rates will decrease due to ICD code version errors. Decreased productivity will result in loss of profit. *Score / Reason:* *50 / Productivity is expected to decrease do to ICD error correction*	Increase in claims processing rates will lower the cost of overall processing due to economies of scale *Score / Reason:* *95 / Increased productivity due to auto/processing and error detection will significantly*	Increase in claims processing rates will lower the cost of overall processing due to economies of scale *Score / Reason:* *95 / same as candidate 2*

			boost productivity	
Schedule	20%	Estimated Time to develop manual compliance process: 1 month *Score / Reason:* *90 / Implementing a manual ICD version check process could be accomplished readily.*	Estimated time of development: 6 Months *Score / Reason:* *80 / implementing automatic ICD version control will take months*	Estimated time of development: 4-8 Months *Score / Reason:* *80 / same as candidate 2*
Operating	25%	The October 1, 2015 changing of ICD coding standards creates conditions in which the current claims system is not able to handle. There will be a lag in ICD compliance after the deadline which will extend for an unforeseeable amount of time in which claims administrators will have to manually ensure ICD compliance. Claims processing rates are predicted to slow down. *Score / Reason:*	Automating claims processing will provide greater accessibility to data as well as creating a more efficient work flow. Error recognition and handling features will ensure quality and accuracy of claims information *Score / Reason:*	Automating claims processing will provide greater accessibility to data as well as creating a more efficient work flow. Error recognition and handling features will ensure quality and accuracy of claims information *Score / Reason:*

		70 / Productivity is expected to decrease do to ICD error correction	*90 / The Creation of a Claims application will allow for improved efficiency and greater accessibility to authorized entities*	*90 / The Creation of a Claims application will allow for improved efficiency and greater accessibility to authorized entities*
Technological	10%	Access to ICD-9 and ICD-10 conversion resources required *Score / Reason:* *90 / ICD-9 and ICD-10 conversion tools and literature are currently freely available from the Centers for Medicare and Medicaid Services*	Hardware and software will need to be upgraded, modified or purchased as defined in the technology feasibility section. *Score / Reason:* *75 / Engineering an automated ICD code conversion tool exposes HCG to risks associated with schedule, cost, errors*	Hardware and software will need to be upgraded, modified or purchased as defined in the technology feasibility section. *Score / Reason:* *75 / Engineering an automated ICD code conversion tool exposes HCG to risks associated with schedule, cost, errors*
Legal	15%	Current methods of claims administration make it difficult to enforce data security measures. Data in the current process is subject to a level of exposure that	In house development allows for complete control of how data is stored and accessed. By implementing access control and adhering to the security	Legal requirements would be stated in any proposal or contract with a third party contractor. Failure to adhere to legal requirements would result in

		is not compliant with best practices within the health care industry. *Score / Reason:* *65 / Data security and authentication measures are weak*	matrix in appendix A, the risk of unlawful exposure of sensitive data is minimized *Score / Reason:* *90 / Data security and authentication measures will be engineered into the system*	legal action against the third party. *Score / Reason:* *90 / Data security and authentication measures will be engineered into the system*
	Total Score	72	86	82

Candidate 1: Retain and modify current manual system

- Current claims processing work flow remains unchanged except for the introduction of methods to detect and correct ICD code version errors. This option would be the cheapest since no Technological development would take place. The methods to handle ICD code versions could be readily developed although the end to end claims processing would slow down due to the addition of ICD code verification steps.

Candidate 2: In House Development of Claims Processing Application

- The proposed claims processing application would automate the current claims processing work flow and allow for automatic detection of ICD codes, versions and descriptions. The automated system would increase processing rates while providing high level of communication between claims entities within the allowance of the least access security policy.

Candidate 3: Outsource Development

- The proposed claims processing application would automate the current claims processing work flow and allow for automatic detection of ICD codes, versions and descriptions. The automated system would increase processing rates while providing high level of communication between claims entities within the allowance of the least access security policy. A main concern of outsourcing development is that vendors will not have a clear understanding of HCG work culture and processes.

Operational Feasibility.

Operational feasibility provides a perspective on how the internal users feel about accessing the new proposed automated system. It helps us understand if the system will work at all times without experiencing failures. It relies heavily on people available during the project for developing as well as implementing the claims processing system that is ICD 10 compliant. The proposed system solves the issue of collecting claims in a timely manner at a proposed time 06:00 am. However, it is also important that the employee base will be accepting of the change.
The automated claims processing system identifies every patient with their existing patient records and validates their information.
The validated patient information is sent for identifying the suitable ICD codes associated with treatments and ensuring that they are ICD 10 compliant. If the codes are not ICD 10 compliant then the convertor in place will automatically change ICD 9 codes into their respective ICD 10 codes.
The claims system will send the processed claims to the repricing system to receive the claims after verifying the discount rates etc.
Every claim associated with patient is further reviewed for calculations based on deductible, co-insurance, and out-of-pocket-limit with respect to their annual limit.
Additionally, every patient is divided into in-network and out-network based on their plans and each patient is provided a status review of their claims at various intervals.

The daily operations within the claims processing system involve:

- The system can process 480 claims per day.
- The system should ensure that the claims have been identified on the basis of approved, rejected and denied.
- The system stores the rejected and denied claims and ensures corrective measures to be implemented.
- The system should back up patient information with their respective claims to keep track of their medical records and history.
- The PIECES framework will provide an overview of the advantage our claims processing system that is ICD 10 compliant:

Performance:

- Enhanced automated system will provide better access to the claims department to process patient information efficiently and effectively.
- The large data of every patient will be accumulated and tracked and therefore handing of enormous information becomes easy.
- The system will allow incorrect patient information to be corrected after fetching from the database without delay.

- The system will process 480 claims /day and the time taken for processing will be reduced by 30% by automating the process of code conversion and claim calculation.
- The new centralized system would allow the users to access existing patient history for calculating payments within seconds.
- The system will allow patients to review their claims status within seconds.
- The system will also store logs of the denied and rejected claims.

Information:

- The system will automatically update the validated patient information when received from healthcare systems.
- The system will be implemented from a central database repository in which the data stored would be consistent and integrity of data will be maintained.
- The automated system will provide high level privacy and security to the patient detail and their claims.
- The system will communicate with various other systems like healthcare systems, repricing systems and audit systems extracting accurate information.
- Alerts will be sent to patients, employers and healthcare organizations for viewing their claims status.
- The new system holds a larger capacity for handling data.
- The new system avoids redundancies

Economy:

- The system will hugely cut down the costs of human work force when compared to if it were outsourced or manually implemented.
- The system would incur development costs only once and later there would be the most minimal costs.
- The project will plan to hire resources in the form of interns to reduce costs.
- The new system will form an edge compared to the other models to increase its security, efficiency and effectiveness.
- The implementation and development of the project is slated to be completed in 6 months

Control

- The claims system will enable backup and history to avoid deletion of patient information recorded.
- Any changes in the centralized database system will create a notification to track updates.
- The data will be analyzed using inbuilt software.
- The access to update patient information would be authorized to the claims admin only.

Efficiency

- The new system must be faster in sending notifications when error is detected in patient information.

- The new system will notify patients, employer and healthcare organizations within a day for in-network patients and within 3 days for out of network patients.
- The new system will be devoid of redundancies and inconsistencies and process full patient information.
- The new system will be efficient enough to adjudicate, process the claims and store client data.
- The new system will be effective in coordinating and directing data to different various entities involved as well as various systems.
- The new system would decrease in the number of people required for feeding in data and sending out emails.

Service

- The system will provide the claims department access to immediate customer service.
- The system will be compatible with the other subsystems that it would interact with.
- The system will provide accurate and reliable results.
- The new system should be compatible with existing software in the company.

The system should offer useful and better services than the existing system.

Economic Feasibility.

Economic feasibility analysis is used for processing and tracking claims in the claims processing system which are ICD 10 compliant. The economic analysis is the test of feasibility in terms of cost, revenue and whether it is feasible to develop an automated. In order to make sure the new system to be completed within budget and earns a higher revenue, there are assumptions we would consider:

Additionally,

- The old system is manually processes the claims without using a conversion tool.
- New hardware and software need to be purchased for converting codes to enhance the claims processing system and customer experience.

Assumptions	Cost / % Increase / Time
Completing development and implementation of the system	**6 months**
The total budget	$63000
Discount rate	10%
Rise of Cost and benefits	222.5%
Total working hours for employees/interns	52 weeks/year & 40 hours/week 2080 hours

Cost Analysis

DEVELOPMENT COSTS

a) *Personnel*

Development	No. Of Employees	No. of hours	Per Hr. Wage	Total
Business Analyst	1	100	40	4000
System Developer	1	120	50	6000
System Developer Intern	1	200	10	2000
Database Administrator	1	120	50	6000
DBA intern	1	240	10	2,400
Quality Analyst	1	100	25	2,500
Quality Analyst Intern	1	200	10	2,000
Total Cost				**24900**

b) *Hardware/Software*

Hardware Cost: The Claim Processing System of HCG Ltd. maintains many hardware devices which are operated throughout the system. The number of devices are listed corresponding to the device name with their respective costs. The costs are determined in $ value every year.

Hardware Equipment	No. of Devices	Cost Per Device	Total Cost Per Device
Computer Systems	10	400	4000
Printer and Scanner Devices	3	150	450
Photocopy Machine	1	500	500

Projectors	5	100	500
Database Server	1	2950	2950
In-House Network Server	1	3600	3600
Total Cost			**12000**

Software Cost: HCG maintains a database application "Accumulator" which is used to calculate each patient's records in terms of deductible and out of pocket limit. An employee application is used throughout HCG Ltd. which every employee can log in by his unique ID and password. Claim Calculation software is used to calculate claims coming every morning. Last, we have Claim conversion software which is an automated software used to convert ICD 9 complaint claims to ICD 10 compliant claims.

Software	Cost Per Software
Accumulator	900
Employee Application	700
Claim Calculation Software	700
Claim Conversion Software	700
Total Cost	3000

c) *Upgrading*

The Software's are kept up to date by regular upgrading on a periodic basis. Some software's are upgraded every month and some once in 6 months. The total cost of all the software's per year is $1,500

d) *Licensing*

HCG Ltd. Copyright its servers, databases, claim conversion and claim calculation software. It takes $1,500 to trademark HCG's products every year as per the current contract.

MAINTENANCE COSTS:

The maintenance of the entire system includes the following activities,

a) Server Maintenance
The server maintenance includes the activities performed by the server administrator who controls the web, app and DB server. This person will be monitoring and controlling the servers for 60 hours per month and is paid 15 $ per hour.

60*15*12=10,800$ per Year

b) System Maintenance
The system maintenance includes the activities performed by a system administrator who controls the entire system from end to end and will be responsible for bug fixes, database deadlock issues, etc. This person will be working for 60 hours per month and is paid $15/hour.

60*15*12=$10,800 per Year

Therefore, the total maintenance costs for the application will be $21,600/Year.

BENEFIT ANALYSIS

- The in-house system would require reduced human resources to perform activities like validating, mapping ICD 10 codes, calculating deductibles, copay, out of pocket expense and annual expense.
- Improvements in functionalities like Prior Authorization and Claims Processing functions will lead to an increased ability to monitor the delivery of patient information from healthcare systems
- Improved responsive time to change business environment that is able to identify the ICD 9 codes and convert them into ICD 10 compliant ones.
- Improved claims data access to the claims department leading to better data integrity and quicker processing of claims.
- Reduce the number of paper claims and in turn, reduce the amount of labor needed to enter claims information.
- Modernization of the technology used for claims conversion provides a stepping stone to full replacement of the existing tool into an automated one.

Tuned Performance:

- The automated system will increase the efficiency of claims processing by 20%. This means that the claims will be processed in the previous system at the rate of 10 claims per hour and in the present automated system it will be processed at 12 claims per hour thereby generating more revenue for the company and also increasing the benefit by 20%.

➢ Optimized Performance:

Previous System:

- An employee working 8 hours/day to calculate 80 claims/day. The employee will be paid $20/hour and therefore the expenses per day will be 160$ per day

80 claims -> $160/day

Current Automated System:

- An employee working 8 hours/day to supervise the automated processing of 96 claims. The employee will be paid $20/hour and therefore the expenses per day will be $160/day.

96 claims -> $160/day

Benefits:

- The benefits derived from the automated system would contribute to the increase in processing claims per day thereby reducing costs and increasing revenue which can be shown below:

Difference between current and proposed system ->16 Claims/day (96-80)
Cost/claim in previous system-> 16/80 = $0.2/claim
Cost/claim in current automated system-> 16/96= $0.16/claim
Cost saved per claim is $0.04/claim.

Therefore, cost saved per claim in a year -> 0.04*96*264(working days) = $1,013.76

➢ Reduction in Manual Errors:

Previous System:

In 1 day, the number of manual errors = 3 claims
Number of claims with error (per year) = 3*264(working days)= 792

Current Automated System:

In 1 day, the number of manual errors = 1 claims
Number of claims with error (per year) = 1*264(working days) = 264

Benefits:

Thus, the number of error claims reduced in a year = 792-264 = 528

Therefore, cost saved on manual claim errors in a year -> 0.2*528 = $105.6

➢ Increase in Revenue:

- The ICD claim conversion process is a new add on value in the new system which helps in the revenue generation.

Claims processed/day -> 96

Claims to be converted to ICD 10 (maximum value assumption in every 96 claims) -> 24 claims/day

Cost for conversion of ICD 9 to ICD 10 code per claim -> $3

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*Therefore, revenue generated for the company through code conversion process -> 24*3*264(working days) =$19,008*

Thus,
TOTAL INCREASE IN REVENUE =

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*Therefore, Total Revenue Generated ->**$1,013.76 + $105.6 + 19,008** =*

$20,127.36

Payback Analysis

Cash Flow Description	Year 0	Year 1	Year 2
Development Cost	24,900.00		
Maintenance Cost	-	21,600.00	21,850.00
Discount Factor 10%	1.00	0.90	0.81
Time Adjust Cost	24,900.00	19,440.00	17,698.50
Cumulative Time Adjust Cost	24,900.00	44,340.00	62,038.50
Benefit Derived From the operation	-	136,224.00	150,224.00
Discount Factor 10%	1.00	0.90	0.81
Time Adjust Benefit	-	122,601.60	121,681.44
Cumulative Time Adjust Benefit	-	122,601.60	244,283.04
Cumulative Lifetime Adjusted Costs and Benefits	24,900.00	78,261.60	182,244.54

NET PRESENT VALUE ANALYSIS

Cash Flow Description	Year 0	Year 1	Year 2
Development Cost	24,900.00		
Maintenance Cost	-	21,600.00	21,850.00
Discount Factor 10%	1.00	0.90	0.81
Present Value of Annual Cost	24,900.00	19,440.00	17,698.50
Total Present value of Lifetime cost	24,900.00	44,340.00	62,038.50
Benefit Derived From the operation	-	136,224.00	150,224.00
Discount Factor 10%	1.00	0.90	0.81
Present Value of Annual Benefits	-	122,601.60	121,681.44
Total Present value of Lifetime Benefits	-	122,601.60	244,283.04
Net Present Value of this Alternative	24,900.00	78,261.60	182,244.54

Return on Investment Analysis:

$$\text{Lifetime ROI} = \frac{\text{(Estimated Lifetime Benefits - Estimated Lifetime Costs)}}{\text{Estimated Lifetime Costs}} * 100$$

Estimated Lifetime Benefits	182,244.54
Estimate Lifetime Cost	62,038.50
Lifetime ROI	193.76

Schedule Feasibility.

This part of feasibility is to produce deliverables before the given deadline. Each and every task of HCG's Claim Processing System is divided into time frames to accomplish the respective task. While there are few phases which needs to be conducted throughout the development phase, other phases follow a rigid timeline.

At HCG's Claim processing system, we also convert ICD9 complaint claims to ICD 10 complaint claims. Since, ICD 10 complaint claims launches from October 1, 2015, our project initiation date is October 1 2015. We are estimating the development stage of this system will last for a period of 6 months. The development cycle consists of the following phases:

- **Initiation & Planning:** This phase is a beginning point of the project and walks the company through from inception point to delivering the product. In this phase, plan for the project is also facilitated. It also generates the scope of the project and project charter is mapped with all the tasks.
- **Requirement Analysis & Gathering:** The requirement gathering phase elicits the requirements from the clients. These requirements are then mapped with the company requirements. Like this, functional and non-functional requirements are generated. This is the most important phase of the project since it guides the company where to head.
- **Designing Phase:** This phase includes the construction of design for the software and databases which will be used. A high level design is produced which is followed for the construction of the product.
- **Implementation:** Implementation stage is when the developers and programmers generate the desired product. This phase is followed by the sequence of steps from constructing system architecture to implementing the functioning. As a result of this implementation stage, an employee application interface and accumulator database architecture would be developed for HCG's Claim Processing System.

- **Quality Assessment and Testing**: A series of unit code is applied to the code generated in the implementation phase. This is done in order to catch any bugs before delivering the product from developer's end.
- **Maintenance:** A maintenance team is always involved in keeping the database servers, network server works properly. They also assist users if they face technical problems in using the system. They also support customers with their issues of trouble through phone or e-mail.

The duration of every phase is in a range beginning from lower limit to upper limit. Meaning, the upper limit is the maximum limit for a deadline to be procrastinated. This timeline is feasible keeping in mind the time lag which can be caused due to various reasons. If the desired deliverable of a phase is not met up to upper limit of deadline, more employees will be appointed to the task while not hindering the following phase. The time lag can cause major differences in the timeline of the project, that's why a rigid structure is needed to be followed.

Buffer Gap: The buffer of 1 week is taken to serve the possibilities of delay in the desired deliverables.

Product Releasing Date: 1st April 2016 is the tentative date on which HCG's claim processing system will go live. It is expected to be used by around 30 employees.

Phase	Duration	Ending Date	Deliverables
Initiation and planning	1 week	2015-10-07	• Business Case document. • Proposal Document • Business Charter.
Requirement gathering and Analysis	3-4 weeks	2015-10-27	• Business Model. • Business Requirement Document • RACI Chart.
System Design and Database Design	4-5 weeks (1 month)	2015-11-26	• Use case Model • Swimlane Diagram • ER Diagram • Data Flow Diagram • Prototype of Application.
System Development And Programming (Implementation 1)	7-8 weeks (2 months)	2016-01-25	• Source Code. • System Architecture. • Final Design Document.

			▪ End Product: An Application Interface for employees
Database Development (Implementation 2)	7-8 weeks (2 months)	2016-03-24	▪ Database Design Document. ▪ Final entities and relationship. ▪ End Product: Accumulator.
Quality Assessment	3-4 weeks	2016-04-01	▪ Unit Testing After every Steps. ▪ Integrated System
Maintenance	24 weeks	2016-04-01	Ongoing maintenance throughout the cycle.

In all, this is a feasible project which can be completed in a period of 6 months.

Technical Feasibility.

Technical feasibility is one of the first studies that must be conducted after the project has been identified. The technical feasibility ensures that the project is achievable and practical meeting the deadlines. The scope of the project is to build a web application which is complaint with the government standards for claim calculation and ICD code conversion.

The following are the checklist required for technical feasibility in the project,

- Determination of tools and equipment needed for the project.
- Determination of projects' requirements of skilled and unskilled resources (labor).
- Determination of time period concerning the costs of designs and consultations.
- Determination of necessary technology to complete the project.
- Determination of necessary hardware required for the completion of the project.
- Determination of budget and costs pertaining to each part of the process and ensure efficient revenue generation to cope with operating and contingency costs.

Project Size:
Project size can be determined by the number of members on the project team, project duration time, number of department involved, or the effort put in programming.

Project Structure:
The project that its requirements are highly structured and well define will have lower risk than the one that the requirements are subject to the judgment of an individual.

Familiarity with Technology or Application area:

The project will be less risky if the development and the user group is familiar with the technology and the systems. Therefore, it would be less risky if the development team uses the standard development tool and hardware environments.

Hardware Requirements:

- 2GHz, dual-core CPU
- 8 – 16 GB of RAM
- 1 TB of storage
- Raid 1 NAS for data storage (RAID1 for redundancy if a drive fails), plus a second NAS for backups.
- Operating System of Windows 7 or more.
- System Architecture: 32/64 bit
- Operating System Architecture: 32/64 bit
- Processor Speed: 1.83 GHz*1 (min)
- Swap Space: 2.1 GB
- Cache: 1 MB

Software Requirements:

- Database Software: Oracle 12c Enterprise Edition will enhance data security, advanced analytics platform, flash data archive, network compression to enhance performance and data pump.
- PDF reader: Acrobat, Nitro
- Web browser: Internet Explorer 8 and above, Google Chrome, Safari 11 12
- Administrative Software: MS Office Suite, JIRA, Confluence, Share point
- App Servers: IBM WebSphere, Tomcat
- IDE: Eclipse, NetBeans
- Security: Login Authentication for every user
- Visual Studio
- Adobe CS4/Adobe Air for AJAX/Flex/Flash developers.
- NetBeans for PHP.
- QTP Tool for Testing

Technical team Requirements:

- One business analyst. He/she will be involved in planning the project from the design phase to the delivery and making sure the timelines are met.
- One System developer. He/she will be responsible for design and development of the system
- One Intern System Developers. He/She will help the developer in development of the system
- One Database Administrator. He/she will design and develop the database of the system
- One Intern Database Developers. He/She will help the database developer in designing and developing the database of the system.
- One Quality Assurance tester. He/she will be responsible for testing of the system from end to end.
- One Quality Assurance Intern. He/she will be help the tester in testing of the system.

Transition Environment Requirements

- Environments: Development (Dev), Test, Quality Assurance(QA) and Production (Prod)
- Deployment Software: Prism, RedHat
- Deployment Tool: Microsoft Deployment Kit

Political and Cultural Feasibility.

POLITICAL FEASIBILITY

Political Feasibility analysis is used to identify if a project and its goals are compatible with the goals of the existing political system and structure of the organization. It involves examining actors and events involved in each stage of a political policy making process and anticipates the likely resolution of the policy problem as it works through a process. It helps understand the points at which the project might run into approval hurdles and challenges and helps in predicting and mitigating against such pitfalls

Below are the steps for assessing the political dimensions of policymaking:

Step 1: Policy/ Reform Proposal – Define the desired policy or decision and propose an indicator to measure the progress towards achieving the goal

Step 2: Players/Political Dynamic – Identify the players involved in the policy and their position and power.

Step 3: Opportunities and Obstacles – Identify opportunities and obstacles to change in organizational environment

Step 4: Strategies and Impact – Rule base of problem solving with strategies to improve policy's feasibility. Assess strategies impact on the power and position of major players

REFORM PROPOSAL

Current systems do not have any mechanism to identify the type of ICD code. Going forward the claims have to be ICD compliant from 1st October 2015. Organizations that do not comply with this face severe penalties that includes nonpayment of claims. This would be a major risk to organizations.

The proposed claim processing systems provide the following major benefits:

- Identification of ICD code
- Quick Conversion of ICD 9 code to ICD 10 code
- Accurate Conversion of ICD 9 code to ICD 10 code

- Value based care
- Improved out of pocket expense
- Transparency
- No hidden costs

PLAYERS INVOLVED/POLITICAL DYNAMIC

A) Government, Administrative and Legislative Sector
(Department of Health, Ministry of Civil Services, Central and State Government etc.)

Viewpoint:
The government has made ICD10 compliance mandatory and need the process to be transparent effective from 1st October 2015. They have severe penalties in place for non-compliance. Various sectors and departments are in approval of the law and would support an organization that complies with the above rules.

Opportunities and Benefits of our system:
The proposed claim processing system makes the process of handling a claim, identifying the ICD code, converting the ICD code from ICD 9 to ICD 10 and calculating the corresponding out of pocket expense amount paid by the customer extremely transparent.

Risks/Challenges:
Implementing the system on a large scale with various conversions at once with the deadlines would be challenging.

B) Employers' Associations
(Association of Public Enterprises, National Association of Enterprises, Employers etc.)

Viewpoint:
These associations look into the interest of the employers. Complying with the ICD 10 code is mandatory and non-compliance would lead to heavy penalties. They consider the best interest of the employers. This would mean that the employers would need to make sure that they do not face penalties for non-compliance.

Opportunities and Benefits of our system:
The proposed project provides ICD conversion from ICD 9 to ICD 10. It makes sure that all ICD codes are converted thereby reducing the risk of non-compliance. The risk of non-compliance for organizations is very high as it includes:

- Incorrect or slow claim payment
- Increase risk of improper payment
- High penalty charges for non-compliance
- Disruption in customer health monitoring
- Volatility in customer retention

The proposed project addresses all of the employer's concerns.

Risks/Challenges:

The new system would have to make sure that the value delivered is of high quality and in a short span of time, because of the high penalties and the time duration to meet the deadlines.

C) Consumer Association, Welfare groups and Customer (Committee of Consumer Services):

The customer and all consumer welfare groups look at the convenience of the process. The need at their end is that the process should be smooth, easy, transparent and effective. Also one of the major needs of the process is that it should deliver value for money. Customers are in support of any system that would provide them with cost effectiveness.

Opportunities and Benefits of our system:

The proposed project takes into consideration the customer/consumer concerns. The project provides benefits such as-

- Value based care
- Improved out of pocket expense
- Transparency
- No hidden costs
- Secure private data

All these benefits are exactly what the customer is looking for.

Risks/Challenges:

The system would need to migrate all customer/ patient data to integrate with the new system. This would be a challenging part of the process and involves a potential risk of data handling that needs to be taken care of.

D) Employees Associations:

The employees look at the technical feasibility, tools and skills required, ease of operation, salary received and the value that the project delivers.

Opportunities and Benefits of our system:

The proposed project automates the claim processing making it convenient for the employees since the process reduces the manual effort that was involved. Employees can focus on other aspects of the claim thereby improving the effectiveness of the claim processing service provided.

Risks/Challenges:

There could be a scenario where the employees resist to making the process automated as there is a risk of employee losing their jobs. But this is not a major challenge as it is only the conversion process that is getting automated. There are various other processes where employee skills are required.

E) Integration with current Systems:

It is important for the proposed system to integrate smoothly with the existing systems to ensure that the project is useful to all users of the system. The claim processing system developed should be easy to integrate with the hospital and medical systems, re-pricing systems, finance systems, compliance and audit system and alert and notification system.

Opportunities and Benefits of our system:

The proposed claim processing system that is developed uses technology that can easily integrate and work effectively with current systems. The proposed system, makes the process of claim processing extremely fast and efficient thereby reducing the delays that exists in current systems. The system provides a portal for hospitals, physicians and doctors to update and verify the ICD code for every individual patient. The claim details, ICD details and status is displayed to all the respective stakeholders.

Risks/Challenges:

The proposed system provides the functionality of storing both ICD 9 and ICD 10 details.
But, due to the new ICD 10 code compliance in place, hospital and current medical systems would need to update their systems to store both ICD 9 data and ICD 10 data and update their data extraction and data saving capabilities.

Cultural Feasibility.

Cultural feasibility analysis is used to identify the compatibility of a proposed project with the cultural environment of the project. In labor intensive projects, planned functions must be integrated with local cultural practices to make sure that the project functioning is smooth. It helps analyze the acceptance of a system by its users and its stakeholders.

Cultural Dynamics: To analyze the cultural feasibility within the project we will consider each stakeholder separately to see how they are affected

A) Consumers

- **Consumer Need:** The main proposition of an individual is the transparent, ease of accessibility, value for money service provided by the system thereby offering them value based care.

  Mitigation: The claim processing system proposed offers lower costs of conversion, fast conversion, updated status, claim details, alerts and notifications and a portal to view all the user and claim details.

- **Consumer Need:** Consumers that belong to certain customer segments (like Senior citizens above 60 years of age, physically handicapped etc.) may oppose to the new system as they are not that well versed with technology.

  Mitigation: The proposed system provides new users with manuals and popups to learn the system in a simplified manner. This makes the portal extremely easy to use. The system also provides an option for such kind of people to register care takers who can help them with the process of claim processing.

- **Consumer Need:** The most important feature that Consumers look in any new system is that of data privacy and security. It is extremely critical for them to trust data handlers.

  Mitigation: The proposed claim processing system developed is in house, instead of giving the data to third parties to handle claim processing. This makes sure that the customer data is not revealed to the outside world. Also the organization is one that functions on trust which the project envisions as well. Further the system, follows all the compliances and regulations for data handling, security and privacy.

B) Hospitals and Existing Medical Systems

- **Consumer Need:** The main proposition for hospitals and medical community is the easy of viewing, updating and verifying the claims. Once a claim has been submitted, it is important that the claim is verified by the system, code is converted and sent to the hospital and medical system for verification. This process must be smooth and without any glitches.

  Mitigation: The claim processing system proposed offers a smooth and simplified experience for medical practitioners to view, update and verify the claims. The system also provides regular updates and status notifications on each claim.

- **Consumer Need**: It is important for the proposed system to integrate smoothly with the existing systems to ensure that the project is useful to all users of the system. The claim processing system developed should be easy to integrate with the hospital and medical systems.

  Mitigation: The proposed claim processing system that is developed uses technology that can easily integrate and work effectively with current systems. The proposed system, makes the process of claim processing extremely fast and efficient thereby reducing the delays that exists in current systems.

C) Various Internal Teams and their conflicts

- **Consumer Need:** Every organization faces internal conflicts. Internal conflicts arise due to disagreements in certain aspects of the functioning. Each team has their own view point.

  Mitigation: In the proposed claim processing system, every team is provided with a section to post any suggestions and views about the functioning. This ensures a transparent process of understanding and resolving conflict.

D) Compliance related possible Conflicts

- **Consumer Need:** Due to the ICD 10 compliance in place, there are several possibilities where conflicts could rise. These conflicts would especially arise in the early days of conversion. It is important to make sure that the system can handle these conflicts and resolve them smoothly and efficiently.

  Mitigation: The proposed claim processing system that is developed is transparent. Every actor involved in the process is updated on the status of the claim with notifications and on the user portal. The system also has a feedback section through which they can raise a case with the application support team in case of discrepancies.

Legal Feasibility.

Compliance with federal and state regulations is imperative to ensure lawful handling of insurance claims and to avoid civil or criminal penalties. The ICD compliance component of the HCG insurance system is exposed to sensitive information protected under HIPPA legislation, specifically 45 CFR §164.530 and 45 CFR §164.306. The ICD compliance system will also handle potentially fraudulent information that must be flagged and reported upon discovery. Fraudulent claims are covered by the Federal False Claims Act 31 U.S.C. §§ 3729–3733 as well as New York False Claims Act State Finance Law, Art. XIII (2013).

HCG current and future insurance claims handling systems must comply with the proceeding legislation:

False Claims and ICD

The ICD component of the HCG insurance system is subject to false and fraudulent information. To ensure lawful compliance, the HCG must ensure a system in which fraudulent information will be created, distributed or enabled knowingly by employees of the HCG.According to the Journal of American Health Information Management Association, ICD codes will be associated with fraud under these situations:

- DRG assignment
- Unbundling (assigning separate codes for each component of a comprehensive service to increase reimbursement)
- Assigning a code for a higher level of service than the service actually provided
- Assigning a code for a "covered" service when the service actually provided is "non-covered"
- Assigning codes for diagnoses that are not present or for procedures that were not performed
- Discrepancies between the physician's and hospital's codes for the same patient visit "Fraud and Abuse Implications for the HIM Professional." *Journal of AHIMA* 68, no.4 (1997): 52-56.

False Claims Act 31 U.S.C. §§ 3729–3733

The False Claim Act is a federal law which covers fraud against the federal government generated by any federally funded program or entity.

Fraudulent activities are defined as:

- Knowingly presenting to the federal government a false or fraudulent claim for payment.
- Knowingly using a false record or statement to get a claim paid by the federal government.
- Conspiring with others to get a false or fraudulent claim paid by the federal government.
- Knowingly using a false record or statement to conceal, avoid or decrease an obligation to pay money or transmit property to the federal government.

NEW YORK FALSE CLAIMS ACT STATE FINANCE LAW, ART. XIII (2013)

Similar to the Federal False Claims act, the NYS version places civil penalties on committing fraud against NYS funded health programs.

Health Insurance Portability and Accountability Act - HIPPA

Privacy Rule 45 CFR §164.530

Covers who may access Sensitive health information that is written, oral, electronic. The privacy rule dictates safeguards that must be implemented to ensure that sensitive health information is not accessible to non associated parties.

Security Rule 45 C.F.R. § 164.306

Unlike the Privacy Rule, the Security Rule Covers only access to electronic health information. The Security Rule covers administrative, physical and technical safeguards for electronic health information in detail. The matrix in appendix A, provided by the U.S. Department of Human and Health Services, provides an index of requirements outlines in 45 C.F.R. § 164.306.

HCG and the associated legal console must ensure that the ICD conversion component of the claims processing system is built, operated, and maintained within compliance of the above legislation. Many of the key regulatory sections can be implemented into the HCG claims system.

Suggested System Implementations

- The system to be developed will compare relevant claim information to the associated patient's health care coverage details. This will enable HCG to determine coverage and analyze trends in provider care practices.
- The claims system will allow for administrators to ensure ICD codes stated on claims match the service description as provided by health care providers.
- The claims system will allow for administrators to view all claims pertaining to a single patient. This feature will allow administrators to assess claims for provider fraud.
- The system will automatically implement a check to confirm no claims duplicates exist.
- Claims will be backed up and stored for 7 years.
- The system will log contact information of claims issuers for potential investigative purposes.
- Health providers and associated claims can be group for purposes of audit and discovery.
- Least privilege access control will be implemented by system administrators to limit data exposure.
- System administers will actively modify and monitor active directories to adjust and modify employee privileges.

- Claims processing metadata will be logged and will include date, history of access, who has accessed, who has modified and active directory access level.

Security Standards Matrix (Appendix A of the Security Rule)

ADMINISTRATIVE SAFEGUARDS			
Standards	**Sections**	**Implementation Specifications (R)= Required, (A)=Addressable**	
Security Management Process	164.308(a)(1)	Risk Analysis	(R)
		Risk Management	(R)
		Sanction Policy	(R)
		Information System Activity Review	(R)
Assigned Security Responsibility	164.308(a)(2)		(R)
Workforce Security	164.308(a)(3)	Authorization and/or Supervision	(A)
		Workforce Clearance Procedure	(A)
		Termination Procedures	(A)
Information Access Management	164.308(a)(4)	Isolating Health Care Clearinghouse Functions	(R)
		Access Authorization	(A)
		Access Establishment and Modification	(A)
Security Awareness and Training	164.308(a)(5)	Security Reminders	(A)
		Protection from Malicious Software	(A)
		Log-in Monitoring	(A)
		Password Management	(A)
Security Incident Procedures	164.308(a)(6)	Response and Reporting	(R)
Contingency Plan	164.308(a)(7)	Data Backup Plan	(R)
		Disaster Recovery Plan	(R)
		Emergency Mode Operation Plan	(R)
		Testing and Revision Procedures	(A)
		Applications and Data Criticality Analysis	(A)
Evaluation	164.308(a)(8)		(R)
Business Associate Contracts and Other Arrangements	164.308(b)(1)	Written Contract or Other Arrangement	(R)

PHYSICAL SAFEGUARDS			
Standards	**Sections**	**Implementation Specifications (R)= Required, (A)=Addressable**	
Facility Access Controls	164.310(a)(1)	Contingency Operations	(A)
		Facility Security Plan	(A)
		Access Control and Validation Procedures	(A)
		Maintenance Records	(A)
Workstation Use	164.310(b)		(R)
Workstation Security	164.310(c)		(R)
Device and Media Controls	164.310(d)(1)	Disposal	(R)
		Media Re-use	(R)
		Accountability	(A)
		Data Backup and Storage	(A)
TECHNICAL SAFEGUARDS			
Standards	**Sections**	**Implementation Specifications (R)= Required, (A)=Addressable**	
Access Control	164.312(a)(1)	Unique User Identification	(R)
		Emergency Access Procedure	(R)
		Automatic Logoff	(A)
		Encryption and Decryption	(A)
Audit Controls	164.312(b)		(R)
Integrity	164.312(c)(1)	Mechanism to Authenticate Electronic Protected Health Information	(A)
Person or Entity Authentication	164.312(d)		(R)
Transmission Security	164.312(e)(1)	Integrity Controls	(A)
		Encryption	(A)