

View Point



Testing Times

Ensuring a Successful HIPAA 5010 Implementation

Pranab Sandhibigraha, Rashmi Nair

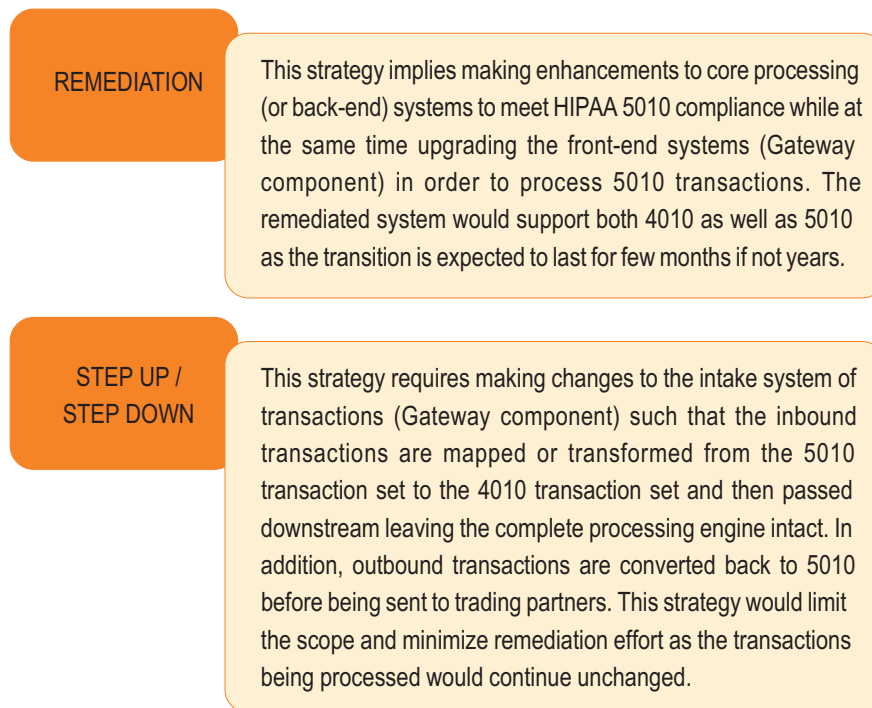
Abstract

With the deadline for the transition to HIPAA 5010 looming large, the United States healthcare sector is scurrying to complete a hassle-free implementation. The colossal exercise will impact the entire healthcare industry's stakeholders - from insurance companies, medical practitioners, research institutes to government healthcare programs. Thus the industry will need adequate time to complete its analysis of the work that needs to be carried out, plan the remediation, carry out internal testing for the changes required and have adequate time for testing with their trading partners to smoothen the transition.

Outlining the benefits of the implementation and highlighting the intrinsic challenges associated with it, this paper looks at the test phases and the ideal testing methodology that can simplify the transition. It also considers the characteristics the best-in-class testing tool must possess if it is to facilitate the implementation.

INTRODUCTION

There are 2 basic strategies for implementing 5010



EDI has been the key in keeping operations costs down in the healthcare industry that is one of the most data intensive industries in the US. While a marginal improvement in claims EDI can result in savings of millions of dollars, other transactions like claim status enquiry and eligibility inquiry can also help in reducing overall cost of healthcare - it is with this intention and based on feedback from the industry that the 5010 standards are developed.

The HIPAA Challenge

The healthcare sector in the United States is grappling with the organization-altering compliance challenge of HIPAA 5010 which has left the industry scrambling to keep pace with the demands that the migration is placing on business, technology and personnel. The complex transition from HIPAA 4010 to HIPAA 5010 will involve substantial effort, affecting every process, system and interface across the healthcare industry, impacting every stakeholder in the health value chain, and costing the industry billions of dollars. There are more than 1000 unique changes in 5010 compared to its predecessor 4010.

Unlike the 4010-A1 implementation, 5010 is not just another upgrade in the X12. Some 5010 changes require new information to be included in the transaction information. This requires understanding of new information contained in 5010 and how best to use this data. Some other changes also calls for some business rule changes that may have a bigger impact. For example: billing provider rules on claim submissions, COB information requirements reported on the remittance advice, and specific benefit and liability information returned on eligibility inquiries.

While operational and transactional efficiency can be expected to rise after the transition even as costs fall, the transition itself assumes urgency because of the fast approaching deadline - January 2012. With all stakeholders expected to switch over simultaneously, the cost of non-compliance can be nightmarish.

With 5010 change being a precursor to ICD-10 change which is the immediate follower of 5010 in terms of compliance deadline, the industry is under severe stress in terms of funding and resources. While the changes affect almost all lines of business, the volume of change is also very high and the nature of change is something that the industry has not seen for years.

What makes this change more special is that the nature of change needs to be tested across the organization boundaries that

exchange data over EDI. This would require an extensive collaboration between the industry stakeholders for a successful compliance. At the same time, these organizations would also need to tackle the more complex challenge of fitting the compliance mandated changes with overall corporate strategies.

The Criticality of Testing

HIPAA 5010 and will require substantial changes in business operations and procedures leading to extensive changes in the existing IT systems. Broadly, it will involve:

- Front-matter changes for better clarity and improved accuracy
- Technical improvements to achieve more consistent data representation
- Structural changes to data elements and segments and rearrangement of information
- Data content changes to remove redundant information and accommodate new information needed by the industry

Apart from challenges like backward compatibility and integration with trading partners, the transitional project will also throw up other issues such as redoing the companion guide with Electronic Data Interchange (EDI) partners and providers, and training for internal stakeholders.

While it can be difficult for compliance-stressed and resource-limited healthcare organizations to view these challenges as opportunities, this is a must do for the industry as 5010 compliance is a technical pre-requisite for ICD-10.

These high-impact systemic changes for cross-organization standardization and synchronicity will require extensive analysis of processes and technology to ensure success. Not only must a healthcare organization ensure that its internal functioning is compliant with the new requirements, but it must also see that its processes and technology are streamlined, end-to-end, with external partners.

Adding to the complexity is the fact that not all changes made to the application will hit in production scenario on day one. It may take several months for the changes on applications to hit real life scenarios to discover the discrepancies in conversion. A good testing before implementation is very critical for the kind of changes 5010 is bringing in.

Only robust, fool-proof pre-implementation testing using the right methodology and tools can facilitate a seamless transition and offer any sort of business advantage to the organizations involved by maximizing returns and reducing risk.

The Test Drive- Testing HIPAA 5010

Studies show that the switch from HIPAA 4010 to HIPAA 5010 will substantially affect payer, provider, clearing houses and their supporting systems requiring vigorous testing activities. In an analysis prepared for the Center for Medicare and Medicaid Services (CMS), Gartner estimated that testing costs for 5010 will account for approximately 60% of provider spending and 70% of payer spending for the implementation of 5010. Such huge costs are because 5010 testing requires many more sub-phases than other run-of-the-mill projects to ensure there is no disruption to ongoing operations.

Infosys has invested in qualified physicians as well as leveraged the rich experience in EDI and healthcare for analyzing the impacts. A thorough review of 1000 EDI plus changes have been used to arrive at the reusable test scenarios.

Numerous exhaustive and risk-based tests must be conducted to make sure that all compliance requirements are met and the system runs smoothly in a fool-proof manner. There are two main types of testing - internal and external.

Internal Testing

It is important that all stakeholders update their individual IT systems used in their day-to-day activities. These systems can be first tested on a stand-alone basis and then interlinked to other systems and tested. Finally integration testing must be conducted within the organization. Internal testing can ensure that everything is working according to plan.

There are four kinds of internal testing that need to be conducted such as:

1

EDI Gateway Testing

In order to verify the readiness of the EDI transaction gateway for incoming and outgoing 5010 transactions an exhaustive EDI gateway testing needs to be conducted for all impacted transaction types, such as interactive and batch transactions. The testing must be carried out through the acceptance and routing of 4010 and 5010 files and must focus on the 5010 transaction structure while verifying the accuracy of interface data translation.

2

Functional Testing

A risk-based functional testing needs to be conducted to verify the application readiness for 5010 changes. The test must validate the changes made to different components of the application and verify the end-to-end integration of applications for the business processes impacted by 5010. It is important to perform a local regression of changed applications and online UI/report, and batch input/output feeds. The test must also validate the changes at different technology layers of the application.

3

Data Migration Testing

This involves exhaustive testing to verify the accuracy of data migration. It is a comprehensive approach for all types of data storage, such as tables, files, stored processes etc., based on the 5010 data migration reference table and transformation rules. A dry run with full production volume data must be conducted and volumetric testing done. Data migration testing must focus on changes in the database structure.

4

End-to-End Testing

This is a risk-based testing to verify the seamless flow of information across the enterprise application involving multiple EDI transactions for the same entity. It must help verify the co-existence of 4010 and 5010. The test must use business scenarios for impacted business transactions and check for backward compatibility.

External Testing

Apart from the four internal compliance tests it is also important to conduct risk-based external testing to check for industry compliance. Since there is a huge amount of data flow among the stake holders / trading partners the interaction among trading partners must be seamless if HIPAA 5010 is to work perfectly. To ensure this, end-to-end testing of the external interfaces of each stakeholder is required to cover trading partners and the healthcare industry as a whole. Coordinated testing can verify integration with providers, EDI vendors and other trading partners. It is also important to verify the backward compatibility with 4010 at this phase so that there is business continuity even as different stakeholders transition to 5010 over a period of time.

The following table gives a bird's eye view of the various tests for 5010 compliance, their focus areas, objectives, strategy and coverage.

5010 Compliance Focus Areas, Objective, Strategy and Coverage

5010 Compliance	Internal Compliance	EDI Gateway Testing	<ul style="list-style-type: none"> Verify readiness of EDI transaction gateway for incoming and outgoing 5010 transactions 	<ul style="list-style-type: none"> Acceptance and routing of 4010 and 5010 files 	Exhaustive
		Functional Testing	<ul style="list-style-type: none"> Verify application readiness for 5010 changes 	<ul style="list-style-type: none"> Validate the changes made to different components of application Local regression of changed applications 	Risk Based
		Data Migration Testing	<ul style="list-style-type: none"> Verify the accuracy of Data Migration 	<ul style="list-style-type: none"> Comprehensive approach for data migration testing based on 5010 data migration reference table and transformation rules 	Exhaustive
		End-to-End Testing	<ul style="list-style-type: none"> Verify seamless flow of information across the enterprise applications Verify coexistence of 4010 and 5010 	<ul style="list-style-type: none"> Business scenarios for impacted business transactions 	Risk Based
	Industry Compliance	External Partner Testing	<ul style="list-style-type: none"> Verify integration with providers, EDI vendors and other trading partners Verify the backward compatibility with 4010 	<ul style="list-style-type: none"> Coordinated testing with Trading partners 	Risk Based

—LEGEND— ● Segment — ● Focus Areas — ● Objectives — ● Test Strategy — ● Test Coverage —

The Best Methodology

The level of operational complexity demands a comprehensive framework and methodology for complete testing across all affected applications. An optimal framework would be one based on the Software Development Life Cycle (SDLC) methodology. An ideal approach to execute the 5010 compliance validation program comprises the following five steps:

1

Assessment

As its first step toward HIPAA 5010 compliance, an organization must make a list of all the impacted applications, define the requirements and detail an impact analysis thus significantly reducing the time and effort required for impact assessment. This is also the stage at which the test environment must be evaluated and the critical path, risks and dependencies identified while assessing the HIPAA knowledge of the participants.

2

Preparation

Post-assessment it is important to prepare and review a test strategy outlining the testing approach. Functional test cases and test data need to be created at this stage while end-to-end test scenarios must be identified and finalized. At this stage smoke test cases and test data can be identified, reviewed and signed off while leveraging the HIPAA knowledge of participants.

3

Internal Application Testing

At this stage, functional testing of impacted applications needs to be carried out. End-to-end testing within the organization must be done and its results documented and reviewed. A 5010 compliance progress dashboard can be prepared with detailed test cases for each type of testing. Defects review meetings can help understand mistakes and rectify them.

4

Integration Testing

At this stage, incremental end-to-end testing must be carried out and completed in phases while test execution activities are tracked, test results documented and reviewed. Risks and dependencies can be updated if required.

5

Industry Testing

Finally, tests with trading partners must be conducted and defects logged and reviewed. Again, test execution must be tracked and test results documented. A 4010 backward compatibility test must also be conducted.

Deploying the Right Tools

Although there are several tools in the market to facilitate the numerous kinds of testing required for the transition, the right tool can make all the difference in ensuring a relatively effortless and risk-mitigated transition.

When choosing a tool it is best to select one that is user-friendly, and one that increases predictability and productivity, minimizes risks, reduces cost and time, and accelerates a smooth transition. A tool which automates a significant volume of the transition exercise is advisable. The following categories of automation tools and accelerators can help reduce the overall testing effort by 40-50%.

Test Data Creation

- Automated conversion of existing 4010 files to 5010 files using pre-built transformation rules.
- GUI based platform to create test data from scratch using out of box test scenarios

Test Case / Scenario Development

- Ability to leverage an existing suite of functional and regression test cases which can be customized with minimal effort.
- GUI based platform that provides the user the ability to create new test scenarios or edit the out of box test scenarios using a GUI interface.
- Assess testing coverage automatically based on the test scenarios and provide coverage reports that can be used for audit purposes (specially for Blues who have additional mandatory requirements from organizations like BCBSA).

Data migration testing

- Ability to automate data migration testing like comparison of source and target tables, batch execution of test scripts and having advanced business rule and query builder facility.
- Use of readymade 'Data Migration Reference Tables' that will aid in identifying the scope of data migration.

EDI validation and testing

- Ability to automatically validate the EDI files for 5010 compliance.
- Ability to automatically send and receive EDI files from target applications and gateways.

Conclusion

HIPAA 5010 scores over its predecessor on several counts. For one, it makes EDI transactions more precise and accurate by removing most of the ambiguity 4010 had with reference to situational requirements. HIPAA 5010 makes transactions easier to implement in a consistent manner across stakeholder systems. This reduces the need for numerous companion guides and leads to their standardization across the healthcare industry. Moreover, with regulations requiring the implementation of ICD-10 to replace ICD-9 it is will become necessary to adopt HIPAA 5010 as this supports ICD-10 while its predecessor 4010 does not. The transition can also bring monetary benefits in the long run. According to a finding by Gartner, implementing HIPAA 5010 can help the healthcare industry realize a net benefit ranging from \$11.6 billion to \$33.8 billion as Return on Investment. It is clear that the entire healthcare industry stands to benefit from the HIPAA 5010 transition. However, before implementing 5010 it is important to conduct the necessary pre-implementation tests, using the right methodology and tools so as to make a smooth and risk-free transition.

About the Authors

Pranab Sandhibigraha, Group Project Manager with over 13 years of experience in Software Industry in the industry verticals of Healthcare, Retail and Utilities. Pranab has 10 years of experience in Software Testing in healthcare industry in various functional areas of payer business. He has managed large transformational programs and numerous cross-domain projects in the areas of reengineering and quality assurance.

Rashmi Nair, Lead Consultant with over 9 years of experience across different functional areas within the Provider business space of the Healthcare Industry. Rashmi has 3 years experience in business analysis and design and over 4 years experience managing and handling various presales requirements for Healthcare clients.



For more information, contact askus@infosys.com

About Infosys

Many of the world's most successful organizations rely on Infosys to deliver measurable business value. Infosys provides business consulting, technology, engineering and outsourcing services to help clients in over 30 countries build tomorrow's enterprise.

For more information about Infosys (NASDAQ:INFY), visit www.infosys.com.