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5010 & ICD-10
Testing Strategies to Achieve Compliance

Executive Summary

The migration to 5010 and ICD-10 are major efforts for healthcare industry stakeholders, and each will require significant testing among trading partners to ensure success. The testing focus for ICD-10 will be fundamentally different from 5010. ICD-10 changes the essential "building blocks" of the business process of healthcare delivery, financing and risk management models; most payer organizations will leverage a crosswalk between ICD-10 and ICD-9 as part of their implementation. It is unlikely that two crosswalks will be identical between payer organizations, introducing variation in expected results of submitted claims, eligibility requests, and so forth.

Standard testing for compliance with format and content will not be enough for a seamless transition, particularly for ICD-10 migration. Of vital importance to both providers and payers is end-to-end testing with trading partners and a careful inspection of the response transactions to ensure that business intent and reimbursement requirements meet anticipated results. To meet this challenge, healthcare stakeholders should leverage testing platforms that:

- Provide the means to perform validation of format and content,
- Provide visibility into and accountability for transaction flow through multiple process steps including transformation and crosswalking, as well as the required linking of results/response transactions to the original transaction, and
- Provide analysis for management of revenue cycles and risk models used by provider and payer business outcomes.

Introduction

Large projects, such as HIPAA 5010 and the conversion from ICD-9 to ICD-10 will invariably need to use some type of Software Development Lifecycle (SDLC) methodology in order to successfully complete implementation. Examples of some common SDLC models include Waterfall, Extreme programming (XP), V-model and Spiral model.

Regardless of the methodology used, testing will be required, although perhaps at different stages depending on the methodology employed. The purpose of this paper is to examine the similarities and differences between 5010 and ICD-10 implementation and migration efforts, and the impact of testing on overall planning and budgeting for many organizations as they move through their SDLC phases.

HIPAA 5010 is an X12 version upgrade from what was implemented in 2003 under X12 version 4010-A1. There are nine transactions in all which define how covered entities under HIPAA must communicate electronically with each other in order to enroll members, check eligibility, submit claims, remit claims, check claim status, pay premiums and submit request for authorizations and referrals. In addition to X12 standards, HIPAA also mandates NCPDP standards for pharmacy claims, which will be now NCPDP D.0. For many payers and providers who are dependent upon vendors for adjudication or practice management / patient accounting systems software, the development work and testing needed for 5010 should be a relatively straightforward effort. This is because the changes required for 5010, while significant, are not a fundamental change to the information "building blocks" of the transactions themselves; namely, diagnostic and procedural information contained in them. However, development and testing involved in implementing ICD-10 CM and ICD-10 PCS by October 2013 does change these "building blocks", and will necessarily be more complicated than 5010. In fact, one of the main reasons the industry is moving to 5010 is in order to support ICD-10 code sets, which may not be sent in 4010-A1 versions.

Therefore as part of the 5010 migration effort, entities must not only determine how to carry and return new segments and values, but also how to create, accept and utilize these new ICD-10 code sets in numerous business processes around claims adjudication and reimbursement, coverage and benefits determination, referral and authorization processes, and quality measurement.

The purpose of this paper is to exam the similarities and differences between 5010 and ICD-10 implementation and migration efforts, and how testing will impact overall planning and budgeting for many organizations as they move through their SDLC phases.

5010

In an analysis prepared for 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. While this may appear like an over-estimation given that testing costs usually are 30-35% of development costs, testing costs will more than likely run higher than average for 5010 implementations. The reason for this is that 5010 testing will require many more sub-phases of testing than what is needed for other projects. Figure 1 defines the various phases of testing needed for 5010 for each of the 9 transactions and/or NCPDP transaction[1].

Internal System Testing	
String Testing	Programmers perform string tests to assess the functionality of related code modules.
Unit Testing	Programmers perform unit tests to assess the functionality of small modules of code.
System Integration Testing	Technicians perform system tests to assess the functionality of an entire system.
Stress Testing	Technicians perform stress tests to assess the maximum limits of an application.
Internal User Testing	
Acceptance Testing	End users perform acceptance tests to assess the overall functionality and interoperability of an application.
End-to-End Testing	End users and system technicians perform end-to-end tests to assess the interoperability of an application and other system components such as databases, hardware, software, or communication devices.
Parallel Testing	End users perform parallel tests to compare the output of a new application against a similar, often the original, application.
Regression Testing	End users retest applications to assess functionality after programmers make code changes to previously tested applications.
External Beta & Pilot Testing	
Functional Testing	End users perform functional tests to assess the operability of a program against predefined requirements. Functional tests include black box tests, which assess the operational functionality of a feature against predefined expectations, or white box tests, which assess the functionality of a feature's code.
End-to-End Testing	End users and system technicians perform end-to-end tests to assess the interoperability of an application and other system components such as databases, hardware, software, or communication devices.

Figure 1 : Testing Phases and Definitions

5010 Internal Testing

In testing for 5010, three components of work will need to be considered by most organizations. First will be the changes received from vendors to support 5010. System Integration and Regression Testing will need to be completed before deploying any additional or customized code to support 5010. Once the vendor's software is production-ready, and decisions have been made about how to handle the 5010 changes from both a business and technical perspective, organizations can then start testing all 5010 changes beginning with the technical and finishing with the User Acceptance Testing.

Each component of code is developed and tested individually, then together as a system. The goal of internal testing is to guarantee that the business requirements meet the functionality of what has been coded. For each of the transactions, at a minimum that equates to how each TR3[2] defines minimal compliance. Beyond that, business users may decide to take advantage of other options offered within the 5010 guides and also begin to look at how ICD-10 data may flow and be captured for reporting and other clinical uses. Figure 2 below depicts how internal testing should flow end-to-end.

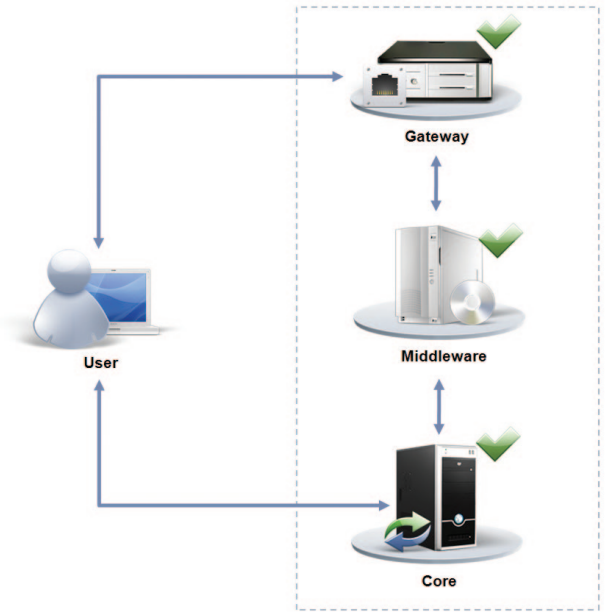

Figure 2: Internal 5010 Testing

5010 External Testing

5010 testing will not only have to take into account the number of internal testing phases, but also the trading partners and entities which also must be involved in the test plan. External testing will need to consist of many trading partners working with each other and each having their own set of challenges and associated risks both internally and externally. By having a solid test and communication plan, this will help to prepare

and mitigate some of the risks associated with testing. Figure 3 follows the end-to-end flow of transaction set data and highlights just a few of the touch points that will be needed to make certain that the files are both HIPAA 5010 compliant as well as meet all entities business rules and requirements.

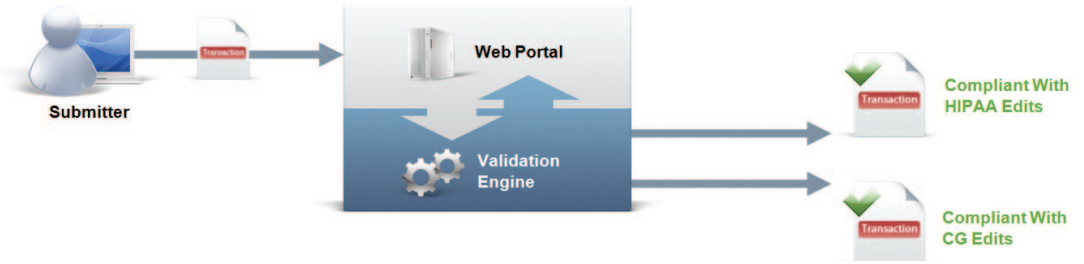

Figure 3: External 5010 Testing

5010 End-to-End Testing

Once the components of change have been tested and approved both internally and externally, 5010 then needs to be tested end-to-end. While many organizations may only be planning for functional type testing of edits to ensure compliance, it is imperative to also plan for end-to-end testing to make certain business continuity is not disrupted. Testing end-to-end ensures paired or dependent transactions are working together correctly. For example, end-to-end testing can assist in the validation that the functionality needed to complete an eligibility response on a 271 is giving the expected results from the 270 inquiry. Likewise, it is just as important to trace the 837 claim file through to the 835 to ensure that the financial reporting of the claim is accurate. In Figure 4 below, the testing of data end-to-end is accomplished.

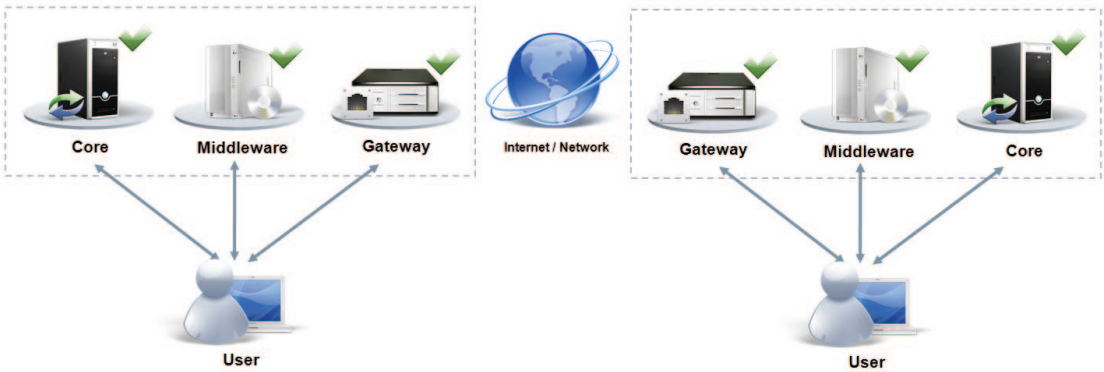

Figure 4: End-to-End 5010 Testing

5010 Collaborative Testing

Collaborative and cooperative healthcare partnerships are growing in steady numbers across the US. According to HIMSS, as of January 2009 there were four industry leaders ready to test real-time 5010 transactions with the Center for Medicare and Medicaid Services (CMS): CAQH, the Healthcare Information and Management Systems Society (HIMSS), the Integrating the Healthcare Enterprise (IHE) Initiative, and the Blue Cross and Blue Shield Association (BCBSA). As interoperability and collaboration become a bigger part of the way healthcare is administered, it then also becomes necessary to recognize the links between all entities participating in the collaborative and plan for testing accordingly. Figure 5 defines a simplistic entity relationship model for testing with collaborative.

Figure 5: Collaborative Testing

ICD-10 Testing

HIPAA law has mandated that by October 1, 2013, ICD-10 replace the ICD-9 standard in the US. The reasons for this conversion include[3]:

- Current ICD-9 codes are over 20 years old and out-dated. The US, using the ICD-9-CM, is presently rationing its codes and is finding it hard to adopt new codes to describe pandemic flu and other new disease outbreaks.
- Failure of the ICD-9-CM to accurately describe contemporary diseases, groundbreaking medical procedures, or landmark technology raises concerns for myriad programs that rely on ICD-9-CM codes for information. This is especially true for data extracted during insurance claims processing.
- The outdated ICD-9-CM codes do not efficiently or effectively represent the knowledge and information contained in the modern EHR. This limits the return on investment (from increased quality, efficiencies and use of secondary data) and the interoperability of data.

- Difficulty of making healthcare management and policy decisions including actuarial premium setting, cost analysis, and service reimbursement (such as Medicare) without accurate and detailed disease, medical procedure, and severity data.

The US is actually the last industrialized nation to adopt ICD-10. Canada implemented ICD-10CA/CCI between 2001- 2005. Some of the documented issues Canada had with implementation include[4]:

Unexpected Outcomes

- Underestimation of how much work was involved in preparing for the new technology environment and what additional cost would be incurred.
- Both Timelines and Budgets were grossly underestimated due to unavoidable delays and unknown variables that were not planned / anticipated.
- As business process' were reviewed, variation in practices, process redundancies, and inefficiencies where identified. Magnitude of change was underestimated.

Expected Outcomes

- Training of certified coders alone is not sufficient in moving from ICD-9 to ICD-10. Physicians need to be able to drive the change and acceptance of ICD-10 and therefore become a critical factor in the success of ICD-10 implementation. Due to the fact that there is not a one-to-one correlation between ICD-9 and ICD-10, the only way to correctly code is to understand the underlying medical condition and make sure that the physician is correctly documenting all clinical aspects of the patient.

Considerations for implementing ICD-10 in the US seem to be primarily based on using a crosswalk which will be developed for the most part independently by payers, providers, vendors and clearinghouses. For some, the testing of this crosswalk will simply be to authenticate that the code being sent across is valid. However, for payers and providers in particular, this will likely not be so simple. Since many processes will be impacted by this conversion, decisions will need to be made as to where and how the crosswalk will be implemented. CMS is advocating not using a crosswalk if at all possible. In *Training Segment 6 Potential Programmatic and Technical Problems*[5], CMS speaks to the fact that there is "no easy way to translate one to the other." The decision to remediate or replace will probably be a key factor in testing for ICD-10. Regardless of the implementation, testing for ICD-10 will be quite different from testing for 5010.

ICD-10 testing will certainly need to include end-to-end, cross-functional, regression, internal and external as depicted previously for 5010. However, the biggest difference in the testing between 5010 and ICD-10 will be the analytics needed for validating results of the test transactions, and impact to business process of those results. Particularly if crosswalks are involved, there will be a need to analyze the results in much greater detail. Testing will need to be well thought out and planned for in advance of the implementation of reimbursement, utilization, underwriting and many other operational processes.

One assumption that needs to be made from a provider perspective is that no two payer crosswalks will be the same, and this may even hold true down to the claim processing level. Therefore a provider, who is participating with a large payer organization with multiple claim engines, could experience different reimbursements for their claims based on claim processing system's crosswalk, in addition to experiencing different outcomes from different payers, based on the same transaction. Both payers and providers need to be aware of the risks associated with crosswalking and should plan for strong, comprehensive and exhaustive test plans that are focused on examining the results of changing the "building blocks" used to create specific fields in the transactions, and acted upon in the business processes inside their trading partners.

Testing Considerations

Given that testing will be such a large portion of both 5010 and ICD-10 implementations, what are some of the key considerations that need to be addressed prior to starting 5010 and ICD-10 testing?

1. Define when the testing team needs to get involved.

a. Ideally, testing team should get involved when the business requirements are being defined for the 5010 transactions and a strategy has been defined for ICD-10. Even if the organization is using a method similar to waterfall SDLC, the earlier the testing team gets involved, the easier it will be for them to understand what needs to be tested and the approximate effort involved.

b. In addition, getting the testing team involved early will help to mitigate many other risks associated with testing, such as environmental and dependency risks.

2. Start looking for tools which will assist with tight testing timeframes.

a. Many projects underestimate the time that is actually needed for requirements and development. In order to meet the deliverable date, time from testing usually is taken out of the plan. With this in mind for 5010 and ICD-10, organization should start looking for tools that can help with the testing process.

3. A lot of coordination will be needed to successfully complete external testing.

a. Another consideration that needs to be planned for is how to test quickly and efficiently with many trading partners. Part of this testing will be only validating the edits on the transactions, while the end-to-end testing will need to push the transactions through all the downstream systems, and generate response transactions to return to trading partners, as well.

b. A vendor tool may be useful in helping with the validation testing that will need to be completed before end-to-end testing can start.

4. Certification of trading partners will help with the testing process.

a. The major, if not the only reason for testing is to ensure the trading partners' capability to produce high quality standard transactions, and reduce the amount of time spent in end to end testing by completing this step first.

b. Using a certification process, up front, as early as possible in the SDLC enables the trading partners to help reduce their end to

end testing time, and provides insight into the quality of development work that has taken place in the trading partners' SDLC.

5. The communication plan should align with the testing plan.

a. Due to the nature of having to test with many trading partners, especially with the large transactions like the 837's or complex testing such as ICD-10, it is very important to have a way to keep track of the testing and testing results and know when the parties agree to move into production.

6. An automated tracking system will be beneficial in the testing processing.

a. Automated issues notification and reporting around individual trading partner results, as well as progress being made by the entire trading community are vital means to reduce re-work, and increase productivity at both ends of the transaction cycle

7. Use of normalized data and data sets will help to reduce errors and testing time.

a. When at all possible, the use of collaborative development and testing will minimize the differences in testing results.

b. By working together in a groups, either regionally or in groups organized around specific vendors, collaboration in defining 5010 edit standards and interpretations, or ICD-10 crosswalk solutions may help to achieve higher quality of output while at the same time reducing implementation costs.

Conclusion

Preparing for the changes needed in order to become compliant with the final rule under HIPAA Electronic Transactions Standards and then moving to ICD-10 will consume large amounts of time and resources for development and testing. It is important to start test plan early and coordinate both internally and externally, leveraging efficient and comprehensive testing methodologies to ensure low-risk, high-quality output from testing. In addition, organizations should explore the many tools available to help with testing needs, which can ultimately reduce time and cost for these projects. No one wants to deploy any changes needed for either electronic transactions or ICD-10 into production without being sure of meeting both functional and business requirements, while at the same time being compliant. Solid testing methodology will be the only way to guarantee continuity of business for all covered entities.

For questions or comments about this white paper, please send an email to 5010@edifecs.com.

Bibliography

1 http://www.ffiec.gov/ffiecinfobase/booklets/d_a/08.html

2 TR3 is a Technical Report Type 3 which has replaced the Implementation Guides under HIPAA.

3 http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_034662 hcsp?dDocName=bok1_034662

4 www.quadramed.com/icd-10/Implementing%20ICD-10.ppt

5 http://www.mmisconference.org/mmis09.htm

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