

Internal Audit's Role in System Conversions

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Background Info.

- ✍ System Conversion = Instant, Online and ICS Systems
- ✍ LA Lottery Games/Products
 - ✍ Instant Tickets
 - ✍ 5 Online Games

No VLT's Keno, etc.

Background Info.

Before Conversion:

- ✦ Instant ticket and back office system hardware = maintained by LA Lottery
- ✦ Instant ticket and back office system software = maintained by LA Lottery
- ✦ Instant ticket and back office operating system = maintained by LA Lottery
- ✦ ICS system = maintained by LA Lottery
- ✦ Online hardware, software and operating system = maintained by online vendor (GTECH)

Background Info.

After Conversion:

- ✦ ICS system = maintained by LA Lottery
 - ✦ EVERYTHING ELSE (instant hardware, instant software, back office system, online hardware, online software, online/instant operating system) = maintained by online vendor
- How did we handle giving up so much control?
 - How did we translate existing system requirements into the new system?
 - How did we identify and mitigate the risks?

Stage 1 “Needs and Wants”

- ✦ Determine the information which MUST be available in the new system (i.e., reports, system data, etc.). This is a good time for ALL departments to determine what is and what isn't necessary.
- ✦ Develop a “wish list” of items. It is easier to create these on the front-end than to have them added in later:
 - ✦ Exception reports (i.e., tickets validated near expiration date; lottery office prize checks issued during non-business hours/holidays/weekends; duplicate, QP, online boards; irregular pack status changes – i.e., OMIT to Activated; multiple mid-tier validations by retailer, by day, etc.
 - ✦ VIRN checksum changes – Remember the KS Lottery?
 - ✦ Access right changes – vendor and lottery personnel

Stage 2 Programming Specification Reviews

- ✦ Assemble a core team to review and discuss programming specifications:
 - ✦ Internal Audit, IT
 - ✦ Identify errors, missing information and vague language. Programming specifications should NOT have to be interpreted.
- ✦ How did we handle giving up so much control?
 - ✦ Question the little things. Take charge of the process.
 - ✦ The online vendor was not prepared for the level of detail and scrutiny that we applied to the review. However, it vastly reduced problems down the road.
- ✦ Lesson learned?
 - ✦ Spend a lot of time and effort in reviewing the specifications! This is the best way to translate existing and new requirements into the new system.

Stage 2 (continued)

Programming Specifications – Internal Audit’s Role

- ✦ Perform a risk assessment of the programming specifications.
- ✦ At a minimum, the risk assessment should include:
 - ✦ The software/hardware specification or element
 - ✦ The risk associated with the specification or element
 - ✦ Potential tests which address these risks
 - ✦ Recommendations for tests which are not adequately included in the acceptance test script

Huh? See example.

Risk Assessment Example

Specification or Element: Online Vendor Spec. 2.14.5

Prizes will be fixed and will include the following:

| <u>Wager Type</u> | <u>Description</u> | <u>Example</u> | <u>\$0.50 Payout</u> | <u>\$1.00 Payout</u> |
|-------------------|----------------------------------|----------------|-----------------------|----------------------|
| straight | 4 digits in exact order | 1234 | \$2,500 | \$5,000 |
| 4-way box | 3 identical digits in any order | 1112, 2111 | \$600 | \$1,200 |
| 6-way box | 2 identical pairs in any order | 1122, 2211 | \$400 | \$800 |
| 12-way box | 2 identical digits in any order | 1123, 3211 | \$200 | \$400 |
| 24-way box | 4 unique digits in any order | 1234, 4321 | \$100 | \$200 |
| 4-way combo | 3 identical digits in any order | 1112, 1121 | \$2,500 (\$2 play) | \$5,000 (\$4 play) |
| 6-way combo | 2 identical pairs in any order | 1122, 1212 | \$2,500 (\$3 play) | \$5,000 (\$6 play) |
| 12-way combo | 2 identical digits in any order | 1123, 2311 | \$2,500 (\$6 play) | \$5,000 (\$12 play) |
| 24-way combo | 4 unique digits in any order | 1234, 2134 | \$2,500 (\$12 play) | \$5,000 (\$24 play) |
| 4-way str/bx | str and box w/3 identical digits | 1112 | \$3,100 (exact order) | \$600 (any order) |
| 6-way str/bx | str and box w/2 identical pairs | 1122 | \$2,900 (exact order) | \$400 (any order) |
| 12-way str/box | str and box w/2 identical digits | 1123 | \$2,700 (exact order) | \$200 (any order) |
| 24-way str/bx | str and box w/4 unique digits | 1234 | \$2,600 (exact order) | \$100 (any order) |

Risk Assessment Example

Risk:

- Combination of matching or unmatched numbers would result in incorrect fixed prize validations
- Wager types (i.e., str, box, etc.) and wager amounts (i.e., \$0.50 or \$1.00) result in incorrect fixed prize validations
- System accounting for validation amounts would be incorrect

Potential Test:

- Attempt to validate matched and unmatched draw numbers, including match 3, match 2, match 1 and match 0. Also attempt to validate a non-winning ticket which match numbers from a previous and/or future draw (include single draw, MULTIDRAW, ADVANCE play, exchange tickets, etc.)

See transaction #'s 4430, 3107, 5408, and 4431–11429 and 8211

- Include all winning validation transaction combinations in the test script in order to verify fixed prize pay outs for all wager types and wager amounts **See standard 5a**
- Attempt to validate a multiple board winning ticket **See transaction #6329**
- Attempt to validate winning tickets on privileged and non-privileged terminals, including winning tickets > \$600 on retailer terminals **See transaction #'s 6227 and 6106**
- Attempt to validate a previously paid ticket **See transaction #4110**
- Attempt to validate a winning ticket which has been canceled **See transaction #'s 2237 and 8110**
- Attempt to validate a losing Pick 4 ticket which has winning numbers that match the winning draw numbers from another online game (i.e., Cash Quest) **See transaction #9303**
- Verify validations to expected results and trace transactions through system reports and ICS general ledger entry.

Risk Assessment Example

Specification or Element: Online Vendor Spec. 2.14.6

Cancellations of a ticket will be allowed. The ticket must be canceled on the terminal where the ticket was produced, before draw break, on the same day.

Risk:

Appropriate wagers cannot be canceled, or inappropriate wagers can be canceled.

Potential Test:

- Attempt to perform cancellations on valid wager transactions **See transaction #5320**
- Attempt to perform cancellations on invalid wager transactions, including:
 - .cancellation after the draw break **See transaction #3329**
 - .cancellation the next day **See transaction #3227**
 - .cancellation same day, different terminal **See transaction #6326**
 - .cancellation of other online games which cannot be canceled **See trans. #'s 8318 and 7420**

Risk Assessment (continued)

- ✦ The risk assessment should also include.....
 - ✦ Conversion Risk
 - ✦ Retailer Inventory balances do not match
 - ✦ Retailer account balances do not match
 - ✦ Tickets which were previously validated on the old system will validate on the new system.
 - ✦ Winning tickets created on the old system do not validate on the new system, OR losing tickets will validate.
 - ✦ Tickets which were cancelled on the old system will validate on the new system.
 - ✦ Etc., etc.
 - ✦ Load Volume Risk
 - ✦ Testing should include a play generator or some other method to simulate the transaction volume under normal conditions.

Stage 3 Acceptance Testing

- ✦ What is an acceptance test?
 - ✦ Any method used to obtain reasonable assurance on the accuracy and integrity of new or modified applications prior to migration of these programs into production
- ✦ Also referred to as Quality Assurance, or “QA” testing
 - ✦ A small scale simulation which verifies the operation and processing of the system as defined in the software and/or hardware specifications. The simulation should mirror the production environment as closely as possible.
- ✦ Who should perform the test?
 - ✦ Someone other than those responsible for developing the system code

Acceptance Testing Audit Criteria

- ✦ In order for the acceptance testing process to be effective, the following elements should exist:
 - ✦ The test should be designed to achieve assurance objectives relative to the changes made (IA risk assessment)
 - ✦ A standard procedure for execution and documentation of the test and review of output should be developed and enforced
 - ✦ Audit should determine whether or not the IT department has an adequate test plan. A test plan should include:
 - A test script
 - Specific/detailed test script instructions, including how to handle and document exceptions
 - Test environment set-up
 - Balancing and reconciliation procedures
 - Exception reports

Acceptance Testing Audit Criteria

- ✦ In order for the acceptance testing process to be effective, the following elements should exist (continued):
 - ✦ The performance of test transactions should be strictly controlled and documented
 - ✦ Test script transactions should be logically labeled (i.e., transaction # 3150 identifies the transaction as occurring on day 3, terminal 1, transaction 50)
 - ✦ Performance of the test transaction should be clearly documented (i.e., “checking off” the transaction as it is successfully performed)
 - ✦ Exceptions should be documented on the test script as testing occurs
 - ✦ Test transactions used to satisfy specific requirements should be identified in order to ensure they are effectively performed (i.e., MUSL Security Standards)

Acceptance Testing Audit Criteria

- ✦ In order for the acceptance testing process to be effective, the following elements should exist (continued):
 - ✦ All output should be verified to expected results
 - ✦ Expected results should be documented on the script prior to performance of the test
 - ✦ Depending on the magnitude of the test, Internal Audit should be responsible for reviewing all or some of the documented expected results (i.e., re-calculating wager and validation totals, verifying purged and partially purged transactions, etc.)
 - ✦ Exceptions should be clearly documented, including “script errors”

Acceptance Testing Audit Criteria

- ✦ In order for the acceptance testing process to be effective, the following elements should exist (continued):
 - ✦ Program changes should be appropriately approved and migrated into production
 - ✦ The internal auditor should obtain and review all appropriate approvals, including vendor and management approval
 - ✦ Internal Audit should ensure that the correct software versions are migrated into production (i.e., matching checksums)

Stage 4 Access Controls

- ✦ Request a prototype system to review and test access rights. Can also help to identify user needs, etc.
- ✦ Don't assume the vendor knows your business rules! Look for segregation concerns, business need, etc.
- ✦ Lessons learned? Here are some of the access issues we identified:
 - ✦ Ability to print a blank prize payment check – additional access controls were developed
 - ✦ Segregation of administrative check processing and printing
 - ✦ Segregation of administrative check processing and “merge check” function
 - ✦ Pack status change screen access
 - ✦ IP address issue

Stage 5 Post-Conversion

- ✦ Stay informed about the problems.
- ✦ Verify that the problems and resolutions are well documented.
- ✦ Verify that the resolutions are adequately tested prior to migration into production.
- ✦ SAS 70
- ✦ LA exceptions?

Post-Conversion Issues

- ✦ Packs activated more than 60 days did not settle for DISABLED retailers.
- ✦ When a retailer's settlement option is changed from 'yes' to 'no', packs which were previously activated did not settle.
- ✦ GVT terminals were validating tickets irregardless of their pack status, including unactivated, stolen and returned.
- ✦ Returned packs which were activated and not settled were not recorded as 'returned' in the general ledger.
- ✦ A \$1 Rolldown wager was produced because playslip wagers for that game were not suppressed.
- ✦ A "live" Powerball ticket was produced in the online vendor's computer room because wagers had not been suppressed on that terminal.
- ✦ STAY INFORMED !!!

Questions?

Thank You.