

BOLT

Application review document

Version: 0.1

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| Related Documents |  |
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| Title | **Comment** |
| BOLT Application codes |  |
| **Code suggestions - Consolidation.docx** | Code review suggestions on source code analysis and process analysis |
| **Bolt Tool Process Evaluation.docx** | Tool Scenarios, Results, Process Logic and Observations |
| **Test Conditions (Verified).docx** | Test conditions handled by the tool |
| **Test Scenario - Customer with existing credit records - No Duplicate Amount.docx** | Sample Process flow screenshots of service request for a customer with historical credit records with the current request not a duplicate credit amount |
| **Test Scenario - Customer with existing credit records - Duplicate Amount.docx** | Sample Process flow screenshots of service request for a customer with historical credit records with the current request being a duplicate credit amount |

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# About assessment document

The objective this document to cover all four aspects of application review: standardization, scalability, security and efficiency, based on the standard parameters, SkyOnn (External supplier) has reviewed the BOLT application and provided observations.

# Audit Parameters and observations

## Standardization

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| Sr. No. | Criteria | Auditor’s Observation | Developer Remarks | Developer Comments | Auditor Comments |
| 1 | Use of appropriate code language and platform for code generation | No observations – As required |  |  |  |
| 2 | Modules are named based on its characteristic and functionality | No deviations from common standards observed |  |  |  |
| 3 | Usage of functions for executing repetitive tasks or steps during scripting runtime | No deviations from common standards observed |  |  |  |
| 4 | Comments or description provided to make function’s use intuitive and more readable | No deviations from common standards observed |  |  |  |
| 5 | Usage of variables and values | Please use “Optional Explicit” on all the modules that has not been specified. Check for the variables that might not have been declared before use. Declare the variables using the appropriate data types. | In some module “Option explicit” not used as data type for same variable changes during application runtime | Closed | 1. Variables could be declared as variant to ensure Option Explicit as a standard is being incorporated for all the source files. 2. It is advised to maintain the datatype of a variable throughout the module/function/sub to avoid performance overheads |
| In all CloseinCRM functions, unassigned second parameter (“A”) is passed and is not used by the function. Please remove the parameter. | Value Removed from all functions | Closed | Verified |
| The following minor differences has been observed in BCLPostings function for all the circles:  Delhi: control name:beID,value=1130489  Call browser.FindElement("a", "uiname=MUM").Click (should it be DEL)? for few other circles as well it is MUM  Gujarat: control: ("select", "name=env").Select("vel1\_PE"), some code related to Accounts Receivable  Haryana: BrowserErrorRerun code  MnG: no differences observed  MP: no differences observed  Mumbai: not much except one variable name reversed error eason  Punjab: control: name=beID,value=1130449, some code related to Accounts Receivable, BrowserErrorRerun code  Rajasthan: control: ("select", "name=env").Select("vel1\_PE"), control: name=beID,value=1130459").  UPE: control: name=beID,value=1130609"  control: ("textarea", "name=memo").InputText(Adreason & "\_" & SrNum & "\_" & "CBO")  UPW: control: name=beID,value=1130619  By using appropriate constants, we would be able to create single generic function called BCLPostings to handle functionality of all the circles. (Request to handle this based on priority) | Values are assigned based on HTML field values on pages, in some cases it’s not required , hence there will be differences in codes | Closed | 1. Suggested to use appropriate constants so that a single generic function called BCLPostings can be developed to handle functionality of all the circles. |
| 6 | Usage of error handlers and code re-triggers | No deviations from common standards observed |  |  |  |
| 7 | Coding Indentation | Please indent the code. | Indentations completed | Closed |  |
| 8 | Unused functions and sub processes | Please look for unused code in the project and remove them (for example I have identified functions CleanName, GetConfiguration, dhFirstDayInMonth, DeleteDir, SendEmailAuto, DeleteFile, NotOnTop, OnTop, text, GetTaskBarSize and GetLines (GetLines2 is used instead) Some of them are probably used for testing purposes and the calls to the functions commented in the code. It is better to remove them before deployment. | All unused codes removed | Closed | GetConfiguration  Declared but unused |
| I am not able to find the AutoExec Macro in the access database file. Please confirm whether ap\_DisableShift and ap\_EnableShift gets executed at the client deployment machine on application startup. If not, suggest to remove this code/module. | As explained, it is used to secure codes layer by disabling use of shift key | Closed | Verified |
| 9 | User Interface design and details of inputs provided by user | No deviations from common standards observed |  |  |  |
| 10 | Data storage inside application, frequency, and handling | No deviations from common standards observed |  |  |  |
| 11. | Process related issues | 1. Memo remarks need to be formatted – Example Output: LPC-SG-CS-CR\_CBO335324804 – Need to provide spaces and follow the standard as doing in the manual entry process. 2. File is not stored in the assigned folder for Duplicate credit scenarios under testing. Need to append “\” to the Duplicate folder location. Now the file name is appended with the folder location. 3. For service requests containing both billed and unbilled information, only one entry is posted in BCL by the tool while two entries are created during the manual process: One for Billed information and One for Unbilled information. I understand the tool has been developed before the GST regime (Pre- July 1, 2017), hence the current functionality. To be compatible with the current manual process, this feature needs to be incorporated into the tool. 4. Some Reason code present in the service request file are currently not available in the BCL Create Credit Screen: Credit Reason drop down (Example: LPC Credit with Service Tax - Invoice level). Hence valid transactions are going to the wrong reason code folder and are left unprocessed for manual processing again. | 1. Format is defined inline to operations requirement 2. Done 3. Changes related to new processed introduced due to GST, doesn’t not come under this assessment (changes will be incorporated while GST code change) 4. Intentional scripting to separate these cases to wrong reason to monitor changes in system | Closed | 1. Fine. Verified 2. Ned to add “\” to "C:\Pilot\DuplicateCases" to avoid getting the file created as DuplicateCasesDuplicateSRs.txt. 3. Yes. But needs to be done before the tool is used for official purposes. 4. Yes, but it would be better to have reason codes in the system while the tool is used for official purposes. Again I believe these would have come up after the introduction of GST. |
| 12 | Selections of codes, libraries and system files | Only difference noticed in all CloseinCRM functions is hardcoding of 4 URLs. Please declare these URLs as constants so that only one function is required instead of as many functions as the number of circles. We can have a small GetURLs function that would return the corresponding URLs on passing the Circle code. BCLPostings and CloseinCRM for all circles will be available in just a single module. | Between circles there is difference in selecting media type, Pages links hence kept it separate. | Closed | 1. This Is again for code manageability, size of the compiled code. Not much diffierences in code across module observed otherwise. We can have a module called CircleURLs to store the URLs of each circle. |
| We can eliminate the calls to these 2 functions in a Big Select case for all circles in LoopThroughFiles function by simply passing the circle code as a parameter. The lines of code would be reduced very much because of the above 3 steps and we can expect improved performance. This is required only when a common module is done for processing all the circles. | Select Function Removed | Closed | 1. Application.Run BCLPostings(BCLlinks, B, E, G, F, H, C, D) 2. Application.Run CloseinCRM(B, G, F, H, C)   Please give source code access to the above two functions  Note: Application.Run can break error handling. |

## Scalability

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| Sr. No. | Criteria | Auditor’s Observation | Developer Remarks | Developer Comments | Auditor Comments |
| 13 | Process specific hardcoded values and if applicable | Please remove the hardcoded list of MCode values in GetCodeNumber function and place it as a constants in a separate module (for readability and maintenance) | Separate module created for Mcode, however, keeping constant will have no impact on efficiency hence, no changes in codes preferred | Closed | This is suggested fonly or readability and maintenance purposes and not to maintain any hardcoded values inside the application code. |
| Please move the hard coded values(TempBCLPosting and also throughout the application) for shared folders, file creation folders, URLs etc. based on the mode of deployment and frequency of change:  i) If the entire Access database will be replaced in the client deployment location irrespective of whether application code will be updated or not (only the change of URLs etc.), create a standard module containing the corresponding constants and update the values there. The constants declared in the modules will be accessed in the code and hardcoding of values in the application code will be eliminated..  ii) If Access database will not be replaced and only the URLs etc need to be changed, create a ini file (values would be read from the file based on the field property name) or txt file(each line would contain the field order and would be used in the code) and just update the values in the file. No changes in the access database would be required. The code would simply read the data from the file accordingly and do the processing as before (But it is important that users don’t tamper the file, otherwise the application will not work as expected). Either way hardcoding of values in the code will be eliminated. | Observation will be considered for changes in future, but as of now we will be changing entire access file in case changes required ( not all users will be using this file as per model, hence controllable). | Closed | Noted. Please create a standard module containing the corresponding constants and update the values there. The constants declared in the modules will be accessed in the code and hardcoding of values in the application code will be eliminated |
| 14 | Storage requirement | No deviations from common standards observed |  |  |  |
| 15 | Manual handovers | No observations |  |  |  |
| 16 | Script change, language complexity and feasibility | No observations |  |  |  |
| 17 | COM objects used | No deviations from common standards observed |  |  |  |

## Security

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| Sr. No. | Criteria | Auditor’s Observation | Developer Remarks | Status |
| 18 | Data retrievals | No deviations from common standards observed |  |  |
| 19 | Data exchanges outside secured environment | No observations |  |  |
| 20 | Application accessibility and users management | Users Management not part of tool functionality |  |  |
| 21 | Storage of user IDs or Password | Not stored anywhere in the application or database. Manually entered into the tool |  |  |
| 22 | Information masking | No observations |  |  |
| 23 | Code protection | No observations |  |  |
| 24 | Shared drive management | No observations |  |  |
| 25 | Action / Output logs | No observations |  |  |

## Efficiency

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| --- | --- | --- | --- | --- | --- |
| Sr. No. | Criteria | Auditor’s Observation | Developer Remarks | Developer Comments | Auditor Comments |
| 26 | Application response time | No observations |  |  |  |
| 27 | Error handlers and run time re-runs | Duplicate code in main function and in the Goto Condition BrowserErrorReRun - code can be put in a common function and just the function can be called at two places. BrowserErrorReRun condition was noticed for only two circles: Haryana and Punjab. Please consider whether this could be considered for the remaining circles as I do not consider much of an overhead. | As discussed, it is placed to handle any web page expiry after first instance | Closed | Agreed |
| Error handling and logging - Reconciliation process. Suggest logging all the processed transactions with status in a separate log folder in text file in a suitable format with new log file created every day. This would be useful instead of manual reconciliation to determine unprocessed records because of any error or application termination. (Priority to be considered) | BnR team manually reconcile cases in bulk. It’s part of their BAU work. | Closed | Agreed |
| 28 | Average time required for processing transactions | No observations |  |  |  |
| 29 | Change over time | No observations |  |  |  |
| 30 | Run time errors | No observations |  |  |  |
| 31 | Interface with other files formats | Not required for this tool |  |  |  |
| 32 | Usage of loop, if and select conditions, | Use instr function to check for the existence of a string eliminate multiple If conditions using OR. For example If browser.Title = "\*Login" Or browser.Title = "Login" Then , If browser.Title = "\*Accounts Receivable" Or browser.Title = "Accounts Receivable" Then etc. | “Instr” doesn’t work as expected in may scenarios hence suggest to keep it as it is. | Closed | Fine. Instr only limitation is size of string 64k but for code understandability we can maintain the existing code |
| Instead of empty If condition - If Forms![Autobots]![dupcheck].Value = "Dup" Then, it can be combined as If Forms![Autobots]![ReasonError].Value = "" and Forms![Autobots]![dupcheck].Value <> "Dup" Then | Changes Made | Closed | Verified |
| 33 | Performance Enhancements | 1. Change the call to GetLines2 in LoopThroughFiles function so that it is called only once. Let the function return an Array and then assign the values to corresponding variables after the function call. This will open the text file only once. File handling is a costly operation that could slow down the application very much and it should be restricted as much as possible. Also close the file object as soon as the required information is read from the text file.  2. Loops can be exit as soon as the condition is satisfied instead of iterating till the loop terminates. – Example loop: Do While tabls.Length > I in BCLPosting  3. Need to benchmark by determining the average time taken to process a service request currently and after incorporating the enhancements . | 1. Prefer to keep it as it is as the functions is/will utilized for other codes 2. Exit loop inserted in while checking for temp value on page 3. No action required | Closed | This is a common code and it is suggested to update considering the performance efficiency.  2. Exit do can be given as soon as the condition is satisfied. |
| 34 | Handoffs between two transactions | No observations |  |  |  |