Software Design Notes

1. Revision History

Rev.	Revision Notes	ECO	Date
A	Initial Release	-	03AUG2024

2. Introduction

2.1. Purpose

Present software design notes for the VBA enabling a simple Traveler system.

2.2. Scope

This document applies to the VBA subroutines listed in Table 1 – Button Click Subroutines.

Table 1 – Button Click Subroutines

Subroutine	Description
saveButton_Click()	• Saves Word document • Creates PDF document • Creates/updates log entry
saveAndCloseButton_Click()	• Saves and closes Word document • Creates PDF document • Creates/updates log entry
closeWithoutSavingButton_Click()	• Closes Word document without saving • Creates PDF document • Does not update log
deleteButton_Click()	• Deletes Word document • Creates PDF document • Deletes log entry
refreshData_Click()	• Updates data for analysis

2.3. File Locations

All Project Files

https://github.com/miniPCB/TravelerBASE.git

3. Software Specification Requirements

SSR1 – Usability
No text (title)

SSR1.1
Able to be run from a computer with Microsoft Office.

SSR1.2
Only requires Word, Excel and a PDF viewer.

SSR1.3
Able to be setup on a USB drive (i.e. thumb drive).

SSR1.4
Does not require password to use the document system.

SSR2 – Functionality
No text (title)

SSR2.1
Saves files in folders described in Table 2 – Folder Structure.

Table 2 – Folder Structure

Folder	Contents
…\TravelerBASE	• Word template for creating new catalog entries. • Word template for creating new inventory entries. • Excel file with data analysis.
…\TravelerBASE\Records	• Word documents, one per ECO.
…\TravelerBASE\Records\PDFs	• PDF documents, one per ECO button click.
~~…\TravelerBASE\Reports~~	• ~~Word documents, one per ECO report.~~
~~…\TravelerBASE\Reports\PDFs~~	• ~~PDF documents, one per ECO report button click.~~
…\TravelerBASE\data	• Excel file with data. • This folder is hidden.

SSR2.2
Functions properly when VBA macros are enabled and the VBA project model is trusted.

SSR2.3
Protect the VBA source code with the password in Table 3 – Password.

Table 3 – Password

Password	9hvmq6KchrZ+V&&j

SSR2.4
Excel Files (title)

SSR2.4.1
Data workbook file placed in the hidden **…\TravelerBASE\data** folder.

SSR2.4.2
Analysis workbook file placed in the **…\TravelerBASE** folder.

SSR2.4.3
Display one (1) button that runs a VBA macro function listed in Table 4 – Excel Button Macros

Table 4 – Excel Button Macros

Button	Macro
Refresh	refreshData_Click()

SSR2.4.4
Protect the data workbook file's data sheet with the password in Table 5 – Password.

Table 5 – Password

Password	WT$?@L&x=F5qYfC#

SSR2.5
PDF Documents (title)

SSR2.5.1
Create a PDF whenever a button is clicked.

SSR2.5.2
Stamp with username, computer ID, datatime and PDF document filepath.

SSR2.5.3
Title as [entry name] & "_" & [PARTNUMBER_YYYYMMDDHHMMSS] & ".pdf".

SSR2.5.4
Save catalog PDFs in the **…\TravelerBASE\Records\PDFs** folder.

SSR2.5.5
Save report PDFs in the **…\TravelerBASE\ECO Reports\PDFs** folder.

SSR2.5.6
Enable/disable the buttons to show in the PDF which button caused the PDF to be generated.

SSR2.6
Word Template (title)

SSR2.6.1
Save in the **…\TravelerBASE** folder.

SSR2.6.2
Display four (4) buttons that run VBA macro functions listed in Table 6 – Word Button Macros.

Table 6 – Word Button Macros

Button	Macro
Save	saveButton_Click()
Save and Close	saveAndCloseButton_Click()
Close Without Saving	closeWithoutSavingButton_Click()
Delete	deleteButton_Click()

SSR2.6.3
Automatically save new documents when "Save" or "Save and Close" buttons are clicked according to Table 7 - Document Save Information.

Table 7 - Document Save Information

Document Type	File Details
ECO Record	• Filename: [ECO number] & ".doc" • File location: …\TravelerBASE\Records
Report Record	• Filename: [report date in format YYYYMMDDHHMMSS] & ".doc" • File location: …\TravelerBASE\ECO Reports

SSR2.6.4
Save form contents in excel data file as an entry (row) when "Save" or "Save and Close" buttons are clicked for the first time.

SSR2.6.5
Update excel data file entry (row) with form contents when "Save" or "Save and Close" buttons are clicked after the first click.

SSR2.6.6
Delete excel data file entry (row) and Word document when "Delete" button is clicked.

4. Source Code

This source code is placed in the ThisDocument section of the Word templates.

4.1. Table 8 – VBA Source Code in Traveler Form (Word) Template

```vba
'Nolan Manteufel
'July-Sep 2020
'Aug 2024
'VBA SOURCE CODE PASSWORD: 9hvmq6KchrZ+V&&j

'Used to protect data
Private Const MY_PASSWORD = "WT$?@L&x=F5qYfC#"
Private Const DOC_FOLDER = "\TRAVELER Records\"
Private Const LOGBOOK = "\data\recorddata.xlsx"
Private Const OPEN_PDF = True

'Used to set text
Private Const NEW_ENTRY_KEY As String = " "
Private Const STAMP_PLACEHOLDER_TEXT As String = " "
Private Const INVALID_REQUIRED_TEXT = "Click or tap here to enter text."

'Used to access form Content Controls by Tags
Private Const datetimestamp = "datetimestamp"
Private Const REQ1_Tag = "PART_NO"
Private Const REQ2_Tag = "ASS_TO"

'Used to access record-stamp Content Controls by Tags
Private Const ccStampComputerID = "ccStampComputerID"
Private Const ccStampUserID = "ccStampUserID"
Private Const ccStampDatetime = "ccStampDatetime"
Private Const ccStampPDF = "ccStampPDF"

'Data key constants
Private Const dataKeyTag = "dataKey" 'for Content Control Tag

'Used to move data
Private Const DATA_ARRAY_LENGTH As Long = 60
Private Const DATAKEY_HEADER = "dataKey"

Dim myDoc As Document
Dim CCs As ContentControls
Dim cc As ContentControl

'Stamp variables
Dim macroUser As String
Dim macroComputer As String
Dim dateTime As String
Dim PDFFILEPATHNAMEEXT As String

'CC variables
Dim ecoTitle As String
Dim REQ1 As String
Dim dwgNumber As String
```

```vba
Dim dwgRev As String
Dim dataKeyString As String
Dim newEntry As Boolean

Dim rowIndexFinder As Long
Dim rowIndex As Long

Dim dataKeyIndexFinder As Long
Dim dataKeyIndex As Long

Private Sub getClickDetails()

'User
macroUser = Environ$("username")
macroUser = LCase(macroUser)

'Computer
macroComputer = Environ$("computername")
macroComputer = LCase(macroComputer)

'Datetime
Dim timeOnly As String
Dim dateOnly As String
timeOnly = Format(Time, "hhmmss")
dateOnly = Format(Date, "yyyymmdd")
dateTime = dateOnly & timeOnly

'Get REQ1 Data
REQ1 = ActiveDocument.SelectContentControlsByTag(REQ1_Tag)(1).Range.Text

'Data key
Set cc = ActiveDocument.SelectContentControlsByTag(dataKeyTag)(1)
dataKeyString = cc.Range.Text

'New entry?
If (dataKeyString = NEW_ENTRY_KEY) Then
    newEntry = True
    With cc
    .LockContents = False
    .Range.Text = dateTime
    .LockContents = True
    End With
Else
    newEntry = False
End If
End Sub


Private Sub saveDoc()

'Doc filename
Dim myDocFullPath As String
myDocFullPath = myDoc.AttachedTemplate.Path
```

```vba
'Auto name/save document if it is new
If (myDoc.Path = "") Then
    'Lock the ECO content control
    ActiveDocument.SelectContentControlsByTag(REQ1_Tag)(1).LockContents = True
    'Create path and name for new Word document
    myDocFullPath = myDocFullPath & DOC_FOLDER & REQ1 & ".docx"
    'Save new document
    myDoc.SaveAs2 filename:=myDocFullPath
Else
    myDoc.Save
End If
End Sub


Private Sub saveData()

'Set settings
Application.StatusBar = "Saving data..."


'Variables
Dim dataArray(DATA_ARRAY_LENGTH) As String

Dim rowIndexFinder As Long
Dim rowIndex As Long

'Populate dataArray
Dim ccIndex As Long
ccIndex = 1
For Each cc In CCs
    dataArray(ccIndex) = cc.Range.Text
    ccIndex = ccIndex + 1
Next cc

'Update status bar
Application.StatusBar = "Updating log ..."

Dim myIssueLogFullPath As String
myIssueLogFullPath = myDoc.AttachedTemplate.Path & LOGBOOK

Dim excelApp As Excel.Application
Dim dataWB As Excel.Workbook
Dim dataSheet As Excel.Worksheet
Dim logSheet As Excel.Worksheet

'Launch excel application
Set excelApp = New Excel.Application

'Open data workbook
Set dataWB = excelApp.Workbooks.Open(filename:=myIssueLogFullPath)
Set dataSheet = dataWB.Worksheets("data")

'Unprotect the log
dataSheet.Unprotect (MY_PASSWORD)
```

```vba
'Get dataKey column index
For dataKeyIndexFinder = 1 To dataSheet.UsedRange.Columns.Count
    If (DATAKEY_HEADER = dataSheet.Cells(1, dataKeyIndexFinder).Value) Then
    dataKeyIndex = dataKeyIndexFinder
    dataKeyIndexFinder = dataSheet.UsedRange.Columns.Count
    End If
Next

'Get entry row index
If (newEntry) Then
    rowIndex = dataSheet.UsedRange.Rows.Count + 1
    dataArray(0) = rowIndex
Else
    For rowIndexFinder = 2 To dataSheet.UsedRange.Rows.Count
        Application.StatusBar = "Searching through records ... " & rowIndexFinder & " of " & dataSheet.UsedRange.Rows.Count
        If (dataKeyString = dataSheet.Cells(rowIndexFinder, dataKeyIndex).Value) Then
            rowIndex = rowIndexFinder
            rowIndexFinder = dataSheet.UsedRange.Rows.Count
        End If
    Next
End If

'Log the entry
dataSheet.Cells(rowIndex, 1).Value = rowIndex
Dim colIndex As Long
For colIndex = 1 To DATA_ARRAY_LENGTH
    Application.StatusBar = "Updating record ... field " & colIndex & " of " & DATA_ARRAY_LENGTH
    dataSheet.Cells(rowIndex, colIndex + 1).Value = dataArray(colIndex)
Next

''Protect the log
dataSheet.Protect (MY_PASSWORD)

'Close log
Word.Application.StatusBar = "Saving ... " & myIssueLogFullPath
dataWB.Close SaveChanges:=True

'Release object references
Set logSheet = Nothing
Set dataSheet = Nothing
Set dataWB = Nothing
Set excelApp = Nothing

'Clear status bar
Application.StatusBar = ""
End Sub

Private Sub deleteData()

'Set settings
Application.StatusBar = "Deleting data..."

'temporaryDoc template
```

```vba
Dim temporaryDocTemplate As String
temporaryDocTemplate = myDoc.AttachedTemplate.FullName

Dim temporaryDoc As Document
Set temporaryDoc = Documents.Add(temporaryDocTemplate)

Dim deleteDoc As String
deleteDoc = myDoc.FullName

Dim rowIndexFinder As Long
Dim rowIndex As Long

Dim myIssueLogFullPath As String
myIssueLogFullPath = myDoc.AttachedTemplate.Path & LOGBOOK

Dim excelApp As Excel.Application
Dim dataWB As Excel.Workbook
Dim dataSheet As Excel.Worksheet
Dim logSheet As Excel.Worksheet

'Launch excel application
Set excelApp = New Excel.Application

'Open data workbook
Set dataWB = excelApp.Workbooks.Open(filename:=myIssueLogFullPath)
Set dataSheet = dataWB.Worksheets("data")

'Unprotect the log
dataSheet.Unprotect (MY_PASSWORD)

'Get dataKey column index
For dataKeyIndexFinder = 1 To dataSheet.UsedRange.Columns.Count
   If (DATAKEY_HEADER = dataSheet.Cells(1, dataKeyIndexFinder).Value) Then
   dataKeyIndex = dataKeyIndexFinder
   dataKeyIndexFinder = dataSheet.UsedRange.Columns.Count
   End If
Next

'Get entry rowIndex
For rowIndexFinder = 2 To dataSheet.UsedRange.Rows.Count
   Application.StatusBar = "Searching through log ... row " & rowIndexFinder & " of " & dataSheet.UsedRange.Rows.Count
   If (dataKeyString = dataSheet.Cells(rowIndexFinder, dataKeyIndex).Value) Then
      rowIndex = rowIndexFinder
      rowIndexFinder = dataSheet.UsedRange.Rows.Count
   End If
Next

'Delete the row
dataSheet.Rows(rowIndex).Delete

'Renumber the rowIndex column
For rowIndex = 2 To dataSheet.UsedRange.Rows.Count
Application.StatusBar = "Renumbering log ... row " & rowIndex & " of " & dataSheet.UsedRange.Rows.Count
```

```
dataSheet.Cells(rowIndex, 1).Value = rowIndex
Next

''Protect the log
dataSheet.Protect (MY_PASSWORD)

'Close log
Application.StatusBar = "Saving ... " & myIssueLogFullPath
dataWB.Close SaveChanges:=True

'Release object references
Set logSheet = Nothing
Set dataSheet = Nothing
Set dataWB = Nothing
Set excelApp = Nothing

'Delete word document
myDoc.Close SaveChanges:=False
Kill deleteDoc

'Close temporary document
If (Word.Application.Documents.Count = 1) Then
    Word.Application.Quit SaveChanges:=wdDoNotSaveChanges
Else
    Application.StatusBar = ""
    temporaryDoc.Close SaveChanges:=False
End If
End Sub

'Sub validReqText()
'MsgBox validRequiredText
'End Sub

Private Function validRequiredText() As Boolean

Dim requiredText(2) As String
requiredText(1) = myDoc.SelectContentControlsByTag(REQ1_Tag)(1).Range.Text
requiredText(2) = myDoc.SelectContentControlsByTag(REQ2_Tag)(1).Range.Text

'If (requiredText(1) = INVALID_REQUIRED_TEXT Or requiredText(2) = INVALID_REQUIRED_TEXT) Then
If (requiredText(1) = INVALID_REQUIRED_TEXT) Then
    validRequiredText = False
Else
    validRequiredText = True
End If
End Function

Private Sub unlockStamps()

'Unlock stamp CCs
ActiveDocument.SelectContentControlsByTag(ccStampComputerID)(1).LockContents = False
ActiveDocument.SelectContentControlsByTag(ccStampUserID)(1).LockContents = False
ActiveDocument.SelectContentControlsByTag(ccStampDatetime)(1).LockContents = False
```

```vba
ActiveDocument.SelectContentControlsByTag(ccStampPDF)(1).LockContents = False

End Sub

Private Sub setStamps()

unlockStamps

'Set PDF stamp fields
ActiveDocument.SelectContentControlsByTag(ccStampComputerID)(1).Range.Text = macroComputer
ActiveDocument.SelectContentControlsByTag(ccStampUserID)(1).Range.Text = macroUser
ActiveDocument.SelectContentControlsByTag(ccStampDatetime)(1).Range.Text = dateTime
ActiveDocument.SelectContentControlsByTag(ccStampPDF)(1).Range.Text = PDFFILEPATHNAMEEXT

End Sub

Private Sub clearStamps()

'Clear PDF stamp fields
ActiveDocument.SelectContentControlsByTag(ccStampComputerID)(1).Range.Text = STAMP_PLACEHOLDER_TEXT
ActiveDocument.SelectContentControlsByTag(ccStampUserID)(1).Range.Text = STAMP_PLACEHOLDER_TEXT
ActiveDocument.SelectContentControlsByTag(ccStampDatetime)(1).Range.Text = STAMP_PLACEHOLDER_TEXT
ActiveDocument.SelectContentControlsByTag(ccStampPDF)(1).Range.Text = STAMP_PLACEHOLDER_TEXT

lockStamps

End Sub

Private Sub lockStamps()

'Lock stamp CCs
ActiveDocument.SelectContentControlsByTag(ccStampComputerID)(1).LockContents = True
ActiveDocument.SelectContentControlsByTag(ccStampUserID)(1).LockContents = True
ActiveDocument.SelectContentControlsByTag(ccStampDatetime)(1).LockContents = True
ActiveDocument.SelectContentControlsByTag(ccStampPDF)(1).LockContents = True

End Sub

Private Sub savePDF()

'Set settings
Application.StatusBar = "Saving PDF..."

'PDF filename
PDFFILEPATHNAMEEXT = myDoc.Path & "\PDFs\" & REQ1 & "_" & dateTime & ".pdf"

'Update document stamps
setStamps

'Set footer datatime stamp
myDoc.SelectContentControlsByTag(datetimestamp)(1).SetPlaceholderText Text:=dateTime

'Save as PDF
```

```vb
myDoc.ExportAsFixedFormat _
    OutputFileName:=PDFFILEPATHNAMEEXT, _
    ExportFormat:=wdExportFormatPDF, _
    OpenAfterExport:=OPEN_PDF

'Clear footer datatime stamp
myDoc.SelectContentControlsByTag(datetimestamp)(1).SetPlaceholderText Text:=STAMP_PLACEHOLDER_TEXT

'Update document stamps
clearStamps

Application.StatusBar = ""
End Sub


Private Sub saveButton_Click()

'Set settings
Application.ScreenUpdating = False

'Set objects
Set myDoc = ActiveDocument
Set CCs = myDoc.ContentControls

'Are required fields valid?
If validRequiredText Then
    'Set button enables
    saveButton.Enabled = True
    saveAndCloseButton.Enabled = False
    closeWithoutSavingButton.Enabled = False
    deleteButton.Enabled = False
    'Run subroutines
    getClickDetails
    saveDoc
    savePDF
    saveData
    'Reset button enables
    saveButton.Enabled = True
    saveAndCloseButton.Enabled = True
    closeWithoutSavingButton.Enabled = True
    deleteButton.Enabled = True
    'Save button changes
    ActiveDocument.Save
    'Message user
    MsgBox ("Congratulations, your document has been saved successfully.")
Else
    'Message user
    MsgBox ("An ECO number is required.")
End If

'Reset settings
Application.ScreenUpdating = True
End Sub
```

```vba
Private Sub saveAndCloseButton_Click()

'Set settings
Application.ScreenUpdating = False

'Set objects
Set myDoc = ActiveDocument
Set CCs = myDoc.ContentControls

If validRequiredText Then
    'Set button enables
    saveButton.Enabled = False
    saveAndCloseButton.Enabled = True
    closeWithoutSavingButton.Enabled = False
    deleteButton.Enabled = False
    'Run subroutines
    getClickDetails
    saveDoc
    savePDF
    saveData
    'Reset button enables
    saveButton.Enabled = True
    saveAndCloseButton.Enabled = True
    closeWithoutSavingButton.Enabled = True
    deleteButton.Enabled = True
    'Close document
    If (Application.Documents.Count = 1) Then
        ActiveDocument.Save
        Application.Quit
    Else
        ActiveDocument.Close SaveChanges:=True
    End If
Else
    MsgBox ("An ECO number is required.")
End If
'Reset settings
Application.ScreenUpdating = True
End Sub


Private Sub closeWithoutSavingButton_Click()

'Set settings
Application.ScreenUpdating = False

'Set objects
Set myDoc = ActiveDocument
Set CCs = myDoc.ContentControls

If validRequiredText Then
    'Set button enables
    saveButton.Enabled = False
    saveAndCloseButton.Enabled = False
    closeWithoutSavingButton.Enabled = True
```

```
    deleteButton.Enabled = False
    'Run subroutines
    getClickDetails
    savePDF
    If (Application.Documents.Count = 1) Then
        Application.Quit SaveChanges:=wdDoNotSaveChanges
    Else
        ActiveDocument.Close SaveChanges:=False
    End If
Else
    MsgBox ("An ECO number is required.")
End If

'Reset settings
Application.ScreenUpdating = True
End Sub

Private Sub deleteButton_Click()

'Set settings
Application.ScreenUpdating = False

'Set objects
Set myDoc = ActiveDocument
Set CCs = myDoc.ContentControls

If validRequiredText Then
    'Set button enables
    saveButton.Enabled = False
    saveAndCloseButton.Enabled = False
    closeWithoutSavingButton.Enabled = False
    deleteButton.Enabled = True
    'Run subroutines
    getClickDetails
    savePDF
    deleteData
Else
    MsgBox ("An ECO number is required.")
End If
End Sub
```

4.2. Table 9 – VBA Source Code in Report Form (Word) Template

4.3. Table 10 – VBA Source Code in the Analysis (Excel) Workbook

```vba
'Nolan Manteufel
'August 2022
'PASSWORD: 9hvmq6KchrZ+V&&j

Dim myWB As Workbook
Dim myWS As Worksheet
Dim dataWB As Workbook
Dim dataWS As Worksheet

Dim dataWorkbookFullPath As String

Dim usedRowCount As Integer
Dim usedColCount As Integer

Private Const DATASHEET_PASSWORD = "WT$?@L&x=F5qYfC#"
Private Const RECORD_DATABOOK = "\data\recorddata.xlsx"
Private Const REPORTS_DATABOOK = "\data\reportdata.xlsx"
Private Const HOMESHEET = "overview"

Private Function copySheets(originSheet As Worksheet, destinationSheet As Worksheet) As Boolean

'Clear desitination sheet
destinationSheet.Cells.Clear

'Find the data
usedRowCount = originSheet.UsedRange.Rows.Count
usedColCount = originSheet.UsedRange.Columns.Count

'Copy data
With originSheet
.Range(.Cells(1, 1), .Cells(usedRowCount, usedColCount)).Copy
End With

'Paste data
destinationSheet.Range("A1").PasteSpecial Paste:=xlPasteValues

End Function

Private Sub refreshData_Click()
'Save application settings
Dim applicationState(2) As Boolean
applicationState(0) = Application.ScreenUpdating
applicationState(1) = Application.EnableEvents
applicationState(2) = Application.DisplayAlerts

'Set application settings
Application.ScreenUpdating = False
Application.EnableEvents = False
Application.DisplayAlerts = False

'Update data
```

```
' CATALOG DATA
'Set data destination sheet
Set myWB = ActiveWorkbook
Set myWS = myWB.Sheets("orders")

'Set data origin sheet
dataWorkbookFullPath = myWB.Path & RECORD_DATABOOK
Set dataWB = Workbooks.Open(Filename:=dataWorkbookFullPath)
Set dataWS = dataWB.Worksheets("data")
dataWS.Unprotect (DATASHEET_PASSWORD)

'Copy data
Dim result As Boolean
result = copySheets(dataWS, myWS)

'Close catalog data workbook and clear objects
dataWB.Close SaveChanges:=False
Set dataWS = Nothing
Set dataWB = Nothing

' INVENTORY DATA
'Set data destination sheet
Set myWS = myWB.Sheets("reports")

'Set data origin sheet
dataWorkbookFullPath = myWB.Path & REPORTS_DATABOOK
Set dataWB = Workbooks.Open(Filename:=dataWorkbookFullPath)
Set dataWS = dataWB.Worksheets("data")
dataWS.Unprotect (DATASHEET_PASSWORD)

'Copy data
result = copySheets(dataWS, myWS)

'Close inventory data workbook and clear objects
dataWB.Close SaveChanges:=False
Set dataWS = Nothing
Set dataWB = Nothing

'Activate original sheet
myWB.Worksheets(HOMESHEET).Activate

'Clear objects
Set myWS = Nothing
Set myWB = Nothing

'Reset application settings
Application.ScreenUpdating = applicationState(0)
Application.EnableEvents = applicationState(1)
Application.DisplayAlerts = applicationState(2)

'Confirmation message
MsgBox "Congratuations, the data updated successfully."
```

End Sub