Make your life easier with Project Macros
August 31, 2016 @ 12pm-1pm EST
Jeff Fenbert
Agenda
Introduction

• Background
  • Process Engineer and Project Enthusiast
  • Not A Programmer
  • Macros Translated from 2007 to 2016

• When to Use A Marco
  • Automate Repeated Actions
  • Share Processes Across a Group
  • When A Micro Just Won’t Do

• Advantages
  • VBA used in most Office Products
  • Easy to record
  • Fun to write
Add Developer’s Menu
Set Macro Security

Option gives popup warning for any files that contain macros
Demo Number 1: Scrub Macro

- Situation – Want to send a file to someone for help, but need to protect information
Quick Look at the Code

Sub scrub()
' This macro clears the task name, resource name and text fields.
' It also resets the project name and title
' Copyright Jack Dahlgren Feb. 2002

Dim t As Task
Dim ts As Tasks
Dim r As Resource
Dim rs As Resources
Dim myok As Integer

myok = MsgBox("This will permanently remove tasknames, resource names and notes from your project. Are you sure you want to continue?", 257, "ERASE DATA?")
If myok = 1 Then
Set ts = ActiveProject.Tasks
Set rs = ActiveProject.Resources
For Each r In ActiveProject.Resources
    r.Name = r.UniqueID
    r.Group = ""
    r.Initials = r.UniqueID
Next r
For Each t In ts
    If Not t Is Nothing Then
        t.Name = t.UniqueID
        t.Notes = ""
    End If
Next t
End If
End Sub
How Do I Build A Macro?

• Situation: I want to analyze the work of the framers in my construction project

• Solution: Record a macro that filters for framers, groups by floor and sorts by duration
Record A Macro

View Tab
Macros, Record Macro

Name It
(No Spaces)

Filter

Group

Sort

Stop Recording
Let’s Review The Code

Sub Sample_Filter_and_Sort()
' Sample for MPUG Presentation
    FilterApply Name:="_flt_Framing_Contractor"
    Sort Key1:="Duration", Ascending1:=False
    GroupApply Name:="_grp_Floor"
    SelectTaskField Row:=1, Column:="Name"
End Sub

Recording is fastest way to understand basic building blocks
A few hints

• Modules vs Macros
  • Multiple Macros in a Module
  • Project names as Module1, Module 2 etc.

• Naming
  • No Spaces Allowed for Module and Variable names
  • Easiest to Read Options
    • Use_Underscores_Between_Words
    • CapitilizeEachWord

• Comments
  • Lines starting with an ‘ are comments
  • Use comments to remind yourself (and others) what the code is doing
# Share a View

- The Perfect View
- How Do I Share with my Group?

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Dur</th>
<th>March 2007</th>
<th>April 2007</th>
<th>May 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form basement walls</td>
<td></td>
<td>23 25 1 4 7 10 13 16 19 22 25 28</td>
<td>31 6 9 12 18 21 24 27 30</td>
<td></td>
</tr>
<tr>
<td>Place concrete for founda</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strip basement wall forms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterproof/insulate base</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform foundation inspect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install 1st floor joists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lay 1st floor decking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame 1st floor walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame 1st floor corners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install 2nd floor joists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame 2nd floor decking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame 2nd floor walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame 2nd floor corners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete roof framing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct framing inspection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install 1st floor sheathing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install 2nd floor sheathing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install roof decking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagram showing tasks and contractors.
Option 1

- Send an Email with the File
- Each person must copy all the elements:
  - View, Table, Filters
An Easier Method

• Send a File with an Embedded macro
Private Sub Project_Open(ByVal pj As Project)

If MsgBox("Do you wish to install the Special MPUG View?", vbYesNo) <> vbYes Then Exit Sub
Alerts False

OrganizerMoveItem Type:=2, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="GLOBAL.MPT", Name:="flag1to3"
OrganizerMoveItem Type:=2, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="GLOBAL.MPT", Name:="flt_Inspector"
OrganizerMoveItem Type:=2, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="GLOBAL.MPT", Name:="flt_general"
OrganizerMoveItem Type:=2, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="GLOBAL.MPT", Name:="flt_Frame_Contractor"
OrganizerMoveItem Type:=0, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="GLOBAL.MPT", Name:="special_gantt"
OrganizerMoveItem Type:=9, FileName:="Construction_Template_copy_view_on_open.mpp", ToFileName:="Global.MPT", Name:="Start1"

FileClose pjDoNotSave, True
Alerts True
End Sub

Copy Elements
Close File elements copied from
Eliminates Pop Ups from Project
Message Box

Code for Copying Elements

Organizer Types
2 - Filters
0 - View
9 - Custom Field

Cycle Through Resources
How to Build

• Select vb screen
• Right click on this project
• Select code
• Then select objects
Create a Network Checker

• No Predecessor

• No Successor

• Constraints

• FF or SS Links

• Linked Summary Tasks
The Results From Construction Template

Standard Template

A few Elements Added
Relationship Between Elements

Macro to Open Form

Form calls to Macro (Procedure)

Macro Generates Data

Form Displays Data
Create a Form

- Select Insert Form
- Add Elements from Tool Bar
Call to Procedure

• Macro to Call Form
  Sub analysis_frm()
  FilterApply "All Tasks"
  OutlineShowAllTasks
  frm_project_analysis.Show
  End Sub

• Call the Procedure
  Private Sub UserForm_Inititalize()
  Call project_data

Action when form opened - - Initialized

Open the form

Prep File
Follow One Variable

- Tasks with No Successor
- Two Options to Generate Data
  - Counter
  - Filter and Count
- Assign value to Text Box in form
Count Tasks with No Successors

- **Option 1 – Counter**
  
  For Each tsk In ActiveProject.Tasks
  
  If Not (tsk Is Nothing) Then
  
  If tsk.Summary = False Then
  
  If tsk.Successors = "" Then
  
  succ = succ + 1
  
  End If
  
  End If
  
  Next tsk

- **Option 2 – Filter**
  
  FilterApply "flt_succs"
  
  SelectAll
  
  succ = ActiveSelection.Tasks.Count
Private Sub UserForm_Initialize()
    Call project_data
    TextBox1.Value = pred
    TextBox2.Value = succ
    TextBox3.Value = fnlt
    TextBox4.Value = snlt
End Sub
Form and Elements

Private Sub UserForm_Initialize()
Call project_data
TextBox1.Value = pred
TextBox2.Value = succ
TextBox3.Value = fnlt
TextBox4.Value = snlt
TextBox5.Value = ActiveProject.Tasks.Count - sumtasks
TextBox6.Value = ActiveProject.ProjectSummaryTask.Duration / 480 & " days"
TextBox9.Value = longtasks
TextBox10.Value = sumlink
TextBox11.Value = lags
Label12 = ActiveProject.Name
End Sub
Working With Excel

• Typical Situation:
  • Data Gathered in Excel File
  • Want to create Projects Based on the Data

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model</td>
<td>Feature</td>
<td>Start</td>
<td>Phase</td>
<td>Complexity</td>
</tr>
<tr>
<td>2</td>
<td>Sedan</td>
<td>CD Player</td>
<td>6/7/2016</td>
<td>Design</td>
<td>Easy</td>
</tr>
<tr>
<td>3</td>
<td>Van</td>
<td>Shag Carpet</td>
<td>9/1/2016</td>
<td>Manufacture</td>
<td>Easy</td>
</tr>
<tr>
<td>4</td>
<td>Sports Car</td>
<td>Sun Roof</td>
<td>10/5/2016</td>
<td>Concept</td>
<td>Standard</td>
</tr>
<tr>
<td>5</td>
<td>Sports Car</td>
<td>Alloy Wheels</td>
<td>1/8/2017</td>
<td>Integration</td>
<td>Hard</td>
</tr>
<tr>
<td>6</td>
<td>Van</td>
<td>Video Monitor</td>
<td>12/8/2016</td>
<td>Design</td>
<td>Hard</td>
</tr>
<tr>
<td>7</td>
<td>Sedan</td>
<td>Seat Warmer</td>
<td>8/1/2016</td>
<td>Offer in Catalog</td>
<td>Easy</td>
</tr>
<tr>
<td>8</td>
<td>Hot Rod</td>
<td>Exhaust System</td>
<td>3/2/2017</td>
<td>Concept</td>
<td>Standard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td></td>
<td>Complexity</td>
<td>Complexity Factor</td>
</tr>
<tr>
<td>Concept</td>
<td></td>
<td>Easy</td>
<td>0.5</td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td>Standard</td>
<td>1</td>
</tr>
<tr>
<td>Manufacture</td>
<td></td>
<td>Hard</td>
<td>3</td>
</tr>
<tr>
<td>Integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer in Catalog</td>
<td></td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
## Project Template

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Feature</td>
<td>48 days</td>
<td>Tue 8/2/16</td>
<td>Thu 10/6/16</td>
</tr>
<tr>
<td>&lt;name&gt; Concept</td>
<td>10 days</td>
<td>Tue 8/2/16</td>
<td>Mon 8/15/16</td>
</tr>
<tr>
<td>&lt;name&gt; Design</td>
<td>6 days</td>
<td>Tue 8/16/16</td>
<td>Tue 8/23/16 1</td>
</tr>
<tr>
<td>&lt;name&gt; Manufacture</td>
<td>20 days</td>
<td>Wed 8/24/16</td>
<td>Tue 9/20/16 2</td>
</tr>
<tr>
<td>&lt;name&gt; Integrate</td>
<td>8 days</td>
<td>Wed 9/21/16</td>
<td>Fri 9/30/16 3</td>
</tr>
<tr>
<td>&lt;name&gt; Offer in Catalog</td>
<td>4 days</td>
<td>Mon 10/3/16</td>
<td>Thu 10/6/16 4</td>
</tr>
<tr>
<td>Project Complete</td>
<td>0 days</td>
<td>Thu 10/6/16</td>
<td>Thu 10/6/16 5</td>
</tr>
</tbody>
</table>
Elements of Macro

• Open Excel File
• Open Project Template
• Read First line
• Update Tasks for Specific Project
  • Name
  • Length
• Save Project File
• Repeat
Open an Excel File

Dim xcel As Object
Set xcel = CreateObject("Excel.Application")

xcel.Workbooks.Open FileName:= "C:\Users\jafen\Documents\2_Activities\2_MPUG\MPUG_webinar\16-08-02_Excel_Sample.xlsx", _
ReadOnly:=True

xcel.Visible = True

Create and Name Excel Object

Open a File
Open Project, Assign Values

For i = 2 To 8

FileOpenEx Name:="C:\Users\jafen\Documents\2_Activities\2_MPUG\MPUG_webinar\Template\MPUG_Aug_2016_Demo.mpp", _
ReadOnly:=False, FormatID:="MSProject.MPP"

TempFileName = ""
TempFileName = xcel.cells(i, 1).Value & " " & xcel.cells(i, 2).Value
ProjectSummaryInfo Title:=TempFileName

newstart = xcel.cells(i, 3).Value
ProjectSummaryInfo Start:=newstart

Cycle Through Rows
Open Project template
Assign File Name
Assign Start Date
Set Durations to 0 for complete tasks

TaskStart = 0
If xcel.cells(i, 4) = "Concept" Then GoTo Line1
If xcel.cells(i, 4) = "Design" Then TaskStart = 2
If xcel.cells(i, 4) = "Manufacture" Then TaskStart = 3
If xcel.cells(i, 4) = "Integration" Then TaskStart = 4
If xcel.cells(i, 4) = "Offer in Catalog" Then TaskStart = 5

' set durations = to 0 if phase complete
For j = 1 To TaskStart - 1
ActiveProject.Tasks(j).Duration = 0
Next j

Line1:
Set Durations from Complexity

Define Complexity

```vbnet
DurFactor = 0
If xcel.cells(i, 5) = "Easy" Then DurFactor = 0.5
If xcel.cells(i, 5) = "Standard" Then DurFactor = 1
If xcel.cells(i, 5) = "Hard" Then DurFactor = 3

' Set Task Durations
For Each t In ActiveProject.Tasks
    If Not (t Is Nothing) Then
        t.Duration = t.Duration * DurFactor
    End If
Next t
```

Cycle Through Tasks, multiply for complexity
Save Project Files, Close Excel

Change Task Names

ReplaceEx Field:="Name", Test:="contains", Value:="<name>", Replacement:=TempFileName, ReplaceAll:=True, Next:=True, MatchCase:=False

SaveLocation = "C:\Users\jafen\Documents\2 Activities\2 MPUG\MPUG_webinar\Template\Demo_Files\"
FileSaveAs Name:=SaveLocation & TempFileName, FormatID:="MSProject.MPP"

FileClose
Next i

xcel.Quit ' When you finish, use the quit statement to close
Set xcel = Nothing ' the application, then release the reference

Replace Placeholder with Specific Name
Save File
Go to Next Line
Quit and Close Excel
Build A Master File

FileNew Template:="
ConsolidateProjects Filenames:="C:\Users\jafen\Documents\2_Activities\2_MPUG\MPUG_webinar\Template\Demo_Files\Van Video Monitor.mpp, ConsolidateProjects Filenames:="C:\Users\jafen\Documents\2_Activities\2_MPUG\MPUG_webinar\Template\Demo_Files\Sedan CD Player.mpp,
TimescaleEdit MajorUnits:=1, MinorUnits:=2, MajorLabel:=2, MinorLabel:=10, MinorTicks:=True, Separator:=True, TierCount:=2
FilesSaveAs Name:="C:\Users\jafen\Documents\2_Activities\2_MPUG\MPUG_webinar\Template\Demo_Files\Sample_Master_File.mpp", FormatI

Insert Subprojects
Edit TimeScale
A few more hints

• Variable Names
  • Use Caps for variable Names
  • Type all lower case -- VB will add caps if correct (error check)
  • Example

  Sub variabletest()
    Dim NewVariable As String
    Newvariable
    NewVariable
  End Sub

• Compile Errors
  • If line not typed correctly.
  • Run file – will define error in structure
What to do Now?

Microsoft Visual Basic

Run-time error '9':
Subscript out of range

Continue  End  Debug  Help
Debugging Your Code

- Step Into – F8
- Select Location
- Add Stop (then Run)
- Add Variable Watch
- Add MsgBoxes
- Build Small Bits of Code
- Phone a Friend

Sub filternumber()
Dim succ As Integer
FilterApply "flt_sucess"
SelectAll
 succ = ActiveSelection.Tasks.Count
MsgBox ("Message Box = " & succ)
Resources

- Microsoft Macro Library Reference
- Rod Gill’s Book
  - VBA Programming for Microsoft Project '98 through 2010 with an Introduction to VSTO
- MPUG Discussion Group
  - http://www.mpug.com/forums/type/discussion/
- Type specific request in Search Engine
  - Example: open Excel from Project
Items covered in demos

- **Message Boxes**

- **Organizer Types**

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pjCalendars</td>
<td>5</td>
<td>Calendars.</td>
</tr>
<tr>
<td>pjDrawings</td>
<td>11</td>
<td>Drawings</td>
</tr>
<tr>
<td>pjFields</td>
<td>9</td>
<td>Fields.</td>
</tr>
<tr>
<td>pjFilters</td>
<td>2</td>
<td>Filters.</td>
</tr>
<tr>
<td>pjForms</td>
<td>8</td>
<td>Forms.</td>
</tr>
<tr>
<td>pjGroups</td>
<td>10</td>
<td>Groups.</td>
</tr>
<tr>
<td>pjMaps</td>
<td>7</td>
<td>Maps.</td>
</tr>
<tr>
<td>pjModules</td>
<td>3</td>
<td>Modules.</td>
</tr>
<tr>
<td>pjReports</td>
<td>4</td>
<td>Reports.</td>
</tr>
<tr>
<td>pjTables</td>
<td>1</td>
<td>Tables.</td>
</tr>
<tr>
<td>pjToolbars</td>
<td>6</td>
<td>Toolbars.</td>
</tr>
<tr>
<td>pjViews</td>
<td>0</td>
<td>Views.</td>
</tr>
</tbody>
</table>
Thank You

• Questions
Thank You!

Presentation Title
Month Aug, 2016 @ 12pm-1pm EST
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