

[illegible]

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ON AIR

**You can
watch/listen to a
recording of this
presentation at the
following link**

**[pepfar.adobeconnect.com/
p115uum25e4e](https://pepfar.adobeconnect.com/p115uum25e4e)**

Time to Update ICPI Tools

How long does it take to update your tool (other than time to download and upload tool to PEPFAR Sharepoint)?

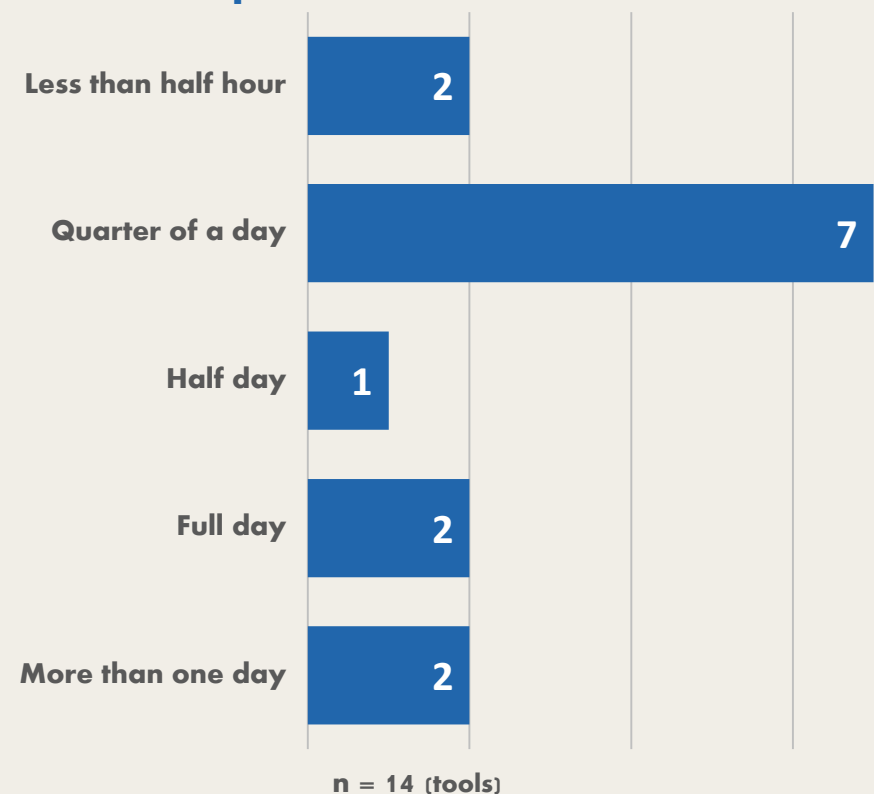
Tool/Tool Set Name

Your answer

Time to update

- ☐ <0.5 hours
- ☐ 0.5 - 2 hours (quarter day)
- ☐ 2-4 hours (half day)
- ☐ 4-8 hours (full day)
- ☐ 8+ hours (more than one day)

How long does it take to update your tools each quarter?



AUTOMATE THE BORING STUFF

PRACTICAL PROGRAMMING
FOR TOTAL BEGINNERS

AL SWEIGART

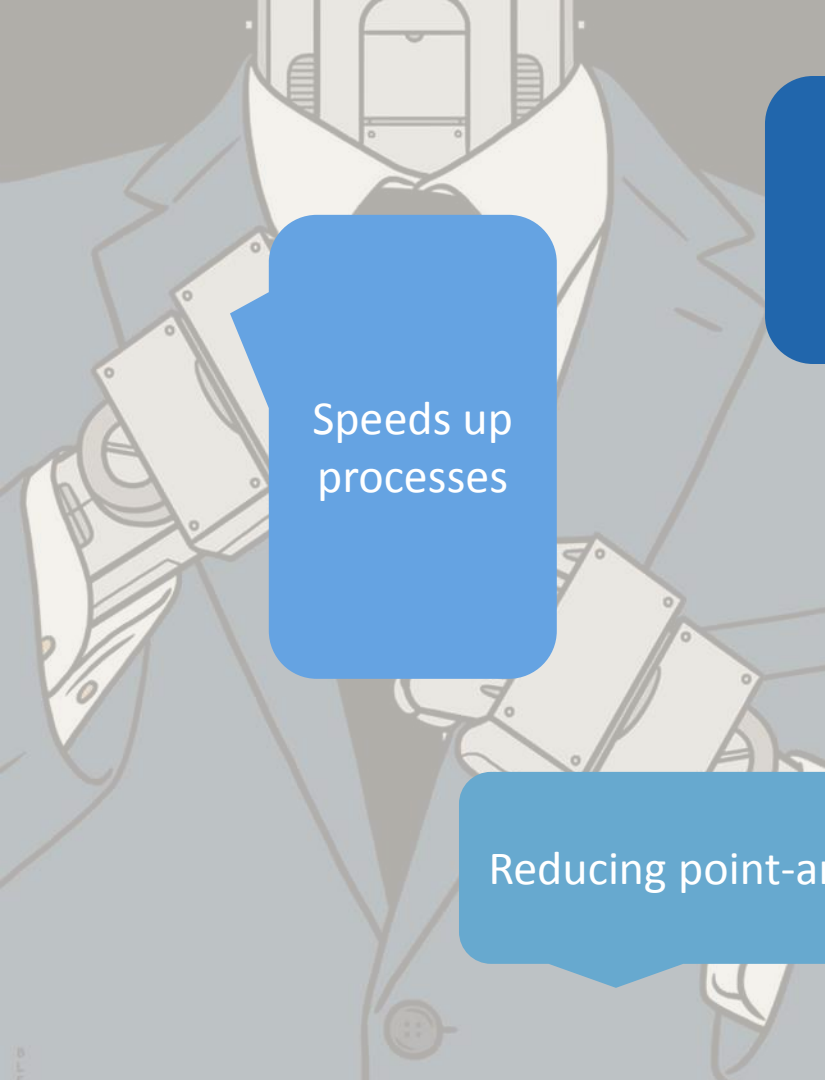


Purpose:

Discuss what automating a tool and its production looks like and how to streamline your own processes



What is **automation**?



Speeds up
processes

Reduce errors

Frees up more time
to analyze data

What is automation?

Reducing point-and-click

Promotes reproducibility

What parts of the
tool building
process **slow**
things down?



What parts of the tool building process slow things down?

Working across multiple platforms (eg SAS & Excel)

Complexity of calculations

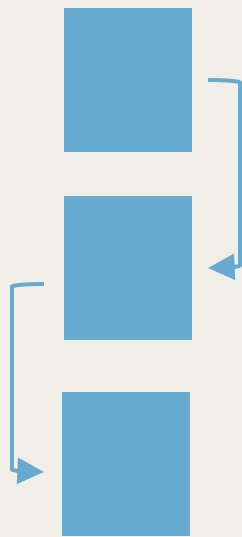
Updating static tables

Limited resources (staff and software)

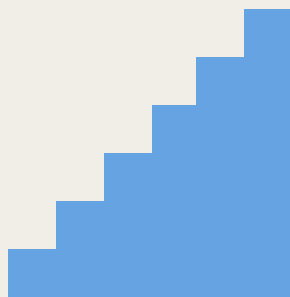
Multiple stakeholders

Need to better understand the program

Changing data structure



Manual copying and pasting within and between original, intermediate and final dashboard files.



Lots of manual steps to follow on each OU's file

Static text in sheets instead of formulas

$$x < f(x)$$



Heavily reliant on point and click to update each OU file

Areas for improvement

AUTOMATE



25%

50%

75%

100%



PARTNER PROGRESS REPORT



```

2 #load package
3 #library("devtools")
4 #install_github("achafetz/PartnerProgress")
5 library(genPPR)
6
7 #import MER Structured Data to Rds format
8 read_msd("ICPI_MER_Structured_Dataset_PSNU_IM_20180323_v2_1.txt",
9         path = "~/ICPI/Data/",
10         remove_txt = TRUE)
11
12 #generate PPR data - global and country specific
13 genPPR("~/ICPI/Data")

```

Use of R

- **Package/function to work in any period, no updating necessary**
- **Apply official names**
- **Create TX_NET_NEW & cumulative variable**
- **Subsetting & aggregation to limit dataset size**
- **Generate csv for each OU (seconds per OU)**
- **1 line of code:**
`genPPR("~/ICPI/Data")`

	D	E	F	G
Complete fields in gold				
data_qtr_date		10/1/2017		
curr_qtr		1		
curr_fy		18		
curr_pd		FY18 Q1		
pd		FY2018Q1		
dataset_date		March 23		
dataset_release		clean		
release_type		c		
proj_path		C:\Users\achafetz\De		
updated_date		Updated: 2018-04-25		
sel_ous_cnt		0		

RUN

	D	E	F	G
Selected OUs				

Automated/Auto-Updating Excel Template

- ~ 90% formulas, 10% hard coded
- Reliance on reference tables and Pivot tables
- Dynamic ranges
- Generic column headers for periods
- Change 3 cells in the tool to update

```
Application.ScreenUpdating = False
```

```
'set directory
Set proj_path = Range("proj_path")
compl_fldr = proj_path & "Reports\"
' set template
Set tmplWkbk = ActiveWorkbook
'unhide sheets
Sheets("RawData").Visible = True
Sheets("rs").Visible = True
'add dates for saving and release type (initial or clean)
Sheets("rs").Activate
Set pd = Range("pd")
Set release_type = Range("release_type")
'for each OU
rng = Range("sel_ous_cnt").Value + 1
Set SelectedOpUnits = Sheets("rs").Range(Cells(2, 7), Cells(rng, 7))

For Each OpUnit In SelectedOpUnits
    OpUnit_ns = Replace(Replace(OpUnit, " ", ""), "'", "")
'create OU specific folder
    OUpath = compl_fldr & "PPR_" & OpUnit_ns & pd
    If Len(Dir(OUpath, vbDirectory)) = 0 Then MkDir OUpath
    OUcompl_fldr = OUpath & "\"
' open csv
    Workbooks.Open Filename:= _
        proj_path & "ExcelOutput\PPRdata_" & OpUnit & "_" & pd & ".csv"
    Set dataWkbk = ActiveWorkbook
'count rows to import over
    LastRow = Range("A1").CurrentRegion.Rows.Count
    LastCol = Range("A1").CurrentRegion.Columns.Count
'copy over rows to bring in from csv to template
    Range(Cells(2, 1), Cells(LastRow, LastCol)).Select
    Selection.Copy
    tmplWkbk.Activate
    Sheets("RawData").Activate
    Range("A2").Select
    ActiveSheet.Paste
'hide background tabs
    Sheets("RawData").Visible = False
    Sheets("rs").Visible = False
'refresh all pivot tables
    ActiveWorkbook.RefreshAll
'open to main page
    Sheets("Info").Select
    ActiveSheet.Unprotect
'hard code date updated & protect
    Range("C57").Value = "Updated: " & VBA.Format(Now, "yyyy-mm-dd")
    Application.CutCopyMode = False
    Range("C1").Select
    ActiveSheet.Protect DrawingObjects:=True, Contents:=True, Scenarios:=True
    ActiveSheet.EnableSelection = xlNoSelection
```

VBA to populate individual tools

- GUI form to interact with
- No updating to code necessary
- Generates & zips reports by operating unit (seconds per OU)

A complex illustration featuring various mechanical gears, pipes, and human figures, symbolizing industry, technology, and human interaction. The design is composed of numerous blue and grey elements on a light background. Large interlocking gears are prominent, some with internal patterns. A network of pipes and valves connects different parts of the scene. Human figures are integrated into the machinery, such as a person standing next to a gear or a person inside a circular component. Other elements include a car, a hand cursor, a lightbulb, a pie chart, a bar chart, a line graph, a checkmark, a trash can, a magnifying glass, a compass, a ruler, and various arrows indicating movement or flow. The overall aesthetic is clean and modern, with a focus on geometric shapes and mechanical motifs.



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Notes and Attribution

- Prepared for the ICPI/DIV “Show and Tell” on “Tool Building Automation” (DC), April 26, 2018
- Image Sources
 - Cover - <http://www.globalfreepress.com/why-implementing-automation-tools-will-change-your-business/>
 - Automate the boring stuff - <https://www.amazon.com/Automate-Boring-Stuff-Python-Programming/dp/1593275994>
 - The New Yorker - www.newyorker.com/magazine/2016/12/19/our-automated-future
 - Snail - <https://pawelurbanek.com/slow-rails-queries>
 - Automate all the Things - <https://engineering.upside.com/upside-engineering-diary-14-automate-all-the-things-e66ddf4a8637?gi=998fa3523149>