The Tao of Excel

The TAO of Excel

The best work in Excel should always include a bias toward "elegant simplicity"

Simplicity

- Decreases the chance of errors and allows those unfamiliar with model to easily understand scenarios and results

Traceability

- Allows for those who did not help build the model be able to understand where data is coming from with easily traceable dependents and precedents

Consistency

- Ensures all data is in the same denomination, formatting for different criteria is the same, makes overall model easier to understand

Adaptability

- Allows for quick and accurate changes to assumptions and variables without significant re-tooling of formulas

Ease of use

- Well thought-out and documented models facilitate use and allow for transfer of ownership without a steep learning curve

We use the guiding principles to ensure we meet the TAO!

Principles of Excel

Some useful tips to take into consideration before working with Excel

Principle 1: Be client ready

Normally Excel is thought of as **a tool to analyze or organize data**. However, Excel is also a **medium and deliverable used to communicate our findings**. When we build and deliver other deliverables such as PowerPoint's, pdf documents, Word documents there are certain items we always consider, **Excel has deliverable requirements** as well:

Considerations:

1. Can someone follow my excel. When they open it do they understand where they find the information they are looking for?
2. Is my Excel client ready?
    1. Does it contain a clear message?
    2. Is there a summary, is the output identifiable?
    3. Is the data sorted and (0r) have the required filters?
    4. Is the selected cell in the top left corner so people know where they are in on a page?
    5. Is the document printable?

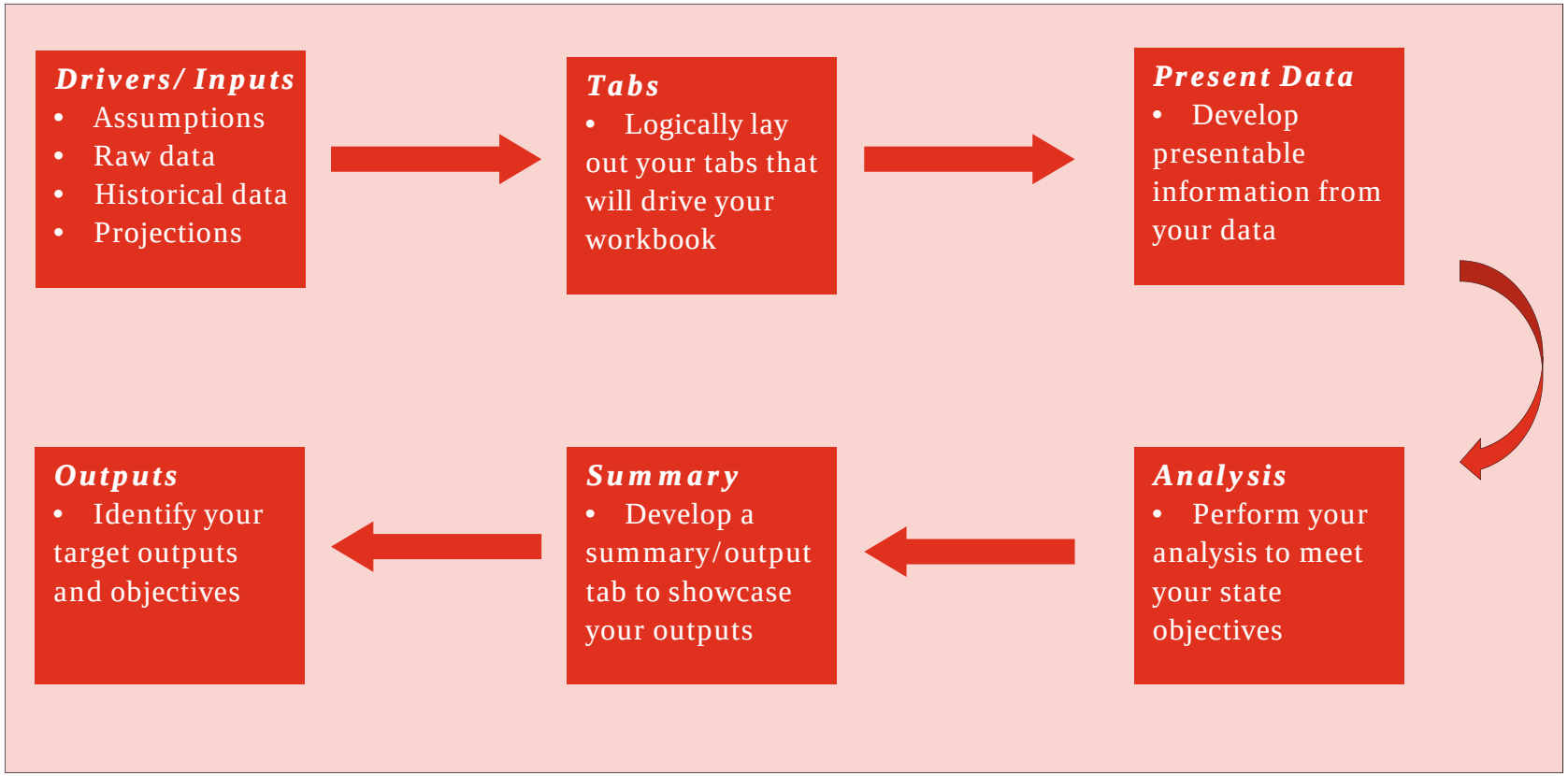
Principle 2: Begin with the end in mind (1/2)

Before building a workbook, it is always helpful to think about your final product and how you build your model will lead to this final product. Develop or think about a Story Board to help you reach your end goal.

What to consider when **Story Boarding:**

- Develop a Summary and/or Assumptions Tab that contains all the outputs of your workbook.
- Logically layout your information so that this information flows within your tabs and from tab to tab.
- Determine how you want to present your information, as raw data or in a more presentable form.
- Think about how the **Core Components** of your workbook will appear and affect your final product.
    1. Inputs/Outputs
    2. Instructions Tab
    3. Change Log

Principle 2: Begin with the end in mind (2/2)



Tabs within a model should be well organized and feed into each other in a logical manner. Assumptions and data should drive analysis, which in turn should inform a final summary/output. The tabs in your workbook are usually in the reverse order of how you arrive at your final product.

Principle 3: Start with a template

Why start from scratch every time, when you can **leverage a template** out there?

- Develop standard templates and begin new work from them.
- When you identify a good Excel document, save it so you can find it later. Borrowing is a foundation of Excel.
- Save files with a consistent naming convention. Retain version control.

Principle 4: Separate the data

Formatting may be the most important aspect of your Excel workbook because how you format your workbook is your **first impression.**

- Ensure the **title and description** of your workbook is located in the **upper left corner.**
- Name your spreadsheet tabs so users can **easily navigate** throughout your workbook.
- **Remove the gridlines** on your workbook to accurately show your data.
- Save your workbook in a **useable format**
  - On all tabs, **freeze the panes** so this information is visible no matter where you are in the workbook.
  - Always save your workbook with **A1** as the **active cell**.
  - **Print format** your workbook so you work is printer ready.
- **Clear cell labels** so your document is easily auditable.
- Format all of your work as **numbers**.
- Never **hide** columns or rows; instead **group** them. Grouping rows allows the user to easily collapse rows and columns, while hiding rows are difficult to locate and can be often overlooked.

Principle 4: Separate the data (2/2)

Identify the project name

Describe the tab

If unclear, reference columns

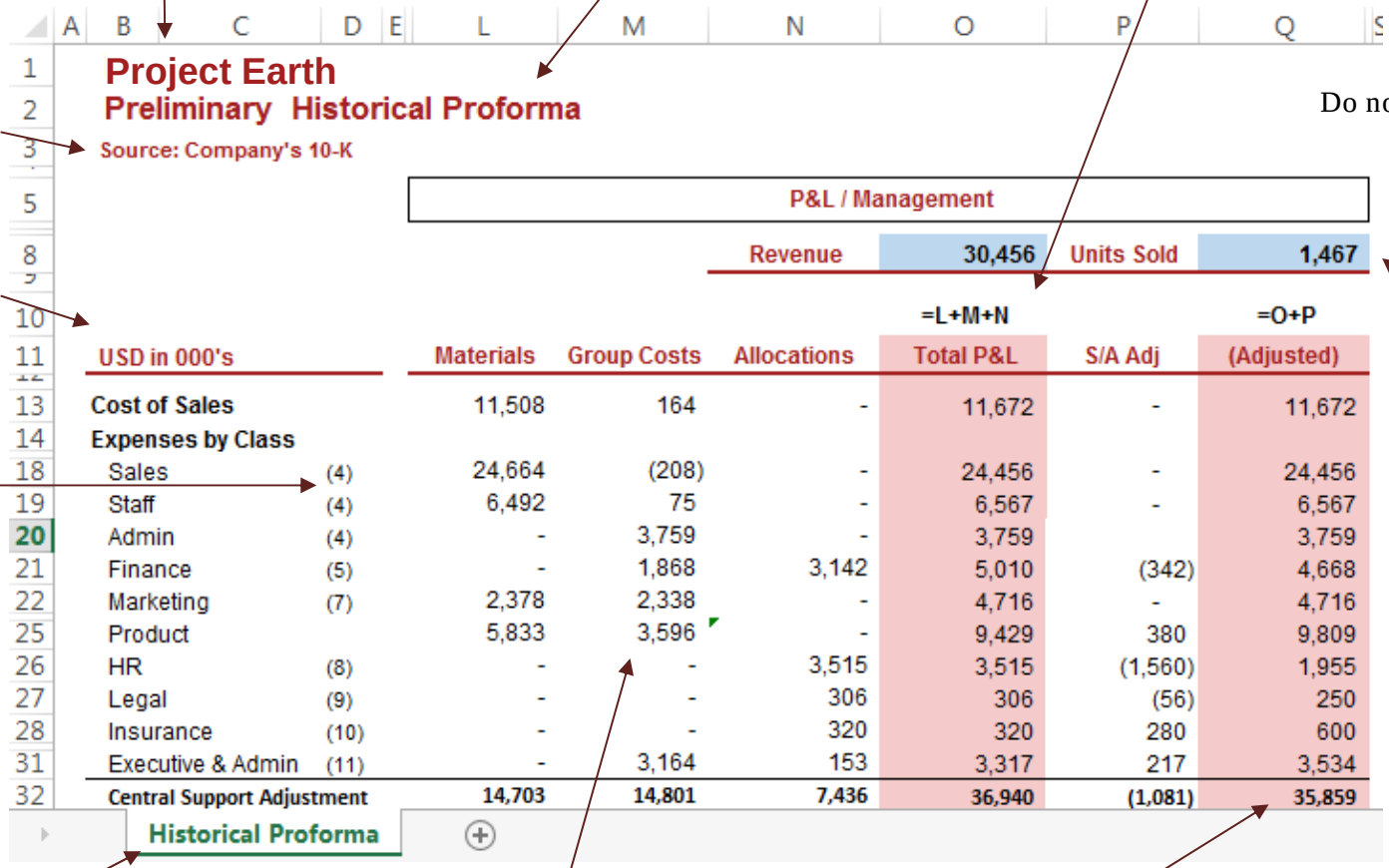
Do not use gridlines

State the source of the information

Use column labels

Shade inputs a specific color

Footnote any additional information



Project Earth
Preliminary Historical Proforma
Source: Company's 10-K

					P&L / Management		
					Revenue	30,456	Units Sold	1,467
						=L+M+N		=O+P
	USD in 000's		Materials	Group Costs	Allocations	Total P&L	S/A Adj	(Adjusted)
13	Cost of Sales		11,508	164	-	11,672	-	11,672
14	Expenses by Class							
18	Sales	(4)	24,664	(208)	-	24,456	-	24,456
19	Staff	(4)	6,492	75	-	6,567	-	6,567
20	Admin	(4)	-	3,759	-	3,759		3,759
21	Finance	(5)	-	1,868	3,142	5,010	(342)	4,668
22	Marketing	(7)	2,378	2,338	-	4,716	-	4,716
25	Product		5,833	3,596	-	9,429	380	9,809
26	HR	(8)	-	-	3,515	3,515	(1,560)	1,955
27	Legal	(9)	-	-	306	306	(56)	250
28	Insurance	(10)	-	-	320	320	280	600
31	Executive & Admin	(11)	-	3,164	153	3,317	217	3,534
32	Central Support Adjustment		14,703	14,801	7,436	36,940	(1,081)	35,859

Historical Proforma

Properly name your tabs

Do not shade or color raw data

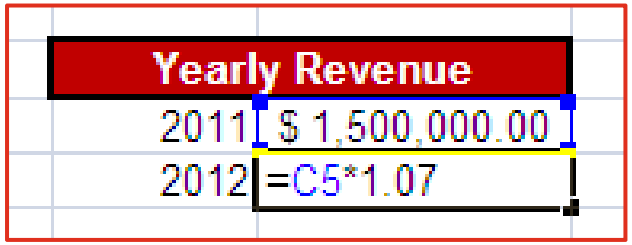
Shade or bold any important information

Principle 5: Highlight and limit and hard coding

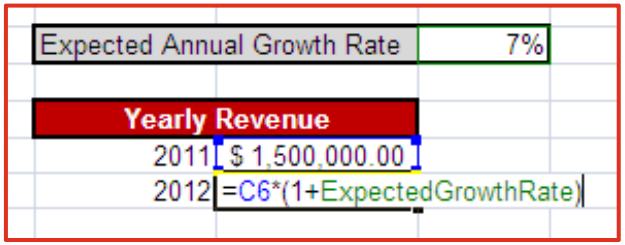
Hardcoding limits flexibility, traceability and increases the risk of errors. **Use formula whenever every possible!**

- Keep source data and reference the source data instead of hardcoding. If you need to edit the source data, keep the original.
- Ensure formatting is different for formulas and input data.
- Be careful of merged cells as it makes it more difficult to move columns or write formulas. Consider center across.
- Be careful of hidden data. Hidden cells can easily be captured in ranges. Consider grouping data to hide it.

Hardcoded Variable



Referenced Named Variable



Principle 6: Break down large complex formulas

Keep your formulas as simple as possible so your work can be easily audited. To do so, consider the following:

- It may look cooler to bunch everything into one monster formula so you have fewer columns/ rows but...
  - Almost guarantees errors
  - Nightmare to understand
  - Difficult to edit
- If you know the output you want, but the way to get there is not obvious, use a stepwise method and outline your steps so others can follow.
- Starting with the objective, think about what data you need to calculate it...
- If you hit a block, think about ways to get data closer to what you need and then look to see if there are ways to modify it.
- Build in Error checks to ensure your formulas are correct.

Principle 7: Review thoroughly

88% of Spreadsheets contain errors, so how do we **check** for them?

- Using Trace Precedents and Trace Dependents, **check** to ensure your formulas are referring the correct cells.
- Always **add a comment** when an external source is involved.
- Print out your workbook and manually perform your calculations using a calculator.
- Ballpark it and rule out common errors.
- **Know the signs** of your formulas and numbers.
- Utilize Formula Auditing Ribbon to assist you.
- Track Changes in Excel when editing documents.

Principle 8: Ask for help or look online

The internet is your friend. It is impossible to know every formula in Excel or the answer to every excel question. However, thousands of your closest excel friends have already posted possible answers.

Internet search hints:

- Spend time thinking about what to search for. Try different combinations of excel terms.
- Break your question down into individual components.
- Combine solutions to create your optimal answer.
- Spend time understanding the individual syntax to help you relate the formula to your specific problem.
- Ask yourself, am I making this to complicated?

Principle 9: Use Keyboard Shortcuts (1/2)

Commonly used shortcuts

- **F2** – Enter into a cell
- **F4** – Repeats last command (or Anchor if within a cell)
- **ESC** – Exit a cell without making any changes
- **Enter** – Moves down a cell
- **Tab** – Moves right a cell
- **Ctrl, Z** – Undo
- **Alt, E, S** – Paste Special (2003 Shortcut)
- **CTRL, D** – Fill Down
- **CTRL, R** – Fill Right
- **Ctrl, (Up, Down, Left or Right)** – Moves to first/last non-empty cell in range
- **Shift, Ctrl (Up, Down, Left or Right)** – Highlights up until last non-empty cell in range
- **Ctrl, Home** – Moves to Cell A1 (unless another home cell has been defined)
- **Ctrl, PgUp/Dn** – Moves between worksheets within workbook
- **Alt, Down** – Opens a drop down list
- **Ctrl, Tab** – Flips between open files of the same program

Principle 9: Use Keyboard Shortcuts (2/2)

C

Shift	Acts as an Anchor
Ctrl	Helps you Accelerate
Alt	Highlights Menu Bar
←↑↓→	Move you around
Tab	Move between tabs
"Spacebar"	Selects a check box
Shift F10	**"Right Click"**

D

Moving Around

1	**Ctrl Home**	Go to top of worksheet
2	**Ctrl End**	Go to end of worksheet
3	**Ctrl ↓**	Accelerate down to end
4	**Ctrl PgDn**	Go to next worksheet (Right)
5	**Ctrl PgUp**	Go to previous worksheet (Left)
6	**Ctrl Tab**	Flip between Excel workbooks

E

Selecting Things

7	**Shift ↓**	Highlight in direction of arrow
8	**Shift Ctrl ↓**	Highlight everything until the end
9	**Shift Ctrl ***	Selects a contiguous area
10	**Ctrl A**	Similar (try doing it twice)
11	**Shift Spacebar**	Selects an entire ROW
12	**Ctrl Spacebar**	Selects an entire COLUMN

32
43
122

F

Formatting Cells

13	**Ctrl 1**	Format Cells
14	**Alt O E**	Format Cells
	... Ctrl Tab to move between tabs	
15	**Shift Ctrl !**	44.00
16	**Shift Ctrl @**	12:00 AM
17	**Shift Ctrl #**	13-Feb-00
18	**Shift Ctrl $**	$44.00
19	**Shift Ctrl %**	4400%
20	**Shift Ctrl &**	Borders on outside area

G

Copying and Pasting

21	**Ctrl C or X**	Copy.... Or Cut
22	**Ctrl V**	Paste to selected cells or range
23	**Alt E S T**	Pastes the format
24	**Alt E S V**	Pastes values
25	**Alt E S F**	Pastes formulas
26	**Alt E S N**	Paste data validation
27	**Alt E S M F**	Multiply a range
28	**Ctrl D**	Fill Down
29	**Ctrl R**	Fill Right

Whilst Keeping Original Format

H

Inserting, Deleting or Changing

30	**Shift Ctrl +**	Will insert highlighted cells or rows
31	**Ctrl -**	Will delete highlighted cells or rows
32	**Alt E A F**	Clear all formats
33	**Alt E A A**	Clear all numbers and formats
34	**Alt H E**	Clear (... then see choices...)
35	**Alf H F S**	Change Font Size
36	**Alt H O R**	Rename Sheet
37	**Shift Ctrl _**	Remove all borders