## *Are we going to make it through peak?*

Some of the models I create are about high level concepts, but many of the techniques apply just as much to money saving such as removing pinchpoints. Some have been about imagining what a future operation could look like at different stages in its growth, with no existing operation as a starting point. But, many have been of real operations where people wanted to sweat assets and make productivity improvements.

I said I'd talk about some of the techniques you can use, and I've split my comments into some different areas: the structure of the model, the input, the guts of the model and, lastly, output and reporting results back to others.

Structure

As I mentioned in the last piece, the very first model I ever created was for Marks & Spencer's peak planning, examining which DCs were likely to max out, and under what conditions – I've partly recreated the structure of this model for the graphic.
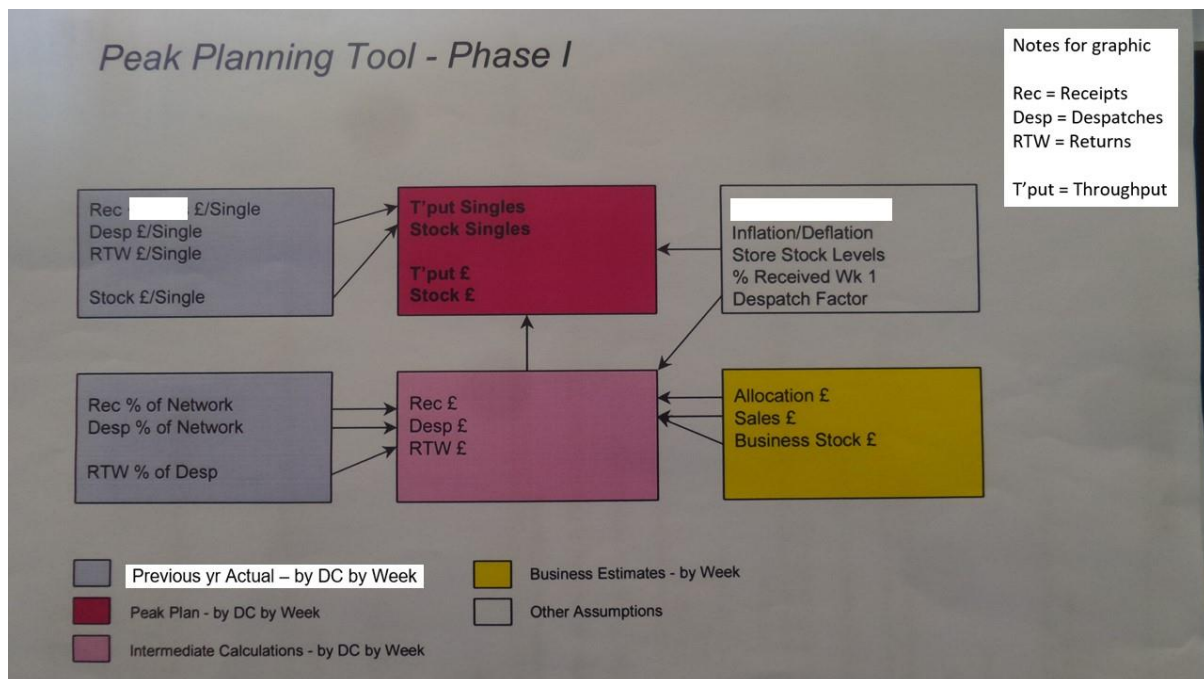
It's really important to create an outline like this – both to communicate with others and to steer the content of the model. Why am I doing this? What's the objective? What input data do I need to find? What scenarios do I want to explore? What output do I want to create? Some of that will depend on the industry involved – some sectors like ecommerce are data heavy, others like construction can be data light.

Input

The input for a model needs to be information that I can collect or generate. In this particular example, I've indicated three different types of input – stats from the existing operation (the two lilac boxes), a forecast from the business (yellow) and various other factors (white) including store

stock. All data I knew I could collect, and with the business forecast able to be refreshed as the season progressed – I highlight the elements of input that the user can easily change themselves, with the results then cascading through.

Inside the model

The engine of the model is likely to be lots of formulae: looking up data from the input element of the model, taking averages, using trend relationships (if you're taking these from a graph, make sure you include as many decimals as possible and have a look to see if you think the R-squared is acceptable first), applying 'if' and 'sumif' statements, etc. Projects can be exhausting – sometimes pretty much every cell in a model can require at least one decision – values, operational methods, relationships…

As I've advised before, keep it as simple as possible and make notes for future reference, although it's now much easier to follow backwards and forwards from an equation …or rather it's now much easier for the user to find those tools in Excel! If I'm using macros to generate multiple results, it's great if the input is all in a single column, with a scenario name, that can be copied and pasted into a live costing page and then copied and pasted back again below the input, keeping the two together. But avoid costing 4K options unless you have a good way of analysing them. PS: I do.

Output & reporting

More often than not, the output is simple tables of figures, but sometimes laid out with a similar 'geography' to the warehouse for example. The M&S example will have had weeks across the top and the various warehouse functions down the side, in blocks for the different DCs – with ecommerce, the same model would now be reporting on the peak hour.

A feature of Excel that I could use more is Sparklines – if you want to use those nice little graphs that fit in one cell of a spreadsheet, consider increasing the row height. However, the outputs for virtually all my models use conditional formatting – formatting that changes as fresh business forecasts are input: red makes it very to see when the maximum capacity is exceeded, amber for when it's getting close, and then perhaps light blue for under-utilised, and purple if things get really frightening!

Communicating back to the business

I see reporting as potentially different to the output - now you've got the figures that are needed for making decisions, but reporting is about communicating the results and decisions to others. At this point you'll probably want to find ways to further summarise the output, drawing out the key points. The message that came out of my M&S model was that one of the DCs might well exceed capacity, so volume was moved from one DC to another which was under less pressure.

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