

The Perils of Flexibility

In oil companies the time of geoscience specialists is a precious commodity. Computer software that restricts what the user can do is clearly a bad thing, this is why so much technical work is done in flexible tools like Excel. Other software wastes time by demanding that data is structured in exactly the right format before it can be loaded, or forces users to document where data came from, or prevents them from doing things the software developer didn't think of.

These overly strict applications prevent the user from doing things, like the addition on this humorous Californian town sign. Now at the moment I can't think of any good reason to mix up units in this way, but that just reflects my current lack of imagination. Excel and similarly flexible applications leave all the checking to the users. They allow apparently stupid actions because they trust that users will have a better idea of when they make sense than the developers ever could.



Of course while trying things out, in the privacy of your own workspace so to speak, this level of flexibility helps facilitate the flow, it lets you test out various ways of playing with the data to see what works. By the time you are sharing the analysis with someone else, for example reporting results to the world, you will have ironed out all the odd calculations, explained all the fiddle factors and fleshed out the intermediate steps that your short-cuts skipped over. After all no one would be stupid enough to make major financial decisions based on a faulty spreadsheet, would they?

Well, unfortunately they would, time and time again. Everyone with any experience in the oil industry knows of at least one seriously bad decision that was made because someone misinterpreted a result, but this is not just an oil industry phenomena. In the UK in 2012 a decision was taken on a rail franchise based on what was later found to be a bad formula in a spreadsheet, as a result the government was forced to refund the £40M costs to the bidders. In 2011 and 2012 JP Morgan lost more than \$6B in the "London Whale" trades, an internal report shows that mistakes in Excel files were one of the main contributing factors. These mistakes are however dwarfed by the Excel errors made by two professors, Reinhart and Rogoff, their 2010 paper has been used by governments around the world to justify austerity policies that have deprived millions of people of jobs and held back growth in almost every country on earth. If their mistakes are removed the data demonstrates that the original conclusions were wrong.

The opposite of flexibility is not rigidity, it is precision. Sure enough when we're testing out ideas we need the flexibility to do some apparently stupid things. But, when we come to communicate final results to others, especially those who don't know what our assumptions are, we need to document the process, explain the details and point out where we've had to rely on less than perfect sources of information. Excel is a great tool for playing with data, but we need something more precise when it comes to sharing it.