Design Thinking, Feedback Loops, and MLOps

I would define design thinking as thinking outside the box, being able to reframe problem scenarios and come up with alternative solutions. Sometimes, the trouble comes from identifying the true problem, rather than the issue or detail that most prominently draws the attention. For data scientists in particular, this can be tricky, as they are often so focused on the mathematical output of a given simulation that they miss out on the power of their own human minds. Using one's intuition and common sense when seeking answers is critical for solving these issues. Thinking creatively allows data scientists in the field to cater their services to their clients more effectively.

Feedback loops are methods by which users of a system can directly give feedback to that system to let it know when it gets something wrong. Even after an algorithm has been fed a lot of training data, it will still face unique scenarios when presented with live data. For this reason, its effectiveness can be bolstered by allowing those users to comment when it fails to describe a situation correctly. If they can flag that instance and add some detail as to why it was wrong, the programmers can go back into the code and add more parameters that will make the model more accurate.

MLOps are operations in machine learning which seek to take what is produced by feedback loops and other methods of commentary and automatically incorporate those things back into the system. In this way, models are made more reliable and efficient, as they will become more accurate with each successive bit of feedback but will integrate that feedback instantaneously.

In a good model, MLOps are explicitly linked with feedback loops. They might be configured to automatically make changes based on the feedback received, but they don't have to be. For example, individually flagged data might not warrant change or even examination by a data scientist, but when flags stack up for a specific reason or topic, a data scientist can go back in, consult with the front-line people who flagged it, and will figure out the best way to alter the coding structure to make the model work better. Design thinking can come into play by creating a model which will solve an important business problem in the first place, using feedback loops and MLOps to keep it running smoothly.