Tech Stack Thoughts from Michel / Sumeet / DJ

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Yesterday, I had good conversations with Sumeet and Michel about developing the right, scalable tech stack at Auxia. This document is to record / share those thoughts.

- **We should simplify the tech stack around TensorFlow**. We should support *fewer* models and *fewer* data types. This is in reaction to the multi-format output of the Prism data product proposal. Converting to LightGBM and testing / maintaining / documenting this create obfuscating complexity. Michel suggests TF Decision Forest is good enough if we want the LightGBM-like modeling.

  At the same time, TF is a senior skillset. It requires training and patience. Data scientists / MLE need to be comfortable with the quirks of DL training / inference. This was my (DJ) primary hesitation, as it requires careful scaling of inputs, interpreting and adjusting gradient descent runs, debugging training issues (NaNs, exploring / vanishing gradients) and so on.

  Michel points out that we can develop standard routines that will avoid these problems. *Also, the output of a data scientist should be a config file (not code).* I agree with this strongly.

- **We agree we need to build horizontally scaled components with contracted inputs and outputs.** Prism is an example of this. We should have APIs or code that does one part of the model-development process and we should make sure it solves multiple use cases. This does not naturally happen as we address linear tickets as they arise.

- **I and Sumeet agree we need to adjust our development process.** I believe this is more feasible than Sumeet believes. I claim that we don't have the development process in place that produces scaled technology.

  Right now, there are many parallel contributions to Auxia's monorepo, reviews are light and PRs are large. This makes development fast, but there's no forcing function to make sure the new use case is served by the existing technology. It's important we have a tech-lead saying "don't create a new file for this. Please generalize XYZ class such that this use case is served."