**Team Six­**

ACME company is a programmatic advertising company working on the demand side (DSP) of a real time bidding system. ACME company already has a data science team of 25 who have a lot of experience of AI and Machine Learning systems in this industry. The team have successfully optimised ad spend for their customers by using machine learning algorithms to identify the most cost optimised ad placement based on data from supply side platforms (SSPs). For example, by knowing the format of the ad, the website and user attributes such as age, and geographical location, they are better able to put the right advert in front of the right user to increase the chance of the user clicking on the advert. The CTO of ACME company reaches out to you and asks you to think about a system to generate new ad content. They are excited that Generative AI will be able to generate new content just in time which would increase the personalisation of an advert, meaning it will be better targeted. This will improve quality assurance and will help in the planning of new advertising campaigns based on the operational data it will provide. ACME company wants you to develop an image generation architecture which will be able to very quickly create new advertising content in real time during a page loading duration of a website.

(Please refer to the additional document outlining how DSPs, SSPs and Ad Exchanges work)

**Key Stakeholders**

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**VP of Engineering**

It’s absolutely critical that the performance of a Generative AI model is optimal since we have only a short duration of time between a user loading a site and adverts appearing on the site. Since we serve customers from more than 40 different industries, we are keen to ensure new advertising media generated is relevant to an industry, variety would be key to ensure advertising is attractive on publisher websites.

The Engineering team would like to ensure that this ML system is highly accurate and the ability to be able to experiment frequently and easily is paramount to allow data scientists to better plan advertising campaigns.

**Head of Data Science**

We have a data science and engineering team here at ACME with 25 members. The ML practitioners here all have a strong background of programmatic advertising science and are familiar with how to optimise ML models, Python is their language of choice. Since we are an advertising company, we are keen to ensure brand safety, we wouldn’t want to create advertising media that may be considered harmful or insensitive.

**Chief Financial Officer**

We realise the huge significance of being able to automate systems to generate new advertising creative media and appreciate that it may be expensive to operate. From a financial perspective, we are willing to allow inference and training production systems to have very powerful infrastructure however, we are very keen that strict budgets are enforced and monitored in non-production environments.



