# Hackathon

## Preface

It was arranged that the Hackathon would be organised online using the Gather | A better way to meet online. The time frame for solving the assignments is set to 8h.

Topics will be opened based on the competitors' interests.

## A robust system for offer management

**Project focus:** Solution Design

**Description:**

Your company is selling various subscription tiers that differ in their features. Some may include trial, and some may not. To boost your sales, you partner with various telcos to boost your sales to provide exclusive deals to their customers. The marketing team would also like to run-time limit deals such as the Black Friday deal. Come up with a solution design that will allow marketing people to configure such campaigns themselves. The system must be able to return personalised subscription offers based on the user's country or current subscription status.

**Output Requirements:**

Teams are required to create a structured system architecture of the system matching all the requirements above. Furthermore, the part of the marketing strategies come with an effective workflow or the algorithm that would help the marketing team and the company achieve their goals.

## Control panel for application features

**Project focus:** Software Engineering

**Description:**

An application you built consists of many features where each one is a wrapper around a 3rd party API. Unfortunately, the 3rd party APIs tend to be degraded, sometimes completely unavailable, making your users frustrated as they cannot use that part of your application. The product team decided that users should be notified of any degradation to the service or to be notified that the feature is currently unavailable in the worst-case scenario. Your task is to create a system that will allow signalling to your application that a feature is degraded or completely unavailable.

**Output Requirements:**

Teams will be designing and developing the application covering the specified scenario. The application should be operable at the level of POC demonstrating key values for the specified use case. Part of the outcome is also the live demonstration and presentation.

## Time machine for web pages

**Project focus:** Software Engineering

**Description:**

In this project, we will basically be building a clone of https://web.archive.org/. Apart from page versioning, implement a version comparison tool that highlights the differences between the two versions.

**Output Requirements:**

Based on the provided blueprint system (or if an alternative is known to the team) teams will be designing and developing the application covering the specified scenario. The application should be operable at the level of POC demonstrating key values for the specified use case. The outcome consists also of the demonstration and presentation of the entire solution.

# Asset embedding and clustering

**Project focus:** Data Science / Machine Learning

**Description:**

We implemented an embedding algorithm Film2Vec (from the family of Node2Vec models) and did some clustering on top of the calculated vectors. We're pretty happy with how the embedding works, and we even use it in production. Still, there is always room for improvement (we thumb sucked the hyperparameters and don't do any optimisation). We may include the students in this part as well, as it is more fun even though there is more work in the second part. Also, it's hard to do the second part if you don't know what the first part is about. The clustering is far from ideal, and we're using it just for our internal visualisations and helping us understand our catalogue. For it to be helpful in production, it needs a lot of improvements and probably coming up with and implementing new clustering algorithms like the ones "out-of-the-box" that didn't work for us.

**Output Requirements:**

In the assignment above teams are required to design and implement the possible approaches and mechanisms how to optimize the utilization of the Node2Vec algorithms for the particular use case. The solution does not have to rely on the provided algorithm family, but teams can come up with different approaches adopted for an instance elsewhere. The solution will be demonstrated on the provided or self-created test data and the detail of the solution as well as used approaches will be presented.