Core Capability Drive-through Report

- **User-Manual**

  Please execute the following commands to set up the environment to run the algorithm

  1. To install virtual environment

     If Python 2.x,

     ```
     python -m pip install --user virtualenv
     python -m virtualenv env
     ```

     If Python 3.x,

     ```
     python3 -m pip install --user virtualenv
     python3 -m venv env
     ```

  1. Download the zip file *FieldProgressAlgorithm.zip*
  2. Unzip the folder
  3. Open the terminal. Navigate to the directory where the folder was unzipped
  4. Run the following commands

     ```
     source env/bin/activate
     pip install -r requirements.txt
     ```

  5. Download and open the python script FPM_cli.py : Change the location of your folder directory in line 65 and 71 middle string(do not edit 'file:///' or the trailing html file names)
  6. Save the file
  7. Open terminal & navigate inside the folder and run the command :

     ```
     python FPM_cli.py <path_to_voters_file> <no_of_volunteers> <precinct_id>
     ```

     ex:- python FPM_cli.py data/voters.csv 7 165010

- **Concern logs**
  - Improve k-means to provide better clustering
  - Incorporate k-means score to decide which cluster is more viable

- **Record of demonstration as performed**
  - Core Capabilities driven through
    - Ability to take in voter information (csv file), volunteer information (number of volunteers) and precinct id to generate cluster of voters (turf cuts)

- View cluster of voters on the map i.e. an interactive map representing different clusters in different colors

    o Suggestions and positive feedbacks
        - Use localhost (http) instead of specifying file path in the code
        - Visualization can also be done on flask server
        - Explore more python packages that can be used for better clustering
        - Positive feedback – Commended for bringing all the modules together to get the clustering working given the difficulty and learning curve of relevant technologies.

- **New risks, if any, and mitigation plans**
    o Things that are core capabilities, but were not exercised: Mitigation = repeat CCD

        N/A

    o Core Capabilities not ready: Mitigation = do afterwards, co-ordinated with Client
        - Route planning is scoped out because of time constraints, API requirements and amount of efforts required
    o Changes in understanding

        N/A

- **Reprioritized capabilities, if any**
    o Improving the clustering to include which cluster is more impactful
- **Plans through end of the semester**
    o Improving the algorithm further by including the k-means clustering score to prioritize the clusters formed
    o Integrate with the frontend to make sure API requests work
    o Test each individual module on their own (Frontend & Backend). Backend focus should be on the algorithm, and frontend should be on visualization and API calls
    o Get Visualization working with deck-gl layers