ENERGY PLANT RECOMMENDATION FOR BIO-FUEL

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Why this Project?

- Farmers from Punjab and Haryana burn paddy straw(around 35 million tonnes) to clear the paddy fields which is harmful to environment and health.
- A2P Energy Solution Pvt Ltd pays Rs. 3000/- per acre and collects straw from them to convert paddy straw to biofuel.
- This business couldn’t survive if the transportation cost is too high.

The Problem or Challenge

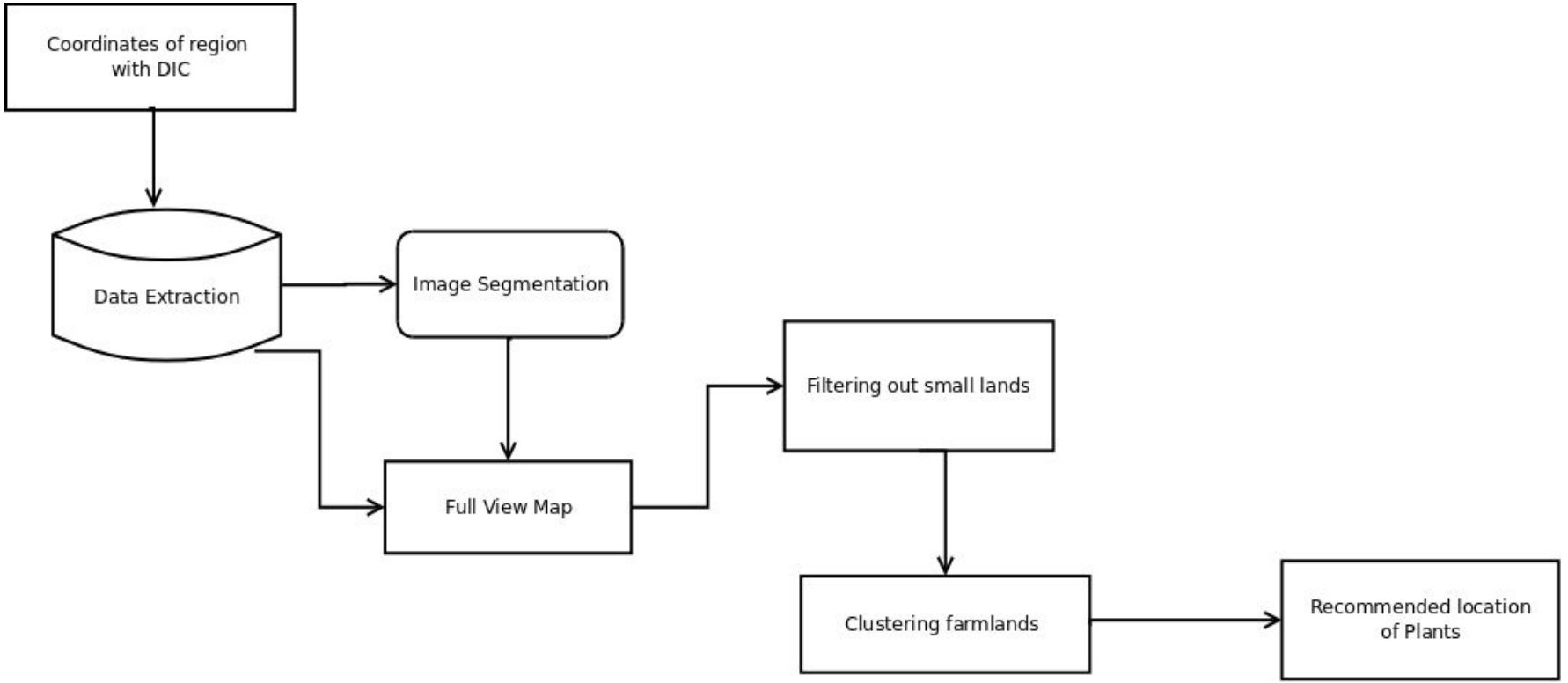
To recommend the optimal locations for Plant to reduce transportation cost.

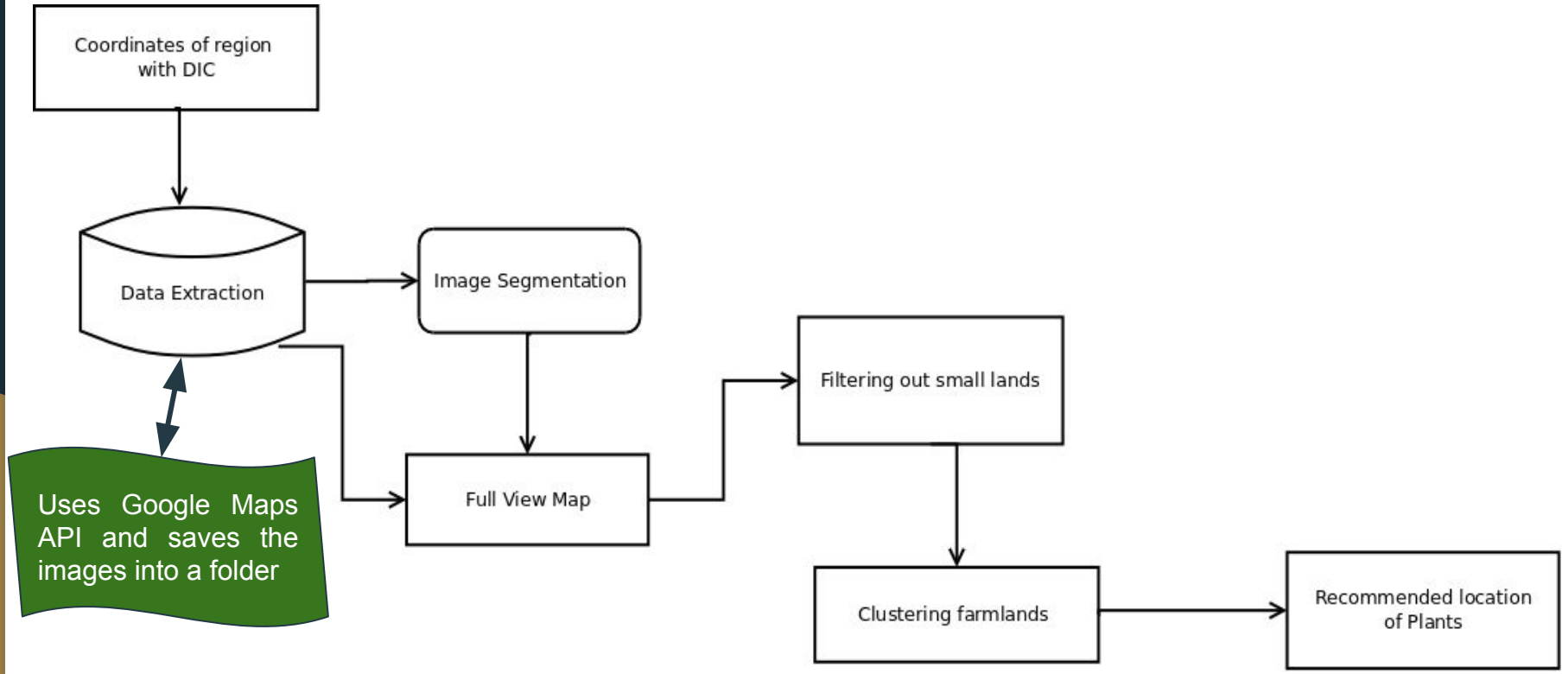
The project creates a pipeline using Python which accomplishes the desired Objectives

Objectives

- ➔ Extract zoom level images of a region (approximately 30km radius)
- ➔ Perform Image segmentation on the images and mask out paddy fields.
- ➔ Attach the images to create a clear map
- ➔ Calculate the area of each patch
- ➔ Recommend Top N patches using various heuristics.

The Pipeline


Coordinates of region with DIC
Data Extraction
Image Segmentation
Full View Map
Filtering out small lands
Clustering farmlands
Recommended location of Plants


Coordinates of region with DIC
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Uses Google Maps API and saves the images into a folder
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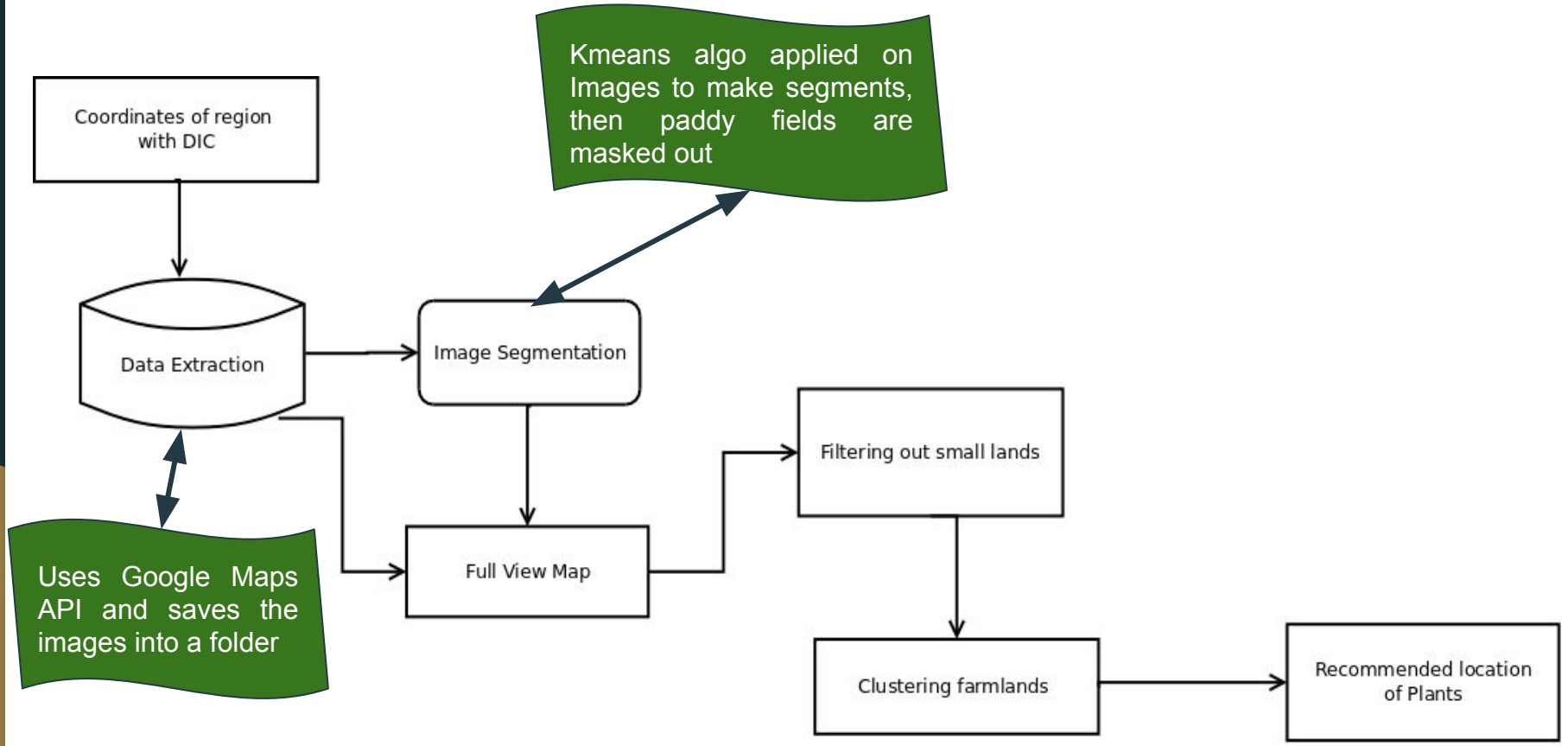
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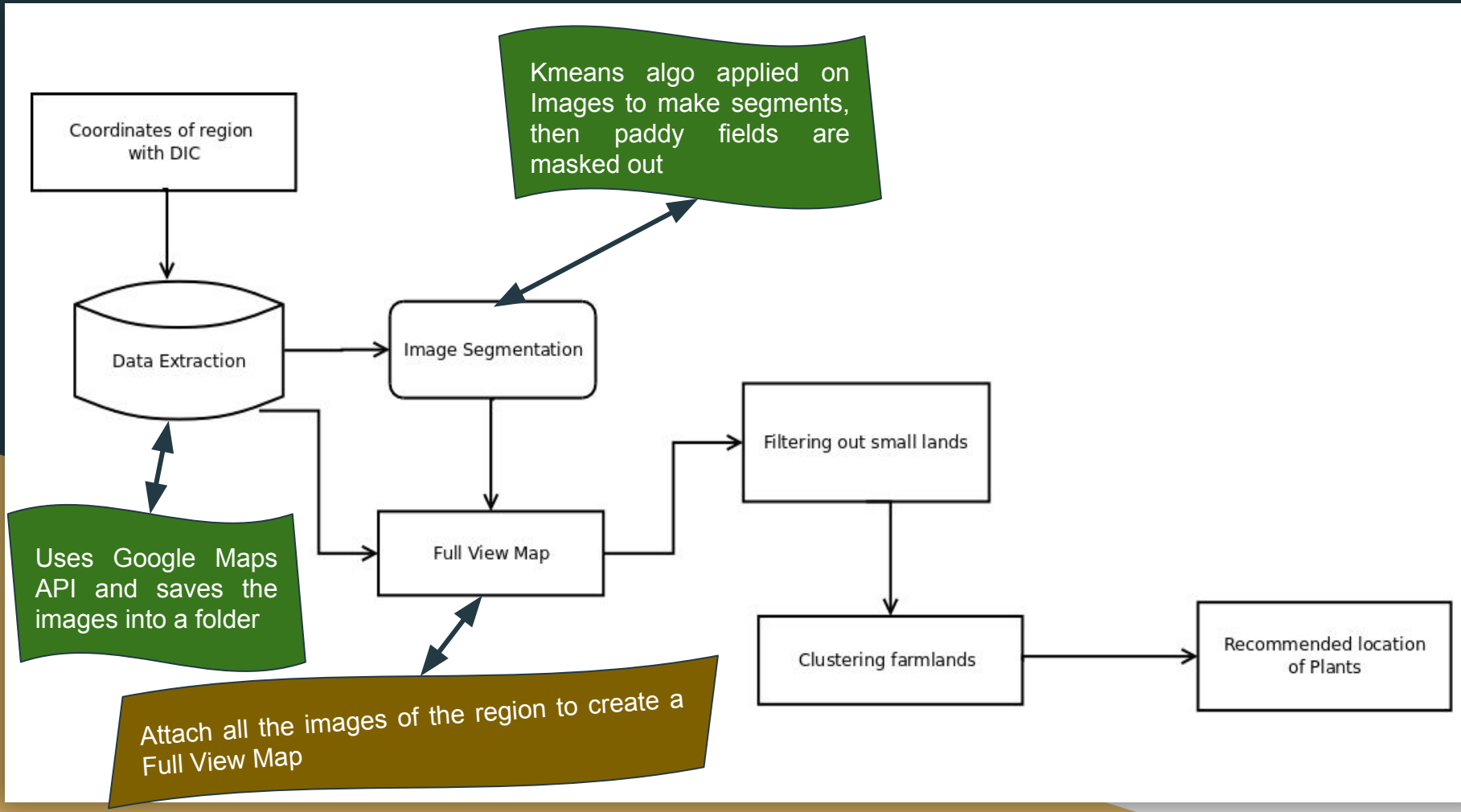
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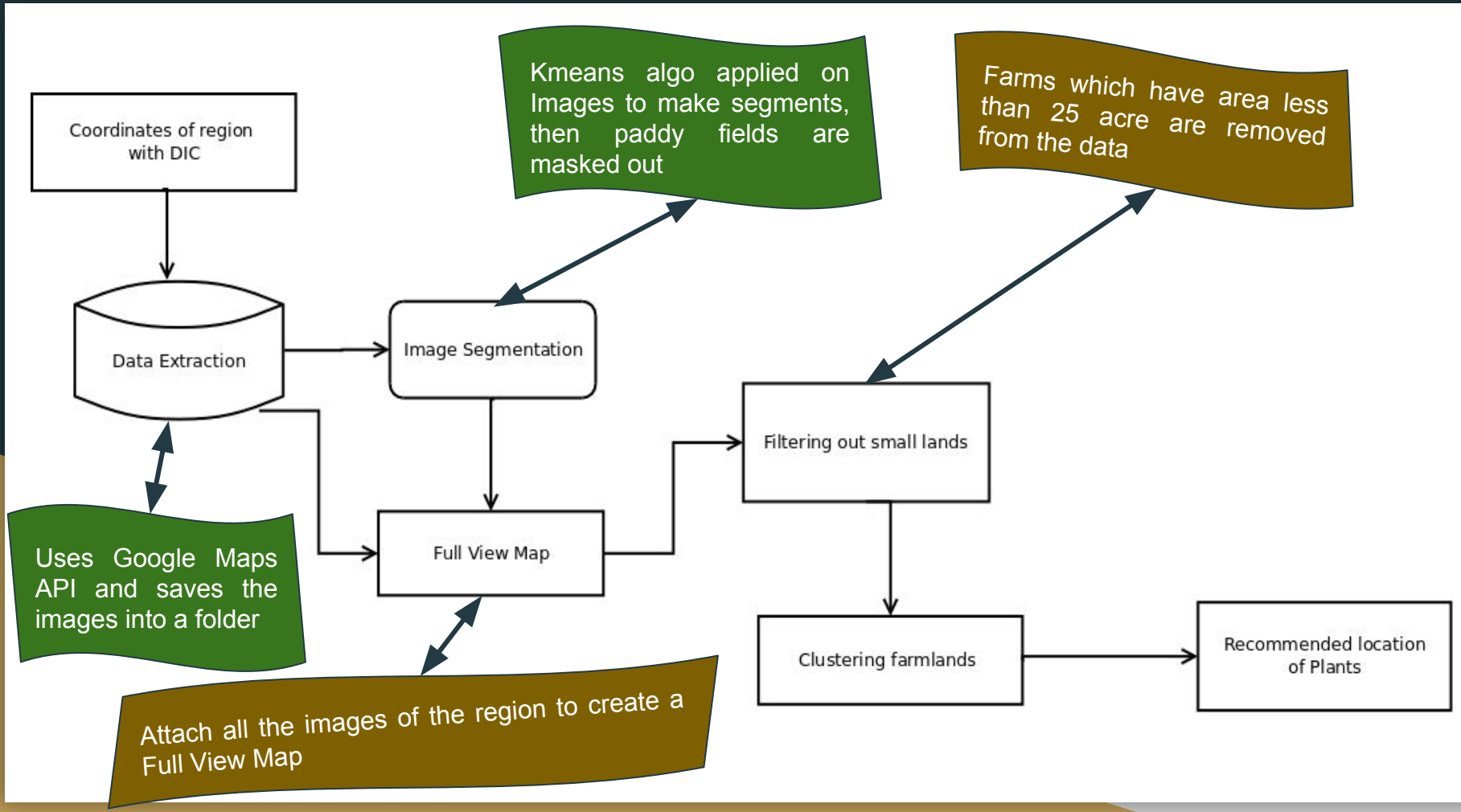
Attach all the images of the region to create a Full View Map


Coordinates of region with DIC
Kmeans algo applied on Images to make segments, then paddy fields are masked out
Farms which have area less than 25 acre are removed from the data
Data Extraction
Image Segmentation
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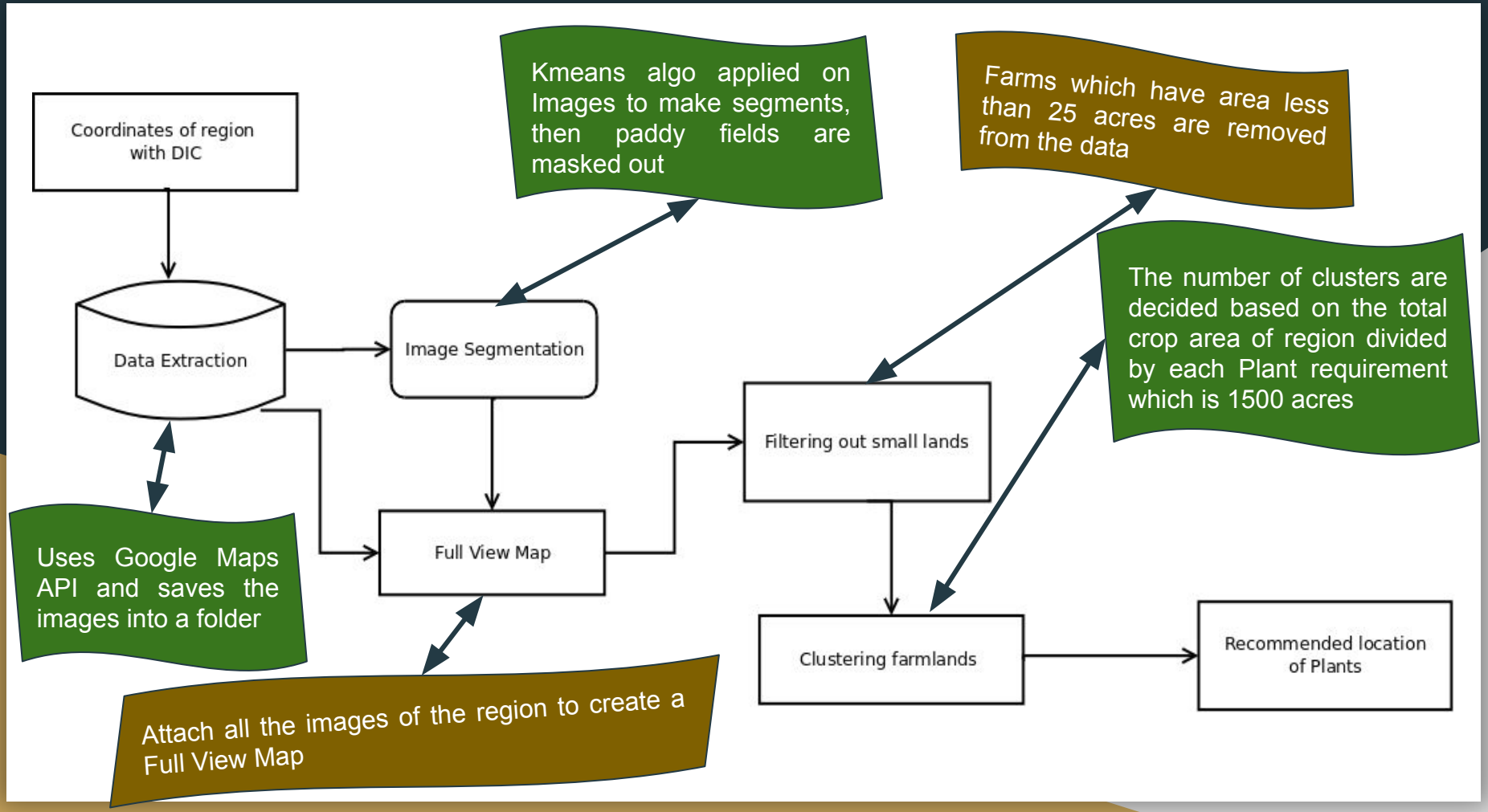
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Farms which have area less than 25 acres are removed from the data
The number of clusters are decided based on the total crop area of region divided by each Plant requirement which is 1500 acres
Filtering out small lands
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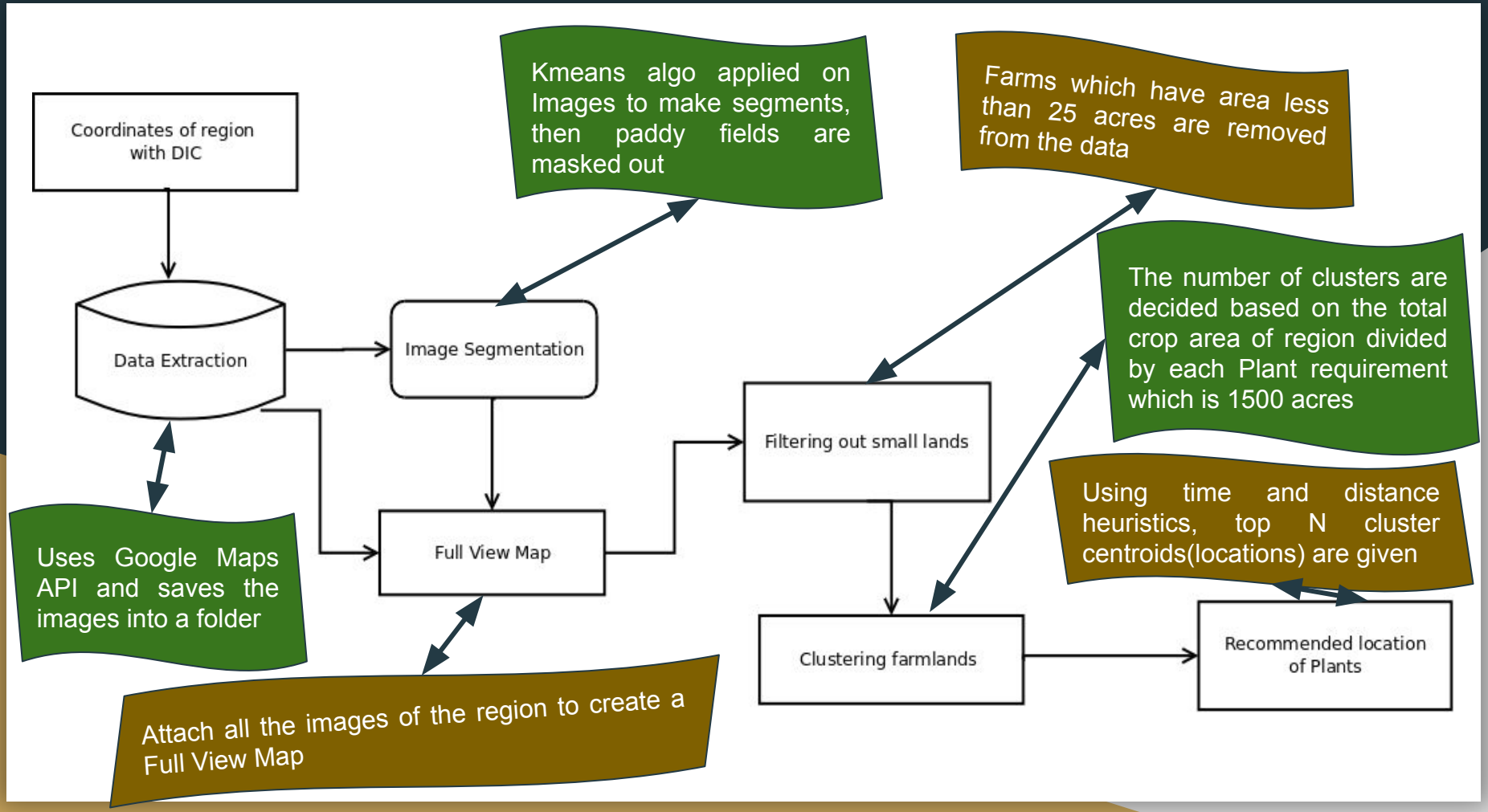
Recommended location of Plants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The number of clusters are decided based on the total crop area of region divided by each Plant requirement which is 1500 acres
Using time and distance heuristics, top N cluster centroids(locations) are given
Recommended location of Plants

Conclusion

- Reduces Transportation Cost
- Increases employment for workers
- Reduces human labour by large amount to decide the location of Plant