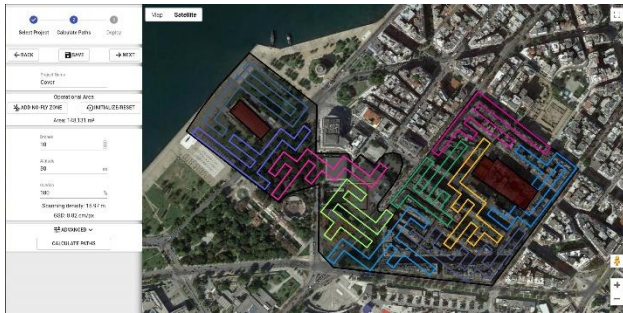


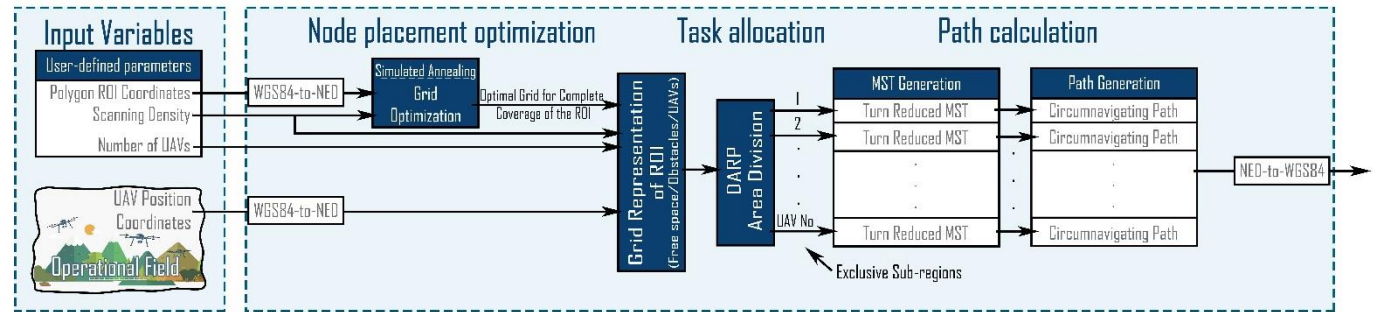
# Multi-Robot Coverage Mission Planning for UAVs' Remote Sensing Operations



Choosepath is an end-to-end coverage mission planning platform, optimized for real-life operations, able to deploy multiple UAVs to cooperatively cover a region of interest (ROI). In the heart of this platform lies a novel multi-robot Coverage Path Planning (mCPP) methodology, that supports convex and very complex-shaped concave regions of interest (ROIs), with no-fly-zones and obstacles. In addition, it manages wisely the operational resources, as it guarantees no backtracking and redundant movements that do not contribute to the coverage procedure, reduced paths' length and number of turns, as well as reduced overall duration of the missions.

## mCPP Service Input:

- From GUI
  - ROI coordinates
  - Scanning Density
  - Number of UAVs
- From physical world
  - UAVs initial positions

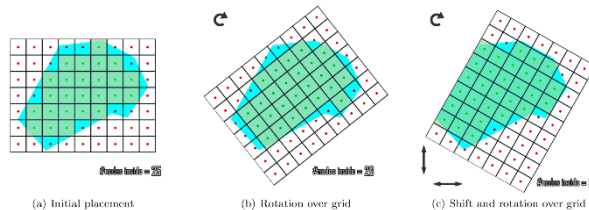


## mCPP service Output:

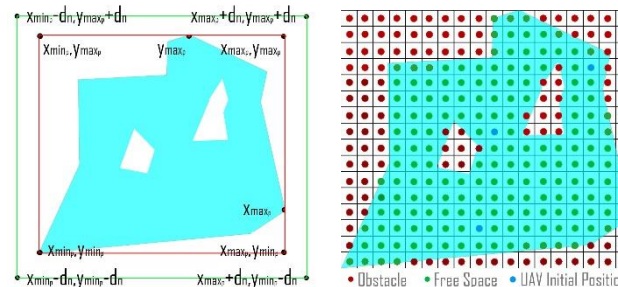
- Set of paths, for all UAVs, to completely cover the ROI

## Path Planning Procedure:

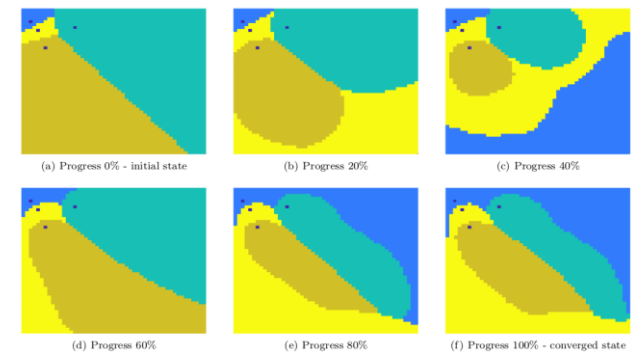
- Simulated Annealing based optimization procedure for the calculation of the optimal for this scenario grid (control variables: Shift-X, Shift-Y, Rotate- $\theta$ )



- Representation of the ROI on grid



- Divide the ROI's grid to exclusive sub-regions for each UAV to undertake with DARP



- Run STC CPP algorithm for each sub-region, applying a turns reduction mod

