



A6.2. Research swarm and constellation layouts in practice and nature and select top candidates

A6.2 Istražiti modele konstelacije u praksi i prirodi te odabrati najprikladnije modele

D6.2. Article: Constellation models in practice

D6.2. Napisan izvještaj: Modeli konstelacije u primjeni

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ORKAN project is using a constellation of 4 UAVs to do rapid signal scanning.

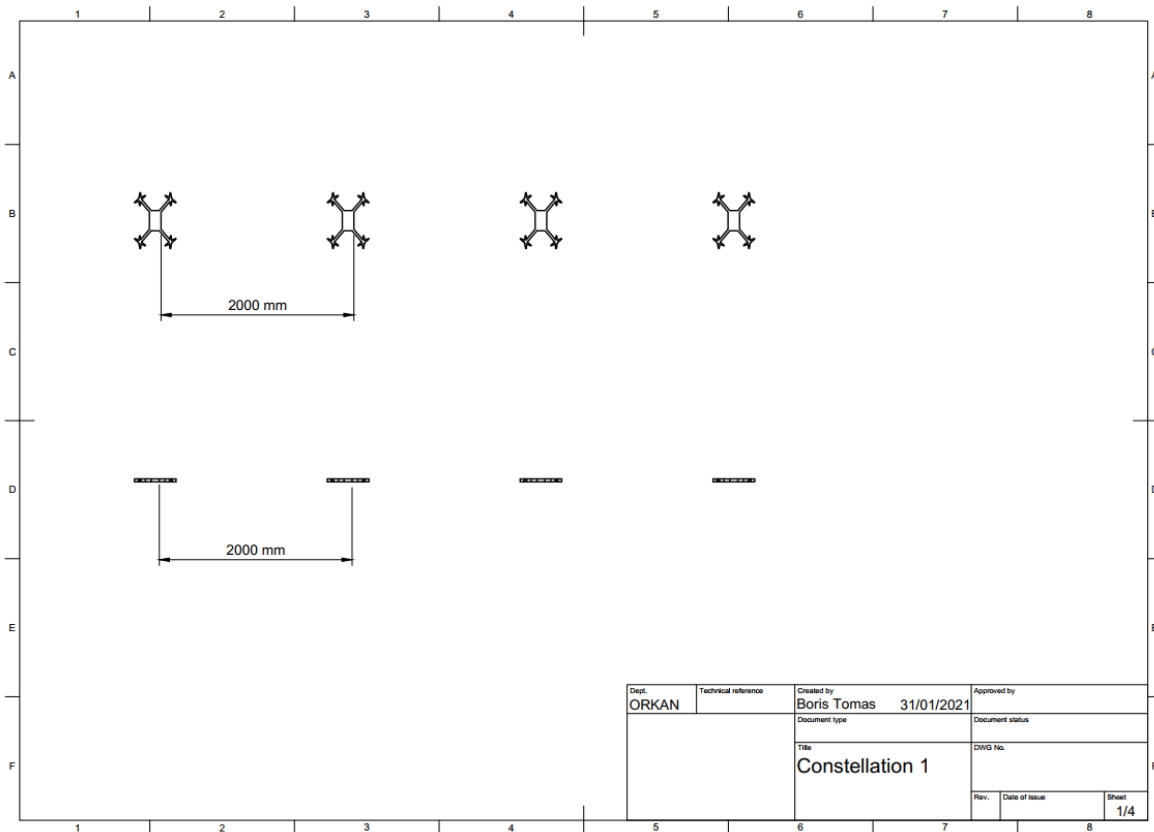
Due to a low number of UAVs, the number of various constellation models is highly limited.

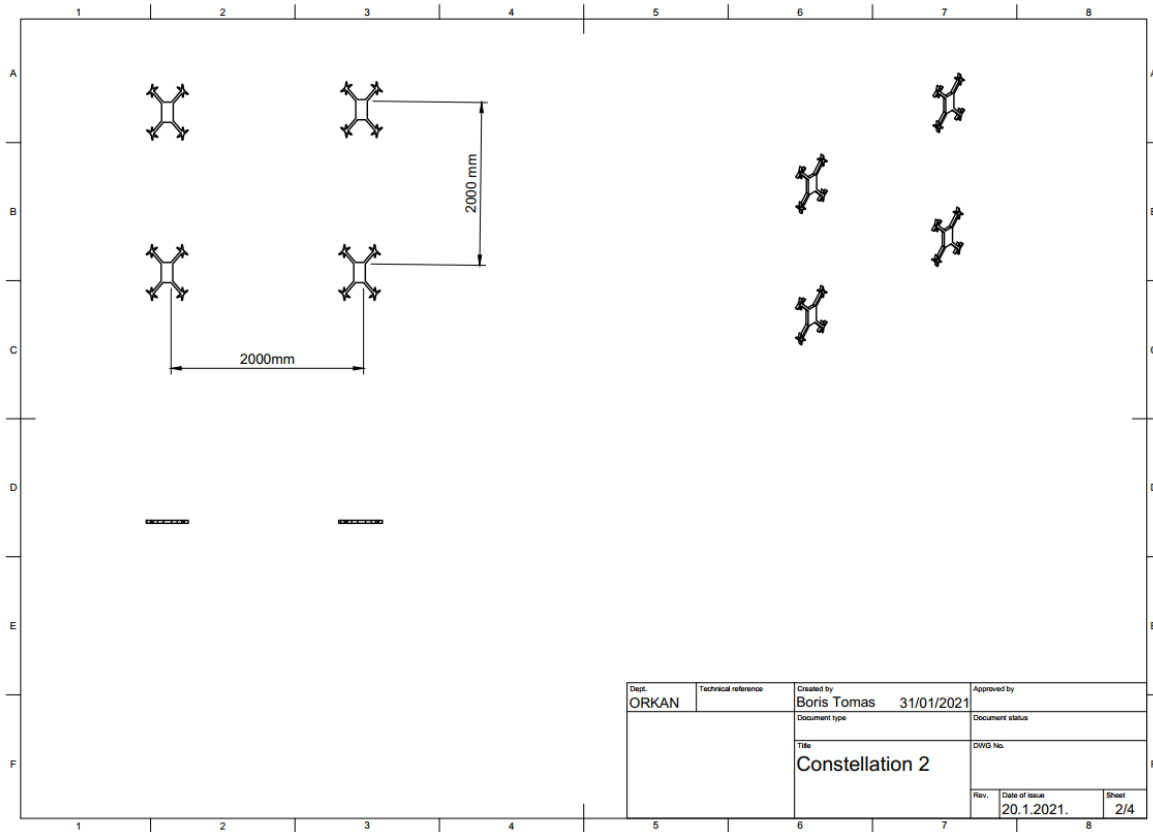
There are three major scenarios where constellations are used:

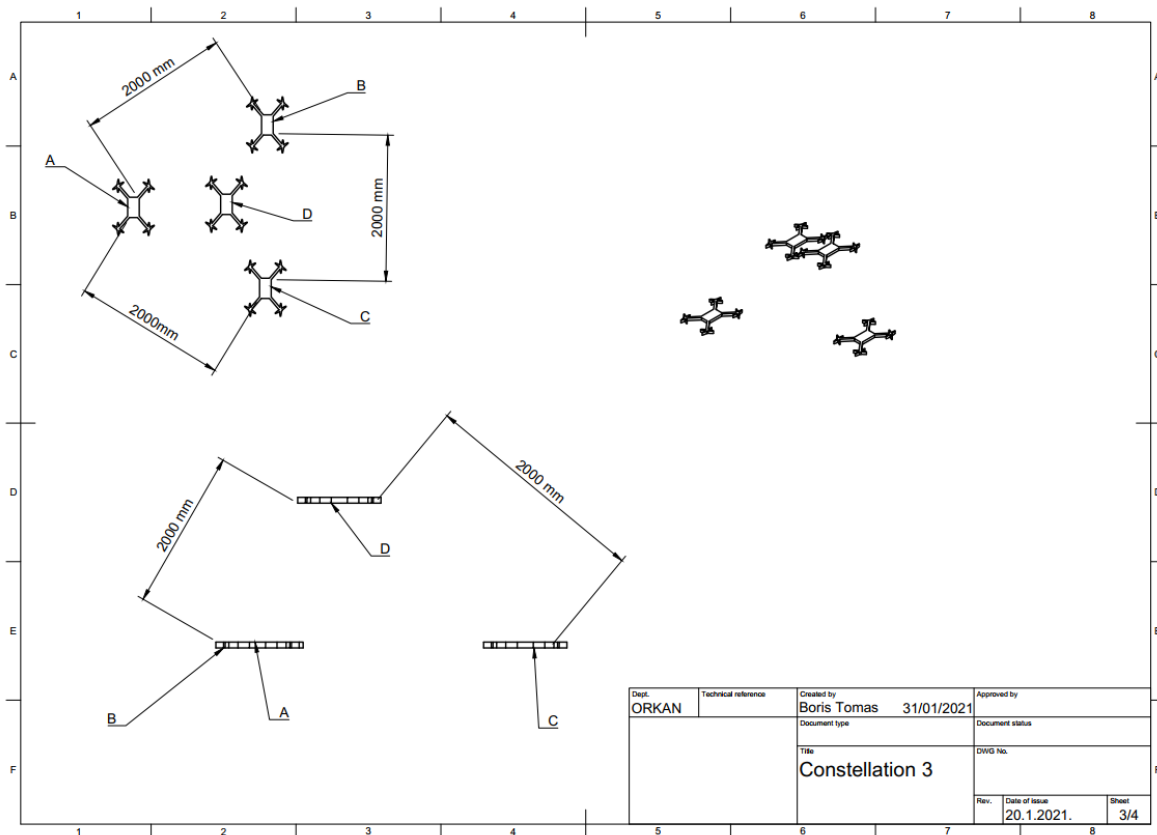
- Take off
- Flight time (operation)
- Landing

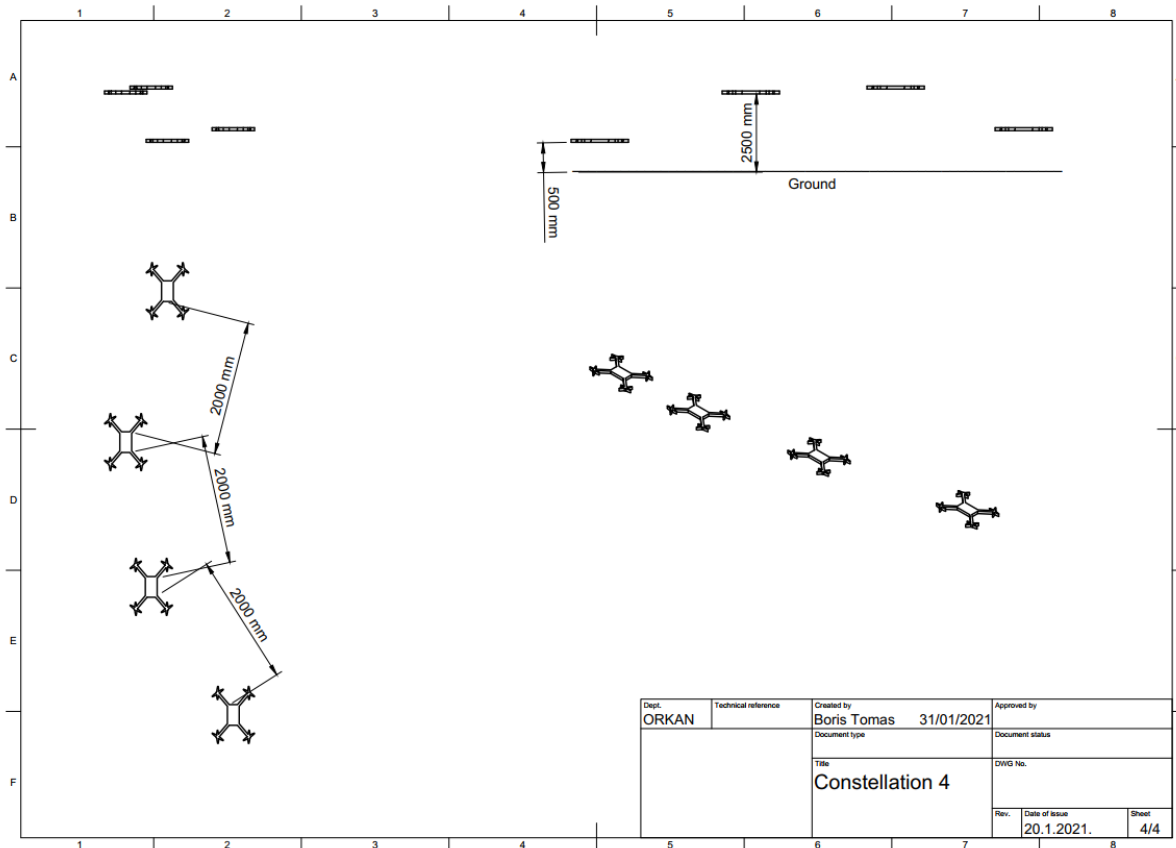
For take-off and landing operations constellations are limited to X-Y plane. During operations (flight time) constellations candidates can include Z axis.

Constellation candidates are:









Candidates for take-off and landing are:

- Constellation 1
- Constellation 2

If the intruder UAV radiation pattern is omni directional then scanning sweep pattern should be a plane. For such a plane, the fastest constellation is linear (Constellation 1).

Other patterns for flight time may include Constellation 3 and Constellation 4. Last one could be particular in detecting single source with stereo configuration of UAVs.

All of the UAVs are spaced at 2000mm in order to maintain a safe and collision free environment. This parameter can be changed based on experiments conducted. During experiment and run time constellations can change due to environment conditions like wind and GLONASS variations. To cover a wider area, distance between UAVs can change. Furthermore, the shape of the constellation can change.



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Conclusion

Constellation patterns are limited by the number of UAVs. True and best constellation pattern should be determined by experiment or simulations.