# 6G-RIC
**Research and Innovation Cluster**

# Energy-Aware Resource Allocation and Trajectory Design for UAV-Enabled ISAC

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> How is joint resource allocation and trajectory design addressed in the context of multi-user multi-target UAV-enabled ISAC? What practical considerations are taken into account for UAV-based sensing systems?
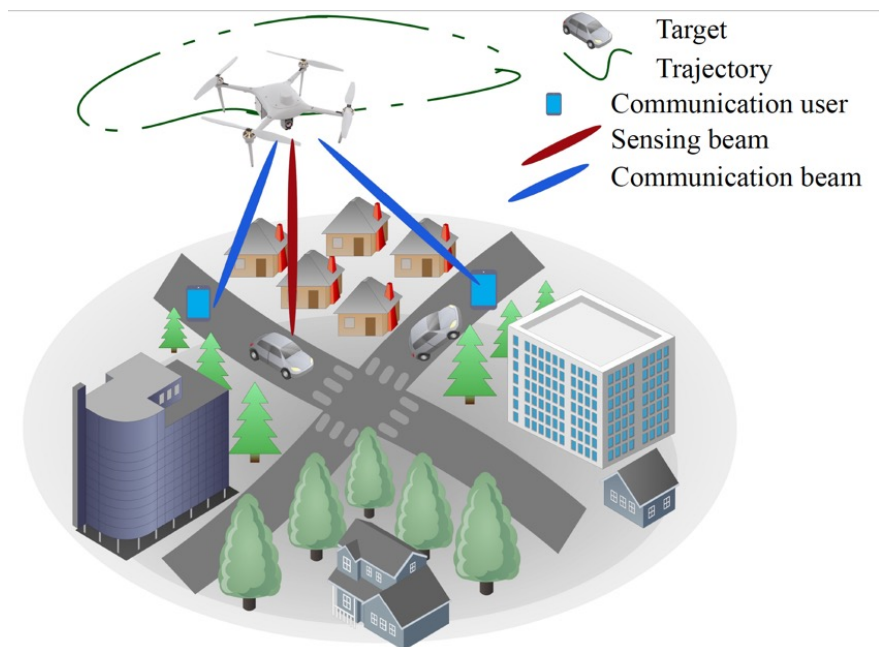


*ISAC: Increase the spectrum efficiency and enable the sharing of the physical infrastructure in 6G, UAV-aided wireless communication: Simple deployment and favorable channel characteristics. UAV-aided sensing: Provide line of sight (LoS) links to the ground, which is also desirable for sensing. UAVs can significantly reduce the typically high sensing powers as they can approach the target. UAV senses the target in the hovering mode to reduce the complexity of designing the beam pattern continuously and circumvent the UAV-induced Doppler shift, simplifying the sensing data signal processing.*

## KEY FINDINGS

The proposed algorithm design aimed at minimizing total UAV power consumption while satisfying the quality of service (QoS) requirements of users and sensing tasks.

Specific considerations for the sensing task included synthesizing a focused beam with small sidelobes, achieving a required accumulated sensing signal-to-noise ratio (SNR), and ensuring the UAV hovers above the target during sensing.

Simulation results revealed significant power savings enabled by the proposed scheme compared to two baseline schemes.

*A. Khalili, A. Rezaei, D. Xu and R. Schober, "Energy-Aware Resource Allocation and Trajectory Design for UAV-Enabled ISAC," GLOBECOM 2023 - 2023 IEEE Global Communications Conference, Kuala Lumpur, Malaysia, 2023, pp. 4193-4198*