**This subsection deals with the general topic of CPT schemes. Problem Statement to deal with specific niche of problem to be considered in the FYP.**

Increasing industrial and military interest in UAV payload delivery has motivated interest in CPT schemes for bulky and heavy objects. Several papers have examined proposals for CPT schemes, addressing issues such as payload attitude and controlling multiple agents [4][5][6][7][8]. Two common limitations of most proposed CPT systems are a reliance on centralized control and the need for explicit communications between agents. These limitations increase the control system’s complexity and power requirements. Decentralized CPT schemes can eliminate the need for explicit communication between agents, thus reducing the system’s power usage.

* Contemporary industrial and military interest in payload transportation
* Payload transportation
  + Agent type: Terrestrial v aerial, homogeneous v heterogeneous
  + Load composition: rigid v flexible, homogeneous v heterogeneous
  + Attachment scheme: rigid grasp, cable suspension, implications of each
  + Single agent v multi-agent
* Cooperative payload transportation (for bulky and heavy objects)
* Strategies for coordinating agents: centralized, distributed, decentralized
* Limitations of existing architectures for CPT:
  + Centralized, distributed: rely on communication, latencies, spectrum usage
  + Centralized: less robust to infrastructure failures, underutilizes onboard computational power
  + Decentralized: neighbor localization computationally complex
  + Assume specific environmental conditions (mocap, no wind disturbance, no obstacles)
  + Many assume a preset trajectory without optimizations
  + Few handle hardware failures gracefully
* Desired properties of a UAV CPT scheme
  + Agile maneuvers
  + Tolerance of diverse environmental conditions
  + Obstacle avoidance
  + Neighbor collision avoidance
  + Minimal oscillations in payload motion
  + Minimal explicit communication between agents
  + Minimize mission time and control effort