Manned and Unmanned Airspace Integration

Did you know...?
In recent years, there has been extensive use of Unmanned Air Systems (UAS) in a civil commercial context for tele-observation activities, such as aerial photography, surveying landscape and search and rescue operations.

**Objective:**
This project aims to examine the methods used to integrate unmanned aircraft into the airspace used by manned aircraft. Both the situations in US and Singapore were analysed.

**Approach in USA**
To meet the problem of lack of onboard collision avoidance capabilities,

- A program called ACAS X, which collects surveillance information from an array of ground sources like radar and satellites and uses it to alert the UAV pilot to possible conflict with other UAVs, may be used.

To counter the problem of lack of secure command and control linkages,

- Airworthiness certification is required for unmanned aircraft which wish to fly in the shared airspace. This certification should assure that the aircraft is holistically capable of flying safely, including having reliable command/control linkages.

As a pioneering move,

- NASA is already in the process of implementing an airspace for unmanned aircraft to fly below 500 ft over a period of 4 years.

**Approach in Singapore**
With an already congested airspace and highly populated geographic areas, the operation of UAS requires a set of clear rules and responsibilities in order to mitigate the risks to aviation and public safety. These include:

- **Permits:** Operating Permit and Activity Permit will be issued to applicants who are capable of operating the UAS safely.

- **Use of geospatial platform to serve as the repository for the sharing of captured data.**

- **This will reduce the repeated UAS operations and potentially reduce the number of UAS operating flights as well as the associated risk from such operations.**

**Conclusion**
Though most of the plans proposed are generally feasible, it is essential to build the trust and confidence of the aviation authority and general public before we could propel the dream of operating unmanned aircrafts in unsegregated airspace into reality.