



Karnataka Jnana Aayoga
(Karnataka Knowledge Commission)
Bangalore

Ref: KJA: Order-10: UAS: 2015

December 22, 2015

Sub: Establishment of KJA Study Group on “UAS Technology, Applications and Policy: Karnataka Vision”

1. Karnataka is one of the leading states in aerospace technology and utilization of integrated ICT solutions – within governments, private sector and academia. Karnataka state is aiming to be a leading hub for aerospace technology development – both in manufacturing systems and utilization systems.
2. KJA has been discussing about the technology of Unmanned Aerial Systems (UAS) – which has been rapidly emerging as an important element of aerospace segment. While world-over, the UAS technology and applications have been on a rise, it is still at nascent level in India. UAS is bringing a new paradigm to society - by bringing a simplistic “piloting experience” to common people of society AND at same time emerging as a sophisticated, but easy to operate, technology for image/data collection that can help real-time monitoring of crops, forests, water-bodies, urban growth etc, for civic monitoring, for disaster management support and many other governance needs. UAS is also making “waves” in bringing innovative applications - logistics delivery, engineering construction, internet connectivity and many others. UAS is also an excellent tool for higher education and bring concepts of aerospace principles integrated with machining, manufacturing, avionics, instrumentation, data software etc – thus, university education and research can get a boost. Many market studies have predicted a significant commercial growth for UAS – thus, commercial potential of UAS can be tremendous for industries in the state for productionising and offering services of UAS to society.
3. In the Indian context, there are challenges to bridge – on one side the potentials are extremely large and it is essential to develop Indian capabilities in UAS AND on other side policy/regulations need to be well-defined, technology standardisation is yet to emerge, sensor technology is linked to UAS, commercialization opportunities need to be well developed, training of manpower and piloting is required, certification and regulatory monitoring is important, liability and insurance aspects are linked etc. If these are well addressed and articulated in a comprehensive study, KJA feels that India can leap-frog and establish an effective national eco-system for UAS. Karnataka has the right capability to be the hub of such a national UAS eco-system development and must take lead in this regard.
4. As a first step to evolve contours of UAS studies, KJA, in association/cooperation with Jain University, National Institute of Advanced Studies (NIAS), GITAM University, and NDRF/Institution of Engineers – Karnataka Centre, had organized a 1-day “Knowledge workshop and Round-table on Civilian Applications of Unmanned Aerial Systems” on March 7, 2015. With about 20 national-level experts debating and discussing various aspects of UAS in the meeting, it was recommended by the experts that there is a need for a well-defined positioning of this technology in the National Airspace, which implied that there is a need to



develop policy, procedures, regulations, and guidance material. The meeting also recommended that a study on UAS assumes importance - involving governmental and non-governmental agencies, to create a national roadmap for "UAS Technology, Applications, and Policies: Karnataka Vision", to enable Karnataka to take the lead.

5. KJA, in its 4th meeting considered the Roundtable recommendations and decided to undertake a comprehensive study on UAS – and generate a case for Karnataka to lead this in the national arena. With above perspective, a KJA Study-Group is hereby constituted with following Members:

- Dr BV Naidu, Member-KJA - Co-Chair
- Dr Baldev Raj, Director, NIAS/Ex-President, INAE - Co-Chair
- Dr Ramachandra, Programme Director, NP-MICAV, NDRF - Member
- Dr G Ramesh, Head, Small & Micro Air Vehicles, CSIR-NAL - Member
- Dr. A. K. Ghosh, Professor, Aerospace Dept, IIT Kanpur - Member
- Representative of DG, DGCA - Member
- Dr Mukund Rao, Chairman, K-GIS Tech Comm/MS, KJA - Member
- Dr MYS Prasad, Former Director, SDCC/ISRO - Member
- Mr Rahul Narayanan, CEO, Team INDUS - Member
- Representative of VC, VTU - Member
- Dr Krishna Venkatesh, Jain University - Member

GoK Departments:

- Addl. Chief Secretary, Home Department, GoK (or Rep) - Member
- Addl. Chief Secretary, Higher Education, GoK (or Rep) - Member
- Principal Secretary, Agriculture, GoK (or Representative) - Member
- Principal Secretary, Planning, GoK (or Representative) - Member
- Principal Secretary, IT/BT, GoK (or Representative) - Member
- PCCF, Govt. of Karnataka - Member
- Secretary, Urban Development, GoK (or Representative) - Member
- Representative of IGP, Karnataka - Member
- Mr R Vijay Krishna, Project Manager, NDRF - Member
- M Jayashri - Secretary
- M Jayashri - Convenor

6. The task of the KJA Study Group is three-fold - one, bring out a comprehensive report on UAS Technology, Applications and Policies as a strategy plan for the nation where Karnataka can lead; two, undertake specific demonstrative application projects in the state, involving departments of Karnataka Government, where examples of UAS value gets demonstrated end-to-end for governance and Karnataka-GIS AND three, UAS research and technology can get embedded into the higher education system of the state. The KJA-Study Group, amongst other things, may specifically address:

- Study and understand the global developments as well as environment and trends in UAS from the perspectives of technology, applications, and policies. Make an assessment of national relevance and potentials of UAS and how a national utilization system can be categorized and developed.



- Study various types of UAS technologies and sensor systems and assess them for different utilization sectors in India.
 - Design and undertake case studies of UAS, with emphasis on civilian applications, such as agriculture, forests, urban and rural development, civic operations etc. and document the results. These studies can be taken up involving the respective user government departments.
 - Study policy aspects of UAS with importance given to aspects of airspace, insurance, and liability. These efforts should lead to recommendations on a comprehensive policy regime for UAS.
 - Study the need for standards in UAS and sensors; certification of operations; training of operators; development of specialized sensors and equipment which are relevant to UAS.
 - Define a road-map for industrial sector development in UAS addressing commercial aspects of manufacturing and services.
 - Define a road-map for the adoption of UAS technology into the higher education system of the state in terms of a systemic education model amenable to lab research and innovation.
 - Identify high-end R&D profiles of UAS technology with focus on how research/academic institutions can undertake research advancement of UAS technologies.
 - Recommend a road-map for full-scale embedding of UAS into an integrated airspace environment and guidelines for UAS operations.
 - Address any other aspect of UAS technology, applications, and policies, which the Study Group may feel necessary.
7. Towards preparing the detailed study report, the Study Group may undertake wide consultations, especially with government agencies/industries/academia, across the state and holistically study all aspects of UAS. The outcomes can then be internalized by the Study Group into a report. Once the report is developed by the Study Group it may be presented to KJA for formal endorsement/approval. The Plan can then be formally submitted by KJA to Government of Karnataka (GOK) for implementation actions.
8. Other experts, as identified/approved by Co-Chairs and Member-Secretary, KJA, may be co-opted to the Study Group and/or invited for specific meetings, as required. For the demonstrative exercises, if other agencies/departments are required to be involved, the same may be taken up by Co-Chairs, in coordination with KJA. As an engagement with UAS industries, Co-Chairs may invite specific industries, as required, for specific meetings and consult with them.
9. Specific budget has been approved/earmarked by KJA for the Study Group activity. The expenses of the Study Group would be met from this approved budget of KJA. For administrative purposes, the expenses for meetings, any travel/fees/honorarium and any other meeting expenses etc could be met from KJA funds, as per KJA procedures, allocated for the Task team activities. Funds related to this activity will be expended upon approval of Co-Chairs of Study Group and as per procedures of KJA.
10. The term of the Study Group will be, in 2 phases, for a period of 12 months from the date of issue of this order – first, within 6 months the report on UAS Technology, Applications and Policies as a strategy plan would be submitted AND second, within 12 months the conduct of



UAS demonstration Case Studies would be achieved and comprehensive report on UAS Strategy Plan for Karnataka would be submitted.

11. This order issues with the approval and under authority of Chairman, KJA.

(Mukund Rao)
Member-Secretary, KJA

To,

- All Members of the KJA Study Group on UAS

Copies for Information to:

- All Members of KJA
- Chief Secretary of Government of Karnataka
- Principal Secretary, Dept of Higher Education, GOK