

Joint Advanced Technology Program (JATP) at the Indian Institute of Science (IISc)

Dr. Abdul Kalam was induced to take charge as the director of DRDL after his successful SLV project in ISRO. By that time, Prof. Satish Dhawan who retired from IISc and for a longer time holding the charge of ISRO chairmanship wanted to start ISRO-IISc space technology cell (STC) to work on the scientific problems of interest to ISRO. Dr. Kalam saw the management model of (STC) and desired very much to get a similar joint activity started between DRDL and IISc. He wanted the model of functioning of this joint program [to be called Joint Advanced Technology Program (JATP)] more intensely connected with the projects of the integrated guided missile development program (IGMDP) of DRDO (in this manner it was different from STC model). The projects had to have joint investigators, time lines for delivery of research results and periodic reviews. In a way this approach was entirely new at IISc at that time for most of the research done by faculty had peer reviewed publications as aim (as has been the case over the last three decades by and large) with *time line based delivery of research results very new*. Because Dr. Kalam spoke to a large number of faculty and induced them to do work that could go into development projects directly, some faculty got fired up with this aim and joined in to conduct research.

Thus, the starting of JATP in 1983 was in a way visionary entirely to Dr. APJ Abdul Kalam. Followed by a visit by Dr. Kalam to the Department of Aerospace Engineering, IISc, there was an invitation to 7-8 faculty from IISc to visit Hyderabad and participate in a day discussion on the needs of the missile programs. This resulted in the formation of JATP with enthusiastic support from Prof. S. Ramaseshan, IISc Director, and Dr. V.S. Arunachalam, SA to RM to the ideas of Dr. Abdul Kalam. The first program started with 14 joint projects. The areas covered were aerodynamics, propulsion, structures, guidance and control and involved at least three departments – aerospace, mechanical and school of automation. The moderating, coordinating role of JATP at IISc was the responsibility of Prof. H. S Mukunda (HSM) to begin with, Prof. B. Dattaguru (BD), Prof. P.R. Mahapatra (PRM), Prof. S. M. Deshpande(SMD) and Prof. P. J. Paul in subsequent times (all from the department of Aerospace Engineering). The usefulness of the program has been very high in the earlier years and has decreased to very specific interactions later. The primary reason is that after successful missile developments at DRDL, the scientists and engineers of DRDL developed skills to manage their projects but depended on IISc for high end activities in subsequent times.

Dr. Kalam realized that the projects should make an impact on the IGMDP program and for this purpose they should be able to attract competent faculty to undertake them. The projects were made comfortable to operate due to

- They had a counterpart from DRDL as co-investigators
- Budget for each project is estimated by PI and DRDL counterpart
- Later they are operated as fixed price contracts (a new introduction to finance management at IISc known only for grants-in-aid projects at that time)
- Reviewed every three months vigorously
- Most of the projects were for 18 months (6 reviews for 18 months project)*
(These frequent reviews put the investigators on their toes)

*When projects were framed for 24 months Dr. Kalam used to retort “For 24 month project you will seek 6 months of additional time, I will not allow 18 months project to go beyond 21 months”. Such was the demand he made on the investigators. He took these projects so seriously that he would call the convener and enquire about projects that seemed to get delayed. Thus the convener’s responsibility was also to ensure even more detailed interactions with the investigators within IISc to ensure that projects did not over-run the time.

The projects made a difference to the IGMDP program certainly in the early stages of the program. The coverage was quite comprehensive with Prof. S.M.Deshpande leading the CFD group, Dr. I.G. Sharma on the programs on flight controls, Prof. P.R. Mahapatra contributing to the Navigation systems, Prof. N.Balakrishnan leading the Electro-magnetics group, Prof. H.S. Mukunda leading the research on propulsion systems and Prof. B.Dattaguru leading on Fracture Mechanics and Acoustic emission.

Finally, the series of projects undertaken in JATP for more than a decade, resulted in contributing to self-reliance in DRDL programs in the areas mentioned above due to contributions from IISc faculty. Such was the impact of this program that the four of the faculty (SMD, PRM, HSM, BD) from the Aerospace Engineering were given the DRDO academic excellence award in the year 2002.

B. Dattaguru and H.S. Mukunda

Past conveners of JATP

Department of Aerospace Engineering
Indian Institute of Science, Bangalore



Dr. Kalam, Prof. I G Sharma signing the MoU with Prof. Mukunda, the first convener looking on



Dr. V. S. Arunachalam (SA to RM), Dr. Kalam and Prof. C N R Rao, Director, IISc at a review meeting with Prof. Dattaguru explaining the progress. Sitting in the background are: Prof. P, R. Mahapatra, Dr. K. N. Nanjudaswamy (officer from DRDL acting as an interface, and Prof. G. N. Venkataramana Rao