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The Imperative of Public Private Partnership in the Defence Aviation Industry

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Summary

In the Defence Aviation Sector the situation today is that while the knowledge and domain expertise rests with the Indian Air Force and Hindustan Aeronautics Limited, it is the private sector that has demonstrated the ability to attract quality manpower, raise financial resources, harness entrepreneurial skills to manage and deliver mega projects on time and make India a reckonable industrial entity. One of the goals of a well-designed PPP (Public Private Partnership) is to pick out the strengths of each sector and combine them together. This results in a partnership of public and private parties that is stronger and more efficient than what either party can deliver by itself. An eco-system exists in the country for PPP. RFPs, contracts and payment basis can address specific project requirements. OEM will scout for competent Indian entities, which, in due course, would acquire the requisite expertise. At the same time, HAL's infrastructure and strengths would be optimally utilised. All this would translate into the defence services acquiring the requisite capabilities in the required time frame. To ensure such an outcome, it is necessary to evolve a long term strategy keeping in mind all the aircraft acquisition programmes, review the factors that contribute to determining the right numbers and begin the process of building a long term partnership with the private industry.

Meeting for the first time under the chairmanship of Defence Minister Manohar Parikkar on 22 November 2014, the Defence Acquisition Council (DAC) sought additional information on two key acquisitions for the Indian Air Force (IAF) – the multi-crore joint bid by Tata Sons and Europe's Airbus to manufacture 56 transport aircraft to replace the Avro fleet; and the proposal for acquiring an additional 106 Swiss Pilatus basic trainer aircraft. If one also takes into account some of the other aircraft acquisition programmes that have been reported upon – Intermediate Jet Trainer (IJT), Light Utility Helicopter (LUH) for the three services, Light Combat Aircraft (LCA) for the Navy and IAF, Medium Multi Role Combat Aircraft (MMRCA), Multi Role Transport Aircraft (MTA) and the Fifth Generation Fighter Aircraft (FGFA) – the list appears very impressive and the value of the order book mouth-watering for all major aircraft manufacturers in the world. But in the days of 'Make in India' why should aircraft manufacturers in other parts of the world be excited? The answer is simple: the domestic aviation industry has lost its way and appears unable to get its act together.

Historical Perspective

But this was not how it was in the early years of independence. India's defence aviation industry owes its roots to the visionary industrialist, the late Seth Walchand Hirachand, who set up Hindustan Aircraft Limited (now Hindustan Aeronautics Limited, HAL) at Bangalore in 1940. He also set up a shipyard (now Hindustan Shipyard at Vishakapatnam) in addition to having the distinction of rolling out the first car from an Indian factory (Premier Automobiles). Prior to Independence, HAL primarily was responsible for the maintenance of the aircraft of the Allied Forces. It was only after independence that it began to engage in design and manufacture of aircraft. In 1948-49, HAL began to license manufacture the Percival Prentice T3 basic trainer aircraft. Design work began simultaneously on the indigenously designed basic trainer HT-2. The mock-up of the HT-2 was ready in 1948, its maiden flight occurred in 1951 and the aircraft was inducted into the IAF in 1955.

The present IAF leadership earned its wings flying the HT 2 or HPT 32 in the basic stage and the Kiran MK I and II in the intermediate stage. All these aircraft were indigenously designed and manufactured at HAL. It is therefore a sad fact that these leaders have no choice today but to recommend that training aircraft be acquired from abroad. But this is not a situation that has developed suddenly. Out of the total of 78 different types of aircraft that have been inducted into the Indian defence forces since independence, only the HT-2, Krishak, HF-24, HJT-16 (MK I & II), HPT-32, ALH & Lakshya PTA were HAL designed and manufactured.[1]

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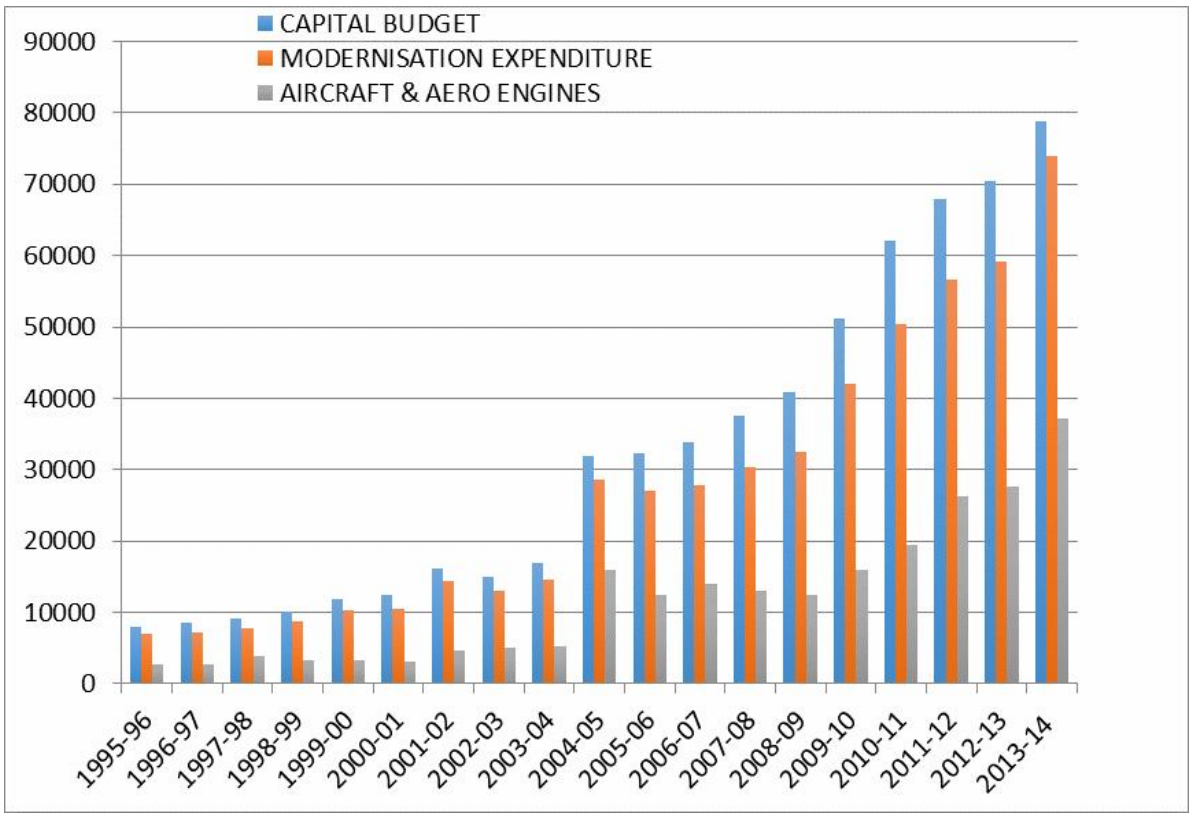
[1] IAF has recorded Cat-I accident rate of 0.25 (per 10,000 hours of flying) as on March 31, 2014, as against a high of 1.84 in the early 1970s (para 5.37 of MoD Annual report 2013-14).

After all these acquisitions what does India have in the form of a 'Defence Aviation Industrial Base'? Only HAL and its latest balance sheet for Fiscal Year 2012-13, which shows the following:

- Sales worth Rs. 14,324 crore
- Profit Before Tax of Rs. 3497 crore, with its principal component being 'Other Income' (most of which is Interest) valued at Rs. 3327 crore.

Its customer(s) have extended full support to HAL in recent decades. For example, the Intermediate Jet Trainer (IJT) named HJT 36 began as a customer funded development programme in the late 1990s. Even Limited Series Production (LSP) and Series Production (SP) orders were placed and attendant financial payments made. Yet, not much progress has been forthcoming. As acknowledged by the then Defence Minister in response to a question in the Rajya Sabha on 5 August 2014,

> "HAL, which has been developing the IJT, as a replacement for the Kiran aircraft, has not so far been able to resolve critical wing and airframe Design & Development issues related to stall and spin. In order to meet the emergent situation created due to inordinate delay in the IJT project, IAF has already initiated the process for extending the technical life of the Kiran aircraft. The IAF has also initiated action to look for alternate options for the IJT."



Source: Author's collation from *Defence Services Estimates Vol. I*

In the perception of its customers, HAL is an 'obese' entity that seldom delivers on time and the quality of whose products leaves much to be desired.

Acquisition of aircraft and aero-engines is the single largest item of expenditure in the modernisation programme of the Armed Forces. Between the years 1995-96 and 2013-14, this item accounted for Rs. 227,971 crore, representing 43.72 per cent of the total modernisation expenditure of Rs. 521,394 crore. (See graph below; figures on the 'X' axis are in Crores of Rupees.)

THE WAY FORWARD

In its collective wisdom, the DAC has deferred a decision on the Pilatus and AVRO replacement projects. Whatever be the reason, it is time to adopt a fresh approach to aircraft acquisition. We cannot afford to have stakeholders working at cross-purposes as happened with respect to the AVRO replacement programme during the last two years. The DAC approved the AVRO replacement programme on 23 July 2012; thereafter, the Request For Proposal was issued in November 2012; yet, HAL Kanpur Division reportedly issued a Request for Information (RFI) in August 2013 for replacing the Dart 533-2 & 536-2T engines on 59 existing AVRO aircraft; and in October 2013, the then Minister for Heavy Industries wrote to the Defence Minister protesting against the DAC's grant of approval for the AVRO replacement programme on the grounds that Public Sector Undertakings (PSUs) were being denied an opportunity to compete for IAF orders.

It costs 'Time & Money' to respond to an RFP and some OEMs are bound to be reluctant to pursue discussions / negotiations with Indian industry to scout for a partner when they get such contrary messages.

Strategy Based Decisions Instead of Project Based Decisions

As a first step, aircraft acquisition projects should not be looked at individually. They must be reviewed collectively to evolve a strategy that ensures that this unique opportunity involving large volumes of production spread over fixed wing, rotary wing, combat aircraft and transport aircraft is utilised in letter and spirit to translate the 'Make in India' policy into actual practice. Instead of working in 'Silos', each stakeholder should contribute collectively in the review exercise so that collective wisdom helps in drawing up the strategy and thereafter each entity contributes its bit to 'Make it Happen'.

Prescribed Assumptions for Planning and Provisioning

The number of squadrons of combat aircraft required (the standard composition of a squadron / unit being a given number) is based on the threat perception. The number of units of transport aircraft and helicopters needed is based on the annual air maintenance requirement in tonnage, its spread and the tactical support role for ground operations if any. And the number of trainer aircraft required is based on the planned intake of pilots

and the syllabus in terms of the number of hours.

The decision on the number of aircraft to be procured is however not based on a simple multiplication of number of squadrons with number of aircraft per squadron. Instead, it involves detailed calculations which take into account the 'Approved Task' (AT), the 'Strike of Wastage' (SOW) rate which is expressed as a factor per 10,000 hours, and the 'Maintenance Reserve' (MR) rate in percentage terms. That is because aircraft have specified periodical servicing and also specified Time Between Overhaul (TBO) after a specific number of hours of flying. Aircraft also have designer specified Total Technical Life (TTL) which could be in calendar years or number of hours of flying or both. Approved Task specifies the number of hours that may be flown per aircraft per month. These hours are utilised for routine training flying of pilots in a squadron so that they attain and maintain their operational status (including exercises and range practice). This unique rate is specified for each category, i.e., combat aircraft, combat aircraft trainers, helicopters, transport aircraft and trainer aircraft.

The primary decision is the number of years for which the platform is planned to be exploited. The key factors to be taken into account while taking this decision are the technology, mid-life upgradation, total technical life and the approved task. The aim is to field a specified number of squadrons for operation for a definite number of years. At the same time, an extra number of aircraft that may be required to make up for losses during the exploitation phase also needs to be catered for. This latter number is a function of both the Strike of Wastage and the Maintenance Reserve.

The SOW rates (unique for each type of aircraft) and MR rates were approved by the Ministry of Defence based on empirical data gathered in the 1970s, and the AT predates even that. The AT needs revision in view of the availability and training efficacy of simulators. The flight safety record has consequently improved over the years and should reflect in a lower SOW rate.[2] At the same time, the availability of maintenance infrastructure and technology is also likely to have reduced the maintenance cycle time. Each of these factors, i.e. AT, SOW and MR, contributes to determining the number of additional aircraft required. And since each aircraft costs hundreds of crores these need to be reviewed immediately to rationalise the number of aircraft to be acquired.

Binding Constraints

In its decision-making process, the DAC must reflect the following binding constraints:

(a) Make in India with a view to maximising value addition in India over the life cycle of the aircraft being acquired.

(b) Time frame to build capabilities. This needs to be arrived at keeping in mind the urgency of plugging the capability gaps.

(c) Technology and quality: There is not only a need for state of the art technology that may not be available within the country but also reliability.

(d) Limited / no experience / capacity in the private sector. The private sector would need hand holding and a long term relationship arrangement.

(e) Budgetary support. The existing allocation level and the expected growth rate may not be able to support the funding needs of all these programmes.

Harnessing Public Private Partnership (PPP)

In the Defence Aviation Sector the situation today is that while the knowledge and domain expertise rests with the IAF and HAL, it is the private sector that has demonstrated the ability to attract quality manpower, raise financial resources, harness entrepreneurial skills to manage and deliver mega projects on time and make India a reckonable industrial entity. One of the goals of a well-designed PPP is to pick out the strengths of each sector and combine them together. This results in a partnership of public and private parties that is stronger and more efficient than what either party can deliver by itself. The demands of a defence acquisition contract also snugly fits the essential conditions of the definition of PPP given by the Department of Economic Affair (DEA):

- Arrangement of a government or statutory entity or government owned entity with Private Sector Entity for creation of a
- Public asset or service for public benefit
    - *'Public Services'* are those services that the State is obligated to provide to its citizens (towards meeting the socio-economic objectives) or where the State has traditionally provided the services to its citizens. For example, provision of security, law and order, electricity, water, etc. to the citizens.
- Investments being made by and / or management undertaken by the private sector entity
- Operations and / or management for a specified period
- Substantial risk sharing with the private sector
- Performance linked payments
- Conformance to performance standards

The average exploitation period of aircraft in Indian defence forces has been greater than 30 years. Acknowledging the limitation of selecting L1 (lowest bid) based on the acquisition price, we have switched over to an evaluation based on 'ownership cost' or life cycle costs. The choice of PPP would result in lower cost while delivering the same or better quality of service than could be achieved by the public or private sector individually. It will also

spread the cash outflow over a longer time horizon and help in creating the requisite capabilities in a shorter timeframe.

Structuring the Projects on PPP

A PPP typically has the following characteristics:

- The private sector is responsible for carrying out or operating the project and takes on a substantial portion of the associated project risks.
- During the operational life of the project the public sector's role is to monitor the performance of the private partner and enforce the terms of the contract.
- The private sector's costs would be recovered in whole or in part from charges related to the use of the service and or annuity payments from the public sector.
- Public sector payments are based on performance standards set out in the contract.
- Often the private sector will contribute the majority of the project's capital costs, although this need not always be the case.
- It may often be necessary to build or add to existing assets in order to meet the infrastructure needs of the project.

Keeping the above general as well as the specific requirements of each programme in mind, the bidding entity would have to be an SPV (Special Purpose Vehicle) comprising of an Indian entity (ies) and an OEM. Based on the targeted indigenous effort content, the payment could be a specified percentage in Rupees and the balance in US Dollars.

Keeping these factors in mind, I suggest below the broad structure for two such projects.

Basic Trainer Aircraft (BTA)

The DAC approval accorded in 2009 was for 181 basic trainers; 75 were to be bought from abroad under the 'Buy Global' category, while 101 HTT 40 were to be manufactured by HAL. Thus, the IAF accepted in principle the idea of having two types of 'Basic Trainers'. Consequently, going in for additional Pilatus would be non-competitive. Instead, the HTT 40 programme can be structured to make it competitive without at the same time completely ruling out the Pilatus. Given all this, the final ASQRs as approved and issued to HAL for HTT 40 should be retained.

Using PPP delivery mode, instead of prescribing the numbers of aircraft, the bid document should prescribe the monthly flying effort (minimum and maximum, including the daily minimum) and the guaranteed minimum number of hours for which payment will be made every month based on per flying hour. The period of contract in number of years should be provided and any other facilities related to training, for example, simulators,

that are required should be stated and the bidder asked to quote per hour rate and an indices based escalation rate may be specified. This would generate fair competition and the cash outflow will be spread over the contract period. This model could be replicated for the Intermediate Jet Trainer as well.

Light Utility Helicopter (LUH)

The model for acquiring these aircraft needs to address the imperatives of distributing them for Helicopter Conversion training (common facility for the services and coast guard) as well as distributing them among the various locations of the user service. Those aircraft acquired for Helicopter Conversion training can be similar to the Basic Trainer Aircraft as suggested in the preceding paragraph, which means the output hours and not the number of aircraft being specified. As for aircraft for individual Service requirement, the number to be inducted and the Standard of Preparation (SOP) necessary by each service need to be specified. The responsibility for the first and second line servicing will have to be that of the user. The positioning of consumables and mandatory replacement items would be that of the contractor. The payment for this portion of the contract would be one part as down payment, one part monthly payment based on number of hours flown per month and one part when aircraft / engine / rotables are received back after overhaul.

Conclusion

An eco-system exists in the country for PPP. RFPs, contracts and payment basis can address specific project requirements. OEM will scout for competent Indian entities, which, in due course, would acquire the requisite expertise. At the same time, HAL's infrastructure and strengths would be optimally utilised. All this would translate into the defence services acquiring the requisite capabilities in the required time frame. To ensure such an outcome, it is necessary to evolve a long term strategy keeping in mind all the aircraft acquisition programmes, review the factors that contribute to determining the right numbers and begin the process of building a long term partnership with the private industry.