Asia Passenger Plane Vision

Executive Summary

Significance of Developing Asia Passenger Plane

The development, manufacture and operation of a jet passenger plane (hereafter; "Asia Passenger Plane") that leverages the technologies and competencies of Asia should be encouraged as a means to respond to air travel demand in Asia, which is expected to grow substantially going forward, and to further solidify Asia's identity.

The development of a jet passenger plane currently underway in Japan carries with it great significance, and the Tokyo Metropolitan Government (TMG) will continue to promote the participation of manufacturers in Asia in development and production of this passenger plane, as well as its widespread use in the Asia region.

Through this initiative, TMG will seek to enhance technical competencies and collaboration in Asia, and to foster momentum to develop and manufacture the Asia Passenger Plane in Asia, which will widely link Asian cities.

Requirements for and Background to Developing a Vision

1. Current Status of Aerospace Industry in Asia

- Current Status of Japan's Aerospace Industry

Japan has experience developing civilian aircraft and system integration. It also has a solid track record in materials and processing.

- Domestically-produced Jet Passenger Plane – the Mitsubishi Regional Jet (MRJ)
- Conversion of Ministry of Defense Aircraft to Civilian Airliners
- Research and Technical Development by the Japan Aerospace Exploration Agency (JAXA)

- Current Status of Asia's Aerospace Industries ex-Japan

Core businesses revolve around MRO (Maintenance, Repair and Overhaul) or supplying parts for North American and European aircraft makers.

a. India

India has the trusted experience of comprehensive production of turboprop aircraft and manufacturing parts.

- NAL (National Aerospace Laboratories)
- HAL (Hindustan Aeronautics Limited) etc.

b. Indonesia

Indonesia has PTDI (PT Dingantara Indonesia) / IAe (Indonesian Aerospace) as the only aircraft producer. PTDI's main activities are aircraft manufacturing and aircraft structure components manufacturing as supplier for various companies including Airbus.

c. Malaysia

Malaysia has manufactured composite and metal aircraft parts mainly for Airbus and Boeing.

- MIGHT (Malaysia Industry-Government Group for High Technology
- CTRM (Composites Technology Research Malaysia Sdn. Bhd) etc

d. Taiwan

Taiwan has the experience of manufacturing components and processing composite materials for

Boeing and other companies. There are also some prominent MRO providers.
- AIDC (Aerospace Industrial Development Corp.)

e. Vietnam

Although there had been small size of aviation industry, foreign capital investments have inspired the production of aircraft components.

f. China

China currently has two programs: the independently developed ARJ21 regional jet and the 150 to 200 seat C919. China has also manufactured components and parts for Boeing and Airbus.
- AVIC: Aviation Industry Corporation of China
- COMAC: Commercial Aircraft Corporation of China Ltd.

g. Korea

Currently, Korea Aerospace Industries (KAI) and the aerospace division of Korean Air form the nucleus of Korea's aircraft industry.

f. Singapore

Singapore is focusing its attention on aircraft maintenance operations as a national strategy.

- Rapid Expansion of Air Travel Demand in Asia

As of 2029, Asia Pacific region will become the largest market of air travel in the world.

- Growing Awareness of the Environment

The International Civil Aviation Organization (ICAO) has announced a commitment to improve aircraft fuel efficiency by 2% per year, and is also considering strengthening noise abatement standards.

2. The Need of Vision for Developing the Asia Passenger Plane

- For the Future of the Aerospace Industry in Asia

The aerospace industry represents an effective means of advancing industrial technologies that will help the further development of nations in Asia. Moreover, aerospace industry development is important because it will provide youth of the region with dream to aspire for, as well as an opportunity to be a part of an advanced technology industry with a global impact.

- For the Future of Japan's Aerospace Industry

The advancement of aerospace-related technologies will contribute directly to the advancement of Japan's overall industrial infrastructure. On the other hand, the initial investment in aircraft development requires large sums of capital.

- The Need for Collaboration among the Nations of Asia

The nations of Asia possess individual experiences in the development of entire airframes and composite components. By effectively combining these experiences and competencies, Asia can aim to become the third leading global influence in the aerospace industry behind the United States and Europe. It will have significance for a wide range of fields in the region, including technology, industry and the economy.

Asia Passenger Plane Vision – Target Vision for 2020

The following can be assumed about the status of the aerospace industry in Asia in 2020.

1. Growth and Rapid Progress of the Aerospace Industry in Asia

- Enhance Asia's Aerospace Technologies via Participation in an International Co-development Project

Aircraft makers in Asia are increasing their participation in the international co-development projects of Boeing and Airbus both qualitatively and quantitatively. Consequently, their technical competencies are improving more and more.

- Commercialization of Civilian Aircraft Development Programs in Japan

Japan's heavy industry firms are building experience as integrators capable of developing an entire jet passenger plane, and strengthening their collaboration.

- MRJ is widely deployed on regional routes around the world including in Asia. The superior performance of the MRJ comes into the worldwide spotlight.
- Following the US-2, the YCX has also been commercialized. The YCS is satisfying growing worldwide air cargo demand as a highly convenient high-speed transport plane.

2. Trigger for the Development of the Asia Passenger Plane

Increasing air travel demand in Asia and the growth of the region's technology and industrial infrastructure are fostering momentum for the development of a passenger plane in Asia. Japan, based on the success of the MRJ and Ministry of Defense converted aircraft, is beginning the development of the Asia Passenger Plane as the successor to the MRJ through collaboration with the nations of Asia.

3. Outline of the Asia Passenger Plane

- Number of Seats

Considering the Asia Passenger Plane will service cities in Asia, it will be a short-range, narrow body aircraft. It shall be designed with between 100 and 150 seats.

- Features

- The possible candidate engine for the Asia Passenger Plane is next-generation one with high fuel efficiency and less noise.
- The Asia Passenger Plane project will build a low-cost framework by establishing a cross-border division of labor, and emphasize its environmental compatibility. The potential to use biofuels as a source for jet fuel and further system electrification will be reviewed.
- The Asia Passenger Plane will be designed to suite to Asia's geography and environment.

- Target Airline Customers

The target airline operators for the Asia Passenger Plane shall be the airlines of Asia. The plane will be designed to be operated under lower cost structures in order to provide lower airfares to passengers. The Asia Passenger Plane will also seek to enhance support service capabilities for aircraft operations.

- Development Structure for the Asia Passenger Plane

The participation in the development of the Asia Passenger Plane by aircraft makers in Asia will be envisioned based on each country's track record in civilian aircraft development.

Integrator (Fuselage Manufacturer)

An integrator should possess strong leadership capabilities and the experience of civilian aircraft

development (entire airframe).

Engine Maker

The integrator will select an engine maker that has a solid track record in engine development and the technical capability to fulfill the aforementioned requirements of Asia Passenger Plane.

Tier 1 suppliers, Tier 2 and below suppliers

The integrator will select the suppliers that have a solid track record and the technical capability to fulfill the aforementioned requirements of Asia Passenger Plane.

- Government Support

National governments in the region are implementing comprehensive and collaborative assistance for research and development, project commercialization and sales of the Asia Passenger Plane.

Challenges facing the Asia Passenger Plane Project

1. Difficult Conditions facing the Asia Passenger Plane

◆ Challenges

The 100 to 150 seat segment of the Asia Passenger Plane is a market that is in the spotlight for its future potential. Given the competitive environment, it will be critical to incorporate new features and look to differentiate the Asia Passenger Plane from its competitors going forward.

◆ Measures

The TMG will lobby the Government of Japan to provide support for the Asia Passenger Plane such as a framework of international cooperation on governmental support. In addition, TMG will help aerospace industries in Asia share information to realize a low cost production structure.

2. Lack of Experience and Track Record Compared to Europe and the U.S.

◆ Challenges

Since aircraft manufacturers in Asia have few experiences in manufacturing complete airframes, they lack the aerospace-related technologies to develop the Asia Passenger Plane. The aerospace industry in Asia also lacks the framework to develop human resources for the industry.

◆ Measures

TMG will continue to provide a platform for information sharing in order to help aerospace industries in Asia actively involve in the MRJ program and raise their technical competencies. The TMG will also utilize its Asian Human Resources Fund to develop the human resources capable of driving the future expansion of aerospace-related technologies in Asia.

3. Large Technology Hurdles

◆ Challenges

When environmental standards will grow tighter and the regulations of each national government are also strengthened, additional costs will be incurred to comply with these standards and regulations. In addition, the Asia Passenger plane should meet various requirements, including the severe geographic and climate conditions of Asia, the high frequency services and reduced aircraft operating weight requested by LCC.

◆ Measures

TMG will establish a platform at international conferences to perceive needs of Asian airline companies, and will work to build an aircraft development structure in close collaboration with airline companies.