

0. Foreword

1. Environmental awareness surrounding Japan’s space policy

- (1) Changes in the outer space power balance: Shift from US-Soviet bilateral competition of the Cold War era to multilateral power balance
- (2) Growing importance of outer space from a national security perspective
 - ① Need for proactive utilization of space resources for national security in line with the National Security Strategy
 - ② Advent of a new era of Japan-US space cooperation
- (3) Growing risks to secure and stable utilization of space
- (4) Growing role of outer space to solve global challenges
- (5) Industrial infrastructure underpinning Japanese space development and utilization is on shaky ground
- (6) Lack of organic cycles among science and technology, national security and industrial vitalization

2. Goals of Japan’s space policy

- (1) Ensuring space security
 - ① Ensuring stable utilization of outer space
 - ② Utilization of space to strengthen Japan’s national security capabilities
 - ③ Reinforcement of alliances with the US, etc. through space cooperation
- (2) Promotion of space utilization in the civil sector
 - ① Utilization of space to resolve global challenges and realize a safe, secure and prosperous society
 - ② Creation of new industries related to space
- (3) Maintenance and reinforcement of space-industry / science and technology infrastructure
 - ① Maintenance and reinforcement of space industry-related infrastructure
 - ② Maintenance and reinforcement of value-producing science and technology infrastructure

3. Japan’s basic stance for fostering space policy

- (1) Prioritization of realization of value through space utilization (exit strategy)
- (2) Prioritization of the realization of policy outcomes concomitant with budgetary allocations
- (3) Rather than fixing rigid targets for each individual initiative, ensure targets are meaningful and in accordance with changes of the environment

4. Japan’s concrete approach to space policy

- (1) Policy framework for realization of space policy goals
 - ① Solidifying national security in space
 - i) Ensuring stable utilization of outer space
 - ii) Utilization of space to strengthen Japan’s national security capabilities
 - iii) Reinforcement of alliances with the US, etc. through space cooperation
 - ② Promotion of space utilization in the civil sector
 - i) Utilization of space to resolve global changes and realize a safe, secure and prosperous society
 - ii) Creation of new industries related to space

- ③ Maintenance and reinforcement of space industry / science and technology infrastructure
 - i) Maintenance and reinforcement of space industry-related infrastructure
 - ii) Maintenance and reinforcement of value-producing science and technology infrastructure
- (2) Specific initiatives
 - ① Implementation policy for space projects aimed at realizing space policy objectives
 - i) Satellite positioning
 - ii) Satellite remote sensing
 - iii) Satellite telecommunications and broadcasting
 - iv) Space transportation systems
 - v) SSA (Space Situational Awareness)
 - vi) MDA: Maritime Domain Awareness
 - vii) Early-warning functions, etc.
 - viii) Improving the resiliency of space systems across the board
 - ix) Space science and exploration and manned space missions
 - ② Strengthening of industrial infrastructure / science and technology infrastructure underpinning individual projects
 - i) Comprehensive initiatives aimed at encouraging new entrants to the field and expanding space utilization
 - ii) Organization of environment geared toward stable supply of core components, etc. for space systems
 - iii) Initiatives aimed at expanding future space utilization
 - ③ Strategies to strengthen systems and frameworks for space development and utilization in general
 - i) Comprehensive reinforcement of space policy implementation frameworks
 - ii) Reinforcement of survey, analysis, and strategic planning functions
 - iii) Comprehensive reinforcement of domestic human infrastructure, furtherance of public understanding
 - iv) Amendment of legal frameworks etc.
 - ④ Advancement of space diplomacy and reinforcement of overseas development strategies related to the space field
 - i) Realization and reinforcement of the rule of law in outer space
 - ii) Strengthening of international space cooperation
 - iii) Establishment of Task Force on Overseas Operations for Space Systems (provisional name)

0. Foreword

The history of Japanese space development and utilization began with the experimental launch of the Pencil Rocket by Professor Hideo Itokawa of University of Tokyo in 1955, and over more than half a century since then, we have made steady technological progress, contributed significantly to the storehouse of humanity’s shared knowledge, and considerably strengthened our presence in the international effort to explore and utilize space.

With the enactment of the Basic Space Law in May 2008, Japanese space policy evolved from a science and technology (R & D)-oriented policy to a comprehensive national strategy, which is now built on three pillars: science and technology, industrial vitalization, and national security. In addition, the current Basic Plan on Space Policy enacted in January 2013 presents new policy guidelines towards a paradigm shift on Japanese space policy, “from a traditional focus on R&D to a new focus on space usage with a clear exit strategy.”

However, since the January 2013 enactment of the Basic Plan on Space Policy, the environment surrounding Japanese space policy has drastically changed. Japan faces increasingly formidable national security challenges, and the importance of space’s role in national security has grown dramatically. At the same time, we find the industrial infrastructure underpinning our space development and utilization to be on shaky ground, and there is an urgent need for restoration and reinforcement of this infrastructure.

In light of these changes, the Strategic Headquarter for Space Policy hereby establishes a new Basic Plan on Space Policy that reformulates the current basic policy while adhering to the fundamental philosophy of the Basic Space Law. The new Basic Plan on Space Policy constitutes a long-term development plan that sets targets for the next 10 years and envisions the next 20 years; fully reflects the new national security policies set forth in the National Security Strategy formulated in December 2013; and aims to enhance the foreseeability of outcomes of industrial-sector investment and maintain and reinforce industrial infrastructure.

Japan seeks to utilize the potential of space to the greatest possible extent in order to boost our national security capabilities and raise our people’s standard of living, and to contribute to the security, stability, prosperity, and advancement of humanity and society as a whole. This Basic Plan on Space Policy specifically and systematically outlines initiatives for the Government of Japan to pursue in the coming years to achieve these goals.

1. Environmental awareness surrounding Japan’s space policy

(1) Changes in the outer space power balance: Shift from US-Soviet bilateral competition of the Cold War era to multilateral power balance

With dramatic technological advances in recent years bringing about the commoditization of space technology, the number of countries operating in space has increased, and a multilateral power balance has replaced the US-Soviet bilateral

competition of the Cold War era. The rapid growth in space operations has been driven in particular by emerging nations such as China and India and by the activities of private-sector enterprises. Increased international cooperation, and moves toward international sharing of information obtained from space-based systems, are also hallmarks of this era of drastic changes to the international environment pertaining to space.

Further growth is forecast in the global commercial space sector, largely propelled by emerging nations. While over the next 10 years these nations plan to launch four times the number of satellites they launched in the last 10 years, they do not necessarily possess the requisite domestic space industry infrastructure, leading them to rely frequently on the commercial sector for construction of satellites and launching services. The increase in nations that operate in space but lack domestic space industry infrastructure is a force driving growth in the commercial space sector, and presents increasingly valuable opportunities for the space industry in other countries including Japan.

Against this backdrop, the United States, the world's leading space superpower, is modifying its approach to space policy. In the past, the US pursued a policy of implementing space projects independently with the goal of maintaining its dominant position in outer space. In recent years, however, it has shifted toward a policy that prioritizes maintaining resiliency and boosting efficiency through mutual complementation in partnerships with allies and trustworthy nations as well as private-sector enterprises. In addition, past US outer space-related governance was characterized by an overtly laissez-faire approach to regulations on space utilization, based on the assumption of a certain degree of mutual understanding between the US and its bilateral rival the Soviet Union, but with the recent proliferation of actors in the space arena that do not share this mutual understanding, there has been a shift toward promotion of space utilization within prescribed limits and guidelines.

(2) Growing importance of outer space from a national security perspective

① Need for proactive utilization of space resources for national security in line with the National Security Strategy

In recent years, space has become significantly more critical to Japanese national security. Outer space not only plays a vital role in the daily lives of the Japanese people, in areas such as positioning, satellite communication and broadcasting, and meteorological observation, it is also a critical and indispensable element of our national security in terms of data collection, command and control functions, etc. Today, the viability of national security is dependent on space-based systems, and the US, Europe, Russia, China, and others are deploying a wide variety of satellites in space for national security purposes, making advanced military strategies possible.

Amid growing severity of threats to Japan's national security, in order to preserve our national interests over the long term, the government of Japan set forth the National Security Strategy in December 2013, which constitutes Japan's fundamental policy pertaining to national security and outlines the directions our nation should take as a member of the international community. Based on this strategy, we will make effective use of various types satellites in our possession for the operation of the Self Defense Forces (SDF) units, data collection and analysis, Maritime Domain Awareness (MDA), telecommunications, and positioning, and establish a system for Space Situational Awareness (SSA). In fostering the development and utilization of outer space along with the maintenance and advancement of related technologies, the

government of Japan will allocate its budgets with clear priority so as to serve our national security interests in the mid-term to long-term.

② Advent of a new era of Japan-US space cooperation

US deterrence in the Asia-Pacific region is essential for regional peace and stability. To this end, space-based systems such as the Global Positioning System (GPS) serve a critical function, and conversely, if space-based systems are degraded or disabled by other actors and US access to the Asia-Pacific region is disrupted, this deterrence would be seriously undermined. Also, the operations of the SDF serving to defend our nation are highly dependent not only on Japan's own space-based systems and commercial satellite services, but also on the GPS and other US space-based systems.

Under these circumstances, during May 2014 working-level talks between Japan and the US pursuant to the Japan-US Security Consultative Committee ("2+2" ministerial conference) and other discussions, the two governments confirmed the advent of a new era of Japan-US space cooperation, stating that "in light of the shared national security concerns of Japan and the US, invigoration of Japan's outer space operations would contribute to enhancing the resiliency of space assets essential to the security of both the United States and Japan." Specific areas of interest include satellite positioning employing the US GPS and the Japanese Quasi-Zenith Satellite System (QZSS), SSA, space-based MDA, and satellite remote sensing and data policy. Also, in the October 8, 2014 Interim Report on the Revision of the Guidelines for Japan-US Defense Cooperation, it was noted that the two governments reached a shared recognition on the importance of multiple issues including "cooperation in space and cyberspace in an Alliance context." In the future, the government of Japan will have to take steps to reinforce Japan-U.S. cooperation in the above-mentioned national security-related areas, as a means of further strengthening the crucial Japan-US alliance.

③ Growing risks to secure and stable utilization of space

Outer space does not fall under the sovereignty of any country, and can be accessed and utilized freely by any nation. For this reason, countries have freely deployed and utilized a wide range of satellites for both civilian and military purposes, with the exception of deployment of weapons of mass destruction banned under the Outer Space Treaty.

While a growing number of nations are enjoying the economic, social, and national security benefits of outer space utilization, there are negative aspects to this trend as well. A rise in the number of satellites has led to congestion in space, and a greater volume of space debris, which poses a risk of severely impairing the functioning of satellites if collisions occur, and is of serious concern to all nations with a presence in space.

In this context, China's test of an anti-satellite weapon in January 2007, which destroyed a satellite and generated a large amount of space debris, was of great concern to the international community. China, which is rapidly strengthening its space capabilities, continues to develop anti-satellite weapons, and is also seen to be developing devices that can employ laser beams to disrupt the functions of satellites.

During the era of US-Soviet bilateral competition in space, there was a certain degree of mutual understanding that either side would refrain from attacking the other's space assets. However, in the current multipolar world where numerous countries are

operating in space, there is no assurance that all countries share this understanding.

If the functioning of positioning satellites declines as a result of space debris collisions or attacks by anti-satellite weapons, equipment playing key roles in the national security apparatus may not function properly, and there may be severe disruption of people's lives as it becomes difficult to monitor positioning information for disaster prevention or to safely operate railways, ships, and airplanes. In addition, if the functioning of telecommunications satellites is degraded, there will be a negative impact on radio communications used in disaster prevention, and communications for shipping, aviation, and so forth, disrupting Japan's abilities to collect data, prepare for and cope with emergency situations, and take countermeasures against pollution.

There is a need for Japan to address these risks effectively and ensure secure and stable utilization of outer space.

(4) Growing role of outer space to solve global challenges

The advance of globalization, with people, goods, capital, and information moving across borders in greater volumes and with increasing rapidity, has stimulated the economies of nations around the world, and brought prosperity and progress to the international community. At the same time, global challenges have come to the forefront that are too formidable to be tackled by any nation individually, such as energy, climate change and other environmental issues, food shortages, and large-scale natural disasters. These pose severe threats to the security and stability of the international community.

Global challenges call for global-scale solutions. Space-based systems composed of satellites, etc. have the advantages of being borderless; simultaneous, with a large volume of data able to be transmitted at once; and disaster-resistant, as they are not affected by the situation on the Earth's surface, meaning that they can make great contributions to resolution of global issues and are being actively employed to this end by other countries including the US, the EU nations, and China. In addition, the EU and China are forging cooperative relationships with countries that lack sufficient space development and utilization capabilities of their own by supplying them with space technology at no cost or low cost, and thereby strengthening their leadership positions within the international community.

Japan, as well, must position its space development and utilization capabilities as a crucial tool for strategic diplomacy, contribute to the resolution of global issues using its strengths in space technology, and move to strengthen its diplomatic presence.

(5) Industrial infrastructure underpinning Japanese space development and utilization is on shaky ground

As the significance of outer space grows both from the national security and civil perspectives, it is essential that Japan maintain the capability to carry out space operations autonomously. A stable and vigorous industrial infrastructure underpinning space development and utilization is a prerequisite for this endeavor.

In every country, the space equipment industry is one in which a large portion of sales is generated by demand from the country's own governmental institutions, and Japan's industry as well is largely dependent on the government's budgetary outlays for space development and utilization. However, Japanese government spending is planned based on single-year budget, which makes it difficult for the Japanese space

industry to plan for a future investment in a sustainable manner, resulting in a spate of withdrawals from the space business and stagnation in the number of newcomers entering the industry.

Equipment and components employed in satellites, etc. must be highly resistant to radiation and heat so as to function in outer space, meaning the space hardware industry requires technological sophistication above and beyond that of other industries. However, the low demand for satellites, etc. from Japan's governmental institutions makes the industry a small-scale one in which it is difficult to secure profits while maintaining the necessary manufacturing and tech infrastructure over the long term. This means that the Japanese space industry is forced to rely on overseas enterprises that supply customers around the world for many of the core components of satellites and other space equipment. Over the long term, it is crucial that Japan take steps to address this situation, including by taking actions to prevent shortages of key components.

Given the fact that it requires tens of billions of yen and a period of several years to develop, launch, and operate satellites, it is essential that the government of Japan, has a long-term vision rather than formulating a short-term plan each fiscal year (FY); clearly defines the necessary space projects; and communicates them to the space industry, in order to enhance the foreseeability of investments by the industry. Also, in addition to clarification of the scope and nature of governmental demand, there is a need for public-private cooperation on generation of new industries and services that utilize space, so as to drive up domestic private-sector demand.

To maintain and advance Japan's industrial infrastructure underpinning space development and utilization in a sustained fashion, it is vital that we supplement domestic demand with overseas demand and work to develop new markets. Taking into account the fact that the space industries in the US, Europe, Russia, China, etc. are heavily supported by national governments and are succeeding in securing orders from abroad, thus playing a role in the maintenance and advancement of industrial infrastructure, Japan must also contribute to the maintenance and advancement of its own industrial infrastructure by working to promote space equipment orders from abroad through international cooperation and diplomatic efforts.

(6) Lack of organic cycles among science and technology, national security and industrial vitalization

Thus far, Japan has worked vigorously to promote science and technology in the space field, strengthening space-related human-resource and technology infrastructure, and making significant contributions to the storehouse of human knowledge and to the resolution of global challenges. The significance and importance of space science and technology will not decline in the future, and our nation must continue proactively putting resources into the advancement of this field.

However, for many years we have not been in an environment conducive to utilization of space for national security purposes, and the relevant R&D has not been conducted to a sufficient extent. There have not been adequate efforts to utilize space-related R&D results to build a more robust, sophisticated, and efficient space industry and related industries, and a natural, organic cycle between utilization needs and technological "seeds" has not been formed.

In Europe, the US and elsewhere, national defense agencies communicate space-

based system needs to R&D institutions, which conduct cutting-edge R&D based on these needs, and after the technological fruits of this R&D are applied for national security purposes, they are transferred to the private sector and contribute to the vitalization of the space industry and the advancement and increased efficiency of related industries. Japan, as well, must carry out cutting-edge R&D firmly rooted in national security and other needs, with the goal of forming a natural, organic cycle between utilization needs and technological “seeds,” and utilize the results of this R&D for purposes such as industrial vitalization.

2. Goals of Japan’s space policy

(1) Ensuring space security

① Ensuring stable utilization of outer space

To effectively address congestion in space due to space debris and the risks of attacks on satellites, etc., Japan will work to boost the resiliency of space-based systems and promote the formulation of international rules on space utilization, thereby preventing negative effects on our national security or civil interests from events occurring in outer space and ensuring the stable utilization of space.

② Utilization of space to strengthen Japan’s national security capabilities

Japan will strengthen its national security capabilities by making it possible to utilize space-based systems for positioning, communications, data collection, etc. in a manner more directly connected to our nation’s diplomatic interests, national security policy, operation of SDF units, etc.

③ Reinforcement of alliances with the US, etc. through space cooperation

We will comprehensively reinforce Japan-US cooperation in space from a national security perspective, including by strengthening partnerships with the US in the area of satellite functions so as to bolster the resiliency of space-based systems underpinning US deterrence in the Asia-Pacific region, and otherwise contribute to the reinforcement of the Japan-US alliance. We will also work to build stronger relationships of mutual trust and cooperation with other allies in a wide range of fields, and progressively build a network of international cooperative relationships in the field of space.

(2) Promotion of space utilization in the civil sector

① Utilization of space to resolve global challenges and realize a safe, secure and prosperous society

Japan will utilize various space-based systems in its possession, including positioning satellites, communication and broadcasting satellites, and remote sensing satellites, and work in cooperation with the international community to contribute to the resolution of global challenges such as energy, climate change, the environment, and food supply, as well as promoting the national resiliency and contributing to the improvement of Japanese people’s standard of living by utilizing space systems for countermeasures against large-scale natural disasters such as earthquakes, tsunami, volcanic eruptions, typhoons, tornadoes, and concentrated heavy rainfall, as well as major accidents, etc.

② Creation of new industries related to space

Data obtained through utilization of space-based systems, such as satellite remote sensing data obtained from earth observation satellites and geospatial data

(“Geospatial information”) including positioning data acquired through satellite positioning, constitutes “big data” that is qualitatively extremely diverse and quantitatively enormous. Japan will utilize space-based systems in its possession and work in cooperation with the international community to maintain a stable supply of this data; maintain and enhance mechanisms to collect, store, share, analyze, and utilize this data; promote the creation of new value; and generate new services and new industries in Japan.

(3) Maintenance and reinforcement of space-industry / science and technology infrastructure

① Maintenance and reinforcement of space industry-related infrastructure

To maintain and reinforce the space industry-related infrastructure that plays a central role in securing the autonomy of Japan’s space operations, we will work to heighten the foreseeability of outcomes of investment by the industrial sector, boost domestic demand in areas that utilize satellites, etc., and further strengthen the international competitiveness of Japan’s space industry.

Also, in addition to enhancing international industrial cooperation in the space field with the goal of expanding Japan’s space industry in overseas markets, we will proactively promote cooperation between Japan and other countries on science and technology and human resource development, and between JAXA (the Japan Aerospace Exploration Agency) and other countries’ space agencies.

② Maintenance and reinforcement of value-producing science and technology infrastructure

Japan will identify specific needs with regard to space development and utilization, from the perspectives of strengthening our nation’s national security, invigorating industry, improving the Japanese people’s standard of living, and promoting the advancement of space science, and after systematically clarifying these needs, develop projects, etc. with the aim of maintaining and reinforcing value-producing science and technology infrastructure in a well-prioritized manner.

3. Japan’s basic stance for fostering space policy

Among Japan’s space policy goals, “solidifying national security in space” is positioned as the priority issue and to this end, space policy will be advanced with the following three guidelines, giving consideration to shifts in the environment, etc.

(1) Prioritization of realization of value through space utilization (exit strategy)

Japan will effectively pinpoint space utilization needs related to national security and industrial vitalization, and after specifying and clarifying them systematically, give sufficient preliminary consideration to the value space-based systems and initiatives will generate and how they will contribute to utilization needs before commencing development of systems and implementation of policies.

During these considerations, vantage points to adopt include respective contributions to national security, industrial vitalization, and science and technology. For example, (1) Are space-based systems and projects coordinated with existing land, marine, and air defense capabilities, and are they capable of providing effective support for these capabilities? (2) Do they contribute to the reinforcement of international competitiveness and overseas marketing capabilities so as to facilitate increased

domestic and overseas orders? (3) Are R&D results released and shared with other fields in a timely and appropriate manner, contributing to the invigoration of the space industry and advancement and greater efficiency of related industries, and producing ripple effects such as the generation of new industries, in a natural, organic cycle between utilization needs and technological “seeds”?

With regard to utilization of space for national security purposes in particular, the utilization of space in itself is not an end but only one available means. It is crucial that we use every means at our disposal, including space, to achieve targets in this area. Compared to other approaches to national security, space development and utilization requires massive investment, long periods of time, and sophisticated technology, and for this reason insights should be obtained from throughout the entire government of Japan and all means should be considered, including non-space initiatives and integrated systems that include terrestrial elements as well. Japan’s space program should be advanced efficiently and effectively, taking into account coordination between Japan’s space-based systems and aircraft, UAVs (Unmanned Aerial Vehicles), and terrestrial systems, as well as complementarity with systems operated by private-sector enterprises and the United States, etc.

(2) Prioritization of the realization of policy outcomes concomitant with budgetary allocations

The government of Japan will set clear targets for the next ten years for each policy item, and in addition to preliminary considerations, perform thorough post facto evaluations so as to pursue maximum effectiveness of policy outcomes.

When doing so, individual space-based systems will be examined and evaluated and points for further improvement / lessons to be learned extracted, with performance desired by users contrasted with performance achieved by the systems, on an ongoing basis. Because development and utilization of space-based systems requires significant expenditures, issues identified during the development and utilization process will be shared with relevant institutions, and for systems that are not producing results, the root causes of failure to perform, etc. will be investigated by all relevant governmental bodies.

Evaluations will focus not only on the degree to which targets are being met, but also on the implementation frameworks and administrative and operational procedures used, with necessary improvements being made so as to ensure initiatives are effective and sustained.

(3) Rather than fixing rigid targets for each individual initiative, ensure targets are meaningful and in accordance with changes of the environment

During implementation, individual projects and initiatives will be adjusted flexibly in order to produce results, based on the outcomes of examinations of the progress status of policy items geared toward realization of an exit strategy, and policy targets for individual projects will also flexibly revised in response to changes in the environment. We will aim for a “constantly evolving Basic Plan on Space Policy” to which new space projects are added and new policies introduced as needed.

The new “Basic Plan on Space Policy” is composed of two parts (“Main Text” and “Implementation Schedule”), with the Implementation Schedule revised every year by

Strategic Headquarters for Space Policy based on examinations of the progress status of each policy item by the Committee on National Space Policy.

Japan faces severe fiscal constraints, and it is necessary to pursue existing projects in a thoroughly efficient and streamlined manner, and to promote space policy in a well-prioritized manner. To do so, the government of Japan needs to give due consideration to the increased importance of space for Japan's national security policy and to the need of a concrete long-term plan for consolidating space infrastructures to prevent the decline of the space industry. In this context, the formulation and revision of the Implementation Schedule should be carried out in a prioritized manner so as to achieve optimum results, while allocating the required amount of overall resources and financing.

4. Japan's concrete approach to space policy

(1) Policy framework for realization of space policy goals

① Solidifying national security in space

i) Ensuring stable utilization of outer space

To address potential anti-satellite attacks risks related to increasing outer-space congestion, etc. including the growing volume of space debris, the government of Japan will work to improve the resiliency of space-based systems, and implement all necessary measures to ensure stable utilization of outer space, including international cooperation particularly with our ally the United States.

In specific terms, this cooperation entails strengthening partnerships with allied nations, etc. related to satellite functions (taking into account other countries' decentralization of space-based systems so as to improve their resiliency), as well as hosted payloads (piggybacking of satellite mission equipment and materials), utilization of commercial satellites, improvement of small-size Operationally Responsive Satellites (ORS), and complementarity with terrestrial systems, so as to comprehensively boost capacity to respond to potential negative impacts on space-based systems.

Japan must also establish a SSA (Space Situational Awareness) system, heighten its effectiveness, and promote sharing of SSA information with allies, etc., so as to prevent space debris collisions.

Also, Japan will proactively pursue partnerships with other nations on realizing and reinforcing the rule of law in outer space, for example by promoting efforts to formulate the ICOC : International Code of Conduct for Outer Space Activities stipulating countermeasures against increased volume of space debris and prohibiting anti-satellite attacks. In addition, we will work toward an improved outer space utilization environment through measures such as developing debris cleanup technologies.

ii) Utilization of space to strengthen Japan's national security capabilities

Japan will reinforce its space-based systems for positioning, communications, data collection, etc., from the vantage point of utilizing space to strengthen Japan's national security capabilities.

Specific measures include establishment of Quasi-Zenith Satellites as a 7-satellite constellation to achieve “sustained positioning”, with discussions to be launched on effective utilization of the system for national security purposes. Also the X-Band Satellite-Based Defense Communication Network will be expanded to a 3-satellite constellation to achieve “a highly resilient and confidential satellite communications network”. Also, with regard to Information Gathering Satellites, we will boost “data collection capabilities” by enhancing, reinforcing, and expanding the number of satellites in response to the specific needs of the SDF and other related organizations.

In addition, we will consider the introduction of small-size Operationally Responsive Satellites (ORS) and conduct research studies on early-warning satellites. In promoting space development and utilization in both the civil and national security fields, in particular with regards to the development of a range of satellites including advanced optical satellites, advanced radar satellites, and data-relay communication satellites, we will move forward with cooperative efforts such as hosted payloads (piggybacking of satellite mission equipment and materials), and dual use (sharing). Initiatives in the civil sector will be carried out with an eye to potential future application in the national security arena over the mid- to long-term, as a part of the construction of a firm foundation for future space development and utilization in the national security field.

We will implement the above-described initiatives, bearing in mind the need to raise technical standards for commercial and civil satellites, pursue international cooperation in the area of space development and utilization, and expanded international sharing of satellite data.

iii) Reinforcement of alliances with the US, etc. through space cooperation

International partnerships are essential for effective realization of various space initiatives. In particular, reinforcement of Japan-US partnership and cooperation is to be taken into account in all space-related initiatives, and is important from the vantage point of strengthening the Japan-US alliance as well.

Specifically, we will further enhance coordination between Japan’s Quasi-Zenith Satellites and the US GPS, and boost Japan’s SSA capabilities and promote sharing of SSA-related information. We will also move forward with deliberations on space cooperation with the goal of bolstering cooperation on Marine Domain Awareness (MDA) across the board. In addition to Japan-US partnership and cooperation, we will work to strengthen cooperation with other countries that share our values and strategic interests, and build multilateral cooperative relationships with Europe, Australia, India, the ASEAN nations, etc. in line with our national security policy.

② Promotion of space utilization in the civil sector

i) Utilization of space to resolve global-scale issues and realize a safe, secure and prosperous society

By developing a seamless network of satellites and related facilities for positioning, satellite communication and broadcasting, weather, environmental monitoring, land and marine observation, etc., and utilizing these space-based systems, Japan will boost its capabilities to prepare for and respond to for large-scale natural disasters such as earthquakes, tsunami, volcanic eruptions, typhoons, tornadoes, and concentrated heavy rainfall, as well as to contribute to the resolution of global challenges facing the international community, such as resources, energy, climate change, the environment, and food supply.

Specifically, this entails making steady improvements to various environmental research satellites such as Meteorological Satellite Himawari and Greenhouse Gases Observing Satellite Ibuki, and natural resource exploration satellites, as well as data utilization and functional enhancement and reinforcement of Information Gathering Satellites, and establishment of Quasi-Zenith Satellites as a 7-satellite constellation, steadily developing space-based systems that can contribute to disaster preparedness and response and the resolution of global-scale issues.

ii) Creation of new, related industries

The government of Japan will support the efforts of private-sector enterprises to create new space-related businesses and services that generate new value applying ICT (information and communications technology) to “big data” obtained from and accumulated via space-based systems, such as satellite remote sensing data and positioning data, so as to improve the Japanese people’s standard of living and contribute to sustainable industrial development and the generation of job opportunities.

In particular, on the basis of the Basic Plan on the Advancement of Utilizing Geospatial Information, through the establishment of Quasi-Zenith Satellites as a 7-satellite constellation and coordination with the GIS (Geographic Information System), we will work to develop a seamless indoor/outdoor positioning information infrastructure and realize a “G-spatial society” (a society that makes advanced use of geospatial information), while promoting the efforts of private-sector enterprises working towards automation, unmanned operation, and power conservation and the advancement and heightened efficiency of existing industries.

③ Maintenance and reinforcement of space industry / science and technology infrastructure

i) Maintenance and reinforcement of space industry-related infrastructure

The government of Japan will develop satellites in accordance with the Implementation Schedule of the Basic Plan on Space Policy. Also, the government continues to designate “new-type liquid-engine core rockets” such as the liquid-fuel H-IIA/B rocket and its successors, as well as the solid-fuel Epsilon rocket, as the core of its rocket program, and will steadily maintain the industrial infrastructure underpinning these programs. In addition, we will push forward with joint public-private efforts to ensure stable supply of core components for the Japanese space industry, encouragement of new entrants to the field, generation of new private-sector demand, and obtaining orders from overseas.

Through these measures, the government is steadily taking steps to achieve its target for the scale of the space equipment industry: five trillion yen for combined public/private industry within 10 years.

ii) Maintenance and reinforcement of value-producing science and technology infrastructure

The government of Japan will identify specific national-security and other needs of relevant ministries and private-sector enterprises, etc. with regard to space development and utilization, and after systematically clarifying these needs, promote R&D in collaboration between JAXA (the core implementing body of Japan’s space

program) and private sector institutions. R&D results will be utilized to build a more sophisticated and efficient space industry and generate new industries in a natural, organic cycle. Efforts will not only focus on science and technology that is close to practical application, but also proactively pursue cutting-edge R&D that aims to produce innovative technological “seeds” from a long-term perspective.

While keeping in mind that the internationally competitive space industries of Western nations differ from those of Japan in systemic and environmental areas other than space policy, such as modes of transfer of governmental and university R&D results, governmental means of procuring satellites, and conditions for venture corporations and other engines of innovation, Japan will move forward with efforts to strengthen space policy and industrial competitiveness, pursue science, technology, and innovation strategies, and enhance coordination with relevant areas such as IT policy, so as to comprehensively maintain and reinforce our nation’s science and technology infrastructure.

(2) Specific initiatives

① Implementation policy for space projects aimed at realizing space policy objectives

i) Satellite positioning

•To ensure a 4-satellite constellation can be maintained after the design life of the first Quasi-Zenith Satellite, Michibiki, comes to its scheduled end in FY2020, deliberations on a successor to Michibiki will begin in FY2015. With regard to the three additional satellites needed to establish a 7-satellite constellation capable of sustained positioning, the matter will be examined comprehensively from the perspective of importance for national security, usefulness to users, ability to attract industry investment, and efficiency of operation, with development scheduled to begin in FY2017 and commencing the operation in FY2023. In this process, we will seek to rein in development and operational costs and pursue standardization. Consideration will also be given to reinforcement of coordination with the US GPS, and necessary measures taken. (CAO)

•Also, we will promote the utilization of Quasi-Zenith Satellites not only in Japan but also in other countries, primarily in the Asia-Pacific region, and provide support for construction of electronic control point networks in the region so as to reinforce the positioning satellite utilization infrastructure. (CAO, MLIT, etc.)

ii) Satellite remote sensing

•With regard to satellite remote sensing as a whole, after clarifying the relevant utilization needs in the national security, public, and industrial sectors, etc., we will engage in ongoing deliberations on the specifications of satellites required, operating procedures and possibilities for data utilization, etc., and construct mechanisms for incorporating outcomes into future projects. (CAO, etc.)

•In the area of Information Gathering Satellites, consideration will be given to the reflection of user needs, the examination of operation outcomes, the state of information-sharing, and the state of measures to ensure resiliency of Information Gathering Satellites, with the basic prerequisite of more direct involvement with the activities of organizations such as the SDF, and from the vantage point of further reinforcing these satellites’ role in the national security field, and necessary follow-up measures will be taken. Meanwhile, development will commence in FY2015 on data

relay satellites, with the aim of enhancing and reinforcing the functioning of Information Gathering Satellites and heightening readiness and rapidness of response. R&D initiatives involving state-of-the-art technology will be pursued and the Information Gathering Satellite framework reinforced on an ongoing basis, including increases in the number of satellites. Also, the functioning of satellites in the existing 4-satellite constellation will be enhanced and reinforced through ongoing steps to boost data quality including resolution etc. to a level surpassing that of the latest commercial satellites, and steps will be taken to cut costs by shortening development periods and lengthening design life, etc. Also, we will continue working to augment Japan's satellite technology infrastructure as a whole by transferring the latest technologies to the private sector, etc. (CAS)

- From the vantage point of boosting the resiliency and rapidity of response of Japan's space infrastructure, research studies will commence in FY2015 on the operational needs and plans, etc. for compact, rapid-response satellites, etc. capable of making frequent observations in specific fields. Consideration will also be given to the possibilities for linkage of compact, rapid-response satellites and Information Gathering Satellites. (CAS, CAO, MEXT, MOD, etc.)

- We will commence development of advanced optical satellites incorporating Japan's technological strengths in FY2015 and start operation in FY2019, with the aim of heightening the foreseeability of outcomes of industrial-sector investment through ongoing provision of data. We will also commence development of advanced radar satellites in FY2016 and start operation in FY2020. To realize a seamless satellite network, development will commence in FY2022 and operation in FY2026 on advanced optical satellite successor models, in light of the respective design lives and development periods of optical and radar satellites. For advanced radar satellite successor models, development will commence in FY2023 and operation in FY2027. (MEXT)

- In light of developments in Europe and the US, etc. we will examine the potential of anchor tenancies (long-term purchase contract systems for satellite images), rules and licensing systems for high-resolution satellite imaging data utilization, and establishment of necessary frameworks for earth observation satellite-related business led primarily by private-sector enterprises. (CAO, etc.)

- Stationary meteorological satellites are indispensable for monitoring of typhoons and concentrated torrential rainfall, safe passage of aircraft and ships, observation of the global environment and volcanic activity, etc., and we will employ them to conduct seamless meteorological observations. Himawari 8, which was launched in 2014 and is currently orbiting the Earth in standby mode, is scheduled to go operational in summer 2015. Its successor, Himawari 9, is scheduled to be launched in 2016 and commence operation in 2022. To ensure that the meteorological satellite observation network remains seamless, manufacture of successor models will commence, with operation scheduled to start in FY2029. (MLIT)

- The second Greenhouse Gases Observing Satellite is scheduled for launch in FY2017. Also, in addition to stepping up monitoring of emissions by key greenhouse gas-emitting nations, we will aim to improve the observation system for whole-Earth greenhouse gas emissions monitoring by commencing development of the third model in FY2017 with launch scheduled for FY2022. (MEXT, MOE)

•Japan will move forward steadily with initiatives currently under development in the areas of disaster preparedness and response, environmental monitoring, and natural resource exploration. Moving forward, with regard to development of new remote sensing satellites other than those described above and the advancement of sensor technologies, we will prioritize the development of technologies with clear applications that contribute to resolution of global-scale issues and improvement of the Japanese people's standard of living, particularly those that build on Japan's engineering strengths, those for which there is strong demand from the academic and user community, and those of key importance to strategic diplomacy. In doing so we will effectively and efficiently move forward, in cooperation with the international community, with sharing of inter-satellite bus technology, international joint development initiatives, piggybacking of satellite mission equipment and materials, international sharing of satellite data, etc. (MIC, MOFA, MEXT, METI, MLIT, MOE)

iii) Satellite telecommunications and broadcasting

• Progress with technological innovation in the field of communications and broadcasting satellites, and securing and maintaining state-of-the-art technologies, is crucial for both the national security of Japan and the international competitiveness of our space industry. For this reason, we will clarify the mission technologies and satellite-bus technologies, etc. that Japan needs to develop, in light of future ICT trends and needs, draw up a road map from launch of experimental satellites to international expansion, set targets for international competitiveness, and deliberate on directions for future technology development, with conclusions to be reached within FY2015. We will aim to launch new experimental satellites emerging from this endeavor around FY2021. In addition, to strengthen international competitiveness in an ongoing fashion, we will endeavor to forecast the state of the communications and broadcasting satellite market and technologies in 10 years' time, and conduct preliminary deliberations on next-next-generation experimental satellites. (MIC, MEXT, METI)

• In FY2015, we will commence development of highly resilient data-relay communication satellites able to handle increased volumes of data and dwindling of available frequencies, with launch scheduled for FY2019. (MIC, MEXT)

•With regard to the X-Band Satellite-Based Defense Communication Network, we will commence improvements on the third unit in FY2016, while considering the most efficient approaches to improvement. At the same time, we will engage in deliberations and take necessary measures in order to secure the confidentiality and boost the resiliency of national security-oriented communications. (MOD)

iv) Space transportation systems

•To secure the autonomy of Japan's space operations, the government of Japan will prioritize the use of domestic core rockets for launch of satellites. (CAS, CAO, MEXT, METI, MLIT, MOE, MOD, etc.)

•The New-Type Liquid-Engine Core Rocket, which contributes to Japan's autonomous launch capabilities and the international competitiveness of launch services, is scheduled for first launch in FY2020, and with this in sight we will move forward steadily with development of an integrated system including the rocket itself and terrestrial systems based at Tanegashima Space Center and elsewhere. This project

aims to enable the expansion of orders received for satellite launch services, in line with the swift start of launch services by private-sector enterprises and the schedule of the governmental satellite launch program. We will also engage in discussions on the smooth transition from the current H-IIA/B rocket to the New-Type Liquid-Engine Core Rocket, with a conclusion to be reached by the end of FY2015. (MEXT)

- With regard to the rapid-response solid-fuel Epsilon Rocket, an important piece of strategic technology, we will complete improvements to launch capabilities and expansion of satellite envelope area by around the end of FY2015. Also, within FY2015 we will begin deliberations on the conformation of future solid-fuel rockets capable of meeting launch needs for a wide range of national security, earth observation, space science and exploration, etc. satellites and of synergy with the solid-fuel rocket boosters of the New-Type Liquid-Engine Core Rocket, with the goal of seamlessly commencing operation when the H-IIA/B rocket is phased out and replaced with the New-Type Liquid-Engine Core Rocket. (CAS, MEXT, MOD, etc.)

- Within FY2015, we will begin deliberations on realignment of launch sites, with the goal of boosting the resiliency of Japan's space-based systems. (CAS, CAO, MEXT, MOD, etc.)

- Within FY2015, we will begin deliberations on rapid-response compact satellite launch systems including air-launch ways, in coordination with the studies on the operational needs and concepts for these satellites. (CAS, CAO, MEXT, MOD, etc.)

v) SSA (Space Situational Awareness)

- By around the early 2020s, we will construct SSA-related facilities required for situational awareness in space, based on Japan-US partnership, and an operational framework integrated with MOD, JAXA and other Japanese governmental institutions. During the same period, we will advance discussions on reinforcement of partnerships between Japan and US strategic forces, etc. as well as data collection and adjustments contributing to the construction of this operational framework. (CAO, MOFA, MEXT, MOD, etc.)

vi) MDA: Maritime Domain Awareness

- With regard to the application of space technology to MDA through test utilization of satellites held by Japan, etc., governmental institutions engaged in maritime monitoring will conduct deliberations covering combinations with aviation, shipping, and terrestrial infrastructure etc. and partnerships with the US, and will summarize opinions and insights by around the end of FY2016 and incorporate them into relevant future plans. (CAS, CAO, MOFA, MEXT, MLIT, MOD, etc.)

vii) Early-warning functions, etc.

- We will deliberate on the viability of early-warning satellites, etc. and take necessary measures, taking full account of potential alternatives such as cooperation with allied nations, as well as the technological feasibility for Japan and cost-benefit analysis. (CAS, CAO, MOD)

viii) Improving the resiliency of space systems across the board

- We will deliberate on measures for comprehensive and ongoing measures to maintain and reinforce the overall resiliency of space-based systems operated by Japan and its allies, reach a conclusion by the end of FY2015, and take necessary

measures. (CAS, CAO, MOD, etc.)

ix) Space science and exploration and manned space missions

• Space science and exploration and manned space missions unite humanity's collective wisdom in pursuit of a common goal, contribute to the storehouse of human knowledge, and expand the international effort to explore and utilize space, and thus far many of Japan's projects have earned high acclaim from around the globe. Moving forward, we will build on the technology and track record we have amassed through projects thus far, and continue our endeavors with the goal of achieving globally recognized results in the space field and boosting our international presence. (MEXT)

• In light of the fact that as a scientific discipline, space science and exploration will continue in the future to produce highly valuable results on a global scale and contribute significantly to the storehouse of human knowledge, the government of Japan will secure adequate funding and move forward with projects, in an essentially bottom-up manner and referencing the JAXA space science and exploration road map.

As a part of this endeavor, over the next 10 years, we will launch three mid-sized units based on the strategically implemented mid-term plan, and five small-sized units once every two years based on the public-offer small-sized plan, as well as steadily implementing a wide range of small-scale projects. Specifically, these include X-ray astronomy satellites (Astro-H), geospatial exploration satellites (ERG), Mercury exploration (BepiColombo), etc. We will also deliberate on the launch in the mid-2020s of SPICA (Space Infrared Telescope for Cosmology and Astrophysics), an international cooperative mission, as well as steadily implementing projects currently under consideration by ISAS, based on the results of deliberation outcomes.

In the area of solar system exploration and science, we will pursue not only explorations based on bottom-up discussions, but also organized programs of effective and efficient unmanned exploration from an academic, big-picture perspective. Specifically, with regard to unmanned landings and exploratory activities on gravitational bodies such as the moon and Mars, we will move forward strategically and cultivate the necessary human resources, in light of the fact that these are particularly long-term endeavors. (MEXT)

• With regard to manned space activities including the International Space Station (ISS), the government of Japan will promote accumulation of related technologies and expansion of ISS' utilization in private sectors in a strategic manner, while striving for improved cost-benefit performance and seeking to contribute to expansion of the range of human activities in the future, with the prerequisite that these initiatives will be implemented in an effective and efficient manner.

Specifically, with regard to the CSOC (Common System Operations Costs) of the ISS from 2016 to 2020, two launches of the space station cargo transport vehicle "Kounotori" are scheduled, along with other technologies expected to have strong positive repercussions in the future.

On the question of whether or not to participate in ISS mission extension from 2021 through 2024 and what if any form of participation will take, we will hold comprehensive discussions giving sufficient consideration to trends in other nations as well as the effects on diplomacy, maintenance of industrial infrastructure, reinforcement of industrial competitiveness, and science and technology, etc., and reach a conclusion by the end of FY2016. (MEXT)

•In the area of international manned space exploration, as well, in light of the fact that plans will be formulated in the international arena, we will hold comprehensive discussions taking sufficient consideration of trends in other nations as well as the effects on diplomacy, maintenance of industrial infrastructure, reinforcement of industrial competitiveness, science and technology, etc., working within severe financial constraints, performing rigorous evaluations, and deliberating in a cautious and comprehensive manner.(MEXT)

② Strengthening of industrial infrastructure / science and technology infrastructure underpinning individual projects

i) Comprehensive initiatives aimed at encouraging new entrants to the field and expanding space utilization

•The government of Japan will aim for comprehensive establishment of the necessary systems, etc. by the end of FY2016 to encourage new entrants and expanded utilization of space, including legal measures relating to the Law on Space Operations and laws related to satellite remote sensing, etc. (discussed later) and systemic frameworks for encouragement of new private-sector participants that attempt new business models such as utilization of ultra-compact satellites and satellite data. (CAO, MEXT, METI, etc.)

•In order to create new space-related businesses and services, including those that generate value by applying information and communications technology to “big data” acquired and accumulated through utilization of space-based systems, such as satellite remote sensing data and positioning data, Japan will commence deliberations on utilization of private-sector financing and various support measures, etc. within FY2015, with the aim of reaching a conclusion by the end of FY2016 and taking the necessary measures. (CAS, CAO, MIC, MEXT, MHLW, MAFF, METI, MLIT, etc.)

ii) Organization of environment geared toward stable supply of core components, etc. for space systems

•To maintain and reinforce space industry-related infrastructure and secure the autonomy of Japan’s space operations, taking into account the “R&D Vision” (provisional name) for defense equipment, and aiming to contribute to efficient, speedy, and low-cost development and manufacturing of space-based systems, we will formulate a technology strategy for components geared toward future space-based systems by the end of FY2015, adopt the necessary measures based on this strategy, and incorporate the strategy into related plans.(CAO, MEXT, METI, MOD, etc.)

• The government of Japan will work to develop and evaluate low-cost, high-performance space equipment and components, so as to support efforts to slash costs related to private-sector enterprises’ development, improvement, launch, and operation of satellites, etc. In addition, to contribute to the testing of new element technologies through utilization of universities and private-sector enterprises, etc. as “test beds” for ultra-compact satellites, etc., we will continue providing opportunities for piggybacking on the H-IIA/B rocket and utilization of the ISS. In addition, we will start in FY2015 to develop an environment for timely, cost-effective in-orbit testing of core components and new element technologies utilizing compact and ultra-compact satellites, and aim to conduct in-orbit operational tests employing the Epsilon rocket

by FY2017. (MEXT, METI)

iii) Initiatives aimed at expanding future space utilization

• The government of Japan will capitalize on the 2020 Tokyo Olympics and Paralympics to showcase the “future society” outer space utilization can bring about, and will embark on deliberations with the aim of conducting pioneering social feasibility experiments coordinated with policies on IT, etc. in FY2019 with the aim of practically implementing state-of-the-art space technology in society. (CAO, METI, etc.)

• In light of rocket technology trends in other countries, we will conduct R&D including operational testing of LNG (Liquefied Natural Gas) propulsion systems and related technologies, which are among Japan’s areas of strength. (MEXT)

• We will work toward establishment of next-generation space transport technologies such as the New-Type Liquid-Engine Core Rocket, and pursue R&D on reusable space transportation systems (MEXT)

• We will pursue initiatives aimed at creating a vital future society and increasing the prosperity of Japan’s citizens via the latent potential of space, including in the area of space-based solar power systems that have the potential to resolve global-scale challenges facing humanity such as energy, climate change, the environment, etc., as well as research studies on measures to address the effects on Japan’s satellites of changes in the outer space environment such as solar activity. (MIC, MEXT, METI, MOE, etc.)

③ Strategies to strengthen systems and frameworks for space development and utilization in general

i) Comprehensive reinforcement of space policy implementation frameworks

• The government of Japan will implement measures based on the Basic Plan on Space Policy in a unified manner, chiefly led by the Cabinet Office and under the jurisdiction of the Strategic Headquarters for Space Development. Relevant ministries will secure the necessary budget and personnel for implementation of the Basic Plan on Space Policy, and promote private-sector activities. Revisions and reorganization of administrative institutions, etc. will be carried out when required for implementation of the Basic Plan on Space Policy. (CAO)

• In order to utilize space for national security, we will continue to reinforce partnerships between the MOD and other agencies pertaining to the technologies and knowledge, held by of JAXA. (MEXT, MOD)

ii) Reinforcement of survey, analysis, and strategic planning functions

• In partnership with foreign diplomatic missions, we will survey and analyze other countries’ space policies and space industry trends, etc., and strengthen strategic planning functions, so as to examine strategies that Japan should adopt over the long term. To this end, we will consolidate the experiences and insights relevant organizations have accumulated, deliberate on mechanisms for sharing these throughout the entire government of Japan, reach a conclusion by the end of FY2015 and implement the required measures. (CAO, MOFA, MEXT, etc.)

iii) Comprehensive reinforcement of domestic human infrastructure, furtherance of public understanding

• We will deliberate on measures to cultivate and secure human resources with expertise and specialized knowledge of the space field including technologies like positioning, communication and broadcasting, and earth observation satellites and rockets, as well as of space-related international relations and relevant policies, including consideration of acceptance of overseas human resources and dispatch of domestic human resources overseas so as to reinforce interpersonal interaction and networking, and other aspects of career paths. Deliberations will commence in FY2015 and we will reach conclusions as soon as possible and implement the required measures. Steps will also be taken to enhance space science and engineering research programs at universities. In addition, in promoting space technology and R&D projects, we will encourage inter-organizational human resources exchange and joint mobilization of human resources in widely varying fields. (MEXT, METI)

• We will implement a variety of initiatives, including space-related education incorporating hands-on opportunities at elementary and junior high schools, etc. so as to raise public interest in space, and other wide-ranging contributions to expansion of the next generation of human resources.

In particular, outer space activities by Japanese astronauts are crucial in obtaining the widespread understanding and support of the Japanese public for space development and utilization, and nurture the hopes and dreams of many members of the public. For this reason we will pursue a wide range of initiatives that build on this value. (MEXT)

iv) Amendment of legal frameworks etc.

• The government of Japan will work to promote the receipt of satellite launch service orders from overseas satellite operators, making reference to the third-party damages compensation programs and national approval and supervision programs covering private-sector space operations, etc., and will aim to submit a Space Operations bill encouraging private-sector space operations during the ordinary Diet session in 2016. (CAO, MOFA, MEXT, METI)

• Also, we will submit a bill during the ordinary Diet session in 2016 that aims to provide systemic safeguards necessary for promotion of private-sector enterprises' utilization of remote sensing satellites, while securing the national security interests of Japan and its allies. (CAO, MOFA, MEXT, METI)

• We will survey and deliberate on risks threatening transmissions by Quasi-Zenith Satellites and other positioning satellites, and measures to address these, taking trends in other countries into account, reaching conclusions by the end of FY2015 and implementing the required measures. (CAO, MIC, MOFA, METI, MLIT)

• We will engage in deliberations, taking into account the actions of other countries, on procurement systems that enable effective reductions in the cost of manufacturing satellites, etc. while maintaining robust business viability of private-sector enterprises. (CAO, etc.)

④ Advancement of space diplomacy and reinforcement of overseas development strategies related to the space field

i) Realization and reinforcement of the rule of law in outer space

• The government of Japan will further work toward the establishment of international rules, in particular by promoting the formulation of the International Code of Conduct for Outer Space Activities, and will proactively participate in and contribute to discussions in international conferences such as the United Nations COPUOS (Committee on the Peaceful Uses of Outer Space), so as to play the greatest possible role in the creation of rules by the international community.

In this process, we will actively utilize opportunities for bilateral and multilateral policy dialogues including the ARF (ASEAN Regional Forum) and other regional cooperative frameworks to convey to the international community Japan's principles and position based on fairness, transparency, and reciprocity. In addition, we will encourage other nations to boost the transparency of space operations and work to foster mutual trust, so as to avoid unexpected situations due to misunderstanding or miscalculation. (CAO, MOFA, MEXT, etc.)

ii) Strengthening of international space cooperation

• The government of Japan will promote bilateral Japan-US space cooperation in both security and civil fields, and will hold regular intergovernmental dialogues on space with the US, the EU, Australia, etc. With regard to other countries, as well, we will also promote dialogue between governments and space agencies. Also, in partnership with the World Bank and other international institutions, we will apply space technologies in which Japan has strengths so as to contribute to resolution of development issues in developing nations, etc., and to the reinforcement of other nations' space capabilities. In addition, we will contribute to the construction of an international earth observation network based on GEOSS (Global Earth Observation System of Systems), and participate in forging stronger international space exploration partnerships through the ISEF (International Space Exploration Forum). Through these initiatives, we will build a multi-layered network of cooperation with other countries in the space field.

In doing so, we will comprehensively utilize a wide range of support mechanisms including ODA (Official Development Assistance) and OOF (Other Official Flows.) (CAS, CAO, MIC, MOFA, MEXT, MAFF, METI, MLIT, MOE, MOD, etc.)

• We will investigate the possibility of cooperation on joint satellite development, mission equipment piggybacking, and earth observation via joint utilization of satellite data with other nations, including those located along sea lanes stretching from the Middle East to Japan's marine territory and others in the Asia-Pacific region, reach conclusions by the end of FY2015, and implement the required measures. (CAO, MOFA, MEXT, METI, MLIT, MOE, etc.)

• In addition to the above, we will take other measures that exercise Japan's soft power and further reinforce our leadership and diplomatic power in the international community, by promoting widespread international space cooperation through science, technology, and human resource cooperation with other nations involving a diverse range of industrial, academic, and governmental actors. (CAO, MOFA, MEXT, etc.)

• In the Asia-Pacific region in particular, we will further boost the effectiveness of the APRSAF (Asia-Pacific Regional Space Agency Forum) in light of its diplomatic significance. Also, Japan will contribute to the development of the ASEAN region and strengthen Japan-ASEAN ties by providing support to enable completion by the end of FY2016 of the ERIA (Economic Research Institute for ASEAN and East Asia)

“Implementation Schedule for Utilization of Space to Reinforce Defense Capabilities,” taking into account existing initiatives in the space and disaster preparedness fields in ASEAN. (CAO, MIC, MOFA, MEXT, MAFF, METI, MLIT, etc.)

iii) Establishment of Task Force on the Overseas Deployment for Space Systems (provisional name)

•During the first half of FY2015, we will establish the Task Force on the Overseas Deployment for Space Systems (provisional name) composed of the government of Japan and private-sector actors, and work to expand a joint public-private commercial space sector for export of space systems in Japan’s areas of strength, etc.

In expanding our presence in the international commercial space system market, we will ensure compatibility with Japan’s national security policies, including the policy of “Proactive Contribution to Peace” based on the principle of international cooperation, and revisions to Japan's “Official Development Assistance Charter”. (CAS, CAO, MIC, MOFA, MEXT, MAFF, METI, MLIT, MOE, MOD, etc.)