JAMSS can support your goals in space applications by making excellent use of technologies acquired through space activities.

We, Japan Manned Space Systems Corporation (JAMSS), have been involved in the operation of “Kibo” and “KOUNOTORI,” the training of astronauts and flight controllers, and the implementation of space experiments, thereby supporting the International Space Station (ISS) Program since our establishment in 1990. We also carry out assessment of the safety, reliability and maintainability of hardware and software for space use.

We are now facing a new era in which private enterprises and other new space entities are utilizing outer space in addition to conventional space-faring nations. JAMSS endeavors to provide services for private enterprises related to the utilization of space environments with a particular focus on the use of “Kibo,” the development and operation of satellites, and the utilization of satellite data. We also offer our expertise accumulated through participation in the ISS Program to private enterprises, such as our outstanding safety technologies and specialist training knowhow.

The ISS is a stepping-stone to future manned space exploration to the moon and Mars. JAMSS is prepared to take the challenge of entering unchartered territory, while continuously serving as the bridge between Earth and outer space and contributing to humanity and society. Place your trust in JAMSS, the company that “links humans and space.”

President Toshikazu Koto
- **Research and Development Project**
  - Investigation and Research for the upcoming Manned Space Exploration
  - Conceptual Study for the Future Space Systems
  - Commercial Usage around the Low Earth Orbit

- **Satellite Development Support**
  - Satellite Engineering Consulting
  - Design and Analysis
  - Small Satellites Launch

- **Operations and Utilization of Kibo**
  - Operation of Kibo and KOUNOTORI
  - Logistics and Maintenance, Cargo Integration
  - Astronaut and Flight Controller Training
  - Astronaut Support
  - Space Experiment Operations
  - User Integration
  - Engineering Support
  - Development of soft bag, etc.

- **Kibo Commercial Utilization**
  - Space Experiment Planning
  - Development of Space Experiment Equipment
  - Transportation of Space Experiment Equipment and Samples
  - Safety Assessment of Space Experiment Equipment

- **Satellite Utilization**
  - Utilization of Earth Observation Data
  - Communication Satellite Utilization

- **System Safety Independent Verification and Validation (IV&V)**
  - IV&V on Automobile System Safety
  - IV&V on Aircraft System Safety
  - IV&V on Transportation System Safety

- **Safety and Product Assurance**
  - Safety and Product Assurance for Spacecraft
  - Safety and Product Assurance for Aircraft
  - Training in Safety and Product Assurance

- **Training**
  - Rocket Launch Site Ground Controller Training
  - Satellite Controller Training
  - Training for Nuclear Power Plants Operator
  - Training for Petrochemical Plants Operator
  - Training Program for Private Companies

- **Making Space Environments Accessible...**

- **Making Space Technologies Applicable...**
JAMSS has acquired manned space flight technology that prioritizes the safety of astronauts in the Japanese Experiment Module “Kibo” on the ISS.

We are keeping our confident eyes on astronauts and Kibo every day from the ground using the latest operation technologies necessary for extreme environments.

Operations and Utilization of Kibo

Endless challenges for maximizing the results from Kibo and future human space exploration

Providing support for manned space flights and the success of the mission in Kibo has been our main objective since JAMSS was established in 1990. Our flight controllers continuously monitor, control, and analyze the status of Kibo from the Kibo Mission Control Room at the JAXA Tsukuba Space Center, and real-time coordination is made through hotlines linking them with the astronauts onboard and the National Aeronautics and Space Administration (NASA) in the USA. Our expertise for medical operation supports astronauts onboard to maintain their health.

Training of the flight controllers and astronauts are also our vital role.

Our flight controllers are brought up to be experts. We run a two-year certification program for flight controllers involving training and simulation exercises to prepare them for quick decision-making and ensure that they have high-level English proficiency and smooth communication skills.

Taking advantage of the microgravity environment of Kibo, astronauts implement a wide range of experiments that would be difficult to perform on Earth. We optimize these experiments for the space environment so that astronauts are able to carry them out safely and effectively in space. We provide end-to-end services for all aspects of each experiment making close communication with researchers. Our service includes international planning coordination, experiment equipment and sample check, launch arrangements, appropriate training for astronauts, and procedure and manual development. While the experiments are conducted onboard, we remain in contact with the astronauts to provide operational support responding flexibly and promptly to off-nominal situations in coordination with our engineering support team who can provide their expertise to any problems.

We continue to work toward more sophisticated and efficient operation to maximize the outcome from Kibo and to accumulate the skills and technologies necessary for future space exploration activities. This challenge has enabled us to operate the robot arm on Kibo remotely from the ground on behalf of the astronauts who were formerly its prime operators.

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We formulate an excellent team suitable depending on particular experiments, thus provide flexible support to astronauts and operate experiment equipment for mission success.

We have much experience in space experiment in Kibo. We can help researchers and Kibo users to plan their experiments in space and ensure compatibility with the space environment through testing and analysis below flight.

Location: JAXA Tsukuba Space Center
JAMSS training

service

On-the-Job

Training

General business

skill training

Technical skill

Non-technical skill

・ Communication
・ Leadership
・ Coaching, etc.

Specificity

Generality

Hard to apply to daily activity

NASA-based training development know-how

Operational skill

System knowledge

Operational procedures, rules and knowledge

Safety requirements knowledge

Process knowledge

Process management knowledge

Training program for technical skills, and non-technical skill

Technical skill

Communication
Decision making
Situational awareness
Legal/Rule compliance
Prioritization
Troubleshooting
Team building

Non-technical skill

Safety requirements

In the human spaceflight, small miscommunication or operation mistake may result in a tragic accident. In order to reduce human errors and deal with emergency situations calmly, non-technical skills are essential.

Kibo Commercial Utilization

Research and development of technology and products on the International Space Station

Kibo is a “piece of Japan in space” and is available for use by companies, research institutions and individuals in the Japanese private sector. Experiments can be performed not only inside but also outside of the space station with the use of robotic arms. Space enables a wide range of experiments that would be impossible to conduct on Earth. JAMSS has actively promoted and supported the use of space by private Japanese companies since Kibo started its operation. We have provided support from launch to recovery after re-entry for private companies’ projects, including the Kibo Robot Project in which KIROBO, the robot astronaut developed by Dentsu Inc. and Toyota Motor Corporation, conducted a conversational experiment with astronaut Koichi Wakata and the experiment carried out by the Suntory Global Innovation Center to “develop mellowness in an alcoholic beverage using a microgravity environment.”

JAMSS provides support for all aspects of space experiments including plan proposals, development, delivery and safety screening processes. Our thorough knowledge of Kibo enables us to provide comprehensive services that cannot be found elsewhere. The utilization of outer space environments is no longer a dream, but a reality. We look forward to helping companies that aspire to operate outside of the conventional frameworks.

“Analyze” investigates customer’s tasks and aims, visualizing the necessary Skills, Knowledge and Attitude to achieve the training objectives. It is called SKA analysis.

“In Design”, we propose efficient training methods, regarding to customer’s conditions and training objectives, etc.

“In Develop”, we prepare training materials and exercises to meet the training goals efficiently.

“In Implement” and “Evaluate” carry out the training and then, its feedback session to evaluate the team and individuals to improve the performance and share the right knowledge of the ideal actions.

As a training method, it is possible to provide a wide variety of methods, not only lectures and exercises but desktop training and simulation training.

Kibo Robot Project

An experiment to study the effects robots have on astronauts who spend long periods of time in an enclosed environment. JAMSS provide engineering support as well as real-time operation in Kibo.

Experiment using a space environment

We use a space environment to conduct a wide variety of experiments, such as “To develop mellowness in an alcoholic beverage using a microgravity environment.”

Space Station Utilization Service

Taking advantage of U.S. commercial company NanoRacks LLC, a NASA partner, we carried out the educational Lagrange Kibo Mission which involved plant seeds flown into space.

Training

JAMSS provides space-qualified training services for various industries.

Our training services are based on the Instructional Design Process theory which is NASA-based organized approach to training and have five systematic processes such as “Analyze”, “Design”, “Develop”, “Implement” and “Evaluate”. We offer training services that combine only necessary processes according to customer’s needs.

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Safety and Product Assurance
The ultimate safety technology we have acquired through space activities is available for use in the private sector.

A seemingly minor accident on Earth can have catastrophic consequences in the enclosed environment in outer space. Our work ensures that the three main hazards in space, namely, fire, depressurization and air contamination, are under control. Additionally, our work for safety and product assurance includes exhaustive checks on every item delivered to the ISS and doing everything within our ability to ensure the safety of the crew through implementation of stringent safety requirements.

We evaluate the reliability and safety of every item delivered into space at all levels beginning with materials and components through to the overall system, and provide suggestions to the developers. Our work provides independent assessments to prove that the item satisfies the stringent quality standards required by NASA and JAXA. The knowledge and expertise required to ensure reliability and safety in space enable us to cater to the needs of the aircraft and railway industries, as they demand extremely strict safety standards. We are now applying the technology developed for space to private enterprises on Earth.

We also regularly provide safety and product assurance training to engineers in the space industry. JAXA has been using our training classes as a mandatory course for JAXA’s engineers. Our training program can certainly contribute to companies in other industries that require high-level training in safety, reliability and quality assurance.

System Safety Independent Verification and Validation
We provide state-of-the-art software independent verification and validation (IV&V).

Software IV&V improves safety by identifying the flaws adversely affecting system safety and software reliability and verifying the proper operation of the software in an emergency situation. JAMISS began IV&V work at the same time as NASA. Working cooperatively with the Massachusetts Institute of Technology (MIT), the University of Southern Denmark and other prestigious institutions around the world has enabled us to accumulate leading-edge software verification technology in the field of spacecraft software, which demands the highest level of safety. JAMISS can expertly apply the Integrated Formal Verification technology that extracts the most critical components of safety from the voluminous target software and verifies all possible combinations of conditions, in addition to identifying potential accident causes that would only occur under extremely rare conditions. This allows us to develop software that is safer than ever.

IV&V is expected to be utilized in fields that have stringent safety standards for complex software, including the automotive, airline and railway industries.
Satellite Development Support

We have been supporting satellite-related projects encompassing the various fields of satellite development, such as system design, satellite communications technology support and orbital operation support, for many years.

Our satellite technical consulting services cover a wide range of areas, from requirement planning to design, manufacture, testing and operation, by exploiting the system engineering technologies and experience we have accumulated from the viewpoint of satellite users. Based on this background, we also provide various survey services covering all aspects of space development both in Japan and overseas.

There has been a global trend in launching small satellites in recent years. Small satellite deployment from Kibo began in 2012. We provide small satellite deployment opportunities from Kibo with technical consulting services for design, manufacture and testing as well as documentation support. It is necessary to meet all applicable safety requirements for deployment from Kibo. We have been supporting small satellite deployment from Kibo globally and successfully deployed three foreign satellites since 2015. We also provide small satellite launch opportunities using other launch vehicles around the world, based on our launch services network to meet our customers’ demands. We will continue to provide technical support from satellite development to launch, both at home and overseas.

Digital Farming

“Digital Farming” is a satellite imagery-based information service which helps increasing your productivity by visualizing your crops conditions in a form utilizing JAMSS unique know-how based on techniques including NDVI which can show the distribution and activity of various agricultural products. A large number of different satellites are currently orbiting space above Earth, and it is possible to receive and make use of vast amounts of satellite data for business purposes. JAMSS provides services in which the satellite data at advanced levels and the customized information passed on to users. In particular, people and companies involved in the field of agriculture are able to use cell phone or tablet to check on crop cultivation status, thus bringing us inexorably closer to an age in which such information will be used to decide on harvest times and volumes.

Solution Service

Solving the problem with space-based skill and know-how.

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As commercial use of space environment progress, JAMSS has developed a high-quality protein crystal growth service called “Kirara”. Protein crystallization is performed in the International Space Station (ISS) for about one month, after which the crystal will be returned to your facility. Besides, space-based know-how is also used in other field. Astronaut trainer in JAMSS has developed “Pullsora” which is a rehabilitation equipment with training program, focused on a similarity between weakness of muscle or a sense of balance during astronaut’s stay in space and bedridden patient in hospital.

Kirara

“Kirara” is a high-quality protein crystal growth service supporting drug discovery through the growth of high-quality protein crystals in space. JAMSS’s original cube-type incubator is installed in the ISS module to grow protein crystals using the counter diffusion method.

Pullsora

“Pullsora” developed by our astronaut trainer is a rehabilitation equipment with simple function to fix on a handrail for pulling, and attached training program may motivate your daily rehabilitation program.

Satellite Engineering Consulting

We provide the necessary assessment services for satellite requirement planning, design, manufacturing and testing, from the viewpoint of satellite users and project management.

Design and Analysis

We provide the interface design for satellite and ground systems, design of satellite orbits, design of delivery control systems, optical sensors, communications and positioning systems.

Small Satellite Launch

We provide opportunities for deploying/launching small satellites from Kibo and launch vehicles suitable for its mission, and also technical consultation as needed for successful launch.

Location: JAXA Tsukuba Space Center
Company Profiles

Name: Japan Manned Space Systems Corporation (JAMSS)
Location: Tokyo Office Otemachi Bldg., 1-6-1, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
President: Toshikazu Koto
Established: May 14, 1990
Capital: 445 million yen
Sales: 4.6 billion yen (fiscal 2018)
Personnel: 217 (as of April 1, 2019)
Main account banks: Mizuho Bank, Ltd., Sumitomo Mitsubishi Banking Corporation, MUFG Bank, Ltd., and Joyo Bank, Ltd.

History

May 1990: Company established (Sanwa Building, 1-27-17, Hamamatsu-cho, Minato-ku, Tokyo)
April 1991: Headquarters moved (Hamamatsu-cho Central Building, Tokyo)
April 1994: Tsukuba Office opened (Urban Square Tsukuba Building, Ibaraki)
November 1997: JAMSS America Inc. established (Houston, Texas, USA)
November 2000: ISO-9002 certification
December 2003: ISO-9001 certification
November 2004: JAMSS joined KEDIAREN, The 21st Century Public Policy Institute and Space Activities Promotion Committee
May 2005: Headquarters moved (Otemachi Building, Tokyo)
March 2007: ISO-14001 certification
November 2009: Kashima Office opened (Tokatsu Techno Plaza, Chiba), ISO/IEC27001 certification
May 2010: 20th anniversary of establishment (a commemorative public symposium held)
September 2013: Offices relocated to Tsukuba and Kashima were integrated with Headquarters, Tsukuba Office opened (Tsukuba Center Inc.)
April 2015: Nagoya office opened (Yagami Kanayama Building, Aichi)
October 2017: Nagoya office moved (Yagami Kanayama Building, Aichi)
July 2019: Kobe office opened (Kobe Kobe Building, Hyogo)

Stockholders