

IPR and technology transfer Building Capacities for Space Research: A case study of NASA

Prof. Dr. Niraj Kumar
St. Xavier's University, Kolkata, INDIA

Throughout its 60 years of existence NASA has shared its inventions and scientific breakthroughs with the public, academia and private industry. Transfer of technology is consistent with the National Aeronautics and space Act. The legislation that created NASA which discuss the Agency to preserve the role of United States as a leader in Aeronautical and Space Science technology and encourage the fullest commercial use of space. NASA's fiscal year AY 2018 budget to promote technology transfer was \$18.2 million, which funds the administration invention disclosure, commercialisation assessments, portfolio management, marketing, software release and infrastructure of NASA's technology transfer program.

I. NASA'S PATENT PORTFOLIO

Technology transfer can happen in variety of ways sometimes broadly and informally though the publishing of information, and other times more formally through partnerships or the licensing of the intellectual property. NASA maintains a portfolio of patents that have commercial potential and are made available to academia and industry through NASA's patent licensing program. NASA partner that make an innovation in the performance of work conducted under a NASA funded contract grant or cooperative agreement is responsible for reporting there innovations in accordance with the requirements of their contract, grant or cooperative agreement.

Each NASA centre is responsible for technology transfer as it relates to that centre's programs and projects and employs a process to review new technology innovations and analyse the patent ability and market ability of each innovation proposed. This is applicable to all its centres namely Kennedy Space Centre, Johnson Space centre, Jet propulsion Laboratory, Langley Research Centre, Marshall Space flight centre, Ames research centre, Armstrong flight research centre, Glenn research centre and Goddard Space Flight Centre. The Bayh – Dole Act of 1980 gave Universities, non-profits, and other small business the ability to obtain patents on inventions funded by the federal government.

II. NASA'S POLICY

NASA's policy is to pursue intellectual property protection only on technologies with commercial potential for which NASA has an ownership interest to licensing. NASA policy provides guidance for implementing the process, sequentially and responsibilities after the agency technology transfer. In addition, NASA established a process for public disclosure of inventing by government employees, release of NASA software and the distribution of royalties received by NASA.

III. TECHNOLOGY TRANSFER PROGRAM

NASA technology transfer program managed within the space technology mission directorate seeks to ensure that technologies developed for exploration and discovery missions are boundary available to the public. The program is responsible for promoting and supporting the development of new technologies and administering the Agency's technology transfer and commercialization program. Activities include collection and assessment of all NASA's inventions, strategic management, and marketing of intellectual property, negotiation and management of licenses, development of technology transfer focussed partnerships and the tracking and reporting of metrics related to the activities (number of new inventions, patents, licences, cooperative research and development agreements, and software use agreements).

NASA Centre Directors appoint Centre Technology Transfer Officers (CTTOS) who work with the Centre's Intellectual Property Lawyers (patent council) to ensure all centre technology transfer activities are conducted in

compliance with legal requirements. The CTTO is responsible for contributing to the development and maintenance of a robust portfolio of NASA Intellectual property assets with commercial potential to pursue NASA's ability to license inventions arising from NASA funded research or development in which NASA has an ownership interest. This includes the disposition of all New Technology Reports (NTRs) addressing items such as ownership of rights, commercial potential, technology transfer plans, intellectual property protection, and NTR closure. The CTTO conducts commercialisation and technical viability assessments for technologies that have potential for transfer to industry.

IV. TECHNOLOGY TRANSFER PROCESS

NASA employees and contractors who develop new technologies are required to report, document, and identify the potential commercial applications of their work by submitting NTRs. NASA has developed a new technology reporting system (e-NTR) capability within the NASA technology transfer system (NTTS) that allows in months to prepare reports and submit them electronically to TTO.

Once an innovator submits NTR, CTTO reviews the submission to assess its commercial potential. Commercial potential is tied to the value of technology- its potential benefits, advantages in the marketplace and profitability. To make this assessment, technology transfer process staff work closely with program and project managers to identify ownership rights, develop technology transfer plans, and take the lead in fostering technology transfer, and commercialisation opportunities.

In FY 2015, program released the innovator dashboard. This on line tool allows innovators to take the NTR's progress through technology transfer review. Additionally, the Automated technology discussing Application system, launched in 2017, allows entrepreneurs to apply for NASA patent licenses online. This initiative modernized and streamlined technologies commercialisation efforts, making it simpler and faster for companies to find and use NASA technologies. It also eliminated the manual processing of license applications and includes automated reminders to applicants to complete application information. NASA began issuing a Software Release catalogue in 2017. The catalogue is an inventory of the free software tools NASA has created and makes available to industry, academia, and other government agencies. This portfolio of software products covers a wide variety of technical applicants and is continually updated on NASA's technology transfer portal. One of the performance metrics utilized by the program office is the number of patents the centre pursues. Considering the difference in size, mission, staffing and functions each centre receives a varying no of NTR submissions from their innovators. The present age of patents field compared to the number of NTR's submitted as one way to measure whether each centre is effectively using intellectual property protection. Another name of performance is the number of patent licenses the centre negotiates. This is an indication of whether the centre is patenting innovations with commercial inability that instantly is interested in licensing for commercial use.

REFERENCES

- [1] An analysis of NASA Technology Transfer Lance B. Bush (July 1996)
Langley Research Centre, Hampton, Virginia.
NASA Technical memorandum 110270
- [2] Technology, Transfer challenges
A case study of User-Centred Design in NASA's Systems Engineering Culture.
Jason Quick
Triumph Aerospace Systems- Newport news 091CES-0317
- [3] Gary Myers, Intellectual Property Resources in and for space: The practitioner's Experience, 32 J. Space L. 385 (2006)
- [4] NASA's legacy of Technology Transfer and Prospects of Future Benefits.
Douglas A. Comstock
National Aeronautics and Space Administration (NASA) Headquarters, WashingtonDC,20546 and Daniel Lockney, NASA centre for Airspace Information (CASI), Hanover, MD, 21076
AIAASPACE 2007 Conference & Exposition, 18-20 September 2007, Long Beach, California.