

National Aeronautics and Space Administration



# NASA TECHNOLOGY TRANSFER PROGRAM

BRINGING NASA TECHNOLOGY DOWN TO EARTH

## NASA Technology Transfer Program Innovations SE/MW FLC Regions Annual Meeting

September 19, 2018

[www.nasa.gov](http://www.nasa.gov)

# Outline



NASA TECHNOLOGY  
TRANSFER PROGRAM

- T2 Legislative Authority Impacting Change
- NASA T2 Pre-2010 – Innovative Partnership Program
- NASA T2 Re-Org and New Approach
- Ten Centers versus One NASA
- Pathway to Success
- Annual Program Goals
- New Technology Reporting
- Agency Patent Portfolio
- Agency Software Catalog
- Automated Licensing System
- Startup NASA
- Technology Transfer University
- Metrics Play a Role
- Moving Forward



# A Message From the NASA Administrator Jim Bridenstine



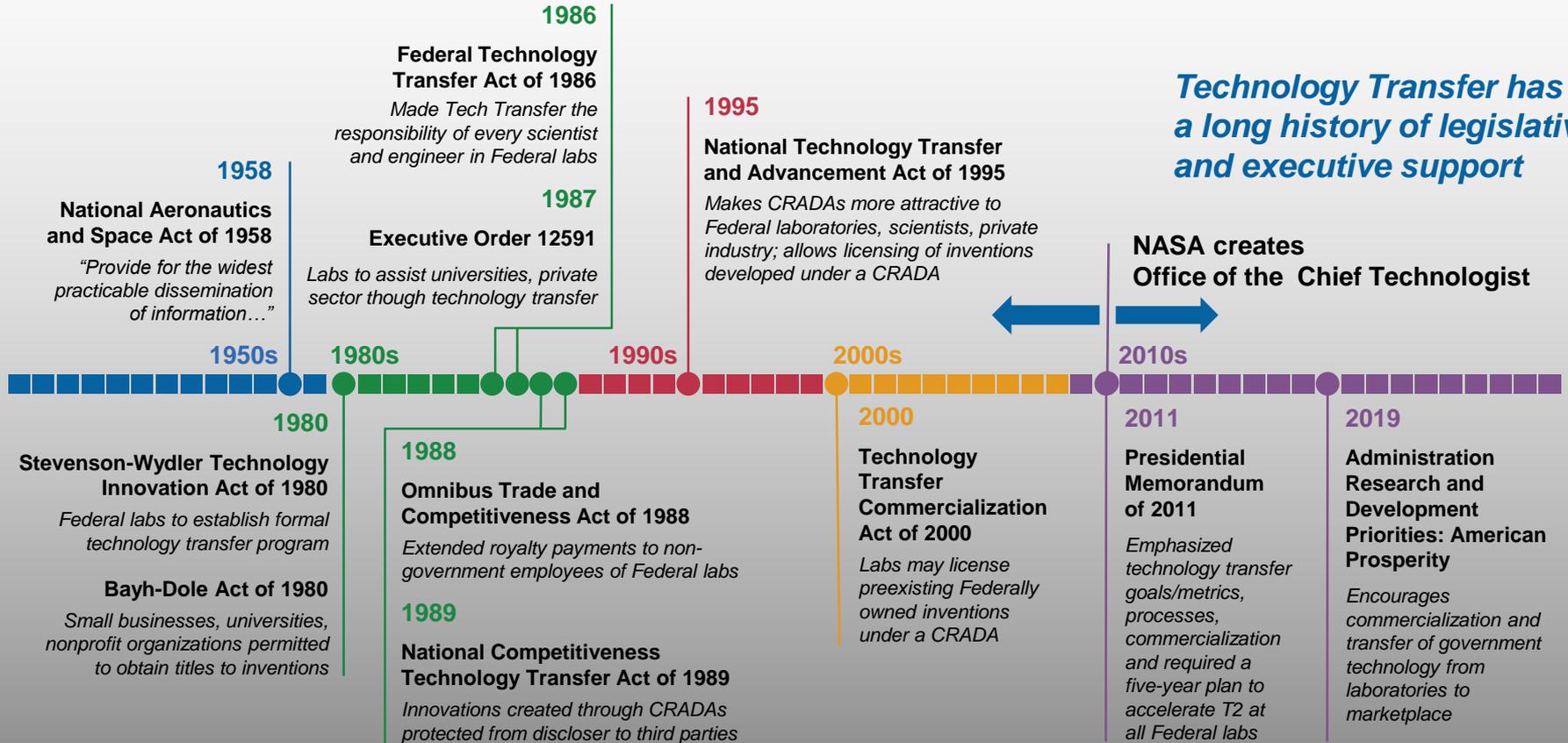
## NASA Home & City

<http://www.homeandcity.nasa.gov>

[https://www.youtube.com/watch?time\\_continue=10&v=NMTGkRHgwK4](https://www.youtube.com/watch?time_continue=10&v=NMTGkRHgwK4)

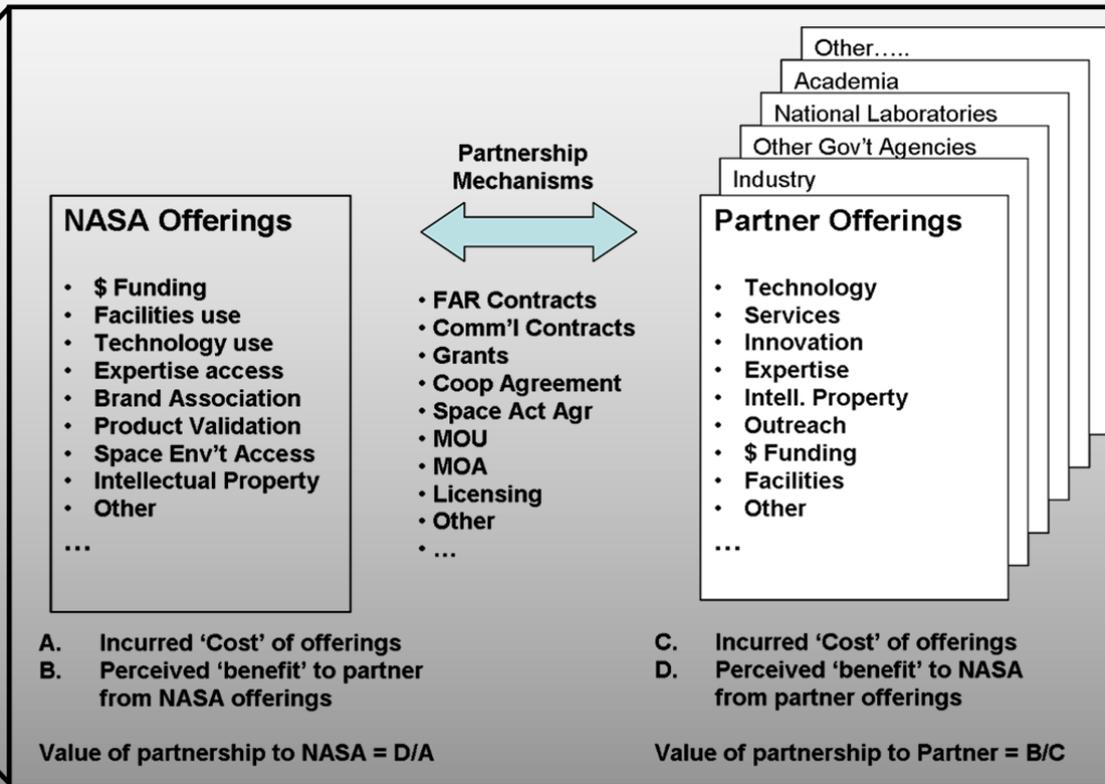
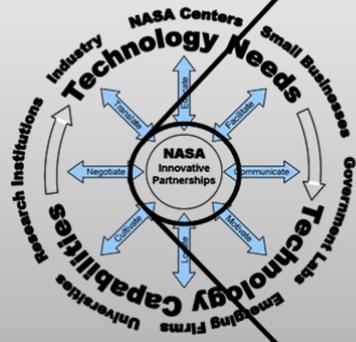


# T2 Legislative Authority



# NASA Tech Transfer Activities – circa 2010

Too many services  
Not enough resources  
and focus.



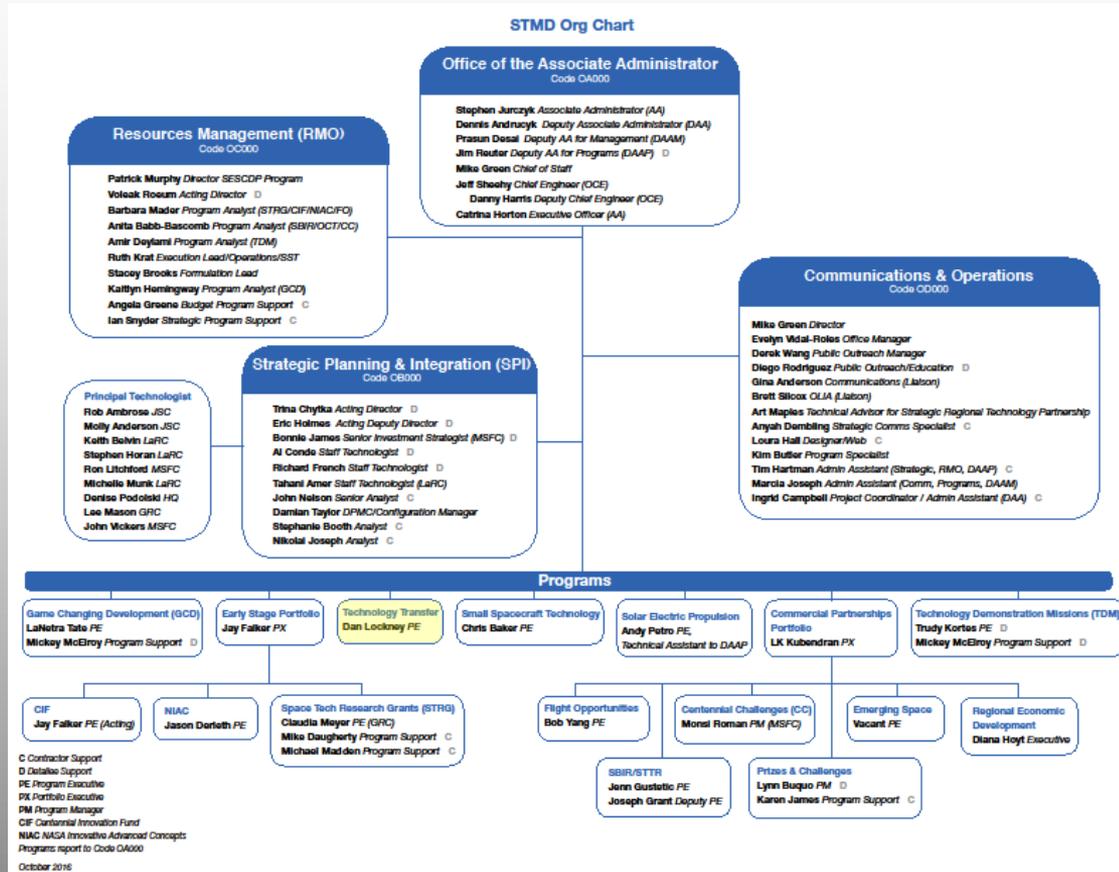
# NASA Tech Transfer Program – post 2010

Pendulum swings the other direction.

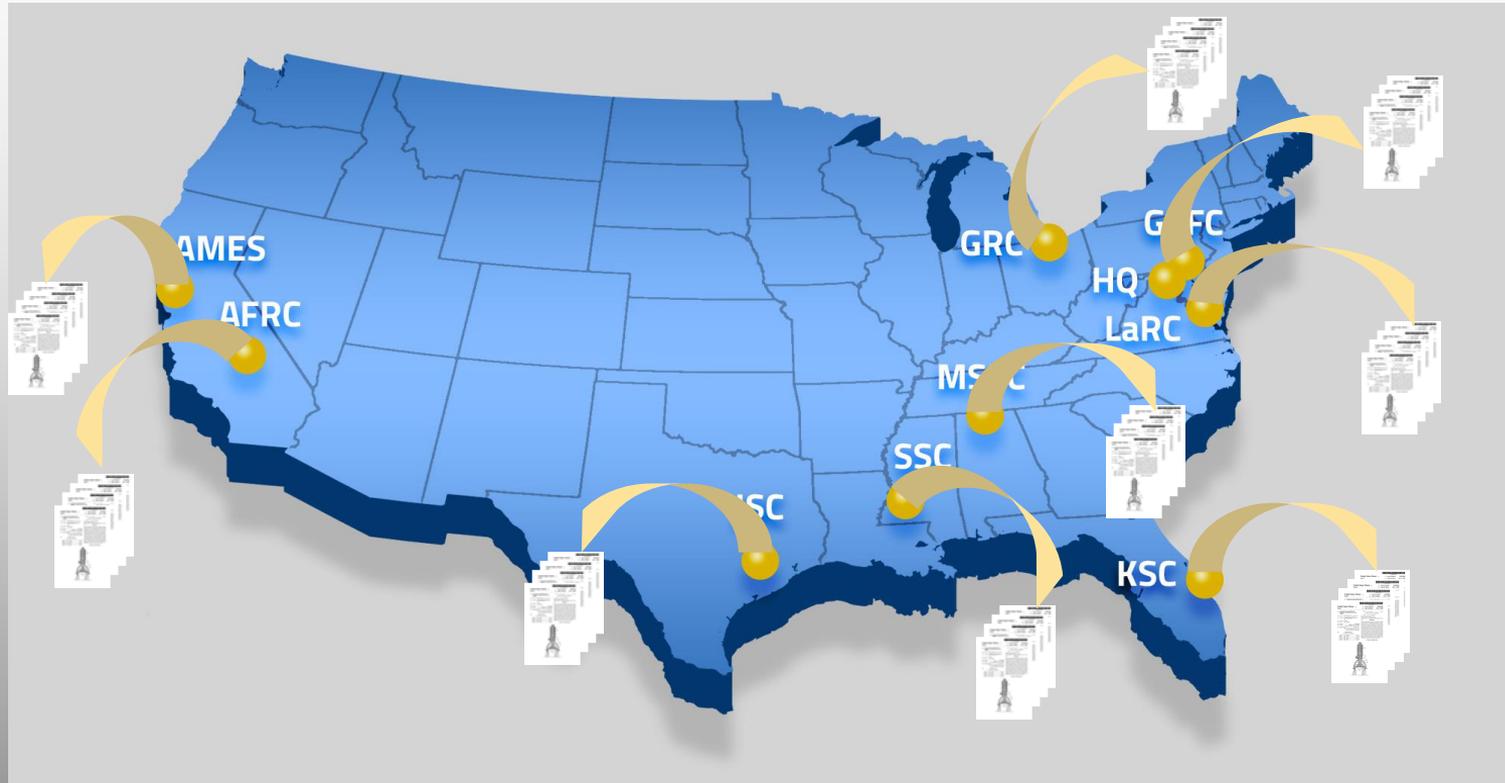
Technology Transfer set-up as standalone program.

Daniel Lockney named as Program Executive.

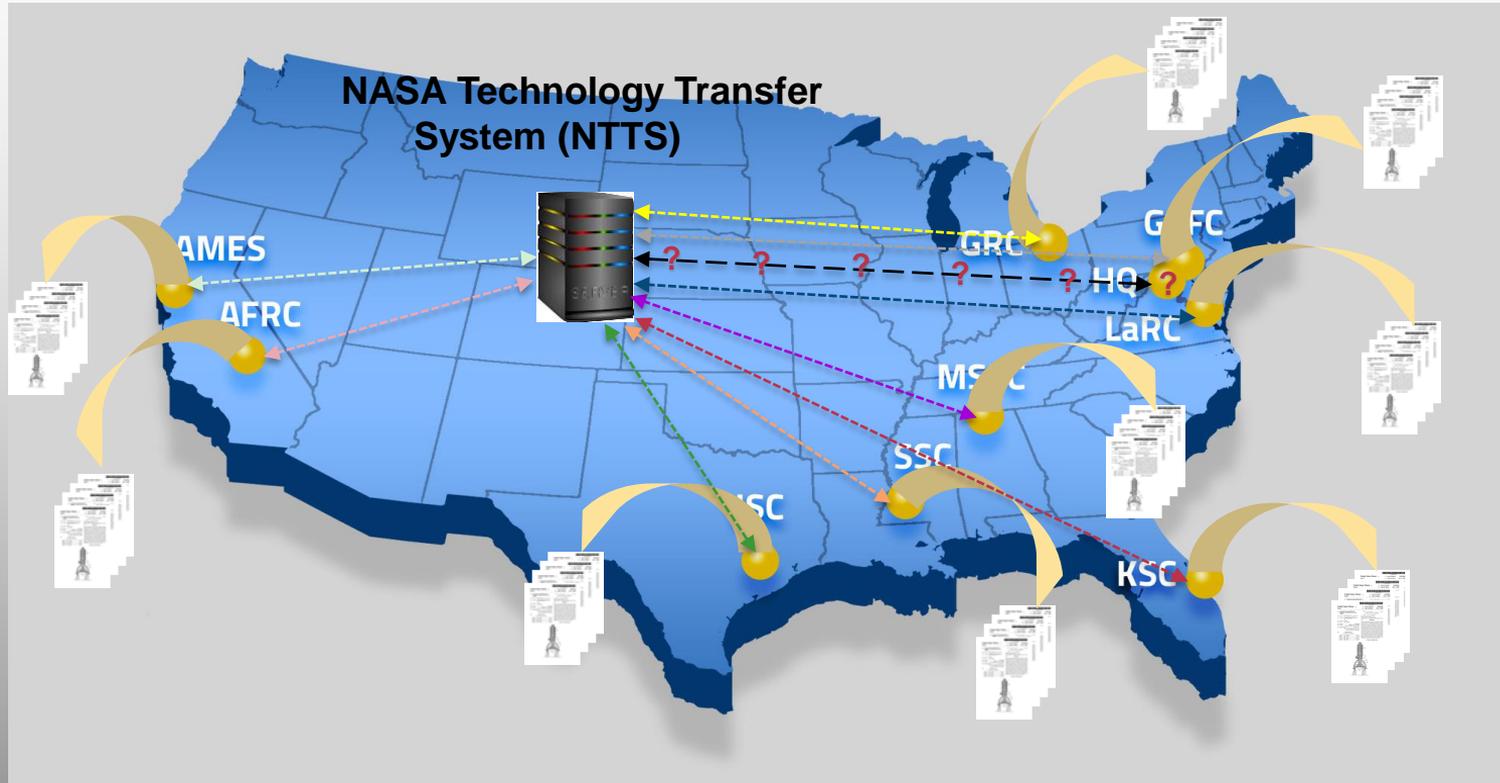
Focus placed on licensing and transfer of Intellectual Property.



# Ten NASA Centers – Ten Different Portfolios



# Central Database – No Requirements/No Standards



# Pathway to Success



# T2 Annual Program Goals



## New Technology Reporting

- 1a – Automate IP Notices to Contractors – JSC / Charlene Gilbert
- 1b – Modernize e-NTR Interface – KSC / Dave Makufka **COMPLETE**
- 1c – Correct Under-reporting of Invention Disclosures by Prime Contractors – MSFC / Terry Taylor, JSC / Charlene Gilbert

## Marketing

- 2a – Develop Customer Relationship Management (CRM) Module – LaRC / Kathy Dezern
- 2b – Coordinate Program Exhibit Strategy – MSFC / Terry Taylor **COMPLETE**
- 2c – Design and Implement Promotion Campaign for 2017/18 Software Catalog and Repository – MSFC / Danny Garcia, Barb Fawcett **COMPLETE**
- 2d – Develop a Method for New and Continued Engagement with Tech Transfer Portal Users – LaRC / Kathy Dezern / Jennifer Viudez **COMPLETE**
- 2e – Create Linkages with Public NASA Scientific and Technical Information to Build a Library – SSC / Duane Armstrong

## Increase Patent Licensing

- 3a – Design and Build Version 2 of "TurboTax" Licensing System – MSFC / Sammy Nabors **COMPLETE**

## Software Release

- 4a – Update Software Catalog – MSFC / Danny Garcia, Barb Fawcett
- 4b – Develop and Deploy Materials to Direct Developers Who Want to Release Software – MSFC / Danny Garcia, Barb Fawcett
- 4c – Develop Toolkit of Remote Sensing Applications – SSC / Duane Armstrong

## Program Infrastructure

- 5a – Improve NTTS – ARC / Tek Okimura **COMPLETE**
- 5b – Explore NSF iCorps Program and Take Advantage of Offerings – JSC / Jack James **COMPLETE**
- 5c – Create Fund for Center T2 Offices to Compete for Resources to Increase the Commercial Readiness of High-Potential Technologies – AFRC / Laura Fobel **COMPLETE**
- 5d – Collaborate and Create Linkages with SBIR Program – HQ / Dan Lockney **COMPLETE**

Legend

On Track

Concerns

Need Help

# Reporting New Technologies

## e-NTR: Electronic New Technology Reporting System



The screenshot shows the top of the NTR reporting system interface. At the top left is the NASA logo. To its right is the "TECHNOLOGY TRANSFER PROGRAM" logo with the tagline "BRINGING NASA TECHNOLOGY DOWN TO EARTH!". Below this, the text "NTR" is displayed in large, bold, white letters, with "New Technology Reporting System" in green text underneath. A central image shows a person's hands holding a smartphone displaying a photo of a bridge. Below the image is the tagline "Improving life on Earth, one technology at a time". At the bottom, there is a white text box containing the text "A New Technology Report (NTR) is the first step in helping NASA make the most of your technology" and a green button with a white hand icon pointing to the right. Below the button is the text "Report your NTR or NTR".

- Technology transfer tracking begins with innovators reporting new technologies.
- Built in workflow to streamline the review of new technology reports.
- Eliminate manual processing of paperwork.
- Inventions are assigned a “Case Number” to track the technology through tech transfer pipeline.

# Inventor's Notebooks and Challenge Coins

Inventor's Notebooks increase awareness of technology reporting requirements



In FY 2017, the Technology Transfer Offices distributed new Tech Transfer Challenge Coins to civil servant inventors (and WYE inventors on joint inventions) for submitting NTRs

# Digital Agency Patent Portfolio

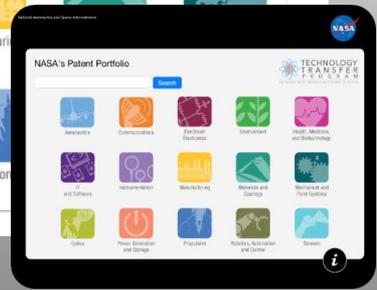
## Patent Portfolio

The NASA patent portfolio is available to benefit US citizens. Through partnerships and licensing agreements with industry, these patents ensure that NASA investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life. Click on each of the category icons for a list of patents in that category or use the search below to explore NASA's patent portfolio.

Search



- Aeronautics
- Communications
- Electrical/Electronics
- Environment
- Health, Medicine, and Biotechnology
- IT and Software
- Instrumentation
- Manufacturing
- Optics
- Power Generation and Storage
- Propulsion
- Materials & Coatings
- Mechanical & Fluid Systems



NASA's Patent Portfolio

Search

TECHNOLOGY TRANSFER PROGRAM

### Robonaut 2 Technologies

For use in logistics and distribution, medical and related robotics, and hardware,ASIC, or sensors

Presented at NASA Johnson Space Center (JSC), in collaboration with General Motors and Oerlikon, have developed a line of three high precision, horizontal roller Robotarm 2 (R2). R2 is made up of multiple sensor technologies and systems, including sensors, image recognition systems, sensor integration, tactile touch, sensor integration, and touch view. R2 uses 3D patented and patent-pending technologies that have the potential to be game-changers in multiple industries, including logistics and distribution, medical and industrial robotics, as well as hardware, tools, or remote environments.

**BENEFITS**

- Operational flexibility
- Scalable solution
- Ability to integrate around existing infrastructure
- Environmentally aware
- Mobile
- Capable of task flexibility
- Ability to work in previously inaccessible environments

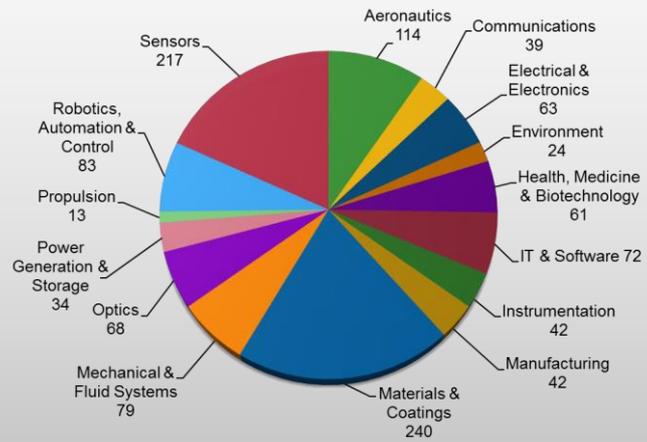
**technology solution**

**THE TECHNOLOGY**

While robotic technologies are already being used in several industries like logistics and distribution, R2 can be used in many more and offers several advantages. R2 is a more sophisticated tool of automation for a variety of handling activities. R2 is designed to be highly modular in terms of technology that can be added or removed as needed. R2 is designed to be highly modular, and can be used in a variety of environments. R2 is designed to be highly modular, and can be used in a variety of environments. R2 is designed to be highly modular, and can be used in a variety of environments.

**APPLICATIONS**

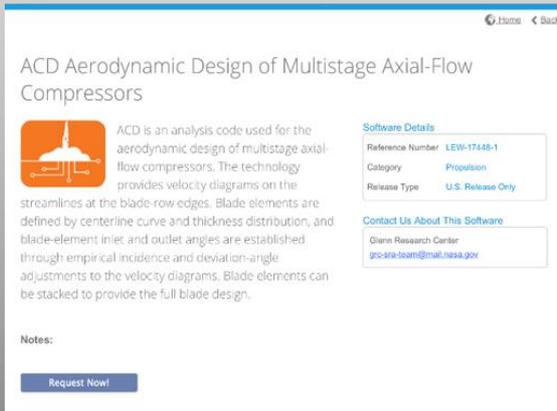
The technology has several potential applications. Logistics and distribution - allows for more efficient handling of goods and materials. Manufacturing - allows for more efficient production of goods. Healthcare - allows for more efficient patient care. Industrial - allows for more efficient production of goods.



All patented technologies (~860) conform to the Agency patent data sheet template and are searchable through the T2 Portal and iPad App.

# Software Is Now Available for Release

## NASA's Software Catalog



Find...

- The NASA Software Catalog site lists hundreds of software codes that users from a wide array of industries and fields of study can browse in order to answer their software needs.

Request...

- Simplified and streamlined into three steps:
  - 1) Find software that best fits your needs
  - 2) Submit a request for the software
  - 3) Sign agreement and receive software

Sign & Receive

- Automates the production of Software Usage Agreements, eliminating the need for managers to manually produce agreements.

# ATLAS

## Automated Technology License Application System



- One stop shop for companies to apply for licenses on NASA technologies, launched June 2017
- 300+ applications started
- Simple and interactive user interface to maximize user experience
- New features include automated reminders to urge applicants to finish and submit applications.
- Addresses the following problems:
  - Centralized location to apply for licenses
  - Unifies and streamlines Center application processes into a single Agency process
  - Eliminate manual processing of license applications



License Application for LEW-TOPS-56

First, a few quick steps:

- License Type
- Company Information
- Technology Use
- Development/Marketing Plans
- Sign and Submit

NTTS Enterprise

How do you want to manage your applications?

- New
- Requested More Info
- Denied
- Approved

New Applications

ID	Technology Title	Application Type	Date Received
TOP2-142	Photogrammetric Recession Measurement	Commercial (Non-Exclusive)	11/23/2016
TOP2-119	NETMARK	Commercial (Non-Exclusive)	12/31/1969
TOP2-142	Photogrammetric Recession Measurement	Commercial (Non-Exclusive)	12/7/2016

# Remote Sensing Toolkit Media Announcement

- The new Remote Sensing Toolkit announced to the public in July.
- This media push includes a YouTube video, Tumblr post, press release, and tweets from multiple agency accounts.
- RST makes finding and using satellite data easier by offering a single access point for users to find the data, analytical tools and software to build their own tools.



**Newly  
Released!**



Remote Sensing Data



Remote Sensing Data  
Tools



Build Your Own  
Tools



Search



Atmosphere



Calibrated Radiance



Cryosphere



Human Dimensions

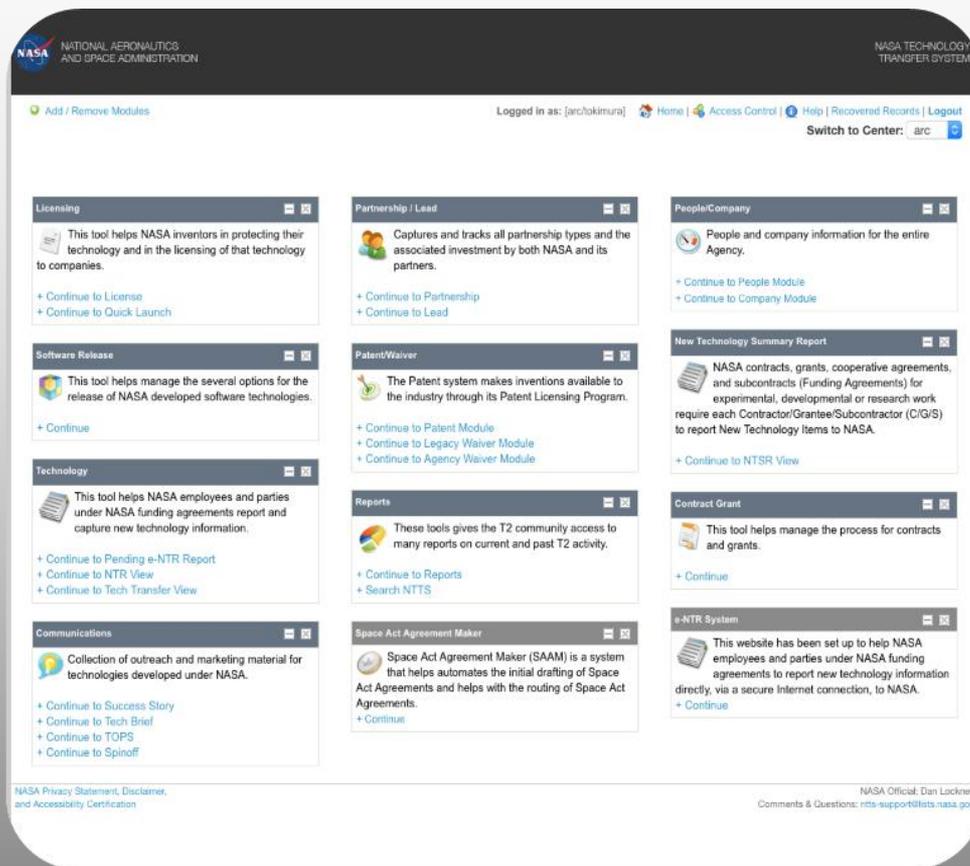


Land



Ocean

# Tracking Technologies Thru T2 Lifecycle



NASA TECHNOLOGY TRANSFER SYSTEM

Logged in as: [arc]okimura | Home | Access Control | Help | Recovered Records | Logout

Switch to Center: arc

- Licensing**  
This tool helps NASA inventors in protecting their technology and in the licensing of that technology to companies.  
+ Continue to License  
+ Continue to Quick Launch
- Partnership / Lead**  
Captures and tracks all partnership types and the associated investment by both NASA and its partners.  
+ Continue to Partnership  
+ Continue to Lead
- People/Company**  
People and company information for the entire Agency.  
+ Continue to People Module  
+ Continue to Company Module
- Software Release**  
This tool helps manage the several options for the release of NASA developed software technologies.  
+ Continue
- Patent/Waiver**  
The Patent system makes inventions available to the industry through its Patent Licensing Program.  
+ Continue to Patent Module  
+ Continue to Legacy Waiver Module  
+ Continue to Agency Waiver Module
- New Technology Summary Report**  
NASA contracts, grants, cooperative agreements, and subcontracts (Funding Agreements) for experimental, developmental or research work require each Contractor/Grantee/Subcontractor (C/G/S) to report New Technology Items to NASA.  
+ Continue to NTRS View
- Technology**  
This tool helps NASA employees and parties under NASA funding agreements report and capture new technology information.  
+ Continue to Pending e-NTR Report  
+ Continue to NTR View  
+ Continue to Tech Transfer View
- Reports**  
These tools gives the T2 community access to many reports on current and past T2 activity.  
+ Continue to Reports  
+ Search NTTS
- Contract Grant**  
This tool helps manage the process for contracts and grants.  
+ Continue
- Communications**  
Collection of outreach and marketing material for technologies developed under NASA.  
+ Continue to Success Story  
+ Continue to Tech Brief  
+ Continue to TOPS  
+ Continue to Spinoff
- Space Act Agreement Maker**  
Space Act Agreement Maker (SAAM) is a system that helps automates the initial drafting of Space Act Agreements and helps with the routing of Space Act Agreements.  
+ Continue

NASA Privacy Statement, Disclaimers, and Accessibility Certification

NASA Official: Dan Lackney  
Comments & Questions: ntts-support@lists.nasa.gov

- Database is backbone to NASA's Technology Transfer IT infrastructure.
- Database contains over 15 data modules to manage and track tech transfer activities:
  - Invention Disclosure, Patent, License, Software Release, Contracts/Grants, Partnerships, Leads, Awards, Marketing, Success Stories and more.**
- NTTS Database also supports NASA's two core mechanisms to transfer technologies:
  - Software Release and Patent Licensing**

# Startup NASA



The Startup NASA initiative offers startup companies a license with no up-front costs for commercial use of our patented technologies, we're letting companies hold onto their cash while securing the intellectual property needed to carve out competitive market space.

31 new companies have formed since program launched in October 2015.



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PROFESSIONAL TECHNICAL SERVICES

# Patent Gift to Public Domain

- Released a carefully-selected portfolio of patents and pending patents to the public domain
- A new searchable page of the Portal includes these technologies as well as access to **over 6,000** expired NASA patents.
- **Goals:**
  - Encourage increased use, further development, and increased collaborative development of space-focused technologies.
  - Capitalize on emerging commercial space industry's high near-term potential for explosive growth.
  - Makes tech more cost-effective for industry to use and develop.
  - Helps next generation of space companies form and grow through creatively using these early-stage techs.
  - Free up Technology Transfer Program resources (money and personnel) to focus on technology with broader commercial potential.

## Public Domain

### NASA TECHNOLOGIES

To stimulate the innovation economy, NASA makes a portion of its technology portfolio **freely available** for anyone to use.

The technologies in this public domain portfolio do not require a license agreement, and anyone may freely pursue independent product development right away without the need to contact NASA in any way.

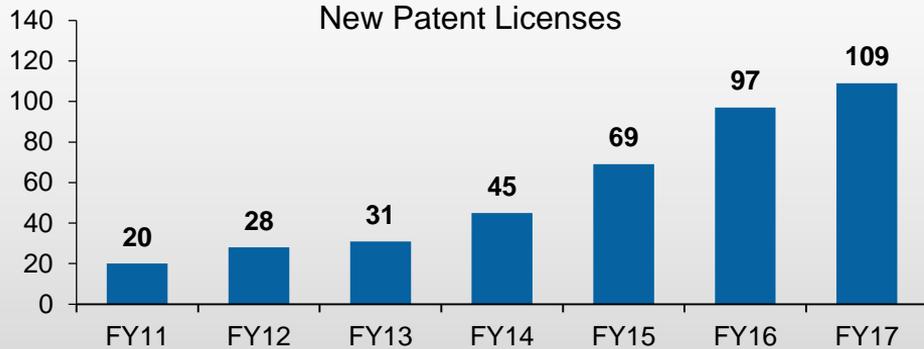


**T2U teaches business students** about NASA's technology portfolio, allowing them to work with agency technology and inventors to discover new uses for the innovations in commercial applications.

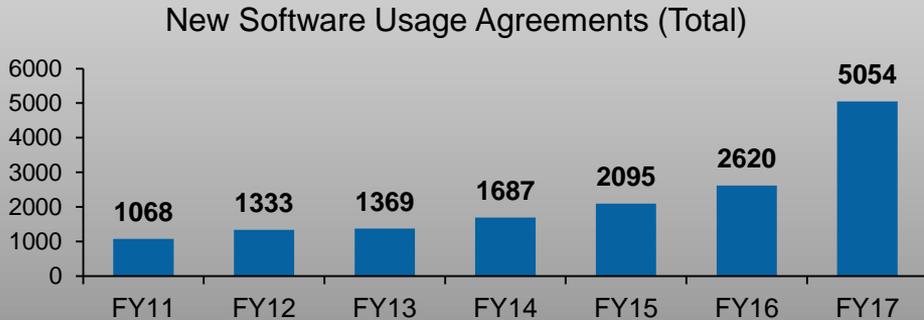


- The students benefit from the interaction with real inventors, real technologies, and all-around real-world experience.
- Student teams may form start-up companies, licensing NASA-patented technologies
- NASA teaches thousands of potential entrepreneurs about the availability of taxpayer-funded technologies across the federal government

# Sustained Progress



Each of the patent licenses represents a NASA technology being transformed into a commercial product by a domestic company.



Each software release represents time savings, safety improvements, and full utilization of federal resources.

Over the past seven years, NASA had made significant improvements in its Tech Transfer capability

- Streamlined and automated processes
- Reduced policy hurdles
- Amplified its interactions with industry
- Deployed new tools

Since FY11, we've managed a **341% increase** in annual licensing totals and a **373% increase** in software release.

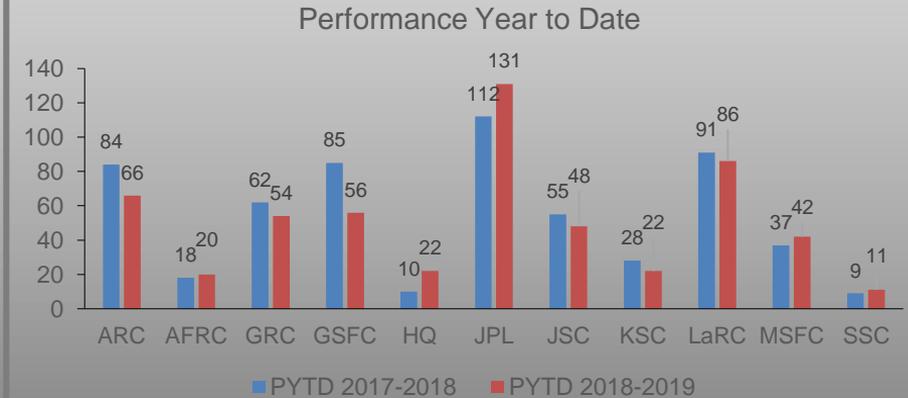
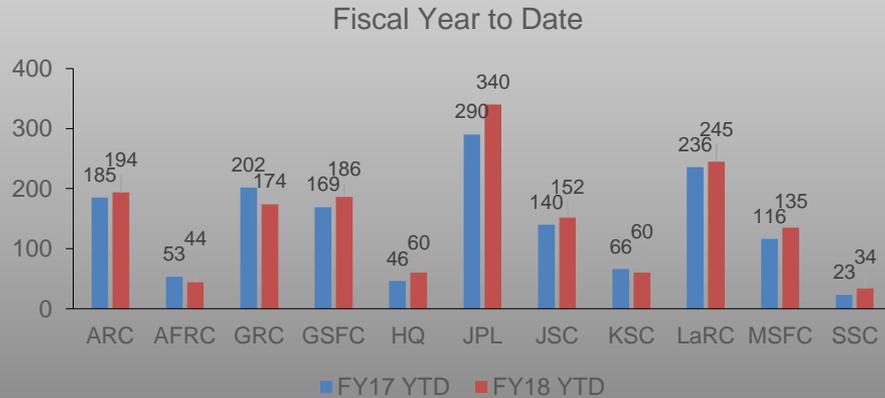
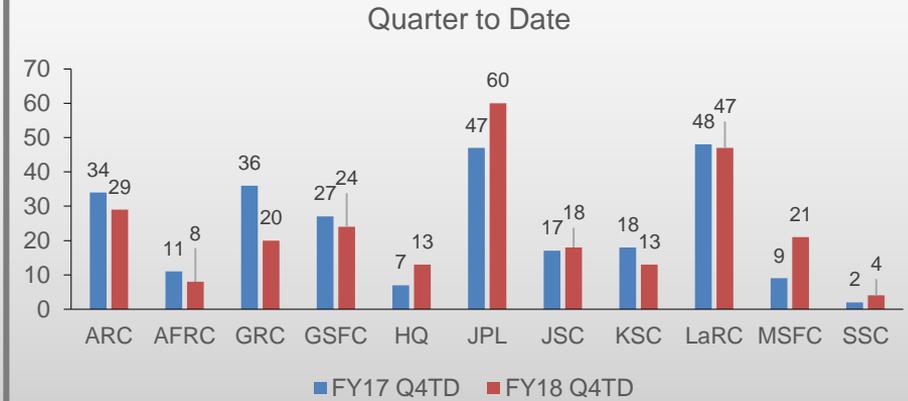
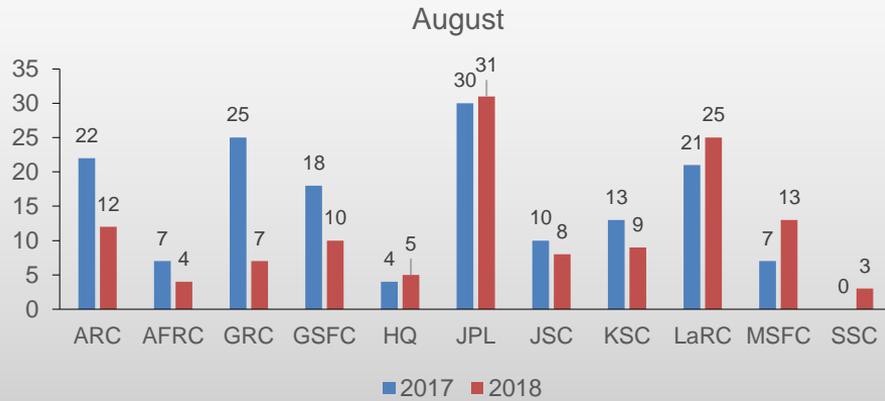
These outcomes represent a significant **return on the taxpayer investment** in NASA technology:

- Jobs created
- Revenue generated
- New products to market
- Quality of life improved

**Acceleration of Tech Transfer is tied to the Agency's reemphasis on technology with the creation of the Space Technology Mission Directorate and Office of the Chief Technologist**

# Sample Metric - Total NTRs Reported

As of September 1, 2018



# Moving Forward...

- **Agency Marketing Team Formed**  
Recently assigned Agency Marketing Lead role and Center-based team.
- **Consolidation of Some Common Functions**  
Functions such as contract closeout and software release vetting consolidated a single location for efficiency and cost-effectiveness.
- **NTTS Transfer to Other Federal Agencies**  
NTTS will be available on the cloud (Software as a Service) by end of calendar year.  
Demoed NTTS to Defense Health Agency (DHA) and Department of Transportation (DOT).
- **Connection with SBIR/STTR Electronic Handbook database**  
Data transfer between the two systems updated every 30 minutes.
- **Continue to Assess Performance and Make Improvements**



# Questions??

Thank You!

**David R. Makufka**

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