National Aeronautics and Space Administration

Small Business Innovation Research
Small Business Technology TRansfer

August 13, 2014

NASA Langley Research Center

Kate Kvaternik

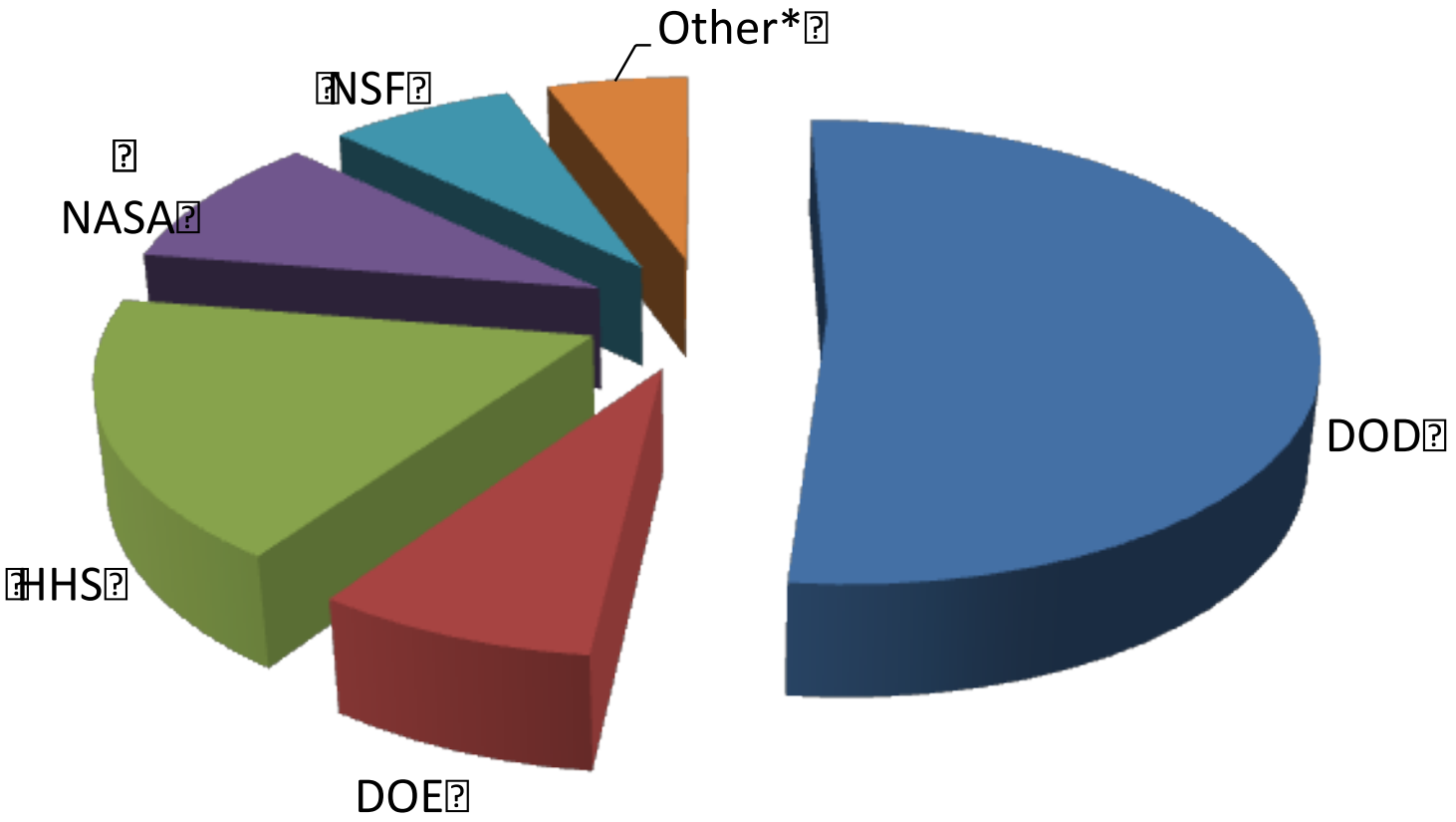
Purpose of SBIR/STTR Programs

- Stimulate technological innovation
- Foster technology transfer through cooperative R&D between small businesses and research institutions
- Use small businesses to meet federal research and development needs
- Increase private-sector commercialization of innovations derived from Federal research and development funding
- Encourage participation in innovation and entrepreneurship by minority and disadvantaged persons

NASA's annual funding for SBIR and STTR Programs ranges between **$150-170 million** per year.

Total SBIR/STTR Investment
NASA compared to other agencies

SBIR/STTR Agency Funding ~2.6 B



*Others Indicate: DHS, DoC, DoT, EPA, ED, USDA,

Eligibility Requirements

- **Only firms qualifying as Small Business Concerns (SBC) are eligible to participate in these programs**.
- Socially and economically disadvantaged and women-owned SBCs are particularly encouraged to propose.
- R/R&D **must be performed in the United States**
- 50% of the Principal Investigator's (PI) total employment shall be with the SBC under the SBIR Program, while under the STTR Program, either the SBC or Research Institute (RI) shall employ the PI.

5

Small Business Concern Eligibility

- is **organized for profit, with a place of business located in the United States**, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials or labor
- is in the legal form of an **individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative**; except that where the form is a joint venture, there can be no more than 49 percent participation by business entities in the joint venture
- is **at least 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States**: except in the case of a joint venture, where each entity to the venture must be 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States
- has, including its affiliates, **not more than 500 employees**.
- Visit the SBA website if you have questions about eligibility **http://www.sba.gov**

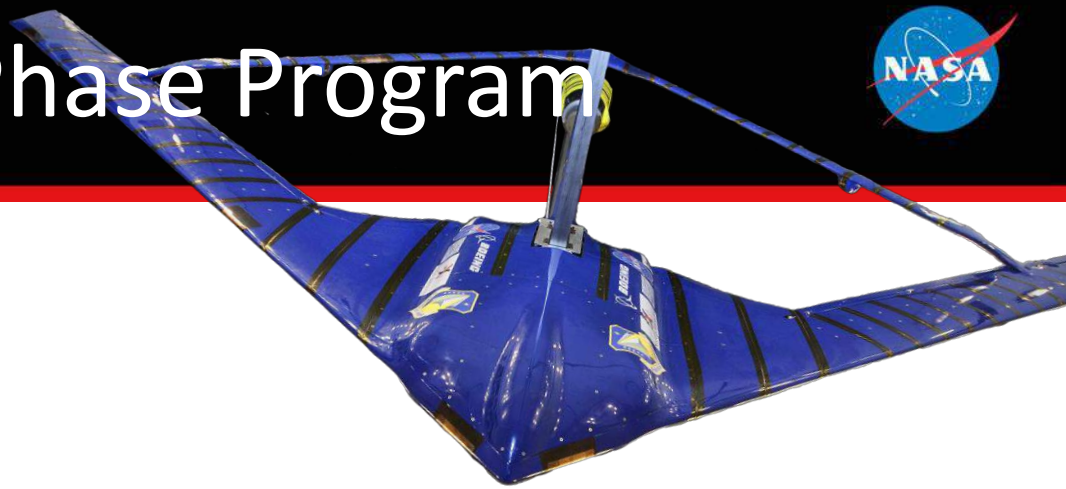
Difference between SBIR and STTR

- The awards are always to a small business
  - In SBIR, a research institution, e.g. a university *may* participate with the small business
  - In STTR, a research institute *must* participate with the small business

3-Phase Program

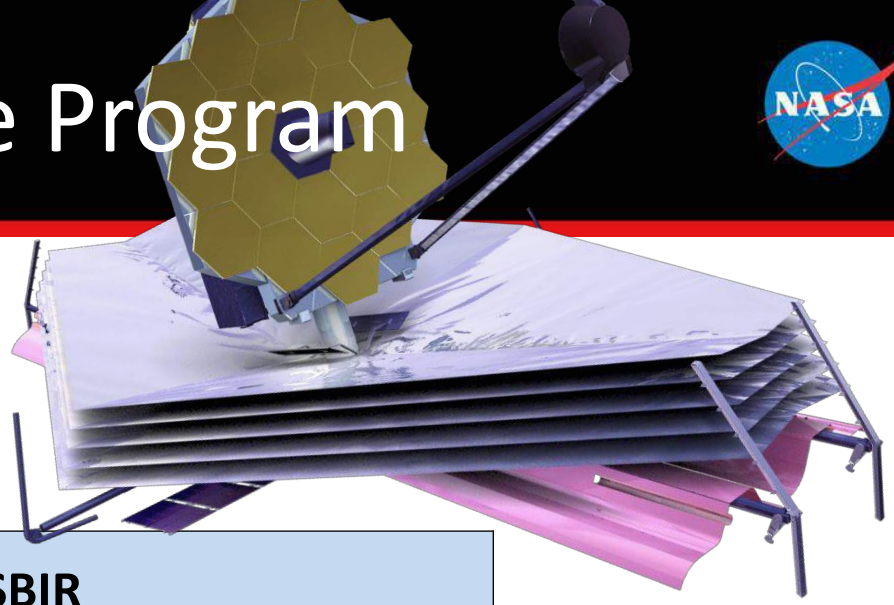
- **Phase 1**
  - Feasibility study, 6 months duration
  - $125K (maximum allowable $150K)
- **Phase 2**
  - Technology or Prototype Development/Demonstration, 2-Year Contract Award
  - $750K (maximum allowable $1 million)
- **Phase 2 Extended and eXpanded, or Phase 2-E and Phase 2-X**
  - Funding to "bridge the gap" to a Phase 3 opportunity
  - Requires non-SBIR/STTR matching funding
- **Phase 3**
  - Technology Infusion/Commercialization Stage
  - Ability to award sole-source contracts without further need for Justification Other than Full and Open competition; (No JOFOC) based on specific SBIR authority

General: 3 Phase Program



Phase 1 Contracts	**SBIR/STTR**
Maximum Contract Value	$125,000
Period of Performance	6 months
Phase 2 Contracts	**SBIR/STTR**
Maximum Contract Value	$750,000
Period of Performance	24 months

Select: 3 Phase Program



Select Phase 1 Contracts	**SBIR**
Maximum Contract Value	$125,000
Period of Performance	6 months
Select Phase 2 Contracts	**SBIR**
Maximum Contract Value	$1,500,000*
Period of Performance	24 months

*** $$ is double that of the regular SBIR/STTR Phase 2 Contract Value**

General: Post-Phase II Awards

Phase 2-Enhancement (2-E)

Phase 2-E	Minimum non-SBIR/STTR Funding Required for Eligibility for Matching in Phase 2-E	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$25,000	$25,000	6-12 Months
	Maximum non-SBIR/STTR Funding to be Matched by SBIR/STTR Program in Phase 2-E	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$125,000	$125,000	6-12 Months

Phase 2-eXpanded (2-X)

Phase 2-X	Minimum Funding Required from non-SBIR/STTR NASA Source for Eligibility for Matching in Phase 2-X	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$75,000	$150,000	12-24 Months
	Maximum Funding Amount from non-SBIR/STTR NASA Source to be Matched in Phase 2-X	Corresponding SBIR/STTR Program Contribution	Anticipated Period of Additional Performance
	$250,000	$500,000	12-24 Months

SBIR/STTR Technology Award Stages

Phase I

- General
- Select

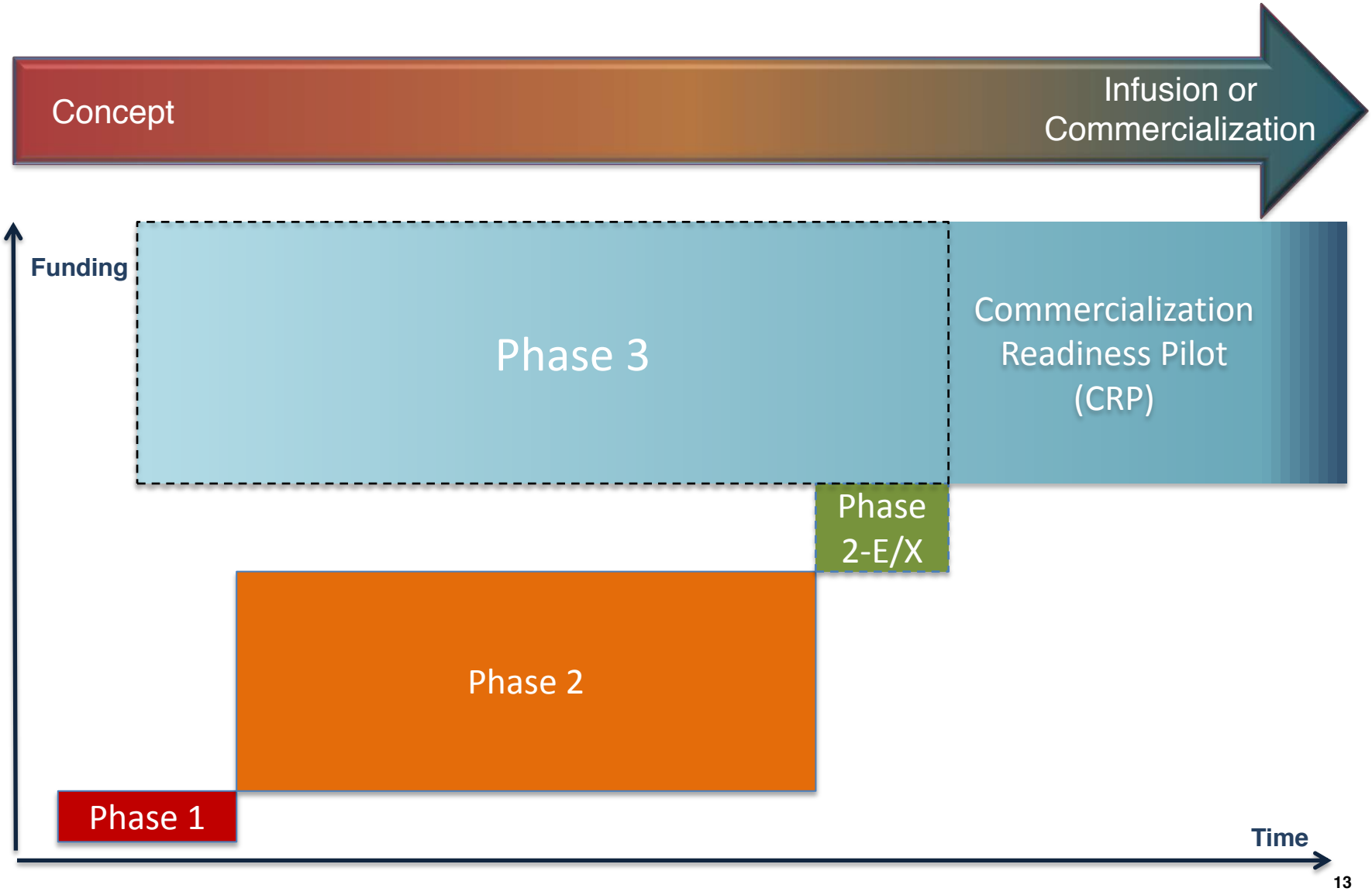
Phase II

- General
- Select
- Phase II-E
- Phase II-X

Phase III

- Non-SBIR: Contract from NASA Program or Center
- SBIR: CRP

SBIR/STTR Technology Award Stages



Commercialization Readiness Pilot

CRP

NASA SBIR CRP

- Allowed as result of re-authorization legislation
- Goal: Enable technology maturation for infusion and commercialization
- NASA programs and industry act as Sponsors
  - Sponsors must illustrate how they intend to conduct critical risk reduction or test-and-demonstration activities, which if not conducted would limit commercialization opportunities
  - SBIR/STTR Program will be able to provide matching funding for technology maturation, in partnership with Sponsors that provide other matching funds
- Matching funds from sponsor are <u>required</u> for the CRP

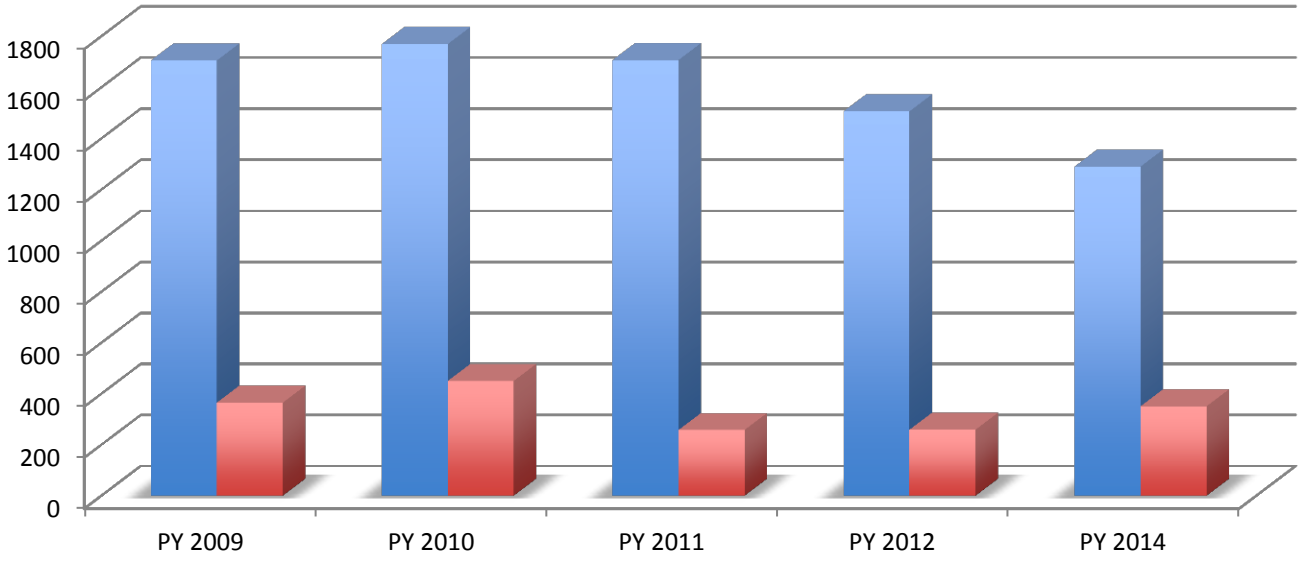
FY14 Limited Pilot

- Executed limited pilot effort for a CRP in FY 2014, which will expand in FY 2015
  - High priority NASA technology needs driven by NASA programs and missions
  - Currently examining process used in FY14
- Anticipate a user guide and forms on NASA SBIR website in FY15
- NASA Advocate was required in FY14, and will be required in the future
  - Advocate must present a SBIR/STTR Technology Maturation Plan (STMP) to the SBIR/STTR Program
  - the STMP must identify detailed technology development objectives and deliverables, funding needs, schedule, opportunities and plans for infusion or commercialization

Further Information

- As mentioned earlier, we are examining the process used in FY14 for enhancement and streamlining purposes
- You may find additional information and future updates at
  - http://sbir.nasa.gov/node/54467

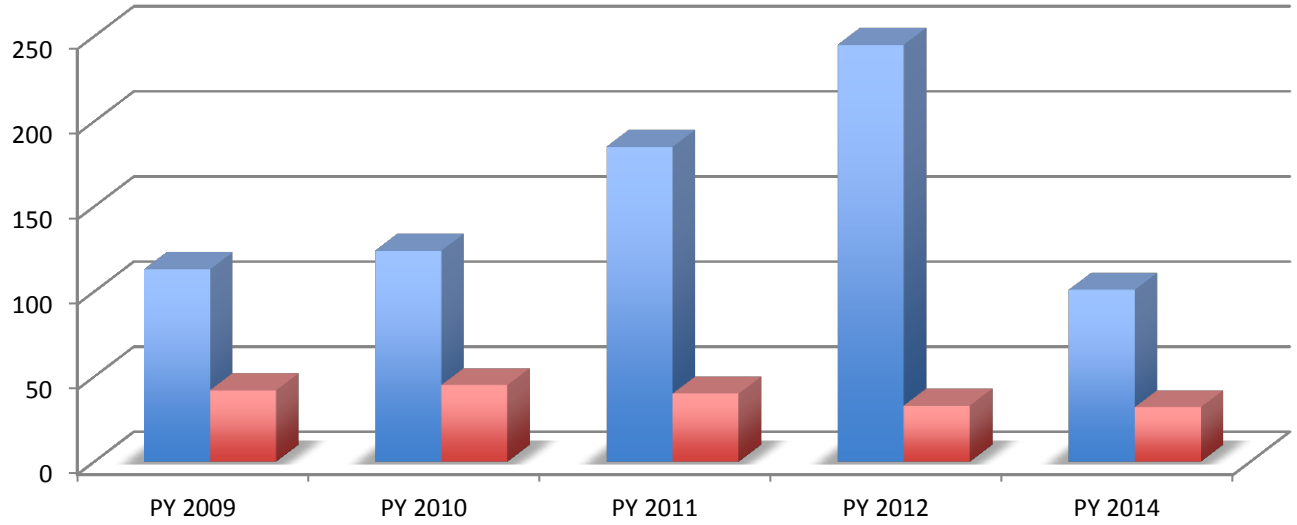
Phase I Proposals vs Awards



SBIR
Phase 1

# of Proposals

# of Awards

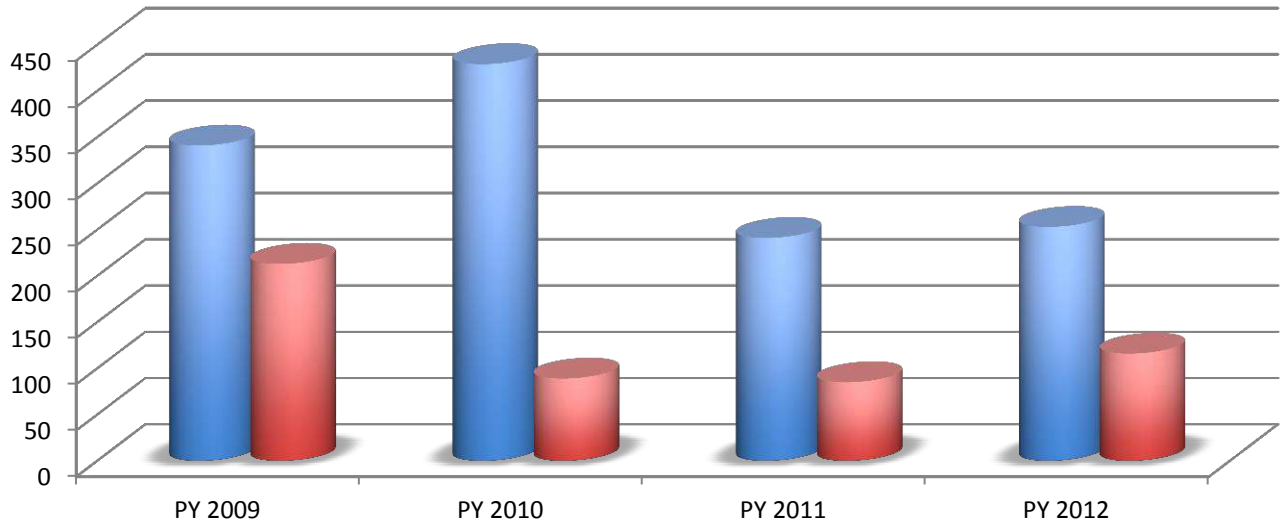


STTR
Phase 1

# of Proposals

# of Awards

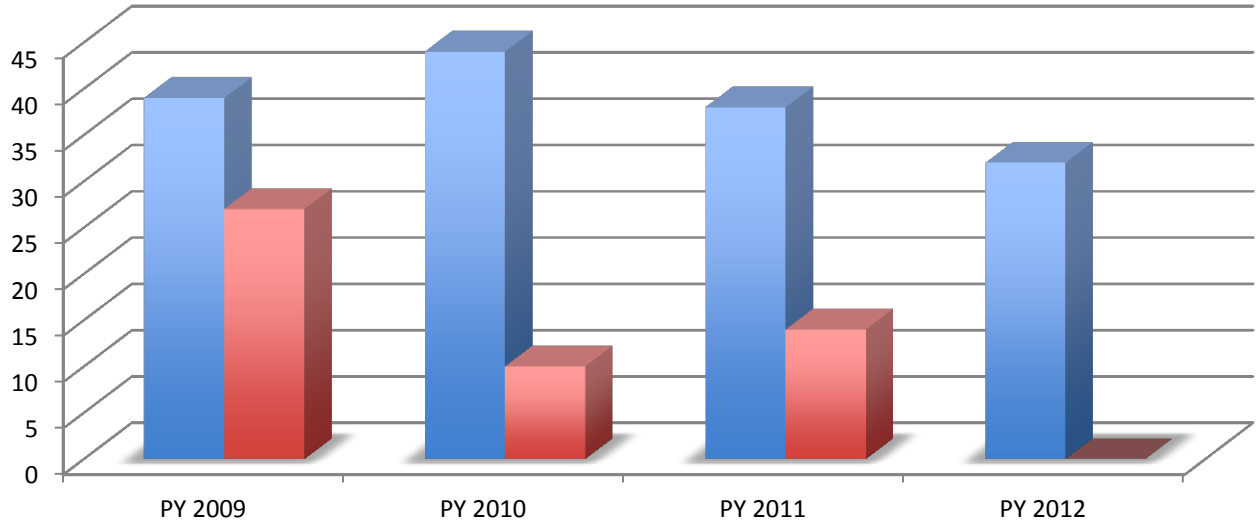
Phase II Proposals vs awards



SBIR
Phase 2

# of Proposals

# of Awards

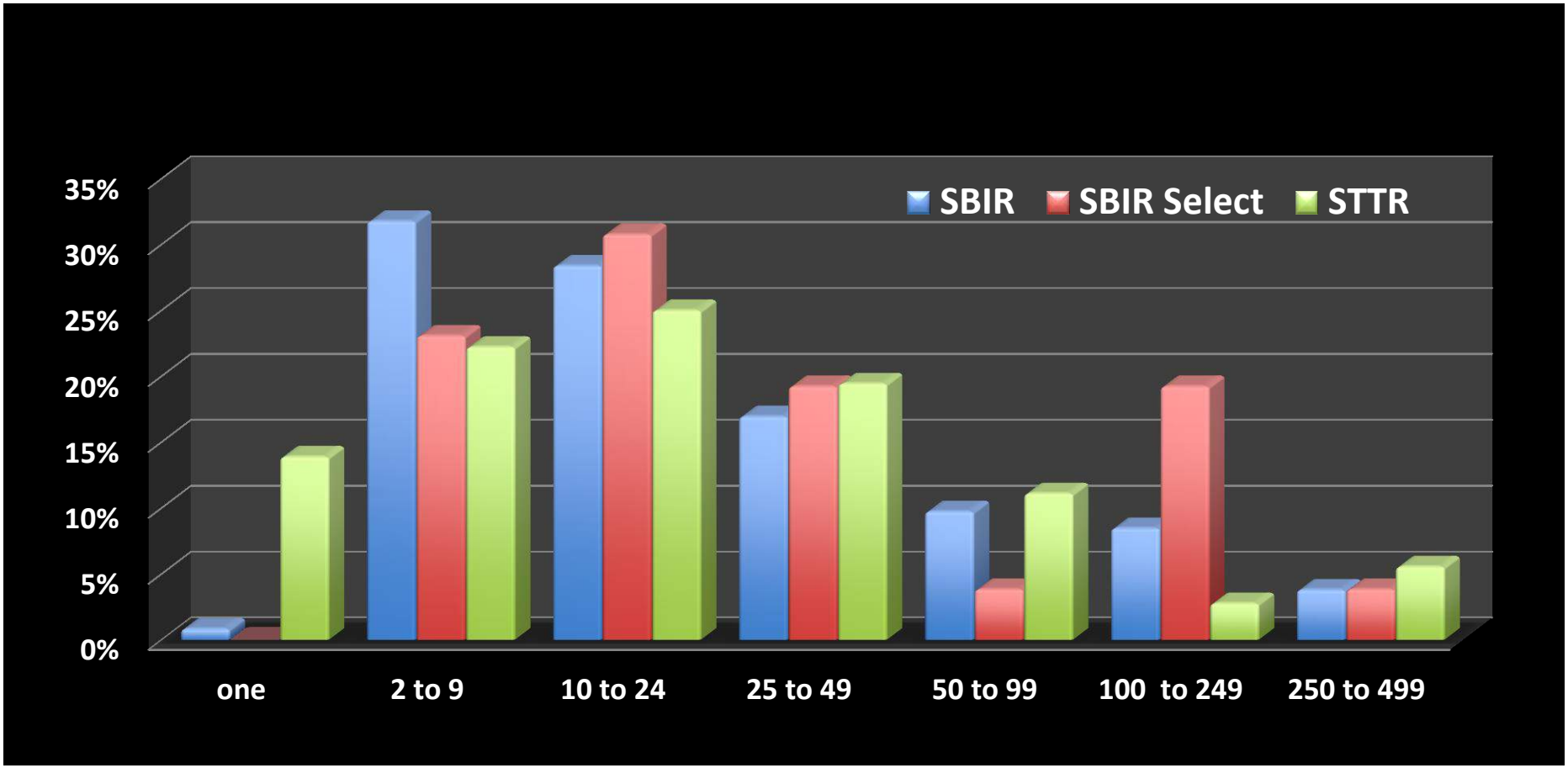


STTR
Phase 2

# of Proposals

# of Awards

Percent selected by size category



- 14% first-time proposer/first-time selectees
- 24% first-time selectees

General Overview

Part of new focus a Space Technology At NASA

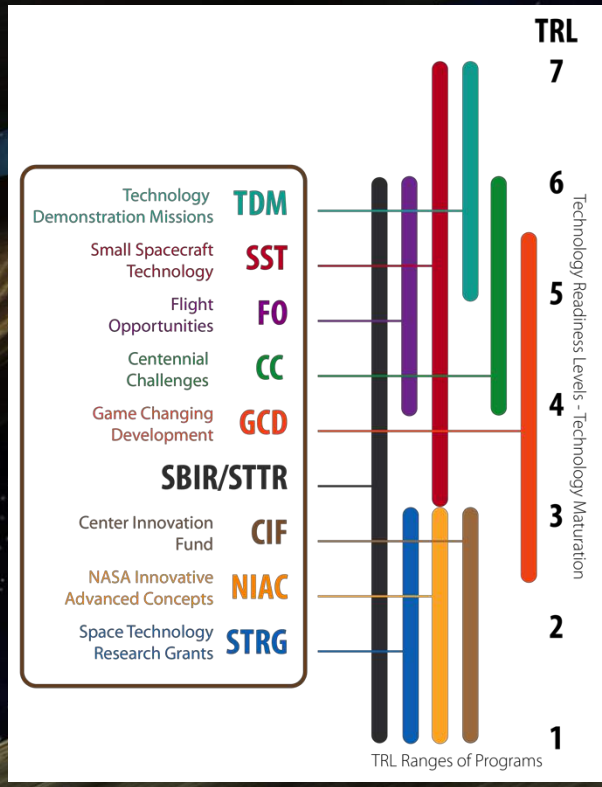
- One of 9 Programs within Space Technology Mission Directorate – tackling new technology development challenges across all "Technology Readiness Levels"

SBIR & STTR

- Topics/Subtopics developed to support the needs of NASA's other Mission Directorates – Science, Human Exploration & Operations, Aeronautics Research
- Topics/Subtopics developed to support mid- to long-term technology development needs identified in NASA's "Space Technology Roadmaps" or the National Aeronautics R&D Plan

NASA Centers Play Critical Role

- All SBIR/STTR projects are managed at one of NASA's 10 Centers – home to NASA's development projects, research facilities, and Subject Matter Experts



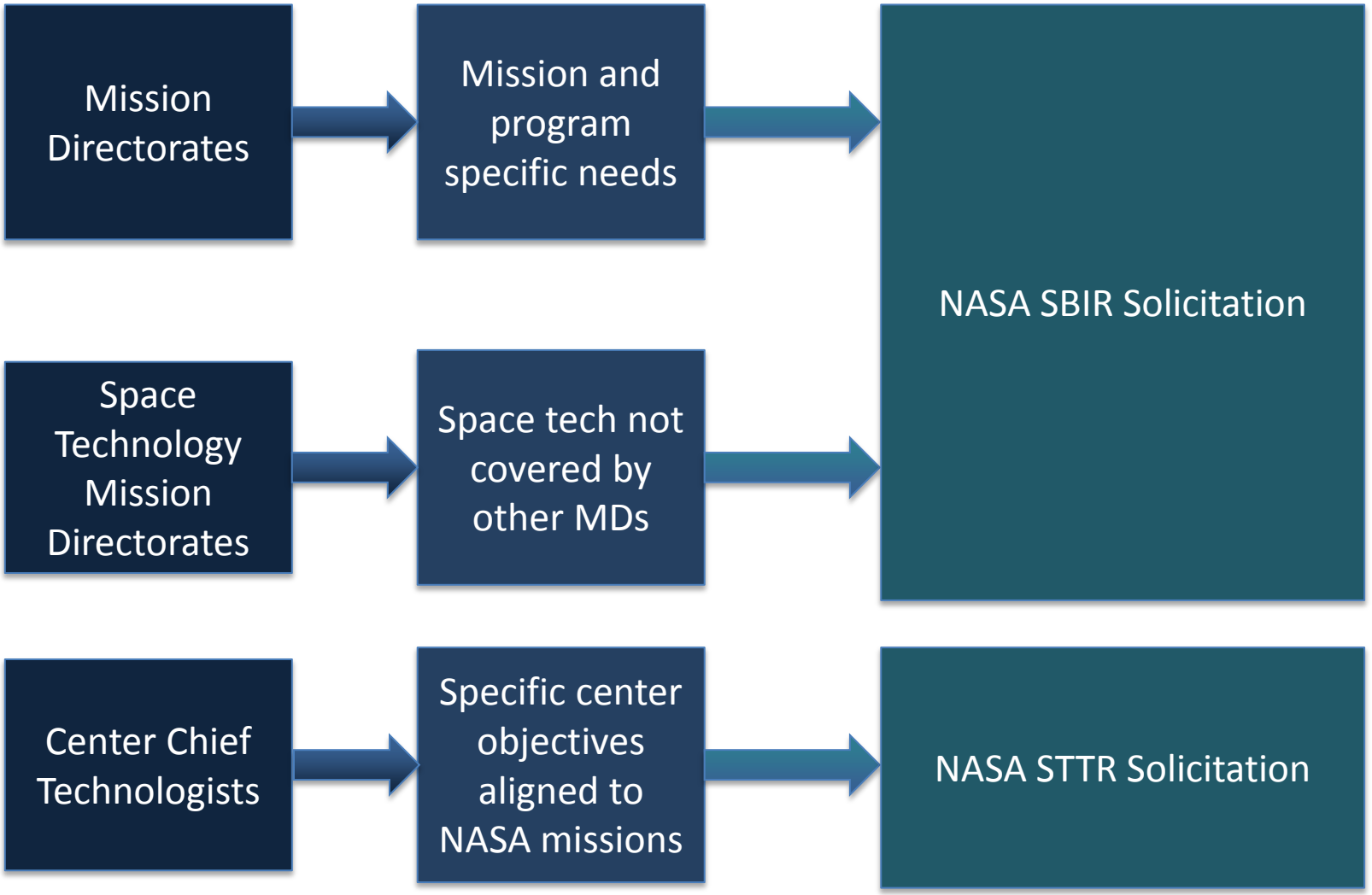
NASA Space Technology Programs

- **NASA Innovative and Advanced Concepts (NIAC)** – "Study innovative, technically credible, advanced concepts that could one day 'Change the Possible' in aerospace"
- **Space Technology Research Grants and Fellowships** –Graduate student research fellowships and grants to academia, NASA field centers and not-for-profit R&D laboratories
- **Center Innovation Fund (CIF)** – stimulate innovation within the NASA Centers support emerging technologies and creative initiatives - NASA scientists and engineers lead projects, partnerships with other agencies, academia and private industry are encouraged.
- **Centennial Challenges** – Prize Competitions
- **Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR)**
- **Small Spacecraft Technology Program -** Accelerate the development of small spacecraft capabilities for NASA, commercial, and other space sector users.
- **Flight Opportunities -** Create multiple paths through which innovative technologies may be matured from concept to flight by facilitating low-cost access to suborbital environments
- **Game Changing Development (GCD)** – Develop technologies that produce "dramatic" impacts for NASA's Space Exploration and Science Missions; a balanced approach of guided technology development efforts and competitively selected efforts
- **Technology Demonstration Missions (TDM) -** Seeks to mature laboratory-proven technologies to flight-ready status; system-level technology solutions are given the opportunity to operate in the actual space environment

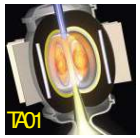
http://www.nasa.gov/directorates/spacetech/home/index.html#.U8_ltBYbbtU

http://www.nasa.gov/directorates/spacetech/home/index.html#.U8_ltBYbbtU

How does NASA define subtopics?



Space Technology Technical Areas

TA01 

• LAUNCH PROPULSION SYSTEMS

TA02 

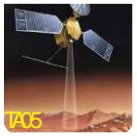
• IN-SPACE PROPULSION TECHNOLOGIES

TA03 

• SPACE POWER & ENERGY STORAGE

TA04 

• ROBOTICS, TELE-ROBOTICS & AUTONOMOUS SYSTEMS

TA05 

• COMMUNICATION & NAVIGATION

TA06 

• HUMAN HEALTH, LIFE SUPPORT & HABITATION SYSTEMS

TA07 

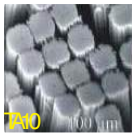
• HUMAN EXPLORATION DESTINATION SYSTEMS

TA08 

• SCIENCE INSTRUMENTS, OBSERVATORIES & SENSOR SYSTEMS

TA09 

• ENTRY, DESCENT & LANDING SYSTEMS

TA10 

• NANOTECHNOLOGY

TA11 

• MODELING, SIMULATION, INFORMATION TECHNOLOGY & PROCESSING

TA12 

• MATERIALS, STRUCTURES, MECHANICAL SYSTEMS & MANUFACTURING

TA13 

• GROUND & LAUNCH SYSTEMS PROCESSING

TA14 

• THERMAL MANAGEMENT SYSTEMS

Challenges for Deep Space Exploration

Communication

Environment Control & Life Supporting Systems

Power Generation & Storage

Logistics

Navigation

Entry, Descent & Landing

Manufacturing In Space & For Space

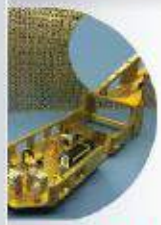
Radiation Mitigation

Propulsion

Space Technology Future Thrust Areas

High Power Solar Electric Propulsion

Deep space human exploration, science missions and commercial applications with investments in advanced solar arrays, high-power Hall thrusters and power processing units.



Space Optical Comm.

Substantially increase the available bandwidth for near Earth space communications currently limited by power and frequency allocation restrictions, and increase the communications throughput for deep space mission.

Advanced life Support & Resource Utilization

Technologies for human exploration mission including Mars atmospheric In-situ resource utilization, near closed loop air revitalization and water recovery, EVA gloves and radiation protection.

Mars Entry Descent and Landing Systems

Permits more capable science missions, eventual human missions to mars including, hypersonic and supersonic aerodynamic decelerators, a new generation of compliant TPS materials, retro-propulsion technologies, instrumentation and modeling capabilities.

Space Robotic Systems

Creates future humanoid robotics, autonomy and remote operations technologies to substantially augments the capability of future human space flight missions.

Lightweight Space Structures

Targets substantial increases in launch mass, and allow for large decreases in needed structural mass for spacecraft and in-space structures.

Deep Space Navigation

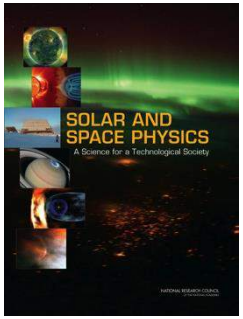
Allows for more capable science and human exploration missions using advanced atomic clocks, x-ray detectors and fast light optical gyroscopes.

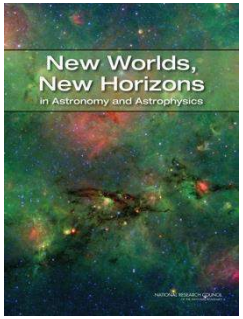
Space Observatory Systems

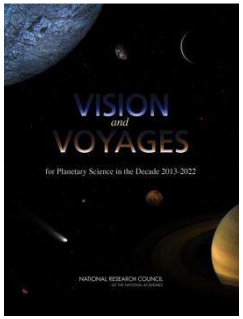
Allows for significant increases in future science capabilities including, AFTA/WFIRST coronagraph technology to characterize exo-planets by direct observation and advances in the surface materials as well as control systems for large space optics.

Understanding NASA Needs

- In Science – "Decadal Surveys" and NASA-developed implementation documents
  - Planetary Science
    - http://solarsystem.nasa.gov/multimedia/download-detail.cfm?DL_ID=742
  - Astronomy and Astrophysics
    - http://science.nasa.gov/astrophysics/special-events/astro2010-astronomy-and-astrophysics-decadal-survey/
    - http://science.nasa.gov/media/medialibrary/2013/04/15/secure-ImpPlan_R2_15Apr2013.pdf
  - Heliophysics (Solar and Space Physics)
    - http://www.nap.edu/catalog.php?record_id=13060
    - http://www.nasa.gov/mission_pages/sunearth/news/decadal-2012.html
    - http://science.nasa.gov/media/medialibrary/2010/03/31/Heliophysics_Roadmap_2009_tagged-quads.pdf
  - Earth Science
    - http://science.nasa.gov/earth-science/decadal-surveys/
    - http://esto.nasa.gov/
- In Aeronautics Research
  - National Aeronautics R&D Plan
    - http://www.whitehouse.gov/sites/default/files/microsites/ostp/aero-rdplan-2010.pdf
  - Various Detailed NASA Aeronautics Research documents
    - http://www.aeronautics.nasa.gov/programs.htm



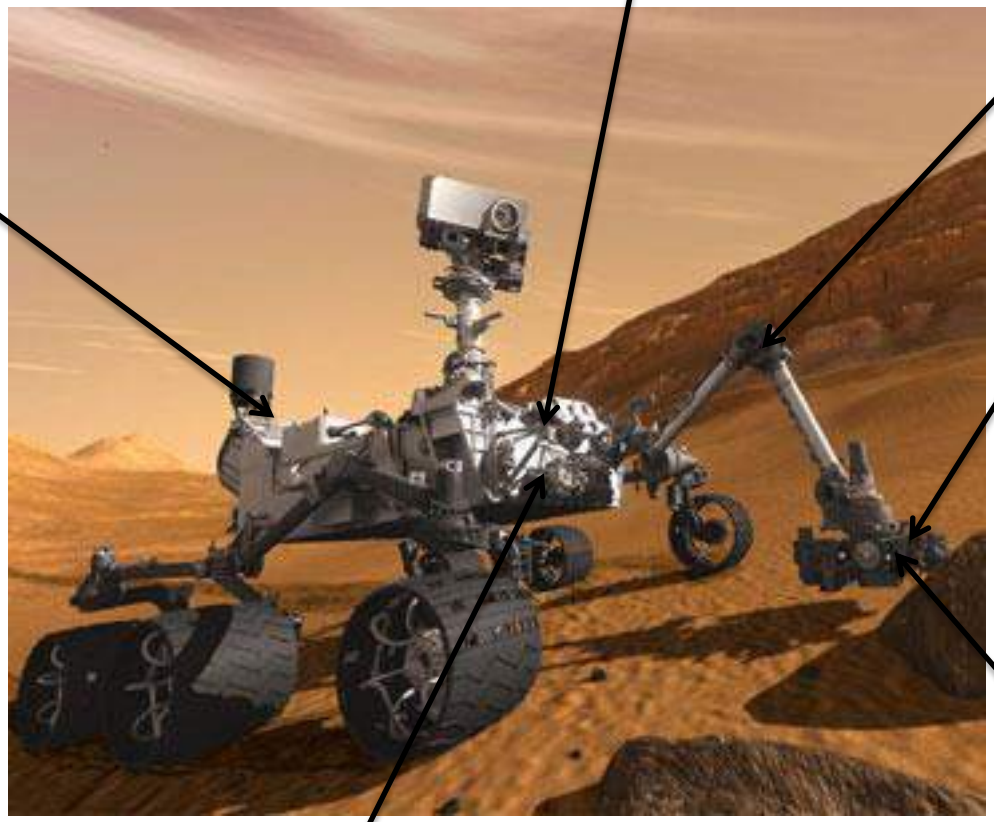




Key Successes: Curiosity Rover

Yardney Technical Products, Pawcatuck CT
Lithium ion batteries

Creare, Hanover NH
Space-qualified vacuum pump



Starsys Research, Boulder CO
Gearboxes for robotic arm

Honeybee Robotics, New York NY
Dust removal tool

inXitu, Campbell, CA
Chemistry and Mineralogy experiment (CheMin) instrument

Grammatech, Ithaca NY -
Software for rover operations

NASA WEB SITES
&
ELECTRONIC HANDBOOK

NASA SBIR Website

http://sbir.nasa.gov

Solicitation Topics

Solicitation Topics

There are four Mission Directorates (MDs):

Aeronautics Research

NASA's Aeronautics Research Mission Directorate (ARMD) expands the boundaries of aeronautical knowledge for the benefit of the Nation and the broad aeronautics community, which includes the Agency's partners in academia, industry, and other government agencies. ARMD is conducting high-quality,… Read more>>

Topic A1 Aviation Safety

The Aviation Safety Program conducts fundamental research and technology development of known and predicted safety concerns as the nation transitions to the Next Generation Air Transportation System (NextGen). Future challenges to maintaining aviation safety arise from expected significant increases… Read more>>

Topic A2 Unmanned Aircraft Systems

The Integrated Systems Research Program (ISRP) conducts research at an integrated system-level on promising concepts and technologies and explores, assesses and/or demonstrates their benefits in a relevant environment. The integrated system-level research in this program will be coordinated with… Read more>>

Topic A3 Air Vehicle Technology

The Air Vehicle Technology topic solicits cutting-edge research in aeronautics to overcome technology barriers and challenges in developing highly efficient aircraft systems of the future, with reduced impact to the environment. The primary objective is the development of innovative design tools,… Read more>>

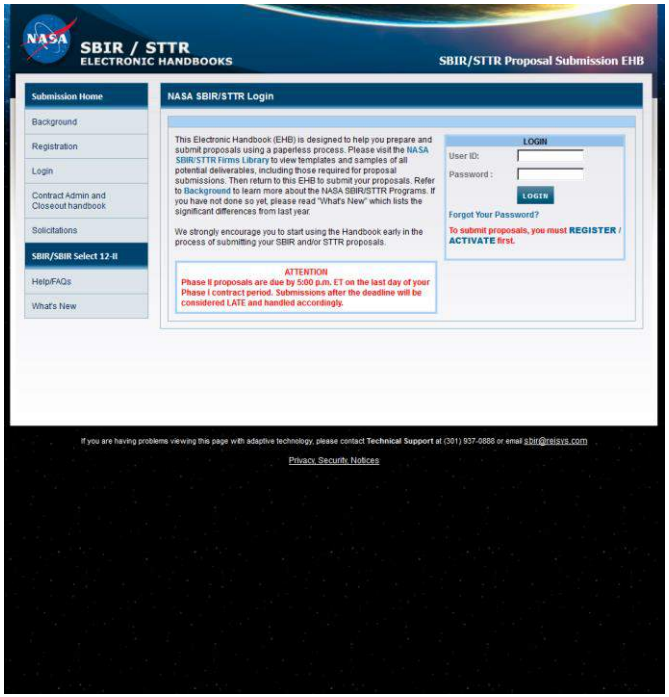
Topic A4 Ground and Flight Test Techniques and Measurement

The Aeronautics Test Program (ATP) supports the experimental modeling and simulation requirements of NASA's Aeronautics Research Mission Directorate from takeoff speeds through Mach 10. It ensures the long-term availability and health of NASA's major wind tunnels/ground test facilities and flight… Read more>>

NASA SBIR Website

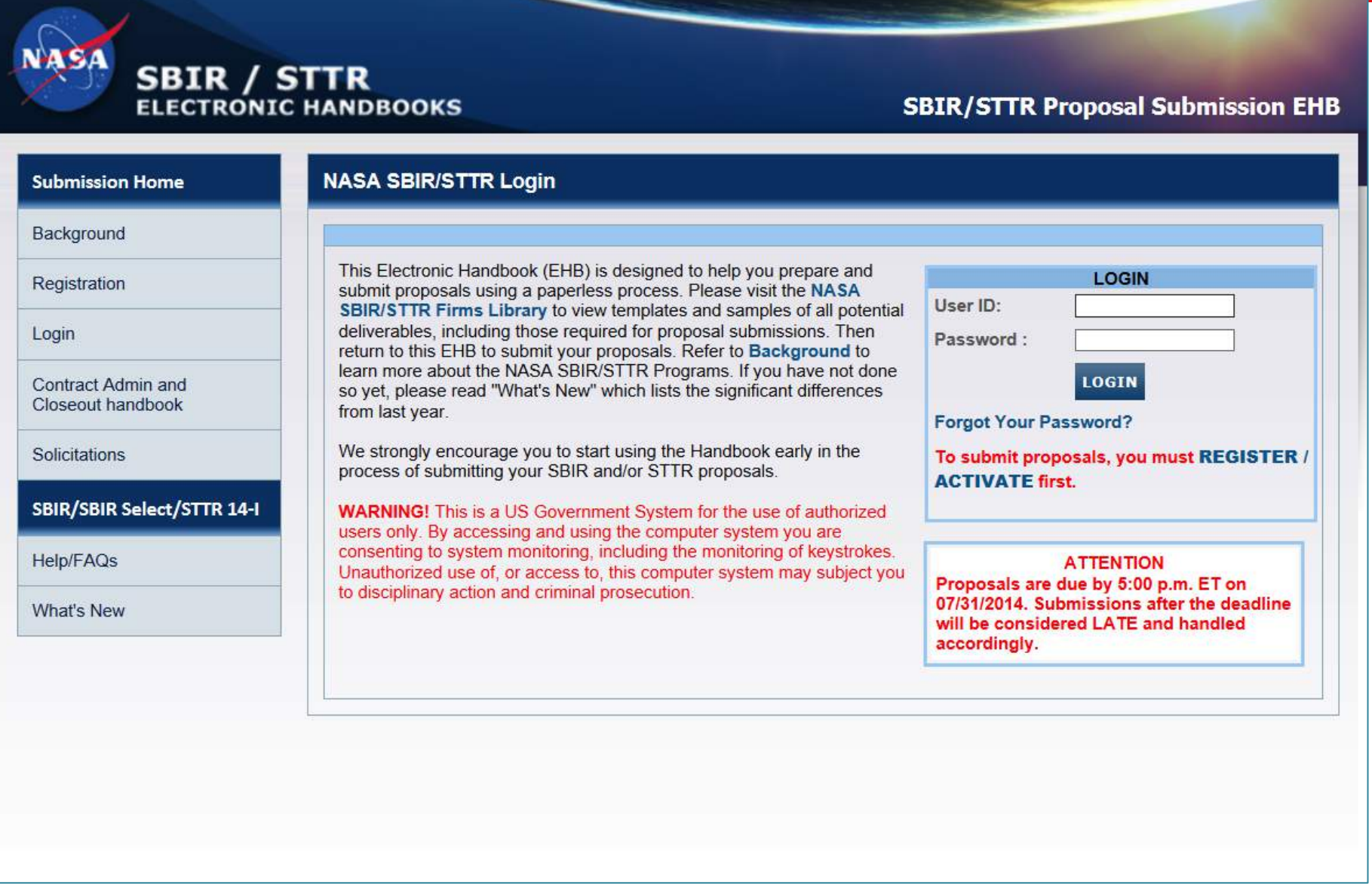
http://sbir.nasa.gov

- Electronic Handbook (EHB)



YOU MUST FIRST BE REGISTERED WITH THE SMALL BUSINESS ADMINISTRATION AT: http://www.sbir.gov/registration

SBIR/STTR Proposal Submission EHB
Login Page



SBIR/STTR Proposal Submission EHB
Activity Worksheet

- Submission Home
- SBIR Proposals
- STTR Proposals
- SBIR Select Proposals
- Certifications
- Audit Information
- Prior Awards Addendum
- Commercial Metrics Survey
- 2014 SBIR/STTR Solicitation
- 2014 Select Solicitation
- What's New

SBIR 2014-I Activity Worksheet

Please review the proposal instructions outlined in the Solicitation and read the Form instructions (opens in new window) carefully before proceeding. You can also view the NASA SBIR/STTR Firms Library for proposal samples. For security reasons, we recommend that you logout (see link on top right) when your session is over.

Firms are required to complete the Certifications, Audit Information, and Commercial Metrics Survey sections that are applicable across all proposals submitted to this Solicitation. In addition, if your firm has received more than 15 Phase II awards in the prior 5 fiscal years, you must complete the Prior Awards Addendum. These are all accessible via the left-hand menu or via the Status section below.

For each individual proposal submission, Firms are required to electronically complete Forms A, B, C and the briefing chart; upload the Technical Proposal; and electronically endorse the submission. To start a proposal click on "Start New Proposal" . Once the proposal has been initiated, updates can be made via the Activity Worksheet below.

+ START NEW PROPOSAL | MANAGE PROPOSALS

Note: The designated Firm Admin, typically the first person to register your Firm, is the only individual authorized to update the Firm level certifications and forms identified below.

Status of Required Firm Level Forms

Certifications	Audit Information	Prior Awards Addendum	Commercial Metrics Survey

Legend: Not Started | Incomplete | Complete | Optional

Listed below are all the proposals you have started.

Provide Access to Official/Others | Endorse Proposal (To be endorsed by SBC Official , Principal Investigator) | Print Forms

H1.01-8500	Test Proposal 0001			
Cover Form A Incomplete Updated 07/15/14 13:06	**Summary Form B** Complete Updated 07/15/14 15:58	**Budget Form C** Incomplete	**Technical Proposal** Uploaded Updated 07/15/14 16:10	**Briefing Chart** Incomplete

SBIR/STTR Proposal Submission EHB
Budget Form C

SBIR / STTR
ELECTRONIC HANDBOOKS

SBIR/SBIR Select/STTR 14-I Proposal Submission EHB

Welcome Heather
Last login: 7/15/14 12:56 PM

Form A | Form B | Form C | Technical Proposal | Briefing Chart | List of solicitations | My account | FAQ | Logout

- Submission Home
- SBIR Proposals
- STTR Proposals
- SBIR Select Proposals
- Certifications
- Audit Information
- Prior Awards Addendum
- Commercial Metrics Survey
- 2014 SBIR/STTR Solicitation
- 2014 Select Solicitation
- What's New

SBIR 2014-I - Budget Form C

Direct Labor | Overhead | ODCs | Subcontractors/Consultants | G&A | Profit/Cost Sharing | Audit info | Review

Proposal # H1.01-8500 : Direct Labor

Please **read the instructions** (opens in new window) carefully before proceeding. If you used the browser's BACK button to come to this page, please reload/refresh now.

Labor Costs and Information: Enter the labor description and cost for each person who will be working on the proposed research effort. Please not that each employee's contribution to the project must be identified in the technical proposal. Do not include labor costs for employees who are not directly contributing to the project. Costs for these should be included in the Overhead or G&A sections of this proposed budget.

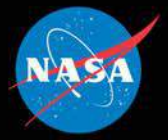
Please detail the labor used for each year of the proposed research effort separately below.

Category:	Chemical Engineer			**Description:**	Principal Investigator
Education:	PhD			**Years of Experience:**	20
Hours:	200	**Rate ($):**	140.00	**Fringe Rate (%) (if applicable) :**	
Total($) (hours x rate x fringe rate):	28000				

Category:	Chemical Technician			**Description:**	Jr. Technician
Education:	Bachelors Degree			**Years of Experience:**	5
Hours:	250	**Rate ($):**	65.00	**Fringe Rate (%) (if**	

NASA SBIR/STTR Firm Library

https://sbir.gsfc.nasa.gov/sbir/firm_library/index.html



SBIR/STTR

Small Business Innovation Research / Small Business Technology Transfer

Firm Library

HOME | PROPOSAL | DRAFT MODEL CONTRACTS | CONTRACT INTERIM DELIVERABLES | CONTRACT FINAL DELIVERABLES | POST-PHASE II CONTRACT CLOSEOUT

Welcome to NASA SBIR/STTR Firm Library

The NASA SBIR/STTR Firm Library contains templates and samples of all potential proposal and contract deliverables for Phase I and Phase II. This library should be utilized by the Firms to aid in the preparation of their deliverables. Firms must submit their deliverables via the Electronic Handbooks (EHBs). Click here to access the Awardee Firm's Contract Administration and Closeout Electronic Handbook.

Links
Phase I Proposal
Phase I Draft Model Contracts
Phase I Contract Interim Deliverables
Phase I Contract Final Deliverables
Phase II Proposal
Phase II Draft Model Contracts
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NASA SBIR/STTR Program Contacts

NASA SBIR/STTR Program Support Office

For questions about the NASA SBIR/STTR solicitations, the proposal preparation and electronic submission process, and other program related areas, please contact the NASA SBIR/STTR Program Support Office.

Phone: 301-937-0888
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Hours: Monday through Friday from 9am to 5pm ET

NASA SBIR/STTR Program Management Office

The Space Technology Mission Directorate provides overall policy direction for implementation of the NASA SBIR/STTR programs. The NASA SBIR/STTR Program Management Office, which operates the programs in conjunction with NASA Mission Directorates and Centers, is hosted at the NASA Ames Research Center.

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The prime contacts at each NASA center for the SBIR/STTR programs are listed below. Those interested in submitting proposals may communicate with NASA mission program personnel and researchers to learn about the needs and objectives of mission programs except when a Solicitation is active (between the date of issue and the deadline for receipt of proposals).

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