

**SUPPORTING STATEMENT FOR PAPERWORK REDUCTION SUBMISSION
ENGINEERING INDUSTRIAL INNOVATIONS AND PARTNERSHIPS (IIP) PROGRAM
MONITORING DATA COLLECTIONS**

SUPPLEMENTARY INFORMATION

TITLE OF COLLECTION: Program Monitoring Data Collections for Industrial Innovation and Partnerships Division

Type of Request: Intent to seek approval to renew an information collection.

Section A. Justification

This request is for approval of a group of information collections intended to monitor outputs, and short-term, intermediate and long-term outcomes of NSF-Directorate of Engineering investments in research and innovation in the Division of Industrial Innovation and Partnerships (IIP).

IIP serves the entire Foundation by fostering partnerships to advance technological innovation and plays an important role in the public-private partnerships by investing in science and engineering research across all disciplines that have the potential for high impact in meeting national and societal needs. IIP focuses on leveraging federal, small business, industrial, university, state and community college resources. Genuine partnerships between academe and industry are an important aspect of IIP programs and should facilitate the types of infrastructure that can sustain and nurture the spread of innovative activity.

IIP is home to the two congressionally mandated small business research programs, the [Small Business Innovation Research \(SBIR\) program](#) and the [Small Business Technology Transfer](#) program. IIP also manages the [Partnerships for Innovation: Accelerating Innovation Research \(PFI:AIR\)](#) as well as the [Partnerships for Innovation: Building Innovation Capacity \(PFI:BIC\)](#) program, which stimulate innovation by building partnerships across the scientific, engineering, and business community. In addition, the IIP leverages industrial support through the [Industry-University Cooperative Research Centers \(I/UCRC\)](#) program. IIP also manages another NSF-wide program, Innovation Corps program ([I-Corps](#)), which equips scientists with the entrepreneurial tools needed to transform discoveries with commercial realization potential into innovative technologies.

These survey questionnaires, individually tailored for different programs, will provide essential information for program monitoring. Data collected by ENG IIP program monitoring collections will be used for program planning, management, and evaluation. Summaries of monitoring data are used to respond to queries from Congress, the public, NSF's external merit reviewers who serve as advisors, including Committees of Visitors (COVs), and NSF's Office of the Inspector General. These data are needed for effective administration, program and project monitoring, evaluation, and for measuring attainment of NSF's program and strategic goals, as identified by the President's Accountable

Government Initiative, the Government Performance and Results Act (GPRA) Modernization Act of 2010, and NSF's Strategic Plan.

The eight (8) program-specific collections included in this request are designed to assist in management of specific programs and to serve as data resources for current and future program evaluations. As such, expected outcomes could vary according to the nature of the program funding, field of study, and other program characteristics.

Office	Programs
Industrial Innovation and Partnerships (IIP)	Innovation Corps (I-Corps)
	Partnerships For Innovation: Accelerating Innovation Research (PFI:AIR)
	Partnerships For Innovation: building Innovation Capacity (PFI:BIC)
	Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)
	Grant Opportunities for Academic Liaison with Industry (GOALI)

A.1 Circumstances Requiring the Collection of Data

The NSF Division of Industrial Innovation and Partnerships is responsible for analyzing and evaluating program research and development activities in IIP's funded portfolios.

Precedent for the ENG IIP Monitoring Systems Clearance

Data from NSF administrative databases can be incorporated with information gathered through initiative-specific, division-specific, and program-specific data collections. NSF-IIP uses these data for monitoring, managing, and evaluating its investment in programs, initiatives, and activities.

Attached is a crosswalk that details the topics each of the questions address and how they vary between collections. These questions are based on the current understanding of data management needs and potential use in evaluation activities, including the development of metrics associated with several program-level logic models.

Circumstances of data collection

To fulfill its planning and management responsibilities, and to answer queries from Congress, OMB, and NSF management, IIP needs current and standardized information about the short-and long-term outcomes of projects in the IIP portfolio. This information is specifically important to support studies and evaluations by IIP, and collection of these data serves several purposes, one of which is to:

- Provide a source of information on the outcomes of the research investments in terms of advancements in science, benefits to the institutions, researchers, students and society and educational and/or career impact on participants/students in NSF-funded projects, in compliance with Foundation responsibilities to monitor scientific and technical resources enabling NSF to monitor the effectiveness of NSF-sponsored projects and identify outputs of projects funded under NSF awards for management and for reporting to the Administration and Congress.

The collections have been assembled for these IIP programs based on their logic models, theory of change or management needs. The data collected under these surveys is focused on initiative-specific, division-specific, and program-specific quantitative and qualitative indicators. The question items elicit participants' details and activities, outputs (i.e., the accomplishments of program grantees (projects) in terms of specific program objectives), outcomes, and impacts (longitudinal (post-award) accomplishments of program grantees).

A.2 Purposes and Use of the Data

The information collected under this request is required for effective program administration, program and project monitoring, evaluation, and for measuring attainment of NSF's program and strategic goals as laid out in NSF's Strategic Plan. This section describes how the data to be collected will be used for internal program management and administration; as a data source for IIP's performance assessment activities, including Committees of Visitors and Directorate and Office Advisory Committees (ACs); and as a foundation for the rigorous research required to evaluate the effectiveness of IIP programs. The primary objective of this clearance is to allow IIP programs to collect outcome and output data from grantees, their partners and students, which will enable the evaluation of the impact of its investments in engineering research over time.

A.3 Use of Information Technology to Reduce Burden

All of the collections included under this clearance request use web-based data collection systems to minimize data duplication and respondent burden. In some cases, program officers may call the respondent for follow-up or clarification, and enter data gathered in these conversations into the web-based data collection system.

A.4 Efforts to Identify Duplication

The ENG IIP Program Monitoring Clearance does not duplicate efforts undertaken by the Foundation, other federal agencies, or other data collection agents. Please note, while there is public data on award information, they are usually a few years out of date.

A.5 Small Business

In the ENG IIP Program Monitoring Clearance, the IIP Division will collect information from small businesses. These businesses are partners to current and/or former awardees or are run/owned by current and/or former awardees. The only impact of this data collection on the business will be the time required for respondents to complete the survey or have a conversation with data collectors.

A.6 Consequences of Not Collecting the Information

Data collected for the IIP Program Monitoring Clearance will be used to manage programs, monitor projects, inform project and program evaluations, coordinate with federal and non-federal partners, provide Congress with information about government-supported activities, and report for GPRA and other requirements.

If additional information were not collected, IIP would be unable to document outputs and outcomes of its programs that occur many years after the award is made (given the nature of scientific discovery). It would be unable to meet its accountability requirements or assess the degree to which projects and programs are meeting their goals over time.

A.7 Special Circumstances Justifying Inconsistencies with Guidelines in 5 CFR 1320.6

All data collections will comply with 5 CFR 1320.6. All collections under the ENG IIP Program Monitoring Clearance could ask respondents for data annually, or occasionally at shorter intervals for some data collected during the life of the award, or at longer intervals for post-award monitoring. Owing to many of the potential outcomes and impacts of investments in engineering research are realized years after the award is made (particularly for fundamental research investments), it is necessary to capture some of these outcomes and impacts via post-award monitoring. **Post-award data collections are voluntary.** Analysis of non-response bias will be implemented every time inferences about a program are to be drawn from the data. Post-award monitoring systems, including the frequency of post-award data collection are tailored to the expected timeline of outcomes and impacts from each individual program. In most cases, we expect to collect post-award data at 1-year, 3-year, and 5-year intervals, with some post-award systems capturing a 4th data point at 10 years post-award. These collections for programs in the IIP division, expect that important indicators for outcomes and impacts may become apparent at shorter intervals post-award, and in these cases, data collection intervals could be more frequent, but will extend over a shorter total period post-award.

A.8 Federal Register Notice Consultation Outside the Agency

The agency's notice, as required by 5 CFR 1320.8(d), was published in the *Federal Register* on February 14, 2018, at 83 FR 6616, and no comments were received.

Consultations have included knowledgeable outsiders such as representatives of IIP contractors, like VentureWell, responsible for technical and evaluation tasks and fellows who work at the Foundation as guests under programs such as the American Association for the Advancement of Science - Science & Technology Policy Fellows Program.

A.9. Payments or Gifts to Respondents

N/A

A.10. Assurance of Confidentiality

Respondents will be informed that any information on specific individuals is maintained in accordance with the Privacy Act of 1974. Every data collection instrument will display both OMB and Privacy Act notices.

Respondents will be told that data collected are available to NSF officials and staff, evaluation contractors, and the contractors hired to manage the data and data collection software. Data will be processed according to federal and state privacy statutes. The system will limit access to personally identifiable information to authorized users. Data submitted will be used in accordance with criteria established by NSF for monitoring research and education grants and in response to Public Law 99-383 and 42 USC 1885c.

The information requested through NSF monitoring systems may be disclosed to qualified researchers and contractors for evaluation purposes and to a federal agency, court, or party in court or federal administrative proceedings, if the government is a party.

A.11 Questions of a Sensitive Nature

Some of the proposed question items in the IIP Program Monitoring Clearance request information from respondents, including name, contact information, and demographic data (see table below). These data are collected to monitor the award sites and evaluate the success of the award programs. Information of this nature is also used to track recipients of funding and training. Responses to all items of a sensitive nature are voluntary. Respondents may choose not to provide information that they deem as privileged. Any individual-level data that are collected will be provided only to program staff and consultants conducting studies using the data as authorized by NSF. Any public reporting of data will be in aggregate form, and all personal identifiers will be removed.

Post-award monitoring data collections are voluntary and respondents will clearly be given the choice of non-response. The table below shows which questions of a sensitive nature are included in the IIP collections.

Table 1. Questions of a Sensitive Nature

Collection Title	Name	Contact Information	Demographic
Grant Opportunities for Academic Liaison with Industry (GOALI)	X	X	
Innovation Corps (I-Corps)	X	X	
Innovation Corps (I-Corps) Pre-Course Survey	X	X	
Innovation Corps (I-Corps) Post-Course Survey	X	X	
Partnerships For Innovation: Accelerating Innovation Research (PFI:AIR)	X	X	
Partnerships For Innovation: building Innovation Capacity (PFI:BIC)	X	X	
Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	X	X	
SBIR Baseline Monitoring Survey	X	X	X

A.12 Estimates of Response Burden

A.12.1. Number of Respondents, Frequency of Response, and Annual Hour Burden

While output and short-term outcome monitoring can happen yearly, long-term outcomes will only be monitored at longer intervals (potentially 1, 3, 5, and 10 years after the end of the award). The table below shows the ideal scenario for a hypothetical year, in which all respondents in all the collections participate in the collection.

For IIP, many awards are made in translational research, such that we might expect a shorter and more condensed timeline of outcomes and impacts. In these cases, it is necessary to collect very limited monitoring data from awardees at short intervals (e.g. annually) during the life of the award. The data collected could serve two purposes: 1) to provide formative feedback to awardees on possible mid-course corrections as challenges arise to assist them in optimizing the impact of their NSF funding, and 2) to provide trend data to NSF program

staff such that they might be able to identify patterns that indicate or suggest characteristics of successful awardees. Identification of trends and patterns can allow NSF to eventually provide training or resources to future awardees to enhance these characteristics of success. If data collections are deemed to occur more frequently, the burden to awardees will be limited to no more than 20 minutes of the respondents' time in each instance.

Table 2. Respondents, Responses, and Annual Hour Burden

Collection Title	No. of Respondents	Annual No. of Hours/Respondent	Annual Hour Burden
Grant Opportunities for Academic Liaison with Industry (GOALI)	200	1	200
Innovation Corps (I-Corps) Longitudinal Collection	700	1	700
Innovation Corps (I-Corps) Pre-Course Survey Questionnaire	800	0.5	400
Innovation Corps (I-Corps) Post-Course Survey Questionnaire	800	0.5	400
Partnerships For Innovation: Accelerating Innovation Research (PFI:AIR)	200	1	200
Partnerships For Innovation: building Innovation Capacity (PFI:BIC)	30	1	30
Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	900	1.5	1,350
SBIR Baseline Monitoring Survey	800	2	1,600
Total	4,430	8.5	4,880

As shown in Table 3 below, the annual response burden for the collections under this request is 4,880 hours. This collection will happen at 1, 3, and 5, and 10 years after the award so the total number of hours is $4,880 \times 4 = 19,520$ hours/10-year period, an average of 1,952 hours per year.

For life-of-award monitoring, the data collection burden to awardees will be limited to no more than 120 minutes of the respondents’ time in each instance, but will most likely average 60 minutes of the respondents’ time in each instance.

The respondents are PIs, partners or students. For some programs, like I-Corps, the burden already includes a response from 3 members of the team in the pre-and post-course surveys. For all others, one PI or assignee per award completes the questionnaire.

A.12.2. Estimates of Annualized Cost to Respondents for the Hour Burdens

The following table shows the annualized estimate of costs to PI/program coordinator respondents, who are generally university professors. This estimated hourly rate is based on a report from the American Association of University Professors, “Annual Report on the Economic Status of the Profession, 2017-18,” *Academe*, March–April 2018, Survey Report Table 1. According to this report¹, the average salary of an associate professor across all types of doctoral-granting institutions (public, private-independent, religiously affiliated) was \$99,820. When divided by the number of standard annual work hours (2,080), this calculates to approximately \$48 per hour.

When at full implementation, in a year in which all programs monitor their investments and all respondents participate in the collection, the overall annualized cost to the respondents is estimated to be \$234,240. Since these data collections will not take place every year—rather, on average, every 2.5 years, annual costs to all the respondents across a ten-year period is average to be \$93,696.

Table 3. Annuitized Cost to Respondent

Respondent Type	No. of Respondents	Total Burden Hours	Average Hourly Rate	Estimated Annual Cost
PIs, Assignees, Partners or Students (IIP Division)	4,430	4,880	\$48	\$234,240

A.13 Estimate of Total Capital and Startup Costs/Operation and Maintenance Costs to Respondents or Record Keepers

Not applicable

A.14 Estimates of Costs to the Federal Government

Estimated costs include ~\$500,000 to develop one monitoring system for each of the 6 divisions and offices, ~\$300,000/year to maintain each of these systems by a contractor, and

¹ https://www.aaup.org/file/ARES_2017-18.pdf

30% of full-time salary for each of two (2) Evaluation & Assessment staff who are salaried at ~\$100,000/year.

A.15. Changes in Burden

The changes in burden are due to revisions to the various collections, which either resulted in less burden time or additional respondents. One new collection was added to the overall request.

A.16. Plans for Publication, Analysis, and Schedule

At this time, IIP plans to produce a summary or descriptive report every year after completion of the data collections.

A.17. Approval to Not Display Expiration Date

Not applicable

A.18 Exceptions to Item 19 of OMB Form 83-I

No exceptions apply.