



SCIENCE & TECHNOLOGY POLICY INSTITUTE

**Findings and Recommendations from
the Supercharged Science, Technology,
Engineering, and Mathematics Reentry
Workshop**

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Executive Summary

Background

According to a 2012 report from the President's Council of Advisors on Science and Technology, at current rates of training in science, technology, engineering, and mathematics (STEM) fields, the nation will see a deficit of 1 million STEM workers in the next decade (PCAST 2012). The United States produces 300,000 undergraduate STEM degrees annually, but labor projections demand 100,000 more each year (PCAST 2012). One way to close this gap is to tap into the population of STEM degree holders who have already shown that they can master the challenging STEM disciplines, but for various reasons have elected to leave the workforce.

The science and technology (S&T) community, including The White House Office of Science and Technology Policy (OSTP), recognizes the benefits and important perspectives that individuals with additional life experiences bring to the work environment. Due to these benefits, the previous investments that have been made in this valuable segment of the STEM-trained population can be better utilized. Therefore, furthering the S&T community's understanding of the reentry pool and the professionals' potential barriers has potential to increase knowledge of how best to encourage and to reengage this talent pool.

In order to link the need for STEM professionals in the workforce and the population of STEM professionals who are challenged attempting to reenter the workforce, OSTP hosted a workshop in October 2014 that focused on strategies and issues related to the reentry of STEM professionals into the workforce. The workshop furthered participants' understanding of reentrants (someone who is no longer employed, with professional experience, and seeking to reenter the workforce) and barriers to reentry, identified attributes of successful reentry programs, and examined strategies that could be adopted to promote reentry into the workforce. In the workshop, the participants took a broad view of STEM, one that includes fields like health care and finance.

Recommendations

Employers in All Sectors

- Create inclusive workplaces and promote hiring practices that see diversity of experiences and backgrounds as advantages and de-emphasize continuous work histories.

- Establish returning professional internship programs.
- Create opportunities for returning professionals to update knowledge and abilities.

Academia and Professional Societies

- Build and foster a reentry community of practice with the academic community and through partnerships with other sectors.
- Create and promote opportunities to update and acquire skills through short courses and certificate programs.
- Consider executive education programs for mid-career alumni on career break that include updating knowledge and internship-like placement.

Reentrants

- Maintain networks and leverage available training and educational services to aid in reestablishing a presence in field of interest.
- Develop technical skills and knowledge through online or in-person courses and available literature.

Conclusions

The workshop participants noted that implementing these recommendations will require a concerted effort from the Federal Government, private industry, and academic institutions. But doing so will help recruit and retain those individuals with critical and analytical thinking skills who will be needed in increasing amounts as our society becomes more technologically based and driven.

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1. Background and Motivation for the Workshop

A. Introduction

A 2014 Government Accountability Office (GAO) report found that the number of science, technology, engineering, and mathematics (STEM) jobs increased 16% from 14.2 million in 2004 to 16.5 million in 2012, while the number of non-STEM jobs has stayed flat (GAO 2014). Most projections suggest that many more STEM-related jobs will be created in both the near and far term, and more jobs in the future will require some STEM skills. Compared with non-STEM occupations, STEM and STEM-related occupations will continue to have higher salaries with larger wage growth rates and experience lower unemployment. Further, to maintain U.S. national competitiveness, the STEM workforce needs to increase in number and to improve in quality (National Academies 2007). Innovation and economic growth depend on the STEM workforce.

Several strategies for boosting the U.S. STEM workforce have been proposed and implemented, with mixed success. These strategies tend to focus on encouraging students or new graduates to go into STEM fields, rather than on the pool of individuals who are well trained in STEM but have chosen to leave the STEM workforce. The science and technology community, including the White House Office of Science and Technical Policy (OSTP), recognizes that trained and experienced STEM professionals looking to reenter the workforce are ideally suited to meet the growing STEM workforce needs.

B. Workplace Diversity

Increasing diversity in the STEM workforce has been shown to boost productivity, broaden overall participation in STEM, and inspire innovative solutions to pressing S&T issues (Forbes Insights 2011; Barsh and Yee 2011; National Academy of Science 2011). Not all STEM disciplines have a deficit of women, but significant gender disparities exist in engineering, computer sciences, physical sciences, and math. According to the National Student Clearinghouse Research Center (2015), 28% of bachelor's degrees obtained by women in 2014 were in STEM disciplines. While this is a 1% increase over 2004, women's representation in engineering, computer sciences, physical sciences, and math bachelor's degrees all dropped between 2004 and 2014.

In many sectors, there are fewer women than men in STEM careers, particularly in higher positions. For example, women comprised only 44% of the total Federal workforce, with decreasing proportions of women in higher positions—only 30% of Senior Executive

Service positions are filled by women (EEOC 2013). In STEM fields such as information technology, natural resource management, biological and physical sciences, and engineering, the percentage of women is even lower. The Equal Employment Opportunity Commission suggests that the government must overcome many difficulties to reach equality for women in the Federal workforce. Inflexible workplace policies, lack of mentoring for women, salary disparities, gender biases, and a perceived lack of commitment to retain women by employers were identified as some of the obstacles to parity in the Federal workforce (EEOC 2013). Women are also more affected by structural constraints in the workplace that create difficulties in work-life balance and culturally based gender-normative beliefs that place family care burdens on women more than men, and that lead to decreased mobility for reentry attempts.

Although comprehensive data are difficult to acquire, those available data generally suggest that women who leave STEM workforce want to return; for example, a recent survey shows that 93% of women with post-undergraduate education who leave want to return to work (Hewlett 2005). The numbers and reasons for voluntarily leaving the workforce vary by gender, but women tend to leave for family reasons, and men for career changes or career development. Ideally, creating a work environment that better accommodates workers' needs and addresses this "leaky pipeline" would prevent at least some of the gender disparity in the STEM workforce; however, current efforts in the both the private and public sectors have not been successful.

When individuals leave the workforce for an extended period of time, they may face a loss of networks and mentors, an inability to maintain or update skills and knowledge, and large résumé gaps that result in decreased marketability. Not all women who want to return to the workforce succeed or even end up in a full-time job related to their career, and longer gaps create additional hardships for reentry. Although this workshop focused primarily on women, the findings and recommendations may be relevant to others, including but not limited to: veterans, men and women with families, or men and women caring for aging parents or disabled family members.

2. Workshop Findings and Recommendations

Workshop panelists were instructed to foster discussion with the attendees, and attendees were instructed to ask questions of the panelists to ensure the breakout sessions would produce a list of challenges to reentry as well as recommendations for addressing these challenges (see Appendix A for the agenda and Appendix B for a more detailed view of what transpired during each panel). All participants were directed to sort out which recommendations could be implemented by employers (including the Federal Government, academia, and industry), by the academic community and professional societies, or by reentrants.

Table 1 shows all the recommendations made during the workshop divided into four broad challenges:

- Awareness—to increase visibility of the challenges to professional reentry and to publicize success stories.
- Professional Development—to target reentrants in career and professional-development programs and mechanisms.
- Program Best Practices—to help establish best practices for new and evolving reentry programs, especially for employers.
- Work Policy and Culture—to create work environments that are not only welcoming and inviting to those who reenter, but also recognize the value in this talent pool.

Each of these challenges is discussed in turn.

Table 1. Recommendations from the Workshop Separated by Theme

Theme	Recommendations from Workshop Attendees
Awareness	<p>For the “champion” of the STEM reentry strategy: Create a marketing plan for reentry to educate both employers and reentrants, with the following points included:</p> <ul style="list-style-type: none"> • Create a visionary policy statement. • Write a best practice guide for how to reenter for reentrants. • Show the benefit of reentrants who have participated in programs like J.P. Morgan ReEntry.* • Quantify how many potential reentrants are in the general population to provide more data about who could reenter. • Provide broad definition of “reentrant.” Although mid-career professionals were originally the primary focus of the workshop, early career and later career professionals should also be included in the pool of potential reentrants. STEM professionals leave the workforce with varying levels of experience and seek to reenter from a large range of ages. • Transcend female-centric views. Men, particularly veterans, face challenges in reentering the workforce as well. <p>Produce and promote a STEM reentry website that includes the details of corporations that support reentry, training opportunities, internships, and success stories.</p> <p>Conduct further data gathering for quantitative reasoning and for the development of a national reentry strategy (one example of data presentation includes a cost and benefit analysis of the productivity lost in the absence of hiring the reentrant population).</p> <p>Highlight reentry at professional conferences and meetings across fields.</p> <p>Publicize success stories of STEM professionals who have reentered the workforce and how they accomplished this transition.</p> <ul style="list-style-type: none"> • Point reentrants to iRelaunch.com, which houses more than 200 success stories of women who reenter. • Create a TEDx-style video with good production value. • Run a query through Office of Personnel Management on those who have transitioned back into the government. • Leverage alumni groups on sites such as LinkedIn. <p>Educate hiring managers about the potential pool of talent through hiring reentrants.</p> <p>House information about reentry programs on alumni career services sites.</p> <p>Continue highlighting reentry through OSTP STEM workforce initiatives.</p> <p>Create a Presidential Management Fellows Program for STEM Reentry. Other organizations could similarly create an award for reentrants and those who effectively create programs and institute mechanisms to increase the number of reentrants in the workforce.</p>
Professional Development	<p>Build and foster a reentry community of practice with the academic community and through partnerships with other sectors.†</p> <p>Offer volunteer and part-time positions for reentrants.</p> <p>Promote access to conferences and to journals for researcher reentrants, and mimic programs such as the ACS’s providing journal access to the unemployed.</p> <p>Reframe “alternative” education options, like badging, modularization, or massive open online courses, and career pathways as “viable.”</p> <p>In times of changing industry workforce needs, leverage whole-industry updating of skills through online courses or other alternative education options.</p> <p>Expand the Occupational Information Network (O*Net) to include more occupations and more descriptive skill requirements.‡</p>

Theme	Recommendations from Workshop Attendees
Professional Development (continued)	<p>Foster partnership between industry and community colleges to house reentry training programs.[§]</p> <p>Implement phased retirement to transfer knowledge from those about to retire to incoming employees.</p> <p>Offer scholarships at academic institutions and in industry specifically for reentrants.</p>
Program Best Practice	<p>Ensure success of reentry programs with buy-in of senior employees, upfront training, goal of 100% placement, and a cohort structure.</p> <p>Implement National Institutes of Health (NIH) Office of Research on Women’s Health (ORWH) supplemental grant model to include other fields and other grants and increase number of grants for reentry.[#]</p> <p>Fund potential reentrants through government programs or give companies incentives to hire reentrants.</p>
Work Policy and Culture	<p><i>General recommendations for employers across all sectors</i></p> <ul style="list-style-type: none"> • Institute and communicate flexible work practices, including maternity leave, temporary replacement, and flexible hours. • Educate hiring managers in order to change perceptions on hiring reentrants. • Change hiring policies that exclude potential hires who indicate career gaps. • Provide skills assessment and retraining as normal hiring practice. • Contact former employees to reestablish relationship and to increase potential workforce pool for employer. • Support employee transition from full-time to part-time employment as an alternative pathway to leaving the workforce entirely. • Aid reentrants by providing child care services. <p><i>Specific recommendations for the Federal Government and government agencies</i></p> <ul style="list-style-type: none"> • Increase workplace flexibility across government agencies to standardized level (e.g., 2 days of virtual work per week). • Promote competitive benefits offered by the Federal Government that support a balance between work and life. • Expand Federal Medical Leave Act (FMLA) to change “gap” into a temporary absence. • Create a new position or utilize diversity officers to focus on reentry and to target the hiring of reentrants. <p><i>Specific recommendations for the academic and research communities</i></p> <ul style="list-style-type: none"> • Foster a culture and create policies to promote most important publications and most productive years to de-emphasize the stigma of career gaps. • Allow professors to have breaks while on the tenure track; these policies are often named “stop the clock.”

* More reentry programs are noted in Section 3.

† Definition of “community of practice” developed by (Lave and Wenger 1991).

‡ For more information on O*Net, see <http://www.onetonline.org/>.

§ This recommendation came before the designation on October 16, 2014, of nine Virginia community colleges “as assessment centers for the Manufacturing Skills Institute (MSI), the workforce development affiliate of the Virginia Manufacturers Association.” Further industry/community college partnerships were recommended by the workshop participants. See http://www.virginiabusiness.com/news/article/326865?utm_source=email&utm_medium=email&utm_campaign=daily.

More about the NIH ORWH supplemental grant can be found in the Reentry Highlight in Section 2.A.

A. Awareness

According to the workshop participants, the best way to increase awareness of STEM reentry would be for a group of influential people or institutions to take the lead in implementing best practices for reentry. Participants noted the deleterious effect of fragmented efforts. For this cause to succeed, the “leader” defines the problem and builds the foundation for marketing of reentry (see Table 1). For example, mature financial reentry programs, such as the J.P. Morgan ReEntry Internship, display the potential high quality of reentrants and mitigate perceived risks surrounding hiring reentrants (Cohen 2014). More data are needed about potential reentrants in the general population, and any marketing of reentry should provide a broad definition of “reentrant,” one that recognizes individuals with different experiences, abilities, and ages.

Those who had not been well-versed in STEM reentry before the workshop continually referenced the large number of success stories as the most convincing facet of the discussion. As highlighted in Table 1, iRelaunch.com currently houses over 200 success stories of professional women who have reentered the workforce, both through the help of the company’s services and independently. Participants said that this effort could be mirrored and expanded. Finding success stories within the Federal Government could require the Office of Personnel Management (OPM) to run a query about employees who have transitioned back into government positions. Communicating success stories could be done by creating a TEDx video, leveraging alumni groups on sites such as LinkedIn and at universities, and launching an executive priority for awareness on the national media stage.

Building upon needing a leader to champion the cause and a communication strategy of success stories, participants and speakers made additional recommendations for increasing awareness of potential reentrants for all interested stakeholders. STEM reentry could benefit from a website or another one-stop resource that showcases reentry programs, corporations that support reentry, training opportunities, internships, and success stories. STEM reentry could also have a presence at conferences and meetings through partnerships with professional societies and a presence on campuses through alumni career services.

Participants called on OSTP to highlight reentry through its efforts in STEM workforce initiatives.¹ OSTP could help orchestrate the collection of data on STEM reentry for more quantitative support for a national reentry strategy. Another high-impact method would be to create an award for reentry. For example, the White House could create a fellowship for STEM reentry similar to the Presidential Management Fellows.²

¹ For the current OSTP’s STEM workforce initiatives, see <https://www.whitehouse.gov/administration/eop/ostp/initiatives/>.

² The Presidential Management Fellows Program is described on the website, <http://www.pmf.gov/>.

Whether one or all of these methods are chosen as the appropriate awareness plan, a visionary policy statement, preferentially created by the “leader” in STEM reentry, could serve as the call to action for all stakeholders involved.

Reentry Highlight: Physician Reentry

Physician reentry refers to physicians who return to clinical practice in the discipline in which they were trained or certified. According to the Primary Physician Reentry Act, the Department of Health and Human Services (DHHS) estimates that given the current shortage of physicians and rate of training new physicians, the United States needs at least 16,000 primary care physicians. Additionally, the Association of American Medical Colleges (AAMC) recently released their data set on physician supply, and report a projected shortfall of 46,100 to 90,400 physicians by 2025. The Health Resources and Services Administration (HRSA) provides information on the locations and distributions of underserved communities in the United States.

As the number of needed physicians grows with the aging population, physician reentry would expand the physician workforce more rapidly than traditional training methods. The largest challenge to implementation is national prioritization of the physician reentry program. The proposed national grant program supports a 2-year course for physicians to update their clinical skills at hospitals, medical schools, medical centers, or other recipients of the grant. The success of physician reentry has been tracked on the state medical board level, and the progress of national physician reentry can be tracked through the progress of H.R. 5498. This bill was presented to the House in September 2014 but was not voted on by the House Committee on Energy and Commerce before the end of the 2014 session (House Committee on Energy and Commerce). There are plans to reintroduce the bill in the current session.

DHHS. 2015. “Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations.” <http://www.hrsa.gov/shortage/>.

AAMC. 2015. “Workforce Data and Reports.” <https://www.aamc.org/data/workforce/reports/>.

HRSA. 2015. “Find Shortage Areas: MUA/P by State and County.” <http://muafind.hrsa.gov/>.

B. Professional Development

Government, private industry, and academia must work together to aid the professional development of reentrants. Employers should offer more volunteer, part-time, and internship positions, which would allow reentrants to update their skills and show off their work potential while attempting to transition to full-time positions. To support skills development, government, private industry, and academia could offer scholarships and grants specifically for reentrants. Once employers begin to support alternative educational options in their hiring process, reentrants can update their skills without fear that their education will not be accepted by future employers.

In the STEM fields, updating reentering workers' skills takes the most resources (in terms of time and money) from the perspective of both the potential employer and the potential reentrant. The workshop participants saw opportunities for reentrants to develop and update their skills through industry partnerships with community colleges. Community colleges historically have been faster than 4-year institutions at working toward workforce development, and industry partnerships would allow for focused course development. Other potential development programs could be housed by large universities. Attendees also suggested that the Occupational Information Network (O*Net; <http://www.onetonline.org/>) could be expanded to include more occupations and more descriptive skill requirements to help reentrants focus on what skills they need for certain professions.

Workshop attendees recommended creating a community of practice for STEM reentry in academia to produce an active support group, as individuals absent from their discipline may feel isolated. To decrease isolation, increase connection to one's field, and to reduce knowledge gap for researchers, professional societies can offer access to conferences and to journals during one's career break. For example, the American Chemical Society (ACS) offers free journal access to unemployed professionals.³

C. Program Best Practices

Reentry programs can increase their chances of success by gaining the approval and support of senior employees for the program, training reentrants at the onset of the program, and hiring reentrants together to develop a cohort structure. Senior management support ensures that company culture supports the reentrants and the program. Upfront training is useful for acclimating reentrants to the work environment and ensuring confidence in abilities. A cohort structure provides reentrants colleagues who can support each other during the transition process.

The Federal Government could create new policies or programs to fund reentrants or give incentives for companies to employ reentrants. The National Institute of Health (NIH) Office of Research on Women's Health (ORWH) supplemental grant model described in the box could be adopted by other funding agencies as a way to provide options for funding reentering researchers.

³ A description of the ACS Special Dues Waiver is in Section 3.

Reentry Highlight: Researcher Reentry

The NIH ORWH offers a supplement grant program.* The program, which started in 1992, is an administrative supplement to an NIH grant for scientists about to reenter research after a 1- to 5-year break. Elements of the supplement include full participation in the research program outlined by the grant and a mentoring program with the principal investigator.

ORWH evaluated the program in 2008. The survey found that most recipients of the reentry grant supplement expanded their grant-writing skills, networked successfully, and secured a position in their scientific field. More qualitatively, respondents to the survey noted how the program was satisfying and helped with the transition back into their research field. The biggest challenge for the ORWH supplement grant program is reaching researchers who could benefit.

* The solicitation for the supplemental grant can be found at <http://grants.nih.gov/grants/guide/pa-files/PA-14-027.html>.

D. Work Policy and Culture

Inflexible work policies and culture dissuade and sometimes prevent potential reentrants from transitioning back to the workforce. The attendees familiar with reentrants and reentry programs said that the reentry talent pool is rich with scientific and technical innovators and the supply of quality reentrants is plentiful. For example, financial services institutions with reentry programs are increasingly competing with each other for candidates for their programs. Attendees also described how hiring managers often fail to capitalize on this talent pool because established hiring practices, such as dismissing individuals whose résumés indicate a gap in a career, often exclude reentrants.

To make the work environment more friendly to reentrants, employers of all sectors could institute flexible work practices, such as maternity leave, temporary replacements, and flexible hours. Attendees said that these practices are not costly, but are effective in retaining and recruiting employees. By offering child care services, employers might encourage reentrants who otherwise may not be able to work without these services to apply for positions. In addition, employers can support employees by allowing them to transition from full-time to part-time status, or offer job-sharing, as an alternative to having them leave the workforce.

Skills assessment and training to update skills could be offered by employers as an incentive for potential reentrants. On-the-job training could incorporate phased retirement, in which the retirement of one employee overlaps the hiring of another. This overlap helps preserve institutional memory by allowing for knowledge transfer from those about to retire to incoming employees. The retiring employee can mentor and build the skills of the incoming employee.

Through its employment practices, the government could promote competitive benefits that support the balance between work and life, such as creating programs that make taking care of children easier. The participants noted that the Federal Medical Leave Act could be expanded to change potential “gaps” into temporary absences. Many participants noted that Federal agencies offer relatively good workplace flexibility and this flexibility could be standardized across agencies. For example, a Federal Government policy allowing employees to work virtually 2 days per week could help recruit employees to the public sector. Diversity officers in the Federal Government currently do not target reentrants, but could, or a new position like the diversity officer but specifically for reentrants could be created.

Besides adopting the general hiring and workplace practices just described, research institutions could retain leaving researchers by implementing “stop the clock” policies that allow those individuals to have breaks while on the tenure track.⁴ Similarly, universities could foster a culture of promoting most important publications rather than most recent publications to support those who have had to transition away from research for a period of time.

All these recommendations hinge on more acceptance of alternatives to the established continuous career paths. Since these recommendations aim at changing work culture across sectors, it was suggested that the success of these programs be monitored over the course of several years, a time frame long enough to observe how culture change is implemented.

⁴ The American Association of University Professors describes “stopping the tenure clock” and universities that have implemented stop-the-clock policies on its website, <http://www.aaup.org/issues/balancing-family-academic-workstopping-tenure-clock/>.

3. Advice for Reentrants

Workshop attendees made suggestions to help individuals reenter the workforce, which focused on four potentially overlapping stages: (1) deciding to leave, (2) the time in the gap, (3) actively searching for a job, and (4) reentering the workforce. Deciding to leave may not be a long stage; as one participant noted, some employees are pushed out of the workforce by unsupportive work environments or pulled out of the workforce by family responsibilities. In this stage, attendees suggested those about to enter the gap could leverage developed workplace relationships, not only to solicit advice, but to maintain strong networks that may be beneficial in later stages.

Similar to the “deciding to leave” stage, the time in the gap stage may not entirely be under the reentrant’s control. If the potential reentrant was pulled from the workplace by family responsibilities such as caring for elderly parents or the birth of a child, then time to position oneself for reentry into the workforce may not be possible. However, options exist, including some professional societies that offer free journal access or other resources for unemployed professionals (see Table 2 for more resources and programs for reentrants in all stages of the reentry process).

Since this workshop was focused primarily on the reentry transition, most recommendations were for reentrants who have decided to return after a break in their careers and covered the last two stages: actively searching for a job and reentering the workforce. Workshop attendees stressed the importance of professional networks for reentrants preparing to apply for jobs. Professional networks could develop informally, such as when consulting with friends and family about what jobs most interest the reentrant, or they could be fostered more formally by using sites like LinkedIn to connect with former colleagues and clients. Many of the success stories heard during the workshop were attributed to leveraging either informal or formal networks, and referenced tools and resources that could aid the reentrant to create or to update networks.

Networks may find reentrants or lead them to potential jobs, but skills can determine whether the reentrant is hired. Regardless of the field, most reentrants must update their knowledge and abilities in some way. Technical positions require learning new software or updating certifications, both of which can be done through self-study or by leveraging professional societies in the field of interest. Updating skills is especially important for reentrants who are entering a field different from the one they left. In these cases, more formal study at academic institutions may be required. Since many reentrants have families and other responsibilities, online education offers an opportunity for them to update skills from home.

For the reentrant, however, understanding how employers view online (or even in-person) classes and credentials is important to make an informed choice from available options.

Workshop attendees suggested that as reentrants conduct a job search, they explore options to full-time employment, such as part-time, volunteer, or job-sharing positions, which may be easier to obtain, help with job and skills training, and lead to full-time work. The number of reentry programs, whether scholarships or paid internships, has been increasing in the past 10 years.⁵ These programs specifically recruit reentrants to fill professional positions and incorporate on-the-job training and mentoring as part of their programs. Table 2 highlights some of these reentry programs, and more of these programs and other tools and resources for reentrants can be found at iRelaunch, which is updated as new programs emerge.

Table 2. Selected Resources and Programs for Reentrants

Name of Resource or Program	Description
American Chemical Society Special Dues Waiver for Unemployed ACS Members	This waiver allows unemployed professional members to retain many membership resources such as access to journals. ACS also provides more information about tools and resources for finding jobs. ^a
American Physical Society M. Hildred Blewett Fellowship	The purpose is “to enable women to return to physics research centers after having had to interrupt those careers,” and it does this by providing a 1-year award that can go to dependent care, salary, travel, equipment, and tuition and fees. ^b
Credit Suisse Real Returns	Eleven-week paid program for financial services reentrants. The 2015 program started in March. ^c
Daphne Jackson Trust Research Fellowships	Fellowship for STEM reentrants with a PhD or at least 3 years of research experience before career break to conduct part-time research for 2 years in the UK. ^d
Goldman Sachs Returnship	Ten-week, paid program for financial services reentrants. The 2015 program started in January. ^e
IBM Pathways for Experienced Technical Women Re-entry Scholarship	One-year scholarship for reentrants from computer engineering, computer science, or electrical engineering. The application deadline for 2015 was in February. ^f
iRelaunch	As the “return-to-work experts,” iRelaunch provides services and information for reentrants such as boot camps, conferences, and numerous success stories. ^g

⁵ According to iRelaunch, the list of programs now totals 123 (as of March 2015). This number was 57 in 2008, and of those 57 programs, only 9 existed before 2004.

Name of Resource or Program	Description
J.P. Morgan ReEntry Program	Eighteen-week paid program for financial services reentrants. The paid fellowship runs from October through February and has been available in asset management, corporate investment, and legal departments of the bank. ^h
MetLife Act2	Ten-week paid programs for reentrants in finance, customer service, and marketing. The applications for 2015 were due in March. ⁱ
Morgan Stanley Return to Work Program	Twelve-week paid program for financial services reentrants. February 2014 was the first instance of this program.
NIH Office of Research on Women's Health Supplemental Grant Program	The award is an administrative supplement to a NIH grant for scientists about to reenter research after a 1- to 5-year break. ^j
National Science Foundation Focus on Reaching Women for Academics, Research and Development (FORWARD) to Professorship	This workshop is for tenure-track women and minority academics in science, engineering, and mathematics and provides opportunity to network and information about obtaining tenure-track positions. ^k
Return Path ReturnShip*	Fourteen-week paid program for reentrants, who develop a specific deliverable project during that time. ^l
Vodafone UK Returning to Technology Programme*	Six-month paid program based in the UK for technology reentrants. ^m
Zillow Software Development Engineer Returnship*	Three-month paid program for software development reentrants. ⁿ

* These programs were developed after the workshop occurred in October 2014.

- a More information can be found at <http://www.acs.org/content/acs/en/membership-and-networks/acs/benefits/unemployed-members.html>.
- b More information can be found at <http://www.aps.org/programs/women/scholarships/blewett/>.
- c More information can be found at <https://www.credit-suisse.com/us/en/careers/experienced-professionals/real-returns.html>.
- d More information can be found at <http://www.daphnejackson.org/fellowships/>.
- e More information can be found at <http://www.goldmansachs.com/careers/experienced-professionals/returnship/index.html>.
- f The scholarship was displayed this past year on the Society of Women Engineers website, <http://societyofwomenengineers.swe.org/swe-scholarships>.
- g Most of the selected resources in this table and many more can be found at www.irelaunch.com/CareerReentry, which is updated as new programs emerge.
- h J.P. Morgan accepts questions related to the program at am.reentry@JPMorgan.com; more information can be found at <http://www.irelaunch.com/CareerReentry>.
- i The programs supported by MetLife Act2 can be found at <http://jobs.metlife.com/careers/act2-jobs>.
- j The solicitation for the supplemental grant can be found at <http://grants.nih.gov/grants/guide/pa-files/PA-14-027.html>.
- k This workshop is funded by a National Science Foundation ADVANCE award and more information can be found at <http://www.student.seas.gwu.edu/~forward/>.
- l Return Path announced the new program on January 21, 2015 at <http://www.onlyonceblog.com/2015/01/returnship-program>.
- m The Vodafone Returning to Technology Programme is described more fully at <http://www.vodafone.co.uk/vodafone-uk/forms/returning-to-technology/>.
- n The solicitation for the Zillow Software Development Engineer Returnship can be found at <http://www.zillow.com/jobs/openings?j=ourc0fwR>.

4. Summary of Recommendations

A. Employers in All Sectors

- Create inclusive workplaces and promote hiring practices that see diversity of experiences and backgrounds as advantages and de-emphasize continuous work histories.
- Establish returning professional internship programs.
- Create opportunities for returning professionals to update knowledge and abilities.

B. Academia and Professional Societies

- Build and foster a reentry community of practice with the academic community and through partnerships with other sectors.
- Create and promote opportunities to update and acquire skills through short courses and certificate programs.
- Consider executive education programs for mid-career alumni on career break that include updating knowledge and internship-like placement.

C. Reentrants

- Maintain networks and leverage available training and educational services to aid in reestablishing a presence in field of interest.
- Develop technical skills and knowledge through online or in-person courses and available literature.

5. Conclusion

A significant, well-trained, and highly skilled population of individuals who have left the STEM workforce but want to return remains an untapped resource. Creating pathways to simplify or promote reentry should be relatively low cost, since the initial high-cost investment is complete, resulting in a low-risk enterprise with very high reward potential. Several completed and ongoing program examples, from within and outside STEM disciplines, show the potential of these reentry programs. Retraining programs also show great potential in leveraging this population of potential reentrants to fill current and future gaps within the STEM workforce. However, accepting and promoting nontraditional, more fluid career trajectories and fostering and celebrating fluidity will require organizational culture change. It is the hope of the organizers and participants of this workshop that the workshop and this resulting document serve as a call to action to facilitate this change.

Appendix A.

Workshop Agenda

Supercharged Reentry Workshop Agenda October 10, 2014 430 Eisenhower Executive Office Building

9:00 – 9:15 AM Welcome and Introduction

Patricia Falcone, White House Office of Science and Technology Policy

9:15 – 10:15 Panel 1: Introduction and Overview of Issues and Barriers

*Carol Fishman Cohen, co-founder of iRelaunch, Author of “Back on the Career Track”
Rochelle Heller, George Washington University, Co-author of “Mind the Gap: Women in
STEM Career Breaks”
Sydney Smith-Heimbrock, Office of Personnel Management
Jane Oates, Apollo Education Group*

10:15 – 10:30 Break

10:30 – 11:30 Panel 2: Reentry Programs – Challenges and Lessons Learned

*Janine Clayton, NIH Office of Research on Women’s Health
Cynthia Irvine, Naval Postgraduate School
Gordon Cooper, J.P. Morgan
Saralyn Mark, SolaMed Solutions, LLC*

11:30 – 12:30 Breakout Session I – What Are the Main Problems and Opportunities?

Goal: To create a list of the key issues that need to be addressed at the policy decision level.

12:30 – 1:30 Lunch

Goal: To discuss goals and issues and provide a summary list for the table by the end of lunch.

1:30 – 2:30 Discussion: Innovative Solutions for Overcoming Barriers

*Jeri Buchholz, NASA
Claudia Urrea, MIT Office of Digital Learning
Carolina Velasco, LinkedIn*

2:30 – 3:30 Breakout Session II – How Do We Create a Clear Path to STEM Reentry?

Goal: To produce policy recommendations and potential programs that can be implemented by those in decision making positions.

3:30 – 4:00 Summary, Next Steps and Closing Remarks

Jayne Morrow, White House Office of Science and Technology Policy

Appendix B.

Workshop Overview

Opening Remarks

In her welcoming statement, Patricia Falcone, OSTP Associate Director for National Security and International Affairs, underscored the need for competitive talent within the STEM workforce, particularly in the Federal Government, as the baby boomer generation begins to retire. The STEM workforce can grow in many ways: through support of the pipeline in early career stages, by focusing on keeping people from leaking out of the pipeline, and in bringing people back into the STEM workforce. STEM professionals who left the workforce but who hope to return to the STEM workforce are a potential source to keep the United States economically and competitively viable. Dr. Falcone asked the audience how the United States can scale up its initial reentry activities. She also stressed the impact capability of the participants at the workshop and the criticality of capitalizing on the talents of people who are already technically trained.

Panel 1: Introduction and Overview of Issues and Barriers

The goal of the first panel was to examine the groups that typically leave and reenter and the issues that they face. This panel introduced potential strategic workforce solutions in the government and in the private sector. Carol Fishman Cohen, co-founder of iRelaunch, introduced the idea of STEM reentry and told six stories of STEM relaunchers she has worked with. Rachelle Heller spoke about her study “Mind the Gap: Women in STEM Career Breaks,” which examines women in research and academia who had career gaps of 5 years or less. Sydney Smith-Heimbrock, Office of Personnel Management, talked about the strategic needs related to the Federal STEM workforce. Jane Oates, Vice President of External Affairs at Apollo Education Group, spoke about forecasting the STEM workforce needs.

Panel 2: Reentry Programs – Challenges and Lessons Learned

The goal of the second panel was to showcase different efforts to recruit and retrain professionals both within and outside STEM fields, explore the strengths of and potential improvements to these efforts, and discuss how the proposed models could be implemented for reentry into STEM fields. Four models were presented. Saralyn Mark, author of “Reentry into Clinical Practice: Challenges and Strategies,”⁶ introduced physician reentry

⁶ Mark, S., and J. Gupta, “Reentry into Clinical Practice: Challenges and Strategies,” *JAMA* 288 (9): 1091–96, 2002.

programs. Janine Clayton, Director of the National Institute of Health (NIH) Office of Research on Women's Health (ORWH), spoke about a supplement grant program for biomedical researchers funded by NIH. Cynthia Irvine, Chair of the Naval Postgraduate School Cyber Academic Group, described a cybersecurity education scholarship for civilians funded by NSF that leads to Federal Government employment. Gordon Cooper, Asset Management Global Diversity Practice Lead, spoke about reentry programs for financial services professionals.

Breakout Session 1: Main Problems and Opportunities

After an introduction about the issues and barriers of reentry and programs in the reentry space, the workshop participants were divided into discussion groups. The discussion groups were tasked with creating a list of key issues to be addressed at the policy decision level and to report the prevailing themes of their discussion to the entire group at the end of the discussion period. The themes included awareness of the reentry issue, professional development, reentry program best practices, and work policy and culture.

Panel 3: Innovative Solutions for Overcoming Barriers

The third panel aimed to produce innovative solutions to the STEM reentry space while also highlighting beneficial support for reentrants. Jeri Buchholz, Chief Human Capital Officer for National Aeronautics and Space Administration, discussed recommendations about reentry for employers and reentrants. Claudia Urrea, of MIT Office of Digital Learning, described the new ways of training and retraining currently explored by the university. Carolina Velasco, Senior Relationship Manager and LinkedIn for Good Ambassador, spoke about the benefits of LinkedIn and how the social media site can be used to maintain networks and assist people who are trying to reenter the workforce.

Breakout Session 2: How Do We Create a Clear Path to STEM Reentry?

The workshop attendees were tasked in the second breakout session to focus on technical needs, opportunities for training programs, and policy recommendations. After individual conversations, the attendees shared top recommendations through a group brainstorming session. The recommendations explained the need to improve visibility of the reentry issue, the opportunity to leverage current policies and programs to expand to reentry, and the momentum to create new policies and programs to promote reentry.

Closing Remarks

Concluding the workshop, Jayne Morrow of the Office of Science and Technology Policy thanked the participants for their involvement and encouraged them to continue the conversation started during the day. Dr. Morrow underscored the call to action by Jeri Buchholz to compel the most senior person in the participants' home organizations to lead the charge in changes to support reentry. Participants were also reminded about the reframing of careers from rigidity to fluidity. Without a work culture with reentry programs for technically trained individuals, the country is losing talent and losing investment.

Finally, participants were encouraged to send additional information before the summary report became publicly available.

Appendix C. Workshop Attendees

Table C-1. List of Panelists (alphabetically by last name)

Name	Title	Organization
Jeri Buchholz	Assistant Administrator for Human Capital Management	National Aeronautics and Space Administration
Janine Clayton	Associate Director for Research on Women's Health Director, Office of Research on Women's Health	National Institutes of Health
Carol Fishman Cohen	Co-founder	iRelaunch
Gordon Cooper	Executive Director of Private Bank Learning and Development	J.P. Morgan
Cynthia Irvine	Chair, Cyber Academic Group Distinguished Professor of Computer Science	Naval Postgraduate School
Jayne Morrow	Executive Director	Office of Science and Technology Policy
Jane Oates	Vice President for External Affairs	Apollo Education Group, Inc.
Sydney Smith-Heimbrock	Deputy Associate Director, Employee Services Strategic Workforce Planning and Chief Learning Officer	Office of Personnel Management
Claudia Urrea	Research Scientist	Massachusetts Institute of Technology
Carolina Velasco	Senior Relationship Manager and LinkedIn for Good Ambassador	LinkedIn

Table C-2. List of Attendees (alphabetically by last name)

Name	Title	Organization
Crystal Bailey	Careers Program Manager	American Physical Society
Susie Collins		Department of Defense
Don Engel	Vice President for Research	University of Maryland, Baltimore County
Michelle Friedman	Executive Coach and Organizational Consultant	Advancing Women's Careers, LLC
Jeanne Friedrich	Human Resources/Human Capital Strategist	Office of Personnel Management
Sheena Friend	Intern	Office of Science and Technology Policy
Domenico Grasso	Provost	University of Delaware
David Harwell	Assistant Director	American Chemical Society
Yvonne Harris	Vice Provost	James Madison University
Jennifer Howland	Pathways Program Executive	IBM
Alison Kraigsley	Health Scientist and AAAS Fellow	National Institutes of Health
Hina McCree	Systems Engineer	Johns Hopkins Applied Physics Lab
Martha Merrill	Science Policy Fellow	Science and Technology Policy Institute
Mayra Montrose	Science Policy Analyst	National Science Foundation
Victor Piotrowski	Program Director	National Science Foundation
Della Sabessar	Managing Director; Global Head of Experienced Talent Acquisition	Credit-Suisse
Walter Schaffer	Senior Scientific Advisor for Extramural Research	National Institutes of Health
Kellye Sheehan	Senior Manager President	Hewlett Packard Women in Technology Board
Roberta Spalter- Roth	Senior Research Fellow	American Sociological Association
Judith Sunley	Director of the Division of Human Resource Management	National Science Foundation
Ryan Whelan	Science Policy Fellow	Science and Technology Policy Institute
Kjersten Bunker Whittington	Health Scientist and AAAS Fellow	National Institutes of Health
Sharon Williams	Research Staff Member	Science and Technology Policy Institute

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14. ABSTRACT
This report summarizes the results of a workshop hosted by the White House Office of Science and Technology Policy (OSTP) in October 2014. The workshop focused on strategies and issues related to the reentry of science, technology, engineering, and mathematics (STEM) professionals into the workforce. The workshop noted barriers to reentry, identified attributes of successful reentry programs, and examined strategies that could be adopted to promote reentry into the workforce.

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