2012 DOE-Sponsored National Laboratories Professional Development Workshop for Underrepresented Participants

Livermore, CA

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Evaluation Report

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The 2012 CMD-IT National Laboratories Professional Development Workshop for Underrepresented Participants (CMD-IT NLPDev 2012) was held at the Lawrence Livermore National Laboratory campus in Livermore, CA. from June 14 - 15, 2012. Sponsored by the Department of Energy (DOE) Advanced Scientific Computing Research Program, the primary goal of this pilot workshop was to provide information about career opportunities in computational science at the various national laboratories and to mentor the underrepresented participants through community building and expert presentations focused on career success.

This first workshop offered sessions to facilitate career advancement and, in particular, the strategies and resources needed to be successful at the national laboratories.

Assessment and Evaluation

The evaluation included three surveys administered during the two day workshop (pre-workshop, post sessions, and post workshop). Using a combination of rating scales and open-ended items, workshop surveys were designed to gather participants': 1) demographics, 2) interest in careers at the national laboratories, 3) perceptions of factors that are important to their career decisions, 4) experiences with mentoring and the role of mentoring and institutional support in their professional development and 5) perceptions of their knowledge and abilities related to their career progression, including their knowledge and experiences with value creation and the proposal submission process prior to the workshop. Participants were also asked about the value and relevance of the individual workshop sessions, as well as their overall impression of participating in a workshop for underrepresented minorities focused on the National Laboratories. Of particular interest are the participants' perceptions of why careers at the national laboratories may or may not "fit" in their current and future career plans.

Participants

Twenty-one men and six women attended CMD-IT NLPDev 2012. These participants were sponsored by the Department of Energy Advanced Scientific computing Research Program. Of the 27 participants, twelve (44%) of the participants self identified as African American/Black and thirteen (48%) as Hispanic. The race/ethnicity and gender demographics are presented in table one. Most participants were affiliated with an educational institution (82%) and almost half (48%) were doctoral students; see table 2. One participant was a person with a disability.

Table 1

Demographics: Participants Race/Ethnicity and Gender			
N = 27	**Men**	**Women**	**Total**
African American / Black	9	3	**12**
Hispanic	10	3	**13**
Asian Indian	1	0	**1**
White	1	0	**1**
Total	**21**	**6**	**27**

Table 2

Demographics: Participants Institutional Affiliation and Rank				
N = 27	**University/ College/ Education**	**National Laboratory**	**Industry/ non-lab government**	**Total**
Associate Professor	2	0	0	**2**
Assistant Professor	4	0	0	**4**
Adjunct Professor	1	0	0	**1**
Postdoctoral Research Associate	0	2	1	**3**
Doctoral Student	13	0	0	**13**
Masters level	0	1	1	**2**
Other	1	0	1	**2**
Total	**21**	**3**	**3**	**27**

Interest in Careers at the National Laboratories

Participants were asked to comment about their interest in working at the DOE National Laboratories prior to the workshop and again after the workshop. 74% indicated interest in careers at the DOE Laboratories in response to the pre-workshop survey. Respondents also rated participating in collaborative and interdisciplinary research teams and identifying research problems with societal implications as important factors in their career decisions (table 3); these factors are both associated with DOE National Laboratory careers. A majority of respondents (70%) hoped to gain information about the career opportunities associated with the National Laboratories.

Comments prior to the workshop:
"My career objective is to either work at a National laboratory or eventually use my knowledge to develop new applicable devices for the biomedical field."

"I will finish my PhD soon and I think DOE national labs are a good fit for my professional interest in high performance computing"

"interested in doing faculty summer research at a DOE national lab//exploring the DOE for career advancement opportunities"

"I would love to lead a life of research. DOE labs are the perfect place to be if you are a scientist."

"I hope to network with personnel who are familiar with the National Laboratories and obtain valuable information for navigating a career with the National laboratories."

"I hope to learn more about opportunities for working as a researcher in a national lab and for navigating career ladders in federal and national labs."

The session about computational science research at the National Laboratories was well received by participants; Most (85%) received information from the presenters that will assist in their career path decisions and thought the session was valuable (see tables 6 and 7). Many also stated they received NEW information about careers at the DOE National Labs and thought the session motivated them to consider a career at the DOE Labs (77% and 73% respectively).

The session about navigating the professional ladder at the National Labs received high marks from the attendees. 88% of participants deemed the session valuable and relevant to their career progression (tables 6 and 7).

The presenters from both sessions provided the participants with personal, relatable insights about the culture of the National Labs, the research objectives, and applicable career strategies.

In general, many of the participants who were already interested in careers at National Labs were encouraged and had an increased understanding of working at the DOE Labs. A couple were not interested, one due to a acquiring a recent position in industry.

Most beneficial aspects of the Computational Science Research at the National Laboratories and Navigating the Professional Ladder Sessions:

"The advice presented by the speakers outlining their motivation for pursuing research careers at national labs was especially helpful."

"Getting firsthand descriptions of the labs from people in the know. This personal presentation offers so much more beyond say any summary from a website"

"I had already an interest in pursuing career at DOE Labs. The session did accentuate this interest."

"Gives insight on how I should prepare myself when apply for a position & what labs may be best for me."

Representative comments about career interest in the National Labs post workshop

"The National Labs provide a perfect setting for my next steps in career advancement. I will highly consider their opportunities in the future. At the very least, I hope to collaborate with them in the near future."

"I knew very little about working at National Labs after the workshop I know what I lack and I will try to add that component in my resume and will try to work for National Lab in the future."

"I have no short term plans to work at the DOE National Lab. But I have the immediate purpose to foster the participation of graduate and undergrad students in research and academic activities related to DOE National Laboratories."

Objectives for Professional Development

Participants were asked to rate the importance of various factors for important for their career decisions. The highest rated factors important to career success were finding a balance between work and personal life, participating in collaborative and interdisciplinary research teams, and identifying a peer support network (all at 96%). Identifying a professional mentor and research problems with societal implications were also deemed important (89%).

Respondents were also asked what they hoped to gain from their workshop experience. In addition to information about career opportunities at the National Labs as mentioned above, participants wanted to enhance their networking contacts including research collaborations and learn specific strategies for career advancement including proposal writing.

Participants' comments follow.

"I hope to network with personnel who are familiar with the National Laboratories and obtain valuable information for navigating a career with the National laboratories."

"I hope to learn more about opportunities for working as a researcher in a national lab and for navigating career ladders in federal and national labs."

"My primary objective is to take away from the workshop ideas, and information needed to succeed in a research career: of particular interests are the workshop on proposal writings, communication and etc."

"I would like to learn about different opportunities at National laboratories. I also hope to network with students and professionals."

Table 3

Factors Important for Career Decisions

Pre-workshop survey	N	Mean[1] (SD)	Important & very important	Somewhat Important	Not at all Important & somewhat unimportant
How important is identifying research problems with societal implications?	27	4.52 (.700)	24 (89%)	3 (11%)	///////
How important is identifying a professional mentor?	27	4.52 (.802)	24 (89%)	2 (7%)	1 (4%)
How important is identifying a peer support network?	27	4.44 (.698)	26 (96%)	///////	1 (4%)

How important is participating in collaborative and interdisciplinary research teams?	27	4.56 (.577)	26 (96%)	1 (4%)	///////
How important is finding a balance between work and personal life?	27	4.78 (.506)	26 (96%)	1 (4%)	///////

1. Mean and standard deviation (SD) based on 5-point scale: Not at all important = 1, somewhat unimportant = 2, somewhat important = 3, important = 4, very important = 5

Making Connections: Mentoring and Networking as Professional Development Tools

Mentoring

Finding a professional mentor was considered important for 89% of participants (Table 3); participants were asked what role mentoring has played in their professional progress to date. All respondents (n=27) stated mentoring and lack of mentoring greatly influenced the progress they were able to make in their career progressions. Most of the respondents had received mentoring to varying degrees and considered these relationships critical to their success. Those who had quality mentors at one stage of their careers but not another stage of their careers missed the encouragement and support. Some of the participants hoped to find new mentors through this workshop.

"I have had good mentors and bad ones. I believe this (mentoring) is crucial for success in research."

"Mentoring has been very critical to my progress. My faculty mentor and PhD advisor has done excellent job at mentoring. I would probably not have gone too far without her mentoring support."

"Mentoring has most importantly allowed me to collaborate with research institutions that I would otherwise not have access to as a graduate student. [Mentoring provided] collaborations that also serve as potential networking opportunities after graduation."

"The choice of mentor greatly affects the outcome of a person's career. I have been fortunate in having a good mentor that has trained me with excellence, and has given me the tools to be very successful. In particular, thanks to my mentor, I have been able to get very good job opportunities."

"It has played an integral role. I've relied greatly on advice from numerous mentors through the application, interview and hiring process, then again through the first promotion process, and in many other instances in between. It has been a key part of my recent success."

"Fortunately I had excellent mentors during my doctoral studies. My advisor was my first mentor who influenced my career. I met people who acted as mentor for my career development. Attending conferences and workshops was fundamental for making connection with potential mentors.

"Mentoring, when I had it, was helpful. However, the amount of mentoring which I have received has been rather limited. I have felt that I might have seen many more career opportunities with more mentoring."

"It is because of my graduate thesis advisor that I decided to continue on to my PhD program. However, I feel the need to network outside my advisory circle with researchers in the DOE for dissertation/postdoc opportunities."

Networking

Identifying a peer network was also considered important to almost all participants (96%); see table 3. Networking opportunities including identifying research collaborations was mentioned by 67% of the participants as one reason for attending the workshop. Attendees had many opportunities to interact, formally and informally peers, panelists, and DOE Lab representatives.

A poster session was provided to allow all to share their research interests and receive constructive feedback. Participants cited this networking opportunity as the most beneficial aspect of the poster session; 80% stated they made connections at the poster session that will contribute to their career advancement while 52% said this session fostered research collaborations and 32% were undecided about this aspect of the session.

Networking was mentioned as one of the beneficial aspects for many of the sessions offered throughout the workshop. Some wanted more time after the sessions to network with presenters and colleagues. Broadening their professional networks was at the top of the list for the most beneficial aspects of the overall workshop.

[Most beneficial was]"talking with other people at the lab.[For example]iIt is amazing how this poster session allowed me to talk with a fellow associate at the lab and gave me the name of a manager to do some collaboration! I saw her in the hallway many times! But we never talked [prior to the poster session].

"Practice preparing and presenting a poster//encouragement to be vocal w/ peers discussing specifics of their research; we entered into the experience w/ an attitudinal expectation of being part of creating and seizing opportunities for exchange and collaboration.

"I hear different points of view and met people with different career paths. For me, the most valuable is their personal experience."

"The networking was great! I met many nice people and several scientists//I made connections and talked about research//At least 1 paper will be affected by my attendance.//I also learned about the labs. It made me realize that the labs are a very good place to be."

Perceptions of Institutional Support.

Survey questions in this area examined perceptions of acceptance and institutional support. 88% of participants stated the leadership in their unit was supportive of their research interests and 84% thought their area of research was well accepted by colleagues at their institutions.

A smaller number (74%) indicated they were comfortable sharing their views. Participants were also asked about the ways their institution contributed to their professional development. A

common theme throughout the participants' responses was the value of these types of workshops for professional development. Many recognize the need for connections outside of their institution, especially if few have the same research interests.

The highlight of many of the sessions was the personal stories and lessons learned from the presenters. It was encouraging for the participants to see that highly accomplished panelists share similar backgrounds and often "failed" before they succeeded.

Participants' comments about institutional support:

"My professor and PhD advisor has done tremendous and excellent mentoring job. The university has a career center but have not taken much advantage of it.//A workshop such as this is great opportunity and a bridge but purely academic mentoring and professional career mentoring."

"I have strong support from my department of faculty development. This support is not financial however. Outside financial support and research funding opportunities would be beneficial."

"My advisor and group give me a lot of support in my academic development but professional development is limited. University help to find jobs but offers in my area are limited. These kinds of workshops are very supportive and provide useful skills."

"A well established mentorship program would have benefitted me immensely. You are pretty much on your own at my institution."

Table 4

Perceptions of Institutional Support

Pre-workshop survey	n	Mean[1] (SD)	Agree & Strongly Agree	Neither Agree nor Disagree	Disagree & Strongly Disagree
At my institution, I feel comfortable sharing my views.	27	3.96 (.940)	20 (74%)	6 (22%)	1 (4%)
At my institution, I feel my area of research is well accepted by my colleagues.	25	4.08 (.640)	21 (84%)	4 (16%)	///////
At my institution, the leadership in my unit is supportive of my research interests	24	4.17 (.917)	21 (88%)	2 (8%)	1 (4%)

1. mean and standard deviation (SD) based on 5-point scale: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree = 4, Strongly agree = 5

Knowledge and Abilities Considered Important for Career Advancement

The workshop offered several presentations, by expert panelists, related to pursuing careers at the national laboratories, the importance of establishing mentoring and networking relationships, as well as nuts and bolts strategies for career success.

Specific survey questions looked at participants' perceptions of their knowledge and abilities considered important to career advancement, especially related to careers at the DOE national laboratories. Participants were asked to rate their 1) knowledge of computational science research and the professional ladder at the national laboratories, 2) knowledge and abilities related to teamwork including effective communication, leadership, and professionalism, 3) knowledge and abilities to obtain funding, including identifying funding opportunities, writing successful proposals and value creation, and 4) ability to make strategic connections with others for career enhancement including mentoring and networking.

The responses to the open-ended question about experience with value creation and proposal writing suggested about one-third of participants had experience with proposal writing and very few had exposure to value creation prior to the workshop. Overall analysis of participant responses suggested that prior to the workshop; participants as a group rated themselves somewhat inadequate to adequate on factors associated with the careers at the DOE national Laboratories, obtaining funding and making strategic connections. Ratings[1] for these topics ranged from ranged from 1.62 regarding obtaining outside funding to 2.88 regarding networking capabilities. Group ratings related to teamwork were adequate to very adequate and ranged from 3.65 regarding knowledge of leadership to 4.12 regarding the ability to work in teams. The post workshop survey revealed increases in perceived level of adequacy in all areas except the ability to work in teams (this topic had the highest pre- workshop rating). Of greater consequence, significant gains were found in perceived levels of adequacy related to knowledge and abilities needed for career success at the national labs. After the workshop, participants' ratings[1] ranged from adequate to very adequate for all topics (3.54 – 4.15) see table 5.

Below are summaries of participants' comments with representative quotations plus tables presenting the responses associated with the value and relevance of each session offered for the participants' career advancement (tables 6 - 9). Quantitative response rates for the workshop post sessions ranged from 89% - 100%. The sessions with the highest percentage of positive responses are highlighted in **bold.**

Additionally, twenty-six of 27 participants (96%) responded to the overall feedback portion of the post-workshop survey (table 10). All participants agreed that: 1) the workshop was a valuable experience; 2) they were better prepared to advance their careers as a result of their participation; and 3) they would recommend the CMD-IT NLPDev Workshop to their colleagues. Almost all respondents stated the presenters addressed topics that were relevant to their career objectives (92%). Most participants (92%) agreed the networking time was beneficial. All participants plan to connect with colleagues they have met at this conference for future collaborations. Open-ended item responses were generally consistent with the results given in tables 6 - 10.

Post-session and post-workshop responses indicated the attendees received from the workshop what they hoped to gain, namely relevant information about working in the DOE national laboratories and the tips and strategies to foster career success. Most also hoped to make critical connections for research collaborations and professional development; these hopes were fulfilled given the overwhelming positive experiences had by the participants. Participants gained

knowledge and strategies that were important to their own career objectives; moreover the participants gained knowledge and confidence needed to pursue and be successful at the DOE national laboratories.

Open Response Summary for Individual Workshop Sessions

Computational Science Research at the National Laboratories

What specific aspects of this session were most beneficial for you?(25 respondents)

- Hearing representatives discuss the various labs including research foci and lab objectives as well as the culture of the organizations
- Hearing the personal stories of the panelists
- Collaboration information and strategies for success shared from a balanced perspective

"[Gaining] an understanding of the groups to work in, what is expected of you, and its culture."

"The most beneficial aspect was learning sacrifices each panelist made and their personal growth and learning about various labs and their contributions to society."

"The description of the main research objectives at each lab and their philosophies in their problem solving strategies"

What specific NEW information relevant to your career progression did you gain from the session, if any? (21 respondents)

- Learned about the different career paths and culture of the labs
- Learned about the specific projects and collaborations taking place at the labs

"A bit more motivated to possibly work in a national lab in the future."

"Mainly the focus of each lab and how my research interest ties in with the labs' missions."

What additional information would you like about computational science research careers at the DOE National Laboratories? (19 respondents)

- Access for career opportunities including specific information about the career offerings, application process, internships and fellowships
- Information about accommodations for persons with disabilities
- Tour of the facilities

Navigating the Professional Ladder

What specific aspects of this session were most beneficial for you? (24 respondents)

- The specific strategies offered for career progression
- The personal experiences and encouragement shared by the panelists
- Question and Answer session

"The importance of being visible and let to know to the community the work you have done; presenting myself as a competitive professional."

"The personal comments about the speakers' own career paths."

What additional information resources would strengthen your research collaborations? (15 respondents)

- More details about the hiring and promotion process
- Expand discussion to include more groups such as post docs, unrepresented scientists

In what ways, if any, has this session (navigating the national laboratories professional ladder) AND the first panel about computational science research affected your interest in pursuing a career at the DOE National Labs? (19 respondents)

- Sessions gave specific details to prepare for a career at the labs
- Sessions gave insights about the work environment and resources available

"I love the fact that there are a number of opportunities that involve both technical and managerial expertise. Also, having a stable job is crucial to me.//It looks like constant training is provided, which is also very encouraging."

"I had already an interest in pursuing career at DOE Labs. The session did accentuate this interest."

Poster Sessions and Luncheon

What specific aspects of this session were most beneficial for you? (23 respondents)

- Networking
- Receiving constructive feedback about research presentation
- Finding research collaborators

"Practice preparing and presenting a poster//encouragement to be vocal w/ peers discussing specifics of their research; we entered into the experience w/ an attitudinal expectation of being part of creating and seizing opportunities for exchange and collaboration."

What additional information/resources would strengthen your research collaborations? (16 respondents)

- Logistics such as grouping posters by research interest; providing copies of abstracts prior to workshop; and broader audience from labs
- More time to interact
- Appreciated the posting of emails and contact info

"What specific groups at the DOE are doing the type of research that I am interested in."

Effective Communications

What specific aspects of this session were most beneficial for you? (22 respondents)

- The personality-communication interactive activity

- Nuts and bolts strategies presented
- Personal stories shared

"Very good presentation! Human behavior activity was great; informative and enjoyable"

"The card session was an eye opening experience and noticed that the way I perceive myself is not how others perceive me.//Real life stories shared were very valuable to me"

What additional information would you like about effective communications? (11 respondents)

- The materials such as the slides and demo sessions
- Expand on topic; "Awesome presentation"

Other comments about the sessions so far… (6 respondents)

- *More breaks between sessions to interact with attendees*
- *Some enjoyed the talking rather than the activity*
- *Some wanted more details in the sessions*

Professionalism and Leadership

What specific aspects of this session were most beneficial for you? (22 respondents)

- Personal stories shared by the director, the motivational style of the presentation
- Discussion of diverse career paths and strategies for success
- Question and Answer session

"Personal experience is almost always the best advice you can get, especially when it's coming from senior members…. His candid talk was great!"

"Different perspectives of professional development including the academy, the government and private companies."

"Excellent insight into what it takes to become more involved in the lab environment. I enjoyed the interactive dialogue and the tips of staying adaptive to advance."

What additional information would you like about professionalism and leadership? (14 respondents)

- More specific strategies that can be applied generally; resources
- More leadership techniques

Effective Strategies for Underrepresented Groups

What specific aspects of this session were most beneficial for you? (21 respondents)

- Personal stories shared plus strategies to navigate various situations
- Enhancing network; being part of unique community
- One participant felt challenges for minorities were not as widespread as in the past

"It was nice to know that there are groups of underrepresented scientists that get together to support each other at this level. This was definitely encouraging and makes me want to become a lab member even more."

"Knowing that others have experienced similar incidents than I have and used it to their advantage. Many of the suggestions given were valuable for future use. Motivational examples; encouraging advice; inspiring."

"Now a days, there are less and less problems for minorities in universities and at the workplace. Although it was good to hear how many of the people dealt with being a minority, I don't think the situations are widespread now as they were before. However, it was good to learn what others have done to climb around all the difficulties minorities confronted in the past."

What additional information would you like about this session's topic? (13 respondents)

- Material for networking and about related associations
- Challenges for foreign nationals
- Highlight potential pitfalls

"I would like to see results, cases and success stories from people who have participated or have received support from organizations like SACNA, CAHSI, etc."

"It's good to know about the stories, good or bad, that the panel members have gone through; however, I would like to know more about the tools and/or processes that have used in the past and have worked for them to advance their careers."

Effective Teams

What specific aspects of the session about effective teams were most beneficial for you? *(18 respondents)*

- Specific strategies presented
- Personal experiences and insights shared

"The qualities of a good leader were most beneficial."

"I like answers about what makes effective team and working with teams. Also, their proposal experiences were important."

"re-enforcement of open communication within teams, how to work around non team players."

What additional information would you like about the topic of effective teams? (16 respondents)

- Specifics about team effectiveness
- More examples
- Several thought the topic was covered thoroughly

Proposal Opportunities

What specific aspects of this session were most beneficial for you? (22 respondents)

- Strategies presented including resources
- Information about the funding agencies

"Very informative, good advice on getting funded//loved the clear steps laid out on getting funded."

"The presenters provided comprehensive descriptions of the categories of opportunities and at the same time specific examples of opportunities."

"[The] talk was incredibly specific, which I thought was great. This is because panelists keep telling us what to do but not exactly how to do it. This talk was a great example of "how" to do things."

What additional information would you like about proposal opportunities? (10 respondents)

- Materials: slides, examples of proposals
- More details
- Have a program manager in attendance

Value Creation

What specific aspects of this session were most beneficial for you? (25 respondents)

- Role playing the pitch; the hands on activities
- Group participation and the exchange of ideas
- Tips / techniques for oral presentations

"Working on groups & presenting the idea to the team and get evaluated."

"The entire exercise process was very beneficial."

"The group exercise was useful. It gave me an opportunity to put principles in practice and gave participants a chance to step constructively a little outside their comfort zones if they tend to be shy about public speaking and/or putting a pitch together w/ little preparation."

What NEW information did you learn about value creation? (24 respondents)

- Specifics about making the pitch and the value creation technique;
- Improving self promotion
- Value creation and team work

What additional information would you like about value creation? (13 respondents)

- More time
- Well explained; excellent
- One participant thought the session too long; preferred time used in another way

"I didn't know about value creation before so this was a new concept and it helps me to understand more how to sell my ideas."

"I learned how teamwork can be and should be a regular part of the value creation process//I learned of the NABC Value Proposition//I was encouraged to think of team resources available at the National Labs"

Other comments about value creation (9 respondents)

- Mostly positive comments: Excellent, presenter was entertaining,
- More time for Q & A with presenter

Proposal Writing

What specific aspects of the proposal writing session were most beneficial for you? (23 respondents)

- The detailed, specific steps outlined by successful proposal writers
- Materials and handouts

"emphasis on reminders of the need to cater to the sponsors' wants and styles in making your proposals. Propose your idea, but remember who your audience and what he/she needs."

"The process for writing a great proposal is awesome."

"Many valuable points were made. It is hard to highlight specific point."

What NEW information did you learn about proposal writing AND how did the information affect your interest in careers at the National Labs, if at all (20 respondents)

- Proposal process for the National Labs
- Specific steps: time management, marketing and mock ups, storyboard techniques
- Trends in research

"Tips for proposal writing oriented to National Labs. I expect to develop collaboration with colleagues and use the information I got from this workshop."

"The scope and magnitude of proposal opportunities. It enhanced any desire to work at a National Lab because of the thoroughness of its procedures."

"Steps for writing proposal. Everything was new. I never wrote a proposal. I feel the resources for writing a good proposal are definitely located at National Labs."

What additional information would you like about proposal writing? (17 respondents)

- Examples of actual proposals and feedback
- Writing exercises
- Group distinctions: agencies, stage of career
- Copy of materials

Additional comments about the proposal writing session (5 respondents)

- More Q and A
- Personal and very thorough

Overall Workshop Feedback

Post-Workshop Open Response Summary

Please list up to five important things you learned at this workshop that will directly impact your career development? (26 respondents)

- Institutional culture of labs including career opportunities and research foci
- Proposal writing strategies
- Making strategic connections including research collaborations
- Enhancing communication skills and teamwork
- Value Creation
- Personal experiences shared by panelists

How will you apply what you have learned at this workshop to your professional goals? (25 respondents)

- Consider a career at the National Labs including apply for internships, fellowships, positions
- Write more proposals
- Use strategies presented to prepare for current and future career goals
- Follow through on mentoring and networking connections made at workshop and research collaborations

What were the most beneficial aspects of the overall workshop for you? (24 respondents)

- Networking with peers and more experienced colleagues
- "Knowledge and advice from good people with good careers"
- Specific, applicable strategies for career success

Please comment about your career objectives and your interest in working at the DOE National Laboratories in relationship to the information and strategies presented at this workshop. (23 respondents)

- 17 of the 23 respondents were interested in pursuing a career at the labs
- One will encourage students to consider careers at the DOE Labs
- One attendee wants to collaborate with the labs
- Two attendees are already working at the labs

Please comment about the networking and community building opportunities provided by this workshop in relationship to your career success. (23 respondents)

- Made valuable career connections that will facilitate career progression
- Made connections for research collaboration
- Made new connections for mentoring and reestablished existing relationships

How does this workshop compare to other professional development workshops you have attended? Please describe. (24 respondents)

- 16 attendees thought this workshop exceeded other experiences particularly due to the unique perspectives of the National Laboratories and a community of underrepresented computing scientists
- This workshop was a first-time experience for 7 attendees
- One attendee thought this workshop was "geared toward young professionals rather than undergraduate/graduate level participants."

What improvements, suggestions, and topics can you suggest for future workshops? (22 respondents)

- Longer workshop to allow for more breaks and time to interact with expert panelists and other attendees
- Specific assistance and opportunities to apply for positions at the labs
- Tour of facilities
- More underrepresented minorities on panels; more about persons with disabilities
- Best session: Team communication, proposal writing and value creation

Table 5

Self-ratings of Knowledge and Abilities Important to Career Advancement

Pre / Post Matched Responses	Pre-Workshop Mean[1](SD)	Post Workshop Mean[1](SD)	t	df	Sig[2]
How would you rate your knowledge of computational science research at the national laboratories?	2.38 (1.023)	3.77 (.587)	5.715	25	.000
How would you rate your knowledge about the professional ladder at the national labs?	1.81 (1.059)	3.96 (.720)	9.231	25	.000

How would you rate your ability to effectively communicate in the workplace?	3.73 (.919)	4.08 (.744)	1.979	25	.059
How would you rate your ability to work effectively in teams?	4.12 (.816)	4.08 (.796)	0.328	25	.746
How would you rate your knowledge about leadership?	3.65 (.892)	4.12 (.711)	2.900	25	.008
How would you rate your knowledge about professionalism?	3.96 (.871)	4.15 (.675)	1.413	25	.170
How would you rate your knowledge about obtaining internal funding for research at national labs?	1.73 (.827)	3.65 (.936)	8.427	25	.000
How would you rate your knowledge about obtaining DOE funding for research at national labs?	1.65 (.797)	3.81 (.895)	11.355	25	.000
How would you rate your knowledge about obtaining external (outside DOE) funding for research at national labs?	1.62 (.752)	3.58 (.987)	8.988	25	.000
How would you rate your ability to *write* a successful research proposal?	2.31 (1.050)	3.54 (.761)	5.494	25	.000
How would you rate your understanding of the elements of value creation?	2.04 (.889)	3.81 (.801)	7.555	24	.000
How would you rate your ability to develop a circle of mentors?	2.73 (1.151)	3.85 (.784)	4.574	25	.000

How would you rate your networking capabilities to enhance your career success?	2.88 (.766)	4.08 (.688)	5.546	25	.000

1. Mean and standard deviation (SD) based on 5 point scale: inadequate = 1, somewhat inadequate = 2, adequate = 3, very adequate = 4, exceptional = 5
2. p< .05

Table 6

Post Sessions Survey Responses

Comparison of mean responses and frequencies per question across presentations

1. This session was valuable for my career progression.

	n	Mean[1] (SD)	#SA+A/%	# N/%	#SD+D/%
Computational Science Research at the National Laboratories	27	4.04 (.854)	23 (85%)	3 (11%)	1 (4%)
Navigating the Professional Ladder	26	4.19 (.895)	23 (88%)	2 (8%)	1 (4%)
Poster Sessions and Luncheon	26	3.96 (.999)	20 (77%)	4 (15%)	2 (8%)
Effective Communications	**26**	**4.38 (.983)**	**24 (92%)**	//////	**2 (8%)**
Professionalism and Leadership	**25**	**4.32 (.748)**	**23 (92%)**	**1 (4%)**	**1 (4%)**
Effective Strategies for Underrepresented Groups	25	4.12 (1.166)	20 (80%)	3 (12%)	2 (8%)
Effective Teams	**24**	**4.25 (.608)**	**22 (92%)**	**2 (8%)**	//////
Proposal Opportunities	**25**	**4.52 (.653)**	**23 (92%)**	**2 (8%)**	//////
Value Creation	26	4.27 (.874)	21 (81%)	4 (15%)	1 (4%)
Proposal Writing	**24**	**4.38 (.770)**	**22 (92%)**	**1 (4%)**	**1 (4%)**

1.based on 5-point scale: Strongly agree (SA) = 5, Agree (A) = 4, Neither agree nor disagree (N) = 3, Disagree (D) = 2, Strongly disagree (SD) = 1

Table 7

Post Sessions Survey Responses

Comparison of mean responses and frequencies per question across presentations

2. The information I received from the presenters (colleagues) will assist me in my career development.

	n	Mean[1] (SD)	#SA+A/%	# N/%[2]	#SD+D/%
Computational Science Research at the National Laboratories	27	4.04 (.940)	23 (85%)	2 (7%)	2 (7%)
Navigating the Professional Ladder	26	4.19 (.895)	23 (88%)	2 (8%)	1 (4%)
Poster Sessions and Luncheon	25	4.08 (1.038)	20 (80%)	3 (12%)	2 (8%)
Effective Communications	26	4.27 (1.041)	22 (84%)	2 (8%)	2 (8%)
Professionalism and Leadership	25	4.40 (.707)	22 (88%)	3 (12%)	//////
Effective Strategies for Underrepresented Groups	25	4.00 (1.118)	20 (80%)	3 (12%)	2 (8%)
Effective Teams	24	4.29 (.690)	21 (88%)	3 (12%)	//////
Proposal Opportunities	**25**	**4.52 (.586)**	**24 (96%)**	**1 (4%)**	//////
Value Creation	26	4.38 (.804)	23 (88%)	2 (8%)	1 (4%)
Proposal Writing	24	4.42 (.830)	21 (88%)	2 (8%)	1 (4%)

1.based on 5-point scale: Strongly agree (SA) = 5, Agree (A) = 4, Neither agree nor disagree (N) = 3, Disagree (D) = 2, Strongly disagree (SD) = 1

2. Rounding may cause total % to be less that 100%

Table 8

Post Sessions Survey Responses

Comparison of mean responses and frequencies per question across presentations

3. I can apply presented strategies to my career objectives.

	n	Mean[1] (SD)	#SA+A/%	# N/%	#SD+D/%
Navigating the Professional Ladder	26	4.00 (.894)	21 (80%)	4 (16%)	1 (4%)
Effective Communications	26	4.42 (1.027)	23 (88%)	1 (4%)	2 (8%)
Professionalism and Leadership	25	4.36 (.907)	22 (88%)	1 (4%)	2 (8%)
Effective Strategies for Underrepresented Groups	25	4.08 (1.152)	20 (80%)	3 (12%)	2 (8%)
Effective Teams	24	4.21 (.779)	21 (88%)	2 (8%)	1 (4%)
Proposal Opportunities	**25**	**4.52 (.653)**	**23 (92%)**	**2 (8%)**	//////
Value Creation	26	4.27 (.962)	21 (81%)	3 (11%)	2 (8%)
Proposal Writing	24	4.42 (.717)	21 (88%)	3 (12%)	//////

1.based on 5-point scale: Strongly agree (SA) = 5, Agree (A) = 4, Neither agree nor disagree (N) = 3, Disagree (D) = 2, Strongly disagree (SD) = 1

Table 9

Post Sessions Survey Responses

Comparison of mean responses and frequencies per question across presentations

4. On a scale from 1 to 5, 5 being the best, my overall rating is:

	n	Mean[1] (SD)	#SA+A/%	# N/%	#SD+D/%
Navigating the Professional Ladder	26	4.27 (.604)	24 (92%)	2 (8%)	//////
Poster Sessions and Luncheon	25	4.16 (.554)	23 (92%)	2 (8%)	//////
Effective Communications	**26**	**4.58 (.703)**	**25 (96%)**	//////	**1 (4%)**

Professionalism and Leadership	25	4.40 (.816)	22 (88%)	2 (8%)	1 (4%)
Effective Teams	24	4.17 (.761)	21 (88%)	2 (8%)	1 (4%)
Proposal Opportunities	**25**	**4.56 (.583)**	**24 (96%)**	**1 (4%)**	//////
Value Creation	26	4.27 (.962)	21 (81%)	3 (11%)	2 (8%)
Proposal Writing	24	4.33 (.637)	22 (92%)	2 (8%)	//////

1.based on 5-point scale: Strongly agree (SA) = 5, Agree (A) = 4, Neither agree nor disagree (N) = 3, Disagree (D) = 2, Strongly disagree (SD) = 1

Table 10

CMD-IT NLPDev 2012: Overall Workshop Feedback					
	n	Mean[1] (SD)	#SA+A/%	# N/%	#SD+D/%
1. The CMD-IT NLPDev workshop was a valuable experience.	26	4.81 (.402)	26 (100%)	//////	//////
2. I am better prepared to advance my career as a result of my participation.	26	4.81 (.402)	26 (100%)	//////	//////
3. I would recommend the CMD-IT NLPDev workshop to my colleagues.	26	4.92 (.272)	26 (100%)	//////	//////
4. The networking time was beneficial.	26	4.77 (.587)	24 (92%)	2 (8%)	//////
5. The presenters addressed topics that were relevant to my career objectives.	26	4.54 (.647)	24 (92%)	2 (8%)	//////
6. I received NEW information relevant to my career success	26	4.58 (.643)	24 (92%)	2 (8%)	//////
7. I plan to connect with colleagues I have met at this conference for future collaborations.	26	4.73 (.452)	26 (100%)	//////	//////
8. I plan to pursue a summer internship at a national laboratory.[2]	14	4.36(1.008)	11 (79%)	2 (14%)	1 (7%)

9. I am more likely to consider/continue a career at a national laboratory as a result of participating in this workshop.	23	4.57 (.728)	20 (87%)	3 (13%)	//////

1. based on 5-point scale: Strongly agree (SA) = 5, Agree (A) = 4, Neither agree nor disagree (N) = 3, Disagree (D) = 2, Strongly disagree (SD) = 1
2. Eligible respondents = 14 (12 respondents selected Not Applicable for this item)

Respondents wanted additional workshop days, more networking time, tours of the National Laboratory, and more time for Q & A with expert panelists and senior researchers from the labs.

Participants highly valued the information shared related to career opportunities and success at the National Laboratories, the expert presentations, and the opportunity to connect with senior researchers and peers as indicated by the following representative comments.

"This is a very valuable workshop that brings together peers in underrepresented groups with decisions makers from several prominent labs. My career objectives have been refocused as a result of this workshop."

"I'm considering DOE National labs as an alternative for my career when I finish my PhD."

"The National Labs provide a perfect setting for my next steps in career advancement. I will highly consider their [lab] opportunities in the future. At the very least, I hope to collaborate with them in the near future."

Comments about the Overall Workshop Experience

"I frankly think this was one of the best workshops I have attended because it provided applicable techniques/ideas that can effectively aid our professional development."

"This workshop provides amazing opportunities to establish contacts, see role models, and learn about research at the National Laboratories."

"-loved it! Will definitely recommend to others."

Conclusion

The review of the data suggests the 2012 CMD-IT National Laboratories Professional Development Workshop for Underrepresented Participants provided attendees with 1) effective techniques and resources to facilitate career advancement and 2) heightened interest in career possibilities at the National Laboratories. Moreover, the attendees gained access and established connections with talented colleagues at various stages of their career development.

Overview of general impressions and suggestions from participants. Evaluator comments are italicized.

The overall impression of the workshop was excellent. Most of the suggestions and comments from the participants indicate they wanted more of the valuable programs and interactions received at the workshop. This workshop accomplished the objective of increasing interest in careers at the labs and offering strategies and support so many of the participants gained new knowledge and confidence to consider applying for a position. Below are a few suggestions/requests made by the participants and the evaluator's related comments.

1. Attendees wanted more experts represented from the various labs and more time to interact with them. They requested more formal time for questions after each session; and especially wanted facilitated time with the panelists either individually or in small groups.

2. Many attendees wanted a tour of the facility.
   Clearly explain why tours of the laboratories cannot be given during the workshop and provide information about how an individual or small group tour group can set up a tour. Send this information with the acceptance packet so arrangements can be made by participants in conjunction with the workshop.

3. Some attendees wanted more detailed, hands-on assistance with the application process for career at the national laboratories including information about internships, fellowships, qualifications needed, contact information at various labs. Something more personal beyond the "website" offered. They requested tangible, specific, actionable steps to connect with national lab recruiters.
   Could CMD-IT act as clearinghouse for links, resources, and contact information exchange?

4. Participants indicated work life balance was an important issue. Consider including a round table discussion about how to balance a demanding career as a DOE scientist with "life outside of work".

5. A few post-docs felt the sessions were not specifically geared for their position. *The information presented was generally applicable for those interested in careers at the labs.*

6. *Longitudinal tracking of participants is also recommended for current and future attendees.*