To:        Dr. Alexander Cartwright, SUNY Research Foundation President
          Catherine Kaszluga, SUNY RF Vice President for Strategy and Planning
From:    Paul Hirsch, SUNY ESF
Date:    June 10, 2015
Re:       Networks of Excellence - RF Presidential Fellowship Final Report

I am extremely grateful to have had the opportunity to serve as Presidential Fellow with the SUNY Research Foundation’s Network of Excellence Initiative for the Academic Year of 2014 / 2015. The experience has given me the opportunity to exercise and develop a set of skills in leadership, facilitation, and network building that complement my ongoing research on overcoming barriers to interdisciplinary and inter-institutional collaboration. I’ve also had the chance to develop mutually beneficial working relationships with SUNY administrators and RF staff, and to gain an appreciation for the SUNY system as a whole – and the challenges and opportunities in working at this larger scale – in a way that would not otherwise have been possible.

Working with the early stages of Networks of Excellence Initiative at the level of strategic visioning and practical implementation has been inspiring, sobering, and empowering. Inspiring, because through this work I have crystallized my own commitment to be a leader in in the emerging field of collaborative research and research systems. Sobering, because I am aware of the many challenges that remain in fostering effective collaborations across the boundaries of discipline, institution, and research culture. Empowering, because the work I have done with the RF and the Networks of Excellence on the design and implementation of collaborative research paradigms has begun to be recognized at a national scale, and I am being increasingly called on to facilitate processes and share insights into overcoming barriers to the development of effective collaborative research programs.

This report is organized as follows:

1. Review of my activities and outputs as an RF Presidential Fellow (2)
2. Big questions for advancing collaborative research (5)
3. Specific recommendations for the SUNY Networks of Excellence Initiative (7)
Review of my activities and outputs as an RF Presidential Fellow

My work as a Presidential Fellow with the RF can be classified into four categories:

1. Developing and disseminating white papers and other strategic communications that pinpoint specific barriers to collaborative research experienced in the early stages of the Networks of Excellence Initiative, and making recommendations for overcoming these barriers

2. Designing curricula and facilitating workshops to support productive interdisciplinary research collaborations for SUNY faculty participating in the Networks of Excellence Initiative

3. Sharing the work and achievements of the Networks of Excellence Initiative at venues throughout the SUNY system, professional gatherings, and through scientific media outlets

4. Data gathering, assisting with design, and group process facilitation for a Strategic Review of the Networks of Excellence Initiative

Developing and disseminating white papers and other strategic communications

I served as Presidential Fellow with the RF in the second year of the Networks of Excellence Initiative. Simultaneous to this work, I also served as Principal Investigator of a Networks of Excellence Funded research program designed to identify barriers to effective research collaborations. I was thus in a unique position to directly experience (as PI) the challenges of leading a SUNY research team trying to work across the boundaries of discipline and institution, and (as Fellow) working to help refine a network structure designed to support effective collaboration across these boundaries. From this position, I identified two specific barriers at play across the Networks. These barriers were 1) the lack of a coordinated SUNY process to support the institutional review of human subjects research, and 2) difficulties experienced by research teams in trusting each other enough with their intellectual capital to put their best ideas on the table in such a way that genuine collaborative innovation becomes feasible. For each of these barriers, I developed a white paper (in partnership with Whitney Lash Marshall and Chris Nomura) designed to provide guidance to RF leadership and the Vice Presidents for Research across the SUNY system in overcoming these barriers. These white papers were shared with Network Champions and RF staff, both in written format and orally on conference calls and at planning meetings.

In addition to these white papers, I participated in visioning and strategic communication sessions around the development of collaborative technology infrastructure. I participated with the “Funding Opportunity and Faculty Search Tools Workgroup” facilitated by Kimberly Eck, and developed and administered survey questions to identify faculty needs related to finding funding opportunities and locating other SUNY faculty members to collaborate with. I also facilitated a discussion at the 4E Network of
Excellence Charrette with meeting participants and RF staff to envision possibilities for a next generation collaborative platform. Finally, I co-developed - w/ Ken Shockley, Kate Lawson, and Andrea Frank – strategic ideas for refining the collaborative infrastructure for the Networks of Excellence Initiative, and presented these ideas for discussion at the 4E Charrette and at strategic planning meetings of the Network Champions and other Network stakeholders.

**Designing curricula and facilitating workshops to support research collaborations**

One of my professional goals is to design and implement innovative processes and programs that can support research teams and their institutions in overcoming the barriers to effective collaboration. As an RF Fellow, drawing on the insights gained from my ongoing research program on interdisciplinary collaboration, I had the opportunity to partner with RF staff and SUNY colleagues to refine and apply interventions designed to yield breakthroughs for research teams across the SUNY system. In partnership with Ken Tramposch, Kimberly Eck, and Whitney Lash Marshall, I designed and implemented a collaborative thinking exercise at the December 2014 Brain Network meeting. The exercise was designed to support small groups of Brain Network participants to collaboratively formulate problems and research agendas that could be linked with White House strategic directions for future brain research. In partnership with Whitney Lash Marshall, Kimberly Eck, and SUNY colleagues from Albany, New Paltz, and Buffalo, I designed and implemented a workshop on “Facilitative Leadership for Collaborative Team Research” in February of 2015. This 2-day workshop, attended by faculty from across the SUNY system and external colleagues, was organized to provide insights and tools for overcoming barriers to collaboration through the cultivation of skills in four areas: facilitative leadership, collaborative problem formulation, critical reflection, and network building. The workshop resulted in the development of a collaborative grant application – across three SUNY institutions - submitted to the new NSF initiative on the Food-Energy-Water Nexus.

In addition to these workshops, I worked specifically with the Green Composite Materials sub-group of the Materials and Manufacturing Network (MAM) to identify and overcome specific barriers related to trust. In partnership with Chris Nomura and Whitney Lash-Marshall, I designed a series of facilitated discussions and interventions to support the research team’s willingness and ability to define a collective research agenda, and reach consensus regarding the allocation of research funds. This team has been identified by Network Champions as a model collaborative team, both due to their success in obtaining external funding, and their ability to develop and implement a research agenda not only across SUNY institutions but also across the boundaries of academia and industry.
Sharing the work and achievements of the Networks of Excellence Initiative

As a Presidential Fellow, I was asked to share the work and achievements of the Networks of Excellence at several venues. At the 2014 SUNY CON I was a speaker and panelist on the topic of “Creating a Culture of Change: Notes From the Field: Leaders of Large-Scale Change Share Their Stories.” At the December 2014 meeting of the SUNY Research Council I was a featured speaker and panelist on the topic of “Collaboration Technology in Support of Interdisciplinary Research.” And at the April SUNY Undergraduate Research Conference in Brockport, as one of the panelists sharing the work of The Networks of Excellence Initiative, I presented my work on understanding and overcoming barriers to collaborative research.

In addition to these venues within the SUNY system, I presented on my work on collaborative research, and with the Networks of Excellence specifically, at the 2014 annual meeting of the Association for Interdisciplinary Studies in East Lansing, Michigan, and at the 2015 meeting of the Consortium for Socially Relevant Philosophy, in Detroit.

As a result of these efforts, my work on fostering collaboration has been written up in media outlets at the Research Foundation, at SUNY ESF, and will be included in an upcoming issue of the journal Nature Careers. I have also been asked to join the slate of candidates for the Board of Directors for the Association of Interdisciplinary Studies.

Data gathering, design and facilitation for the NOE Strategic Review process

As the Networks of Excellence Initiative unfolds, there is an ongoing effort by Network Champions, RF staff, and Network participants to refine and improve Network function. Throughout the latter portion of my tenure as RF Presidential Fellow, I had the opportunity to support Cathy Kaszlug and other RF staff in the design and implementation of a strategic review process. Prior to the review process, my contributions to the effort included sharing the concept of the review at VPR and other meetings, working to clarify the objectives of the Networks in such a way that progress towards them could be evaluated, and participating in the design of the review process. As the review process moved forward, I worked with RF staff and Whitney Lash Marshall to develop and implement a survey of Principal Investigators throughout the Networks of Excellence for the purposes of obtaining data to input into the review. Finally, I served as facilitator for two out of three of the meetings with the Review Advisory committee. The strategic review has recently been completed, and submitted to RF President Cartwright for consideration in the continual refinement of the Networks of Excellence Initiative.
Big questions for advancing collaborative research

The SUNY Research Foundation occupies a unique and sometimes challenging niche in the SUNY research ecosystem. With the creation of and investment in the Networks of Excellence Initiative, the Research Foundation is banking on the untapped potential for scientific advancement and associated economic development that can come from groups of SUNY researchers pooling their intellectual and material resources across the boundaries of institution and discipline. In the interest of the success of this effort over the long term, it is useful to orient to some “big questions” in order to develop actionable insights that will advance collaborative research, both institutionally and nationally. These questions and insights are informed both by my academic research on the issues and by my direct efforts in support of the SUNY Networks of Excellence over this past year.

As a starting point, I would argue that authentic collaboration is difficult and rare, and requires intellectual and material investment in the process of research as much as the content. Many times throughout my tenure as Presidential Fellow, I heard a statement made to the effect of “we know how to collaborate: we just need the right support.” My own observations lead me to disagree with this statement. Researchers do indeed know how to contribute their pieces of a puzzle to a joint or larger effort; however, they are generally unskilled and/or reluctant in – even temporarily – setting aside their individual agendas and areas of expertise in order to collaboratively generate ideas and visions around large-scale research problems and possibilities. If we are to make progress towards the development of the capacity and vision necessary to obtain funding for NSF Centers and other large-scale programs, much more work needs to be done to develop the capacities of SUNY faculty to engage in the kind of thinking this entails.

While much has been written regarding the need for appropriate incentives (both in terms of funding availability and in terms of credit towards tenure and promotion) in support of a culture of collaboration, my sense is that these necessary elements will in and of themselves not be enough. To meaningfully advance collaborative research, in addition to questions of incentive and related issues, the following big questions should be engaged with:

- **How to develop and exercise facilitative leadership?** Facilitative leadership is different than the kinds of top-down leadership we often see in the operation of research teams. In working across discipline and institution, traditional models of leadership fall short because they privilege specific disciplines, institutions, and ways of knowing, which can detract from participants’ willingness to fully engage in collaborative efforts. In a facilitative model, leadership is not only offered by the most senior members of a team: indeed, it is often the junior members that are able to see a more holistic picture and enroll others in new and perhaps more risky – and potentially fruitful – pathways of inquiry.

- **How to identify and use conceptual tools that can support mindfulness and dialog about the intellectual boundaries that often have us talking past each
other? A variety of efforts to develop frameworks and concepts for overcoming disciplinary barriers have emerged over the past decade, along with institutional efforts such as NSF’s “Science of Team Science,” the Toolbox approach being developed by researchers at Michigan State University, and the work of my own 4E funded research team on the development of “boundary objects” – conceptual diagrams that integrate collective representations of complex problems with individual role articulation. The application of these and other approaches to the kinds of large-scale initiatives epitomized by the SUNY Networks of Excellence represents a frontier that SUNY should play a leadership role in exploring and developing.

• How to be pro-active about the issues of intellectual property, credit sharing, and trust that will inevitably come up in the course of collaborative research efforts? Confronting these issues requires progress at the institutional and interpersonal levels. At the institutional level, calls for the systematization of non-disclosure agreements and protocols for protecting the participants in academic-industry collaborations need to be pursued in ways that don’t dilute or compromise the University’s mission to promote the public good. At the interpersonal level, researchers trained as soloists will have to learn something akin to the art of improvisational jazz – playing their own interests and expertise off the expertise of others to develop new and innovative solutions to problems that without such efforts might be otherwise intractable.

• How to find creative ways to address current gaps in venues for publishing and disseminating interdisciplinary research? More than money or promotion, many researchers are driven by the desire to share ideas and knowledge that can make a difference with respect to pressing social issues. Yet existing journals recognize narrow disciplinary efforts rather than integrative and problem-based approaches that reflect the engagement of plural perspectives. As a coordinator and catalyst within one of the largest educational institutions in the world, the RF should address not only the supply-side of research production, but should shape the demand-side as well by playing a leading role in carving out respectable niches for the communication and dissemination of interdisciplinary, problem-based research.
Specific recommendations for SUNY Networks of Excellence Initiative

In regards to the continuing efforts of the Research Foundation in the Implementation of the Networks of Excellence Initiative, below are three concrete suggestions that might be considered to increase the effectiveness of the program.

- **First, greater attention should be paid to the design and implementation of the Charrettes and other in-person meetings that constitute the backbone of the Networks of Excellence Initiative.** While the meetings have been helpful in providing a venue for sharing the research initiatives that have been funded by the Networks, future Charrettes and other workshops should be planned and structured to maximize creative synergies and the development of collaborative research ventures organized around common problems or sets of interconnected issues. The experiences of SUNY faculty, RF staff, and outside experts in designing and facilitating activities that would support these efforts should be drawn on.

- **Second, the Networks of Excellence Initiative should invest in people, both within the Research Foundation and across the SUNY system, who possess strengths in facilitative leadership, interdisciplinary translation, and other skills conducive to effective collaborative research.** The current position of collaborative grants developer, for example, has played a significant role in bridging both the intellectual and institutional divides that need to be crossed to foster effective large-scale collaborations. Across SUNY campuses, the investment of resources in post-doctoral positions explicitly targeted to fulfilling a collaborative function has also been effective and should be enhanced. More broadly, human and infrastructural capital should be invested in to support collaborative functioning both at the central level and across the system.

- **Third, the messaging around the Networks of Excellence Initiative, both internally and externally directed, should be refined to place an increased focus on the core values of the Networks.** While much if not most of the ongoing talk about the value of the Networks has concerned being competitive for federal grant dollars and associated economic benefits to the state, this in itself does not seem to be the core value, nor is it particularly motivating for the majority of Network participants and supporters. Moving forwards, messaging centered on the value of doing research that is relevant and robust in the face of current societal challenges should be developed, and the necessity of working across discipline and institution to meet these challenges should play a primary role. There is a surplus of excitement regarding what is possible when some of the smartest people in the state put their minds together on shared problems – this excitement should be tapped into as the basis of the Network’s future engine of support.