Northeastern University ADVANCE Institutional Transformation: Advancing Women within Interdisciplinary and International Networks (AWIIN)

1. Introduction

Northeastern University (NU) has a 100-year legacy as a national leader in practice-oriented education with a long history of applied research. Advancing Women within Interdisciplinary and International Networks (AWIIN) builds on our strengths to combine practice and research in a large-scale institutional transformation project complemented by policy-focused organizational research. The NU AWIIN Institutional Transformation (IT) aims to further the presence and leadership of women faculty in the context of increased interdisciplinarity and internationalization of research. We believe institutional transformation is necessary to improve hiring and promoting women and the climate for women in the sciences, to raise the percentage of women faculty from 18 to 30%, and to triple the number of women from underrepresented groups from six to18. Our project recognizes that intersections of race, class, gender, sexual orientation, and national origin complicate issues of representation and requires focused attention. NU is dedicated to providing opportunities to students, faculty, and our neighboring communities. We aim to build on this legacy by fostering an environment in which women faculty can find opportunities to succeed in academic careers in an increasingly global academic world.

AWIIN is based on the recognition that science and engineering are in tremendous change. Demographic changes include swiftly growing numbers of international faculty, graduate students, and scholars but much slower increases in US women and women from underrepresented groups. Scientific research today relies on networking and collaboration across disciplinary and increasingly across cultural and national lines. As NSF Director Dr. Arden L. Bement, Jr. stated in 2005, "International science and engineering collaboration is increasingly important because many of the challenges that confront us today are inherently global. We all have a stake in the results of research in climate change, emerging diseases, the health of the oceans, biodiversity, sustainable energy, and improved earthquake engineering, to name only a few. In today's world, U.S. scientists and engineers must be able to operate in teams comprised of partners from different nations and cultural backgrounds."

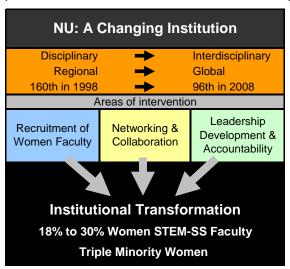


Figure 1: Model for Institutional Transformation

A Transition: NU is undergoing a major transformation (Fig. 1), moving in ten years from Tier III (160th in 1998) to top 100 (96th in 2008) (U.S. News and World Report, 2008). In a concerted effort to become a top institution with quality research and teaching, NU is selective in admissions and is mounting a comprehensive plan to elevate its research profile and recognition. The College of Engineering is ranked 58th in the country and all of our engineering graduate programs are in the top 33%. Our physics department was ranked 12th in total research funding by the 1993 NRC survey. The 2007 Academic Plan includes major faculty hiring, modernizes administrative structures, reorients the university from disciplinary to interdisciplinary and regional to global outlooks, and embraces faculty diversity as a core value. AWIIN will bring the advancement of women to center in this transition.

Focus Departments: We focus on the 16

interdisciplinary centers and 14 departments in science, technology, engineering, and mathematics (STEM) and the social sciences (SS) and engage nearly 350 faculty and administration. These departments are characterized by solo women and culturally diverse workplace cultures. The average STEM and SS department consists of 20 tenured or tenure-track faculty members, nearly half with international educational backgrounds, but with only three women, one in each rank (Table 1).

Our main innovative contribution to the NSF ADVANCE community is to systematically integrate interdisciplinary and international research into our model for institutional transformation: The overarching

goal is to enhance women's role in the globalized world of science and engineering. We use an original approach to integrate interdisciplinary and international dimensions for collaboration and research into our AWIIN interventions through improved recruitment, network, and leadership development. We will strategically combat the isolation of women by providing women faculty with opportunities to build and extend their networks and collaborations nationally and internationally. We recognize that faculty and administrators need new skills to work productively in mixed gender, international, interdisciplinary, and collaborative workplaces, including intercultural gender sensitive competence.

Intervention Focus: Building on other ADVANCE projects and the social science literature on gender and science, our intervention focuses mainly on the following three areas:

- 1) **recruitment** to improve hiring of women, in particular, women of color;
- 2) **networking and collaboration** for white women and women of color through the transitions (tenure, promotion to full professor); and
- 3) **development of leadership** by recruiting women into leadership positions, and creating methods for **accountability** and competencies to further gender equity in the university.

Model for Change: The recruitment process needs to be transformed to produce significant growth from the small number of women faculty. Strengthening women faculty networks, both in and outside of the university, is crucial in the context of emphasis on interdisciplinary research and collaboration. Enhancing interdisciplinary and international research and collaboration facilitates integrating women faculty more fully into our global science and engineering centers and departments. As a private university with a strong faculty senate and no unionized faculty, we must increase the presence of women in leadership positions and hold Deans and Chairs accountable for increasing, retaining and advancing women faculty. Attention to leadership is necessary to engage the institutional practices of recruitment, tenure, promotion, merit, and selection to leadership. These processes need to be revisited and revised to identify and challenge unintended consequences for gender equity.

Institutional Resources: NU has committed an estimated \$1.7 million over the five-year grant period, dedicated to Dual Career Hiring, University Life, and Leadership Development, not covered in the AWIIN budget. NU leadership (President and Deans) is prepared to raise a \$2 million endowment, to generate on the order of \$100,000 per year for AWIIN activities.

2. Motivation

NU is an urban, private, Carnegie Classification *High Research University* with about 660 tenured or tenure track faculty and 25,000 students (20% graduate degrees). Cooperative education and experiential learning are hallmarks and bring institutional partnerships with more than 2,000 employers. The seven colleges are largely decentralized, and the faculty senate plays a major role in governance. Compared to peers, our STEM departments tend to be smaller, with an average size of 20 faculty; 30 percent of NU graduates receive degrees in science and engineering, including the social and life sciences. Annual research expenditures are \$76M. Endowment is under \$700M; tuition accounts for most of the budget.

Northeastern and Women: Established in 1896, NU admitted its first women in 1946. Today women are more than 50% of students, 38% of alumni, and 36% of tenured or tenure track faculty. President Freeland (1996-2006) established an Advisory Committee for Women, which in collaboration with Women's Studies launched a number of investigations to assess and improve the campus climate. A 1998 Women's Studies report led to the first written policy on maternity leave and the extension of the tenure clock, as well as motivation for further data collection. In 2005, Provost Abdelal created the position of Associate Vice-Provost for Faculty Advancement, reporting directly to him. AWIIN team members Professor Sara Wadia-Fascetti and Professor Kathrin Zippel have built an informal network among women faculty and members of the Women's Studies Executive Board.

Institutional Context for Change: In the early 1990s, NU unexpectedly experienced the largest drop in new student enrollment in its history. After a period of readjustment, a smaller NU emerged with the goal of becoming a national urban research institution ranked among the top 100. Strategic efforts led to growing financial strength; monies were earmarked for new faculty hires, research activity increased, and substantial investments were made in facilities and infrastructure. By 2006, NU broke into the top 100 with a U.S. News & World Reports rank of 98. With a change in presidential leadership in 2006, there is a new

challenge to become more globally oriented, open to partnerships, and creative in experiential education, with a broader, more interdisciplinary approach to research and instruction.

Representation of Women: Representation of women among NU STEM and SS faculty can be best characterized as uneven and slowly changing: only 18% of STEM and SS faculty are women (Table 1). Most departments are characterized by the solo status of women faculty: The average NU STEM and SS department has 20 tenured or tenure track (T/TT) faculty members with one woman at each rank. Most departments are at or below national averages for women faculty, especially minorities. Women represent only 6% of T/TT faculty in mathematics with no tenure track women (compared to 26% in the national pool). Sociology and economics have high turnover especially, among women assistant professors. There are only six women from underrepresented minorities. An exception is the College of Engineering (COE). Inspired by its 2001 NSF ADVANCE submission, COE implemented best practices in recruitment, doubling in T/TT women faculty (from 6 to 13), including a dual career hire in the same department, and a new woman Chair. Despite this progress, women do not constitute a critical mass at 15%, and COE still lacks women of color; yet its progress, largely attributed to consistent leadership by Dean Al Soyster, underscores the potential to change.

Table 1: Northeastern University Faculty in 2006 Compared to National Averages by Department												
	All tenure or tenure track			Professor			Associate Professor			Assistant Professor		
	W (n)	%W [§]	%U ^{†§}	W (n)	%W [§]	%U ^{†§}	W (n)	%W [§]	%U ^{†§}	W (n)	%W [§]	%U ^{†§}
All NU STEM-SS Faculty	51	18%	2%	19	15%	2%	13	14%	0%	20	36%	2%
Life Sciences	14	30%	4%	5	29%	6%	5	26%	0%	5	45%	9%
Biology	7	32% (24%)	5% (1%)	2	22% (17%)	0% (0%)	2	25% (29%)	0% (1%)	3	60% (34%)	20% (2%)
Psychology	4	21% (39%)	5% (4%)	2	33% (29%)	17% (1%)	1	11% (47%)	11% (6%)	1	25% (53%)	25% (6%)
Physical Sciences	7	8%	2%	3	7%	2%	1	4%	0%	3	33%	11%
Chemistry & Chem Bio	3	16% (14%)	5% (1%)	2	15% (10)	8% (0%)	0	0% (18%)	0% (1%)	1	50% (21%)	0% (3%)
Earth & Enviro Science	0	0% (20%)	0% (0%)	0	0% (15%)	0% (0%)	0	0% (21%)	0% (1%)	0	0% (31%)	0% (0%)
Mathematics	2	6% (14%)	0% (1%)	1	6% (7%)	0% (0%)	1	7% (23%)	0% (1%)	0	0% (25%)	0% (2%)
Physics	2	8% (9%)	0% (0%)	0	0% (7%)	0% (0%)	0	0% (13%)	0% (1%)	2	40% (18%)	0% (1%)
Social Sciences	12	34%	6%	4	29%	7%	2	17%	0%	6	67%	11%
Sociology & Anthropology	10	50% (40%)	5% (5%)	3	38% (29%)	13% (2%)	2	29% (46%)	14% (7%)	5	100% (54%)	20% (9%)
Economics	2	13% (18%)	7% (1%)	1	17% (9%)	17% (1%)	0	0% (25%)	20% (1%)	1	25% (31%)	25% (2%)
Computer & Information												
Science	5	20% (13%)	0% (1%)	4	40% (8%)	0% (0%)	1	9% (12%)	0% (1%)	0	0% (21%)	0% (1%)
Engineering	13	15%	1%	3	8%	3%	4	15%	0%	6	27%	0%
Chemical	5	56% (12%)	0% (1%)	1	33% (5%)	0% (0%)	2	100% (17%)	0% (1%)	2	50% (25%)	0% (4%)
Civil & Environmental	2	14% (14%)	0% (0%)	0	0% (7%)	0% (0%)	1	17% (15%)	0% (1%)	1	25% (24%)	0% (1%)
Electrical & Computer	4	10% (9%)	0% (0%)	2	10% (5%)	0% (0%)	0	0% (10%)	0% (0%)	2	18% (17%)	0% (0%)
Mech & Industrial	2	8% (8%)	0% (0%)	0	0% (3%)	0% (0%)	1	11% (12%)	0% (1%)	1	33% (18%)	0% (1%)

^{† %}U is the percentage of underrepresented women (Black, Hispanic and Native American)

Women also have a solo status in the leadership. Only one out of 14 department Chairs and one out of 16 directors of interdisciplinary centers in the science and engineering are women. In the administration there are no women Deans in the participating colleges, of the seven Deans university-wide only one is a woman. Finally, one out of four vice-provosts is a woman and two of six women are senior vice presidents (for admissions and enrollment and for development and fundraising).

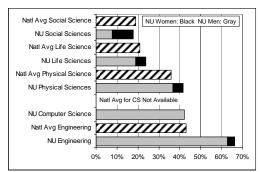


Fig. 2 NU Faculty holding any international degree compared with national averages

Unique Context of Northeastern University: Globalization has led to a diverse international faculty: 48% of male and 30% of female faculty in STEM and SS hold at least one degree from an international institution. Because our university does not keep records on country of birth, we use this conservative estimate for faculty with immigrant backgrounds. Engineering has higher percentages, with 75% of men and 25% of women holding degrees from non-U.S. institutions, compared to 2003 National Center for Educational Statistics (NCES) averages for full-time engineering faculty at Carnegie 5 institutions (40% men and 36% women foreign born) (Fig. 2). SS international representation is lower, but above national averages. This

[§] National comparison data (in parentheses) ranked by NSF FY2004 research expenditures, with 2007 faculty populations [Nelson 2007]

diverse NU faculty can help to stimulate international contacts and collaborations. Global interactions are major components of the Academic Plan, which will govern future activities.

Climate Indicators: The most recent UCLA Higher Education Research Institution survey (2004) found gender differences in NU's faculty perceptions: Women raised concerns about the climate for women; were less likely than men to believe the institution was committed to promoting gender equity in faculty or administration; and saw barriers to full inclusion. NU has also participated in the Harvard Collaborative on Academic Careers in Higher Education (COACHE 2005) survey for all TT faculty. Compared to male colleagues, women reported lower clarity on scholarly expectations for tenure and more mixed messages from senior colleagues about tenure requirements. They reported lower levels of satisfaction in professional interaction with colleagues, and greater stress in partner placement and work/life balance. Fewer women than men would again accept their current position if given the chance.

Focus Groups: To complement the survey findings, small group discussions were held with women faculty by rank. When asked about contacts and collaborations abroad, women mentioned concerns such as travel costs, safety, child care, and dual career issues. Women perceived the reluctance of male graduate students and male colleagues in particular with more traditional cultural backgrounds to consider collaboration. NU women feel isolated not just within the university, but also in their disciplines and research areas.

3. Logic of Intervention

Researchers have linked a variety of gender differences in career progress and experiences of women scientists and engineers to organizational and institutional practices and policies (see *Beyond Bias and Barriers* 2006, Bailyn 2003, Gaughan 2006, Fox 2001). Our approach for overcoming climate issues and two key problems--discrimination/stereotyping and isolation--associated with the solo status of women is guided by the literature on women in organizations and the experiences of other ADVANCE IT sites. For example, Kanter (1977) argued that women experienced more discrimination if they were tokens rather than a critical mass. Building on the Michigan STRIDE program, we will educate recruitment chairs and faculty about systematic, unintended gender bias in evaluations that lead to devaluation of women's work (Valian 1998). The idea is that organizational practices and procedures can prevent that gender schemata have a negative effect on evaluation of women. Moody (2004) argues that in the United States academic cultural stereotypes overvalue international scholars and undervalue minorities from colonized cultures, including Native Americans, African Americans, and Latinos. Given our low numbers of international and minority women and high number of foreign-trained male faculty, we will also add educational programs on intercultural gender competencies. This is important because consistent guidelines on openness, bias awareness, and clarity support equity in evaluation (Long & Fox 1995, Fox & Colatrella 2006).

Importance of Networks: Building on the literature of academic gender and social networks and the insights of several ADVANCE IT sites, we will focus on enhancing diverse networks and collaboration to help women overcome the isolation associated with solo status (CAWMSET 2000, Sonnert 1995, Steward, Malley and LaVaque-Manty 2007). We build on the concept of the New Jersey Institute of Technology to strengthen interdisciplinary networks (Steffen-Fluhr 2006). Central to interventions in networks is the insight that there are differences in professional networks between women and men and that women's participation in formal and informal decision-making campus networks is crucial to institutional change (see for summary Ranking, Neilsen, Stanley 2007, Lamont et al. 2007). As the social movement literature suggests, networks can be an important basis for effecting institutional change. The University of Colorado at Boulder LEAP program emphasizes how important it is for women to have tacit knowledge about science and the institutions, which can be learned through networks (Ranking, Neilsen, Stanley 2007). Georgia Tech researchers found that various intersecting networks involving women faculty proved crucial for institutional change (Realff, Colatrella and Fox 2007).

Many researchers have shown through interviews and survey data that there are career advantages for individuals with a contact network that is rich and links to different groups (referred to as structural holes in the literature). Heterogeneous networks with loose connections are often useful in career progression (Burt, 1998; Granovetter 1973 & 1974; many others), which can translate to the reputation required for tenure and promotion. Exceptions do exist. A social network study of the Northeastern-led NSF Nanoscale Science and Engineering Center for High-rate Nanomanufacturing suggests that establishment of trusted research collaborations and translation from knowledge in industry requires

strong close relationships because trust is required to initiate collaborations and share state-of-the-art information (Garcia 2007).

We hypothesize that the social capital required for successful interdisciplinary research and proposal development is different from that required for disciplinary research, and that gender and race factor into necessary network characteristics. Faculty networks in the interdisciplinary world must be more diverse, with looser connections than networks for faculty in a concentrated discipline. New faculty must balance the need to develop disciplinary expertise for credibility and tenure with working in interdisciplinary educational and funding environments. While the development of this new type of social capital is a challenge for everyone, faculty who are underrepresented in their own departments and disciplines may experience greater challenges, as they typically do not have the same inherent connections to broader communities that facilitate interdisciplinary growth, and they may experience greater criticism for not working in the "right" areas. Additionally, the networks required to enhance success of women in our departments of interest (STEM and SS) have different characteristics from the networks common among men. Women require strong ties with potential collaborators that may be difficult to develop on their own; strong ties with women in heterogeneous networks for personal development; and loose heterogeneous networks to develop technical reputations.

A compounding international component: There is limited research about integrating women faculty into increasingly culturally and internationally diverse work and teaching environments. Our intervention focuses on gender sensitive intercultural competence among both women and men, because we suspect that the increasing cultural diversity might exacerbate exclusion of women from collaboration network on campus. Rosser, for example, found that U.S. women perceived that international male colleagues did not take them seriously and were not open to collaborating (Rosser 2004). The increasing cultural diversity among women faculty needs to be taken into account in interventions to advance women. For example, Steffen-Fuhr (2006) from the ADVANCE IT site at New Jersey Institute of Technology argues that the diversity of women's national backgrounds might contribute to the isolation that women faculty encounter. Historically, women scientists were sometimes more successful abroad than in their home countries. "Foreigner" status meant they were less expected to fulfill stereotypical gender norms. For example, Czarniawska and Sevón (forthcoming) found that foreign women professors at European universities were seen as "double strangers," allowing them to succeed as scientists and transgress narrowly defined gender roles. U.S. women expatriate managers could be successful because they are perceived as foreigners who happen to be female, granting them outsider status (Adler 1987, 1995). The advantage of international mobility does not seem to translate into equal wages for women scientists, though. Similar to U.S. women, highly skilled women scientist immigrants in the U.S. have persistent wage and promotion gaps, demonstrating that these women cannot escape the disadvantages of being women in U.S. science occupations (Batalova 2006, Xie and Shauman 2003).

Our aim is to provide opportunities to enhance international networks for women, because a national reputation in the sciences depends increasingly on international visibility. For example, NU's merit and promotion criteria include attendance at international conferences, and the guidelines for promotion to full professor include an international reputation. Given the high specialization in many fields of science and engineering, researchers need to seek collaboration partners beyond national boundaries. There is little research on gender-specific barriers to academic international networks and collaboration, but we suspect that establishing collaborations with international centers of excellence is more difficult for women, because women, as well as minority men, tend to be more excluded from the prestigious "old-boy" international networks. This is also reflected in the persistent gender gap among prestigious international fellowship holders. In our focus groups and informal conversations, we have also learned that women have fewer opportunities to attend international conferences because they did not get invited, expected the conference culture to be sexist, or felt unsafe traveling abroad alone. Given the lack of literature in this area, our research will investigate further gender-specific barriers to international collaboration and strategies to overcome these.

We focus on interdisciplinary recruitment and networks because research suggests that, outside established departmental structures, interdisciplinary teams and centers provide opportunities to create new forms of collaborative, team-based research that allow women to thrive (Rosser 2004, Corley and Gaughan 2005). We believe that increasing gender-sensitive cultural competence skills among leadership and faculty will enhance interdisciplinary research and collaboration, too. There is an interesting parallel

between the skills needed to work effectively in interdisciplinary, collaborative teams and with colleagues from different cultural backgrounds; both require communication skills, awareness of one's own culture and privileges, and mutual respect, instead of putting one culture over another (Reich and Reich 2006). International businesses have seen increased productivity of moderately diverse teams and the need to build "soft-skills" for teamwork and gender-sensitive intercultural competence. Similarly, given the diversity of faculty bodies, universities cannot rely on shared values and understandings; they must step in to build competencies to create an inclusive environment. This will lead in the long run to improved mixed gender, mixed cultural networks for women and more generally advance women in a changing global and interdisciplinary landscape in science and engineering.

Critical Role of Leadership: Finally, our model for long-term change is based on the insights that several factors need to be in place. Rosser and Chameau (2006) argue that long lasting effective reforms and institutional changes must include the top leadership, middle administrators, and faculty. From the literature we have learned that a diverse group of women have to have a "voice" in institutional transformation by participating in informal decision-making networks. Recruiting women to critical leadership positions can make a difference in the hiring of more women (Konrad and Pfeffer 1991; Cohen et al 1998, Lamont et al. 2007). Campus-wide diverse, intersecting networks that include women therefore are motors for institutional change (Realff, Colatrella and Fox 2007). Given the small overall number of women senior faculty in our STEM and SS departments, however, it is necessary to prioritize equally the improvement of the competencies for effecting gender equity and accountability across all leadership positions. Managerial accountability for diversity had the strongest impact on hiring women and minorities in private organizations, while diversity training programs were also more effective in organizations with accountability (Kalev, Dobbin and Kelly 2006). Leaders (Department Chairs and Deans) informed by the role of social networks and differential aspects related to gender and diversity can be influential in providing mentoring and other opportunities that broaden the career success potential of both white women and women of color (Burt 1998).

4. AWIIN Initiatives and Interventions

The institutionalized barriers that limit advancement of women in the academy are addressed through interventions designed to improve **recruitment**, to develop and strengthen **networks and collaboration** for promotion, and to **develop leadership and accountability**. AWIIN interventions are designed to address these three main areas with a cross-cutting theme to establish interdisciplinary and international networks and collaborations. We have designed new, unique approaches (see Table 2, denoted * in the first column). Other interventions are adapted and modified from existing ADVANCE IT sites. We target potential faculty candidates, men and women faculty, and leadership, extant and rising. Endorsed by the Deans, Department Chairs will be change agents who influence policy, practices, and programs to promote advancement of women at NU. With the leadership academy we have a process in place to involve institutional leaders (including Department Chairs) to participate in educational awareness building exercises to help overcome deep cultural resistance Schein (2004). We will evaluate our interventions with ongoing research and combined internal and external evaluation that will provide guidance for possible modification for design and implementation.

INITIATIVE I: Recruitment. Northeastern anticipates recruiting more than 200 faculty members over the next five to eight years (30% of its faculty body), with up to 150 of these in STEM or SS fields. This broad hiring initiative provides a timely opportunity to improve diversity and representation, as it includes additional faculty made possible through the interdisciplinary hiring initiative to hire senior stars, hires due to realignment of faculty/teaching needs, and anticipated replacement hires of the 25% of our faculty over age 60. In anticipation of this opportunity, the Office of the Provost and the Office of Affirmative Action are coordinating strategic initiatives and developing a hiring plan to make the 2007 Academic Plan diversity core value come alive. Our intervention is designed to improve recruitment practices and processes and effectively monitor the recruitment and hiring process by increasing accountability. The AWIIN project will build on the Michigan STRIDE program and focus on increasing diversity in applicant pools and strengthening resources to support dual hires.

Interdisciplinary Recruitment Conferences (IRC) will serve as a forum for women and minority graduate students and postdoctoral researchers to present research and interact with faculty. These

Table 2: Proposed Interventions, Outcomes and Target Populations

Interventions	Outcomes	Target Population					
Recruitment Isaacs & Jones							
* Interdisciplinary Recruitment Conferences	Stronger and larger applicant pools	PhD Students and Faculty elsewhere					
NU STRIDE: Search Committee Workshops	More diverse applicant pools and recruitment	Search Committees					
* Dual Career Network HERC Committee	Higher success in searches	Faculty Recruits					
Networking and Collaborat	ion (Promotion) Zippel and Lee-Parsons						
* External Career Mentoring Teams	Inclusive academic networks for women	Women in Dept, Interdisc. Groups					
Internal Mentoring Program	Clarity in T&P policies and guidelines	TT Faculty					
Expanded Internal Mentoring Program	Appropriate mentoring resources	Tenured Associate Professor Women					
* Grants for National and Intl Research Collaboration	Increased interdisciplinary and intl collaborations	Women Faculty					
Campus wide Networks (lunch/dinner funding)	Increase in quality of climate for women	Women Faculty					
Greater Boston Area Faculty Seminars (NU Jr faculty host)	Increase in the number of local area contacts	Women Faculty					
Leadership Development And	Accountability Falcon and Wadia-Fascetti						
* Leadership Academy	Increase women in leadership & competences	Chairs, Directors, Deans, (Leaders)					
Center and Dept. Development Grants	Improved climate and advance women	Chairs and Center Directors					
AWIIN College Committees	Strong participation of faculty in AWIIN activities	Senior Faculty					
Recognition of Diversity and Networking Efforts	Diversity valued in institutional merit system	Chairs, Directors, Deans					
Grants to Attend External Leadership Training	Increased social capital for women faculty	Tenured Women Faculty					
Policy & Practice Review (Gender, Interdisciplinary & Intl)	Improved policies & institutional practices	Chairs, Deans					

^{*} denotes newly developed interventions

conferences will be thematic and offered in conjunction with major interdisciplinary center and industry activities on campus. Northeastern students in the past have been able to make important employment connections through presentations and networking activities at such workshops and conferences, as each center typically has three to four academic partners and dozens of industry and government affiliates. By inviting potential faculty candidates from outside the networks, we will provide Northeastern centers and search committees the opportunity to meet potential candidates for future searches. In turn, candidates will have the opportunity to get to know NU faculty with the incentive to meet a variety of potential employers. This practice will be transformative, as we expect it to become a routine strategy to bring cohorts of diverse prospective faculty candidates to campus.

Two different centers will be identified each year to co-host an IRC. The NSF-funded Engineering Research Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS) and the NSF-funded Nanoscale Science and Engineering Center for High-rate Nanomanufacturing (CHN) are our partners the first year. Since regular center conferences typically convene students and faculty, center staff will identify leading institutions and faculty in similar research areas currently outside the center. AWIIN staff will reach out nationally to the identified institutions and faculty, their postdoctoral research assistants, and their students with invitations for conference registration. The goal will be to invite 20-30 PhD students and postdocs as well as junior faculty women and minority men to participate in each center conference and to give presentations as part of breakout groups or poster sessions, depending on the conference format. A specific program to enhance women and minorities will be incorporated into each IRC to enhance participant career preparation. Topics will include negotiating the ideal faculty position (adapted from the ADVANCE IT site at RICE), how to "jump start" careers, and networking. AWIIN will provide travel support to women participants; the Office of the Provost, through minority enhancement funds, will provide travel support to minority men participants. AWIIN will ensure that a representative of a disciplinary department, research center, or search committee follows up with each participant. Participants' (with permission) CVs and papers will be consolidated into a searchable database through NU's AWIIN website to support Northeastern and other schools in hiring.

Northeastern will initiate and serve as the initial chair to a "**Dual Career Network**" committee as part of the New England HERC (Higher Education Recruitment Consortium) to activate cross-institutional professional contacts. Currently, the New England HERC supports dual careers through an enhanced search engine of a comprehensive database of faculty and staff positions at New England educational institutions. The new Dual Career Network adds a personal component, increasing the likelihood that partners will receive interviews. Institutional investment includes additional staff support to manage dual career hiring. The Deans have agreed to interview any candidate (faculty or staff) whose partner is being actively recruited and fits an open position description.

Finally, we will adopt the Michigan STRIDE program to educate faculty involved in recruitment and promotion processes about unintentional gender biases in evaluation processes, and improve our evaluation procedures to reduce reliance on these biases in practices. We will modify this program to add an intercultural-competence component and information about hiring issues involving international faculty. Because hiring processes can be difficult for candidates to navigate, each faculty candidate who has been offered a position will be contacted by a "recruitment liaison," a faculty member with similar background who will serve as a confidential advisor and is not on the search committee or involved with the negotiations. The purpose of this contact is to give the candidate information about the unique aspects of Northeastern and serve as a sounding board in the negotiation process.

INITIATIVE II: Advancement through Networking and Collaboration. NU's existing faculty mentoring program is discipline-bound and fraught with all the uncertainties junior faculty face in confiding in eventual reviewers of their performance. Because of the gender differences in mentoring styles, women ideally should have access to several mentors, both senior women and men. While men are effective in providing women with guidance to promote positive work outcomes (Drehe & Cox 1996, Ragins & Cotton 1999, Wallace 2001), women can help other women become more empowered and influential in their departments (Settles et al. 2007, Gaughan 2006). Given the numerical shortage of possible senior women mentors at NU, the mentoring program will also use effective mentoring workshops to enable junior women to benefit from senior women's experiences. Our modified mentoring program will include: (1) new faculty being linked to a senior faculty member, preferably a person with professional and institutional experience; (2) the option for a mentor (with common personal traits) from outside the department who will not have an evaluative role in the tenure and/or promotion process, but has institutional experience; and (3) a series of workshops, for example, including panels of women senior faculty speaking about work/life issues, panels talking about how to build international networks and collaborations, etc.

Additional activities to enhance networking for women include three major parts. First, travel grants will enhance the participation of women in interdisciplinary and international networks. Individual or groups of women faculty members can apply for these grants to build interdisciplinary or international contacts and collaborations by attending international conferences, short visits at international centers of excellence and laboratories abroad, etc. The program will provide opportunities for faculty members with international contacts to help their colleagues establish contacts abroad. Because international conferences frequently require longer stays and travel, the grant can be used to travel, to cover expenses for child care, or to subsidize travel costs for family members. Second, modifying a practice from the ADVANCE IT site at Kansas State University, junior women will host Boston area faculty for seminars at Northeastern. The women will have the opportunity to build professional network ties by one-on-one meetings over lunch, learning during the seminar, and hosting a post-seminar discussion. Third, we will continue ongoing campus-wide interdisciplinary network building for women across the ranks through lunch and dinner meetings. The combination of the modified and expanded institutional faculty mentoring program with collaboration grant opportunities, and the proposed External Career Mentoring Teams described below, will enable women to get balanced and trusted advice and develop effective professional networks.

External Career Mentoring Teams (ECMT) will be developed through AWIIN to strengthen national and international networks for women and overcome the lack of mentors available within the NU community. ECMTs will consist of mentors from outside Northeastern to help women break into networks with colleagues outside the institutions, to create a rich contact network that links to different groups (or structural holes), and a heterogeneous network with loose connections for career progression (Burt 1998; Granovetter 1973 & 1974; many others). In academia, the latter translates into building the reputation and name recognition required for tenure and promotion. Research by Professor Garcia (2007) on social

networks in an interdisciplinary research center suggests that trusted (strong) relationships are an essential precursor for sharing scientific knowledge. Thus, we propose ECMTs as a means to accelerate development of strong and trusted networks for research, as well as loosely connected heterogeneous networks to support reputation development for women.

ECMTs will be coordinated as an AWIIN grant program. Departments, interdisciplinary centers, or groups of departments can write proposals to formulate a team of advisors external to Northeastern (with national and international reputation and experience in interdisciplinary collaborations). The outside teams of senior advisors will help guide faculty (within a unit or an interdisciplinary program) toward their career goals. The ECMT proposals will be expected to have multiyear plans to enable development of longitudinal relationships between the mentoring team and multiple faculty members at Northeastern; and to address the unique aspects of the department or centers with regard to women and diversity. ECMT applicants will be required to show that external advisors have agreed to participate and to commit to interactions with the faculty for a two to three-year period. Activities should include focused one-on-one meetings with individual faculty to go over the CV, possible grant proposals, and general questions about professional career advice and development. Funds can include travel costs, stipends to advisors, and expenses to send NU faculty to the external mentors' institutions to give seminars and meet with potential national or international collaborators. ECMT visitors will be provided with materials on mentoring and will be engaged in discussions about AWIIN goals. Consistent with existing grants offered through the Office of the Provost, final and annual reports will be required for each ECMT. Eligibility for all Provost Grant Funds requires that an applicant be up-to-date with reporting obligations.

INITIATIVE III: Leadership Development and Accountability. Numerous campus discussions highlight two key aspects of advancing women faculty that require attention. First is the need for development of leaders who can manage departments effectively as well as recognize and appreciate the unique situation of potentially isolated women faculty; second is the importance of accountability in processes such as recruitment, mentoring, tenure and promotion. Department Chairs have a direct influence on department climate, and we appreciate how these climates vary across the institution. How Individual faculty perceive departmental contexts varies as significantly as departmental leadership styles (Pillai et al. 1999, Ehrhart 2004, Arnold et al. 2000). Since academic leadership is a "loosely coupled system" (Clark 1983, Orton & Weick 1990, Weick 1976) rather than hierarchical or entirely "team" based, with localized independence and logical separateness, we propose the Leadership Academy as a means to connect the vision established by the highest-level institutional administrators with the daily lives of the faculty (Bennett & Figuli 1990, Lucas 2000). Thus, the focus of the leadership initiative is to create an overarching Leadership Academy to provide opportunity for longitudinal skill development, a pipeline for women in leadership, and the sharing of best practices.

The Leadership Academy is a means of reinforcing climates that enable building of women-inclusive interdisciplinary and international competence by engaging participant chairs, Deans, Center Directors, rising women leaders, and members of the faculty senate in collaborations that identify solutions to challenges that face their faculty, with a particular emphasis on women. By engaging leaders who are also responsible for the Academic Plan, the Leadership Academy will enable AWIIN to be a catalyst bringing gender balance and diversity into the center of the Plan. The Leadership Academy will be effective for change because it incorporates representation from across the institution at different levels. It is designed with foci toward leaders in the most direct contact with faculty to address the need for shared and pervasive accountability. The Academy is innovative as it builds on existing ADVANCE toolkits that bring Chairs together for skill development, diversity awareness programming, and discussion to create a collaborative approach to establishment of different forms of accountability. Leadership succession within units is a major problem that we expect will be alleviated by the efforts of the Leadership Academy. The Provost's office will assume responsibility for the Academy, and it will be an integral component of regular meetings and retreats for Deans and Chairs and rising faculty.

The Leadership Academy will consist of a half-day workshop for new Chairs and Directors (line managers) that include case based presentations on management and leadership skills as well as information about institutional budgeting processes. Meetings continue for all Academy members to meet about once a month (10 times) during the academic year for two or three hour theme-based meetings. All sessions will provide opportunities for case-based discussion. There will be an expectation that leadership will participate regularly during their terms (see letters from the Deans and Chairs) with more experienced

leaders providing peer-based guidance in discussions and presentations. For example, experienced leaders will be asked to present best practices. Some meetings will be allocated for discussion of the implementation of policies and practices. Distinguishing features of the Academy include:

- Theme-based meetings with interactive presentations on unintended (gender) bias; how Chairs can use the idea of social networks to improve opportunities for their departments or individual faculty; the importance of transparency in policy implementation; change management (see Simmons letter); and intercultural competence for an increasing internationally diverse faculty (see IBM & HP letters).
- The collaborative peer-based training approach engages participants in developing accountability practices for gender balance. The participants will develop best practice models to advance women in interdisciplinary and international collaborations for units at NU. Consistent with Wisconsin WISELI active-learning, peer-assisted workshops, we will invite provosts, Deans, and Chairs from existing ADVANCE institutions such as NJIT (see letter) to participate as peers. Additional ADVANCE institutions will be invited to participate during the course of the grant. One example that has been discussed is sections in annual activity reports asking specifically about mentoring activities (given or received) or a section on "Mentoring" or "Broadening Activities" outside the obligatory service section.
- Members of the Academy will be expected to recruit women faculty who are potential institutional leaders to participate in academy activities.

Center and Departmental Development Grants: As a result of the leadership academy, we anticipate that the Center Directors and Chairs will identify unit-specific opportunities to improve the climate and advancement of women in their units. These grants provide the necessary resources for these changes.

5. Opportunity for Transformation at NU

The changing university leadership, the rising expectations of faculty, a new Academic Plan, a potential 150 new faculty hires in science and engineering over the next five years, and the Interdisciplinary Hiring Initiative make 2008 an opportune time to implement interventions that will have a direct effect on recruitment and advance women faculty at NU. Rosser and Chameau (2006) explain how institutional initiatives and activities must be aligned for genuine transformation. The faster pace of activity at Northeastern, largely driven by the new Academic Plan and its new initiatives, will provide great opportunity for transformation. While there are important initiatives already in place, the NSF ADVANCE grant will support a larger number of efforts that can be timely and fruitful.

AWIIN goals align well with the Academic Plan, yet an IT award can serve as a catalyst to stimulate further change within the context of current institutional planning and initiatives. This alignment is reinforced because AWIIN leadership (Professors Sara Wadia-Fascetti, Luis Falcón and Graham Jones) serve on Academic Planning and Implementation committees, and the team represents multiple institutional levels, including administrative offices, faculty, and interdisciplinary programs. The Deans are integral to the change effort and have agreed to chair policy review committees on accountability and mentoring practices, dual career issues, development of interdisciplinary and international metrics, and strategies and incentives for development of interdisciplinary collaborations. Programming has also grown out of initial efforts through the Women's Studies and Women in Engineering programs.

Under the leadership of Wadia-Fascetti, NU has already initiated a review of policies and practices. A revision to the tenure clock extension policy was passed by the faculty senate and awaits final approval from the Board of Trustees. In partnership with the Offices for Affirmative Action and for Planning and Institutional Research, NU has collected NSF data Indicators since 2004. The institution has committed significant resources during the course of the project (\$1.7M) to support dual career hiring, university life, and leadership development in addition to office space (see Provost's Letter), and is committed to sustainability through a planned endowment (see President's letter). An ADVANCE award to NU in its current environment will lead to faster, deeper, and sustainable changes.

6. Research, Evaluation, and Monitoring to Transformation

Our research and evaluation efforts will focus on three main areas combining project-based monitoring and ongoing external reviews and evaluations. First, to monitor the impact of our interventions on hiring, retention, and climate, we will continue to collect NSF ADVANCE indicators and conduct climate surveys

coordinated by the AWIIN office. Second, we will evaluate the impact of our interventions to build and strengthen women's participation in networks. Third, we will conduct parallel original research to monitor and evaluate our interventions to enhance women's participation in international networks.

To monitor and possibly modify interventions, we will solicit feedback from participants at AWIIN events and activities through evaluation sheets. In addition, we will ask individuals, departments, and centers who receive grants through AWIIN to provide summaries of their activities on a semi-annual basis. Finally, we will have regular outside evaluations prior to the yearly NSFannual reports. The following sections describe data available, research in social networks, internationalization of academia, and external evaluation. The research and evaluation described in this section are guided by experts in gender, organizations, and faculty experiences who are familiar with NSF ADVANCE IT sites. These experts are Professors Lotte Bailyn (MIT Sloan School), Carol Burger (Virginia Tech), Elizabeth Gorman (University of Virginia) and Dr. Cathy Trower (Harvard COACHE PI). Biographical information for these individuals is available in supplementary documents.

I. Data Collection for Evaluation Research: A central tool to assess project effectiveness is periodic review of statistical demographic career-related data on faculty. Monitoring changes and transitions in faculty characteristics is a crucial analytical tool for evaluation and for the institutional transformation process itself (Frehill, Jeser-Cannavale and Malley 2007). Guided by NSF ADVANCE indicators, AWIIN will centralize and coordinate data collection across several campus offices, an extensive demographic database from the Office of Planning Institutional Research, and a database that monitors faculty career backgrounds and career progression in the Office of the Provost. The Office of the Provost will also have an additional staff person whose role will be to track demand for dual career placement issues. In collaboration with the Affirmative Action Office we are improving collection of information to monitor recruitment. We are in the process of adopting an e-recruit system that would include CVs and other applicant racial/ethnic information. This will allow more complete data to examine applicant pools relative to search outcomes.

We will continue to participate in three climate surveys of faculty: the university-wide Diversity Climate survey (5-year cycle); the UCLA HERI national faculty survey (3-year cycle); and the Harvard COACHE survey of new faculty experiences (3-year cycle). The most recent Diversity Climate survey was in 2003, with the next scheduled for 2008 and 2013. We are working with Institutional Research to ensure that questions pertaining to the AWIIN are included in the upcoming survey. In addition, the UCLA HERI faculty survey in 2007/8, 2010/1 will provide longitudinal data and comparative national data. Finally, we participated in the 2005 Harvard COACHE study of tenure track faculty and plan to participate again in 2008 and 2011. The COACHE data provide longitudinal data compared to a selected number of peer institutions and to the study population. Hence, we will have data to establish a baseline for 2007/2008 and for the final assessment as well as longitudinal data from the three climate surveys.

New data the AWIIN office will collect include CVs for new and existing faculty, faculty activity reports that include both research and teaching activities for the calendar year, and annual merit review increases and market adjustments. To monitor and improve the hiring process, we will survey candidates who received and declined offers from NU to explore the reasons that led to a negative response. We will also conduct exit interviews with all faculty members leaving the university.

II. Evaluation of Our Efforts to Improve Women's Networks: The main goal of our interventions is to create, extend, and deepen networks for women faculty. To demonstrate what we have contributed, it is essential that we measure changes in academic network characteristics among our target population. Professor Rosanna Garcia, a faculty member in the College of Business Administration and an expert in social networks in organizations, will be responsible for overseeing evaluation of this part of the project. Garcia will modify her survey instruments and use Netdraw and UCI net software to map faculty engagement in meaningful networks by measuring the quantity and quality (strength of ties) of network connections. In year one, as a baseline, we will conduct a census of the faculty for a 25-minute online survey to assess degree of involvement in networks at various levels. In years three and five, the entire faculty will be invited to participate in the same survey, allowing us to see changes in departmental, campus, national, and international network structures. The survey asks in detail who they know professionally and their frequency of contact (face, phone, email) with each individual. Analysis of these data will allow us to map not only who knows whom but also how often they communicate and, thus, the strength of the tie.

We will combine network mapping with an ethnographic study in year three using qualitative interviews of a representative sample of 25 women and 25 men faculty from different ranks. The interview questions will be constructed from the data collected in the initial mapping of faculty, scholars, and mentors and our own understanding of key concepts in academic career advancement and its determinants. We will ask them to identify areas and institutions where they understand that networks and collaborations are critical to their careers. This will allow us to identify areas for network development and strengthening from the perspective of the faculty member and more established scholars/mentors.

The taped interviews will be transcribed and coded using MAXQDA software. This software allows us to examine patterns in concepts and ideas within the data but also to incorporate some of the quantitative data and sort the respondents by various characteristics. This method will provide us with further information on the meanings that faculty attribute to these network connections, and we will use this data and the mapping from Year 1 to modify our interventions if necessary.

III. Research on Gender and the Internationalizing of Academia. Our third research component will measure the impact of our interventions on women faculty integration into culturally and internationally diverse work and teaching environments. Because less research is available, we will conduct exploratory research about gender and international academic networks. Zippel is working on a book manuscript about the impact of academic globalization on gender relations and will oversee this part of our research.

The goal of the research will be to identify gender-specific and institutionalized barriers for international collaboration and networking. We will use multiple methods and triangulate different sources of data in year one: First, we will assess, by collecting retrospective data from the prior five years, how engaged our faculty are in international activities and collaborations. The activities listed on CVs and continuing annual merit reviews of all women faculty and a sample of 50 male faculty in the STEM and SS departments will be examined with a focus on the following indicators: participation in international conferences, international peer review, visits abroad, guest lecturing, visiting fellowships/positions, publications in international journals, international co-authorship, etc. This initial study will allow us to analyze if there are gender differences in the degree to which faculty are involved internationally.

Second, we will conduct in-depth interviews with 15 Department Chairs and Directors of interdisciplinary centers as well as with 16 faculty members (8 women and 8 men) who have been engaged in international collaboration to find out what they perceive as the opportunities and barriers to international teaching, research, and collaboration. This will allow us to identify gender-specific barriers and strategies for international collaboration. Third, we will analyze how NU's institutionalized reward and incentives structures values international publications, research, and collaborations. We will review merit and promotion documents, leave options, etc. to identify organizational practices that provide incentives or disincentives to engage in international research and collaborations and that might have different impacts on women's and men's career paths.

These data will help us identify strategies to overcome barriers and identify best model practices for institutional transformation toward an internationally and gender inclusive culture and inform our interventions for the coming years. The final assessment in year five will be the network mapping in which we expect international contacts to increase in number, in quality of interaction, and in respondent assessment of impact. Using the CVs and annual merit review of year four, we will also measure international conference attendance and publications.

IV. External Evaluation: Dr. Judy Gordon is Professor of Management and Chair of Organizational Studies in the Carroll School of Management at Boston College, and a specialist in women's career development, work-family workplace issues, organizational change, and managerial effectiveness. Dr. Gordon will serve as external evaluator to the AWIIN project. Evaluation will be performed prior to the completion of each annual report and will include a review of available data and reports and visits to NU to meet with project leaders, STEM and SS faculty, and administration. In addition to these visits, Dr. Gordon will have available a summary of all activities and grant programs, pre- and post-evaluations, and any reports generated by the project. Evaluation will focus on the measurable outcomes of our interventions, as well as an assessment of the impact of institutional changes, including establishment and implementation of policies and benefits. Our demographic, career-related data collected with NSF ADVANCE indicators, climate studies, and maps of (international) network will also be available, along with reports generated by AWIIN from these studies. Dr. Gordon will provide annual reports as a means

of formative evaluation as well as a summative review of institutional change. These reports will be available to AWIIN as well as submitted for review by NSF and NSF site visit teams.

7. Dissemination

We will disseminate the findings from our research and evaluations of our AWIIN interventions activities through New England, nationally, and internationally. Our office will create and maintain an **interactive web site** with publicly accessible publications and documents about recruitment processes, including best practices, information for candidates and new hires, and a database of interdisciplinary recruitment workshop participants, evaluation tools, etc. In addition, we will produce guides for networking and collaboration, mentoring program information, and "how to get involved in international and interdisciplinary networks and collaborations." Finally, we will have online comprehensive materials for leadership development and accountability, including new policies, data indicators, and leadership tips.

In year four, the AWIIN office will sponsor a day-long workshop for New England universities and colleges on "gender in globalized science and engineering." The conference will have panels of experts speaking on gender-specific strategies to overcome barriers to international networks and collaboration, gender-specific mobility issues, and concerns about international career paths. Research findings will be published and presented at regional, national, and international science and social science conferences and published in national and international academic and popular journals and newsletters. Zippel plans to publish a book with an academic press on the internationalization of gender in academia. AWIIN will produce annual electronic newsletters to be distributed broadly to the academic community.

8. Management Team

The AWIIN management team represents members from each participating units. Team leader and Pl. Associate Vice-Provost for Faculty Advancement Wadia-Fascetti reports directly to the Provost. To build an effective network structure, college level AWIIN committees will be created in the College of Arts & Sciences and the Bouvé College of Health Sciences. These committees will adopt structures parallel to the Engineering Institute for Gender Equity in Leadership (IGEL) and will be composed of Chairs and interdisciplinary Center Directors; the committee chair will serve on the college's executive committee. Due to its smaller size, the College of Computer and Information Science will incorporate IGEL objectives into its existing executive committees. This organizational structure is designed to provide the college committee working on advancing women with direct access to key administrators at multiple institutional levels (Provost, university-wide Council of Deans, Department Chairs), while maintaining focus at the department level, which has the greatest influence on faculty culture. AWIIN leadership and the college committee chairs will have regular semi-monthly meetings for coordination and sharing best practices across units. The project management team will hold annual retreats to review progress project measures, and implement a SWOT (strengths, weakness, opportunities, and threats) analysis. The retreats will end with modifications to the existing implementation plan and any necessary revisions to goals and objectives.

A national search will identify a full-time project manager to administer day-to-day activities, field initial questions, develop resources, organize workshops, including the NU STRIDE and National Recruitment Conferences, and collaborate with the Office of Affirmative Action for monitoring faculty recruitment and with the Office for Planning and Institutional Research for NSF data indicator collection and climate studies. Two post-docs will assist in the research and evaluation projects. Undergraduate students through works study and cooperative education assignments will help with research and the working of the office. The website design and other activities will be facilitated by the cyber infrastructure in collaboration with NU's state-of-the-art Education Technology Center. A detailed timeline for planned design and implementation of activities, research and evaluation is shown in Table 3.

Senior Personnel: AWIIN will be directed by Professor Wadia-Fascetti (PI), Associate Vice-Provost for Faculty Advancement, with Professor Zippel (Co-PI) serving as Associate Director and leader of the research component. Professor Graham Jones (Co-PI) serving as Associate Director and leader of the interventions with particular focus on engaging the Chairs. Project implementation will include oversight by Co-PIs, senior personnel, and academic Deans. Recruitment will be led by Professor Jacqueline Isaacs (Co-PI) and Jones (Co-PI). Networking and Collaboration will be led by Zippel (Co-PI) and

Table 3: Project Timeline for Activities and Research

Interventions	Yr 1 '09	Yr 2 '10	Yr 3 '11	Yr 4 '12	Yr 5 '13				
Recruitment Isaacs & Jones									
* Interdisciplinary Recruitment Conferences	Conferences held twice a year								
NU STRIDE: Search Committee Workshops	Prep.	COE focus	Extend to SS	Extend to all CAS	All				
* Dual Career Network HERC Committee	Prep.	Boston beginning	Exten	end to New England					
Networking and Collaboration (Promotion) Zippel and Lee-Parsons									
* External Career Mentoring Teams	Prep.	1st 2yr grant	2nd 2yr grant	3rd 2 yr grant	All reports due				
Internal Mentoring Program	Existing in the Office of the Provost								
Expanded Internal Mentoring Program	Outside mentors added to program								
* Grants for National and Intl Research Collaboration	Incorporate with existing Provost Grant Programs								
Campus wide Networks (lunch/dinner funding)	Offered annually								
Greater Boston Area Faculty Seminars (Jr faculty host)	Offered annually beginning Year 2								
Leadership Development And Accountability Falcon and Wadia-Fascetti									
* Leadership Academy Ramp up in first year to full implementa									
Center and Dept. Development Grants		Initiate Distribute funds		ds					
AWIIN College Committees	Initiate Rotate Membership								
Recognition of Diversity and Networking Efforts	Implementation of new metrics								
Grants to Attend External Leadership Training	Existing in the Office of the Provost								
Policy & Practice Review (Gender, Interdisc & Intl)	Begin	Imple	ement	Reassess					
Research, Evaluation and Monitoring to Transformation Zippel, Garcia, and External Evaluator									
Data Collection for Evaluation Research	Ongoing	HERI	COACHE		Diversity HERI				
Evaluation of Efforts to Improve Networks of Women	Baseline Map		Survey Interviews		Survey				
Research on Gender and the Intlization of Academia	Interviews	CV study	Interviews		Networks				
External Evaluation (Dr. Judith Gordon, Bos. College)	Observations and Annual Reporting				Final Report				
Interventions	Yr 1 '09	Yr 2 '10	Yr 3 '11	Yr 4 '12	Yr 5 '13				

^{*} denotes newly developed interventions

Professor Carolyn Lee-Parsons (Sr. Personnel). Leadership Development and Accountability will be led by Professors Luis Falcón (Co-Pl) and Sara Wadia-Fascetti.

Research will be supported by Professor Rosanna Garcia (Sr. Personnel). This leadership team is appropriately placed within the institution. Falcón is Vice-Provost for Graduate Studies and former Vice-Provost for Faculty; Jones is Chemistry Department Chair; Zippel and Wadia-Fascetti sit on the Executive Committee for Women's Studies; Garcia (has an ongoing project for social networks for an interdisciplinary research center). Isaacs, Engineering IGEL Director, will chair an AWIIN committee of faculty departmental representatives and be the STRIDE institutional representative.

Deans' Role in AWIIN Leadership: The four participating Deans sit on the AWIIN advisory board and will participate in the Leadership Academy themselves as well as require participation on the part of their Department Chairs. Each Dean has agreed to chair a committee to review important institutional policies and procedures that may have negative impacts on the recruitment and advancement of women. They have also committed to hold their Department Chairs responsible for diversity and excellence in faculty searches and to ensure that effective mentoring is available to faculty (see Dean's letters). In turn, and as stated in President Aoun's letter, the Deans will be held accountable by the new Provost (to be appointed in 2008) for diversity and excellence in their colleges.

Faculty Participation: In addition to participating in the interventions proposed, faculty (men and women) will participate as rising leaders in the Leadership Academy, STRIDE recruitment workshops if they serve on faculty search committees or evaluation committees and will have the opportunity to serve on the college AWIIN committees. Faculty will also become agents for change through the AWIIN college committees.

Advisory Boards will meet semiannually (six meetings have been held in the past), with input from a diverse group of advisors, and consist of three subgroups: research, external best practices, and internal implementation advisors to guide development, implementation, and sustainability. Bios for the research advisors (Professors Lotte Bailyn, Carol Burger, Elizabeth Gorman and Dr. Cathy Trower) are included in supplementary information. An external advisory board includes influential members of the Northeastern Board of Trustees: Bob Marini, Emeritus Vice-Chairman, and Carol Shapazian, member of the Executive Committee, as well as key members from industry and academia. Board membership also includes experience in implementation of ADVANCE programs Professor Wayne Jones (Engineering ADVANCE Director at the University of Michigan) and Professor Priscilla Nelson (Provost, New Jersey Institute of Technology). The internal advisory board includes individuals in positions of influence and decision-making and will guide the project through implementation across Northeastern.

9. Path to Sustainability

NU already has plans for sustainability of AWIIN and its programs. The Office of the Provost will invest \$1.7M in programs that directly support and impact AWIIN efforts. The President has agreed to support raising an endowment estimated to be \$2M. The Associate Vice-Provost will have discretion over the use of the funds committed during the project as well as the operational funds (estimated at \$100k/year) of the endowment once it is raised. The dedicated AWIIN office space integrated with our leadership offices will be maintained after the completion of the grant. These steps toward sustainability are consistent with organizational changes already in place (IGEL and Associate Vice-Provost for Faculty), which will be sustained unless the project evaluation suggests a different structure. Faculty support mechanisms, leadership programs, gender bias awareness, intercultural competence, and changes in attitudes will be mainstreamed into department, college, and university leadership practices to maintain the improved cultural climate. Data collection initiated during the grant will continue through NU administrative structures and will instigate a culture of open communication through university websites, publications, and announcements.

10. Results from Prior NSF Funding

In 2006 Dr. Gilda Barabino received an NSF ADVANCE Leadership award titled "Cross-Disciplinary Initiative for Minority Women Faculty" while she was on the NU faculty, but left at the end of 2006 to join the Georgia Institute of Technology. The Connections Program was developed by Wadia-Fascetti in partnership with a Northeastern team and the Boston area Patriots' Trail Girl Scout Council to strengthen career pathways for women and girls interested in engineering and science. The College of Engineering received a major NSF grant in 1999 (HRD #9813896) to start Connections, which has received numerous accolades, including NU Presidential Aspiration (2002) and NU Diversity Recognition (2002, 2005) awards and the 2005 American Association of University Women Progress in Equity Award. In 2003, Connections and Wadia-Fascetti were honored by President Bush with a 2002 Presidential Mentoring Award. The College of Engineering dedicated funds to continue Connections. Its program includes activities to help women through the most difficult college challenges, with concentrated mentoring and opportunities to practice career skills and develop networks for career success. The program has increased retention significantly (see additional outcomes in Wadia-Fascetti's bio).