SECTION A. PROJECT SUMMARY

The proposed NSF ADVANCE IT project, *Creating Opportunity Networks for Engagement and Collective Transformation:* Increasing the Representation and Advancement of Women Faculty @ RIT (*Connect*@RIT), is an effort across RIT's nine colleges, all of which include STEM/SBS disciplines. The project's goal is to increase the representation and advancement of women STEM/SBS faculty*,* widely represented across ethnic, social, and cultural backgrounds, by removing barriers to resources that support career success and creating new interventions and resources. An additional emphasis will be upon adapting interventions to address the needs of key sub-populations including women of color and deaf and hard-of-hearing women faculty. The project aims to: 1) refine and strengthen targeted institutional structures; 2) improve the quality of women faculty's work life; 3) align institutional, administrative, and informal systems of power and resources to support and sustain progress towards the project goal; 4) enhance the working environment and support career advancement for women faculty; and 5) establish a sustainable, inclusive, accessible RIT network that supports career goals for all RIT faculty.

Intellectual Merit:
The overarching project theme is based on social resources theory, which posits that resources embedded within a social network promote an individual's upward mobility [1]. Individuals who are able to access these resources effectively benefit through greater career success. This project utilizes numerous innovative approaches to advancing women faculty, with a focus on faculty social networking behavior, an area of expertise for one of the co-PIs. Interventions that promote network connectivity, in conjunction with faculty training to access social resources, will target increased career goal attainment and improved recruitment, retention, and advancement of women faculty. The project has adopted a multi-frame organizational analysis approach [2,3], integrating structural, human resources, political, and symbolic perspectives of organizational theory. *Connect*@RIT will establish clear connections among the social network framework, interventions, research, and evaluation activities. Results will guide future policy development, to support a network where faculty can leverage social resources to accomplish individual and organizational objectives. This project will both enhance existing family-friendly, gender-neutral policies and implement new ones. It is thus clearly aligned with NSF's new Career Life-Balance Initiative [4]. The project team is led by a group of dynamic faculty from six of RIT's colleges, with considerable expertise in issues facing STEM/SBS women faculty, including women of color and deaf and hard-of-hearing women faculty. The PI and several project team members were integral members of RIT's NSF IT Catalyst grant project (#0811076).

Broader Impacts:
This study will shed light on how organizational climate influences a woman faculty member's ability to permeate the network structure and will determine how the *Connect*@RIT interventions influence the inclusion of all faculty members. Adapting the proposed interventions to the unique needs of underrepresented groups such as women of color faculty and deaf and hard-of-hearing women faculty will broaden access to the formal and informal RIT network. Graduate students will play a key role in this project and will gain research experience, knowledge, and skills that will be instrumental to their future roles in the workforce. Professional development sessions, electronic newsletters, and progress reports will inform the RIT community about the project and promote the participation of both men and women.

Furthermore, partnerships with Rochester-area organizations will be strengthened through dual-career hire initiatives. Project results will be disseminated locally, nationally, and internationally through the annual "Imagine RIT" community outreach festival, the project web site, conference presentations, and peer-reviewed publications. By determining the role of social networking behavior in improving recruitment, retention, and advancement of women faculty in STEM/SBS fields, this project will provide a unique element that could be adopted by future NSF ADVANCE projects. Moreover, the knowledge obtained through this project may provide critical insights to guide social networking initiatives to advance women in industrial, government, and non-profit work settings.

SECTION C. PROJECT DESCRIPTION
1. Institutional Context and Data

Founded in 1829, RIT was an early pioneer in practice-based and cooperative education. Today, RIT is the third largest technical institution of higher education in the United States and a leading career-oriented university that prepares students for success in a global, technological world. Over the past five years, RIT's incoming classes have improved in quality and diversity and increased in size (20%). Likewise, the faculty has become significantly larger, and more diverse. RIT is now among the fifteen largest private universities in the nation and has over 110,000 identified alumni. Its emphasis on creativity and innovation arises naturally out of a unique program portfolio that includes STEM and the creative and integrative arts. RIT offers a broad array of undergraduate and graduate programs in its nine colleges: College of Applied Science and Technology, E. Philip Saunders College of Business, B. Thomas Golisano College of Computing and Sciences, Kate Gleason College of Engineering, College of Imaging Arts and Sciences, College of Liberal Arts, College of Science, College of Health Sciences and Technology, and National Technical Institute for the Deaf (NTID).

Engineering, photography, engineering technology, design, science, film and animation, computing and information sciences, business, and education for the deaf are among RIT's core strengths. Specialized academic units such as the Center for Imaging Science, NTID (created by federal law in 1965 under U.S. President Johnson and located at RIT in 1966), the School for American Crafts, and the School of Print Media further distinguish its offerings. RIT is a student-focused and a tuition-driven university. Seventy-three percent of the 2011 incoming class is enrolled in a STEM major. In the fall of 2011, undergraduate students comprised 87% of the total student population (over 17,000). The majority of graduate students are enrolled in masters programs, with approximately fifteen each year receiving doctorates. Roughly 20% of entering freshmen are minority and international students and the approximately 1300 deaf and hard-of-hearing students enrich the community in unique ways. Gender diversity has historically been a challenge for RIT with the ratio of male to female students of 2:1.

In the past fifteen years, RIT has committed substantial resources to diversifying the university population and to developing educational, structural, and policy measures to ensure its ongoing health and prosperity. Under former President Simone, a University Diversity Action Plan was written (1998); the position of Assistant Provost for Diversity was created to oversee the implementation of the Action Plan; and a unique and highly successful AALANA (African American, Latino American, and Native American) faculty recruitment program developed, in which AALANA Ph.D.'s and Ph.D. candidates are invited to RIT for a two-day round of hospitality, interviews, and presentations [5]. Largely through this program, the percentage of AALANA tenured and tenure-track (T/TT) faculty has grown to 9.6% (fall 2011). In the first year of his presidency (2007), William Destler inserted two gender-related "performance commitments" to support the strategic goal of Student Success: 1) increase the percentage of entering undergraduate women from 28.8 in 2007 to 40 in 2013; and 2) increase the percentage of female T/TT faculty from 30% in 2007 to 32% in 2013 [6]. Several aligned initiatives to support these and other diversity-related commitments are underway. Among these are the creation of a President's Commission

on Women (co-chaired by Bailey, PI); and the creation of Faculty Associate positions (part-time) within the Provost's Office to support female (Bailey, PI) and AALANA (Chance Glenn) faculty.

Table 1 shows the break-down of the distribution of RIT STEM and SBS (Social and Behavioral Sciences) female faculty in years 2008 and 2010 and by rank in 2010. In 2010, the 95 T/TT female faculty in STEM constituted 23% of total STEM T/TT faculty, and the 33 T/TT female faculty in SBS constituted 36% of that total faculty. At 25%, the combined T/TT female faculty in STEM and SBS is significantly below the 34% average of doctoral scientists and engineers employed at Master's granting colleges and universities in the U.S. [7]. While the representation of STEM faculty has nearly tripled over the past fifteen years, the representation of female STEM T/TT faculty has grown more slowly at RIT— from 16% in 1995 to 23% in 2010.

Table 1. Number of T/TT (excludes research faculty) Women Faculty in STEM/SBS

Area	# Women Oct 2008	# Women Oct 2010	% Women 2010	Asst: % Women	Assoc: % Women	Full: % Women
Total STEM	86	95	23%	31% (36/115)	24% (35/148)	16% (24/154)
Total SBS	31	33	36%	43% (13/30)	43% (16/37)	17% (4/24)
STEM/SBS	**117**	**128**	**25%**	**34%**	**28%**	**16%**

The period between 2008 and 2010 saw increases in most STEM/SBS colleges, but within colleges there were wide variations between disciplines. For example in 2010, 42% of life sciences faculty were female, as opposed to 15% in the physical sciences (in line with national trends). Additionally, four STEM units had no female T/TT faculty and half of STEM departments had a representation of female faculty that was below 20%, a critical mass threshold [8,9]. A comparison (Table 2) of RIT's women faculty representation to national availability data [7] reveals low levels except for computer science, in which a high percentage of RIT women T/TT computing faculty have master's degrees as their highest degree (a relic of past hiring practices). From 2007 - 2010, the percentage of female applicants for STEM positions was 19%, which is below availability in the national pool.

Table 2. Comparison of Representations of RIT Women T/TT Faculty with National Availability

	RIT % Women (2010)	National % Women
Engineering (not Engr. Tech.)	12%	21.6%
Physical Sciences	17%	29.3%
Computer Sciences	29%	22.0%
Mathematics and Statistics	16%	31.1%
Biological Sciences	44%	50.6%
Psychology	40%	72.0%
Social Sciences	36%	48.6%

In general, women faculty tend to be successful in terms of securing supporting types of high-level administrative positions, accounting for 67% of associate/vice dean positions in the predominately STEM colleges. However, just 20% (2/10) of dean positions at RIT are held by women. In 2010, 23% of the STEM leadership positions were held by women faculty, aligning with their representation in STEM. However, women faculty overall hold 25% of leadership positions, which lags overall representation.

Subpopulations of T/TT female faculty which will be studied within the proposed project include women faculty who are deaf or hard-of-hearing (D/HH) and AALANA. In 2011, 31 of NTID female faculty are D/HH and 70 are hearing. Eleven of the female D/HH faculty work within STEM/SBS disciplines, compared with 13 of the hearing female faculty. Faculty who are D/HH do not necessarily classify themselves as individuals with disabilities, nor does RIT track data on faculty with disabilities.   Table 3 provides a break-down of the distribution of STEM/SBS AALANA faculty by gender and rank.

Table 3. Representation of RIT STEM/SBS AALANA T/TT Faculty

	AALANA Male Faculty	AALANA Female Faculty	Female AALANA

STEM	Asst.	Assoc.	Full	Total	Asst.	Assoc.	Full	Total	within STEM
2008	17	6	6	29	8	3	0	11	3%
2009	18	7	5	30	7	5	0	12	3%
2010	16	6	4	26	6	4	0	10	2%
2011	10	10	2	22	4	5	0	9	2%
SBS	Asst.	Assoc.	Full	Total	Asst.	Assoc.	Full	Total	within SBS
2008	5	1	1	7	3	2	0	5	6%
2009	6	1	1	8	4	2	0	6	6%
2010	4	2	1	7	4	3	0	7	8%
2011	5	1	1	7	5	2	0	7	8%

2. Results from Prior NSF Support

Bailey (PI), Mason (co-PI), Baum (Senior Personnel, hereafter SP) and Valentine (co-PI) each serve on the PI team of the NSF ADVANCE Institutional Transformation Catalyst project titled *Establishing the Foundation for Future Organizational Reform at RIT* or simply EFFORT@RIT (#0811076, 8/1/08 – 7/31/12, $199,770). In addition, Marchetti (co-PI) serves as SP. The EFFORT@RIT research objective is to identify career advancement barriers for current women faculty at RIT in order to establish how well

1) On average, males are more satisfied than females with their distribution of time, overall research/scholarship, long-range career map/plan, and position overall. With respect to their time distribution at work, 50% of women respondents were dissatisfied compared to 32% of men. Professors were more satisfied than Assistant Professors and STEM faculty less satisfied than non-STEM faculty. Of all ethnic categories, the AALANA group was the least satisfied with the overall scholarship/research dimension of their careers.
2) Although promotion and tenure (P/T) success rates did not differ statistically by gender, women considered delaying P/T at higher levels than men with the highest levels reported by AALANA females (56%). AALANA faculty were the least comfortable asking questions about P/T.
3) Regarding work/life balance, more female faculty agreed that their career had been slowed by personal responsibilities (50% of women compared to 23% of men) and that they often gave up personal activities for professional responsibilities (66% of women compared to 47% of men).
4) Overall T/TT faculty data for 2002-2009 reveal higher levels of attrition for female faculty than male faculty. As of Oct. 2010, 28% of the 87 female faculty hired had left RIT compared with 14% of the 174 male faculty hired (rates varied considerably by college). Similarly, the attrition rate for AALANA faculty hired was 27%, considerably higher than that for non-AALANA faculty of 17%.

the university addresses issues that have been found to be important in the recruitment, retention, and advancement of women faculty. The research team addressed six primary research questions: 1) What is the distribution of STEM faculty by gender, rank, and department? 2) What are the outcomes of institutional processes of recruitment and advancement for men and women? 3) What is the gender distribution of faculty in leadership positions? 4) What is the allocation of resources for faculty? 5) Are there barriers to the recruitment and advancement of women? 6) How successful are existing structures at addressing these barriers? Results of a faculty climate survey [10] conducted as part of the project (overall response rate of 66%, female response rate over 71%), in conjunction with objective data review and benchmarking, led to the identification of barriers in the areas of career navigation, climate, and flexibility in work/life management balance [11,12]. The following are key, statistically significant findings from the climate survey which are aligned with similar studies and the objective data review.

Issues related to career navigation could be caused by women's weaker self-agency and negotiation skills, coupled with a lack of "sponsorship" from more seasoned faculty and/or administrators [13,14]; both could hinder the success of female faculty in obtaining advantageous start-up packages, assignments, compensation, and promotions [15]. Climate issues are exacerbated by women's view of the workplace in personal terms, as opposed to a more male process-oriented view, meaning that issues of

connectedness, support, and interpersonal relations are important to their success [16-19]. Finally, managing work/life balance through flexible work arrangements, available and convenient child care, and tenure clock adjustments may lower stress and increase satisfaction, thus possibly contributing to better retention of retention of female (and male) faculty. A compilation of the many reports of barriers facing female faculty yields two general categories of barriers: workplace issues and personal challenges. Workplace issues include feelings of isolation or marginalization [16,20-22]; lack of mentoring [16,20-24] and sponsorship by senior colleagues [13,14], leading to accumulated disadvantage over the course of a career [15]; a need to gain credibility or respect [16,25,26]; unclear expectations for tenure and promotion [21,22]; and biases ranging from subtle to open [21,22,27-29]. Personal challenges include childbearing and child-rearing decisions [19,30-33]; work/family balance [21,29,33,34]; and controlling overflow of work life into home life [35].

3. The Conceptual Framework for Institutional Transformation

The *Connect*@RIT project strengthens the RIT academic culture within a framework of **inclusive excellence**, to create an environment that **promotes innovation** and **that attracts, retains,** and **advances more women faculty**. Inclusive excellence is an institution's method for coherently and collaboratively integrating diversity and inclusion into its pursuit of excellence [36]. The **project goals** are as follows:

1. Increase the recruitment, retention, and advancement of women STEM/SBS faculty from diverse ethnic, social, and cultural backgrounds.
2. Increase the representation of women at senior faculty and leadership ranks.
3. Advance the careers of women STEM/SBS faculty through improvements in social networking behaviors, increasing their ability to access social resources to accomplish career objectives.
4. Institutionalize interventions that support change across the university in line with the project goals.

The conceptual framework (see Figure1) for the *Connect*@RIT project is based upon **social resources theory**, which posits that an individual accomplishes goals by effectively tapping into his or her social network and identifying and utilizing social resources, [37,38]. Social resources theory has been used to predict career success [39-42]. Moreover, prior research shows that women fail to remain or advance in organizations because of their lack of ability to tap effectively into their social resources [43-48].

Figure 1. *Connect*@RIT Framework for Institutional Transformation:
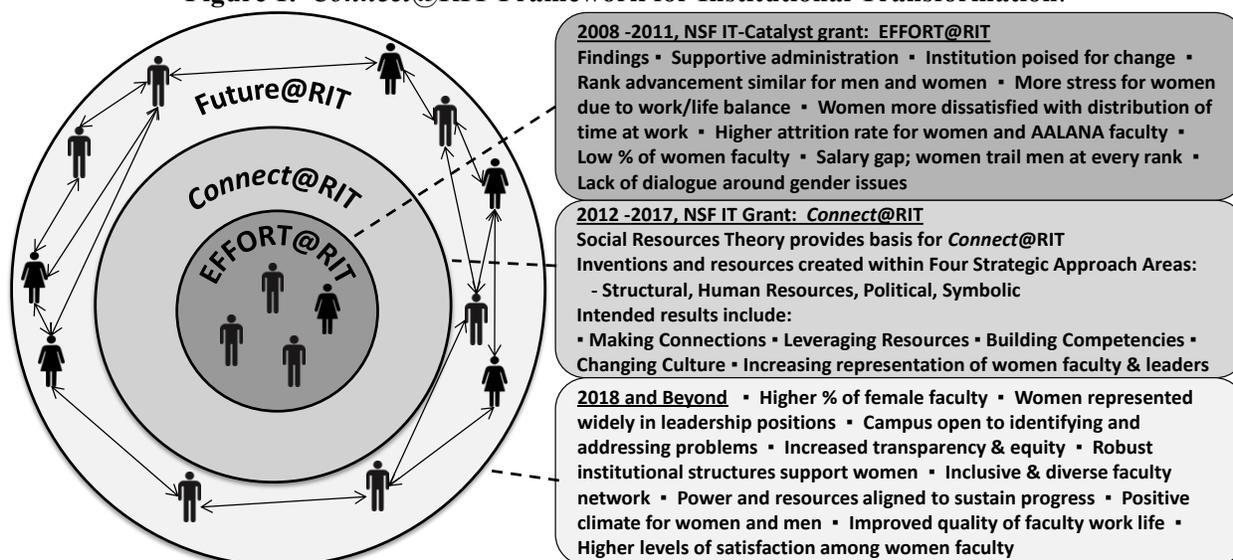
As detailed in the *Connect*@RIT Social Science Research Supplement, our conceptual model is based upon the premise that the socializing and social resources of STEM/SBS women faculty influence their Social Networking Behaviors (SNB), which then impacts their retention and advancement at RIT. *Connect*@RIT will implement carefully designed interventions, based upon our findings from the

EFFORT@RIT project, to improve faculty SNB. Our project has a special focus on AALANA and D/HH women faculty, who face unique barriers to accessing social resources. Because faculty characteristics differ across sub-populations, additional effort will be placed upon adapting interventions to address needs of these sub-populations. We propose that the interventions will improve faculty social networking behaviors, thereby increasing their ability to access social resources to accomplish career objectives. Ultimately, we predict that improvements in STEM/SBS women faculty's SNB will result in improved recruitment, retention, and advancement for women faculty at RIT.

The *Connect*@RIT project has adopted a **multi-frame organizational analysis approach** from Bolman and Deal [3] to improve understanding of organizational issues at RIT. This approach integrates several aspects of organizational theory, including structural, human resources, political, and symbolic perspectives, and suggests the use of each as a "frame" or "lens" for viewing the organization and the strategic approaches created to change the organization [2]. This approach has been instrumental in improving understanding of our organization; ensuring that our set of proposed interventions are designed to positively impact RIT at the structural, human resource, political, and symbolic levels; and strongly supporting the sustainability of successful grant activities beyond the length of the grant, due to the broad and embedded nature of the proposed interventions. Based on the proposed organizational analysis method, *Connect*@RIT **project objectives** are as follows:

1. Refine and strengthen targeted institutional structures, and install practices promoting representation and advancement of women faculty. This objective directly maps to the structural strategic approaches.
2. Improve the quality of women faculty work life, professional development, and incentive/reward structures. This objective directly maps to the human resources strategic approaches.
3. Align institutional, administrative, and informal systems of power and resources to support and sustain progress by shaping the political frameworks that impact representation and advancement of women faculty. This objective directly maps to the political strategic approaches.
4. Enhance the working environment and support career advancement for women faculty using symbolic measures that emphasize issues of meaning (e.g., the importance of inclusion) within RIT. This objective directly maps to the symbolic strategic approaches.
5. Establish a sustainable RIT network that is inclusive of all faculty members in supporting their career goals, while uncovering unique faculty needs of women of color and deaf and hard-of-hearing women faculty to ensure full participation in the formal and informal RIT network. This objective maps directly to the social science research described next and in the Social Science Supplement.

4. Activity Plan and Strategy

Based on the project model proposed, **social resources theory** suggests that an individual accomplishes goals by gaining access to his or her network, identifying social resources and mobilizing them to accomplish an objective as described in the Social Science Supplement. All of the proposed interventions are included within the social science research (hereafter SSR) and will directly help women faculty achieve desired objectives while also supporting the project's goals and objectives. The following list of interventions is separated into structural, human resources, political, and symbolic strategic approaches. Timeline and evaluation details are included within each strategic area (Tables 4-7) and further described in Sections 7 and 8. Based upon social resources theory, within various proposed interventions, Hatala (co-PI) will design and incorporate education aimed at improving social networking behaviors. Foster (SP) and Crawford (SP) will investigate whether there is a need to refine these interventions based upon unique needs of D/HH and AALANA women faculty, respectively. If so, Foster and Crawford will implement refinements to those interventions for those groups of faculty, or, if appropriate in certain cases, for all faculty through universal design practices.

Structural (S) Strategic Approaches
The structural perspective recognizes the importance of formal rules, policies, management hierarchies, organizational arrangements, and relationships within organizations [2,3]. Within this framework, our

structural strategic approaches address institutional policies and processes that will add clarity for women faculty and provide information on their perspectives. **Valentine (co-PI) will lead all of the structural strategic approaches** with the support of the *Connect* Program Manager and the *Connect* Human Resources (HR) Analyst, in conjunction with the indicated Network Resources.

Campus-Wide Faculty Survey (S1. Climate Survey). With grant support, RIT will administer a campus-wide faculty climate survey (triennial basis) through COACHE [49-51], beginning in 2012, to all T/TT faculty. A select group of additional questions will be added to the survey from the EFFORT@RIT climate survey [10]. Survey results will be reported to the faculty community and steps will be taken to highlight areas of accomplishment and address areas of opportunity. Network Resources: Baker (SP), Faculty Associates to the Provost, *Connect* Evaluation Committee

Faculty and Department Head Annual Review Template (S2. Template Review). RIT upper administration will support collaborative efforts to propose a faculty annual review template. Data from our previous study indicate lack of career navigation support as a barrier to advancement of women faculty. The *Connect* Policy Committee will develop a faculty annual review template to provide a uniform structure which outlines expectations, leads faculty to establish goals around their planned work, and requires a corresponding support (resource) plan. The intent is to foster negotiations and dialogue between faculty and department heads regarding necessary resources for their work. In addition, the committee will create a template for department head annual review, including elements that support *Connect*@RIT project goals. Both templates will be vetted through appropriate channels. Network Resources: J. Bender, Asst. VP, HR (hereafter HR); *Connect* Policy Committee.; Office of the Provost

Academic Policy/Procedure Revisions (S3. Policy/Procedure Review). Benchmarking indicates that RIT lacks flexible work agreements and clearly articulated methods to stop/extend the tenure clock and take maternity and parental leave [11]. RIT upper administration will support efforts to revise academic policy and procedures to address these areas. Because the establishment of clear employee grievance policies was highlighted as a key initiative among companies identified as best places for women to advance [52], we will examine this policy as well. Initial writing will be accomplished through the *Connect* Policy Committee, which will propose new or modified policies/procedures to the appropriate campus governance body. Proposed changes in procedure will be reviewed with the appropriate organizations including the Associate Dean's Council. Network Resources: HR; *Connect* Policy Committee; Academic Senate; Office of the Provost; Assoc. Dean's Council

Faculty Exit Interviews (S4. Exit Interviews). Stemming from the EFFORT@RIT project, a faculty exit interview procedure and survey were created in 2011 and are under review by the Office of the Provost, HR, and the Office of the Faculty Recruitment and Retention. Pending outcomes of the review process, *Connect* personnel will lead RIT to incorporate a faculty exit interview process and data dissemination plan. Data often reported include common reasons for leaving and satisfaction with resources provided [53]. An initial goal is for at least half of the faculty leaving RIT for any reason to complete the optional faculty exit interview process. Network Resources: HR; *Connect* Evaluation Committee; Office of the Provost; Faculty Associates to Provost

Dual Career Hire Initiatives (S5. Dual Career). Dual career employment issues have been identified as relevant for many faculty at RIT and although both genders report agreement with the need for more assistance with employment for spouse/partner, women report higher levels of agreement [11,12]. *Connect*@RIT will strengthen current resources to support dual career hire initiatives. Proposed activities include working with the Office of the Provost to review and revise current practices to allow for more employment opportunities for qualified academic partners. In partnership with the University of Rochester, RIT will explore synergistic activities which assist in placing partners within either university. A partnership with The Chief Diversity Officers in Western New York will support dual career efforts for academic and non-academic partners by disseminating needs and networking. (Partner letters included.) Network Resources: HR; McDonald (SP); Baker (SP); Partner Organizations

Table 4. Structural Strategic Approaches: Timeline and Formative Assessment Plan

Interventions	Timeline Details/*Assessment Methods (indirect and direct)*

S1. Climate Survey	Years 1, 4 survey administration; Years 2, 3, 5 data analysis, dissemination and action *Survey response rates; Response analysis*
S2. Template Review	Year 1 template development; Years 2-5 implementation / *Percentage of reviews that use template during annual review cycle*
S3. P/P Review	Years 1-5 policy/procedure committee work / *No. of policies modified and brought to Academic Senate; Presence of grant personnel on Associate Dean's Council and WC*
S4. Exit Interviews	Year 1 program development; Years 2-5 program launch / # *of interviews conducted; response rate; Interview results compiled and disseminated*
S5. Dual Career	Year 1 program development; Years 2-5 program launch / # *of partners using enhanced services; Feedback survey to new faculty whose partners used services*

Human Resources (HR) Strategic Approaches

This view of our university stresses the importance of recognizing the experiences, needs, and outlook of faculty. From this frame of reference, approaches are created which affect faculty work life, professional development, and incentive and reward structures [2,3]. **Marchetti (co-PI) will lead these efforts**, with the direct support of the *Connect* Program Manager, working closely with the noted Network Resources.

Refine the RIT Faculty Mentoring Network (HR1. Mentoring). *Connect*@RIT will work with the Wallace Center to refine the existing Faculty Mentoring Network program. Our previous study found that the majority of RIT faculty did not identify as having a mentor and that male faculty felt freer to pursue research without compromising P/T. In addition, 60% of females and 35% of males view support for mentoring TT faculty to be of significant value [12]. Several new features will be added to the mentoring program (created in 2009 by Bailey (PI), Dickson (SP), Baker (SP), and the Faculty Associate to the Provost for AALANA Faculty), including web-based career coaching training for mentors; career mapping workshops; and affinity groups to provide forums to gather and share ideas. Pairing participants with a mentor who is at a higher level in the organizational hierarchy will occur as these individuals can provide access to information that will potentially improve career mobility. Based on findings from the social science research study, unique element(s) for D/HH and AALANA women faculty will be incorporated. Network Resources: Dickson (SP); Baker (SP); Faculty Associates to the Provost

Launch Leadership and Career Development Program and Grants Program (HR2. Leadership and HR.3 Leader Grant). This new leadership and career development program for female faculty will be designed to increase participants' social capital, widen networks, and develop additional competencies such as negotiation skills. The EFFORT@RIT study revealed that women put forth more effort and feel less satisfied than men in negotiations and 41% feel that male faculty receive preferential treatment with regard to career advancement [11,12]. The project team will work with the Wallace Center to develop and deliver programming. Topics will include (1) Importance of Sponsorship: The value of senior faculty using their influence to advance their protégés [52]. (2) Power & Influence: Help faculty recognize and develop their power and influence to positively impact career advancement. (3) Conflict Resolution: Build skills to address and resolve conflicts, helping faculty avoid pitfalls and create opportunities for professional growth. (4) Negotiations: Develop faculty proficiency in successful negotiation for resources to further their careers. (5) Strategic Networking: Expand competency in setting goals, aligning goals with social resources, accessing social resources, and mobilizing the social resources to accomplish goals. (6) Terminal Degree Attainment: Sessions to advise and educate faculty on internal and external resources, and strategies for success; this will assist with completion of a terminal degree, thus opening doors for career advancement that may otherwise be closed. This is relevant for many at RIT where 32% of female T/TT STEM faculty do not have terminal degrees as well as 22% of male faculty. In conjunction with the workshop, female faculty participants and non-participants will be able to apply for grants to pursue opportunities for leadership education and career development. Female faculty from all RIT departments will be eligible to apply for this grant program, as RIT will support grants associated with non-STEM/SBS faculty. An online application process for this one-year grant will be developed to ease administration. The application process will require applicants to answer a series of questions including identifying career goals and demonstrating how access to this funding will help accomplish

those goals. Faculty receiving funding will be required to report on their accomplishments with the funds received in a final report submitted on-line. Based on social science research findings from efforts focused on D/HH and AALANA subpopulations, revisions may be incorporated within the workshop's curriculum or within the grants program. Network Resources: Dickson (SP); RIT Leadership Institute

Launch Connectivity Series (HR4. Connectivity). *Connect*@RIT will create and deliver the Connectivity Series which includes *Connect* Start-up Workshops (2 hours), Opportunity Conferences, and a session during new faculty orientation where faculty will learn to effectively build networks and leverage resources, and to use a Social Network Management System (SNMS) [54]. SNMS provides a systematic way to identify and manage social network resources to support career-related goals and objectives. It involves a social network assessment, goal-setting process, network mapping, action plan development, and relationship-building tool. The SNMS contains virtual and hands-on materials. Faculty will learn how to use the tool to improve their networking and manage their social resources. Sessions will also include an introduction to *Connect*@RIT grant activities. Single-gender Connectivity Series sessions will be conducted, including an all-male session that will be modeled after the North Dakota State University Advocates and Allies program [55] for male faculty. Session content will be refined over the grant period based on findings from social science research studies on D/HH and AALANA subpopulations. Network Resources: Dickson (SP)

Administer Faculty Salary Studies (HR5. Salary Study). Marchetti (co-PI) will collaborate with Institutional Research (IR) and HR to establish a systematic procedure for conducting annual faculty salary studies by gender, college, department, rank, and race/ethnicity. In academia, women earn on average 6.9% less than men even after controlling for disciplinary/institutional characteristics, individual factors, human capital, and demographic factors [56]. In 2010, gender-based average salary gaps existed at each faculty rank within RIT, with women earning about 5% less than their male colleagues [11,12]. Providing a means of access to an individual's salary study findings is vital since women faculty are less likely to be retained when they sense that information is guarded and that rewards are not distributed by merit, but biased by insider deals [57,58]. Network Resources: HR; J. Graham, Asst. VP, IR

Create Childcare & Personal Needs Committee (HR6. Childcare Committee). Members of *Connect*@RIT plus interested stakeholders will create a childcare/personal needs committee. The committee will conduct a needs and usage survey, develop recommendations, and carry out a cost/benefits analysis. Recommendations could include a lactation facility plan for nursing mothers. RIT survey results indicate that childcare issues are a significant source of stress for 34% of female faculty and 14% of male faculty [11,12]. Start-up support will be provided by RIT to fund initial, modest projects recommended by the committee. Network Resources: Dir., Margaret's House Child Care Center

Table 5. Human Resources Strategic Approaches: Timeline and Formative Assessment Plan

Interventions	Timeline Details/*Assessment Methods (indirect and direct)*
HR1. Mentoring	Year 1 program dev.; Years 2-5 program launch / *Participation; Website usage; Feedback survey; Link participation with Social Science Research activities (see supplement)*
HR2. Leadership	Year 1 program development; Years 2-5 program launch / *Participation; Feedback survey; Link participation with Social Science Research activities (see supplement)*
HR3. Lead. Grant	Year 1 program development; Years 2-5 program launch / *# Applicants and awardees; Reported grantee accomplishments; Link participation with Social Science Research activities (see supplement)*
HR4. Connectivity	Year 1 program development; Years 2-5 program launch / *Participation; Feedback survey; Link participation with Social Science Research activities (see supplement)*
HR5. Salary	Yrs. 1-5 salary study / *Annual salary study analysis; Create dissemination process*
HR6. Child. Committee	Year 1 needs/usage survey; Year 2 options/analysis; Yr. 3 recommendation; Yrs. 4-5 implementation / *Data disseminated; Recommendations made; Actions undertaken*

Political Strategic Approaches

The political perspective recognizes organizational issues associated with power and resources [2,3]. Within this framework, the political strategic approaches include deliberate methods of engaging campus leaders at various levels within the change process and redefining the role of a presidential-level institutional committee. **Bailey (PI) will lead each of these efforts** while working closely with the *Connect* Program Manager, identified Network Resources, and *Connect* HR Analyst where noted.

Align RIT Office of Diversity and Inclusion with *Connect*@RIT Initiative (P1. Align Diversity). Creating synergy between the Office of Diversity and Inclusion (ODI) and *Connect*@RIT is the focus of this activity. Traditionally, the ODI has focused on issues related to racial/ethnic diversity and inclusion. In 2010, McDonald (SP) joined ODI as the CDO and shortly thereafter began vetting the Inclusive Excellence Framework [36], which puts forth a broadened vision of diversity and serves as the basis for RIT's strategic plan on diversity. The CDO will play an active role on the *Connect*@RIT Team (Section 7). Possible collaborative activities include hosting an annual conference. Network Resources: *Connect* Dissemination Committee; McDonald, CDO (SP)

Analyze and Disseminate NSF ADVANCE Indicators (P2. Indicators). Throughout the EFFORT@RIT project, the team worked closely with HR and IR to assemble indicator data [11,12]; however, some processes were manual while others were not possible with current and past data systems. *Connect*@RIT will collaborate with IR and HR to create formal systems (using existing and refined resources) to collect this data while the *Connect* Dissemination Committee will design mechanisms to share information with campus stakeholders to build transparency and campus knowledge. One outcome may be similar to the Academic Dashboard proposed by Univ. of Maryland CP ADVANCE [59]. Network Resources: *Connect* Dissemination Committee; J. Graham, Asst. VP, IR; HR

Formalize the President's Commission on Women (P3. WC). The Women's Commission (WC) is currently an ad-hoc advisory committee to the president with representation from across the university. Membership varies based on the president's annual charge. For example, in 2008-2010, the WC focused on women faculty and served as an advisory board for EFFORT@RIT. In 2011, the WC has turned its focus towards barriers in recruiting women undergraduate students. Under *Connect*@RIT, the WC will become a standing committee on campus, receiving charges through the president from members of the RIT community regarding issues relevant to supporting women. The revised WC will bring issues of importance for women on campus to the attention of senior administrators and key campus constituents, informing campus stakeholders about gender equity and diversity issues and disseminating data through a website. Network Resources: *Connect* Dissemination Committee; Mary-Beth Cooper, Sr. Assoc. VP Student Affairs and WC Co-Chair; Destler (SP)

Advisory Team for Unique Circumstances Related to Gender-Related Bias (P4. Unique)
Connect personnel will formalize measures of accountability, addressing issues such as departments or colleges that are unsupportive of gender equity. The proposed advisory team will provide advice and advocacy, if necessary, for a faculty member who feels that she/he is experiencing gender-related bias within the workplace. The faculty member will be encouraged to deploy other resources first, including rectifying the situation with the people who are directly involved. If direct methods are unsuccessful or if the situation is very sensitive, then the issue may be taken to this team. Interactions between the advisory team and individual will remain confidential unless otherwise requested by the faculty member or as required by law. Currently, there is limited protection and advocacy for individuals in these circumstances outside of the Faculty Grievance policy which focuses on procedural errors that result in injustice. Mayberry (SP) will lead this team; other members include the CDO and an HR representative. Based on the severity of each situation, Mayberry may provide advice to the individual, or bring the situation to her team to propose interventions or provide advocacy. Interventions will be designed to create a safe environment for the individual, including documenting the situation, meeting with the offending individuals, writing a formal reprimand letter to the offending individuals, setting up required training for the offending individuals, or creating a learning situation (mandatory) for the broader group involved. Network Resources: Mayberry (SP); HR; McDonald, CDO (SP)

Launch Department Head Education Program (P5. DH Education). *Connect@RIT* and the Wallace Center will create an education program for department heads to support skills and competency development in their efforts to manage faculty throughout various career stages. All departments will be eligible to participate in this program, as RIT will financially support efforts associated with non-STEM/SBS departments. The educational sessions will explore the following: (1) Possible Remediation Plans for Areas of Faculty Concern. Review relevant faculty satisfaction responses from the EFFORT@RIT climate survey [10-12], learn of possible remediation plans for areas of concern, and propose/administer programs to address areas where opportunities exist for improvement. (2) Features and Implementation of Faculty Life-Cycle Advisors Program. Understand features of this new program (see P7. Faculty Advisor) and how to best support and leverage this program. (3) Managerial Basics. Learn managerial basics such as conflict resolution, running a faculty meeting while attending to those with less institutional power or perceived value, creating effective annual evaluations of faculty, assigning workload fairly, compensation basics, and understanding informal power structures that exist within academic departments which can negatively impact climate. (4) Issues that Disproportionately Impact Women. Discuss issues such as working with faculty to manage work-life issues and ensuring that departmental staff responds equally, promptly, and fully to males and females. (5) Identification of and Access to Key Social Resources. Shape the manner by which their faculty members accomplish identified goals through first identifying and then accessing key social resources that exist within their network. Collaborative opportunities to further enhance the training series will be explored with the University of Rochester.   Department head education may be refined over the grant period based on social science research findings from the D/HH and AALANA subpopulation studies. Network Resources: HR; Dickson (SP); Partner Organization

Launch Department Head Grants Program (P6. DH Grants). *Connect@RIT* and the Provost's office will create and administer a Department Head's grants program to financially support creative efforts that align with *Connect@RIT* goals. All departments will be eligible to apply for this grant program, as RIT will support non-STEM/SBS department grants. Within the program, multiple proposals may be submitted by a single department in a year, while cross-departmental efforts will be encouraged. An online application process will be developed which involves identifying the intended outcome of the proposed activity and how access to the grant funds will help accomplish the outcome. Department heads receiving funding will be required to report on their accomplishments in a final report submitted on-line. Based on social science research findings from efforts focused on D/HH and AALANA subpopulations, revisions may be incorporated within this program. Network Resources: Haefner (SP)

Launch Faculty Life-Cycle Advisor Program (P7. Faculty Advisor). *Connect@RIT* and the Office of Faculty Recruitment and Retention will create and incorporate a college-level Faculty Life-Cycle Advisor (FLCA) Program within the faculty recruitment process using the program at UC-Irvine as a benchmark [60]. A senior faculty member within each college will be appointed by the Dean to participate fully in the faculty recruiting process by approving search strategies and raising awareness of best practices. Additionally, the FLCA will organize faculty development programs for search committee chairs and members as well as P/T committees to ensure that recruitment, hiring, and advancement processes are equitable and free of hidden bias. FLCA with also provide mentoring and address individual issues raised by faculty. Our intent is that women and men will equally serve in the role of FLCA. All colleges will have advisors, as RIT will provide support in predominantly non-STEM/SBS colleges. Network Resources: Baker (SP), Dickson (SP)

Table 6. Political Strategic Approaches: Timeline and Formative Assessment Plan

Interventions	Timeline Details/*Assessment Methods (indirect and direct)*
P1. Align Diversity	Years 1-2 develop collaborative plan; Years 3-5 launch / *Collaborate on initiatives; Event feedback and participation*
P2. Indicators	Years 1-5 data analysis/system development; Years 2-5 reporting / *Systematic assembly of NSF ADVANCE Indicators; Dissemination*
P3. WC	Year 1 committee redesign; Years 2-5 launch / *Website traffic; Dissemination of data*

P4. Unique	Year 1 team design; Years 2-5 launch / *Feedback survey - level of satisfaction with committee interactions and results*
P5. DH Education & P6. Grants	Year 1 program development; Year 2 pilot, Years 3-5 launch / *Participation; Feedback survey; Link participation of department head and faculty w/in associated department with Social Science Research activities (see supplement)*
P7. Faculty Advisor	Yrs. 1-2 program dev.; Yrs. 3-5 launch / *Establish training; Participation in training; Feedback survey; Impact on hiring outcomes; Link participation with Social Science Research activities (see supplement)*

Symbolic Strategic Approaches

The symbolic perspective recognizes organizational issues associated with "meaning" within RIT [2,3]. Within this framework, symbolic strategic approaches include deliberate methods of highlighting the institutional commitment to advancing women faculty and providing a context for leaders to articulate thoughts on campus culture and climate for women. This area also includes efforts to convey the institution's commitment to a welcoming and supportive environment for women faculty and promoting an academic setting that is conducive to their career success. **Mason (co-PI) will lead this work** while working closely with the *Connect* Program Manager and the noted Network Resources.

World-Wide Exposure to IT Project (SY1. Web). RIT will provide high-level exposure to the *Connect*@RIT project through creation of a highly visible web-site accessible from the university's homepage. This summative page will list all available opportunities offered by the grant (Section 6). Here RIT faculty can learn about resources that may support their goals (mentoring, networking event, etc.) Network Resources: Web developer; *Connect* Dissemination Comm.; University News Services

Eminent Scholars Program (SY2. Eminent). *Connect*@RIT will develop an Eminent Scholars Program modeled after a similar program at the University of Maryland, Baltimore County [61]. The program will enable mentoring and collaboration by pairing early-career RIT female faculty members with prominent senior female or male faculty from outside of RIT. Two annual exchanges will occur between the scholar pairs: one visit by the RIT scholar to her mentor's university and one visit by the mentor to RIT. The visits to RIT will provide the external scholars with an opportunity to participate in campus events and speaking engagements highlighting the importance of diversity and inclusion. Such events will include an Eminent Scholars Speaker Series sponsored by the Provost. Female faculty from all departments at RIT will be eligible to apply for this program, as RIT will support non-STEM/SBS scholars. An online application process will require an applicant to identify career goals and demonstrate how access to an eminent scholar will help accomplish her goals. This is a two-year program and final reports describing accomplishments will be required. Based on social science research findings from efforts focused on D/HH and AALANA subpopulations, program refinements may be incorporated over the grant period. Network Resources: *Connect* Dissemination Comm.

Local Dissemination at RIT(SY3. Local). *Connect*@RIT will create methods of broader dissemination at the local level (e.g., workshops) for RIT faculty, staff, and students to learn about the overall project, its need and goals, and the ways in which people can become involved. In addition, the session will provide an introduction on how an individual can develop connection strategies to gain access into various networks of opportunity. The Wallace Center will collaborate in creating these hour long sessions offered bi-annually starting in the first year of the grant period. Session content may be refined over the grant period based on social science research findings from the D/HH and AALANA subpopulation studies. Network Resources: Dickson (SP); *Connect* Dissemination Committee

External Advisory Board Input to RIT Upper Administration (SY4. EAB). The external advisory board will meet for an annual one-day summit focused on grant activities. Several persons have already made the commitment to serve on the Board (see letters) and Section 7 includes for more details on the External Advisory Board. Annual meetings will include a debriefing with the upper administration regarding visit findings. Network Resources: *Connect* Evaluation and Dissemination Committees

Table 7. Symbolic Strategic Approaches: Timeline and Formative Assessment Plan

Interventions	Timeline Details/*Assessment Methods (indirect and direct)*
SY1. Web	Year 1 website development; Years 2-5 delivery / *Website usage tracking*
SY2. Eminent	Year 1 program development; Year 2 pilot, Years 3-5 launch/ *# Applicants and awardees; Feedback survey; Speaker program attendance; Link participation with Social Science Research activities (see supplement)*
SY3. Local	Year 1 program development; Years 2-5 program launch/ *Participation; Event feedback*
SY4. EAB	Years 1-5 host meetings / *Event feedback; External advisory board report*

5. Institutional Commitment and Sustainability

The goals of this ADVANCE grant are interwoven within the RIT Strategic Plan. The RIT Board of Trustees, President, Provost, and CDO all stand firmly behind the *Connect*@RIT proposal and have been critical partners throughout its development. The letters of support indicate that they are fully prepared to back up that commitment both financially and through their institutional roles and responsibilities. RIT will promote successful *Connect*@RIT activities beyond the term of the ADVANCE grant itself, to sustain and build upon the momentum and progress the ADVANCE grant enables. The embedded design of this proposal ensures that there will be conversations about *Connect*@RIT and its value throughout many layers of the university, ensuring that there will be ongoing support for the *Connect*@RIT activities and aims beyond the end of the grant period. RIT has already committed to providing additional support to the grant in order to broaden and deepen the reach of *Connect*@RIT, including providing financial support for portions of the grant's management structure and assuring that the *Connect*@RIT PI will be at the table with the Senior Leadership of RIT on a regular basis through her membership on the Institute Council. These actions demonstrate RIT's deep commitment to the project and the project goals throughout and beyond the NSF ADVANCE grant. By dividing project interventions and resources into categories representing different threads of the university fabric, we will forge meaningful and strategic formal relationships throughout the university. In addition, key RIT administrative leaders are embedded within the project plan (Section 7).

6. Dissemination

The *Connect*@RIT Dissemination Committee will be a subset of all the participants in the project and will spearhead its dissemination, which will include findings and research intended to reach campus-wide, local, national, and international audiences. Members of the *Connect*@RIT team will author publications for top-tier peer-reviewed journals related to social science, higher education, gender in STEM fields, D/HH faculty, and academic women of color. Members will also present at conferences and workshops focusing on these areas. Local dissemination within RIT will occur in numerous ways including professional development sessions for faculty, staff, administrators, and students where they will learn about the *Connect*@RIT program, the need for this initiative, and how men and women can become involved. *Connect*@RIT will also participate in the annual Imagine RIT Festival, a large regional event, to inform the local community about the grant and its activities. Progress reports and open forums will be presented to the campus in Years 1 (self-study), 3 (resources and interventions) and 5 (results). Workshops offered at national conferences in Years 1, 3, and 5 will mirror this content. The *Connect* Dissemination Committee will also produce electronic newsletters in the fall and spring highlighting grant activities and the achievements of women at RIT. RIT will provide a high-level of exposure to the *Connect*@RIT project through the World-Wide Exposure to IT Project (Section 4) web site accessible from the university's homepage. The primary focus of this site is to present all the available opportunities offered as part of the *Connect*@RIT project. This website will provide a valuable resource for RIT faculty to find resources that may support their own goals (e.g. mentoring and networking events). Additionally, this site will house the project outcomes and research findings, making them available to a broader audience. Website-accessible tools include curriculum developed for Connectivity Conferences, Start-up Sessions, Department Head training, Leadership and Career Development, Faculty Mentoring Network,

and Faculty Life-Cycle Advisor training materials for P/T committees and search committees/chairs. Online toolkits and brochures based on best practices from *Connect*@RIT activities will also be available.

7. Organizational Structure and Administration

With a leadership team that is gender-equitable and inclusive of faculty from Assistant Professor to President, and commitment to the project from all levels of institutional administration, *Connect*@RIT will have the support it needs to be highly successful. The organizational chart and leadership team are described below and in Figure 2; intervention timeline and evaluation information are included in Tables 4-7; and the overall project timeline (Table 8) includes project milestones.

PI Bailey will lead the overall project and serve as chair of the Executive Team, which also consists of the four co-PI's plus Baum (SP). Members of the Executive Team will manage the project implementation, resolve project issues, and ensure that the project is on track for meeting goals and objectives. This team will meet bi-weekly throughout the project. The Executive Team will seek input and advice from many viewpoints (see dashed lines in Figure 2) including those from internal and external evaluators (Section 8). The Executive Team Advisors and the Internal Advisory Boards (co-chaired by Mayberry (SP) and Flores (SP)) will advise the Executive Team on the implementation of the project and progress toward goals. The External Advisory Board includes Vivian Lewis, Vice Provost for Faculty Development and Diversity and Deputy to the President, University of Rochester; Caroline Solomon, Professor, Gallaudet University; Laurie Brewer, Retired (effective December 2012) Dean, NTID; Sara Wadia-Fascetti, Director of ADVANCE, Northeastern University; and Linda Manning, Senior Fellow, Centre on Governance, University of Ottawa (see letters). Three additional members will be identified.

Figure 2. *Connect*@RIT Project Management Structure
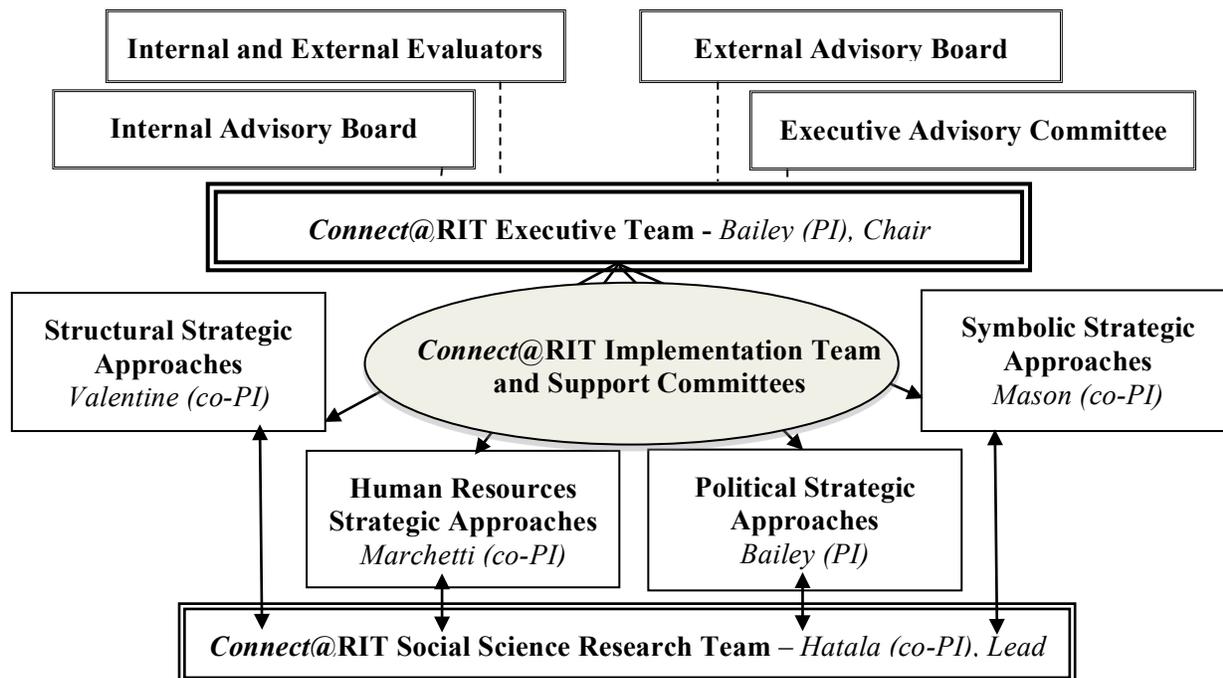
The *Connect* Program Director (PI) will provide leadership and supervision on all grant activities and manage the *Connect* Program Manager and HR Analyst. The *Connect* Program Manager will run the program on a daily basis, coordinating and supporting all grant activities. The *Connect* HR Analyst will collect and analyze HR data related to the grant, and create structures that will continue to support these efforts after the end of the grant period. The Implementation Team includes the Executive Team plus the *Connect* Project Manager and HR Analyst, faculty leading social science research areas, and institutional staff from HR, IR, Wallace Center, Office of Faculty Recruitment and Retention, and Student Learning

Outcomes Assessment. Other faculty and staff not yet identified can join the project in a meaningful manner through participation on this team. The Implementation Team will meet bi-weekly. Leadership of the four Strategic Approach areas is described in Section 4. The *Connect*@RIT Social Science Research Team led by Hatala (co-PI) will work closely with the Implementation and Executive Teams.

Support structure for the grant includes a number of committees, each of which will be led by a group-selected chair. The *Connect* Project Manager or Director will serve on each committee. The *Connect* Policy Committee consists of individuals with high levels of institutional knowledge who will be strong advocates of proposed policy revisions. The *Connect* Dissemination Committee will spearhead all grant dissemination efforts and include faculty and staff with marketing, communication, and public relations backgrounds. The *Connect* Evaluation Committee will be a small group of faculty who work with the project's internal evaluator (situated in the Academic Affairs Assessment Office).

The management plan includes a full-day retreat each summer for the Executive, Implementation, and Research Teams. Management goals include gaining high levels of visibility campus-wide, and engaging a large number of faculty, staff, and administrators. The project's numerous and varied "access" points invite the involvement of both women and men, and its inclusive leadership model allows for individual growth and empowerment. Dissemination of activities and findings will be thoughtful and strategic as will the communication strategy created to keep the various groups within *Connect*@RIT informed.

Table 8. *Connect*@RIT Project Management, Data Collection and Data Analysis Timeline

Year	2012	2013				2014				2015				2016				2017			
Quarter	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Management (Lead)																					
Interventions - see Tables 4-7 (MB)		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ADVANCE Quarterly Reports (MB)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ADVANCE Annual Reports (MB)					■				■				■				■				■
ADVANCE Site Visit (MB)													■								
Connect EAB Meetings (SM)			■			■				■				■				■			
Connect IAB Meetings (MB)	■																				
External Evaluator Visit/Report (EE)			■							■								■			
Internal Evaluator Report (AW)			■			■				■				■				■			
Data Collection (see Supplement)																					
SNB Antecedents (JH)																					
Institutional Climate (MV)			■														■				
Social Networking Behaviors (JH)				■						■				■				■			
Institutional Data (JH)		■				■				■				■				■			
Intervention Impact (JH)						■				■				■				■			
Qualitative Data –AALANA (KC)	■	■					■				■				■						
Qualitative Data - D/HH (SF)	■	■																	■	■	■
Data Analysis (see Supplement)																					
Quantitative -Time Series (JH)																					■
Quantitative-GLM LM Modeling (JH)																					
Quantitative-Clustering, FA, Reg.(JH)				■			■				■				■						■
Qualitative – AALANA (KC)			■				■				■				■				■		
Qualitative – D/HH (SF)				■					■									■	■		

8. Project Evaluation

The *Connect*@RIT project includes both formative and summative evaluation guided by the *Connect* Evaluation Team and the internal and external evaluators. The first two project goals (regarding

recruitment, retention, advancement, and leadership representation) will be measured through quantitatively through NSF Indicators. However, goals 3 and 4 (regarding improved social networking behaviors and institutionalizing interventions) require a more diverse evaluation plan. The following outcomes (late and examples of intermediate) will be used in assessing progress towards grant goals.

Late Outcomes:
1. Increase the representation of women faculty within targeted departments with less than a critical mass (20%) of women [8,9]. In 2010, half of the STEM departments (17/34) had less than a critical mass (LCM) of women [11] and this goal is to reduce LCM department count by 50%.
2. Increase representation of women within candidate pools for STEM positions with a goal of 30%.
3. Achieve higher levels of retention of T/TT female faculty. The attrition target rates for female and male faculty are essentially equivalent. This would translate to approximately a 14% attrition rate for female faculty based on the current 14% rate for male faculty.
4. Increase the percentage of women in academic tenure-track leadership positions with a goal of 40%.
5. Sustain strategic initiatives in RIT infrastructure that support continued progress towards project goals.

Intermediate Outcomes (examples):
1. Promote and increase salary transparency and equity issues among women faculty through professional development opportunities and web-based communications.
2. Develop accountability measures at numerous levels within the organization.
3. Improve climate for women faculty to achieve 65% of female faculty in every department viewing their department as friendly, diverse, respectful, and non-sexist.
4. Develop and implement faculty career flexibility and work/life policies.
5. Identify and share the social resources within the RIT network.
6. Improve faculty social networking behavior to improve career success/advancement opportunities.
7. Implement data-driven interventions for AALANA and D/HH women faculty to increase their social networking behaviors and career success.

Internal Evaluation The internal evaluator will primarily focus on formative evaluation while the external evaluator will conduct an annual analysis for summative assessment purposes and provide feedback on the formative assessment process (such as on metrics development). Internal evaluation will be provided through Academic Affairs under the guidance of **Dr. Anne Wahl**, Director of Student Learning Outcomes Assessment. Dr. Wahl will engage primarily in formative project evaluation while not involved in day-to-day implementation of the project. She will review proposed participant feedback surveys for all grant offerings. The general nature of the intervention survey questions will focus on whether intended learning outcomes were met and identifying areas for potential improvement and perceived usefulness. Intervention assessment will involve quantitative methods as listed in Tables 4-7. The internal evaluator will also review the qualitative and quantitative measures used within the social science research. As described in the Social Science Supplement, an annual survey will be given to women faculty members regarding intervention impact, SNB antecedents, and SNB. In Years 1 and 4, the COACHE faculty climate survey will be administered to all T/TT faculty. Quantitative and qualitative data from AALANA and D/HH women faculty focus groups and interviews will be gathered in Years 1, 3, and 5 (Table 8). The internal evaluator will review measures and provide input on data collection methodology. The internal evaluator will meet frequently with the Executive Team and Research Team to gain awareness of grant activities and strategies and will produce an annual report based on his/her evaluation activities and outcomes to be shared with the Executive Team to inform the project's Advisory Boards and determine what, if any, programmatic improvements are needed.

External Evaluation **Dr. Laura Kramer** and **Alice Hogan**, past NSF ADVANCE Program Managers, will serve as the external evaluators for this proposed effort (see letter and bio-sketches). On an annual basis, the EE will visit RIT for two days to meet with members of the *Connect*@RIT team and the internal evaluator to review formative progress towards goals and identify barriers to goal success based on summative findings. The EE will also review intervention progress and effectiveness, and identify

challenges in the summary of findings. Finally, the EE will provide a formative evaluation of progress made in the social science study for each research objective with a focus on progress and results to date. During Years 4 and 5, *Connect*@RIT best practices will be identified. In preparation for visits and to aid in collaborative efforts, the grant team will share quarterly and annual NSF reports with the EE as well as annual internal evaluation reports. In Year 4, the EE will also review all evaluation data related to workshops and sessions to ensure that grant activities are aligned with the goals. In order to assess institutional change and progress towards sustainability, in Year 5 the EE will conduct a final site visit to conduct interviews with a sample of faculty, department heads, Faculty Life-Cycle Advisors, administrators, and the grant team. The EE final and summative report will describe demonstrated progress towards grant goals, effectiveness of grant interventions, best practices, lessons learned, and an assessment on sustaining various *Connect*@RIT programs such as the Leadership Workshop and grants program, Connectivity Series, Department Head workshops and grants programs, Eminent Scholars program, and Faculty Life-Cycle Advisor at RIT.

Connect@RIT Data Management Plan
This plan describes the approach the project team will take to define the type of data generated by the project, ensure integrity of the data and allow distribution of data in a way that conforms to university and NSF privacy and protection policies.

1. **Types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project:**

   The data to be collected during the course of this project will be as follows: (a) survey results (including climate survey information past and future, feedback surveys, and the faculty characteristics and social network behavior surveys), (b) statistical indicators (faculty demographics, recruitment, retention and advancement statistics, and salaries), (c) qualitative responses (focus groups, exit interviews), and (d) progress counts (participation levels in events, number of policies changed, number of templates used, number of trainings completed, number of prospective hires who use provided services, etc.).

   Data will also be created during the course of this project as follows: (e) any course, forms and/or outreach materials developed for the activities, (f) results of analyses of the collected data.

2. **Standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies):**

   The data will be recorded via typical practices used in the human resource/institutional research arena. Quantitative data is typically acquired and/or stored in excel format. Statistical analyses will be performed using Minitab, SAS, and Excel. Qualitative data will be recorded through audio and video recording, transcribed into word documents, and analyzed for common themes using the qualitative research package HyperRESEARCH. All compiled data will be posted to the *Connect*@RIT website using HTML and commonly readable data formats. Climate survey results will be stored by the agency conducting the survey. The *Connect*@RIT team will consult with the agency to ensure that minimum confidentiality, privacy and security standards are met.

3. **Policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements:**

Data access will be shared by the *Connect*@RIT team (survey results, progress counts, and summaries of results from analysis of qualitative data) with the Human Resources and Institutional Research offices of RIT (statistical indicators). Due to the often-sensitive nature of qualitative data and the requirement to protect the identity of participants, interview recordings and transcriptions will be housed on an encrypted external storage device physically secured in a locked facility and accessible only to the researchers who are analyzing the data. Summary reports describing key themes and results will be posted in files accessible to the full *Connect*@RIT team.

The *Connect*@RIT implementation team will share aggregate data in a compiled and analyzed form with organizations associated with the project such as the *Connect*@RIT executive team, the internal advisory board, the executive advisory committee, the external advisory board and internal and external evaluators. The team will share data to the broader external community through annual and project completion reports, submission of archival/refereed publications, presentations made at conferences, presentations made at any institution interested in the research and the public website. No fees will be charged for access to this publicly accessible data. To ensure the appropriate protection of privacy and confidentiality, the team will abide by the RIT university policy C5.0, Policy for the Protection of Human Subjects in Research.

During the project, qualitative interview and survey response data, progress counts, and program data will be stored electronically on the RIT computers of the *Connect*@RIT office and the PI, Co-PIs and Senior Personnel. These machines will be managed according to the RIT "Security Standard: Institute Information Access and Protection" effective as of February 1, 2010. This standard, from the RIT Information Security Office (ISO), is provided to ensure a minimum set of criteria for data privacy, confidentiality and integrity. It requires that "private information in electronic form must be stored in secure ISO-approved servers, or, if authorized to be stored elsewhere, only in encrypted (not just password-protected) form." The RIT ISO Office provides assistance in setting up secure access to data. The standard also requires the use of secure file transfer and secure storage of printed materials. Additionally, statistical indicators will be stored within RIT's Office of Human Resources and Institutional Research, both of which are already required to be in compliance with the RIT security standard. Sharon Mason (Co-PI) from the Department of Networking, Security and Systems Administration will interface with the ISO to oversee the provisions for data protection, confidentiality and security.

4. **Policies and provisions for re-use, re-distribution, and the production of derivatives:**

Restrictions will be placed on the raw data collected during the project to ensure protection of privacy and confidentiality. Although upper administration (Provost, deans, department chairs) may wish access to individual response sets, information will only be provided in aggregate, limiting access to groups of five or more. Re-use of the data in the future would be appropriate in the aggregate form, in order to complete linear analyses of the results.

5. **Plans for archiving data, samples, and other research products, and for preservation of access to them:**

Upon project completion, all digital data will be stored for a minimum of seven years. Physical notes will be retained by the team members for a minimum of five years post completion of the project.

The RIT Information Security Office will be consulted in developing a plan for secure digital and physical data archival.

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