the University of Connecticut in Storrs, CT from May 3-5, 2004, the Women in Engineering Leadership Summit.

The Summit assembled over 70 engineering leaders from professional organizations, government, academic institutions and industry with the goal of developing cooperative strategies for promoting women in engineering leadership at all levels in both industry and academia. The Summit also offered participants the opportunity to further connections within a national network to focus on this critical need area.

In disseminating the ten specific blueprint action plans developed at the Summit to a wider group, the Women in Engineering Leadership Institute (WELI) anticipates broader discussion and collaborative action on these key items. Summit participants believed that if these specific high priority actions were undertaken by collaborative teams of relevant stakeholders, the number of women in engineering leadership roles in industry and academia would increase.

The Summit final report containing more details on each of these blueprints can be found on the WELI homepage.

www.weli.eng.iastate.edu

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WELI’s objectives are to increase the number and accelerate and enhance the success, of women in academic leadership positions, as well as establish and maintain a support network for women engineering faculty leaders.

The Summit was supported by NSF and the UConn School of Engineering.
Ten “blueprint” plans identified by Summit participants as key areas to increase the number of women in engineering leadership positions

**CULTURE CHANGE**
A more inclusive engineering culture would provide numerous benefits to the profession, including promotion of more women leaders. Leaders are a main determinant of organizational culture, yet the organizational culture affects the ability of any one individual to become a successful leader. This feedback loop of a traditional organizational culture that produces replicative future leaders is hard to break. There is a need for more open conversations about the everyday work environment and diversity in engineering that raises awareness of the importance of culture in attracting women to leadership roles. In turn, women and other diverse leaders will assist in propagating culture change. Numerical indicators of an inclusive culture must be applied to engineering communities.

**LEADERSHIP TRAINING**
There is growing recognition that, in most cases, good leadership style is not completely innate, but must be cultivated. Those who attain leadership positions have amassed a set of experiences, both technical and administrative, which qualify and prepare them for their leadership roles. Training is necessary not only to ensure that women engineers gain leadership skills as they climb the administrative ladder, but also to make them aware that certain experiences are necessary if they wish to qualify for leadership positions in the future. Training gives women the opportunity to set a career path and gain the necessary skills to pursue that path. For many women, formal leadership roles have not been included in their career aspirations, even for those who have strong leadership skills. Women may need to be encouraged to consider leadership positions. Higher management also needs to appreciate and recognize existing biases in recruiting and advancing diverse leaders.

**REWARDS AND AWARDS**
Women are less often recognized for their professional contributions than men. Therefore, there is a need to recognize the professional excellence of women with awards. For example, professional awards often have significant impact when professors are considered for administrative positions or chaired professorships. Summit participants were not suggesting that special awards be established for women, but rather that efforts be made to nominate women for the existing prestigious awards for which they qualify.

**EXTERNAL SUPPORT**
Changing the face of engineering leadership requires resources to raise awareness within the profession of the role of leadership and the importance of culture change. To make programs attractive for funding one must clearly build and document the business case for gender diversity in academic leadership.

Case studies that detail the advantages of more diverse leadership and leadership styles must be prepared by a team of representatives from all sides of engineering. Industry is ahead of academia in this endeavor and can be the source of support and case studies. Engineering professional associations may be key leaders in this effort.

**EXTERNAL MARKETING**
Change within engineering also requires changes in public perception and awareness of engineering. Part of this effort involves bringing women engineers into the spotlight through an external marketing campaign. One theme that might attract more women to engineering would be to frame the work of engineering women in a societal context that is meaningful and directly relevant to community and public service.

**MENTORING ACADEMIC LEADERS**
Female engineering faculty are a key link to attracting and retaining women engineering students. Success has been realized in increasing the number of tenured women engineering faculty. However, mid-level women engineers in academia, as well as industry, lack the mentors and informal support from senior colleagues enjoyed by their male counterparts. Development of a mentoring network for tenured engineering faculty was identified by the WELI Summit attendees as one important action. An on-line network was suggested as a viable approach to provide the mentoring needed to increase the number of women engineering department heads and deans. Given the small number of mentors and mentees, a nationwide on-line network would overcome geographic limitations. Pertinent topics identified by the Summit team included budgeting, fundraising, leadership styles that work, negotiation, resume building, networking with other leaders, outreach programs, serving professional societies, time management, university politics, and work-life balance.

**ATTRACTIVENESS OF LEADERSHIP POSITIONS**
Many professional women possess the communication and management skills that make them ideal leadership candidates. Within academia, the prevailing attitude is that one should not seek nor accept formal leadership positions until one has achieved full professor rank. Unfortunately, circumstances, personal choice, and the possession of leadership skills push women faculty into these roles earlier in their careers, and can result in serious damage to their later promotion. This situation suggests that some women are attracted to leadership roles because they value the institutional service which is not clearly measured or valued in the same way as research, for example. Ensuring that leadership accomplishments are valued and can be measured within the organization is a key component to rewarding women who take leadership positions.

**RECRUITING WOMEN TO LEADERSHIP POSITIONS**
Women may need or want different support, resources and team members to pursue their leadership style within an organization. As such, the recruitment process may require specific attention, especially within an organization where culture change is needed and perhaps the motivation for hiring the diverse leader. Organizations already successful at recruiting women leaders may or may not be willing to share the strategies that have worked for them because of the competition for a limited number of talented senior women engineers. Therefore, teams within professional societies may be required to initiate this effort. Model institutions that share their best practices as toolkits should be encouraged. Finally, there remains a stigma associated with including diversity as a hiring goal, and this must be overcome.

**FAMILY LEAVE INCENTIVES**
Formal leadership roles add complexity to the delicate work-life balance faced by many professional women. Strong family leave policies can effect change by allowing women to continue their engineering careers and be available for future leadership positions. Yet, even some of the largest and most respected universities and engineering companies lag behind in this regard, suggesting a need to widely disseminate best practices. Successful implementation of a family leave policy requires overcoming negative consequences and perceptions to ensure women seamlessly continue their careers after a leave. The traditional climate, as well as conflicts between biological and tenure clocks, make this challenge especially difficult in academia. National metrics tracking the use and benefits of family leave policies are needed.

**NETWORKING**
Understanding the difference between mentoring and networking was discussed during numerous conversations at the Summit. Encouraging diverse engineering leaders requires both mentors and diverse professional networks. A professional network consists of a cross-organizational set of colleagues, both junior and senior, who are linked by technical interests, shared experiences and common goals. In addition to support, networks provide information and opportunities, including availability and qualifications required for engineering leadership positions. A strong network can also serve to provide women with experiences that increase their qualifications for leadership roles.

To work collaboratively on these blueprints, contact the Women in Engineering Leadership Institute