ACM SGB Task Force on Full Inclusion Recommendations*

Erik Altman   Flo Appel   Donna Cappo   Alain Chesnais   Zhengjie Liu
Vicki Hanson   Simon Harper†   Barbara Boucher Owens   Renee McCauley
Jeanna Matthews   Jenny Preece   Shari Trewin

Abstract

In his 'CACM' – Communications of the Association of Computing Machinery (ACM) – article of February 2013, the President discussed 'Growing the ACM Family' [1] in which he addresses full inclusion, suggesting that 'in a field which primarily involves thinking logically, designing, implementing, testing of software and hardware, it is difficult to imagine that in and of itself, the profession has any built-in biases against anyone'. He goes on to state that 'anyone who is interested should not be excluded by virtue of any inherent constraints'. He finally asks 'what, if anything, might the ACM do more than it is already doing, to grow interest in and familiarity with computing and the computing profession?'. This initiative [2] was created to accomplish theses aims by collecting, reviewing, and disseminating guidance to the Special Interest Group (SIG) Governing Board (SGB) and therefore the SIGs themselves.

From these thoughts, and further discussions between Erik Altman (the SGB Chair) and various ACM staff (including Donna Cappo – Director, Office of SIG Services), the SIG Task Force on Full Inclusion was chartered (guidance starts at § 2; skip ahead to avoid this pre-amble) as follows.

"The SIG Task Force on Full Inclusion (TFFI) will drive to ensure that the computing field is open and welcoming to all, independent of any characteristics not directly related to computing. The task force will have three major responsibilities: (1) Review and disseminate best practices for full inclusion – first from among the SIGs, other groups within the field and subsequently from groups and professions further afield such as natural sciences,

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[1] Cerf VG (2013) Growing the ACM family. Commun ACM 56(2):7, DOI 10.1145/2408776.2408778.
[2] The SIG Task Force on Full Inclusion – abbreviated to TFFI and referred to as 'we' in this document.)

engineering, medicine, and law; (2) Develop definitions for full inclusion, that are universal in character and account for ACM's growing international presence; and (3) Identify technologies and research areas that can help"

1 Scoping 'Full Inclusion'

As a group we paid particular attention to the Presidents 'Growing the ACM Family' article and within that text we gave an increased weight to the phrase 'anyone who is interested should not be excluded by virtue of any inherent constraints'. We reasoned that by defining a set of 'constrained' areas we could both define the people who may be excluded, and fulfil the Presidents intended outcomes. In this case, we limited our scope to the following seven areas[3]: Accessibility and Disability; Age Equality; Citizen Science, Hobbyists, and Makers; Cultural Equality and Race; Economic Disadvantage; Gender Equality; and, Unconventional Educational Routes.

We then decide on two repeating questions to ask for each constraint. 'How will this area constrain participation for people wishing to become members' (How can we encourage participation?); and 'How will this area constrain participation of our members' (How can we support our members once participating?). Finally, once a constraint was identified we considered what advice could we give to SIGs to support participation in respect to SIG Resources, SIG Events, and directly to each SIGs Membership such that the identified constraints are removed or, at the least, mitigated.

2 Advice to SIG Leaders

The following advice is not intended to be compulsory, exhaustive, or inflexible. Indeed, we see it as a minimum standard which the SIGs may apply as a whole or as individual parts; the decision to apply any of this advice is the SIG leaderships alone.

More important than any of the advice in the following sections is the desire for the SIGs leadership to remove any 'inherent constraints' which arise by applying the guidance within this document when applicable, and by listening to member suggestions when practical.

Initially, some general advice applies to all constraining areas:

- Contact the Director of the Office of SIG Services with any provision required for general SIG activities including SGB meetings and other SIG management activities;

- Make sure you have a web page which details the full inclusion arrangements you have made for your members - and mention that page on other promotional material. Make it clear that no inherent constraint will effect their volunteering and progress within the ACM and that the Office of SIG Services will make provisions – if requested – to accommodate any reasonable needs. Make sure that you state that you are happy to support individual needs and provide a monitored email address for feedback;

- Reassure prospective members that you are interested in supporting their needs and backgrounds; and that full inclusion along the lines of Accessibility and Disability, Age Equality, Citizen Scientists (Hackers and Makers), Cultural Equality and Race, Economic Disadvantage, Gender Equality, and Unconventional Educational Routes, is important and taken seriously by the SIG Leadership;

- Consider a Full Inclusion Program to increase the participation of individuals who have been traditionally underrepresented in your SIGs area. And bolster this with a specific Diversity Policy. Examples can be found at:

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[3]...listed alphabetically

SIGACT; SIGACCESS; SIGCHI; SIGART; SIGCOMM; SIGART; SIGDA; SIGHPC; SIG-MIS; SIGPLAN; SIGSOFT; and, finally

- Be flexible enough to provide provisions not discussed here but suggested by your members who may have a specific requirement, which would mean they cannot participate (or would be excessively disadvantaged) if this requirement is not met.

2.1 Accessibility and Disability

Disability can be a barrier to accessing both the SIG and its resources. In this case, we would wish to increase the accessibility of a SIG in terms of a persons ability to contribute and the resources they are able to interact with. Disabled people (as with most of the people falling into these 'inherent constraints') most lay across a broad spectrum, this should be kept in mind when implementing the advice detailed here.

Encouraging Participation   We found that there are no significant constraints to people wishing to become members in the context of accessibility and disability. The only advice we have in this regard is:

- Make your website conform to Web Accessibility Standards (Guidelines | Evaluation Tools | Suggested); and

- Use the appropriate language on your website and SIG materials;

- Provide accessible electronic copies of publicity materials.

Supporting Your Members   Member support is critical in the context of accessibility and disability, and centres on access to material and support at events (mainly conferences):

- Create an accessible conference by conforming to the Accessible Conference Guide;

- Ask your conference organisers and paper authors to use the appropriate language when writing papers concerning disabled people;

- Create accessible Adobe Acrobat/pdf documents (also...), accessible 'Word' documents, and accessible presentations;

- Consider a companion assistance program to support a person with a physical disability necessitating a companion. Examples can be found at:
SIGARCH; SIGOPS; SIGPLAN.

2.2 Age Equality

As is the case in most communities, issues surrounding age equality, leading to age discrimination, can impact a computing professional at various stages in his or her career. Students, who are typically (though not always) younger, as well as recent graduates, are often considered to be "green", "naïve" and generally "unseasoned". Some, at the very beginnings of their careers, may be exploited by employers or colleagues to fulfil unreasonably long working or (volunteer) hours and to perform all the "grunt" work, leaving their ideas and enthusiasm to go unappreciated. At the opposite end of the spectrum, we find older professionals who may be considered "out of step" with the current technology or generally "old-fashioned". Their opinions and contributions may be discounted as irrelevant for the current times, and we have seen situations where these individuals are callously and disrespectfully removed from their positions, leaving these individuals to feel that they have nothing to contribute to the field for which they have given their entire professional lives.

It is incumbent upon ACM and its SIGs to provide a vibrant community for computing professionals of all ages so that younger and older, inexperienced and experienced, and "out of the box" and more traditional thinkers can learn from and support each other. The computing field is one that is volatile and exciting, with new ideas building upon the contributions of those who have laid the foundations – all ideas and contributions must be welcome.

Encouraging Participation

- Each SIG should conduct a survey of its age demographics, and determine what the spectrum and concentration of ages are in its membership composition:

    - Efforts should be made to attract members of different age brackets, led by individuals in those age brackets.

- SIG membership literature and web presence should include information about SIG members' activities and contributions, making deliberate efforts to highlight the achievements of both its younger and older members.

Supporting Your Members

- SIG leadership should include a mix of older and younger members. Positions should be earmarked to ensure that this age diversity exists.

- Conferences sponsored by the SIG may consider sessions for younger members to discuss age-related issues such as launching their careers, sessions for older members to discuss issues such as workplace discrimination or approaching retirement, and mixed sessions (panels might work best here) for representatives from the beginning, middle and end of the age spectrum to address common issues and build respect and trust.

- Establish opportunities for mentoring relationships between older and younger members.

- Proactively encourage and support SIG members to apply for ACM advanced membership ranks as they become eligible.

- For younger colleagues in academia, middle-range and older faculty members of the SIG should provide university promotion and tenure committees with evidence of the voluntary professional contributions of younger tenure-track faculty in their quest for tenure.

- Provide opportunities for financial assistance for conference attendance or SIG dues for SIG members whose careers are not yet established or are winding down.

2.3   Citizen Science

Computer Science was built on citizen science (and engineering). From Hewlett Packards garage at 367 Addison Avenue to the Homebrew Computer Club, from the Whole Earth Catalog to MITs Tech Model Railroad Club, our science has been mostly defined by citizens, hobbyists, and makers. In an increasingly professionalised world our roots can be easily forgotten, indeed, the ACM says of itself 'ACM, the world's largest educational and scientific computing society, delivers resources that advance computing as a science and a profession.'; forgetting where it comes from?

Encouraging Participation   One of the big first goals is to help this community be more aware of all of the great innovation happening within the ACM SIGS. This could be done in many ways, however two relatively easy ways to do this would be to:

- ACM SIG participation in less formal events could increase numbers. By demonstrating cool research under the ACM name young researchers could be inspired, and prospective members courted;

- Encourage SIG members to post summary articles of relevant published research in venues to which citizen scientists read; and

- Facilitate SIG members to have a presence at events, such as MakerFaire (both the regional and local events), in support of the SIG; or consider outreach to demo/hacker spaces.

Supporting Your Members Citizen Scientists, Hobbyists, and Makers are interested in exciting work which contributes to the field and for which they are acknowledged. In this case, room exists within standard ACM conference settings to facilitate inclusion.

- Consider a flexible poster or demonstration format which credits the data collector or the application / driver developer. This is similar to open source development and so github or thingyverse downloads could be cited. Submissions could include: 1) video; 2) Source code; 3) write-up via s public webpage - instructions on what they did - project page how it was build, how it could be followed. the UIST hardware design competition is one example of how this flexibility could be included; but must be controlled properly;

- Consider funding to help get Citizen Scientists, Hobbyists, or Makers to the event - conditions for this funding could be that they show no formal education, or this is outside their profession; and

- Computer scientists tend to see CS as a 'hard' science, while having some bias to those 'soft' sciences. This discourages some inter-disciplinary fields to be fully involved and well recognised in the SIG communities. In this case, could your SIG make use of influential people within it: ACM fellows; Turing Award winners; etc to champion certain cross-disciplinary fields. Or have specific forums/communities for certain cross-disciplinary groups of people. Maybe changes to the ACM CCS (Computer Classification Systems) are needed to better recognise certain cross-disciplines or areas.

2.4 Cultural Equality and Race

The ACM is an international organisation moving away form its previously US centric view of the world. As the demographic split reaches 48% USA 52% Rest of the World we can expect cultural equality and race to play an increasingly significant part of a SIG. Further, while cultural equality and race must be respected, the unifying culture within the ACM, its openness, diversity, desire to move forward, must not be subjugated to any single cultural interest.

Encouraging Participation

- Be proactive in assembling culturally and racially diverse slates for SIG officers;

- Be proactive in assembling culturally and racially diverse conference committees and leadership;

- Remind membership of language differences and nuances such as using terms such as Spring and Fall when referring to conferences (Difference between northern and southern hemispheres, fall versus autumn; and

- Facilitate the formation international of local chapters.

Supporting Your Members

- Consider a Developing Country Researcher Award. It can be difficult to travel to conferences if you are in a developing country. Indeed, travel costs can be a barrier to your attendance and further, these countries may be further away from the conference venues than other countries. Examples can be found at:
  SIGACT; SIGAPP; SIGART; SIGCOMM

- Support different dietary requirements and an open request for other culture specific requirements;

- Do you have SIG chapters in developing regions? Could you promote the concept of full inclusion not only in developed regions, but also in developing regions, through these chapters or via alliance with other local organisations;

- Award Nominations, in some cultures it is inappropriate to nominate yourself, or approach people yourself to endorse your application for advanced ACM membership levels. You can attempt to address this by approaching members and coordinating applications on their behalf;

- Many non-native English speakers have a problem of being fully involved in the ACM communities where English is the common working language:

  – In this case, you could try to provide language support by offering a mentoring scheme that can include help with language for paper submissions; other SIGs have found it helpful to pair the non-native with some native English speakers, to cultivate some good communicators from the non-native English speaking communities;

  – Some SIGs have found it useful to have multi-lingual versions for the key parts of websites, publications, conference programs etc., such as UXPAs User Experience magazine online version; perhaps local chapters could undertake translation of key documents; and

  – At conferences, you could assist oral communications with some non-oral means, such as detailed textual slides instead of very brief ones, or to allow the audience to raise questions on a sheet of paper at Q&A sessions.

2.5 Economic Disadvantage

Economic disadvantage can take many forms throughout the world. While the fundamental roots of economic disadvantage can be traced to class, race, gender, and physical ability, financial constraints may also be felt by computing professionals serving nonprofits or those in fields that are less well-funded than the traditional high tech industry.

Encouraging Participation   No computing professional should be denied membership to a SIG or access to its resources because of the inability to pay. Many computing professionals are well-paid and able to make a financial commitment to ACM, but many are not, due to issues of class, race, gender, and physical ability. Still others have chosen less lucrative professional computing paths and face salary constraints that have been imposed on nonprofits and other nontraditional technical positions. In this case it may be useful to support:

- Establish a sliding scale for SIG dues based on income;

- Collaborate with other allied SIGs to offer a package deal membership, or 'bag of SIGs' to enable individuals to take advantage of a reduced membership rate for multiple SIGs; and

- Consider institutional memberships at the SIG level. These would be at a higher cost and could support the funding of those individuals who are unable to pay.

Supporting Your Members Many SIGs have established excellent practices to accommodate students, whose financial hardships are in most cases temporary – upon graduation, their budgets are quite often able to sustain SIG and ACM memberships. We suggest that each SIG examine its student policy and consider how it might extend the policy to include those individuals with challenging financial situations. Suggestions include:

- Consider a supporting a child-care travel support program for those who would like to attend but cannot because the cost of child-care is prohibitive. Examples can be found at: SIGARCH; SIGSOFT;

- Consider attendance scholarships for applicants who can prove economic disadvantage impacts their ability to attend and present their work. Examples can be found at: SIGMICRO; SIGACCESS;

- Consider supporting Student Grants for all different kinds of students, and to encourage student diversity. For instance SIGMOD support a Mentoring Workshop to increase diversity in those seeking a PhD, while SIGDA support an Undergraduate Scholarship for Advancement in Computer Science and Electrical Engineering. Examples can be found at: SIGARCH; SIGDA; SIGDA; SIGHPC; SIGMOD; SIGSOFT;

- Offer scholarships or reduced rates for conferences and resources for people who are not well-connected with the community and would not otherwise be able to attend. Non-academics such as clinicians, people working for non-profit organisations, people with strong personal commitment to the conference area, and people whose disability means they need to bring an assistant with them to the conference have been able to attend through this mechanism; and

- Finally, poll current SIG members to ascertain how they fund their memberships and conference attendance. This investigation might shed light on potential funding possibilities (e.g., if a member's professional dues are paid by an employer, that individual might be asked to make a nominal donation to a fund to support those who cannot afford to join).

2.6 Gender Equality

Even as we recognise the significant contributions of distinguished women such as Grace Hopper, Anita Borg, Barbara Liskov, Fran Allen and Shafi Goldwasser, and the many others without whom progress in computing would be dramatically impeded, we recognise that women are notoriously under-represented in the computing profession. It is incumbent upon all of us in the field to address this problem at both the educational and professional levels. At the time of this writing, only 12% of U.S. computing majors at the university level are female, and other recent work in the U.S. has cited the mid-career drop-out rate for female workers as high as 56%. The efforts of recruiting and retaining women go hand-in-hand, and it is natural to present them together here.

Encouraging Participation

- Set clear, measurable goals for increasing the number of women members in your SIG. For example, plan to increase the percentage of women members by n% by a given date:
  - Implement formal evaluation procedures for ongoing measurement of these goals. Include an evaluation of goal achievement in each annual report.

- On a practical level, provide childcare to encourage women to participate in conferences and meetings; encourage male members who are fathers to contribute to their spouses' ability to be fully active members in SIG activities.

Supporting Your Members It is expected that all SIGs take advantage of the ACM Athena lecture series and the leadership and resources provided by the ACM-W. Additionally, we make the following recommendations:

- Ensure that every effort has been made to recruit women to panels and visible speaker positions at conferences, meetings and all SIG-sponsored events;

- Ensure that the issue of the under-representation of women in your SIG computing subfield is addressed at an appropriately high level, and not relegated to side-issue status:

    - Provide opportunities to discuss remedies, suggestions and best practices at SIG-sponsored conferences and meetings.

- Hold SIG leadership accountable for recruiting and retaining women, and recognising and tapping the achievements and expertise of its women members:

    - Formalise the SIG's relationship with ACM-W by establishing an ACM-W liaison who reports back to the SIG's EC.;

    - Formalise the SIG's relationship with NCWIT (National Center for Women in Information Technology), if appropriate. E.g., join one of the alliances as an organisation, or appoint a liaison; and

    - At a minimum, SIGs should look at the resources available from NCWIT (ncwit.org/resources). For example, see their 2-page resource with an amazing "laundry list" of effective ways to change the culture of an organisation (industry, academic or professional). The idea is to establish formal organisational responsibility for building diversity, not just diversity practices that place the onus on individuals – the responsibility is placed on the organisation.

- Involve male members in the SIG's efforts to support women's participation;

- Involve senior SIG members who have the authority to make, carry out, and enforce necessary decisions;

- Proactively encourage and support female SIG members to apply for ACM advanced membership ranks as they become eligible;

- Consider subsidising networking events at conference that you run. For instance SIGCHI subsidises a Women's breakfast at CHI, while SIGMM run a similar event at the ACM/MM event. SIGMOBILE run a Networking Networking Women (N2W) program joint with IEEE to foster connections among underrepresented women in computer networking and research; and SIGMICRO support a full CRA-W summer workshop. Examples can be found at:
  SIGCHI; SIGMOBILE; SIGMM; SIGPLAN;

- Consider scholarships conference attendance, and to discuss gender at your conference. For instance both SIGACCESS and SIGMM has an ACM-W scholarship recipients attending their conferences; while SIGITE sponsored a speaker presentation at RIIT 12 on addressing underrepresented women in college programs. Examples can be found at:
  SIGACCESS; SIGITE.

- Consider a supporting a child-care travel support program for those who would like to attend but cannot because the cost of child-care is prohibitive. Examples can be found at:
  SIGARCH; SIGSOFT; and

- Consider a companion assistance program to support a parent of an infant less than two years old who cannot travel without the infant and a care-provider for the infant. The only costs covered are those incurred solely for the transportation of the companion. Examples can be found at:
  SIGARCH; SIGOPS; SIGPLAN.

2.7 Unconventional Educational Routes

Education can be a thorny issue in a professional organisation, however Computer Science has always been forward thinking in this regard. With its Tech Packs and Conference tutorials the ACM is Testament to this forward thinking, and the rise of MOOCs is an interesting Computer Science development. With this in mind, a prospective SIG member should not be disadvantaged due to their educational background, or the route taken to reach an ACM membership status (initially student and regular members), as long as they fulfil the requirements of that status.

Encouraging Participation We believe that, in itself, prospective members who have taken unconventional educational routes, or are from other disciplines are not at a disadvantage. Once these prospective members choose to participate there is no reason to think that they won't be included. We assert that if they are disadvantaged it is likely due to some reason other than their unconventional path, which we believe may be subsumed into one of the categories previously discussed.

Supporting Your Members There may however be some disadvantages to being outside formal education and the core ACM disciplines. In this case, the following suggestions and examples may help to address these issues:

- Consider supporting Student Grants for all different kinds of students, and to encourage student diversity. For instance SIGMOD support a Mentoring Workshop to increase diversity in those seeking a PhD, while SIGDA support an Undergraduate Scholarship for Advancement in Computer Science and Electrical Engineering. Examples can be found at:
  SIGARCH; SIGDA; SIGDA; SIGHPC; SIGMOD; SIGSOFT;

- Instigate a mentoring programme to support the growth of a vibrant SIG community by connecting the newcomers at the area with experienced conference attendees. Examples can be found at:
  SIGACCESS; SIGHPC;

- Computer scientists tend to see CS as a 'hard' science, while having some bias to those 'soft' sciences. This discourages some inter-disciplinary fields to be fully involved and well recognised in the SIG communities. In this case, could your SIG make use of influential people within it: ACM fellows; Turing Award winners; etc to champion certain cross-disciplinary fields. Or have specific forums/communities for certain cross-disciplinary groups of people. Maybe changes to the ACM CCS (Computer Classification Systems) are needed to better recognise certain cross-disciplines or areas; and

- Offer scholarships to conference for people who are not well-connected with the community and would not otherwise be able to attend. Non-academics such as clinicians, people working for non-profit organisations, people with strong personal commitment to the conference area, and people whose disability means they need to bring an assistant with them to the conference have been able to attend through this mechanism.

3 Summary

There are a number of other aspects to full inclusion which go beyond the SIG Governing Board and need ACM Executive Committee approval. For instance with regard to Citizen Scientists or Seniors we might suggest a sliding scale membership rate (AAUP does, for example). The ACM only has the student versus faculty designation; but, a sliding scale could be most effective as applied to resources such as the digital library. The global issues regarding Cultural Equality and Race, with specific attention to China and India appear to be beyond the scope of any individual SIG and must likewise be addressed at the organisational level, indeed if we are going to be truly global we should address all areas of the globe not only have council for India, China, and Europe. Finally, the ACM could start a fund that members could contribute to, which could somehow be used to allow more people

to participate. In general, there are many additional consideration which can critically effect full inclusion beyond the SIG level, even though the majority of members will belong to a SIG, and the SIG activity is probably the most familiar to most members.

4   Authors

Erik Altman (SGB Chair)
IBM TJ Watson, USA

Current SIG Activities

Florence Appel (SIGCAS)
Saint Xavier University, USA.

2.2 Age Equality / 2.6 Gender Equality
2.5 Economic Disadvantage

Donna Cappo (ACM – New York)
ACM, USA

SIG Services / Current SIG Activities

Alain Chesnais (SIGGRAPH) and
current Past President of the ACM
trendspottr, USA.

2.6 Gender Equality / 2.4 Cultural Equality and Race

Vicki Hanson (Treasurer of the ACM)
Rochester Institute of Technology, USA &
University of Dundee, UK

2.1 Accessibility and Disability / Current SIG Activities

Simon Harper (SIGWEB)
University of Manchester, UK

Full Inclusion Chair[4] / 2.1 Accessibility and Disability
2.3 Citizen Science

Zhengjie Liu (SIGCHI)
Dalian Maritime University, China.

2.4 Cultural Equality and Race

Jeanna Matthews (SIGOPS)
Clarkson University, USA

2.3 Citizen Science

Renee McCauley (SIGCSE)
College of Charleston, USA

2.7 Unc. Educational Routes / 2.5 Economic Disadvantage

Barbara Boucher Owens (SIGCSE)
Southwestern University, USA.

2.2 Age Equality / 2.6 Gender Equality
2.4 Cultural Equality and Race / 2.7 Unc. Educational Routes

Jenny Preece (SIGCHI)
University of Maryland, USA

2.3 Citizen Science

Shari Trewin (SIGACCESS)
IBM TJ Watson, USA

2.1 Accessibility and Disability / 2.4 Cultural Equality and Race