

## **Charter for the**

### **International Symposium on Search-Based Software Engineering (SSBSE)**

**(see end of document for date information)**

This document describes the regulations and guidelines to help organize and manage the SSBSE conference. Both organizers and program committee members must abide by the regulations (set out in Section IV). They should also seek to comply with the guidelines (set out in Section V), deviations from which should be notified and justified to the Steering Committee (SC), giving as much advance notice as possible.

Sections I, II, and III of this charter can only be changed by a unanimous vote of the SC. Regulations in Section IV can only be changed by a two-thirds majority vote of the SC (in which the chair is both a normal voting member and has the casting vote in the case of a tie). Guidelines in Section V can only be changed by a simple majority vote of the SC (in which the chair is both a normal voting member and has the casting vote in the case of a tie).

Amendments, which are subsequently agreed by the Steering Committee and included after Section V, can only be affected (including repeal) by a two-thirds majority vote of the SC.

#### **I. Goals and scope for the SSBSE conference**

The International Symposium on Search-Based Software Engineering (SSBSE) offers an open forum for the discussion, development, and dissemination of Search-Based Software Engineering research and its transfer to practice. It will provide a service to the developing community in this area of activity that intersects the communities working on Software Engineering, Metaheuristic Search, and Operations Research. One of the primary goals of SSBSE is to help to develop, nurture, and support this growing community, working at this intersection of three longer-established research areas.

The charter of SSBSE draws on the principles described in the charters of other conferences, such as ICSM and ICST, in order to arrive at specific rules that seek to ensure that the management of the symposia series will be transparent, democratic, and open and to maximize the scientific and engineering value of the series of events to the research and practitioner community that it serves. Throughout this document, the terms symposium and conference are used interchangeably. At its inception, SSBSE has the character of a symposium: single-track, focused, and medium-size (between a smaller workshop and a larger multi-track conference). However, it is not the intention of this charter to “set in stone” this format and so the event may evolve into a conference, depending on the evolution of the community that SSBSE seeks to support.

#### **II. Motivation for SSBSE**

The Search Based Software Engineering (SBSE) philosophy is that Software Engineering often considers problems that involve finding optimal or near-optimal

balances between competing and potentially conflicting goals. There is often a bewilderingly large set of choices, and finding good solutions can be hard. For instance, the following is an illustrative list of software engineering optimization questions:

- What is the smallest set of test cases that cover all branches?
- What is the best way to structure the architecture of the system?
- Which requirements best balance cost and customer satisfaction?
- What is the best allocation of resources to this development project?
- What is the best sequence of refactoring steps to apply to this system?

Answers to these questions might be expected from the literature on testing, design, requirements engineering, software engineering management and refactoring, respectively. It would appear, at first sight, that questions such as these involve different aspects of software engineering, that they would be covered by different conferences and specialized journals, and that they would have little in common.

However, all of these questions are essentially *optimization* questions. As such, they are typical of the kind of problems for which SBSE is well adapted, and with which each has been successfully formulated as a search-based optimization problem. SSBSE re-unites areas of Software Engineering that have long been studied in isolation. It seeks to overcome the potential for 'silo mentality' that the necessary expansion of Software Engineering has forced upon the growing Software Engineering community.

Through SBSE, many crosscutting concerns that apply to several otherwise disparate sub-areas of Software Engineering can be considered together. These different areas are often united by SBSE nomenclature, such as the form of representation or the properties of the search landscape. It is this generic nature of SBSE that is one of its attractions and one of the motivations for the symposium. By bringing together the academic and practitioner communities, SSBSE will also help inform and stimulate the research directions and will serve to disseminate knowledge, understanding, and experience, to develop expertise, and to formulate research challenges.

### **III. Definition of SBSE**

The SSBSE conference will adopt a broad and inclusive definition of Search-Based Software Engineering.

Search-Based Software Engineering shall be considered to be the application of search-based optimization techniques to any area of Software Engineering.

The interpretation of the term "Software Engineering area" is intended to encompass any topic that might reasonably be expected to be considered for a Software Engineering conference, such as the International Conference on Software Engineering or Foundations of Software Engineering or a Software Engineering journal such as IEEE Transactions on Software Engineering or ACM Transactions on Software Engineering and Methodology.

The interpretation of the term “Search Based Optimization” is to be interpreted to include all metaheuristic search techniques but also should not be so tightly construed as to rule out classical Operations Research (OR) optimization techniques. This allows, for instance, the consideration of exact optimization techniques, so the inclusion of the word “search” should not cause a barrier to be erected between different optimization communities. The defining characteristic should be that the optimization approach seeks to find solutions to Software Engineering problems from a space of candidates, guided in this process by some form or forms of assessment of fitness (or cost).

In deciding on questions of eligibility, the Program Chairs (PCs) and the Technical Program Committee (TPC) should seek not to be over-prescriptive since the SBSE community, perhaps at least as much as any other, should understand and appreciate the value of crossover and diversity. As a guideline, a technique should be considered a suitable optimization technique for SBSE if it would normally be considered suitable for publication at conferences such as the Genetic and Evolutionary Computation Conference, EuroGP, Conference on Evolutionary Computation and Metaheuristic International Conference or in journals such as Computers and Operations Research, IEEE Transactions on Evolutionary Computation, the Journal of Operations Research and the European Journal of Operational Research.

## **IV. Regulations**

### **1. Steering Committee (SC)**

#### **1.1. Role and Composition**

- The SC has the responsibility to strategically lead the conference in the long term. This responsibility includes implementing this charter, selecting future conferences, and setting the overall goals for the directions of the conference and the technical community. While the primary task of the SC is governance of the conferences, it also takes on the role of mentoring.
- Member tenure: 3 years
- Maximum number of consecutive terms of a member: 2
- Size in steady state: 9
- New members are selected by election (see next subsection).
- Elections are administered by the SC chair or his/her appointee.

#### **1.2. Election of Steering Committee Members**

- This election of new members to the SC shall normally take place at the conference itself in an open meeting. In exceptional circumstances, the SC chair may make alternative arrangements for the election. This should only be considered when the normal open meeting process is impossible.

#### **1.3. Election of the Steering Committee Chair (SCC) and Secretary (SCS)**

- The SCC is elected by the Steering Committee.

- The Steering Committee Chair is elected (or re-elected) annually following the SC elections.
- The Steering Committee Secretary is chosen by the SCC from the SC membership.

#### **1.4. Website**

- The SCS is responsible for maintaining a website with relevant statistics on past conferences and an updated version of the present charter.

### **2. General Chair (GC) and Program Chairs (PCs)**

- A member of the community wishing to serve as a future GC should submit a proposal to chair a conference. If there is no proposal from a community member, the SC can select the GC based on the voting among possible candidates nominated by the SC members. The GC should preferably have prior leadership experience in a similar role that led to a successful research/scientific event.
- The GC should recommend PCs for approval to the SC as part of the proposal. Normally, two PCs will be selected to ensure a degree of coverage not obtainable with a single PC and to help manage any potential conflicts of interest in the reviewing process. Where there is more than one PC, there will be a clear distinction of roles for each PC.
- The Technical Program Committee (TPC) membership should change yearly, balancing a desire to bring in new people and maintain continuity (see next section on forming the TPC).
- The role of the GC and PC is to execute the specific conference they are chosen to lead. The GC and PC of a future year must normally be active in the current (or prior) year's conference in some capacity to gain experience.
- The GC and PC will be responsible and accountable for the planning and execution of an SSBSE conference, and for proposing prospective members of the Organizing Committee (OC) such as prospective track chairs, publicity chairs, web chairs. GC and PC are asked to submit their list of prospective OC members to the Steering Committee Chair at least one month prior to the desired date for sending out invitations to the OC.
- GC and PC should normally have served as a program committee member to qualify.
- Conference selection can be up to 3 years in advance and no less than 18 months. However, exceptions can be made to reduce the minimum period in special circumstances such as changes in timelines of main conferences with which SSBSE is typically co-located. The minimum period is designed to ensure that the community is informed well in advance of the location of future events and the composition of the organizing committee.
- The GC shall issue periodic reports on the status of the planning and execution of the conference to the SC. The GC and PC should use the SC for advice in planning for the conference, including submitting for approval the list of prospective members for the OC and TPC.

- For the SSBSE instance for which they hold their position as GC or PC, GCs and PCs are forbidden from submitting papers to the main technical track of the conference but can submit papers to other tracks where they do not access to the review process. Similarly, track chairs are forbidden to submit papers to the track they chair but can submit to the other tracks where they have no access to the review process.

### **3. Technical Program Committee Selection**

The composition of a technical program committee is one of the most important factors in determining the quality of a conference and the quality of the papers it accepts. This, in turn reflects on the long-term prestige of the conference and ultimately on the impact it is able to have. The quality of reviews is a paramount concern for the SSBSE conference. Reviewing should be seen as a primary scientific service provided by SSSBE to the community as a whole. The PCs should pay particular attention to ensuring that reviews are fair, sufficiently detailed and that points made by reviewers are justified in the review. TPC members will be selected for their expertise and ability to reliably and consistently perform the role of expert and fair reviewer.

The Steering Committee has thus adopted a set of guidelines for use by Program Chairs in assembling a technical program committee (guidelines provided in next section). Program Chairs are asked to submit their list of prospective TPC members to the Steering Committee Chair at least one month prior to the desired date for sending out invitations to the TPC.

If a prospective TPC member, or the list of members as a whole, does not meet these guidelines, the Program Chairs should indicate this, and provide arguments for these cases. The Steering Committee will consider, on a case-by-case basis, such arguments, as it evaluates the TPC list as a whole. The Steering Committee reserves the right to require changes in TPC composition based on these guidelines.

## **V. Guidelines**

### **1. Guidelines to Form a Technical Program Committee**

1. Reviewers need to be able to judge whether research submitted to SSBSE is technically sound, contributes to the field, and is novel with respect to previous work. To ensure that reviewers have this qualification, SSBSE requires that to serve on the SSBSE TPC, a person must have had an active role in the field of software engineering, metaheuristic search or Operations Research (all three as most broadly construed) in the preceding 5 years.
2. SSBSE reviewers need to be familiar with SSBSE itself, and with the review process, from the point of view of an author. To ensure this, we require that, from the 4th SSBSE onwards, first-time TPC members must have previously authored or co-authored at least one paper that has been accepted by SSBSE.
3. Technical program committees require continuity to ensure that conference

goals can continue to be met. It is also important, however, that TPCs make room for new members, and that Program Chairs do not feel obliged to retain, for historical reasons, committee members. In particular, those TPC members who fail to meet the high standards of reviewing expected by SSBSE, should not be included for the following year's TPC. Incoming PCs should request an indication of performance of the TPC members from the outgoing PCs to ensure that this information is passed on. It should be treated as confidential and sensitive information and therefore passed on in strictest confidence, including only the outgoing and incoming PCs and GCs and the SC. No lasting record other than the communication between the outgoing and incoming PCs is to be retained. We recommend that TPCs explicitly incorporate a process of rotating members on and off of the TPC, as follows:

- a. TPC members shall normally serve on no more than three consecutive TPCs, following which they must be omitted from the TPC for at least one year.  
And we make the following more strongly required guideline, deviation from which should be notified to the SC and for which their approval should be sought:
- b. On each TPC, between 10% and 30% of the members shall be new with respect to the preceding year's TPC.

4. To help ensure the success of future SSBSE, the Program Chairs and General Chair associated with a future SSBSE should be on the TPC for SSBSE for the year preceding that instance of SSBSE. (This is one case where it is permissible to violate guideline 3a.)
5. Given the need to provide effective reviews in each of the many sub-areas of research covered by SSBSE, Program Chairs must ensure that the TPC includes members whose areas of expertise sufficiently cover those areas of research.
6. Given the desire to continue to project SSBSE as an international and inclusive conference, Program Chairs should make every effort to achieve diversity on the TPC with respect to gender, geographic distribution, technical expertise, scientific and engineering viewpoint, experience, and industry versus academic experience etc.
7. The quality of a conference's reviews is central to the view authors have of the conference, and to the conference's subsequent prestige. This in turn affects the conference's ability to attract good work and have an impact. Therefore, Program Chairs should make every effort to invite TPC members who are expected to and agree to abide by the following proscriptions as a condition of serving on the TPC:-
  - a. TPC members are responsible for their own reviews. Although it is acceptable to obtain co-reviewers such as students and colleagues, who may provide relevant expertise, it is neither the student nor the colleague who is on the TPC. The TPC member alone is responsible for the review and must be personally able to argue for or against the

- merits of the paper and to fully justify the review content.
- b. TPC members must play an active role in helping authors improve their papers and develop their work. Reviews should contain details sufficient to support their conclusions, and reviews should be constructive, offering comments on how papers can be improved. To ensure that potential TPC members are aware of and agree with these proscriptions, Program Chairs should include them prominently in any invitation sent out to prospective TPC members, stating that acceptance of the invitation implies agreement with the proscriptions.
  - c. TPC members are expected to attend the SSBSE conference for which they are a TPC member. Failure to attend will normally be deemed sufficient reason to drop a TPC member from the TPC for the subsequent SSBSE and failure to attend two consecutive conferences will normally automatically require that the TPC member is dropped from the TPC of the subsequent SSBSE event.
  - d. TPC members are not only able to submit to the conference, but are encouraged to do so. They should also take an active role in encouraging others to do so.
  - e. TPC members are not only expected to submit timely, authoritative and constructive reviews, they are also expected to take part in on-line discussions of the papers they have reviewed (and others) with other members of the TPC and the PCs.
8. To determine the size of a TPC, calculate an estimate of paper submissions E given the submission numbers from the preceding two conferences, and determine the number of TPC members necessary to handle E papers, consistent with having 3-4 reviewers per paper, and a reviewing load of between 4 to 7 papers per member.

## **2. Location and Schedule**

- The location should be practical to facilitate growth and quality of the conference.
- It is anticipated that on odd numbered years SSBSE will co-locate with FSE (the conference on Foundations of Software Engineering) and that, in even numbered years it will either be free standing or will seek, opportunistically, to co-locate with other conferences to ensure cross over of ideas and wider dissemination. Like all guidelines of this charter, this guiding principle can be changed by the SC at its discretion following a majority vote to do so, but such a decision should be recorded through the mechanism of an updater to the charter.
- The SSBSE conference should take place in Autumn (coinciding with FSE when co located and free to move slightly in order to seek opportunistic co-location in other cases). In all cases, the decision on dates should seek to avoid date clashes with other conferences.

## **Amendments agreed by the Steering Committee**

## VI. Special rules for initiating the conference

These rules, guidelines and procedures are fully applicable to the fourth SSSBE event and should be applied wherever possible and practical to the third event. For the first and second SSBSE events, there was an inherent “starting up” process, during which an SC was formed from an initial group of active supporters of the event and for which this group of supporters conducted the selection of GCs and PCs. It is the aspiration of all involved in SSBSE to migrate to full implementation of these guidelines by the third instantiation of SSBSE and it is a requirement of the charter that these procedures be fully adopted and observed by the fourth instantiation.

## VII. SSBSE Harassment policy

SSBSE is an open and democratic symposium, dedicated to the highest standards of professional and scientific ethics. The symposium seeks to provide a supportive and inclusive environment for the discussion of technical and scientific ideas. Fortunately, there have hitherto been no known cases of harassment at the symposium. Nor will any be tolerated: Any attendee who harasses another (for example, on grounds of race, gender, nationality, sexual orientation) will be immediately challenged by the symposium organizers. If such behavior persists, after it has been challenged, then the offending attendee(s) will be required to leave the symposium. Should any attendee feel that they have been harassed they should feel confident that they can report it to the general chair (and/or program chairs) and that it be treated with due seriousness, tact and discretion.

## VIII. SSBSE Challenge Track Guidelines

The purpose of the challenge track is to pose to the community the challenge of applying Search Based Software Engineering techniques to real-world software engineering problems. The steering committee recommends that track chairs adopt a criterion-based acceptance/rejection approach outlined in this section.

**Criterion for Acceptance:** Specifically, if a paper presents the results of applying an SBSE technique to one of the challenge track programs/problems, and meets the standards of writing and formatting required by the Symposium, then the default position should be to accept the paper. Referees should be asked to give, in addition to their review, a “yes/no” answer to the following question: *“Does the paper clearly present results from applying SBSE to at least one challenge track program/problem?”*

Where the consensus among the referees is that the answer to this question is “yes”, then the track chairs should only reject the paper if they have a very clear justification for overturning the acceptance criterion and these guidelines.

A paper that does not address the challenge should clearly be rejected, as should one that does not use SBSE (since it will be out of scope for the Symposium). Papers that do not present clear results should also be rejected. However, it is not the purpose of the track to necessarily introduce novel techniques (although it may). As such, an accepted paper could apply an existing SBSE technique to one of the challenge track programs/problems.

**Motivation for a Criterion-Based Approach:** Challenge papers are typically short papers, and are specifically targeted to the challenge track, since they concern the specific challenge posed by the track chairs. Any paper that meets the criteria benefits the community by increasing the pool of evidence for real-world SBSE applicability. Any prestige that attaches to the Challenge Track is more closely associated with the awards, uptake and reaction to results, rather than paper acceptance alone.

Having a large number of authors presenting work in this track is desirable, since it facilitates cross-comparison between techniques, all of which have been applied to the same program/problem. If a large number of submissions are received, then the track chairs may decide to award gold, silver and bronze medals (or similar), rather than simply announcing the overall winner.

## **Change Log**

Amended 11<sup>th</sup> October 2009 by Mark Harman (SC chair) to create the agreed version of the founding Steering Committee.

Extended 4<sup>th</sup> November 2014 by Mark Harman (SC chair), to add section VII, the Harassment policy agreed by the Steering Committee in October 2014.

Extended January 22<sup>nd</sup> 2015 by Mark Harman to add Section VIII, the agreed guidelines for the SSBSE Challenge Track, discussed by the Steering committee at SSBSE 2014 and by email after.

Amended 29<sup>th</sup> September 2023 by Shaukat Ali (SC chair) in agreement on email with SC member to (1) allow research track chairs to submit papers to other tracks, if they don't have access to submission system of those other tracks; (2) In case of no proposal from a prospective GC submitted, then SC can initiate search for GC; (3) relaxed conference selection period in case of special circumstances; (4) prospective members for the OC and TPC to be consulted with SC.