
Standard Performance Evaluation Corporation (SPEC)

# SPEC Research Group Charter V3.0

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# 1. Introduction

SPEC is a non-profit corporation whose membership is open to any company, organization, and university that is willing to support SPEC's goals. The Corporation has a Board of Directors (BoD), President, and a staff to carry out the business of SPEC. The Board has established the Research Group (RG) in order to promote innovative research in the area of quantitative system evaluation and analysis by serving as a platform for collaborative research efforts fostering the interaction between industry and academia in the field.

The scope of the group includes computer benchmarking, performance evaluation, and experimental system analysis in general, considering both classical performance metrics such as response time, throughput, scalability and efficiency, as well as other non-functional system properties included under the term dependability, e.g., availability, reliability, and security.

The conducted research efforts span the design of metrics for system evaluation as well as the development of methodologies, techniques and tools for measurement, load testing, profiling, workload characterization, dependability and efficiency evaluation of computing systems.

Certain organizational activities require board participation and approval, e.g., the board must approve press releases, setting prices for benchmark licenses, and any major resource, reallocations of SPEC administrative staff, and Public Relations to assist with the non-technical aspects of releasing a new benchmark suite.

To check for possible updates to the SPEC Research Group Charter, please see
http://research.spec.org/fileadmin/user_upload/documents/SPEC_RG_Charter.pdf.

## 1.1. Trademark

SPEC and the name SPEC Research Group are registered trademarks/service marks of the Standard Performance Evaluation Corporation. Additional product and service names mentioned herein may be the trademarks of their respective owners.

## 1.2. Copyright Notice



# 2. Structure

## 2.1. Membership

RG members (universities, research institutes, and companies) are expected to uphold the policies and principles endorsed by SPEC and the RG. This includes policies described in this document and amended by resolutions of the RG; SPEC's Articles of Incorporation and Bylaws; policies adopted by the SPEC Board of Directors (including the SPEC's Confidentiality Guidelines http://www.spec.org/spec/confidentiality.html); and any applicable set of benchmark run and reporting rules. In the event of disagreement between this document and SPEC's Bylaws, or disagreement between this document and decisions by the SPEC Board of Directors, said Bylaws or decisions shall take precedence over this document.

For due cause, the RG may vote to approve exceptions to this policy or may adopt resolutions that may conflict with policies expressed in this document; in such cases, an amendment to this document will be brought forth within a reasonable time period afterwards.

Members are also expected to remain members in good standing by the prompt remittance of annual dues. To be in good standing, a member is required to be current on fees and obligations imposed by SPEC. Membership privileges will be suspended if dues have not been received by the SPEC administrator in time. Membership privileges will be restored once dues have been paid.

## 2.2. Committees and Groups

### 2.2.1. Research Group

Members of the RG are organizations. Any members of SPEC as well as non-SPEC members can become a RG member by requesting a member application from the SPEC office. Each RG member will have a primary representative who has voting rights; each RG member has one vote. RG membership confers voting rights only within the RG. Each RG member may become active participant in any or all Working Group of the RG.

Note: RG members will not be granted any membership privileges beyond the ones described in the current document unless they are also members of other SPEC groups (GWPG, HPG, and/or OSG).

### 2.2.2. Research Group Steering Committee (RGSC)

The Research Group Steering Committee (RGSC) is the administrative body for the operations of the Research Group. The RGSC reviews and monitors all activities for compliance with these procedures and for compliance with the Bylaws of SPEC. The principal activities of the RGSC are the development and maintenance of RG's mission, e.g., establishing RG Working Groups focusing on specific areas of interests. It also provides administrative management for the RG activities and is responsible for reviewing and approving all new project applications.

RGSC Member responsibilities include:

- Attendance of regular conference calls of the RGSC
- Timely delivery of assigned reviews of submitted benchmarking tools or research benchmarks
- Active participation in the RGSC activities

### 2.2.3. Working Group (WG)

A Working Group may be established by the RGSC to address specific area of interest. Any organization is allowed to make a proposal for establishing a Working Group. This proposal will be evaluated according to the criteria in Section 7.1.3. A Working Group should consist of at least 3 (three) different RG member organizations to ensure a balanced work manner and sufficient resources. All proposals, recommendations, or decisions made by a WG are subject to approval or further action by the RGSC, unless specific authority for a decision has been delegated by the RGSC to the WG.

The conduct of a WG meeting may, at the discretion of the Chair of that WG, be less formal than the RGSC rules require. There is no specific requirement for the advance notice of a WG meeting. Representatives from voting and non-voting RG members can participate in meetings of the WGs

Guests invited by WG officers and others may attend at the discretion of the WG Chair; they are observers and may participate only with permission from the WG Chair. All guests are required to file a Guest Participation Statement with the SPEC Office.

RG and its Working Groups will adhere at all times to the principles of due process and antitrust compliance as set forth in detail in the Guidelines for Handling SPEC Information.

## 2.3. Officers

The terms of the Chairperson, Vice Chairperson, Secretary, Publicity Manager, and Release Manager shall be one year and each officer shall be elected by the voting members of the RGSC or the respective given WG. The number of terms of any officer shall be unlimited.

The **Chairperson** shall preside at all meetings. The Chairperson may designate the Vice Chairperson or, in the latter's absence, another alternate to serve in his or her place.

The **Vice Chairperson** shall assist the Chairperson in all duties of the office.

 

The **Secretary** shall assure that all activities are accurately recorded. The Secretary shall also assure that all records of membership and voting status are maintained. The Secretary is responsible for preparing and distributing the minutes of all official meetings. Issues raised at meetings, or through electronic means, will be recorded in the manner of standards discussion. An electronic mail archive will be kept.

The **Publicity Manager** (RGSC only) maintains the list of RG publicity/advertisement channels and is in charge of distributing all RG announcements.

The **Release Manager** works with the SPEC staff and editor to make code and documentation publicly available, as circumstances require.

# 3. Voting Rights

### 3.1.1. Voting in the RGSC and RG Working Groups

Each active RG member is allowed one vote on any motion. Organizations may send as many representatives as necessary to represent their interests.

After joining the RGSC or a Working Group, voting status there is achieved by attendance at the second consecutive official (qualified) meeting of the RGSC or the Working Group.

Voting status is lost if the organization fails to remit payment for membership fees or annual dues. Voting status is restored by payment of these fees or dues. Voting status is also lost if the organization is not represented in person during at least two consecutive official meetings of the RGSC or the considered WG. Voting status is restored at the second consecutive official meeting after attendance has been resumed.

Issues may be designated for resolution by ballot by voting members of the RGSC or Working Group. Ballot may be by standard mail, by electronic means, conference call voice ballot, or a combination of any of the three. A ballot is deemed valid if a quorum of 2/3 of the eligible voting organizations returns ballots. Voting is Approved, Approved with Comment, Disapproved with Comment, or Abstained with Comment. Disapproval and Abstained votes require comment on the nature of the vote.

All RG votes shall be open votes, except for election of the RGSC, and RGSC and WG officers, which is by secret ballot. Exceptions to the secret ballot may be made if there is only one candidate per office.

It should be noted that the lack of passage of a motion by the RG does NOT imply approval of the CONVERSE of the motion.

**Affiliation:** Entering into a relationship of affiliation (as defined in the SPEC Bylaws, Section 2.2) does not alone constitute the creation of a vacancy. (For example, Company B is not a member of the RG or one of its groups. It buys all the assets of, and takes on, all the responsibilities of Company A, including Company A's RG seat.) If, however, such affiliation would cause or appear to cause a member and its affiliate(s) to have two or more votes on the RG, then, as described in the Bylaws, a single voting representative shall be designated and one or more vacancies shall be declared.

**Voting representative:** Each RG member institution shall designate a primary representative. This designation is tracked on the Membership Roster:
https://pro.spec.org/private/wiki/bin/view/Research/MembershipInformation#Membership_Roster)

If the designated primary representative is absent from an RG meeting, another person employed by the member institution (or its affiliates) may temporarily represent the member. In the event of a lack of clarity as to who has the vote, the RG Chair may refuse to accept a vote until the designated primary representative appoints a substitute in writing.

 

#### 3.1.2. Voting in Technical Sessions of Working Groups

Technical sessions of Working Groups are those meetings in which discussions are based on the technical merit of the issues being addressed. These issues are left to the specific agenda of the Working Group.

Each Voting Member designates one person as its primary representative. This designation is made in writing usually on the Participation application form.

#### 3.1.3. Alternate Representatives

In addition, each voting member may designate one or more alternate representatives for a particular WG. This designation must be made in writing.

#### 3.1.4. Changes in assigned Representatives

Members (other than individual) may revoke or reassign their assigned representatives at any time. Notice of changes must be designated in writing.

#### 3.1.5. Proxy Representation

Voting members may designate a proxy for a Technical Committee for a given period or subject matter. This designation must be made in writing. The designation must be signed by the primary representative or by an alternate representative acting as the primary representative. Appointment of a proxy orally is not acceptable.

Proxies may be revoked at any time by the primary representative or by an alternate representative acting as the primary representative. The revocation must be in writing if the representative is not physically present at the meeting.

The proxy authorization or revocation is effective upon receipt by the Chair. A person may hold and exercise multiple proxies.

#### 3.1.6. Who may be a Proxy

RG and RGSC impose few restrictions on who may be a proxy. It may be the representative of another member, a Working Group Officer, an Officer of the RGSC, or any other chosen person as long as he or she belongs to a SPEC member.

#### 3.1.7. When is a Proxy not required

A proxy is not required when a member is being represented by an alternate representative (instead of the principal representative). The alternate representative must be listed on the Membership Roster

## 4. Elections

#### 4.1.1. RGSC Election

The RG members (universities, research institutes, and companies) elect the 10 members of the RGSC (individuals).

Each member of the RGSC must be able to demonstrate extensive experience in the area of benchmarking and performance evaluation in order to ensure a good balance between RGSC members representing different topic areas and technology domains.

Prior to new RGSC and RGSC Officer Elections (election will be held in March of each year), an **Officer of Election** will be designated by the existing RGSC. The Officer of Election is responsible for the conduct of the elections involved, including determining voting eligibility and the means of carrying out the election. The individual selected should be associated with SPEC either as belonging to a member company or a member of the Board of Directors and must not be competing for a position in the RG Steering Committee. The Officer of Election shall perform the appointed duties impartially, in good faith, to the best of his/her ability, confidential and as expeditiously as is practical.

 

Any individual belonging to a RG Member may nominate qualified candidates for the RGSC election. Any nominated candidate must accept the nomination in order to be included in the election, according to dates selected by the Officer of Election. RGSC members will be elected for a period of two years. To maintain continuity and consistency of representation on the RGSC, the RGSC has staggered two-year terms, with half of the RGSC elected each year. **Class A** RGSC members will be elected in **even** years, **Class B** RGSC members in **odd** years.

The RGSC can include up to two individuals from the same RG member. In case a RG member is represented with two individuals, they will only have one vote on the RGSC.

The Primary Representative from each RG Member shall have votes to distribute in the RGSC Election equal to the number of vacant seats (there is no requirement to cast all votes).The candidates with the greatest number of votes, and any others tied for the final qualifying place, will be declared members of the RGSC.

#### 4.1.2. RGSC Officer Election

The 10 RGSC members elect the RGSC officers by a method proposed by its Officer of Election.

#### 4.1.3. Working Group Officer Election

The active WG members elect their WG officers by a method proposed by its chair.

## 5. Meetings

Parliamentary procedure: RGSC meetings are conducted in accordance with general parliamentary procedures under the direction of the chair. Meeting participants may remind the chair of such principles, e.g., by raising a "point of order", but the chair is responsible for interpretation of such principles, which in some cases may specify a greater degree of complexity than is required in order to accomplish SPEC's business.

In such interpretations, the Chair shall use fairness as the primary criterion and simplicity of process as a secondary criterion. The chair's interpretations may be overruled by the RGSC using its usual voting rules.

Locations and dates for RGSC meetings shall be decided upon by the RGSC, and notification shall be distributed to the RGSC members at least 20 days in advance of the meeting.

Notification for meetings in person is distributed on the email lists. For telephone meetings, schedules may be announced a week before the meeting.

**Meeting Types:** RGSC meetings are of two types: regularly scheduled and special (ad hoc). RG may establish an informal group to discuss specific issues or subjects in special meetings may be called by the Chair, the Vice-Chair, or any three members, to handle urgent issues. These meetings are considered ad hoc meetings and are announced on the RG mailing list.

**Notice of Meeting:** At least two full business days' notice is required prior to RGSC meetings, unless every voting member agrees to shorter notice. For example, if the meeting is called for Tuesday at 11 a.m. PST, the meeting notice needs to go out by 11 a.m. PST on the previous Friday.

**Venue:** Meetings may be face-to-face or by teleconference. Remote call-in access at face-to-face meetings will be provided (when feasible) to encourage participation.

**Meeting Protocol:** For regularly scheduled meetings, the RGSC has adopted the following meeting protocol:

- Written proposals submitted in advance of the meeting will be given priority on the agenda.
- A written form of the proposal must accompany all non-trivial proposals.
- Guest presentations may be scheduled for no more than one hour in total for all guests in any one meeting.
- Meetings include:
    - A short session to adjust the agenda

 

  - Approval of previous meeting minutes
  - Status reports from each active Working Group
  - Old business
  - Action item follow up
  - New business
  - Notice of the time and place of the next meeting
  - Announcements
- If time permits, the agenda may also include a section for informal discussions to allow the group to begin discussion on relevant topics that are likely to require action at future meetings. During informal discussions, no RGSC votes will be taken.

# 6. Documentation

#### 6.1.1. Web Pages and Email Subscription

The RG internal web pages (including RG Wiki pages) may be read by all members and a member may subscribe to the email list for the RG.

#### 6.1.2. Mailing Lists

The RGSC Chair or WG Chair shall designate a person to maintain a mailing list for participants in RGSC or WG meetings. Participation in mailing list discussions is considered an extension of RGSC or WG meetings, and, as such, participation is at the discretion of the RGSC Chair or WG Chair.

#### 6.1.3. Calendar of Meetings

The calendar of RGSC meetings and WG meetings shall be available on the private site. The calendar will also show other events or meetings of interest.

#### 6.1.4. Agenda of Meetings

The initial agenda of a meeting shall be made available to members no later than three business days before the meeting. Additional agenda items may be added after the initial agenda is distributed, up to, and during the meeting itself. All members may submit items to the Chair for inclusion in the agenda. The inclusion of submitted items is at the discretion of the Chair, or during the meeting at the discretion of the Presiding Chair.

All members of email lists may submit items to the Chair for inclusion in the agenda. Additional agenda items may be added after the initial agenda is distributed, up to, and during the meeting itself. The inclusion of submitted items is at the discretion of the Chair and Vice Chair.

#### 6.1.5. Meeting Documents

Documents to be considered at meetings of the RGSC or a WG shall be distributed not later than one week before the meeting. Documents received less than one week before a RGSC/WG meeting may, at the discretion of the Chair, be processed, particularly if there is a need for action to meet a schedule for standardization or for coordination with another SPEC group or Working Group.

When a proposal is introduced for the first time in a meeting, any voting member can ask for the decision to be delayed to the next meeting to allow time for study. The Chair will normally honor the request, except under exceptional circumstances.

Meeting documents will be announced on the mailing lists and placed in the document register.

#### 6.1.6. Meeting Minutes

The minutes of a meeting shall be made available within seven business days of the meeting.

 

#### 6.1.7. Action Item List

A list of action items shall be kept and reviewed at each meeting.

# 7. Activities

The RG will be involved in several activities, managed and coordinated by the RGSC, including but not limited to the following:

- Maintain a repository of peer-reviewed tools for quantitative system evaluation and analysis.
- Establish and supervise Working Groups focused on developing representative application scenarios and workloads, referred to as research benchmarks, for existing or newly emerging technologies and application domains.
- Review and publish proposed tools and research benchmarks.
- Publish a regular newsletter as well as peer-reviewed research articles and white papers in the area of quantitative system evaluation and analysis.
- Establish and maintain a portal for benchmarking-related resources, including benchmarking research bibliography, popular tools, whitepapers, and best practices.
- Organize conferences and workshops fostering the transfer of knowledge between industry and academia in the areas of computer benchmarking, performance evaluation, and quantitative system evaluation and analysis, in general.
- Recognize outstanding research contributions in the areas within the scope of the RG.
- Publish a journal on benchmarking methodologies and tools.

Note: In all publication and all other public activities the following statement needs to be included: “This research has been supported by the Research Group of the Standard Performance Evaluation Corporation (SPEC)”.

#### 7.1.1. Repository of Peer-Reviewed Tools

The RG maintains a repository of peer-reviewed tools for quantitative system evaluation and analysis. The published tools undergo a thorough review process by multiple independent experts to ensure high quality and relevance to the community. The review process covers important quality factors including maturity, availability, and usability.

The scope of the considered tools covers system evaluation and analysis with respect to both classical performance metrics. In particular, tools for measurement, monitoring, profiling, workload characterization, load testing, stress testing, and resilience testing are solicited. Of particular interest are generic tools that address recurring issues in benchmark development as well as reusable software components that significantly reduce the effort for building new benchmarks. The focus is on open source domain-independent tools that have been well tested and have been shown to provide generic functionality that can be reused in future benchmark development. In addition, benchmark development frameworks targeted at specific application domains are considered.

Any organization or individual is eligible to submit a proposal for publishing a tool in the repository. The criteria based on which tools are selected for inclusion in the repository are described in detail in Section 7.1.3.

#### 7.1.2. Development of Research Benchmarks

A major activity of the RG is the establishment and supervision of Working Groups focusing on developing research benchmarks for existing or newly emerging technology domains. Unlike conventional benchmarks, research benchmarks are not intended to serve as benchmarks for direct comparison and marketing of existing products. The goal is rather to provide representative application scenarios, defined at a higher level of abstraction, which can be used as a basis to evaluate early prototypes and research results as well as full-blown implementations in the respective technology domain. Research benchmarks can be defined both for existing technologies as well as for newly emerging technologies.

By explicitly considering newly emerging technologies and application domains, research benchmarks can serve as a basis to evaluate new paradigms and research prototypes at the early stages of their inception before full-fledged

 

industrial implementations are available. By providing representative application scenarios and workloads, the SPEC RG encourages researchers to consider performance issues at the very beginning of the technology lifecycle. Moreover, as emerging technologies eventually get adopted by industry, the developed research benchmarks are available for SPEC's regular groups to use as a basis for developing new standard benchmarks. This will reduce the time to market for novel "first-of-a-kind" benchmarks and potentially increase the impact of the RG.

A research benchmark is released in the form of a specification covering the following aspects:

1. A description of the target application
2. A description of a set of application scenarios and respective workloads for the target domain
3. A strategy for scaling the workloads
4. Guidelines for customizing the workloads
5. Guidelines for implementing the scenarios and workloads
6. Possible metrics that can be used as a basis for quantitative evaluation of specific implementations of the technology
7. Possible dependencies in terms of runtime environment or target hardware
8. (optional) Prototype implementation of initial benchmark components

Research benchmarks are designed to have long-term relevance and representativeness in the respective technology domain and are targeted for use in both academic and industrial research. They may also be used by other SPEC Committees outside of the RG as a basis to implement standard benchmarks to measure and compare specific platforms similarly to the way conventional SPEC benchmarks are used. As new platforms emerge, benchmark implementations will be updated; however, the scenarios themselves would be more stable and are thus expected to have a longer life-span than conventional SPEC benchmarks.

Research benchmarks differ from conventional benchmarks in a number of ways:

- Their main goal is to provide a basis for in-depth quantitative analysis and evaluation of early prototypes and research results, as well as full-blown implementations, in academic and industrial research environments.
- They are not intended for direct comparison and marketing of existing products; however, they can be used as a basis for building conventional industry-standard benchmarks.
- They are targeted at both established and newly emerging technologies.
- Research benchmarks are defined at a higher level of abstraction and thus provide room for a wide range of different implementations.
- They are more stable and are expected to have longer life-span and relevance for the considered technology domain.
- They would normally be more flexible and customizable to different usage scenarios.
- They are intended to provide a range of possible metrics and leave it up to the user to decide how to weigh them based on the goals and scope of his analysis.

#### 7.1.3. Review of Proposals for Tools and Research Benchmarks

Submitted proposals for tools and research benchmarks undergo a rigorous review process. Each proposed tool or benchmark is reviewed by members of the Research Group Steering Committee who are asked to write an evaluation report with a recommendation. In addition, the proposals are discussed and reviewed at a meeting of the Research Group Steering Committee. Based on the results of this meeting, the Research Group makes a final determination and communicates this outcome to the submitter.

Tool proposals are evaluated based on the following criteria:

1. Relevance to the system evaluation community
2. Overall utility
3. Originality or novelty

 

4. Tool maturity / user base
5. Ease-of-use and quality of documentation

Proposals for research benchmarks are evaluated based on the following criteria:

1. Relevance of the considered technology or application domain
2. Evidence showing the need for benchmarks in the respective domain
3. Novelty and representativeness of the proposed application scenarios and workloads
4. Adequacy of the proposed strategies for customizing and scaling the workloads
5. Quality of the implementation guidelines

#### 7.1.4. Dissemination of Regular Newsletter

The Research Group publishes and disseminates a regular newsletter (twice a year) reporting on new peer-reviewed tools, new research benchmarks, newly established Working Groups, as well as any other information of interest to the system evaluation community. The newsletter is published online on the SPEC RG's web site and announced through mailing lists and other advertisement channels.

#### 7.1.5. Management of a Portal for Benchmarking-related Resources

The Research Group established and maintains a portal for benchmarking-related resources. Some examples include:

- Benchmarking research bibliography
- Popular tools that could be of use to the benchmarking community
- Best practice documents
- Whitepapers on benchmarking

#### 7.1.6. Publication of Journal on Benchmarking Methodologies and Tools

The establishment of a journal focusing on novel benchmarking methodologies and tools is a long-term goal for the Research Group. Currently, no journal exists in this area and its introduction will be welcomed by the research community. Submitted articles will undergo a rigorous review process and will be evaluated according to high standards for quality, originality, and relevance. Aiming at quality rather than quantity, only exceptional high-quality articles will be accepted for publication to ensure credibility in both the academic and industrial world. In addition to normal articles submitted to the journal, selected best papers from conferences and workshops organized with the participation of SPEC (e.g., the ACM/SPEC International Conference on Performance Engineering (ICPE) or the SPEC Benchmark Workshop) and invited papers from leading researchers will be considered for publication in the journal. The RGSC will select an editor-in-chief for the journal and will approve the composition of the editorial board as well as the guidelines for peer reviewing for this journal.

#### 7.1.7. Recognition of Outstanding Research Contributions

The SPEC Distinguished Dissertation Award aims to recognize outstanding doctoral dissertations within the scope of SPEC RG in terms of scientific originality, scientific significance, practical relevance, impact, and quality of the presentation. The scope of the considered dissertations covers system evaluation and analysis with respect to both classical performance metrics, such as response time, throughput, scalability and efficiency, as well as other non-functional system properties included under the term dependability, e.g., availability, reliability, and security.

Contributions of interest span the design of metrics for system evaluation as well as the development of methodologies, techniques and tools for measurement, load testing, profiling, workload characterization, dependability, and efficiency evaluation of computing systems.

The award is accompanied by a prize awarded at the Annual ACM/SPEC International Conference on Performance Engineering (ICPE). The Call-for-Nominations is normally announced in May with a submission deadline in the fall.

 

In addition to the Distinguished Dissertation Award, each year SPEC might decide to grant SPECtacular Awards (as established in the wider SPEC community) to recognize outstanding contributions such as:

- High-impact research contributions in the areas within the scope of the RG
- Contribution of a highly influential research benchmark or a highly successful tool
- Contributions to foster interactions and exchange of ideas between academia and industry

#### 7.1.8. Organization of Conferences and Workshops

The Research Group actively participates in the organization of conferences and workshops in the area of quantitative system evaluation and analysis including computer benchmarking, performance evaluation, and general experimental system analysis. A major goal of such events is to foster the transfer of knowledge and interaction between industry and academia. In particular, members of the Research Group are actively involved in the organization of the ACM/SPEC International Conference on Performance Engineering (ICPE) series as well as the SPEC Benchmark Workshop.

#### 7.1.9. WG Projects

Projects are assigned to standing Working Groups which are the operational bodies responsible for the development, production and management of specifications, programs, and benchmarks for quantitative system evaluation and analysis. Projects are approved by a two-thirds (2/3) vote of the RGSC members. All final releases of rules and specifications applicable across multiple projects, programs, and benchmarks shall be approved by the RGSC prior to release.

The Working Groups are responsible for the work to develop, evaluate, and approve the specifications, programs, and benchmarks. All Working Groups' documents and records of the Working Groups' actions, methods, and procedures shall be retained for review and inspection. The specifications, programs, and benchmarks described herein will be made available to all interested parties at the earliest possible release dates.

The specifications, programs, and benchmarks should list the names and affiliations of individuals participating in the development effort.

 