MPI Forum Procedures
Version 2.0

The MPI Forum

Chapter 1

Terms and Conventions

1.1 Document Definitions

This document defines rules and conventions for the creation of:

- **MPI Standard Document:** the main document defining the Message Passing Interface standard.

- **MPI Companion Documents:** additional documents published by the MPI Forum in addition to the MPI Standard Document. These documents are ratified by the MPI Forum, but are not part of the official MPI Standard Document.

Both types of documents are marked with monotonically increasing version numbers using a major/minor version number scheme.

1.2 Definitions of Roles

The following defines the roles of the people or groups of people involved in the MPI standardization process:

- **MPI Forum:** the group of people actively involved in the standardization process by participation in physical meetings, participation in MPI working groups, and / or chapter committees.

- **MPI Forum Chair:** is responsible for organizing the agenda for physical MPI Forum meetings as well as the activities leading to the publication of MPI Standard and MPI Companion Documents. The Forum Chair also maintains the overall outside presence of the MPI Forum.

- **MPI Forum Secretary:** is responsible for organizing and recording ballots as well as artifacts from the physical MPI Forum meetings.

- **MPI Standard Document Editor:** is responsible for both maintaining the overall document and its repository, and for publishing newly ratified versions of the MPI documents.

- **Chapter Committee Chair (sometimes referred to as "Chapter Author"):** is responsible for implementing and organizing reviews for approved changes into their respective chapter(s).

- **Chapter Committee:** assists the Chapter Committee Chair in implementing and reviewing changes for the respective chapters.

- **Working Group:** group of people working on individual, possibly cross-cutting topics that can lead to proposed changes for the MPI Standard Document. Working groups can be established at MPI Forum meetings once support from at least four IMOVE organizations.

- **Working Group Chair:** is responsible for organizing the work in the Working Group, reporting to the MPI Forum on progress in the working group, maintains the outside presence of the Working Group, and organizing regular Working Group meetings.

1.3   Ballot Definitions

- **Physical MPI Forum Meeting:** An open meeting of the entire MPI Forum in a physical location (vs. a teleconference or other virtual meeting). In-person attendance to the meeting is open to all organizations in the MPI Forum as well as the general public.

- **Organization:** A business entity that sends one or more representatives to a physical MPI Forum meeting.

- **Registration:** Individuals register for each physical MPI Forum meeting that they will attend. At the time of registration, individuals declare which organization they will represent at that meeting.

- **Overall Organization Eligibility (OOE):** An organization is generally eligible to vote if it has registered and had one or more representatives physically present at two out of the last three physical MPI Forum meetings (including the current meeting).

- **Individual Meeting Organization Voting Eligibility (IMOVE):** An organization is eligible to vote at a specific physical MPI Forum meeting if all of the following are true:

    - The organization is OOE.
    - An individual representing this organization registered for that specific physical MPI Forum meeting before the first ballot occured.

– The organization had at least one of its representatives physically present during that specific physical MPI Forum meeting.

Once an organization becomes IMOVE for a specific physical MPI Forum meeting, that organization stays IMOVE for the remainder of that specific physical MPI Forum meeting. For example, if an organization's only representative leaves the meeting, that organization still remains IMOVE.

- **Meeting Quorum:** Quorum is established at a physical MPI Forum meeting when more than $2/3$ of OOE organizations have registered for that meeting.

- **Individual Ballot Quorum:** Quorum is established for an individual ballot when more than $3/4$ of IMOVE organizations at the meeting cast a vote (vs. abstain). The number of IMOVE organizations is counted at the beginning of each ballot.

Chapter 2

Voting Rules

2.1 Intent

This chapter was written with the following goals in mind:

1. Provide clear, unambiguous definitions and procedures for voting on general text proposals, errata proposals, the final MPI Standard Document and changing this document.

2. Enforce a high degree of consensus before text is accepted into the MPI Standard Document.

3. Ensure a process that ensures a high quality MPI Standard Document that is both well thought through and allows for fixes found in final review stages.

4. Disallow arbitrary abuse of voting procedures.

This proposal only details *official ballot* voting definitions and procedures. Unofficial voting procedures, such as "straw" votes, are outside the scope of this document.

2.2 Procedures

2.2.1 Official Ballot Voting

Official ballot voting and formal readings occur only at physical MPI Forum meetings where a meeting quorum has been established.

All official ballots must be announced and scheduled at least two weeks prior (four weeks prior in case of votes for a final MPI Standard Document) to the start date of the physical MPI Forum meeting at which they will be held. The dates/times for official ballots will not change after two weeks prior to the beginning of the meeting to allow attendees to schedule their travel appropriately.

For each official ballot, each IMOVE organization is individually polled for their vote. The designated representative of an IMOVE organization may vote "yes," vote "no," or abstain from voting. Proxies are not permitted. If no representative of an IMOVE organization is physically present at the time of the ballot, that organization has implicitly abstained.

A ballot passes if:

1. The ballot meets the requirements for the individual ballot quorum, and

2. The number of "yes" votes is more than ¾ of the sum of "yes" and "no" votes.

   Rationale.   The first condition prevents large numbers of abstentions from skewing results. The second condition sets a high requirement for consensus before a ballot will pass. (*End of rationale.*)

Note that if a ballot fails to meet the required individual ballot quorum, the ballot can be re-cast one time at the same physical MPI Forum meeting. The ballot may also be deferred to a subsequent physical MPI Forum meeting. Specifically: failing to establish the individual ballot quorum does not mean that the ballot failed.

2.2.2   General Text Proposals

General text proposals for the MPI Standard Document (including MPI Companion Documents, such as the MPIR specification document) are usually "not trivial" changes, and typically add new semantics, change or clarify existing semantics, or remove previously-defined semantics.

General text proposals use the following process to be accepted into an MPI Standard Document:

1. Have a formal reading at a physical MPI Forum meeting where the meeting quorum has been met.

   (a) The final text of the proposal to be read must be made publicly available via the general MPI Forum broadcast email list at least two weeks prior to the start date of the physical MPI Forum meeting at which it is to be formally read.

   (b) The formal reading must be scheduled on the physical MPI Forum meeting's agenda at least two weeks prior to the meeting's start date.

   (c) There is no criteria for "passing" or "failing" a formal reading. It is up to the proposal's author(s) to decide whether to bring the proposal up for a formal ballot at a subsequent meeting.

2. Pass a first official ballot at a physical MPI Forum meeting.

   (a) A proposal's first ballot can only be conducted after its formal reading.

(b) A proposal's first ballot must be conducted at a different physical MPI Forum meeting than which it was formally read.

3. Pass a second official ballot at a physical MPI Forum meeting.

   (a) A proposal's second ballot can only be conducted after its first ballot passes.

   (b) A proposal's second ballot must be conducted at a different physical MPI Forum meeting than which it passed its first ballot.

4. Changes to proposal text after it was made available for the formal reading (i.e., at least two weeks prior to the start date of the physical MPI Forum meeting at which it was read) are permitted in some cases:

   (a) Before the second ballot, changes are permitted if the text delta is presented at a physical MPI Forum meeting and approved via a special formal ballot of IMOVE organizations at that meeting:

       i. The ballot meets the requirements for the individual ballot quorum, and

       ii. There are zero "no" votes.

       Rationale. The first condition prevents a large number of abstentions. The second condition ensure that all non-abstaining organizations are unanimous in their consent of the text changes. (*End of rationale.*)

       If the special ballot fails, the original text of the proposal is used.

   (b) After the second ballot, text changes that do not change the semantics of the proposal are permitted with the unanimous consent of the relevant chapter committee(s).

Proposals may be voluntarily withdrawn at any time before the second ballot passes.

Ballots may be deferred to a subsequent physical MPI Forum meeting in the following cases:

1. Before the ballot is conducted, the proposal author requests a deferral to the next physical MPI Forum meeting.

2. When the ballot is conducted, it fails to meet the individual ballot quorum.

If a proposal fails either of its ballots, or if a proposal is withdrawn, it must perform the entire procedure again (i.e., start over with a formal reading). If either ballot fails to establish its per-ballot quorum, it may be re-cast within the timeframes specified above.

2.2.3   Errata Proposals

Errata proposals for the MPI Standard Documents are usually "small" and deal with "critical" changes to documents to correct errors, clarify egregious ambiguities, etc.

Errata proposals use the following process to be accepted into an MPI Standard Document:

1. Pass a single official ballot at a physical MPI Forum meeting.

    (a) Final errata proposal text must be made publicly available by the Errata document editor via the general MPI Forum broadcast email list at least two weeks prior to the start date of the physical MPI Forum meeting at which its ballot will occur.

2. Changes to proposal text after it was made available (i.e., at least two weeks prior to the start date of the physical MPI Forum meeting at which it was balloted) are permitted in some cases:

    (a) Before the ballot, changes are permitted if the text delta is presented at a physical MPI Forum meeting and approved via a special formal ballot of IMOVE organizations at that meeting:

        i. The ballot meets the requirements for the individual ballot quorum, and

        ii. There are zero "no" votes.

        If the special ballot fails, the original text of the errata proposal is used.

    (b) After the ballot, text changes that do not change the semantics of the proposal are permitted with the unanimous consent of the relevant chapter committee(s).

If an errata proposal fails its ballot, it must perform the entire procedure again (i.e., start over by posting the text a minimum of two weeks before a physical MPI Forum meeting).

Procedures for deferring errata proposal ballots are the same as those for general text proposals.

2.2.4   Process to Ratify an MPI Standard Document

Once a series of changes (errata and text proposals) are voted in by the MPI Forum using the processes above, the Forum can publish a new revision of the MPI Standard Document. This could be a new minor or major version of the standard; the process below applies to either. The Forum Chair, after consulting with the members of the Forum, initiates this process.

The ratification process of any MPI Forum Document starts after the end of the last physical MPI Forum meeting where changes were voted into that Document, and typically spans two subsequent physical MPI forum meetings:

- Release Candidate Meeting (RCM)

- Final Ratification Meeting (FRM)

Ratification procedures are as follows:

1. Prior to two weeks before the start of the RCM:

    - Chapter Committee Chairs integrate approved changes and/or minor, non-semantic fixes to their chapters into the MPI Standard Document.

    - Chapter Committees review changes to their chapters to ensure that approved changes have been integrated accurately into the MPI Standard Document.

    - Chapter Committees may also find problems with approved changes that require further deliberation by the Forum. Such problems must be itemized for review by the Forum.

2. At least two weeks before the start of the RCM:

    (a) Chapter Committee Chairs publish the following for the Forum members to review:

        - Release Candidate Drafts (in PDF form) of their chapters.
        - Changes to the chapter since the last published version (preferably in the form of a colorized diff, or a marked up PDF, or some other easily-reviewable format showing the changes).
        - List of still-unresolved problems, including (but not limited to) problems with or mistakes in approved changes.

    (b) The MPI Standard Document Editor publishes a Release Candidate Draft of the entire MPI Standard Document (in PDF form), including all the changes from all Chapter Committees.

3. In the two-week window before the start of the RCM:

    (a) MPI Forum members review all the material published by the Chapter Committee Chairs and MPI Standard Document Editor.

    (b) Chapter Committees continue to work on still-unresolved issues. *Any* changes to text after the MPI Standard Document Editor published the final draft at the two-week window must be specifically discussed with the Forum at the RCM.

4. At the RCM:

    (a) All Chapter Committee Chairs (or their designees) read their chapters for the entire Forum. The focus of the readings is the changes that have occurred since the last released version (as opposed to verbally reading the entire chapter word-for-word).

(b) Items that must be specifically itemized and discussed with the Forum during these readings include:

- Any unresolved issues found in implementing approved changes.
- Any technical issues found with approved changes or with the existing MPI Standard Document.
- Any changes that were made within two weeks of the beginning of the RCM.

(c) The MPI Forum collectively reviews the entire Release Candidate Draft MPI Standard Document, looking for problems such as (but not limited to):

- Formatting and whitespace problems, spelling errors, and other typos. Such problems should be itemized and can be fixed at the meeting by Chapter Committees and/or the MPI Standard Document Editor.
- Logical inconsistencies in the overall document, or problems with approved changes.

(d) The MPI Forum Chair compiles a list of all still-unresolved issues that will be fixed before this release of the MPI Standard Document.

- Forum members are encouraged to only allow "errata"-quality items on the list of still-unresolved issues. Larger items should either delay the ratification process or be deferred to a future version of the MPI Standard Document.

(e) Per section 2.2.2, a first ballot is conducted on ratifying the entire Release Candidate Draft MPI Standard Document *along with* the listing of all still-unresolved issues created in the previous step.

- If the ballot fails, the entire procedure must be repeated, possibly starting a new RCM at the next physical meeting.

(f) If, after the ballot, the list of all still-unresolved issues is empty and the forum was able to resolve all other minor issues, such formatting and whitespace problems, spelling errors, and other typos, at the RCM, the forum can decide, using a ballot following the no "no" votes procedure, to fast track the ratification. In this case, the steps in 5, 6, 7a), and 7b) are skipped and the final vote for the MPI Standard Document is held during the same meeting. This vote still has to be on a different calendar day than the previous ballots.

5. Prior to four weeks before the start of the FRM:

- Chapter Committees and Working Groups work on resolving the issues in the list of open issues and integrate changes into the Release Candidate Document and review any changes made.

6. At least four weeks before the start of the FRM:

- Chapter Committee Chairs publish a final draft of their chapters.
- Chapter Committee Chairs publish list of all changes made since the RCM, including changes made based on the list of open issues.
- The editor freezes the Release Candidate document and publishes it to the MPI Forum.

7. At the FRM:

   (a) The MPI Forum Secretary conducts a ballot for each individual change that originated from the list of open issues decided upon at the RCM (and was completed before the four-week window). Ballots that fail must have their changes reverted.

   (b) The MPI Forum Secretary conducts a series of ballots for all other changes made since the RCM. In addition to the procedures listed in Section 2.2.1, if any "no" votes are recorded in the ballot for a given change, this change must be reverted.

   (c) On a different calendar date than ballots listed in the previous two bullets (but at the same FRM), the MPI Forum Secretary conducts a final ballot on the entire Document.

      - If the ballot passes, the MPI Standard Document Editor adds a date stamp to the Document and publishes it to the MPI Forum web site.
      - If the ballot fails, the entire ratification process must be repeated.

   (d) Historical note: prior MPI Standard Documents had ballots for each chapter and then the entire document. This is no longer the case.

2.2.5 Changing These Rules

The procedure for changing these rules is essentially the same as for Errata Proposals: publish the proposed change at least two weeks prior to a physical MPI Forum meeting and then pass one official ballot.

The new rules take effect as soon as they are approved/voted in by the MPI Forum.

Chapter 3

Suggestions for Proposers

The following are several suggestions to consider before raising a proposal to the MPI Forum:

1. Socialize your proposal among all the relevant Forum chapter committees, other relevant Forum members, and real-world users. Get feedback and buy-in from as many people as possible.

2. Ensure that your proposal:

    (a) Is not "syntactic sugar" for something that could be implemented outside of an MPI implementation.
    (b) Represents a "best practice."
    (c) Is useful on a wide variety of platforms / architectures, both today and in the conceivable future.
    (d) Is not an ephemeral use case.

3. Be prepared to cite concrete use cases and/or applications that can use the functionality in your proposal.

4. Implementations of proposals are strongly encouraged, especially for "non-trivial" proposals. The most highly valued implementations are ones that:

    (a) Show a performance or functionality benefit that cannot be accomplished outside of an MPI implementation.
    (b) Can be implemented on a wide variety of platforms / architectures.

5. Proposal quality issues:

    (a) Use a similar writing style to the rest of the MPI specification document.
    (b) Get the proposal proofread by a native English speaker.
    (c) Ensure that the proposal fits in well with the overall MPI specification document.

6. Don't let too much time elapse between the formal reading and ballots.

Chapter 4

Suggestions for Voters

The following are several suggestions to think about before voting on an MPI Forum proposal.

1. Actually read the proposal. Take time to think about it. Socialize it with your colleagues.

2. Is this proposal just "syntactic sugar" for something that could be implemented outside of an MPI implementation?

3. Does this proposal represent a "best practice"?

4. Is this proposal useful on a wide variety of platforms / architectures, both today and in the conceivable future?

5. Are there applications that will use the functionality from this proposal?

6. Is the use case for this proposal ephemeral?

7. Implementation issues:

   (a) Is there an implementation? Implementations may not be *required*, but should be highly valued, especially for "non-trivial" proposals.

   (b) Does the implementation show a performance or functionality benefit that could not be implemented outside of an MPI implementation?

   (c) Is the proposal implementable on a wide variety of platforms / architectures?

8. Proposal quality issues:

   (a) Is the proposal well-written?

   (b) Is the proposal too young? E.g., does this proposal represent new work that may not yet have been completely vetted, thought through, or simply had time to mature?

   (c) Is the proposal too old? E.g., has there been a significant time lapse between its reading and/or ballots? (if so, why?)

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