

Guidelines for preparation for the first IPC meeting for an ICME congress

Note: These guidelines were developed prior to the Covid-19 pandemic and thus apply to the work of the IPC towards a Congress unhampered by restrictions on international travel, or financial constraints that might face all communities across the world in the near to medium term future. While the underlying principles that guide all ICMI activity, including an ICME Congress remain, a Congress that might be organized for a blended fully remote format would require differed and/or additional considerations.

1. Introductory comments

The ICME congress is a key activity of ICMI. There is extensive documentation as to its purpose, history, organization and so on, on the ICMI web page. The Congress Chair is usually also the Chair of the International Program Committee (IPC).

While the work of the IPC is informed by past ICME IPCs and Congress programs, each new IPC of ICME has some (if limited) latitude in shaping their specific scientific program. This document is to support and guide the work of the IPC, and in particular the critical preparation that needs to be done by all IPC members prior to the first IPC meeting. The first IPC meeting is where the major work of developing the scientific program for the Congress is carried out. It includes identifying key invited speakers (plenaries, panels, invited lectures, survey teams) as well as the co-chairs and team members for the Topic Study Groups. The IPC, and particularly through this first meeting, thus gives voice and visibility to selections from our community as the members work together to produce the best possible program. This is not a trivial task, and while no set of regulations can or should determine the work of the IPC, the complexity can be reduced with attention to the guidelines offered below.

All IPC members will have some previous experience with ICME (e.g. attended and presented at a past congress, participated as TSG Co-chair or member, or invited speaker) and/or ICMI (e.g. chaired an affiliated organization; been a member of an ICMI Study IPC, etc.), but might not be aware of the role of the various activities that make up the program. The Chair of the IPC, who leads the process, will need to develop a comprehensive agenda for this meeting, alerting all committee members to the preparatory work to be done. Some suggestions for this are made in the guidelines below, so as to enhance the workings of the committee.

There is now extensive experience over many ICME congresses to institutionalize not only the processes (meetings, members of IPC, letters of invitations, first and second announcements, etc.), but also the substance of the various activities and so inform the new IPC in setting up the program. This will provide for continuity beyond the ex-officio presence of the previous ICME IPC Chair.

2. The IPC and its role

2.1. The Chair of the IPC

The Chair of the International Program Committee (IPC) is nominated as part of the bid-process, and is supported by an LOC (Local Organizing Committee).

The Chair of the IPC, together with the LOC, manages the entire process of the program development starting with all the preparation for the first IPC meeting. This includes considering and suggesting the overall format of the scientific program and so the allocation of time for various activities, and any innovations or directions that the host country wishes to introduce. The suggested program is linked to the facilities for the Congress, as these circumscribe, for example, the number and the size of the activities that can take place in parallel.

The Congress Convenor and Chair of the IPC works in tandem with the Congress Local Organizing Committee (LOC). The IPC is responsible for the academic components of the program and LOC the logistics of the Congress and its preparations. Of course, there are some overlaps (e.g. the IPC cannot program activities that the LOC cannot guarantee the proper infrastructure to support it). Reciprocally, the IPC should inspect the venue during its first meeting so as to be sure the academic components have a proper “stage” to take place.

2.2. Ex-officio members of the IPC

The current President and Secretary General of ICMI, together with the IPC chair of the previous ICME are ex-officio members of the IPC. The presence of all three is important as they provide for continuity between ICMEs and can ensure that the ICMI statutes and spirit are respected.

All ex-officio members are full members of the IPC – thus with full voting rights, should there be need for voting.

2.3. IPC committee members - functions

The wider membership of the committee (up to a maximum of 22 persons, including ex-officio members) are nominated and appointed by the ICMI EC, through the President. The guidelines for the appointment of the IPC members can be found as an appendix to this document. Collectively the IPC members need to be able to enact the ICMI principle of inclusion in the development of the scientific program.

While each IPC member is from a particular country and collectively selected to provide for a geographic spread in the committee, and as stated in the guidelines for the selection of the IPC, it is important to note that an IPC member is *not selected as a representative of their country* but as *a member of the international community* to contribute their experience and wisdom to the overall vision and quality of the congress program, ensuring that it is truly international and inclusive.

IPC members need to be available to travel to, and participate in, the IPC meetings prior to the congress (expenses for travel, accommodation and meals are covered by the ICME organizers, as stipulated in the bidding guidelines).

The key tasks of the members of the IPC prior to and during the first IPC meeting is *collectively* to:

- Provide informed nominations for all invited speakers for all key activities in the congress; and participate in the final selection of these.
- Declare conflicts of interest in relation to nominations of persons to key roles in the program.
- Serve as liaison persons between ICME and the TSG chairs in order to facilitate and monitor the progress of their organization and intervene if requested or needed.

A key concern in producing this coordinated selection of speakers and participants is reflecting both the excellence and ongoing development of the field, while achieving “balance” – in terms of gender and geographical spread, affluent and non-affluent country participants, and sectors within countries. This places considerable responsibility on the IPC who by virtue of being a limited number of people, must collectively ensure that the best available information is at hand about possible contributors across the world. It is impossible for all countries and regions to be equally represented in the committee. In addition, in some regions of the world, for example across Europe and the US, mathematics education communities have depth, breadth and longevity. Thus, knowledge and information about these wider communities in terms of outstanding and emerging scholars and educators is typically accessible. Emerging scholars in some countries, for example, with younger mathematics education research communities, are often not well known outside their country. Thus, there is work to do so that ideas/research/expertise from across the world can enter into the deliberations of the committee.

It is advisable that the Chair of the IPC allocate regions of the world to the different IPC members requiring that each does the requisite preparatory work of engaging with others in the regions allocated to identify possible participants. This could include the member’s own country and related region, of course, but would necessitate some investigation beyond what the particular IPC member might him/herself be aware of. Country representatives could be sources of information about possible speakers, as well as other affiliated groups of ICMI. Each member could thus be required, in advance of the meeting, to:

- Investigate and develop considered suggestions of persons for the various invited roles (plenary speakers including plenary panelists, invited lectures, survey teams and topic study group chairs).
- The difficult issue here is that topics for the survey team and panels also have to be agreed by the IPC; as does the number, themes and spread of TSGs. If these are only decided in the meeting, then advance nominations for roles is not possible. The IPC chair will need to provide guidance as to how members of the committee can prepare nominations in advance for these activities. Each of the activities is discussed further below.

3. Overarching issues for the scientific programme

There are at least three main considerations (which may be in tension with each other) in developing the scientific program for an ICME that permeate discussion of all the key activities: continuity, vision/theme and inclusion.

- **Managing continuity in the structure of the Congress Program**

The host country and so the Chair and LOC provide the direction for the overall congress. This includes both the format of the program (the range of activities, and their number) and whether there are any particular themes/foci. New activities have been introduced in the past (e.g. Survey teams; Thematic afternoons). ICME14 introduced a new structure to the TSGs (see below). Across ICMEs the number of plenary sessions, invited lectures, TSGs has varied, in particular depending on the venue and its capacities.

- **Vision/theme**

Many conferences have overarching themes. It has not been the practice for ICME Congresses to have such a theme. As a four-yearly large and expansive Congress, with wide ranging activities, a particular theme for the entire congress might not be appropriate. It is nevertheless important to understand the role of the various activities in setting up and producing what comes to be driving themes across these.

A question that has arisen in previous IPCs is how, in a rapidly changing world, the ICME program is kept “current”. The first IPC is three years before the congress. The “hot” issues from a global perspective might be less hot closer to the time, and there might well be new ones. The survey teams and the plenary panels are key activities that can address this question. The IPC can bear this issue in mind in the preparation of the full range of activities and the selection of invited speakers.

- **Inclusion/ ‘balance’**

Inclusion is a principle that drives all ICMI’s activities. Throughout the development of the program and the various activities, as already noted, special attention should be given to establishing a range/balance of speakers (e.g. in relation to gender, low income countries; under-represented regions, areas of mathematics education and so on). This is an ongoing concern for the all IPC members, as even collectively, they cannot be deeply knowledgeable about all member countries. Hence there is a need for preparation.

It will be the role of the IPC Chair to consider and then communicate with the IPC members the work to be done prior to the meeting. The IPC as a whole needs to be careful of the overall balance across all invited speakers. This could include the chair assigning an IPC member particular regions of the world and ask each member to prepare motivations for a range of nominations for various activities from their assigned region. Such motivations could include information about the persons, their specialisations, local, national and international roles and recognitions and so on. There needs to be deliberate attention to the inclusion of persons from under-represented countries in ICMI (which often coincide with low income countries), and more broadly, to young or emerging researchers who are often not well-known beyond their locality.

4. Current activities and their role in the overall programme

The following information is useful to share with the IPC at the start of the meeting, or in advance, and so to enable preparation.

The ICMI network



This map shows vividly the spread of ICMI across the globe, and at the same time, through the light blue areas shows those countries and regions that at this point are under-represented in the ICMI network.

The components of an ICME Congress program and their roles

*The first five components below are different kinds of opportunities for ICMI – as an international network – to **celebrate, showcase** and debate / reflect on the field.*

Components 6 and 7 are where there are opportunities for wide participation and contribution to the Congress and its scientific work.

Component	Substantive role
1. ICMI awardee lectures	ICMI awardees are invited speakers at the Congress, in recognition of excellence in our field, research, practice, lifetime (They are presented with their medals in the opening ceremony) These lectures are in parallel but are not at the same time as any other activity.
2. Plenary lectures	These are in recognition of substantial and continuing (new) contribution to growth of field
3. Plenary panels	<ul style="list-style-type: none"> Opening up debate in a contested/debatable area of our work Bridging communities/different perspectives on an issue
4. Survey teams	State of the art of selected areas of our work <ul style="list-style-type: none"> areas “ready” for this and with longevity and spread of work, and of current wide interest.
5. Invited lectures	Broader level of recognition of work and giving visibility within and across countries (thus including established and emerging researchers)
6. TSGs (Papers, Oral Presentations, Posters)	This is the one place in the congress where all participants, early and experienced researchers alike, across different contexts, foci and approaches can <ul style="list-style-type: none"> share their work with colleagues working in similar areas learn from each other TSGs need to provide opportunities across the broad spectrum of interest areas in the field for people to present their work and hear about others’ work.
7. Discussion groups and workshops	This is the place for participative interaction, for new topics to be proposed, for practitioners, curriculum discussion, policy discussion, etc. and, in general, for people to create spaces to think together with others.

8. The thematic afternoon	This has become (it was not the case in ICME10) the place for the host country to select and showcase local or regional work.
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In the remainder of this document, there are suggestions and some guidance for the development of each of these components and activities in the program by the IPC, attempting to flag up possibilities and pressures that come in to play.

5. Current components/activities: Role in the Congress, issues and pressure points

5.1. THE PLENARIES: Recognition of excellence in any aspect of our field

Role in congress

These together with the plenary panels are the only places (besides the opening and closing ceremonies) where the whole community of participants is in the same room, listening to the same message.

Two of the plenary speakers are “fixed” – one from the host country, and one mathematician (of course, these could be the same person).

- This has the benefit of the host country putting forward their choice, and the whole conference having opportunity besides the thematic afternoon to learn something new or understand something in a different way.
- The mathematician lecture enables a space where we offer communication across our intersecting communities, foregrounding aspects of mathematics of relevance to the mathematics education community.
- Plenary speakers are free to choose the topic/focus of their talks.

The number of plenary speakers has varied between 3 and 5, depending on the number of plenary panels and suitable slots for plenary activity. A common recent trend has been to have four plenary speakers and two plenary panels.

Nominations for plenary speakers

Plenary speakers are recognized for excellence in the field, in research and/or practice, or over a lifetime – i.e. a plenary speaker needs to be established and widely known, and as they will present to the entire congress, they are preferably also, speakers able to hold the attention and interest of a large and varied audience.

Issues/pressure points

- The selection of the plenary speakers necessarily comes first in the deliberation of all invitees. Yet, in the early stages of the meeting, the committee is still settling in, learning the ropes, figuring out roles and so on. At the same time, these are the selections for a most important role in the conference, signalling of what is the best of what we do as a mathematics education community.
- Plenary speakers are invited in addition to the latest awardees. It is unusual that a person is invited a second time as a plenary speaker.

- Depending on the country, and the mathematician, and the gender of both, there are some constraints on nominating the other two. In the case of ICME13, for example, the German speaker was also the mathematician. In ICME14 the Chinese speaker and the mathematician are two different people and both men, restricting the choice of the remaining two to female speakers.

Following the advice earlier that IPC members be allocated regions of the world to consider when bringing nominations to the IPC meeting, each IPC member could be asked to identify a small number of possible plenary speakers, sharing the motivation for this person with the rest of the committee. If this is done in advance of the meeting, the IPC Chair can consider how selection is then done during the meeting.

Here, as with all other nominations of persons for roles, it is useful to restrict IPC members to nominating no more than one person from their own country for the plenary roles.

5.2. THE PLENARY PANELS

Role in the congress

The panels need to be assigned particular roles. The guidelines above were used for the two panels in ICME 14:

- **Opening up debate.** The topic selected is one that is debatable and contested, and speakers can be selected to provoke this debate. The Chair of the panel needs to be able to organise the panel and its focus.
- **Bridging communities/different perspectives on an issue.** Here, the topic selected is of interesting across our intersecting communities (mathematicians, researchers, teachers, curriculum and policy persons) and the diverse perspectives they will bring to the panel.

Unlike plenary speakers, the panel chair is invited to lead the panel on a topic decided by the IPC (in the form of an abstract developed by the IPC). The responsibility of the chair is to launch conversations among the panellists well in advance, so that the coordinations will result in a coherent and smooth presentation at the Congress. The panellists are also chosen by the IPC, and the Chair has thus to ensure collaboration across all panellists.

Plenary panel speakers

As the panels are a plenary event, with no competing activities elsewhere in the program, this is a prestigious activity in the Congress and all panellists need to be speakers of standing/stature. The Chair of a panel has a critical role in shaping the direction and substance of the panel.

Issues/pressure points

- The panellists and the chairs of the panels obviously cannot be nominated until the topics for the panels have been agreed in the IPC. It takes time to decide on the topics for the panels. The IPC Chair needs to decide whether discussion of the panel topics precedes the first IPC meeting, enabling members then to prepare and bring motivations for nominations to the meeting. Alternatively, the panels need be decided in the meeting (say on day 1) and then nominations and discussion of chairs and panellists can follow on day 2, when IPC members have had time to do some preparatory work, to bring nominations and motivations for these.

- Constructing a panel to deal with a contested/debatable issue could include a panellist from “outside” (of math ed). This is a place in the program to invite us to engage not only across our different communities within mathematics education, but also with colleagues in other related disciplines.
- Just as bringing in outside voices within a panel can be productive for debate, so it is important to structure one of the panels for different voices inside of mathematics education.

5.3. THE AWARDEES LECTURES

The time-tabling of these lectures in a specific and dedicated slot need to be decided by the IPC.

5.4. THE SURVEY TEAMS

Role in the congress

These are topics of study in our field – sitting somewhere between an ICMI study and the work of a Topic Study Group (TSG). These are surveys into current issues/topics/areas where there is already some depth that can be excavated.

The chairs and team members

Chairs are experts in the domain/field. Team members need to reflect “balance” so as to be able to excavate across regions.

Issues/pressure points

The discussion and selection of survey teams has a similar challenge to the panels, as topics for the survey teams need to be agreed by the IPC before members can be nominated.

As with the panels, it is possible these be part of pre-meeting preparation, where suggestions for surveys, together with an abstract and motivation as well as suggestions (more than one) for a possible Chair are shared prior to the IPC meeting. Otherwise here too, the discussion of the topics needs to be on a day prior in the meeting to the discussion of the members of the teams.

In contrast to panels where the panellists present opinions or reflections or results from a perspective chosen by themselves in co-ordination with the chair, the survey teams are tasked to “survey”, i.e. study a topic in depth so to present the state of the art of a field. Their work is comprehensive and intense. There are no templates for how survey teams organize their presentation – this is up to each team.

5.5. THE INVITED LECTURES

Role in the program

The number of these has increased over the years – and is dependent on the venue in terms of possible number of parallel sessions.

An invited lecture is also recognition of work, but at a far broader level than the plenaries. This is a place for giving visibility within and across individuals and countries on developing work in the field.

Nominating invitees

These should include established and emerging researchers, across countries, contexts and attention to balance in the overall selection is important. Attempts should be made to ensure at least a third of the invited researchers are emerging researchers.

Pre-preparation is essential for this, and possible to do prior to the IPC meeting. All IPC members could be asked to bring a small number of nominations, with at most one from their own country; and motivations should accompany nominations (indicating the person's area of work, standing, etc.).

Issues with invited lectures

- There are less issues/pressure points in this activity. It is important to have lists of the invited lectures at previous ICMEs so as to select new and different lectures, avoid repeated invitations and at the same time ensure inclusion in the end across all the nominations for the invited lectures
- There is some inevitable unevenness in relation to new and more established researchers as well as inclusion across countries. In small communities (and so small countries /under-represented countries), young researchers can be difficult to identify.

5.6. THE TOPIC STUDY GROUPS (TSG)

Role in the program

As noted in the table above, the TSGs are the key place in the congress where participants are both early and experienced researchers and where they

- share their work with colleagues working in similar areas
- learn from each other
- bring different foci and approaches

TSGs need to provide opportunities across the broad spectrum of interest areas in the field for people to present their work and hear about others' ongoing work. The IPC can erase topics from previous conferences and suggest new ones, based on information (like interest and participation in previous Congresses, and related affiliate organisations' conferences). As the TSGs can be considered as mini conferences on their own, the co-chairs and their team have some flexibility in how these are organised. This includes how submissions will be reviewed, specific programs organised and structured.

The co-chairs and team members

TSGs have two co-chairs, and two additional team members. The fifth person on the TSG is a member from the host country and decided by the host country. The IPC members act as liaison persons to TSGs, with each IPC member being allocated two or three TSGs. Their role is to be a link to the IPC and a support to the ongoing work of the TSG.

Issues

There are issues and pressure points related to the TSGs in the program overall, as well as in who the teams are and how they are nominated/set-up by the IPC.

- The number of TSGs has grown considerably, with some concern for proliferation and overlap. The IPC has to manage the constraints of room availability in the Congress venue, the history of previous groups and domains of practice in our community.
- ICME14 has adopted a new model where there will be two strands of TSGs (A and B) enabling all participants to present in one, but attend a second one of their choice obviously in a different strand. There will be an evaluation of the model with ICME14 participants that is fed back to the EC and so to future IPCs
- The process of both nominating team members and then selecting them is complex.
 - The nomination of chairs and co-chairs occurs after all of the above – thus there are many members of the community who are already listed in roles such as survey team members, invited lectures etc.
 - Continuity with a TSG and its work in the previous ICME needs to be considered. There are benefits to, for example, a new co-chair having been a previous team member, but also constraints as this does not promote space for newcomers. The IPC will need to agree on its guidelines for this.
 - If there is a large number of TSGs, it is advisable to group them and assign some IPC members to a group for initial preparation and discussion and decision of co-chairs for each TSG before the team members are proposed. It could be useful to assign groups were the IPC person who will be the liaison person for those TSGs.

5.7. NATIONAL PRESENTATIONS

National Presentations are a parallel slots in the program in which will small number of countries have the opportunity to present the state of the art and the trends of mathematics education in their communities, so that the international mathematics community may gain a closer knowledge about it. Selection of these take place in the second IPC meeting and depend on the number of proposals received. ICME14 received a large number. Some principles are included in the invitation to submit proposals. In concert with ICMI's goal to reflect mathematics education broadly, national presentations should represent a broad spectrum of persons and work in the country. The only constraint on number relates to available rooms for parallel sessions, as these are timetabled at the same time as discussion groups/workshops.

Discussion groups and workshops

As submission of these is only scheduled after the second IPC, the IPC Chair will set up a process for the consideration of proposals received, and again acceptances will depend of course on appropriacy as well as room availability.

A final note:

The IPC is responsible for the production of Congress proceedings and this will be discussed by the committee.

These guidelines have been signed by the Chair of the Congress and IPC and will be distributed to all IPC members.

APPENDIX: Guidelines for selecting the IPC for an ICME Congress

Guidelines for selecting the IPC for an ICME Congress

The IPC is nominated and selected in the 4th (and last) meeting of the current EC.

The IPC includes the Committee Chair (and this is usually the Congress convener and agreed by the ICMI EC when the bid is accepted), and three ex-officio members (the President and Secretary General of the EC, and past convenor/IPC Chair of the previous ICME). These ex-officio members are to ensure, respectively, links to the ICMI statutes and spirit, as well as gain from the experience from the previous conference.

The full committee is comprised of

- (1) Up to four members from the host country, nominated by the conference convener. This usually includes the chair of the LOC. The conference convener can suggest up to five possible members, from which the EC will select 2 or 3.
- (2) The additional 13 -14 international members of the IPC are selected by the current ICMI EC, according to the principles and processes outlined below.

Principles:

- International and/or regional standing
- geographical representation, and gender balance
- representation from emergent communities
- previous experience with ICME (e.g. attended and presented at a past congress, participated as TSG Co-chair or member, or invited speaker) and/or ICMI (e.g. Chaired an affiliated organization; been a member of an ICMI Study IPC etc)
- members should not have been on a previous ICME IPC

Processes

The President of the current EC will invite all members of the EC (including the president her-himself, the SG, past President, and IMU representative) to nominate up to **five** appropriate persons for membership on the IPC, at a time well in advance of the 4th EC meeting.

Each nomination needs to be from a different region of the world and include a motivation of two or three sentences, as to the suitability of the nominee, including providing website link for further information; and information on previous role(s) in ICMI.

In order to inform their nominations, and avoid repetition, each member of the EC will be sent a list of all previous IPC members, together with a timeline for the process

Nominations will need to be sent to the President and SG no later than 6 weeks before the EC meeting, so that they can produce a consolidated list and an initial pre-selection from this list of up to 25 persons, providing the EC members a rationale for the choices made. If deemed necessary (in terms of the principles above), they may add further nominations to the consolidated list, without restriction.

Discussion on the pre-selected list will take place initially over email in advance of the EC meeting until there is agreement on this list. The final selection of the full committee

will be made at the EC meeting, through a process decided by the President (e.g. by voting following the extensive email discussion)