CEIC MINUTES
6th Official Meeting, Pages 1–6

REPORT OF THE SEVENTH MEETING OF THE COMMITTEE ON ELECTRONIC INFORMATION AND COMMUNICATION (CEIC) OF THE INTERNATIONAL MATHEMATICAL UNION HELD AT DUKE UNIVERSITY DURHAM NC, MARCH 19–21, 2004

Membership and Participation. Jonathan Borwein (Canada), Pierre Bérard (France), John Ewing (USA), Alejandro Jofre (Chile), Martin Grötschel (Germany), Peter Michor (Austria), David Morrison (USA), David Mumford (USA), Alf van der Poorten (Australia).
Regrets: Rolf Jeltsch (ETH) who, with David Mumford, comprises the DML liaison committee of the IMU.

0.1. The CEIC met on Friday, March 19 (at 09:00) and through Sunday, May 21 with the meeting closing at 12:10.

0.2. **Summary.** After hearing and discussing status reports on a variety of ongoing projects of the CEIC and on other matters of interest to the CEIC the Committee held a wideranging discussion 'taking stock of the CEIC' in order to identify new tasks and current priorities. Subgroups of the Committee carefully drafted agreed Committee statements. Members of the Committee 'volunteered' to advance the respective tasks.

0.3. **Best Practice.** BP#1 concludes with the exhortation: "Authors are encouraged to provide the structure necessary to use their documents now and in the future. The aim is to create a master file from which the various other formats can be derived. (In mathematics, LaTeX is a congenial and accessible way to give documents some structure without adding unreasonable burdens on the author.)" Accordingly this report has been prepared in LaTeX. Curiously, the *Best Practices* document itself is not.

1. CEIC

A wide ranging discussion led the Committee to the view that its present activity should emphasise assisting the mathematical community to inform itself on electronic and information issues.

Typeset April 13, 2004.
Version 0.4 by JMB, Narch 21, 2004; Version 0.9 by AJvdP, April 12, 2004.

2. Metadata

A recent request from the Editors of the Zentralblatt and of Mathematical Reviews proposes minimal 'standards for metdata for digitized mathematics'. The CEIC carefully discussed this proposal and came to the view summarised in the following statement.

Finding digitized material: CEIC statement concerning a set of minimal metadata to facilitate access to the digitized literature

Mathematics is special among the sciences in that it heavily relies on past literature. Retrodigitization aims at providing electronic access to the past literature with added value (linking, searching, etc.). It is important that users be able to access and locate past and present resources in a seamless fashion.

Such access can be provided by referencing services. Zentralblatt Math and Mathematical Reviews have proposed a minimal set of metadata to implement linking (http://www.ams.org/? Standards for Metadata for Digitized Mathematics).

International agreements on standards are essential to the realization of our goals. The CEIC encourages existing and future digitization projects to take advantage of these cross-referencing services by generating at least this set of minimal data for their collections.

The CEIC also encourages the digitization projects to consult with one another about a broader set of metadata for which they may wish to establish common standards.

3. Cost of Journals

3.1. **Knuth's Letter.** A little wile ago, Donald Knuth invited his fellow editorial board members of the *Journal of Algorithms* to consider jumping ship (http://www-cs-faculty.stanford.edu/~knuth/joalet.pdf). The upshot is a new journal, *ACM Transactions on Algorithms*, to be edited by the entire former editorial staff of the Journal of Algorithms. The letter and its aftermath raises some interesting issues and led the CEIC to write a comment on its Best Practice statement touching upon related matters.

3.2. **IMU on the Web.** The following item appeared in IMU-NET 4.

What Can You Do About Journal Prices?

The IMU Committee on Electronic Information and Communication (CEIC) made a series of recommendations in its Best Practices document several years ago. The advice was aimed at many groups — mathematicians, librarians, and publishers — and it covered many topics, ranging from versioning papers to archiving journals. The Best Practices document can be found at http://www.ceic.math.ca/Publications/Recommendations/3_best_practices.html .

One of the recommendations (#8) concerned the problem of escalating journal prices. The specific advice was straight-forward: "When deciding where to submit a paper an author may choose to be aware of a journal's standing and impact, but an author also should take account of a journal's price ... .. In addition, one might consider a journal's price and policies when considering whether to referee or serve on an editorial board."

While this is straight-forward and sound advice, the consequences of specific actions may be complicated and controversial. For example, creating new journals with low prices may (temporarily) stretch library budgets even further. This is especially true if many of the library's journals are included in a bundle. Is it a good idea to increase the stress on the journals system by creating new journals? What can individual mathematicians do to effect real change?

The CEIC recently added a Web page on Recommendation #8 with remarks that discuss the actions one can take to reduce journal prices. For all mathematicians, the most important action is to stay informed. The new Web page can be found at http://www.ceic.math.ca/Publications/Recommendations/Journalprices.html .

4. World Digital Mathematics Library

4.1. **Preliminaries.** The CEIC had noted at its fifth meeting in early 2002, that some half dozen centres in various countries had projects to scan the existing mathematical literature, thus making it available in digital form (retrodigitisation). It had determined that the development is of great importance for mathematics and warrants the attention of the IMU. Further, the CEIC had come to the view that the value of the then efforts would be much enhanced if they were truly international and if there were some overall co-ordination and facilitation (inter alia to minimise duplication and to identify best practice). Accordingly the CEIC had urged the IMU to accept a central role in the co-ordination and facilitation of the World Digital Mathematics Library project and had offered the expertise and experience of members of the CEIC to act on behalf of the IMU. Those urgings were heeded by the EC and by the GA of the IMU. Accordingly the IMU resolved to work to realise the vision of a comprehensive digital mathematics library by agreeing to coordinate the worldwide activities leading to a World Digital Mathematics Library and charged the CEIC to co-ordinate the IMU's WDML activities.

4.2. **Developments.** As an initial action the CEIC established the website http://www.wdml.org and on the advice of IMU President John Ball, established a WDML Committee, first charged with the task of arranging a WDML meeting this summer. The 4ecm satellite meeting 'New Developments in Electronic Publishing of Mathematics' (see http://eic-ecm4.sub.uni-goettingen.de), organised by Bernd Wegner on behalf of EMANI, will combine the 5th EMANI workshop and the 3rd WDML workshop.

4.3. **Website.** It is intended that the WDML Website eventually include

a mission statement;
guidelines and technical recommendations for institutions which are interested in taking part;
a registry yielding a table with information on existing archives in mathematics and detailing access conditions to those archives;
a poster/leaflet;
FAQ[1].

[1]'Frequently asked questions', such as: "What is an FAQ ?"

4.4. The CEIC will endeavour to develop a framework for the WDML dealing with formalisation of such matters as aims and principles of the project, formats, functionalities, long-time archiving issues, access, organisation, management, copyright, and the like.

4.5. The CEIC recalls that the WDML is based on the DML project and on the work of the several digitisation initiatives of such institutions as EMANI, Cornell University, NUMDAM, GDZ Göttingen, ERAM, ... , and notes that the digitising institutions have indicated that they will support WDML activity under the aegis of the IMU.

4.6. The CEIC emphasises that the WDML initiative is and will be open to all interested parties that are able to promote the goals of the WDML.

5. A Federated World Directory of Mathematicians

5.1. **Preamble.** Though the IMU has ceased publication of a printed version of the World Directory of Mathematicians, the CEIC remains charged with the duty to develop feasible models for an electronic WDM. However, "Privacy Laws" provide fundamental obstruction to that endeavour. Nonetheless, it does seem feasible to move towards an electronic WDM by way of federated search ("federated search" refers to search over diverse databases) of electronically available membership lists of mathematical societies and the electronic world directory of mathematicians (http://www.mathunion.org/ewdm/).

5.2. **FWDM.** Accordingly the CEIC resolved to seek endorsement and seed-funding from the EC to further the establishment of a FWDM (a temporary initial address http://ddrive.cecm.sfu.ca/fwdm/ lists various known electronic membership lists).

Recommendation to establish the Federated World Directory of Mathematicians

Federated searching is a system that provides a common user interface for searching and retrieving information across heterogeneous datasets over the Internet.

Preamble. In 1998 the CEIC was asked to explore the feasibility of an electronic World Directory of Mathematicians to replace the traditional hard copy. The CEIC concluded that intellectual property and privacy issues in different countries made this, while desirable, impossible for the 2002 edition of the WDM. With the emergence of better Internet search tools, we now believe it is realistic to build a federated directory, as defined above. What this provides is a rapid and simple search over existing online databases with no additional work for the user.

Decision. Consequently, we now ask the IMU Executive Committee to approve and fund the construction, under CEIC aegis, of a Federated World Directory of Mathematicians (FWDM).

Details. We propose the following phases of development:

Dec 2004. Prototype ready. This will be searchable for names with wildcards, perhaps more, but with little post processing or duplicate removal.

April 2005. FWDM shown to EC. We also request the EC to establish FWDM guidelines for the inclusion of electronic online lists.

Sept 2005. Beta version searching over major existing directories. CEIC intends to invite the following groups to participate:

Combined Membership List (AMS/MAA/SIAM/CMS/AWM/...)
Germany (DMV)
France (annuaire de la communauté mathématique française)
Canada (CAIMS/CMS/SMC/SSC)
Russia
Australia (Academy of Science)
UMALCA (South America)

Jan 2006. Decision about continuation, further development, and extension of the project.

Aug 2006. A functioning version for the initial lists. A software directory builder for use by Adhering Organizations and other participating institutions, ready for demonstration at GA/ICM2006. This will assist member countries who do not already have online membership lists in building a database in the form best suited for the FWDM.

2006–2010. Four year cycle used to stabilize and expand the FWDM.

- Investigations of enhancements (listing home pages, searching by institutions, ...)
- Production of software which individual societies could choose to install and operate on their own sites.

Work will be carried out in the Faculties of Computer Science, and Library Science, at Dalhousie University under the direction of J. Borwein with the assistance of the IMU website staff at ZIB Berlin.

Budget. Budget requests total $35 000

2004–05 $8 000 (to design the FWDM)
2005–06 $15 000 (to build and initiate the FWDM)
2006–10 $12 000 ($3 000 p.a. to maintain, operate, enhance the FWDM)

This is a small fraction of the present cost of producing the printed WDM. The Dalhousie Faculty of Computer Science in conjunction with NSERC can obtain several graduate and undergraduate fellowships to support this project.

6. Math-Net

Although take-up remains small the Committee decided to renew the request to the mathematical community to add secondary home pages. The Commiittee recommended that that use be made of the 'banner' area in Math-Net pages (thus, certainly including the IMU page) to highlight items likely to be of immediate interest to visitors to the page.

7. Communications and Information from the CEIC

The Committee resolved that it would contribute a regular column to the electronic news IMU-NET.

Also to be known as 'IMU on the Web', these communications will appear in each IMU-Net newsletter and will be accompanied by additional commentary and links. Some will be invited signed opinions and some will come from the CEIC itself. They intend to stimulate interest in and debate about electronic information and communication matters. Our first piece, written by the CEIC, is on the vexing issue of journal pricing (see §3.2 at page 2 above).

AJvdP has agreed to edit the first six communications (and volunteers were arranged to write those columns).

8. Best Practice

The CEIC resolved to recommend amendment of the Best Practices document so as to allow it to integrate into the document proper the present concluding comments on 'Developing Countries'. The amendments (which will have been prepared after the CEIC meeting) will be presented to the EC at its April, 2004 meeting.