

REPORT OF OPENMATH ACTIVITIES

FINAL REPORT OF THE HCM NETWORK EDITING AND COMPUTING

Project Acronym: EC

Title: Editing and Computing

Contract Number: CHRX-CT94-0631

Contractual Period: Start date: January 1, 1995; end date December 31, 1996. Duration: 24 months.

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Objectives: The aim of the HCM-network “Editing and Computing” was to develop a character based communication protocol for mathematics.

1. ACTUAL COMPLISMENTS VS. OBJECTIVES

The network has organized, during two years, five workshops open to all that have been interested in the project. In addition to these workshops, several restricted meetings have taken place.

The problems in the work to be carried out have been rather of political than of scientific nature. To design a communication protocol for mathematics is a straight forward job of software engineering. Actually there already are several solutions which address this problem.

The main concern in managing this network of researchers was to ensure that the design decisions get support from as many parties as possible and to ensure that the needs of mathematics are properly taken care of.

The OpenMath consortium got formally organized at the Amsterdam meeting in February 1995. A Steering Committee was elected at that time and this steering committee has been responsible for the project.

Members of the Steering Committee are Arjeh Cohen (chair), Gaston Gonnet, Mika Seppälä, Bob Sutor, and Stephen Watt.

Particular attention has been paid to ensure the commitment of the industrial partners, foremostly Maple, Mathematica and Axiom. Waterloo Maple Inc has contributed in an important way to the project by paying 50% of the salary of the OpenMath coordinator John Abbot (who worked at CAN/RIACA under the direction of Arjeh Cohen).

It was not possible to avoid all the problems. While Waterloo Maple Inc. (Maple) and NAG (Axiom) have explicitly supported OpenMath, Wolfram Research (Mathematica), did not get as involved as what we hoped for.

In spite of that fact, the project managed to produce OpenMath v 1.0 with prototype Phrase Books for Maple, Axiom, and REDUCE. This allows these three programs to exchange basic mathematical objects.

OpenMath system v 1.0 is available at <http://www.openmath.org/>. Hence the goals set in the work programme, have been achieved.

2. BENEFITS OF COMMUNITY LEVEL CO-OPERATION

Community level co-operation and the support of the HCM programme have been instrumental in this project. In the highly competitive environment of mathematical software, HCM support has given a neutral stamp on the project and this in turn has made it possible to get the above mentioned commercial partners involved.

The present project is also such that it requires expertise from as many fields of mathematics as possible and expertise of computer science. No single institute could have provided this. Hence Community wide co-operation was essential.

3. CONTRIBUTION TO TRAINING AND MOBILITY

The numerous workshops organized by the network have been the most important contribution to training and mobility. There have been typically 30–40 participants at the five workshops organized in Amsterdam, Copenhagen, Bath, Zürich, and Dublin.

Thee workshops created also a situation which made it possible that INRIA Sophia-Antipolis, under the direction of Prof. Stephen Watt, took, in the fall 1996, a leading role in the development of the OpenMath system. INRIA researchers, Stpehane Dalmas and Marc Gaetano, took part in several of the OpenMath meetings and wrote proposals for the Content Dictionaries for polynomials, and for basic mathematical expressions. The work was done in collaboration with Gaston Gonnet.