**Attachment A**

## 1 Research Project

This research pursues the development of a distributed software system consisting of

- a functional logic language interpreter on one machine,
- a number of constraint solving engines running on other machines.

The interpreter is based on an already existing (sequential) implementation of a functional logic language on the computer system Mathematica extended in two directions:

- the possibility to specify (non-linear) constraints over real numbers;
- the possibility to specify OR-parallelism among different clauses of a predicate.

The OR parallel features of the interpreter allow the decomposition of the solution space into different subspaces denoted by various sets of constraints; the individual sets are solved by different constraint solving engines in parallel and joined together to form the total solution set. This allows to investigate problems with large solution spaces using the computational power available in large computer networks.

## 2 Research Method

This research shall be carried out by a group at RISC-Linz directed and supervised by Professor Bruno Buchberger.

## 3 Research Period

June 1, 1997 to February 28, 1998

## 4 Research Schedule

- September 1997–October 1997: adaption and extension of the functional logic language interpreter.
- November 1997–February 1998: implementation of prototype of scheduler and communication interface for constraint solving engines.
- March 1998–June 1998: further development of software components; integration into prototype version operational in local area networks.
- July 1998–December 1998: developing example applications, improving and extending the system.
- January 1999–March 1999: experimenting with the system on large area networks, final adjustments.
- April 1999–May 1999: development of final documentation

## 5 Project Organization

| | Name | Title | Affiliation | e-mail address |
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## 6 Deliverables

**Deliverables:** The Research Report and its summary

**Date:** February 28, 1998