This document attempts to explain the current state of the IUSB computer science subdepartment and to project its expected growth in the next five years. The plan reflects the subdepartment's educational, research, interdisciplinary and outreach mission. It examines the following six components:

1) New Degree Programs
2) Students
3) Faculty
4) Laboratory Space
5) Laboratory Equipment
6) Laboratory Software Environment

1) New Degree Programs:

   In Progress:

   M.S. in Applied Mathematics and Computer Science: In the fall of 1995, the department proposed the development of a joint masters program between mathematics and computer science. We hope to have this program in place by the year 2000. The proposal is currently in progress.

   M.S. in Management Information System: In the fall of 1995, the Division of Business and Economics proposed the development of a joint masters program between B&E and Computer Science. We hope to have this program in place by 1999. The department has appointed a subcommittee to meet B&E and develop the curriculum for this program. The proposal is being considered by all-university administration.

   Future Goals:

   Certificate Programs: The department is developing two computer certification programs. (Certificate in Computer Programming and certificate in Advanced Computer Programming) The thrust of these programs is to provide timely and high quality technical expertise to employees in our regional business community.

   Minor in Computer Applications: the department will study the feasibility of a minor in computer applications. Such a minor would greatly enhance the job prospective of students in other majors.

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1 Given the dynamic nature of our discipline, this plan will be reviewed and revised on an annual basis.
**Associate of Arts Program:** The department will study the feasibility and impact of an Associate of Arts (AA) degree in computer applications.

2) **Student Recruitment:**
   **In Progress:**
   Currently the computer science subdepartment has about 200 declared undergraduate majors. With the advances in technology and job market, we anticipate that this number will grow. In addition to the growth in our undergraduate program, we project that our joint masters programs with mathematics and business and economics will add 20 to 30 graduate students to our program.

   **Future Goals:**
   The department plans to redouble its efforts and place more emphasis on recruitment of local and regional high school students for our undergraduate program. Further, anticipating of the approval of the MS in CS and MIS programs, the department plans to recruit graduate students from local, national and international sources.

3) **Faculty:**
   Currently the computer science subdepartment has 5 full time and a number of part time faculty. The department will work toward increasing the number of full time faculty to better accommodate the creation of new programs, courses, release time for research and sabbaticals. We feel at least 2 to 3 additional faculty members are needed to expand and complement our base of expertise, teach and advise undergraduate and graduate students and maintain a reasonable student / faculty ratio.

   **In Progress:**
   The department has made repeated requests for an additional faculty position from the Dean of Liberal Arts and Sciences. The importance and seriousness of our request is understood by the divisional administrators and we hope to receive the position in the near future. In addition to the normal channels, the computer science subdepartment has clearly indicated that in order to support the MIS program it requires an additional full time faculty member.

   **Future Goals:**
   In accordance with our future goals in developing new programs and recruitment of students, the computer science subdepartment hopes to increase the number of full time faculty members to 8 by the year 2001.

4) **Lab Space:**
   Currently our department supports and maintains 3 laboratories. Two of these are open to all undergraduates beyond C201. The third laboratory is used as a hardware lab and for special projects. We plan to add an additional lab to support our undergraduate and a second laboratory to support graduate students.

   **In Progress:**
   The department is currently developing plans for moving the computer laboratories from the second floor of North Side Hall to the fourth floor. We expect the plan to be completed in 1998 and the move to take place later in the same year.
**Future Goals:**

In accordance with our future goals in developing new programs and recruitment of new undergraduate and graduate students, the computer science subdepartment hopes to increase the number of laboratories and improve their functionality. Our plans should address and provide for innovative and technology oriented teaching and research in areas of faculty expertise. In addition our future plans include real time distance learning facilities as well as the ability for local and wide area distributed computing. A floor plan for the new laboratories has been developed and is currently under review by the computer science faculty (See Future Computer Science Laboratory Floor Plan). We hope to implement this plan by the year 2000.
Future Computer Science Laboratories
(Floor Plan)
5) Lab Equipment:

Currently our department operates two HP/9000 mini computers in addition to a supporting network of user workstations running Linux or Windows 95 operating system.

In Progress:

The department has recently acquired a number of Pentium based computers and other peripherals. These include the following:

Workstations:
- Two Pentium 90 workstations
- One Pentium 133, donated by SYSCON International.
- One Pentium 120.
- One Pentium 166.
- Four Pentium 200's.
- Five Pentium II / 233's (Dell Optiplex)
- One Sun-4/370 running SUN/OS, donated by Teacher's Credit Union. This machine is currently under testing for feasibility as a network router.

Currently one the Pentium 200's is designated as the fileserver, and 2 or 3 (typically 20% of our machines) will run Windows 95 and the remaining run Linux (Debian distribution). All workstations have access to the departmental networks. The SUN mini computer is currently not being used.

Peripherals:
- Two HP Laser Jet 5MP.
- One TI laser printer.
- 1 Tape backup (connected to fileserver).
- 1 Zip drive

Future Goals:

Our goal is to fully integrate our existing workstations as well as future ones into a distributed computing environment expanding our computing capabilities, autonomy and flexibility. We hope to reach 40 workstations with various capabilities by the year 2001. Figures 1 and 2 below represent our current lab environment and future plans respectively.

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2 See Math/CS "Educational Computing Model"
Dept. of Math. and CS
Future Computing Environment

Dept. of Math. & CS

Figure - 2
# Hardware Specifications

## Servers:

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<tr>
<th>Servers Type</th>
<th>Specification</th>
<th>Naming Scheme</th>
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<tr>
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<tr>
<td>Mouse:</td>
<td>MS Mouse, PS/2 Mouse</td>
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</table>
6) **Lab Software Environment:**

Plans are currently underway to define a set of software systems required for our labs. These include operating systems, compilers, editors, debuggers, CASE tools, computer graphics tools and libraries, artificial intelligence tools, database tools, GUI tools, networking libraries and simulators for various courses³.

**In Progress:**
The current Linux workstations provide the basic operating system and applications necessary to support some of the courses offered at IUSB. However, a number of other courses such as programming languages, computer graphics, PC techniques, database systems, systems analysis and design and operating systems require additional software tools and libraries.

**Future Goals:**
Our goal is to provide the users with the software environment detailed in the accompanying Math/CS Software specifications, adapting these specifications in response to the changing needs of the users as well as to more general changes within the discipline.

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³ More details are provided later in this document. See Math-CS Software Specifications.
Math & CS Software Specifications

Operating Environment:
- Operating System:
  - Linux, FreeBSD, Solaris, Nextstep, Windows-95, Windows/NT, Novel, ..
- Windowing Environment
  - X Window, Motif, etc.

Programming Environment:
- Compilers and Interpreters:
  - GNU C++, Pascal, Lisp, scheme, ADA, PROLOG, Borland C++, Borland C++ Builder, MS Visual C++, Visual Basic, Borland Delphi, Java
- Editors:
  - Vi, Emacs, ee, etc..
- Debuggers:
  - X window Debuggers, Borland debugger, etc..
- Profilers
- Libraries (BSD Socket, Win-Sock, X-window, Light Weight Processes, Motif)

Software Engineering Tools:
- Integrated code development environment for our primary language (currently C++)
  - (Borland IDE, Softbench, etc.)
- CASE tools (Structured and Object Oriented)
  - Software that facilitates code sharing, communication and group work among students. Upper and Lower CASE tools, Analysis and design tools, Project planning and management tools. Code generators, reverse engineering tools, etc.
  - (Easy CASE, Visual Analyst, Excellarator)
- GUI tools
  - UIM/X, Visual Basic, JAVA, Visual C++, Borland Delphi, C++ Builder
- 4GL tools and program generators
- Databases (Ingres, Postgres95, mSQL, MySQL, FoxPro, MS Access, Paradox, Sybase, Power Builder)

Office Automation Tools:
- Word Processors & Formatters (Latex, Word Perfect, MS-Word, AMI-Pro etc.)
- Presentation Tools (Power Point, etc.)
- Drawing Tools (WP-Draw, Visio, etc.)
- Spread Sheets

Networking and WWW tools:
- Berkeley Socket Library
- Web Browsers (Masaic, Netscape, Internet Explorer, Lynx etc..)
- Web Servers (Apache, etc.)
- HTML editors(MS Front page, Netscape Navigator Gold, Corel Web Designer)
- JAVA programming language (SUN’s JDK, MS Visual J++)
- CGI and Pearl, Tcl/Tk.

Miscellaneous Libraries and tools:
- Thread Libraries
- File organization Libraries (ISAM, B-tree, etc.)