

# From Project Management To Project Unlimited

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## Abstract

The year 2004, 2005, and 2006 experienced significant downsizing of the Information Technology (IT) industry. In 2006, outsourcing or off-shoring gave another blow to the IT job market. The enrollment of computer science, computer information system, management information system majors were down. Many of us, the professors who presented papers at the ISECON conferences, would have fewer students to teach. Our jobs may not be here. The pedagogy using true/false questions, multiple choices or short essays, no longer worked. One of the hottest jobs today is being a project manager. Using the concept in project management: team building, constant communication and leadership, students can complete any final project individually or in a group. Final projects were used as assessment tools in advanced business or computer courses. This author taught/mentored all courses as listed in current paper. The class evaluations were extremely positive and the retention of Business, CIS or MIS majors as well as clients/employees was greatly improved. Project Unlimited becomes the new paradigm for learning.

**Keywords:** C++, Java, Visual Basic, System Analysis Design, Database, Software Development, Unix, C# .NET, IT Project+, Microsoft Project, Project Management and Project Unlimited

Project Management has been the focus of research and development, for AITP and young professionals were interested in pursuing a Master degree in Business Administration (MBA) after receiving a Bachelor degree in Computer Science, Engineering or other areas. MBA became a hot ticket for them to quickly move up the corporate ladder, becoming managers before they turned 30. Almost everyone was applying for admissions. Few years later, there was a glut of MBA graduates. The MBA job market was no longer rosy and the enrollment was down. At this

point, Massachusetts Institute of Technology, Polytechnic Institute of New York and Stevens Institute of Technology offered the Executive Master Degree program in Technical Management to differentiate themselves from the traditional MBA program. Project Management has been one of the core courses in this curriculum. Since project management is cross-functional, the project skills learned can be applied to any industry. Companies all over the world started to hire project managers that can handle construction, engineering,

environment, finance, human resource, marketing, software or any large/small project. In 2006, project manager became one of the hottest job titles, with 5,000 daily openings listed on Dice.com! Hundreds of courses and seminars were offered at colleges/universities, corporations, and government facilities, to accommodate this surging needs. Hsu and Wirth (1997) reported Japanese management styles, Hsu (2003) completed case studies in Business, Finance, International Management and Marketing courses, Hsu (2003) did work on strategy of teaching foreign students, and Hsu (2004) did case studies in project management and global e-commerce projects. CompTIA (2003) developed a series of training manuals for a course in IT Project+, which focused on the Information Technology aspect of project management. One can take the CompTIA exam to get certified as an IT Project Manager. Kerzner (2004) did work on Advanced Project Management. Project Management Institute (PMI 2004) provided the guide for professionals to get certification in Project Management. Microsoft Corporation has continued to update its MS Project software, to include more sophisticated features, thus created a need for a "hands-on" course in MS Project 2003.

Since 1996, internet e-commerce quickly became the new mechanism for doing business. Students were fully aware of these trends. They used their cell phones, PDAs, sidekicks, and any other newest gadget that their parents gave them as birthday gifts. They loved to search on MySpace.com for teenager friends and played video game all day long. Yet, when it came to choosing a major in college/university, they did not wish to

major in Computer Science. Why? Students who major in Computer Science are required to take courses in abstract mathematics, Calculus, quantitative analysis, automata, and compiler design. None of these courses are easy to handle even the best mathematics professors teach them. As a result, many students studied computer science as freshmen, but changed majors quickly. Every year, 1.1 million students graduated from the 4,000+ US colleges/universities. Only 1% (or 11,000) majored in Computer Science, Information Systems and related areas. These computer graduates had no problems getting jobs in the last 10 years. Lately, the story was different. Graduates struggled to find entry-level positions due to outsourcing, Hsu (2005).

### **Dominican College\***

In Fall Semester of 1988, Dominican College enrolled 1,400 students when this author joined the Division of Business Administration as an Associate Professor in Computer Information Systems. The Business Division offers two Bachelor of Science programs in Information Technology (IT), one in Computer Information Systems (CIS) and the other in Management Information Systems (MIS). As of the Spring Semester of 2006, the College student population is about 1,950 with 8 CIS majors and 40 MIS majors, representing 2.5%, slightly higher than the national average (1%). The College is located 14 miles northwest of the New York City. Business is the largest division (30%). Other programs include Arts and Science, Education, Nursing, Occupational Therapy, Physical Therapy, and Social Science. Master degrees are offered in Education, Nursing, and Occupational Therapy. This author

served as the Director of Business Administration Division, from 1990 to 1996. Starting in 1992, this author also taught courses in the International Management area, namely International Business, Global Marketing, International Finance, International Management and Manage Global E-Commerce Project (Hsu 2003, 2004, 2005, 2006).

The requirements for CIS majors are:

- Liberal Arts 60 credits, including Calculus I, Statistics
- Business core 21 credits, including Accounting, Bus. Law, Economics, and Management
- Any two programming courses in COBOL, C++, Java, or Visual Basic
- One advanced programming course in COBOL, C++, Java or Visual Basic
- Systems Analysis Design
- Database Organization System
- Software Development Project
- Computer electives, 9 credits
- Free electives, 12 credits

The requirements for MIS majors are similar to CIS, except the students take computer electives in lieu of Calculus I, Database Organization System and Software Development Project.

#### **A. Project Management courses**

##### **Polytechnic University New York\*\***

In the Fall Semester of 1999, this author was offered an opportunity to teach "Project Management" at Polytechnic University of New York, Executive

Master Degree Program in New York City. 36 students enrolled.

The textbook by Kezsbom et al (1989), was good for definitions but very outdated. Harvard Business School cases were provided for discussion and research. Project Management concepts were explained in details, including budgeting, change management, critical path method, Gantt chart, milestones, network diagrams, planning, project life cycle, return on investment, request for proposal, statement of work, and work breakdown structure. Communications, financial, conflict, resources, risk analysis, timelines, and training issues were thoroughly examined. A managing director from Bear Stearns gave a presentation on "Managing Financial Projects". Last class was centered on global marketing strategy. Students were separated into 6 groups, with 6 each, for their final project. Each group was assigned a project manager with others serving as project team members. The goal was to develop team building skills. Six final projects were done:

- Apollo Program
- Australian Motors
- Automated Baggage System
- Human Genome project
- Kansai Airport project
- Telecommunication Installation

The final grading had two parts: (a) oral presentation 60 points (18 minutes each, with 7 minutes questions and answers): 10 points each on purpose of the paper, core concept, project management data, conclusion/future, asking intelligent question and responding correctly, and (b) a written paper 40 points (30 doubly-spaced, typed pages) which covers the

same criteria as (a) except without the question and answer grade. With this setup, each student was given a different oral presentation grade. The written paper grade was the same for the group.

### **Manhattan Institute Management\*\***

In Spring 2001 and 2002, Project Management course was given at the Manhattan Institute of Management, NYC to 14 and 26 students respectively. Students came from EBS, ESA and Weller Institute, Paris, France. The book by Wysocki and McGary (2003) was used. E-Commerce, IPO success and dot.com crash stories were explained in details. There were few dot.com companies in France. Students displayed much interest in these topics. Four groups were formed to do in-class projects: (1) MS Project, (2) Business Plan, (3) Global Finance, and (4) Merger & Acquisition. One student had to return home. He did a final project on a Paris bank, Credit Cooperatif with this author as part of his internship. Distance education worked out well.

### **Baruch College\*\***

Project Management course was given at Baruch College with 7 students in Fall Semester of 2001. Final projects were: Budget Planning, Fundraising Project, Navision Financials Implementation Plan and NYC Public Library Meeting Website.

### **High Performance Technology Inc\*\***

In Spring 2004, Project Management course was taken by 12 engineers (including 2 from HPTI, a defense contractor located in Dover, NJ). This

course is sponsored by IEEE North Jersey Section. Final group projects were: Adaptive Project Framework, New Business, New Product Planning, Software Engineering, and UNIX Sun Solaris server at JPMorganChase Bank.

### **New Jersey Bulk Mail Center\*\***

IEEE North Jersey Section sponsored the Project Management course at NJBMC, Jersey City, NJ. The course was offered four times to 41 people since Fall 2004. Some of them were NJBMC employees. Final projects were: BMC Heating System, BMC Maintenance Operation, BMC Storage, Crane Retrofit, Miami Airport, Microwave Converter, Network Installation, Organizing IEEE Conference, Powered Industrial Vehicle, Second Ave Subway, Security Landing System, Security Master, Software Infrastructure, and TSA Screening.

### **Elcom Technologies\*\***

In Fall 2005, IEEE North Jersey Section sponsored the Project Management course at Elcom, another defense contractor located in Rockleigh, NJ. Sixteen Elcom engineers registered and twelve completed the course. Final group projects were: Design Cycle, MS Project Features, Travel Website, and Wide-Band Modulation Frequency Simulator. Many of these final projects were being used in the daily work.

### **Netcom Information Technology\*\***

In addition to the Project Management course, two IT project courses were available at Netcom Information Technology, Long Island City and NYC: IT Project+ and MS Project. The

textbooks were published by CompTIA, Inc (2003). One can get certified in IT Project+ by passing the CompTIA exam. Heldman (2002) was useful for the preparation of the IT Project+ exam.

### **1. IT Project+ course**

Due to the rapid growth of the IT industry since 1980, IT project manager became a hot commodity. Companies spent a lot of money to upgrade IT infrastructure, from MS Window 95, to 98, to XP to 2003 server. Each of these projects, no longer rested with the IT manager, but with a project manager that might not come from the IT area. Therefore, the IT Project+ is a course to connect these pieces, discussing the use of IT to support all enterprise functions.

This course ran for 32 hours. This author taught IT Project+ three times at Netcom in 2003, with a total of 9 students. Many of them were under the Workforce program of the New York State. They got vouchers so they could take courses at Netcom during the period of unemployment. Final projects presented were: IBM WebSphere, Siebel CRM, and Wireless Fidelity Applications.

### **2. Microsoft Project course**

The MS Project course was a “hands-on” course, doing exercises in a step-by-step fashion to learn the details of using this software. One created a project from scratch, set up a baseline, imported tasks from MS Excel, generated resource sheet, exported MS Project files to MS Word and employed the Gantt chart for task schedules. One modified custom reports, templates, and combination views. One could then implement a master plan and

submitted it to the Project Server, to approve updates and to conclude a project plan. At Netcom, this course was taught three times in 2003, with a total of 8 students. Final projects were: Brass Implementation, Client Contact System and Sparkle Inc (to start a company in the cleaning business). Gantt chart was created for each of these projects using MS Project 2002 software. The installation of MS Project Server 2002 was successful. However, students were unable to access the server.

## **B. Programming/System courses**

### **1. C++ and Advanced C++ Programming projects**

This course was taught to day students, evening students and accelerated evening adults (ACCEL) at Dominican College. The ACCEL students worked in the company, many in the IT field. For the Advanced C++ course, students were required to do final projects. It consisted of a particular programming problem, a written paper and an oral presentation. A group project (two or more people) was assigned when the class size was large (12 or higher) and an individual project was given when the class size was small (less than 12). Similar to the Polytechnic University, students at Dominican received the same group grades for the written paper, but different grades for the oral presentations. Many final projects were completed: Common Gateway Interface C++ Website, Dynamic Object Calculator with Hex Codes, and Electronic Shopping Cart Program. Each of these projects took 20 to 40 hours to complete.

## **2. Java and Advanced Java Programming projects**

Both courses were taught at Avtech Institute, Baruch College, BlueData Int'l, Computer Impact, IEEE, Netcom, Xincon, as well as at Dominican College, (Hsu 2002, 2003, 2004). For the Advanced Java course, students were required to do final projects: Airline Applets, Cold Fusion, Corba, Java Server Page, Investment Applets, J2ME, Jini, WebLogic, WebSphere and XML, just to name a few.

## **3. Visual Basic Programming projects**

This author taught Visual Basic at BlueData, Computer Impact and Netcom. One student who worked for Morgan Stanley, did a final project explaining how to link different Microsoft Excel worksheets from different client portfolios (stock, bond, 401K, 529 program) using the Visual Basic Application (VBA) framework. VBA has been popular in New York law offices and financial firms.

## **4. System Analysis Design projects**

This is the course that existed for the past 30 years. How do we make it more interesting? By using MS Visio and MS Project 2003, it was easy to construct flowcharts and to explain concepts in project management (Hsu 2004). Final projects presented: IBM DB2, Intel ISMART, MySQL, Oracle 9i, PeopleSoft Purchase Order System, Sakroc Formula Management System, and Sybase Adaptive Server.

## **5. Database Organization System projects**

This course was taught twice at Dominican. With the recent development of Oracle 9i, 10g, 11i, the course should be redesigned, see Hsu (2004) and Ricardo (2004). A sabbatical award in Fall 2005 was granted and a course in Oracle 10g/MS SQL Server 2003 was completed by this author. Oracle or MS SQL server course may be offered in the future.

## **6. Software Development projects**

At Dominican, this is a capstone course for the CIS major. Students spent 120 hours in their senior year to work in companies as interns. They did regular company jobs. In addition, he/she worked on a software project that was useful for the company. A faculty mentor was selected for this task. Final projects were: Accounting Payroll System, Customer Support System, Healthcare Inventory System, Networking Marketing, and PowerBuilder Database.

## **7. Unix projects**

This course was taught as an independent study at Dominican using a PC with a Redhat Linux. At Xincon Technology, this course was offered to 5 people, on the Sun Solaris Unix platform. They learned the Unix commands at Xincon but could not practice when they went home. Each student then installed a different Linux operating system on a home PC. By doing system testing and trouble shooting, students were able to complete final projects: Redhat Linux, Mandrake Linux, Suse Linux and Turbo Linux applications. The "hands-on" learning was crucial.

## **8. C # .NET projects**

This course was taught at Avtech Institute Technology, to 14 IEEE engineers in Spring 2006 and to 5 people in Fall 2006, Hsu (2006). MS Visual Studio 2003 version was used with a Visual C# .NET compiler. Several students did the free downloads of the new version, MS Visual Studio 2005 Express Edition. Final projects completed: ADO.NET, Electric Power, Infrared Imaging, Optical Scanner, Power Computation, Rolling Dice, Sudoku, Visual Studio 2005 Special Features, and Web Services. Many of these projects were applied directly to their engineering jobs.

### 9. Project Unlimited

Using the final project format, this author was able to generate much interest among students in other courses, not limited to:

Accounting, Applied Electronics, International Management (Hsu 2005), Manage Global E-Commerce (Hsu 2006), and Marketing Research (Hsu 2006).

\* Full time position

\*\* Part time consultant

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### Conclusion

Programming, Systems, IT Project+, Microsoft Project and Project Management courses were developed and taught at 13 organizations to 1500+ people by this author since 1999. Hands-on approach, in-class and/or homework assignments, Harvard case studies, internet search, final projects using oral presentation, will have the best chance of success. Project Unlimited gave major benefits to global firms, see Table 1.

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**Table 1 World companies that sent employees (a partial list)**

Minolta Corp, KPMG Inc, Krka Pharmaceutical, Lawler Matusky Skelly Engineers, Lehman Brothers, Level 3 Communications, Liberty Science Center, Liberty Travel, Liveperson.com, Lucent Technologies, Mastercard International, Masters Coverage Corp, Materials Research Corp, Mazescape, MCI Corp, Mellon Investor Service, Merck Inc, Merrill Lynch, MetLife Insurance, Micro Design Services, Microfirst Inc, Microsoft Corp, Milano Service International, Misys Healthcare System, Morgan Stanley, Myron Manufacturing, NAC Reinsurance, Natex Interactive, National Discount Brokers, NBS Card Technology, New Jersey Transit, Nice Pak, Nortel Network, NYC Comptroller Office, NYC Dept. Public Health, NYC Government Law Office, New York Police Dept, New York State Dept Banking, New York State Highway Authority, North Shore Long Island Jewish Hospital, Nu Sound Telecom, Opici Wine Group, Oppenheimer Co, Orange Rockland Utilities, PaineWebber, Panasonic Computer Solutions, Par Pharmaceutical, Park Avenue Cellular, Paynet Transactions, Pearson Education, Peoples Publishing, Pepsi Bottling Group, Philip Morris, Polo Ralph Lauren, PricewaterhouseCoopers Inc, Proctor and Gamble, Provident Bank, Prudential Securities, Queens Electrical Corp, Register.com, Rockland Economic Development Corporation, Salomon Smith Barney, Salton Inc, Scholastic Inc, Siemens Inc, Short Billy PC, Simon Shuster, St. Barnabas Hospital, St. Luke's Hospital, Searchspace Inc, Sequa Corp, Sungard Data System, Syms Corp, Syska and Hennessy, Telsource Corp, Tender Touch Healthcare, Tilcon New York, Toyota Corp, Traffix Inc, Unilever Inc, Union State Bank, United Parcel Service,

United Water Resources, US Army, US Dept Commerce, US Postal Service, Valcor Engineering Corp, Verizon Communications, Verizon Wireless, Viacom Inc, Volkswagen Credit, Volvo Finance, Weiss Peck and Greer, William Sonoma, Winmar Enterprise, Weller Institute (Paris), WMC Mortgage Corp, Wyeth Pharmaceutical, Xerox Corp and YMCA-92<sup>nd</sup> Street.