
Building a Financial Trading Lab: Step 1 and Beyond

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The use of financial trading labs within university settings is in a growth phase, with more colleges and universities finding the need to build one just to stay competitive. This paper gives information on the various steps in the development process of the trading lab, key factors for building a lab, and key questions that need to be addressed while in the formulation phase of the lab design. In addition various hardware designs, fund raising opportunities, utilization methods are discussed.

INTRODUCTION

The term financial trading lab is used generically to encompass trading rooms, financial services labs, and financial services centers. The use of financial trading labs within university settings is in a growth phase, with more colleges and universities finding the need to build one just to stay competitive. Currently, there are more than 200 on-campus trading labs of various forms across the colleges and universities within the United States.¹ A survey undertaken by Rise Vision shows that over 30% of the respondents indicate that their labs have been open for 3 years or longer.² This paper will outline the steps necessary for implementing a financial trading lab. It should be noted that the use of a trading lab augments the levels of learning outlined by Bloom (1956) involving application, analysis, and synthesizing which should be initiated in the classroom. There is a wealth of research supporting the need for actually involving an action step as a key component of learning.³ Thus, the key to a successful trading lab is insuring the quality of its usage, not the actual design.

PLANNING

Concept

Building a financial trading lab begins with a concept. This idea can be generated internally from the administration, the faculty, or a group of students or externally from alumni or interested parties that see the benefit of a trading lab for

Table 1. Key Factors for Initiating a Trading Lab

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| <ol style="list-style-type: none">1. To boost the quality of the business school program2. To provide a real-life trading experience for the students3. To run a student-managed investment fund4. To enhance the graduates' job prospects5. To provide a central place for storing financial data and programs6. As a recruitment tool to entice more business-school applicants7. As a recruitment tool to entice high-level professors8. As a showplace for students, alumni, visitors, faculty, and staff |
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improving both the reputation of the institution and the students matriculating from the program. Results from the Rise Vision survey indicate that boosting the quality of the business program and showcasing the program were the top reasons for creating a lab. The more diverse the initial support, the greater the probability that any proposal initialing a financial trading lab will be successful since you will have a multitude of advocates. Regardless of where the idea is generated, the finance lab needs a champion, one who will lead the charge from its inception to its completion and beyond. The reason for the “and beyond” is that the finance lab needs constant monitoring to carry the lab forward after the initial “buzz” wears off.

Formation

The formation phase is the time period in which the concept is discussed among the many interested parties (administrators, faculty, students, development, and alumni) and turned into an action step. Many of the questions generated during the concept phase need to be addressed in greater detail. Several of the key questions that must be addressed during this phase are included in Table 2, such as “Why do we need a finance lab?” The answers to these questions will help generate additional support, as well as, help in the initial fund raising activities.

After it has been decided that building a finance lab is a good idea, the key factor is whether the necessary funds be raised? Therefore, it is imperative to bring development personnel into the discussions as early as possible. Besides the construction costs, there are additional costs for hardware—computers or workstations, electronic ticker screens, electronic data boards with streaming market data and news, and projection screens, as well as for software (for instance base software feeds—Thomson-Reuters and Bloomberg and data sets for faculty research—CRSP, Compustat, Global Insight, and IBES). The designed uses of the lab will dictate the types of hardware and software needed. The appendix describes

**Table 2. Key Questions that Need to be Addressed
During the Formation Phase**

1. Why do we need a finance lab?
2. Who will use it?
3. Who will benefit from it and what resources are needed to achieve these benefits?
4. How will it be funded (both initial costs and ongoing expenses)?
5. Where will it be housed (in an existing structure or a completely new facility)?
6. What are the space, time and cost constraints? (Is there a need to have a functioning facility immediately, i.e., a temporary lab until a permanent one can be constructed?)
7. What are the administrative procedures to make it happen?

a sample of software and data sets commonly used within finance labs at various universities across the United States and Canada. It is imperative that the potential users (primarily faculty) are surveyed to determine what software and data are essential to make the lab successful. Not all data and software feeds are going to be economically doable, so the list must be narrowed down to the ones that will give the biggest return for the expenditures. Initial software must include only items that can be assured a high rate of usage by students. This will help justify the cost outlay to perspective donors.

The key factor to remember is that both the hardware and software costs are reoccurring, i.e., computers need to be replaced on a periodic basis and software subscriptions need to be renewed. The use of endowed funding works well for reoccurring expenses. Other funding considerations outside of donations (in the form of funding, hardware, and/or software) include grants, naming rights, and corporate sponsors. An example of using grants to fund operations can be found with the funding of the Willard J. Walker Hall to house the Graduate School of Business at the University of Arkansas. Initial funding consisted of a lead gift from the Willard and Pat Walker Charitable Foundation for construction and \$250,000 grant from the AT&T Foundation for communications technology. Note that if costs are a key hurdle, a trading-like structure can be coupled around free internet sites such as Yahoo Finance (finance.yahoo.com), Bloomberg (www.bloomberg.com), the Federal Reserve Banks (www.federalreserve.gov), the various exchanges (NYSE Euronext—www.nyse.com; NASDAQ—www.nasdaq.com), and EDGAR (www.sec.gov/edgar.shtml). This definitely does not generate the “buzz” from using the same data/software as the professionals, but at least it allows the students to

apply real data to better understand the financial concepts learned in the classroom and to test financial theory.

C. Fund Raising

After the idea has been formatted, both cost and budget projections have been made, and the concept approved, the actual funding must be secured. Since development personnel must start proposing the idea of a trading lab to perspective donors, it is imperative that they are brought into the picture as early as possible, possibly even during the formation phase. Since this usually involves a great deal of lead time, the earlier the process is started the greater the probability of success. It is important to put promotional material together outlining the benefits of a lab. To get buy-in from potential donors, there has to be a clear link between the lab and the perceived benefits the student users will reap in terms of skill advancements beyond the normal classroom setting. Linking the lab to increases in job opportunities through better preparation of the students, exposure to guest speakers and/or seminars that are enhanced by the use of the lab, improved perception of potential employers of the quality of the education of graduates are keys to funding the needs of the lab.

Design

The design of the facility will take several iterations. The first step is to plan the ideal facility as if there were no cost constraints or physical limitations. Next is the tradeoff step. What can be sacrificed without losing the key benefits of the trading concept? The tradeoffs revolve around reception of various scenarios by development personnel with potential donors. The more receptive potential donors are to the concept, the less the trading lab has to be compromised. The design phase also involves the decision to do the project in house, to outsource the project, or a combination of the two. Since there are over 200 financial trading rooms in various colleges and universities throughout the U.S., an array of experts exist.⁴ It is important to visit other sites to find out what has been done; what worked and what did not; and how these existing concepts can be incorporated into the final design.

Table 3. Spectrum of Hardware Design

Simple	—————→	Complex
<ul style="list-style-type: none"> ● PC Based ● Simple projection system ● Single room format ● Use of existing classroom 		<ul style="list-style-type: none"> ● Work stations with multiple screen ● Multiple project screens ● Multiple rooms (1 for trading and 1 For data gathering and/or class usage) ● Moveable whiteboard ● Specially designed facility

A key factor to consider when designing the facility is visibility. Most trading rooms are designed to be a showcase for the business school. It will not only be used as a classroom, a seminar room, and a workshop, but it will be used for recruitment of both students and faculty. Therefore, it needs to be located in an area with a lot of traffic to maximize its visibility. Most trading rooms use a lot of glass, so that anyone passing by will be drawn to the facility. As a showcase, the lab must include ticker screens, large screens with data feeds, and a Wall Street look with multiple trading stations.

A huge component of the budget will be the data and software. Hopefully, some will be donated or at least offered at discounted prices. There are some data feeds that are necessary, regardless of the cost implications. Low cost items include live feeds for news coverage (ex. CNBC, CNN, Market New International) and Web based programs such as economic data provided by the Federal Reserve Bank of St. Louis (<http://research.stlouisfed.org/fred2/>), Yahoo! Finance (<http://finance.yahoo.com/>), or Google Finance (<http://google.com/finance>) to name a few. Next are operating systems such as mock trading systems such as Financial Trading System. Live data feeds cover a wide array of options such as Bloomberg, Thomson-Reuters, Firstcall, Datastream, Capital IQ, MSCI Barra, and/or MorningStar. Many vendors offer educational discounts, but usually with constraints on the data use. Historical data sets, Compustat and CRSP, which are used for faculty research, are also major costs. Therefore, it must be decided whether or not to include these types of items within the lab's budget. Since research data are primarily used for faculty research, many universities have separate funding for research driven needs. Analysis tools, especially ones that have applications to advancing class work are also important (Crystal Ball, Boot Strap, Excel, @Risk, and SAS).

Table 4. Spectrum of Data Design

Simple	—————→	Complex
<ul style="list-style-type: none"> ● Web based 	<ul style="list-style-type: none"> ● Complex data sets and feeds ● Trading simulation software 	

Schools typically have one or two rooms devoted for lab activities. For instance, the University of Maryland has 2 rooms: Natcentric Financial Markets Teaching Theater, which is devoted for teaching classes, and the Netcentric Financial Markets Data Center, which is open to students to do research and practice. Use of simulators is also common in many of the trading rooms. For instance, McMaster

University in Canada uses simulation software programs to change the trading environment to test the student's ability to function under various trading environments.

UTILIZATION

The key factor to a successful trading room is utilization. This is why it is so important that the trading room has a champion. This individual must be successful in promoting the lab to faculty. Faculty utilization is essential to the trading room's success. Classes need to be taught in the lab and projects must be assigned that utilize the lab. Thus a schedule must be drawn up so that classes can be scheduled, but more importantly, open hours that are convenient for student use must be made available. Table 5 outlines the spectrum of uses from information gathering to complex analytics.

Table 5. Spectrum of Uses

Simple	—————→	Complex
<ul style="list-style-type: none"> ● Information gathering ● Class projects 		<ul style="list-style-type: none"> ● Data gathering ● High tech analytics ● Portfolio monitoring ● Research ● Investment clubs ● Stocks, bonds and derivatives analysis ● Trading sessions (internal and external campus users) ● Certification (CFA; Bloomberg; Thomson-Reuters)

Several factors impact the lab's utilization. Classes (finance, business, and non-business) need to be scheduled to document utilization to help satisfy the donors' payback. This also insures student exposure to the lab. Training is a must. Both faculty and students must be trained in the use of the data feeds in the lab to insure frustration levels are minimized. Training can be done through both training sessions and through online modules. Other activities that must become part of training room's success are investment clubs and investment contests. Investment clubs are a way for students to use the data feeds while learning concepts which will

improve their job prospects in the investment field of trading and analysts. Most investment clubs manage a portfolio of funds where the seed money typically comes from a donation, although some clubs manage part of the university's endowment such as Washington State University. The portfolio management aspect of the funds is handled in one of two ways: through a series of classes or strictly through club membership. Contests, whether in-house or external (such as RISE-University of Dayton or the Rotman Competition sponsored by the University of Toronto) are a key way to generate additional publicity and experience. It is also a way to bring in alumni (i.e., potential donors) onto campus for interaction with students. Contests are another way of promoting the lab to the campus community and beyond. Research activities by undergraduates, graduates, and faculty may also play a key role in making the lab a success. McMaster University offers a volunteer internship program to get students trained on the software in their trading room. This is also a screening point for applicants to work on the Trading Floor.

Management

Once the trading room is under construction, its management structure must be formalized. Most labs have a dedicated director who is in charge of the daily running of the lab, as well as, the motivational leader of the lab. The director must keep the lab moving forward. This director can be a full time or part time position. If it is a part time director, the individual filling this role usually comes from the faculty and the directorship is only one of his/her duties. This individual would typically receive a reduced teaching load and/or a stipend. Depending on the scope of the trading lab, the director could be a full time position. This individual would usually have experience working within the financial services industry as a trader.

Table 6. Spectrum of Management Design

Simple	—————→	Complex
<ul style="list-style-type: none"> ● Single faculty member who oversees the lab as part of his/her service requirements, usually with some release time from teaching (for example, a 1 course teaching load reduction each semester) and/or extra compensation. 		<ul style="list-style-type: none"> ● Full dedicated director who oversees all aspects of the lab including data licenses; hardware and software acquisitions; lab maintenance, supervision of employees such as a technical director and student lab assistants. ● Dedicated technical director ● Student assistants

A second key aspect is technical support. Again, this could be a standalone position or one that is incorporated within the existing personnel pool within the college. Many colleges use their existing computer support personnel to service the trading room. Others, because of the unique needs of the trading lab, have a technician dedicated to the trading room full time. An additional component of the management team could be student managers. These students would be trained in all aspects of the databases/software utilized in the room. They not only manage the room, monitoring its use but could also be involved in conducting tutorials on an ad hoc or scheduled basis. For example, the University of Maryland employs a financial lab director, a lab manager, a graduate assistant, an undergraduate assistant, and a webmaster. McMaster University uses a director and a trader in residence revolving position. The Trader-in-residence involves professionals from various segments of the financial services industry who visit the Gould Trading Floor on a weekly basis to discuss current events and to serve as advisors to both students and as a resource for faculty. Several trading floors also have a dedicated board of advisors from industry to help advance the mission of the lab. See for example McMaster University's Gould Trading Floor.

Utilization

Another key to the lab's success is to have both scheduled and open lab hours. Scheduled lab hours insure that the lab is utilized and that constituents are exposed to the benefits the lab has to offer. Scheduled sessions are used for classes, training, and clubs. Open hours provide those that are really interested in trading and research the opportunity to develop their skills. The other need for open hours is so that students can utilize the lab to complete assignments. The college must also decide early if the trading lab is to be used by outside organizations. The benefit is increased exposure. The downside is that use by outside groups cuts down the time for the students to use the lab. In addition, most of the data feeds are offered to the universities at a reduced cost provided they are only used for educational purposes by the faculty and the students of that college. Corporate training can be undertaken with the firms offering the data services which gets around these restrictions.

Key to lab's success is getting faculty utilization for class assignments. Several papers have been written outlining projects that have been incorporated in finance classes from the introductory undergraduate level to advance graduate courses.⁵ For instance at Lehigh University, there are a set of group projects within the core finance classes (Investment and Corporate Finance) that utilize the same set of companies to advance the concepts being studied. These class projects include topics such as bond valuation, equity modeling, and risk and return. Within the Master of Analytical Finance program, the Financial Calculus course uses the data and software for projects dealing with derivative instruments. Classroom utilization can be broader than just finance coursework. Journalism courses have used the lab

experience for business writing assignments. Also foreign language coursework have used the data feeds for business and news to gain cultural insights into the countries being studied.

Another way in which the lab can increase the lab's visibility and benefit the students is to offer certification on the data feeds utilized such as Bloomberg and Thomson-Reuters. This has the potential to make the students more marketable during the job interviewing process for both internships and permanent jobs. It provides a mechanism to attest to outside constituents a skill set the students have mastered.

Many students can also begin using the Trading Room before matriculation in pre-collegiate outreach programs such as those offered by Bentley College. Three examples they offer for high school students are Wall Street 101, LEAD to Wall Street, and the Boston Economic Club.⁶ Wall Street 101 offered annually is a nationally recognized investment management program for high school students. Wall Street 101 is a demanding, one-week residential program for enterprising students interested in the financial markets. The program provides students with an interactive opportunity to learn about investments and risk management, develop leadership and teamwork skills, and explore the world of higher education through a campus experience. The program incorporates college-level lectures, simulations and role-playing exercises, as well as interactions with traders, portfolio managers and risk management professionals. The program also integrates field trips to the Boston Stock Exchange and Federal Reserve Bank. LEAD to Wall Street is a program partnered with LEAD, organization based in Philadelphia dedicated to increasing ALANA (Asian-American, Latino, African-American, Native American, and Multiracial) student interest in the field of business. Their flagship program, the Summer Business Institute, introduces highly motivated high school juniors from across the country to business through a three week summer program at 12 of the top graduate business schools in the United States. Through a partnership with LEAD, Bentley offers a finance program exclusively to LEAD alumni. Bentley's third outreach program, Boston Economics Club is offered in partnership with the Boston Federal Reserve Bank and NABE facilitates a trading competition for students enrolled in the Boston Economics Club. After touring the Boston Stock Exchange, the students travel to Bentley and engage in a real-time trading competition designed to give members of the Economic Club an extremely valuable experience.

Another example of outreach is at Southern New Hampshire's Center for Financial Studies which offers financial literacy training to young adults covering 8 topics through sponsorship of the Financial Regulatory Authority Investor Education Foundation. The 8 models include Asset Allocation and Security Selection; Creating and Monitoring a Diversified Stock Portfolio; Internet Resources for Bond, Bond Mutual Fund & Exchange Traded Fund Investors; Investing for Retirement; Investing in Equity Mutual Funds; Personal Financial

Statements; Portfolio & Risk Management; and Selecting a Financial Advisor. Furthermore, Marquette University's Applied Investment Management (AIM) program is a unique 3 semester program for select student that center on summer internships and active management of equity and fixed income portfolios throughout the senior year that focuses on the core of knowledge necessary to pass the CFA Level I exam upon graduation.

CONCLUSION

Financial trading labs are becoming essential to finance programs within universities across the country. This report outlines the steps necessary for building a financial trading lab from conception to implementation. The key component of this report is that finance labs allow for active learning, a major concept within Bloom's hierarchy of learning. Another key factor within this report is that a finance lab can be designed to fit the mission and financial resources of the various universities while still offering the major benefit of advancing the learning of the students. Fancy and expensive is not necessarily better than a stripped down economical lab. The key driving factor behind the success of the trading lab is quality utilization which come about through the active involvement of a wide variety of constituents (students, faculty, administrators, alumni, and employers).

ENDNOTES

¹ "Financial Trading Labs Reap Benefits for Colleges and Universities" (www.risedisplay.com).

² See the summary of the Rise Vision survey from 2008 in Table 7 in the appendix.

³ See Mckeachie et. el. (1986), Pintrich (1989), Paulsen and Gentry (1995), and Kish and Hogan (2001) for justification of active learning.

⁴ See www.risedisplay.com/examples for examples with brief descriptions and pictures of Business School Trading Labs using Rise Vision displays.

⁵ See for instance Kish and Hogan (2001) and Kish and Hogan (forthcoming).

⁶ LEAD stands for Leadership Education and Development. LEAD provides a set of programs for the advancement of business and engineering (<http://business.leadprogram.org>).

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Appendix
Table A1. Software and Data by main function

<i>Data/Research Reports</i>	<i>Software-General</i>	<i>Software-Risk</i>	<i>Comprehensive</i>
D-raw data RR-research reports N-news FO-futures and options	VE-valuation equity VD-valuation debt SC-screening EX-Excel add-ins IN-international RE-Real Estate T-trading	AE-analytics equity AD-analytics debt MO-modeling R-risk management S-simulations M-math/statistical	
AFGView (RR)	AFGView (VE/SC/EX)	BARRA Aegis System (AE/AD/MO)	Bloomberg©
Capital IQ (RR/SC/ EX)	ARGUSTM (RE)	Crystal Ball (S/EX)	SAP
Dow Jones Newswire (N)	eVal (EX)	Factset (SC/AE/R)	Thomson-Reuters DataStream Advance First Call Investext SDC Platinum Thomson Deals Thomson ONE Banker Thomson-Reuters 3000 Xtra Thomson-Reuters Knowledge Thomson-Reuters Power Plus
eSignal Pro (D/FO/N)	KLD Socrates (SC)	G.X. Clarke & Co. (MO/D)	
S&P NetAdvantage (N/RR)	Mergent Online (SC/D/IN)	Matlab (M)	
	Portfolio Analysis (SC)	Minitab (M)	
	TradeStation (SC/D)	Morningstar.com (D)	
	Value Line Investment Survey (SC)	Morningstar Encorr (AE/AD/SC)	
	Zacks Research Wizard (SC)	Northfield Portfolio Optimizer (AE/R)	
		SPSS (D/AE/MO)	
		StockVal (AE/VE/EX)	
Research Tools	Instructional/Trading		CFA Review
Wharton Research .Data Services (WRDS)	Financial Trading System Bond Tutor (MO/VD/R/T)		Schweser
COMPUSTAT	CAPM Tutor (S)		Stalla
CRSP	Option Tutor (S/MO/T)		
Global Insight			
IBES	Rotman Interactive Trader (T)		

Software and data listed alphabetically with brief descriptions

- AFGView incorporates the Economic Margin Framework to provide company fundamentals, analyst estimates, and corporate events accessed through numerous pre-formatted and user created custom reports and graphs. (www.afgview.com)
- ARGUST™, by Realm Business Solutions, is the industry standard for cash flow analysis for commercial real estate, modeling all aspects of the real estate life cycle — from initial acquisition, through development, to lease up, and disposition. It can also be used to value assets, view partnership structures and analyze debt financing. (www.argussoftware.com)
- BARRA Aegis System is an industry-leading equity risk management software package that enables portfolio managers, analysts, researchers and traders to achieve a competitive edge in managing equity securities and derivatives. Its Portfolio Manager can help construct and optimize equity portfolios, while factoring in risk, return, and transaction costs. (www.barra.com)
- Bloomberg© provides the following types of information for all international markets: beta, moving averages, money flows, balance sheets, earnings and EPS estimates, ratios, public filings, bonds, interest rates, exchange rates and more. Prices include bonds, currency, spot energy, derivative and other over-the-counter prices. The News & Research section contains over 3,000 stories per day on companies, industries and global markets. (www.bloomberg.com)
- Capital IQ provides information on public and private companies as well as professionals worldwide. Used for complex financial statement analysis, comparables analysis, financial modeling, sector analysis and charting. (www.capitaliq.com)
- Crystal Ball is a simulation program that helps user analyze the risks and uncertainties associated with Microsoft Excel spreadsheet models. Has a fully integrated Excel add-in program with its own toolbar and menu. Has a scaled down version: Crystal Ball Classroom edition. (www.oracle.com)
- Dow Jones Newswire provides a real-time source of electronic, real-time news for global market professionals, combining the financial and economic reporting expertise of Dow Jones with the political and general news expertise of the Associated Press. (www.djnewswire.com)
- eSignal Pro provides access to all major equity, futures and options exchanges, as well as complete news stories, market commentary, exchange leaders, ticker searches, Time and Sales, Nasdaq Level II data, technical data, foreign exchange data, historical data and US Treasury data. (www.eSignal.com)
- eVal is an Excel VBA program that performs comprehensive financial and valuation analyses. It imports corporate financial data from various sources, conducts ration and cash flow analyses, and guides the user through the steps of forecasting and valuation by using both residual income and DCF techniques. (www.excel-vba.com)

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- Factset is the industry standard research solution for the investment practitioner community. It is used to evaluate and screen for securities, conduct fundamental, quantitative and risk analysis and managing portfolios. (www.factset.com)
 - Financial Trading System (FTS) is a virtual ECN that creates a trading room from a network of PCs. It creates a virtual dealing system and a trading crowd composed of students. Students create and/or play the market, and investigate market efficiency, put call options and stock indices. (www.ftsweb.com)
 - Bond Tutor allows users to input data on a bond or series of bonds and calculate both present and future bond values and/or the values of underlying cash flows. By incorporating the use of Bond Tutor during simulated bond trading (using the FAST software), users can accurately compute the price of the bonds involved, and consequently trade them most efficiently.
 - CAPM Tutor allows the end user to take a modern approach to managing a portfolio of stocks and mutual funds. CAPM Tutor is a unique investment tool that reflects these broad trends in investment analysis. CAPM Tutor instructs users on the principle of the Capital Asset Pricing Model (CAPM) and the importance of portfolio diversification in real-world market scenarios.
 - Option Tutor is an advanced derivative pricing and analysis tool. By inputting a series of market and derivative variables, users can accurately price the value of option contracts, as well as compute the underlying constituents that affect an option's price (delta, gamma, vega, etc.). More advanced functions allow the user to compute the prices and payoff streams of a variety of multiple-put/call option strategies.
 - G.X. Clarke & Co. is an Institutional Dealer for U.S. government, Federal agency and Mortgage-backed securities. Web-based access to view live prices and markets, as well as access to financial utilities. (www.gxclarke.com)
 - KLD Socrates monitors the social records for 3000 publicly-traded US and international companies. Data in Socrates is presented in the form of Company Profiles, Industry Involvement Reports and Detailed Social Ratings. Socrates also provides screening capabilities on 70 ratings areas as well as qualitative ratings to evaluate environmental performance and community involvement. (www.kld.com)
 - Matlab is an interactive software system for numerical computations and graphics. It is especially designed for matrix computations for the use of solving linear equations, computing eigenvalues and eigenvectors as well as factoring matrices. Additional from that, the software has a variety of graphical capabilities. (www.mathworks.com)
 - Mergent Online provides fully searchable database of over 10,000 U.S. public companies, over 18,000 international companies, and over 8,000 "dead stocks." Worldwide industry reports, company tear sheets, custom reports and screening capabilities are also available. (www.mergentonline.com)

- Minitab is statistical software that is used for six sigma and other quality improvement projects. From statistical process control to design experiments, the program offers the user methods that can be implemented at every phase of a project to improve the overall process. Through key inputs, the program can help the user discover which processes need improvement, identify the best solutions and measure their success. (www.minitab.com)

- Morningstar.com provides investors with information on over 6,000 stocks, 20,000 mutual funds and over 150 Exchange Traded Funds. In addition, it provides stock screening functions and portfolio analysis tools. (www.Morningstar.com)

 - Morningstar Encorr is a comprehensive software suite that offers flexible investment analysis tools and central data access. Features include mutual fund/manager advanced query options and statistical filtering capability.

- Northfield Portfolio Optimizer (NPO) allows the user to uncover factor influences on an existing portfolio, and, in combination with inputs given, applies these influences to portfolio construction. The application suggests buys and sells that deliver more expected returns for each level of predicted risk. The two main functions of NPO are to Measure Risk and Choose the Right Model for analytical purposes. (www.northinfo.com)

- Portfolio Analysis allows the user to investigate sources of over and under performance, view the current valuation and recent trading history of portfolio constituents, and compare portfolio weights to any available benchmark (including the S&P, Russell and MSCI indices). Using dynamic reports that incorporate your portfolio, along with data on hundreds of global indices, you can quickly assess the factor that make your portfolio move and illustrate how your investment decisions affect portfolio performance. Available from a number of sites: www.fidelity.com; www.tdameritrade.com; www.vanguard.com)

- Rotman Interactive Trader is an application that simulates a stock exchange and allows users to transact financial securities with each other on a real-time basis. The user-friendly and transparent interface has been designed specifically to facilitate the learning experience. Users will be able to see each step of transaction process occur as they submit their orders to the market and trade with one another. (rit.rotman.utoronto.ca)

- SAP is a comprehensive Enterprise Resource Planning program which ties all the diverse functions of an organization (accounting, finance, management, sales, etc.) into one cohesive database. Allows the user to analyze data for financial planning, sales forecasting and quality control. (www.sap.com)

- Schweser provides online access to study material for CFA, CPA, CAIA and FRM. They are a division of Kaplan, Inc. Their mission is to help individuals achieve their educational and career goals. (www.schweser.com)

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- Stalla provides online access to study materials for the CFA. They are a division of Becker Professional Education. (www.stalla.com)
 - SPSS is a modular, tightly integrated product for the analytical process—planning, data collecting, data access, data management and preparation, analysis, reporting and deployment. With SPSS, users can generate decision-making information quickly using powerful statistics, and understand and effectively present their results with high-quality tabular and graphical output. (www.spss.com)
 - StockVal is a comprehensive, integrated and versatile software/database package that has been developed for analysis and valuation modeling of corporate equities. It combines advanced equity valuation concepts, a proprietary database of clean and consistently stated financial information and a multitude of analytical features designed to facilitate the equity selection process. SV Connect, StockVal's Add-In for Microsoft Excel®, brings the StockVal proprietary database into the open-ended Excel spreadsheet environment. SV Connect provides the tools necessary to create fast, presentation quality spreadsheets. (www.stockval.com)
 - S&P NetAdvantage is a financial information resource with access to the S&P Industry Surveys (U.S. and global), Bond Reports, Stock Reports, Directory of Corporations, Register of Executives and more. (www.netadvantage.standardandpoors.com)
 - Thomson-Reuters suite of products (thomsonreuters.com)
 - DataStream Advance is a reporting and charting interface designed for use with DataStream's internationally renowned historical financial and economic databases. It supplies stock market, indices, fundamentals and economics data from around the world with historical depth spanning more than 30 years. DataStream's graphical user interface enables retrieval and display of reports, charts, and data, and allows for the custom integration of requested information over a variety of reporting formats.
 - First Call database software provides daily updates of consensus EPS and sales estimates as calculated by First Call. The program also includes expected quarterly report dates and guidance information, which is collected directly from companies. Companies covered in this database are located in the United States, Canada and Latin America. This software is fully integrated with FactSet which means that the user can perform analysis and create reports using First Call's data in conjunctions with all that FactSet offers, including customized spreadsheets and reports, charting, statistical analysis and much more.
 - Investext provides access to investment research reports that are written by analysts at investment banks, brokerage houses and consulting firms who closely follow particular companies or industries.

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- SDC Platinum provides online access to Securities Data Company's global merger and financing information. It contains two databases: Global New Issues and Mergers & Acquisitions.
 - Thomson Baseline is the leading provider of information products and services to the investment community, with primary emphasis on the institutional equity market. It is an interactive application that presents complex financial information in a visually revealing, graphical framework that delivers instant insight into the strengths and weaknesses of stocks and portfolios. This application provides portfolio managers and related investment professionals with a comprehensive, "one-stop" source for financial information and analytics. BASELINE is used by more than 10,000 institutional investors, residing in over 800 organizations across North America.
 - Thomson Deals (via Thomson ONE Banker) provides current and historical global Mergers & Acquisitions and equity information.
 - Thomson ONE Banker provides information about US and international company financials, earnings estimates, ownership, deals (M&A and new issues), annual report, SEC filings, plus Thomson Deals screening, VentureXpert plus Thomson Research full text searching.
 - Thomson-Reuters 3000 Xtra is the very latest rendition of the Reuters package incorporating a fully integrated user interface and supporting a host of new features and functions. The Reuters data feed offered at the Trading Room offers users real-time access to all global financial markets, including up-to-the-second news, analytics, and pricing information on all every financial market worldwide (equity, currency, fixed-income, commodity, derivative, etc.). Integrated into the interface of Reuters 3000 Kobra is seamless access to the internet, as well as the ability to utilize advanced graphing and technical tools offered by Reuters Graphics. The Kobra software allows the user to custom design screens based upon the individual's financial data preferences. Any data on the Reuters network can also be exported to Excel to allow for further analytics for the user's needs.
 - Thomson-Reuters Power Plus is the Reuters-integrated version of MS Excel used specifically for retrieving information from the Reuters data feed network and incorporating that data into the Excel spreadsheet format. Data can be instantly retrieved on any financial instrument in the world on both a historical basis and real-time basis. Historical information is available for all financial instruments (both current and non-current) dating back to the inception of the instrument or 10-years of trading data. Real-time data can also be integrated into the spreadsheet, which automatically fluctuates in tandem to real-time market moves. This allows the user to easily manipulate and analyze the historical and/or real-time data of any global financial instrument using the plethora of Excel's statistical, graphing, and analytical tools.

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- Thomson-Reuters Knowledge provides timely and accurate statistical and descriptive information on more than 9,000 active companies. Over the past 18 years MultexNet has developed and enhanced its data collection and analytical processing systems to create its in-depth financial and business information database. MultexNet continuously updates its database as information is released in filings with the SEC (10K, 10Q, 8K, etc.) and through various forms of corporate releases.
 - TradeStation is a web-based system with data. Real-time data provided for AMEX, NYSE and NASDAQ. This program allows users to back test ideas. It provides historical data for stocks for 30 years; futures and commodities back to 1959. Users can build their own strategies and indicators, or manipulate ones given. (www.tradestation.com)
 - Value Line Investment Survey provides investors with information on over 5,000 active stocks. It offers screening of over 200 data items for each stock including performance indicators such as safety, financial strength, earnings predictability and industry timeliness. (www.valueline.com)
 - Zacks Research Wizard is a powerful screening and backtesting tool for investors of all skill levels. Built in screens with proven market-beating results make it easy to get started. Plus, experienced screeners will be amazed by the depth of information and tools at their disposal. (www.zacks.com)

Research Tools

- Wharton Research Data Services (WRDS) provides instant access to important databases in the fields of finance, accounting, banking, economics, management, marketing and public policy. (wrds.wharton.upenn.edu)
- COMPUSTAT from Standard & Poor's) provides more than 300 annual and 100 quarterly Income Statement, Balance Sheet, Statement of Cash Flows, and supplemental data items on more than 24,000 publicly held companies.
- CRSP (The Center for Research in Security Prices) contains a comprehensive data set of security price, return, and volume data for the NYSE, AMEX and NASDAQ stock markets. Additional CRSP files provide stock indices, beta- and cap-based portfolio, treasury bond and risk-free rates, and mutual fund databases.
- Global Insight databases providing data on national income accounts, balance of payments, foreign debt, exchange rates, money supply and employment - among other national level categories. They provide data on the IMF series and the OCDE series as well.
- IBES (Institutional Brokers Estimates System) provides consensus and detail forecasts from security analysts, including earnings per share, revenue, cash flow, long-term growth projections and stock recommendations.

Table 7. Rise Vision Questionnaire		
Q1. How long have you had your on-campus trading lab?		
Answer Options	Response Percent	Count
We do not have a dedicated room for our trading lab	22.6%	12
We plan to open within the next six months	7.5%	4
Our lab has been open less than one year	18.9%	10
Our lab has been open between one and three years	18.9%	10
Our lab has been open three years or more	32.1%	17
	answered question	53
	skipped question	0
Q2. What were your reasons for creating a trading lab? (Check all that apply.)		
Answer Options	Response Percent	Count
To boost the quality of our business school program	75.5%	40
To provide a real-life trading experience for our students	69.8%	37
To run a student-managed investment fund	60.4%	32
To enhance our graduates' job prospects	69.8%	37
As a recruitment tool to entice more business-school applicants	69.8%	37
As a recruitment tool to entice high-level professors	37.7%	20
As a showplace for students, alumni, visitors, faculty, and staff	77.4%	41
Other (please specify)	13.2%	7
	answered question	53
	skipped question	0
Q3. What activities are handled in your trading lab? (Check all that apply.)		
Answer Options	Response Percent	Count
Operate a student-managed fund with actual money	72.9%	35
Run simulated portfolios (no actual money traded)	58.3%	28
Teach general finance and research classes	79.2%	38
	answered question	48
	skipped question	5
Q4. If your students manage a portfolio of actual funds, what is its value?		
Answer Options	Response Percent	Count
Our lab does not manage any portfolios at this time	22.9%	11
Our lab manages simulated portfolios only at this time	8.3%	4
Our fund value is less than \$100,000	14.6%	7
Our fund value is between \$100,000 and \$500,000	31.3%	15
Our fund value is between \$500,000 and \$1 million	6.3%	3
Our fund value is greater than \$1 million	16.7%	8
	answered question	48
	skipped question	5

Q5. Do other colleges within the university use the trading lab to conduct non-finance related classes?		
Answer Options	Response Percent	Count
We do not have a dedicated facility for our trading lab, and share space with the general computer lab	16.7%	8
No, the trading lab is used only for finance-related classes	50.0%	24
Yes, the trading lab is used for non-finance-related classes	33.3%	16
Comments		13
	answered question	48
	skipped question	5
Q6. What type of trading or analytics software do you use in the classroom?(all that apply.)		
Answer Options	Response Percent	Count
We do not use any special software	4.3%	2
Bloomberg	58.7%	27
Reuters	39.1%	18
Thompson	34.8%	16
SDS MarketWatch	6.5%	3
Stock Trak	8.7%	4
FTS (Financial Trading Systems)	32.6%	15
TeleMet	2.2%	1
Internet / Free web tools	69.6%	32
Other (please specify)	43.5%	20
	answered question	46
	skipped question	7
Q7. What display technologies are currently installed in your trading lab? (all that apply.)		
Answer Options	Response Percent	Count
LED stock tickers	71.7%	33
LCD flat-panel screens displaying customized financial content	47.8%	22
LCD or plasma TVs	47.8%	22
World clock displays	39.1%	18
LED wallboards	41.3%	19
Other (please specify)	8.7%	4
	answered question	46
	skipped question	7
Q8. What display technologies are currently installed in the hallway or lobby to draw attention to your trading lab? (Check all that apply.)		
Answer Options	Response Percent	Count
LED stock tickers	52.2%	24
LCD flat-panel screens displaying customized financial content	21.7%	10
LCD or plasma TVs	23.9%	11
World clock displays	6.5%	3
LED wallboards	6.5%	3
Other (please specify)	41.3%	19
	answered question	46
	skipped question	7

Q9. How much money did your university invest in creating its trading lab?		
Answer Options	Response Percent	Count
I am not sure as it was part of a larger capital project	15.6%	7
We renovated a room for less than \$100,000	28.9%	13
We invested between \$100,000 and \$500,000	40.0%	18
Our room cost between \$500,000 and \$1 million	8.9%	4
We invested more than \$1 million in our trading lab	6.7%	3
	answered question	45
	skipped question	8
Q10. How did you fund the display technology for your trading lab? (Check all that apply.)		
Answer Options	Response Percent	Response Count
As part of the school capital budget	44.4%	20
With alumni donations	53.3%	24
With corporate sponsorships	26.7%	12
We do not have displays in our trading lab	2.2%	1
Other (please specify)	24.4%	11
	answered question	45
	skipped question	8
Q11. Please quantify the return on investment you have received from your trading lab. (Check all that apply.)		
Answer Options	Response Percent	Count
Our trading lab helped us improve our ranking among business schools	30.2%	13
Our students report a high level of satisfaction with the trading lab aspect of our business school program	55.8%	24
Our students have received more and higher-paying job offers because of their experience with our trading lab	39.5%	17
We have improved the quality and/or quantity of applications to our business school	37.2%	16
We have been able to hire or retain high-level faculty for our business school	18.6%	8
We have secured alumni donations to build and/or support our trading lab	53.5%	23
Faculty, visitors, and staff like the "energy" of our trading lab	76.7%	33
Other (please specify)	30.2%	13
	answered question	43
	skipped question	10