DESIGNING SOLUTIONS FOR YOUR BUSINESS PROBLEMS

A Structured Process for Managers and Consultants

Betty Vandenbosch

TEACHING GUIDE

The problem solving process students will learn by following this course of study has evolved from more than two decades of consulting and teaching. Its development began with my experiences as a consultant with McKinsey & Company where I learned best practices of problem solving and consulting from the ground up. While the approach I describe is not McKinsey's process *per se*, my experiences there have had a great deal to do with my understanding of what world class problem solving entails. I owe a debt to my many McKinsey mentors and colleagues.

I am also a director of PDN Limited, a professional services advisory firm specializing in consultancy skills training and professional development. I have borrowed liberally from the PDN materials in the development of *Designing Solutions* and thank my partners for helping me with their insights and encouragement.

My students at the Weatherhead School of Management at Case Western Reserve University have participated in this course in all its early incarnations. Their comments and criticisms have contributed to refinements of the process and its supporting tools and techniques.

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COURSE OBJECTIVES

In a course using *Designing Solutions for Your Business Problems* as the primary text, students should develop the ability to solve unstructured organizational problems and respond to opportunities using a rigorous and detailed process based on the premise that good solutions are designed—they aren't analyzed into existence and they don't emerge on their own. By first developing a solid understanding of the organizational situation into which the solution must fit and keeping that understanding current throughout the problem solving process, students will ensure that their solutions will work in the context of the organization in which it will be implemented. By making their logic transparent, they will open their potential conclusions and solutions to legitimate debate based on facts and capabilities rather than intuition and politics. By considering and developing options rather than just presuming that a first hunch is the answer, they will learn how to design the best possible solution for the problem they are facing.

Students will begin by learning the importance of understanding the situation and the needs of their boss or client. Then they will learn how to define objectives of the project and determine its scope. Using the scope to manage the project, students will develop hypotheses and questions to test them. This will lead them to a matrix of the data sources they will need to tap to answer the questions that test the hypotheses. The matrix, in turn, leads to a project plan. Next they learn about the logic diagram which helps them to synthesize data into findings and draw conclusions from their findings. Conclusions lead to the solution and action plan.

While undertaking these steps, students will also learn to stay focused on building relationships, nurturing commitment and driving execution. Finally, they will develop their written and oral communication skills.

Designing Solutions for Your Business Problems describes a rigorous, detailed, and human process for solving unstructured business problems and responding to opportunities in a way that people can understand and organizations can implement. A course on which it is based will provide students with the ability to address the problems and opportunities they will face when they graduate in a logical and coherent manner.

TEACHING PHILOSOPHY AND APPROACH

This course requires live consulting projects in local organizations so that students can apply concepts and techniques to a real world setting. The projects are focused on improving business processes or developing product or marketing strategies. Students are expected to work in a team to analyze an organization's situation and diagnose its problems or opportunities, creatively envision new possibilities, evaluate potential improvements and recommend appropriate solutions. Depending on your local environment, you may wish to find projects for the students ahead of time (giving you more control over project content) or have students find their own projects (saving your time and giving students the opportunity to learn how to engage organizations).

Examples of past projects that have been successful include:

Sales Force Reorganization: The team improved the process for deploying the client's sales force and marketing managers to gain market share quickly.

Organization Development: The team developed an orientation process for all new employees and improved mentoring from an informal and erratic process to a systematic program that was adopted company-wide.

Integration Strategy: The team assessed whether or not the firm's best growth strategy should integrate forward from manufacturing to include direct sales.

Supply Chain Management: The team developed a plan to integrate the firm's fifty distribution centres into an optimized distribution network, eliminating redundancy while incorporating key systems and processes.

Cost/Benefits Optimization: The team reviewed medical care reimbursement data in a mixed capacity/fee-for-service hospital to determine the costs and benefits of in-house and contract options with other hospitals and recommended an overall strategy for optimizing delivery capacity in the future.

Although it is an excellent way to apply the course concepts, the project is not enough to enable students to learn how to use the problem solving process effectively. They need classroom exercises and homework assignments as well. I find that the course works best when students have at least two opportunities to try each technique and at least one, and preferably two, opportunities to critique others' work. By reflecting on what others have done, they learn how they might improve their own understanding and capability.

The Porter Building Products case study that accompanies the book is one way to provide students with practice. If they attempt the tools and techniques they learn in class using the case study situation (without looking at the suggested solution), they have an opportunity to improve their abilities in a safe environment before applying them at their client site. However, the case is also useful as an additional ongoing example to be used during the class. For many parts of the course, other case studies may work just as well, although I am not familiar with another case that is sufficiently robust to take students from the beginning of the process through to its conclusion.

Another option is to have students use the techniques on situations of interest to them, possibly something they experienced at a previous job, while volunteering, on a sports team, in a club or at their church. These real-world examples make the class more interesting as everyone will have different experiences to share. By having the students critique each others' work, they begin to understand how the tools can be used effectively and ineffectively in a variety of situations.

When I teach this course, I typically spend less than 20 percent of the class time lecturing. Most of the class is used in small group discussions and the review of class assignments. I find that students often learn more from each other and retain it better than when they have to rely solely on me. For maximum learning, in-class groups should consist of different people than the project teams.

The amount of non-class time students devote to this course depends almost entirely on the size of the projects they undertake. The assignments listed in the outline should each take between 1 and 2 hours to complete. In most cases, project work will be in addition to this time.

COURSE OUTLINE

This outline presumes a fifteen week semester with about three hours of class time per week. If your class time is divided into two sessions, the first could be focused on learning the concepts and the second on applying them. For a masters' level class, at least one additional reading should be included each week. A few suggestions appear after this outline.

Introduction

Reading: Introduction

Assignment: Think about a time when you hired a professional to help you solve a problem (e.g., doctor, mechanic, lawyer, architect). How did you decide whether or not their solution to your problem was successful?

Understanding the Situation

Reading: Chapter 1

Assignment: Prepare a situation analysis and rich picture for an organization of interest to you.

Process Mapping

Reading: Appendix A

Assignment: Prepare a detailed process map for a process of interest to you.

Objectives and Stakeholders

Reading: Chapter 2

Assignment: Prepare a stakeholder map and an objective.

Interviewing

Reading: Appendix B
Assignment: Prepare an interview guide for a person you expect to interview in the near future.

Building Relationships

Reading: Chapter 3
Assignment: Prepare a plan for an introductory meeting at a client site.

Defining Scope

Reading: Chapter 4
Assignment: Prepare a scoping diagram.

Developing Hypotheses

Reading: Chapter 5
Assignment: Develop hypotheses, questions and a storyboard for the scoping diagram you created last week.

Project Planning

Reading: Chapter 6
Assignment: Prepare to discuss your project plan with the class.

Nurturing Commitment

Reading: Chapter 7
Assignment: Depends on instructor's approach for teaching this class.

Logic Diagrams

Reading: Chapter 8
Assignment: Prepare a logic diagram.

Project Review

Assignment: Present an interim progress report to the class. Include a preliminary logic diagram and be prepared to discuss the upcoming change situation at your client. Briefly describe the situation. What will be changed? By whom? What makes this change situation difficult? What makes it easy? What strategies or tactics will you employ to help accomplish the desired change?

Designing the Solution

Reading: Chapter 9

Assignment: Develop at least ten unique solutions for a problem of interest to you. Think about the criteria you would use to select among them.

Implementation

Reading: Chapter 10

Assignment: Be ready to discuss the implementation challenges facing your client and provide at least three unique solutions for them.

Final Reports

Reading: Chapter 10

Assignment: Be ready to present a draft of your final report to the class.

TEACHING SUGGESTIONS

Introduction

In addition to the preamble of any first class (introductions, grading, project assignments, *etc.*) I introduce students to the *Designing Solutions* framework and help them begin to understand the complexities of undertaking projects to solve problems.

Teaching Plan

I usually begin with the assignment question: How do you judge solutions provided by professionals? Typical answers include cost, time, innovativeness, quality, etc. I list what students say on the board, so that the class can reflect on the usefulness of those criteria for an organizational situation. I also tend to push students to be explicit when they use words like quality, cost and timeliness. Is the lowest cost the best? Is the highest quality worth it?

Other questions that get people thinking about organizational problem solving and their client projects include:

What do you expect to do during your project?
What do you expect to produce?

Again, it's helpful to push students to be as specific as they can and to remind them that they may well produce fear and/or envy if they aren't careful.

Additional Reading

Biswas and D. Twitchell, *Management Consulting: A Complete Guide to the Industry* (New York: Willey & Sons, 1999).

P. Block, *Flawless Consulting* (San Francisco: Jossey-Bass Pfeiffer, 1999).

Chapter 1

Often the most demanding aspect of solving a problem or investigating an opportunity is understanding the environment in which the solution must work and the organizational constraints imposed upon it. It is a rare problem or opportunity that isn't subject to a challenging environment. Good problem solvers not only try to think outside the box; they begin by understanding the box better. Chapter 1 provides students with the situation analysis and the rich picture to help them consider the situations they will be facing as an integrated whole at the outset of a project rather than as a series of impediments they encounter throughout.

Teaching Plan

You can begin this class by describing the elements of situation analysis and providing examples in addition to those in the book of how understanding the situation (or not understanding it) made a substantial difference to the success of a project. There are lots of examples of failed change management initiatives in the press that can usually be described in terms of the elements of the situation. A classic example is the attempt made by several major airlines to compete head-to-head with Southwest Airlines. This segment should demonstrate to students that not every solution suits every situation.

Next, three or four students can show and describe their rich pictures and situation analyses. This will enable a further discussion about the elements of situation analysis and will ensure that students understand each concept completely. Students often have difficulty with the notion of world view, with the importance of thinking through norms, values and politics and with concepts of measurement.

Finally, break the class into groups and have students evaluate each other's situation analyses. The class can conclude with a discussion of what people learned when looking at the maps and analyses prepared by their colleagues.

Additional Reading

P. Checkland, *Systems Thinking, Systems Practice* (New York: John Wiley, 1981).

H. Mintzberg, "Organigraphs: Drawing how companies really work," *Harvard Business Review* 77:5 (September-October 1999): 87-94.

Chapter 2

Chapter 2 explores clients, stakeholders and objectives. It describes the importance of determining who the client and stakeholders are before attempting to finalize the project objective. It also explains why specific objectives are more likely to be effective than vague statements of purpose. The stakeholder analysis and the SMART framework for testing the quality of objectives are introduced.

Teaching Plan

A good way to introduce the stakeholder analysis is to take the class through several local situations with which they are all familiar and discuss the stakeholders involved. An easy one to begin with is the school or the university itself. Who is the client is a challenging question. Students will undoubtedly say that they are, but there is also an argument to be made for their ultimate employers or the faculty that teach them. Through discussion students can come to understand that which client they pick has a significant impact on how they decide exactly what the problem is. Other examples to explore can come from government or the news.

Assessing the quality of objectives is something students can help each other with. Once the instructor has reviewed the SMART acronym and provided several examples of good and not-so-good objectives, students can form small groups of five or six to review each others' objectives. They will quickly come to realize that it is easy to criticize an objective and harder to improve it.

Additional Reading

H. Levinson, Management by Whose Objectives?, *Harvard Business Review* 81:1 (January 2003): 107-116.

J.E. Post, L.E. Preston and S. Sachs, Managing the Extended Enterprise: The New Stakeholder View, *California Management Review* 45:1(Fall 2002): 6-28.

Chapter 3

The beginning of a problem-solving project is often a stressful time for all the participants. People may not know each other well, expectations may be unclear, and ground rules for how individuals will work together have not been set. To make the situation even more challenging, the process by which people sort through these issues may determine the tenor of their relationships. Hence, it is important to think about what the important elements of communication are during the early stages of a project and how relationships can be built to sustain the group through the challenging times ahead.

Teaching Plan

If students have had experience working on teams to solve problems in the past, begin the class by reflecting on those experiences—what worked, what didn't, what sorts of problems emerged, how they were solved. If previous experience is limited, the class must rely on the instructor to help them understand these issues.

Next, spend time describing and discussing the importance of communication planning. Ask students to share their ideas for their kickoff meeting and use the communication plan elements to evaluate their quality.

Depending on the experience of the students, it may be necessary to provide instruction on how to run and facilitate meetings. The video, *Meetings, Bloody Meetings*, provides a good introduction to those new to managing the meeting process.

Additional Reading

M. Munter, *Guide to Managerial Communciation* (Upper Saddle River, NJ: Prentice Hall, 2000).

J.R. Katzenbach and D.K. Smith, *The Wisdom of Teams* (New York: HarperCollins, 1993).

J. Cleese, *Meetings, Bloody Meetings* (London: Video Arts, 1993).

Chapter 4

Chapter 4 shows students how to quickly define and reach consensus about the areas that will be investigated and those that will remain off limits in a project. By applying an understanding of the limitations of human attention and the need to be mutually exclusive and collectively exhaustive, it is possible to find the appropriate balance between inclusiveness and achievability. The scoping diagram provides a solid tool to use in the battle against scope creep throughout the duration of the project. In addition, the resource assessment matrix helps students understand the nature of the resources available to the project and constraints placed on it.

Teaching Plan

The students will learn a great deal about the vagaries of scope if they are all asked to develop the scope for a particular situation with which they are all familiar. You might take a case study and ask them to define the objective and create a scoping diagram designed to resolve the problem presented in the case. Alternatively, you might provide them with an article about a problem in a local organization. A comparison of the student responses will quickly demonstrate the challenges associated with scope—even though they all had the same material, many different versions of the approach emerge.

If there is time to do this exercise twice, the second time, provide the objective and ask them only to create the scoping diagram. Again, results will vary widely, demonstrating the importance of negotiating not only the objective, but also the scope, with the client.

When students have a chance to evaluate each other's work, they quickly develop an ability to apply the rules of scoping outlined in the text. They also become more self-critical and will prepare a better scoping diagram for their projects.

Additional Reading

J. D. Frame, *Managing Projects in Organizations,* (San Francisco: Jossey-Bass, 2003).

Chapter 5

There is a great deal more data about any problem or opportunity than students will ever have time to collect and analyze. The sooner they can determine what is relevant, the sooner they will reach a conclusion and the organizations they are helping will be able to implement a solution. Hypotheses organize and limit data collection to that which is most likely to be important and useful. Chapter 5 explains the most practical way to decide which data to collect and shows how to use such information to maximize the benefit of those efforts. In addition, it provides two tools to clarify the data collection effort—the story board and the data matrix.

Teaching Plan

Students may resist developing hypotheses because they feel they don't have enough data to do so. This class should give them the confidence to develop hypotheses that are practical and testable. It helps students if they have an opportunity to discuss the material about hypotheses and questions in detail. Then provide them with several scenarios about which they can develop hypotheses. The students can then evaluate the hypotheses, the questions that would have to be answered and the data that would have to be collected to support or discredit each. They will find that there is usually significant data overlap for competing hypotheses, giving them the confidence to recognize that a hypothesis is truly nothing more than a way to bound data collection.

Students tend to get side-tracked when listing the questions required to test a hypothesis. Often, they have questions that are totally unrelated to the hypothesis, but are interesting to them. Often, they miss key questions that must be answered in order to fully test the hypothesis. A public airing of several hypotheses brings these errors to light and teaches students how to be more self-critical as they develop their data collection plans.

Asking students to prepare a storyboard that might support a hypothesis is a sure way to help them recognize the challenges they are setting for themselves with the data they believe they need. By thinking through what they would have to collect to complete their storyboard, they become better able to determine how long the project should take and whether or not they really need all the data they think they do.

While the data matrix is a powerful input into project planning, reviewing one in the classroom is boring and doesn't really add anything to the discussion. I think it's sufficient to review the process of creating and critiquing a matrix without having students present them.

Chapter 6

Chapter 6 demonstrates how to effectively use planning tools and techniques and connect them to the rest of the problem solving process. There are many books on project management and entire courses devoted to the subject. The intent of Chapter 6 is to focus on those elements of project management that are crucial to the success of a small to medium problem solving effort. They include the assessment of risk, project organization, task sequence, timing and budget.

Teaching Plan

The experience of the students in the class, whether or not there is a project management course in their curriculum in addition to this course, and their access to project management software will drive the decision on how to teach Chapter 6.

Often by this time, students are ready to start talking about their own projects and this is a good class to have them review their project plans and the issues they have encountered. It is important at this stage to keep the discussion focused on process issues rather than the substance of their potential solutions, in part so that they learn the difference, but also because most students will not have spent enough time in their client organizations yet to make discussions about content fruitful. That should wait until they have collected most of their data and are prepared to create a logic diagram to show their thinking.

If you decide not to go into detail on specific project plans, the class time can be spent discussing the elements of project planning and what is required to ensure that each is successful.

Additional Reading

J. D. Frame, *Managing Projects in Organizations,* (San Francisco: Jossey-Bass, 2003).

Chapter 7

Chapter 7 helps students understand basic change management concepts. It describes how to get commitment from key stakeholders and explores the challenges and opportunities associated with bringing people along during the problem solving process. It also provides advice on structuring communications whose main purpose is learning rather than informing or selling. Chapter 7 reminds students that they have to start from where the organization is starting, not from where they are or where they would like the organization to end up. They have to go back to their understanding of the situation and its constraints. Coercion and begging do not work. It is important to remember that what people say may not be what they think. Often yes means "I'm tired of all this" and no means "I'm not up to the risk or effort." The problem solver must provide understanding and motivation—commitment and action are up to the doers.

Teaching Plan

There are many cases and frameworks to teach change management. It is impossible to cover them all, but it is beneficial for students to see one or two alternatives to help them with the change management issues in their projects. The background and experience of the instructor should drive the content that is provided in addition to that in the text.

This class works well with a lecture about change management and the exploration of a case study, such as the one listed in the reading list, to help students understand the challenges they will face.

Alternatively, I have brought practitioners into this class to give the students a real world example of a challenging change effort. The problems seem more real and challenging when a manager talks about the difficulties he or she faced and the way they were (or weren't) overcome.

Additional Reading

R.H. Schaffer, *High-Impact Consulting* (San Francisco: Jossey-Bass, 1997).

D.R. Conner, *Managing at the Speed of Change: How Resilient Managers Succeed and Prosper Where Others Fail* (New York:Villard Books, 1993).

E.H. Schein, *The Corporate Culture Survival Guide* (San Francisco: Jossey-Bass, 1999).

E. McNulty, Welcome Aboard, But Don't Change a Thing, *Harvard Business Review* 80:10 (October 2002): 32-40.

Chapter 8

Chapter 8 explains the logic diagram, the core of the problem solving process. A logic diagram shows the connections between the data that are gathered, the findings deduced from the data, the conclusions reached based on the findings and the solution recommended based on the conclusions. It allows students to quickly test whether the argument they hope to use to convince others to act is both complete and consistent. Each component can be tested by itself, but it is testing the whole that enables them to determine whether or not they are really making any sense.

Teaching Plan

Students have a difficult time putting their first logic diagram together and often need help distinguishing between findings and conclusions. A good way to teach them how to develop logic well is to provide them with a fairly lengthy editorial or essay and have them uncover the logic. If the piece is well-written, they should be able to create a logic diagram from it. It doesn't matter if the logic is not complete, because they can suggest what is missing and what would make the piece more compelling. It will also help them to identify information that is extraneous to the argument.

The students should also prepare a logic diagram on an issue of interest to them. By critiquing each other's logic, they will become better at developing arguments themselves.

One of the key points to make in this session is that it is never to early to start developing logic. By understanding what is missing, you are better able to determine what data must still be collected and/or analyzed.

Chapter 9

Chapter 9 shows students why their first idea is rarely their best. Often, people have the mistaken notion that they should go with their first hunches. The reality is that a first idea to solve a problem has nothing more going for it than the fact that it was the first idea. It is no better than a first draft. Taking the time to consider other options will usually lead to the best solution. But, thinking of alternatives once there is an answer available frequently seems like a waste of time. Students may be tempted to come up with nothing but straw men once they have developed a solution they are comfortable with. Chapter 9 helps them quickly devise plausible options and then select among them based, not only on their elegance, but also on the will and the ability of the organization to implement them.

Teaching Plan

The best possible outcome for this class is convincing students that alternatives are worth the effort required to generate them. I begin by posing a local problem, e.g. not enough tourism, not enough parking, too much crime, and ask students to come up with an unreasonable number of solutions, i.e., at least ten. Then I ask them to pick the one they believe is most likely to succeed and set it aside.

Next, I ask for criteria for evaluating the alternatives for a solution to this problem. When the class has agreed on the criteria, I ask each person to revisit his or her list to test whether the solution they initially picked as "the best" still is. The ensuing discussion is usually lively, to say the least.

Of course, it is important to remind students that the best way to come up with good solutions is to be well prepared through the creation of a logic diagram that summarizes findings and conclusions about the problem.

Additional Reading

S. Plous, *The Psychology of Judgment and Decision Making* (New York: McGraw-Hill, 1993).

R. Hastie and R.M. Dawes, *Rational Choice in an Uncertain World* (Thousand Oaks, CA: Sage Publications, 2001).

Chapter 10

No matter how involved people are in the development of the solution and how committed they are to its implementation, there is no guarantee that they will actually follow through and do something. In order to execute, people need to know what to do, why they should do it and how they should proceed. The solution provides the *what*. Chapter 10 describes how to put together a justification that will be understood long after the people who created it have moved on as well as how to develop an action plan that enables people to implement the solution that has been recommended.

Teaching Plan

Depending on the needs of the students, the class devoted to this chapter can focus on creating presentations and reports or the implementation process. Doing both in a single session doesn't work.

If you choose to focus on presentations, you can ask students to bring good and poor examples of information presentation to class to discuss. They can find them in newspapers, magazines, presentations teachers have made, and so forth. It is also helpful for you to present examples of well- and poorly- structured writing. This is a class in which I break my 20% lecture rule. I find that students benefit from a thorough review of what makes a good presentation or report and how they should put their final presentation and report together.

If you choose to focus on implementation, select an implementation case study from the many good ones available and have the students sort through the issues Porter Building Products is an option since there are no implementation plans provided in the suggestion answer. They should employ the framework(s) they learned in the change management session to help them sort through the potential issues in the case.

Additional Reading

B. Minto, *The Pyramid Principle* (London: Barbara Minto, 1996).

G. Zelazny, *Say It With Charts* (New York: McGraw-Hill, 1996).

G. Zelazny, *Say It With Presentations*, (New York: McGraw-Hill, 2000).

J. Kotter, Why Transformation Efforts Fail, *Harvard Business Review* 73:2 (March-April 1995): 59-67.

Appendix A

Appendix A describes how to map and evaluate processes. It evaluates the pros and cons of different approaches for collecting data about processes: interviewing, observation and data collection. It also describes some of the analyses that are possible once a process map has been created.

Teaching Plan

The Porter Building Products case study is well-suited to process mapping and the pitfalls associated with it. Because an answer is not provided on the CD, there is no risk of cheating. You can ask students to map the various ways that customers interact with Porter. The case doesn't contain enough information to provide an unequivocal representation. This offers students the opportunity to explore what additional information is required and how they might obtain it.

You can also have students describe processes that they are interested in. As with other classes that ask for student input, this adds variety to the class and is more likely to encourage questions about different ways to map specific processes and the value of process mapping itself.

Once students are comfortable with mapping, they can be engaged in a discussion about improving processes. Be sure to engage them to consider hypotheses about the maps that they could test and the questions that would have to be answered and the data collected to validate those hypotheses. It is tempting for students to simply map a process that appears to be more efficient without considering the ramifications for the real people whose jobs and responsibilities will change as a consequence.

Additional Reading

G.A. Rummler and A. P. Brache, *Improving Performance*, (San Francisco: Jossey Bass, 1995).

Appendix B

Appendix B covers interviewing for data collection. It includes planning, making arrangements, preparing, conducting and recording interviews. The experience of your students will dictate the amount of time you will spend teaching them how to interview.

Teaching Plan

The only way to become a better interviewer is to practice interviewing. After the instructor provides a brief summary of Appendix B, students should be given the opportunity to practice interviewing each other. The challenge is finding appropriate interviewees. The Porter Building Products case contains several interview notes. Students can be asked to reverse engineer them and create the interview guide that might have been used. Then, because they are all familiar with the content, they can role play the characters and interviewers. The process is made more realistic and challenging when the instructor tells the character what type of personality to portray (Table B.3) without informing the interviewer.

Students often have a difficult time getting the interview started and fumble around while trying to build credibility. The instructor should encourage classmates to stop the role play at any time to provide guidance or criticism. Of course, this gives the instructor the perfect opportunity to ask the critic to step into the interviewer's role.

Additional Reading

C. Argyris and D. Schön, *Organizational Learning: A Theory of Action Perspective* (Reading, Mass: Addison-Wesley, 1978).

CONTACT INFORMATION

Betty Vandenbosch
Weatherhead School of Management
10900 Euclid Avenue
Cleveland, Ohio 44106-7235

bmv@cwru.edu