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Crummer Graduate School of Business

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PMBA '98

From The Editor

Edge. Innovation. Dog-eat-dog. Think globally – act locally. These are the sound bites of doing business in today's economy. But for business leaders striding into the 21st century, sound bites and slogans offer little in practical, accessible information. They want strategies and alternatives that produce growth, profit, and permanence in a highly competitive and ever changing economy.

The Crummer Journal, a quarterly electronic publication, provides a stage for alumni and others worldwide to network and share stories/antidotes to help each other prosper in work and life. It contains tips and techniques for maximizing today's technologies, articles on how future technological advances will influence business, candid "Face-to-Face" interviews with business leaders who discuss philosophies, strategies, and lessons of success, and more...

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Mark Carbone
Mark Carbone
Editor
PMBA, '98

Stunning Presentations

By: James P. Gilbert, Ph.D.

**James P. Gilbert
Crummer Professor**

"...when a presentation does not effectively communicate concepts and ideas, everyone loses:"

Presentation skills are critical for successful careers. Whether we are in the largest companies, the smallest not-for-profit, or the most prestigious governmental organizations, the effective communication of our ideas is vitally important. I've always felt that when a presentation does not effectively communicate concepts and ideas, everyone loses: the organization loses because a potentially great idea or direction does not get an opportunity for further examination and the presenter loses because we often get only one opportunity to stimulate action by others.

This column will focus on Microsoft PowerPoint® presentations. This communication tool has become a favorite for many presenters no matter what the organization. The process here is to take some presentation examples and suggest other ways to more effectively communicate the ideas within. I will offer suggestions to "punch-up" the presentation style and move away from the endless – read boring – bullet lists.

For our initial effort, I am working with a file sent to me by one of our alumni. The presentation is typical of many that you and I no doubt have seen before in terms of its delivery scheme. We will work with just two of the slides from the much larger presentation. When I first looked at the slide set, it was clear to me that there was limited consistency from slide-to-slide. I first worked on a consistent background and then made adjustments to the font and placement aspects on the slides.

The title slide shown here is the original view as sent to me. The company logo is prominently displayed and centered at the top, followed by the product identifier and company address. I started by developing a color scheme to be included on all slide to develop a consistent look to the slides. The purple and green in the company logo struck my eye as a nice color combination

ACCSEUS CORPORATION ®

"Success In A Box"

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. I set up a new presentation Slide Master under the View menu and developed a left border that uses these two colors in a vertical strip pattern (see Slide 2). This border will be used on all slides and can be adjusted in size slightly to add or

subtract white space in the middle of the slides as needed.

We need a place on most slides for a title header. The Slide 2 top area for a header is actually three rectangles that I drew using the drawing toolbar. The top most rectangle is colored to bring out the green slightly and carry that color theme. The main box is filled in black for a solid surface for our slide titles. The third rectangle is filled with purple to match the logo and border colors.

The bottom of the slide has a drawn rectangle that is filled by a two-color fill effect white and green. I then took a miniature of the corporate logo that is located on the lower right side of this box on all slides. Again, lending to a consistent look throughout the presentation. The slide center is left white which allows for a lot of flexibility in terms of fonts, colors, and images on future slides.

Now that we have a colorful and consistent look, let's move to adjustments in fonts and the like. I liked the large logo image on the initial (Slide 1) title slide. I copied this and centered it on the new (Slide 2) master and slightly reduced its size. The product being offered is called "Success in a Box." By placing a Word Art object into a clip art box we better carry that theme. Again, I colored the border around the clip art with a bit of the green. To bring the readers eye to screen center (and the product), I placed six alternately colored rectangles drawn from our toolbar and "sent then to the back" below the product box.

The Product

"Success In A Box" is a proven methodology that Innovation Centers use to create investable, high-growth technology companies, at lowered risk for investors.

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This completed the redo of the Title slide, which now has a colorful look that clearly offers the company logo and product to the audience. You will notice, that I downsized the address on the Title slide. It is very important and should be brought out fully on the last slide that may be a copy of the Title slide. [Just a thought while I am thinking about the Last slide in a presentation. Don't miss an opportunity to bring out your product and address here. Ending on a black page is almost never effective.)

The text slide to the right is the second slide in the original presentation. The message is important in that it states who specifically is the intended receiver and what are the key points in the product. This message sort of gets lost in the long sentence and basic black-on-white look.

I started here on the slide master (for our Slide 4) by bringing over the image

"Don't miss an opportunity here to bring out your product and address."

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Success In A Box

Proven Methodology

Innovation Centers

Create High-growth Technology

Lowered Risk for Investors

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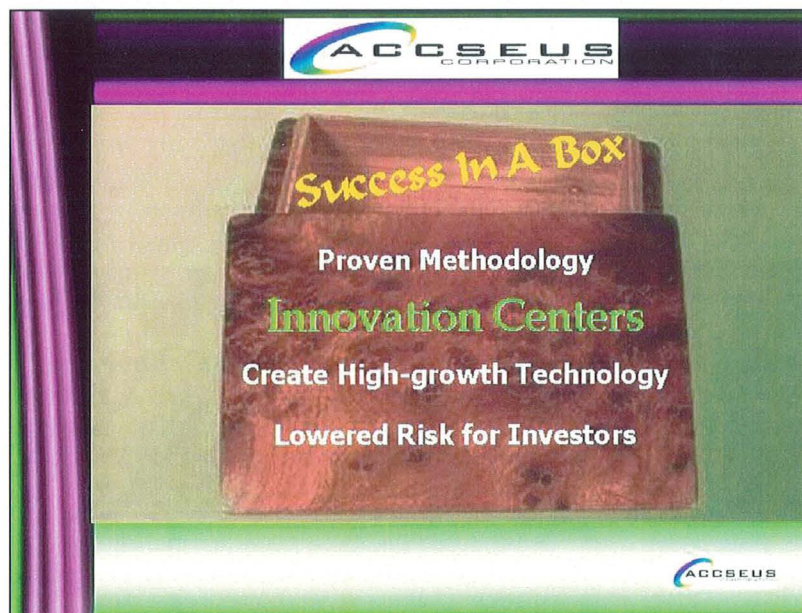
created for the Title Master (Slide 2). I changed the slide title font from Times New Roman 44 pt. to Tahoma 44 font for a cleaner look and improved readability at a distance.

I wanted to highlight the product as well as the message here. The box clip art was brought over from the Title slide and expanded to fill the white space. I moved the Word Art "Success in A Box" up so that it appears to be coming from the box and tilted it slightly for added effect. This leaves plenty of working space on the box for the message.

I changed the font from Times New Roman 32 pt. to Tahoma 24. This is a very readable font and the size was appropriate to fill the working space. The product is intended for Innovation Centers. This message is centered in our box and enlarged to Book Antigua 40 pt. font. There are three key points that are developed on Slide 3. I brought out these points using a minimal amount of words. The speaker can present the story surrounding these points orally.

What the viewer sees
Our new Opening slide could be "on" as the audience enters the room. It offers a nice look and feel for the presentation to come. The second slide unfolds for the audience. The first click brings up the company logo at the top of our new slide color scheme and the box with the product name in place. On the next click, the words "Innovation Center" dissolves into place for the presenter's elaboration. The three key product points are then developed by Zooming In Slightly for added impact with a set time delay (adjusted by the presenter).

Certainly to my eye, and I hope the prospective client's eye, the revised presentation has improved impact and presents a better visual image, while highlighting the message. It took about an hour to think through and develop these changes to the presentation. You can do it too—give it a try and please let me know what you think.

"You can do it too – give it a try."

Face-To-Face

Interview by: Mark Carbone, PMBA '98

**greg clendenin
EMBA '98**

Middleton Pest Control, Inc. was first established in 1952 as Middleton Lawn Spray and Garden Supply in the College Park neighborhood of Orlando, Florida. Today, Middleton Lawn & Pest Control is one of the largest privately own pest control companies in the nation with over 200 Team Members providing the best service in the industry to more than 30,000 customers.

Greg Clendenin began his career with Middleton in 1979 as a sales technician. Now President/CEO, he recently sat down with us to discuss his business and personal philosophies.

Q: HOW DO YOU STAY CURRENT WITH CHANGES IN YOUR INDUSTRY?
A: Well, in our industry, I read several trade journals every month and go to trade shows, conventions, and management workshops in our industry. I talk to people, other pest management professionals, and of course, manufacturers, and distributors.

Q: WHAT IS YOUR FAVORITE PERIODICAL?
A: To me, the best business magazine out there right now is Harvard Business Review. I read that cover to cover every issue.

Q: WHAT NEW TECHNOLOGIES/MANAGEMENT PROCESSES/SOFTWARE ARE YOU EXPERIMENTING WITH?
A: Converted to a new windows based software program. It required a full software and network upgrade – took about 1.5 years. Spent a lot of money on it but the RIO has been great. It has improved our operations efficiency and strategic control reports. And we're also moving toward hand held computers for our sales people. Also working towards a good vehicle maintenance package and an asset protection system. We also have a great website. It sells as much as a salesperson.

Q: WHAT HAS BEEN YOUR COMPANY'S MOST EFECTIVE COST CUTTING PROGRAM?
A: Our most effective cost cutting program has been to invest in the company. When I became president of Middleton in '96, we had to spend a lot of money to get the company back on a fast track growth pace. We didn't cut costs. But we made sure our cost control systems were in place.

> "Our most effective cost cutting program has been to invest in the company."

Then we spent money on new equipment, hiring and training good people, new facilities, a new marketing and advertising program... It reduced employee turnover, customer cancellations, re-work, and also increased productivity per truck. It's not always just about slashing costs.

Q: HOW DO YOU MANAGE PEOPLE? WHAT'S YOUR STYLE?
A: Trainer. Equip them to do the job properly. Give them, not just the responsibility but give them the authority to do the job. Don't be fake about it. Make it real. Make them feel like they are an important part of the team. I don't care what position they have or what role they play in the organization. In our company, there is no person better than the next. The only difference between each employee is their function. You coach and deal with misconduct and violations on a personal basis. And when you need to, you protect the organization from bad elements.

Q: WHO DO YOU SURROUND YOURSELF WITH TO GIVE YOU AN EDGE – WHO'S IN YOUR INNER CIRCLE?

A: Well first of all, we have a real capable staff. We have several MBA's on staff. We happen to have 4 Crummer grads on staff. You need to hire specialists. People who are strategic thinkers that have good character – that's more important than anything (character).

I also surround myself with my top-notch vendors including sharp attorneys. You know, I really like attorneys and particularly when you start to get into some kind of size and you have contracts with people, your attorneys are an important part of your network. I'd say this to anybody; you need to have a big network with the right kind of people. I think that's important in business and your personal life. Not just to get from, but to give to.

"You know, I really like attorneys..."

Q: WHAT'S YOUR SECRET TO BALANCING WORK AND PERSONAL LIFE?

A: Get everybody involved at the level that they ought to be. I think we create an atmosphere where people want to be involved. In addition, if that doesn't work, we require people to be involved. There's no virtue in working 80 hours a week. If you have to do that, there's something wrong with your execution. Maybe your organization is not aligned, and there's something wrong with your plan. Sometimes you just need to pack it up and go home when it's time to go. There are exceptions to that but you have to have a general standard to follow.

Q: HOW DO YOU PLAN YOUR DAY?

A: I stay results oriented, not task oriented. And I try to get everybody to do the same. Although, to execute properly there are a lot of tasks that have to be preformed, but always keep your eyes on the goals and the results.

Q: WHAT ARE THE FIRST AND LAST HOURS OF YOUR DAY LIKE?

A: The first hour and the last hour are very similar. I spend those times communicating with people either talking on the phone, in person, or via email. Now at the beginning of the day I like to get out and spend time with my front line people and talk to them directly, to see how they perceive things and see how they're doing.

Q: WHAT DO YOU DO TO HELP YOU NOT TAKE YOUR WORK TO SERIOUSLY?

A: Well I think you have to keep it all in perspective. The most important thing in life is the value of the individual and lets make sure that we're not just burning up people as we grow our company. Let's make sure people are being developed. Let's keep it all in perspective. Life is short. And yes, we do want to be the best and yes, we are in business to make a profit and we're not going to negotiate those things.

Q: WHAT ARE YOU PASSIONATE ABOUT?

A: I'm very passionate about my family. I think that is part of having a balanced life and it's important to your overall health. I'm very passionate about my business. This business is almost like a child to me. And I'm passionate about the people in our company enjoying their working environment while being productive.

There are some social issues that I'm very passionate about – education in the community - particularly K-12. We have a great university in our country – the best in the world – but our K-12 system needs a whole lot of work. We spend a good bit of time volunteering in that area in the community and most of our community involvement as a company is aimed at education and juvenile justice issues.

Strategic Personnel Planning:
How to identify, select, and retain top employees
By: Bob Porter, EMBA '90

bob porter
EMBA '90

"The reader who implements this system should expect...higher performance, lower stress, and lower overall cost..."

Who Should Read This Article and The Benefits Offered:
Small to medium sized business owners and division managers. This paper will outline an integrated system of best practices to create a repeatable process for identifying, selecting, and retaining high performance employees. The best practices integrated are: (1) strategic personnel planning, (2) role definition using personal behavioral style and skill assessment tools, and (3) behavioral interviewing. The practices are used to match employee and organization expectations during all stages in the organization's lifecycle. The reader who implements this system should expect to develop an organization with higher performance, lower stress, and a lower overall cost of hiring and retention.

Three Essential Rules of Strategic Personnel Planning (SPP):

1. Align organizational and employee expectations:

    - Organizations have expectations – these are developed in the strategic planning process.
    - Employees have expectations – these come from their career plans and personal life goals.
    - Unmet or unaligned expectations between the organization and the employee are a major cause of stress for both the organization and the employee.

2. Recognize the organization's lifecycle and match employee personal styles and skills to each stage to maintain prime performance:

    - Organizations and people are living organisms – there are different kinds of each and each goes through a lifecycle as they develop.
    - People with different styles and skills are needed at different points in an organization's lifecycle.
    - The optimum for both the organization and the employee occur when the organization's developmental needs match the employee's developmental strengths – this is true teamwork, and it leads to a high performing adaptive organization.

3. Define and use a process for selection, hiring, and retention:

    - If something is important, you must use a repeatable process to achieve repeatable satisfactory results.
    - Building and sustaining an organization is very important.
    - You therefore must use a repeatable process to build and sustain your organization. Note: the smaller the organization, the more important this process is; yet ironically the less it is followed because smaller organizations don't take the time to learn how to do it.

Rule One - Individuals and Organizations Have Powerful Expectations
The goal of most organizations is to make a profit now and in the future. Typically

we focus on the expectations of our organization as we make personnel decisions. While employee expectations are not ignored or abandoned by management, they are rarely featured or listed at the top of selection or motivation criteria. A well-developed strategic plan should be driving the organization toward the goal of making a profit now and in the future. An outstanding strategic plan addresses the human capital needed to achieve the goal – think of this as a strategic personnel plan (**SPP**). If your company's strategic plan does not carefully address the element of human capital, it is most likely not going to be a driving force to make your company a great one that sustains its position in the market. This is more than planning how many people you need to hire by position on an organization chart.

Organizations often expect more of an employee than they can deliver. Unmet expectations are a key cause of the worst kinds of stress. Is this the fault of the organization, or the employee? Surprisingly, a greater problem for the organization is an employee that appears to be a good performer, but who leaves the organization because their individual expectation about the role they play was not met. While you found the right person for your team, they later chose on their own to leave. Now you are back at square one.

These conditions, met and unmet expectations, are illustrated below in Figures 1 and 2. Note the gap in expectations in Figure 1 between Employee A and the Organization and envision the stress. Figure 2 shows for illustration purposes the near perfect match between Employee B and the Organization. Realistically, the expectations of the Organization have not changed much, the point here is to hire Employee's that share the Organization's expectations, and also allow the Organization to flex to match the Employee's expectations. Don't assume that expectations will align over time, they rarely do.

Stress Is Caused By Unaligned Expectations
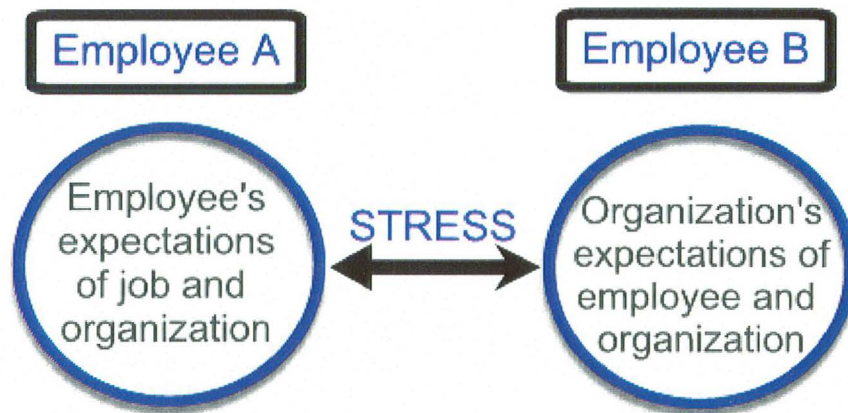
Lack of Alignment in Expectations Leads to Stress
(Figure 1)
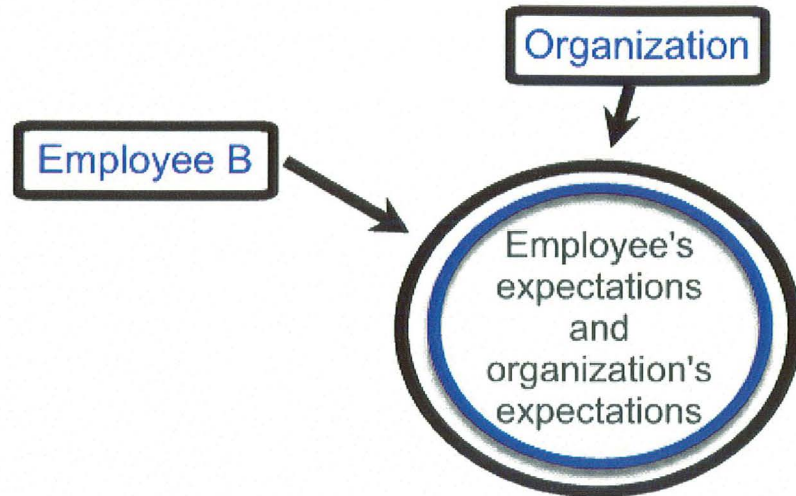
Aligned expectations leads to reduced stress – Match is key
(Figure 2)

Rule Two - Organizational Lifecycles and the Differences in People
Much has been written on both of these topics. There is an essential connection between the two, and you must judge for yourself the fundamental power of this relationship.

From birth to death, we pass through many stages of development. The parallels are straightforward as we apply these human lifecycle terms to our developing business. Classically and simply the stages range from:

Human Stages of Development	Business Stages of Development
Infancy	Start-up
Adolescence	Rapid Expansion
Early-adulthood	Early stability, still agile
Middle-adulthood	Very stable, typically growing bureaucratic
Late-adulthood	Declining

Too often the small business owner begins a business fueled by passion and hard work, and then fails when he hits the first real plateau of growth. Why? Not only are his skills often inadequate for the next stage of development, but his expectations of personal wealth or achievement are not shared by the small staff currently working for him - they are not owners, they are after all just employees. Recognize also that an organization requires not only different skills, but also often different employees with various personal styles as it moves through the stages of development. Your strategic personnel plan must address the stages of development your organization will be experiencing. Don't expect all employees to remain universally competent as the organization develops. You may apply these

comments at all levels of the organization. Leadership skills and styles must evolve and adapt with each new phase of development. For a thorough discourse on this, see the work of Adizes[i] and Gerber[1].

And consider the differences in people? We know that no two people are alike. Personal styles, based on behavioral tendencies, have been defined and debated for many centuries as to root cause and classification. At Management Insights, the dimensions of personal behaviors, identified by Marston[ii] and subsequently refined into the DiSC Personal Profile System®[iii], have been used very effectively as a tool to help individuals understand their personal style and resulting behaviors. Other effective systems and tools are available and should be considered based on your company's needs. Very simply put, people are either outgoing or not, and also are either task or people oriented. Where do you find yourself? Outgoing and task oriented – in a management role? Perhaps outgoing and people oriented – in a sales role? A bit more inwardly focused and task oriented – in a quality assurance or accounting role? Or inwardly focused and people oriented – a teacher? The Personal Profile System identifies 15 classical patterns of personal style that will aid you in matching employees to your company's current lifecycle stage.

Rule Three - The Process: A Convergence of Best Practices

How much does it cost your company to hire and prepare someone to do a good job? It's more than you care to admit. Most managers and owners know that their organization can do a better job. As with any improvement or new organizational habit, it will take work on your part as the leader of the organization acting as a change agent. New habits are formed when old practices are replaced with new ones. Here are the steps to develop the new practices.

First – Define the Role you are hiring for

The first step is to define the role that you are hiring for. This does not mean a position description, but a role description. You are defining the part, or character, if you will, that you need in your company's cast of employees and the behavior that you expect from the individual in the role you are hiring for. You will define the role for all of the important scenes, continuing with our metaphor, that the individual must perform well in. How do roles differ from positions? Roles focus on the "how the job gets done" instead of the positional focus of "what needs to be done." With the role, you are not overlooking the results; instead you are working to get at the underlying behaviors needed to accomplish the results.

A good role checklist will have 20 to 30 items. You should rate each one in terms of importance for the role you are defining. Examples include:

- Directing others in their daily activities and giving them feedback to help them achieve their results
- Settle conflicts with customers
- Carefully analyze alternatives and make recommendations in a timely manner based on the alternatives
- Developing a written process that yields repeatable results
- Assumes the responsibility to complete tasks at the detail level

And so on. Use several people in your office to develop and complete this role definition. Spend the time up-front clarifying the job requirements, what is needed, selecting, and training/introducing to insure success. You will spend the time in correcting and rehiring and dealing with poor customer satisfaction if you don't

"Leadership skills and styles must evolve and adapt with each new phase of development."

"Roles focus on the 'how the job gets done' instead of...'What needs to be done'"

spend the time up-front.

This part of the process applies to new roles and new hires as well as transfers within the company. Your ideal candidate should fit this role like a well-selected glove. You will determine this fit through a combination of evaluation tools and interviewing.

Evaluation Tools
The scope of this paper does not permit a thorough review of all of the tools available. Use some common sense, and review both existing success stories, and past failures in your organization regarding the role in question. Ask:

- What level of cognitive ability and problem solving is required? Consider the tools from Wonderlic[iv] or a similar product.
- What type of personal style will work best in the position – don't overlook future changes that the **SPP** has already identified. Consider the DiSC® tools from Inscape Publishing or a similar product to describe the role (Role Behavior Analysis).
- What specific technical skills are needed? These will range from typing skills to scientific or medical skills. Consider software based assessment tools, or use a specific set of typical problems that your own employees must solve everyday and measure the response from your candidate.
- What else you should objectively assess? Refer back to the role description.

"...you can assess just about any element of skill and personal style that plays a key part in the role."

The point here is you can assess just about any element of skill and personal style that plays a key part in the role. Think of the assessments like an X-ray used to examine key points that are not obvious to the naked eye. Use evaluations to identify candidates that have the potential to make the grade into the high potential pool. Use a prioritizing system to develop a short-list candidate slate. As with all of the
steps outlined in this article, use them consistently with all candidates. Don't count on the tools alone to do your job. The tools are simply a component of the evaluation process. This is the best defense against a lawsuit based on discrimination.

Interviewing Effectively and Efficiently
At this point, you have defined the role and you have identified candidates that should perform with high potential. It is now time to interview your short-list of candidates. A great deal has been written on this subject, and the basic concepts have been adapted and summarized below:

It is recommended that you use the following steps:

1. Identify the behaviors that you want to verify your candidate possesses. This is where your defined role comes in. A behavior is a response to a given situation. You are looking for the individual's response, not how the group that the individual worked with responded.
2. Develop a list of questions to find out if your candidate responds the way you need him to in key situations. You must ask a question that compels the candidate to answer how he or she responded in a real situation, what they did in the situation, and how the situation turned out. Whether the situation turned out positively or negatively is not the key issue, you are trying to insure that the candidate actually responded with the behavior you are searching for.
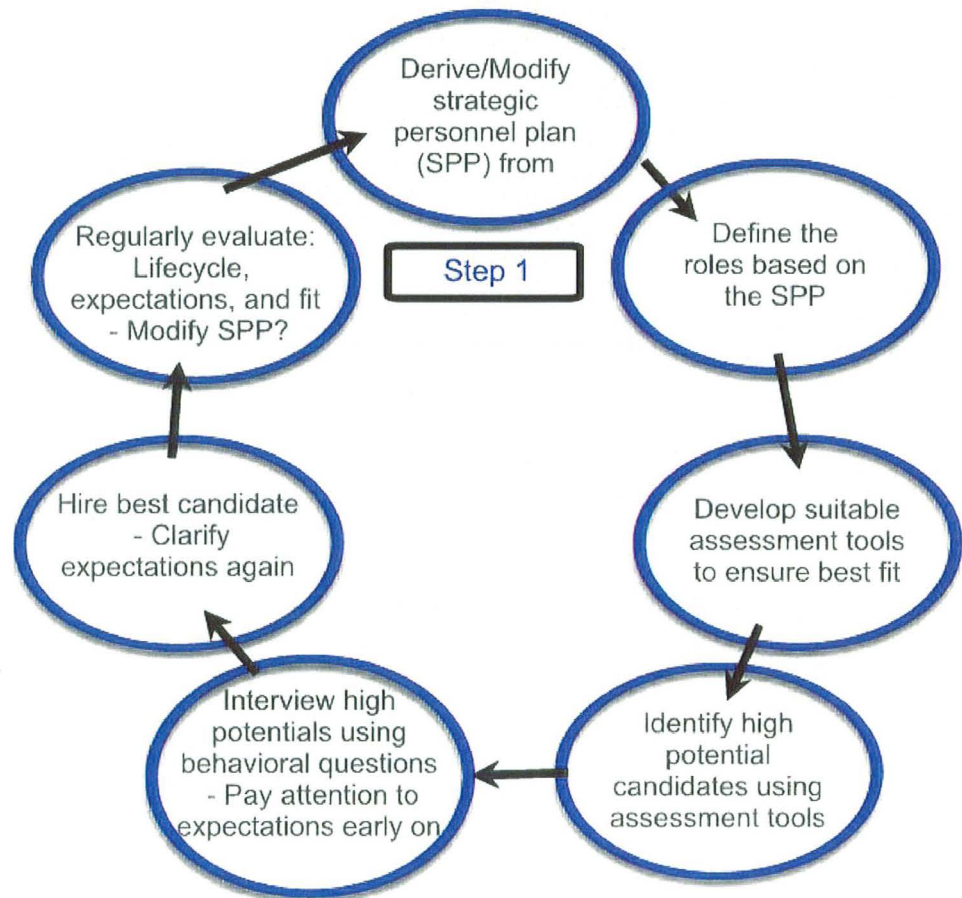3. If possible, use two or three people to conduct the core of the interview.

Assign each one questions to ask the candidate. Use overlapping questions to get more than one set of answers on key behaviors.

4. As soon as possible after the interview, get the team together and integrate the answers using a scoring system. Keep the scoring as objective as possible.

You should interview a minimum of two candidates for a position. Obviously, use the same process for all candidates. If you have more than three or four high potential candidates, you are either very blessed with great applicants, or your initial evaluation system was not tight enough. Schedule the candidates as closely together in time as possible so the comparisons can be fresh.

The best practice here is to take the time to define the role, identify and assess for the skills needed, and verify that the candidate under review is a great fit in all of the key areas in a win-win outcome. You are not looking for a passable fit; you are looking for a great fit. A well-run process should yield two or more candidates that you will have some difficulty choosing between.

While outside the scope of this article, the reader is encouraged to thoroughly research the topics of background checks, total compensation, ongoing training, and career development from within the organization. And as noted earlier, nothing in this article should be construed as legal advice, consult your attorney for that.

Pulling It All Together – Convergence of Best Practices

- Derive/Modify strategic personnel plan (SPP) from
- Step 1
- Define the roles based on the SPP
- Develop suitable assessment tools to ensure best fit
- Identify high potential candidates using assessment tools
- Interview high potentials using behavioral questions - Pay attention to expectations early on
- Hire best candidate - Clarify expectations again
- Regularly evaluate: Lifecycle, expectations, and fit - Modify SPP?

Overview of Process Flow
(Figure 3)

Summary

Put a good deal of thought into your strategic personnel plan. Work out a clear definition of key personnel roles. Identify and use assessment tools to identify your list of high potential candidates. Interview the high potentials to verify that they have the underlying behaviors that are needed to achieve success in the roles the organization requires. Each of the above points should be developed into a reusable process. After hiring, regularly evaluate organizational and employee expectations to keep negative stress at a minimum. Regularly assess the strategic personnel plan to account for lifecycle changes and adjust as needed.

Author's Bio

Mr. Porter's undergraduate degree is in engineering with an emphasis on electrical design and computer software systems. He is a graduate of distinction from GE's renowned two year Manufacturing Management Program. He has worked domestically and internationally for GE, NCR, and AT&T. He graduated first in his class '90, from the Rollins College Crummer School of Business Executive MBA program. He was the Chief Technical Officer for a NASDAQ startup, participated in several IPO's, and helped organize and start an independent community bank, Florida Choice Bank, where he serves as a board member. Mr. Porter currently serves as a Director of Management Insight, Inc. a consulting company that works with owners and managers who want to grow their business, and people who want to start a successful business. Areas of focus include strategic planning, team building, and balanced life planning.

After hours he directs MultiSport Training Club, Inc. a non-profit company he co-founded, dedicated to central Florida triathletes. He specializes in training cyclist for individual and team events. In April of '01 Mr. Porter's rode the cycling section on a team that took first place in an Olympic distance triathlon. This achievement underscores the point that properly set expectations can often serve as motivation to overcome natural limitations - Mr. Porter received a total hip replacement in 1989, some 2

[i] Adizes, Ichak, Ph. D. – *The Pursuit of Prime,* Santa Monica, California; Knowledge Exchange, 1996.
[ii] Gerber, Michael, *The E-Myth Revisited;* Harper Collins, 1995.
[iii] Marston published *Emotions of Normal People* in 1928 and presented four principles of primary emotion. This eventually became the DiSC model where (D) is for Dominance, (i) is for Influence, (S) is for Steadiness, and (C) is for Conscientiousness.
[iv] Copyright Carlson Learning Organization, now Inscape Publishing, features the Personal Profile System based on DiSC.
[v] The Wonderlic Personnel Test (WPT®) is an accurate measure of general adult intelligence that allows you to match individuals with positions that best suit their learning speed and problem-solving ability.

The Next Big Thing: Wireless Internet

By: Prasad Sundararajan, MBA '96

prasad sundararajan
MBA '96

"The birth of Wireless Internet creates the World's largest addressable electronic market "
JPMorgan, 2000

According to research firm International Data Corp. (IDC), by the end of 2002, there will be more wireless subscribers capable of Internet access than wired Internet users.

Although the U.S. lags Europe in wireless Internet adoption, growth in the U.S. from 1999 to 2000 was 89.4 % versus 48.2% in Europe, according to Cahners-In-Stat Group.

Forrester Research Inc. of Cambridge, Mass., predicts that 80 million Americans will use mobile data services by 2005, with the majority using cell phones rather than PDAs for access.

Wireless Financial Services (WFS)

Wireless Financial Services (WFS) is a natural progression from Online Financial Services (OFS) and could have a potentially huge impact on the way users conduct online financial transactions. WFS applications will range from simple banking on the move to enabling financial settlement for every e-Commerce/ m-Commerce transaction carried out via a user's mobile device.

Financial institutions are at the forefront of adopting wireless technology for customer services. European banks already see wireless financial services (WFS) as a killer application of the wireless Web. According to Yankee Group (June 2001), financial applications will be accessed by 50% of the 74 million wireless Internet users in the United States by 2005.

"By 2005, the financial services industry is expected to spend $699 million on wireless IT services. By that time, the number of WFS customers in North America is expected to hit 35 million"
- Tower Group, 2000

- Fidelity Investments has made its InstantBroker wireless trading service available to the subscribers of a number of leading wireless firms such as Nextel, Verizon and Sprint PC
- Bank of Montreal has teamed up with 724 Solutions, a Toronto based wireless technology firm, to offer wireless banking services to other financial institutions.
- NetBank, the only public-traded profitable net only bank started offering wireless financial services from September 2000.
- Wells Fargo Bank has launched Wells Wireless, a nationwide service allowing consumers and small-business customers ready access to their finances through wireless Web ready Sprint PCS phones and Palm VII devices.

M-Commerce

M-commerce is the second coming of the e-Commerce revolution. M-commerce refers to the conduct of e-commerce from mobile devices. M-commerce offers a new channel for accessing customers for both brick and mortar and Net companies. Moreover, any industry that can offer benefits to customers based on time and location is apt for speedy m-commerce deployment.

Worldwide Mobile Commerce Revenues, 2000-2005 (in billions)

Region	2000	2001	2002	2003	2004	2005
Asia	$0.4	$1.3	$2.6	$5.0	$7.4	$9.4
Latin America	$0.0	$0.0	$0.0	$0.1	$0.2	$0.5
North America	$0.0	$0.1	$0.2	$0.7	$1.8	$3.5
Western Europe	$0.0	$0.1	$0.5	$1.7	$4.6	$7.8
Rest of world	$0.0	$0.0	$0.1	$0.2	$0.4	$1.0
Total	**$0.4**	**$1.5**	**$3.4**	**$7.7**	**$14.4**	**$22.2**

Source: Jupiter Research, 2000

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In the US, comparative estimates for m-commerce revenue in 2004 vary greatly. While Ovum and Merrill Lynch forecast an m-commerce industry worth $20 billion, Herschel Shosteck Associates forecasts that it will not even reach $1 billion by 2004.

If m-Commerce is to take off and flourish as predicted by industry analysts, consumer concerns regarding security and trust need to be addressed effectively. Wireless Internet security solutions and appliances that can be easily integrated into the overall corporate e-Commerce infrastructure will be essential for achieving rapid m-Commerce revenues.

The following section explains about wireless application protocol (WAP), a leading specification for mobile Internet communications and its security features.

Wireless Application Protocol

The universal and non-proprietary wireless application protocol (WAP) is emerging as the leading specification for wireless services. WAP enabled mobile phones, PDAs, smart phones and other communicators, are capable of accessing information from corporate networks or Web sites, or engage in m-Commerce from anywhere and at anytime.

How WAP Works?

When a WAP-enabled device connects to a wireless network and requests access to a Web site that supports WAP, the mobile device sends the request via radio waves to the nearest wireless cell, where it is routed through the Internet to a gateway server. The gateway server translates the request into the HTTP format and sends it to the Web site. A WAP request is routed through a WAP gateway, which acts as an intermediary between the "bearer" used by the client (GSM, CDMA, TDMA, etc.) and the TCP/ IP computing network that the WAP gateway resides on.

A WAP gateway is a system that WAP devices communicate directly with, and any content delivered to WAP devices via IP networks (like the Internet) must travel through these gateways on their way to mobile device screens. The most important function of a WAP gateway is the protocol translations that are necessary to connect the TCP/IP-based world of the wired Internet with the WAP-based world of wireless mobile devices. Converting between WAP's wireless session protocol (WSP) and the Internet's HTTP is another central function of any WAP gateway.

> "By 2004, approximately 30 million m-commerce users, spending $50 each, will purchase $1.5 billion dollars worth of goods and services on mobile devices."
> **eMarketer, 2001**

The data is formatted as WML (Wireless Markup Language), a markup language based on Extensible Markup Language (XML). Once the WML has been prepared (known as a deck), the gateway then sends the completed request back (in binary form due to bandwidth restrictions) to the client for display and/or processing.

Wireless Security

Security is one of the highest strategic priorities for businesses offering wireless services. Similar to the wired Internet environment, the four critical elements of Wireless security needs are explained below.

(1) Authentication - Positively verify the identity of the user and/ or the device.

(2) Confidentiality - Protect the information from unauthorized eavesdropping and keeping it secret from all but those who are authorized to receive.

> Wireless Transport Layer Security (WTLS) is the equivalent of the popular Internet security protocol, SSL for the wireless Internet world.

(3) Integrity - Ensure the correctness of the content and/or source of a piece of information.

(4) Non-repudiation - Ability of the recipient of the transaction to prove to a third party that the sender really did send the message.

For mobile phones and personal digital assistants (PDA) to gain the market acceptance they need for critical applications, such as wireless trading, they need the infrastructure for transactional integrity, including encryption, secure authentication and digital certificates.
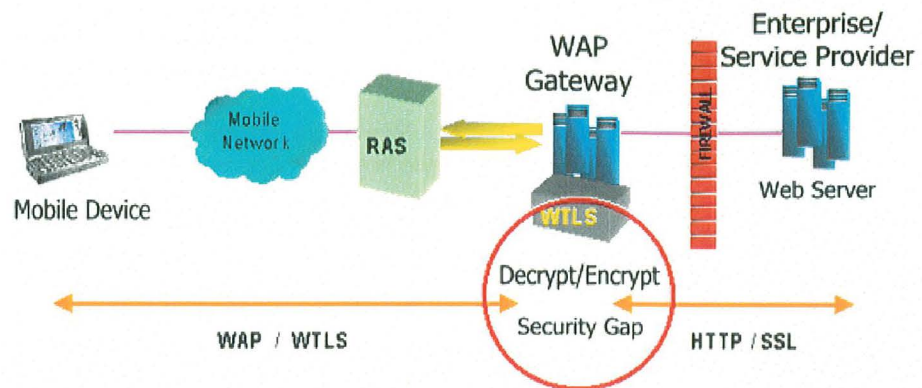
Wireless Transport Layer Security, or WTLS, provides the main security elements of WAP communications. The WTLS, a version of the TLS/ SSL, for wireless communications provide privacy, data integrity, authentication and denial of service protection for transmissions traveling from WAP devices to WAP gateways to Web servers.

WTLS can initiate a secure session by using an optimized handshake with dynamic key refreshing. Dynamic key refreshing allows encryption keys to be updated on a regular and configurable basis during a secure session. This not only provides a higher level of security, but also provides significant bandwidth savings on the relatively costly handshaking procedure.

The WTLS protocol is composed of three layers: the handshake protocol layer, the record layer, and the alert layer. The handshake protocol layer manages the secure connections and key exchanges, and provides client and server authentication. The record layer handles privacy and data integrity, and the alert layer reports error conditions and handles the close alert.

The handshake protocol takes place when the client and server first start communicating, and is where they agree on a protocol version, select cryptographic algorithms, authenticate each other, and use public-key encryption to generate a shared secret. First, the client and server exchange hello messages, which is where they agree on algorithms. Then they exchange the necessary cryptographic parameters, and certificates. The handshake layer provides the security parameters to the record layer.

Current WAP Gap Problem:

WTLS Performance Problem

Wireless Transport Layer Security (WTLS) technology is the security protocol similar to the SSL for Internet. WTLS is being implemented in all the major micro-browsers and WAP servers to facilitate secure mobile transactions. WTLS insures data integrity, privacy, authentication and denial-of-service protection.

The WAP protocol version 1.3 addresses this 'WAP Gap' problem by allowing the micro-browser to store digital certificates in the Wireless Identity Module (WIM). The WTLS protocol uses digital certificates to create a secure confidential communications pipeline between the two entities, typically a mobile device and a WAP Server. Data transmitted over a WTLS connection cannot be tampered with or forged without the two parties becoming immediately aware of the tampering. However, the process is highly computational intensive and the process of encryption and decryption utilizes a lot of memory and slows the WAP gateway performance considerably. This results in lost wireless connections and unacceptable waiting time for processing the secure mobile transaction request. The performance problem in a wireless Internet is further exasperated by the inherent latency of wireless data transmissions.

Wireless LAN (WLAN)

Over the last six months, 802.11b, a standard of wireless networked communications called Wireless LAN (WLAN), has gathered momentum. The primary application for this technology is a cheap alternative to cable LAN as 802.11b is based on the LAN (local area network) standard Ethernet. Microsoft has included support for 802.11b in its Windows XP operating system to be released in October 2001. Security is provided by Wired Equivalent Privacy (WEP) protocol, but the use of higher encryption such as 128 bit affect throughput.

"In the coming month, the wireless technology firms need to address the security and performance issues..."

While adoption of WLAN systems has been concentrated in warehousing, manufacturing, and retail settings, future market growth is expected to be driven by enterprise, small office/home office, ISP markets. Other applications include add-ons to PCs, lap tops, hand held devices as well as home and business gateways.

In the coming months, the wireless technology firms need to address the security and performance issues associated with wireless Internet for speedy adoption and the 'brick and mortar' businesses who do not wish to be left behind in adopting to the second coming of Internet need to evolve a wireless strategy for their businesses.

About Author
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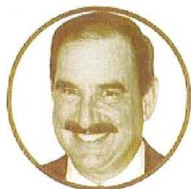mc@XEcorporation.com

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