P R E S E N T A T I O N

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THE INDISPENSIBLE TEST TEAM: GAINING AND MAINTAINING VALUE IN 2000 AND BEYOND

Terrye Ashby
Pointe Technology Group, Inc.

The Indispensable Test Team

Gaining and Maintaining Value in 2000 and Beyond

Presented by

Terrye Ashby

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Pointe Technology Group, Inc.

May 3, 2000

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The Indispensable Test Team

- Prevent the "No Testers" Sign
  - ▶ Add Value
  - ▶ Communicate Value
  - ▶ Maximize the Message

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Add Value

- Value - A Perception of Usefulness

  ▶ Expressed in Dollars & Cents

  ▶ Demonstrated Through Defect Identification

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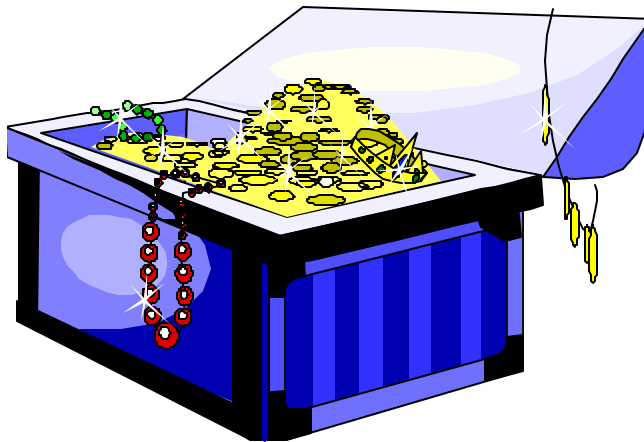
Communicate Value

- Techniques for Making Your Value Known

  ▸ Mission Statement

  ▸ Mascots, Slogans and Mottos

  ▸ Brown Bag Sessions and Presentations

  ▸ Special Recognition Days

  ▸ "You Make It, We Break It" Program

  ▸ "Testing Central"

  ▸ Release Birthday/Retirement Parties

  ▸ National Quality Month & Zero Defects Day

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Maximize the Message

- Software Development Life Cycle
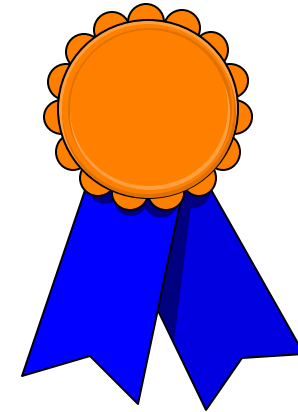
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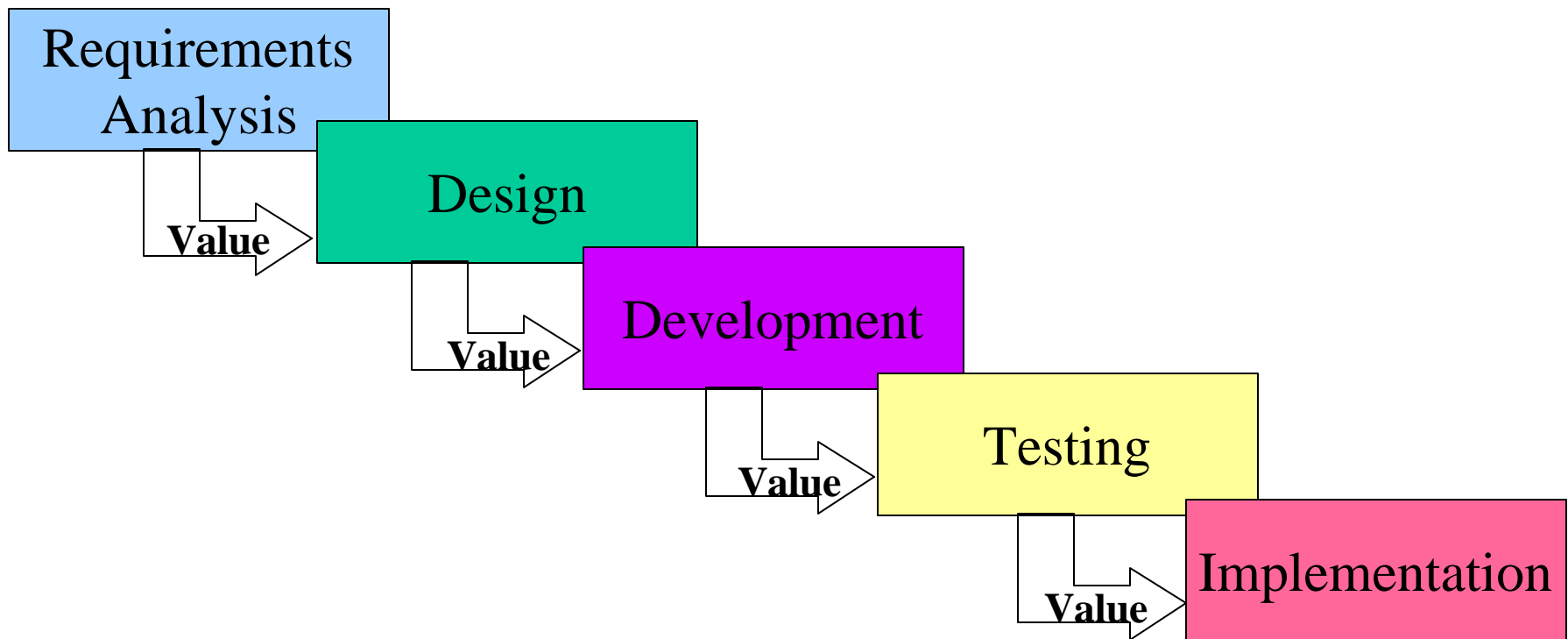
Requirements Analysis

- Develop the Mission Statement

- Introduce Mascot & Slogan

- Present Testing Methodology

- Conduct Brown Bag Session

  ▸ "The Testable Requirement"

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Develop Mission Statement

- Components of a Good Mission Statement

  ▶ Meaningful Objectives

  ▶ Linked to Corporate Mission

  ▶ Visible

- Example of a Mission Statement

Deliver services that instill a high level of confidence in the quality of the systems our customers deploy through the implementation of reliable, reusable, and repeatable processes.

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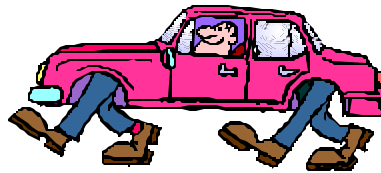# Introduce Mascot & Slogan

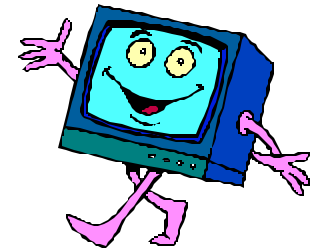- Establish a Team Mascot

- Establish a Team Slogan

- Sample Mascots and Slogans
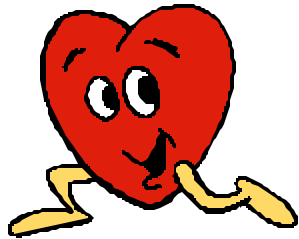
We Go the Extra Mile!

We've Got Heart!

We Make You Look Good!

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Present Testing Methodology

- Document & Publish Methodology

- Conduct Methodology Open House

- Highlight Key Deliverables

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The Testable Requirement

- ## Target Audience

  - ▸ Business Analysts

  - ▸ Requirements Analysis Group

  - ▸ End Users
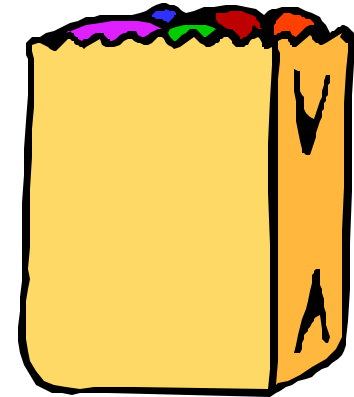
- ## Discussion Topics

  - ▸ Standard Requirements Formats (IEEE Standards)

  - ▸ Making Requirements Measurable

  - ▸ Eliminating Ambiguity

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Design

- Conduct Brown Bag Session

    ▶ "Using Test Tools"

- Celebrate "International Tester's Day"

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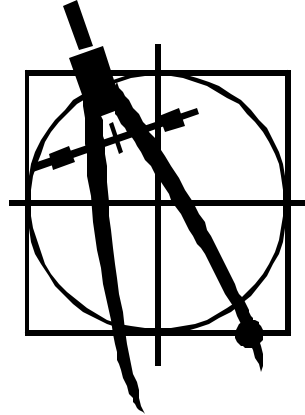
Using Test Tools

- ## Target Audience

  - ▸ Developers

  - ▸ Testers

  - ▸ Project Management

- ## Discussion Topics

  - ▸ Description of Tools (Demo)

  - ▸ Benefits of Using Tools

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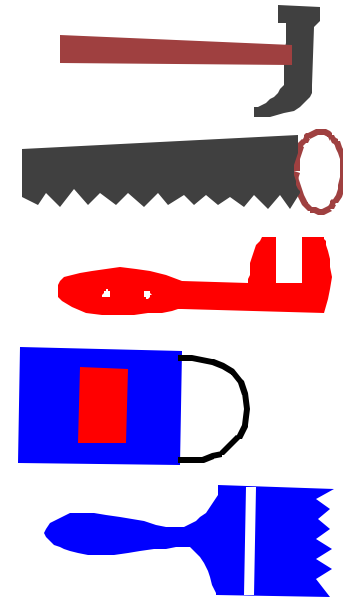
International Tester's Day

- Designed as a Team Building Activity

- Celebrate in Connection with Quality Recognition Program

- Choose a Significant Project Date for Celebration

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Development

- Celebrate "Programmers' Day"

- Conduct Brown Bag Session

  ▶ "Developing Unit Tests"
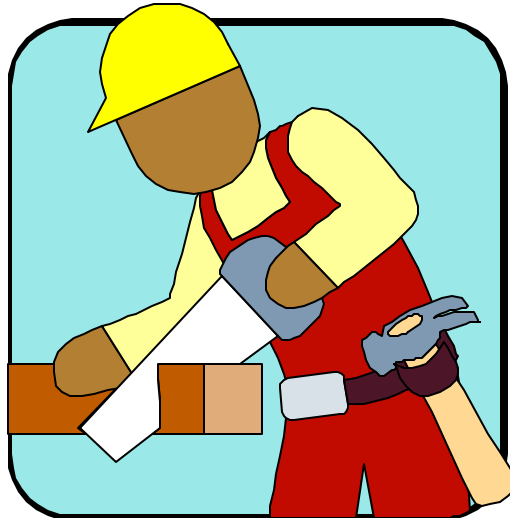
Programmers' Day

- Designed as a Rapport Building Activity

- December 10th - Birthday of Augusta Ada Lovelace

- Plan Activities to Recognize Developers

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Developing Unit Tests

- ## Target Audience

  - ▸ Developers

  - ▸ Testers

- ## Dicussion Topics

  - ▸ Path Coverage Techniques

  - ▸ Calculating Cyclomatic Complexity

  - ▸ Unit Test Case Templates

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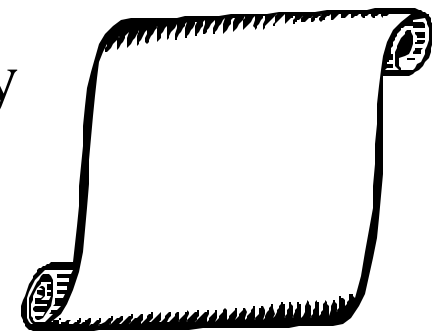
Testing

- Introduce "You Make It, We Break It" Program

- Establish "Testing Central"

  ▸ Chart Testing Metrics

  ▸ Set Up Defect Alert Corner

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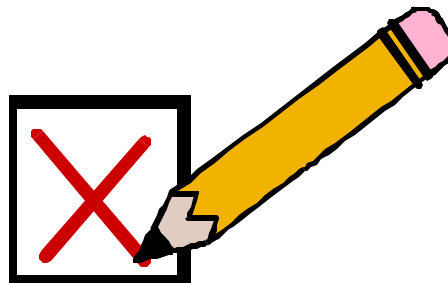
You Make It, We Break It

- Goal - To Motivate Testers to Find Defects

  ▶ Establish an Award Program to Recognize Testers Finding the Most Defects

  - Point Structure Based on Defect Severity

  - Awards Given in Formal Presentation

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Testing Central

- Establish a Prominent Place for Displaying Testing Status

  ▶ Metrics

    - Post Number of Defects Opened, Closed, Re-opened, etc.

  ▶ Defect Alert

    - Visually Represent the Number of Open Defects

Proprietary & Confidential

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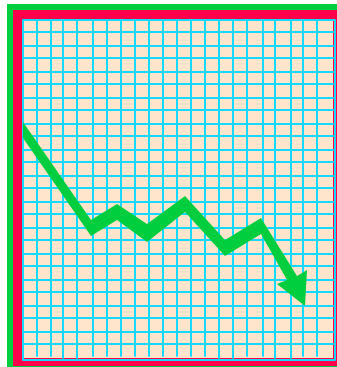
Implementation

- ## Conduct Release Birthday/Retirement Party

    - ▶ Plan a Program and Invite Project Stakeholders

    - ▶ Publish Testing Success Story

    - ▶ Present Most Valuable Team Player Awards

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Other Activities

- Celebrate National Quality Month

- Celebrate Zero Defects Day

Quality

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- Make Your Value Known!
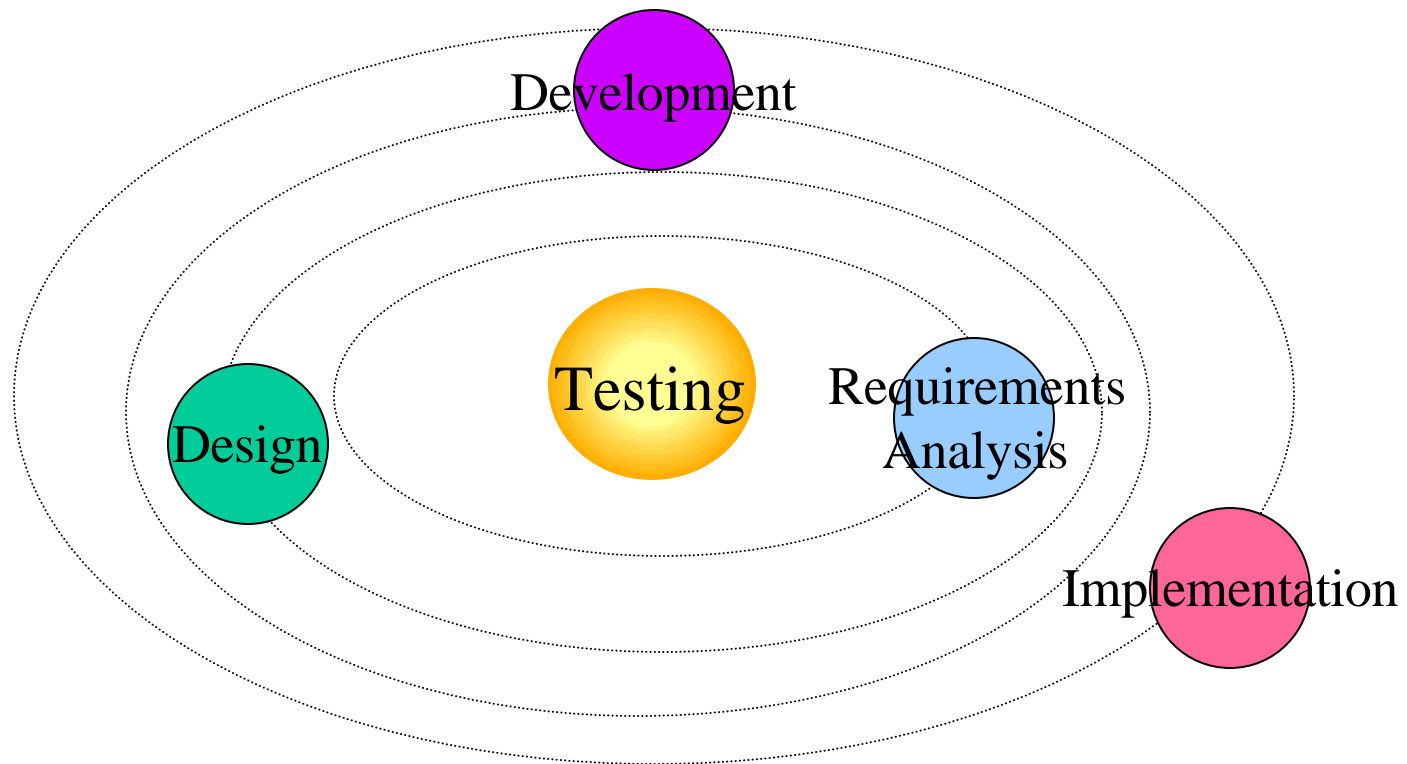
The Indispensable Test Team: Gaining and Maintaining Value in 2000 and Beyond

Presented by:

Terrye M. Ashby
Vice President Quality Assurance & Testing

May 3, 2000

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Capitalizing on the Testing Boon

Quite often in the world of software engineering, testers and Quality Assurance (QA) managers find themselves to be the "last hired and the first fired". In some IT shops, QA does not exist at all.   In spite of this, recent years have brought major breakthroughs in the areas of software testing and quality assurance. Spurred by total quality management initiatives in the 80's and 90's and the Year 2000 (Y2K) problem, software testing has reached new heights.   It was Y2K software testing that saved the world from cataclysmic meltdown and as a result, testers have been catapulted to the forefront of application development. In addition, improvements in test automation have transformed the tester into the test developer and the discipline has been taken to a new level of professionalism.

Now that you have shelved your voluminous Y2K test plans and your test team is securely in place, how can you continue to add value and keep the momentum going? How can you enhance your processes and demonstrate the value of your team to the rest of the world?

This paper is designed to answer these questions by providing fun and practical ways to help testers create an awareness of QA's value within the organization. This paper will also demonstrate how to communicate that value to project managers, development teams, clients, external organizations and other project stakeholders.

What is value?

According to the American Heritage Dictionary, value is defined as worth in usefulness or importance to the possessor; utility or merit.   Like beauty, value is in the eye of the beholder. It is something that must be perceived. Value must be perceived by the developers, the project management team, the stakeholders, and so on and so on.   Your perceived value is built upon the image that your team has established.   To be perceived as being valuable, you must possess an "image of excellence". The image will be cast when you and your team commit to applying a standard of excellence to every process, to every deliverable, and to every personal encounter with those outside your team.

Not only is value based upon image or reputation, it is also based on historical or factual information that supports the perceived image. In other words, the worth or importance of an item is relative to what the owner knows about that item. For

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example, there are many stories about priceless antiques being sold for pennies at yard sales simply because the owner was ignorant of the treasure they possessed. Value must be known and it must be real and tangible, not something virtual or imagined. The test team must show that they add real value. They must express that value in dollars and cents and demonstrate that value through maximum defect identification.

Dollars and Cents

So where does one begin to come up with a quantitative measurement of value? If your system is already in production, you probably have to look no further than your Help Desk (or similar functional area) or at your defect tracking system. Help Desk personnel and tracking systems maintain logs of all application problems reported. If your system is still in development, seek our reference materials that will provide you with industry standards and facts and figures. It is your job to collect, categorize, analyze the data and apply dollar amounts to problems that could have been avoided through adequate testing. This is what Quality guru, Philip B. Crosby, refers to as calculating the price of nonconformance (PONC); the price tag associated with doing things wrong.

Let's say for example that you collect data about a faulty function of a financial application that requires monthly manual adjustments to the general ledger. To equate this problem to dollars and cents, find out how much time is required to perform the manual adjustment. Obtain the adjuster's rate of pay and multiply these amounts to come up with a unit price. Then estimate the frequency of occurrence and extrapolate, if necessary, to develop an annual rate. Finally, multiply this total by the unit price to develop a total annual estimated price of nonconformance. Repeat this process for all of the data collected and come up with a grand total. Because "money talks", your ultimate goal is to allow the metrics to speak volumes about your value. Later, we will discuss how to share this information with project team members who have the power to make or break the test team.

Maximum Defect Identification

As testers, defect detection is our raison d'être. And so, it goes without saying that if your test team is not finding defects, then your worth or importance in terms of usefulness is probably very low. In order to be valued, you must find bugs! The "more the merrier" is good, but testing is not a numbers game. Testers should be driven and should strive to find the most severe and damaging defects. To truly be viewed as indispensable, the valued test team must pump out major defects. Later we will look at a program designed to maximize defect identification and reward the team accordingly.

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The Importance of Communicating Value

As the Holy Bible states, "No man, when he hath lighted a candle, covereth it with a vessel, or putteth it under a bed; but setteth it on a candlestick, that they which enter in may see the light." (Luke 8:16). And so it is with gaining and maintaining value in 2000 and beyond. Test teams must find ways to enlighten management and aid them in making wise software development decisions. As a manager or member of a test team, it is your responsibility to "shed the light".

Maximize Your Message

Before you take advantage of the techniques discussed in this paper, be sure you know your market. It's quite possible that your target audience will be clueless when it comes to testing. They may never have seen a test plan or a test case and they may not understand you when you start talking about traceability matrices and the like. Be cautious and know the corporate culture before you chart your course and put your plan into action. You will first have to take the pulse of the organization. Test the waters with a few ice breaking techniques before jumping in head first. The last thing you want to do is make a bad first impression. Quality can be wrought with rules and regulations and you don't want the introduction to quality to be as overwhelming as we know it can be. Especially if you are in an ad hoc development environment today, don't expect miracles overnight!   While you don't want your influence to be so subtle that it's almost subliminal, you do want the perception of usefulness to grow out of the natural course of software development events.   The following techniques will allow you to maximize the message through "show and tell", through on the job methods of mentoring, sharing and doing.

Whether your team is rapidly developing web-based applications or wading in the waterfall development method, rest assured that the following techniques can be applied regardless of approach. Whether your time to market is three hours or three years or whether you are following a model that calls for RAD (rapid application development) or MAD (mostly ad-hoc development) or SAD (structured application development), there are three unalterable constants:

Constant #1: There will be a requirement, however loosely defined.
Constant #2: There will be some sort of design and some sort of code, however technology
                        dictates.
Constant #3: There will be bugs to be found, however big or small.

The techniques in this paper describe activities that coincide with the timing of a traditional waterfall development life cycle. Keeping this in mind, consider how you

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might alter the relative timing to suit your particular needs. Fit these activities in wherever they make sense for your environment.

Requirements Analysis Phase

- Develop the Tester's Mission Statement

  The first step to creating an awareness of value within the organization is to understand where your team fits into the big picture. The test team is not just a bubble on the organization chart, but a vital group with goals and objectives. The purpose of the mission statement is to communicate the specific goals and intentions of your team. Create a statement that highlights the role of your test team and the service that your group provides. The mission statement should clearly state these team objectives. It should be evident from reading your mission statement where your team fits into the overall mission of the project and to the overall mission of the company. If there is no path that leads up the corporate ladder, then you may need to reword your statement.

  Once the statement is finalized, you will want to publish the statement, to distribute it and place it in a prominent place for all to see. Consider putting the mission statement on the inside cover of all of your deliverables and in the signature text of all outgoing email. Just for fun, you may also want to urge test team members to memorize the statement for instantaneous recall or have the statement printed on business card stock and laminated for posterity's sake.

- Introduce Your Testing Mascot and Slogan

  Use a popular marketing technique known as branding to create immediate recognition of your value. It is true that a picture is worth a thousand words. Combined with a simple slogan, a little creative effort on your part can go a long way in planting the "image of excellence" in the minds of your target audience. The goal is to select a mascot, logo and/or slogan that achieves instant team value recognition. For example, if given the following mascots, "Tony the Tiger" and Colonel Sanders, how would you respond if asked to match mascot with the product they represent? Nine times out of ten, the immediate response would be Frosted Flakes and Kentucky Fried Chicken. And to take it one step further, without much thought you could probably rattle off their slogans as "They're Greaaat!" and "Finger Lickin' Good". As you can see, mascots and slogans are powerful tools for communicating value.

  You will want to select a mascot, logo and/or slogan that epitomizes the mission of your test team. Your choice can be something cute, funny, serious, cartoon like, whatever. The most important consideration is that your selection be professional. Get your creative juices flowing! For example, if the system your team is testing is a blood collection system, you may want to select a heart

shaped logo or one designed like a huge drop of blood.   Finally, think of a catchy phase to go with your mascot. This will be your slogan.

Again as with the mission statement, publish the new mascot and slogan, and distribute, including them in deliverables, emails, etc. Consider making buttons for the testers to wear and banners to display so you can start getting the word out. You want to keep the logo ever before your public.

- Unveil Your Testing Methodology

All work is a process and this most definitely applies to testing. There must be a process that governs how the testing gets done.   You must have a well documented approach of how you will carry out your testing activities. If you are in need of a testing methodology, refer to the National Institute of Standards and Technology (NIST) website at www.nist.gov or the Institute of Electrical and Electronics Engineers, Inc. (IEEE) website at www.ieee.org to get ideas on creating one for your organization. If there are no quality improvement initiatives in place, you may also want to review one of Philip B. Crosby's many books on the subject. Visit the official Philip B. Crosby website at www.philipcrosby.com for more information on quality improvement processes.

Once you have a documented testing methodology, plan a kick-off meeting or open house to publicize it.   You will want your hand-outs to focus on the methodology's outputs or process deliverables.   You will also want everyone on the project team to understand how the work they perform intersects with the different points in your testing process. Communicating what you actually do as a tester is key to establishing a frame of reference for the value that you add to the overall project team.

- Conduct Brown Bag Sessions

Brown bag sessions are wonderful tools for marketing your organization internally. So named, "brown bag" because these sessions are generally scheduled during lunch time and attendees are encouraged to bring their lunch. The format is informal with the primarily goal to deliver a wealth of information within 40 – 45 minutes.

Consider the topic, "The Testable Requirement", for discussion during this phase. Requirements are the lifeblood of the testing process. Poor or nonexistent requirements can mean death to your testing efforts. There is no way a tester can be successful if he or she has no idea of what to test.   And if you can't be successful, then you can't expect to add value or maintain your "image of excellence".

This marketing technique gives you the chance to put your analytical skills to good use. Quite often, to avoid ambiguity or problems with requirements, testers find themselves rewriting or creating requirements from scratch. Take a "how-to" approach and share your knowledge with business analysts, requirements analysis people, and end users. Invite anyone you think may be remotely interested in the topic. Remember this could include individuals from external groups who may be doing similar work. These groups may never have received training of this type and would welcome the opportunity to sacrifice their lunch hour to get enlightened. Also bear in mind that not only are you sharing valuable information, but you are communicating your value to everyone who attends.

Suggested areas to cover during this discussion are: standard requirements formats, how to make requirements measurable, and how to eliminate ambiguity. There are several sources available for information on requirements management and analysis, for example, IEEE Recommended Practice for Software Requirements Specifications - 830 and the Requirements Management Tools Website - www.incose.org/tools/ieee1220tax/reqanalysis.html.

Other topics that you may want to cover during this phase: Developing Client Acceptance Criteria, How to Conduct a Joint Application Design (JAD) Session, and Creating Traceability Matrices.

Design Phase

- Conduct Brown Bag Session - "Using Test Tools"

If test tools are not part of your team's bag of tricks or even if you have already made a huge investment in a suite of tools, now is a good time to introduce them to the rest of the world. Call in the developers, testers and project managers and show them how cool the tools are. Do a demo or invite a major test tool vendor to come in and show the troops how the record and replay features can animate a testing session. This is guaranteed to get a few aahs and oohs from the crowd.

Remember that automation is not a silver bullet to eliminate all of your testing woes. Although, it can be a very powerful weapon, if used strategically. Be ready to respond to the skeptic's questions about time and cost savings. Make sure that you have done the math to calculate the return on the investment before asking upper management to sign on the dotted line. You should be armed with statistics that demonstrate the amount of time it takes to manually execute your existing baselines. After you subtract the cost of the software, training and learning curve, the numbers should speak for themselves in terms of pay back.

Use this brown bag session as an opportunity to present the clear benefits of having an automated regression test baseline and to demonstrate all the other wonderful things the tools can do. If performance is a sensitive issue with your

application, you may also want to invite end users and show them how these tools can be used to anticipate and pinpoint response time problems.

- Celebrate "International Tester's Day"

  Add International Tester's Day to the list of invented or concocted holidays designed to pay homage to a select group of people like Bosses Day or Left-handed Cabbies Day.   This holiday of sorts was instituted as a team building activity to give recognition to testers and to highlight the achievements of the test team. Make this a fun day to let the entire team know how much the testers are appreciated.   Especially during the design phase, when the project is just beginning to take shape and major test deliverables are still under construction.

  Choose any day of the year that you might deem as having some significant value. For example, choose an infamous Y2K date like September 9 or March 1 or a date that commemorates the day your team found a major bug. You may want to celebrate on the anniversary date of your system's maiden voyage into production or some other major project milestone.

  Use this activity as a time to help the testers to get to know each other. One idea for this celebration is to conduct a diversity luncheon where each member of the test team brings in a special dish representing their culture, heritage or national origin. Give each tester an opportunity to talk about the dish and tell stories about the preparation, ingredients, etc. Invite members of other teams to take part. This activity will serve to break down barriers and foster a better sense of teamwork among the testers.

Development Phase

- Celebrate "Programmers' Day"

  Another new holiday to add to your Hallmark list is Programmers' Day. Programmers' Day can be celebrated at any time, but it's suggested celebration date is December 10 in honor of the world's first programmer, Augusta Ada Lovelace.   Read   more   on   Ada's   history   at www.soft.com/News/TTNOnline/ttnjan99.html or in the book, "Programming and Problem Solving with Ada", by Dale, Weems, and McCormick, Jones and Bartlett, 1997.

  Use "Programmers' Day" as your big day to win development friends and influence key people.   Remember that your ultimate goal is to strengthen the bond between testers and developers prior to the execution of the first test. If a

relationship has already begun to form, then it will be easier for you to deliver bad news with a smile during testing.

You will want to use this day to show the developers how much you appreciate them for their work. You might consider sponsoring a luncheon on their behalf. Sending them electronic cards or emails to let them know that you appreciate them is a nice gesture also.

- Conduct Brown Bag Session - "Developing Unit Tests"

In order to begin the testing phase, certain entrance criteria must first be met. One such criteria, is the receipt of unit test results from the developers. What are unit test results and why do the testers care about receiving them? A brown bag session on "Developing Unit Tests" is a perfect opportunity to educate developers and testers alike on unit testing; the first test step to ensuring a defect-free product.

Define white box testing and provide a brief overview of the paper entitled, "Structured Testing: A Testing Methodology Using the Cyclomatic Complexity Metric" (NIST Special Publication 500-235). This information will inform testers on how to find the minimum number of independent paths through the code to be tested.

As an added bonus, provide the developers with templates and sample unit test cases to help them get started. Demonstrate how the results should be recorded so that the entrance criteria can be met. At the end of this session, you will have imparted valuable knowledge and ensured that the developers fully understand your requirements for starting the testing phase of the project.

Testing Phase

- Initiate "You Make It, We Break It" Program

As mentioned earlier, one way to assure your value is to maximize the defects that are found. The "You Make It, We Break It" program is a wonderful way to motivate testers through a little friendly competition. This program was introduced in 1996 by Robert Hicks of Bell Atlantic's Broadband Systems Testing Group. In general, the program involves a plan and documented rules to award testers who find the most critical defects during testing.

Establish a point structure based on the number of defects found and the severity of these defects. For example your point scale might be 20 points for a critical defect, 15 for a high severity defect and 10 and 5 for medium and low respectively. You may wish to give awards weekly or monthly or at the end of the project cycle. Make the awards worthy of the effort and long hours it will take to achieve them.   Some suggested ideas for prizes might be an extra day of personal leave, a gift certificate at a trendy restaurant or a coveted software tool

or hardware peripheral, like a desktop color printer. The key here is to motivate, motivate, motivate. And in doing so, you will be storing up the hard data needed to support your perception of value.

- Establish "Testing Central"

During testing, the testers' work area becomes a very popular place. Use this to your advantage! Like a billboard along a highway, you want to get the message out to all the passers by that the testers are busy finding bugs. Establish a "Testing Central" using a bulletin board, white board or similar space where testing status can be displayed for all to see. If possible, secure a location on your company's Intranet, as well. You may want to create this area during the requirements analysis phase and inaugurate the space with the placement of your mascot, motto or slogan. Later you will want to add metrics to show the number of test cases created for each functional test area or the number of defects opened or closed on any given day, or the number of defects re-tested. You may even want to use this area to display posters about upcoming brown bag sessions or other presentations. The sky's the limit with the type of information that can be shared.

Make the area attractive and inviting! If you are using test management or defect tracking tools, then it should be easy to create colorful charts and graphs. Data stored in MS Excel spreadsheets or the like can be easily converted into interesting charts and graphs. Do a little pre-planning to ensure that you create meaningful and visually appealing reports.

A little extra effort in setting up an area such as this will keep you from repeating the same message over and over to all interested parties. Most importantly, "Testing Central" will prove to be a great marketing tool for communicating your value.

Implementation Phase

- Conduct Release Birthday/Retirement Party

Cut over day has finally arrived! The target date, whatever it may be is probably indelibly etched on your brain. The date rolls off your tongue like the date that Columbus discovered America or some other very important date. After all, this is a major milestone and as a member of the test team, it is your responsibility to capitalize on this. You can do this by recommending that your team host a release party to recognize team accomplishments. Invite the key project stakeholders. Plan a short program that features the managers from each functional application area. Include a humorous talk by the test team lead or manager that highlights the testers impact on each functional area. Conclude the meeting with most valuable player awards that are nominated by team members.

If the system is brand new to production, then you may want to make it a birthday party format. If there is a lot of end user sensitivity about the new system because of downsizing or resource displacement, then you may want to make the theme more of a retirement party. In this way, the users can bring closure to the relationship that they held with the retiring legacy system. Invite an end user to deliver remarks or fond and funny memories about the retiring system. And of course, food (complete with sheet cake) is essential to make the celebration worth attending.

In any event, the goal is for the test team's value to shine through the celebration. So make the recommendation and take the initiative to plan and conduct some sort of implementation celebration. In doing so, you will be able to ensure that the message of the test team's value gets communicated until the bittersweet end.

Other Activities

- Celebrate National Quality Month (NQM)

  The American Society for Quality (ASQ) instituted National Quality Month in the early 1980's as a week long celebration to heighten quality awareness. Now a month long event, the ASQ publishes a guide to help you plan. The guide includes a list of the top 25 NQM ideas for events to plan during the month of October. For example, send "Thank Q" notes or email quality quotes during the month to team members and project stakeholders. Check out the ASQ website at www.asq.org for more information on NQM celebration. Tailor this celebration to suit your individual marketing needs so that you get your test team's quality message heard.

- Celebrate Zero Defects (ZD) Day

  Zero Defects Day was instituted by Philip B. Crosby as a quality commitment event and is one step of his 14 step quality improvement process. ZD Day is intended to communicate to every individual on the project team through a personal experience that improvements have been made. The timing of the celebration of this day is critical to it's success. ZD day must be planned to coincide with significant signs of reduction in the PONC.

  ZD Day is designed as a day for management to show their commitment to quality and quality improvement processes. Revisit the mission statement and give quality recognition awards to individuals who have personally embraced the quality improvement initiatives. Invite the project sponsor to make a speech and equip him or her with statistics that demonstrate how PONC was reduced through the testing efforts. Make sure there is a camera on hand to capture the Kodak moments. Without a doubt, pictures of the event should find their way to "Testing Central".

Pointe Technology Group, Inc.

The Center of the Universe

It is not enough for those involved in software development to simply perceive the test team's value, as mentioned earlier. They must be able to see how good you are in black and white. If you employ the internal marketing techniques described in this paper, an awareness of your value will be known. The business analysts and end users will come to realize that they need your input to ensure that requirements are testable. The designers and developers will become accustomed to having you "save their necks". Even the configuration manager will seek your reassurance that all major components are in the build. But most importantly, the project manager and other stakeholders will count on you to give the true and accurate picture of the risks and rewards of moving to production. If you are successful in creating this "image of excellence", the test team will be strategically placed at the center of the software development universe. And not in a self-serving, self-centered kind of way, but in a way that seeks to illuminate the path to defect-free software products and deliverables.

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Mrs. Ashby joined Pointe Technology two years ago after a 14-year career with Bell Atlantic, a regional Bell operating company. Beginning as a COBOL programmer, Mrs. Ashby has been involved in every aspect of software development. Just prior to leaving Bell Atlantic, she established quality improvement processes and managed system, regression and performance test teams for several multi-million dollar telecommunications applications.

Mrs. Ashby holds a Bachelor of Science degree from Tuskegee University where she graduated magna cum laude. She is also a certified product specialist and certified product instructor for the Mercury Interactive suite of automated test tools.