

Paving the Road to a Software Measurement Program: How to Avoid Pitfalls, Potholes and Speedbumps

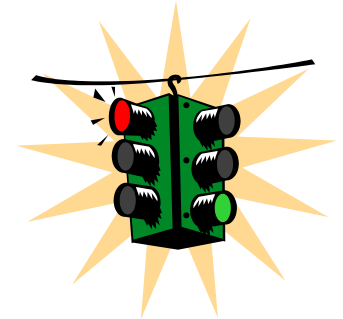
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REACTIVE: PROBLEMS, PITFALLS, OBSTACLES



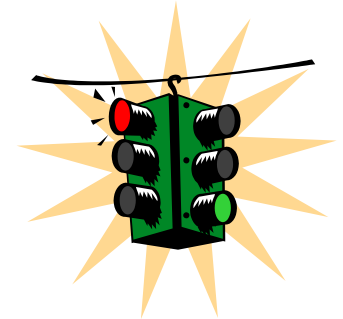
◆ Management

- Lack of senior commitment
- Not willing to invest upfront for long term gains
- Paying for expert advice but not using that advice
- Poor decision making
 - ▶ Not using input from people, who are doing work
- First thing cut when budget is cut
 - ▶ Measurement processes

◆ Stakeholders & External Factors

- Not soliciting input from customers and stakeholders
- Not considering external factors (factors outside of organization's control)

REACTIVE: PROBLEMS, PITFALLS, OBSTACLES



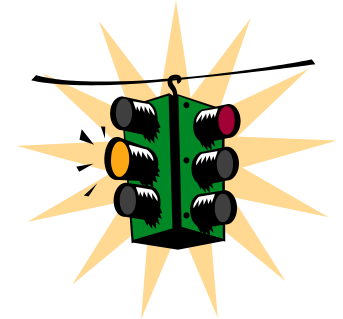
◆ Reporting & Analysis

- Too many reports
- Reports not meaningful
- Reports difficult to understand
- Poor distribution of reports

◆ Tools

- Improper or no training on tools
- Wrong tools chosen
- No integrated tool set

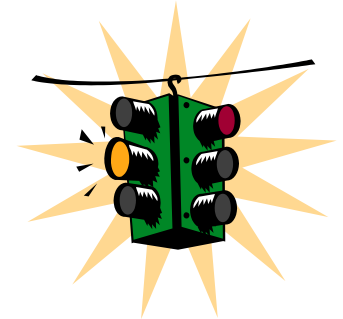
PROACTIVE: AVOIDING, PREVENTING



◆ Management

- Establish senior commitment
 - ▶ Show positive ROI
 - ▶ Speak their language
 - ▶ Have a plan
 - ▶ Align SM program with business goals
- Sponsorship
 - ▶ Senior 'evangelist'
- Procedures in place for management review on a periodic basis

PROACTIVE: AVOIDING, PREVENTING



◆ Stakeholders & External Factors

- Anticipate future requirements
- External regulations, etc.

◆ Communication

- Be open and honest
- Communicate to everyone at appropriate levels
- Explain purpose of software measurement to all

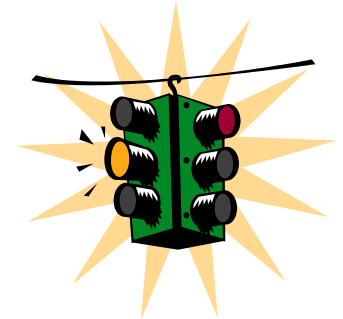
◆ Misuse of Measurement

- Set up program so that processes, not people, are measured
 - ▶ Ensure that management understands this concept

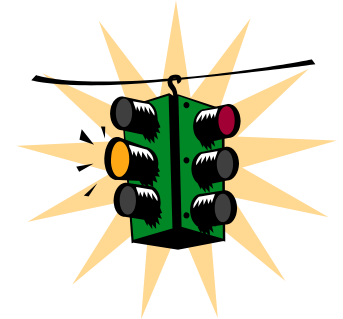
PROACTIVE: AVOIDING, PREVENTING

◆ Organization

- Assess organizational readiness
 - ▶ Mission statement
 - ▶ Executive support
 - ▶ Resources available
 - ▶ Devoted personnel
- Profile organization then incorporate into present processes to be 'seamless/invisible'
- Organizational manual for everyone
 - ▶ Purpose
 - ▶ Guidelines
 - ▶ Data collection procedures
 - ▶ Standardized data definitions
 - ▶ Sample reports



PROACTIVE: AVOIDING, PREVENTING



◆ Resources

➤ Measurement 'Champion'

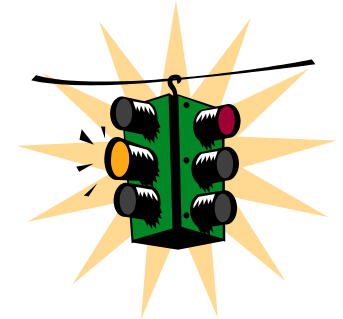
- ▶ Person that has a passion for SM
- ▶ Someone who can tell the story
- ▶ Can understand and establish role with internal & external customers
- ▶ Knows the stakeholders
- ▶ Identifies and addresses risks for internal & external customers

➤ Training of personnel at all levels

◆ Data Collection

- Automate and streamline data collection, where possible
- Archive data

PROACTIVE: AVOIDING, PREVENTING



- ◆ Design & Implementation
 - Develop a plan
 - Leverage existing processes and tools into your SM program
 - Adaptability and flexibility
 - ▶ Adapt to needs of organization
 - ▶ Answer those needs with measurement
 - Process for introduction of new metrics

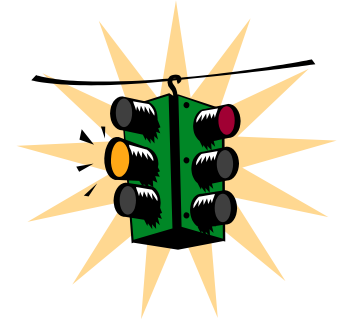
- ◆ Reporting & Analysis
 - Identify audience
 - Identify key needs of that audience
 - Identify data that will need to be collected
 - Identify frequency of reports

PROACTIVE: AVOIDING, PREVENTING

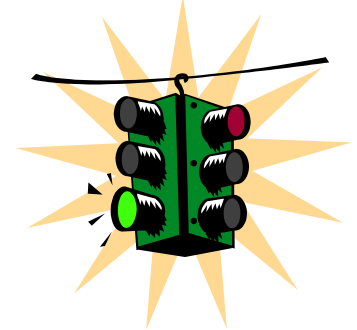
◆ Tools

➤ Evaluate metrics tools

- ▶ Cost
 - Initial
 - Maintenance
- ▶ Ease of use
- ▶ Ease of integration with existing tools
- ▶ Reporting capability
- ▶ Relevant to needs
- ▶ Vendor credibility
- ▶ Tailoring capability
- ▶ Support availability
- ▶ Security



BEST PRACTICES



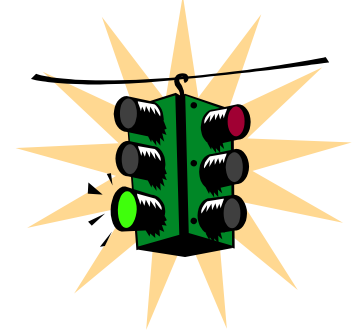
◆ Management

- Begin with management and executive support
- Obtain organizational commitment
- Choose measures that support decisions and action
- Choose measures that align with business goals

◆ Stakeholders & External Factors

- Proactive identification of needs from stakeholders
 - ▶ Fits organizational goals and vision
 - ▶ Input from sponsors and other stakeholders
 - ▶ Frequency and timeliness
 - ▶ Value to the stakeholder and the organization

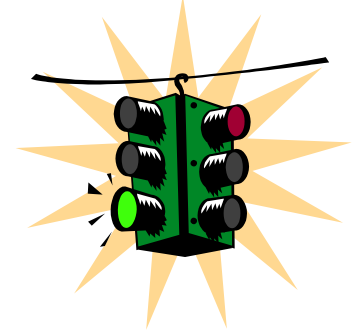
BEST PRACTICES



◆ Communication

- Communicate in timely manner
- Share success
 - ▶ Communicate success stories to everyone in the organization
- Participants need to know what's in it for them
 - ▶ Project team members need to be shown how the correct utilization of metrics can help them institute processes that will assist in creating projects that are 'better, cheaper, faster'
 - ▶ This in turn can translate into project team recognition and rewards

BEST PRACTICES



◆ Communication (continued)

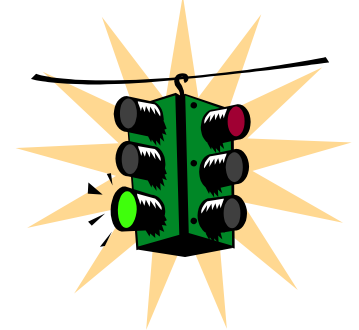
➤ Be consistent and persistent

- ▶ Make sure that everyone understands that this is not just 'the flavor of the month' and that the metrics program is there to stay

➤ Promote! Promote! Promote!

- ▶ Never miss an opportunity to promote the metrics program
- ▶ Send out weekly e-mails to the masses which can be used to both educate and promote
- ▶ Give little gifts to those that agree to participate in the roll-out program or who attend education sessions
- ▶ Have contests, create bulletin boards or do whatever it takes to generate interest and keep metrics in the forefront

BEST PRACTICES



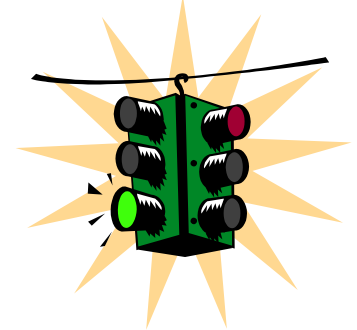
◆ Misuse of Measurement

- Use metrics in a positive way
 - ▶ Measure process, not people
- Reward teams for participation and improvement

◆ Data Collection

- Have well defined processes to support program
- Where possible, automate
- Put procedures in place to ensure data accuracy
- Ease of collection
- Usefulness of data

BEST PRACTICES



◆ Organization

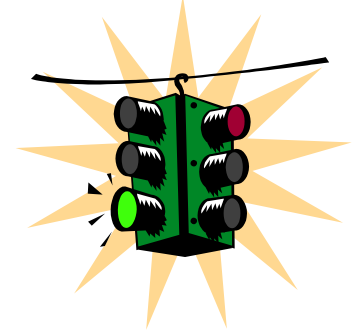
➤ Organization personnel

- ▶ Sufficient personnel resources to do planning, execution and analysis of measurement
- ▶ Proper training
- ▶ Define roles
- ▶ Define accountability

➤ Choose your function point and metrics personnel carefully, making sure that:

- ▶ They will be enthusiastic supporters of the program
- ▶ They have the determination to see the program succeed
- ▶ They have the tenacity to keep pursuing individuals and project teams who are not cooperative

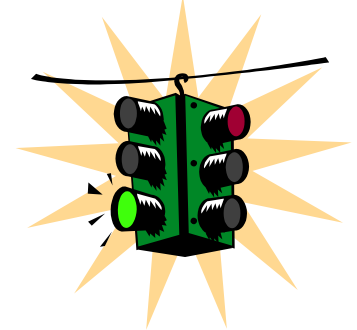
BEST PRACTICES



◆ Resources

- Provide resources
- Define responsibilities
- Have expert mentoring in software metrics (and function points if using internal function point counters)
- Be sensitive to the value of time within the organization, especially at the executive level.
- Use working groups (i.e., involvement) of both project and organizational staff
- Educate:
 - ▶ Personnel including executives, management, project leaders and the project team
 - ▶ Subjects include function points and metrics

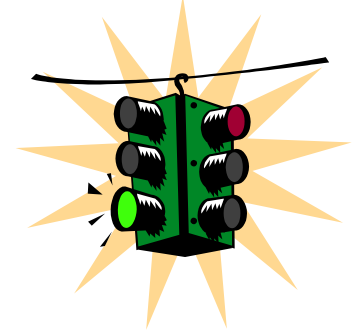
BEST PRACTICES



◆ Design & Implementation

- Focus on business needs
- Identify key processes at appropriate maturity levels
 - ▶ Entry, basic, industry leader, world class
- Identify goals
 - ▶ Goal, question, metric
 - ▶ Determine organization objectives for each goal
 - ▶ Profile current environment
 - ▶ Baseline current levels of performance
 - ▶ Plan what to measure
- Establish standards
- Cost effective
- Address uniformity, consistency, integrity

BEST PRACTICES



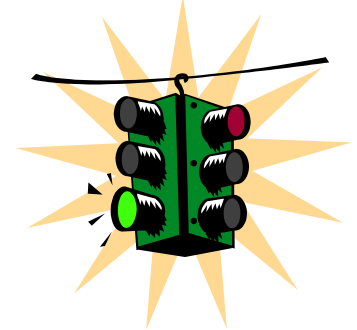
◆ Design & Implementation (continued)

➤ Select the measurement process

▶ Selection criteria for measurement

- Select only a few metrics to implement initially
- Use industry standard metrics to facilitate comparisons with other organizations
- Meet the goals of your measurement program
- Be clearly definable and easily understood
- Have the ability to be collected consistently at a project level and be usable at a variety of summary levels
- Be realistic and measurable
- Align with customer satisfiers and the needs of the development organization
- Allow your metrics to change and evolve as your organization matures

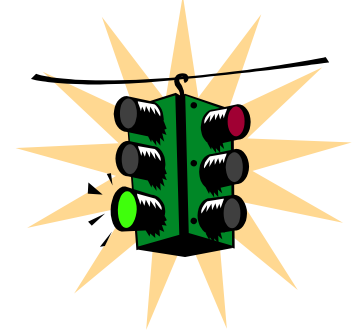
BEST PRACTICES



◆ Reporting & Analysis

- Ease of reporting
- Discuss and validate results with data providers and data owners
- Invest time in analysis
- Tier measurement reporting
 - ▶ Drill down
 - ▶ Appropriate reporting for appropriate levels
- Review progress of measurement program
- Usefulness of data

BEST PRACTICES



◆ Tools

- Tools and technology to meet needs of organization
 - ▶ Common repository of information for estimation & benchmarking based upon project characteristics
 - ▶ Facilitates data collection
 - ▶ Facilitates reporting
 - ▶ Archival of data

CONCEPTS & PRINCIPLES SUMMARY

- ◆ How to use; when not to use
 - Use metrics in a positive way
 - Integrate metrics into existing processes
 - Make metrics a part of the culture
 - Promote metrics in your organization
 - Train and educate everyone involved in the measurement program
 - Communicate results promptly and appropriately
 - Use metrics for decision making, goal setting and process improvement modeling
 - NEVER use metrics to measure individuals
 - NEVER use metrics to hide project concerns



CONCLUSIONS

- ◆ Many problems are common across organizations
- ◆ There are 'proactive' practices to avoid most, if not all, of these potential problems
- ◆ Divergence exists among organizations in 'best practices'
 - Each organization has to tailor their measurement plan to fit their business needs
 - There is no 'one size fits all' measurement program
 - Take advantage of the success stories of others to help shape your measurement program
 - It is beneficial that there is a free sharing of information among companies and organizations

CONCLUSIONS

- ◆ A metrics program can be highly successful if implemented correctly
- ◆ Starting small, having short-term goals, focusing on key measures and obtaining buy-in from everyone from the executives to the project team members are critical in ensuring a successful program



ONLINE RESOURCES - ORGANIZATIONS

- ◆ International Function Point Users Group (IFPUG)
 - ◆ www.ifpug.org
- ◆ Practical Software and Systems Measurement (PSM)
 - ◆ www.psmc.com
- ◆ Software Engineering Institute (SEI)
 - ◆ www.sei.cmu.edu
- ◆ The David Consulting Group, Inc.
 - ◆ www.davidconsultinggroup.com
- ◆ Quality Assurance Institute (QAI)
 - ◆ www.qaiusa.com

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