5 Core Metrics to Guide Your Software Endgames

Bob Galen
RGalen Consulting Group, LLC
www.rgalen.com

Outline

- Notion of QA teams as *GUIDES* not reporters
- Metrics Analysis Question (MAQ) development
- 5 Key Metrics
  - Found vs. Fixed
  - High Priority
  - Project Keywords
  - Defect Transition Progress
  - Product Functional Area Distribution

  with MAQ, Guide Points and PM Guidance
- Wrap-up and Q&A

Introduction

- We (Testers) need to adjust from a
  - Detecting
  - Reporting
  - “Safety net” or “Gating” perspective or role
- To one including all of the above, but more so serving as a project *Guide*. Providing more -
  - Deep data insights and recommendations
  - Bottleneck and efficiency improvement guidance
  - Risk detection and resource application guidance

Metrics Analysis Questions Origin

- STQE May/June 2001 article by Anna Allison – Meaningful Metrics
- Looking for the meaning *behind* the metrics or project data
- Determining a list of questions to ask when viewing or observing project data trends
- Can simply ask. Increase your curiosity and give yourself a license to inquire.
- Always looking to provide higher level guidance to the project team

Metrics Analysis Questions Examples

1. Has there been a change in QA personnel assignments that could account for fewer bugs being found in the last cycle?
   - Vacations, time off, illness?
   - Another project starting up?
2. We've seen a drastic increase in priority 1 defects in this last release. Did the developers do something?
   - Add a new component, fix some related defects?
   - Are we testing something for the first time?

Metrics Analysis Questions Examples – cont.

3. What kinds of bugs are being found?
   - Severity mix? Priority mix?
   - What is the trending? Did we expect this?
   - Are these only code bugs or other things? Relationships in counts and trending?
4. Is the software really stabilizing / maturing?
   - Where specifically – everywhere? Exceptions?
   - Same trends? Anything troubling or getting worse?

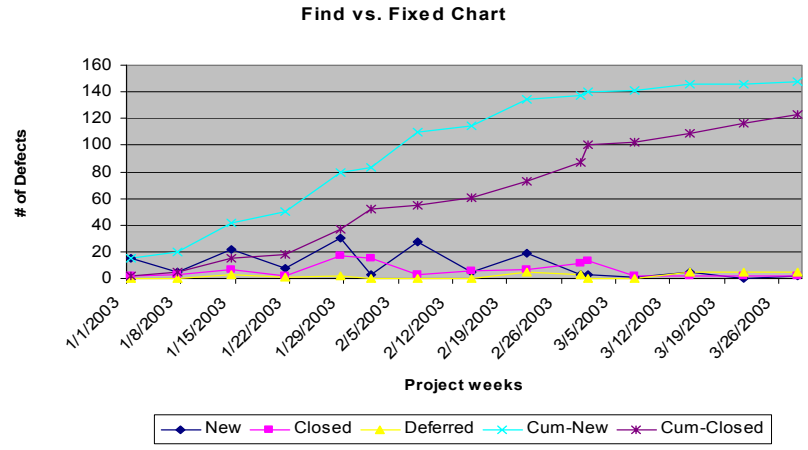
Metrics Analysis Questions
Why?

- Why ask? Why probe?
  - Provide insight for improved management decision making
  - Alert team to risks
  - Provide clarity and insight into the REAL state of the product & project
  - Because you have the ability to do so AND the functional breadth to do it well

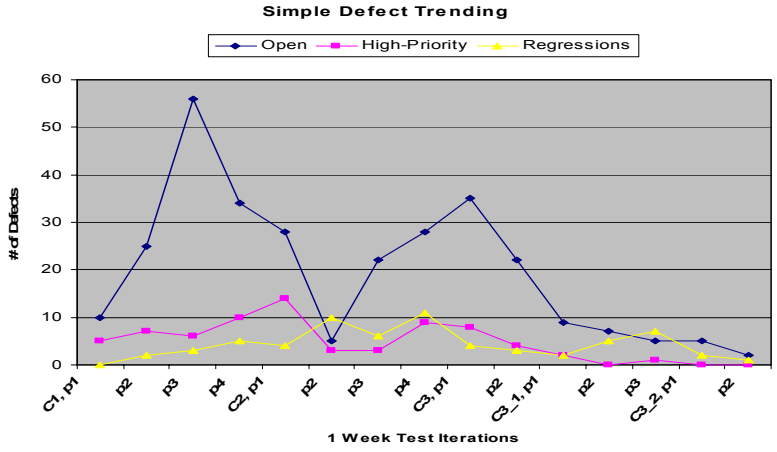
5 Core Metrics to Guide Testing in Your Endgames

1. Found vs. Fixed
2. High Priority
3. Project Keywords
4. Defect Transition Progress
5. Product Functional Area Distribution

Defects Found vs. Fixed Trending - Maturation



Defects Found vs. Fixed Trending - Maturation



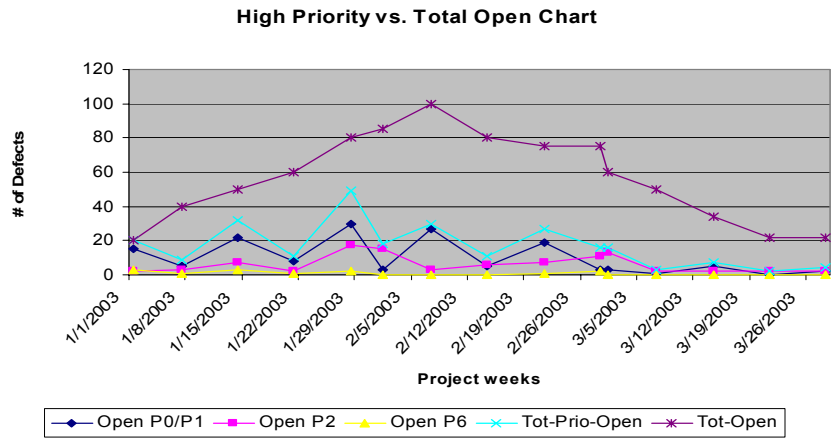
Defects Found vs. Fixed Trending - Maturation

- Found – new, vs. Fixed – repaired, closed, duplicate, not-a-bug, works-as-designed, etc.
- MAQ
  - What are the general trends? Found down? Fix up?
  - Is the trending stabilizing for the project or test cycle?
  - Are we approaching a release point? (cumulative trends intersect, with period of low / no find and stability)

Defects Found vs. Fixed Trending - Maturation

- Key Guide Points
  - Carefully view trending to take into consideration organizational or other anomalies
  - Looking for equilibrium or regression trends (progress & stability vs. backsliding)
- Feedback to Project Management
  - Release readiness predictions
  - Triage / closure concerns
  - Intermittent trend influences – identifying root causes

High Priority
Trending – Robustness & Risk



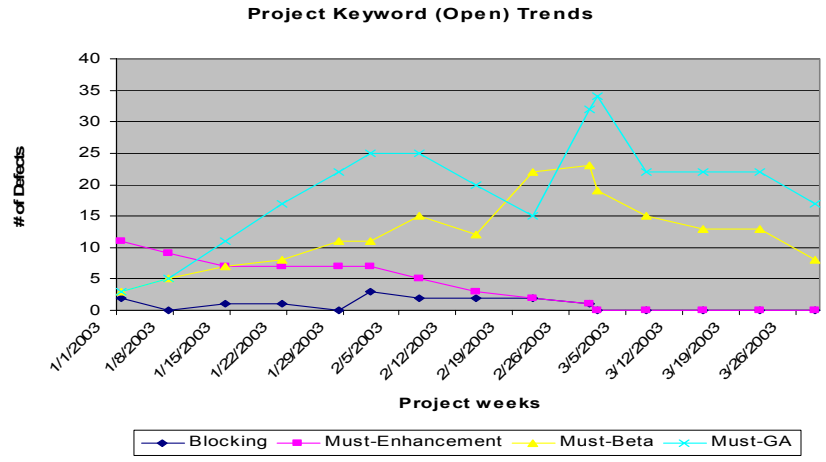
High Priority
Trending – Robustness & Risk

- Specifically defined set of defects indicating high priority (defects vs. enhancements) monitored as a significant group
- MAQ
  - What is the overall trending – relative to position within the Endgame release cycle?
  - Stable downward curve? Is there any spiking or obvious trend regression?
  - Defects vs. Enhancements – scope creep?

High Priority
Trending – Robustness & Risk

- Key Guide Points
  - High priority defects should decline and stabilize early in testing iterations
  - Continuous and abrupt downward trending
  - Shouldn't occur midway to late in Endgame
- Feedback to PM
  - Any "spiking" in trending usually indicates a systemic regression of some sort
  - Late in the Endgame implies lack of robustness and increasing risk

Project Keywords
Trending – PM Workflow Impact



Project Keywords
Trending – PM Workflow Impact

- Attaching keywords to defects, allowing for targeting repairs towards your iterative release planning scheme. Normally driven by triage and change control.

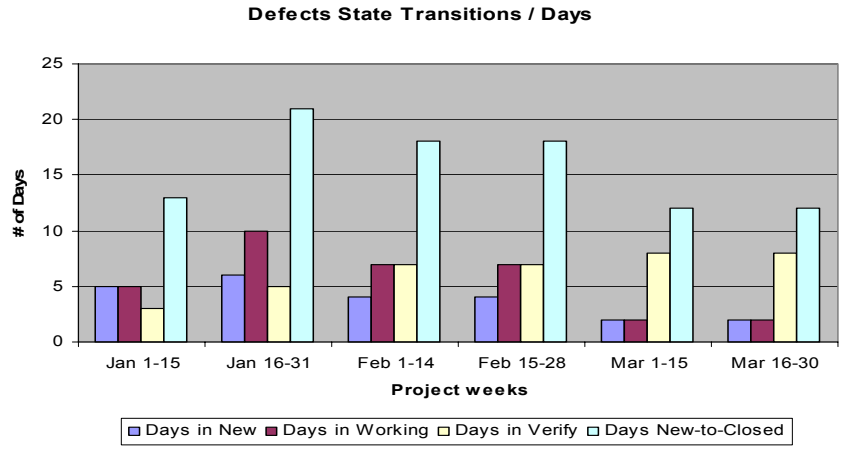
- MAQ
  - What is the trending of “must have” repairs for individual project milestones?
  - What are the priorities within each targeted milestone release?
  - Will we make it? And what needs to be deferred?

Project Keywords
Trending – PM Workflow Impact

- Key Guide Points
  - Define meaningful keywords aligned with major project milestones
  - Target features, enhancements, and repairs towards these milestones

- Feedback to PM
  - Blocking issues
  - Trending relative to milestones, example Code Freeze
  - Deferral guidance (priority, impact)

Defect State Transitions Trending – Development Capacity



Defect State Transitions Trending – Development Capacity

- Reviewing defect activity state transitions to determine team capacity (efficiency & capacity)
- MAQ
  - What is the typical triage / assigning time (Triage)?
  - What is the typical repair turnaround time (Dev)?
  - What is the typical verification time (Test)?
  - What are the trending and relationships amongst the team workflows? Improving or not? Performance problems – specific bottlenecks?

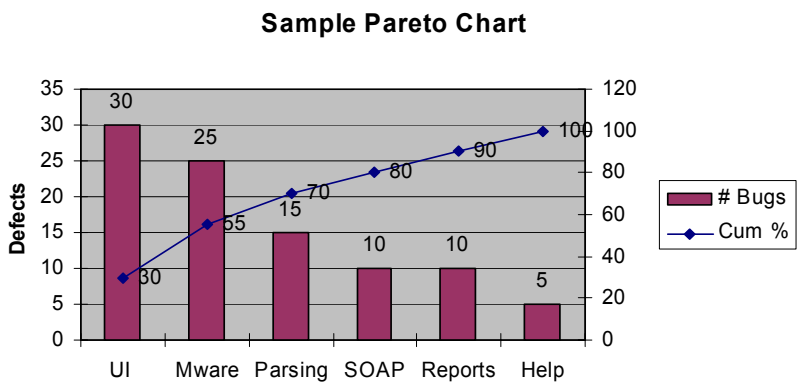
Defect State Transitions
Trending – Development Capacity

- Key Guide Points
  - As the project progresses, triage should reduce from 5 – 7 days average to < day average
  - Development time should decrease as they move from construction iterations to repair, polish & maintenance
  - Verification time relates to overall testing cycle time, early feedback preferred.
    - Regression rates come into play
  - # of days moving from New -> Closed indicates overall team capacity
    - Should be factored into iteration release plans.

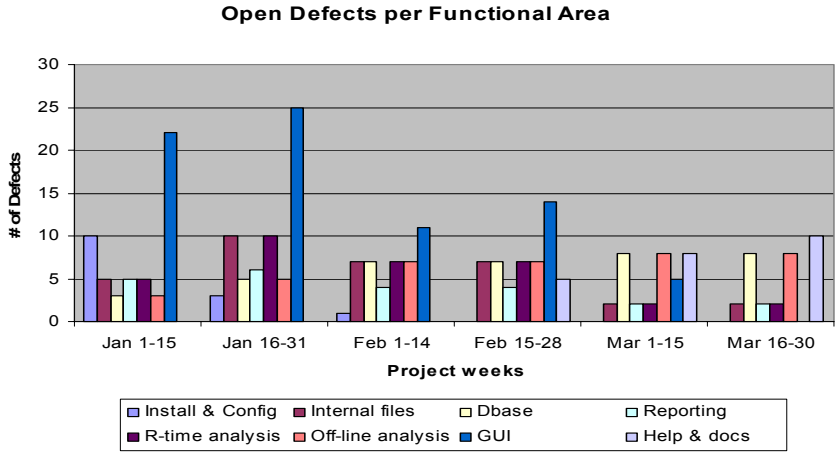
Defect State Transitions
Trending – Development Capacity

- Feedback to PM
  - Triage backlog & workflow bottlenecks – tracking average time to New -> Close
  - Filter out anomalies
  - Development- to -testing equilibrium
    - Either function overloaded, suggest adjustments. More developers, more testers, help each other, adjust goals.
  - Factor functional and team capabilities into iterative release planning.

Open Defects per Functional Area Trending – Pareto (80:20 Rule) Guidance



Open Defects per Functional Area Trending – Pareto (80:20 Rule) Guidance



Open Defects per Functional Area Trending – Pareto (80:20 Rule) Guidance

- Partitioning the AUT into meaningful components, then diligently mapping defects to component yields valuable Pareto insights
- MAQ
  - Different trends within components? Is it expected behavior? (Late vs. early maturation)
  - Highest risk, lowest risk areas? By defect count, priority or regression?
  - Where to focus process (inspections & unit testing) and testing?

Open Defects per Functional Area Trending – Pareto (80:20 Rule) Guidance

- Key Guide Points
  - Correct decomposition is the first challenge – horizontally, then vertically
  - Requires triage insights into root cause / locale and diligent categorization
  - Powerful guiding mechanism
- Feedback to PM (and Development, Testing)
  - High & Low risk components – testing direction
  - Individualized trending and maturation rates
  - How component rates map to overall project goals

Wrap-up
Historical Data

- Maintain historical data active in your DTS
- My observations are that:
  - Cycle times *repeat* (iterations, testing duration)
  - Settle times *repeat* (stabilization for releases of similar composition – new, maintenance, patch)
  - Bandwidth capabilities *repeat* for similarly sized teams and efforts
  - Defect injection rates and regression rates *repeat* for similar efforts
- Learn to compare and leverage the patterns

Wrap-up
Theme

- If there is a theme to this talk its –
  - Look beneath the data
  - Be inquisitive- ask questions of yourself and others
  - Find the root relationships
  - Share your concerns, thoughts, guidance with the broader team
  - Take and expect action

In other words, become an Endgame Guide for your team

Thank you for taking the time!

Questions?

Contact Info:
RGalen Consulting Group, L.L.C.
PO Box 865, Cary, NC 27512
919 272 7019
www.rgalen.com bob@rgalen.com

References

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- *Software Endgames: Eliminating Defects, Controlling Change, and the Countdown to On-Time Delivery* published by Dorset House in December 2004. www.rgalen.com for order info, misc. related presentations, papers, and link to a Yahoo group focused on Endgames – please join us.
- Request Software Testing & Performance (www.stpmag.com) article, which was the basis for this presentation, from info@rgalen.com