



Factory School Testing Revisited / Redacted / Re-energized aka (Kickin' it "Old School"!)

TASSQ 2010





Introduction – Who is this guy?

About the Author:

Jeff Somerville

Jeff has nearly 25 years IT experience with three different Canadian Financial Institutions, leading and managing Development, Business Analysis, and Quality Assurance teams. Jeff currently manages Quality Assurance activities for the Retail and Wealth Management Applications area within Technology and Operations, RBC Royal Bank. The team consists of approximately 275 resources including full-time, contract, and vendor resources (onshore and offshore) and supports Branch Banking, On-line Banking, ATM, Deposits, Lending, Credit Card, Point-of-Sale and Payments Applications.

About RBC Financial Group:

RBC Royal Bank is Canada's largest bank as measured by assets and market capitalization and one of North America's leading diversified financial services companies. We employ approximately 80,000 full-time and part-time employees, serving more than 18 million personal, business, public sector and institutional clients throughout offices in North America and some 50+ countries around the world.



Agenda and Objectives

Objective:

Discuss Factory School of Testing – looking at inherent strengths, weaknesses and how to breathe some new life and put a new spin on what it brings to an organization when done well in my opinion (and avoid some of the traps)

Agenda:

- **Factory School of Testing**
 - Controversies – “...my school of testing can beat up your school of testing...”
- **Driving Forces**
 - Organizational Needs – how did we get here and why stay?
- **Leveraging Inherent Strengths of Factory Testing**
 - Metrics reporting (Are we there yet? Are we there yet? ...)
 - Pacing of work and why does it matter
 - The dreaded “O” word – a means to an end
 - Transitioning from Metrics to Models



Agenda and Objectives (cont'd)

Objectives (cont'd):

- **Business value conversations**
 - Turning progress metrics into earned value dialogs
 - Understanding your role in the organization (assuming you're a QA person) – turning the lens around
- **Taking Factory School Further**
 - Collaborating with other “schools”
 - Understanding your platforms
 - Managing through your metrics
- **Contact Info / Questions / Wrap-up**



“Factory School” – what is it and why some of the controversy?

Jeff’s Definition:

A method of software testing that relies on a defined body of test cases constructed from a documented requirement specification and executed in a planned and managed manner with an emphasis on repeatability, process and measurement.

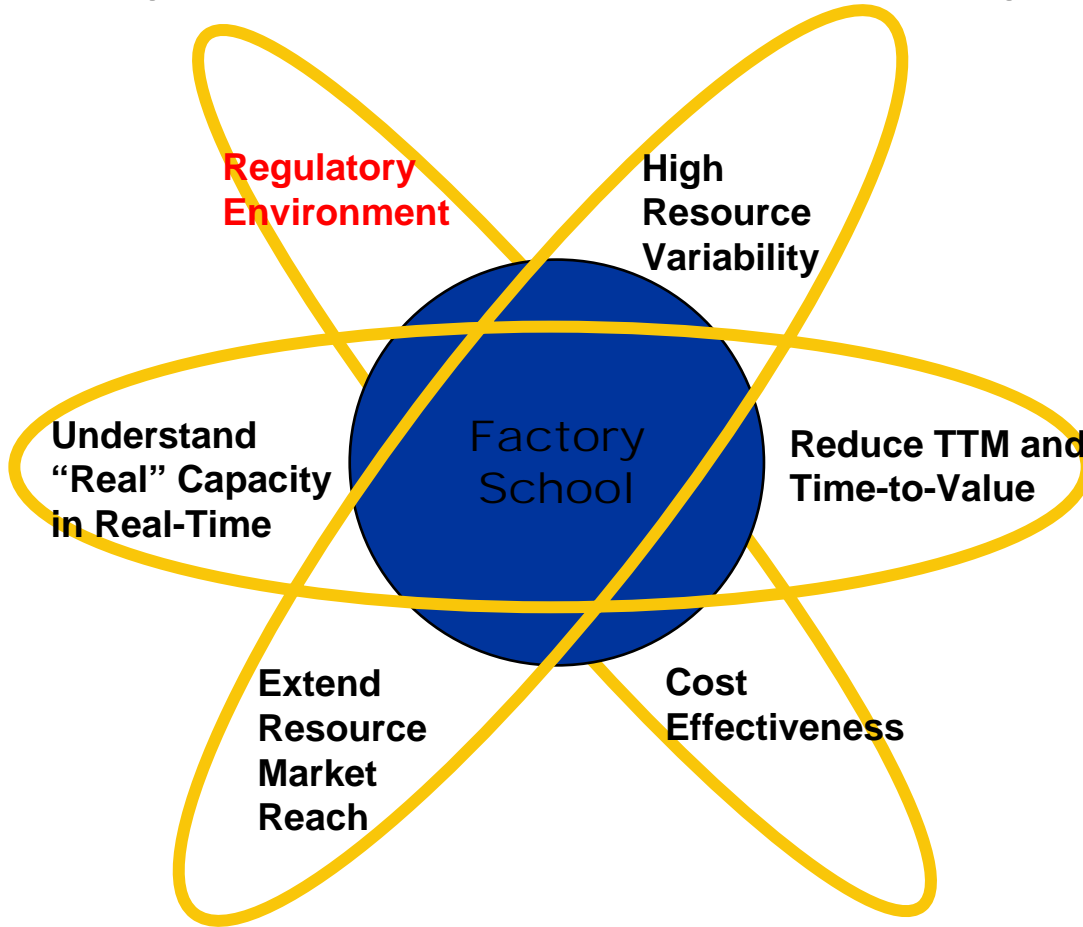
Why the controversy?

- Implications raised/ascribed to the factory school in the testing community (in many cases from other testing schools of thought)
 - cost effectiveness means use of low-skilled workers ???
 - resists changing plans ???
 - Taylorism – **Taylorism?** (google it) Who writes this stuff?
 - Creates dysfunction and developer alienation



Driving Forces behind the Factory School Approach

Why define the test cases? Why measure?



- Financial Institutions are under considerable, increasing regulatory pressure
 - OSFI / IDA / SEC (U.S.) governance
 - Sarbanes-Oxley (SOX)
 - AML and Anti-Terrorist Financing OFAC (U.S.)
 - Accessibility
 - Internal Audit and Compliance
- Risk of financial loss
 - Litigation



The first dreaded “O” word

- **ORACLES!! 😊 (with nod to M. Bolton) What are factory school oracles?**
 - **Business Requirements, Software Specifications, Arch. & Design** project deliverables
 - **Industry Standards** (e.g. Accessibility)
 - **Interface standards - “tacit requirements”** - organizations have internal vocabularies for inclusion of stable, well-known interfaces that are not necessarily elaborated in the specifications for projects. Examples include:
 - **Internal interfaces** (e.g. G/L, Data Warehouses)
 - **External interfaces** – Canada (e.g. Fintrac, Interac, Credit Bureau)
 - **External interfaces** – U.S. (e.g. Account Clearing Houses, OFAC)
 - **Embedded content and tracking in on-line systems** (“bread crumbs”)



Opportunities and Inhibitors inherent within the Factory School

Opportunities

- Externalize the business knowledge
- Pacing of activities and understanding “flow”
- Schedule compression (if and as necessary)
- Predictive modeling based on teams / platforms / processes / vendors – escape rates – historical benchmarks
- Cost efficiency and focus
- Effective use of SME knowledge
- Repeatability
- Auditability
- Foster risk dialogues

Inhibitors*

- Quality “gatekeeper” mentality
 - Rigidity when team interactions are poorly understood
 - Risk of putting process ahead of outcomes
 - Communication – “QA Mumbo Jumbo”
- *Most of the above can be attributed to leadership failures**
- Lack of consistency/inability to measuring scope objectively
 - Lines of Code
 - Function Points
 - Developer Hours



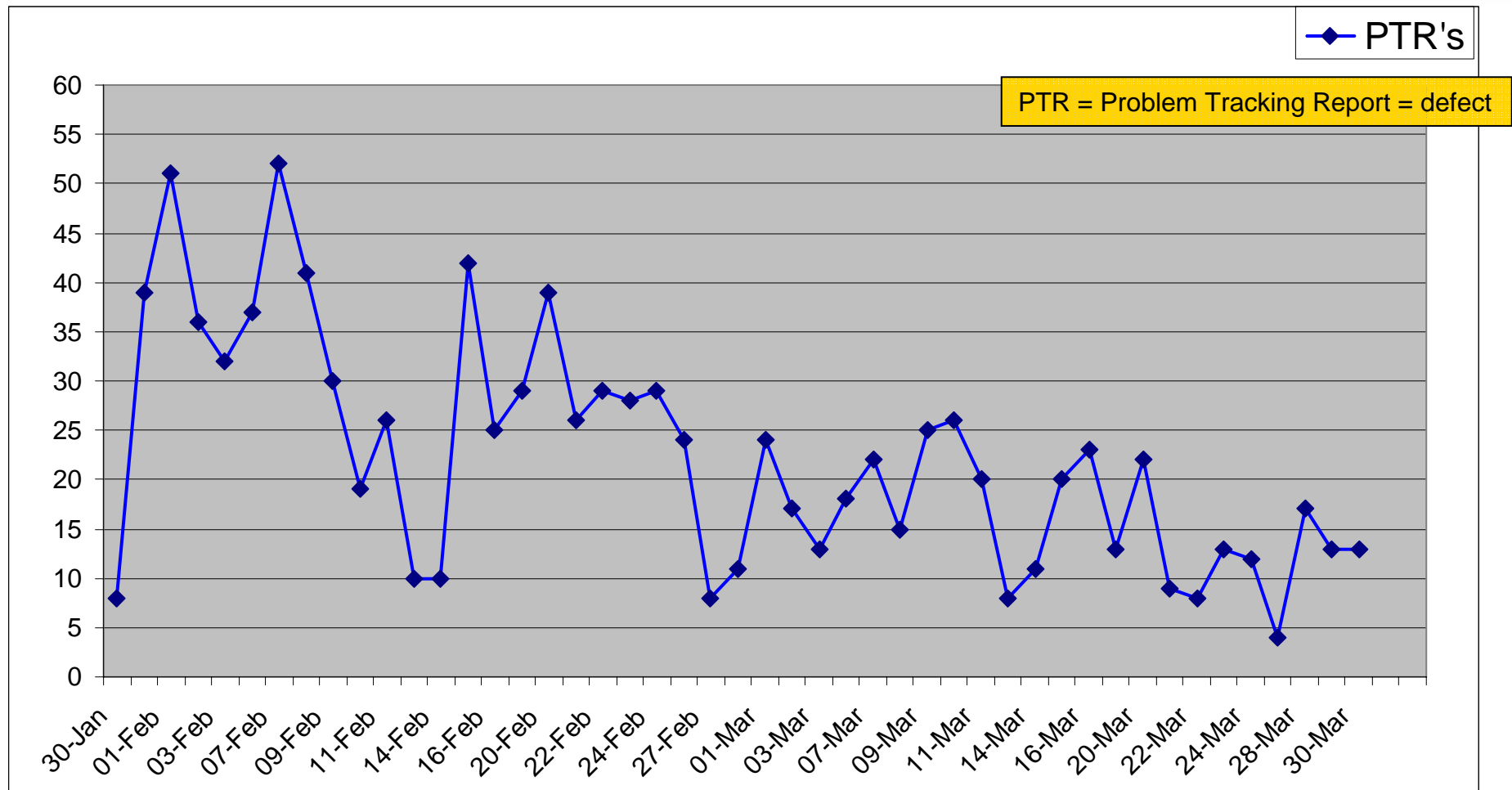
Factory School Metrics – “Progress Metrics” – not “Quality Metrics”

- **Some key forward-looking measures to understand team capacity and progress of the project**
 - **Defect Arrival** – with the assumption that as arrival diminishes, project approaches implementation readiness – so you need to look at it.
 - **Defect Work Distribution** – again – to extrapolate completion and confirm capacity – will we make it?
 - **Defect Aging** – where are your bottlenecks? – modern enterprise projects don’t involve one development group
 - **First Pass and Closure** – burn-down charts – what a novel idea!
 - Consider “burn-up” charts for QA phases prior to execution – test case scripts and testing development processes (not depicted in examples)
- **Disclaimer: Following examples taken from waterfall project – but approach is not limited to waterfall – but it is limited in the sense that it doesn’t fit well with XP (eXtreme Programming) or Agile**



Factory School Measurement: Metrics (Test Execution Phase)

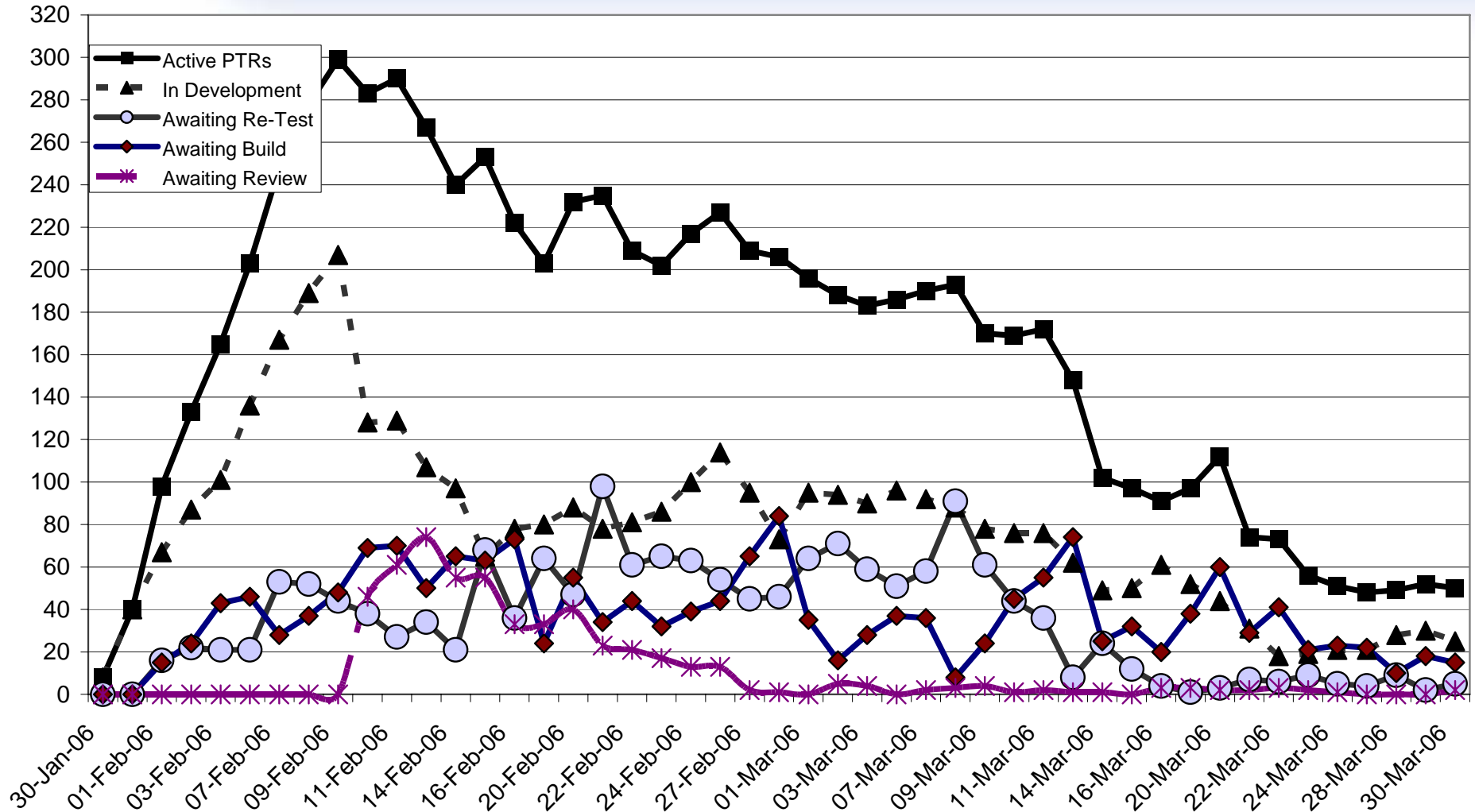
Defect Arrival Rate (defects/day)





Factory School Measurement: Metrics (Test Execution Phase)

Defect Work Distribution





Factory School Measurement: Metrics (Test Execution Phase)

Defect Aging by Severity/Priority/Assigned Group

By Severity

	Severe	Major	Minor	Cosmetic	Total
Less than 2 days	0	8	3	1	12
3 days to 1 week	0	4	2	0	6
Greater than 1 week	0	3	0	1	4
Greater than 2 weeks	0	3	0	0	3
Total Active PTRs	0	18	5	2	25

By Priority

	High	Medium	Low	Total
Less than 2 days	3	8	1	12
3 days to 1 week	2	2	2	6
Greater than 1 week	1	1	2	4
Greater than 2 weeks	0	0	3	3
Total Active PTRs	6	11	8	25

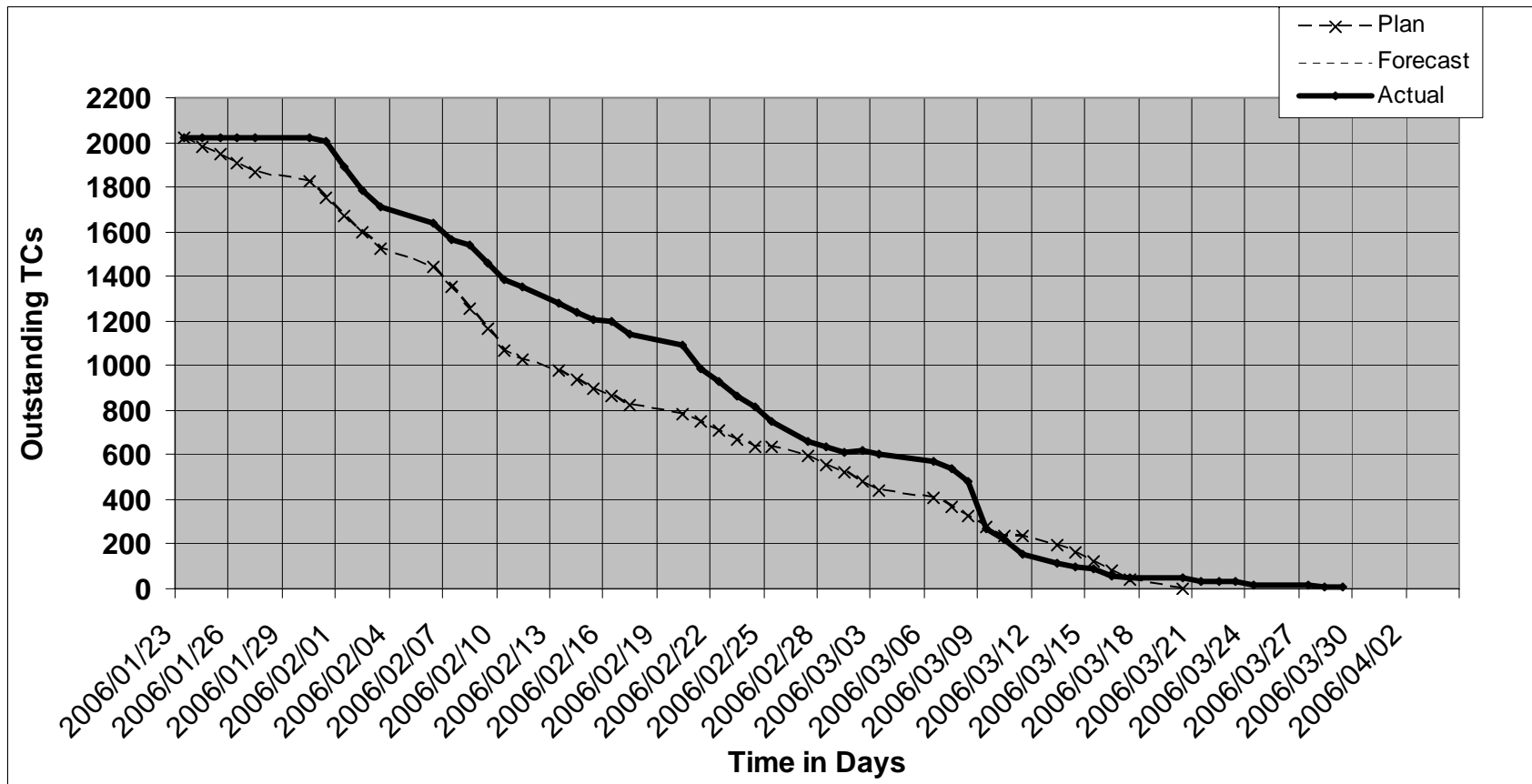
By Assigned Group

	Test	PM	Managers	CM	Req	WAS	CIS	UI	Legacy	eForms	Implement	CCD	Totals
Less than 2 days	0	0	0	0	4	0	0	7	0	0	0	1	12
3 days to 1 week	0	0	0	1	0	1	0	4	0	0	0	0	6
Greater than 1 week	1	0	0	0	0	2	0	0	0	0	0	1	4
Greater than 2 weeks	0	0	0	0	0	0	1	2	0	0	0	0	3
Total Active PTRs	1	0	0	1	4	3	1	13	0	0	0	2	25



Factory School Measurement: Metrics (Test Execution Phase)

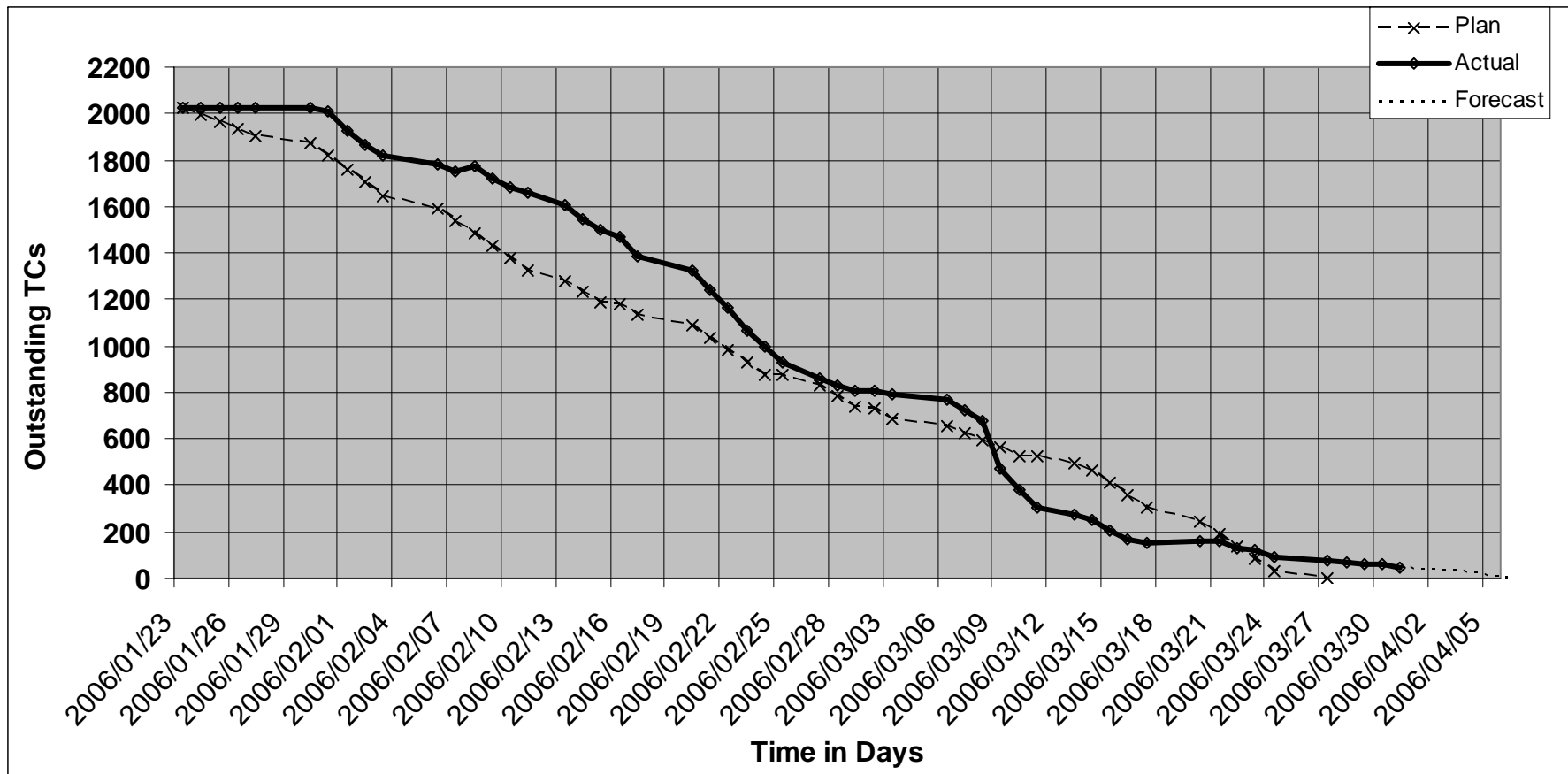
Test Execution Coverage (First Pass Coverage)





Factory School Measurement: Metrics (Test Execution Phase)

Test Case Closure





Pacing of Work – why does it matter?

- Time is money, like it or not – projects are often at their maximum run rate during the testing phase – best not to linger there
 - Confirm supporting resources have a model complementary to QA for tracking capacity
- Schedule Compression – can we add additional test resources?
 - Understand where diminishing returns kick in
 - Understand that development team resources are under greater schedule compression stress than QA. (go back 4 slides and illustrate)
- Testing phase (esp. Factory School Testing) is often the first point in the project where progress can be objectively measured
 - Critical path activity to implementation
 - A very good opportunity to introduce risk and earned value dialogues with business sponsors – service provider mindset
 - Embrace the transparency – service provider mindset
 - Manage through your metrics – if there's no line of sight to a successful outcome – change the game – what levers can be pulled?



The second dreaded “O” word

- **Offshoring / Outsourcing**
 - Lends itself to Factory School testing approaches
 - Schedule compression opportunities – “follow-the-sun”
 - Labour arbitrage to offset project cost pressures
 - Offset by upward cost pressures for after hours support
 - Tap into external labour markets for skilled resources
 - Externalized business knowledge helps bridge a resource augmentation engagement into a deeper, SME engagement

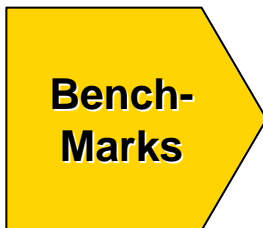


Factory School Measurement: Forward Leverage – Metrics to Models

Reuse of Specific Measures for Like-Project Planning



- Learn about the pacing of work
- Understand context of technology used, vendor methods
- Onboard/offboard resources as necessary based on metrics
- Communicate the metrics. Context is key – don't just forward measurement without commentary



- Track project-over-project historicals
- Examine metrics for trends and referential integrity – are the measures representative of the workflow?



- Ensure like-for-like projects have realistic expectations for pacing of work and delivery timelines
- Gather ideas from all project stakeholders to adopt practices that can move the benchmarks e.g Early defect discovery, higher throughput.



Business Value Conversations

- **Turning Project Metrics into earned value dialogs**
 - **Earn a place at the table** surrounding project status discussions including a metrics review during test execution phase
 - **Understand that earned value is a function of delivered scope relative to project cost** – point out / celebrate internal QA milestones
 - **Understand and point out when the project moves to lower risk states such as completion of First Pass.** Or completion of a specific set of high-business-interest testing such as End-to-End scenarios.
 - **Discuss daily metrics during execution phase of project** – the absolute numbers are less important than the trends behind numbers. Can we extrapolate success at the current pace? Better yet, can we extrapolate failure? Trends give early indications when course corrections are necessary.
 - **Ensure business has a voice in IT specific forums** – esp. defect triage



Business Value Conversations

One potential view of maximizing value

Each Tier of the hierarchy is a higher state of business relationship maturity

Look to understand what discussions are enablers or steps to the next tier. Earn the right to progress with your Business Sponsors

Having objective progress measures are valuable and often “table stakes” to participate in operating groups and steering committees.





Business Value Conversations “Turning the lens around”

- Understand how you are perceived within your organization – which meets your own perception?
- “We are the IT advocates for the Business Sponsors in ensuring that the deliverable meets the requirements. We provide information on risk and completeness that informed business decisions are made with respect to implementation of the deliverables.”
- “We are the Quality Gatekeepers for the organization. All changes must pass our evaluation and both the processes and developers must be policed.”
- “We are a provider of Quality Assurance services to Projects and the PM dictates our agenda.”
- “We are a debugging service for our Developer Community.”

Answer: ALL are likely true perceptions in context of one or more of your internal IT relationships – Lesson: Don't let others define you. Embrace the perception you desire and act both accordingly and consistently.



Taking Factory School Further

- **Borrow from other “Schools”**
 - Agile methods add tremendous value in the test analysis and planning phases
“Pure” Agile is not as compatible.
 - Exploratory Testing augments Factory School approach esp. for both non-functional or para-functional testing.
 - Allow your testers to go “off script” and foster good exploratory skills
- **Know your platforms and vendor engagements**
 - Defect arrival rates are by-products of, and have affinities to, processes and engagement models
 - Desktop applications often have different defect profiles than web applications
- **Manage through your metrics – use it as a compass to navigate**
 - Look for trends and dysfunctional patterns in work distribution and defect arrival.
 - Extrapolate successful outcome possibilities from current status
 - Know your development team capacity and plan conservatively based on historical performance.



Wrap up and Contact Info

Thank You - Questions?

Contact the Author by email:

jeff.somerville@rbc.com