Changing the Project Execution Culture at NASA Dryden

Thomas J. Horn
CCPM Core Implementation Team Lead
NASA Dryden Flight Research Center
Edwards, California
Outline

- The Dryden Project Environment
- Former Cultural State
  - The need for change
- Desired Cultural State
  - Change description
  - Critical Chain Project Management Philosophies
- The Challenges
  - Management Attention: Help or Punishment?
  - Synchronizing vs. Micromanagement
  - Focus on Minutia: Paralysis by Analysis
  - Phased Implementation: Change Schizophrenia
  - Long Term Attention: Organizational Attention Deficit Disorder
- Current State
- Conclusion
The Dryden Project Environment

- A small Center
  - ~550 civil service
  - ~600 support contractors
- Multiple projects from multiple customers
  - Aeronautics Research Mission Directorate
  - Science Mission Directorate
  - Human Exploration & Operations Mission Directorate
  - Office of the Chief Technologist
  - Non-NASA
- 40+ active projects of widely varying sizes
  - Small analysis or ground test efforts (<5 WFE)
  - Large, multi-year, flight research efforts (up to ~50 WFE)
Former Cultural State

- Unclear Center Priorities
- Budget Driven Staffing
- Poorly Defined Work
- Most Projects In Progress
- Local Priority Decisions
- Dedicated Project Teams
- Unknown Future Demand
- Severe Multi-tasking

Fear Drives Resource Allocation

The 800 LB Gorillas
The Change

• Implementation of Critical Chain Project Management Tools & *Philosophies*
  – Fundamental shift in center management and project execution philosophies

• Goals
  – Reduce multitasking
  – Reduce workforce stress
  – Improve on-time performance
  – Improve time for training, R&D, infrastructure improvement, etc.

• No significant change in size of center workforce
Desired Cultural State

Less Multitasking, Less Stress, Most Projects On Time, More Time For Training...
THE CHALLENGES
Management Attention: Help or Punishment

• Issue: Negative perception of management attention
  – Developed over time
  – Management asks:
    • “How did this happen?”
    • “Who is to blame?”
  – Staff feels need to justify actions
  – It’s about *perception*
    • Management intent less important
    • Can come from simple choice of wording
      – E.g., “Why...” vs. “What...”

• Result: Stifled communication up the chain
  – Problem ID to management delayed
  – Problems become bigger
  – Less time to resolve
Management Attention: Help or Punishment

- Getting past negative perception of management attention
  - Don’t turn open meetings into interrogations
    - Address performance failings in private and as positively as possible
  - Ask good questions
    - “What is needed to make progress?”
    - “What help do you need?”
    - Choose words carefully – don’t put messenger on defensive
  - Expect problems to come with potential solutions
    - “If we could _____ then...”
  - Help when your help is needed!!
    - Facilitate solutions to problems quickly
- Only demonstrated “real” help will drive change in perception
Synchronizing vs. Micromanagement

• Issue: Management control over when work is active may be perceived as micromanagement
  – Particularly true in:
    • Research organizations
    • High grade, independent thinkers
    • Level of effort funding models

• Result: Work goes “underground”
  – Natural urge to “keep the plates spinning”
  – Desire to get ahead on work
  – Desire to stay busy
  – Desire to show progress to customers
Synchronizing vs. Micromanagement

• Getting past the perception of micromanagement
  – Set the right goals
    • Must stretch
    • Must show noticeable progress
    • Near term vs. long term
  – Demonstration of results
    • Individual satisfaction
      – Reduced multitasking
      – Improved performance
    • Corporate performance
      – Increase completion rate
      – Reducing lateness
  – Enforcement, while necessary, won’t alter perception quickly
• The change must provide some tangible evidence of benefit in the near term
My Project vs. My Center

• Issue: Focus on/allegiance to project team
  – Esprit de corps
  – Budget driven “ownership” of staff
  – Faltering project seen as that teams fault
  – Lack of technical depth
    • Specific project knowledge
    • Broader discipline knowledge
    • Real potential safety impact!

• Result: Reduced staff flexibility degrades overall center performance
My Project vs. My Center

- Getting past excessive focus on and allegiance to project teams
  - Choose right metrics
    - E.g., Center lateness vs. project beating deadline
    - Choose wisely to drive desired behaviors
    - Balance of safety, quality, cost, and schedule
  - Recognize and reward the right behaviors
    - Sacrificing some schedule reserve for the benefit of the center
    - Move to another project that is falling behind
  - Address the issue of technical depth
    - Training, phase the work, etc.
- Ownership of larger organizational success critical but don’t let staffing flexibility degrade safety
Focus on Minutia: Paralysis by Analysis

• Issue: Attempting to address every detail or contingency during change implementation
  – Differences in sub-organization operation
  – Imagined post-implementation problems

• Result: Management and change implementation team workload skyrockets, change implementation stalls & possibly fails
  – Difficulty making decisions
  – Endless analysis/test cycle
Focus on Minutia: Too Much Depth Leads to Drowning

• Getting past excessive focus on minutia
  – Put most energy on “show stopper” issues prior to implementation
    • Accept that problems will surface during implementation of change
    • Impossible to design out every issue
    • Don’t demand excessive detail before approving initial implementation
  – Have plan & capacity in place to receive and act on problems after “go-live”
    • Help line to collect questions & problems
    • Coach and revisit pre-implementation training
    • Triage problems & act quickly to resolve those of significance
    • Team must include people who have performed the effected functions & understand the change being implemented

• Actual exercising of the change will identify the real problems that need attention
Phased Implementation: Change Schizophrenia

• Issue: Some parts of organization operate under new system and parts operate under old system
  – Test the change
    • Find and fix problems on small scale
  – Need to train everyone
    • Need to know philosophy before they can operate under new rules
  – Unable to muster resources to implement entire organization at once

• Result: Conflict between 2 inherently non-aligned systems
  – Prolongs the change
  – “Why do I/we have to do this if they don’t?”
  – Tough on shared resources
  – Management has to make decisions based on 2 rule books
  – Extra resources required to deal with system conflict issues
Phased Implementation: Change Schizophrenia

• Avoiding phased implementation conflicts
  – Avoid phased implementation if you can
    • Execute the phases in quick succession if you must
  – Carefully define the “control volume” of necessary phases
    • Minimize operating in and out of the change
  – Err on the side of over estimating required implementation resources
  – Eliminate old processes, procedures, ways of doing business as quickly as possible

• Once decided, move aggressively to implement change throughout the organization
  – Get past the tipping point
  – Execute the change like you mean it!
  – Pockets of “old ways” will put drag on the change
Long Term Attention:
Organizational Attention Deficit Disorder

• Issue: Many demands on organizations management
  – Budget issues
  – Staff issues
  – Demands from HQ
  – Meeting upon meeting
  – Ad-hoc implementation team may be in place

• Result: Management attention and visibility regarding change wanes
  – Difficulty getting needed approval/decisions
  – Lack of ownership of implementation design
  – Staff question management commitment
Long Term Attention: Organizational Attention Deficit Disorder

• Motivating Long Term Focus & Attention
  – Make a senior manager & their organization responsible for implementation & sustainment functions
  – Still create ad-hoc implementation team
    • Architect of the implementation w/senior manager
    • Membership from across impacted organizations
  – Line organization(s) responsible for long term support must be full partners in designing implementation

• The organization will focus its attention where the leaders focus their attention
  – Organization management must remain engaged in the change & take on their new roles
  – Only organizational management has authority to change the underlying rules, processes, procedures, etc.
Current State

- Management has taken ownership of the change
- Implemented in \(~50\%\) of projects
- More knowledge based decision making
- Success has been observed where philosophies have been applied
- Generally satisfied with progress
  - Still long way to go
Current State

- Unclear Center Priorities
- Budget Driven Staffing
- Poorly Defined Work
- Most Projects In Progress
- Local Priority Decisions
- Dedicated Project Teams
- Unknown Future Demand
- Severe Multi-tasking
- Fear Drives Resource Allocation

The 800 LB Gorillas
Current State

- Implementation of Critical Chain Project Management Tools & Philosophies
  - Fundamental shift in center management and project execution philosophies

- Goals
  - Reduce multitasking
  - Reduce workforce stress
  - Improve on-time performance
  - Improve time for training, R&D, infrastructure improvement, etc.

- No significant change in size of center workforce

- Tools & processes generally in place
  - In need of documentation
  - Philosophy is slowly taking hold

- Progress toward goals
  - Multitasking reduced but still too high
  - Workforce stress is up due to change
  - Projects still run late but more focus and commitment to figure out why & fix
  - No real change in time for training, R&D, etc.

- Workforce is about same size to slightly smaller
Conclusion

• Substantial, sustainable, improvements in performance come from fundamental changes in how people think about and execute their jobs
  – From the most senior leader to the most junior employee
  – Tool and process changes are necessary but not sufficient
  – Policing use of new tools and processes also necessary but not sufficient

• Don’t underestimate the resources required to implement the change
  – Implementing new tools and processes is relatively easy
  – Changing how people think is time consuming and hard
  – Build the implementation team with sufficient breadth and depth
Conclusion

• Once the change is launched, execute implementation quickly
  – Discard old tools and processes as quickly as possible
  – Make the new philosophies and tools the way the organization operates
  – Minimize the number and length of implementation phases

• Choose goals, metrics, & rewards carefully
  – Goals need to stretch but be achievable & of value to all
  – Set expectations appropriately regarding timeline for achievement of goals – real change takes time & is messy at first
  – Metrics and rewards (recognition) drive behavior of the organization

• Senior managers must lead the way
  – Managers and their organizations must execute the change
  – They must own it and demonstrate the change through action
  – Their questions must force people to think about going forward into the change, not looking back to justify actions
Thank you for your Attention

Questions?

Hugh L. Dryden Flight Research Center