Learning from Lessons Observed

Mitigating Resistance to SE Process Change

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Dedication


Without is exemplary support to process improvement, none of these lessons would have ever been learned.
Topics

• Recognizing the need for change

• Lessons Observed-Lessons Learned

• Epilogue

• Summary
Recognizing the Need for Change

- If it’s broke; don’t fix it- Call a hero
- Ultimately, change is a business imperative
- Improve product quality & reduce risk

“Documented repeatable SE processes to produce predictable positive results”
Recognizing the Need for Change:

- Process change requires “organization culture” changes

- Change brings resistance

Overcoming resistance is HARD
But ACHIEVABLE
Dealing with Resistance

- Be prepared
- Face the facts
- Anticipate, plan for, and mitigate change barriers UP FRONT
Lessons Observed – Lessons Learned

A lesson is not actually *learned*, it’s only *observed* and admired, unless the previous mistake is not repeated due to a deliberate corrective action.

- Change team must look at mistakes from previous initiatives
  - Learn by implementing mitigations (lessons)
- Make lessons part of “The Plan” up front
Case Study-
NGA Process Improvement Initiative

- Initiated Jan 2000
- Goal: 10 Process Areas to Level 2 (FAA-iCMM*)
- External appraisal conducted Oct 2003
  - 8 Process Areas at Level 3
  - 1 Process Area at Level 2
  - 1 Process Area at Level 1

* Federal Aviation Administration Integrated Capability Maturity Model, Version 1
Case Study 2

- Systems Engineering Process Group (SEPG)
  - Led the initiative
  - Observed and learned the lessons
  - 14 government and contractor stakeholders
  - Guided by Senior Steering Group and Sponsor
  - Relied on Process Action Teams (PAT) for process engineering and implementation

The SEPG, PATs and practitioners enabled change to happen!!!
Lessons Observed (LO)- Lessons Learned (LL)

- Strong senior sponsorship
- Early constituent buy-in
- Leverage converted doubters
- Incentivize and recognize

Change Support

- Manage change as a program
- Have a schedule; manage to it
- Personnel Resource Plan
- Pick and stick with a process model
- Progress in small steps

Change Planning

- Pick and stick with a process model
- Appraisal planning
- Conduct a Mock Appraisal
- Use process practitioners
- Help from those who have learned
- Promote change and goals

Change Execution
Senior Sponsorship Is Essential

- LO: Without senior sponsorship, people will resist providing support

- LL: Having a strong supportive sponsor from the beginning is **ABSOLUTELY ESSENTIAL!!!!!!**
  - People look for senior leadership endorsement before cooperating
  - Leverage their buy-in and accountability

Constituent Buy-in Early

• LO: Many SE practitioners will not be supportive
  – Do not recognize the value of change

• LL: Answer “What’s in it for me?” at the start
  – State added-value in clear identifiable outcomes
  – Group forums, one-on-one discussions, written communication
  – Leadership must see and convey the benefits
The Best Change Agents are Doubters Who Become Believers

- **LO**: Skepticism is infectious
  - Those who doubt value and success hurt progress

- **LL**: Converted skeptics help breakdown resistance and win others over
  - Buy-in seeing value-added change
  - Removing skepticism takes time, patience and persistence
  - Increased converts – decreased resistance overall
Incentivize and Recognize Those Leading the Charge

- LO: Getting people to change is difficult, frustrating and demoralizing

- LL: Recognizing change agents and practitioners is a strong motivator
  - Ad hoc parties
  - Public awards ceremonies
  - Employee performance plan item

Food is an excellent motivator
Manage Change as a Program

LO: There is resistance to an activity that seemingly lacks purpose and structure
  – Managers resisted supporting an informal program
  – SEPG was not operating efficiently or effectively

LL: Develop and use a Work Plan
  – Established ‘real program’ and stabilized activities
  – Used new Program Management Process
  – Full cost, schedule, and resource aspects
  – SEPG held accountable to the plan
Have a Schedule…Manage to it

• LO: Without a **detailed** (resource-loaded) schedule:
  – Procrastination to meet milestones
  – Cannot measure or manage progress
  – Cannot establish realistic resource needs

• LL: A detailed resource-loaded schedule improves program execution
  – **All** activities through formal appraisal
  – Defined dates improve schedule management
  – Additional structure increases program legitimacy

Clear progress reporting increased senior management support
Have a Personnel Resource Plan

- **LO:** Resource managers will not allocate personnel without a resource plan

- **LL:** Maintain a realistic resource plan
  - Derive from schedule
  - Identify diverse skills needed
  - Identify turnover/overlap periods
  - Include all training requirements

Resistance decreases…buy-in increases for an adequately resourced program
Seek Success in Small Steps

- **LO:** Pursuing too optimistic goals on an aggressive schedule creates resistance
  - 21 processes to Level 3 across the agency in 3 years
  - Over ambition put initiative at risk

- **LL:** Scale back – focus on short-term, achievable and manageable goals
  - 10 critical processes to Level 2 in 3 years
  - Implement in one part of organization

Small successes reinforced progress
Pick a Process Model and Stick With it

- LO: There is resistance to change when the specific changes/goals are not clear

- LL: Identify a process model based on a clear objective selection criteria*
  - Define change strategy and goals
  - Develop criteria with process model experts
  - NGA selected the FAA-iCMM
    - Integrates core processes: systems engineering, software engineering and software acquisition
    - Written from acquisition agent point of view
  - Constant reference for continuous improvement

* Adapted from Andary, James F., et al., NASA Systems Engineering Capability Pre-Assessment Plan, Proceedings of INCOSE 2004
Apply A Lot of Attention to Appraisal Planning

- **LO:** Appraisals take more effort than imaginable
  - Practitioners resisted extent of help required
  - Appraisers needed a lot of process artifacts
  - Considerable diverse support was essential

- **LL:** Dedicate sufficient resources
  - Develop and execute detailed plan
  - 6 full-time staff for 6 months covering 10 processes
  - 1 full-time person for 6 weeks - collect, catalogue, and organize process artifacts

Being organized reduced resistance!!!
Conduct a Mock Appraisal

• LO: Practitioners doubting success resist appraisal preparations
• LL: Conduct a mock appraisal to assess readiness and gain support
  – 6-months before formal appraisal
  – Validates likelihood of success
  – Being prepared paid off!!!

Publicizing results built credibility and support
Effectively Use of Process Practitioners

- **LO:** Practitioners who do not buy-into change resist change and process ownership

- **LL:** Involve practitioners in everything
  - Most knowledgeable for defining, documenting, and facilitating change
  - SEPG and PATs included process owners, practitioners, and change experts
  - Invaluable during artifact collection

Participation established buy-in; buy-in established credibility for change
Get Help from Those Who Have Learned Lessons

- LO: Changing processes cannot be learned from books
- LL: Rely on process change experts and veterans
  - Imperative and invaluable
  - Strengthens team’s competencies
  - Provides critical direction and moral support
Use Hierarchical Process Documents

- **LO**: People who do not understand the changes resist the changes
  - Different people need different levels of detail

- **LL**: Write process documentation to meet multi-user needs and ensure utility
  - Tier 1: Policy and Executive Summary
  - Tier 2: Process Practices
  - Tier 3: Templates and checklists
  - Tier 4: Training materials
  - Project specific tailoring
Continually Promote the Change Process and Goals

- LO: Resistance overcomes progress, until a ‘critical mass’ of supporters is achieved

- LL: Communicate-Communicate-Communicate!!!
  - Comprehensive Communication Plan
  - Senior Sponsor messages
  - News articles and e-mails
  - Posters / Banners
  - Rewards for paying attention

Maintain focus and buy-in
Epilogue

- October 2003 achievement was just a milestone
- Agency leadership commitment remains
- Current Steps
  - Continuing institutionalization
  - Developing and institutionalizing new processes
    - Agency strategic planning, budgeting and architecting
    - Acquisition management processes

New lessons are being observed
Lessons learned are still being applied
Summary

- Improvements require change
- Resistance accompanies change
- Overcoming resistance is hard but ACHIEVABLE
Questions???