



*Know the Earth...Show the Way*

# Learning from Lessons Observed

## Mitigating Resistance to SE Process Change

### 5<sup>th</sup> Annual CMMI Technology Conference

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## ► Dedication

*Dedicated to the memory of William R. "Bill" Alder, Jr. (1950-2005) of the National Geospatial-Intelligence Agency.*



*Without his 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<sub>2</sub>

- 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



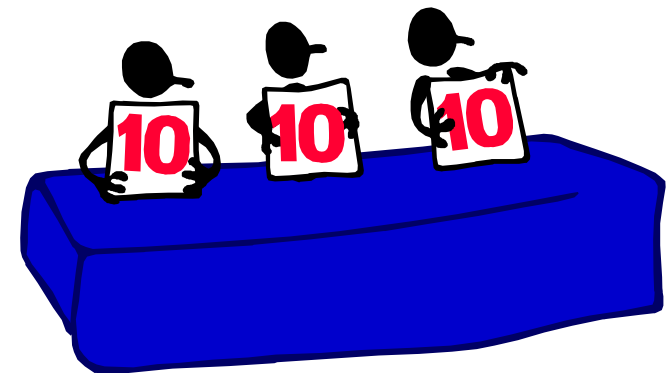
## ▶ Lessons Observed – Lessons Learned

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

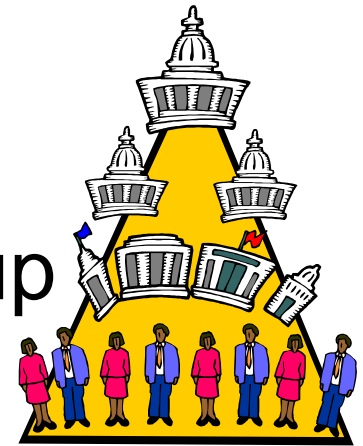


\* Federal Aviation Administration Integrated Capability Maturity Model, Version 1



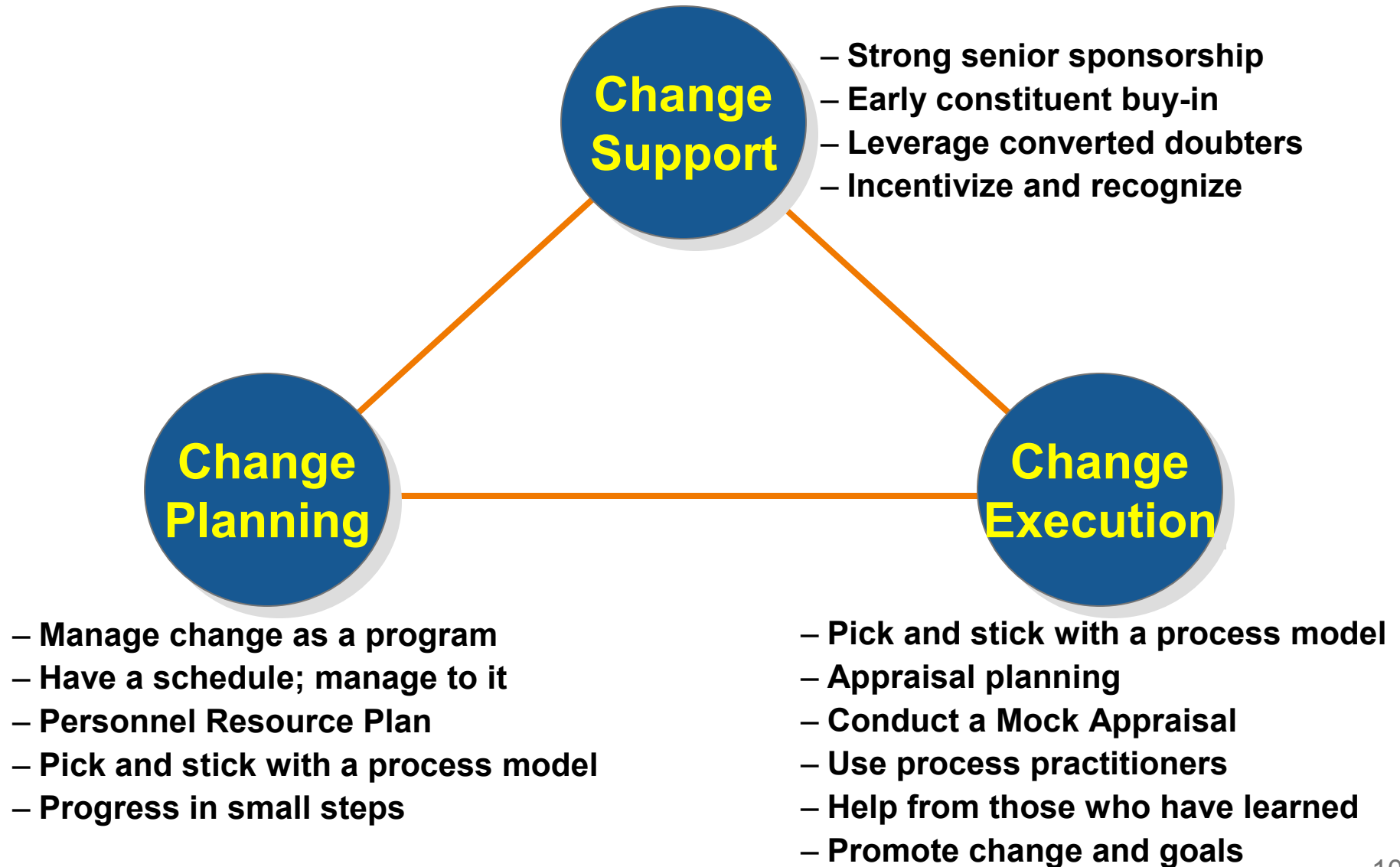
## ► Case Study<sub>2</sub>

- 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)



## ► 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

\* Sheard, Sarah A., *What is Senior Management Commitment?*, Proceedings of INCOSE, 2001

## ► 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

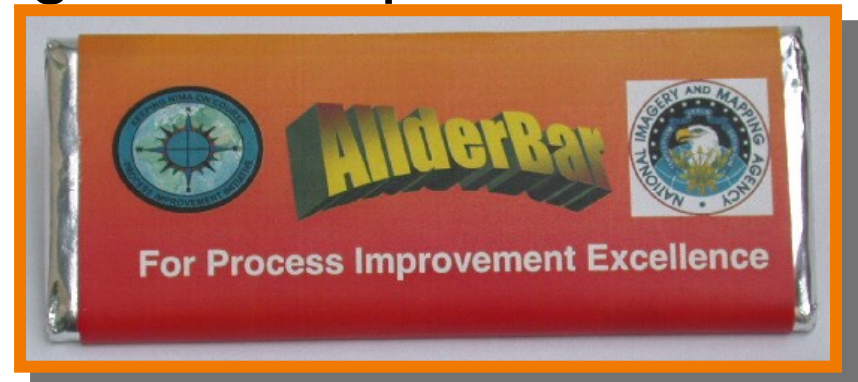
## ► The Best Change Agents are Doubters Who Become Believers

- 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

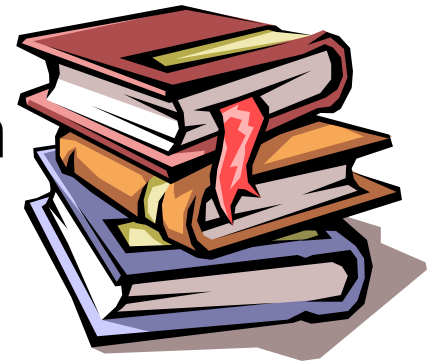
## ► Seek Success in Small Steps

- 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

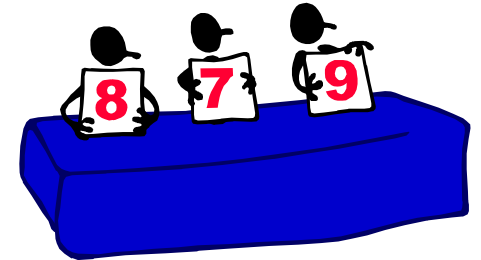
## ► Apply A Lot of Attention to Appraisal Planning

- 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

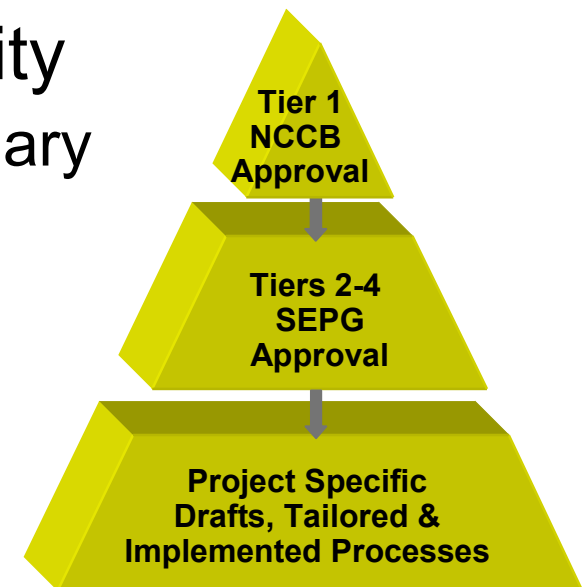
## ► Get Help from Those Who Have Learned Lessons

- 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**

Patience

Commitment

Dedication

-Learn from Lessons Observed-  
--Benefit from Lessons Learned--

# Questions???

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ▼



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