

Do's and Don'ts of Process Improvement

Pat O'Toole, PACT

March, 2004

Acknowledgments

Terms like these are often used in the following material:

CMM[®] Framework
IDEALSM Model

Capability Maturity Model SM and IDEALSM are service marks of Carnegie Mellon University

[®]CMM is registered in the U.S. Patent & Trademark Office

“Primary” Lessons Learned

- **Secure Senior Management Sponsorship**
- **Treat SPI as a Project**
- **Engage Internal Staff.**

OK, what now?

- **Yeah, but what do we DO?**
- **And is there anything we should AVOID doing?**

Caveat

- **Weinberg's Organizational Dichotomy**
 - No two organizations are entirely the same
 - No two organizations are completely different
- **Weinberg's Law of Raspberry Jam**
 - The broader you spread it, the thinner it gets
- **This tutorial covers 32 specific **Do's** and **Don'ts****
 - Assume about a 20% “raspberry jam” rate
 - The rest is intended for “a friend of yours.”

Do's and Don'ts

- **Senior Management**
- **CMM(I)**
- **Measurement**
- **Process**
- **Behavioral Change**
- **(K)PA Specific**
- **Message from our Sponsor**

Do's and Don'ts: Senior Management

**“Sponsorship” is nice,
Proactive Leadership is better!**

- **Don't** Treat the Level as the Goal
- **Do** Establish “Alignment Principle”
- **Do** Take Time Getting Faster
- **Do** Align the Reward System
- **Do** Ask Different Questions
- **Do/Don't** Lead by Example

Don't Treat the Level as the Goal

- **What are you really trying to achieve?**
 - **What is the business imperative?**
 - **How do your customers evaluate your products?**
 - **Why do potential customers keep buying your competitor's products?**
- **Which would be better:**
 - **Achieve Level 2, but NOT the business objectives**
 - **Achieve the business objectives, but NOT Level 2?**
- **So what's the REAL goal?**

Don't Treat the Level as the Goal

- **Maximize the VALUE, not the LEVEL!**
 - **Problem:** Focusing on the level establishes conflict between the SPI project and the software projects
 - **Solution:** Focusing on the business imperative produces harmony
 - Well, at least it reduces the conflict!
 - Lends credibility to the SPI program
 - Changes discussion from “if” to “how.”

Do Establish “Alignment Principle”

- **Faster, Better, Cheaper - pick ONE!**
 - If you could improve in only 1 area, which would it be?
 - Which “number one priority” is really on top?
 - Remember Deming’s “constancy of purpose”?

Do Establish “Alignment Principle”

- **Example:**
 - “Achieve an annual, sustainable 10% reduction in field reported defects without degrading current levels of cost, schedule, and functional variance.”
- **Align business, project, and SPI goals**
 - SPI becomes “Software Project Improvement”
- **Communicate this broadly**
- **Focus with a passion!**

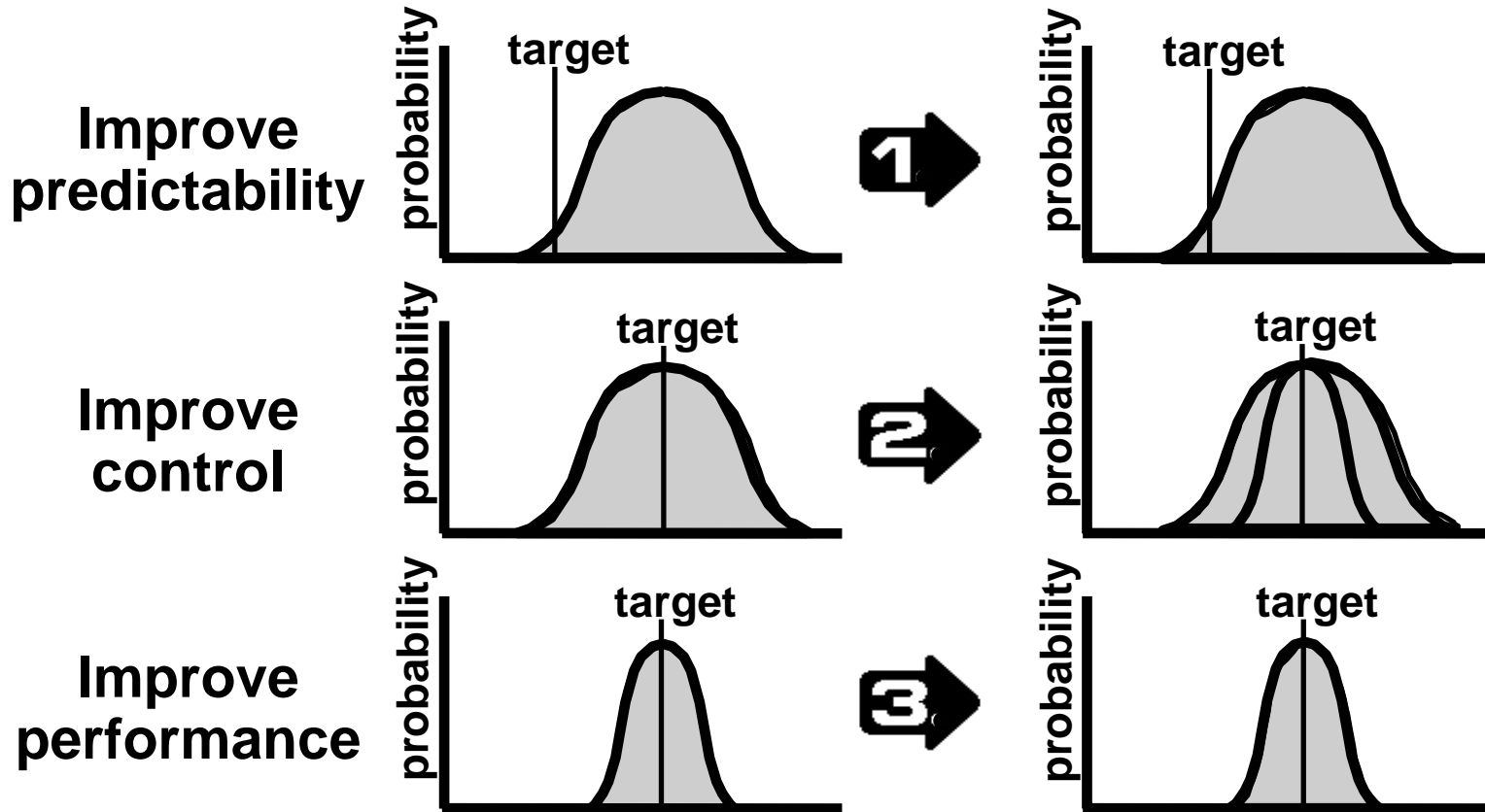
Do Take Time Getting Faster

- **Why would your customer believe 6 months when they don't believe 8?**
 - **Do YOU believe it?**
 - **Have you seen the plan?**
 - **Is it credible?**
 - **Remember: A wish is NOT a plan!**
- **How will the troops respond to this goal?**

Do Take Time Getting Faster

- **Despite what they SAY, most customers WANT predictability - they want to believe**
 - Applies equally well to:
 - Internal customers (Product Mgt / Marketing)
 - External customers
- **Prerequisite: enhance the credibility of your estimates**
 - The troops want to be believed!
 - It's a matter of professional integrity.

Improving Capability



Do Align the Reward System

- **What behavior do you reward today?**
 - **Who received the last few achievement awards?**
 - **Why did they receive them?**
 - **Why do people *perceive* they received them?**
 - **Perception is reality to the perceiver**
 - **Are the reward system and the Alignment Principle aligned?**

Do Align the Reward System

- **The behavior you reward is the behavior you get**
 - **Stop rewarding process arson and fire fighting**
 - **Start rewarding disciplined planning & execution**
- **Not all rewards are monetary**
 - **Atta-boys**
 - **Success stories published**
 - **Executive recognition**
 - **Promotions**
- **But money's nice too!**

Do Ask Different Questions

- **What do you ask about in project reviews today?**
 - Is the project on schedule?
 - Is the project on budget?
 - Whose fault is it?
 - Why don't I see anybody in here on Saturday?
- **Do you ask any questions related to process or process improvement?**

Do Ask Different Questions

- **The power of the executive question:**
 - **Management can:**
 - **influence behavior by asking different questions**
 - **change behavior by insisting on getting the answers!**
- **Try asking:**
 - **Is SPI helping you achieve our alignment principle?**
 - **What improvements are you piloting?**
 - **What SPI suggestions have you made recently?**
 - **What are the pain points in the current way of doing things?**

Do/Don't Lead By Example

- What are YOU doing to become more process disciplined?
 - Are any of your processes documented?
 - Does anyone verify that you are following them?
 - Are you trying to improve them over time?
- Are you sending the message, “Do as I say, not as I do”?

Do/Don't Lead By Example

- **Consider documenting the Organizational Commitment Process first**
 - “How does our organization commit to doing work on behalf of a customer?”
 - Involve peers in Marketing/Product Management
 - Pilot the process
 - Have SQA verify adherence
- **Demonstrate your personal commitment to process discipline and process improvement**
- **Sponsorship is nice; proactive leadership is better!**

Exercise

- **Do's and Don'ts: Senior Management**
 - **Don't** Treat the Level as the Goal
 - **Do** Establish “Alignment Principle”
 - **Do** Take Time Getting Faster
 - **Do** Align the Reward System
 - **Do** Ask Different Questions
 - **Do/Don't** Lead by Example
- **What now?**
 - Which would help your organization the most?
 - What are you going to do when you get back?
 - Are there other Senior Mgt **Do's** and **Don'ts**?

Do's and Don'ts

- Senior Management
- CMM(I)
- Measurement
- Process
- Behavioral Change
- (K)PA Specific
- Message from our Sponsor

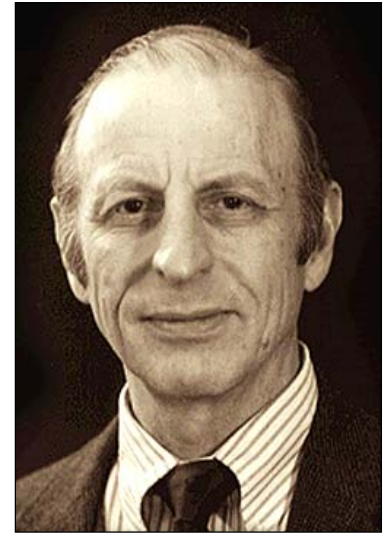
Do's and Don'ts: CMM(I)

**“All models are wrong;
some models are useful”**

- **Don't** Treat the CMM(I) as the Bible
- **Don't** Train the Masses on CMM(I)
- **Do** Become a Stronger Maturity Level 1
- **Don't** Skip Over Maturity Level 2
- **Don't** Use Appraisals for Diagnosis
- **Don't** Use the Continuous Representation
- **Don't** Use the Staged Representation

Don't Treat the CMM(I) as the Bible

- **Does Watts really look that much like Moses?**
 - **The CMM(I) is a good book but it's not THE good book!**
 - **1000+ suggested changes submitted**
- **It's just a model!**
 - **Goals - sound engineering/management principles**
 - **Practices - one way to accomplish the goals**
 - **Subpractices - insight into the practices.**



Don't Treat the CMM(I) as the Bible

- **Don't have one policy per (K)PA!**
 - Apply CMM(I) with your brain in “ON” position
 - Consider policies for:
 - Project Management Stuff
 - Engineering Stuff
 - Process Stuff
 - Write the policy LAST
- **Look elsewhere for additional guidance**
 - IEEE standards, ITIL, ISO, Baldrige
 - Books, periodicals, employees, Dilbert, etc.

Don't Train the Masses on CMM(I)

- **Have you heard the expressions:**
 - Here we go again?
 - The next silver bullet?
 - Yet another flavor of the month?
 - This too shall pass?
- **Have you ever read the CMM(I) like a novice?**
 - “System requirements allocated to software”?
 - “Software process database”?
 - “Organization(al) Process Focus”?
 - “Instantiation”???

Don't Train the Masses on CMM(I)

- **What should you do?**
 - **Train the SEPG on the CMM(I)**
 - **Train Process Action Teams on relevant portions**
 - **Train the unwashed masses on THEIR process**
 - **Consider providing CMM(I) orientation after:**
 - **Initial value has been proven**
 - **Momentum has been established**
- **Translate CMM(I)ese into local jargon**
 - **In order to influence behavior, folks have to understand it!**

Do Become a Stronger Level 1

- **How many Process Action Team do you have?**
 - **Do you have a PAT for each of the Level 2 KPAs?**
 - **Is your “process pain” equally distributed?**
 - **Can projects absorb all of these concurrent changes?**
- **Are the project managers, the SEPG’s customers, actively involved in establishing SPI requirements and priorities?**

Do Become a Stronger Level 1

- **Treat Level 1 as a continuum, not a point value**
 - **Improve in a few areas to gain:**
 - **Experience**
 - **Credibility**
 - **Momentum**
 - **Process discipline**
 - **One or two improvements per target audience**
 - **It's OK to improve in non-CMM(I) areas**
- **It's the education, not the degree, that makes you smarter.**

Don't Skip Over Level 2

- **Level 2 approach:**
 - Document the “as is” practices
 - Basis for improvement and sharing good practice
- **There is no "CMM(I) Level 2 In-a-Box"**
 - It's not the process documentation, Stupid!
 - The process documentation is **NOT** the process
- **Believe it or not, it's a BEHAVIORAL model.**

Don't Use Appraisals for Diagnosis

- **Diagnosis implies sickness/disease**
 - Nobody enjoys going to the doctor
- **An appraisal should be more like a health check**
 - “Health” is our overall feeling of well-being
 - Many people do enjoy going to the health club
 - Assume that the patient is already healthy
 - "Seeking opportunities to make the organization even better than it already is"
 - Assume that the patient wants to get even healthier
 - However, **IHEAL** sounds worse than **IDEAL**!

Don't Use Appraisals for Diagnosis

- **It's not about levels, it's about capability**
 - **Process improvement is a *tactical* approach to achieve a *strategic* business objective**
 - **When the map and the terrain disagree, always believe the terrain**
 - **The process documentation is the map**
 - **The process as performed is the terrain**
 - **Alternatively:**
 - **The level is the map**
 - **The behavior is the terrain.**

Don't Use the Staged Representation

Don't Use the Continuous Representation

- **Staged representation**
 - Prescribed ordering with proven results
 - Organizational change model
- **Continuous Representation**
 - Feel the pain/fix the pain
 - More granular level of information
 - Encouragement to consider quantitative management in any/all process areas
- **Don't** use *either* – **Do** use *both*.

Maturity Level 2 Example

	Staged at	1/1/03						
	Maturity	MSA	1Q04	2Q04		3Q04	4Q04	
	Level	Act	Plan	Plan	Act	Plan	Plan	Act
Project Mgt:								
PP	2	2	2	2		2	2	
PMC	2	1	1	2		2	2	
SAM	2	0	1	1		2	2	
Engineering:								
RM	2	1	2	2		2	2	
Support:								
CM	2	2	2	2		2	2	
PPQA	2	2	2	2		2	2	
MA	2	0	0	1		1	2	

Maturity Level 3 Example

	Staged at	1/1/04												
	Maturity	MSA	1Q04	2Q04	3Q04	4Q04	1Q05	2Q05	3Q05	4Q05				
	Level	Act	Plan	Plan	Act	Plan	Plan	Act	Plan	Plan	Act	Plan	Plan	Act
Process Mgt:														
OPF	3	1	1	2		2	2		2	3		3	3	
OPD	3	0	1	1		1	2		2	2		3	3	
OT	3	1	1	1		1	2		2	2		3	3	
Project Mgt:														
PP	2	2	2	2		3	3		3	3		3	3	
PMC	2	1	1	2		2	2		3	3		3	3	
SAM	2	0	1	1		2	2		2	3		3	3	
IPM	3	0	0	0		0	1		1	1		2	3	
RskM	3	1	1	1		1	1		1	2		2	3	
ISM	3	0	0	0		0	1		1	2		2	3	
Engineering:														
RM	2	1	2	2		2	2		3	3		3	3	
RD	3	1	2	2		2	2		2	3		3	3	
TS	3	1	1	1		1	1		1	2		2	3	
PI	3	1	1	1		1	1		2	2		2	3	
Ver	3	1	1	1		1	1		2	2		3	3	
Val	3	0	0	1		1	1		2	2		3	3	
Support:														
CM	2	2	2	2		2	2		3	3		3	3	
PPQA	2	2	2	2		3	3		3	3		3	3	
MA	2	0	0	1		1	2		2	2		3	3	
DAR	3	0	0	0		1	1		1	2		2	3	

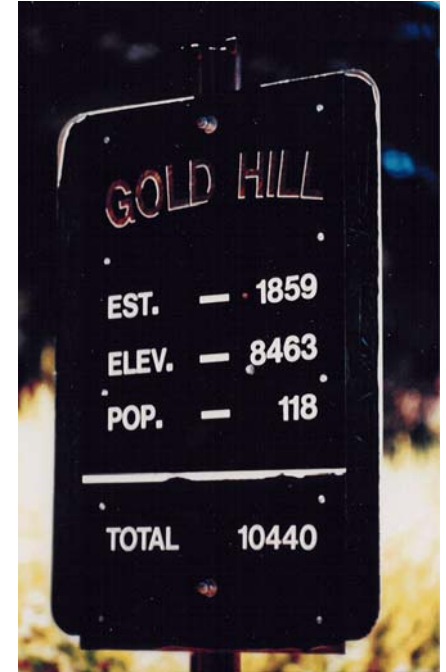
Do's and Don'ts

- Senior Management
- CMM(I)
- **Measurement**
- **Process**
- **Behavioral Change**
- **(K)PA Specific**
- **Message from our Sponsor**

Do's and Don'ts: Measurement

**“In God we trust,
all others bring data”**

- **Do** Employ Basic Measures **NOW!**
- **Don't** Collect Data You Don't Use
- **Do** Enhance Data Integrity



Picture by Bill Riddle
(Used with permission)

Do Employ Basic Measures **NOW!**

- **You don't have a current baseline?**
 - **If you don't start now, you'll be saying the same thing two years from now**
 - **Remember saying it two years ago?!**
- **What to measure?**
 - **Look to**
 - **The Alignment Principle**
 - **The goals of the process improvement program**
 - **Defects, effort, schedule.**

Do Employ Basic Measures **NOW!**

- **There is no physics in software**
 - You can't say, "It can't be done"
 - You should be able to say, "We can't do it"
- **Management's gut is typically bigger than yours.**

Don't Collect Data You Don't Use

- **Do you have “write-only” databases?**
 - **Do you use your:**
 - **Historical data to improve your estimates?**
 - **Inspection and risk data to detect trends?**
 - **Etc.**
- **Are your people “surveyed to death”?**
 - **Are your surveys valid?**
 - **Do things change based on the results?**
 - **Would the survey participants answer the same way?**

Don't Collect Data You Don't Use

- **Use it or lose it!**
 - **Data collection is an expensive investment**
 - **There is no ROI if the data is not used**
- **Don't conduct appraisals if nothing is to change**
 - **Same for Employee Satisfaction Surveys, etc.**
- **Better yet - USE THE DATA!**

Do Enhance Data Integrity

- **Data =>Information =>Action/Decisions =>Results**
 - Many organizations have “numbers”, not data
 - Many others have “stuff”, not even numbers
- **Define data for consistency**
 - Operational definition or some other technique
 - Unambiguous definitions
 - Automate data collection whenever possible.

Do Enhance Data Integrity

- **Track actuals at the same level you estimate**
 - Don't throw darts in the dark
 - Track actuals to *motivate* corrective action
- **Providers of data must be consumers of the data**
 - WIIFM?
 - Predictability/control/professional integrity/\$100
- **Adopt Grady's Rules of Data Etiquette**
 - Private vs. public data
 - Don't misuse the data.

Do's and Don'ts

- Senior Management
- CMM(I)
- Measurement
- **Process**
- **Behavioral Change**
- **(K)PA Specific**
- **Message from our Sponsor**

Do's and Don'ts: Process

It's NOT the process documentation, Stupid!

- **Don't** Over-Engineer Processes
- **Don't** Target Mega-Projects First
- **Do** Standardize Process, Not Procedure
- **Do** Establish a Process Architecture
- **Don't** Make Gurus Write Processes
- **Do** Think “Good” Not “Best” Practice

Don't Over-Engineer Processes

- **Engineers thrive on detail & elegance**
- **The "accordion effect" may be unavoidable**
 - **Typically start with very little in place**
 - **Develop thick process**
 - **Generate consensus**
 - **Train personnel**
 - **Developed abridged versions**
 - **Thin to win!**
 - **Experienced practitioner's cheat sheet**
 - **SQA/PPQA's review checklist**
 - **“Decomplexification.”**

Don't Over-Engineer Processes

- **Differentiate between:**
 - Process documentation
 - Training material
- **Don't give Process Action Teams too much time**
 - Parkinson's Law is sure to creep in
- **Have "good case examples" for guidance.**

Don't Target Mega-Projects First

- **Many groups build the “standard process” to address their largest projects**
 - **Theory is: easier to eliminate, than to add**
 - **Problem: Projects have to “justify” scaling down**
 - **Question: If it were built small=>large, would it be fundamentally different?**

Don't Target Mega-Projects First

- **Build thin process layer for medium projects**
 - **Scrutinize/rationalize changes as it's scaled up**
 - **Scale to accommodate additional:**
 - **Complexity**
 - **Coordination**
 - **Communication**
 - **Control**
- **Remember that the process serves the projects, not vice versa!**

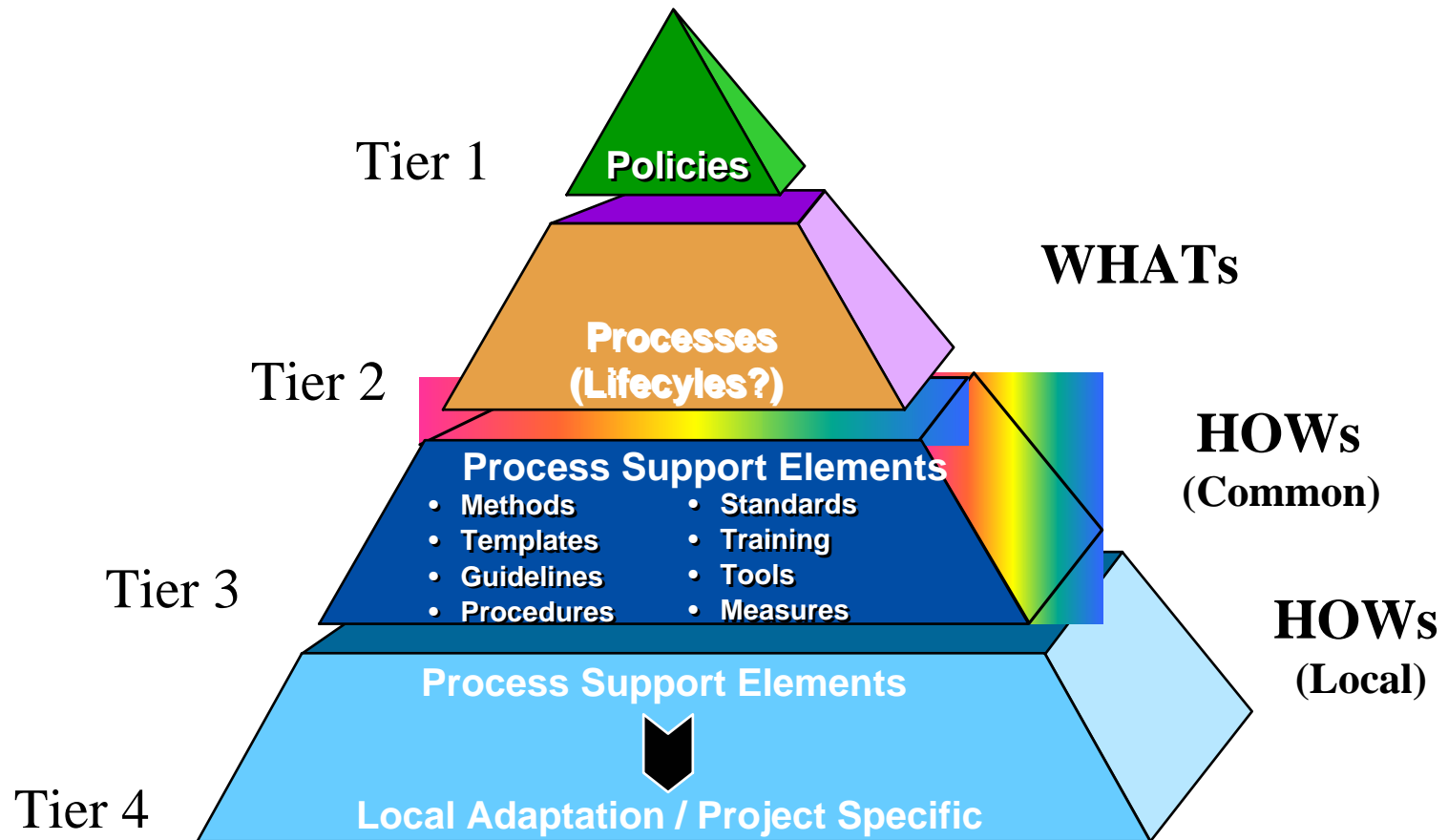
Do Standardize Process, Not Procedure

- **Level 3: Organization Std Software Process**
 - Process defines “what” is done
 - Procedure defines “how” it is done
- **Localized procedures make sense for different:**
 - Technologies/environments
 - Size/complexity of projects
 - Practices that are achieving success!
- **Level 3 requires standardized processes, not procedures!**

Do Establish a Process Architecture

- **Organizes process elements**
 - Policies
 - Processes
 - Process support elements
- **Assists with navigation**
- **Leads to common process-related jargon.**

Process Architecture



Don't Make Gurus Write Processes

- **SEPG can interview the guru**
 - Have them “think out loud” as they work
 - Generate a rough draft of the current process
 - Work with the guru to sand down rough edges
- **Tech writers can apply doc standards/packaging**
 - Present tense
 - Active voice
 - Each step begins with responsible role
 - Standard acronyms/roles, no split infinitives, etc.

Don't Make Gurus Write Processes

- **Subject process element to peer review**
 - **Involve other subject matter experts**
 - **Changes “your process” to “our process”**
 - **Build in “voice of the customer”**
 - **Introduces peer reviews on “safe” work products**
- **Make changes based on their feedback**
 - **Don't collect data you're not going to use!**
 - **Gets their fingerprints on the process element**
 - **Further enhances buy-in.**

Do Think “Good” not “Best” Practice

- **Avoid religious warfare for a 2% improvement**
 - “Just because I do it differently doesn’t mean I do it wrong”
 - Consistency is good, but weigh the cost/benefit
- **Don’t exercise stupidity in the name of consistency!**

Exercise

- **Do's and Don'ts: CMM, Measurement, Process**
 - **Don't** Treat the CMM as the Bible
 - **Don't** Train the Masses on CMM
 - **Do** Become a Stronger Level 1
 - **Don't** Skip Over Level 2
 - **Don't** Use Assessments for Diagnosis
 - **Do** Employ Basic Measures NOW!
 - **Don't** Collect Data You Don't Use
 - **Do** Enhance Data Integrity
 - **Don't** Over-Engineer Processes
 - **Don't** Target Mega-Projects First
 - **Do** Standardize Process, Not Procedure
 - **Do** Establish a Process Architecture
 - **Don't** Make Gurus Write Processes
 - **Do** Think “Good” Not “Best” Practice

Exercise

- **What now?**
 - Which would help your organization the most?
 - What are you going to do when you get back?
 - Are there other CMM, Measurement, or Process **Do's** and **Don'ts**?

Do's and Don'ts

- Senior Management
- CMM(I)
- Measurement
- Process
- **Behavioral Change**
- **(K)PA Specific**
- **Message from our Sponsor**

Do's and Don'ts: Behavioral Change

**If it isn't helping the projects succeed,
the SEPG is failing!**

- **Do Eliminate Low-Value-Added Tasks**
- **Do Pilot Early and Often**
- **Do Make Friday SPI-day**
- **Do Become a Learning Organization**
- **Don't Ignore the Adoption Curve**

Do Eliminate Low-Value-Add Tasks

- **Seek and eliminate some useless administrivia**
 - **The plate is only so big!**
- **Do this early and make some friends**
- **Helps avoid the "process weenie" tag.**

Do Pilot Early and Often

- **Don't debate issues in the ivory tower**
 - Wastes a lot of time
 - Chances are, both sides are wrong!
- **Run “alpha pilots” to test competing theories**
 - Seek feedback from the process executors
 - Value vs. overhead/disruption
 - Skills and cultural fit
 - Toolability
- **Run “beta pilots” to demonstrate readiness.**

Do Make Friday SPI-day

- **If you allocate part-time SEPG/PAT members:**
 - **Less than 20% is useless**
 - **Remember the Law of Raspberry Jam**
 - **The broader you spread it the thinner it gets**
 - **Don't spread it out - allocate a full day for SPI work**
 - **Friday is a lousy day - pick Wednesday instead!**
 - **Hold SPI people accountable for:**
 - **Achieving their SPI milestones and deliverables**
 - **Renegotiating their SPI commitments**
 - **Make it part of their performance review.**

Do Become a Learning Organization

- **Most organizations are Learning Organizations**
 - **But, most are Forgetting Organizations as well**
- **Don't just cram for the final exam - use quizzes**
 - **At the end of each *phase*, ask:**
 - **What went right; why?**
 - **What went wrong; how could it have been avoided?**
 - **What problems escaped from previous phases?**
 - **Recommit to next phase work products/processes**
 - **Review “lessons identified”**
 - **From your last project**
 - **From other projects.**

Do Become a Learning Organization

- **The flip side of every assumption is a risk**
 - And the flip side of every risk is an opportunity!
- **Every problem is a risk that was overlooked**
 - How can you gain better foresight next time?
 - Establish triggers indicating, “Here we go again!”
- **Learn from other projects**
 - Each project exploits organizational knowledge
 - Each project contributes as well
 - Flag data from “less than successful” projects
 - Otherwise, those who study history are bound to repeat it!

Don't Ignore the Adoption Curve

- **You will NOT convert the unwashed masses**
 - Don't waste cycles on the late majority/laggards
 - Target the innovators and early adopters
 - Prove the value and capture the early majority
- **Senior management must exercise “tough love”**
 - Apply pressure on the late majority
 - Apply sanctions on the laggards
 - Ultimately, compliance becomes part of the “salary continuation program.”

Do's and Don'ts

- Senior Management
- CMM(I)
- Measurement
- Process
- Behavioral Change
- **(K)PA Specific**
- **Message from our Sponsor**

Do's and Don'ts: (K)PA Specific

- **Do Implement Value-Added SQA**
- **Do Evolve SQA's Role**
- **Do Implement Peer Reviews Slowly**
- **Do Reinvigorate Your Peer Reviews**

Do Implement Value-Added SQA

- **Invest your best and brightest**
 - **Train them to serve as project coaches/mentors**
 - **Consult on the selection of process elements**
- **First focus on process adoption not compliance**
 - **Assist projects in adopting the process and deriving the intended value**
 - **Ask about the value of the process - and LISTEN!**
 - **Solicit feedback on administrivia/improvements**
 - **Are there resources/skills issues to be addressed?**
 - **Help them Obiwan, you're their only hope!**

Do Implement Value-Added SQA

- **The first two audits of a new process are freebies**
 - **First one is “understanding”**
 - **Second one is “alignment”**
 - **Third one is for real**
- **Differentiate non-compliances by severity**
 - **Tailor reporting and escalation accordingly**
- **Consider naming SQA “Process Assurance”**
 - **Don't use full Process Assurance until you have:**
 - **Defined process**
 - **Work product standards.**

Do Evolve SQA's Role

- **Level 1: SQA instills process discipline**
 - Assists with process adoption
 - Compliance based on “fear of the audit”
- **Level 2: SQA detects process erosion**
 - Sampling is fine! Selection based on:
 - Most critical items
 - Systemic problems
 - Items selected at random
 - If major non-compliances, then conduct full audit
 - Perform trend analysis to detect process erosion.

Do Introduce Peer Reviews Slowly

- **Peer reviews have huge potential payback**
 - Provide higher quality products at a lower cost
 - Achieve application/technical cross-training
- **Start with no more than 3 work products**
 - Favor early life cycle work products
 - Requirements, design, high-complexity code?
- **Add new work products slowly and judiciously**
 - Sampling is OK!
 - Establish the process, value, buy-in, and culture.

Do Introduce Peer Reviews Slowly

- **Conduct data analysis**
 - **Determine how data will be used**
 - **Work product defect density**
 - **Defect phase containment**
 - **Establish how data will NOT be used**
- **Softer, gentler approach**
 - **“Saves” and “escapes” vs. defects**
- **Inject defects to gauge review effectiveness**
 - **Hawthorne effect kicks in as well**
- **Make the team co-responsible for the quality of the work product.**

Exercise

- **Do's and Don'ts: Behavior and (K)PA Specific**
 - **Do** Eliminate Low-Value-Added Tasks
 - **Do** Pilot Early and Often
 - **Do** Make Friday SPI-day
 - **Do** Become a Learning Organization
 - **Do** Implement Value-Added SQA
 - **Do** Evolve SQA's Role
 - **Do** Implement Peer Reviews Slowly
 - **Don't** Ignore the Adoption Curve
- **What now?**
 - Which would help your organization the most?
 - What are you going to do when you get back?
 - Are there other Behavior or KPA **Do's** and **Don'ts**?

Do's and Don'ts

- Senior Management
- CMM(I)
- Measurement
- Process
- Behavioral Change
- (K)PA Specific
- **Message from our Sponsor**

Do Participate in Your Local SPIN

- **Learn from others' experience**
- **Get consultation on your issues**
- **Provide consultation on their issues**
- **Expand your network**
- **All for one low price of admission!**

Questions?

Pat O'Toole

Process Assessment, Consulting & Training

952-432-0693

PACT.otoole@att.net