

# DAR: Appraisal is Coming,... No Trade Studies Anywhere,... Now What?

**SEPG Conference 2008**

March 17 - 20, 2008

---

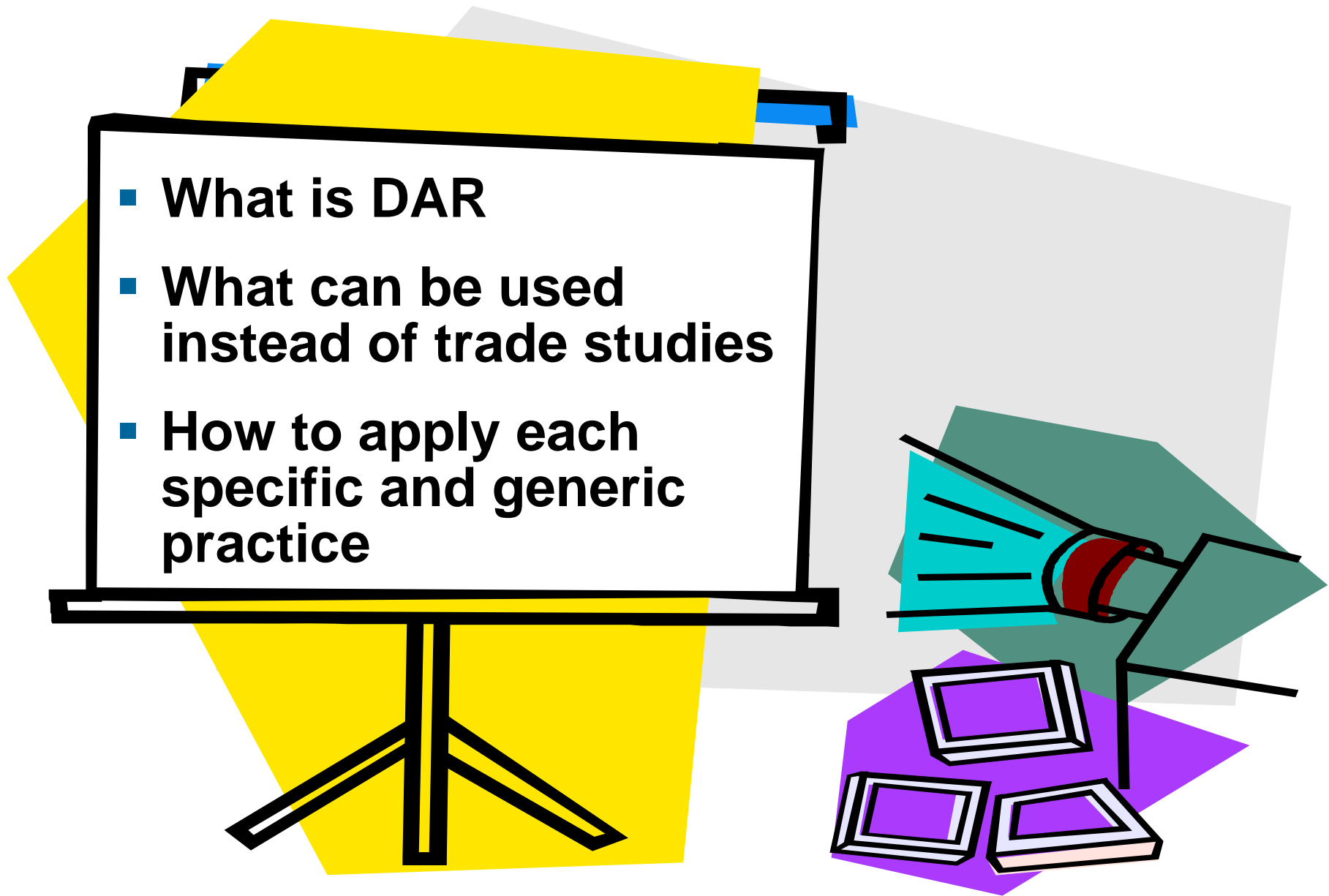
**Diane Mizukami (Williams)**

[Diane.Mizukami@ngc.com](mailto:Diane.Mizukami@ngc.com)

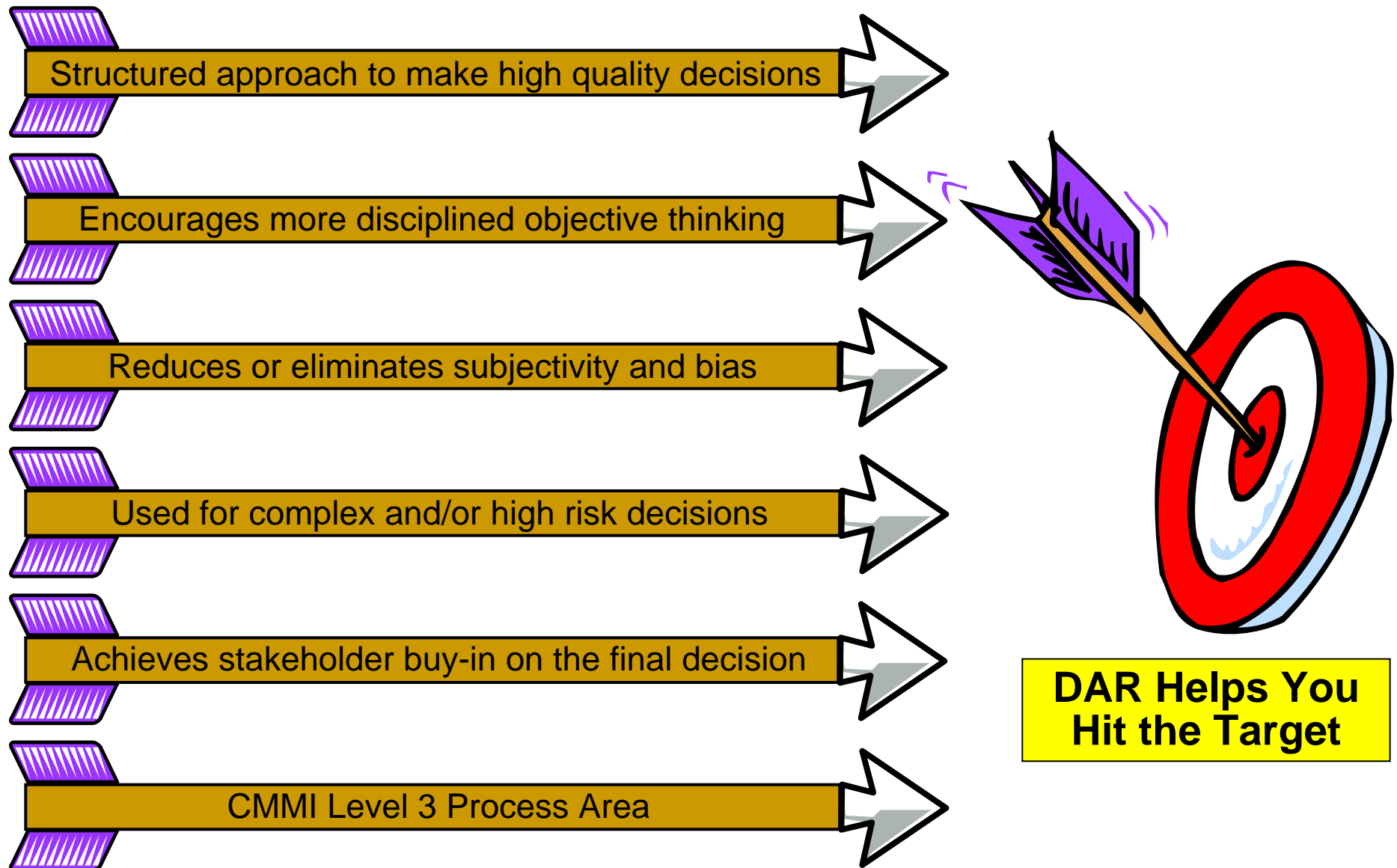
**Northrop Grumman Corporation**

# Agenda

---

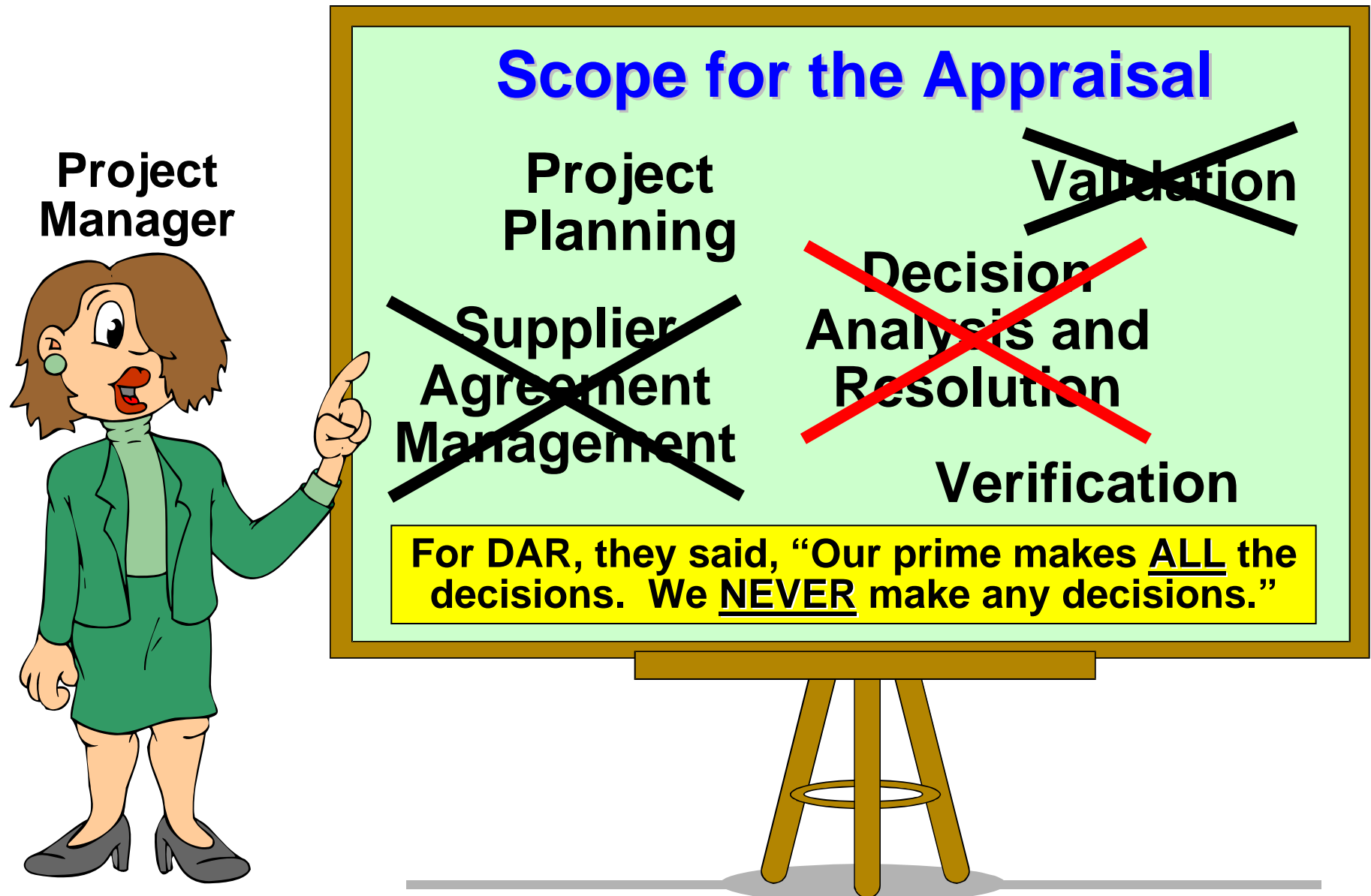
- 
- What is DAR
  - What can be used instead of trade studies
  - How to apply each specific and generic practice

# What is Decision Analysis and Resolution (DAR)?



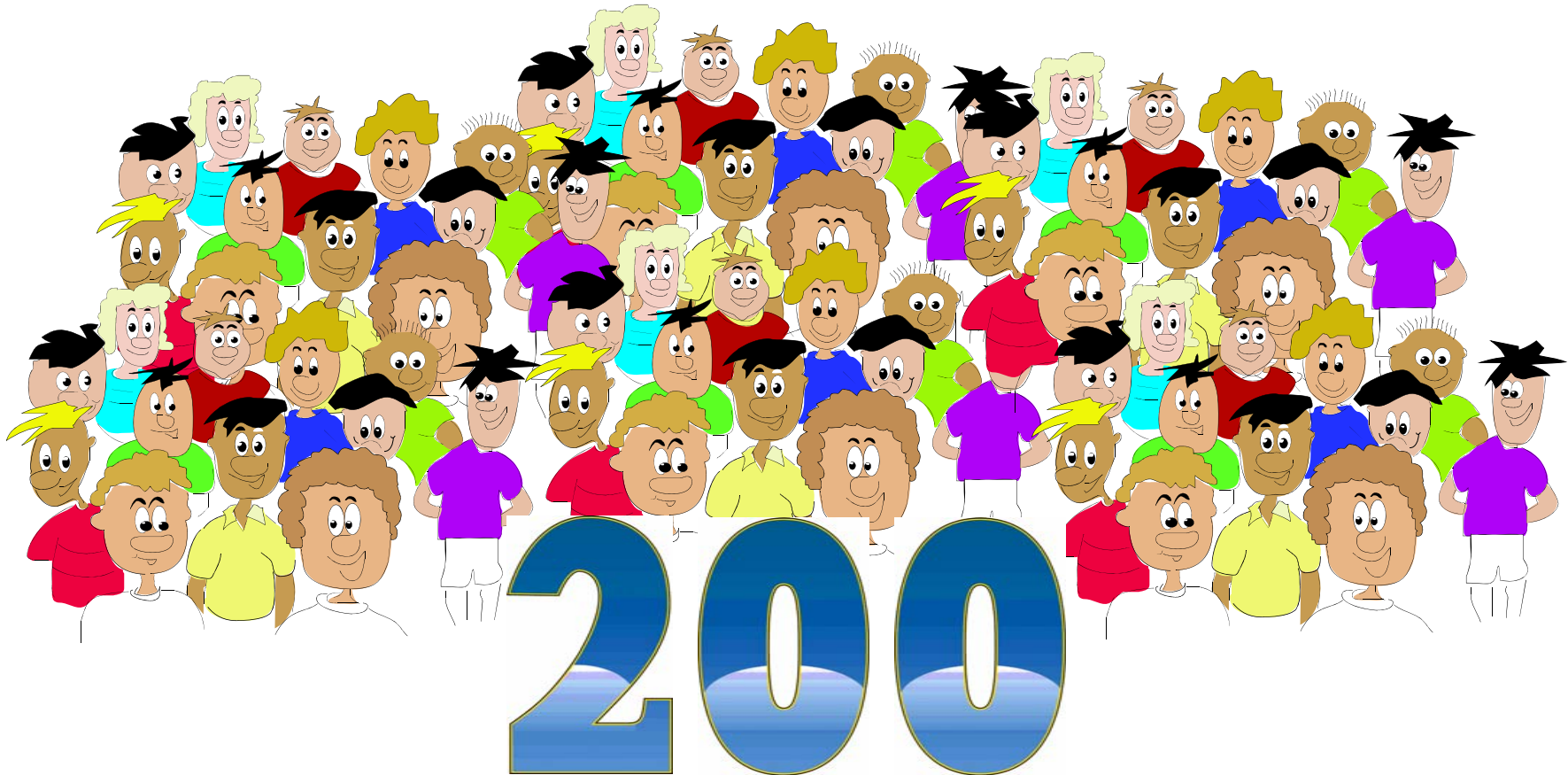


# Don't You Love the Excuses! (1 of 2)



## Don't You Love the Excuses! (2 of 2)

**When asked how many Northrop Grumman people are on the project, the answer was . . .**



**... but Northrop Grumman never makes any decisions.**

# Don't You Love the Cheaters!

## DAR Applies When:

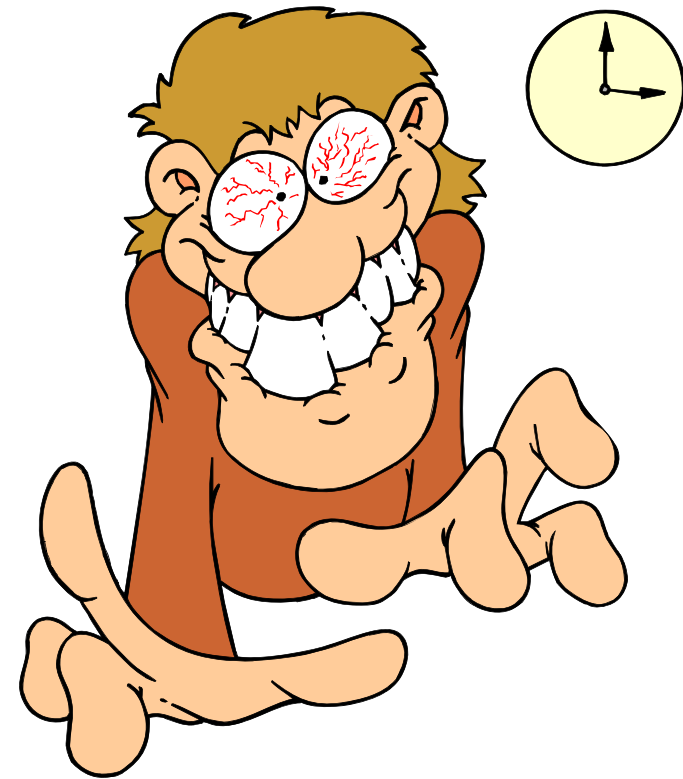
- The cost is greater than 500 trillion dollars
- The schedule is affected by more than 1,000 years
- The Project Manager supports CMMI



**Geez,... DAR was a breeze!**

**Criteria for when to use DAR are set so high that DARs never occur.**

# Don't You Love the People Who Panic!



## Project Manager's Response

**Then just do a trade study on what type of pens to buy!**

# Need Help? Try Using Boards for DAR

## LOOK!

- Projects apply DAR in a very limited way and only apply it to technical decisions using trade studies
- DAR can be applied to other types of decisions
- Use boards such as the Change Control Board (CCB), Risk Management Board (RMB), etc. for DAR
- Just formalize the process





# Text From the CMMI for DAR

CMMI-SE/SW/PPD/SS, v1.1 Staged Representation	
<b>DECISION ANALYSIS AND RESOLUTION</b>	
Maturity Level 3	
<b>Purpose</b>	The purpose of this process is to establish guidelines for decision analysis and resolution.
<b>Introductory Notes</b>	<p>The Decision Analysis and Resolution process is used to establish guidelines for decision analysis and resolution.</p> <p>A formal evaluation process is used to determine which issues are subject to a formal evaluation process.</p> <p>Typical guidelines for determining when to require a formal evaluation process include the following:</p> <ul style="list-style-type: none"> <li>When a decision is directly related to topics assessed as being of medium or high risk</li> <li>When a decision is related to changing work products under configuration management</li> <li>When a decision would cause schedule delays over a certain percentage or specific amount of time</li> <li>When a decision affects the ability to achieve project objectives</li> <li>When the costs of the formal evaluation process are reasonable when compared to the decision's impact</li> </ul>

**CCB Applies**

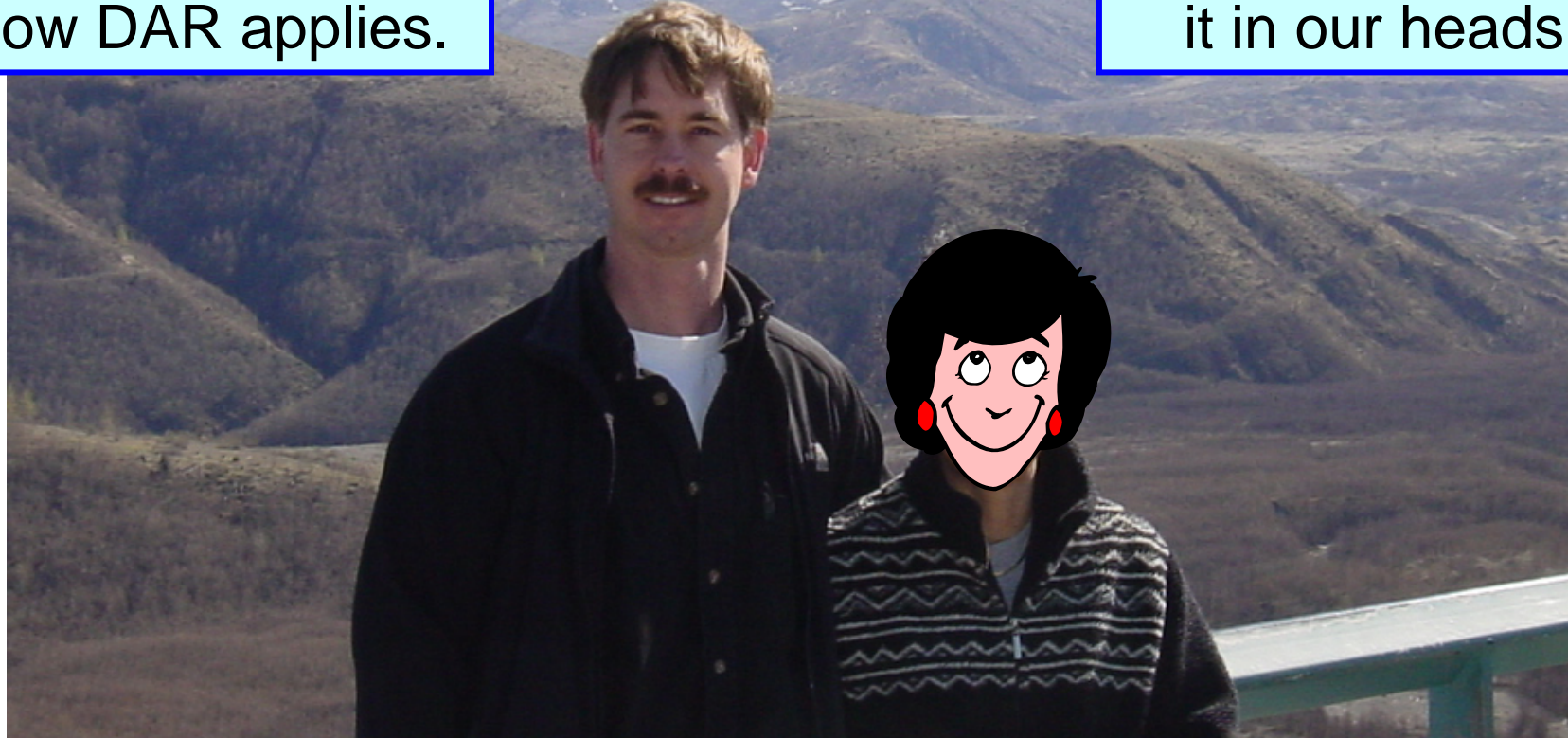
# Meet My Husband Ed

## Ed's Purpose #1

To break up the boredom of monotonous text slides and show how DAR applies.

## Ed's Purpose #2

To show how much we use DAR even in our personal lives,... we just do it in our heads.



# SP 1.1 Establish Guidelines for Decision Analysis

## SP 1.1

Establish and maintain guidelines to determine which issues are subject to a formal evaluation process.

In project plans, include guidelines for when to use a formal evaluation process.

- Include in project plans, “For decisions made at formal boards, such as the CCB, use a formal evaluation process.”
- Also include traditional decisions subject to a formal evaluation, such as COTS selection, subcontractor selection, make or buy, alternative designs, etc.
- Also include traditional criteria (triggers), such as cost is over XYZ, schedule is impacted by more than XYZ, decision adds risk, etc.

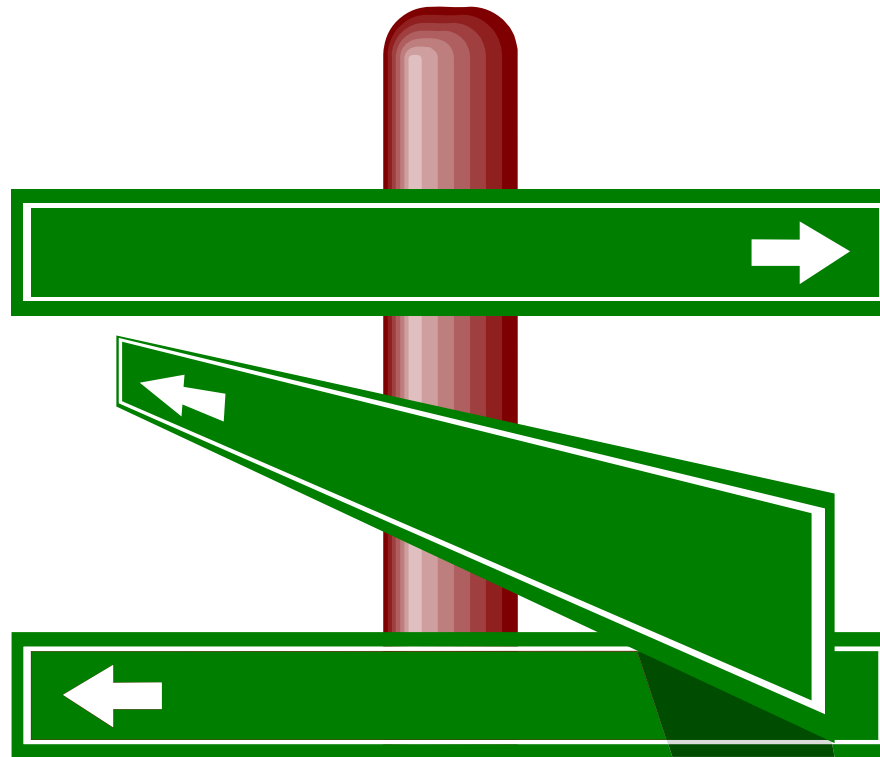
# Ed's Guidelines for When to Do a Formal Evaluation



Alternative will  
make her happy

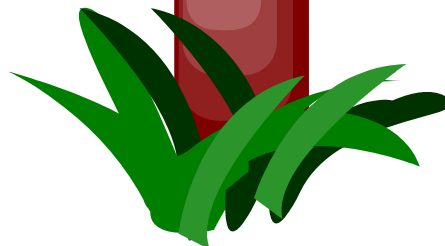


Alternative will  
make her mad



Alternative will  
make her spit

**Guidelines:** For key decisions  
that affect my wife, use a  
formal evaluation process.



# Ed Needs to Make a Decision

---

**Yay! I got a big bonus! Should I tell my wife?**





## SP 1.2 Establish Evaluation Criteria

### SP 1.2

Establish and maintain the criteria for evaluating alternatives, and the relative ranking of these criteria.

In project plans, define criteria ranked in order of importance for how the CCB chooses among the alternatives.

- 1 **Customer Satisfaction:** Changes related to customer satisfaction are usually accepted.
- 2 **Availability of Budget:** Consider deferring or rejecting changes if budget is currently not available. Consider rejecting changes that have higher costs with little benefits (cost/benefit analysis)
- 3 **Impact to Schedule:** Consider deferring or rejecting changes that significantly impact the schedule.
- 4 **Technical Criticality:** Accept all high severity bugs and failure to meet requirements.
- 5 **Risk to the Project:** Consider rejecting the change if it significantly increases the risk of mission success. If the change is accepted, add it to the risk watch list.
- 6 **Availability of Staff:** Consider deferring or rejecting changes if staff is not available to make the change.

# Ed's Criteria Ranked in Order of Importance



Use Your Imagination



How Will She React



Will She Spend Money



Will There be Repurcussions (baby sit)



Will I Get a Homecooked Meal (yeah, when pigs fly)

**Criteria:** These things will help Ed make the right decision. These are criteria for “Decisions that affect my wife”.

## SP 1.3 Identify Alternative Solutions

### SP 1.3

Identify alternatives to address issues.

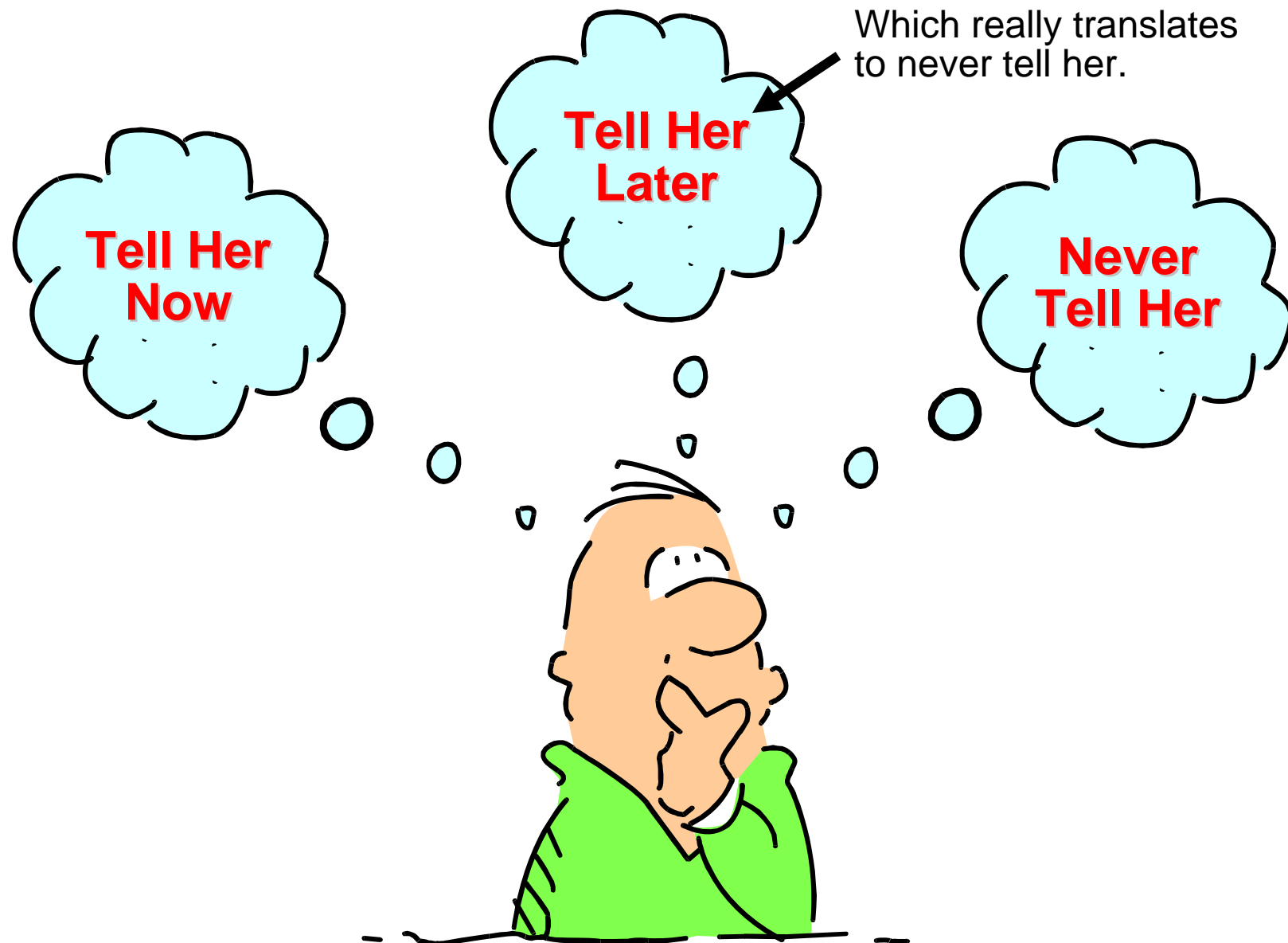
In project plans, define the alternatives the CCB has to choose from for each change.

Include in project plans, “For each change, the CCB chooses from among these alternatives:

- \* **Accept:** Accepted the change per the criteria defined in SP 1.2.
- \* **Reject:** Rejected the change per the criteria defined in SP 1.2.
- \* **Defer:** Need further information before making a decision or the change is deferred to a later time.
- \* **Withdraw:** Duplicates, misunderstandings, or Overcome by Events
- \* **etc.”**

# Ed's Alternatives for Whether to Tell the Wife

---



## SP 1.4 Select Evaluation Methods

---

### SP 1.4

Select the evaluation methods.

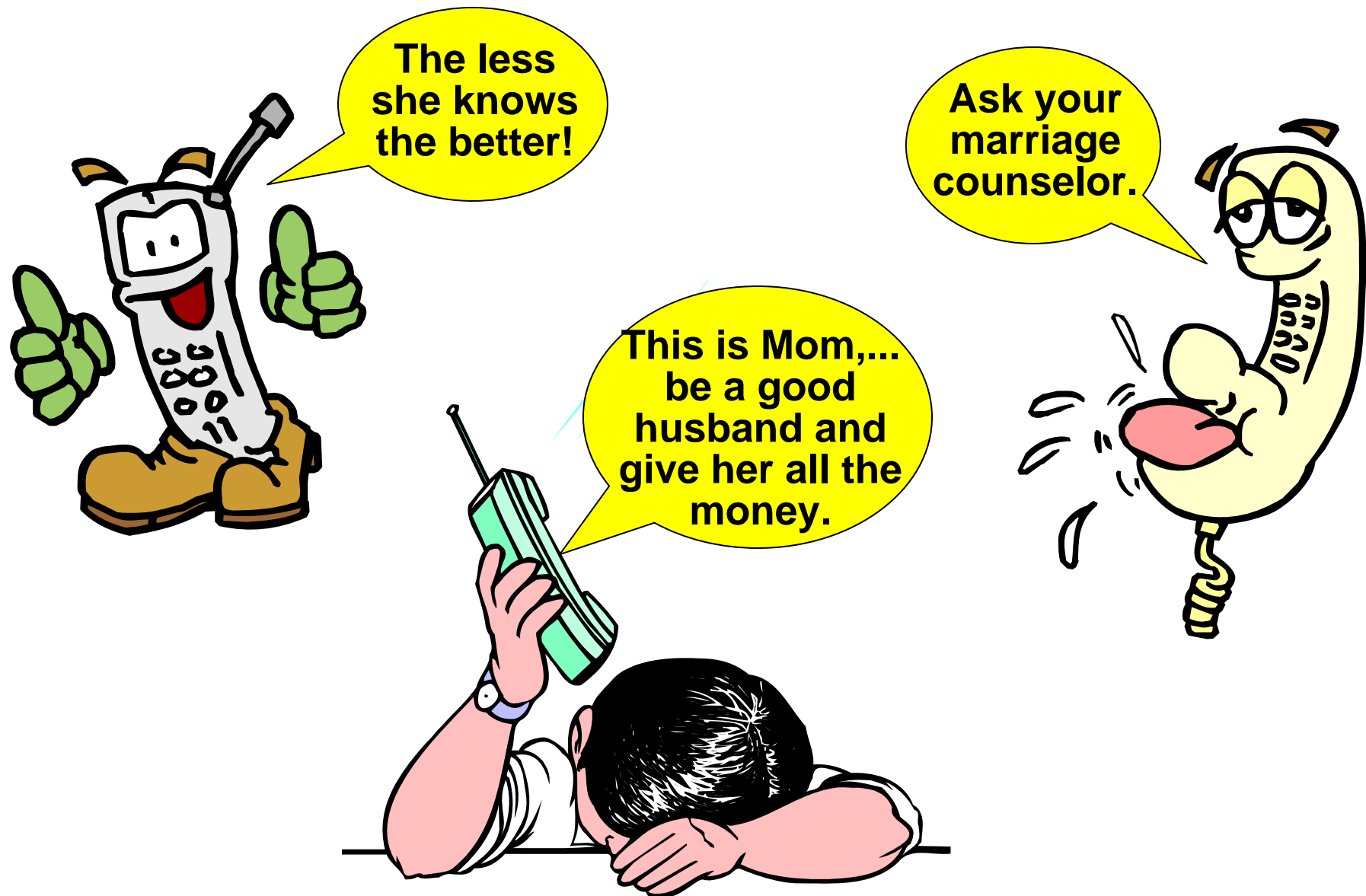
In project plans, describe all evaluation methods such as trade studies, including the method for making decisions at the CCB.

Include in project plans:

- **Impact Analysis:** Conduct impact analysis for schedule, cost, risk, technical performance, etc., using surveys, reviews, analysis of data, etc.
- **Consensus:** Use consensus to make the decision. This technique should only be used if a quorum (80%) of relevant stakeholders are present.
- The evaluation methods used by the CCB to choose from among the alternatives are Impact Analysis and Consensus.



# Ed's Method is "Call a Buddy" Followed by Analysis



## SP 1.5 Evaluate Alternatives

---

### SP 1.5

Evaluate alternative solutions using the established criteria and methods.

This is time consuming. In project plans, ensure this is limited to more significant changes.

- **Analyze the alternatives (Accept, Reject, Defer, Withdraw, etc.) per the criteria and rankings (Customer Satisfaction, Cost, Schedule, etc).**
- **Projects usually have an impact analysis section in their CM system, such as Cost Impact, Schedule Impact, Risk, Technical Performance, Severity, etc.**
- **The CCB uses the analysis to select from among the alternatives using consensus.**

# Ed Evaluates His Choices (Actually Done in His Head)

Per the CMMI, you should also consider risk when making a decision.

Criteria	Weight	Tell Her Now	Tell Her Later	Never Tell Her (but she finds out)
Use Your Imagination	35%	8 (280) She may still have a headache but chances are good.	6 (210)	1 (35)
How Will She React	25%	10 (250)	8 (200) She will still be happy but alittle annoyed.	1 (25)
Will She Spend Money	20%	3 (60) She will be happy and leave some money for me.	8 (160) I'll spend most of the money before I tell her.	1 (20) She will be so mad that she'll spend all of it.
Will There be Repercussions (baby sit)	10%	3 (30) She'll take me shopping with her, UGH!	5 (50)	7 (70) She'll be so mad, she'll go shopping herself. I babysit.
Will I Get a Homecooked Meal (yeah, when pigs fly)	10%	1 (10) Get real,... does she ever cook?	1 (10)	1 (10)
<b>TOTAL</b>		<b>770</b>	<b>630</b>	<b>160</b>

Scale from 1 to 10 where 10 is a good result and 1 is a bad result.

## SP 1.6 Select Solutions

### SP 1.6

Select solutions from the alternatives based on the evaluation criteria.

Show the selected solution and the rationale for why the solution was selected, which is related to the criteria.

- The customer requested change 20; therefore, the change was accepted.
- Incorporating change 62 significantly increases the risk of delivering the product on schedule; therefore, the change was rejected.
- Diane is on vacation for 1 year; therefore, change 48 was deferred to build 3.
- If change 18 is not corrected, the software will fail the redundancy requirements; therefore, the change was accepted.

# Generic Practices

---

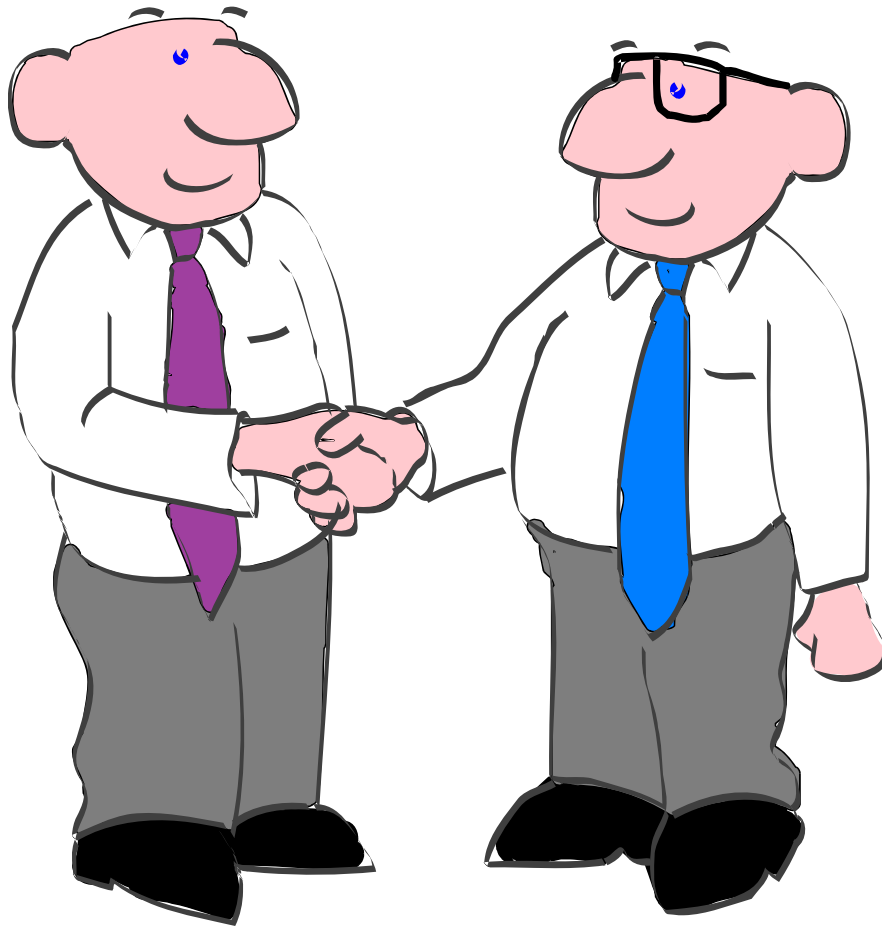
## The Generic Practices could also relate to the CCB:

- **GP 2.2** : Project Management Plan that has DAR criteria and methods and CM Plan that has the CCB section
- **GP 2.3** : CM Resources for the CCB
- **GP 2.4** : Role, responsibility, and authority for the CCB Chair, CCB Secretary, and CCB Members
- **GP 2.5** : DAR training which includes slides for the CCB
- **GP 2.6** : CCB Agenda, CCB Minutes, and Change Requests placed under control
- **GP 2.7** : Identification of CCB members, and which members are the relevant members (voting members). CCB minutes as evidence of involvement.
- **GP 2.8** : Report significant CCB decisions to the Project Manager
- **GP 2.9** : QA attends CCBs and audits the CCB process
- **GP 2.10** : Report significant CCB decisions to higher-level management



# Make Sure Your Approach is Approved

---

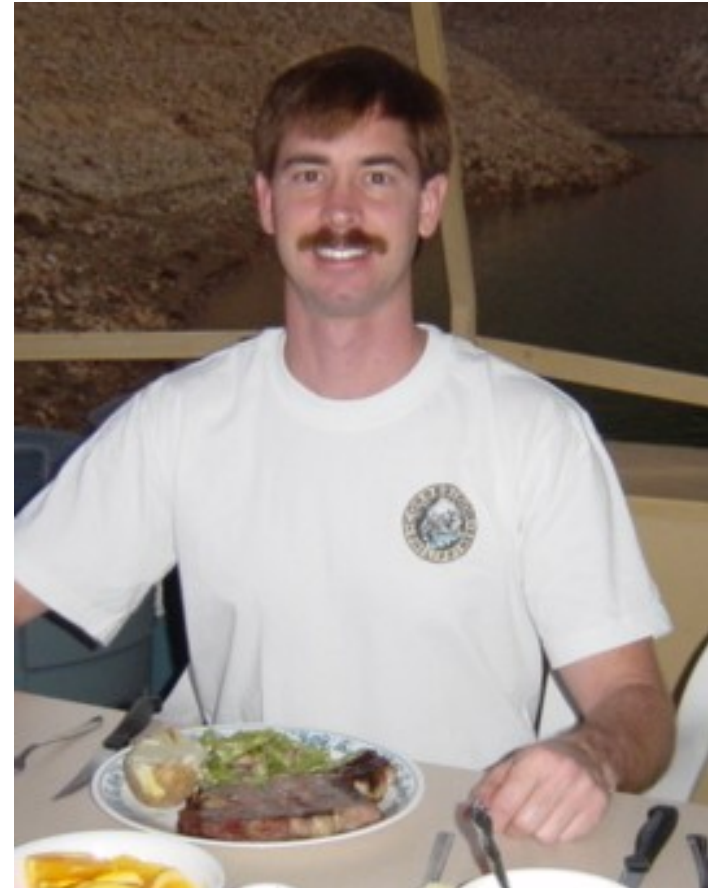


- Some appraisers may not be familiar with other DAR approaches
- Present your approach to your lead appraiser
- Ensure the lead appraiser agrees with the approach
- Ensure there is a formal agreement to prevent surprises during the appraisal
- Northrop Grumman Mission Systems uses an “Interpretations Briefing”, which is approved by the lead appraiser prior to the appraisal, and is presented to the team on the first day of the appraisal

# Ed's Final Decision on Whether to Tell the Wife

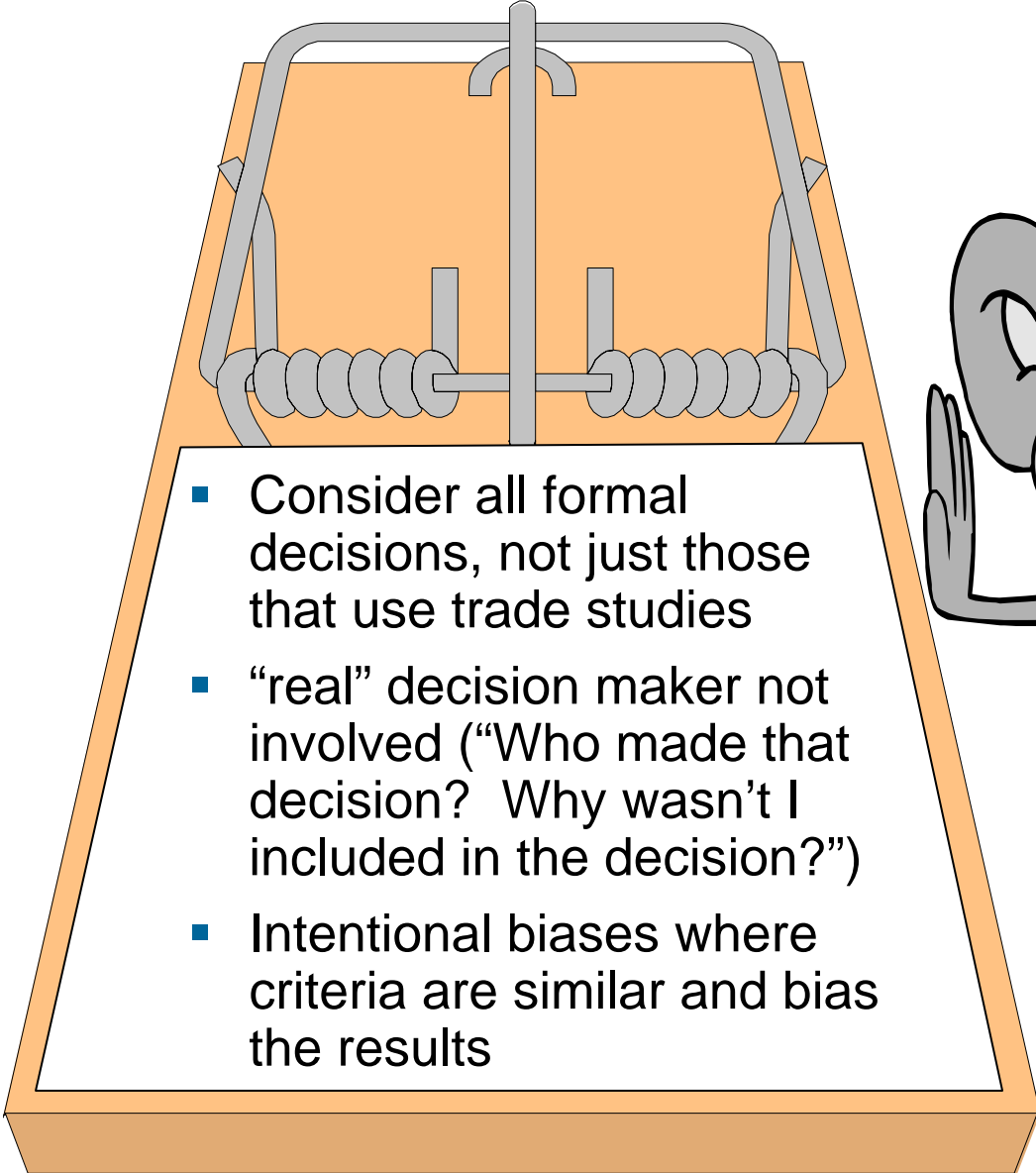


**Tell Her Now**



**Pigs Do Fly,... Ed Got  
His Homecooked Meal**

# Summary and Traps to Avoid

- 
- Consider all formal decisions, not just those that use trade studies
  - “real” decision maker not involved (“Who made that decision? Why wasn’t I included in the decision?”)
  - Intentional biases where criteria are similar and bias the results



**Diane.Mizukami@ngc.com**  
**310-921-1939**