ATLAS Shrugged

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(with apologies to Ayn Rand and John Galt)

ATLAS

- "Ask The Lead AppraiserS"
- A scenario-based email forum used to elicit opinions on "interesting" topics
- Distributed to all 400+ LAs and 1500+ non-LAs
- Limited to one page
- Multiple choice format - ample room for comments
- Results are compiled and published by PACT with no intellectual property rights retained
- SEI is just another recipient of the data – they do not sponsor or influence ATLAS in any way.

ATLAS Scenarios

Scenario number (# LA's / # non-LA's)

#1 – Bidirectional traceability (46/45)

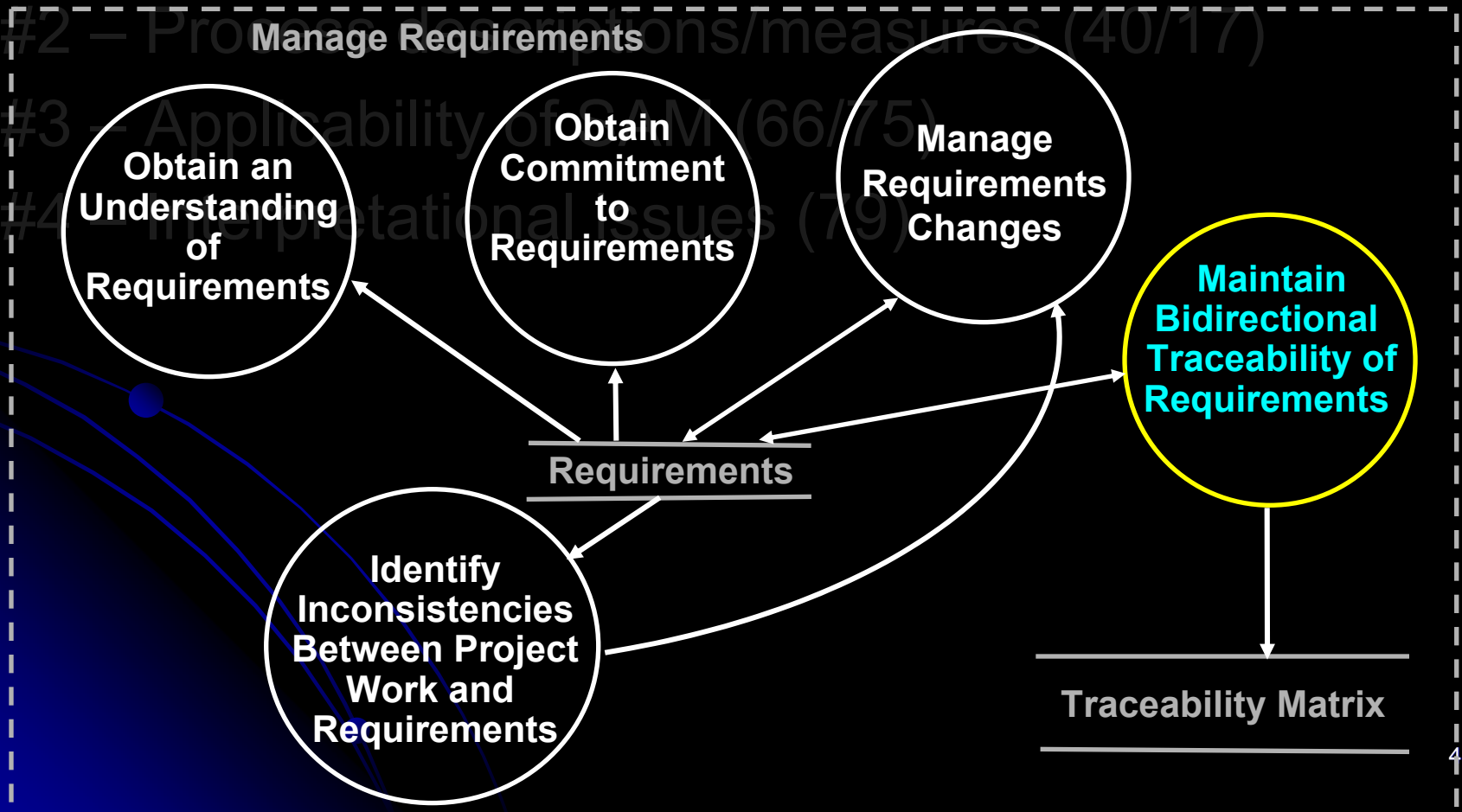
#2 – Process descriptions/measures (40/17)

#3 – Applicability of SAM (66/75)

#4 – Interpretational issues (79)

ATLAS Scenarios

#1 – Bidirectional traceability (46/45)



ATLAS #1 – Bidirectional Traceability

- A project in a SCAMPI A appraisal is:
  - estimated to be 30,000 person hours
  - 14 months into its 18 month schedule
  - preparing to initiate system testing
- No alternative practices for this project.

Question 1

1. For this project, which selection best represents your view of model expectations with respect to REQM SP1.4?
   A. Vertical and horizontal traceability
   B. Either vertical or horizontal traceability
   C. Only vertical traceability
   D. Only horizontal traceability
   E. Other

Answer 1: Model Expectations

Selected choice:	Leads	Non-Leads
A: Vertical and horizontal	70%	84%
B: Vertical or horizontal	13%	0%
C: Vertical only	13%	11%
D: Horizontal only	0%	4%
E: Other/None	4%	0%

Question 2

2. What characterization (FI, LI, PI, NI) is most appropriate if there is:

   A. ___ Ample evidence of vertical traceability but no evidence of horizontal traceability?

   B. ___ Ample evidence of horizontal traceability but no evidence of vertical traceability?

Answer 2a - Characterizations

Ample evidence of vertical traceability
but no evidence of horizontal traceability

Selected choice:	Leads	Non-Leads
A. FI	20%	15%
B. LI	39%	32%
C. PI	36%	47%
D. NI	5%	6%

Answer 2b - Characterizations

Ample evidence of horizontal traceability but no evidence of vertical traceability

Selected choice:	Leads	Non-Leads
A. FI	7%	2%
B. LI	11%	9%
C. PI	66%	66%
D. NI	16%	23%

Question 3

3. For each of the following, please indicate if you consider it to be:

   A. Vertical Traceability

   B. Horizontal Traceability

   C. Neither

   D. Both

   E. I don’t have a clue! (Don’t know)

Answer 3a – Traceability Type

High-level business requirements are traceable to feature requirements

Selected choice:	Leads	Non-Leads
A: Vertical	95%	86%
B: Horizontal	5%	2%
C: Neither	0%	0%
D: Both	0%	12%
E. Don't Know	0%	0%

Answer 3b – Traceability Type

Traceability is maintained among interdependent functional requirements

Selected choice:	Leads	Non-Leads
A: Vertical	4%	9%
B: Horizontal	82%	74%
C: Neither	2%	2%
D: Both	9%	16%
E. Don't Know	2%	0%

Answer 3c – Traceability Type

Each of the 500+ system test cases lists the specific requirement(s) being tested

Selected choice:	Leads	Non-Leads
A: Vertical	78%	67%
B: Horizontal	16%	21%
C: Neither	2%	4%
D: Both	4%	9%
E. Don't Know	0%	0%

Note: Traceability ACROSS the life cycle is "vertical;"

And we wonder why there are interpretational issues!

Answer 3d – Traceability Type

System requirements are traceable to the group(s) to which they are allocated

Selected choice:	Leads	Non-Leads
A: Vertical	51%	32%
B: Horizontal	29%	39%
C: Neither	16%	14%
D: Both	0%	16%
E. Don't Know	4%	0%

Answer 3e – Traceability Type

Technical requirements are traceable to specific elements in the WBS

Selected choice:	Leads	Non-Leads
A: Vertical	51%	40%
B: Horizontal	29%	35%
C: Neither	16%	16%
D: Both	4%	7%
E. Don't Know	0%	2%

ATLAS #1 Note

- The SEI's website contains answers to "Frequently Asked Questions" (FAQ)
- Bidirectional traceability is covered:
  - **http://www.sei.cmu.edu/cmmi/faq/new-faq.html#Q318**
  - **See partial text on next slide**
- Only 1 of nearly 100 respondents (a lead appraiser) mentioned the SEI FAQ!

SEI FAQ regarding Traceability

Vertical traceability identifies the origin of items (e.g., customer needs) and follows these same items as they travel through the hierarchy of the WBS to the project teams and eventually to the customer. When the requirements are managed well, traceability can be established from the source requirement to its lower level requirements and from the lower level requirements back to their source.

Horizontal traceability is also important, but it is not required to satisfy bidirectional traceability. Horizontal traceability identifies the relationships among related items across work groups or product components for the purpose of avoiding potential conflicts. For example, horizontal traceability would follow related requirements across two work groups working on two associated components of a product.

ATLAS Scenarios

#1 – Bidirectional traceability (46/45)

#2 – Process descriptions/measures (40/17)

#3 – Applicability of SAM (66/75)

#4 – Interpretational issues (79)

ATLAS #2: Process Descriptions

When conducting a ML2 appraisal, the organization has no documented process descriptions, and organizational personnel corroborate this.

Question 1

Would you document a weakness regarding the lack of process descriptions? _____

	Yes	No
Lead Appraisers	79%	21%
Non-Leads	87%	13%

Do you perceive this to be a goal-threatening weakness? _____

	Yes	No
Lead Appraisers	65%	35%
Non-Leads	73%	27%

ATLAS #2: Metric Specifications

When conducting a ML2 appraisal the organization employs project and product measures, but no process measures. Organizational personnel corroborate this.

They DO plan and track the process activities associated with REQM, PP, PMC, etc., but they have not implemented any process measures as suggested by the GP2.8 example boxes.

Question 2

Would you document a weakness regarding the lack of process measures? _____

	Yes	No
Lead Appraisers	51%	49%
Non-Leads	80%	20%

Do you perceive this to be a goal-threatening weakness? _____

	Yes	No
Lead Appraisers	18%	82%
Non-Leads	53%	47%

ATLAS #2 – How Much Is Enough?

When conducting a ML2 appraisal, the org has specified only 4 measures: SLOC, Earned Value, Peer Review Defects, and Test Defects. The specifications are complete and cover all of the MA SG1 specific practices.

In addition to the 4 specified measures, the org and projects capture and use many more measures, but no specs exist for these additional measures.

Org personnel contend that the specified measures are those that were most recently introduced (throughout the past year). The unspecified measures were already well-established and used consistently.

Question 3

Would you document a weakness regarding the limited number of specified measures? _____

	Yes	No
Lead Appraisers	70%	30%
Non-Leads	53%	47%

Do you perceive this to be a goal-threatening weakness? ____

	Yes	No
Lead Appraisers	27%	73%
Non-Leads	33%	67%

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ATLAS #3, Scenario 1

The project team is incorporating an “Open Source” component. The source code was posted on the originator’s website with an indication that it can be used without restriction, free of charge and “at your own risk.”

The originator also indicated she retains no intellectual property rights with respect to the component, nor any responsibility for its ongoing support/maintenance.

Question 1

Must SAM be applied with respect to the Open Source component? _____

	Yes	No
Lead Appraisers	35%	65%
Non-lead Appraisers	19%	81%

ATLAS #3, Scenario 2

The customer's SOW requires that you incorporate an unmodified version of component X which is available solely from Company Y.

According to the SOW, the customer will negotiate X's acquisition cost, maintenance fees, and license fees with Company Y.

Question 2

Must SAM be applied with respect to Company Y? _____

	Yes	No
Lead Appraisers	28%	72%
Non-lead Appraisers	34%	66%

Must SAM be applied with respect to the customer? _____

	Yes	No
Lead Appraisers	50%	50%
Non-lead Appraisers	64%	36%

ATLAS #3, Scenario 3

The solution that your very small company intends to provide to your customer includes a laser jet printer supplied by Very Big Company.

It is off-the-shelf and no modifications are required.

Question 3

Must SAM be applied with respect to Very Big Company? _____

	Yes	No
Lead Appraisers	52%	48%
Non-lead Appraisers	51%	49%

ATLAS Scenarios

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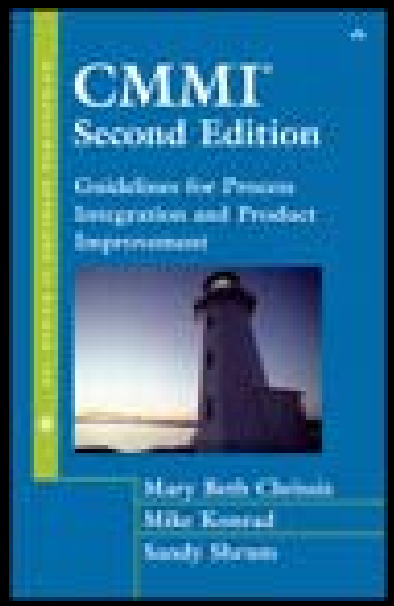

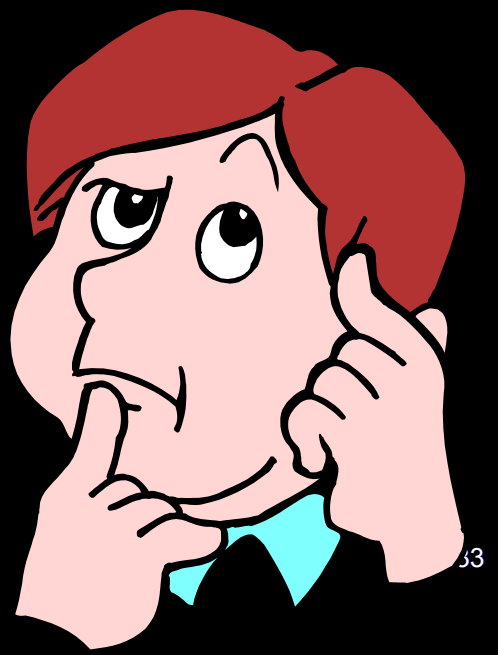

ATLAS #4 – Interpretational Issues

- Which 3 ML2 specific practices are most likely to encounter interpretational issues?

Interpretational Issues - ML2 Response Data by Rank

PA	Practice	Practice Title	Number of ML2 Respondents	Percent of ML2 Respondents	Rank within ML2	Cum. % of ML2 Responses
REQM	SP 1.4-2	Maintain Bidirectional Traceability of Requirements	43	54%	1	18%
PP	SP 2.3-1	Plan for Data Management	21	27%	2	27%
MA	SP 1.1-1	Establish Measurement Objectives	19	24%	3	35%
PP	SP 1.2-1	Establish Estimates of Work Product and Task Attributes	16	20%	4	41%
CM	SP 3.2-1	Perform Configuration Audits	16	20%	4	48%

ATLAS #4 – Interpretational Issues

- Which 3 ML3 specific practices are most likely to encounter interpretational issues?

Interpretational Issues - ML3 Response Data by Rank

PA	Practice	Practice Title	Number of ML3 Respondents	Percentage of ML3 Respondents	Rank within ML3	Cum. % of ML3 Responses
RD	SP 3.1-1	Establish Operational Concepts and Scenarios	12	16%	1	6%
DAR	SP 1.1-1	Establish Guidelines for Decision Analysis	12	16%	1	12%
TS	SP 1.2-2	Evolve Operational Concepts and Scenarios	11	15%	3	18%
TS	SP 2.2-3	Establish a Technical Data Package	11	15%	3	24%
RD	SP 3.5-2	Validate Requirements with Comprehensive Methods	10	14%	5	29%

ATLAS #4 – Interpretational Issues

- Which 3 ML4/5 specific practices are most likely to encounter interpretational issues?

Interpretational Issues - ML4/5 Response Data by Rank

PA	Practice	Practice Title	Number of ML3 Respondents	Percent of ML3 Respondents	Rank within ML3	Cum. % of ML3 Responses
OPP	SP 1.5-1	Establish Process Performance Models	26	49%	1	19%
QPM	SP 1.3-1	Select the Subprocesses that Will Be Statistically Managed	13	25%	2	28%
QPM	SP 1.2-1	Compose the Defined Process	12	23%	3	37%
OPP	SP 1.4-1	Establish Process Performance Baselines	11	21%	4	45%
OPP	SP 1.1-1	Select Processes	10	19%	5	52%

ATLAS #4 – Interpretational Issues

- Which 1 Generic Practice is most likely to encounter interpretational issues?

Interpretational Issues - GP Response Data by Rank

PA	Practice	Practice Title	Number of ML3 Respondents	Percent of ML3 Respondents	Rank within ML3	Cum. % of ML3 Responses
	GP 2.8	Monitor and Control the Process	20	26%	1	22%
	GP 2.2	Plan the Process	12	16%	2	36%
	GP 3.2	Collect Improvement Information	11	14%	3	48%
	GP 2.9	Objectively Evaluate Adherence	9	12%	4	58%
	GP 2.7	Identify and Involve Relevant Stakeholders	7	9%	5	66%

Conclusion

- The SEI's lead appraiser upgrade training included a module on model interpretation issues. The conclusion drawn by the SEI Visiting Scientist that authored that section is:

"Model interpretation issues will always exist. For the benefit of the lead appraiser community and that of our constituents, such issues need to be identified, discussed, resolved and communicated."

Questions?

To be added to the ATLAS distribution list, send an mail to:

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(And don't hesitate to email suggestions for other "interesting" topics!)