USC-SEI Spiral Experience Workshop: Breakout Group Summaries

Barry Boehm, USC
TRW-BMDO Meetings
February 16-17, 2000

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http://sunset.usc.edu/MBASE
Participants

- David Carney, SEI
- Jack Ferguson, OUSD
- Lisa Finneran, SPC
- Kevin Goeke, TRW
- Bruce Long, Lockheed
- Rami Razouk, Aerospace
- Don Reifer, USC
- Skip Saunders, MITRE
- Gary Thomas, Raytheon
- Ann Willheite, MITRE

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Topics Covered

- Original questions
  - Not all covered
- Started, but migrated to in depth discussion of Evolutionary Acquisition (EA)
- Finished by developing recommendations and a list of variants and invariants

Vision was directed towards EA, not spiral development
Goals and Characteristics

- **Goals**
  - Quicker, better, cheaper
  - Satisfy user needs - mission success
  - Identify and satisfy valid requirements
  - Demystify acquisition process
  - Nimble enough to take advantage of technology advances

- **Characteristics**
  - More COTS
  - More licensing
  - Increased partnering and out-sourcing
  - Decreased specs and standards
  - Positive instead of negative rewards for risk taking
Constraints

- Interoperability
- The law and its interpretation
- Time to delivery
- Colors of money
- How we do testing (incremental vs. end product)
- Hard to start a new program
- Culture change
- Lean workforces (resource constraints force more co-location)
- Continuing change
Challenges - Part 1

- Color of money - $$
- Lack of teamwork (live together before marriage)
- User challenges (instant gratification)
- Logistic, training, etc. for increments
- Workforce skills and experience
- Measurable milestones
Challenges - Part 2

- Consistent and effective risk management processes
- Staffing profiles/iterations
- Ability to contract quickly
- Access to test-beds/labs (capital investments)
- Management issues
  - Risk adverse nature of the acquisition community
  - Ability to collect and analyze metrics
Recommendations - Part 1

• More clearly define, perhaps in a commercial standard, what EA is and how it relates to spiral development (need a champion wider than DoD)
  – Need to clearly clarify the roles associated with these processes
• Formulate/recommend incentives to change stakeholders (program managers, users, etc.) behavior to adopt EA practices (SEI)
Recommendations - Part 2

- Streamline contracting process (OUSD/AR - Mr. Soloway)
  - Need to speedup program initialization process
  - Pick the contract based on risk
  - New starts with no penalties for fast failures
  - POM process should have “financial wedge” for executing more rapidly

- Define and certify core competencies in Evolutionary Acquisition (DAU)
Recommendations - Part 3

• Strengthen the IPPD policy and guidelines to include mechanisms to build teams and trust as part of the Evolutionary Acquisition process (USD/AT&L - Gansler)
  – Mechanisms include off-sites, boot camps, etc.
  – Must periodically rebuild and refresh teams as staff changes

• Coordinate personnel changes with increment boundaries (DoD/Personnel People)
Invariants/Variants - Part 1

**Invariants**
- Accommodating evolving requirements
- Multiple deployments to the field

**Variants**
- Degrees of flexibility
- Degrees of time phasing
- Overlapping versus non-overlapping increments
- O&M versus RDT&E funds
Invariants/Variants - Part 2

Invariants

- Consideration in each cycle ...... PLUS technology insertion opportunities
- Emphasis on total life cycle activities

Variants

- Choice of development process
- Choice of contract
- Nature of incentives
- Choice of risk resolution techniques
- Testing, training, supportability, etc.

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Invariants/Variants - Part 3

**Invariants**

- Decision point at end of each increment involving multiple stakeholders
- Content of deployment driven by risk considerations (market, operational, etc.)
- Managing stakeholder life cycle commitment via increment anchor points

**Variants**

- Choice of decision making method (risk-based funding, ...)
- Trade space for deciding what to deploy
- Management of teamwork issues
Evaluation

- Was this a useful exercise? YES
- If so, how so? MADE US THINK
  - Things to make exercise better!!
    - MORE TIME
    - MORE COMMERCIAL INPUTS
    - SOMEONE TO TAKE ACTIONS
    - HAWAII, CANCUN, ETC. FOR NEXT MEETING
      (ONLY WAY TO GET BIG WIGS TO ATTEND)
WG 2
Scope/Focus adjustment

- We are not talking about systems and software, we are talking about integrating systems that include software.
Group 2: Integrating SW & Systems

- Participants
  - Chris Abts
  - Elliott Axelband
  - John Cosgrove
  - John Foreman
  - Eileen Forrester
  - Peter Hantos
  - Joshua Hurvitz
Topics Covered

• Generally the Original questions

• Significant discussion about Business models and contracting

• Significant discussion about Systems engineering issues...perhaps lost some focus on Spiral implications
Vision if the World Was Safe for Spiral Development

• In 5-10 years:
  • Integrated systems (software, hardware, people, etc.) are created in a manner that satisfies the customer’s requirements in a cost-effective, risk-sensitive way.

• The systems creation process:
  – is change friendly
  – integrates the waterfall, spiral, evolutionary, and new-system views.
Problems and Challenges #1

• System, software and hardware disciplines often have differing or clashing processes. It would be beneficial if they worked according to compatible (but not necessarily the same) processes, which requires removing barriers between the disciplines in terms of assumptions, success & progress models, etc.

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Problems and Challenges #2

- **Corollary to item #1:**

  - System/software/hardware people need to have a common language that allows them to recognize and understand the biases and points-of-view each group brings to the integration task.
Problems and Challenges #3

*Top level issue:* the gov't sector contracting communities' ability to create contract vehicles appropriate to an evolutionary development approach.

*Lower level aspects:* contractual success factors/progress indicators are necessary for each spiral cycle/billable delivery; HOWEVER, they should be driven by the individual project context and the customers' and developers' business models. (on what basis does one get paid?)
Problems and Challenges #4

• The challenge is moving from a risk avoidance culture to a risk acknowledging (even risk embracing?) culture that allows candid discussion of tradeoffs to identify and mitigate risks.

• Remember: “Without risk, there is no profit!”
Critical Success Factors

• Process cost effectiveness
  – effort to accomplish - requirements, resources
    • schedule
    • labor
    • reusability of process
  – effectiveness of activity - measures of success
    • verification of requirements
      – current & prior functions (iterations)
      – resolution of discrepancies
    • validation of system behavior
      – response to anomalies
      – boundary - near & exceeded
      – time domain (overload, endurance, etc.)
    • emergent properties
Critical Success Factors

- Process architecture characteristics
  - short, manageable MINOR loops (~ 3-6 months)
  - proper focus on regression testing policy
  - re-validate functions implemented in prior cycle
  - test planning as related to spiral

balance

white box

Black box
CSF: Process Understanding

Product/Process Producers

Minimized Dichotomy

Customers and Consumers

- big picture
- roles/responsibilities
- general "requirements"
  operational context
- "other" system elements

- business strategy
- risk management
- being informed
- being educated
- managed expectations

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Recommendations

• Education and Selection
  – Support education and training for systems integration
  – select systems integrators based on aptitudes and skills
  – Actors: INCOSE, DAU, DSMC, corporations, universities

• Community Building
  – support forums and workshops to develop and promote mutual understanding among practitioners of all involved disciplines
  – Actors: CSE, SEI, INCOSE, etc
Recommendations

• Program management
  – better linking/understanding of purpose/interaction of R&D/technology evaluation and product development
    • where ok to fail, where can’t fail
    • what really is fixed price work
  – Implement IPTS effectively (systems and SW people actually talking to each other)
  – develop contracting methods/business models compatible with evolving products
    • ability to measure progress
    • billing milestones
  – Actors: DAU, DSMC, SEI, PMI
Recommendations

**Testing**
- test for success, anomalies, time-based emergent behavior, architectural integrity
- evaluate systems integration testing for adequacy and worst case behavior which may affect mission success/safety
- Actors: DAU, DSMC, AFOTEC, INCOSE
Additional Insights

- Government must provide system contractors--who deal with risk--adequate financial return to ensure their long-term financial visibility.
Evaluation- Positive

- Making progress on issues of common concern

- working groups way better than expected

- overall workshop good -- very smooth, good org, facilitation
Evaluation- Areas for Improvement

- insufficiently diverse group- notably lacking reps from company’s involved in system development as opposed to SW development or to make the marriage analogy: too much like a marriage between first cousins
- very few users, acquisition folks, Uniforms (especially army/Navy)
- sense of re-hashing prior workshops; for example prior workshop addressed this WG’s focus. Could we build on prior work?
Changing Role of Requirements

Working Group 3
Group 3: Changing Role of Requirements

• Participants
  – Verna Griffin  Lockheed Martin
  – Paul Grünbacher  USC
  – Judy Kerner  Aerospace Corporation
  – David Klappholz  Stevens Institute of Technology
  – Julie Kwan  USC
  – Pat Place  CMU/SEI
  – Jan Putman  Mitre Corporation
  – Walker Royce  Rational
  – Lt. Col. Bob Wind  AC2ISRC
Real Problem

- The wrong people are developing requirements
Problems and Challenges

- Agreeing terminology for requirements
- Still see a desire to “get all the requirements right” at the start of a system’s life
- Communication through requirements must be improved
- Understanding impact of changed requirements
- Collaborative development
Problem: Terminology

- No two people agree on the meaning of the word “requirements”:
  - my requirements are your constraints

- Used MBASE terminology:
  - product requirements
  - project requirements
  - process requirements
  - property requirements
Problem: Too Much Too Soon

- Government view of fairness to contractors means
  - every contractor has the same information
  - too much detail too early in the project
- Spiral development/acquisition institutionalizes a process where requirements are:
  - initially abstract
  - evolved (refined) over time
- How do we determine the minimum set of requirements to start with?
Problem: Lack of Communication

- Too often, requirements are misinterpreted
- Need rigorous languages for requirements expression
- Need to manage expectations (user, acquirer, developer)
- Educate in the universities and wait it out
- Use military colleges to teach appropriate notations (UML?)
- Encourage use
Problem: Miscommunication occurs

• Programs may get functional requirements, but they’re not requirements for that system but some other dependent system.

• All stakeholders need to realize that classification of requirements is context dependent & may change over different levels of abstraction (spirals).
Problem: Identifying risk

- Identifying biggest risks/requirements is a hard problem. May not be functional/technical
  - if the function isn’t delivered, then the program is canceled
- Prioritizing requirements leads to:
  - project survival
  - getting most needed capabilities first
  - getting fieldable sub-components early
  - least important requirements dropped when the money runs out
  - basis for requirements tradeoff/negotiation
- Spiral supports incremental development of detail
Problem: Changing Requirements

- Requirements changes are a fact of life but poorly accommodated.
  - entire system is affected, not just pieces
  - includes the architecture
  - impact analysis is necessary

- With spiral development:
  - greater chance of maintaining models
Problem: Requirements Omitted

- Too often, requirements are missed because they are "obvious". Requirements documents contain many implicit assumptions. Result is that conflicts are missed.

- Spiral development is a solution
  - expectation for addition of new/refined requirements for later spirals
Problem: War Zone

- System acquisition is combative not collaborative:
  - us and them "fence" mentality
  - unwillingness of either side to flex
- Spiral changes expectations
  - as much cultural as technical
  - both sides expect differences in subsequent spirals
Problem: Wrong People Develop Requirements

- The wrong collection of people develop requirements:
  - users are omitted (functional managers represent them)
  - contractors are omitted (fairness concerns)
- In some cases contractors/industry help develop requirements
- Must have suitable requirements development team
- Spiral, as a culture change device enables
  - solicitation of RFP as a response to a SOO
  - contractor/government partnerships to develop requirements
Recommendation: Publish Success Stories

- The community needs case studies of collaborative development of requirements.
- These can be used to form convincing business arguments for spiral
- USC to act as a repository of spiral development stories, both the good and the bad
Conclusion

• Requirements are a problem

(a lot more)

• Spiral development is an enabler and opportunity provider for changing requirements development process

• There’s more to do
WG4
Institutional Challenges

Spiral Workshop, Feb. 10, 2000
Center for Software Engineering
University of Southern California
Outline

- Introduction
- Participants
- Vision
- Challenges
- Necessary Changes
- Critical Success Factors
- Recommendations
- Conclusion
Participants

- Ross Dudley, Maj. USAF, AC2ISRC - human factors, modeling sim & analysis, co-wrote tech trans guide
- Fred Hansen, SEI - Andrew document system, COTS
- Larry McKee, MITRE, AC2ISRC - S/W developer, comm computers, tech transition
- Winsor Brown, USC, Asst Director CSE - tech transfer, SEPG, mtc, evolutionary delivery tech, attended Barry’s first talk on spiral, mil std 498 comment group
- Caroline Graettinger, SEI - tech Transition/adoption planning, insertion of new technologies at Oracle
- Steve Cross, SEI, Director - DART, inserting new tech in orgs, mgr, flight tester, R&D
- Barry Boehm, USC, CSE Director - DDR&E sw action plan (mil std 498)
- Tom Bostelaar, TRW, CCPL Project Manager
Definitions

• Spiral is
  - Short cycles
  - Risk-based
  - Collaborative: users, developers, acquirers, TE
  - Anchor point milestones
  - Generator for development model

• Institutional Challenges
  - Challenges from institutions to spiral model
  - Collective constraints to a team or to its existence
Vision - The “to be” State of Spiral

• DoD / Gov is Level 5 SMM

• DoD / Gov management of the investment portfolio in software intensive systems is as good as commercial best practices w.r.t. the spiral model
Actors

• B - Barry Boehm
• C - Consultants
• U - Universities
• W - Workshop
Institutional Challenges

- Lack of understanding inhibits adoption and success
- Rigid funding cycles and contracting policies hamper spiral
- Existing cultures, policies and practices inhibit spiral
- Risk aversion contradicts spiral
- All the usual teaming challenges apply
Lack of Understanding Inhibits Adoption and Success

- **Necessary Changes:**
  - Grass roots initiated definition of spiral model
  - Get community to internalize the definition
  - Common understanding of the benefits

- **CSFs:**
  - Definition must be clear and succinct (invariants and variants)
  - Must have experiential validation
Recommendations - Understanding

• Short Term
  – Develop and evangelize the definition - W, all
  – Develop a range of training courses - SEI, C, DSMC
  – Document case studies - SEI, U

• Research
  – Experimental validation - U

• Long Term
  – University courses - U
  – Books - B, U
  – Supporting tools - C
Rigid Funding Cycles and Contracting Policies Hamper Spiral

- A vision without funding is hallucination

Necessary Changes:
- Introduce flexible contracting strategies
- Introduce out of cycle funding methods
- Include spiral planning and funding in ASR
- Understand TSPR and its relation to spiral

CSFs:
- Make the acquisition people part of the team
- Participate with OSD on policy planning
Recommendations - Funding, Contracting

• Short Term
  – Brief leadership on workshop results - McNutt (SAF/AQ), Ferguson (OSD)
  – Submit a spiral pilot project through the WRAP - AC2ISRC
  – Iterate the ESC handbook to reflect workshop results - MITRE/SEI/USC --> ESC, ASC, SMC

• Long Term
  – Work with Congress to improve funding model - OSD
  – Get DCMC to develop a guide - DCMC
Existing Cultures, Policies and Practices Inhibit Spiral

- Necessary Changes:
  - Modify or replace cultures, policies and practices
  - Leadership buy-in

- CSFs:
  - Understand what cultures, policies and practices enable or prohibit spiral
  - ROI data, compelling business case analysis, success stories
Recommendations - Cultures, Policies, Practices

• Short Term
  – business case, commercial success stories - SEI, U

• Research
  – develop ROI data - U
  – understand culture, policy and practice implications for spiral success - U

• Long Term
  – military success stories - OSD
Risk Aversion Contradicts Spiral

- **Shoot the Messenger**

- **Necessary Changes:**
  - Adopt view that risk management is necessary
  - Promulgate team risk management
  - Remove organizational barriers to identifying risks

- **CSFs:**
  - Incentives for identifying and managing risks
  - Structured risk-based approach for project assessment
  - Trusting cross-institution environment
Recommendations - Risk Aversion

• Short Term
  – Focused risk section in ESC handbook - ESC/SMC/ASC
  – Teach teams how to identify and select incentives - B, C
  – Provide incentives for identifying risks - all
  – Create PMI connection to spiral - SEI

• Long Term
  – Structured risk-based approach for project assessment - ESC/SMC/ASC/SPAWAR/CECOM
All The Usual Teaming Challenges Apply

- **Necessary Changes:**
  - Eliminating “us vs them” attitudes
  - Multiple chains of command for reporting (home org and IPT)
  - Means to accommodate geographical distribution
  - Continuity of leader-/sponsor-/member-ship

- **CSFs:**
  - Consistent/persistent application of IPT principles and practices
  - Knowledge capture & organizational learning
  - Distributed performance appraisal methods
Recommendations - Teaming

• Short Term
  – Pilot dist. Team w/ USC web-casting - USC, ESC
  – Plan for more face-to-face at project onset - all
  – IPT training - C
  – Recognize team building as a risk in each iteration
    - ESC/ASC/CECOM/SPAWAR/SMC
  – Study ROI of distributed vs co-located - SEI, U
  – Tech transfer of knowledge mgmt methods/tools - MITRE
  – Tech transfer of distributed performance appraisal methods - MITRE
Recommendations - Teaming - 2

- Research
  - Human factors in distributed teaming - U
  - Simulate/emulate distributed teaming in education environment - U

- Long Term
  - Need better ways of doing distributed teaming - U
  - Need better collaborative tools - U, vendors
Conclusion

- **Spiral can save the world if only we will let it!**
Unordered Challenges List - 1

1. Incentive structure missing on acquirers side
2. Need Contracting mechanisms (ala CCPL) that support spiral devel
3. Balancing participation & delegation of [in] the IPT
4. Oversight structure & mechanism (metrics, progress indicators ... ) Anchor points are a macro solution for this
5. Getting shared understanding across stakeholders on what will be built and how used
Unordered Challenges List - 2

6. Getting the team to have the same picture of success. Team building, understanding the end game, commitment to the team.

7. Allow the team to have time to train, rehearse, ... team startup.

8. The Establishment (existing culture has antithetical aspects).

9. Align peoples traits w/ tasks (detail vs big picture; single-threaded vs multi-tasking; team player vs individual contributor)
Unordered Challenges List - 3

10. Budgeting/Accounting: DOD Funding Model; POM cycle [Model Clash ala Stud poker analogy].

11. Spiral assumes team. How to select part of team (developer/contractor)? [Places for all competitors?]

12. Competition versus Open Communication: Full information during competition is infeasible? CCPL example.

13. Task order contracting: Disjoint spirals? TSPR concept: >spiral? <spiral?
Unordered Challenges List - 4

14. Limited funding time period (End of year & fall-out money; Execution year decisions [FinPlan, etc.]).

15. [potential] Adopters need ROI data

16. Need to identify supporting tools for adoption (whole product)

17 Shared understanding of what “spiral [model?]” means [an enabler for execution]

18. Identify which existing policies can be dropped or tailored back.
Unordered Challenges List - 5

19. Lack of clear understanding of spiral [model] means it can not be consistently executed (if mandated).

20. Responsibilities/loyalties of IPT members (home organization vs. team)

21. Training on spiral

22. Self-inflicted complexity (goals become union of all team members vision): Focusing on means vs. ends.

23. Usual “teaming” challenges are magnified by use of IPTs & geographic distribution.
24. Need for shared vision validation.
25. Need for success stories

[Breakdown of 8. The “Establishment”]

27. Culture
28. Policy
29. Self-selection effect
30. Legacy practices
31. Loyalties
32. Chain of command rigidity
33. View of Risk
Spiral Development Process

breakout group results
Outline

• Participants
• Vision
• Problems
• Challenges
• Critical Success Factors
• Recommendations
• Evaluation
## Participants

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2/16-17/00
Vision

SDM takes a seat at the table as a first class candidate lifecycle model for development projects. It is well understood, and understood in a common way in both federal and commercial arenas e.g. when to use or not use SDM, the value of SDM, risks and tradeoffs.

Projects using SDM are delivered on schedule, on budget, with high quality to satisfied customers. The business value of SDM is demonstrated through collected and analyzed data.

SDM is acculturated within 10 years and becomes transparent best practice.
Problems

- No one knows if a project is following a spiral due to lack of a clear, accepted definition (but paradigm clearly there). Invariants a good start.

- Need more education and training in human oriented aspects (vs. process oriented) e.g. WinWin Spiral.

- Acquisition lifecycle mandates constrain use of spiral. If a contractor is given an LCO/LCA artifact set, then the contractor (in the typical DoD RFP context) is de-facto limited to waterfall

- Acculturation issues

- Does spiral imply more management overhead?
Challenge categories

- CMMI, spiral development model, and MBASE
- Transition and maturity
- Education and training
- "Crispy" definition
- Relationship with acquisition
- Value of spiral development
- Humanistic approaches
- Integrating risk management
- Field guidance
Critical Success Factors (Prioritized)

- Acquisition process and contracting mechanisms are adjusted to facilitate spiral development methods
- Organizational culture is receptive to SDM
- Risk identification and management is openly performed
- Crispy, common definition of SDM is accepted
- Training and education is available
- SDM refined so that it is scalable and tailorable to a wide spectrum of projects
- The value of the SDM is widely accepted
Critical Success Factors (Cont.)

- Spiral process accommodated by cost and effort estimating methods
- All stakeholders actively participate in enacting the SDM
- Expectations of customers and developers are realistic and harmonized
- SDM is taught in all SWE and business school curriculum
- Some significant percentage of CSE affiliates are using SDM "correctly"
Recommendations

- Write more papers on SDM:
  - Defining spiral model in terms of spiral invariants
  - "Crispy" criteria
  - Transition waterfall/incremental to spiral
  - Process selection criteria
  - Risks and tradeoffs
  - MBASE, CMMI, etc.
  - Value
    - Convene DoD, industry IPT to address acquisition process and contracting mechanisms
    - Collect data and experience and address scale issue
Recommendations (Cont.)

- Write a “field guide” to enacting SDM
- CMMI consider spiral model as acceptable alternative practice
  - Two mappings needed: incremental waterfall to CCMI, spiral to CMMI
  - “Gap analysis” from incremental waterfall to spiral
- Elaborate spiral invariants for stakeholder tasks to explicitly require “collective decision”
Evaluation

- Enthusiastic group
- Everyone participated!
- Positive expectations
- Enjoyed and valued the time

THANKS TO ALL!!

(let's have more CSE/SEI interaction)
Spiral Development Process

breakout group results
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- Acculturation issues

- Does spiral imply more management overhead?
Challenge categories

- CMMI, spiral development model, and MBASE
- Transition and maturity
- Education and training
- “Crispy” definition
- Relationship with acquisition
- Value of spiral development
- Humanistic approaches
- Integrating risk management
- Field guidance
CSF Refined and Prioritized

- Acquisition process and contracting mechanisms are adjusted to facilitate spiral development methods
- Organizational culture is receptive to SDM
  - Risk identification and management is openly performed
- Crispy, common definition of SDM is accepted
- Training and education is available
- SDM refined so that it is scalable and tailorable to a wide spectrum of projects
- The value of the SDM is widely accepted
CSF Refined and Prioritized (cont.)

- Spiral process accommodated by cost and effort estimating methods
- All stakeholders actively participate in enacting the SDM
- Expectations of customers and developers are realistic and harmonized
- SDM is taught in all SWE and business school curriculum
- Some significant percentage of CSE affiliates are using SDM “correctly”
Recommendations

- Write more papers on SDM:
  - Defining spiral model in terms of spiral invariants
  - “Crispy” criteria
  - Transition waterfall/incremental to spiral
  - Process selection criteria
  - Risks and tradeoffs
  - MBASE, CMMI, etc.
- Value
  - Convene DoD, industry IPT to address acquisition process and contracting mechanisms
  - Collect data and experience and address scale issue
Recommendations (Cont.)

- Write a "field guide" to enacting SDM
- CMMI consider spiral model as acceptable alternative practice
  - Two mappings needed: incremental waterfall to CCMI, spiral to CMMI
  - "Gap analysis" from incremental waterfall to spiral

6. Elaborate spiral invariants for stakeholder tasks to explicitly require "collective decision"
<table>
<thead>
<tr>
<th>Task</th>
<th>WG1</th>
<th>WG2</th>
<th>WG3</th>
<th>WG4</th>
<th>WG5</th>
<th>Agents</th>
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<td>Clear definitions, publish paper of EA</td>
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<td>EA, INCOSE (EA), SEI, Universities, next workshop</td>
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<td>Refine spiral development handbook</td>
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<td>Community building, team building, associated incentives, culture change</td>
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<td>Better contracting mechanisms</td>
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<td>OSD, DAV, DSMC, INCOSE</td>
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<td>Better policy</td>
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<td>OSD</td>
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<td>Coordinate personal shifts, increment boundaries</td>
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<td>USC, SEI</td>
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<td>Work testing implications of spiral</td>
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<td>Publish success stories</td>
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<td>Provide business case, validation</td>
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<td>Relate CMM to spiral</td>
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Approx. Schedule

- Detailed schedule: next week
- Initial Writeups for TR - 10 Working days - SEI, CSE,
- Comment period: all WG participants
- Finalized TR inputs - 20 Working Days
- Draft TR - 21 Mar
- Final TR ~ 1 Apr, SEI publish
- Action item roll-up, consolidation, “assignment” - ongoing -- SEI, CSE, spiral community
- Grow a community, communications - ongoing

2/16-17/00