



SCAMPI V1.3 Status

SCAMPI Upgrade Team



Speaker Biography

Mr. Hayes has served in a variety of roles at the Software Engineering Institute for nearly 20 years. His present focus is on leading the team updating the Standard CMMI Appraisal Method for Process Improvement (SCAMPI) for version 1.3 of the CMMI product suite. He is also presently serving on the team updating the High Maturity Process Areas of CMMI. Prior to these assignments, Will was the leader of the SEI Appraisal Program's Quality Management Team, and initiated the process for auditing SCAMPI Appraisals. He has been a frequent presenter at conferences throughout the world on topics relating to Process Improvement, Measurement, and High Maturity Practices.



SCAMPI Upgrade Team

Membership:

1. Mary Busby – Lockheed Martin
2. Palma Buttles-Valdez – Software Engineering Institute
3. Paul Byrnes – Integrated System Diagnostics
4. Will Hayes – Software Engineering Institute
5. Ravi Khetan – Northrop Grumman
6. Denise Kirkham – The Boeing Company
7. Lisa Ming – BAE Systems
8. Kevin Schaaff – Software Engineering Institute
9. Alex Stall – Software Engineering Institute
10. Agapi Svolou – Alexanna Inc.
11. Ron Ulrich (emeritus) – Northrop Grumman



SCAMPI Upgrade Team Goals

Goal 1. Increase Efficiency of the Appraisal Process

- Consider entire lifecycle of cost/value (not just 'onsite')
- Decrease cost while maintaining accuracy and utility
- Increase value returned per cost incurred

Goal 2. Remove Barriers to Broader Usage (e.g., other constellations)

- Remove terminology that uniquely applies to CMMI-DEV
- Enhance the capability of current set of practitioners (LAs & ATMs)
- Clarify skill/experience requirements for all users

Goal 3. Assure Synchronization with CMMI Product Suite for v1.3

- Manage level of change within specified Steering Group guidance
- Enhance consistency of usage and fidelity to method requirements
- Evolution of methods and techniques based on change requests



Change Packages and Mapping to SUT Goals

	Change Package Title	Goal 1 Efficiency	Goal 2 Remove Barriers	Goal 3 Product Suite
1.	Appraisal Scoping	High	High	High
2.	Evidence	High	High	Medium
3.	Cleanup (e.g., tailoring, ADS revision)	Medium	High	Medium
4.	Qualifications	High	High	Low
5.	Other Appraisal Types	High	Medium	Low
6.	Multi-Constellation Appraisals	High	High	Low
7.	Appraisal Requirements for CMMI (ARC)	Low	Low	High





Change Packages 1 & 2



CP 1 Appraisal Scoping₁

Defect Description:

- Inconsistency in the organizational appraisal scoping
- Confusion in the definition of organization, organizational unit, and organizational scope for the purpose of the appraisal
- Appraisal scoping choices not always clear to consumers of appraisal results (e.g., descriptions of Organizational Unit can be confusing)

Scoping:

- Define Organization/Organizational Unit
- Define Organizational Scope
- Define representative sample (critical factors)
- Selection of instantiations/projects/units/work groups/services
- Clarification of focus/non-focus as relating to scoping decisions
- Clearly explain model scoping



CP 1 Appraisal Scoping₂

Justification for Change

- Efficiency and effectiveness are compromised by lack of clear guidance for:
 - Determining Organizational Scope of the Appraisal
 - Determining Model Scope of the Appraisal (e.g., for Non-Focus Projects)
- Current scoping requirements are difficult to apply to all CMMI constellations (e.g., the concept of 'project' may not work in CMMI-SVC, and People CMM the way it does in CMMI-DEV)
- Insufficient guidance for selecting a 'representative' organizational scope
- Variation of appraisal results attributed to wide differences in scoping decisions
- Business value compromised by arbitrary choices with questionable rationale
- Reliability degraded by Lead Appraisers who have varying expectations and understanding



CP2 Evidence₁

Defect Description:

The current evidence guidance in SCAMPI causes confusion that limits efficiency and consistency in appraisals.

Scoping:

- Data types (e.g., documents, interviews, demos, and presentations)
- Reliance on ‘discovery’ versus ‘verification’ of data
- Achieving efficiency by leveraging innovative data collection/groupings
- Establishing minimum requirements (answer “how much is enough?”)
- Addressing problems with confusion about ‘direct-’ and ‘indirect artifacts’
- Evidence sampling level (e.g., practice-specific data vs. goal level)
- Generic/institutionalization practices vs. specific/implementation practices
- Clarification of focus/non–focus as relating to data sufficiency
- Clear guidelines on reuse of data (artifacts) that are input to appraisals that address the same organizational elements in multiple events.



CP2 Evidence₂

Justification for change:

- Excessive effort consumed in data preparation, which does not always payoff during the appraisal event itself
- Differentiating ‘direct-’ and ‘indirect artifacts’ consumes a lot of time for appraisal teams as well as the appraised organizations
- Role of demos and presentations isn’t always clear
- Wide variation observed in what LAs consider to be the ‘minimum’ for data to be supplied
- The trade-offs associated with ‘discovery’ versus ‘verification’ are not well elaborated in the present method (i.e., focus on “FULL verification” shifted excessive effort to the organization)
- Evidence requirements may be difficult to apply all CMMI constellations (e.g., how do we handle the fact that ‘project’ may not work in CMMI-SVC and People CMM the way it does in CMMI-DEV)



Two-Pronged Approach to Focus on Efficiency

Change Package 1 **Scoping Appraisals**

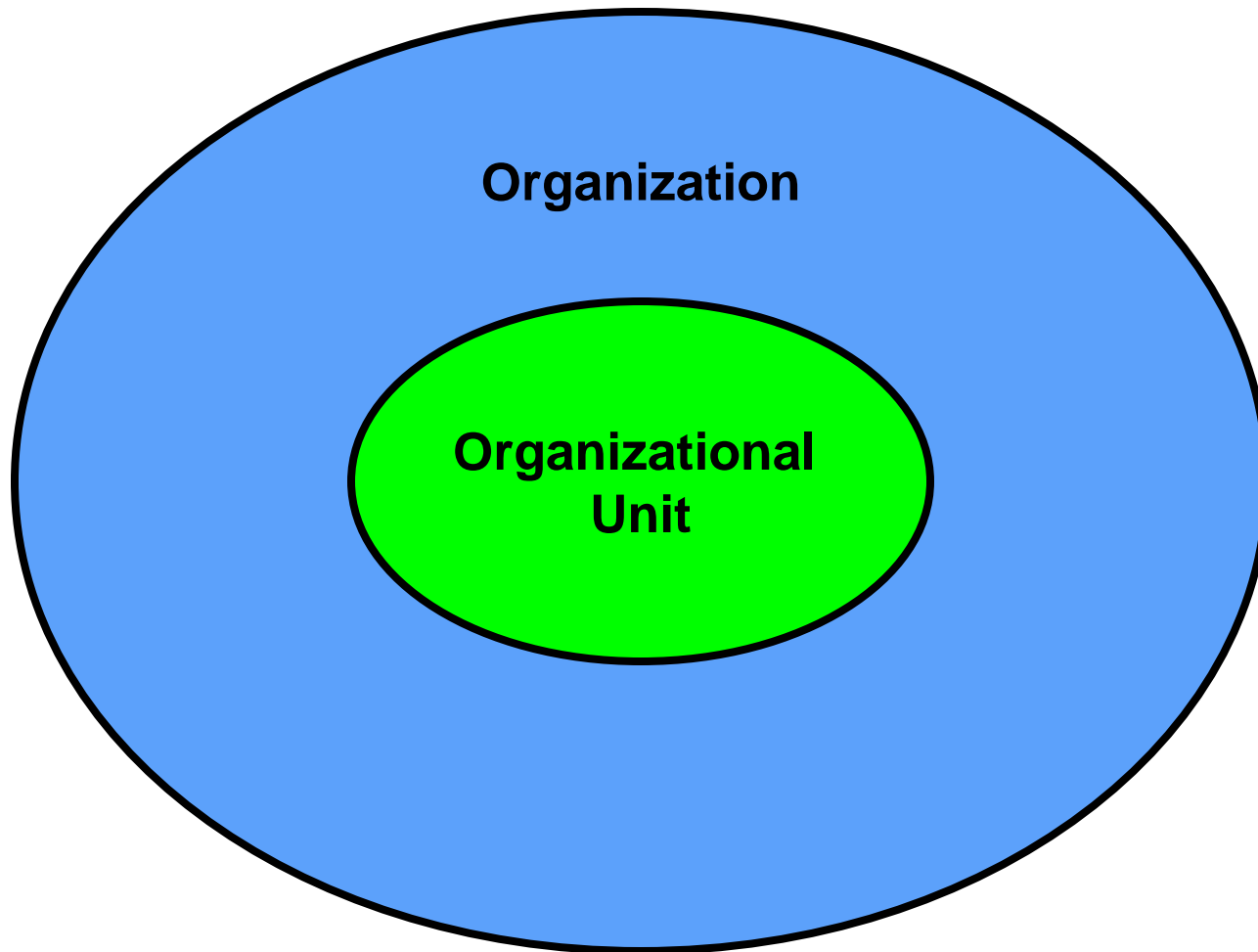
- Defining ‘Organizational Unit’
- Analyzing ‘Critical Factors’
- Agreeing on considerations for ‘Representative Sample’
- Preventing undue burden for large organizations
- Protecting against unreasonable over-generalizations using very small samples
- Enhancing transparency and protecting credibility

Change Package 2 **Evidence Standards**

- Defining ‘Organizational Scope of the Appraisal’
- Establishing evidence types that don’t lead to wasted book-keeping effort (e.g., distinction of direct/indirect artifacts)
- Unambiguous rules/guidance for “how much is enough?”
- Efficient methods for collecting all data that are needed, and no data that won’t be used



Determining the Organizational Unit



Organizational Unit: Coherent Process Context

Often a single division within a larger organization, a collection of related efforts, or even a single project. Typical organizational units have:

- Single Budget for Process Improvement
- Common Management Structure
- Shared Infrastructure or Policies
- Shared Customer Set
- Matrixed Staffing

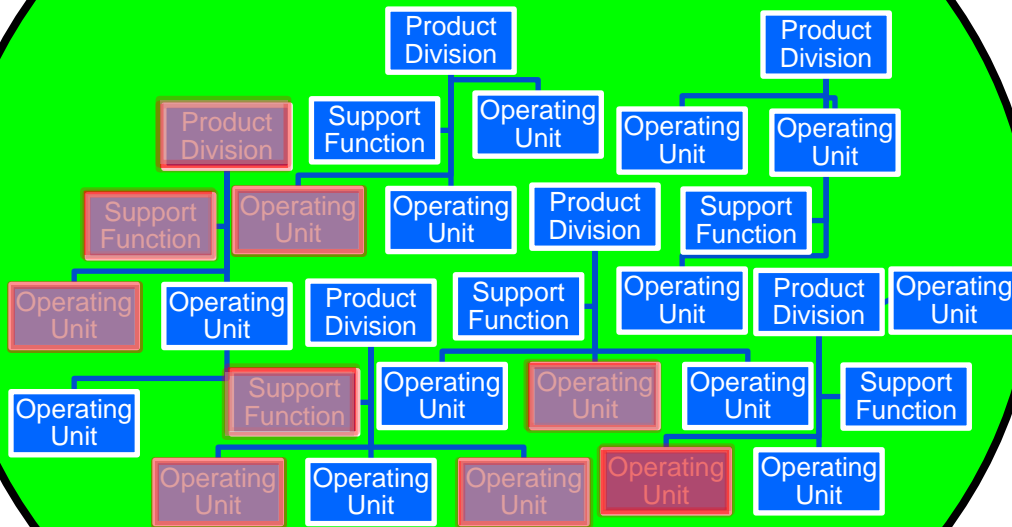
The attributes above are not required by the method, they are observed in practice – because:

- Process improvement programs tend to be focused at this level
- Appraisal sponsors tend to be the Senior Manager of the OU
- Funding, customers, and staffing are grouped within the OU



Organizational Scope of the Appraisal

Organizational Unit



Organizational Scope
of the Appraisal

Is this 'Representative'?



Appraisal Scope: “Critical” Factors

Concept is not always implemented as intended

The word “critical” is being misunderstood, the SUT is considering:

- Sampling Factors
- Implementation Factors
- ...

A New Definition (rough draft):

The implementation attributes that are important to the business context and operation of the organizational unit that may influence the practice implementation in projects or basic units and functions within the organizational unit relative to the selected reference model scope.

Examples include, but are not limited to: size, application domains, lines of business, geographical locations, disciplines (e.g., systems engineering, software engineering, or hardware engineering), effort types (e.g., development, maintenance, or services), project types (e.g., legacy or new development), customer types (e.g., commercial or government agency), and lifecycle models in use within the organizational unit (e.g., spiral, evolutionary, waterfall, or incremental). [Proposed MDD V1.3]



Key Concepts

Input from CMMI Working Group, and SUT discussions leads to emphasis on the following key concepts:

Managed Discovery

- Appropriate mix of verification and discovery

Phased Data Collection

- Evolutionary focus in data needs

Hierarchical Document Review

- Organization > process > implementation

Stratified Sampling

- Use of 'sampling factors'

Data Collection Plan

- More disciplined and detailed planning

Product-Centric Data Sets

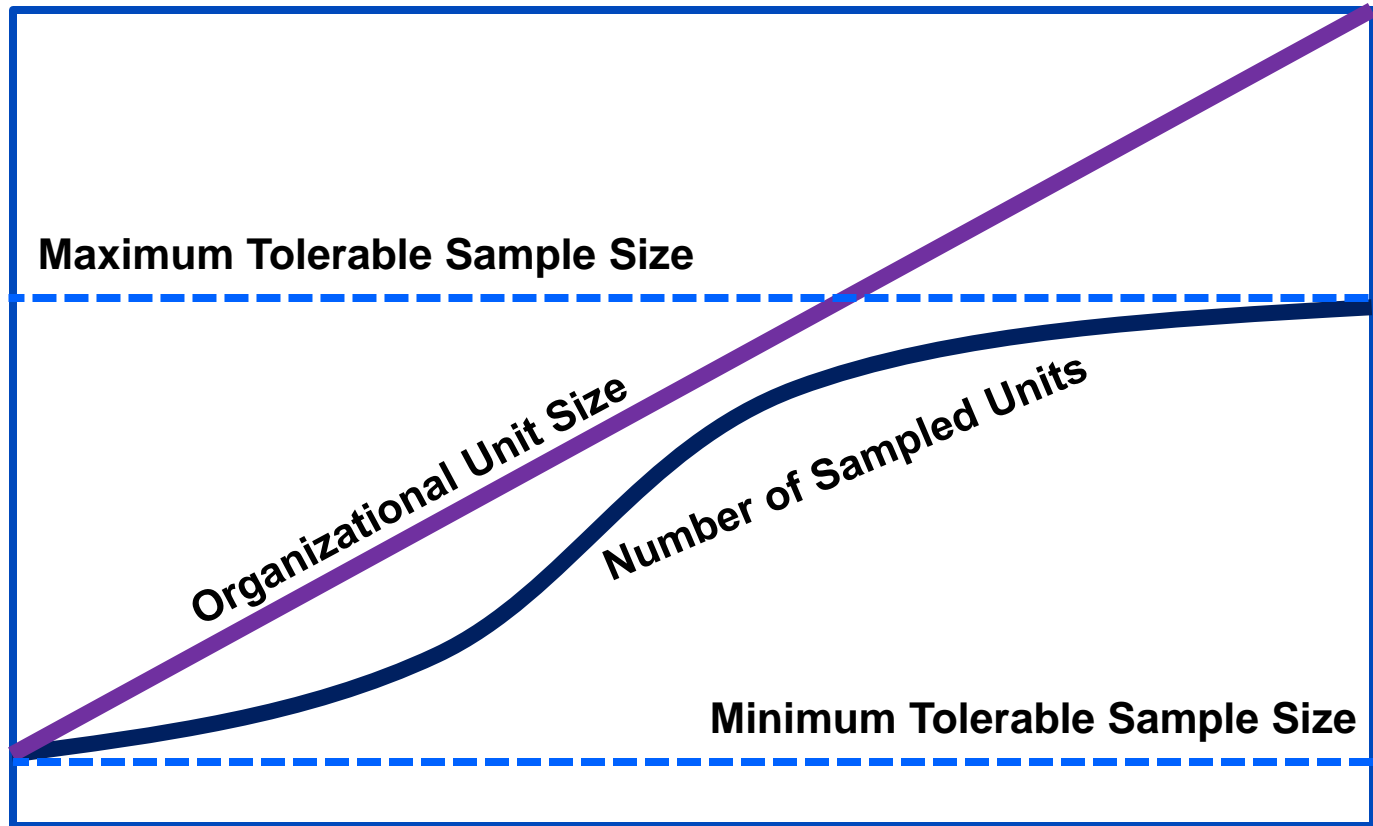
- Work product (vs. practice-mapped) documents

Random Sampling

- Identify places where this can be applied



Tradeoffs in Sampling



CP 1&2 Work Currently Underway

Change Packages have been drafted and reviewed within the team

Change Package 1 approved by the Change Control Board March 18

On-going Work

- Refinement of Change Packages
- Elaboration of a “concept of operations”
- Developing use cases for CMMI constellations and People CMM

Considering strategies for broader involvement of Lead Appraisers

- Collecting benchmarking performance data for the method
- Looking for volunteers to help with Implementation packages
- Piloting rough drafts on v1.2 SCAMPI appraisal events (As and Bs)





Change Package 3



CP3 Cleanup₁

Defect Description:

- The Cleanup CP addresses miscellaneous topics that are of concern to the community as indicated by many Accepted CRs.

Scoping:

- Tailoring of the appraisal method – and documenting that in the appraisal plan
- Content of the ADS (and SAS, by inference)
- Practice characterizations – clarity of definitions (FILIPININY)
- Clarification about who needs to participate in each activity (Validating Findings, Interviews, Final Findings, etc.)
- Purpose of Readiness Review, and assuring consistency in practice (what is included, who must participate, when does it start/end...)
- Integration of V1.2 MDD Errata



CP3 Cleanup₂

Justification for Change

Appraisal efficiency and integrity are adversely effected by misunderstandings surrounding the SCAMPI MDD's handling of these topics. Clarifications can and should be made to reduce interpretation effort and assure a consistent SCAMPI approach.

Note: *This change package is intended to be the “catch-all” for issues that don’t logically relate to the other “major CPs” being addressed by the team.*





Change Package 4



CP4 Qualifications₁

Defect description

The adequacy of appraisal teams to meet SCAMPI requirements, and fundamentally to meet SCAMPI goals for accuracy and efficiency, continues to be questioned. This leads to issues with skills, composition, and qualifications for SCAMPI teams.

- HM appraisals, new constellations, and the use of current appraisal tailoring and variations built into the SCAMPI method increases the team capability problem.

Scoping:

Team composition

- Lead Appraiser selection; criteria, discipline/domain experience
- Team mix (internal/external, OU/non-OU, min/max number, conflicts of interest, etc.)

Team qualification

- Experiential requirements (Individual, whole team, discipline, and appraisal experience)
- High Maturity and Multi-Constellations
- Required training and Recertification of existing leads



CP4 Qualifications₂

Justification for change

- Desired improvements in efficiency, while maintaining the high quality of events (accuracy), will not be achieved without also assuring appropriate team qualifications and composition.
- The cost of appraisals is affected by the skill levels of the set of individuals participating in the preparation and conduct phases. Team Qualification changes directly impacts lowering overall appraisal life cycle costs.
- The credibility of appraisal results cannot be improved by fixing the method alone. Qualification and composition of the team also severely impact this dimension.
- There is a widely held perception among stakeholders that the current training/testing/fees are not commensurate with the value received and results achieved.



Work Currently Underway

The Change Package has been drafted, and implementation details are being developed by an extended virtual team.

The six major categories of focus are:

1. Required Training and Experience of All ATMs
2. Team Composition Requirements and Guidance
3. Guidance on Achieving Balance in Forming the Team
4. Requirements for use of Virtual Technology
5. Specification of Appraisal Team Roles and Responsibilities
6. Requirements for Team Member Qualifications and Team Composition to Perform High Maturity Appraisals





Change Package 5



CP5 Appraisal Types₁

Defect Description:

Emphasis on the “full-up SCAMPI A” and associated three-year period of validity for results leads to disproportionate focus on the benchmarking event. Opportunities for efficiency and overall value may be enhanced by adding supplemental events during the period of validity between benchmarking SCAMPI As.

Scoping:

- Possibility of doing delta appraisals when the cause of failure in the A is very limited
- Maintenance or surveillance appraisals to sustain momentum and manage risk
- Clear guidance for appraisal activities during the current 90-day appraisal conduct period (e.g., incremental)
- Structuring incremental appraisal events to assure accuracy and efficiency (value)



CP5 Appraisal Types₂

Justification for Change:

- Current requirement to conduct an entire SCAMPI A again to achieve a Maturity Level after minimal weaknesses prevented achievement of target rating is viewed to be too costly (delta appraisals are desired)
- Lack of external insight regarding continued process maturity during the Period of Validity (official maintenance appraisals are desired)
- No mechanism for re-use of information (results/artifacts) from prior appraisals for use as input to the next appraisal (enterprise appraisals would be facilitated by rules for baselining data)
- Lack of clear guidance for appraisal activities during the current 90-day appraisal conduct period (incremental appraisals are permitted, but the associated techniques are not fully explained)





Change Package 6



CP 6 Multi-Constellations₁

Defect Description:

There currently is no documented approach to perform multi-constellation (DEV, ACQ and SVC) and People CMM appraisals in an efficient, accurate, and repeatable manner. They must be performed as separate appraisals – even if they are performed simultaneously.

Scoping:

- Sampling (organizational unit analysis) differences for ACQ, DEV, SVC, and People CMM
- Rating scheme for multiple maturity level among multiple-models appraisals
- Evidence requirements (e.g., sufficiency, core vs. constellation specific PAs, objective evidence types)
- Use of terminology (e.g., project, unit, work group)



CP 6 Multi-Constellations₂

Justification for change:

- Multi-constellation/model appraisal lifecycle costs are high because separate appraisals are currently being performed – rather than amortizing the cost of appraisals using a single event to produce multiple results.
- Organizations may choose to use other non-integrated and less efficient methods.
- Potential process improvement benefits of having an integrated approach will not be realized.



NDIA Industry Working Group: Input to SUT

Working group considered options for multi-constellation appraisals

Option 1: Multiple Simultaneous Appraisal (MSA) Approach

- Single appraisal team, single plan, single event
- Multiple ratings, multiple SAS entries, multiple ADSs
- Appraisal scope defined for each constellation included
- Data sufficiency and rating established for each constellation – with some possibility for overlap on process areas like OPD, OPF, OT, OPP and OID.

Option 2: Integrated Multi-Constellation Appraisal Approach

- Single appraisal team, single plan, single event
- Single rating outcome applying to all constellations included, single SAS entry
- Possible reduced sampling requirements
- Single Appraisal Disclosure Statement

Working Group Recommended Approach:

Option 1: Multiple Simultaneous Appraisal (MSA) Approach





Change Package 7



CP7 ARC₁

Defect Description:

Some change requests that drive SCAMPI v1.3 design may lead to the method 'falling out of compliance' with ARC v1.2.

Scoping:

- Synchronization of the Appraisal Requirements for CMMI (ARC) document as the product suite moves to version 1.3
- Level of detail in the ARC (i.e., requirements statements versus detailed design or implementation level material)
- Redundant clauses in the document
- ARC compliance of SCAMPI v1.3



CP7 ARC₂

Justification for change:

The ARC is not consistently written as a requirements document, it specifies design constraints and detailed solutions in some places.

There is duplicative information within the ARC and between the ARC and the MDD.

If the version 1.3 of the product suite is to keep the ARC document, then lack of consistency between the Method Definition Document and the ARC will be perceived as a flaw.



Change Package 7 was Approved by the CCB

Maintain Traceability

- Assure that the MDD traces to the ARC

Remove Redundant Information in the ARC

- Some ARC clauses repeat related information

Update ARC Language to Higher Level of Abstraction

- Some ARC clauses specify very detailed information at the implementation level – which is intended for the MDD



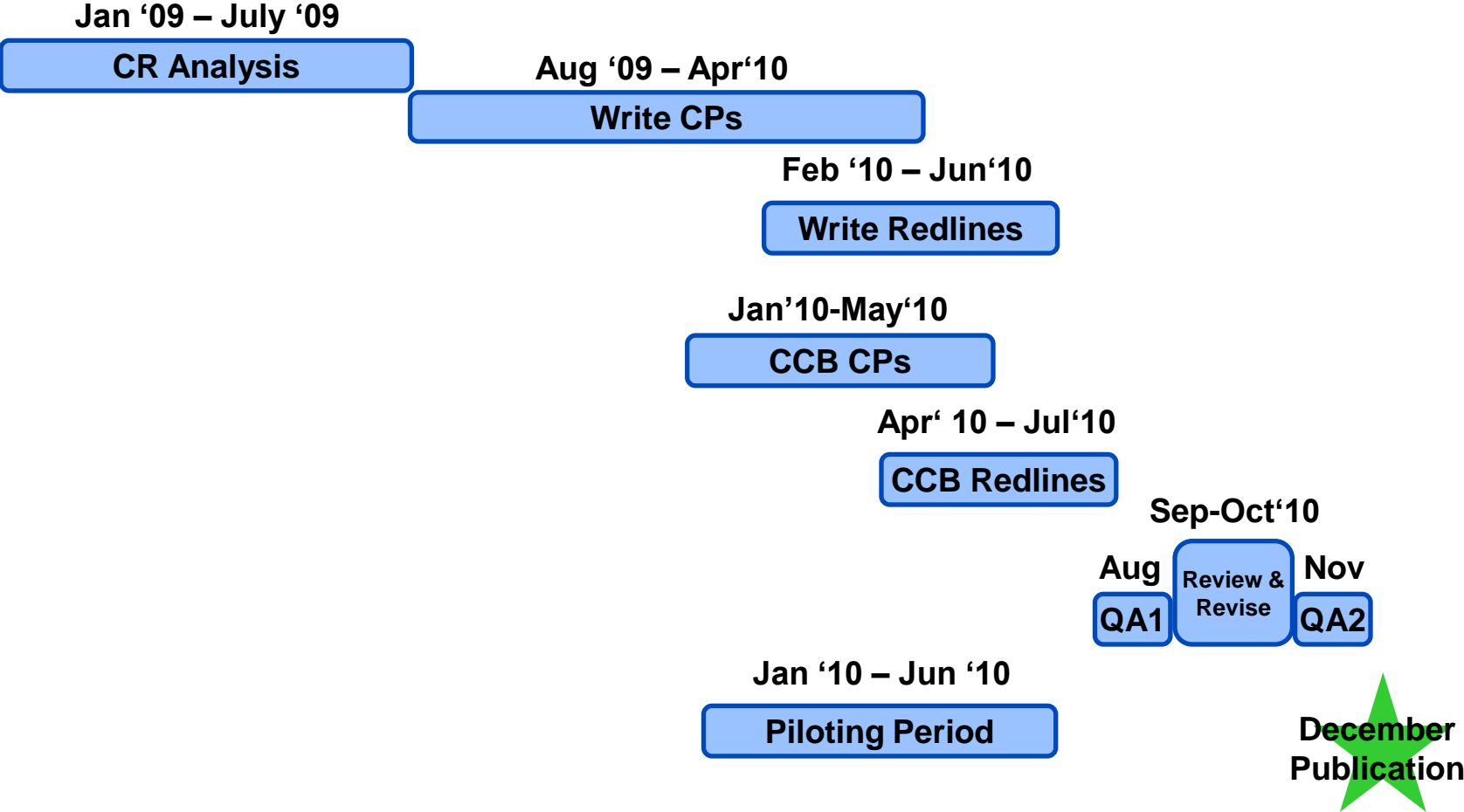


Wrap-Up

Schedule and Next Steps



SCAMPI Upgrade Team Schedule



How You Can Help

Join the SUT Extended Team

- This is not an avenue to receive early draft material
- Volunteer to do implementation work

Be a Reviewer

- Public review period September & October for Lead Appraisers
- The Change Control Board holds decision authority

Pilot SCAMPI v1.3 Methods

- We are not piloting “SCAMPI v1.3” but targeted methods
- Working with organizations and Lead Appraisers individually
- Focused pilots that gather key data to understand impacts

