Supplier Management Strategy Considerations with CMMI

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Background

Supplier Agreement Management and Integrated Supplier Management process areas cover only day-to-day tactics

How do you address the broader strategy issues, such as:

- **How do you quantify the risk of working with a low maturity supplier?**

- **Should primes conduct pre-award and in-process appraisals of key suppliers?**

- **Which teaming approaches are appropriate in various situations?**

- **Should the supplier be asked to follow the prime's process?**

- **Should the supplier be allowed to use their own processes?**

- **When does Integrated Supplier Management apply?**

- **How should Subcontracts be involved with the CMMI effort?**

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CMMI: Supplier Management

Supplier Agreement Management	Integrated Supplier Management
▪ **Used to manage simple supplier arrangements (e.g., COTS)**	▪ **Used to manage complex supplier arrangements**
SG 1 Establish Supplier Agreements SP 1.1 Determine Acquisition Type SP 1.2 Select Suppliers SP 1.3 Establish Supplier Agreements **SG 2 Satisfy Supplier Agreements** SP 2.1 Review COTS Products SP 2.2 Execute the Supplier Agreement SP 2.3 Accept the Acquired Product SP 2.4 Transition Products	**SG 1 Analyze and Select Sources of Products** SP 1.1 Analyze Potential Sources of Products SP 1.2 Evaluate and Determine Sources of Products **SG 2 Coordinate Work with Suppliers** SP 2.1 Monitor Selected Supplier Processes SP 2.2 Evaluate Selected Supplier Work Products SP 2.3 Revise the Supplier Agreement or Relationship

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Supplier Agreement Management

From the CMMI text

"This process area primarily applies to the acquisition of products and product components that are delivered to the project's customer. To minimize risks to the project, this process area may also be applied to the acquisition of significant products and product components not delivered to the project's customer (for example, development tools and test environments)."

"This process area does not directly address arrangements in which the supplier is integrated into the project team (for example, integrated product teams). Typically, these situations are handled by other processes or functions, possibly external to the project, though some of the specific practices of this process area may be useful in managing the formal agreement with such a supplier."

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Supplier Agreement Management

SG 1 Agreements with the suppliers are established and maintained.

SP 1.1 Determine the type of acquisition for each product or product component to be acquired.

SP 1.2 Select suppliers based on an evaluation of their ability to meet the specified requirements and established criteria.

SP 1.3 Establish and maintain formal agreements with the supplier.

SG 2 Agreements with the suppliers are satisfied by both the project and the supplier.

SP 2.1 Review candidate COTS products to ensure they satisfy the specified requirements that are covered under a supplier agreement.

SP 2.2 Perform activities with the supplier as specified in the supplier agreement.

SP 2.3 Ensure that the supplier agreement is satisfied before accepting the acquired product.

SP 2.4 Transition the acquired products from the supplier to the project.

Understanding areas where ability is weak can lead to mitigating the inherent risks

Formal commitments can lead to an appreciation of the commitments, mechanisms for enforcement

Contracts must have the required clauses to allow sufficient visibility into potential problems

Review before acceptance allows the agreement to be enforced

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Integrated Supplier Management

From the CMMI text

The Integrated Supplier Management process area builds on the concepts established in the Supplier Agreement Management process area by adding practices that emphasize a cooperative relationship with suppliers.

Integrated Supplier Management is designed for situations in which projects use suppliers to perform functions that are critical to the success of the project.

Integrated Supplier Management

SG 1 Potential sources of products that best fit the needs of the project are identified, analyzed, and selected.

SP 1.1 Identify and analyze potential sources of products that may be used to satisfy the project's requirements.

Increases awareness of alternative suppliers

SP 1.2 Use a formal evaluation process to determine which sources of custom-made and off-the-shelf products to use.

May be a more rigorous process

SG 2 Work is coordinated with suppliers to ensure the supplier agreement is executed appropriately.

SP 2.1 Monitor and analyze selected processes used by the supplier.

Continuous monitoring

SP 2.2 For custom-made products, evaluate selected supplier work products.

SP 2.3 Revise the supplier agreement or relationship, as appropriate, to reflect changes in conditions.

Unexpected performance may require changes in the agreement/contract

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Which to Use?

Each supplier must be evaluated as to:

- **Criticality – How important is the product they provide?**

- **Capability – How likely is the supplier to produce the needed product within schedule and budget?**

If supplier performance is important to project success, it is worth devoting resources to understanding the risks and managing them

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Using a Subcontracts Organization

The CMMI refers to the supplier management <u>process</u>, not the project team

- Some practices many be performed by project personnel, some by members of a Subcontracts functional area
- CMMI does not dictate an organizational structure

It is the responsibility of the project manager to ensure the process is performed, regardless of who performs it

- May involve collaboration with a Subcontracts functional area (e.g., writing specific terms into a contract, etc.)
- Subcontracts personnel must be addressed in the Generic Practices (e.g., policies, planning, training, audits, etc.)

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Selecting a Teaming Approach
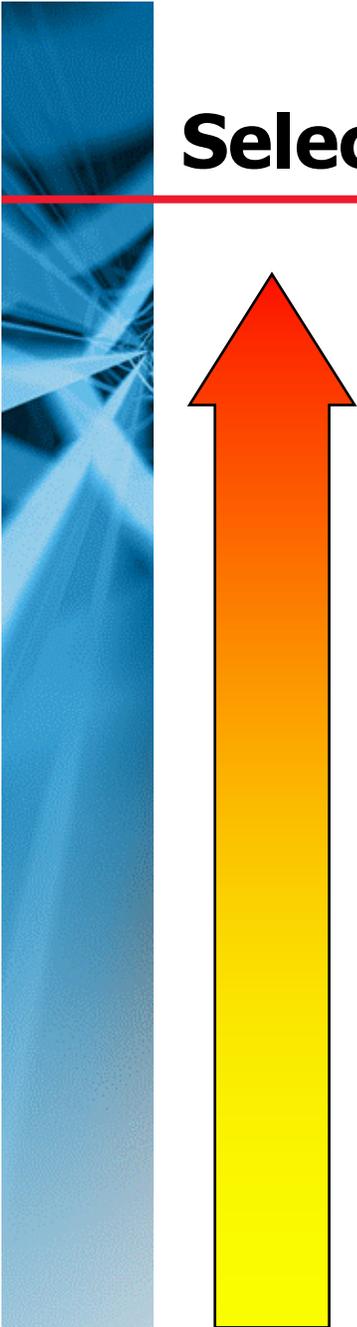
Integrated Team

- **Prime and supplier work on one "badgeless" team**

Supplier Uses Prime's Process

- **Prime trains supplier on the process, assets**
- **Prime may augment the supplier's team**

Prime Audits Supplier Process

- **Prime performs quality assurance role**
- **Prime tests delivered product**

Supplier Uses Own Process

- **Prime monitors against plans, schedules, budgets**
- **Prime reviews supplier test results**

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Integrated Team
Prime and supplier work on one "badgeless" team

Pros

- Common process can merge best practices from each organization
- Joint teams encourage best use of individual talents, mentoring
- Common processes may simplify reviews, consolidation of data

Cons

- Must have clearly defined roles and responsibilities
- Each organization most experienced with their own process
- Each organization typically bids work based on their own processes
- May not bid training needed to understand joint process
- Difficulty reaching consensus about style issues (e.g., peer reviews)
- Difficulty sharing proprietary process assets
- Personnel from a low maturity organization may not have the knowledge or experience to execute a high maturity process (either prime or sub)

Best when teammates are equal/close in maturity, co-location possible

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Supplier Uses Prime's Process

Prime trains supplier on the process, assets

Pros

- **Common processes may simplify reviews, consolidation of data**

Cons

- **Suppliers not experienced with prime's processes**
- **Supplier may not know how to bid work based on prime's processes**
- **May not bid training needed to understand prime's processes**
- **Difficulty sharing proprietary process assets**
- **Personnel from a low maturity supplier may not have the knowledge or experience needed to execute a high maturity process**
- **Supplier may be higher maturity than prime**

Best when supplier role is small, maturity close to prime

Prime Audits Supplier Process

Prime performs quality assurance role

Pros

- **Each organization uses processes they are familiar with**

- **Prime has insight into supplier's process issues**

Cons

- **Low maturity processes could effect project performance**
  - Can try to levy additional requirements (e.g., behave as a Level X on this project)

- **QA role may be difficult for outsider**

Best when teammates are equal/close in maturity

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Supplier Uses Own Process
Prime monitors against plans, schedules, budgets

Pros

- **Each organization uses processes they are familiar with**

Cons

- **Low maturity processes could effect project performance**

Best when supplier maturity equal/better than prime

Assessing a Supplier's Capability

Primes should assess a supplier's process capability

- **Process evaluation (SCAMPI A, B, or C depending on the criticality)**
- **Given process weaknesses, work to <u>mitigate the risks to the project</u>**

Example - Weaknesses in Project Planning

SG 1 Establish Estimates *Estimates of project planning parameters are established and maintained.*	▪ **Construct independent estimates** ▪ **Monitor actuals more closely**
SG 2 Develop a Project Plan *A project plan is established and maintained as the basis for managing the project.*	▪ **Review planning for completeness** ▪ **Monitor against plan more closely anticipating forgotten activities**
SG 3 Obtain Commitment to the Plan *Commitments to the project plan are established and maintained.*	▪ **Ensure awareness of commitments** ▪ **Track more closely**
GG 2 Institutionalize a Managed Process *The process is institutionalized as a managed process.*	▪ **Insist on best possible planning** ▪ **Emphasize planning commitments, abilities, directing, verification**
GG 3 Institutionalize a Defined Process *The process is institutionalized as a defined process.*	▪ **Insist on best possible planning** ▪ **Provide examples, templates, historical data where possible**

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Supplier Process Evaluations - Challenges

Timing – Ideally, before teaming

- Can be used up front to set terms of the subcontract
- Can also be used to monitor subcontract performance

Scope – How many projects? Which process areas?

- Need similarity to projected role on focus project
- Must consider site at which work is to take place
- Must evaluate all Level 2 and 3 process areas to determine possible risks of each teaming option

Style – SCAMPI A, B, or C

- Often time/cost constraints will encourage SCAMPI C
- Important that appraiser understand and reports on project risks, not merely compliance

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Conclusions

New CMM Math

Jack Ferguson - SEI
M. Lynn Penn - Lockheed Martin M&DS

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With proper strategies, supplier risks can be mitigated

- **Evaluate the criticality and capability of each supplier**

- **Select Supplier Agreement Management or Integrated Supplier Management, as appropriate**

- **Involve Subcontracts up front and throughout to ensure a strong supplier management process**

- **Select the right team approach based on the situation**

- **Make judicious use of SCAMPI A, B and C's for supplier selection and monitoring**

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