"Identifying Risks in Outsourcing Software-Intensive Projects"

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"Identifying Risks in Outsourcing Software-Intensive Projects"

Some practical experience and insights into outsourced project risks.

- *Identifies some risks* inherent in subcontracting software projects.
- Serves as *guideline to both software contractors and customers* engaged in software contracts.

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- Software out-sourcing as a trend/necessity

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Some [obvious] background on software development process improvement methodologies:

- National and internal trends in process models for software development.

  (e.g., SEI's SW-CMM models)

- Trends in process models for software acquisition.

  (e.g., SEI's SA-CMM)

- Foci on risk management

  (e.g., SEI Risk Eval., Continuous Risk Mgt., Team Risk Mgt.)

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- Report based on formal research into organizational practices and on-site (informal) observations:
  - Survey/interviews of 26 orgs. About acquisition practices. (Fed. Govt., Telecomm.,DoD, Financial Inst.)
  - Contracts for $30K to $50M
  - Projects: Business, Eng., AI/ES, Hybrids

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Study focus:

- $ to contracting organization during SDLC to acquire, manage, control, and support the software contract.
- Time effort of personnel to support the contract.
- Risk post-mortems.

Before, during and after product deployment

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Some initial research observations:

- *[lack of]* Organizational awareness of models
- *[lack of]* Formal institutionalized software acquisition plans or project tracking plans
- Traditional "order and wait" scenarios
- *[lack of]* Software requirements document specificity

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Some initial research observations (continued):

- *[lack of]* Acquisition project management processes for:
  - Contract management
  - Configuration management for tracking
  - Internal/external personnel oversight processes
  - Tracking progress against requirements and costs
  - Artifact inspections
  - Risk identification and management
  - Metrics gathering

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The first part of research results [briefly]:

- The hidden costs of contracting software is substantial – mean value is 190% of the contract.
- Linear relationship between hidden costs and project size:

$$M = 2.2 * KLOC + 52 \text{ (person months)}$$

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The second part:

Risk Identification and Management

as a

Major Component of

Software Contracting

Customer-Contractor relationships

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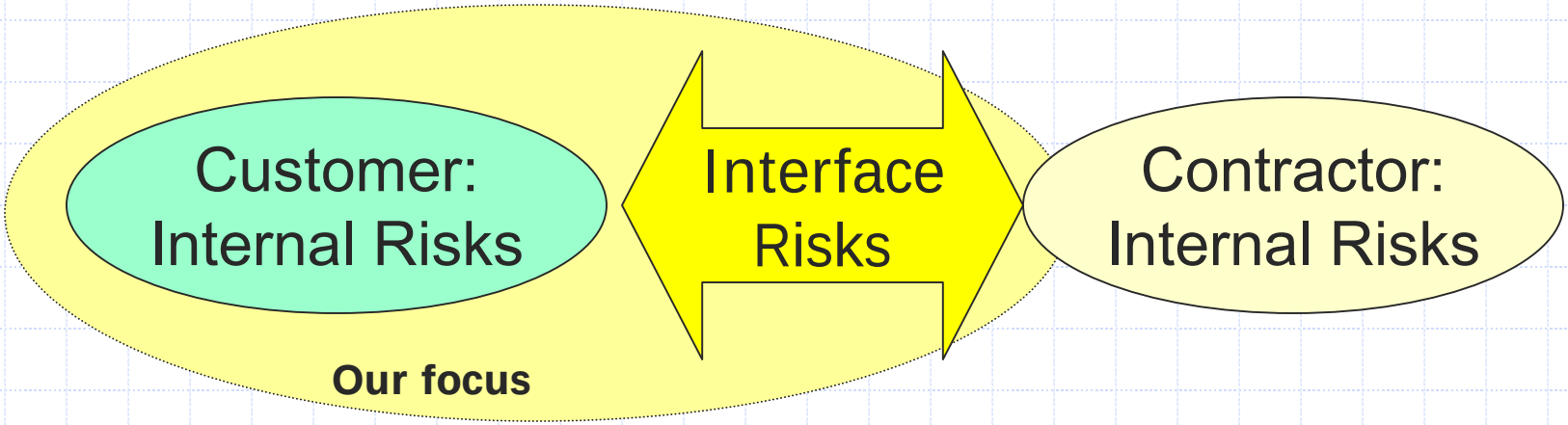
- Nature of risks in software contracting
- Impacts of contracting risks on organizations
- Sources of software contracting risks:



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As a customer, what are *some* of your internal risk sources?

- Inaccurate estimates of effort (time, scope, $)
- Personnel knowledge (software + acquisition)
- User availability and involvement
- Specification of customer (your) requirements
- Contract specificity (processes and interfaces)
- Creeping requirements
- Unanticipated coordination and oversight

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- What are the contractor's internal risks?

[Ignored for this presentation – Because adherence to process models such as SEI's CMM is meant to reduce or eliminate many of contractors risks – or provide guidelines for risk management plan.]

[BUT -- Additional problems arise if your contractor is sub-contracting!]

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As a customer, what are *some* of the sources of risk at your interface with your software contractor?

- Mutually accepted ambiguous contract
- Ill-defined interfaces (users ... contract manager(s) ... developers ... system)
- Pathological [multiple] contacts
- Antagonistic interfaces
- Deficient inspections
- Loosely defined checkpoints
- Unavailable testing criteria, processes, data, benchmarks

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As a customer, what are *some* of the sources of risk at your interface with your software contractor (continued)?

- Shared repositories
- Configuration management of artifacts
- Risk management [incompatible] program
- Quality assurance [incompatible] program
- Expectations of re-use and maintainability
- Missed schedules

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As a customer, what are *some* of the sources of risk at your interface with your software contractor (continued)?

- Costs of tools and management software
- Incompatible deployment and development infrastructures
- Security
- Transient personnel
- Unanticipated direct costs

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As a customer, what are *some* of the sources of risk at your interface with your software contractor (continued)?

- Incompatible processes and standards
- Activity synchronization
- "Gutless" oversight
- Manager end-around play
- Negotiating change
- Test site requirements
- Contract termination and litigation

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Conclusions:

- Process is [still] "King/Queen"
- Engage in software outsourcing only when you understand the pitfalls
- Be prepared: manage costs, manage risks
- Get it all in writing
- Avoid the "customer-victim" role.

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Questions?