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SOFTWARE QUALITY MANAGEMENT
CSP587

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Computer Science

Reading

- Partners and Leadership
- Reading
  - Ch. 12 – Supplier Management and Agreements
- Objectives
  - What are the risks associated with outsourcing?
  - Is management of outsourcing mature enough to manage its risks?
  - What role does human relationships play in the success or failure of outsourcing?
  - What are the most important factors in establishing and maintaining adequate relationships for outsourcing?

Topics for Discussion

- Discuss ways in which outsourcing a portion of the development effort improve the quality of the system being developed.
- Discuss risks associated with engaging a partner organization with a portion of your development effort and explain how to assess the exposure.
- Discuss ways that automation can improve quality. And explain why software development is still a largely manual task despite this potential.
- Discuss the role of proactive quality management in making maintenance less of a "burden". Explain an approach for analyzing the associated costs and benefits.
- Describe the relationship between management and leadership, as well as the role each plays in increasing product quality.
- Explain actions a SW Quality Manager should take to predict and improve leadership capability in an organization.

Week 13 Partners and Leadership

Maintenance Responsibilities

- Corrective
  - User support and corrective action
- Adaptive
  - Evolution management
- Functionality improvement
  - Perfective – feature enhancement
  - Preventive – reliability enhancement

Foundations

- Software package quality
  - The better the system, the easier it is to maintain
  - Revisit those factors associated with maintenance
    - Correctness, reliability, maintainability, flexibility, testability, portability, and interoperability
- Maintenance policy
  - How many versions will be supported?
  - Change management process

Pre-maintenance Components

- Maintenance contract review
  - What is and is not covered, and by whom
  - Service level agreements
  - Enhancement vs. fix expectations
- Maintenance plan construction
  - State the obligation (per the contract)
  - Staff it
  - Identify required infrastructure
  - Manage risk
  - Incident management, change management, etc.
  - Budget

Tool Support

- Corrective maintenance
  - User support and bug fixing
- Functionality improvement
  - Small-scale SDLC
- Infrastructure
  - Support for maintenance activities
  - Tools, templates, training, procedures, etc.
  - Configuration management
- Managerial control
  - Command, control, and communication
  - Metrics collection and reporting, cost analysis, etc.

CASE Tools

- Developer support through the life cycle
- Quality benefits
  - Adherence to requirements
  - Design consistency
  - Code generation
  - Adherence to standards
  - Test case generation and management
  - UI development support
  - Documentation generation

Partnering to Improve Quality

- Types of partners
  - Subcontractors
  - Software module suppliers (COTS)
  - The customer?
    - Subject matter experts, etc.
- The promise
  - Development should be faster (due to extra effort)
  - Quality should be better (due to expertise)
  - Understanding should be deeper (due to diversity of thought)

Threats to Quality from Partnering

- What could go wrong
  - Lack of visibility can lead to
    - Missed deadlines, poor quality, unexpected costs, etc.
  - Lack of control can lead to
    - Unmanaged personnel changes, subcontracting, etc.
  - Communication gaps can lead to
    - Requirements misunderstandings, module interoperability issues, inadequate documentation, etc.
  - Ownership ambiguity can lead to
    - Maintenance responsibility issues, inadequate commitment, etc.

Steps for Managing Partners

- Requirements document reviews
- Selection criteria review
- Coordination and control committee
- Design reviews
- Software testing
- Special procedures
- Certification of suppliers
- Progress reports
- Review of deliverables and acceptance tests

Leadership

- Related to management
  - Managers are expected to lead
  - Leaders usually have management responsibilities
- Yet, different than management
  - Management is about maintaining control of the present
  - Leadership is about getting to a better future
- Role in facilitating quality
  - Inspiring extraordinary effort
  - Motivating attention to detail
  - Leading by example

Leadership Traits

- Supervisory ability
  - Get others to get work done
- Need for occupational achievement
  - The desire to earn responsibility
- Intelligence
  - Judgment, reasoning, smarts, etc.
- Decisiveness
- Self-assurance
- Initiative
  - Self-starting, requiring minimal supervision

The Leadership Grid

HIGH

CONCERN FOR PEOPLE (TEMPS)

REWARD ACCOMPLISH!

LOW   HIGH

CONCERN FOR PRODUCTION (WORK)
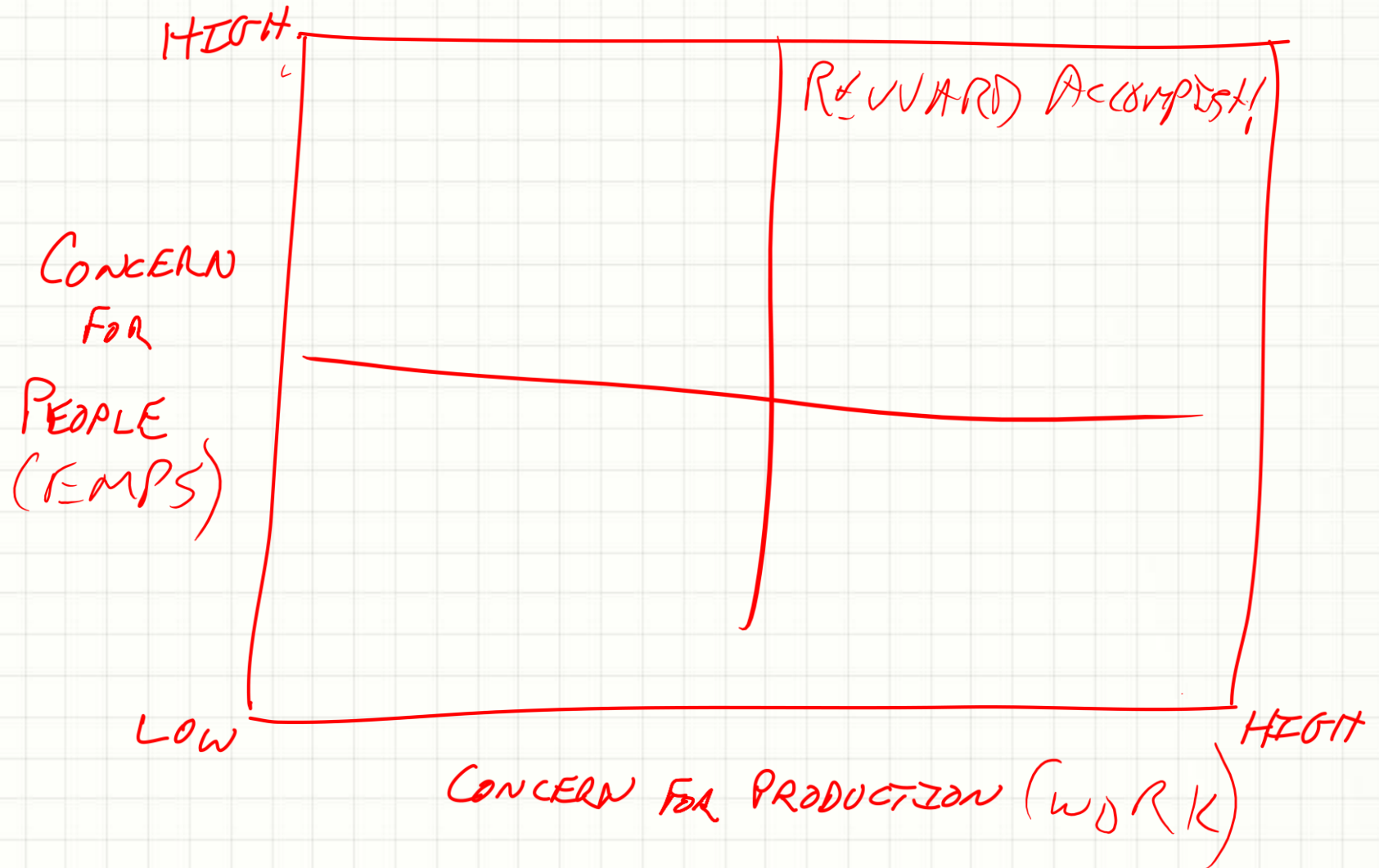
Leading Software Development

- The people doing the work are smart, professional, and in demand
- The deliverables are relatively intangible
- Teamwork is critical – which means social constructs matter
- Estimating productivity and predicting effort/time is difficult
- Iteration means the work is (intentionally) never done

Leading for Quality

- Quality is hard to measure
- Quality requires dedication and discipline
- Benefit is obvious yet difficult to quantify
- Cost is clear and difficult to justify

Leading By Example

- Reinforce established priorities
- Establish a sense of urgency
- Establish a culture of resolving issues
- Value cooperation and trust
- Establish high standards
- Act ethically