

Software Process Improvement and e-Business: An Oxymoron?

Boston SPIN
March 19, 2002

Donna L. Johnson
LOGOS International, Inc.

Agenda

- I. Background**
- II. e-Business and the Need for Process**
- III. CMM Adaptations for e-Business**
- IV. Summary**

Questions and Answers

Background

The e-Business Environment



Background

Defining the Environment

e-business

Business using the internet for:

- e-commerce
- advertising
- communication

B2C

B2B

e-project

system level

component

A project that has the following characteristics*:

- quick delivery
- research-like, yet mission critical
- managed in turbulent business and technology environment

Background

The Controversy

Light methodologies

- Preserving flexibility
- Adaptable to changing environments

VS.

CMM Perceptions

- Based on large DoD organizations
- Focused on continuous improvement
- Promoting repeatable processes

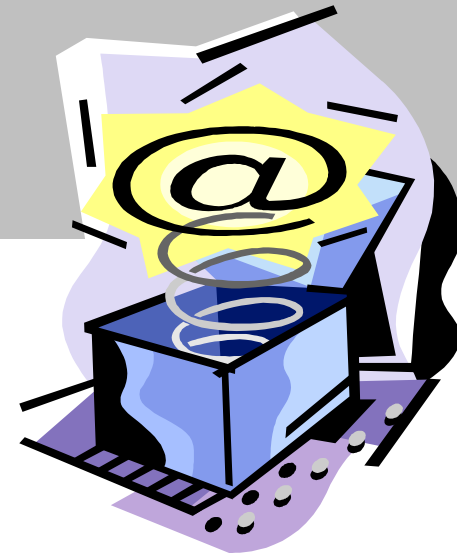
Background

The Study

interviews

15 Software managers in e-business environments

- **IT organizations**
- **Web page development**
- **Web applications**
- **e-Business applications**



Background

The e-Business Companies

Software development practices

- **Project plans developed**
- **Iterative or evolutionary lifecycle used**
 - **Some parallelism of phases**
 - **Little prototyping – mainly for proof of principle**
- **Effort estimates generated based on experience**
- **Delivery dates customer driven**
- **Documentation stored in libraries**
- **Technology introduced gradually to minimize impact**
- **Personnel issues identified as greatest risk**

Background

e-Project Discriminators

e-business vs. traditional SW

- **Insufficient skilled, experienced software engineers**
- **Rapidly changing technology and business environments**
- **Many functionally complex, interconnected systems**
- **Increased number of stakeholders**
- **Worldwide, networked connectivity**
- **Fuzzy requirements**
- **Compressed development cycle/time-to-market pressures**

Need for Process

e-Project Characteristics

**insufficient skills,
experience**

Impact on development

- Systems engineering inadequately performed
- Software development outsourced

subcontract management
org process definition
training program

Process solutions

- Training
- Hiring of experienced managers
- Documented processes
- Subcontractor oversight

Need for Process

e-Project Characteristics -2

**changing technology/
environments**

Impact on development

- Turbulent transitions to technologies and business models
- Frequent updates/ revamping of software

requirements management

SW project planning

org process definition

Process solutions

- Process for introducing change
- Short development cycles
- Planning for change
- Management of requirements changes

Need for Process

e-Project Characteristics -3

**complex, interconnected
systems**

Impact on development

- Dependent on external commitments
- System quality a product of vendor and COTs quality

SW project planning
SW project tracking
SW product engineering

Process solutions

- Risk identification and management
- Planning & tracking of commitments
- Increased importance on integration testing

Need for Process

e-Project Characteristics -4

**increased number
of stakeholders**

Impact on development

- Conflicting requirements
- Changing requirements

requirements management
SW project planning
SW project tracking
intergroup coordination

Process solutions

- Stakeholder buy-in/commitment
- Requirements change processes
- Conflict resolution

Need for Process

e-Project Characteristics -5

**worldwide, networked
connectivity**

Impact on development

- Immediate distribution of information/news
- Worldwide customer base
- High visibility of SW problems

**SW quality assurance
peer reviews
SW quality management
defect prevention**

Process solutions

- Improved product quality

Need for Process

e-Project Characteristics -6

fuzzy requirements

Impact on development

- Requirements evolving as project progresses

requirements management
SW project planning
SW project tracking

Process solutions

- Prototyping
- Evolutionary life cycle
- Process for incorporating requirements changes

Need for Process

e-Project Characteristics -7

**compressed
development cycle**

Impact on development

- Insufficient testing
- Inadequate systems analysis
- Reduced project functionality

Process solutions

- Improved estimating processes
- Training
- Hiring of experienced managers
- Reduced rework
- Increased milestones for tracking progress

SW project planning
SW project tracking
training program
peer reviews
defect prevention

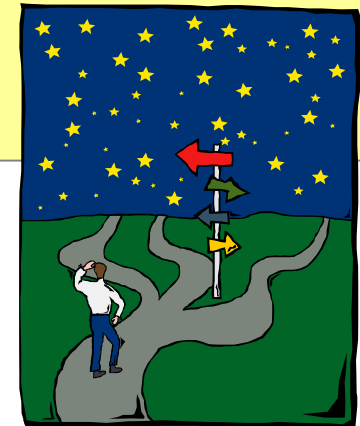
CMM Adaptations

CMM Level	KFAs
Level 2: Repeatable	<i>Requirements management</i> <i>Software project planning</i> <i>Software project tracking and oversight</i> Software subcontract management Software quality assurance <i>Software configuration management</i>
Level 3: Defined	Organization process focus Organization process definition Training program Integrated software management Software product engineering Intergroup coordination <i>Peer reviews</i>
Level 4: Managed	Quantitative process measurement Software quality management
Level 5: Optimizing	Defect prevention Technology change management Process change management

CMM Adaptations

Requirements Management

- **Processes for managing changing requirements**
 - **Quick turn-around process for responding to customer or market needs**
- **Requirements not fully defined (i.e., incomplete, fuzzy)**
- **Increased importance of software review of requirements**



CMM Adaptations

Software Project Planning

- Detailed planning for small, manageable units of work
- Iterative or evolutionary life cycle
- Plans for introduction of technology changes
- Increased planning needs
 - Increased risks
 - Increased interfaces
 - Increased commitments
 - Changing training needs
- Schedule & budget pressures on estimates

**HIGH
RISK**

A graphic of a hand holding a sign that says "HIGH RISK". The hand is green and the sign is red with white text.

More planning, shorter cycles

CMM Adaptations

Software Project Tracking and Oversight

- **Re-evaluation of project tracking metrics**
- **Increased tracking of commitments and risks**
- **Reduced frequency of plan updates**
- **Increased need for communication**



CMM Adaptations

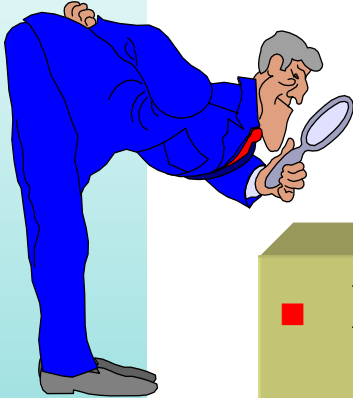
Software Configuration Management

- **Heavy emphasis on tools**
- **Wider range of controlled items**
 - **Voice and video objects, graphic images**
 - **Databases**
 - **Copyright releases**
- **Provision for fast track in change management**

What constitutes a CI?

CMM Adaptations

Peer Reviews



- **Modified peer review methods to accommodate smaller teams**
- **Expanded coverage of peer reviews**
- **Re-definition of “code”**

Summary

The CMM can improve e-business software development, if:

- **CMM practices are applied judiciously to recognize the e-business need for:**
 - **Improved quality**
 - **Reduced time to market**
 - **Increased productivity**
- **Attention is paid to recognizing the alternative practices of e-projects when satisfying CMM KPA goals.**



e-Projects

Contact Information

Donna Johnson

**LOGOS International, Inc.
8 Mackintosh Lane
Lincoln, MA 01773**

**Tel: 781-259-8266 Fax: 781-259-8268
johnson@logos-intl.com**

**Visit our WEB site for more information:
<http://www.logos-intl.com>**