Communication, Cooperation, and Coordination Model
for Process Improvement of C2 Projects

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Introduction

• Project Definition
  (Unique, one of a kind endeavor with a definite beginning and a definite end)

• Project Management Definition
  (Managing, allocating, and timing resources to achieve a given goal in an efficient and expeditious manner)

• Systems Definition
  (A system is a collection of interrelated elements, whose collective output, based on synergy, is higher than the sum of the individual outputs of the sub-elements)

• Hierarchy of Engagement:
  – Enterprise, System, Program, Project, Task, Activity
Process Components

- **Activity**
- **Task**
- **Sub-process**
- **Process**
- **System**

**WBS Elements**

- Task = f(activity)
- Sub-process = f(task)
- Process = f(sub-process)
- System = f(process)
Elements of C2 Project Control

Goal: Adapt C2 to the 21st Century
Evolution of Complex Systems

1960s
- Efficiency
- Quality
- Flexibility

1970s
- Efficiency
- Quality
- Flexibility

1980s
- Efficiency
- Quality
- Flexibility

1990s
- Efficiency
- Quality
- Flexibility
- Environment

2000s
- Efficiency
- Quality
- Flexibility
- Environment
- Globality

2010s
- Efficiency
- Quality
- Flexibility
- Environment
- Globality
- Nanology

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Project Review Quadrants

(Go or No-Go)

Value Added Scale

High

Low

Task Complexity

Difficult

Easy

Go

No Go

???
C2 Project Environment

- New system challenges
- Integration of Human Skills and Technical Systems

Project Knowledge Areas
- Scope
- Cost
- Schedule
- Risk
- Communications
- Human Resources
- Procurement
- Quality
- Integration
Project Management Approach

• Managing, allocating, and timing resources to achieve a given goal in an efficient and expeditious manner.

• **OBJECTIVES**
  – Time, Cost, Performance

• **SIMPLE PROJECT**
  – Painting a vacant room

• **COMPLEX PROJECT**
  – Designing new warfighter system
Project Management Steps

COST/PERFORMANCE/SCHEDULE
OBJECTIVES

PHASE-OUT
CONTROL
TRACKING/REPORTING
SCHEDULING
RESOURCE ALLOCATION
ORGANIZING
PLANNING
DEFINITION
IDENTIFICATION
Triple Constraints on Projects

- **Scope (Performance)** ➔ Performance Specs, Output Targets, etc.
- **Schedule (Time)** ➔ Due Date Expectations, Milestones, etc.
- **Cost (Budget)** ➔ Budget Limitations, Cost Estimates, etc.
Factors Influencing Project Performance

Internal Factors
- Performance Requirements
- Resource Constraints
- Project Boundary
- Time Constraints

External Factors

Output
Trade-offs on Project Performance

- Compromise Regions

Diagram showing relationships between performance, time, and resource.
Traditional Approach

- Traditional Result-Based Evaluation
- Old Incentive Structures
- Disadvantages
Collaborative project structure

- Structured Systems Analysis

- Advantages

- Systems Approach

- Process Inputs

- Point-to-Point Performance Review

- Integrated Output

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Introduction to Triple C Model

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Participative Approach of Triple C

“Tell me, and I forget;
Show me, and I remember;
Involve me, and I understand.”

- Chinese Proverb
Communication

What to communicate
• Project scope
• Personnel contribution required
• Expected cost
• Project justification (pros and cons)
• Project organization
• Potential adverse impacts
• Direct and indirect benefits
Triple C Communication Matrix

Source

- Project Manager
- Vendor
- Engineer
- Programmer
- Supervisor

TARGET

- Functional Manager
- Vendor
- Engineer
- Programmer
- Supervisor

Topic of Conversation
Project Knowledge Communication Modes

Communicator’s Column

- **Simplex (Unidirectional)**
  - Infinite Time Lag

- **Half-Duplex (Partial Bidirectional)**
  - Finite Time Lag

- **Full Duplex (Bidirectional dialogue)**
  - Negligible Time Lag

Receiver’s Column

- **Origin**
  - Target

Transmitter State

- Transient State
- Maturity State
- Steady State

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How to get “explicit” cooperation

• Importance of Cooperation
• Expected Role of Personnel
• Rewards of Cooperation
• Time Frame Involved
• Organizational Impact
Coordination

How to coordinate
• Who is to do what
• When
• Where
• How
• Why
• External/Internal Interfaces
Example of Responsibility Chart

Codes:
R = Responsible
A = Approve
C = Consult
I = Inform
S = Support

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<th>Responsibility</th>
<th>Management</th>
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<th>Technician</th>
<th>Project Manager</th>
<th>Technical Writer</th>
<th>Plant Manager</th>
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WBS
(A Tool for Coordination)
Concluding Remarks

“Intellectuals solve problems, Geniuses prevent them.”
- Albert Einstein

**Lesson Learned:**
Avert C2 project problems rather than engage in retroactive fire-fighting, after the damage has been done.
Questions/Answers/Discussions

- Discussions
- Follow-ups