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Critical Chain Project Management: Motivation & Overview

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Motivation

- < 45% of all projects finish on schedule or before
- < 17% software projects completed on-time / on-budget.
- IT related projects
 - 23%+ of projects will be canceled before they ever get completed. Further results indicate
 - 50%+ of projects cost > 150% original estimates
- Ref: www.it-cortex.com/Stat_Failure_Rate.htm
www.pqa.net/ProdServices/ccpm/W05002001.html

Results: Switching to Critical Chain

- Lucent Technologies
 - Outside Plant Fiber Optic Cable Business Unit **reduced** its product introduction interval by **50%**, improved on-time delivery, and increased the organization's capacity to develop products.
- Seagate
 - Brings 1st 15,000 rpm disc drive to market ahead of its competition, causing all competition to pull out of the market. (circa 2000).
- Lord Corporation
 - Capacity has increased, cycle time improved, and operating expense remained the same.

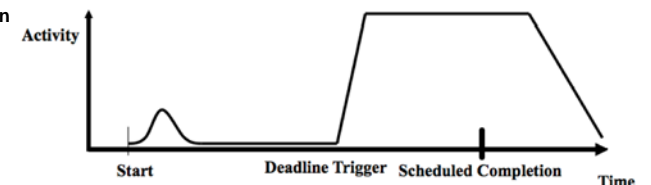
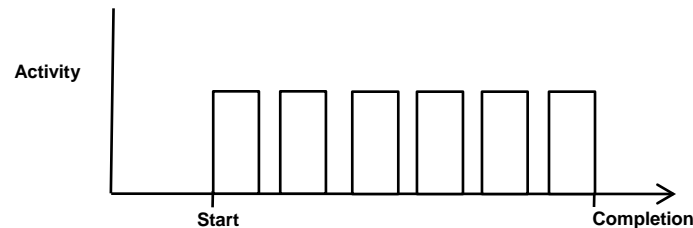
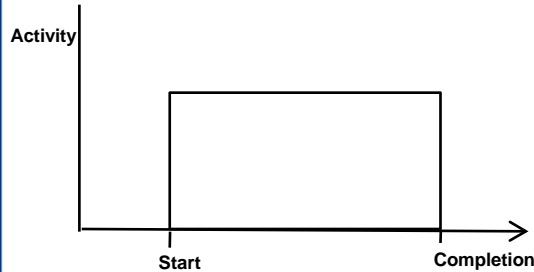
Are You A Responsible Person?

When asked for task estimate, or asking for one:

What do you supply? What do you assume is supplied?

How often is the "Three Point Estimation" used?

How do you work when assigned to a task?



Presentation Outline

Introduction

Problem [What to Change]

- **Localized Risk Management**
 - **Task Level Insurance Policy**
 - **Student Syndrome**
 - **Parkinson's Law**
 - **Multi-tasking**

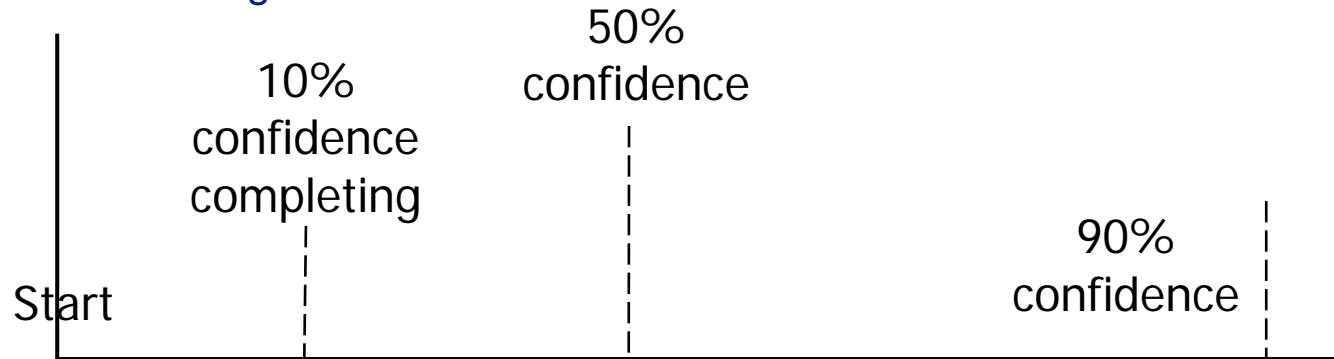
Solution [What to Change to]

- **Governing Principle - Global Risk Management**
 - **Project Level Protection**
 - **Systems Perspective**
 - **Execution Control**

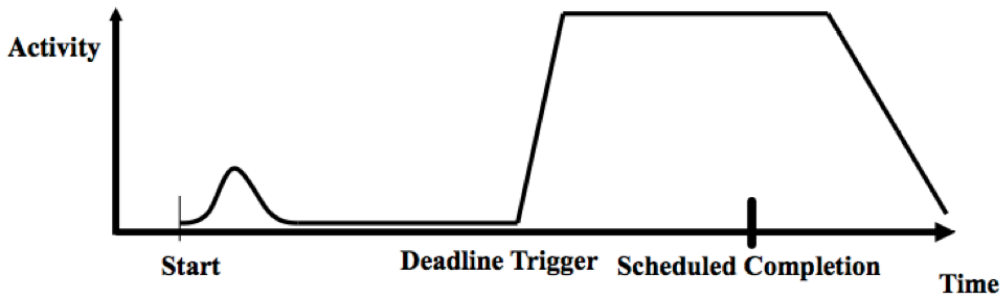
Problem: Localized Risk Management Strategy

1. Task level insurance policy

** How safe is safe enough? **



2. Student Syndrome



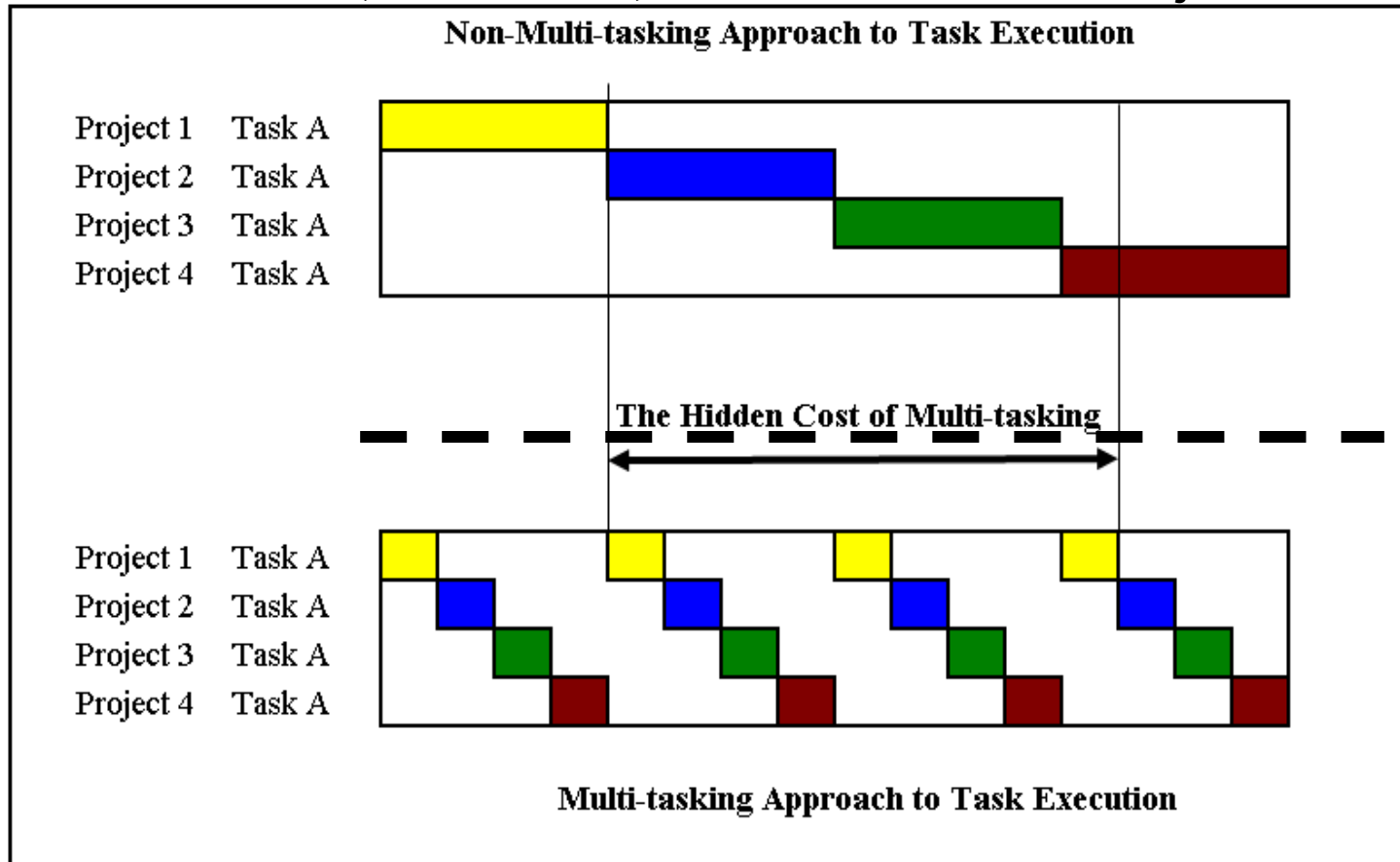
1. Parkinson's Law

Self-fulfilling prophecy [good estimating?]

2. Multi-tasking [absence of priorities]

Problem: Localized Risk Management

One Resource, Four Tasks, from Four Different Projects



Multi-tasking / task switching has overhead causing more delays to spread across all projects.

Presentation Outline

Background

- Governing Principle or Paradigm Shift
- Triple Constraints
- Complexity
- Murphy's Law

Problem [What to Change]

- Localized Risk Management
 - Task Level Insurance Policy
 - Student Syndrome
 - Parkinson's Law

Solution [What to Change to]

- **Global Risk Management**
 - **Project Level Protection**
 - **Systems Perspective**
 - **Execution Control**

Solution

Governing Principle Behind CCPM is:

Aggregation of risk...

Benefits:

- Lower overall protection needed
- Higher degree of “coverage” achieved
- Leading to lower incidence of “failure”

Solution:

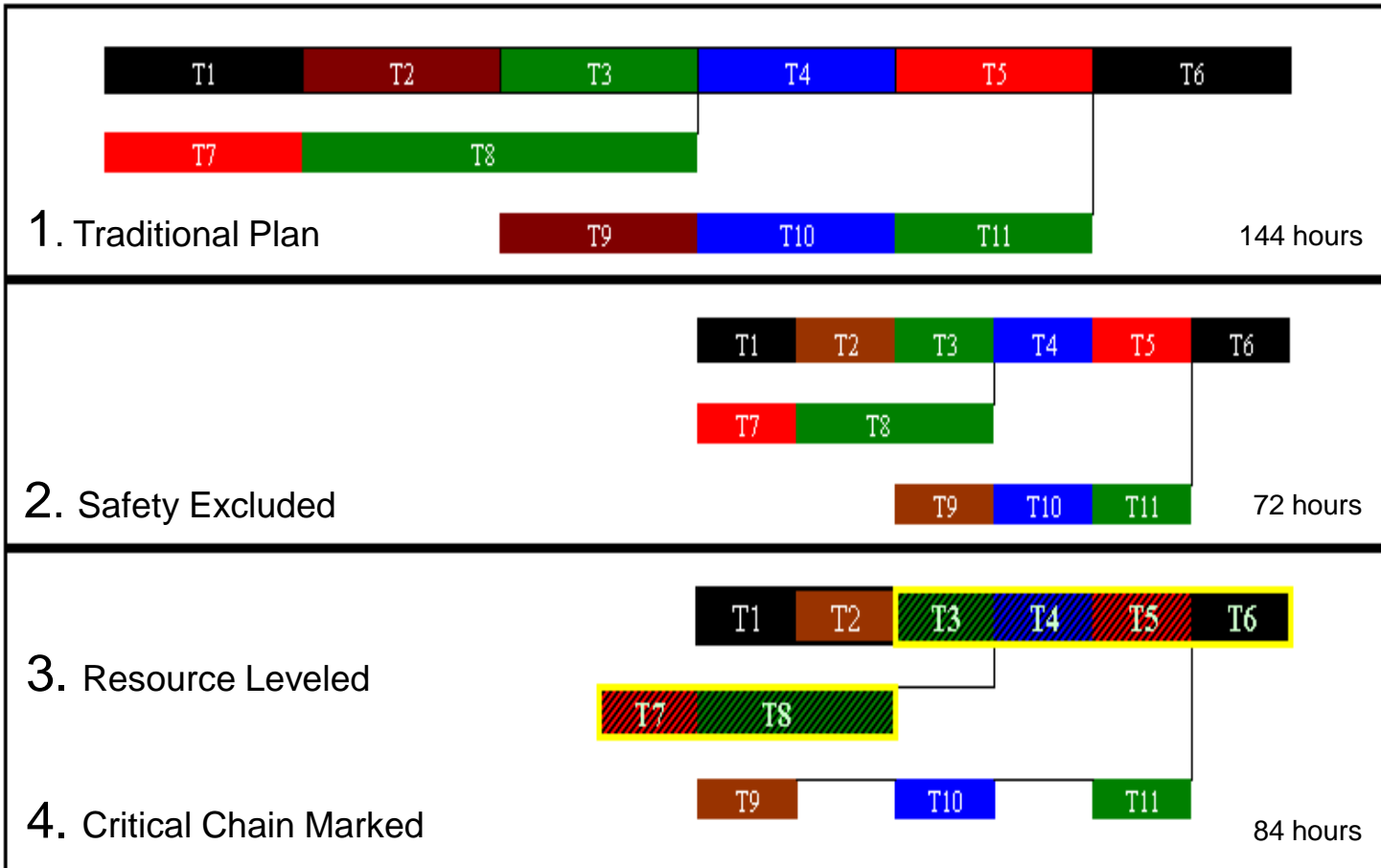
Global Approach to Risk Management

1. Planning
 1. Project Level vs. Task Level Protection
 2. Systems Perspective for Multiple Projects
 - Pipeline projects with overlapping resources

2. Execution Control
 1. Promote and encourage team culture
 2. Controlled work queues
 3. No multi-tasking work rules
 4. No batch processing work rules
 5. Task assignment prioritization
 6. Management by Exception

Critical Chain Planning Process

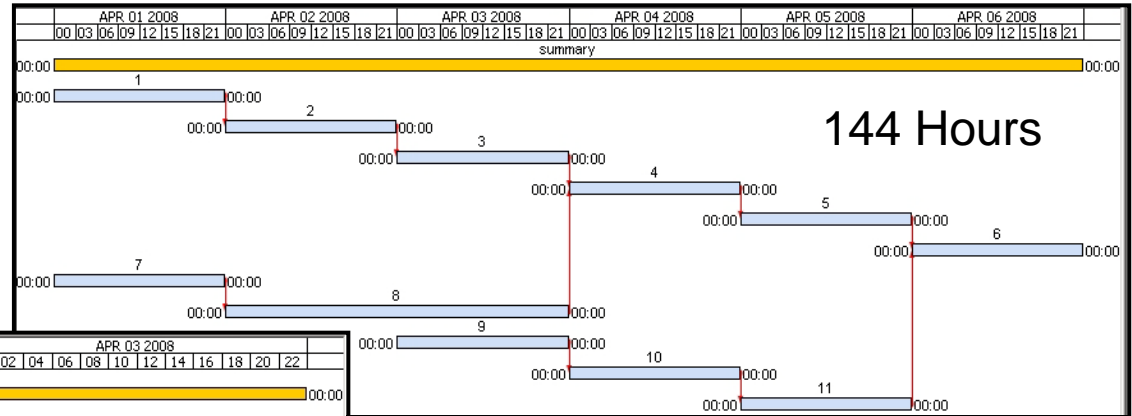
From Task to Project Protection



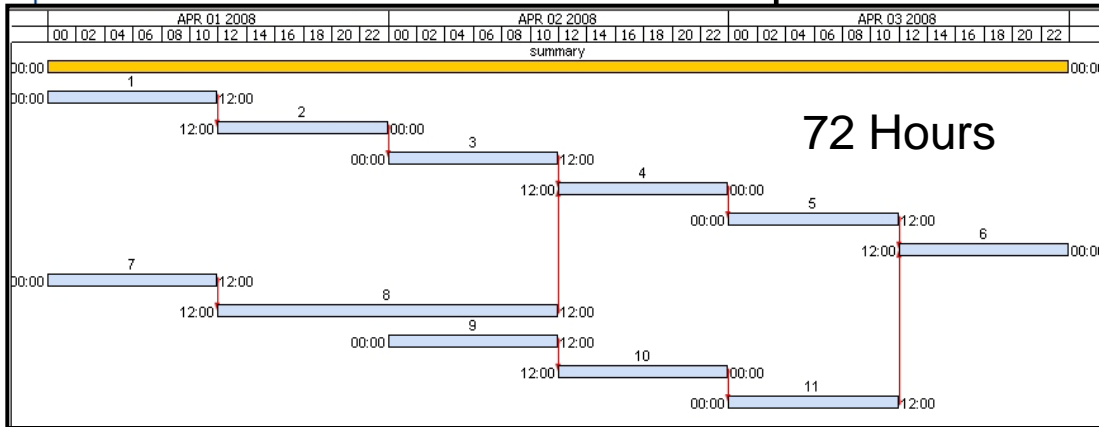
Critical Chain Planning Process

From Task to Project Protection

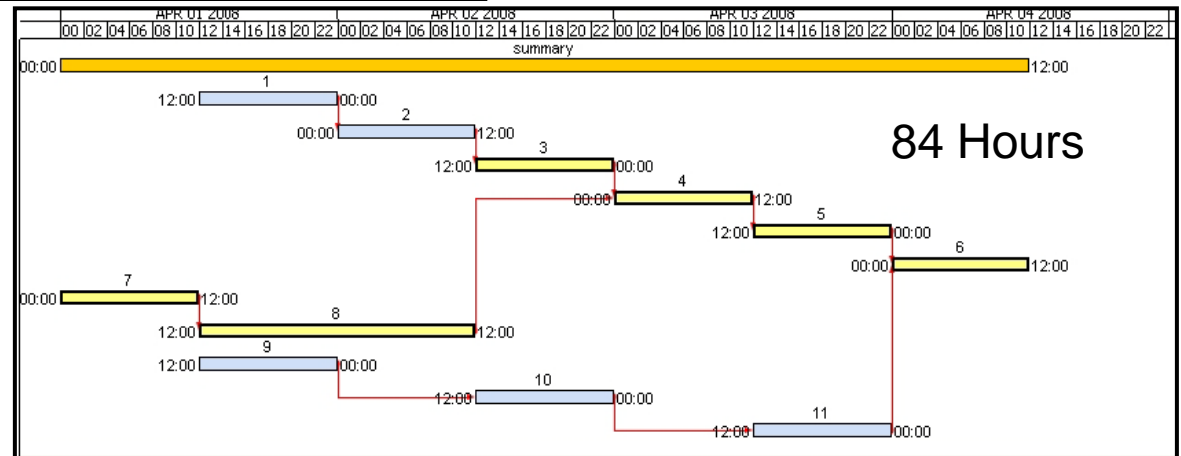
1. Traditional Plan



2. Safety Excluded



3. Resource Leveled



4. Critical Chain Marked in Yellow

Aggregation Principle

The Concept of Risk Pooling:

Can someone explain why this works?

Health Care Example:

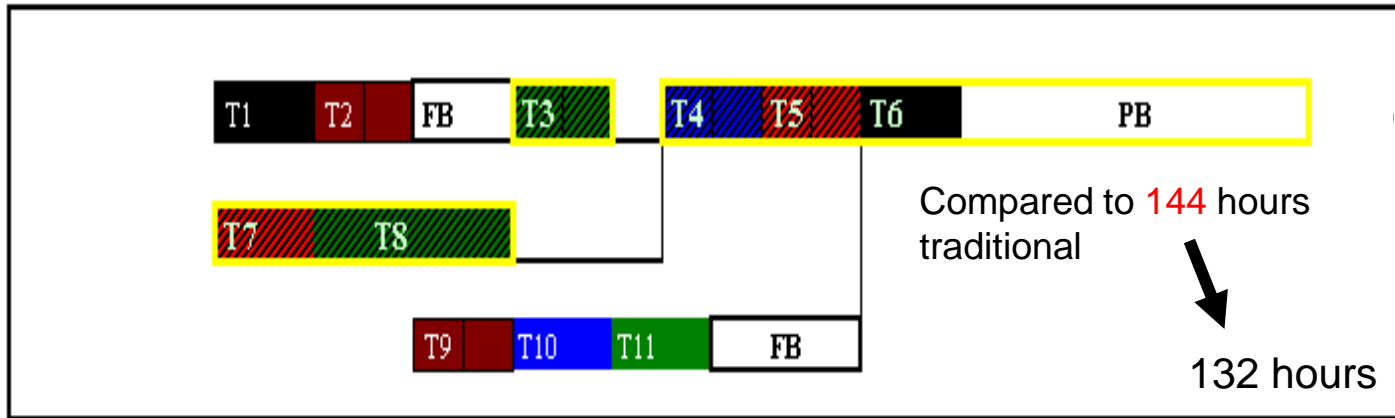
Larger pool = Lower cost

Aggregation Principle

Insurance is designed to work by spreading costs across a large number of people. Premiums are based on the average costs for the people in an insured group. This risk-spreading function helps make insurance reasonably affordable for most people.

<http://www.insurance.wa.gov/legislative/factsheets/PoolingRiskReducingCost.asp>

Critical Chain Planning



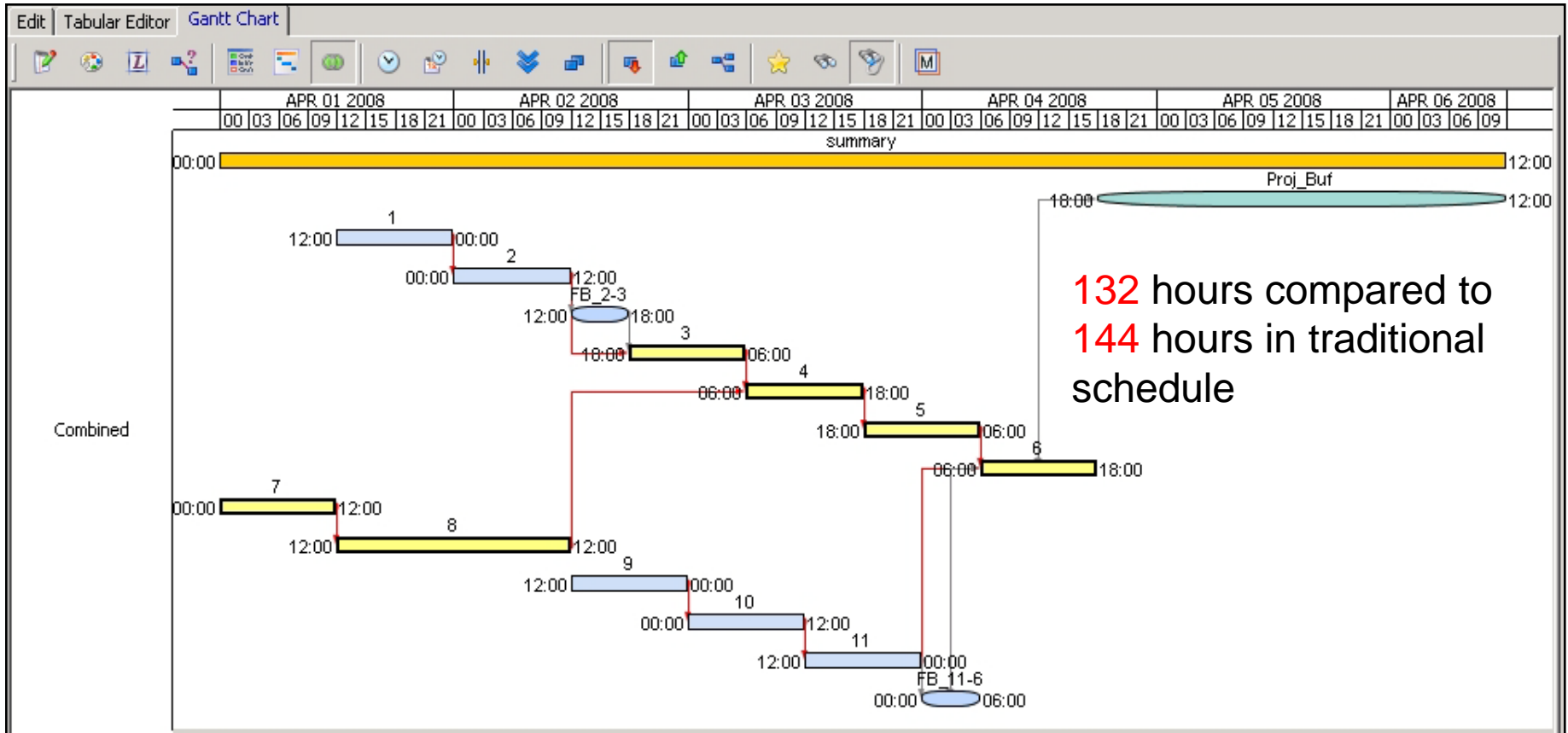
PB = Project Buffer FB = Feeding Buffer

Aggregation Principle [where did some of the safety go?]:

1. Pooled protection provides more coverage
2. Location is just as important as amount
3. Sizing Rule of Thumb → Buffer is $\frac{1}{2}$ of preceding chain

Critical Chain Planning

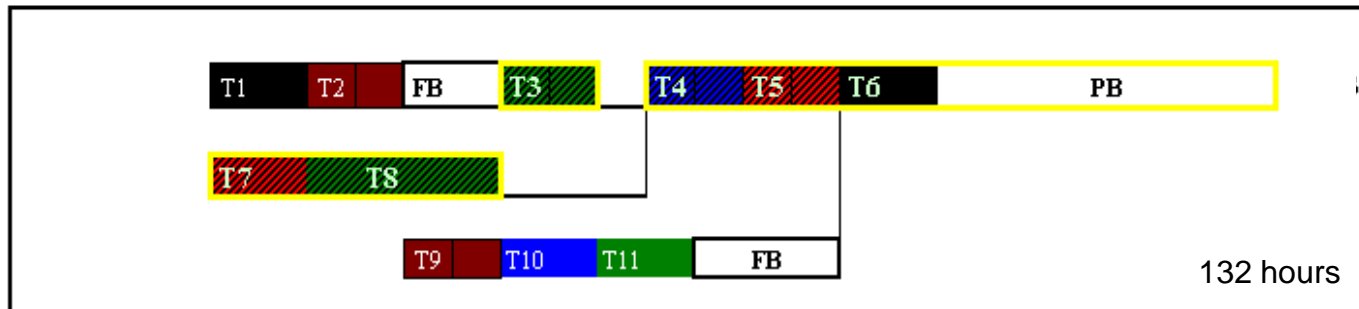
Schedule shown in Aurora



Proj_Buf = Project Buffer FB = Feeding Buffer

Critical Chain in Execution

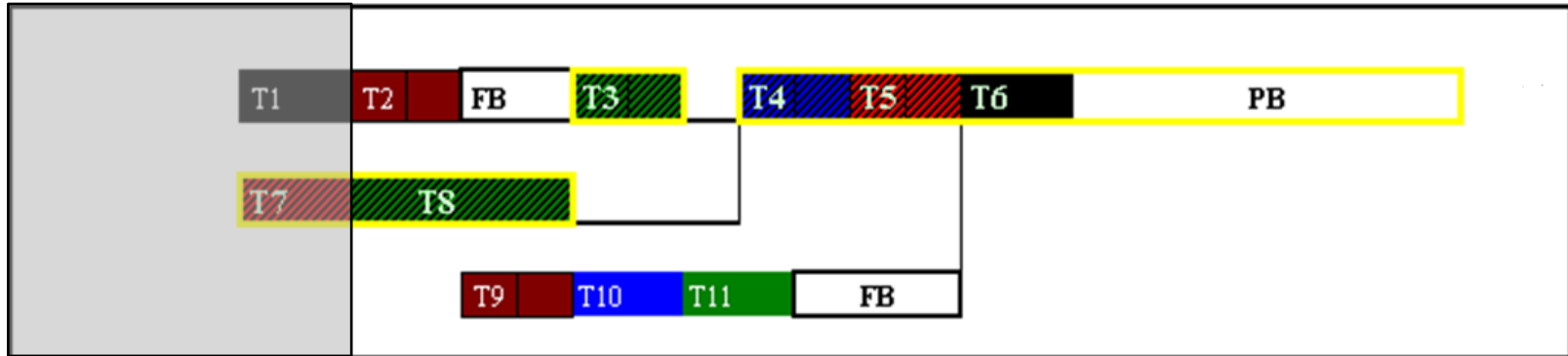
Schedule Before Execution Starts



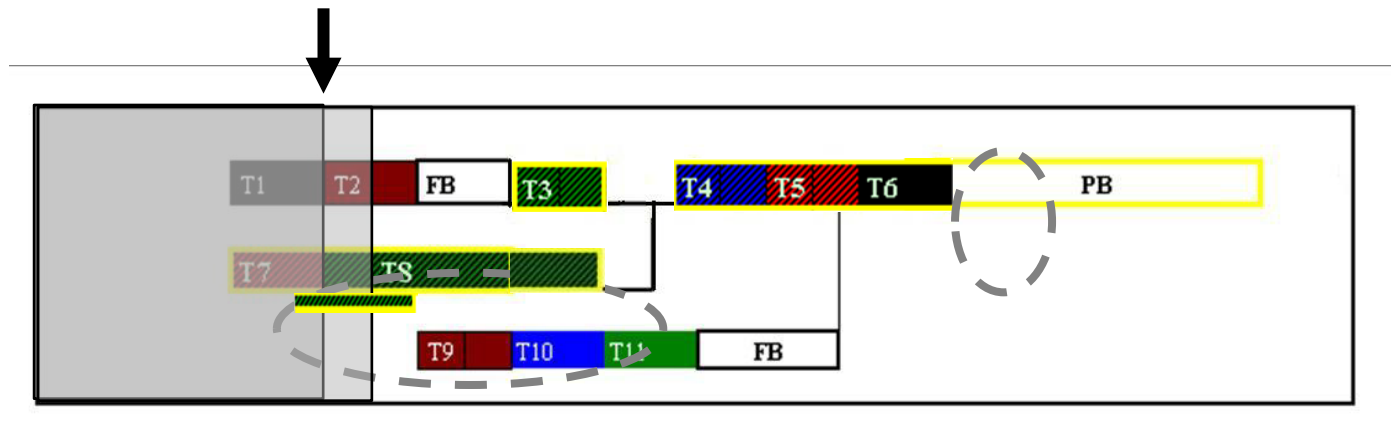
1. T8 experiences increase in scope or delay
2. First portion of delay absorbed by gap between T3 & T4
3. Rest of delay impacts the project buffer
4. E.g., So as of date project may be → 7% Complete with 14% Buffer Consumed

Critical Chain in Execution

↓ "AS OF DATE"

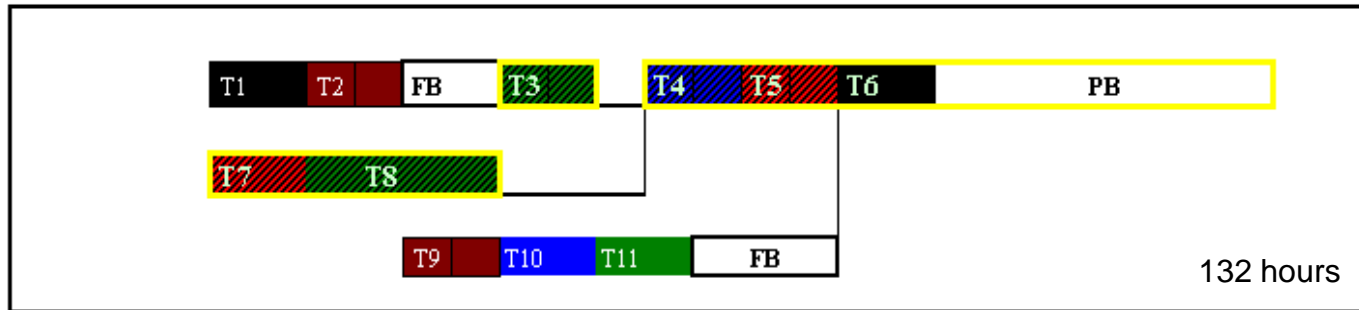


Critical Chain in Execution

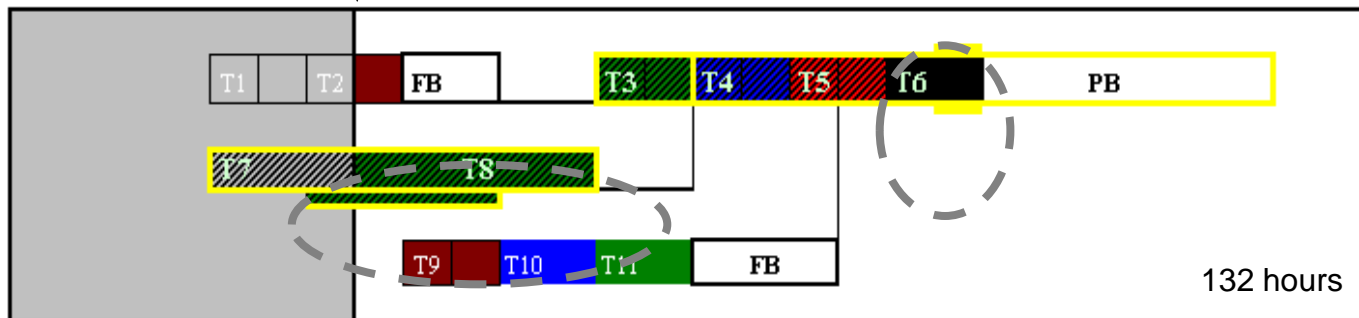


Critical Chain in Execution

Schedule Before Execution Starts



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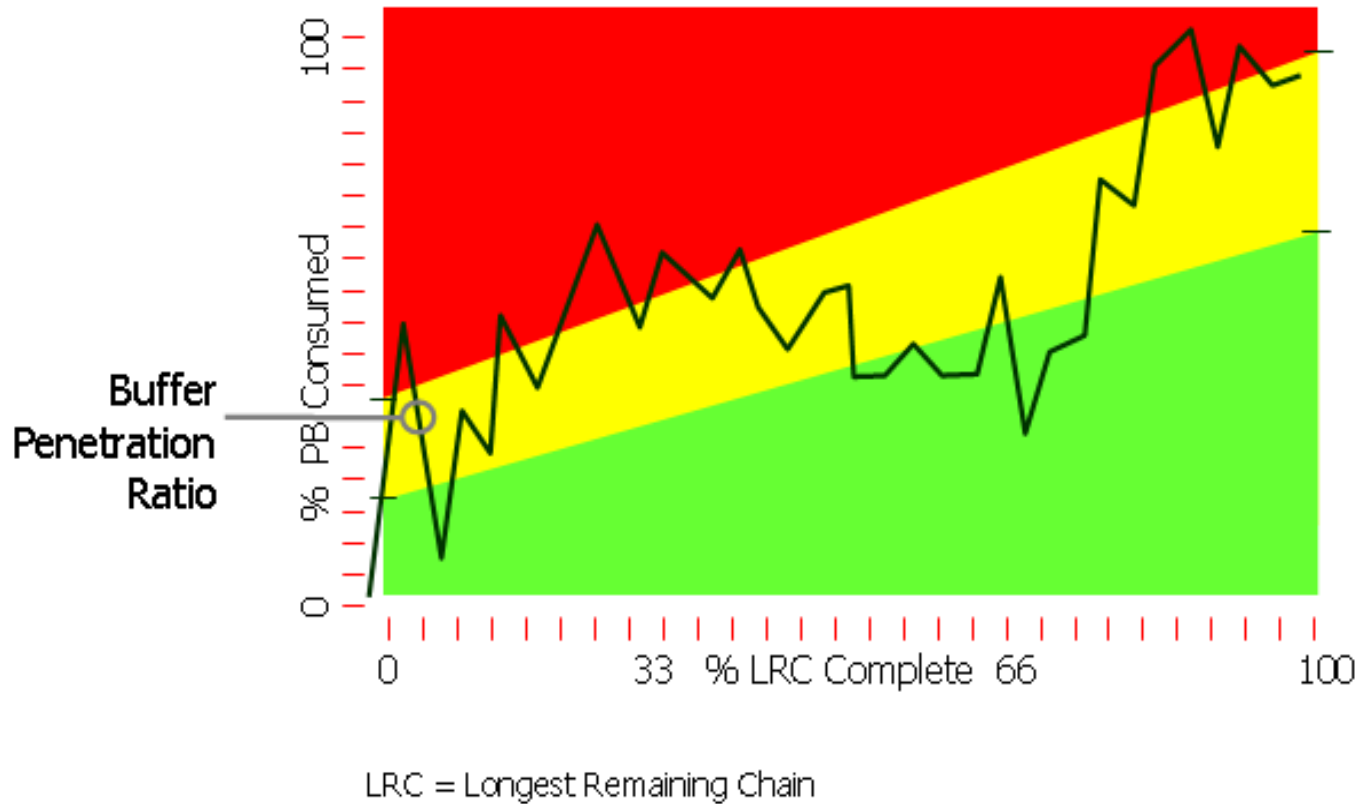


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Perspective on Buffers

- Not “rear view mirror watching”
- Predictive/Preventative/Leading Indicator
- Mechanism to Promote and encourage Team Work
- Collaboration / Communication Incentive Mechanism
- Measuring device – Neutral, Normalized Metrics
- Real-time Risk Meter
- Encourages an holistic/goal oriented perspective

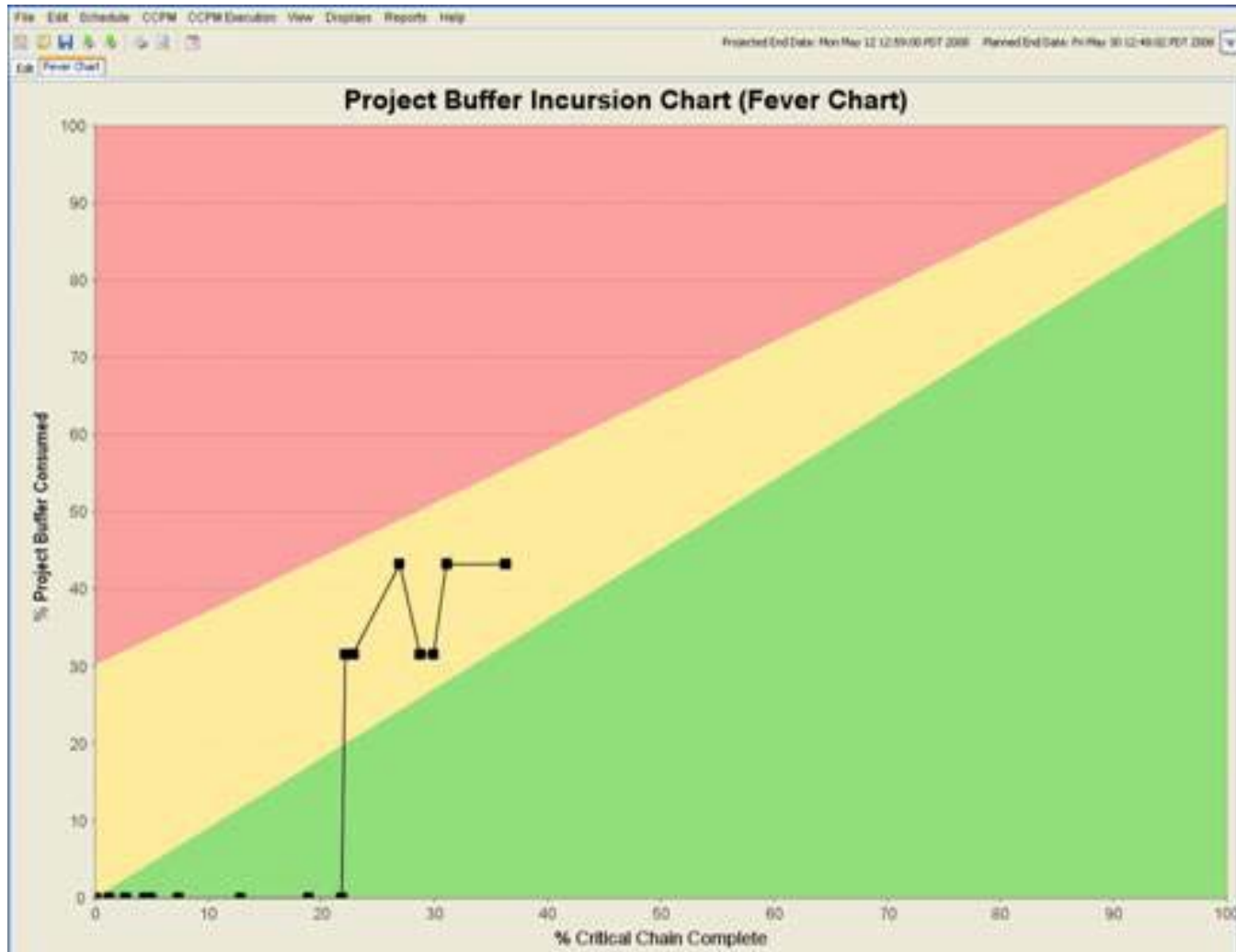
Critical Chain Priority Metric



Project Status Trend Chart or “Fever” Chart

Critical Chain Priority Metric

Project Status Trend Chart or “Fever” Chart



Results (2)

- Harris Corporation:
 - construction of its \$250 million wafer fabrication plant – 3 days ahead of 13 month schedule (originally 18 months) & 4% over budget.
- Balfour Beatty
 - Civil engineering projects ahead of schedule and under budget.
- FMC Energy Systems
 - Sub sea systems on-time performance went from < 50% to >90%.
- Phillips
- US Navy

Questions ???

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