Project Pro

Complete Critical Paths – Refreshing and New!
Critical Path 2.0

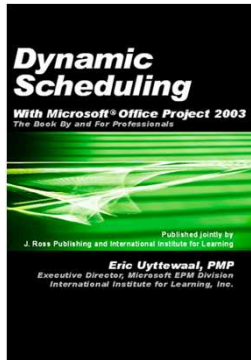Eric Uyttewaal, PMP

Presenter Intro: Eric Uyttewaal, PMP

- ❖ President ProjectPro Corp. specializing in Microsoft Office Project, Project Server and Portfolio Server
- ❖ BS, Engineering; MS Business Administration
- ❖ PMI-COS Award: "Significant Contributions to the Scheduling Profession"
- ❖ Author "Dynamic Scheduling with Microsoft Office Project 2003" (3rd edition)
- ❖ Formerly: Executive Director at IIL as developer and manager of the Orange, Blue, Black Belt certification curriculum
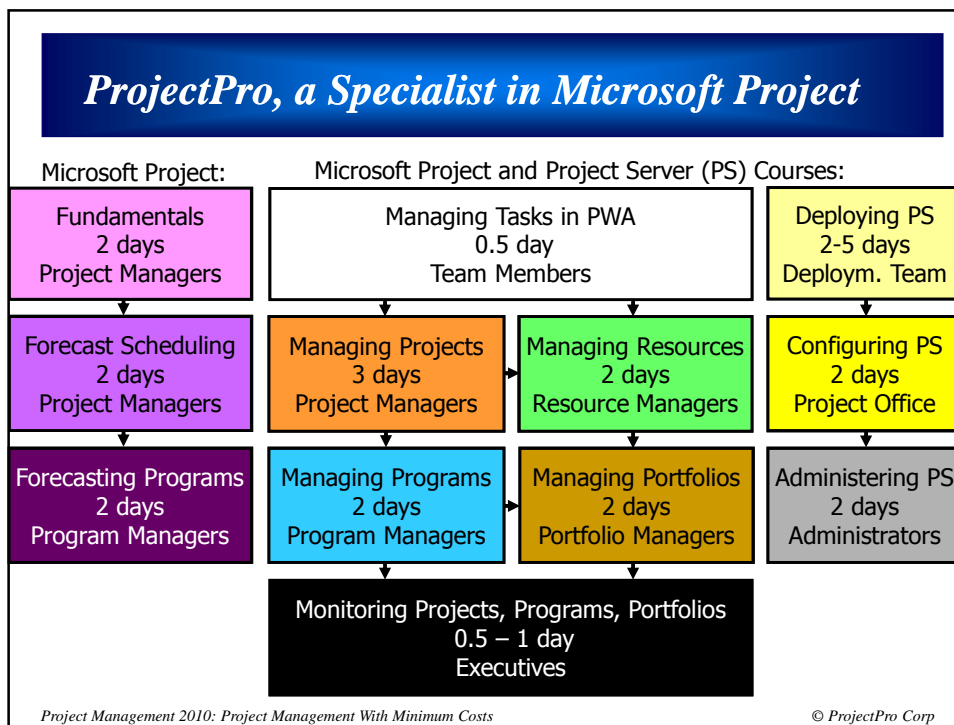
- ❖ Email: EricU@ProjectProCorp.com
- ❖ Tel: 613-692-7778

Dynamic Scheduling
With Microsoft® Office Project 2003
The Book By and For Professionals

Published jointly by
J. Ross Publishing and International Institute for Learning

Eric Uyttewaal, PMP
Executive Director, Microsoft EPM Division
International Institute for Learning, Inc.

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ProjectPro, a Specialist in Microsoft Project

Microsoft Project:

Microsoft Project and Project Server (PS) Courses:

Fundamentals 2 days Project Managers	Managing Tasks in PWA 0.5 day Team Members		Deploying PS 2-5 days Deploym. Team
Forecast Scheduling 2 days Project Managers	Managing Projects 3 days Project Managers	Managing Resources 2 days Resource Managers	Configuring PS 2 days Project Office
Forecasting Programs 2 days Program Managers	Managing Programs 2 days Program Managers	Managing Portfolios 2 days Portfolio Managers	Administering PS 2 days Administrators
	Monitoring Projects, Programs, Portfolios 0.5 – 1 day Executives		

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Agenda: Critical Path 2.0

- ➢ Assumptions CPM 1.0
- ➢ Critical Chain versus CPM 1.0
- ➢ Agile versus CPM 1.0
- ➢ Issues CPM 1.0 - Features CPM 2.0
- ➢ Conclusion

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Assumptions of CPM 1.0

1. Task estimates are normally distributed
2. Multiple parallel paths don't affect the on-time probability of the overall project
3. You have unlimited resources available

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Critical Chain versus CPM 1.0

➢ Switching from 90 percent to 50 percent confidence level estimates
➢ Resource-Critical Path
➢ Adding a project buffer to the most Resource-Critical Path
➢ Scheduling the secondary paths as late as possible and inserting buffers
➢ No multi-tasking of resources

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Agile versus CPM 1.0

- ➢ Mostly in software development and in research
- ➢ Chunking of projects (prototypes, builds)

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OVERVIEW: Issues CPM 1.0 -- Features CPM 2.0

- ➢ Incomprehensible Critical Paths
  - – Why is it, what it is?
- ➢ Incomplete Critical Paths
  - – Why does it only explain part of the project duration?
- ➢ Program Critical Paths
  - – Can you trace your Critical Path across subprojects?
- ➢ Resource Critical Paths
  - – Do you have unlimited resources - anybody?
- ➢ Hidden Critical Paths
  - – Are you looking at the right path?
- ➢ Protecting the Critical Paths
  - – Protect the main Critical Path from other paths?

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DEMO Incomprehensible Critical Path.MPP

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OVERVIEW Incomplete Critical Paths: Possible Causes

- ➢ Incomplete network logic
- ➢ Unavailability of Resources
- ➢ Schedule Constraints
- ➢ Elapsed Durations
- ➢ Task Calendars
- ➢ External Predecessors

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Expected Gains from Complete and Correct Network Logic

Project: 100 tasks, 3 month duration, 180 expected changes: update 100 tasks, 30 twice, 50 other changes

Static Chart:	Dynamic Model:
➤ Make 5 changes in once: 180/5=36 revisions ➤ Revise rest of the schedule: avg. 50 tasks ➤ 2 hours per revision	➤ 8 hours to set dependencies ➤ 8 hours to enter 180 changes
Total: 36*2=72 hours	**Total: 16 hours**

Difference: 56 hours!

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Unavailability of Resources

Tu	We	Th	Fr	Sa	Su

Prepare location

Move

Is this real slack?
What can we do about this?

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DEMO Perfect Critical Path.MPP

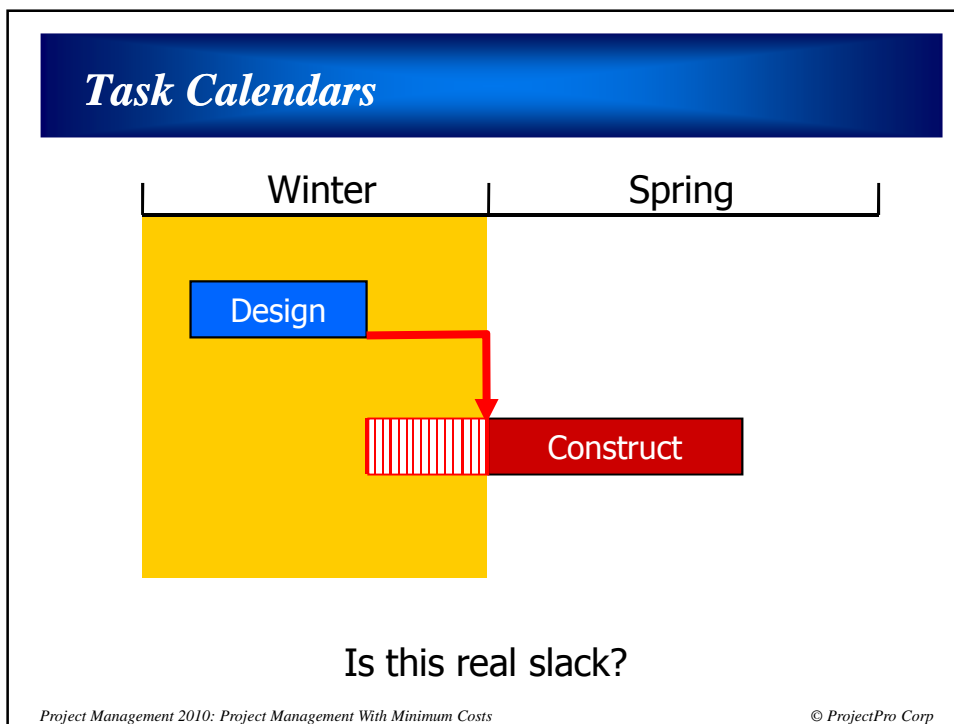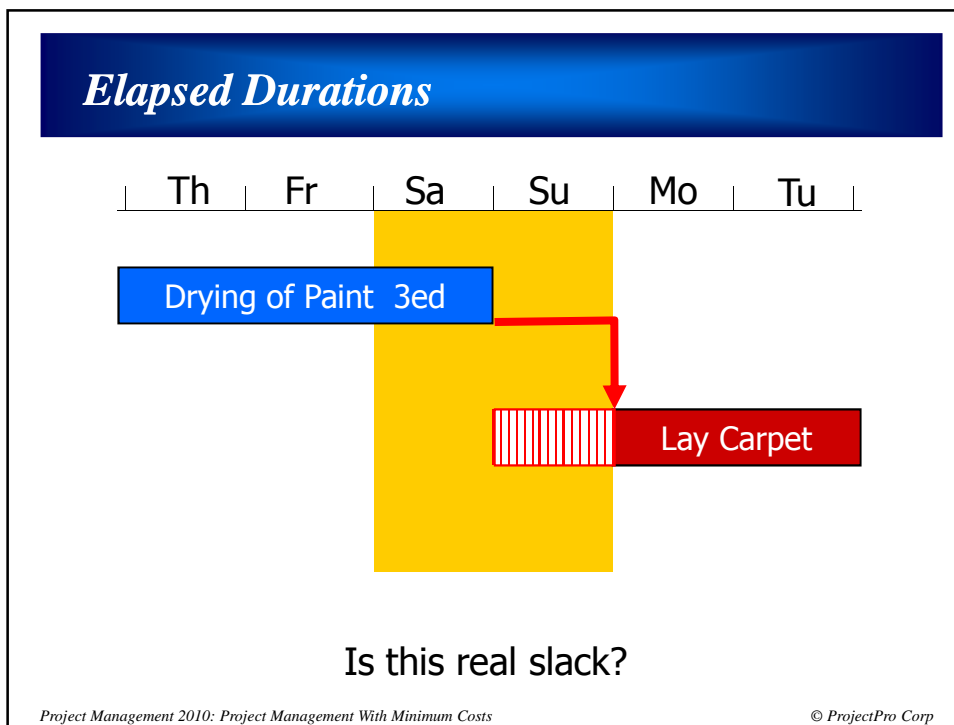*Project Management 2010: Project Management With Minimum Costs*　　　　*© ProjectPro Corp*
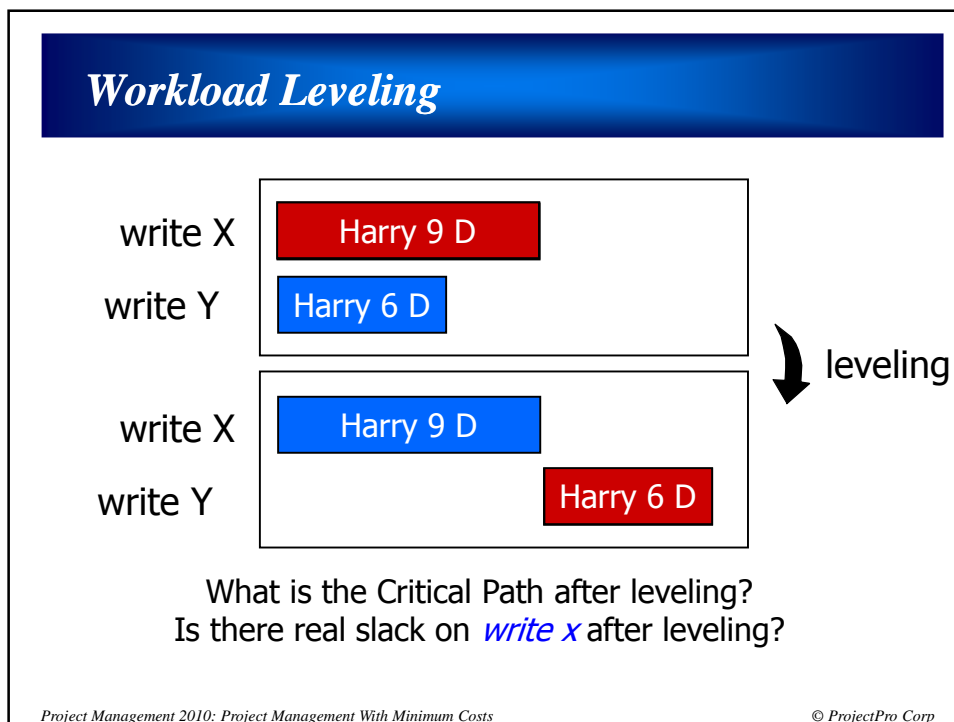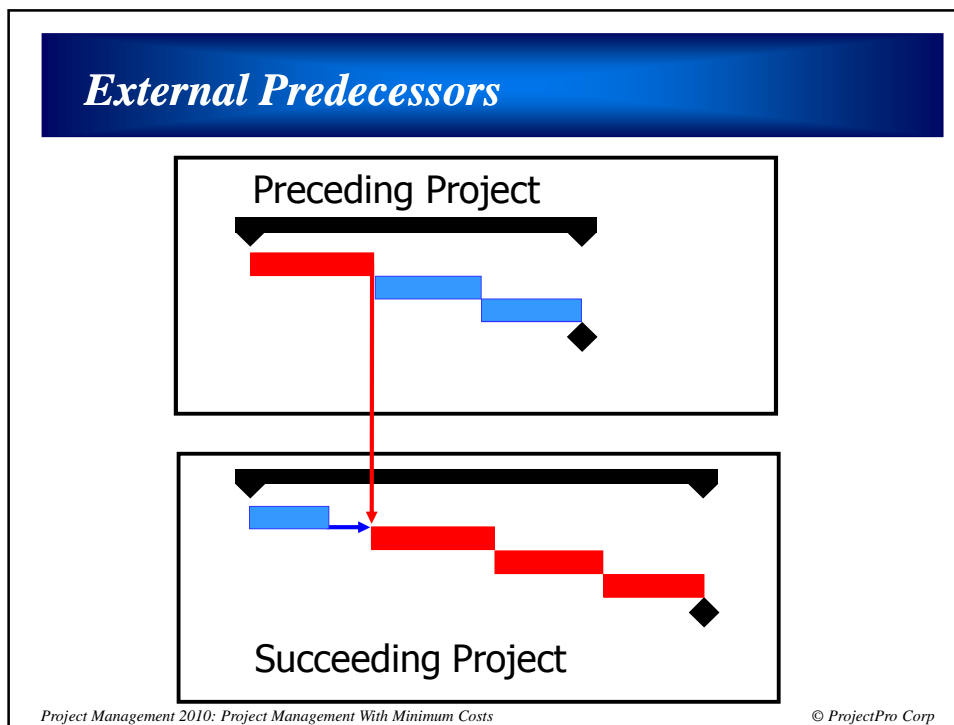
Schedule Constraints

Mo	Tu	We	Th	Fr	Sa

Prepare agenda

Meeting

Is this real slack?
By how much should the threshold be increased?

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Elapsed Durations

| Th | Fr | Sa | Su | Mo | Tu |

Drying of Paint 3ed

Lay Carpet

Is this real slack?

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Task Calendars

| Winter | Spring |

Design

Construct

Is this real slack?

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External Predecessors

Preceding Project

Succeeding Project

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Workload Leveling

write X   Harry 9 D

write Y   Harry 6 D

leveling

write X   Harry 9 D

write Y   Harry 6 D

What is the Critical Path after leveling?
Is there real slack on *write x* after leveling?

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SUMMARY: Incomplete Critical Paths: Possible Causes

165

- ➢ Incomplete network logic
- ➢ Unavailability of Resources
- ➢ Schedule Constraints
- ➢ Elapsed Durations
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DEMO Complete Critical Paths

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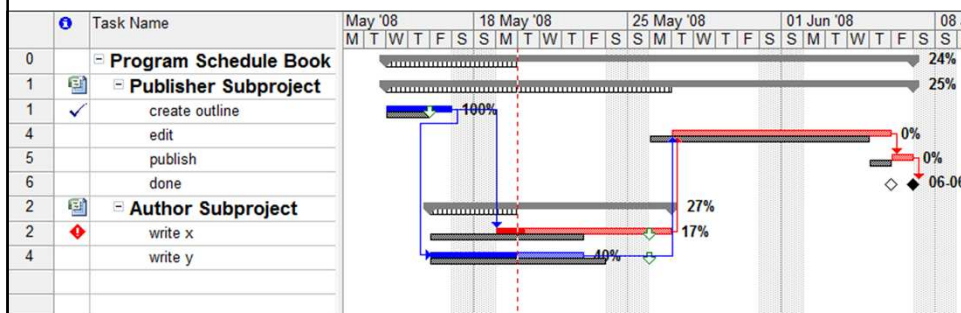
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Tracing the Critical Path across Subprojects

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DEMO ProjectPro Program Management Solution
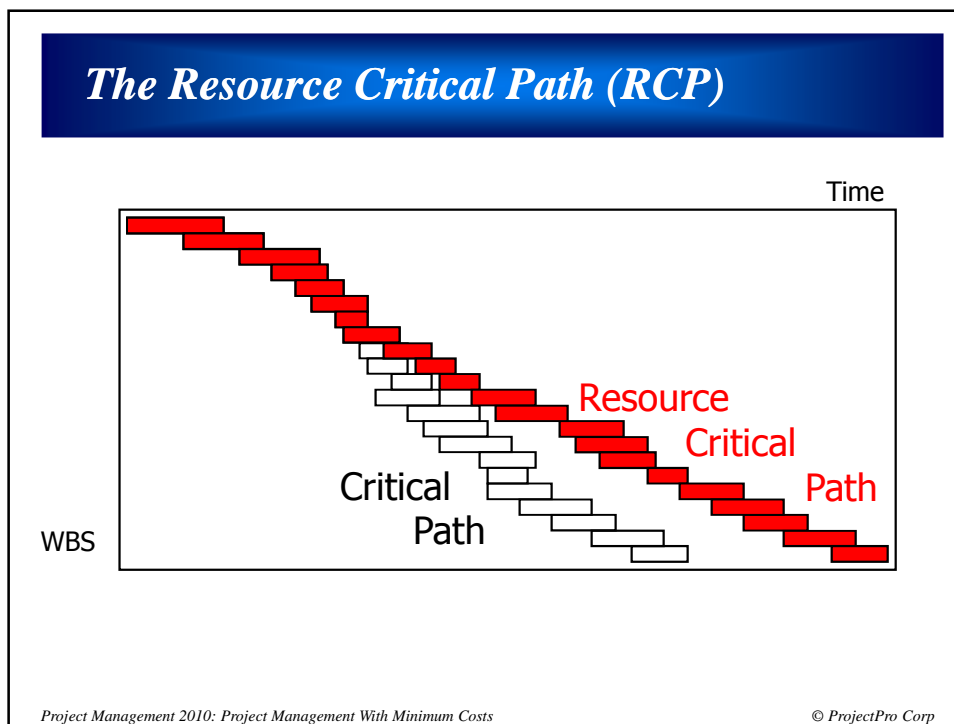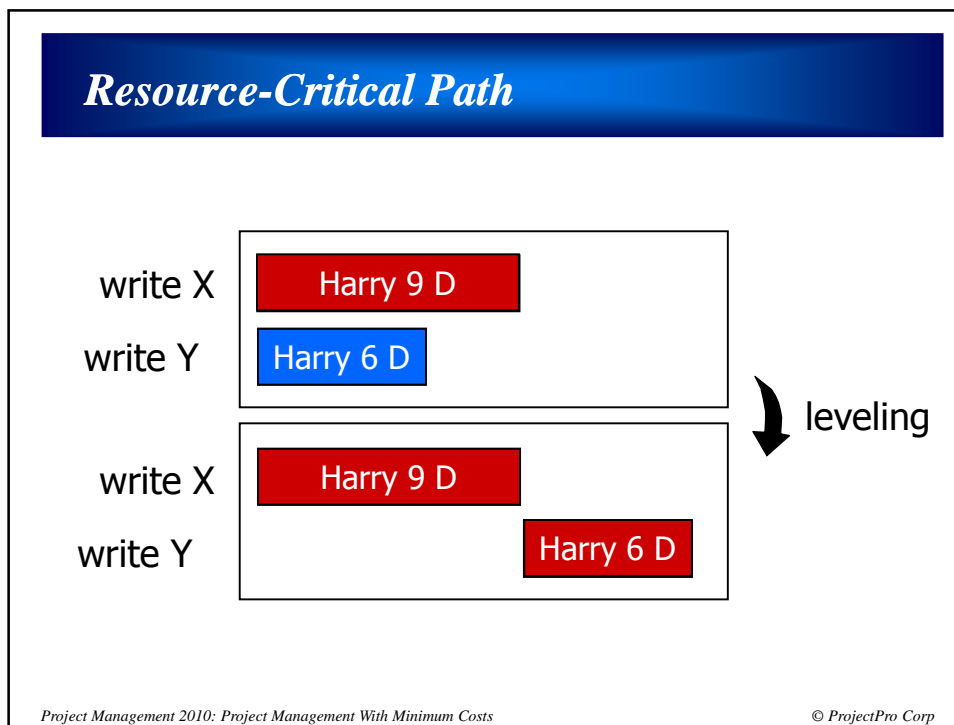
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Resource-Critical Path

write X — Harry 9 D

write Y — Harry 6 D

leveling

write X — Harry 9 D

write Y — Harry 6 D

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The Resource Critical Path (RCP)

Time

Resource Critical Path

Critical Path

WBS

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DEMO Hidden Critical Paths

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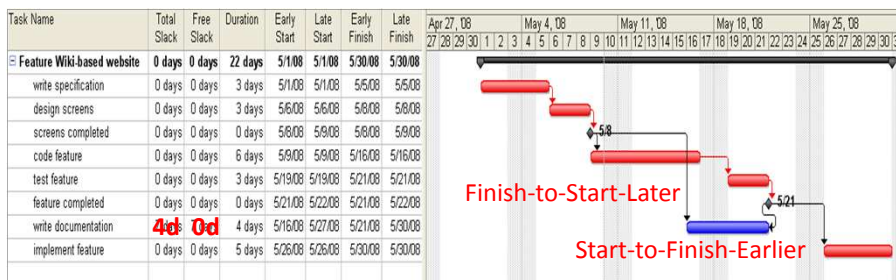
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What Future Scheduling Software Should Be Able To in Schedules

Task Name	Total Slack	Free Slack	Duration	Early Start	Late Start	Early Finish	Late Finish
Feature Wiki-based website	0 days	0 days	22 days	5/1/08	5/1/08	5/30/08	5/30/08
write specification	0 days	0 days	3 days	5/1/08	5/1/08	5/5/08	5/5/08
design screens	0 days	0 days	3 days	5/6/08	5/6/08	5/8/08	5/8/08
screens completed	0 days	0 days	0 days	5/8/08	5/9/08	5/8/08	5/9/08
code feature	0 days	0 days	6 days	5/9/08	5/9/08	5/16/08	5/16/08
test feature	0 days	0 days	3 days	5/19/08	5/19/08	5/21/08	5/21/08
feature completed	0 days	0 days	0 days	5/21/08	5/22/08	5/21/08	5/22/08
write documentation	**4d**	**0d**	4 days	5/16/08	5/27/08	5/21/08	5/30/08
implement feature	0 days	0 days	5 days	5/26/08	5/26/08	5/30/08	5/30/08

Finish-to-Start-Later

Start-to-Finish-Earlier

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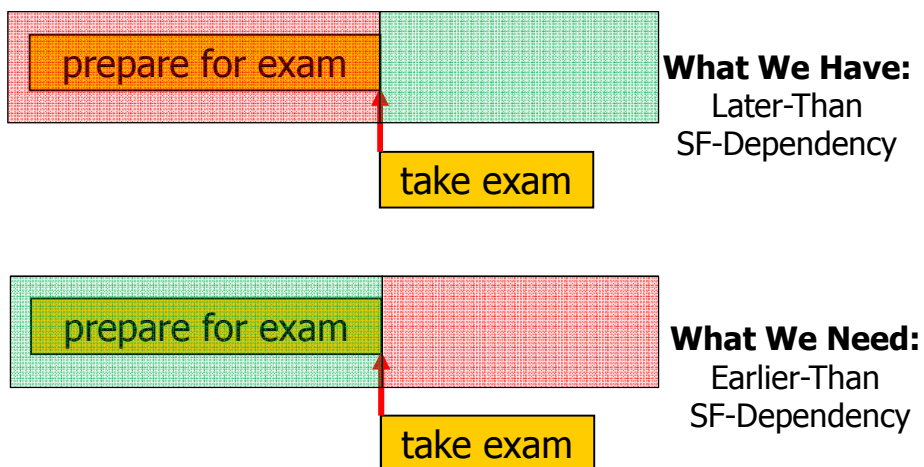
All Our Current Dependencies are Later-Than Dependencies!

➢ **Finish-to-Start:** the start of the dependent task cannot be earlier than, but can slip later than the finish of the independent task

➢ **Start-to-Start:** the start of the dependent task cannot be earlier than, but can slip later than the start of the independent task

➢ **Finish-to-Finish:** the finish of the dependent task cannot be earlier than, but can slip later than the finish of the independent task

➢ **Start-to-Finish:** the finish of the dependent task cannot be earlier than, but can slip later than the start of the independent task

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The Current Start-To-Finish Dependency has Little Value

prepare for exam

take exam

What We Have:
Later-Than
SF-Dependency

prepare for exam

take exam

What We Need:
Earlier-Than
SF-Dependency

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Conclusion

- For five of the six elements of CPM 2.0 there are already solutions available:
  - Incomprehensible Critical Paths: Complete Critical Paths
  - Incomplete Critical Paths: Complete Critical Paths
  - Program Critical Paths: ProjectPro Program Management Solution
  - Resource Critical Paths: Complete Critical Paths
  - Hidden Critical Paths: @Risk and Risk+
- For the sixth, we will need a new class of Earlier-dependencies for:
  - buffer management, backward scheduling, dynamic due dates, and windows of opportunity

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Thank You for Attending!

If you would like to:
- Buy Complete Critical Paths 2.0, visit our website www.ProjectProCorp.com
- Get help identifying the Critical Path in your large schedule, email EricU@ProjectProCorp.com
- Receive the PDF of this slide deck, email: EricU@ProjectProCorp.com

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