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Always an answer to "what's next?"

LYNX PROJECT AND PORTFOLIO MANAGEMENT

Buffer and Progress Management Strategies

December 2022

LYNX by a-dato

LYNX TameFlow

Topics

- Buffer Management Strategies Overview
  - Classical and Practical CCPM
- LYNX Progress Measurement Strategies
- Buffer and Progress Strategy Examples in LYNX
- LYNX Priority Management and configuration
- LYNX Rescheduling Options
  - Update Feeding Chain
  - Rescheduling behavior
- Addendums:
  - Background of the CCPM Theory:
    - Estimate Task Durations with 50 Percent Confidence

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CCPM Settings

Classical and Practical CCPM

Original Duration	***36***

Buffer settings:	**Setting 1**	**Setting 2**	**Setting 3**	**Setting 4**
Reduction percentage	50%	50%	33%	20%
Buffer percentage	50%	100%	50%	25%
Project Durations				
Original Duration	36,0	36,0	36,0	36,0
CCPM Duration	18,0	18,0	24,0	28,8
Buffer Duration	9,0	18,0	12,0	7,2
CCPM + Buffer *(Debuffered)*	27,0	36,0	36,0	36,0
Delta Duration Project	-25%	0%	0%	0%

Classical CCPM

Practical CCPM

Setting 3 is currently preferred by most customers

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LYNX Buffer and Progress Management Strategies

- When practical CCPM?
  - To become the benefits of buffer management, but…
  - Becoming faster is not the prime objective or expectation
- To avoid using “Debuffered View” by project managers:
  - Setting 2 and Setting 3 are nearer to the original duration
- …

- Progress can be measured as follows:
  - Relative to the Critical Chain or CCPM Duration (after reduction)
  - Relative to the Original Duration
- Considerations:
  - Prevention of negative progress, especially when workpackages are becoming larger
  - Prevention of “**zigzag**” progress (upon Task Starts)
  - Measurement against Original Duration, is closer to “***a common understanding of progress***”
  - Avoid the need for using de-buffered view by project managers
- …

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Example 1:

In this example the first task of 12 days is started and the first Ettc value is 9 days

	Estimate	*Ettc*
First Task Estimate / Ettc	12	9

Original Duration	***36***

Buffer settings:		**Setting 2**	**Setting 3**	**Setting 4**
Reduction percentage		50%	33%	20%
Buffer percentage		100%	50%	25%
Project Durations				
Original Duration		36,0	36,0	36,0
CCPM Duration		18,0	24,0	28,8
Buffer Duration		18,0	12,0	7,2
CCPM + Buffer *(Debuffered)*		36	36	36

		Setting 2	**Setting 3**	**Setting 4**
First Task - CCPM Duration		6,0	8,0	9,6
Progress CCPM Duration	Days:	-3,0	-1,0	0,6
	Percent.:	**-17%**	**-4%**	**2%**
Relative Buffer Consumption		17%	8%	-8%

First Task - Original Duration		12,0	12,0	12,0
Progress Original Duration	Days:	3,0	3,0	3,0
	Percent.:	**8%**	**8%**	**8%**
Relative Buffer Consumption		17%	8%	-8%

Original Duration Progress shows 3 days positive progress, unlike the CCPM progress

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Example 2:

In this example the first task of 12 days is started and the first Ettc value is 12 days

Original Duration	***36***

Buffer settings:		**Setting 2**	**Setting 3**	**Setting 4**
Reduction percentage		50%	33%	20%
Buffer percentage		100%	50%	25%
Project Durations				
Original Duration		36,0	36,0	36,0
CCPM Duration		18,0	24,0	28,8
Buffer Duration		18,0	12,0	7,2
CCPM + Buffer *(Debuffered)*		36	36	36

	Estimate	*Ettc*
First Task Estimate / Ettc	12	12

		Setting 2	**Setting 3**	**Setting 4**
First Task - CCPM Duration		6,0	8,0	9,6
Progress CCPM Duration	Days:	-6,0	-4,0	-2,4
	Percent.:	**-33%**	**-17%**	**-8%**
Relative Buffer Consumption		33%	33%	33%

First Task - Original Duration		12,0	12,0	12,0
Progress Original Duration	Days:	0,0	0,0	0,0
	Percent.:	**0%**	**0%**	**0%**
Relative Buffer Consumption		33%	33%	33%

CCPM Duration is negative in all 3 settings.
Original Duration progress is 0.

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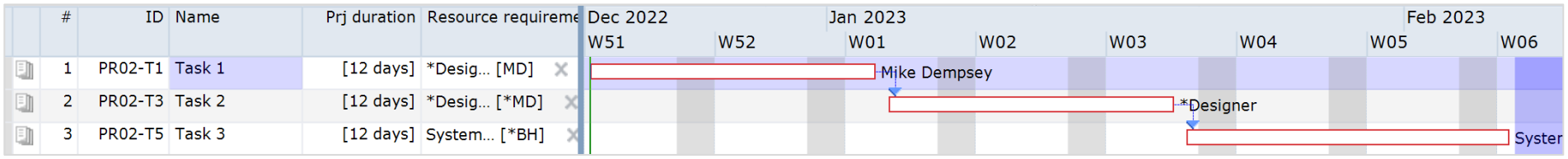
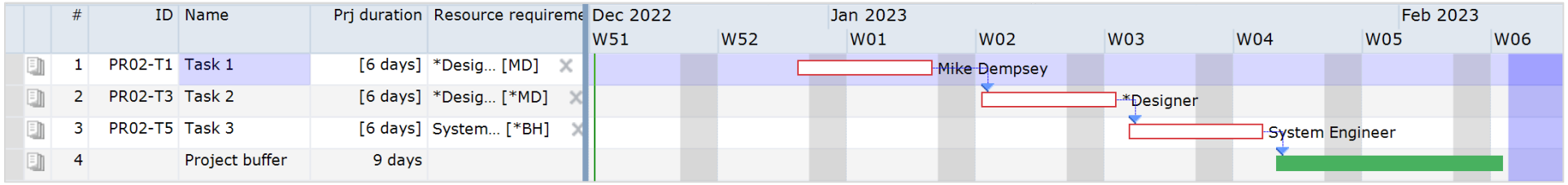
Buffer and Progress Strategies

Examples in LYNX

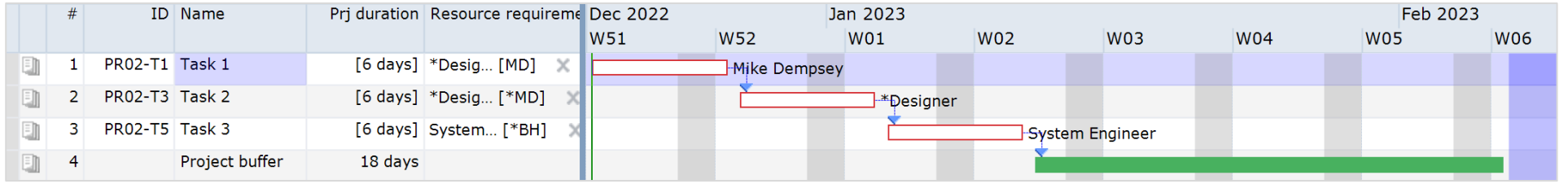
Buffer Strategies



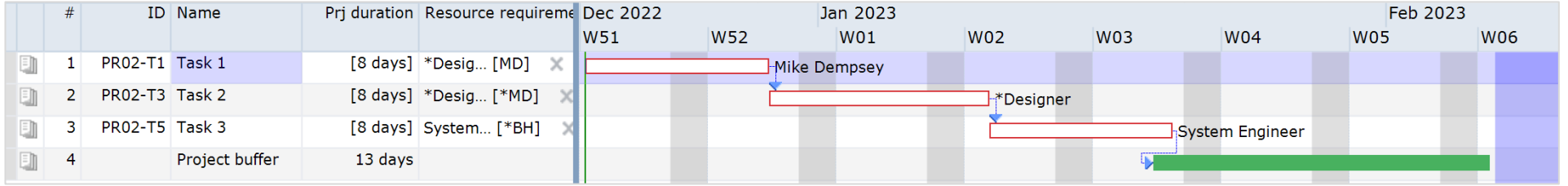
Original Duration = 36 days



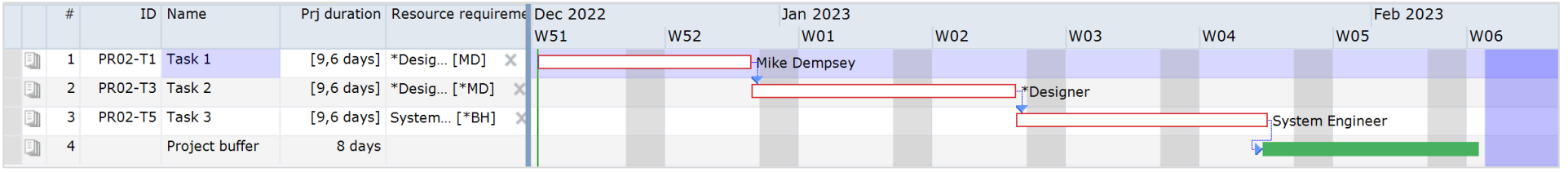
Setting 1 (50/50)



Setting 2 (50/100)

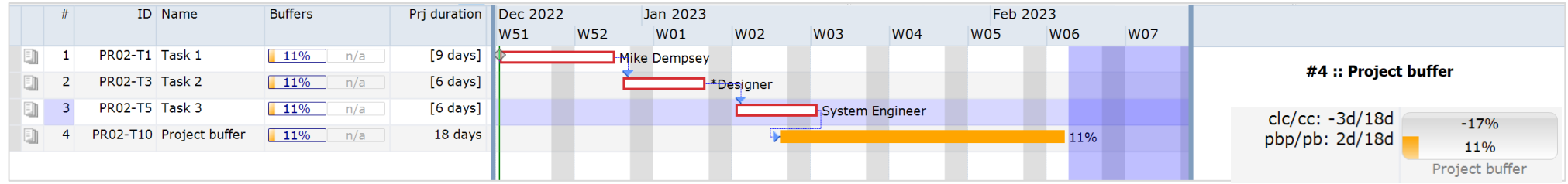


Setting 3 (33/50)

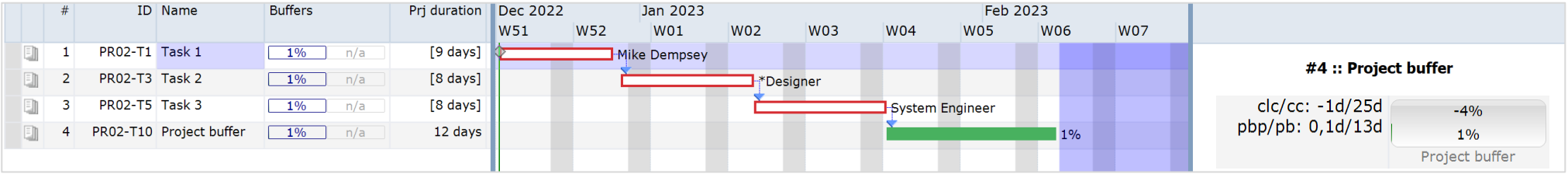


Setting 4 (25/20)

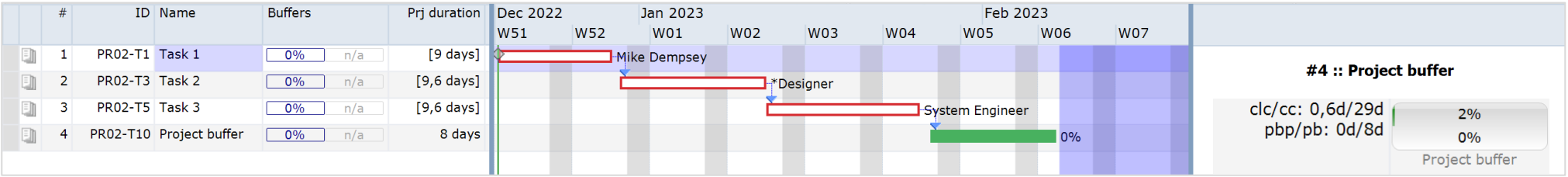
Scenario 1: *Task 1 Started / Ettc = 9 days*



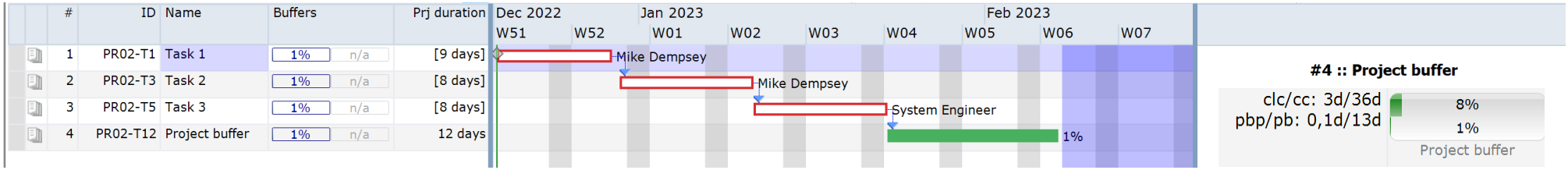
Setting 2
(50/100)



Setting 3
(33/50)

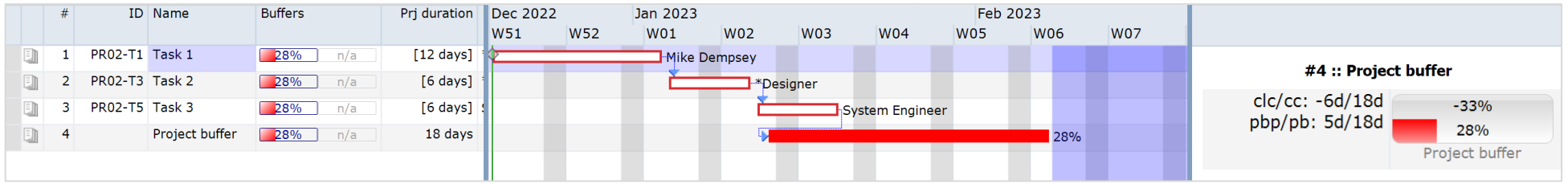


Setting 4
(25/20)

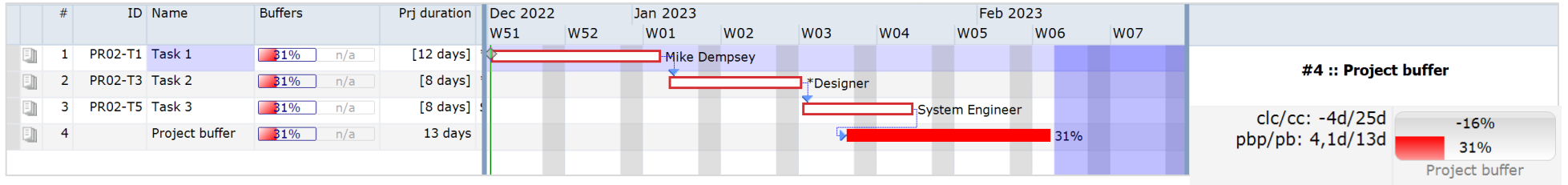


Setting 3
+
Original
Duration

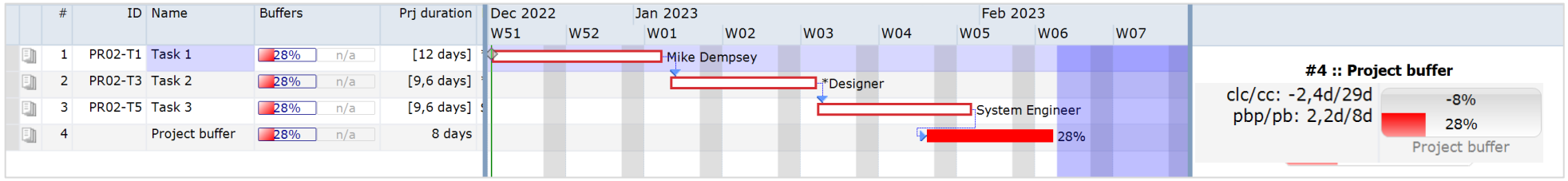
Scenario 2: *Task 1 Started / Ettc = 12 days*



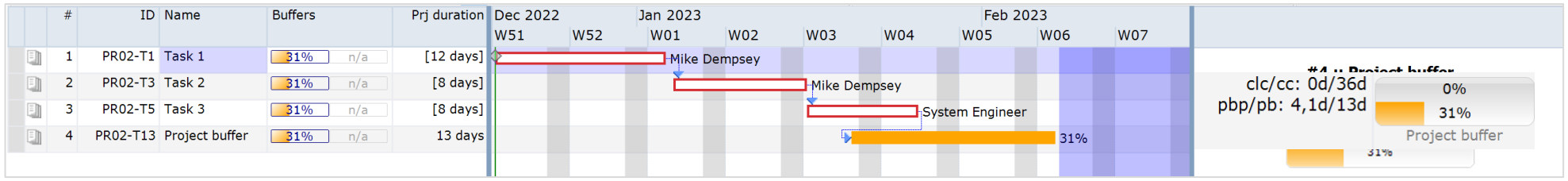
Setting 2
(50/100)



Setting 3
(33/50)

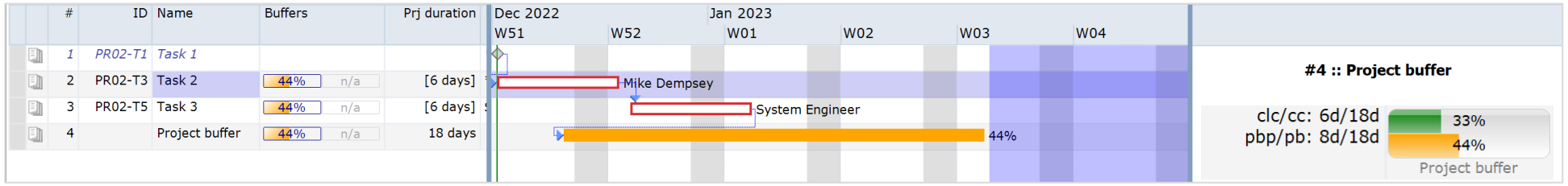


Setting 3
(25/20)

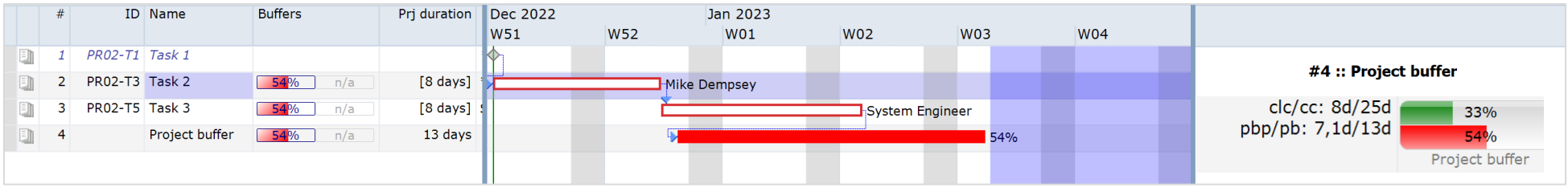


Setting 3
+
Original
Duration

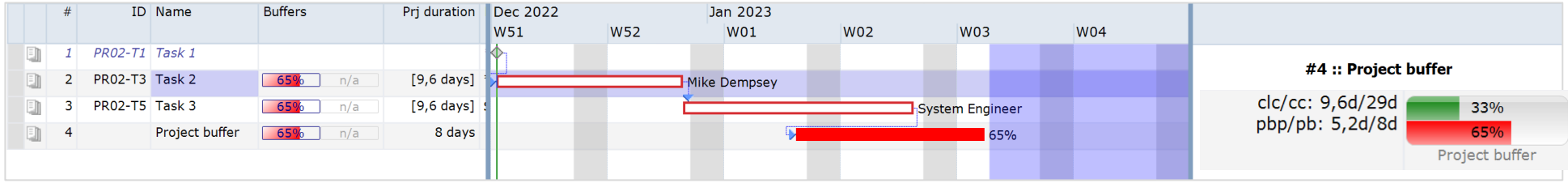
Scenario 3: *Task 1 Completed*



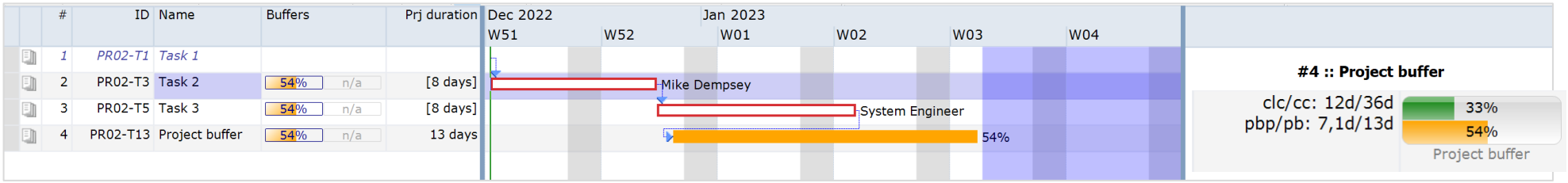
Setting 2
(50/100)



Setting 3
(33/50)



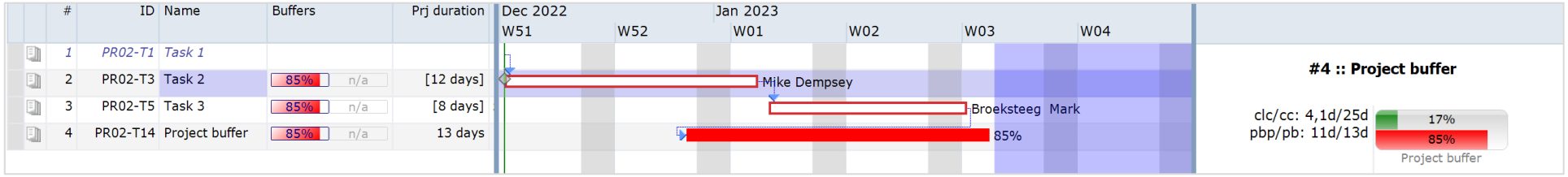
Setting 4
(25/20)



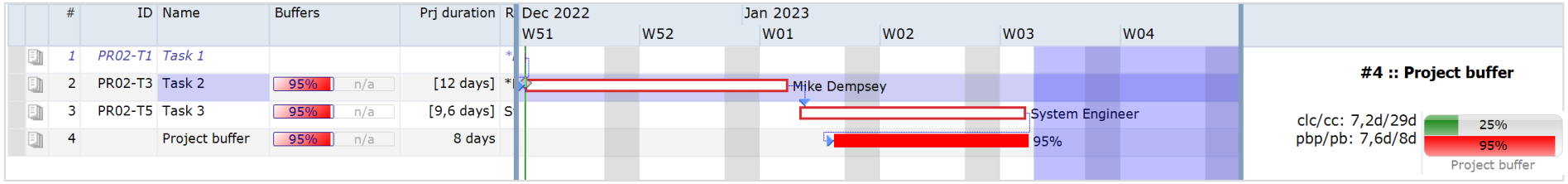
Setting 3
+
Original
Duration

Scenario 4: *Task 1 Completed/ Task 2 Started/ Ettc = 12 days*

Setting 2 (50/100)



Setting 3 (33/50)



Setting 4 (25/20)

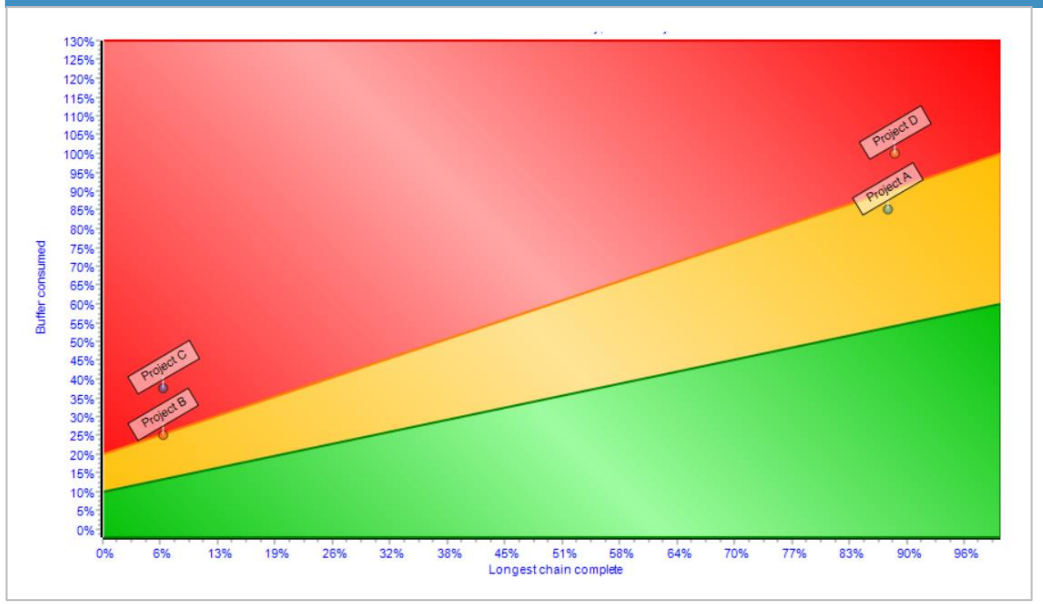
Setting 3 + Original Duration

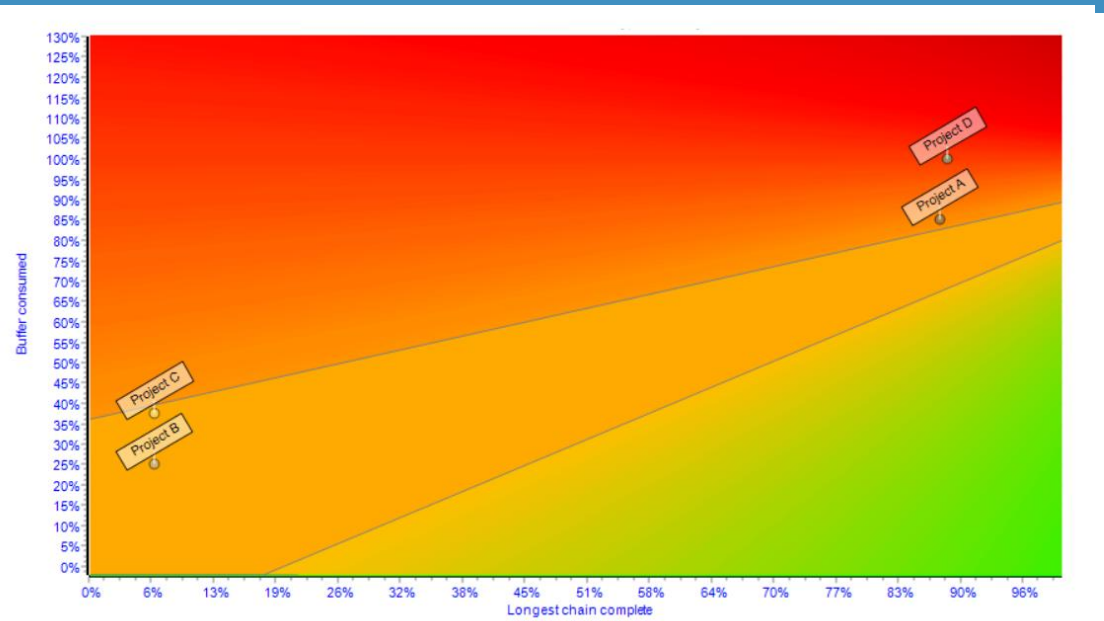
LYNX Priority Management

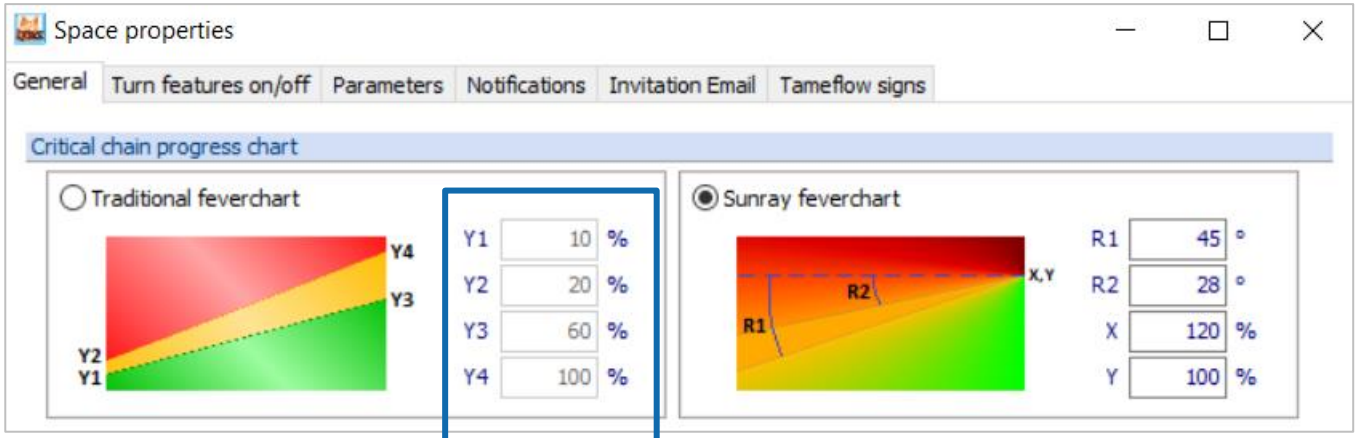
Configuration

LYNX Priority Dimensions

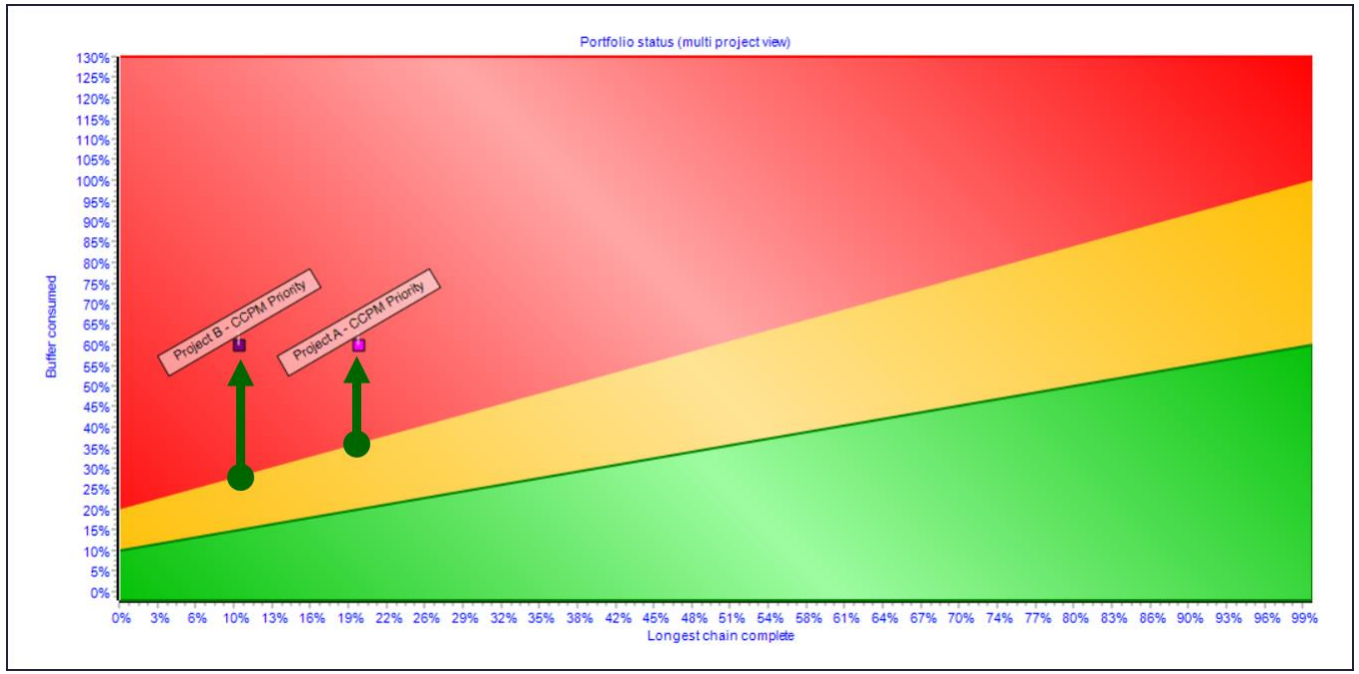
Configuration of the "Sensitivity" to Buffer Consumption and/or Progress







CCMP Priority Measurement



Project A and Project B have both 60 % buffer consumption. However, the distance to the demarcation line is the largest for Project B, because this project has less progress and therefore this project has a higher CCPM priority.

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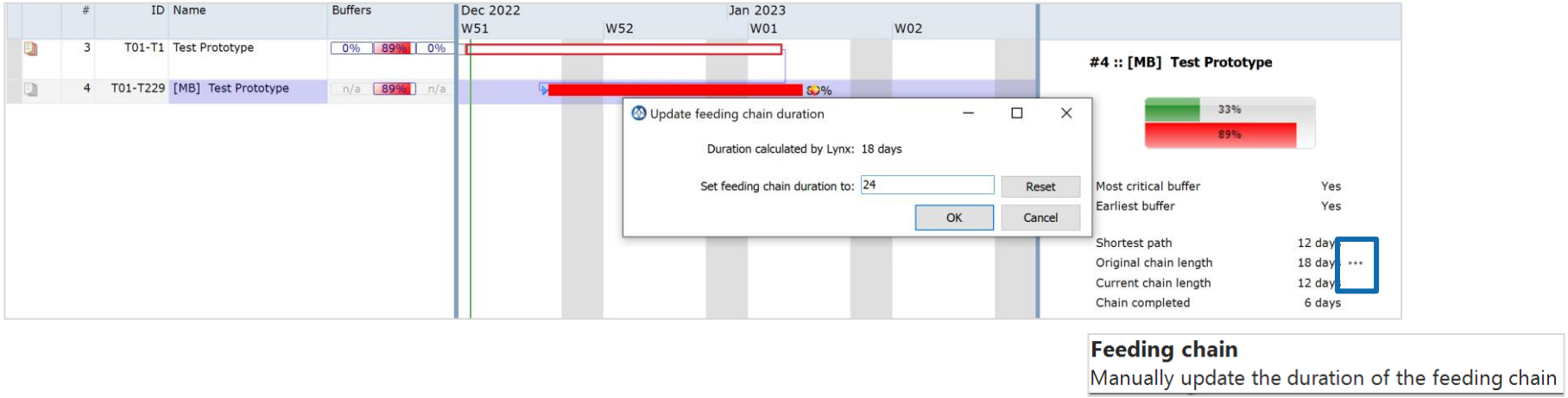
LYNX Rescheduling Options

What if the scope of the project changes significantly? (> x %)

Which was not included in the original buffer size….

Update Feeding Chain Duration



Feeding chain
Manually update the duration of the feeding chain

Rescheduling Behavior

- Reschedule the project “using the original plan” and including the additional scope changes
- Reschedule the project “based on current progress” and including the additional scope

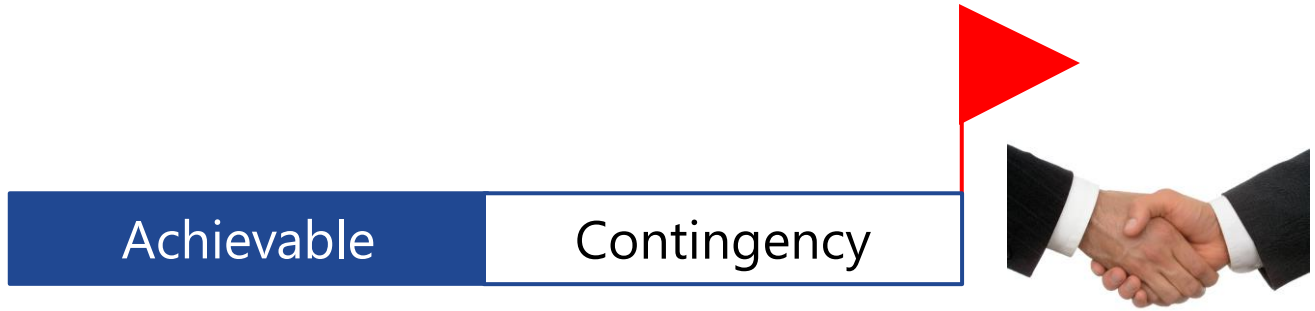
- Both options can be combined with: “Update Feeding Chain Duration”

CCPM Theory

Estimate Task Durations with 50 Percent Confidence

Estimates

Planning



Estimate Task Durations with 50 Percent Confidence

CCPM sets task durations at exactly the amount of time the activity is expected to take, without anticipating any complications or delays. **This is referred to as a *50 percent confidence interval* without any buffer**.

Of course, project managers should communicate to the team that they understand things may sometimes take longer than expected. But this isn't a problem — it's how CCPM is supposed to work.

Planners add time equal to 50 percent of each estimated task duration to a buffer at the end of the project. If a task runs over, the time comes from this buffer.

In most project methods, participants set task duration so they are highly confident they can finish in the time provided. It's human nature to want to meet a commitment, so they build a lot of safety margin in the time estimate. While critical chain calls for 50 percent confidence estimates, planners in other methods often use durations that they are 80 to 90 percent confident will be enough time.

CPM managers believe this results in schedules that are realistic and achievable — if the confidence level is high, the task and project should finish on time. In theory, this should increase the odds of on-time project delivery. In reality, the added safety time is usually unnecessary (but taken anyway), and the project takes longer than needed.

Certain human weaknesses come into play, such as *student syndrome*. When a student sees they have two weeks to finish an assignment, they often procrastinate until the last minute. In a real-world project, a team member suffering from student syndrome begins at the last moment they can and still meets the deadline. As they procrastinate, they waste safety time built into the duration estimate.

Another phenomenon known as *gold-plating* may also occur. In this scenario, the worker finishes the assignment ahead of schedule. But rather than advancing the work early to the next step, the worker uses the extra time to add flourishes, double-check the task, or look for potential improvements. This is Parkinson's Law, which says work expands to fill the time available. Once again, buffer time goes to waste.

Even if neither issue comes into play, the project is still unlikely to benefit from the worker finishing ahead of schedule. People and resources involved in the next step may not be ready early because the project plan has not prepared them for the possibility. The time saved in the prior activity is not passed on and doesn't benefit the overall project.

Unfortunately, if a task runs over its allotted time — even in the generous CPM duration estimate — that late finish will always impact successor activities. The traditional project method passes on all the negative time consequences and none of the potential windfalls.

Estimate Task Durations with 50 Percent Confidence

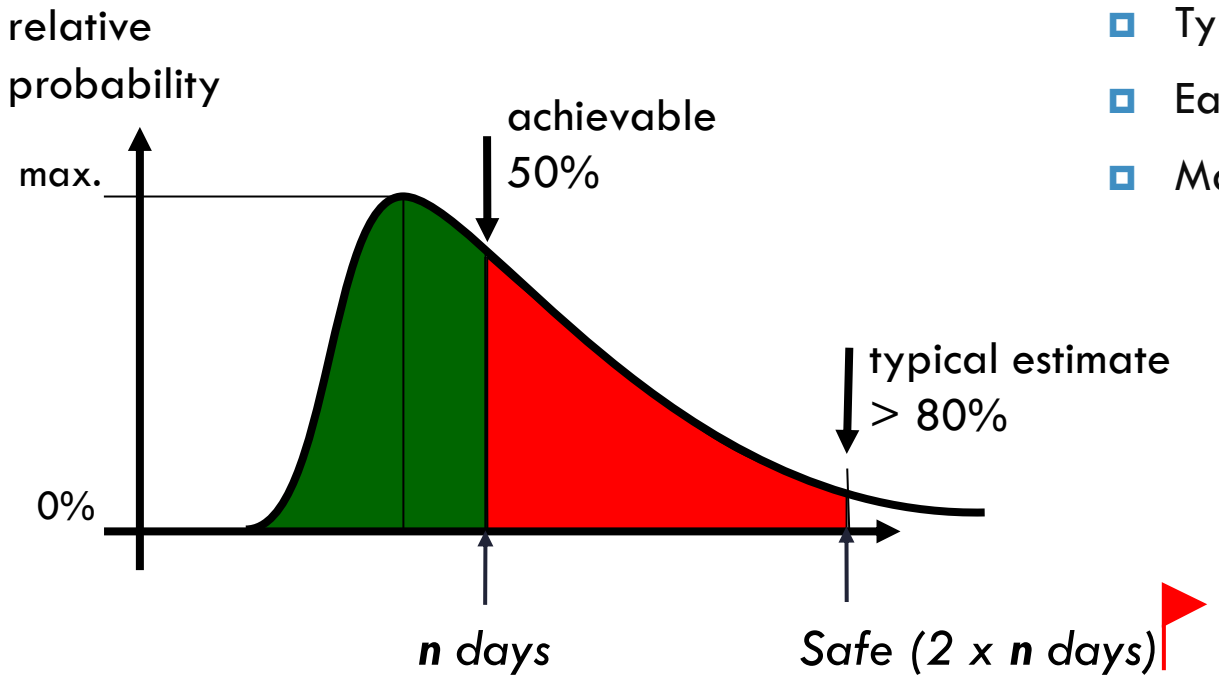
In CCPM, the tight duration estimates help keep project staff focused on the task and discourage distraction, procrastination, and multitasking. The aggressive estimates also motivate managers to make sure resources are available where and when they need to be.

CCPM has other practical advantages, too. Project buffers promote ownership of the team's collective commitment, while individual task buffers promote individual ownership of individual pieces of work.

We can look to insurance as an analogy for the difference in these methods. In traditional project management, each homeowner in a neighborhood assumes that their home will have a problem, and each homeowner self-insures. If a house suffers a major problem (for example, a bad fire), the amount an individual has set aside may not be enough to cover the worst-case scenario. And in cases where no problem occurs, the money set aside is underutilized.

In CCPM, the homeowners in the neighborhood get together and recognize that it's unlikely all the houses will have a serious problem at the same time. Each owner puts a smaller amount of money than when they self-insured into a pot. Collectively, they have enough to cover the worst-case scenario and the costs of some ordinary problems. Each owner saves money, too.

Psychology of Estimates



- Typically >50% durations is a safety buffer
- Early completions are rare animals
- Many tasks are still late

"Laws":

- Available time will always be used (Parkinson´s-Law)
- Postponement Behavior (Student-Syndrome)
- Murphy will bring a visit

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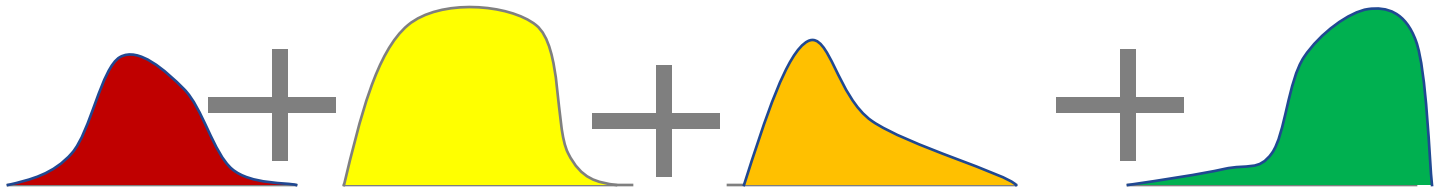
Critical Chain Solution

Take advantage of Central Limit Theorem

Good Statistics



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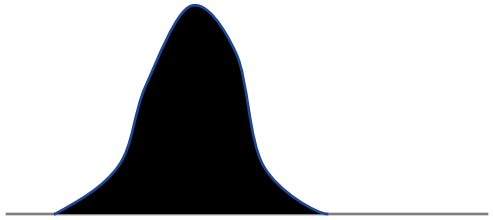
Central Limit Theorem

(add enough things together and everything looks normal)

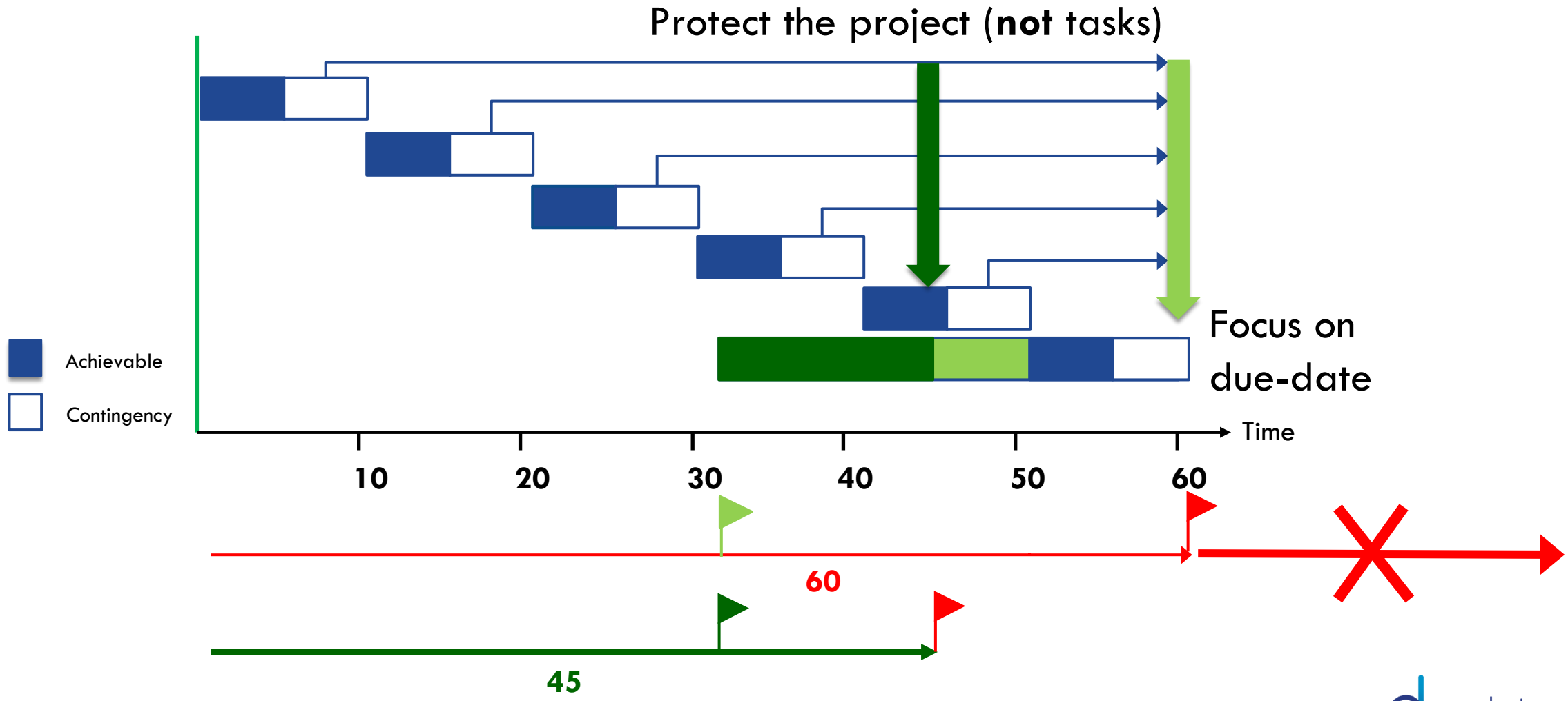


$$\sigma_{\Sigma} < n\sigma$$

Pooling of Contingency – Insurance Model

Buffer Management

"To be safer, (re)move the safety"



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