APICS The Association for Operations Management®
Ontario Grand Valley Chapter

Gain Control Over Your Projects with CCPM

Peter Milroy
CMS Montera Inc.
Cambridge, Ontario

Innovation
February 22, 2013
Cambridge, Ontario

INNOVATION

Common Issues with Managing Projects

- Original due dates are not met
- Too many changes
- Resources are not available when needed
- Necessary things are not available on time
- Fights about priorities among projects
- Budget overruns
- Too much rework

What is the Major Cause for their Existence?

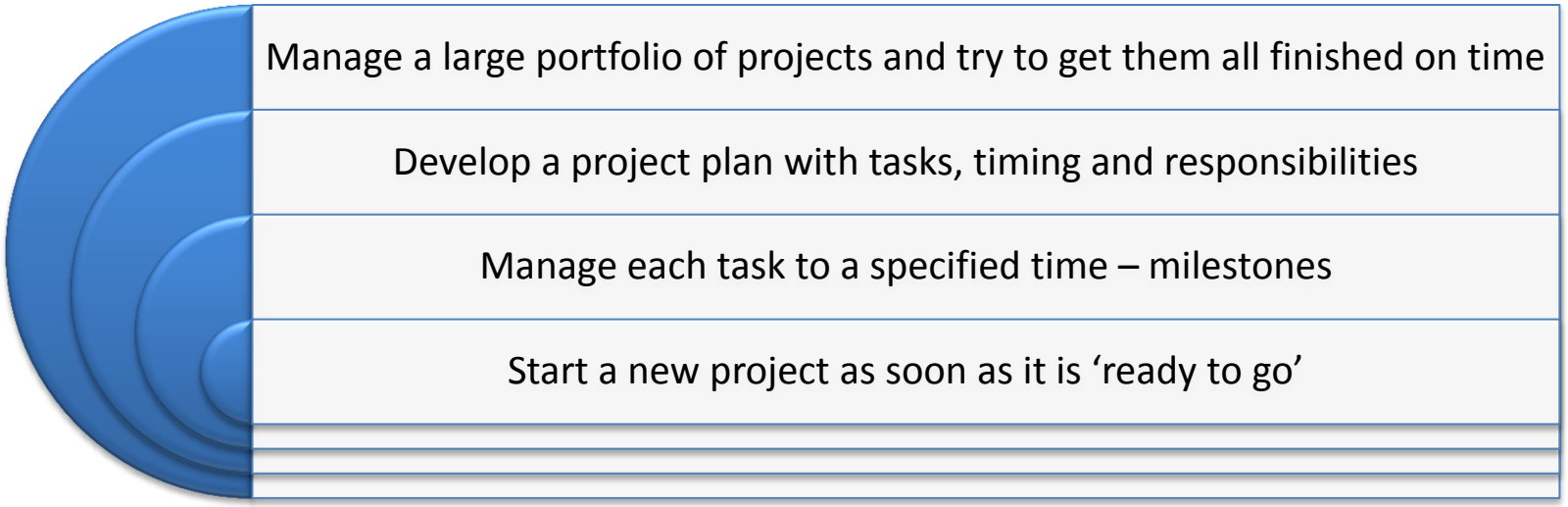
1st Approach

The Cause is:
UNCERTAINTY…
In Content, In Processes; in Skills; in Vendors' Performance, etc.

2nd Approach

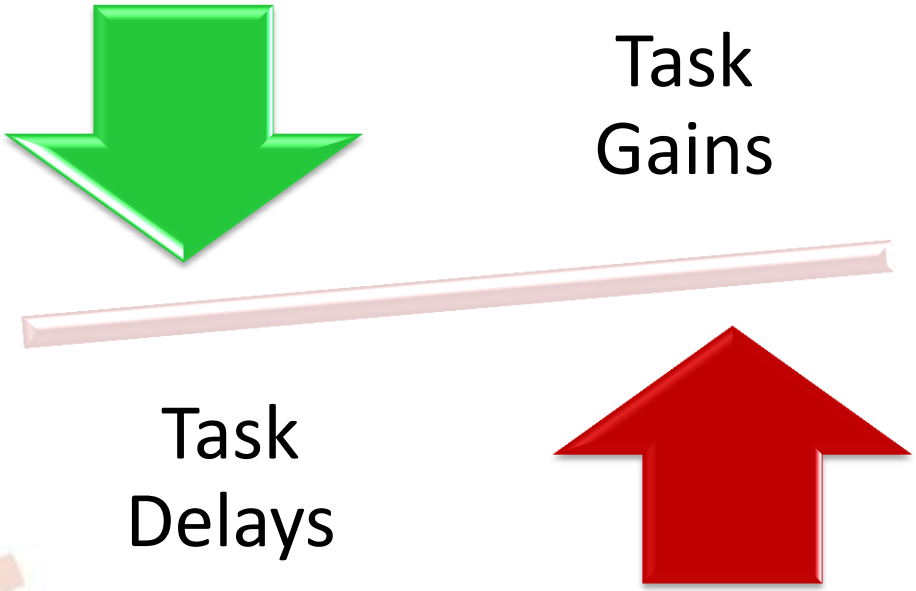
The Cause is
THE WAY WE MANAGE THE UNCERTAINTY

How do we typically manage projects
(what rules do we follow)?



Single Projects

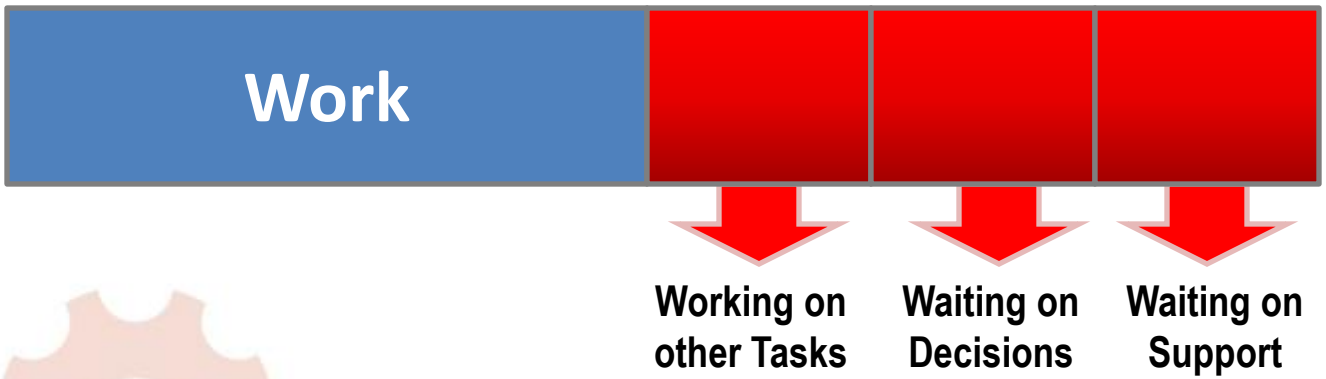
In Order to Achieve the Project Plan – Task Gains must Offset Task Delays



How are Task Durations Usually Developed?

Task Durations Based on History

- Components of Task “Actuals”



Task Durations based on Estimate

Common Practice

- The way to ensure that the project will finish on time is to try to make every task finish on time

Reality of Projects

- High uncertainty, therefore, task times cannot be determined – they can only be estimated

Consequence

- The common practice turns task estimations into commitments

Task Durations based on Estimate

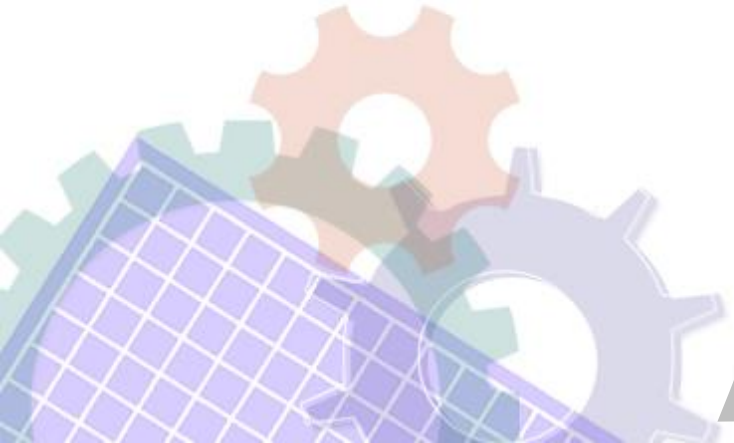
As professionals – we are trying to give REALISTIC ESTIMATIONS

Realistic estimation means that we do take into account that things will not go smoothly. We know that disruptions will occur.

Therefore, realistic estimations always embed some level of safety

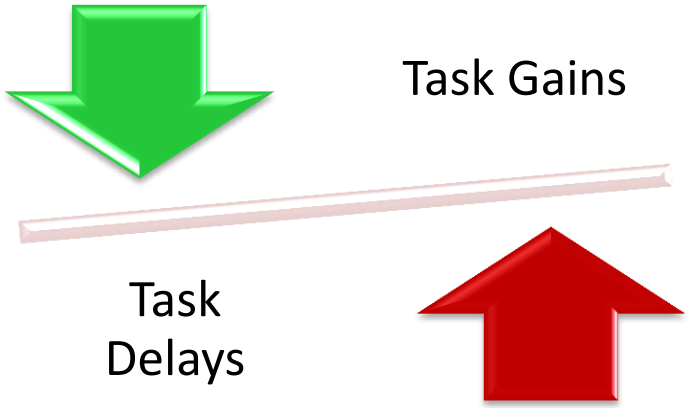
- How Much Safety is Embedded in Estimations?

- **In most environments, at least half the estimated time is safety!**

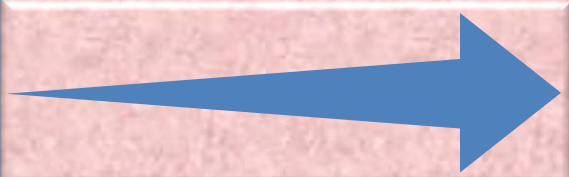
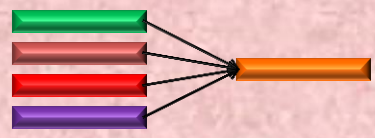
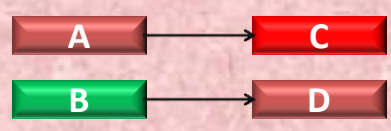


So…

- If task estimates have so much safety embedded in them, what happens to all of this safety?
- In other words shouldn't we finish some tasks early and shouldn't those Gains offset the Delays?

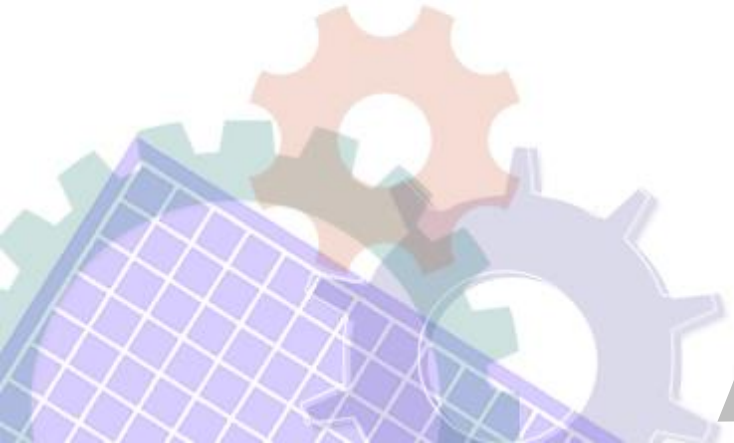


What Prevents us from Achieving / Taking Advantage of Task Gains?

Parkinson's Law		**Work expands to fill the time available**
Student's Syndrome		**Work gets delayed until the 'last' minute**
Integration Points		**Finishing one task on time is not enough, unless all tasks are complete**
Resources with Multi-Task		**Finishing one task on time is not enough, unless the resources are ready**

Multi Project Environment

The Multi-Tasking Game



INNOVATION

A Short Exercise

Project 1:

M U L T I T A S K I N G

Project 2:

1 2 3 4 5 6 7 8 9 10 11 12

Record the time…

A Short Exercise

Project 1:

M U L T I T A S K I N G

Project 2:

1 2 3 4 5 6 7 8 9 10 11 12

Record the time…

Stopwatch

Typical Results

- Single-tasking – about X seconds
- Multi-tasking – about 1.5X seconds

- Multi-tasking increases lead time
- Multi-tasking reduces quality
- Single-tasking delivers first project in less than half the time, and both projects faster

Therefore, the solution must ensure that…

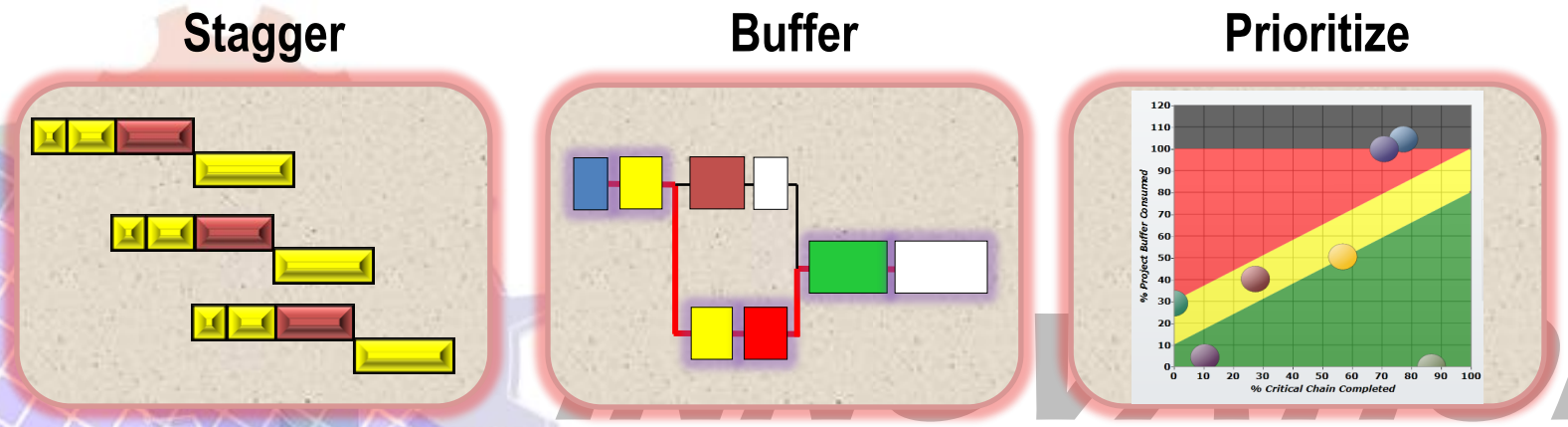
Task Gains Offset Task Delays

Bad Multi-Tasking is eliminated

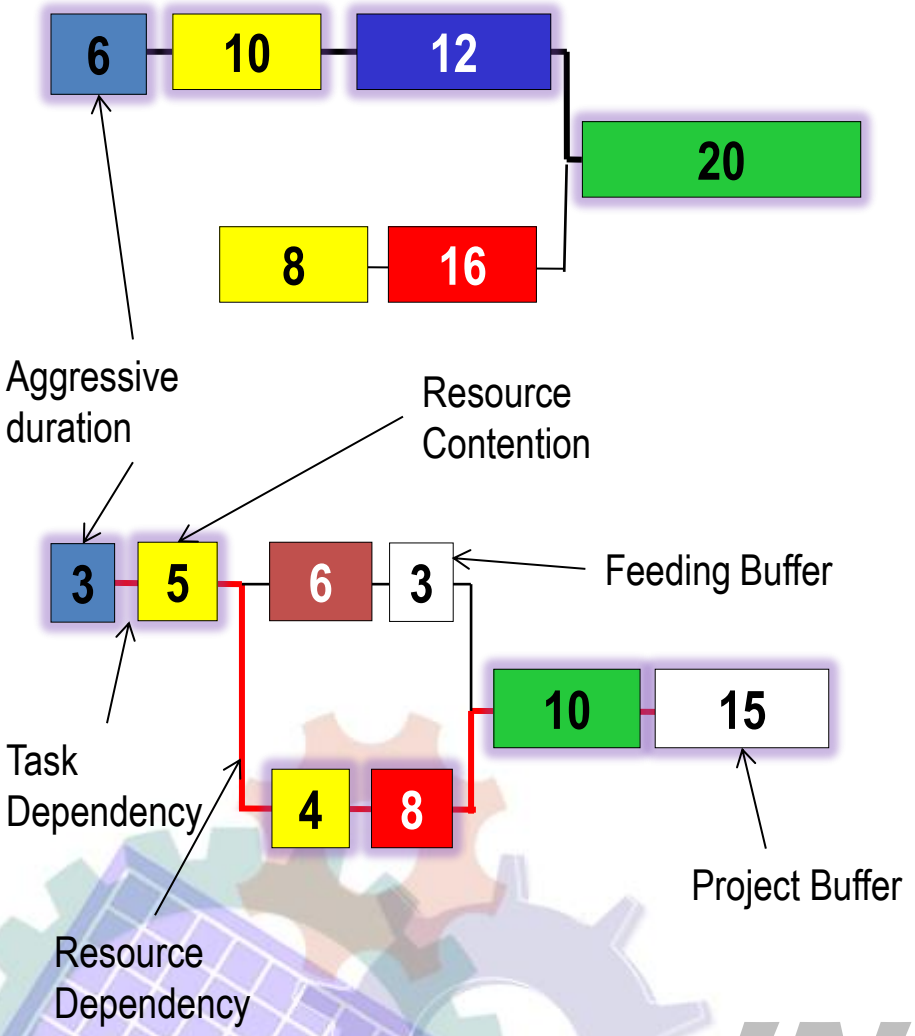
INNOVATION

Three Simple Rules of Critical Chain

- **Stagger** the release of projects into execution in order to limit the number of active projects in the pipeline
- **Buffer** project plans in order to better protect against unknowns
- **Prioritize** task execution based on project completion vs. buffer consumption

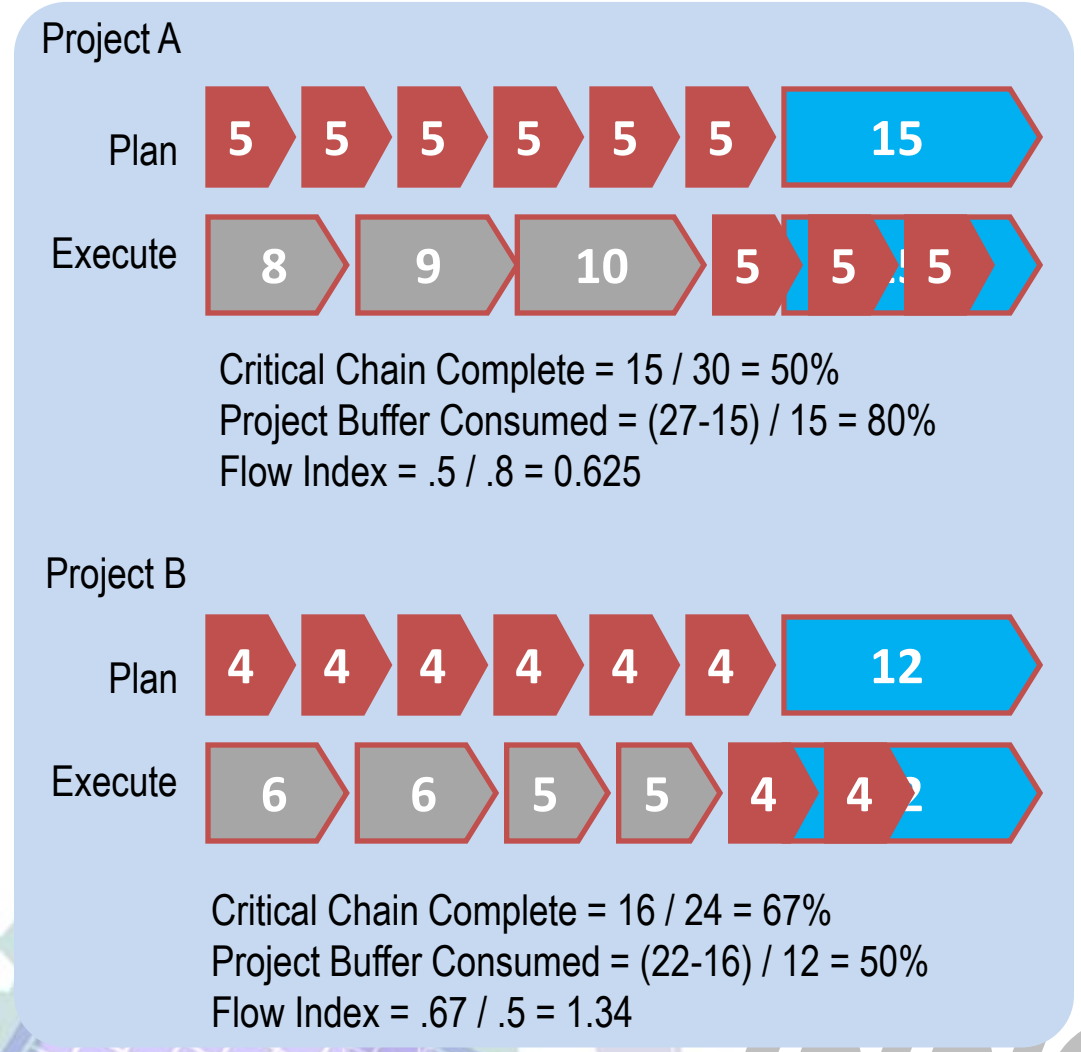


Creating a CCPM Project Network



1. Create aggressive durations
   - *Communicate that task durations will not be used as measurements*
2. Resolve resource contentions
3. Identify Critical Chain (red line)
   - *Longest chain of task and resource dependencies*
4. Protect with Buffers
   - *Add a 50% Project Buffer to protect the CC at the end of the project – 15 days*
   - *Add a 50% Feeding Buffer to protect the entry points into the CC – 3 days*
   - *Buffers are always 1/2 of the chain they protect*

Flow Index – the Ratio of Critical Chain Complete to Project Buffer Consumed



- Flow Index
  - Expected ratio = 1
  - Below 1 = consuming buffer faster than completing the CC
  - Above 1 = Consuming buffer slower than completing CC
- Which project is the priority?
  - Project A – its Flow Index is below 1 and lower than Project B

Buffer-based Priorities – Fever Chart

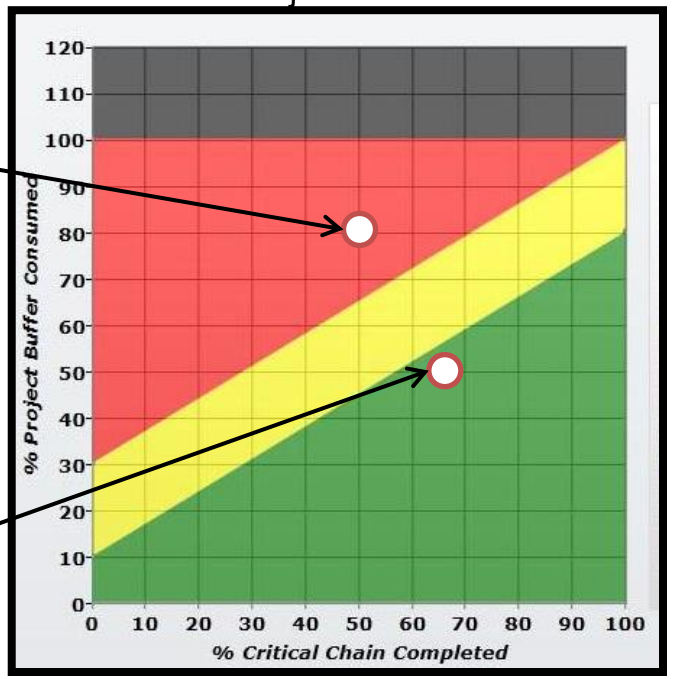
Project A

Critical Chain Complete = 50%
Project Buffer Consumed = 80%
Flow Index = .5 / .8 = .625

Project B

Critical Chain Complete = 67%
Project Buffer Consumed = 50%
Flow Index = .67 / .5 = 1.34

Multi-Project Fever Chart



Prioritize – Task Execution

Project Flow Index

54% Chain complete

60% Project Buffer Consumed

CMS RoadRunner Px

Projects | Project Network | Tasks | Resources

Tasks

Fever Chart

		Project	Task	Task Name		Project Flow Index	Chain Delay Days	Task Owner	Start Date	Early Start	Status	Predecessors Not Complete	RDU	Last Update	Note	Chain	% Chain Completed	% Project Buffer Consumed	PM	Key Resource
...		2379	1372	MA -37		0.79	5	Shell, Darrer			A	0	1	12/18/2012		CC	54	69	Pat R	Shell, Darren
...		2379	1370	CA Fin -37		0.79	5	Fyke, Brian	12/20/2012		NS	1	4.5	11/30/2012	...	CC	54	69	Pat R	Gray, Steve
...		2379	1339	MA -35		0.81	4	Shell, Darrer			A	0	1	12/18/2012		FB8	55	67	Pat R	Shell, Darren
...		2379	1337	CA Final -35		0.81	4	Fyke, Brian	12/20/2012		NS	1	4.5	11/30/2012	...	FB8	55	67	Pat R	Adams, Ron
...		2375a	4031	ME-31-Quote/Ord		0.90	2	Kemper, Dar	12/19/2012		AS	0	1	12/18/2012		FB06	31	35	Richa	Kemper, Dan
...		2379	1356	MA -36		0.9	2	Shell, Darrer			A	0	1	12/18/2012		FB14	57	63	Pat R	Shell, Darren
...		2379	1354	CA Final -36		0.91	2	Fyke, Brian	12/20/2012		NS	1	3	11/30/2012	...	FB14	57	63	Pat R	Bond, John
...		2379_Edd	10529	Order Recv Eddy (		0.91	2	Supply Chair	12/19/2012		AS	0	20	12/17/2012		FB2	54	60	Pat R	Supply Chain
...		2379	1329	CE Write SW -35		0.95	1	Saettel, Ton	12/19/2012		AS	0	3.5		...	FB8	58	61	Pat R	Kennedy, Ale
...		2379	1363	CE Write SW -37		0.95	1	Saettel, Ton	12/19/2012		AS	0	3.5		...	FB18	58	6	Pat R	Kennedy, Ale
...		2379	1346	CE Write SW -36		0.95	1	Saettel, Ton	12/19/2012		AS	0	3.5		...	FB14	58	61	Pat R	Kennedy, Ale
...		2379_Edd	5026	Order Recv MA Cc		1.09	-2	Supply Chair			A	0	5	12/19/2012		FB1	58	53	Pat R	Supply Chain
...		2379	1368	SC Order Recv MA		1.09	-2	Supply Chair			A	0	1	12/17/2012		FB13	61	55	Pat R	Supply Chain
...		2379_Edd	5024	TR -31 Details Ed		1.30	-5	Anderson, D			A	0	2	12/19/2012	...	FB1	61	47	Pat R	TR
...		2379_Edd	5032	CE to CA FK2 -31		1.70	-9	Smith, Derri	12/19/2012		AS	0	1	11/21/2012	...	FB3	65	38	Pat R	Saettel, Tony
...		2379_Edd	5033	CA Sub -31		1.70	-9	Fyke, Brian	12/20/2012		A	1	1	12/18/2012		FB3	65	38	Pat R	Bond, John
...		2375b	351	SC-33-FTI Design		1.99	-22	Dvorsky, Ric			A	0	73	12/18/2012		CC	59	30	Richa	Dvorsky, Rich
...		2379	1310	Build Install Guar		24.41	-26	Anderson, Je	1/25/2013	12/20/2012	A	1	1.5	12/17/2012	...	FB2	79	3	Pat R	Stone, Eric

Filter by:

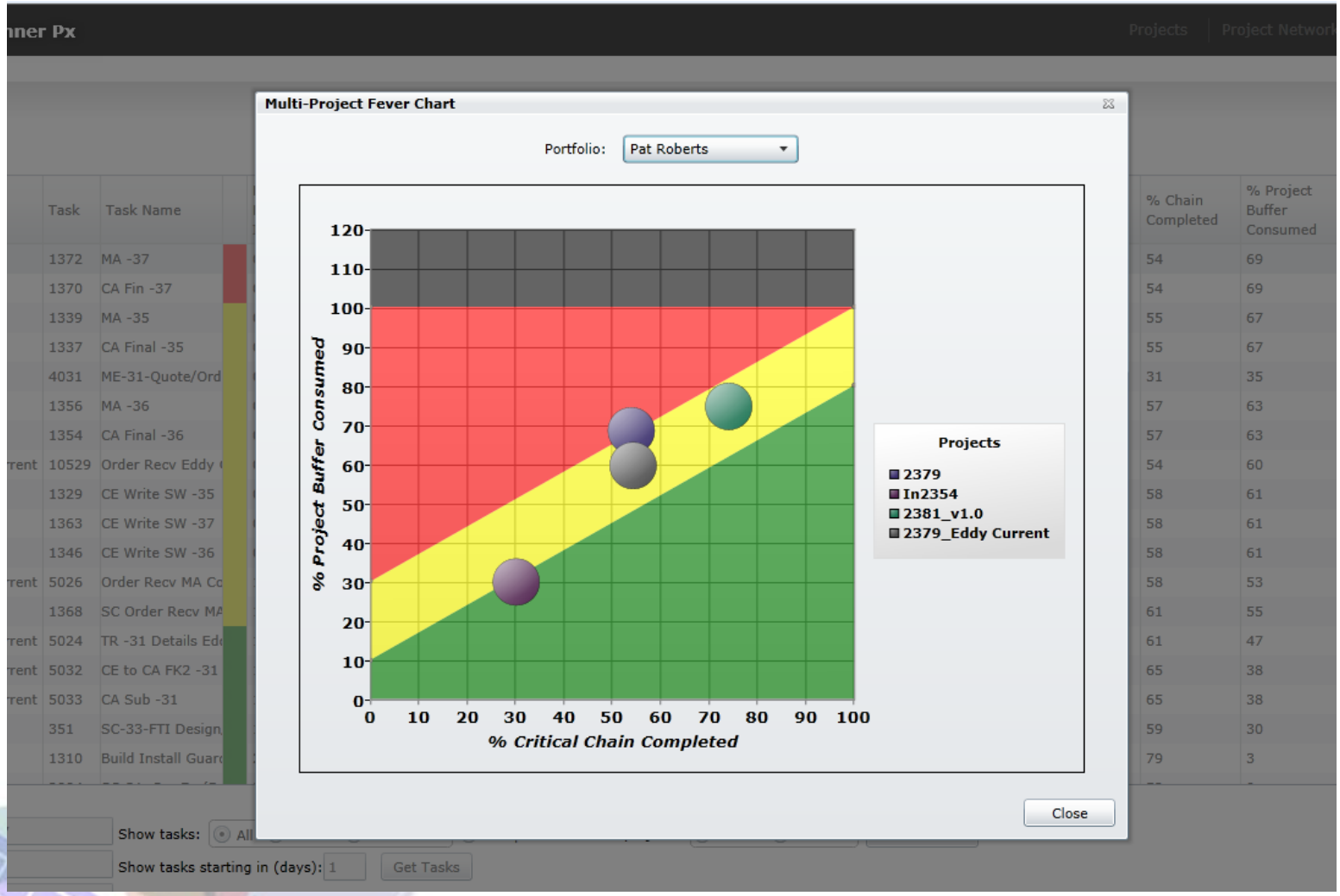
Project: 237 Show tasks: (•) All ( ) Active ( ) Not Started ( ) Completed Show projects: (•) Active ( ) Inactive RDU Calculator

Task Owner: Show tasks starting in (days): 1 Get Tasks

Resource Group:

INNOVATION

Prioritize – Projects



- Drive priorities based on Flow Index = % Critical Chain complete / % Project Buffer consumed
- Used to monitor and compare projects

Summary

Task Delays often accumulate

Task Gains are usually wasted

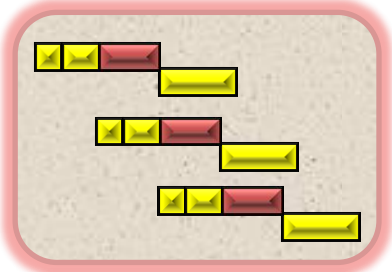
Too Much Bad Multi-Tasking

Cause

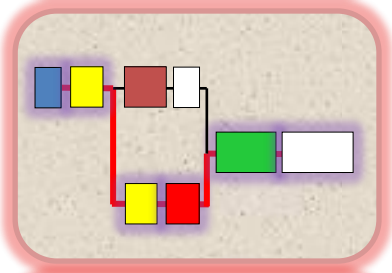
Many Projects are Late, Over-Budget or Under-Scope with

- Too many Changes
- Resources not Available when needed
- Necessary things not available on time
- Fights about priorities among projects
- Too much rework

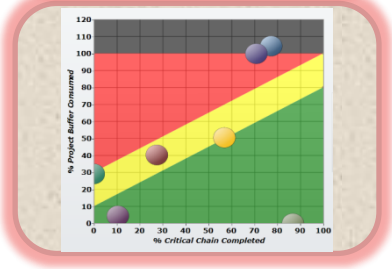
Effect



Stagger



Buffer



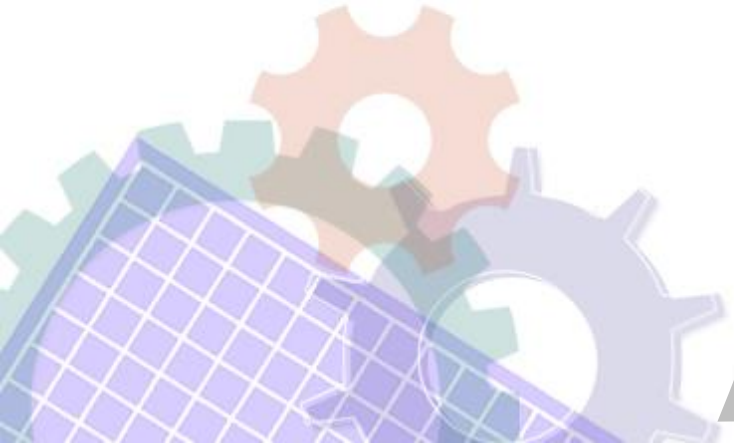
Prioritize

Critical Chain Solution

INNOVATION

Contact Us

- CMS Montera Inc.
  - www.cmsmontera.com
  - +15196249856
  - info@cmsmontera.com



INNOVATION