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Scheduling: Where are the superintendents?

Daniel Soliman

2025 AGC Technology Conference





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Dan Soliman

- Turner Construction
 - Estimator, Superintendent, BIM
- Consultant
 - Marlins Ballpark, Brickell City Center
- Baker Concrete
 - Director of Scheduling & BIM
- Robins & Morton
 - Scheduling Leader
- Planflow
 - Co-founder







Agenda

- 1. Learn CPM
- 1. UI/UX Design
- 1. Planning, Scheduling, Execution



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Construction productivity 1950-2012

Real productivity (GDP value-add per employee) by industry in the US
Indexed; 1950 = 1.0



1

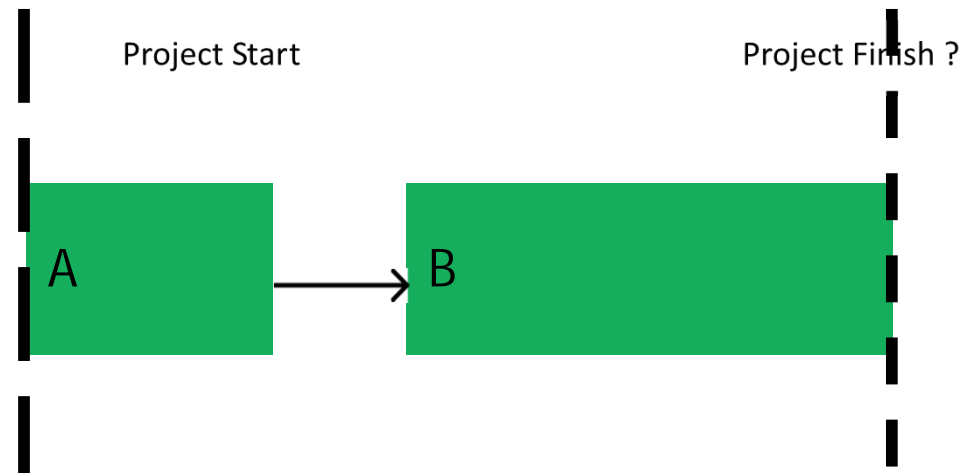
CPM

The critical path method



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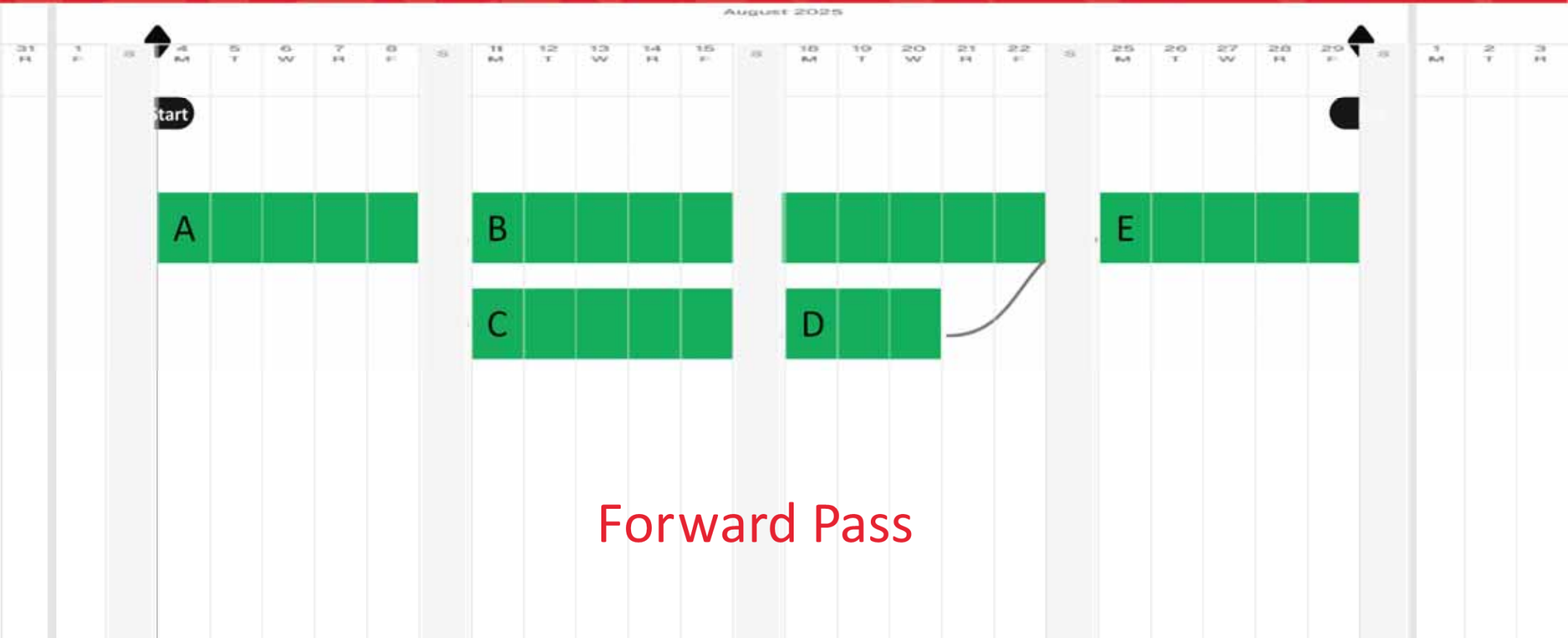
- Network of activities
- Connected by relationships
- Nodes and links





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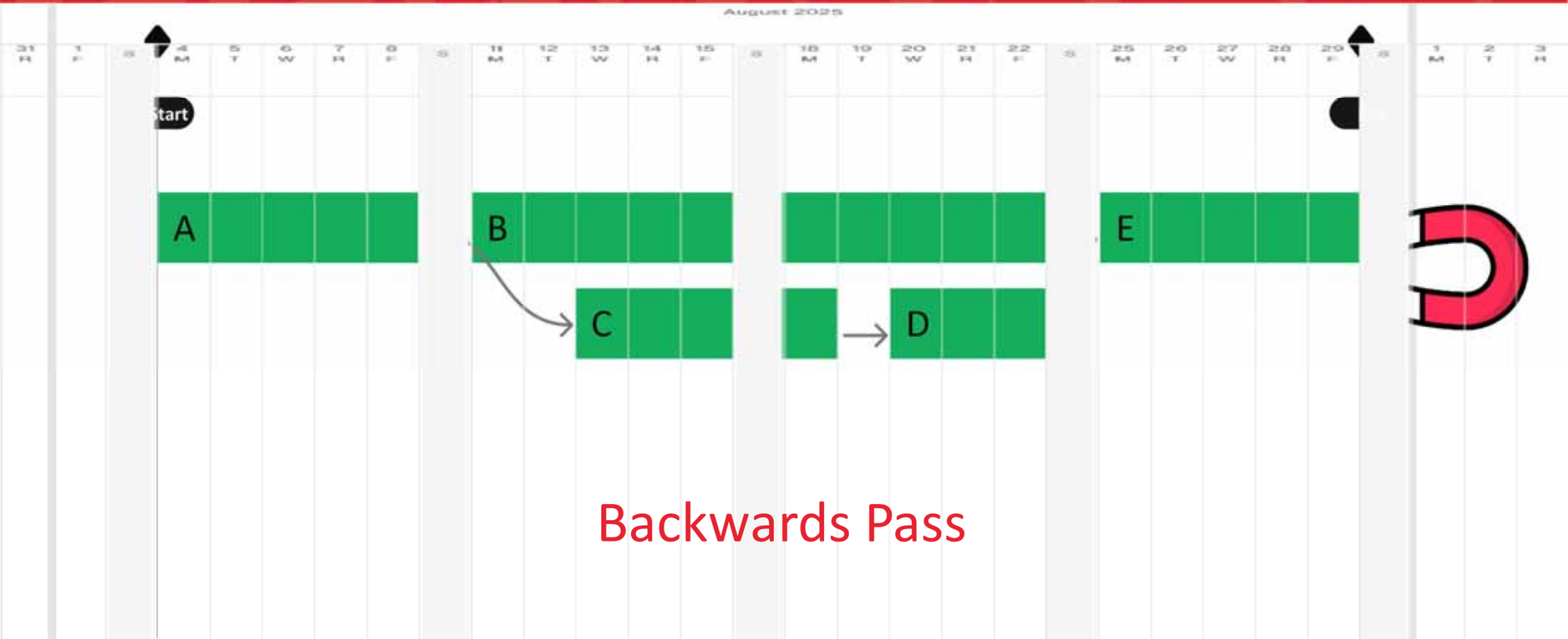


Forward Pass



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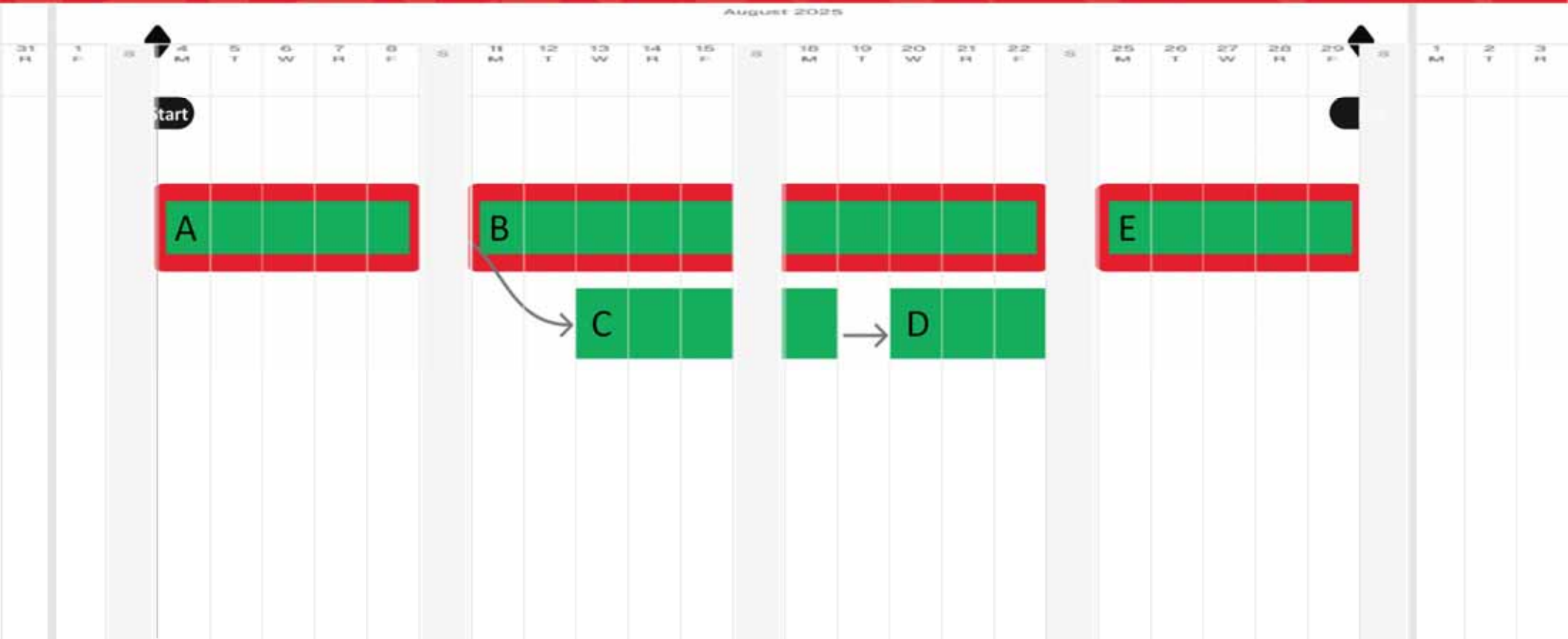


Backwards Pass



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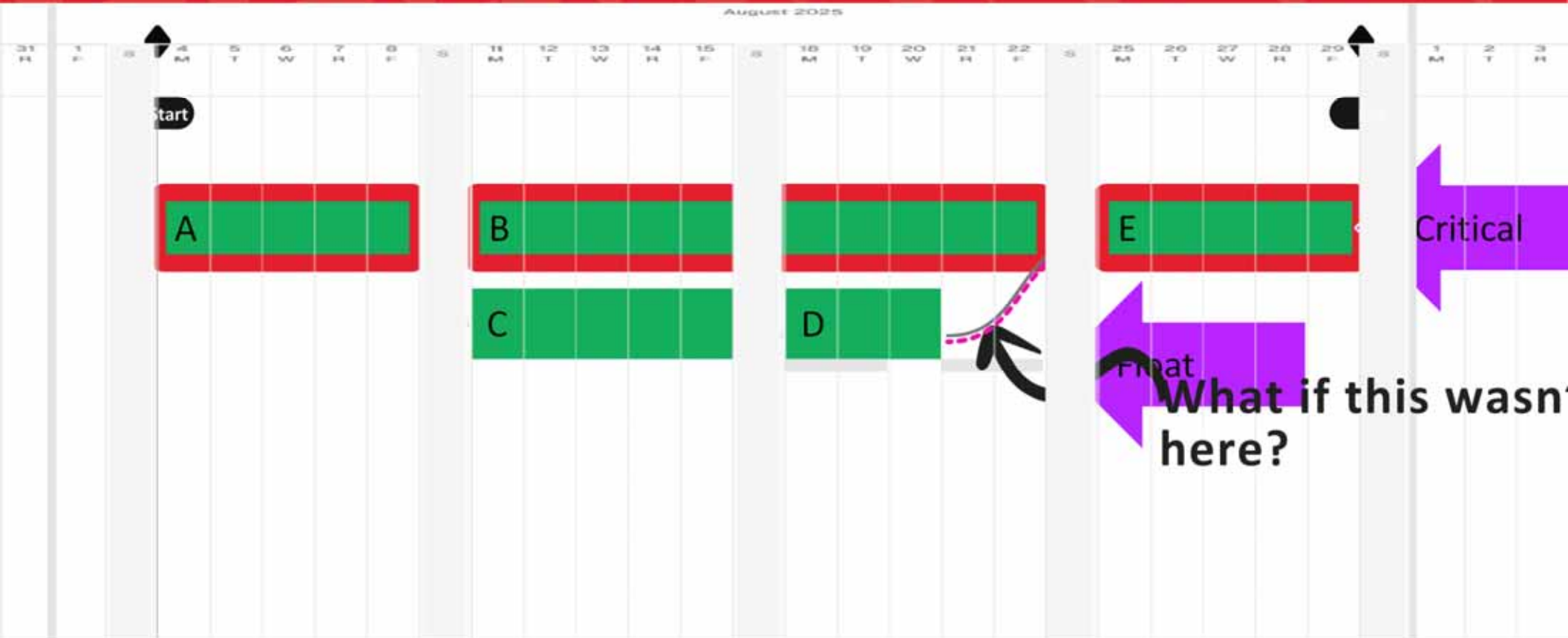
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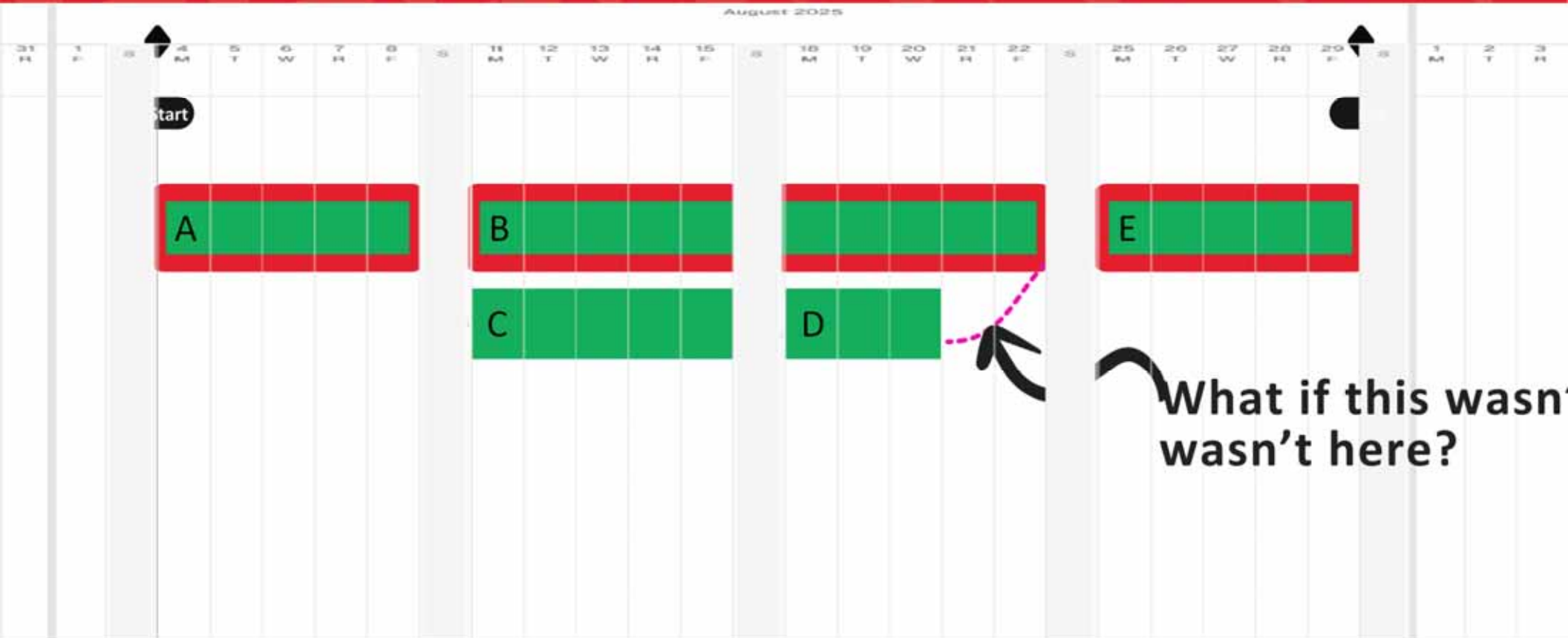
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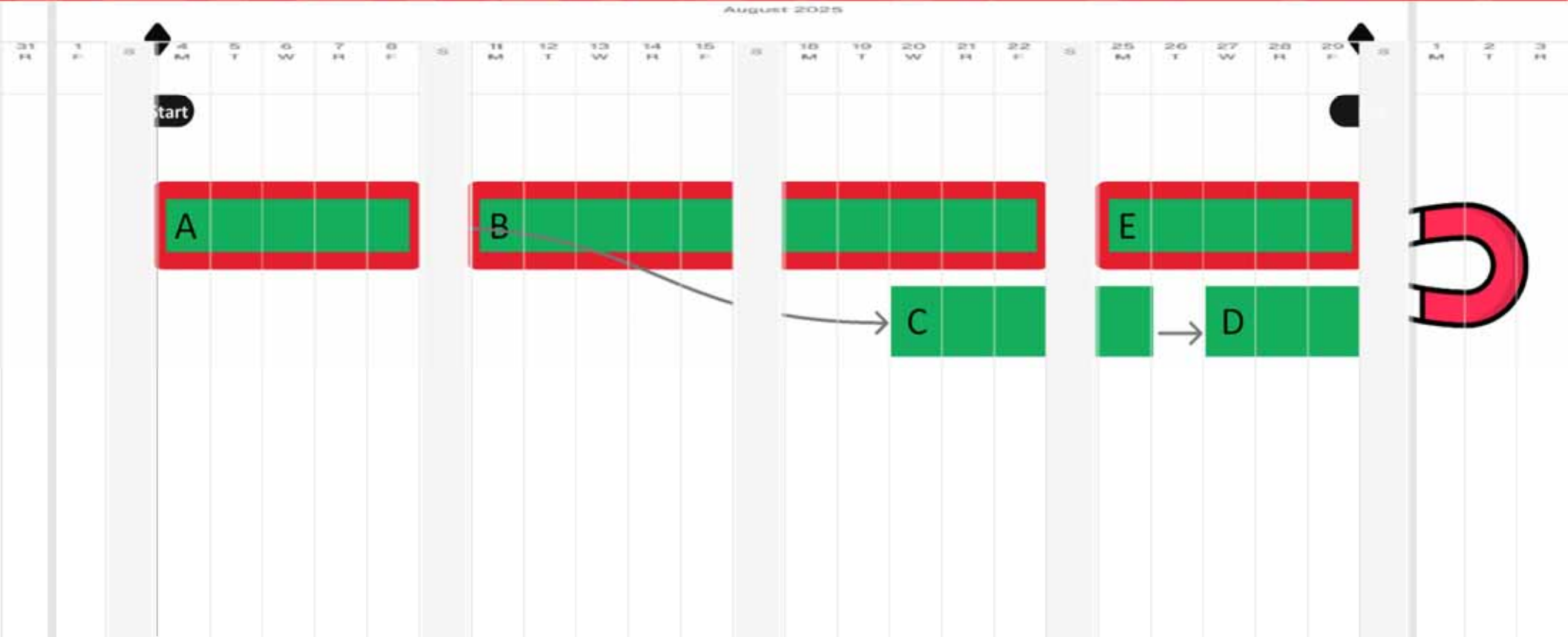
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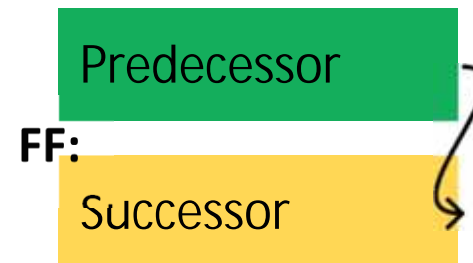




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Relationship Types

FS: Predecessor → Successor

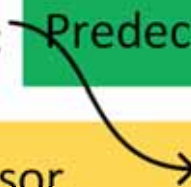




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SF: Predecessor

Successor



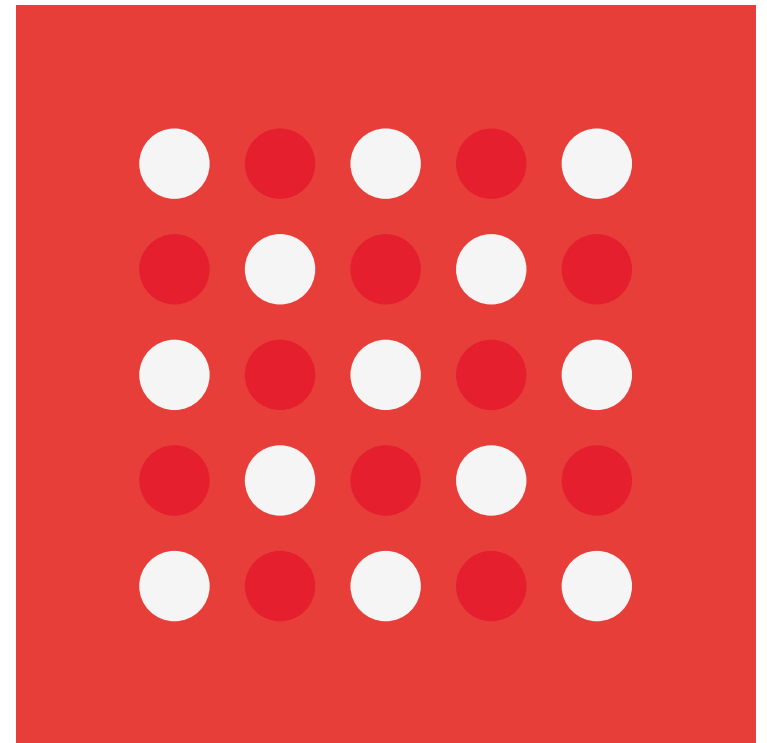


UI/UX Design

User Interface / User Experience

Choice overload

The tendency for people to get overwhelmed when they are presented with a large number of options

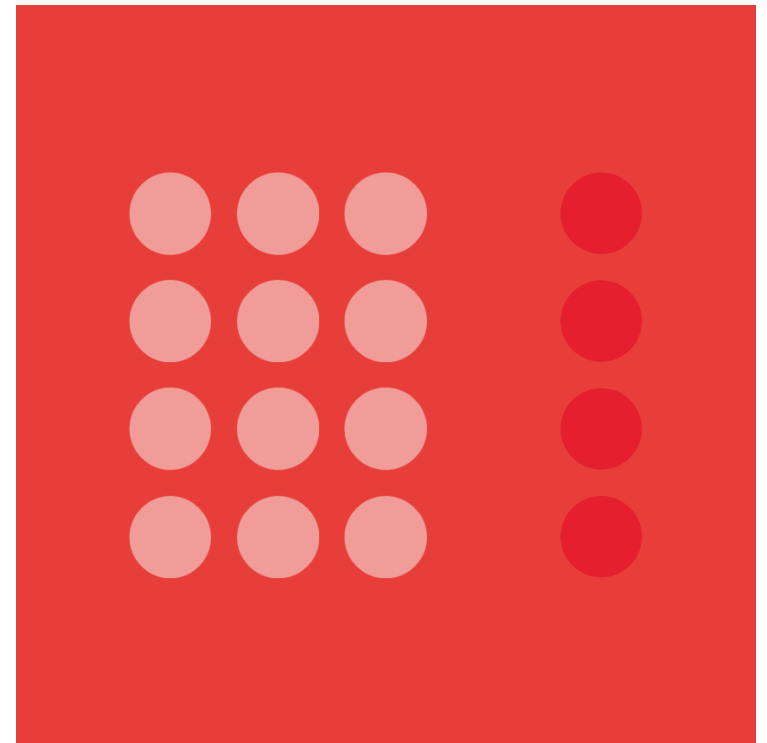




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Law of Proximity

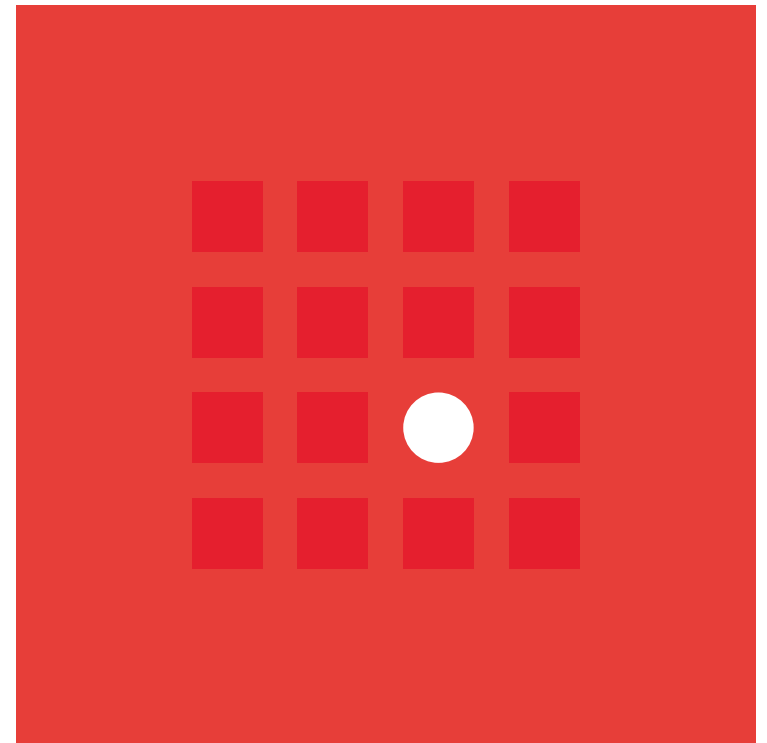
Objects that are near, or proximate to each other, tend to be grouped together.





Aesthetic-Usability Effect

We often perceive aesthetically pleasing design as design that's more usable.





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Miller's Law

The average person can only keep 7 (plus or minus 2) items in their working memory.





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Chunking

A process by which individual pieces of an information set are broken down and then grouped together in a meaningful whole.

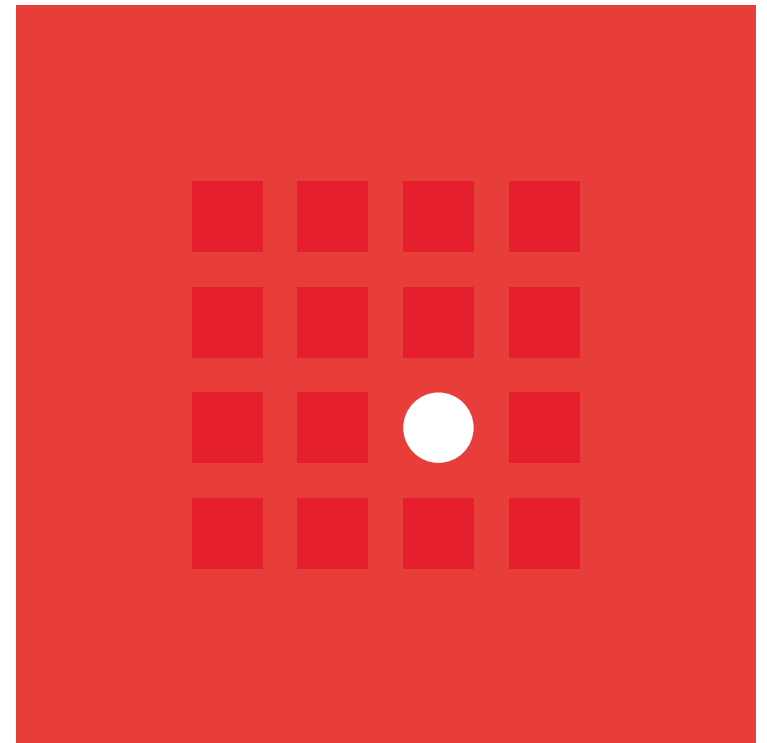




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Isolation Effect

When multiple similar objects are present, the one that differs from the rest is most likely to be remembered.

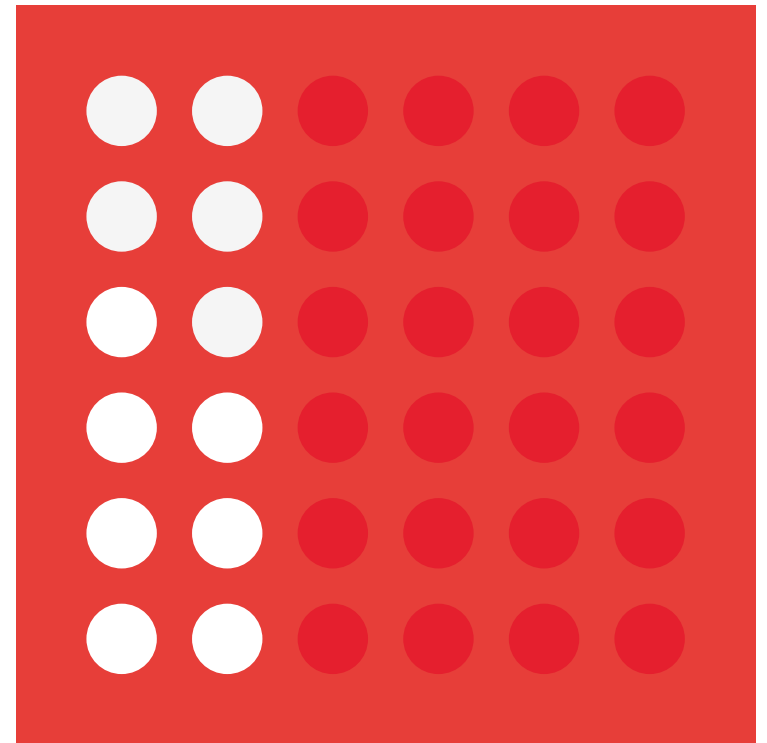




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Cognitive Load

The amount of mental resources needed to understand and interact with an interface.

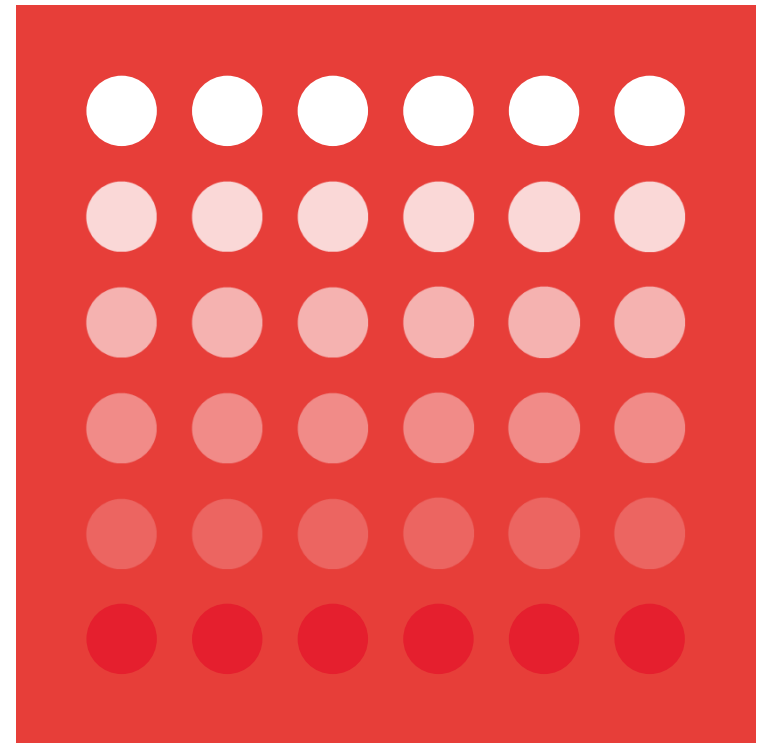




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Goal-Gradient Effect

The tendency to complete a goal increases with proximity to the goal.

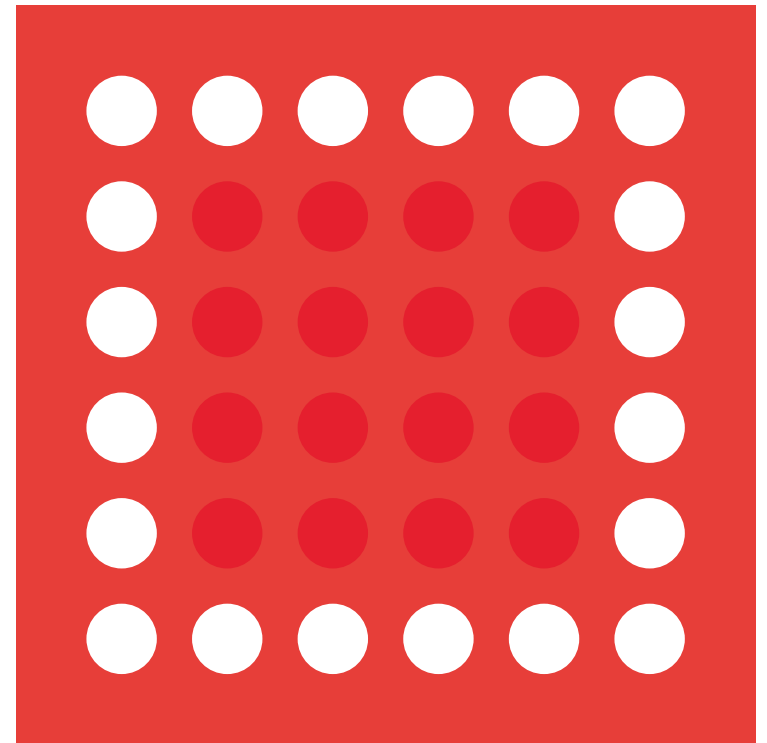




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Hick's Law

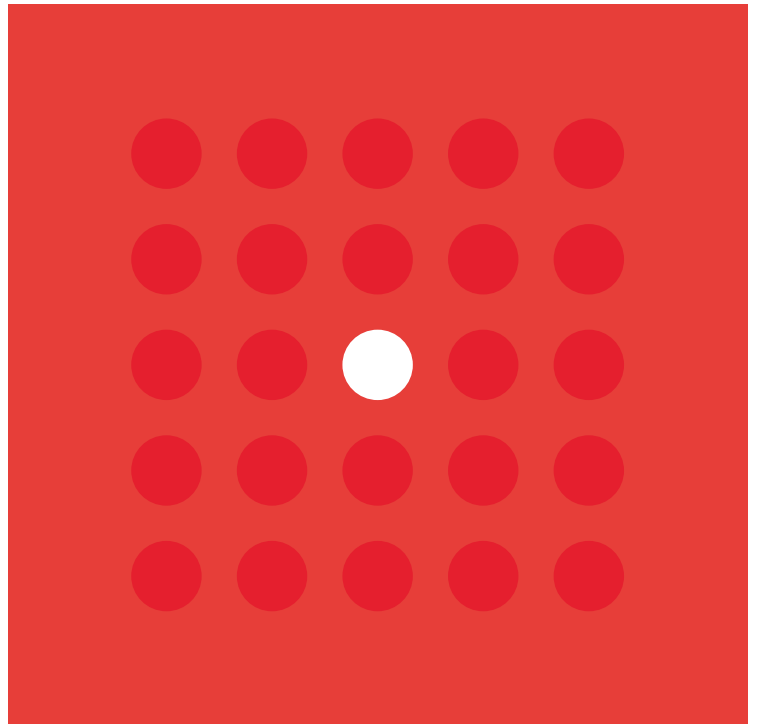
The time it takes to make a decision increases with the number and complexity of choices.





Doherty Threshold

Productivity soars when a computer and its users interact at a pace ($<400\text{ms}$) that ensures that neither has to wait on the other.



Flow

The mental state in which a person performing some activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity.

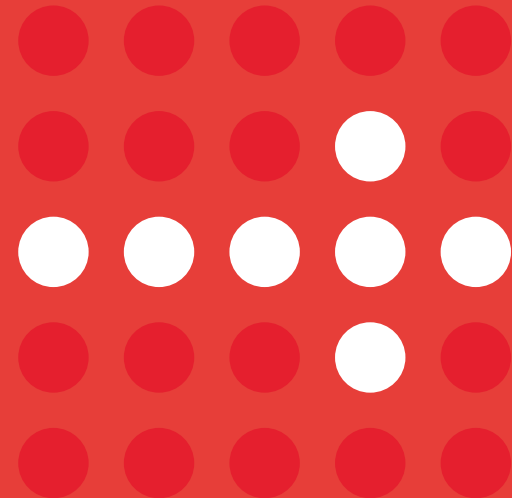




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Paradox of the Active User

Active users never read manuals but start using the software immediately.

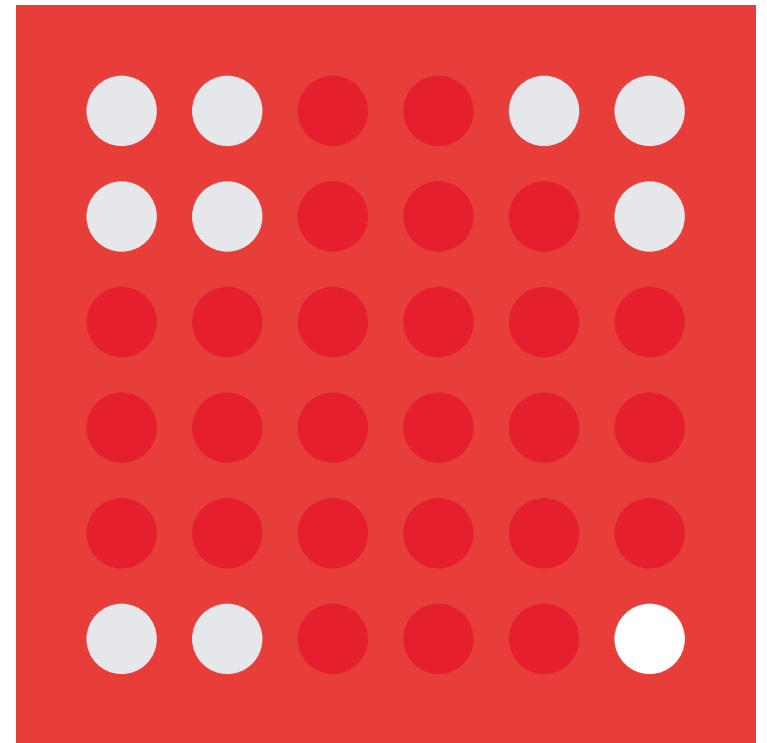




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Occam's razor

The simplest explanation is usually the best one.

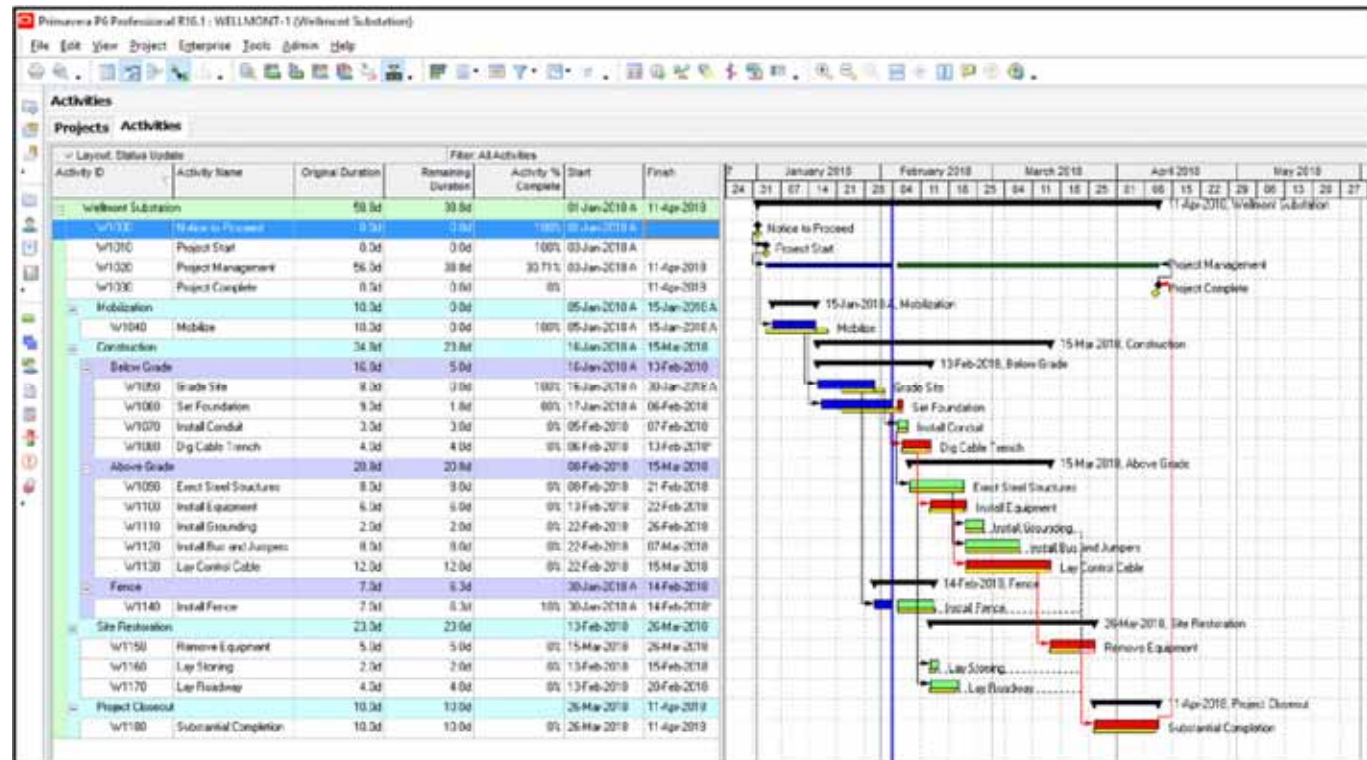




What Superintendents see

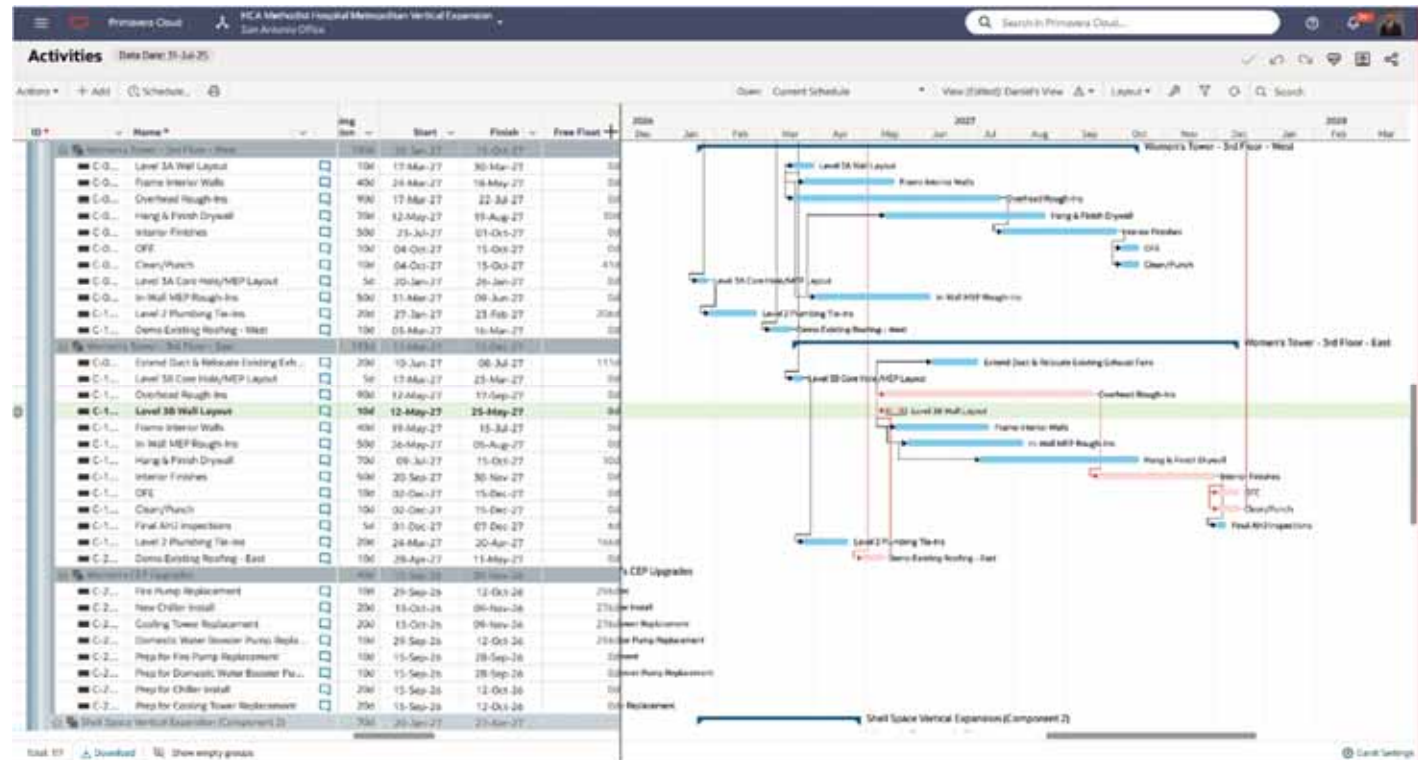
Time to get messy

1. Cognitive Load
1. Paradox: Active User
1. Aesthetic/Usability
1. Choice Overload





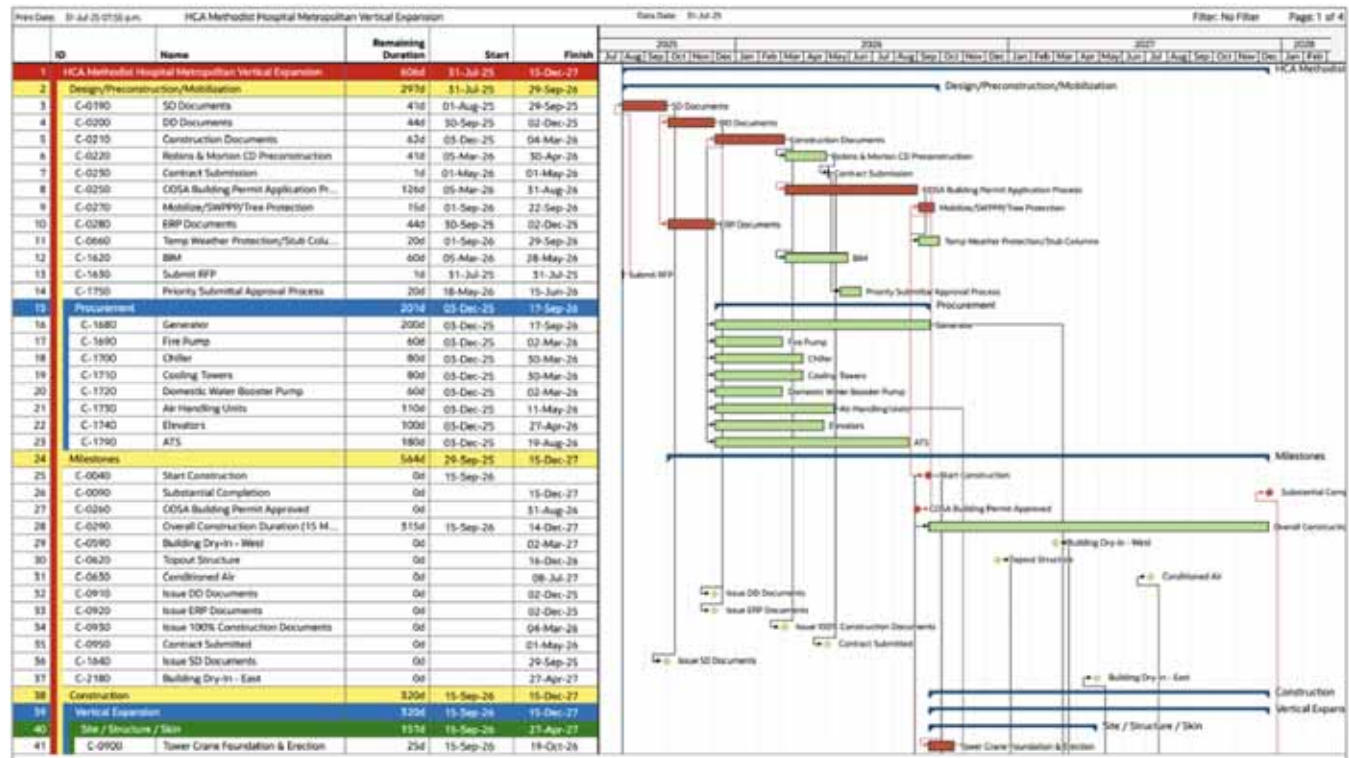
1. Cognitive Load
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1. Cognitive Load
1. Paradox: Active User
1. Aesthetic/Usability
1. Choice Overload





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■ C-1680	Generator	200d	03-Dec-25	17-Sep-26	0
■ C-1690	Fire Pump	60d	03-Dec-25	02-Mar-26	147
■ C-1700	Chiller	80d	03-Dec-25	30-Mar-26	137
■ C-1710	Cooling Towers	80d	03-Dec-25	30-Mar-26	137
■ C-1720	Domestic Water Booster Pump	60d	03-Dec-25	02-Mar-26	147
■ C-1730	Air Handling Units	110d			0
■ C-1740	Elevators	100d			217
■ C-1790	ATS	180d			333
Milestones		564d			
• C-0040	Start Construction	0d			0
• C-0090	Substantial Completion	0d			0
• C-0260	COSA Building Permit Approved	0d			0
• C-0290	Overall Construction Duration (15 M...	315d			1
• C-0590	Building Dry-In - West	0d			50
• C-0620	Topout Structure	0d			251
• C-0630	Conditioned Air	0d			111
• C-0910	Issue DD Documents	0d			513
• C-0920	Issue ERP Documents	0d			513
• C-0930	Issue 100% Construction Documents	0d		04-Mar-26	451
• C-0950	Contract Submitted	0d		01-May-26	409
• C-1640	Issue SD Documents	0d		29-Sep-25	557

« < December 2025 > »

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

07:00

Today Cancel OK



You shouldn't:

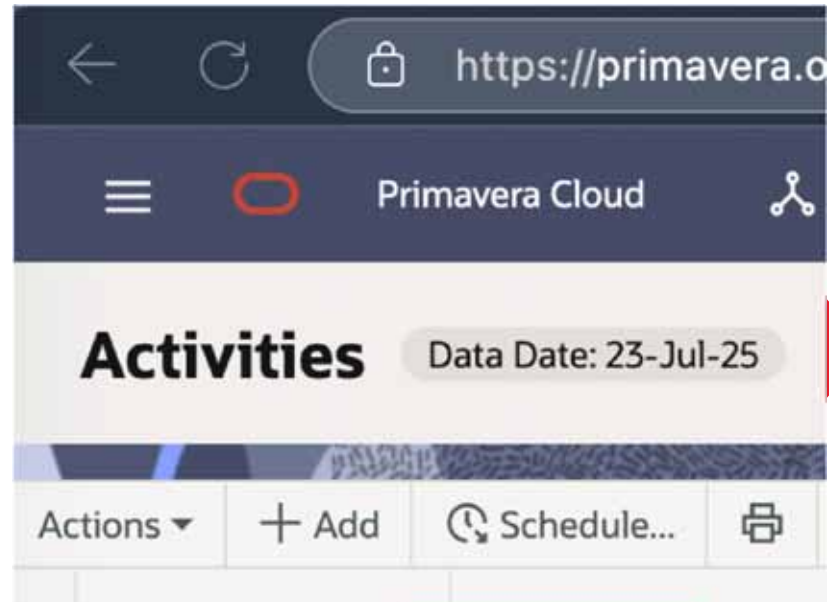
- use too many constraints
- Use SF relationship
- Use FS + Lag
- Durations longer than 40d
- Missing Successor
- Missing Predecessor
- Invalid Dates
- Delete activities / relationships

You should:

- Have a completion milestone
- Have a constraint on it
- Update often, but not too often

My biggest complaint

- Data Date
- Schedule button



Scheduling Consultants





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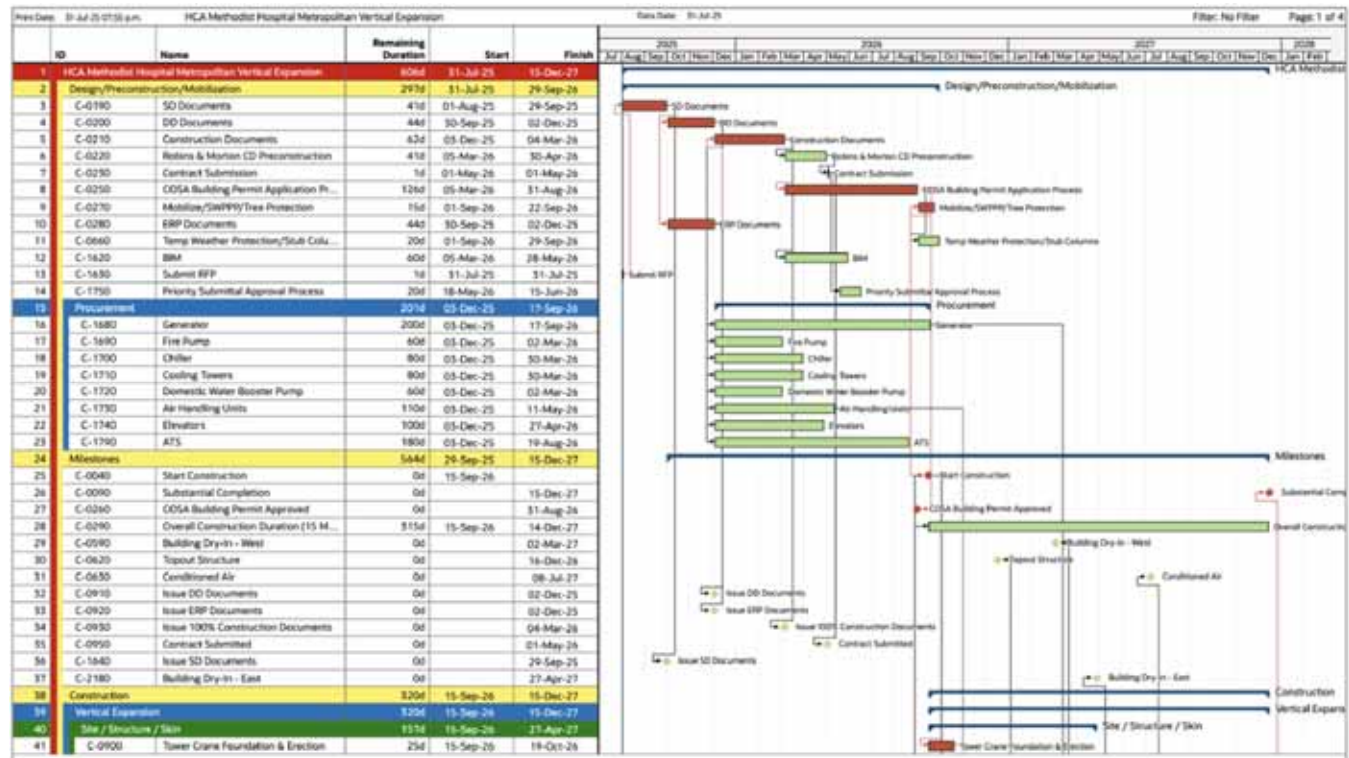


What's the point?



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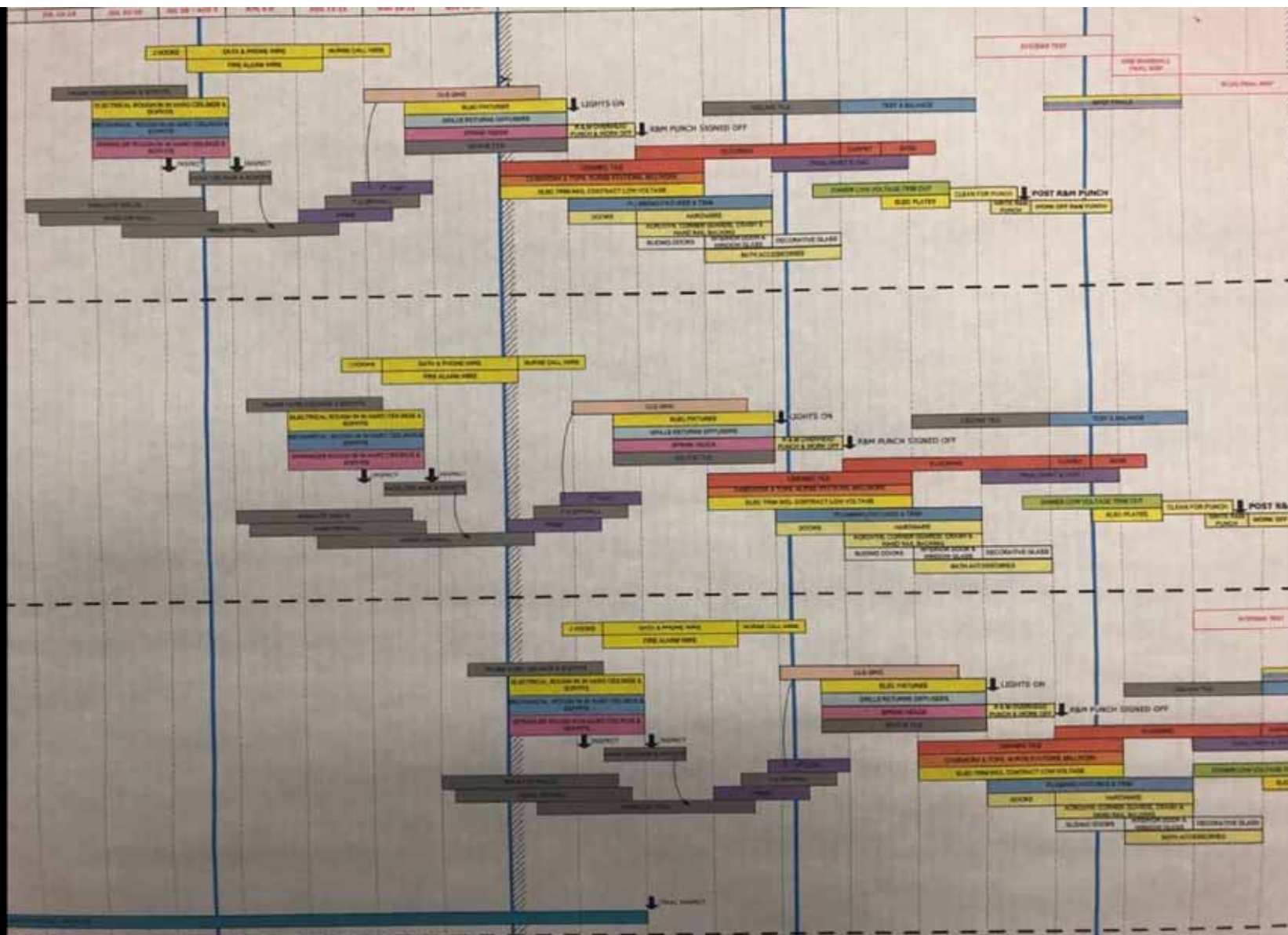
40 pages of this













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Pricing

Scheduling Guide

Field First

Get started

Still using Gantt charts? Assign and update P6 schedules from the field.

Integrates with P6. Real-time and collaborative. Assign work, record progress, identify and track issues, and stay informed with a real-time schedule that's always with you, on iOS and Android.

What's your work email?

Get started

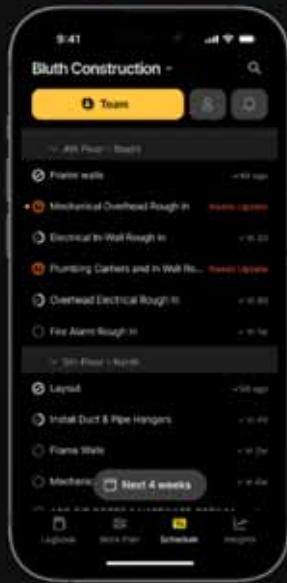
Onboarding takes less than an hour.





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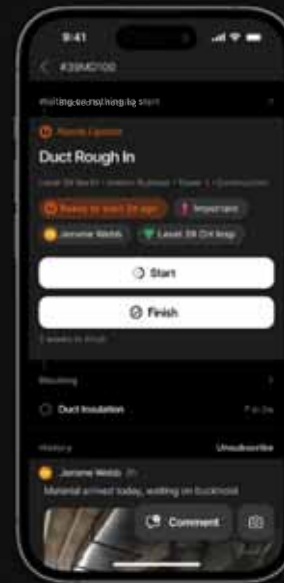
Assign to **trades** or
coworkers



Create & Track **Issues**



Update from
the field



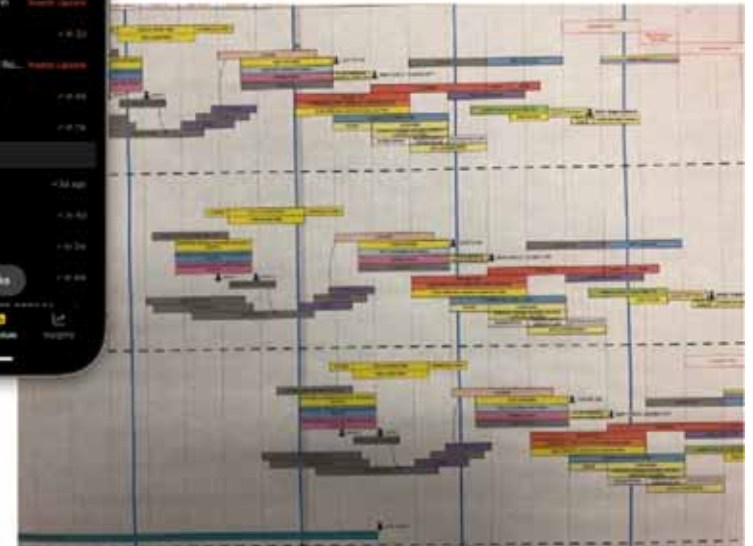
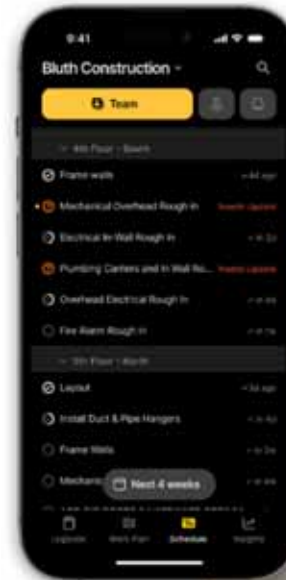
notifications to finish early





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Limited by CPM

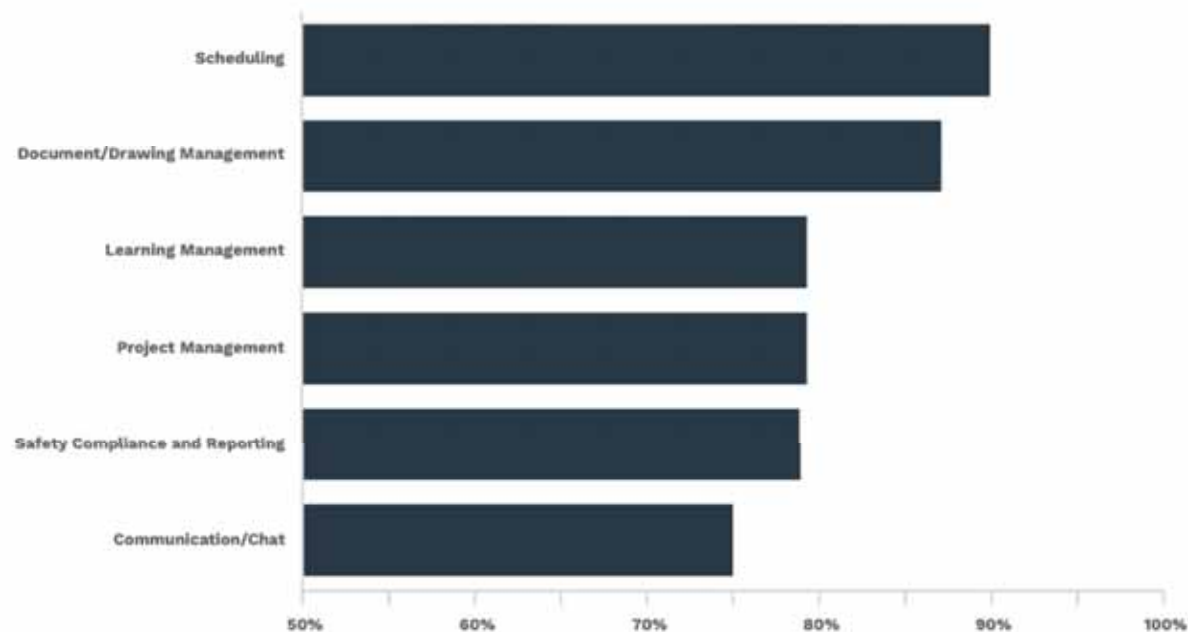




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Most important technologies for contractors

Based on our research, contractors rated these technologies as being most important to the success of the highest performing companies:



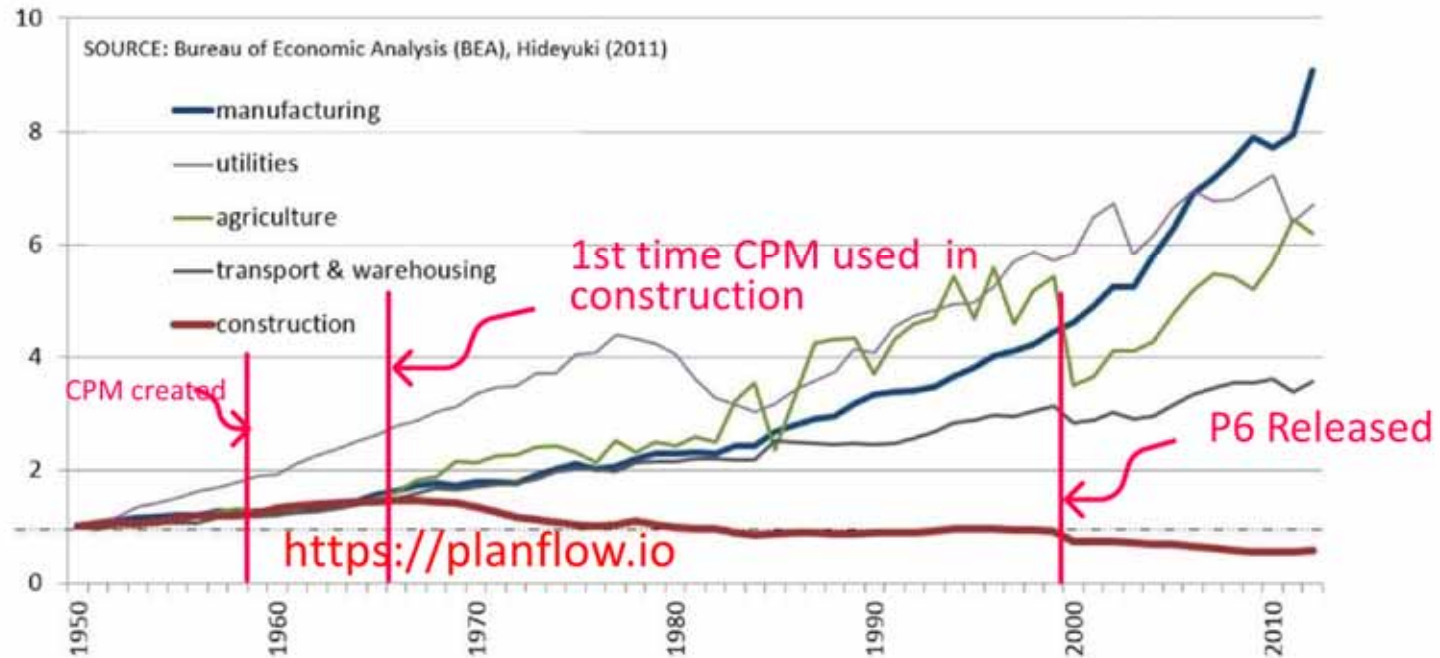
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Construction productivity 1950-2012

Real productivity (GDP value-add per employee) by industry in the US
Indexed; 1950 = 1.0





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The State of Construction Scheduling 2025

A performance snapshot of how construction teams are managing time, data, and decisions.

 SmartPM

70,000 projects

3,500 respondents



What did they find?



Good quality



Bad data



Finished late



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Where Is Time Being Wasted?

Construction professionals spend

35%

of time on non-optimal activities.



Only

65%

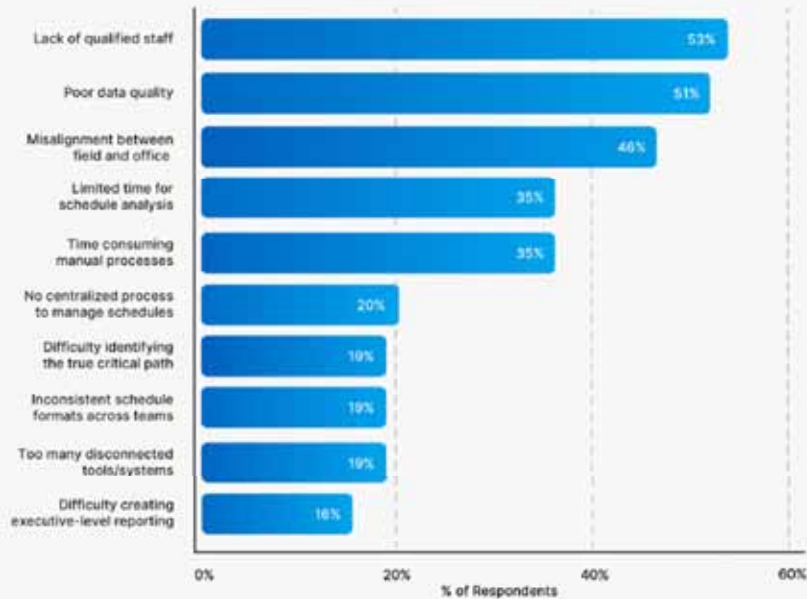
of their time is spent on optimal activities.



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Finding #6: Schedules Aren't Aligned to Their Purpose.

What are the biggest challenges with construction scheduling in your experience? (non users of SmartPM)



Field misalignment ranks among the top reported pain points.

When asked about the biggest challenges in scheduling today, professionals pointed to three consistent themes:

- Lack of qualified staff
- Poor data quality
- Misalignment between the field and the office

That last one is critical. The core purpose of a construction schedule is **NOT** to satisfy contracts or check boxes. It's to connect assumptions made in the office with the reality unfolding on-site.

Yet many teams still treat the schedule as a static document, updated for optics or obligation, not as a real-time risk management tool.

Source: SmartPM Industry Survey

What if...
CPM is the problem, not
software



Want proof?



LEAN **CONSTRUCTION**

Breaking down the concept



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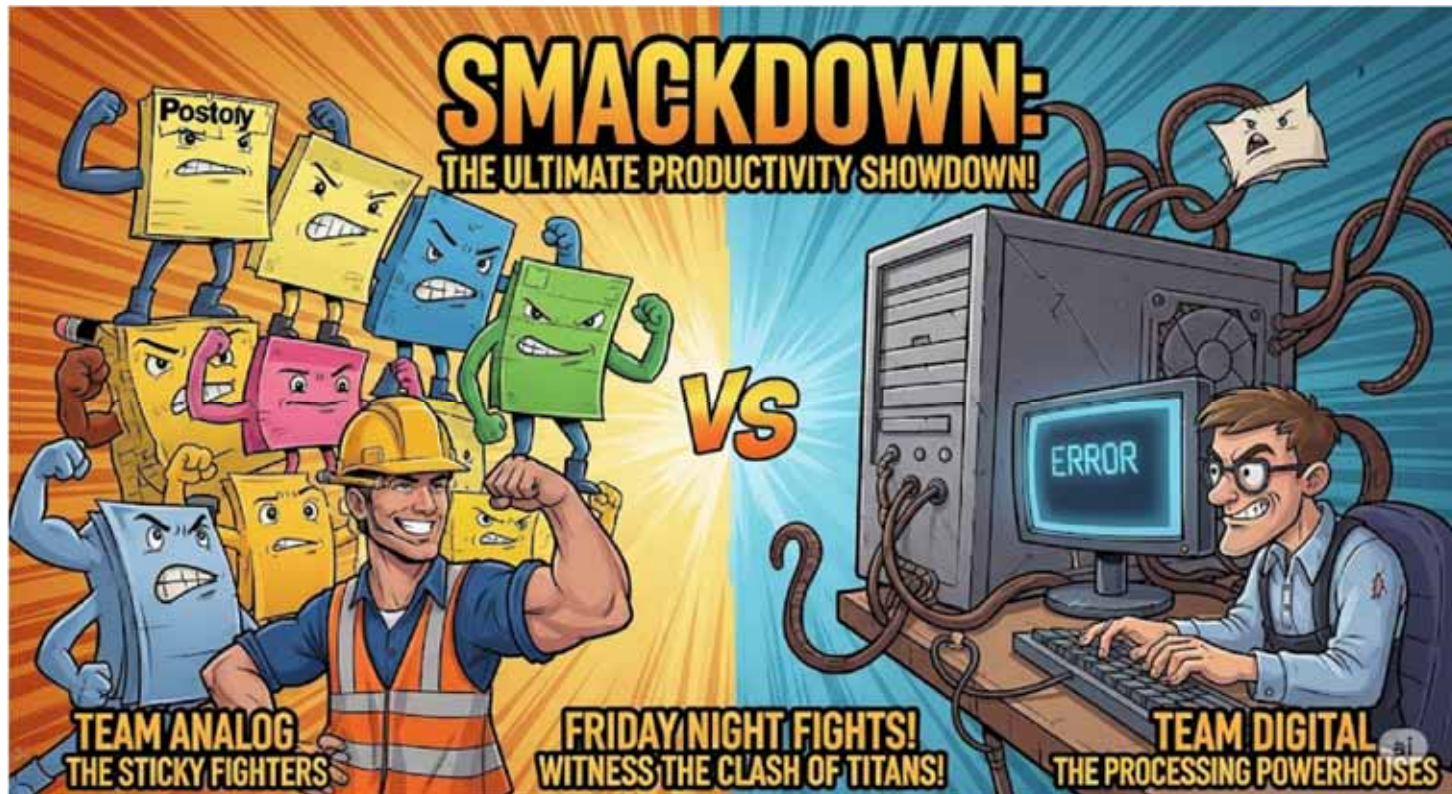


Pull Planning is not parametric

- Things don't go according to plan
- Priority is lost



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CPM doesn't work
Lean doesn't work



Elon Musk's 5-step improvement process



1. Question the requirements
2. Remove unnecessary process steps
3. Optimize
4. Accelerate
5. Automate

LeanCPM.org

LeanCPM

Search

⌕

Introduction

What is LeanCPM

LeanCPM vs CPM

LeanCPM vs Lean

How it works

Calculating Schedules

Organization

Work Breakdown Structure

Areas

Tags

Goals

Timeline Matrix

Terms

Activity Log

Actual Dates

Anticipated Dates

Constraints

Deadline

Dependencies

Drag

What is LeanCPM

A new take on project planning and execution. Not quite Lean, not quite CPM.

Work in progress

LeanCPM and this website are still a work in progress. I am working on making this open source, meaning anyone can contribute. If you'd like to participate or follow our progress, please email daniel at leancpm dot org.

LeanCPM was created because I wanted Superintendents to own their schedules. Since Superintendents don't have the luxury of sitting at a desk all day, they need something easy, flexible, and foolproof, while also offloading some of the burden and accountability to subcontractors.

Philosophy

Logic-safe

Poor relationships between tasks, or a lack thereof, are responsible for 95% of schedule issues. LeanCPM not only enforces best logic practices but also prevents bad practices, ensuring every schedule is as sound as possible, given reasonable input.

Synchronous communication

Construction is synchronous: Participants must be present because they rely on the work or resources from others before they can provide the same in return. With legacy CPM, "the schedule was outdated the day it was published."

Updating & maintaining the schedule should be a continuous, real-time operation, not an afterthought.

Bias for action

The problem with legacy CPM is that it is "defensive scheduling" (scheduling for lawyers). It is rooted in a system that ensures nobody finishes early

On this page

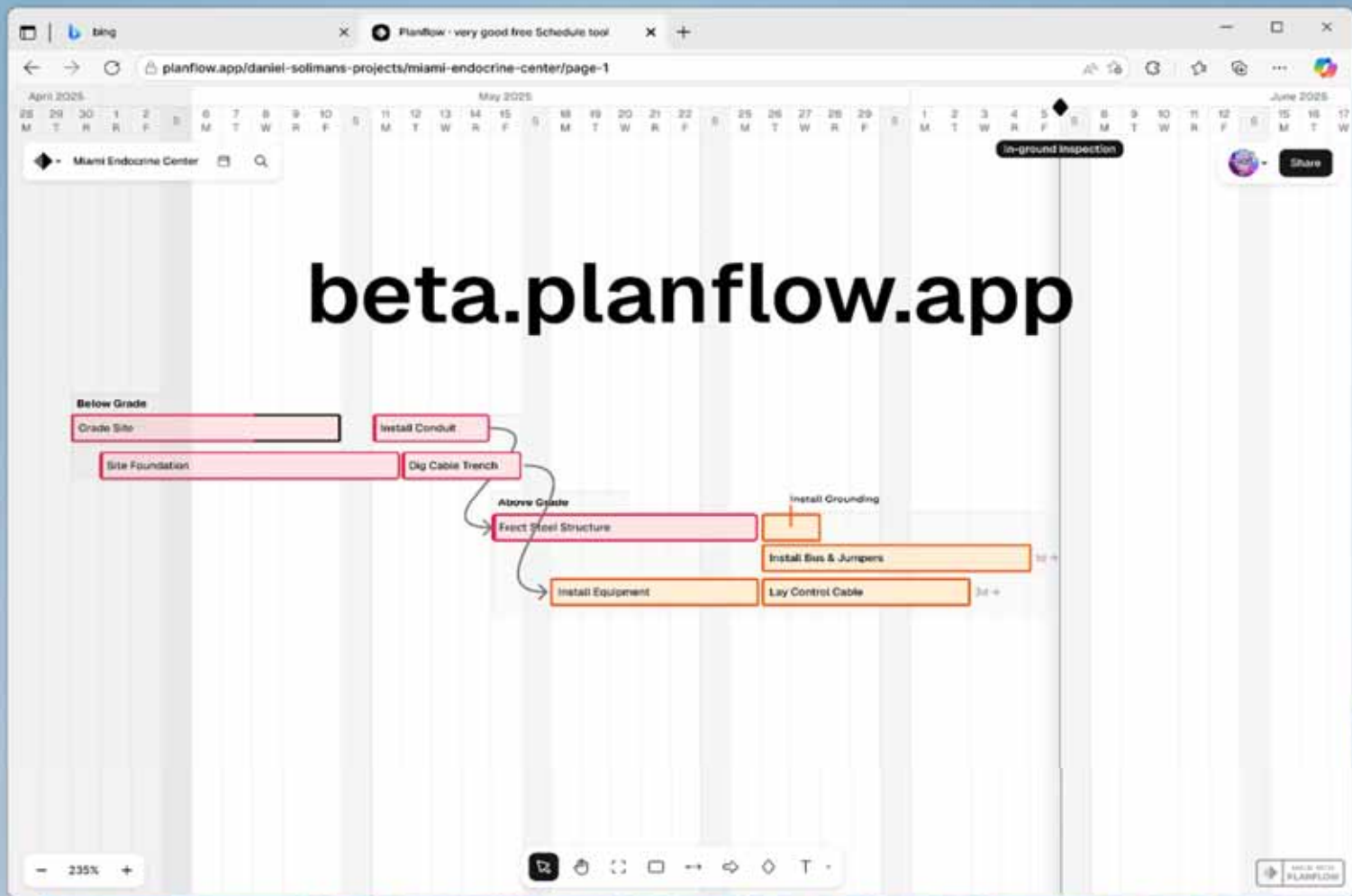
Philosophy

Logic-safe

Synchronous communication

Bias for action

When to use LeanCPM





LeanCPM.org

beta.planflow.app

planflow.io



Questions?