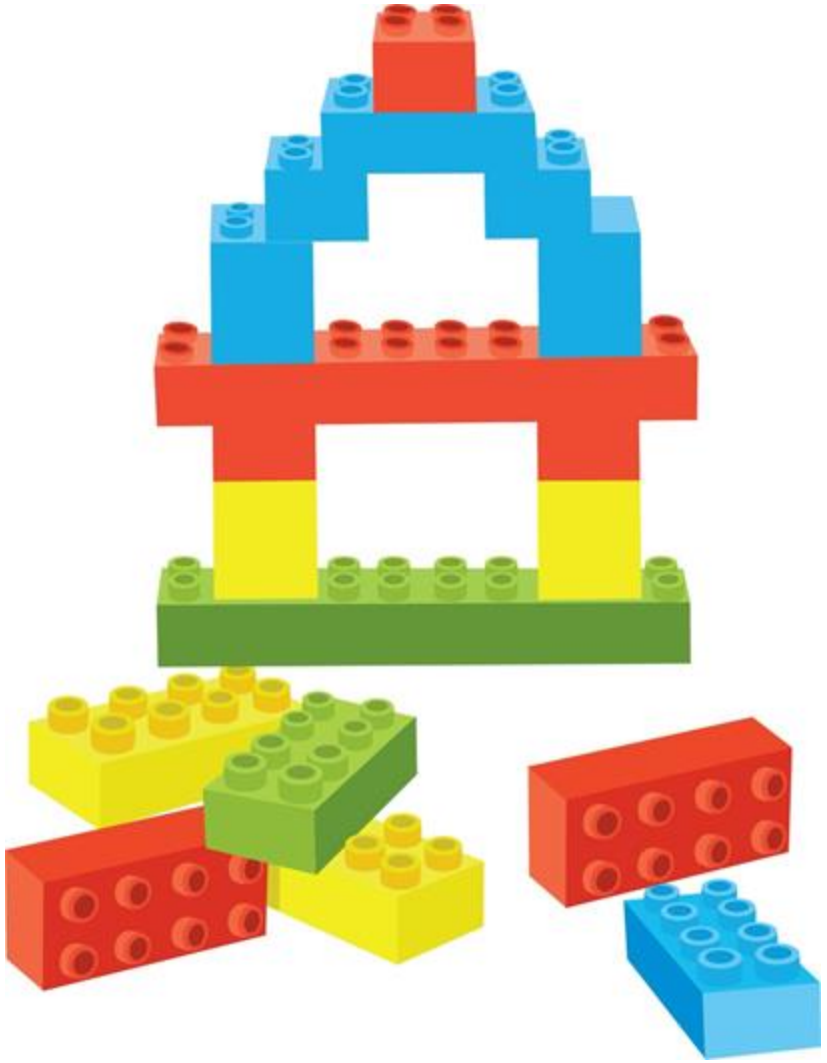


A Design To Improve Lego's Accessibility for the Visually Impaired:

Final Presentation

Marina Adam, Kenneth Liu, Ibraham Raji, and Kimberly Rodriguez Parilli

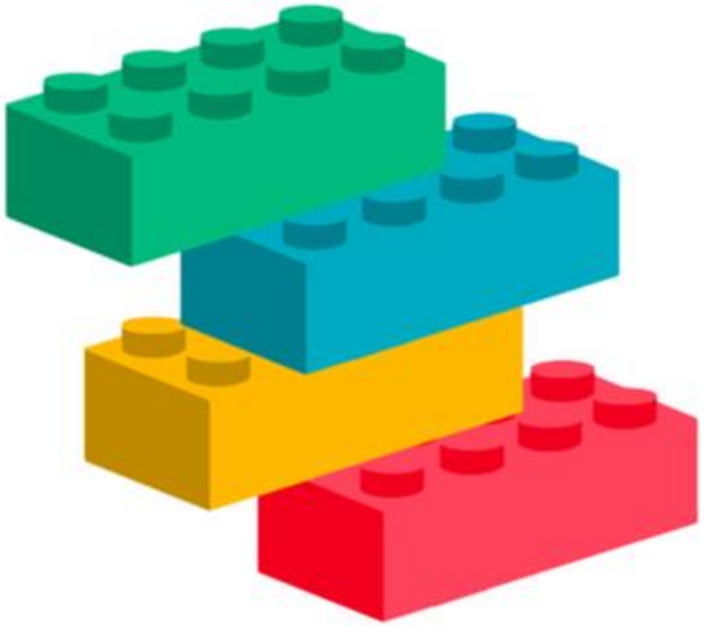
I&P Review
and Project Overview

RACI CHART

Team Member	Role	Research	Planning	Design/Develop	Marketing
Kenneth Liu	Design Lead	A	C	R	I
Marina Adam	Strategic Lead	R	I	C	A
Ibrahim Raji	Marketing Lead	C	A	I	R
Kimberly Rodriguez Parilli	Project Lead	I	R	A	C

COMPANY BACKGROUND, CORE VALUES, & PROJECT LINK

Danish toy company founded in 1932. Famous for its iconic Lego brick product, a durable and versatile product found in over 140 countries.



Vision: To be a global champion of using play as a learning tool and a means to develop new skills ("A global force for Learning-through-Play.")

Mission: To create building blocks that will inspire and develop the builders of tomorrow.

Core Values: Imagination, fun, creativity, learning, and quality. As evidenced by their products and employees such as Lego Master Builders.

Link: Lego is dedicated to developing the imagination and creativity of all kids. This project targets a demographic not typically considered and enables them to use Legos more independently, thereby allowing a more diverse set of customers to learn through play.

SCOPE

- **Design** that is an extension of Braille Bricks product line
  - **CAD model**
  - **Engineering drawing**
- Design to include features that better accommodate visually impaired users
- Includes a **presentation** discussing project and design, which shall be presented to the client on November 25, 2024

DURATION

Key Milestone	Date
Team Formation (external)	9/13
Project Charter (external)	9/23
PM Plan Ready (external)	10/14
Finalize Research on Market/Product (internal)	10/20
Begin Product Brainstorming (internal)	10/21
Begin Marketing Plans (internal)	10/28
Finalize Product Design (internal)	11/18
Finalize Marketing Plan (internal)	11/06
Close-out (external)	11/25

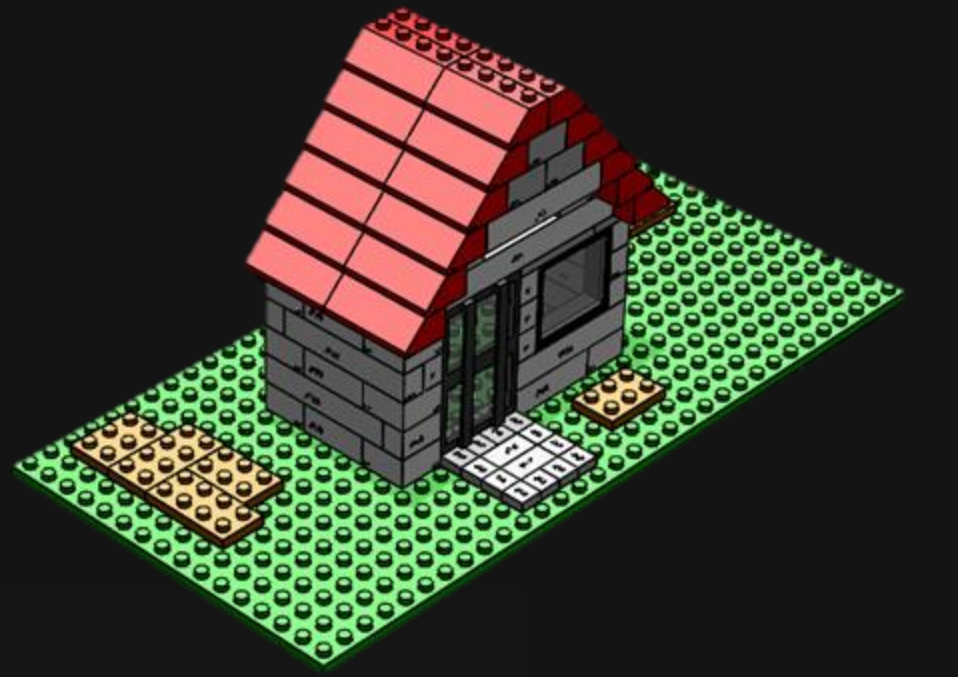
BUDGET

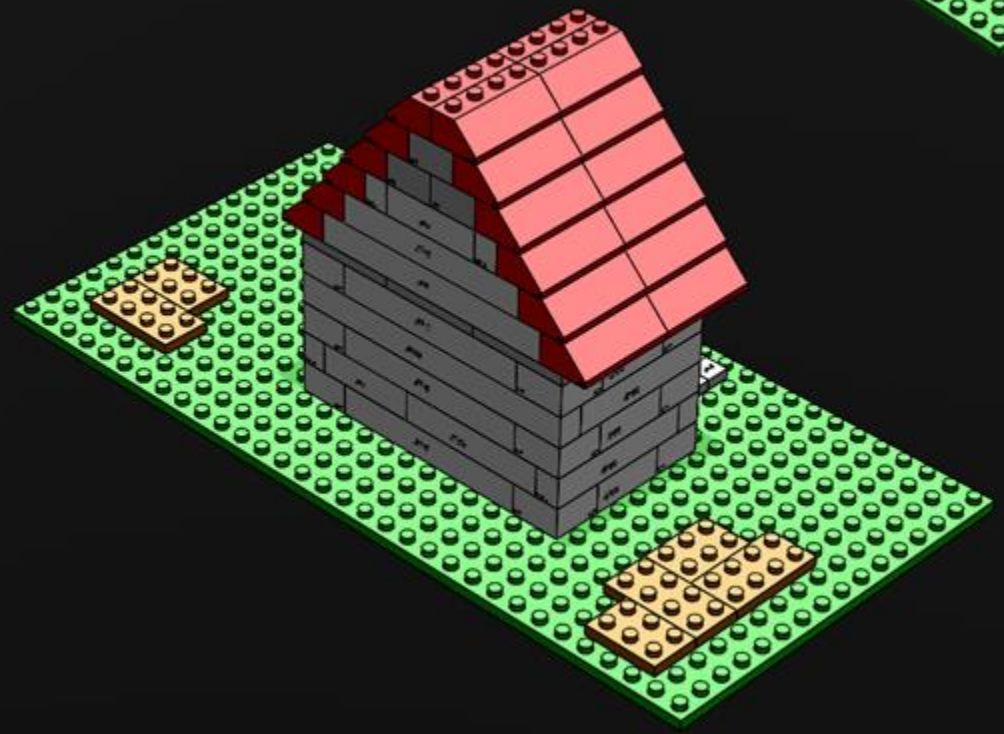
- 4 consultants
- $70/hr rate
- 5 working hours/week
- 1 hr/week contingency reserve
- 8 week project timeline

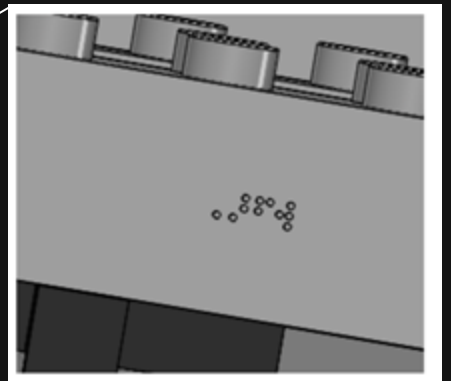
Labor budget: $11,200
Contingency budget: $2,240
Indirect costs (10%): $1,344

_____

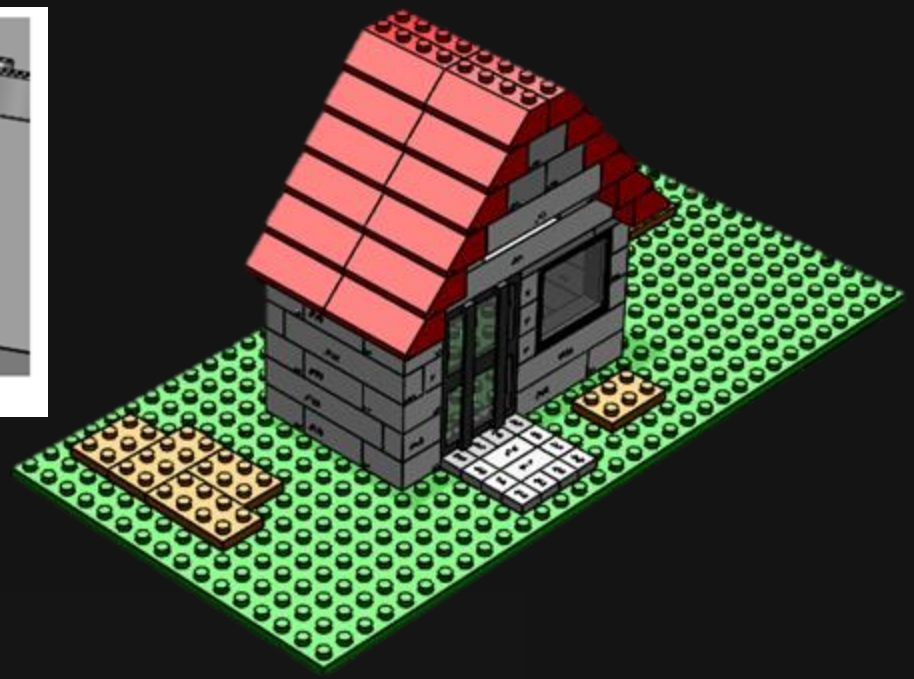
Total: $14,784

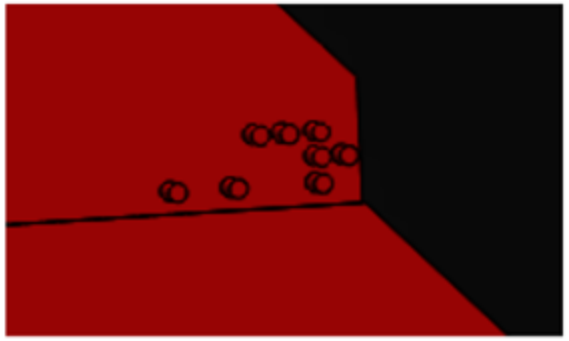




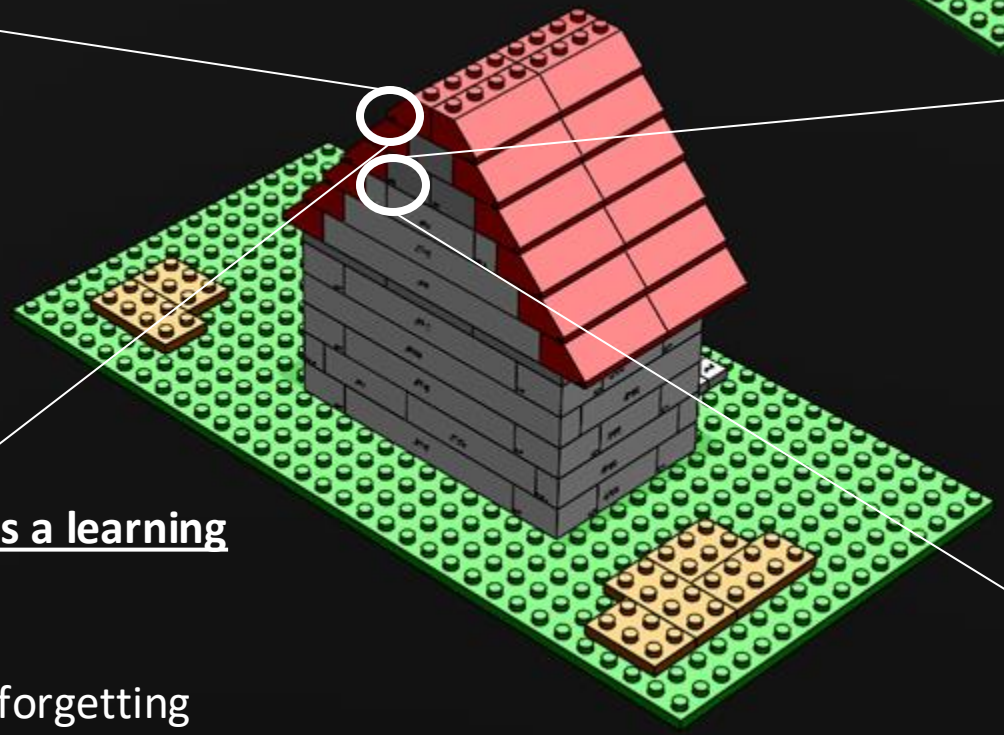


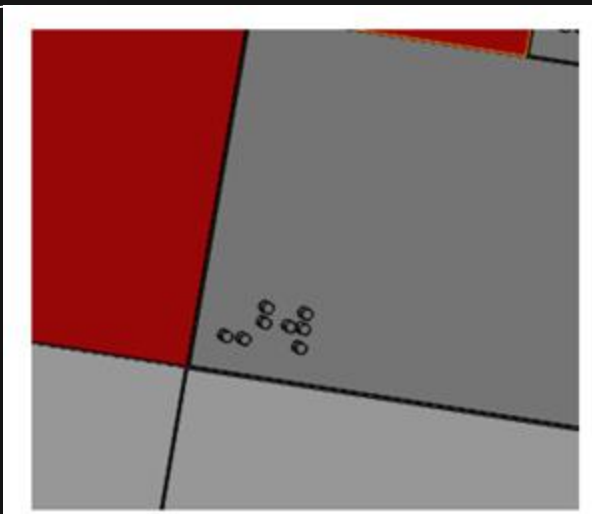
BigFront Wall (BFW)





Ceiling Right (CR)



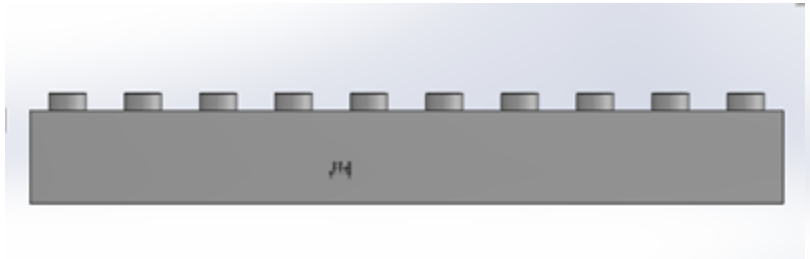


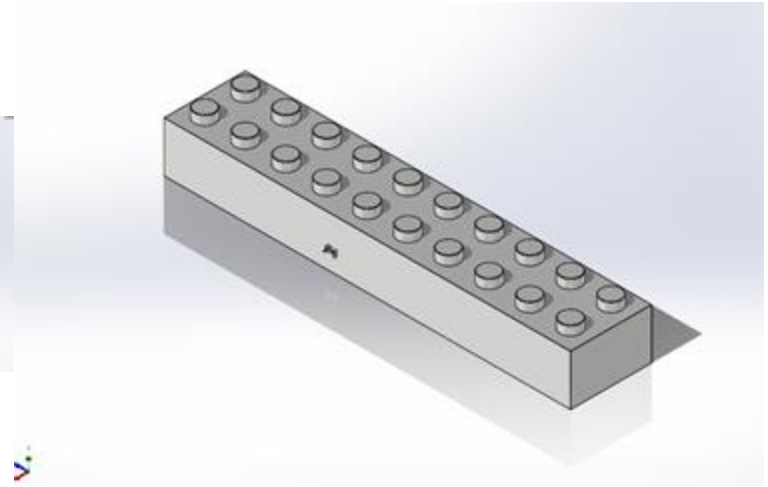
Back Wall (BW)

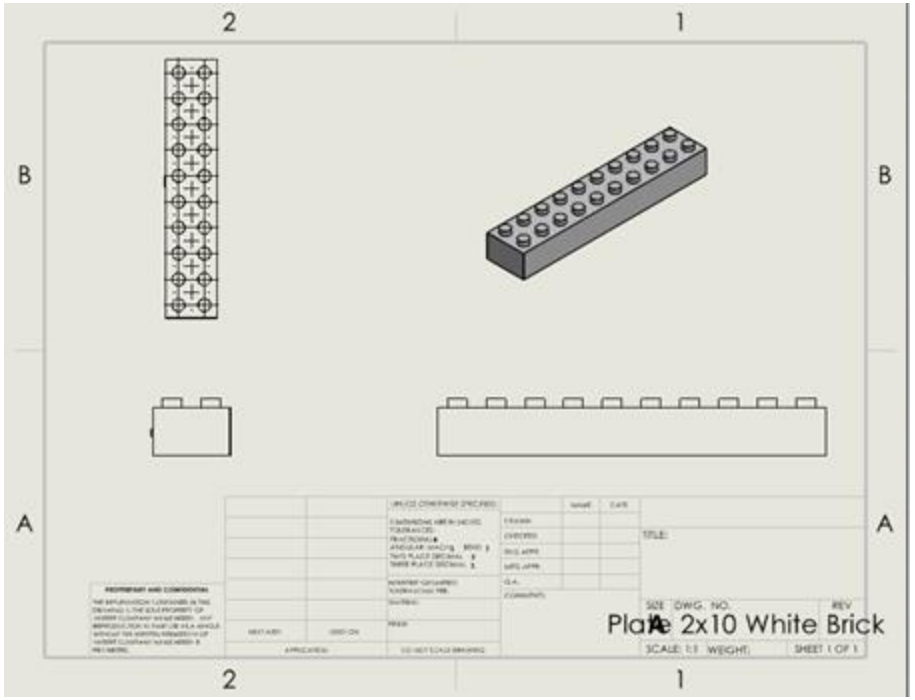
To be a **<u>global</u>** champion of using **<u>play as a learning tool</u>** and a means to develop new skills

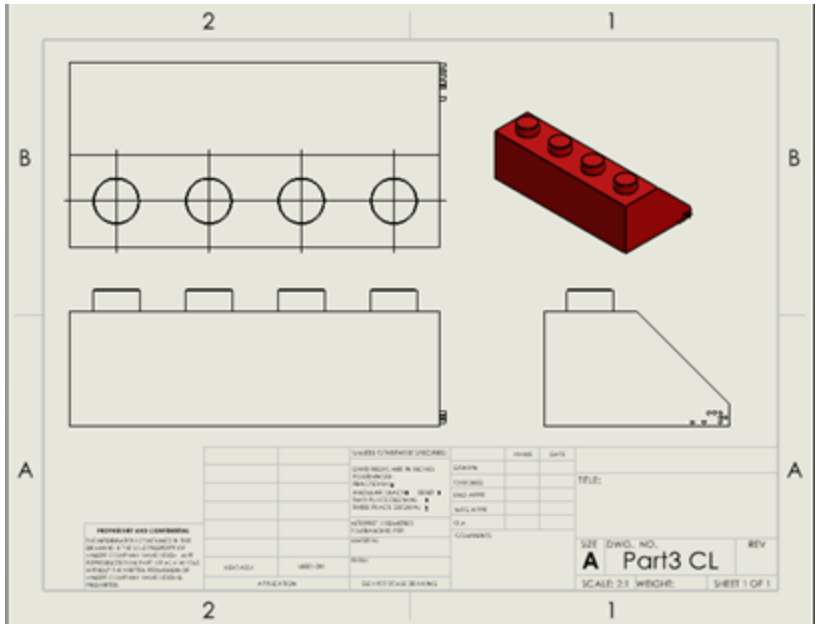
Focusing on new demographic without forgetting

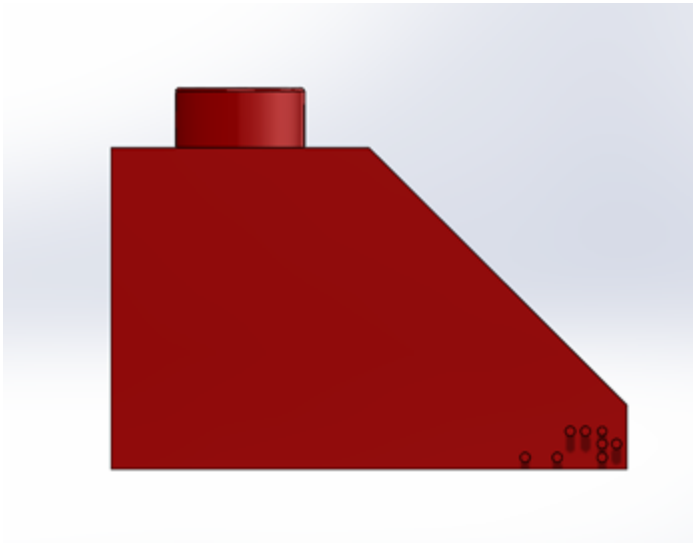
DRAWINGS – BFW AND CL

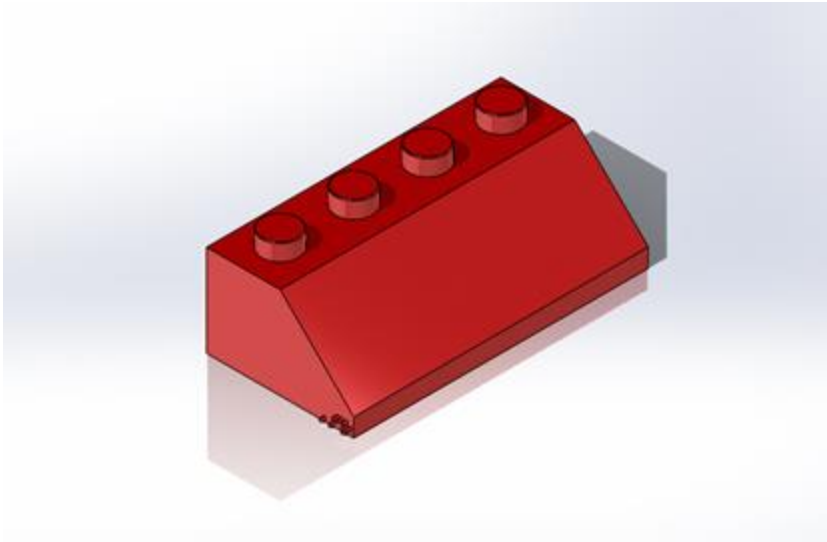












MARKET RESEARCH

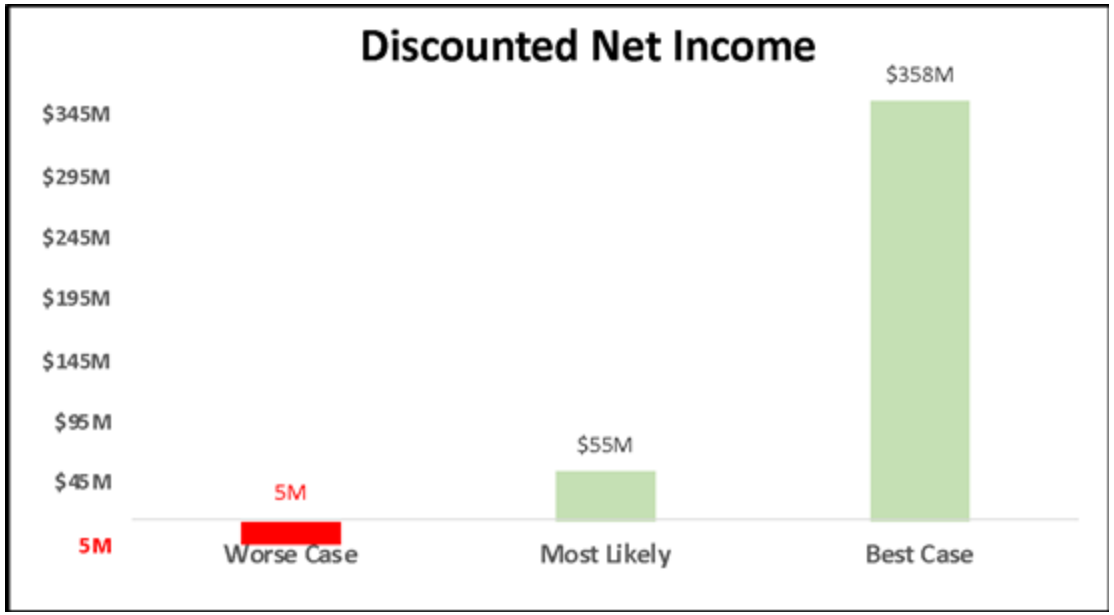
- 600,000 children with some degree of visual impairment in the US (2022) [1]
- Federal Act to Promote the Education of the Blind provides grant to organizations to obtain specialized educational materials for visually impaired students. [2]
- Simple Braille blocks exist from other companies but do not feature builds, and are priced from $26 - $47
- Market adoption for Lego's initial product release observed "overwhelming" global demand
- North America and Europe are ideal for initial geographic expansion due to well established advocacy for inclusive education and accessible learning tools.

[1] https://afb.org/research-and-initiatives/statistics

[2] https://www.aph.org/federal-quota/

MARKET PROJECTIONS

Revenue Assumptions	Worse Case	Most Likely	Best Case
Base Braille Literacy Population (TAM)	300000	600000	800000
% Growth rate in Visually Impaired	1.0%	3.2%	7.0%
Market Share	15.0%	40.0%	60.0%
Market Share Size - End	18.0%	60.0%	90.0%
Annual Increase in Market Share	0.3%	2.0%	3.0%
Passed on price increase	1.0%	2.0%	5.0%
Average Number Bought by Customers per year	0.7	1.5	2
Base Year Price	$90.00	$90.00	$90.00
Cost Assumptions			
Unit Material Cost	$25.00	$20.00	$18.00
Labour Cost	$20.00	$12.00	$7.00
Sales Cost(% of price)	13%	7%	4%
Storage Cost	$7.00	$4.00	$2.00
Material Cost Inflation Rate	15.0%	3.0%	1.5%
Labour Cost Inflation	10.0%	2.5%	1.0%
Annual Increase in Storage Cost	7.0%	2.0%	1.0%
Base Year GA Cost	$3000000	$2000000	$800,000.00
Asset Assumptions			
Depreciable/Amortizable asset	$3,000,000.00	$1,000,000.00	$500,000.00
Dereciation Type	Straight Line	Straight Line	Straight Line
Number of Years	10	10	10
Interest Cost	15%	7%	3%
Work Capital	$27,456,000	$27,456,000	$27,456,000
Total Debt Financing	$28,456,000.0	$28,456,000.0	$28,456,000.0
Annual Finance Cost	**$5,669,916.69**	**$4,051,494.22**	**$3,335,911.30**
Base Year Overhead	$3,000,000.00	$2,000,000.00	$1,000,000.00
General Inflation Rate	10.0%	3.0%	2.0%
Company Assumptions			
Corporate Tax rate	50.0%	30.0%	10.0%
Discount Rate	25.0%	25.0%	25.0%



RISK MATRIX

RISK SCORE GUIDE			
PROBABILITY / IMPACT	**UNLIKELY (1)**	**POSSIBLE (2)**	**VERY LIKELY (3)**
LOW (1)	LOW (1)	LOW (2)	LOW (3)
MEDIUM (2)	LOW (2)	MEDIUM (4)	MEDIUM (6)
HIGH (3)	MEDIUM (3)	MEDIUM (6)	HIGH (9)
CRITICAL (4)	MEDIUM (4)	HIGH (8)	HIGH (12)

RISK DESCRIPTION	PROB	IMPACT	RISK SCORE
Insufficient technical knowledge with CAD	2	3	6
Lack of access to suitable CAD software	2	3	6
Lack of knowledge of international accessibility standards	1	4	4
Difficulty in scheduling working time with team members	3	2	6
Project progress behind schedule with deadline approaching	2	3	6
LEGO dislikes product design	1	4	4
LEGO design reduces playability	1	3	3
Target audience too niche	2	3	6

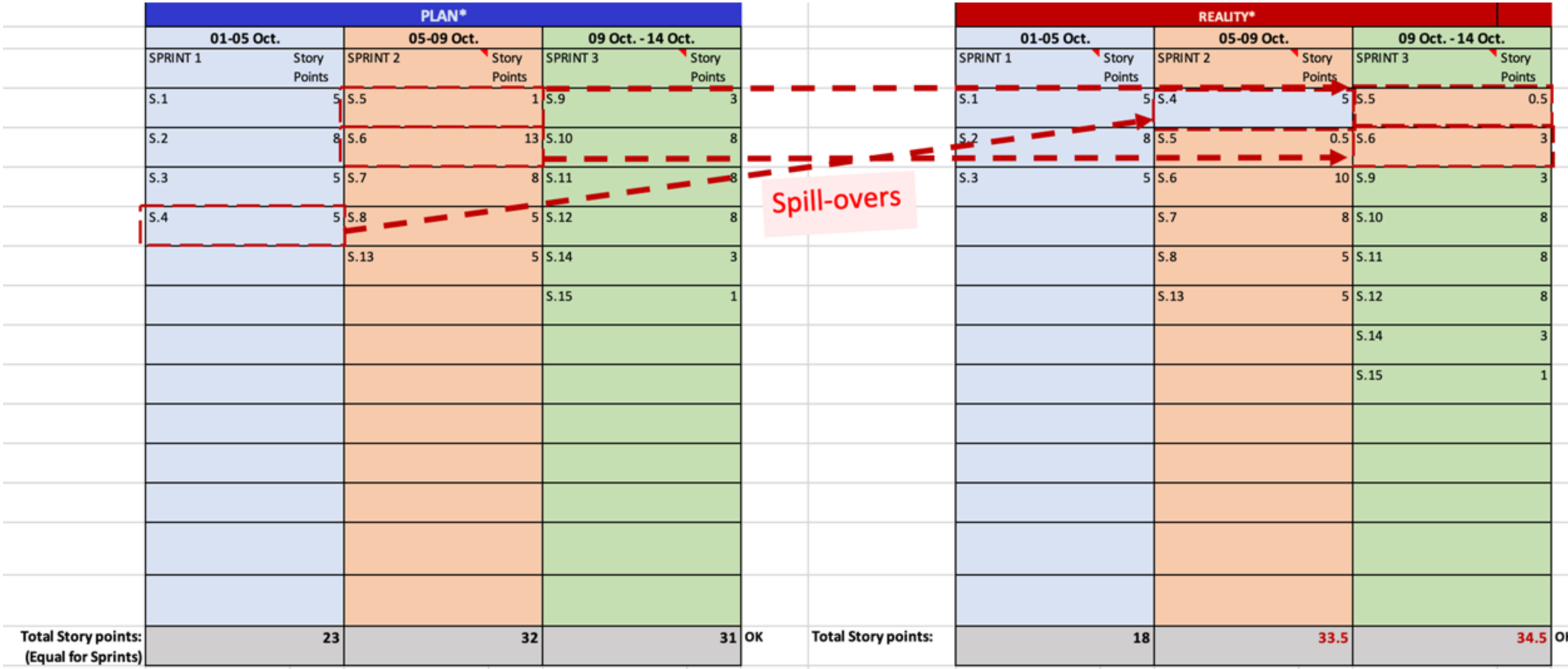
TOTAL RISKS BY CATEGORIES	
LOW Unlikely to cause major setback but action can still be taken.	**0**
MEDIUM Review control measures and reduce the risk.	**8**
HIGH Special control measures must be in place.	**0**

USE OF AGILE

Storyboard using the Fibonacci sequence for agile estimation:

Product Backlog*	Task #	Description	Priorities	Story points (LOE)
(ALL TO BE DONE)	(Story #)	(TO DO LIST)	(NOT LOGIC)	(Estimation Poker)**
Facilitation Tool	S.1	Ensure requirements complete via YX matrix or other method	1	5
Create WBS	S.2	Brainsorming to crate a "reasonable" WBS, keep in mind the "tests"	1	8
Logic	S.3	Brainsorming to crate "hard" and "Soft" logics, keep in mind the "tests"	2	5
Durations	S.4	Estimate of each task DUR by the responsible party (fixed-Dur est.)	2	5
Budget	S.5	Assign LOE's & salaries to tasks. Resource allocation	3	1
RMP	S.6	Follow the Risk Management process and create a PMP (includes self-study)	4	13
1st Draft of MSP	S.7	The planner prepares the 1st draft of the MSP file	4	8
1st Review Meeting	S.8	Review of the 1st draft of MSP with the "consultant"	5	5
Finalize the plan (before leveling)	S.9	Modify the plan, perform all "tests", and get ready for leveling	5	3
Prepare the baseline (After leveling)	S.10	Brainstorm and negotiate to level the LOE's, reconcile budget with charter	6	8
S-Curve	S.11	Create S-Curve after leveling.	6	8
Pre-presentation meeting	S.12	Review of the PMP with the "consultant" for final feedback	6	8
Prepare presentation slides (Draft)	S.13	Start preparing the slides	4	5
Prepare presentation slides (Final)	S.14	Continue and finalize the slides	6	3
Acquiring Resources	S.15	Selecting and acquiring CAD Software needed	6	1
		Total Story Points =		**86**

USE OF AGILE


PLAN*
01-05 Oct.
05-09 Oct.
09 Oct. - 14 Oct.
SPRINT 1
Story Points
SPRINT 2
Story Points
SPRINT 3
Story Points
S.1 5
S.2 8
S.3 5
S.4 5
S.5 1
S.6 13
S.7 8
S.8 5
S.13 5
S.9 3
S.10 8
S.11 8
S.12 8
S.14 3
S.15 1
Total Story points: (Equal for Sprints)
23
32
31
OK
Spill-overs
REALITY*
01-05 Oct.
05-09 Oct.
09 Oct. - 14 Oct.
SPRINT 1
Story Points
SPRINT 2
Story Points
SPRINT 3
Story Points
S.1 5
S.2 8
S.3 5
S.4 5
S.5 0.5
S.6 10
S.7 8
S.8 5
S.13 5
S.5 0.5
S.6 3
S.9 3
S.10 8
S.11 8
S.12 8
S.14 3
S.15 1
Total Story points:
18
33.5
34.5
OK

USE OF AGILE

Kanban boards:

USE OF AGILE

Story Completion Rate:

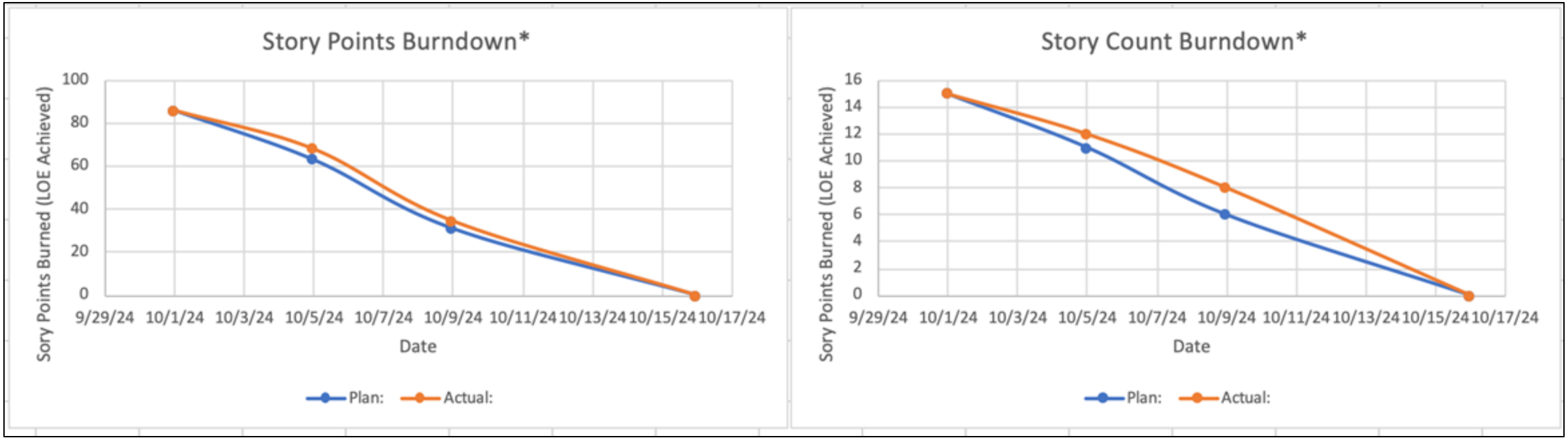
Mean: 2.467 days/story
Median: 2 days/story
Mode: 1 day/story

Story points Spill-over			
From / To	Sprint #1	Sprint #2	Sprint #3
Sprint #1	N/A	5	0
Sprint #2	N/A	N/A	6.5
Sprint #3	N/A	N/A	N/A

Story counts Spill-over			
From / To	Sprint #1	Sprint #2	Sprint #3
Sprint #1	N/A	1	0
Sprint #2	N/A	N/A	2
Sprint #3	N/A	N/A	N/A

Story Points Burndown*				
	10/1/24	10/5/24	10/9/24	10/16/24
Plan:	86	63	31	0
Actual:	86	68	34.5	0

Story Count Burndown*				
	10/1/24	10/8/24	10/15/24	10/22/24
Plan:	15	11	6	0
Actual:	15	12	8	0



*Using simplified burndown chart

AGILE LESSONS LEARNED

Product Backlog* (ALL TO BE DONE)	Task # (Story #)	Description (TO DO LIST)	Priorities (NOT LOGIC)	Story points (LOE) (Estimation Poker)**
Facilitation Tool	S.1	Ensure requirements complete via YX matrix or other method	1	5
Create WBS	S.2	Brainsorming to crate a "reasonable" WBS, keep in mind the "tests"	1	8
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Durations	S.4	Estimate of each task DUR by the responsible party (fixed-Dur est.)	2	5
Budget	S.5	Assign LOE's & salaries to tasks. Resource allocation	3	1
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Prepare presentation slides (Final)	S.14	Continue and finalize the slides	6	3
Acquiring Resources	S.15	Selecting and acquiring CAD Software needed	6	1

Decrease to 5

Decrease to 1

Increase to 8

Decrease to 3

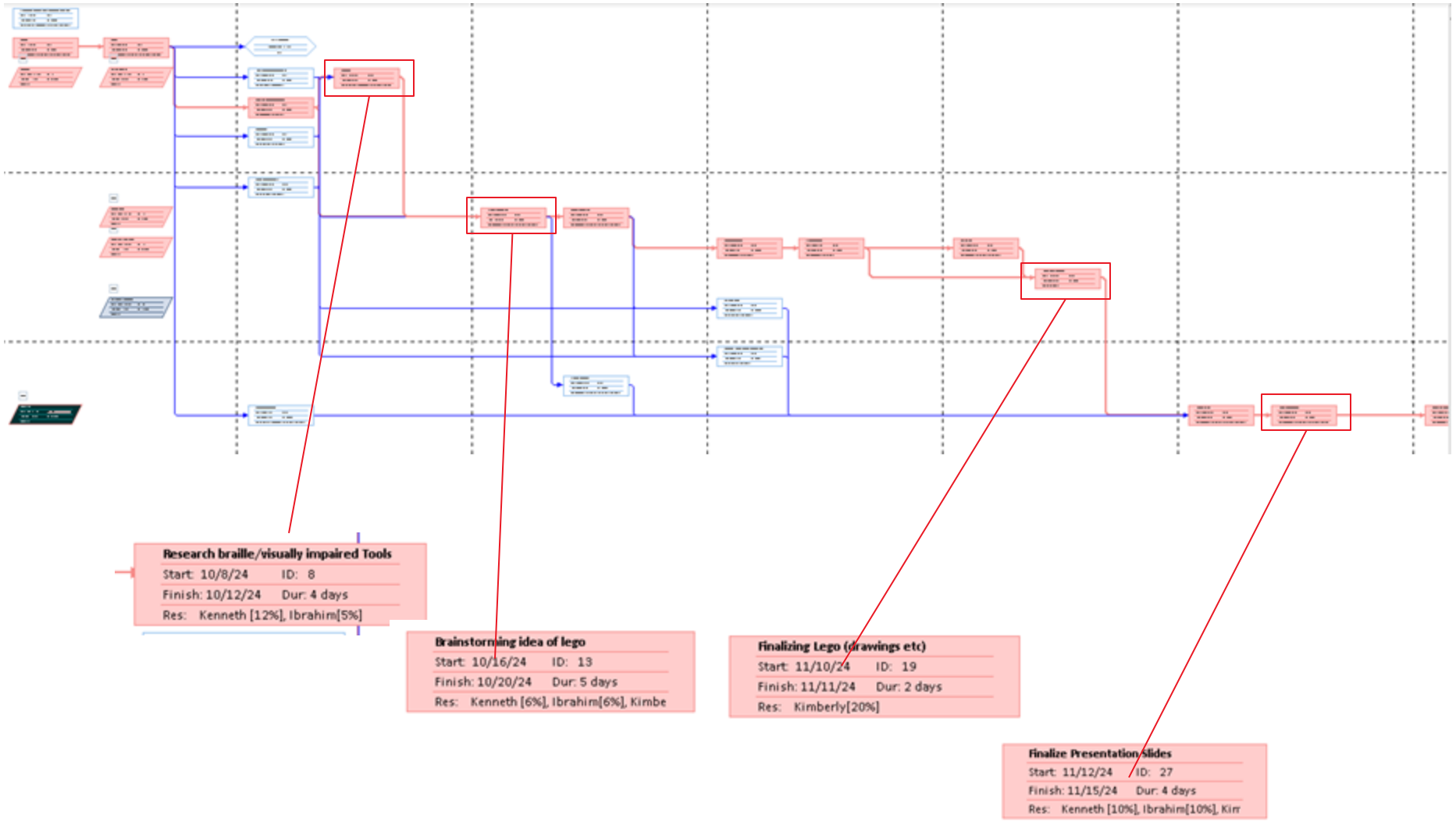
Decrease to 1

REALITY*

01-05 Oct.		05-09 Oct.		09 Oct. - 14 Oct.	
SPRINT 1	Story Points	SPRINT 2	Story Points	SPRINT 3	Story Points
S.1	5	S.4	5	S.5	0.5
S.2	8	S.5	0.5	S.6	3
S.3	5	S.6	10	S.9	8
		S.7	5	S.10	3
		S.8	1	S.11	8
		S.13	5	S.12	1
				S.14	3
				S.15	1
	18		26.5 ~~33.5~~		27.5 ~~34.5~~

Execution

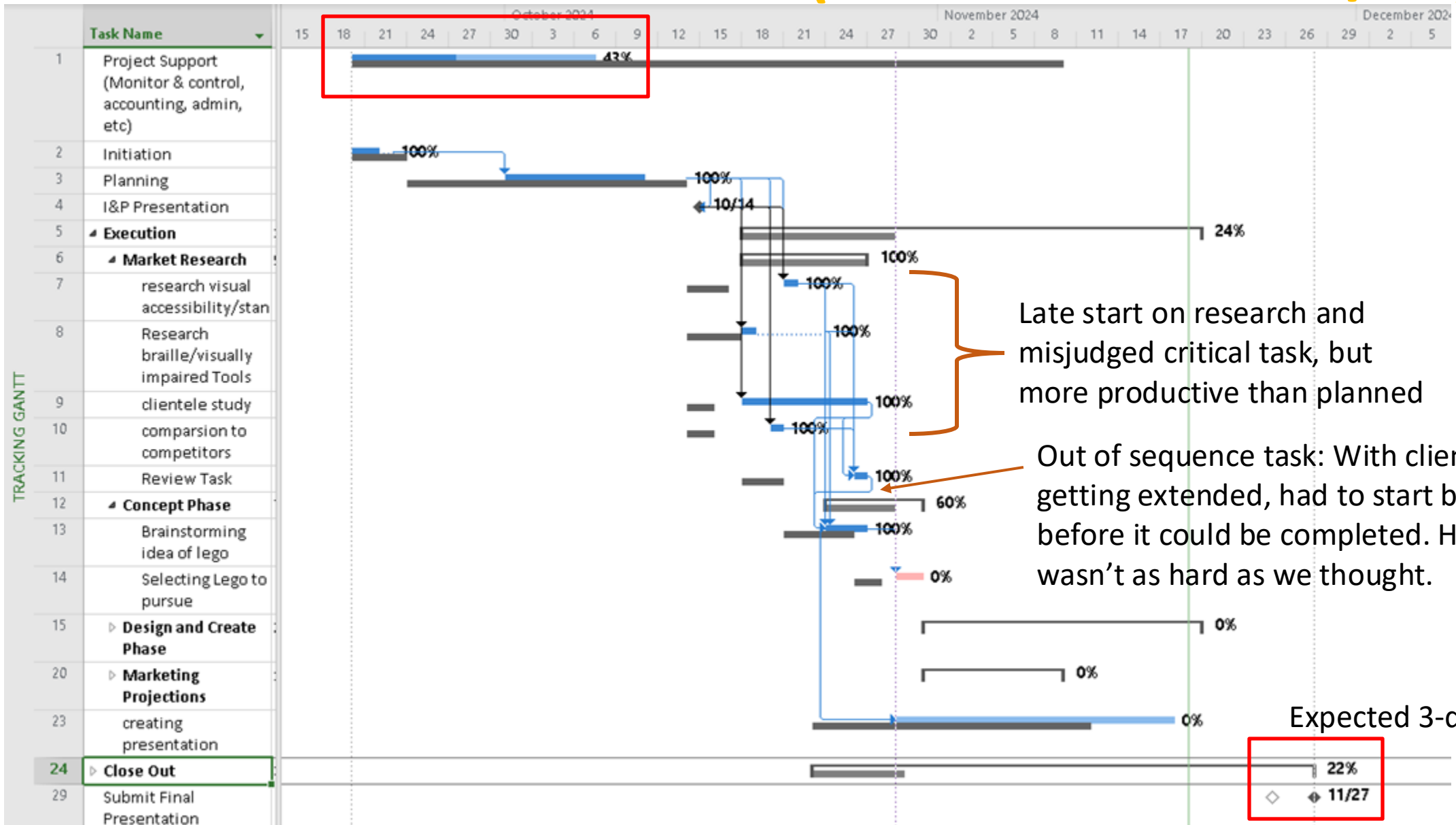
BASELINE PROJECT SCHEDULE: Critical Path Network



Critical Tasks:

- Initiation
- Planning
- Research Braille / Visually Impaired tools
- Review/discuss Research
- Brainstorming Ideas
- Selecting Lego Idea
- Designing Lego (Sketch)
- Creating Lego (CAD) / Iterate on Lego
- Finalizing Lego (Drawings)
- Creating / Finalizing / Submitting Presentation

UPDATED GANTT CHART (STATUS DATE: 10/28)



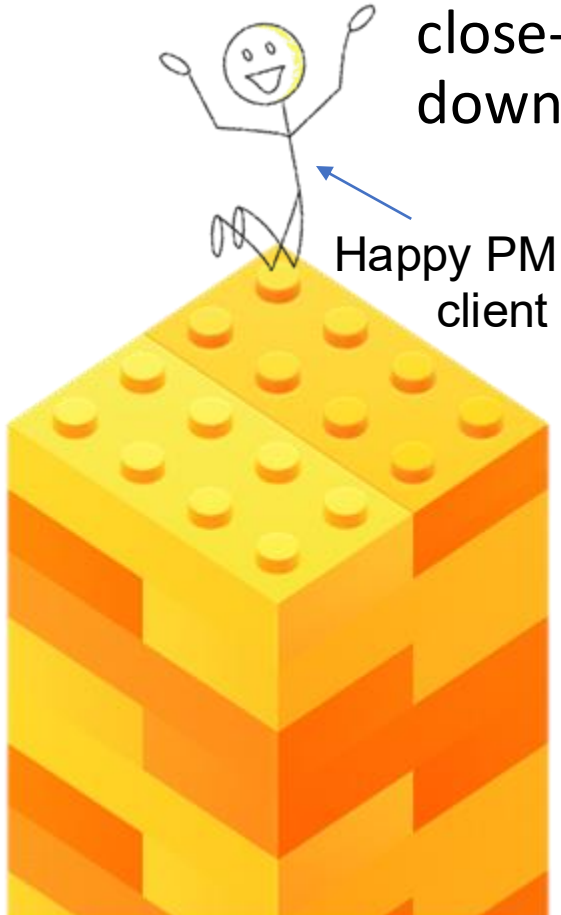
Late start on research and misjudged critical task, but more productive than planned

Out of sequence task: With clientele study getting extended, had to start brainstorming before it could be completed. Hard logic wasn't as hard as we thought.

Expected 3-day delay

RECOVERY PLAN

- Find the genius of the "ands”: Bring in schedule without adding resources ($$) or decreasing scope (paradoxical solution)
  - Do this via resource allocation (redistribute time allocated for tasks during close-out, as resources are under-allocated given that project is ramping down)



Before recovery plan is implemented:

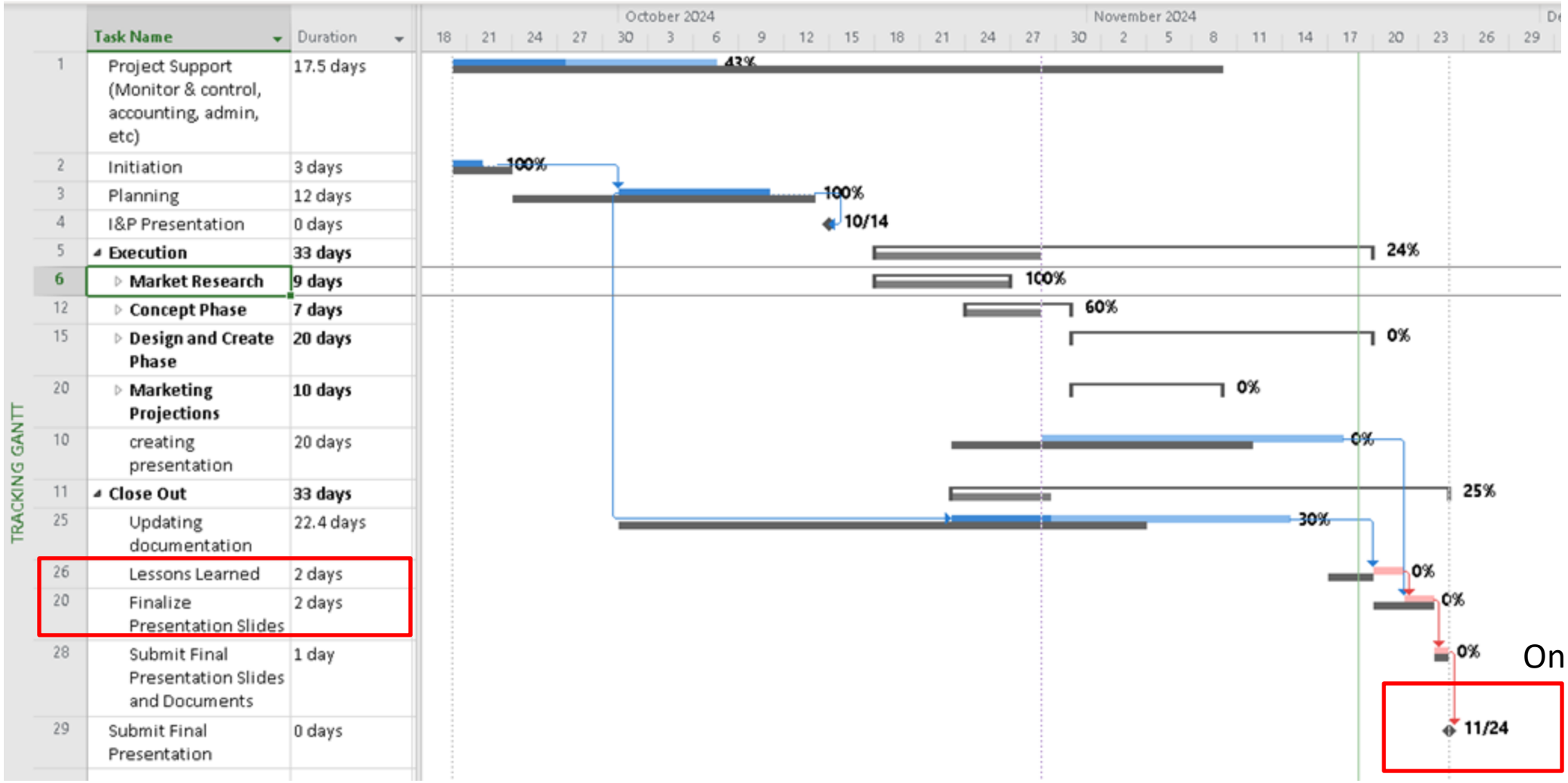
	Task Name	Duration	Start	Finish	Work	Cost
24	**Close Out**	**36 days**	**Wed 10/23/2**	**Wed 11/27/2**	**40.14 hrs**	**$2,416.83**
25	Updating documentation	22.4 days	Wed 10/23/24	Thu 11/14/24	21.5 hrs	$1,112.03
26	Lessons Learned	3 days	Wed 11/20/24	Fri 11/22/24	5.76 hrs	$403.20
27	Finalize Presentation Slides	4 days	Sat 11/23/24	Tue 11/26/24	12.8 hrs	$896.00
28	Submit Final Presentation Slides and Documents	1 day	Wed 11/27/24	Wed 11/27/24	0.08 hrs	$5.60
29	Submit Final Presentat	0 days	Wed 11/27/2	Wed 11/27/2	0 hrs	$0.00

After recovery plan is implemented:

	Task Name	Duration	Start	Finish	Work	Cost
24	**Close Out**	**33 days**	**Wed 10/23/2**	**Sun 11/24/24**	**40.14 hrs**	**$2,416.83**
25	Updating documentation	22.4 days	Wed 10/23/24	Thu 11/14/24	21.5 hrs	$1,112.03
26	Lessons Learned	2 days	Wed 11/20/2	Thu 11/21/24	5.76 hrs	$403.20
27	Finalize Presentation Slides	2 days	Fri 11/22/24	Sat 11/23/24	12.8 hrs	$896.00
28	Submit Final Presentation Slides and Documents	1 day	Sun 11/24/24	Sun 11/24/24	0.08 hrs	$5.60
29	Submit Final Presentation	0 days	Sun 11/24/24	Sun 11/24/24	0 hrs	$0.00

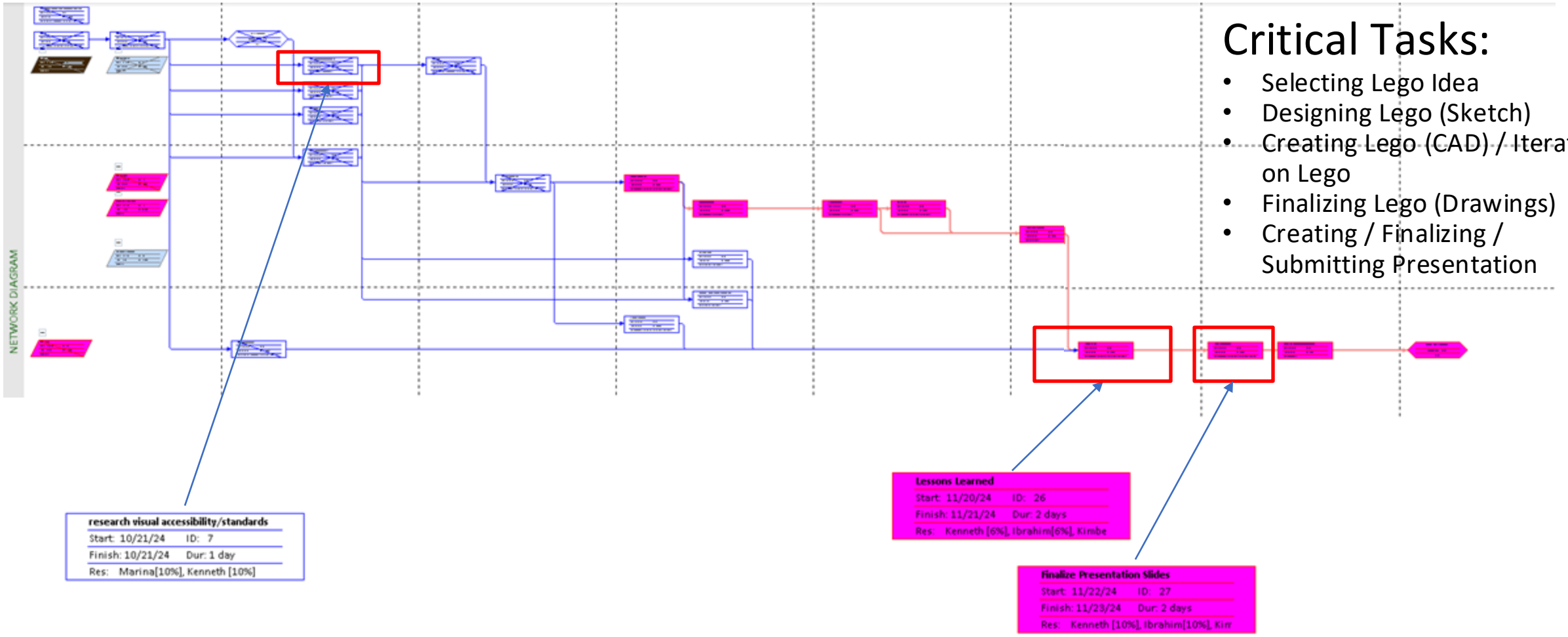
RECOVERED GANTT CHART

- No changes to expected critical path
- No added costs due to recovery plan
- Brings back project back on schedule



On schedule!

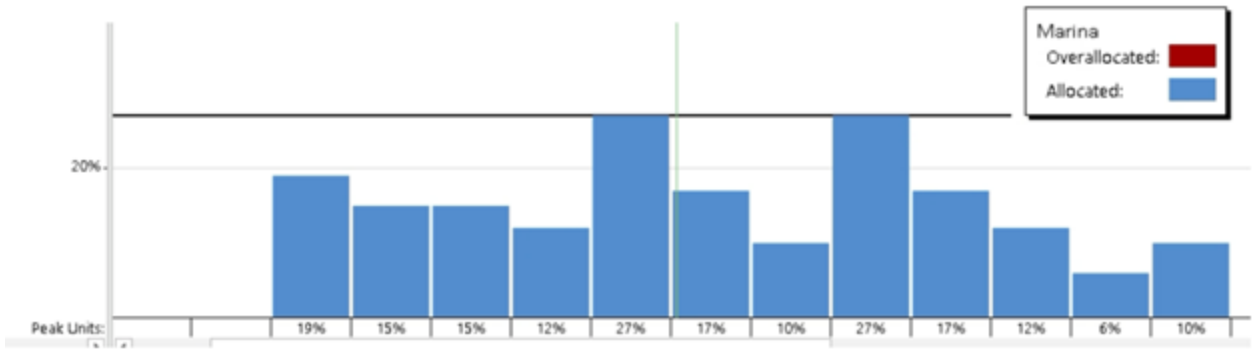
CRITICAL PATH NETWORK POST-RECOVERY PLAN (NO CHANGE)

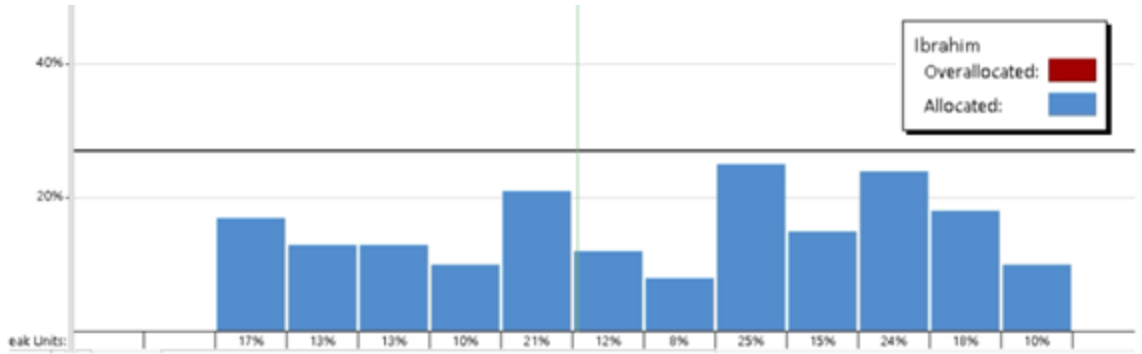


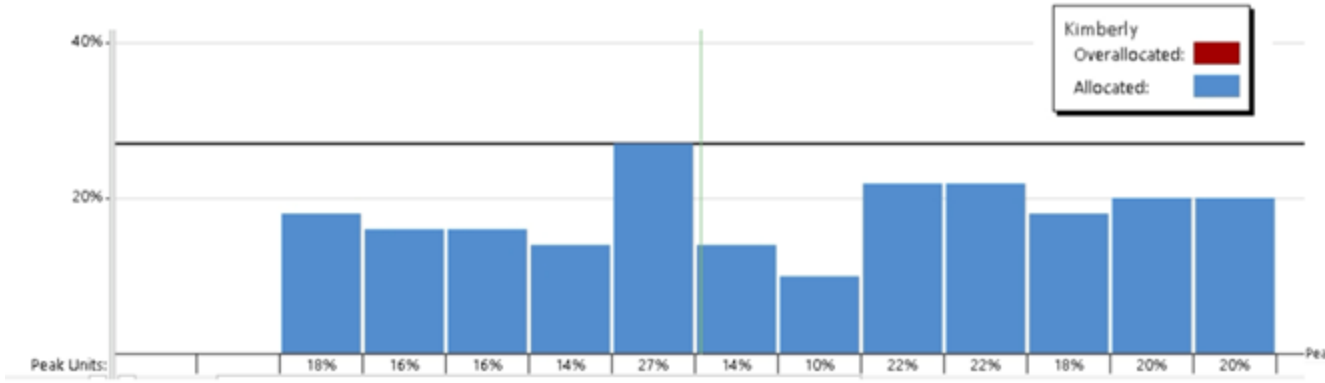
Critical Tasks:

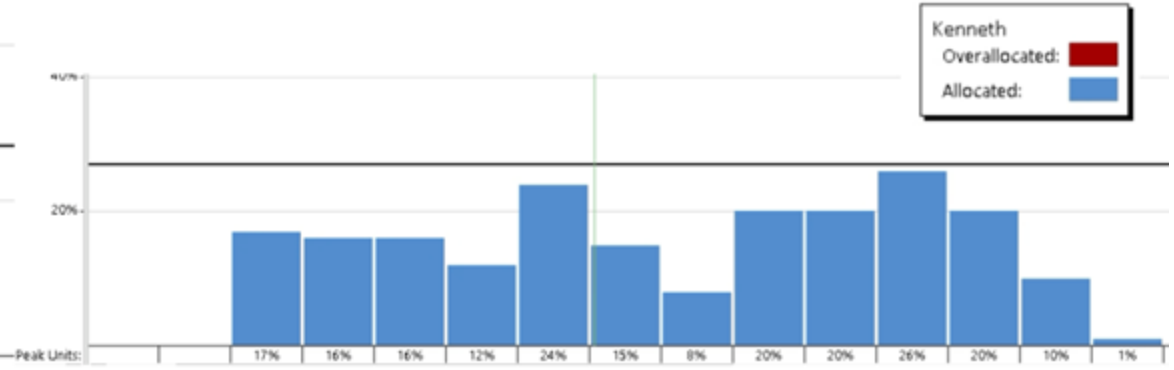
- Selecting Lego Idea
- Designing Lego (Sketch)
- Creating Lego (CAD) / Iterate on Lego
- Finalizing Lego (Drawings)
- Creating / Finalizing / Submitting Presentation

PLANNED RESOURCES (BASELINE, AFTER LEVELING)



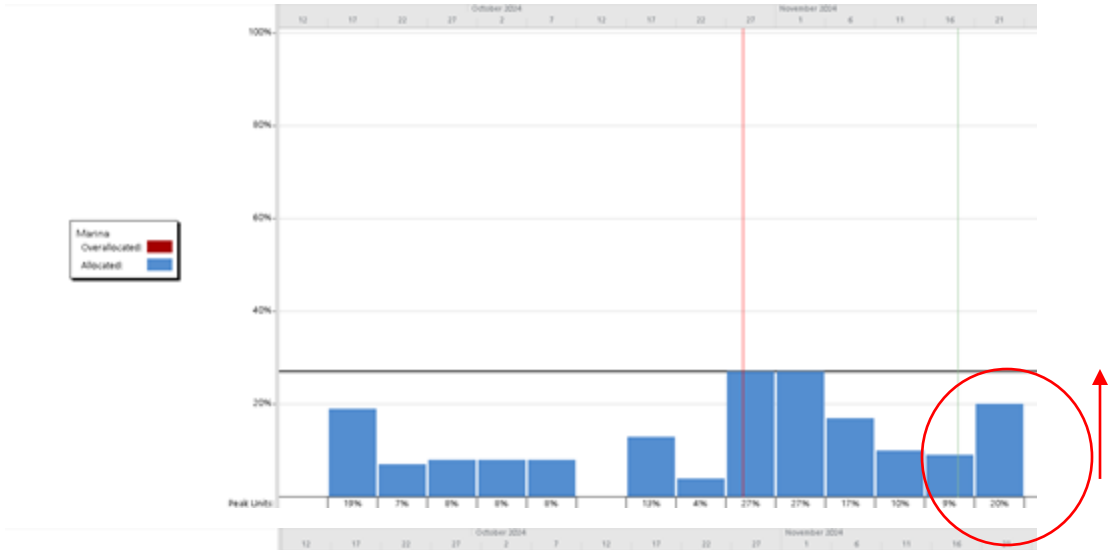


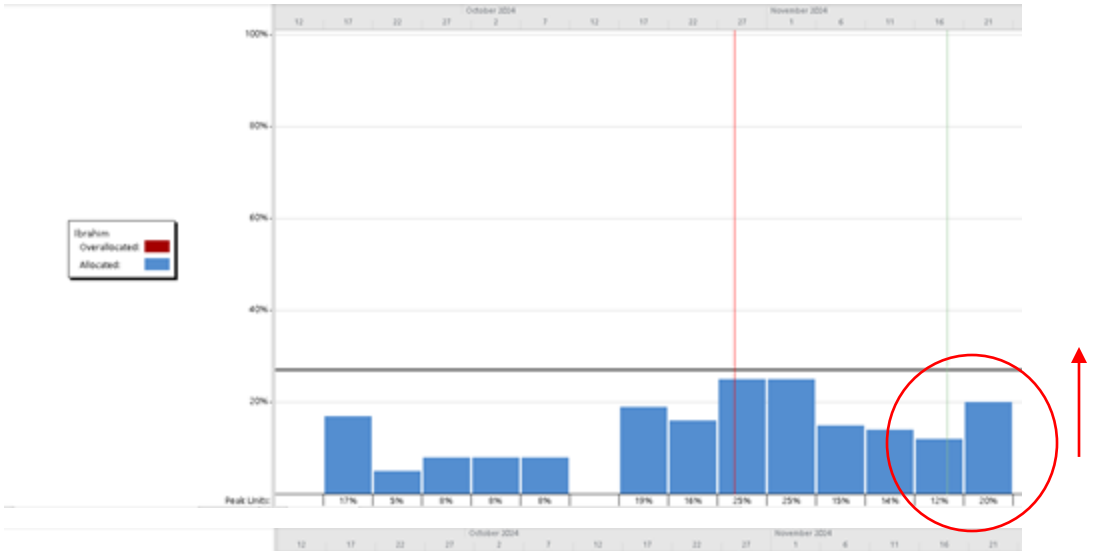


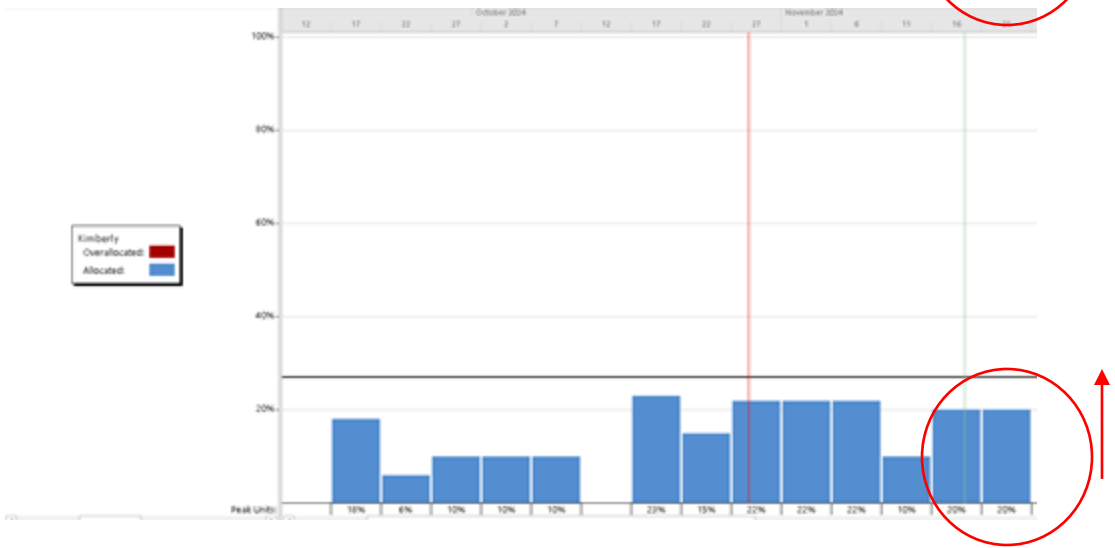


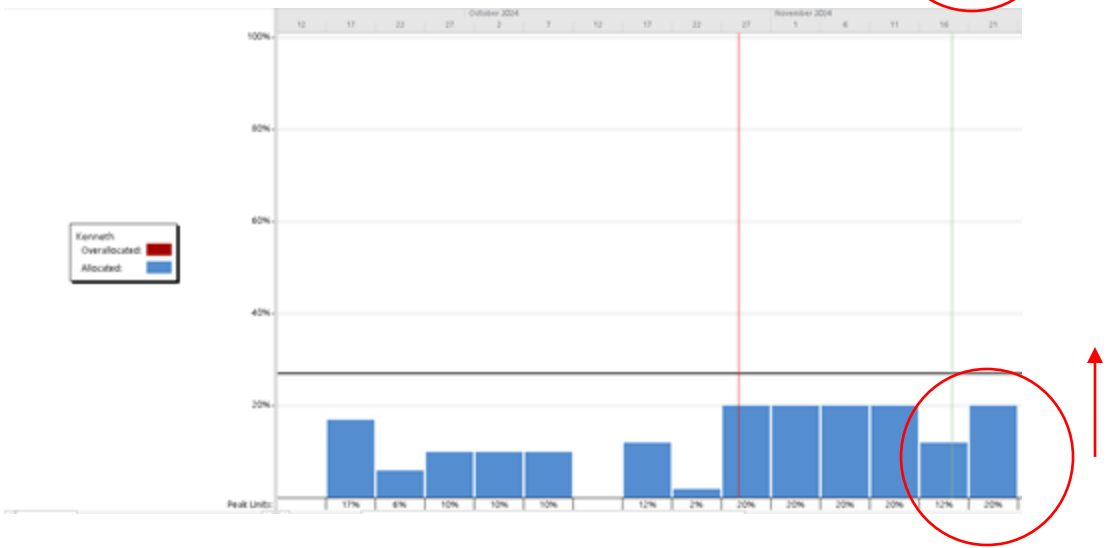
PLANNED RESOURCES (AFTER RECOVERY PLAN)

- Due to recovery plan, compression results in higher levels of activity near the end than what was baselined
- Despite that, resources stay within allocation so no leveling was required

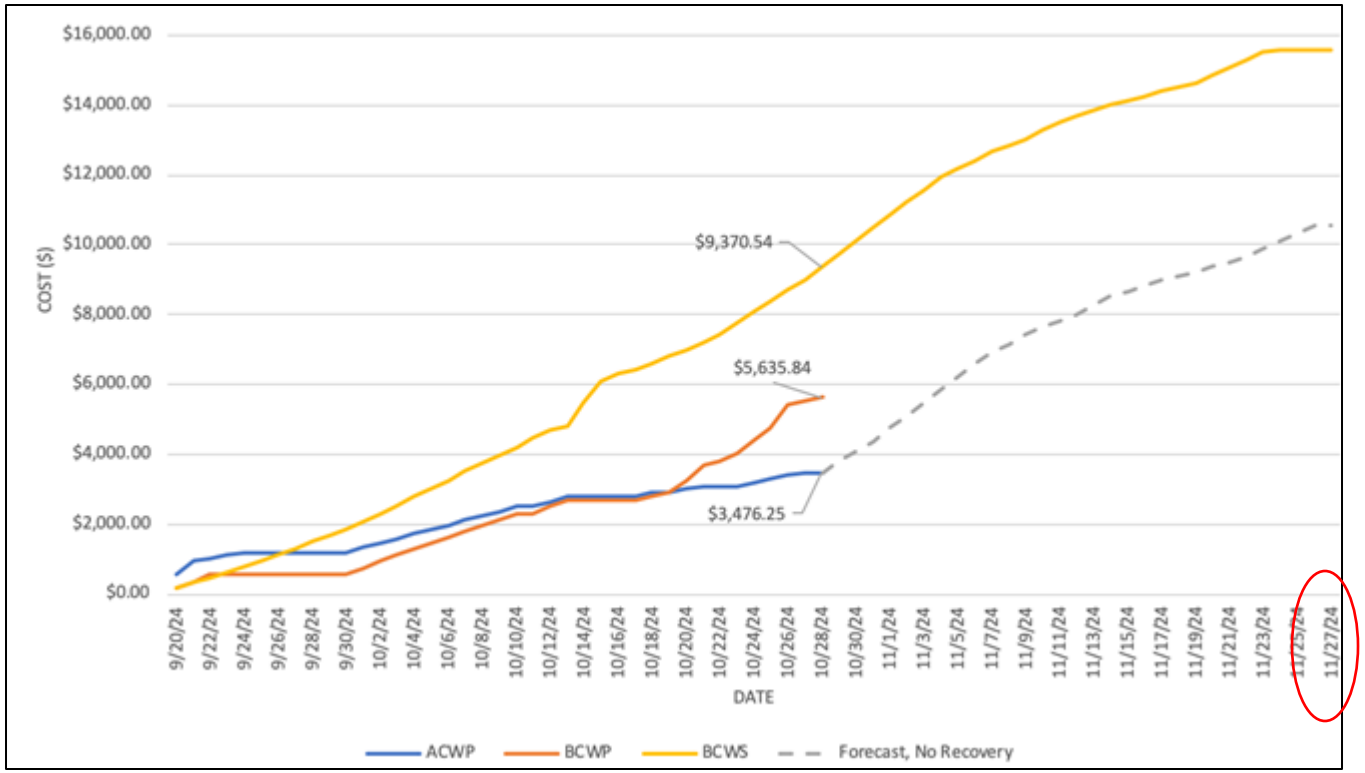




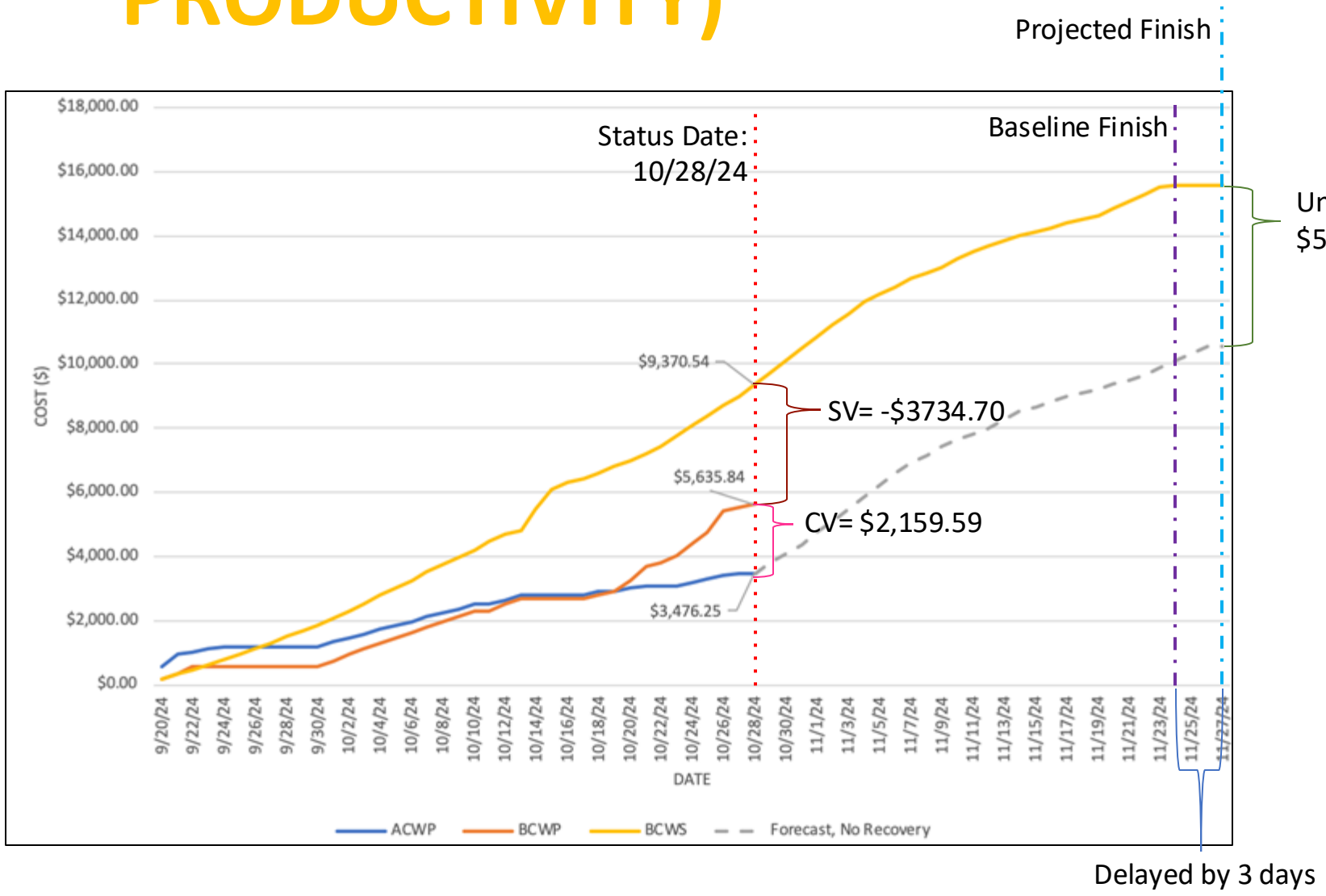




S-CURVE (NO RECOVERY PLAN, PLANNED PRODUCTIVITY) WITH SCHEDULE



S-CURVE (NO RECOVERY PLAN, PLANNED PRODUCTIVITY)

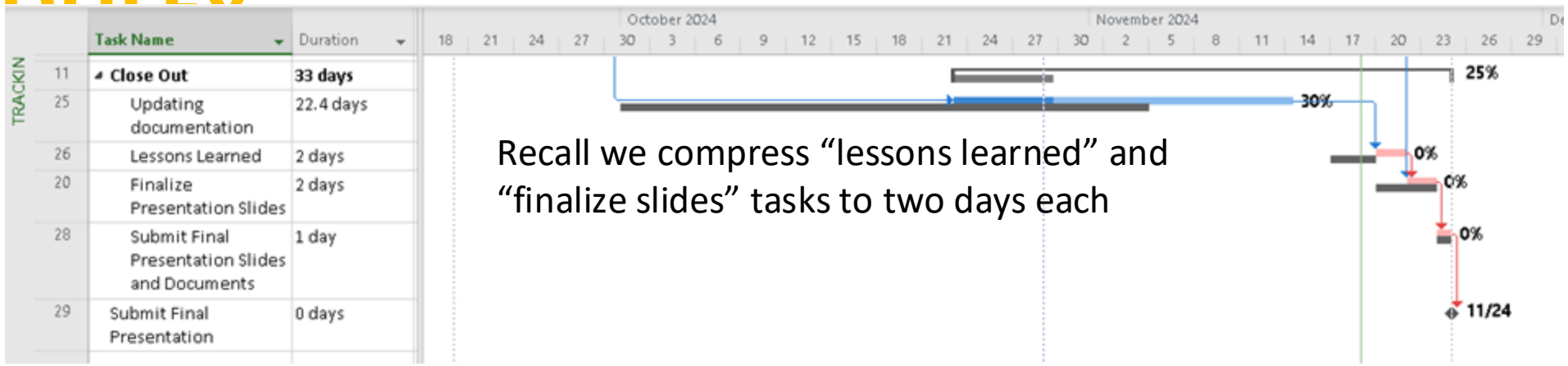


Under budget by $15552.9 – $10547.93 = $5004.97

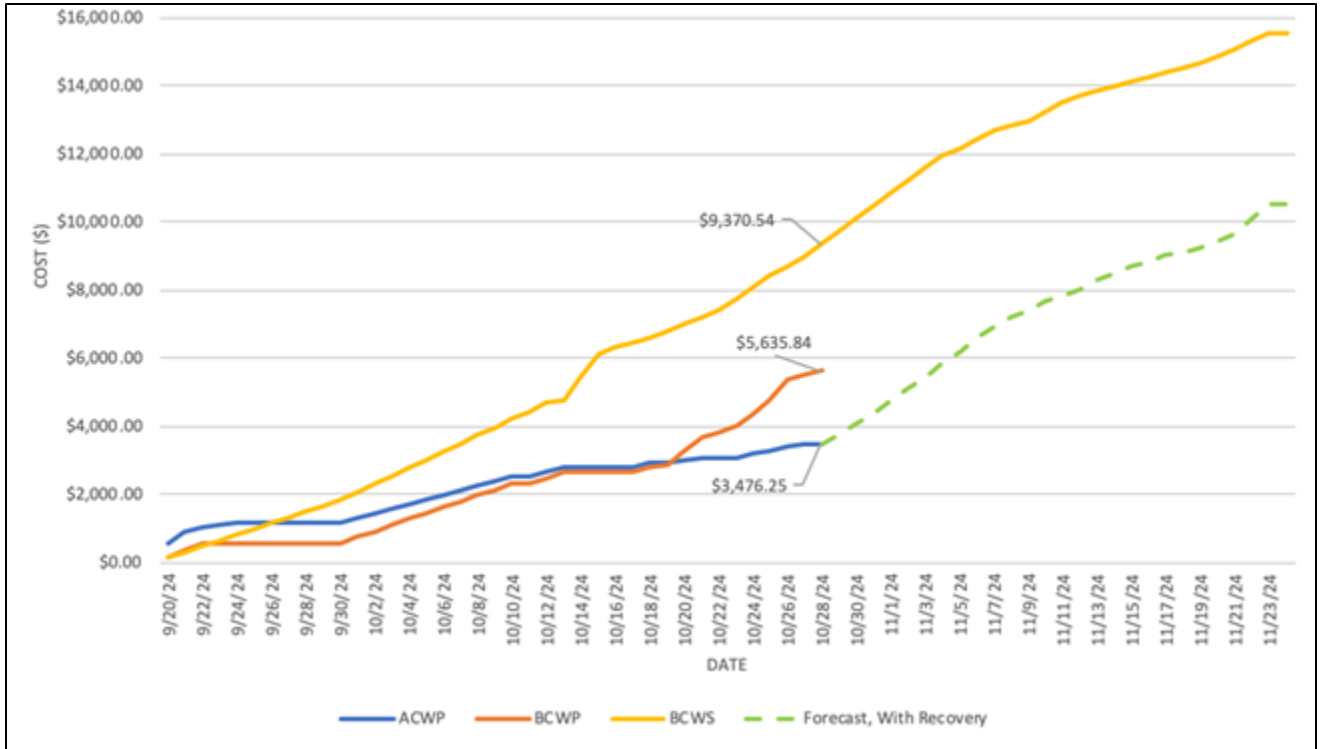
Delayed by 3 days

- CPI = EV/AC
  = 5635.84/3476.25
  = 1.62
- SPI = EV/PV
  = 5635.84/9370.54
  = 0.60
- SCI (CR) = CPI*SPI
  = 0.972

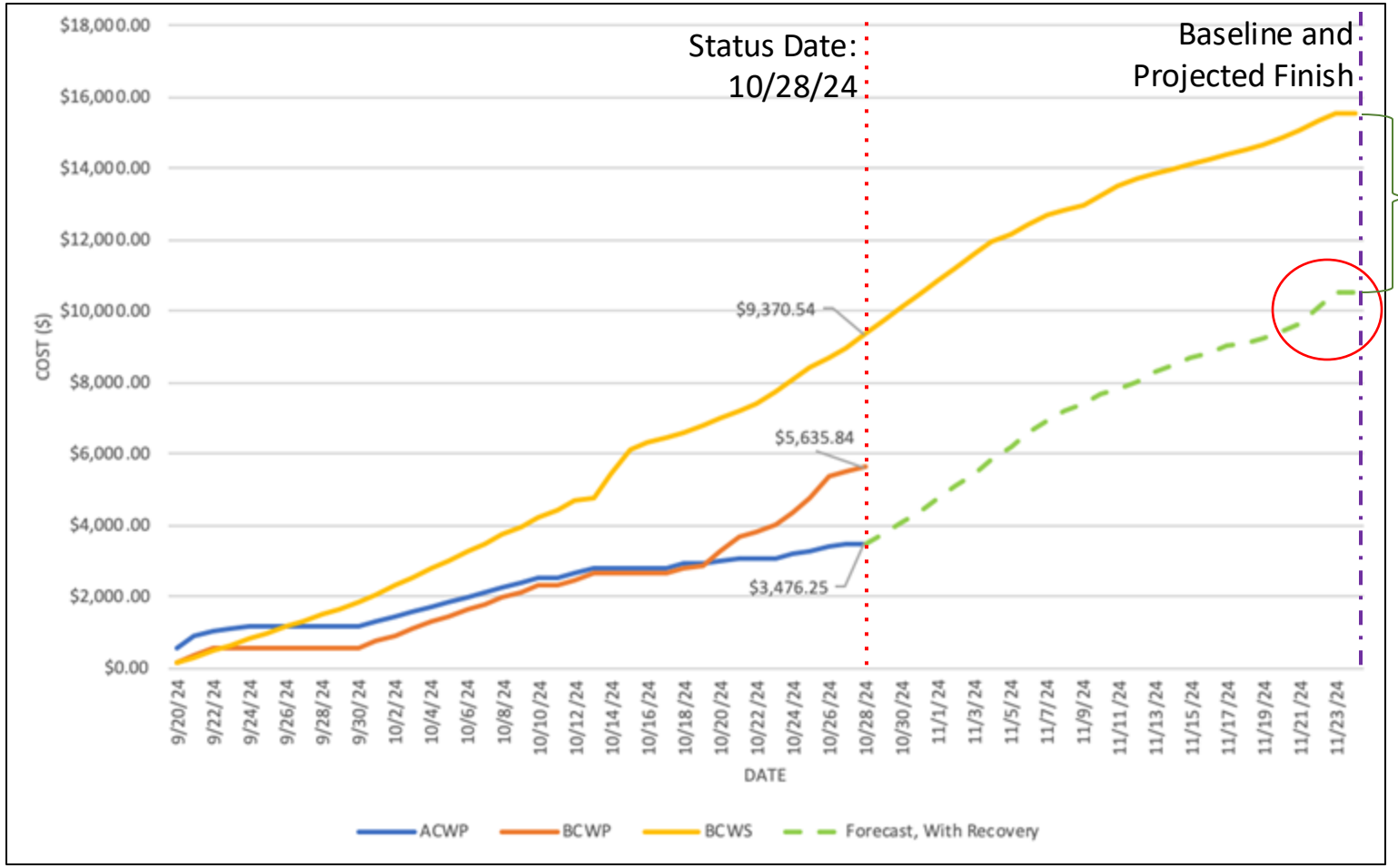
S-CURVE (WITH RECOVERY PLAN) WITH SCHEDULE



Recall we compress “lessons learned” and “finalize slides” tasks to two days each



S-CURVE (WITH RECOVERY PLAN)



Still under budget by
$15552.9 – $10547.93
= $5004.97

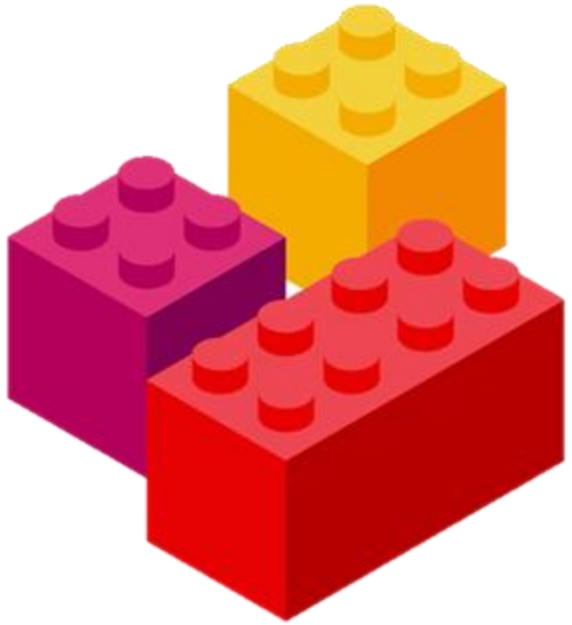
Feasible due to under allocation of resources typically seen during closeout

UPDATED RISK REGISTER

Sr No	Risk Description	Likelihood	Impact	Risk Score	Severity	Owner	Mitigating Action	Contingency Plan	Progress on Action	Status	Resource
1	Insufficient technical knowledge with CAD	2	3	6	Medium	Project Manager	Use software team is already familiar with and find online trai	Escalate to project sponsor for resources.	Members with sufficient CAD experience identified. Have membe	Closed	CAD Training Materials, Viterbi Virtual Desktop
2	Lack of access to suitable CAD software	2	3	6	Medium	Project Manager	Try accessing CAD software through Viterbi virtual desktop ea	Reach out to USC Viterbi for potential substitutes, or IT office	Licenses sourced and distributed to all required team members.	Closed	Software License
3	Lack of knowledge of international accessibility standards	1	4	4	Low	Product Owner	Conduct research for guidelines.	Review deliverables for compliance.	Accessibility guidelines reviewed; adjustments in progress.	Closed	Accessibility Guidelines
4	Difficulty in scheduling working time with team members	3	2	6	Medium	Project Manager	Improve communication channels and set clear schedules.	Escalate to sponsor if scheduling conflicts persist.	Team scheduling conflicts identified and partially resolved.	Closed	Communication Tools
5	Project progress behind schedule with deadline approaching	2	3	6	Medium	Project Manager	Reallocate resources to critical tasks.	Develop a recovery plan to meet the deadline.	Critical tasks prioritized and team is on recovery track.	Closed	Updated Project Schedule
6	LEGO dislikes product design	1	4	4	Low	Product Owner	Gather feedback early and iterate on designs.	Engage LEGO representatives for approval before finalization.	Feedback sessions scheduled with LEGO representatives.	Closed	Feedback Log
7	LEGO design reduces playability	1	3	3	Low	Product Owner	Test playability with target users and adapt accordingly.	Iterate designs to ensure better user experience.	Initial playability tests conducted; further refinement ongoing.	Closed	User Testing Reports
8	Target audience too niche	2	3	6	Medium	Marketing Lead	Expand market research to identify broader audiences.	Adjust marketing strategies to attract diverse clients.	Market research conducted and marketing strategy updated.	Closed	Market Research Report
9	Issues with corrupted CAD files	2	3	6	Medium	Project Manager	Ensure regular backups and use file recovery tools.	Rely on backups in every format taken	Used the screenshot taken of CAD files	Closed	Backup System

Close-Out

CHALLENGES AND OPPORTUNITIES



Challenges

- Software issues
- Communication platform (Whatsapp)
  - Something like Discord/Slack would have let us create threads and channels to more easily see and navigate different discussion topics
- Scheduling meeting times – half of the team is DEN, so need to consider working and class schedules
- Delays early on meant needing to do some catch up work

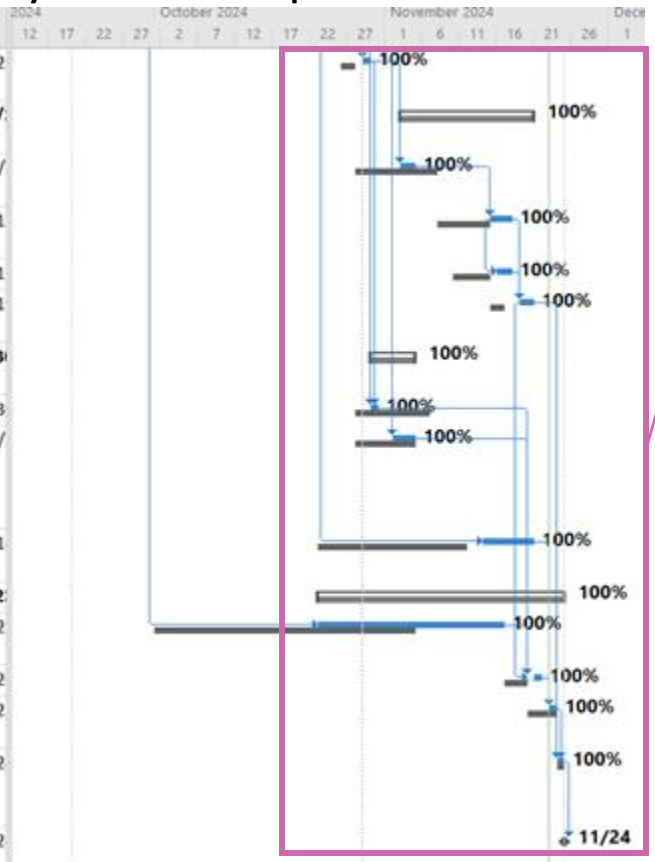
Opportunities (Lessons Learned)

- Better file management: Have backup locations (local saves instead of only relying on cloud)
- Better scheduling mechanism, such as Google Calendar
- Better way of logging hours
  - Used spreadsheet where person, hours, and task performed was recorded, but task name varied depending on person. Could benefit from standardization
  - But color coding of our spreadsheet worked really well and would recommend using again
- Better task duration estimation: could involve more research or talking to SMEs to improve estimation
  - But now can use this project as a data point and learn that our productivity is much better than initially thought. By focusing future efforts on starting tasks on time (main weakness), future projects can complete much sooner

DEVIATIONS AND AS-BUILT DOCUMENTATION

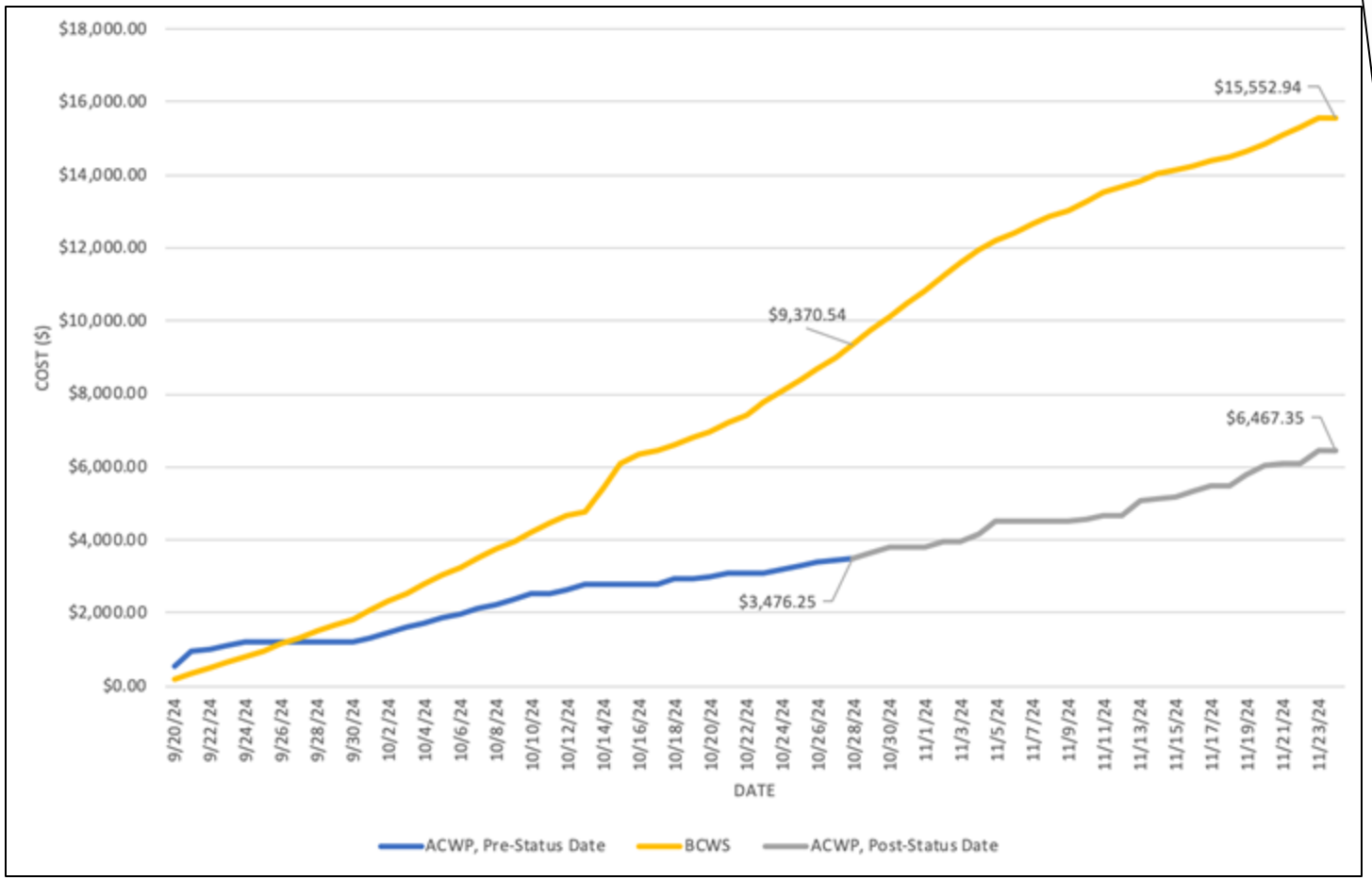
- Deviated from imposed structure by working a bit more individually. Meetings would help distribute workload/delegate tasks
  - This allowed greater efficiency as all teammates had varying availabilities
- Only did out-of-sequence progress once: Started brainstorming ideas before research review due to desire to catch up to schedule (before 10/28 date). Logic was less hard than we thought (ok to do FF instead of FS)
- Critical path changed slightly since “creating final presentation” replaced the LEGO designing-specific tasks as critical due to speed at which designing tasks were done and delay to start of presentation creation

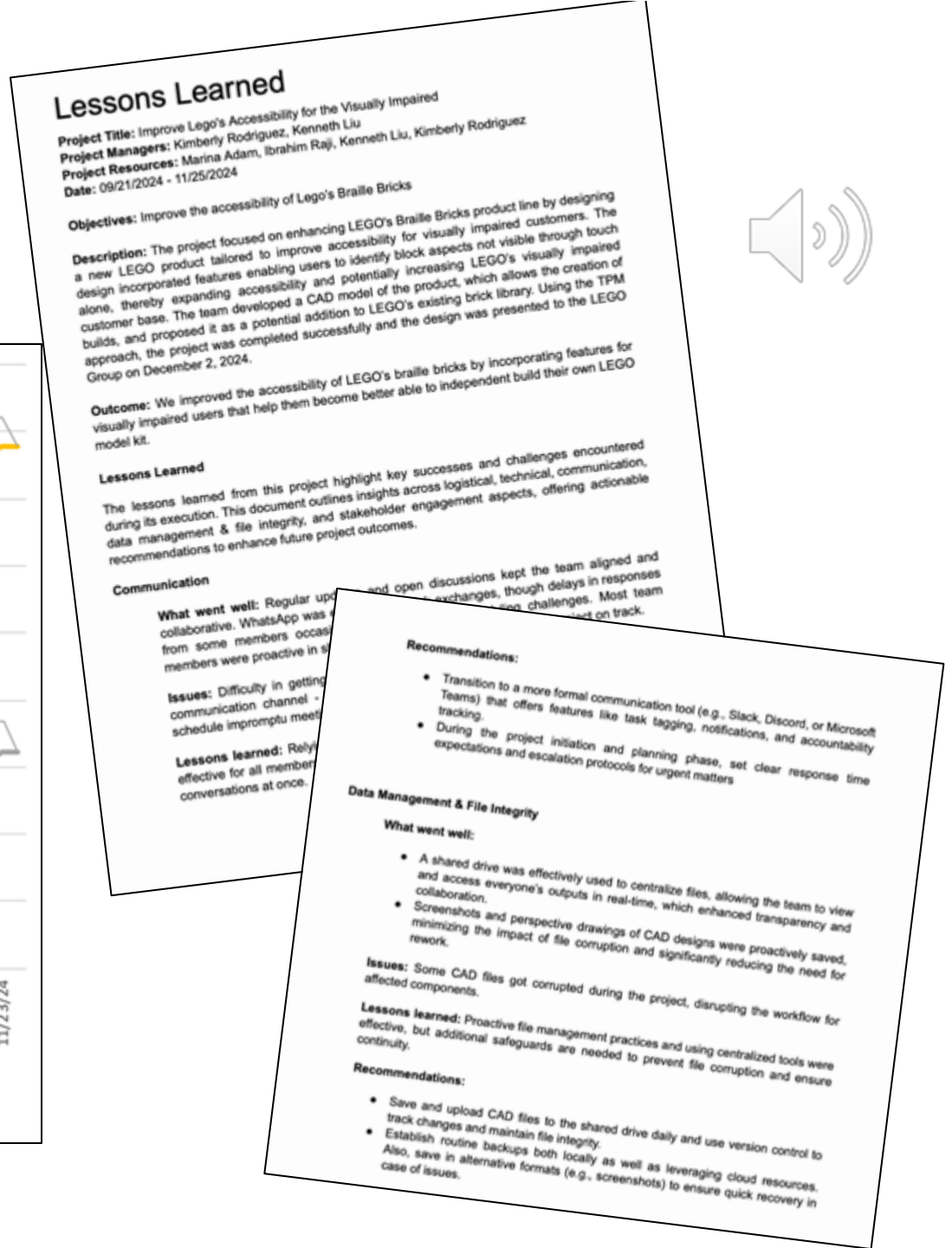
	Task Name	Duration	Start	Finish	Predecessors	Work	Cost	Actual Cost	Actual Start
14	Selecting Lego to pursue	1 day	Tue 10/29/24	Tue 10/29/24	13	1.6 hrs	$194.83	$194.83	Tue 10/2
15	**Design and Create Phase**	**18 days**	**Sun 11/3/24**	**Wed 11/20/24**		**13.12 hrs**	**$428.17**	**$428.17**	**Sun 11/**
16	designing lego (sketch)	2 days	Sun 11/3/24	Mon 11/4/24	14	3.84 hrs	$52.50	$52.50	Sun 11/
17	creating lego (in CAD)	3 days	Fri 11/15/24	Sun 11/17/24	16	2.88 hrs	$218.17	$218.17	Fri 11/1
18	Iterate Lego	2 days	Sat 11/16/24	Sun 11/17/24	17SS+2 days	3.2 hrs	$0.00	$0.00	Sat 11/1
19	Finalizing Lego (drawings etc)	2 days	Tue 11/19/24	Wed 11/20/24	18,17	3.2 hrs	$157.50	$157.50	Tue 11/1
20	**Marketing Projections**	**6 days**	**Wed 10/30/24**	**Mon 11/4/24**		**4.96 hrs**	**$431.66**	**$431.66**	**Wed 10/3**
21	Market strategy	1 day	Wed 10/30/2	Wed 10/30/2	10,14	1.6 hrs	$145.83	$145.83	Wed 10/3
22	analyzing current user base vs projected growth	3 days	Sat 11/2/24	Mon 11/4/24	9,14	3.36 hrs	$285.83	$285.83	Sat 11/
23	creating presentation	7 days	Thu 11/14/24	Wed 11/20/24	13SS+2 days	13.44 hrs	$0.00	$0.00	Thu 11/1
24	**Close Out**	**33 days**	**Wed 10/23/2**	**Sun 11/24/24**		**29.2 hrs**	**$681.10**	**$681.10**	**Wed 10/2**
25	Updating documentation	25 days	Wed 10/23/24	Sat 11/16/24	3SS+7 days	24 hrs	$233.33	$233.33	Wed 10/2
26	Lessons Learned	2 days	Wed 11/20/2	Thu 11/21/24	22,25,21,19SS+2 d	1.92 hrs	$92.17	$92.17	Wed 11/2
27	Finalize Presentation Slides	1 day	Sat 11/23/24	Sat 11/23/24	23,26	3.2 hrs	$350.00	$350.00	Sat 11/2
28	Submit Final Presentation Slides and Documents	1 day	Sun 11/24/24	Sun 11/24/24	27,19	0.08 hrs	$5.60	$5.60	Sun 11/2
29	Submit Final	0 days	Sun 11/24/24	Sun 11/24/24	28	0 hrs	$0.00	$0.00	Sun 11/2



Although still had delays in post-10/28 tasks, these tasks follow logic and sequence from I&P

AS-BUILT DOCUMENTATION





Lessons Learned

Project Title: Improve Lego's Accessibility for the Visually Impaired
Project Managers: Kimberly Rodriguez, Kenneth Liu
Project Resources: Marina Adam, Ibrahim Raji, Kenneth Liu, Kimberly Rodriguez
Date: 09/21/2024 - 11/25/2024

Objectives: Improve the accessibility of Lego's Braille Bricks

Description: The project focused on enhancing LEGO's Braille Bricks product line by designing a new LEGO product tailored to improve accessibility for visually impaired customers. The design incorporated features enabling users to identify block aspects not visible through touch alone, thereby expanding accessibility and potentially increasing LEGO's visually impaired customer base. The team developed a CAD model of the product, which allows the creation of builds, and proposed it as a potential addition to LEGO's existing brick library. Using the TPM approach, the project was completed successfully and the design was presented to the LEGO Group on December 2, 2024.

Outcome: We improved the accessibility of LEGO's braille bricks by incorporating features for visually impaired users that help them become better able to independent build their own LEGO model kit.

Lessons Learned

The lessons learned from this project highlight key successes and challenges encountered during its execution. This document outlines insights across logistical, technical, communication, data management & file integrity, and stakeholder engagement aspects, offering actionable recommendations to enhance future project outcomes.

Communication

What went well: Regular upd… and open discussions kept the team aligned and collaborative. WhatsApp was … exchanges, though delays in responses from some members occas… …ing challenges. Most team members were proactive in s… …ct on track.

Issues: Difficulty in getting … communication channel … schedule impromptu meet…

Lessons learned: Rely… effective for all member… conversations at once.

Recommendations:

- *Transition to a more formal communication tool (e.g., Slack, Discord, or Microsoft Teams) that offers features like task tagging, notifications, and accountability tracking.*
- *During the project initiation and planning phase, set clear response time expectations and escalation protocols for urgent matters*

Data Management & File Integrity

What went well:

- A shared drive was effectively used to centralize files, allowing the team to view and access everyone's outputs in real-time, which enhanced transparency and collaboration.
- Screenshots and perspective drawings of CAD designs were proactively saved, minimizing the impact of file corruption and significantly reducing the need for rework.

Issues: Some CAD files got corrupted during the project, disrupting the workflow for affected components.

Lessons learned: Proactive file management practices and using centralized tools were effective, but additional safeguards are needed to prevent file corruption and ensure continuity.

Recommendations:

- *Save and upload CAD files to the shared drive daily and use version control to track changes and maintain file integrity.*
- *Establish routine backups both locally as well as leveraging cloud resources. Also, save in alternative formats (e.g., screenshots) to ensure quick recovery in case of issues.*

DEVIATIONS FROM PRIMARY OBJECTIVES?

SCOPE

- **Design** that is an extension of Braille Bricks product line
  - **CAD model** ✓
  - **Engineering drawing** ✓
- **Presentation** ✓

DURATION

Key Milestone	Date	
Team Formation (external)	9/13	✓
Project Charter (external)	9/23	✓
PM Plan Ready (external)	10/14	✓
Finalize Research on Market/Product (internal)	10/20	✓
Begin Product Brainstorming (internal)	10/21	✓
Begin Marketing Plans (internal)	10/28	✓
Finalize Product Design (internal)	11/18	✓
Finalize Marketing Plan (internal)	11/06	✓
Close-out (external)	11/25	✓

BUDGET

Labor budget: $11,200
Contingency budget: $2,240
Indirect costs (10%): $1,344

Total: $14,784
Actual: $6,467.35 ✓

NO DEVIATIONS!

SCOPE

- **Design** that is an extension of Braille Bricks product line
  - **CAD model** ✓
  - **Engineering drawing** ✓
- **Presentation** ✓

No deviations; Scope unchanged and completed all deliverables indicated in original contract with client.

DURATION

Key Milestone	Date
Team Formation (external)	9/13 ✓
Project Charter (external)	9/23 ✓
PM Plan Ready (external)	10/14 ✓
Close-out (external)	11/25 ✓

All external deadlines met. Some deviations with regard to internal deadlines due to delays and unforeseen events (due to outside commitments, unpaid vacation, etc.), but overall duration constraints met.

BUDGET

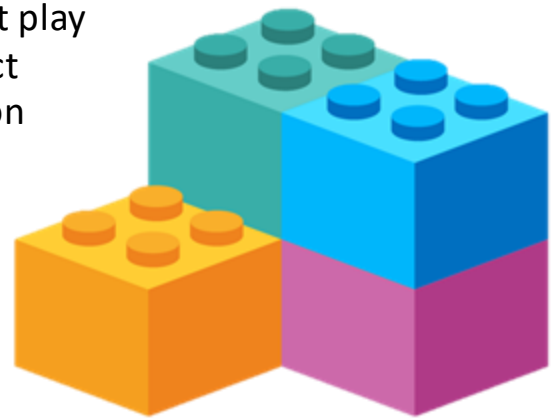
Labor budget: $11,200
Contingency budget: $2,240
Indirect costs (10%): $1,344

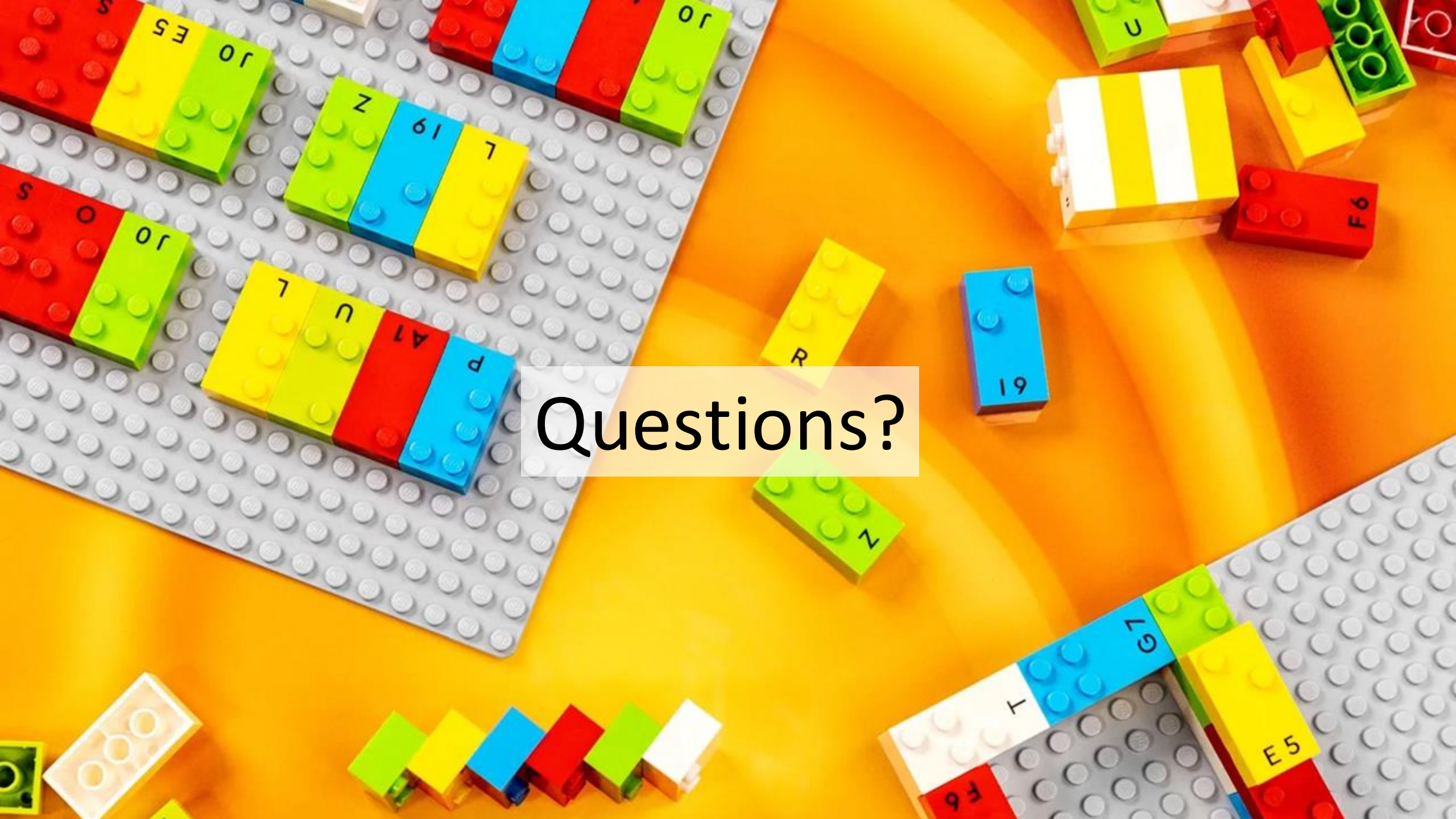
Total: $14,784 ✓

Underbudget! Overestimated LOE for tasks. Recall during I&P we thought we were being naïve optimists when estimating task durations, but may have over-corrected. Helped with delays, however.

LOGIC, IMPLICATIONS OF THE PROJECT AND PROJECT MANAGING STYLE

- **Hard logic vs soft logic**
  - Majority of tasks were sequential, so used hard logic there (Ex: can't CAD if you don't have a design concept)
  - Used soft logic to indicate preferences, such as initiating market research before design in case that influenced our design
    - Having more soft logic throughout would have given us greater flexibility to speed up schedule (such as ability to fast track)
- **Project as a positive, effective step towards achieving long term goals**
  - LEGO has goal to be a global advocate of Learning-through-Play, and to be able to impact every user, LEGO needs to consider accessibility and inclusion
  - Our project takes step in the right direction and incorporates many tools to promote independent play
  - Potential KPI to monitor long-term goal achievement from this point on is to track sales of product
    - Can compare sales data (in revenue and number of builds sold) to those in market projection
- **Agile vs Traditional Project Management**
  - This project leaned more TPM than APM:
    - Project objectives and solution was clear from the beginning
    - Broke down project into multiple tasks and went into details for each task during planning
    - Maintained a structured plan, and then worked the plan
    - Had a risk avoidance mentality
  - Using more APM when executing individual tasks could improve better project delivery
  - More APM-like iteration could also lead to a better product, as user tests can highlight deficiencies in design




Questions?