

#transparentbuckets

TEAM

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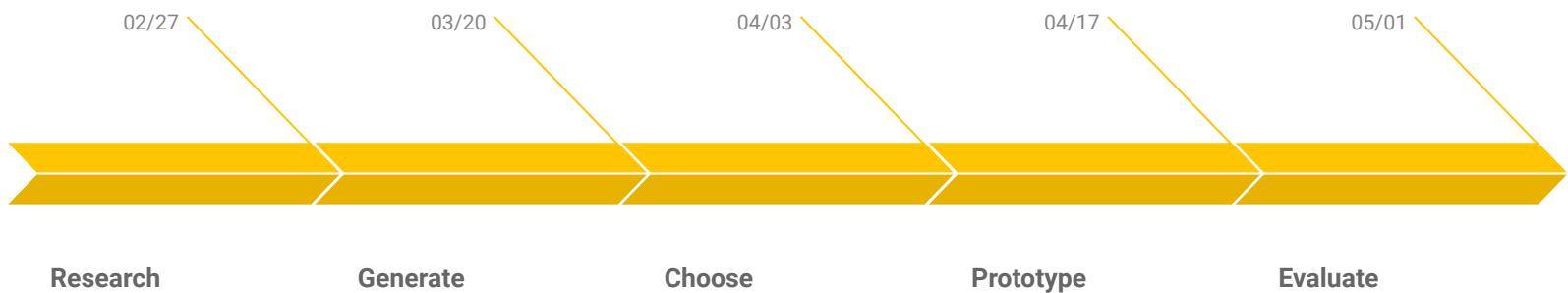
ZELIN SUN

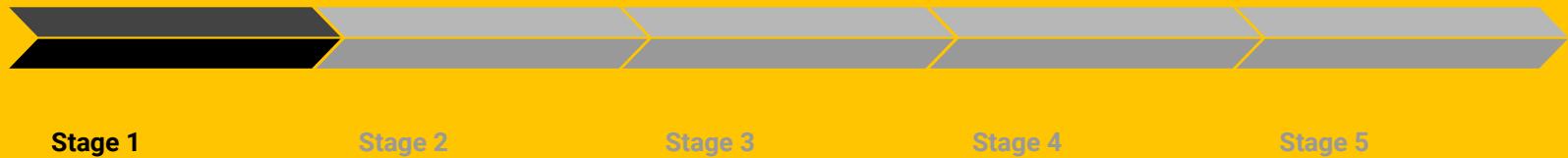
CLIENT

CATERPILLAR®



SPRINT





RESEARCH

LONG TERM GOALS
CHALLENGES
EXPERIENCE MAP
TARGET

RESEARCH

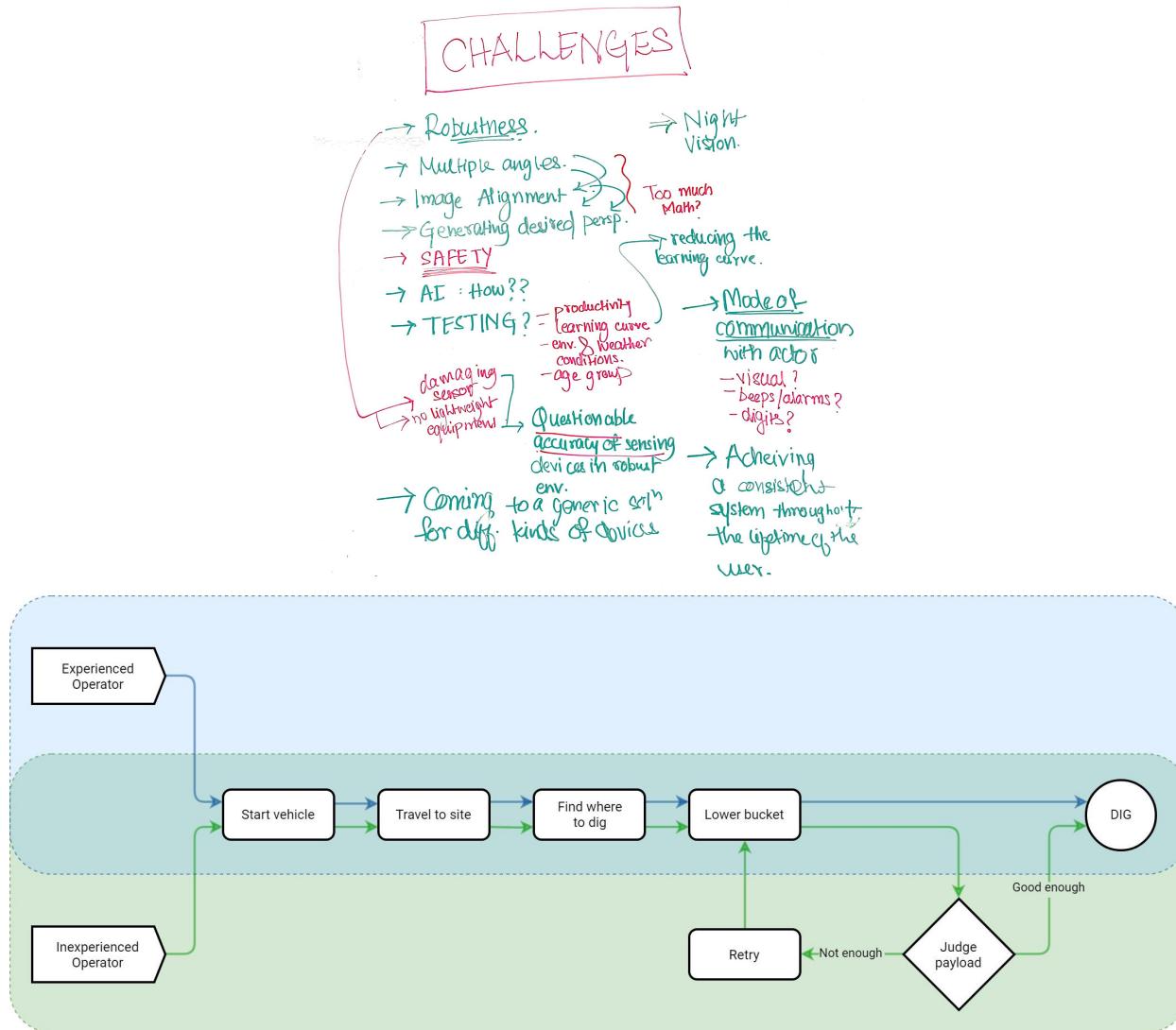
LONG TERM GOALS

Improve user experience so as to increase the amount of payload dug per day by a novice worker

TARGET

- Safety
- Productivity
 - Learning Curve
 - Efficiency

RESEARCH





GENERATE

LIST OF IDEAS AND INSPIRATIONS
CRAZY 8'S
STORYBOARDS

GENERATE

RAHUL

Periscope

- mirrors to capture images not visible
- used in submarines

Safety Trucks

- Screen on the back of vehicle
- allows us to see what is in front of vehicle.

Seura Smart Mirrors.

- Smart mirrors connected to internet
- give customized data.

ZELIN

Google Home

- use of voice control

Drone

- used to capture the pictures
- 360° view

Load Cell

- weight sensor

ZACH

Tesla Autopilot collision avoidance

- detects any person or animal in front of the car
- array of sensors for detection

Convex Mirrors.

- like in parking lots and turns
- increase the range of vision

LG Rollable TV

- comes up only when it is required
- doesn't obstruct normal view

PRACHI

Transparent water Buckets

- bucket made up of transparent material
- see through the bucket

Cabriolet

- flexible coverage option
- comes up only when needed

Trash Compactor

- space utilization

POOJA

Periscope

- can see stuff beyond the normal field of view
- smart placement of multiple mirrors

Vuze +

- allows to access someone else's view remotely
- use of virtual reality

Google Glass & Augmented Reality

- allows augmentation of images/objects captured elsewhere in the current field of view.

ARJUN

HTC Vive

- environment tracking setup
- track accurate position of user in an area.

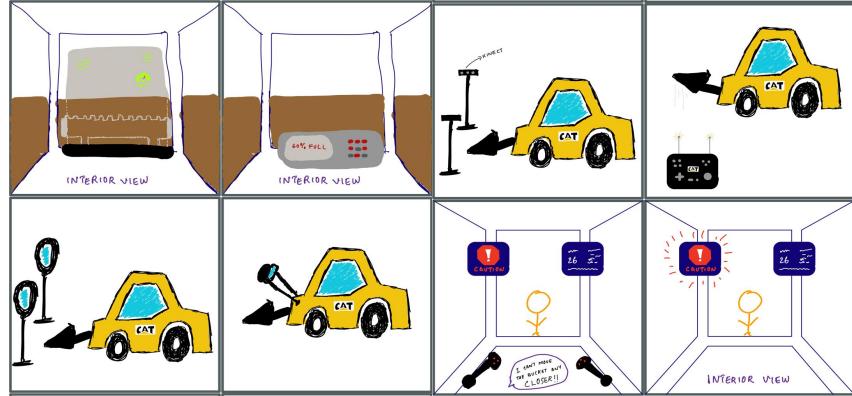
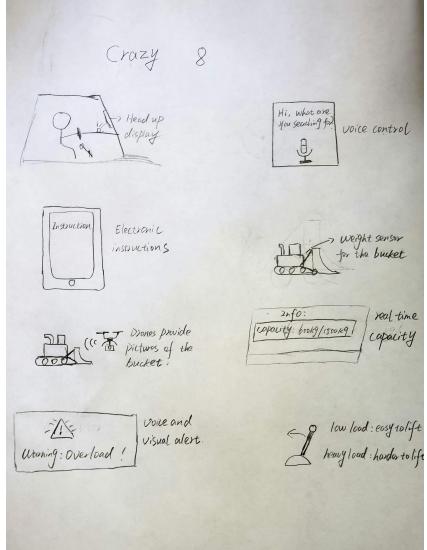
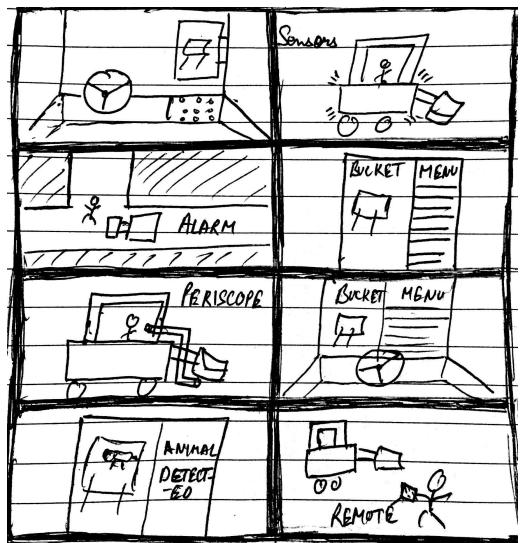
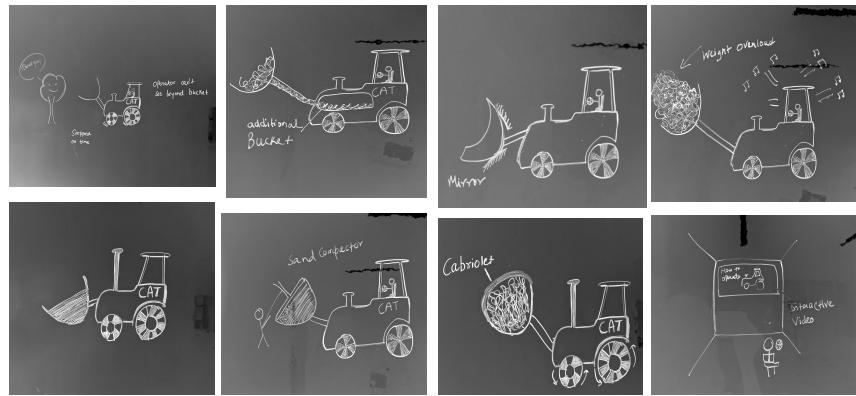
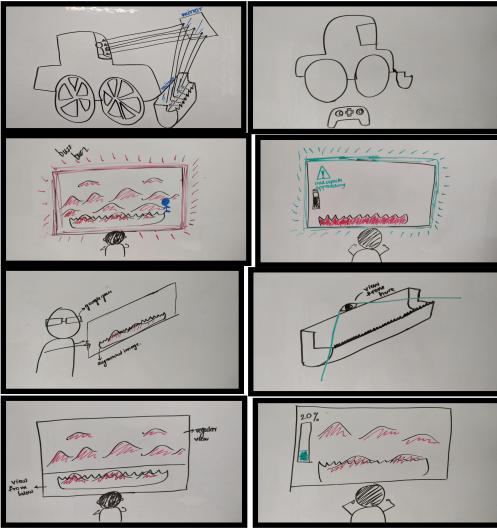
Alon

- transparent aluminium
- aluminium oxide nitride.
- v. robust - bulletproof.

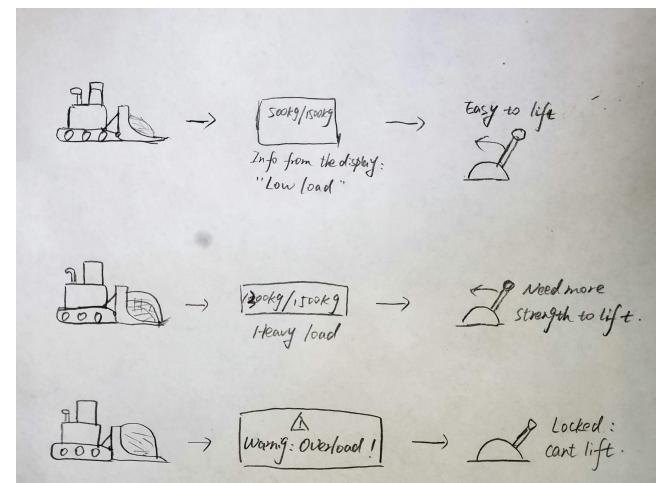
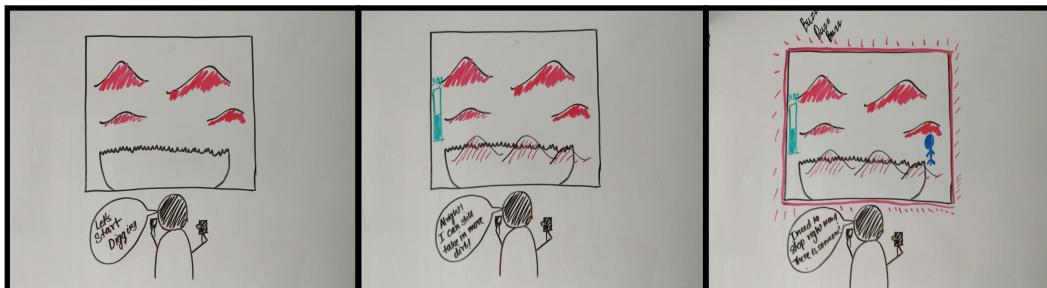
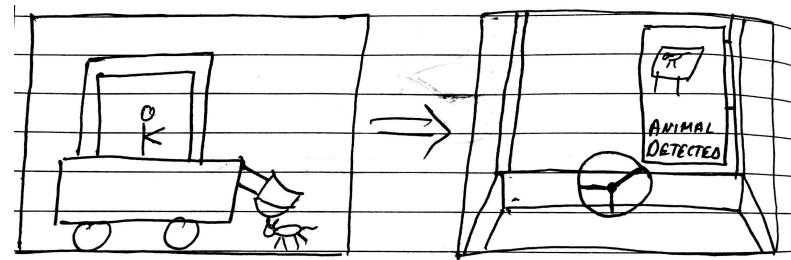
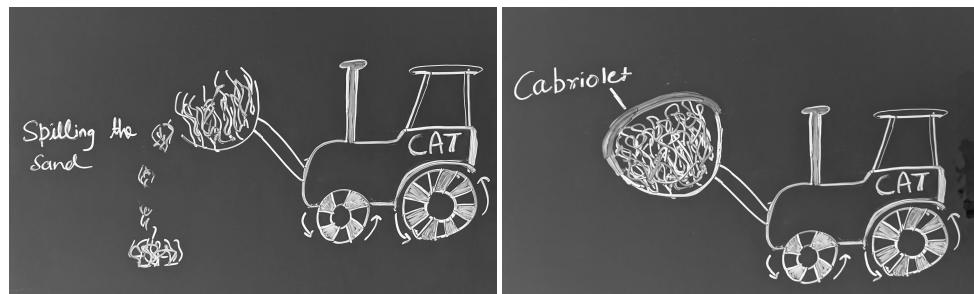
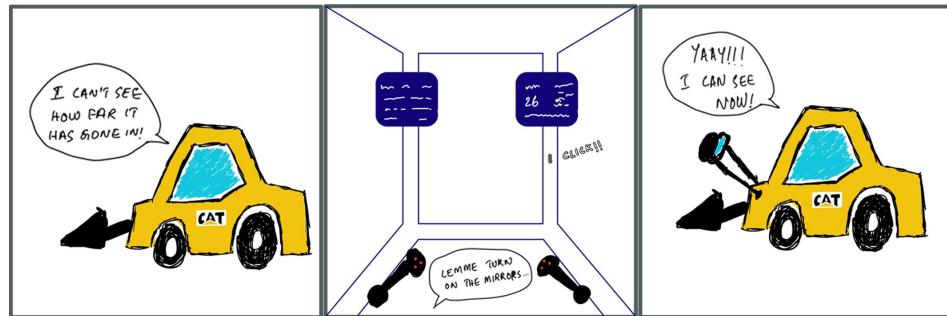
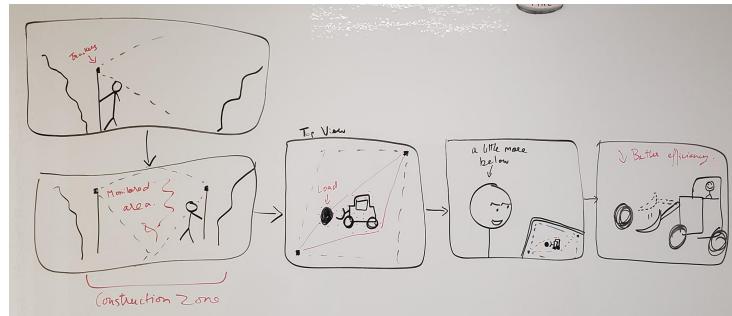
Rotating Buckets

- water wheel irrigation

GENERATE



GENERATE

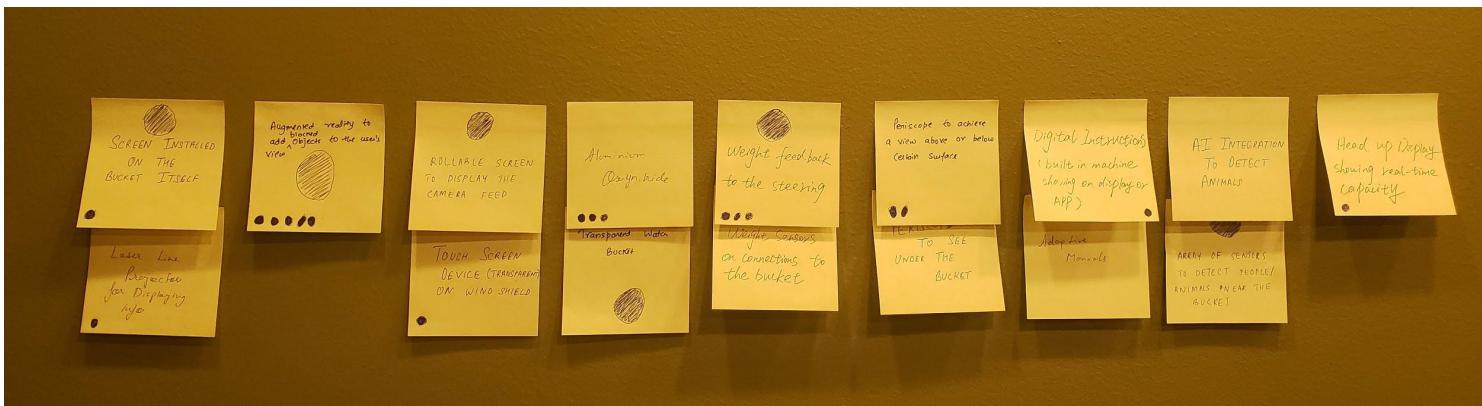
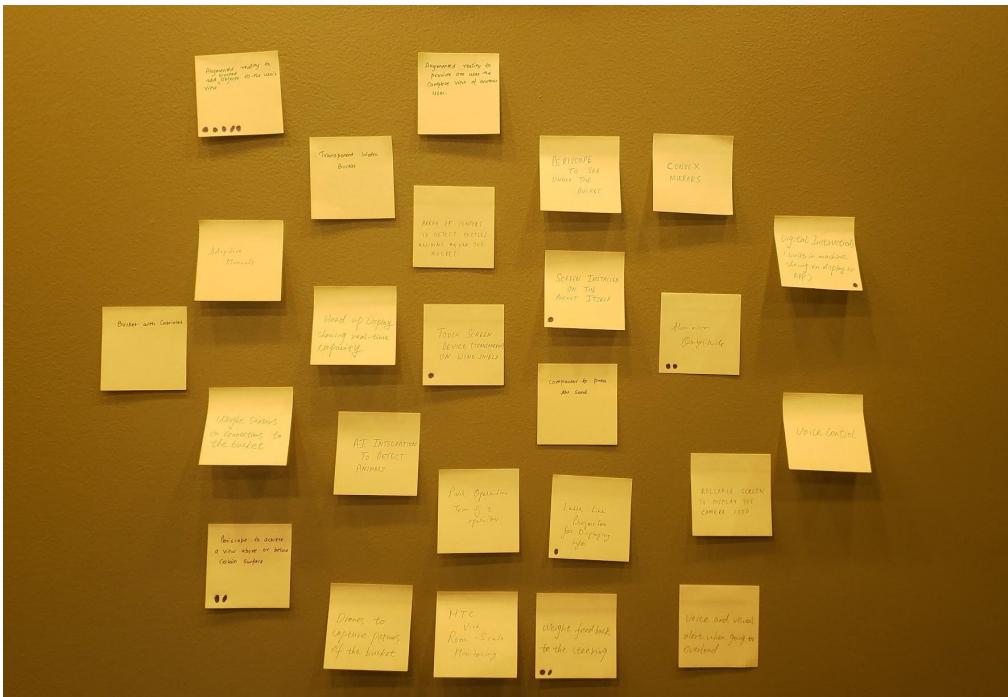




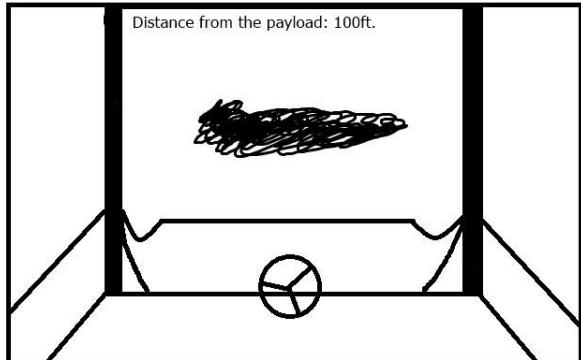
CHOOSE

DISPLAY OF IDEAS
VOTING
STRAW AND DECIDER VOTES
FINAL STORYBOARD

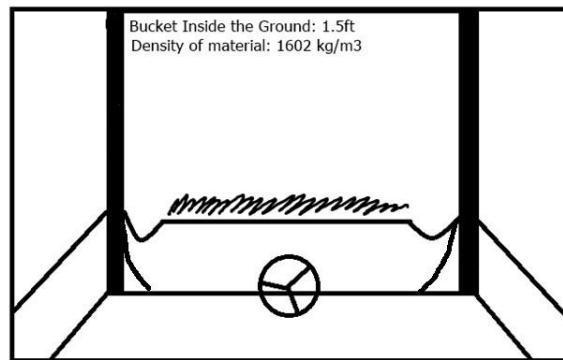
CHOOSE



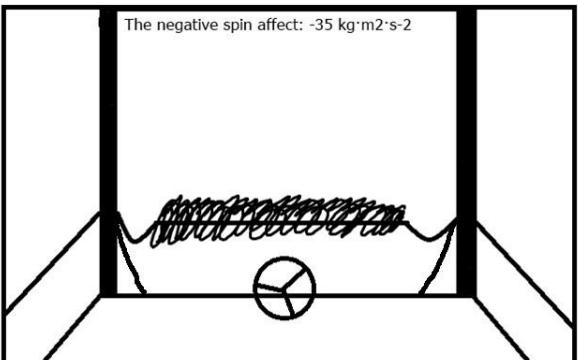
CHOOSE



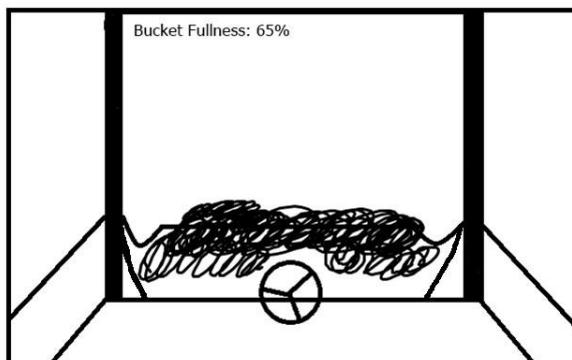
While Approaching the payload



While Digging the Ground



While digging the affect of
friction caused by the wheels.



Once you have taken the payload
inside the bucket.



PROTOTYPE

PROTOTYPE
TRIAL RUN

PROTOTYPE

TOOLS USED

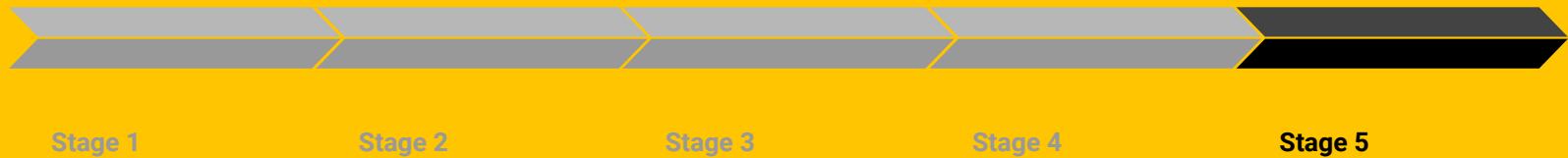


PROTOTYPE



OBSERVATIONS FROM TRIAL RUN

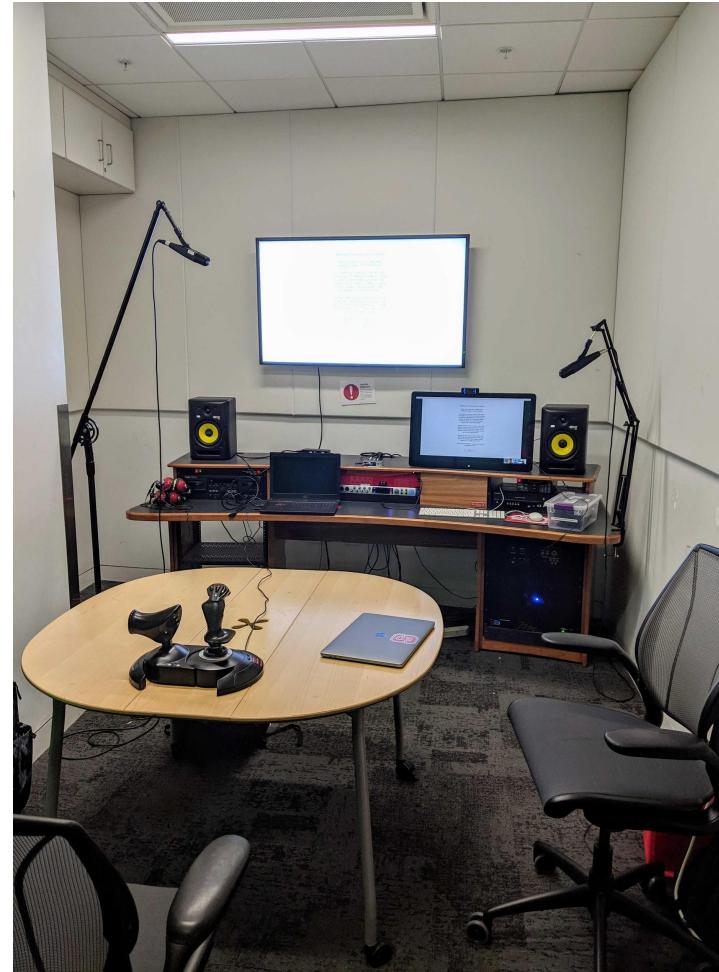
- Icon color
- Side pillar width



EVALUATE

PARTICIPANTS
LAB
INTERVIEWS
GRID
PATTERNS & IMPROVEMENTS

EVALUATE



EVALUATE

	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6
STAGE 1	Confused about joystic controls Cannot see dirt pile properly Asked about instructions	Unpamiliar with joysticks Confused with controls Did not read the entire instructions. Bad scores	Had problems understanding the motions of the bucket Very enthusiastic Made sure he understood the task	Problem with bucket visibility Judgement problems as they get closer to the object. Comfortable with the system.	Makes an effort to understand controls properly Speed judgement problem Very careful but goes too far. Distance to ground judgement was good	No baseline for height judgement. Can't see the bottom of the bucket. Comfortable with the control.
STAGE 2	Was using the distance meter Quite comfortable with the system now Improved accuracy	Notice the distance meter Did not move the bucket at all Score did not improve Too much info Was overwhelming	Couldn't judge inertia Did not notice aid at first Notice aids on prompting and feels they were very helpful in judging distance. Improved score.	Quite at ease with the system. Did not notice the height meter. Could not judge how much to go down.	Instantly noticed distance meter. Did not see the height meter even on subtle prompting More comfortable than stage 1. Found height-meter useful once noticed. Scores increased.	Notice height and distance meters 'Scores deteriorated.'
STAGE 3	Weather not useful Noticed the load meter and used it Interpreted warning correctly Takes more attempts to make sure he didn't miss any features.	Weather is not important Did not interpret the warning correctly	Missed the weather info completely. Surprised to see the alert Interpreted alert correctly.	Not sure what load meter does. Shocked by alarm Thought the load meter showed power Found weather info useful.	Notice load meter. Missed the weather info completely. Thought the load meter showed power Did not have a problem focusing.	Interpreted the alarm correctly. Noticed the load meter and found it useful. Missed the weather info.
FEEDBACK COMMENTS	Load meter and safety warning are useful. Distance to dog can be shown. Did not have a problem focusing.	Distance meter was disturbing. Problem in focusing.	Change color of no. to indicate optimal distance in dist. meter. Feels distance meter is more quantified than camera feed.	Prototype is helpful. Change coloring vehicle. Distance value for height.	Color change on height meter. Line indicating angle instead of height meter. Did not have a problem focusing.	Numeric feedback for height Good for starters and not experienced people.

EVALUATE

PATTERNS

- Scores improved
- No problem focusing
- Weather was not useful
- Warning sound was useful but alarming
- Height meter was useful but not noticeable
 - Prefer numerical feedback
- Problems with judging inertia
- Load meter was useful and noticeable

QUESTIONS?