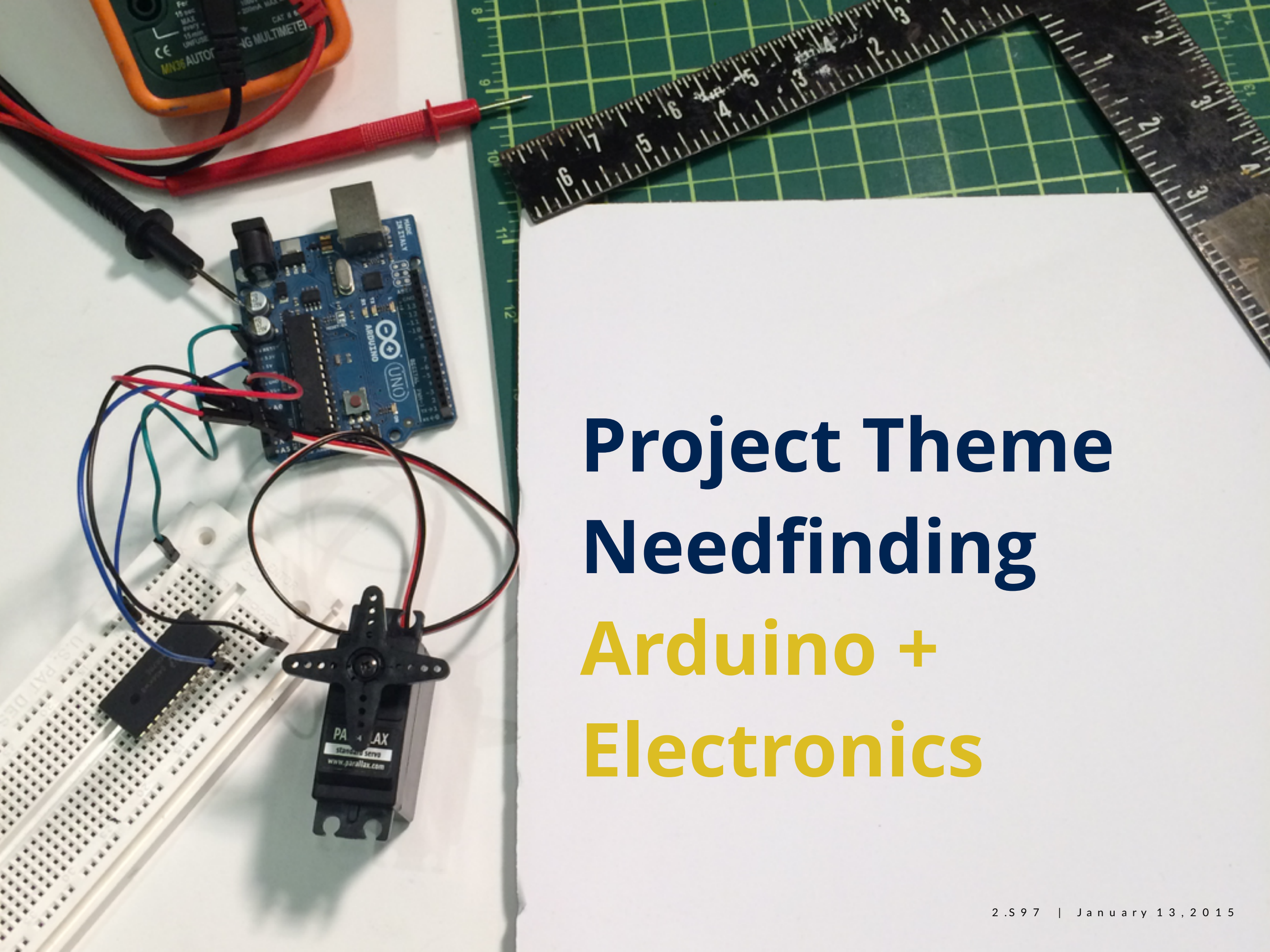


Project Theme Needfinding

Arduino + Electronics

2.S97 | January 13, 2015

Project Theme

Interactive Living

Re-imagine how a living space can support and enrich our activities.

Apple Pie
Workspace

Banana Split
Kitchen

Creme Brule
Living Room

Dulce de Leche
Bedroom

Eclair
Bathroom

Roomba
iRobot


CVS
pharmacy

Drop Scale
Adapatics

12
SERVINGS

COPY LIST

Confectioners sugar
8.45oz

Salted butter
7.05oz

Egg white
6 Egg whites

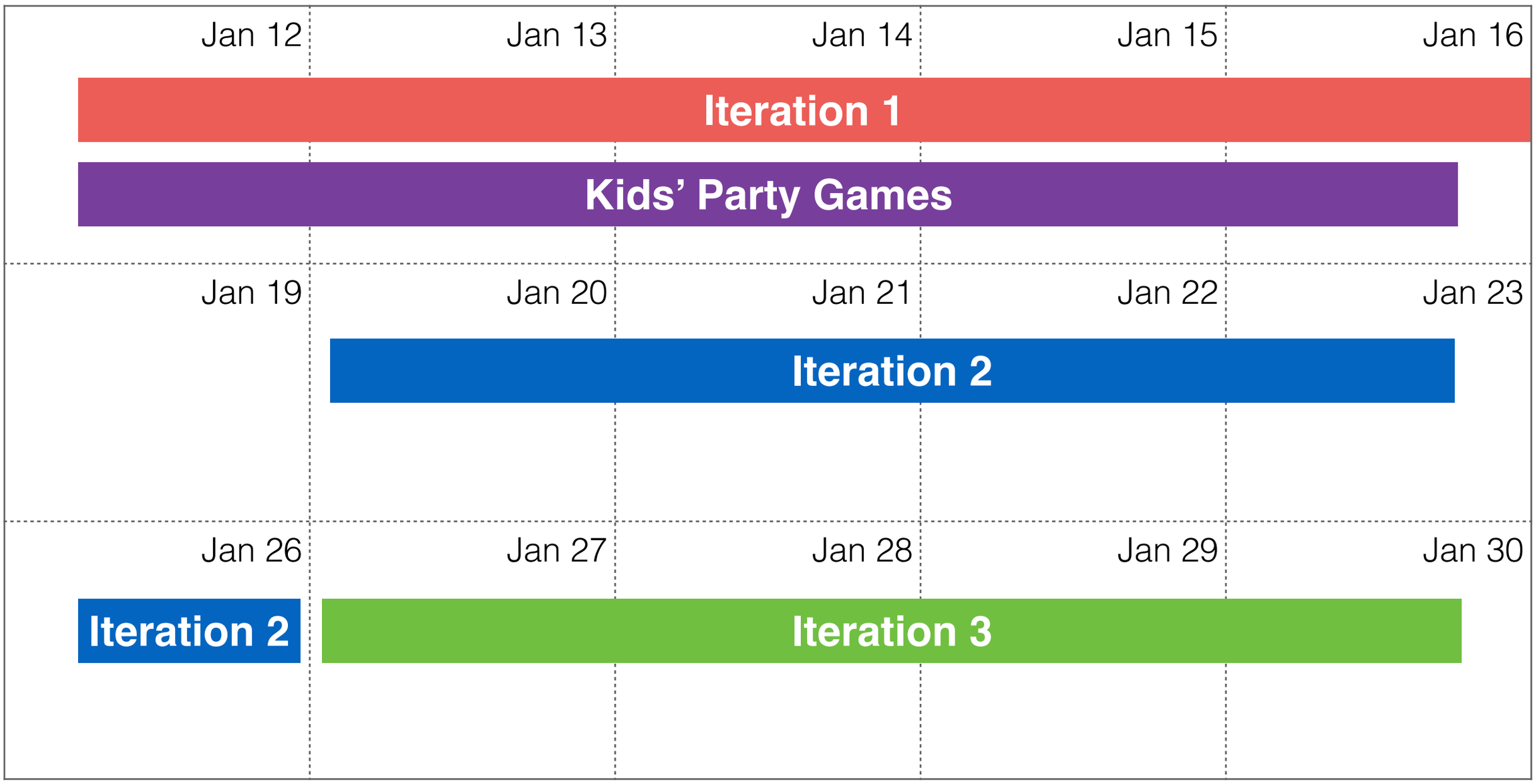
Ground almonds
5.30oz

Blackberries
5.30oz

All purpose flour
0.60oz

Confectioners sugar
As Needed

Sing with Me Step Stool
Fisher-Price



	Iteration 1	Storyboard 3 concepts
Alpha	Iteration 2	Create and test 2 prototypes
Beta	Iteration 3	Present 1 final design

Interactive Living Final Project

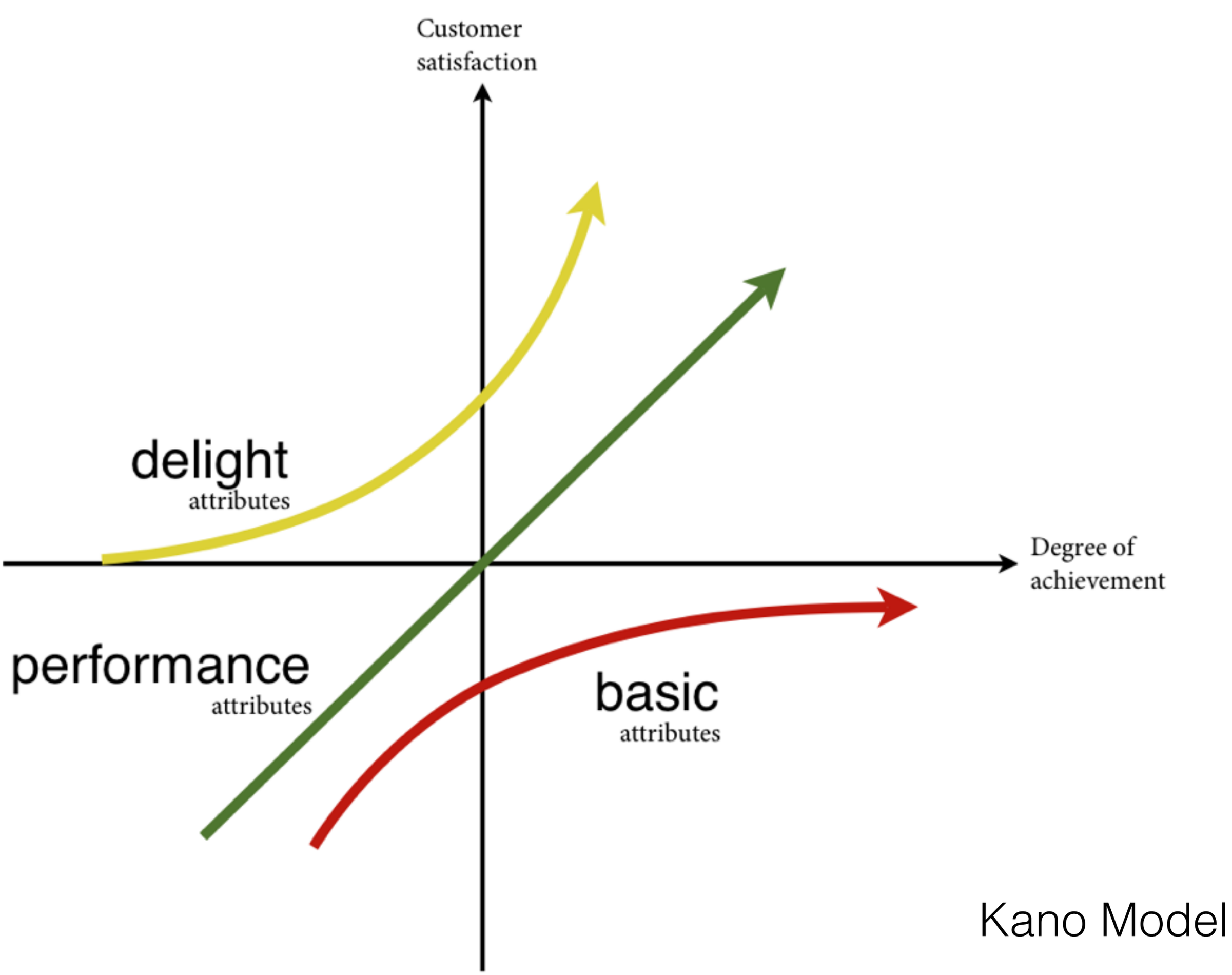
Documentation on Build in Progress

$100 group budget
Google Spreadsheets + keep receipts!
Tax exempt form

Needfinding

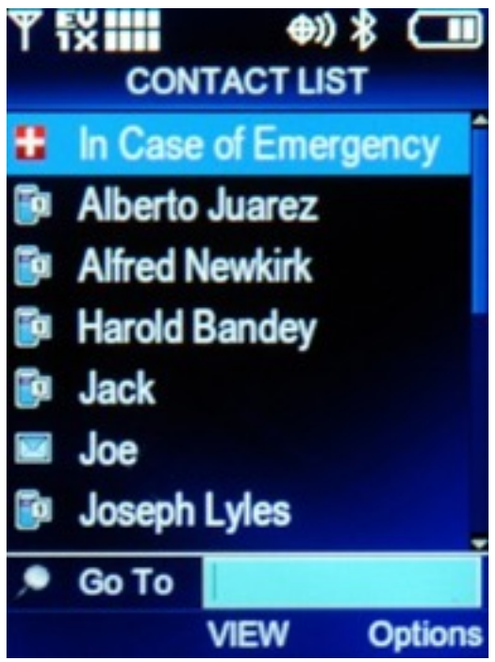
Needfinding

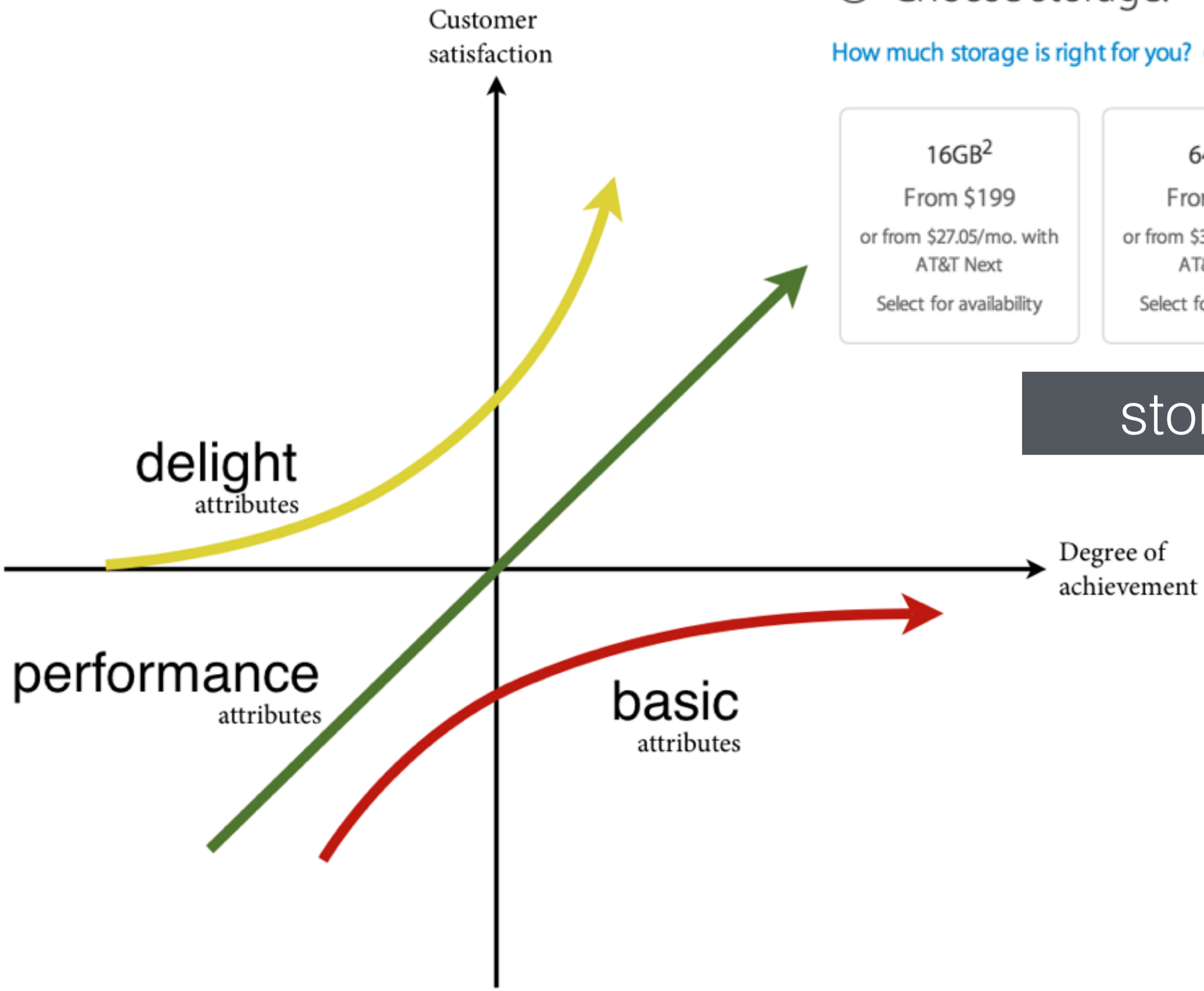
Uncovering design opportunities by identifying compelling, unmet **needs**


Customer
satisfaction
delight
attributes
Degree of
achievement
performance
attributes
basic
attributes

Kano Model

contact list
and
caller ID



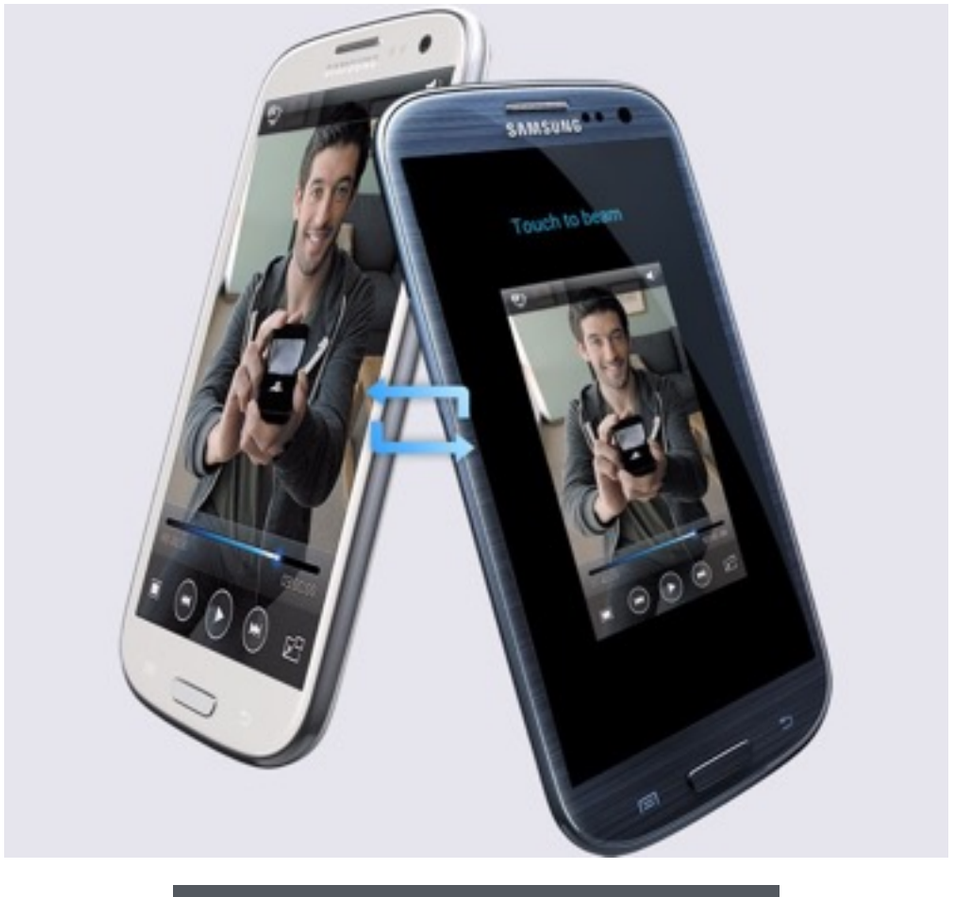


④ Choose storage:

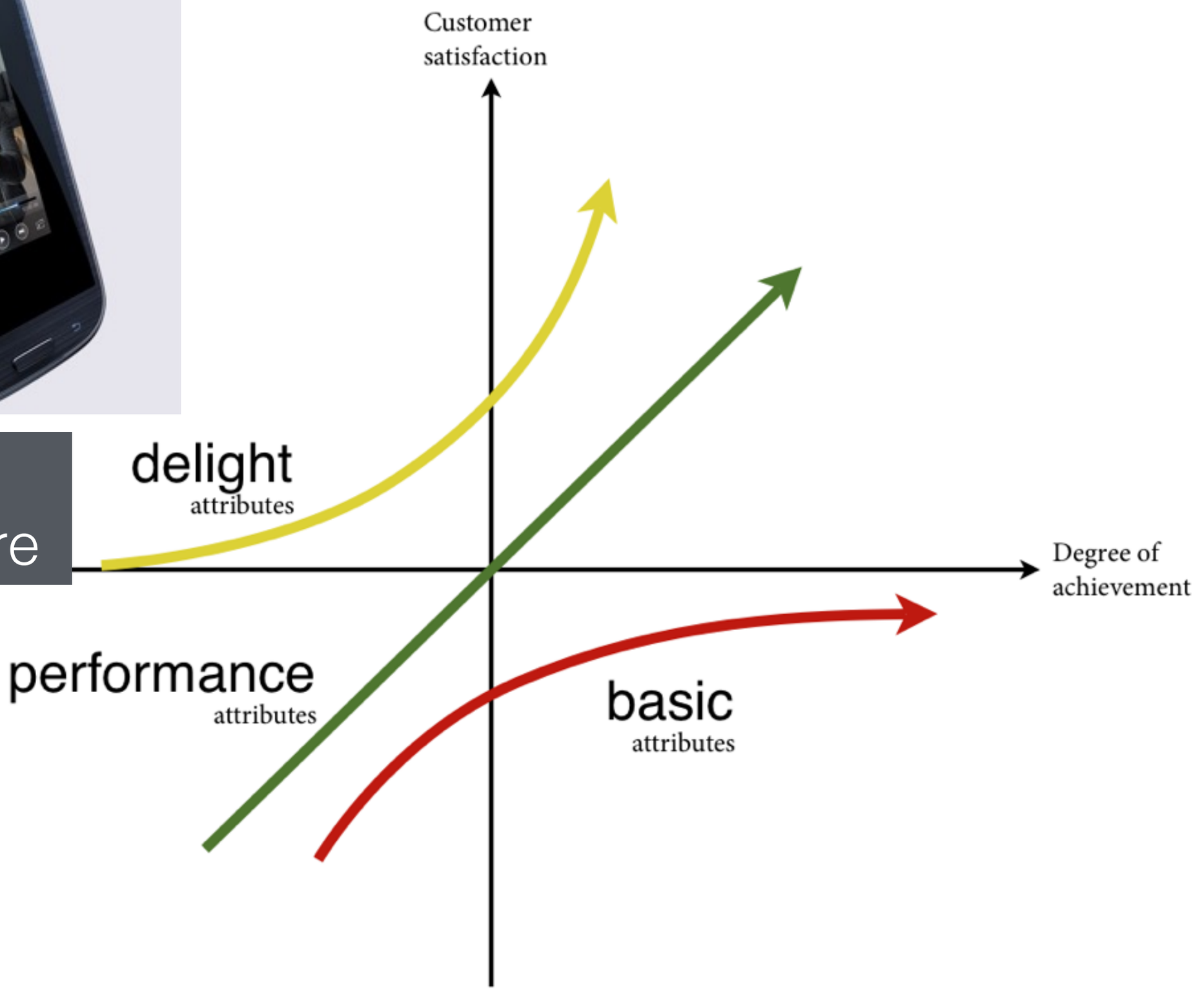
How much storage is right for you? ⊕

16GB[2]	64GB[2]	128GB[2]
From $199	From $299	From $399
or from $27.05/mo. with AT&T Next	or from $31.21/mo. with AT&T Next	or from $35.38/mo. with AT&T Next
Select for availability	Select for availability	Select for availability

storage



NFC &
Tap to Share



Technologies are constantly changing

Needs are overarching

Technologies are constantly changing

Needs are overarching

contact list and caller ID

storage

NFC & Tap to Share

Keep in touch with our friends and family

Reflect and extend our memory

Share our experiences with others

How do we identify needs?

How do we identify needs?

Market Research & Benchmarking

Observations and Interviews

How do we identify needs?

Market Research & Benchmarking

Observations and Interviews

Needfinding: observations

Used to observe actions that are implicit / difficult to articulate

Choose site and observe activities in the space

- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions
- Focus on entire space / one individual

Natalie.

She has a new idea. Brings towards robot, but they decide against. It get another piece.

Doesn't seem like he's letting the girl add anything to robot.

"Natalie, so what we're going to do is this" (A) "Nice!" (N).

seems genuinely excited

"so hold on. show me the idea again" (N). → patiently.

(A) seems to run off with his idea. doesn't communic it fully to (N)

They work together on putting together pieces to add to the robot.

"You don't need four regular pegs. You just need one" (A).

Generally (A) looks for pieces while talking about new idea. (N) follows, tries to look for pieces too, but doesn't seem sure of what they're looking for

A adds pieces to the robot. They disagree about which piece to add to the robot first (N) agrees with (A)

(N) put together new design.

"This needs a rubber band" (N)

"No no no, it needs this" (A) → grabs piece & adds to robot

"Oh I see" (N).

Great said positively, no sign of anger/resentment.

(N) brings robot over to table. (A) grabs it from her and says "Let's program it first"

(Alex) + (X)

Second boy intervenes. Suggests not using a third motor.

(A) tells another boy not to do what he's doing with another robot. The other boy strongly disagrees. (A) walks away.

(X).

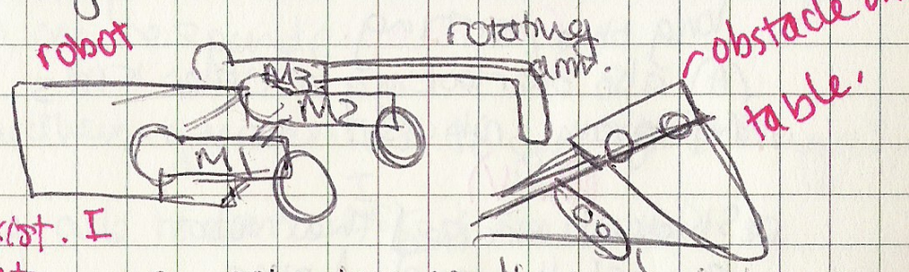
disagreement that never comes to conclusion

Third boy (green shirt) says if they use the third motor, no one else can

"just go work on your own robot (A) to (GS). (X).

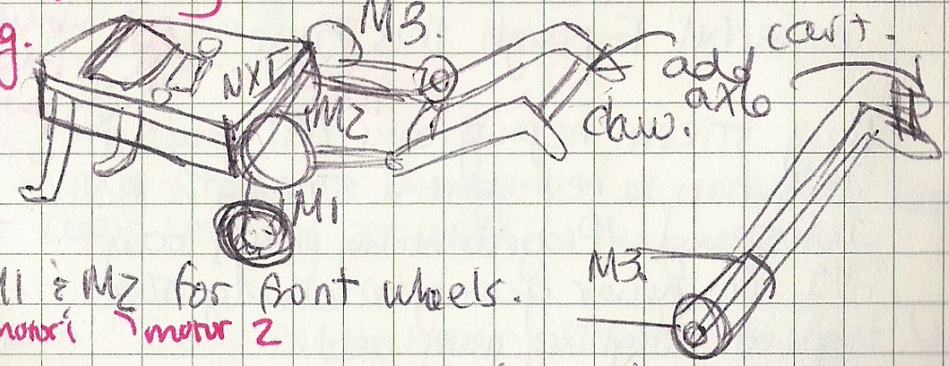
12:04. (N) (GS) explaining how the wheels rotate/slide.

"2.69" seems like they're figuring out exactly how much robot motor rotates.



Axle didn't exist. I suggested it at end of observation. Axle drawn in during notetaking.

arm actuates needle down → lever releases cart.



M1 & M2 for front wheels.
motor 1 motor 2

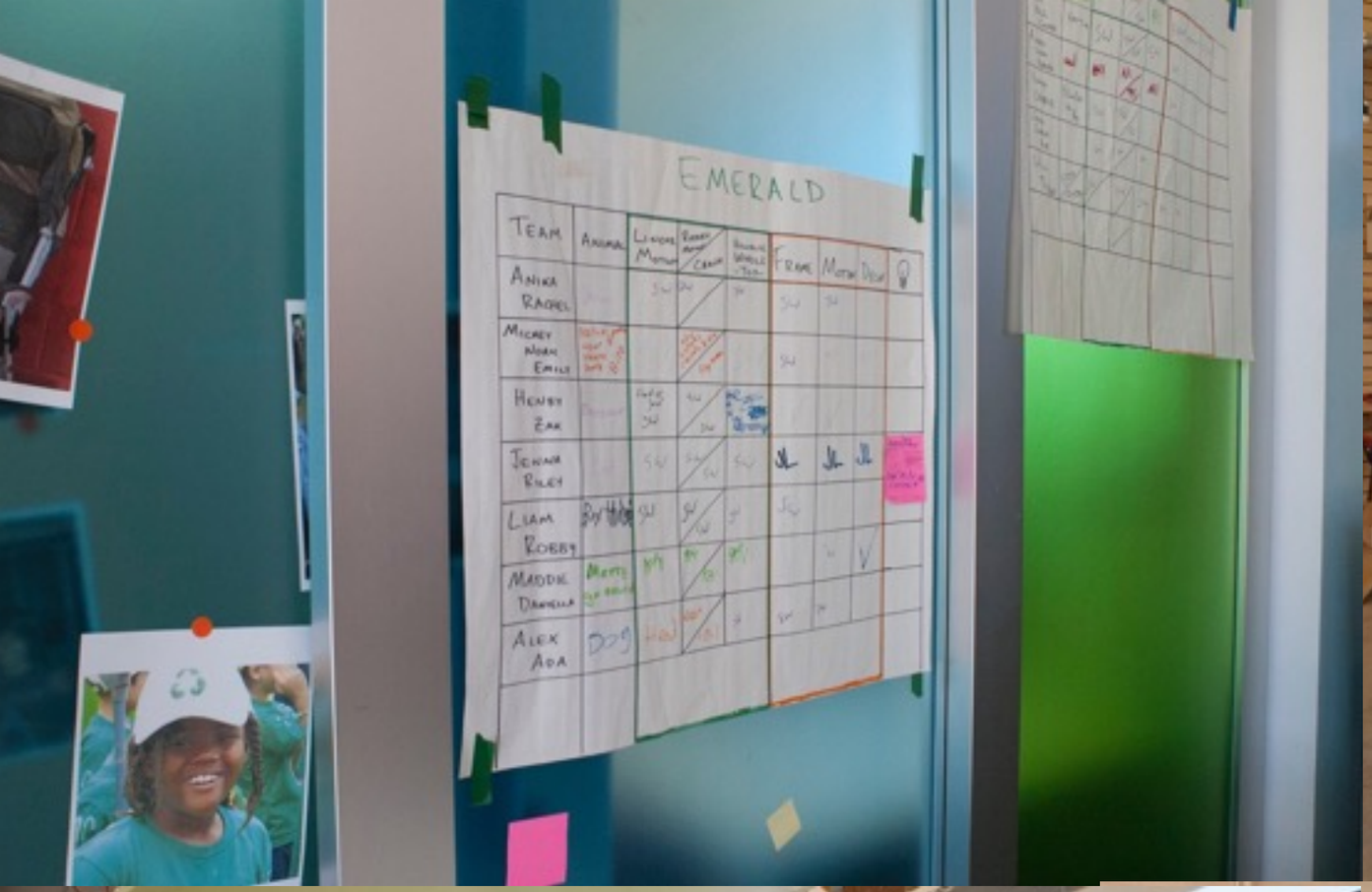
12:11. Boy programming claw / robot has taken over robot, (A) & (N) overlooking

"You're doing great. Keep at it!" (K)

When Kim talks, students seem to listen intently. She never no doesn't seem to need to do much to get their attention, doesn't speak over them

Strategy is not to use sensors unless they need to. Dead reckoning instead. Told a story about another team that came in last with sensors. Decided against it next year and won nationals.

All students listen to story (K) about how people should be "open, helpful, sharing" → one team shared strategies, was nice with other team. In finals, their robot ran out of batteries. Other


EMERALD
TEAM
ANIMAL
FRAME
MOTOR
DRUM
ANIKA
RACHEL
HENRY
ZAK
JENNA
RILEY
LIAM
ROBBY
ALEX
ADA

Airport Security Exercise

- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions


BNVN
00;00;05;10

Airport Security Example

- Demographics (age, gender, etc.)
- Activities
- Behaviors
- Unexpected interactions

Needfinding: observations

Being observant

Count how many times
the players wearing
white pass the ball

The correct answer is

16 passes

Needfinding: observations

Being observant
Minimize biases and preconceptions

Exercise: Go Forth and Observe!

Observe a living space on campus

Take notes and photographs (put on BiP)

> 5 activities you observe

How are these activities carried out?

Start with observing entire space, then focus on a single individual

30 minutes

Apple Pie **Workspace**	Ideation (3-446) / Athena Cluster
Banana Split **Kitchen**	Steam Cafe (7-407)
Creme Brule **Living Room**	Stratton First Floor Couches
Dulce de Leche **Bedroom**	Dollar Bill Lounge (Lobby 10)
Eclair **Bathroom**	Infinite Corridor Bathrooms

30 minutes
(20 minute observation)

Exercise: Go Forth and Observe!

Share

EXTREME

Users

Extreme users

Edge cases - people who have unusual needs

Amplify needs that may be more generalizable

IDEO & OXO

Extreme users

List attributes of the space

Create a spectrum / map for each attribute

Identify a user at either extreme

Extreme users

Attributes

Storage Closet

Extreme users

Storage Closet

Attributes

What is stored?

How big is it?

Extreme users

Storage Closet

Attributes

What is stored?

How big is it?

What is stored?

How big is it?

Food

Clothing

Memorabilia

Storage Closet

Packaging

Dry goods

Refrigerated goods

Home cook

Chef

Food

Clothing

Memorabilia

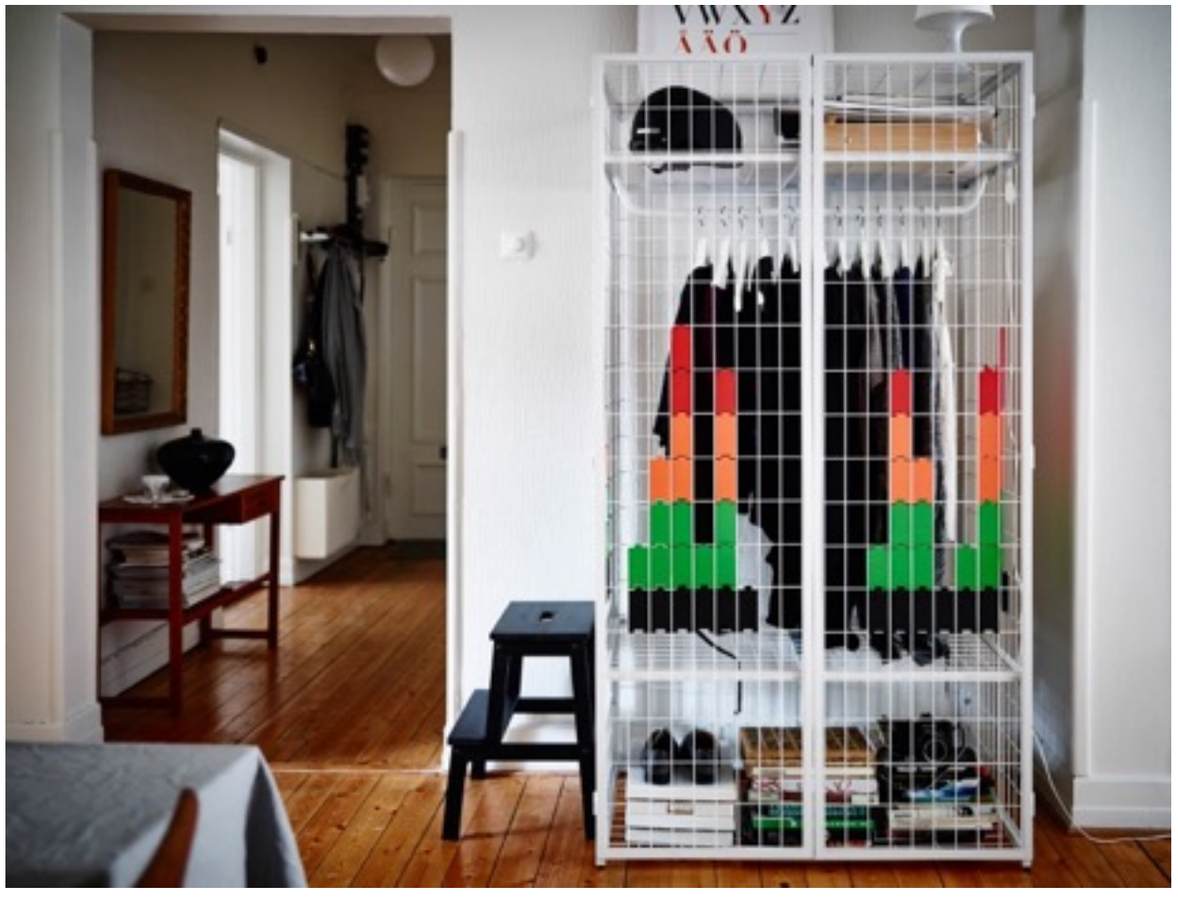
large

Suburban Home Owner

What is stored?

How big is it?

Clothing



Urban Dweller

small

Exercise: Identify Extreme Users

Using your observations, come up with a list of 3 extreme users for your assigned living space.

10 minutes

Bedroom?

campers

Bathroom?


ODESSA
WRANGLERS
athletes

Home Office?

builders

Assignment: Due Tomorrow

Do one more observation of an area that falls under your team's assigned living space

(ideally one of your extreme users)
Can be done in group or individually

Add to your list of observed behaviors

Post images and observations to BiP

Arduino + Electronics