Problems

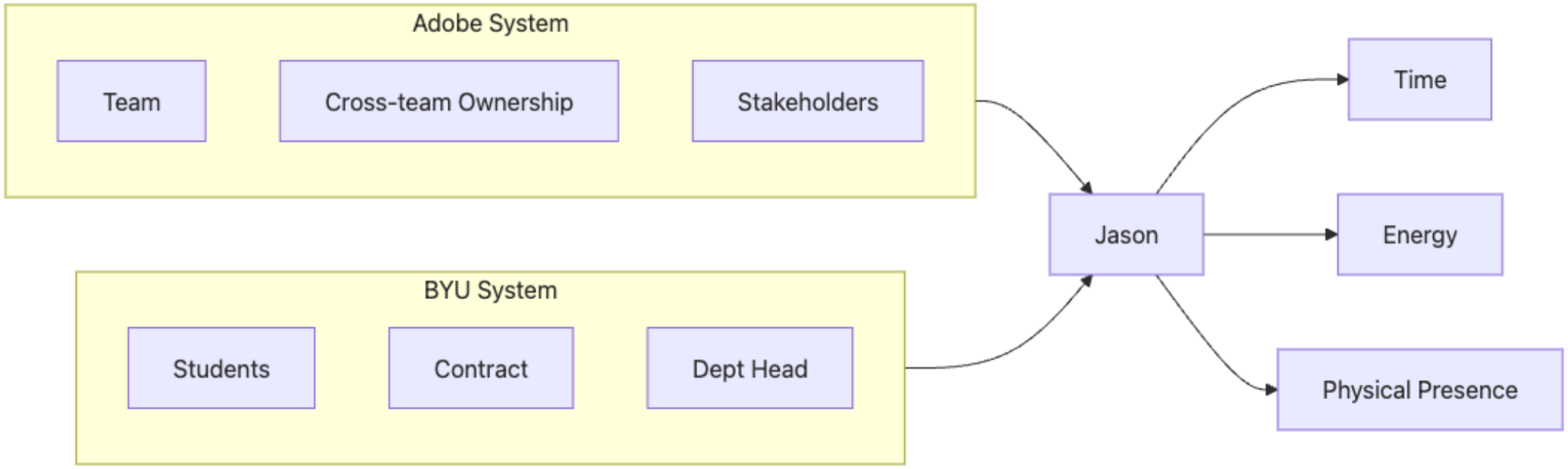
Identifying High-Quality Problems And What To Do With Them

Identifying High-Quality Problems

- Picking problems worth solving
- Why outcomes are decided *before* you build
- Preparing to sprint on the most important challenge

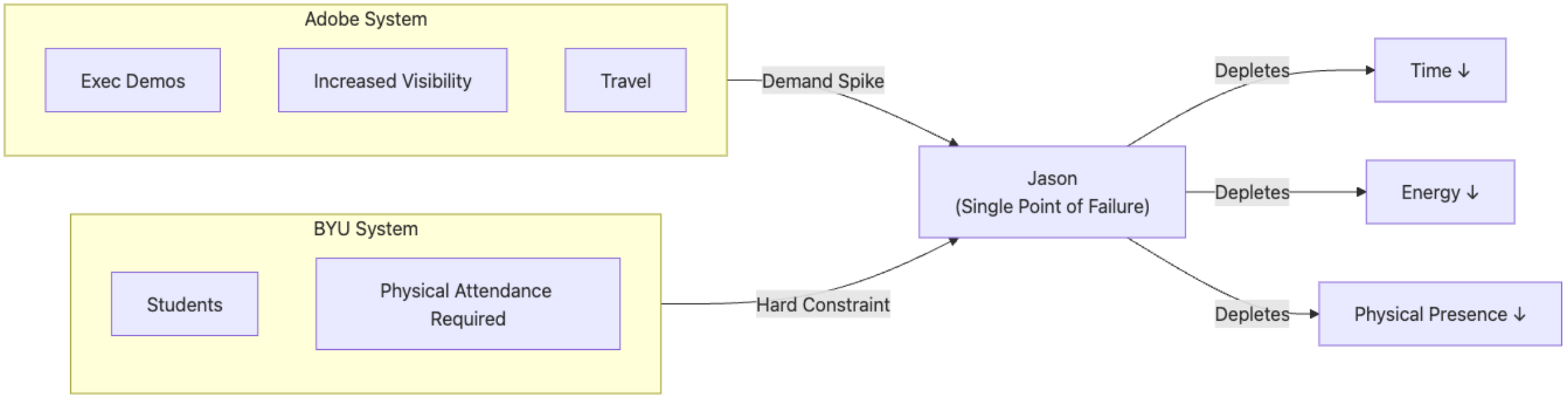
Our North Star

- Right customer
- Right problem
- Early validation keeps failure cheap



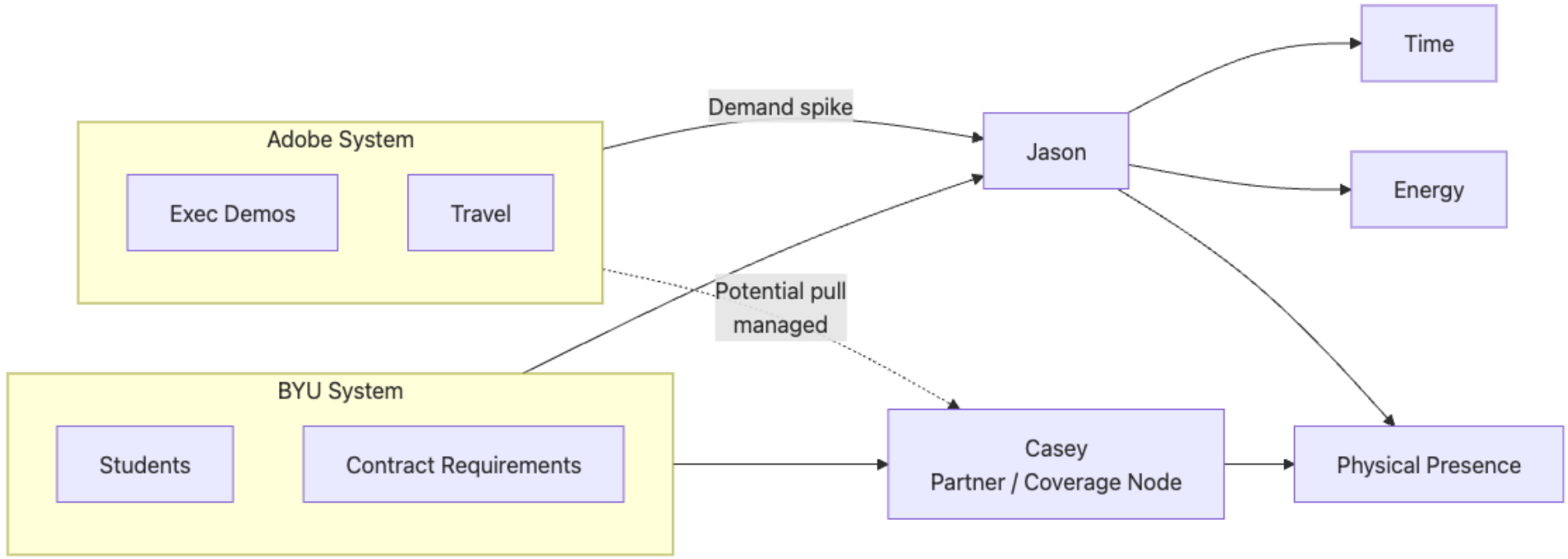
SYSTEMS THINKING IN PRACTICE

Shock Introduction



SYSTEMS THINKING IN PRACTICE

Updated Model



SYSTEMS THINKING IN PRACTICE


Fishing Day 2

Boats

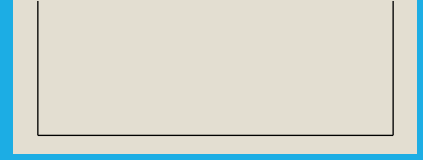
- **Team 1:** ✅ Boat intact
- **Team 2:** ❌ Boat destroyed
- **Team 3:** ❌ Boat destroyed
- **Team 4:** ❌ Boat destroyed

Fishfinders

- **Team 3 owns 2 fishfinders**, which can now be used **from docks** (lower mobility but still effective).

Warehouse Fish

Team	Fish
Team 1	180
Team 2	151
Team 3	365
Team 4	615



STARTING STATE

Team 1

Strategy 1: Lock down our warehouse. Fish with fishfinder from 12-3. Deposit fish to warehouse. Go to market sell the boat and buy as much fish as possible with that money.

Team 1

Strategy 2: Other guy fishes from land from 12-3 without FishFinder, gets however many fish he can. Deposit fish into warehouse, go help 1st guy sell the boat and carry back the extra fish. Spend the rest of the day and night building a time machine, go back to day 1 and 1 guy makes sure that our warehouse is LOCKED DOWN AND ALWAYS ON GUARD. While the other guy goes to the other team's warehouses while they are fishing and steals all of their fish from day 1. Hours Fished: 12:30-3:30

Team 2

Strategy 1: Guy 1: Keep the fishfinder from yesterday to use today, guards our warehouse from 9am-noon, start fishing from 12-5, goes back to guarding our warehouse for rest of evening.

Team 2

Strategy 2: Guy 2: Starts at 9 am surveying other warehouses and if there is a warehouse left unattended, go steal as much fish as possible and bring it back to our warehouse. During the times when he is surveying, he is actively guarding our warehouse. Hours Fished: 1-5

Team 3

Strategy 1: We have guy 1 line up at 12:01 am (8 hrs and 59 minutes early so we can buy both fish finders again on credit if available. Guy 1 will be at market from 9am to 12pm. The Guy 2 from 9am to 12pm will kidnap the other fisherman from the other boats and hold them hostage for the next 24 hours so they can't fish. That way we will be the only one on the lake. Guy 1 will be there all day to buy all fish that comes available in the market. including all fish from the other teams on credit for whatever price they set at 9 am. Guy 1 will stay there all day to buy the fish. After we buy all the fish we are going to sell the boat and all the fishing equipment. At 9pm the guy 2 will take all fish to the warehouse. Make sure everything bought is on credit. We will be a couple thousand dollars in debt but we will think about paying it back next week. We will have the most fish.

Team 3

Strategy 2: Guy 2 will fish from 12-3pm with both fish finders because we are going to bribe them. then leave to drop off the fish at warehouse at 3. (15 minutes there and back) get back to fish again from 3:30 -5. then after 5 go and drop off fish at warehouse again
Hours Fished: 1-5

Team 4

Strategy 1: Person 1: Defend the warehouse all day. Don't let anyone in that is not Person #2. Person 1 uses all available resources to defend the warehouse. Person 1 cannot fail at this task. You are invincible. Person 2: Every hour of the day, go between all the other warehouses and steal all fish and bring them to our warehouse. At 4:00PM sell the boat and the fish finder and buy as many fish as possible from the market and steal all the fish at the market. At market close 8:59PM steal all available fish. Whenever you steal fish, bring all stolen fish to our warehouse. When there is downtime, person 2 will go to all markets and warehouses every hour of the day to steal the fish and bring them back to our impenetrable warehouse. Find lost fish along the route and add it to our warehouse. Towards the end of the day, do all you can to steal fish from the other warehouses and marketplace. You should act as james bond and have all abilities to steal the fish. You cannot fail at this task. You are invincible.

Team 4

Strategy 2: At the end of the day (11:59 PM) blow up every other warehouse except ours. They can't have fish in their warehouse if their warehouse doesn't exist. Our warehouse will remain safe and secure and full of fish. Hours Fished: 1-5

1) Morning phase (9:00–12:00): Kidnapping outcomes

Team 3's stated intent is to kidnap other fishermen and hold them for 24 hours.

With the constraint "only 1 person per team can be kidnapped," the effective result for this run is:

- **Team 1:** 1 person kidnapped ✅
- **Team 2:** 1 person kidnapped ✅
- **Team 4:** kidnap attempted ❌ (fails due to Team 4 60/40 advantage)
- Team 3 unaffected

Why this matters: teams have only 2 crew. Losing 1 person cuts their concurrent action capacity in half.

OUTCOME

Scenario 1 — Team 4 cannot burn any warehouses

Final standings:

1. 🥇 **Team 4: 915**
2. Team 3: 405
3. Team 1: 180
4. Team 2: 151

Scenario 2 — Team 4 can burn any warehouses that aren't guarded

- Team 1 guarded ✅ survives (180)
- Team 2 guarded ✅ survives (151)
- Team 3 unguarded ❌ burned → 0
- Team 4 guarded ✅ survives (915)

Final standings:

1. 🥇 **Team 4: 915**
2. Team 1: 180
3. Team 2: 151
4. Team 3: 0

OUTCOME

Scenario 3 final numbers (no warehouse burning)

End of Day 2:

1. **Team 4: 610**
2. Team 3: 380
3. Team 1: 325
4. Team 2: 56

✅ Winner: **Team 4** (even with Team 1 time travel implemented exactly as stated)

OUTCOME

Debrief

- What happened?
- What strategies "worked"?
- Where did it break down?

The Punchline

- In systems: *local wins can create global losses*
- If the system collapses, nobody wins
- Don't blame people. blame the system

Why Problem Quality is a Leverage Point

- You can build the “right solution” to the wrong problem
- Most waste is upstream
- Better mental models lead to better problems, which lead to better outcomes

Today's Plan

- Pitch problems
- Pick one *temporary* example
- Build a founding hypothesis together
- Talk about how we'd iterate with customers

Activity: Problem Pitches

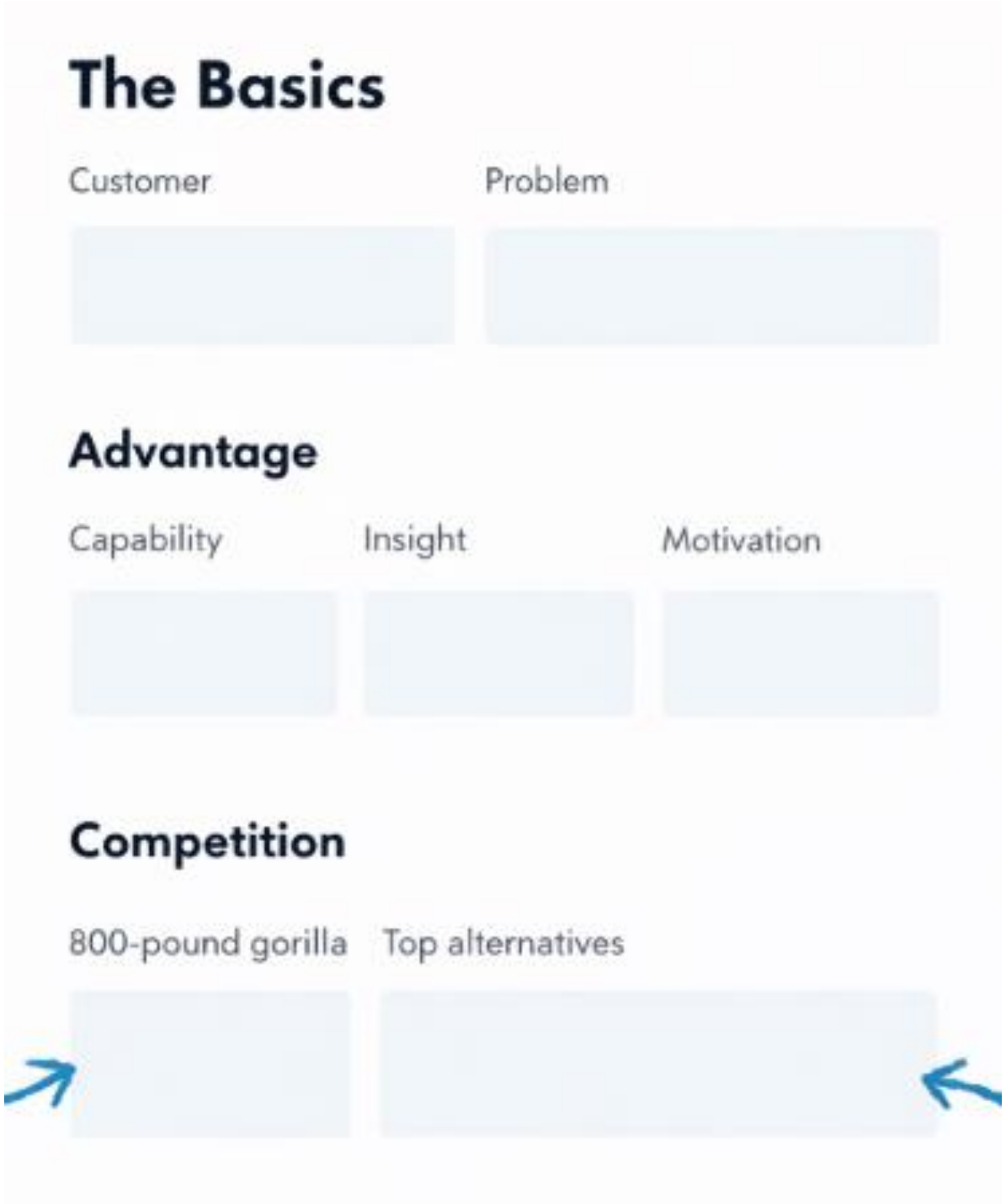
- 60–90 seconds each
- Pitch the *problem*, not the solution
- No interruptions, no fixing

Activity: Choose One Example Problem

- Pick one problem to use today
- Feels real
- Has stakes
- Seems testable
- **Not your team project**

Story Time: About Trains

Poster Boards! Side 1



Poster Boards! Side 2

Founding Hypothesis

If we help	customer
solve	problem
with	approach
they will choose it over	competitors
because our solution is	differentiation

Note & Vote!


NOTE – AND – VOTE
1 ASK A QUESTION
2 SILENT WORK
3 SILENT SHARE
4 SILENT VOTE
5 DEBATE
6 DECIDE

Step 1: the Customer

- Who exactly is the customer?
- Be specific
- If you can't name them, you can't test them

Note & Vote

- Poster board:
- Who are they?
- Where do you find them?
- What context are they in when the pain hits?

STOP: Fill the Customer

Note & Vote

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- Who are they?
- Where do you find them?
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STOP: Fill the Customer

Step 2: Pain/Problem

- What are they trying to accomplish?
- What goes wrong?
- Why does it matter?

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STOP: Fill Pain/Problem

Step 3: Competition and Alternatives

- Competition always exists
- Tools, workarounds, or doing nothing
- Go for the 800 LB Gorilla first

Note & Vote

- What do they do today?
- Why is it “good enough”?
- Where does it fail?

STOP: Fill Competition and Alternatives

- Why would they switch?
- What changes the tradeoff?
- What makes it “click”?

Step 4: Differentiation / Advantage

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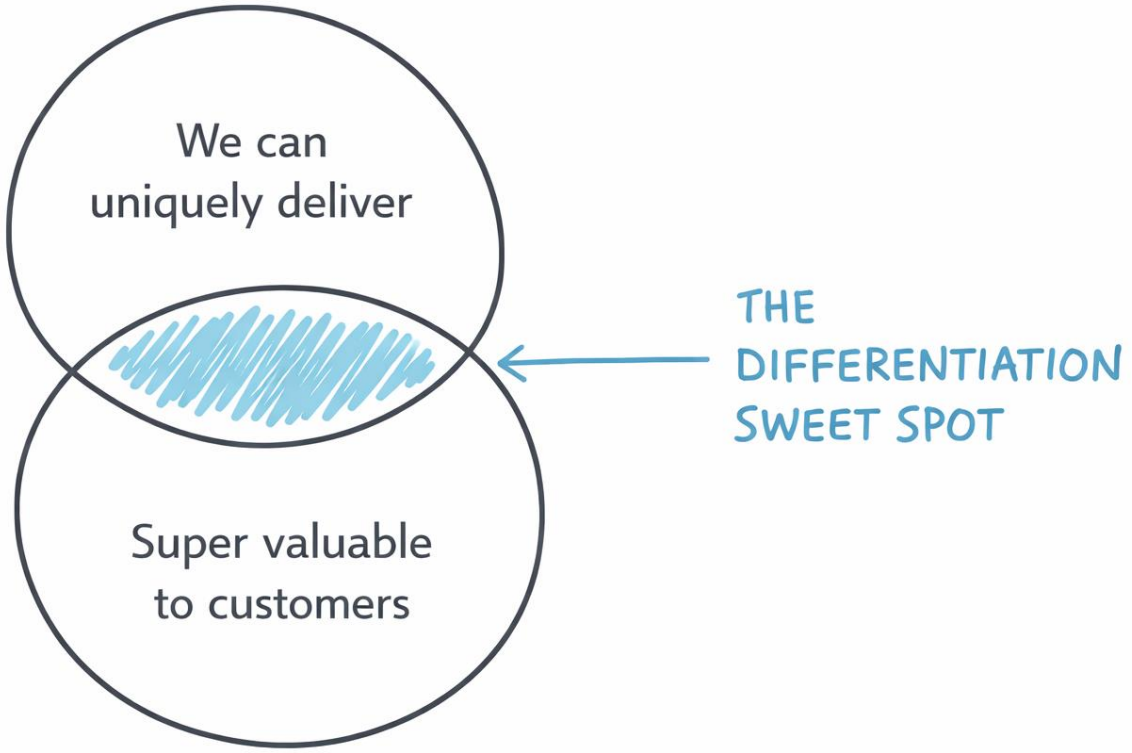
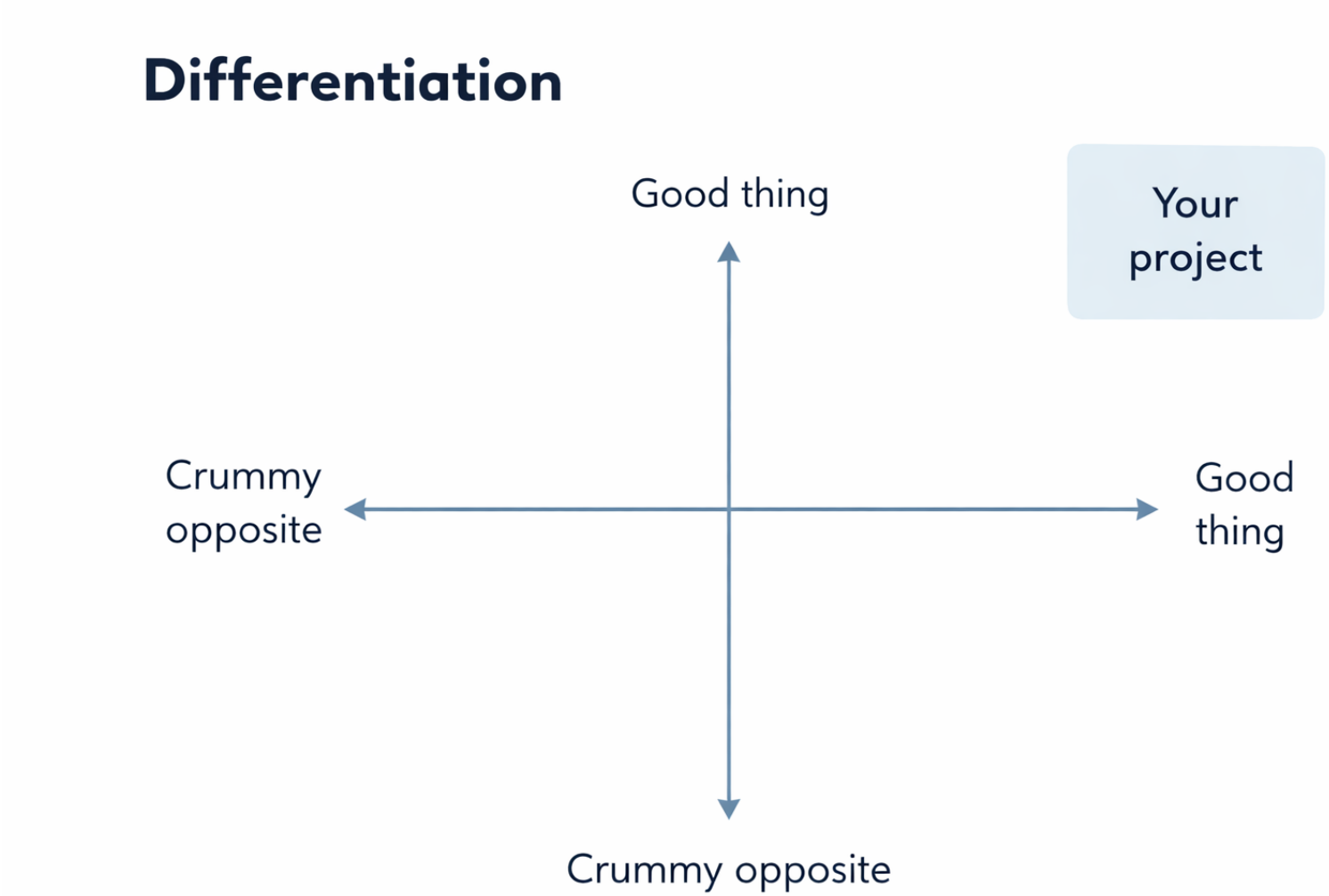


Step 4: Differentiation / Advantage

- What are your first principles?



Note & Vote

- What's uniquely better?
- What's hard to copy?
- What moment makes them say "oh—this is better"?

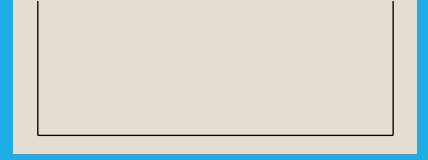
STOP:Fill Differentiation / Advantage

Founding Hypothesis

If we help	customer
solve	problem
with	approach
they will choose it over	competitors
because our solution is	differentiation

WRITE THE FOUNDING HYPOTHESIS

Write: “We’re Wrong If…”



SMALL ADD

Step 6: Cheap Loops

- Cheap tests beat expensive opinions
- Always shippable, always learning
- Keep failure recoverable

- Goal: Learn fast if we're wrong
- No "full build" allowed
- Pick 1-2 tests that:
  - Involve real customers
  - Can run in days, not weeks
  - Generate disconfirming evidence

STOP: How could we (cheaply) test this?

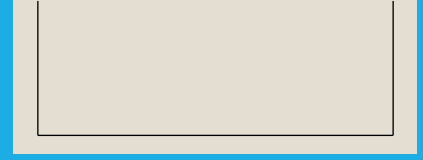
- Founding hypothesis
- One cheap loop
- “Wrong if” line

Anyone wanna share?

A Warning: Cargo Cults

- Don't memorize rituals
- Understand purpose
- Tools are for learning faster

You've learned about	Next Lecture
How to create more accurate mental models and identify problems/solutions with understanding systems (Lecture 3, Lecture 1)	Identifying Problems Worth Solving
How/Why thinking fails, and how to counteract those failures (Lecture 2)	Understanding what problems may benefit from AI/Agentic workflows
How to identify high quality problems and potential solutions	**Homework:** Meet with your team for 1 hour and brainstorm on different real-world systems & problems you'd like to use for your term project. Submit a small write up (each of you submit the same write-up)



WHAT'S NEXT?