(Early) ideation

The Human Factor
2025

Image: https://www.interaction-design.org

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First – Week 10 – Student Led Inquiry

- Student Led slot in Week 10

- Start thinking about what have we not covered in this class yet that you would like to learn about
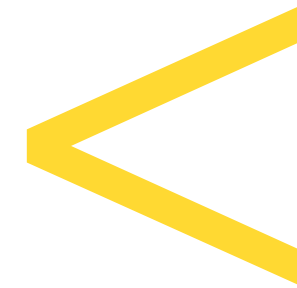
- Ideas will be gathered next week

What is ideation?

- Generating as many ideas for a design brief as possible

- With the goal of coming up with ideas that you may not have thought of initially

- …that then can then be narrowed down, and refined into the ones that are considered best (e.g., most innovative, most practical…) for further iteration

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What is ideation?

< **Divergent thinking**

Many possible solutions

> **Convergent thinking**

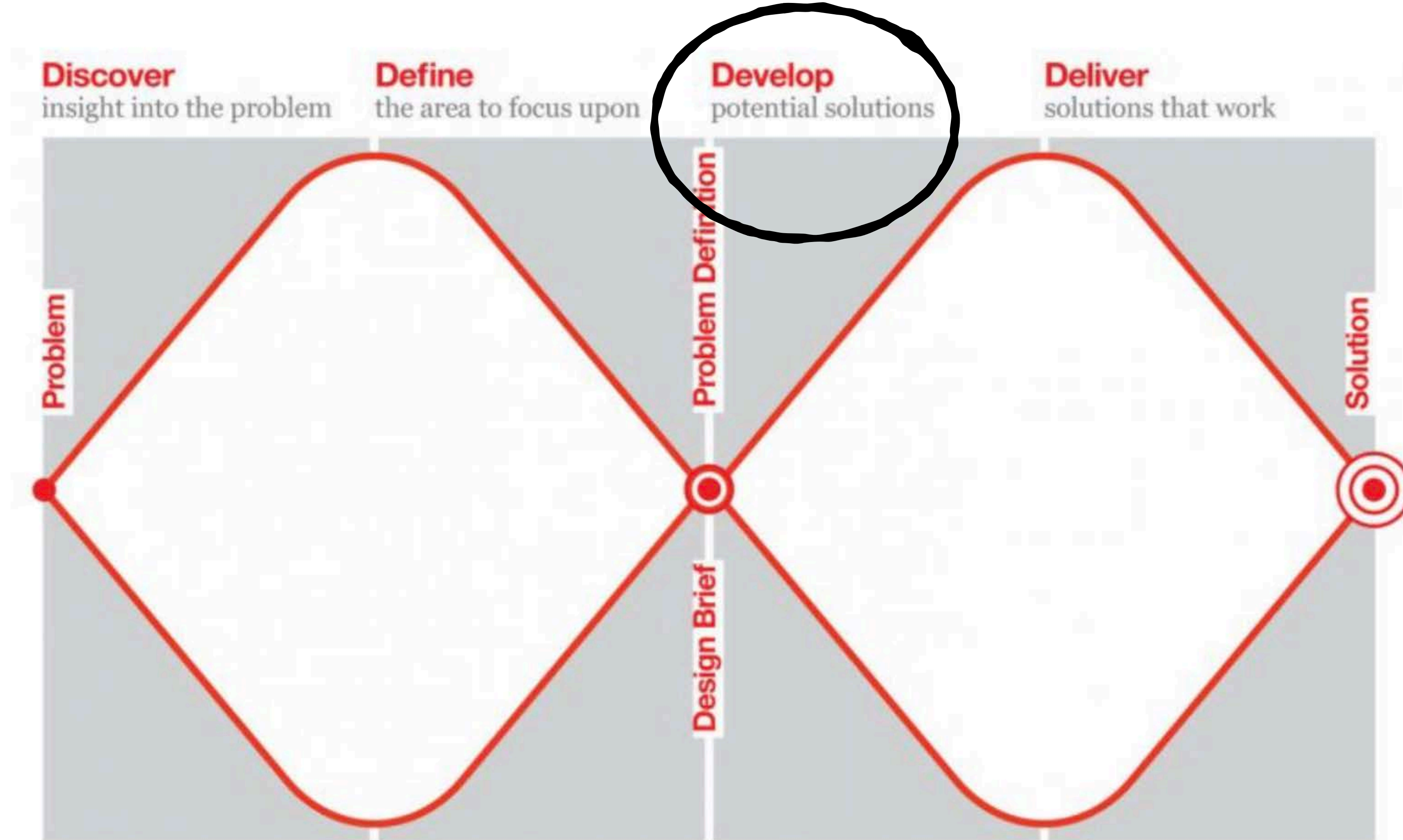Developing a "good" solution

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When do we need ideation?

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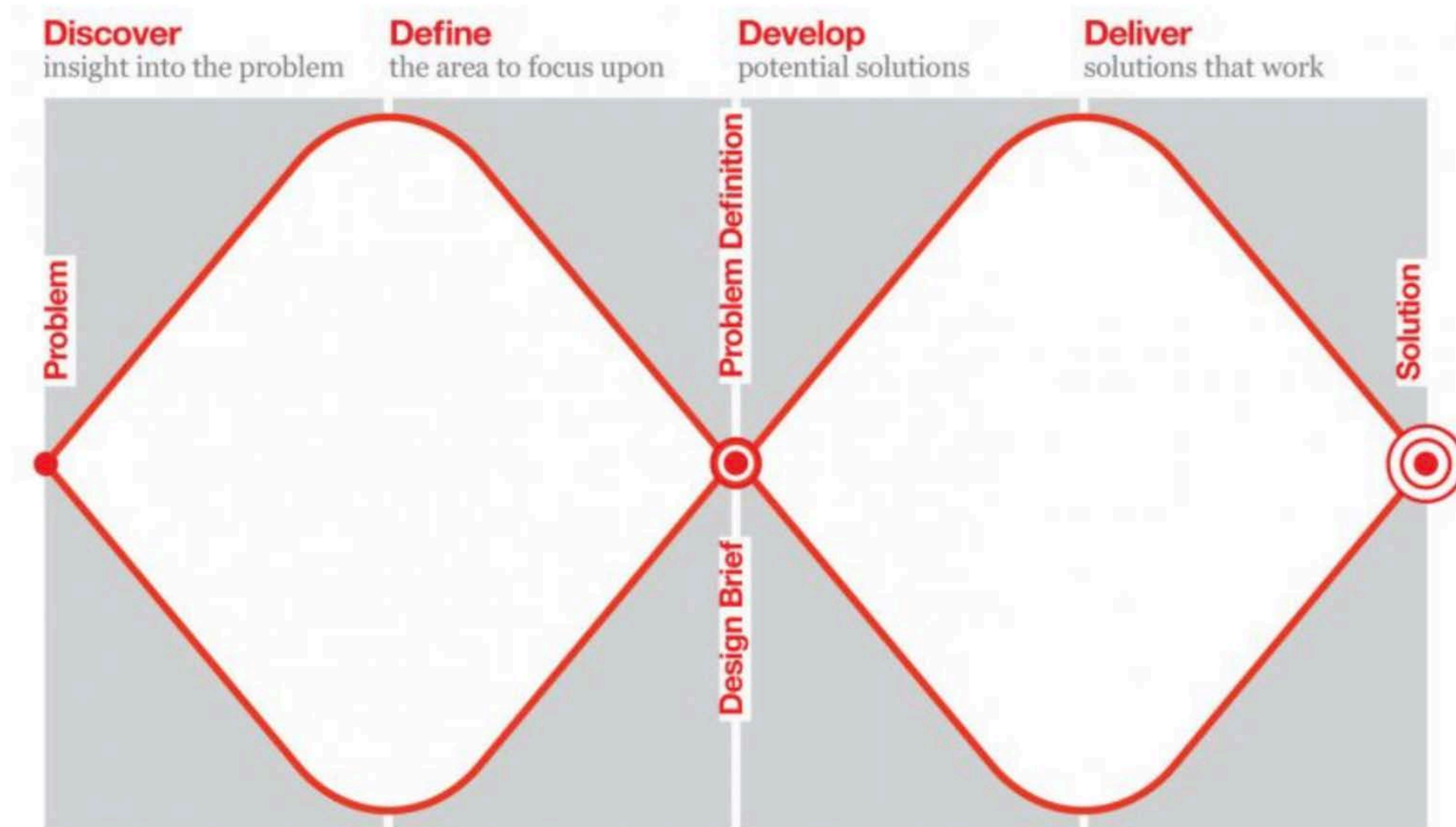
When do we need ideation?

What is the value of ideation methods?

- You might gravitate towards (and get "stuck" on) an "obvious" idea

- Sometimes difficult to come up with more than a few ideas - especially without a set process/method in place

- -> Ideation is all about getting you to think outside the box

How might we ideate?

Preparing for ideation

Divergent thinking

Convergent thinking

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Preparing for ideation....

Preparing for ideation

What should we have done before ideating?

Know what problem you are addressing:

- Understand the context and reason for the problem

- Know who your stakeholders and users are

- Understand what their needs and wants are

Preparing for ideation

What should we have done before ideating?

- Understand the context and reason for the problem

    Floor scrubbing robots were introduced at the airport in the wake of the Covid-19 pandemic. While initially, these robots were intended to be used in times of low foot-traffic, which was the case during the pandemic, over time they've been increasingly used during busy times. This has been leading to increased malfunctioning of the robots, which has had profound effects on janitorial staff's work. There have also been frustrations with how malfunctions are managed and janitorial staff feel that the current processes are further impacting and slowing down their work.

Derived from research by: Kang, Esther. Y., & Fox, Sarah. E. (2022, June). Stories from the Frontline: Recuperating Essential Worker Accounts of AI Integration. In *Designing Interactive Systems Conference* (pp. 58-70).

Preparing for ideation

What should we have done before ideating?

- Know who your stakeholders and users are

  - **Janitorial staff**
  - **Managers and shift supervisors**
  - **County Authority (makes executive decisions)**
  - **Engineers from Northfield Robotics**

- Know what their needs/wants are
  - **Janitorial staff need to feel that their voices and insights are heard by decision makers**
  - **Administrators would like a clearer line of communication with Northfield Robotics to anticipate robots' changes in behaviour and routes**
  - **….**

Derived from research by: Kang, E. Y., & Fox, S. E. (2022, June).
Stories from the Frontline: Recuperating Essential Worker
Accounts of AI Integration. In *Designing Interactive Systems
Conference* (pp. 58-70).

Preparing for ideation

Distilling the problem…

- Your research may reveal many possible problems, or design briefs

- For ideation, it is important to narrow it down to the problem you actually want to address

Preparing for ideation

One approach: "How Might We?" questions

…Questions to focus your ideation, based on the problem you are engaging with

How might we…

- Design technology that supports the work of janitorial staff?

- Support better communication between janitorial staff and administrative staff?

- Make the management of robot malfunctions quick and easy?

Preparing for ideation

https://www.nngroup.com/articles/how-might-we-questions/

One approach: "How Might We" questions?

How might we…

- Design technology that supports the work of janitorial staff?

- Support better communication between janitorial staff and administrative staff?

- Make the management of robot malfunctions quick and easy?

Key: Each question affords different ideas, different forms of design…

Preparing for ideation

One approach: "How Might We" questions?

How might we…

- Design technology that supports the work of janitorial staff?

- Support better communication between janitorial staff and administrative staff?

- Make the management of robot malfunctions quick and easy?

Key: Should be broad enough to inspire creativity, and not point to a specific solution

Preparing for ideation

One approach: "How Might We" questions?

How might we…

- Design technology that supports the work of janitorial staff?
- Support better communication between janitorial staff and administrative staff?
- Make the management of robot malfunctions quick and easy?

Key: Should be broad enough to inspire creativity, and not point to a specific solution

E.g. - a worse question: How might we create an app that tells administrative staff when a robot has malfunctioned?

Preparing for ideation

Activity 1: How Might We Questions (5 mins)

Develop 3 How Might We Questions based on your research in CW1

Examples for reference:
- Design technology that supports the work of janitorial staff?
- Support better communication between janitorial staff and administrative staff?
- Make the management of robot malfunctions quick and easy?

Key: Should be broad enough to inspire creativity, and not point to a specific solution

https://www.nngroup.com/articles/how-might-we-questions/

Preparing for ideation

Activity 1B: How Might We Questions (5 mins)

Decide on one How Might We question with the rest of your group, or develop a new one together - you will use this in the next activity!

Preparing for ideation

https://www.nngroup.com/articles/how-might-we-questions/

Onto ideation….

Divergent thinking

Divergent thinking

Divergent thinking

Greenberg, Saul. Sketching User Experiences. 1st edition. Waltham, Mass: Elsevier, 2012. Print.
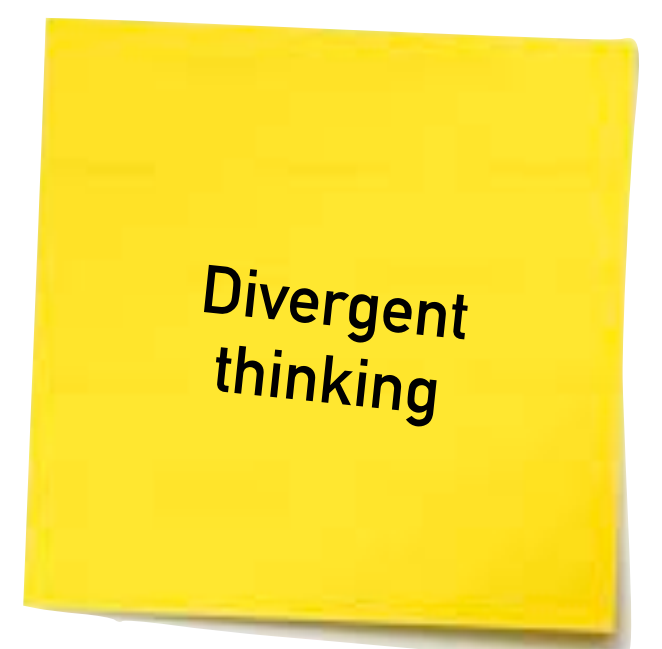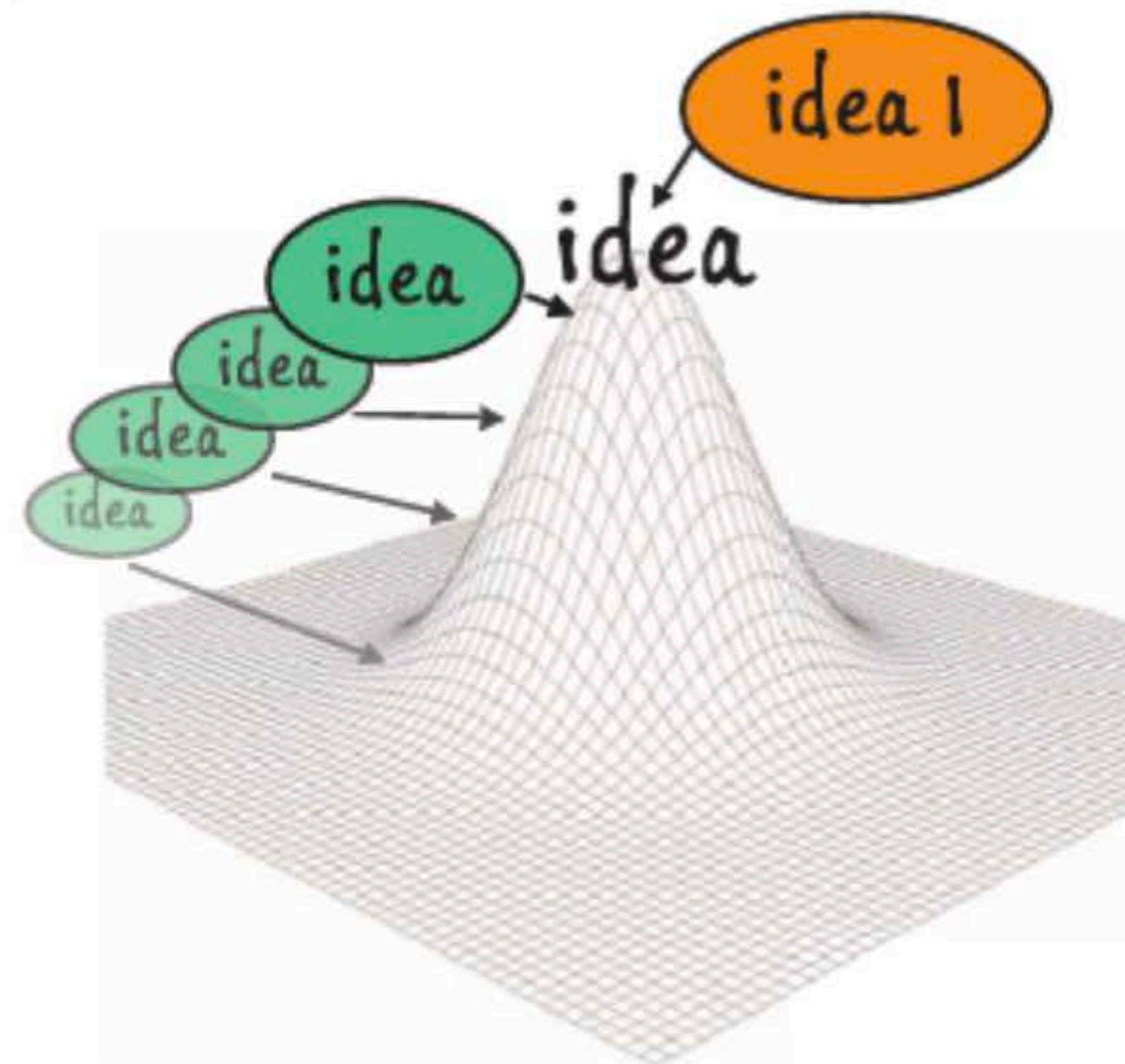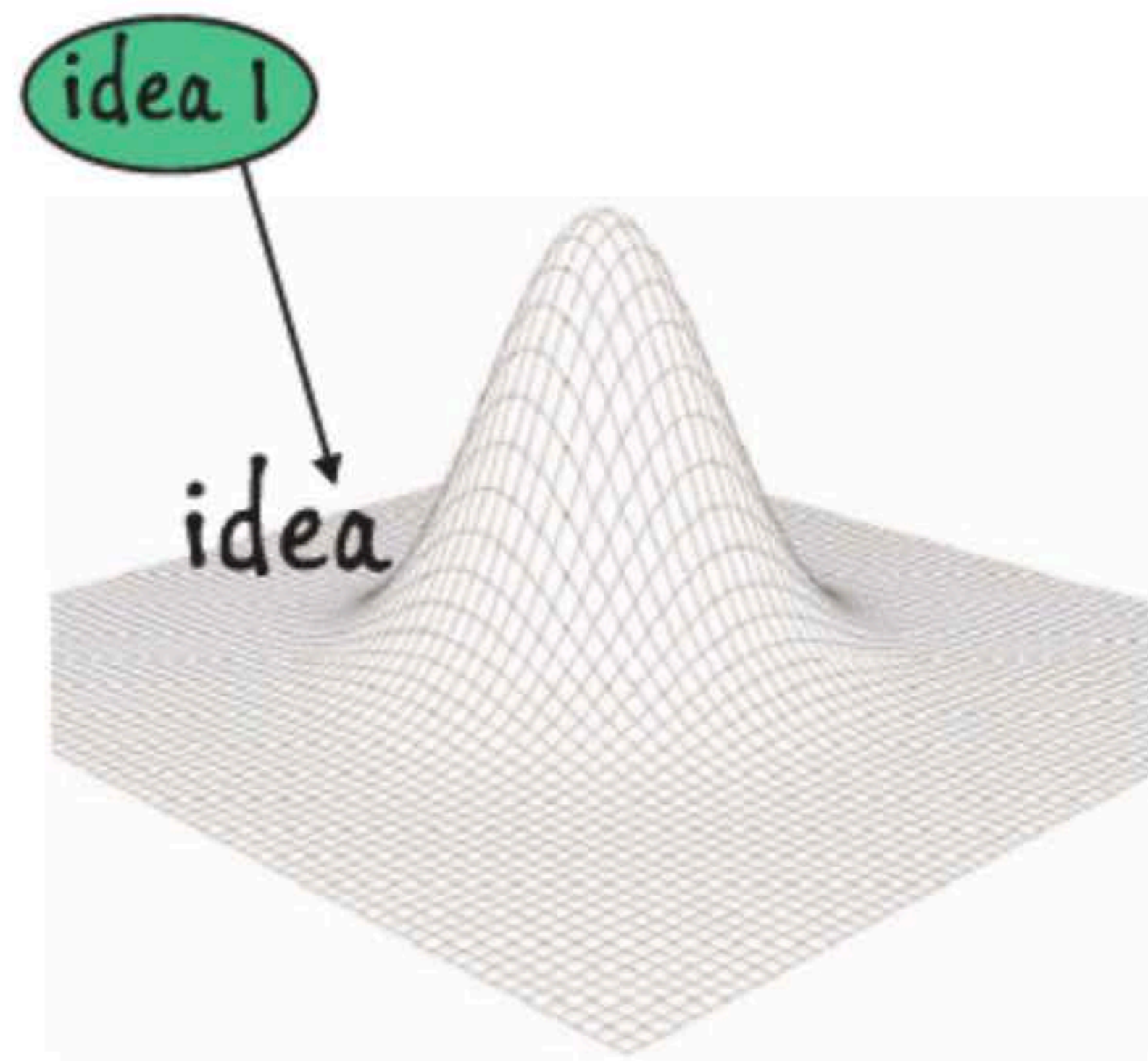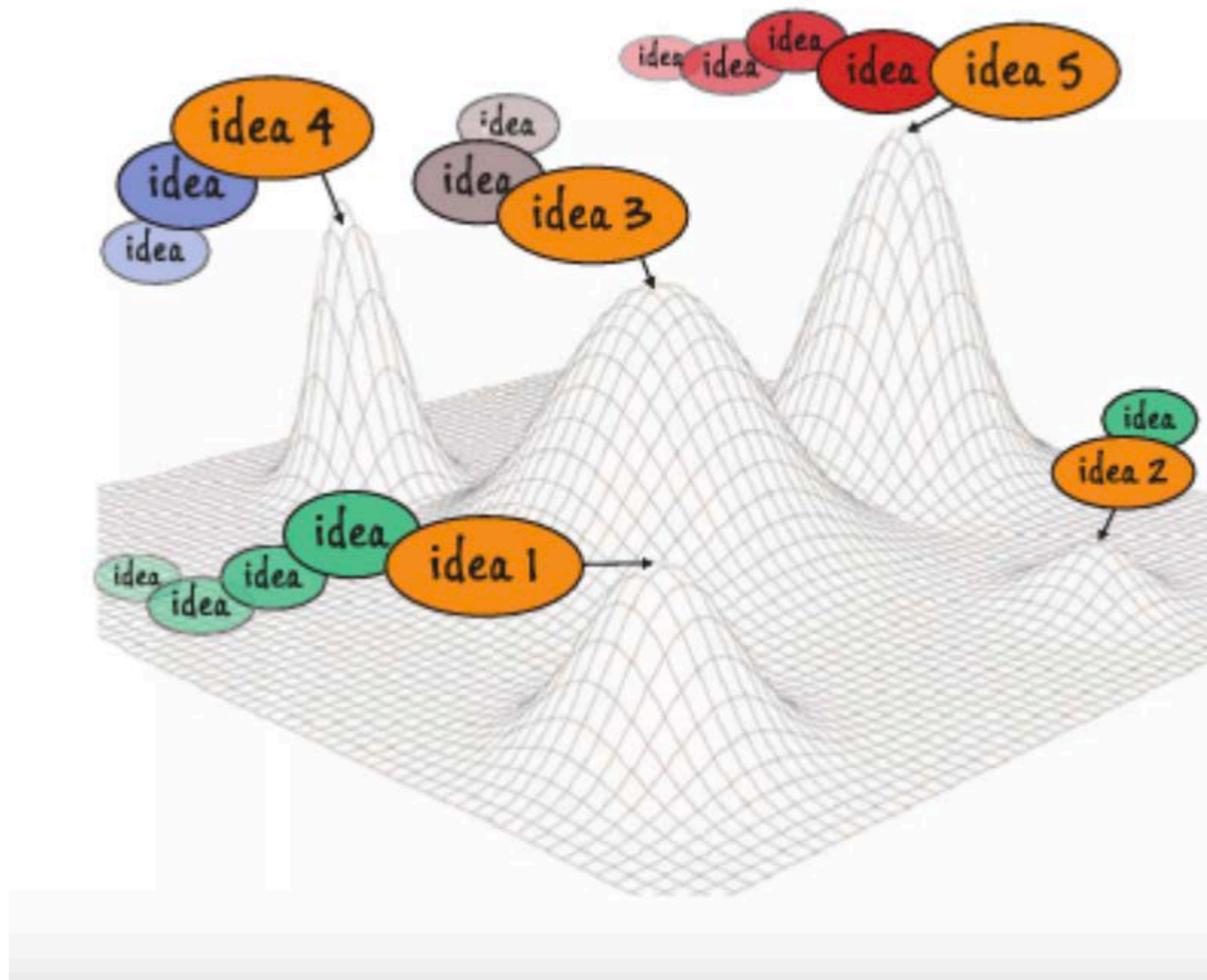
What are the goals of (early) ideation?

- Quantity > Quality
- Diversity
- Novelty over relevance
- Going beyond the obvious
- Wild ideas welcome
- High level thinking - no details

Divergent thinking

Ideation methods

- All are about coming up with ideas
- And all give the ideation a few simple rules to help it along, e.g.,
  - Time limits
  - Promoting discussion (e.g., active listening, using 'yes and?')
  - Helping you connect ideas together (e.g., connecting ideas physically)

Divergent thinking

Ideation methods

- Brainstorming
- Mindmaps
- Crazy 8s
- Crowdstorming
- Metaphors
- Sketching
- Mash-ups
- Storyboards
- … Many more

Generative

Iterative

Divergent thinking

Brainstorming

Add an Android version	Add a social element to the app	Have a section that helps gym goers find a gym buddy	Location tracking, tells you how long you spend at the gym automatically	Have a leaderboard for people who have set gym records	I think it would be important to make the gym a judge free zone. Maybe we can help with that in the app?
Yang's first idea	*Oscar's first idea*	*Rachel's first idea*			
Provide an incentive if they download the app	Users can post pictures and videos so other gym members can see them	A lot of people go to the gym to meet people, maybe there could be a way to have your profile public	Phones can track how many steps you take	Let's just require members to get the app	We could fine anyone that participates in body shaming
	Yang's idea after reading Oscar's idea	*Oscar's idea after reading Rachel's idea*	*Rachel's idea after reading Preston's idea*		
Rewards program	Users can post comments/like on Instagram and Facebook	Have a QR code scanner feature for people to add friends to their gym network	Have a news feed with gym announcements	An option to send a video of lifting weights to a trainer to get help on improving form	Gym-rat free zone!
		Yang's idea after considering the ideas above	*Oscar's idea after considering the ideas above*		
Referral program	App users should be able to share music and playlists they like	Each treadmill should have a QR scanner that can scan your app to do something	Have a "Member Moment" with gym members	Create a technology that virtually gives feedback in real time using a phone's front-facing camera	There needs to be a better way to collect member's data

Brainstorming rules

- Typically has a time limit and is done in groups
- A variety of "ground rules"
  - Don't be judgemental – let ideas flow
  - Encourage wild ideas
  - Build on the ideas of others
  - One conversation at a time
  - Be visual (include sketches)
  - Go for quantity

Brainstorming benefits

Pros:
- Highly generative
- Enables group discussion and reframing the problem together

Risks:
- Not everyone always contributes
- Some people might dominate conversation
- Sometimes the ideas that come out are not very individual

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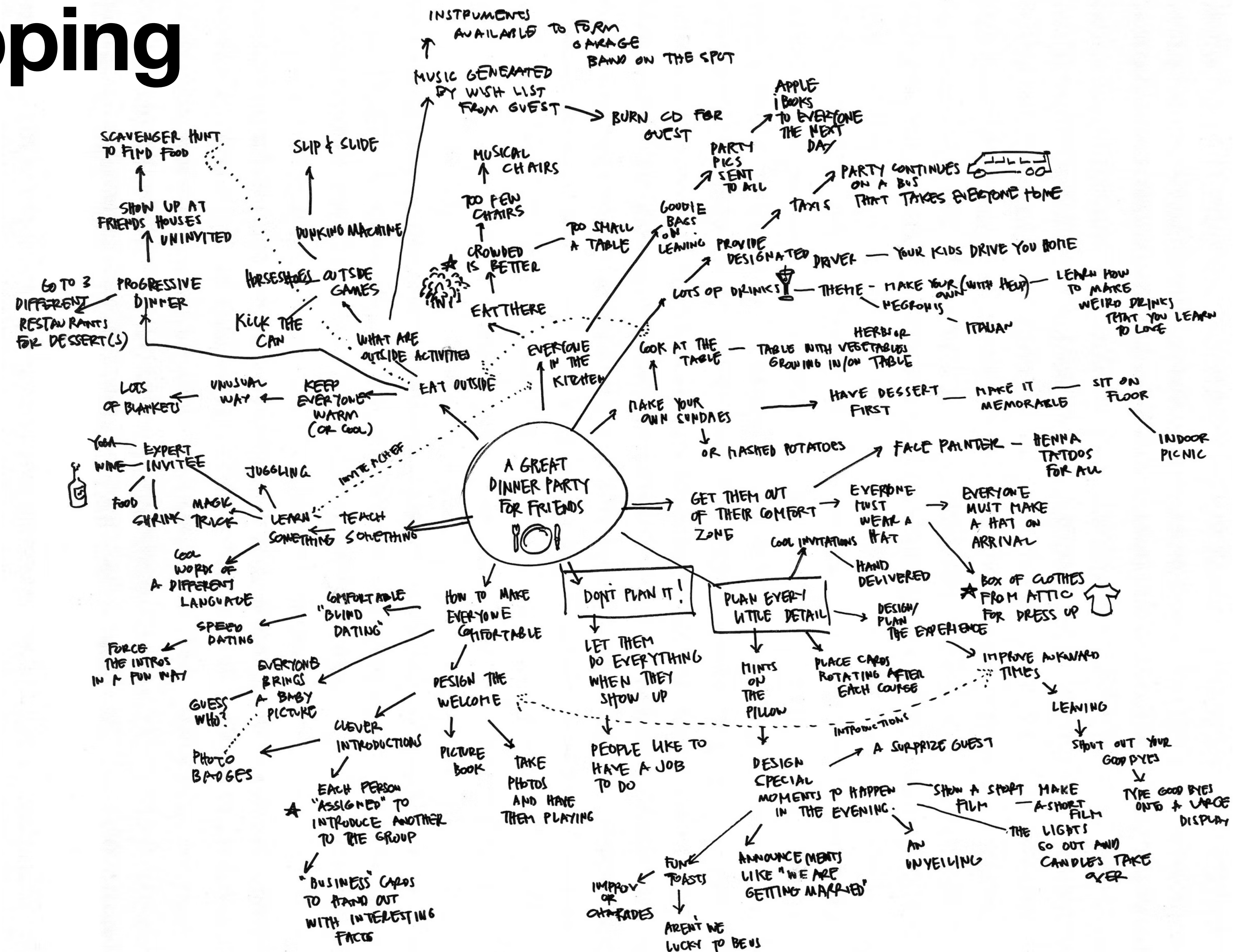
Mindmapping

Mindmapping

- Begin with the main concept in the middle (e.g., "How Might We" question)

- Add branches with high-level thoughts on the main concept

- Expand each branch with new nodes, and add new branches

- Add connections between different themes
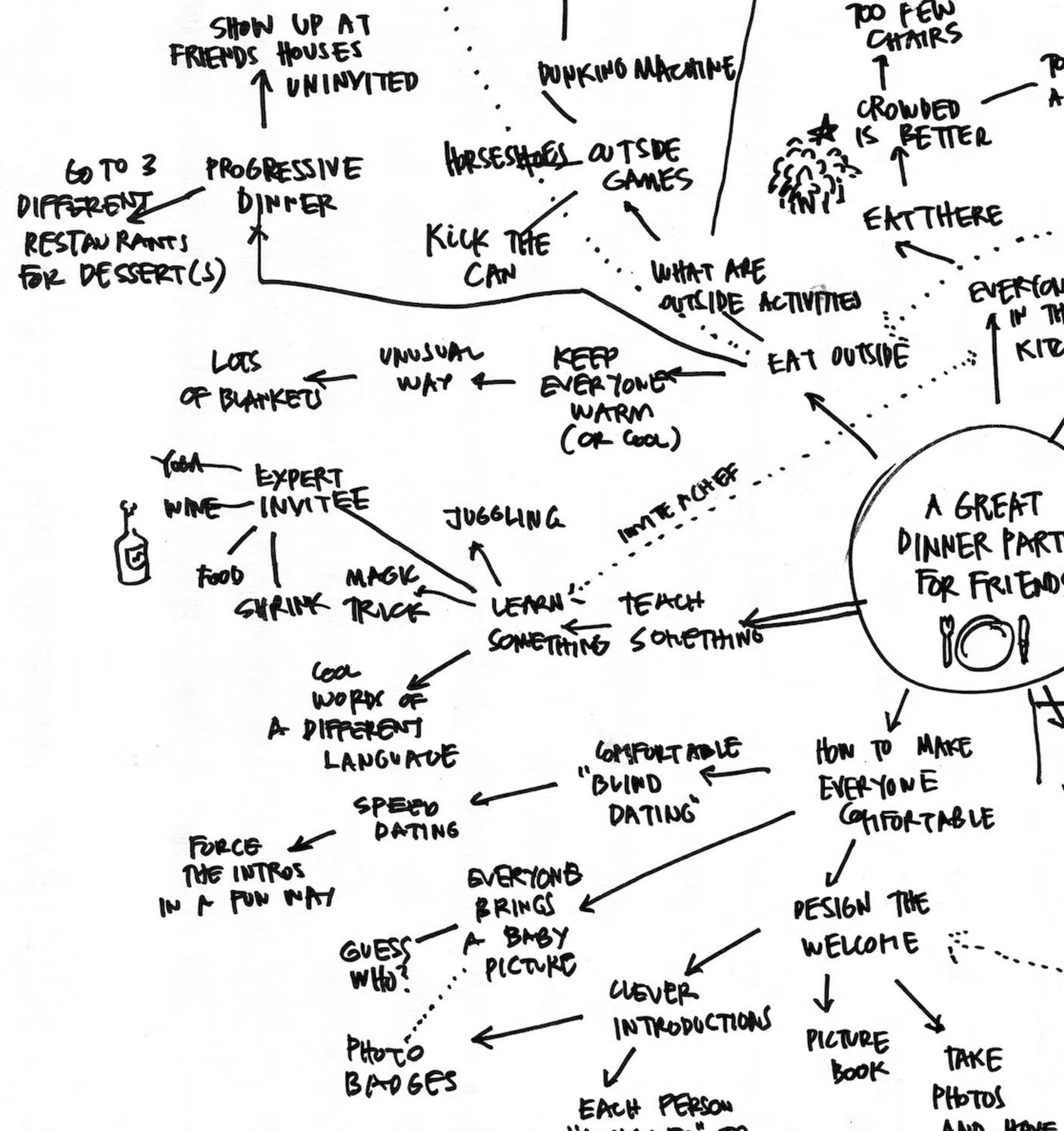
Mindmapping

Pros:

- Very easy to expand concepts (as opposed to brainstorming)

- Make connections during the ideation session

Risks:

- Can be a bit messy and hard to decipher

- Easy to get stuck on one branch
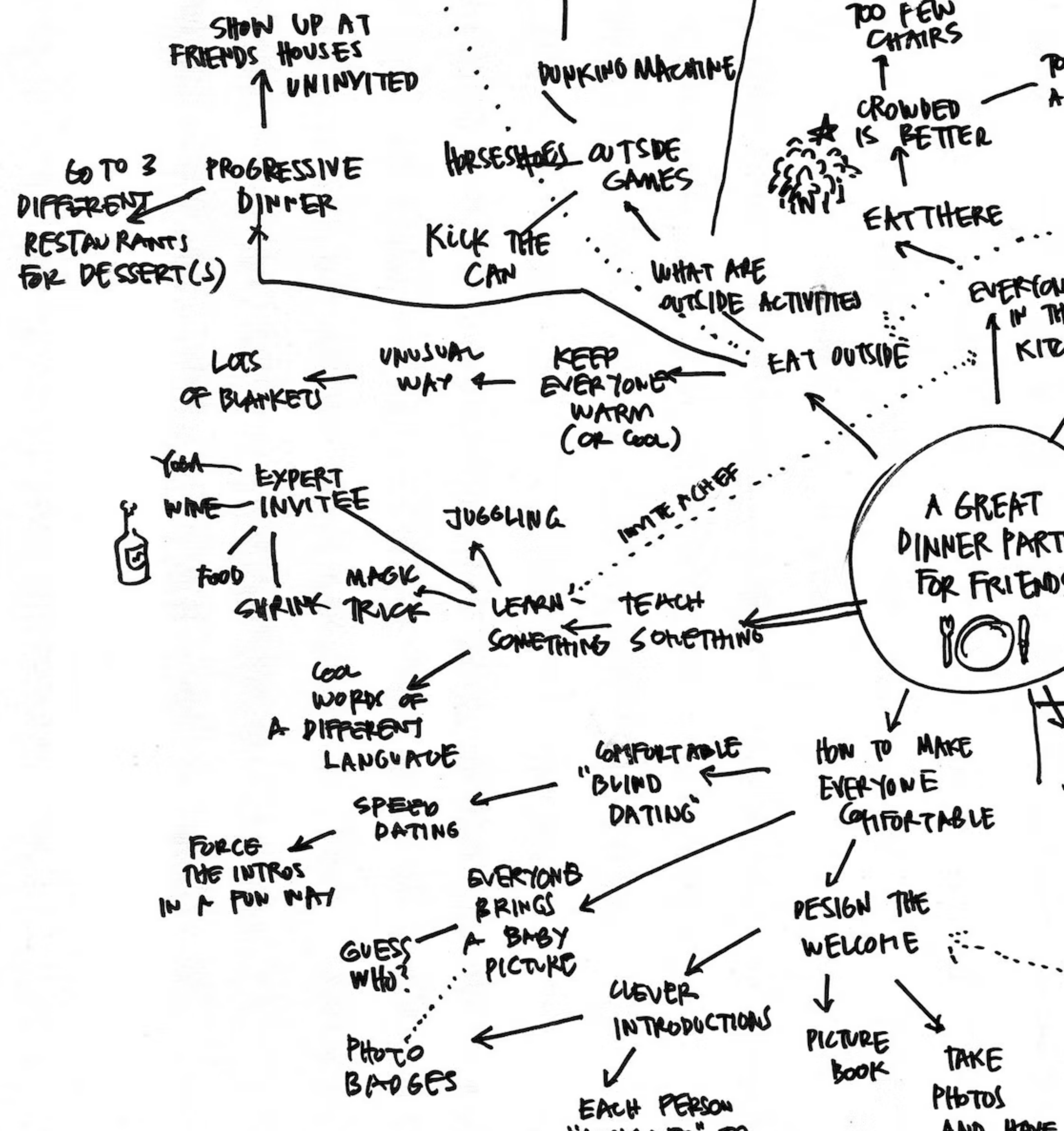
Crazy Eights

Crazy Eights

- Fold your piece of paper three times
- Draw 8 ideas in 8 minutes
- Give yourself 1 minute to draw each idea
- Try to get something down on the page every time
- Don't overthink it
- Each concept has to be distinct

Divergent thinking

Activity 2: Crazy Eights - (8 minutes)

- Write your How Might We Question at the top of your paper

- Give yourself 1 minute to draw each idea

- Try to get something down on the page every time

- Don't overthink it

- Each concept has to be distinct

You can think about websites, apps, tangible interfaces, blockchain applications, teddy bears, letters… - the sky is the limit!

Divergent thinking

Activity 2B: Crazy Eights (5 minutes)

- Now, explain two of your ideas to your group members

Divergent thinking

How do we refine and narrow it down?

Convergent thinking

Divergence and convergence

Divergent thinking

Many possible solutions

Convergent thinking

Developing a "good" solution

Determining fit, Ranking and Clustering

Convergent thinking

Voting

Round 1	Add an Android version	Add a social element to the app	Have a section that helps gym goers find a gym buddy	Location tracking, tells you how long you spend at the gym automatically	Have a leaderboard for people who have set gym records	I think it would be important to make the gym a judge free zone. Maybe we can help with that in the app? ★
	Yang's first idea	*Oscar's first idea*	*Rachel's first idea*			
Round 2	★ ★ Provide an incentive if they download the app ★ ★	Users can post pictures and videos so other gym members can see them	A lot of people go to the gym to meet people, maybe there could be a way to have your profile public	Phones can track how many steps you take	Let's just require members to get the app	We could fine anyone that participates in body shaming
		Yang's idea after reading Oscar's idea	*Oscar's idea after reading Rachel's idea*	*Rachel's idea after reading Preston's idea*		
Round 3	Rewards program	Users can post comments/like on Instagram and Facebook	Have a QR code scanner feature for people to add friends to their gym network	Have a news feed with gym announcements ★ ★	An option to send a video of lifting weights to a trainer to get help on improving form	Gym-rat free zone!
			Yang's idea after considering the ideas above	*Oscar's idea after considering the ideas above*		
Round 4	Referral program	App users should be able to share music and playlists they like	Each treadmill should have a QR scanner that can scan your app to do something ★	Have a "Member Moment" with gym members	Create a technology that virtually gives feedback in real time using a phone's front-facing camera	There needs to be a better way to collect member's data

Convergent thinking

2x2s

Dimension 1

Dimension 2

Convergent thinking

2x2s

Feasibility

More Feasible

Less Impactful

More Impactful **Impact**

Less Feasible

Convergent thinking
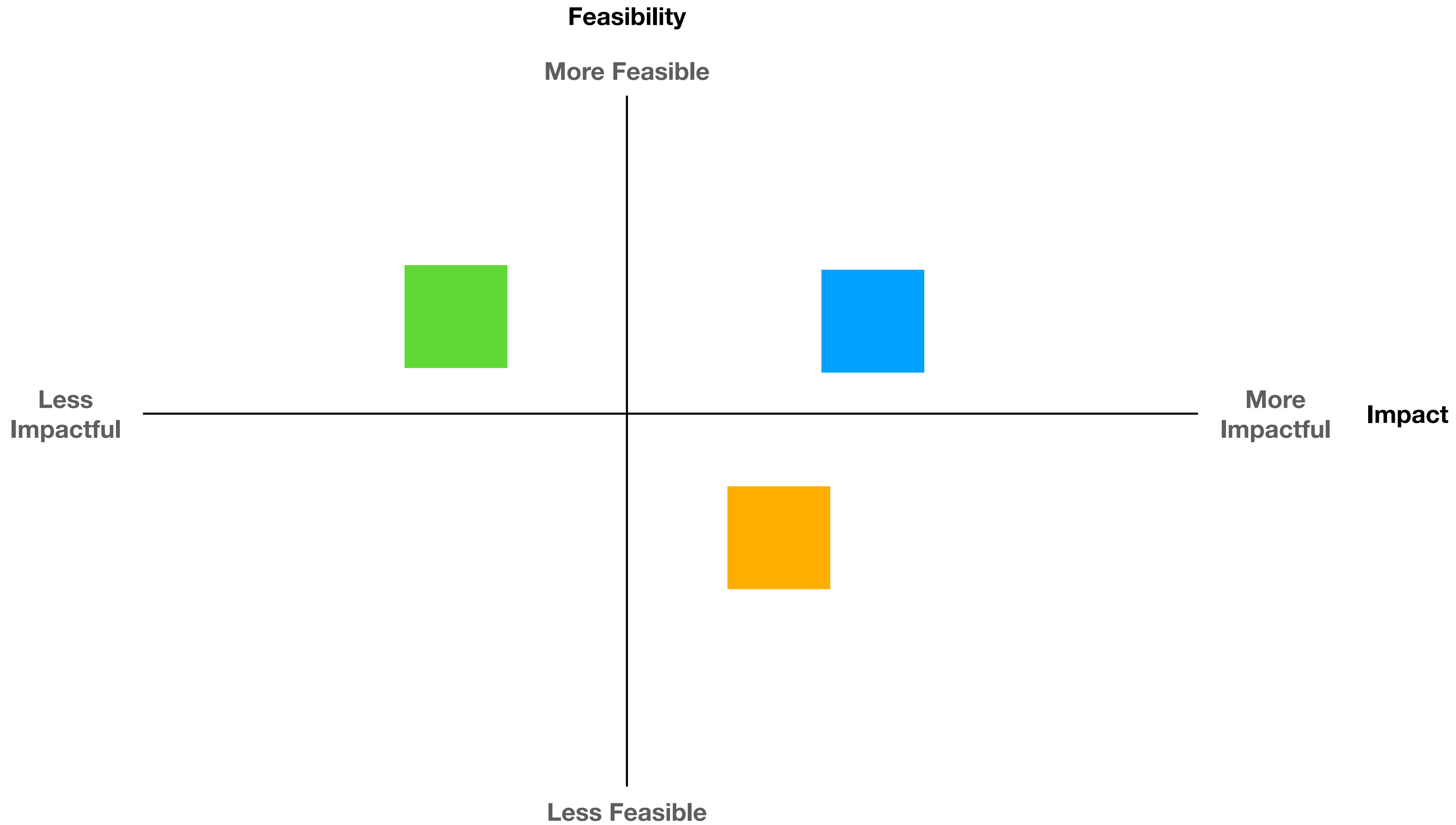
2x2s

Legal Compliance

More Legally Compliant

Less Equitable

More Equitable   **Equity**

Less Legally Compliant

Convergent thinking

Affinity Mapping

Gamification of Experience

Games

Sensory Interface

Immersive Experience

Interactive Experiences and Installations

Creative Interfaces for Play and Exploration

Advocating for Equality, Diversity and Inclusion

Inclusive Music

LGBTQIA+ Issues

Increasing Awareness of Children's Rights

Advocacy Through Data

Fostering Representation Through Art

Fair Pay for Creative Work

Automated Rights Management

Automated Content Retrieval

Guiding and Navigating

Data Driven Knitting

Bias Scanning

Automation

Image Cropping

Automated Video Editing

Workflow efficiency and productivity

Championing Environmental Sustainability

Making Environmental Decisions

Environmental Impact

Energy efficiency

Carbon management

Ethical Products

Carbon Calculators

Sustainable Purchasing

Sustainable Products

Sustainable Fashion

Physical products / things

Second Hand Items

Giftware

Physical Telescope

Toys

Smart Textiles

Tactile Books

3D Design

3D Models

Musical Instruments

Data Physicalisation

IoT Products

Standardising and sharing data

Shared Data Repository

Documenting Venues

Standardising and Streamlining Data

Informing Decision Making

Data sharing

Shared Data Repository

Sharing Library

Collaboration/Networking Platform

Collaboration Support

Supporting collaboration, sharing and community

Digital Cooperative

Connecting Performances

Co-Creation

Community building

Convergent thinking

Combining Ideas

How might we address post-natal chronic back pain?

An ergonomic backpack with sensors for monitoring posture and avoiding excess weight

A physical in-home visualization device tracking progress in exercise and pain symptoms, to encourage long-term treatment adherence

A wearable baby carrier with posture sensors and a heating pad for providing symptom relief
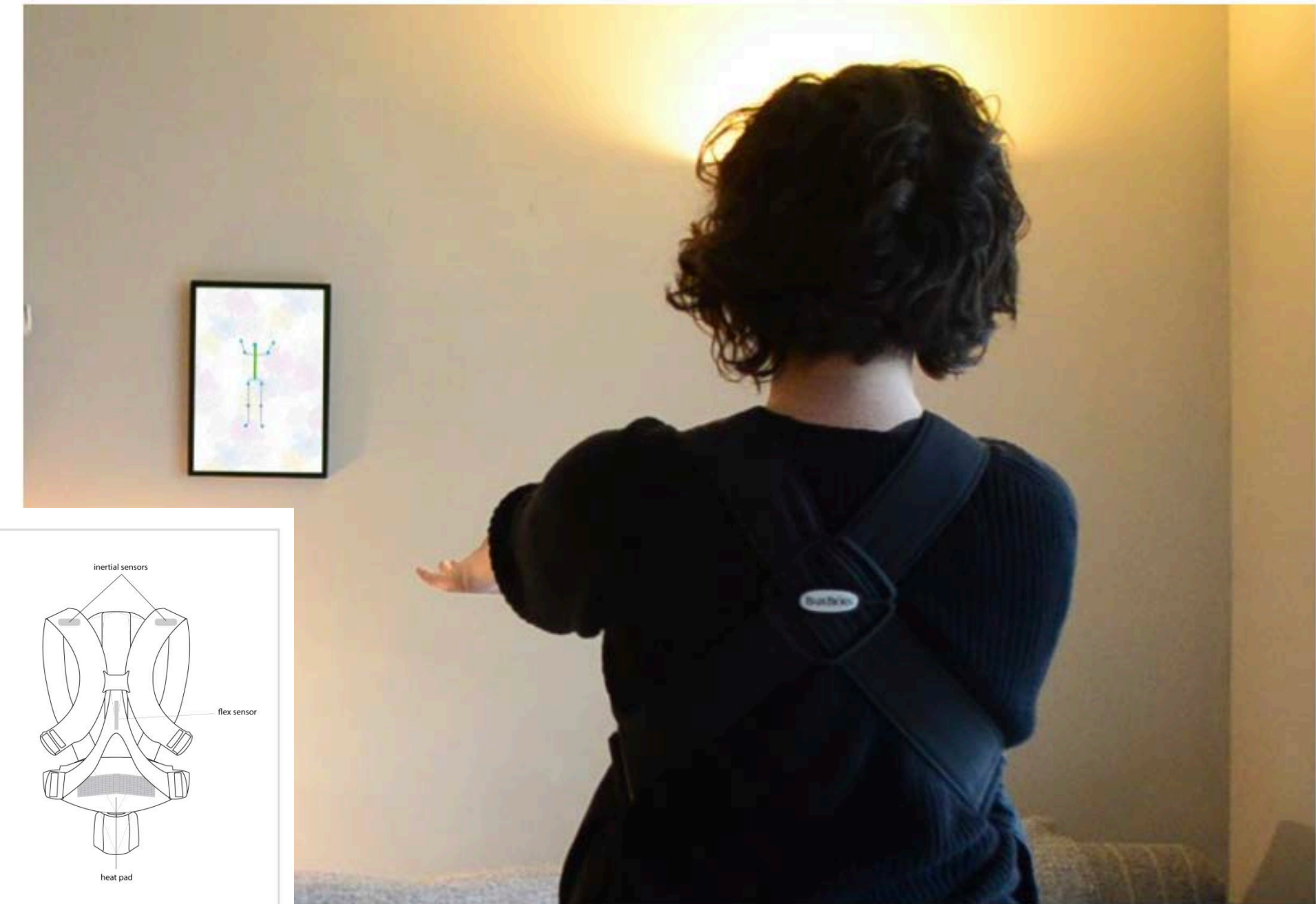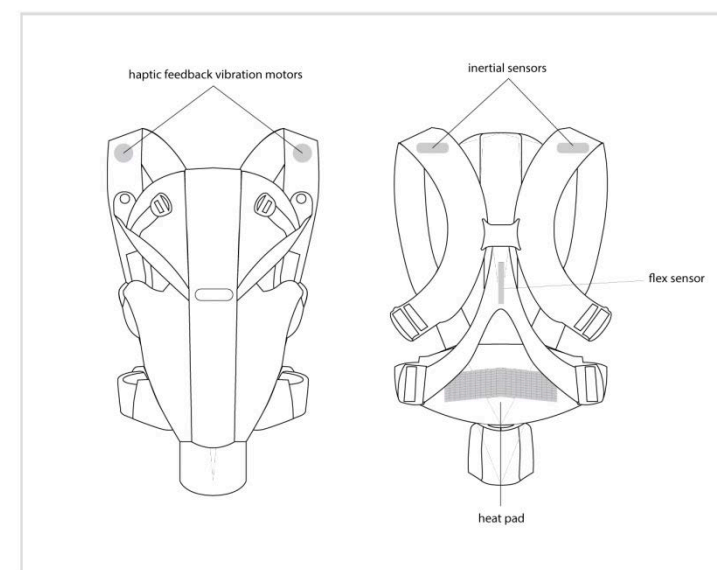
- Baby carrier with sensors that monitor for spine movements that exacerbate PNCBP
- Connected by Bluetooth to a digital display that guides users through physiotherapy, also using the sensors

Convergent thinking

Di Cuia, D., Janovica, J., Lechelt, Z., Li, S., & Purewal, H. (2016, May). CarryLine: A Tool for Management and Rehabilitation of Post-Natal Chronic Back Pain. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 26-31).

Inspiration: CHI Student Design Competition

- Worldwide competition for student design

- Last year's finalists: https://programs.sigchi.org/chi/2024/program/session/156864

- Good resource for getting inspiration for design methods you might use in your coursework, and how they fit together

CHI 2024
Surfing the World

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