(Early) Ideation

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Slides adapted from Dr. Susan Lechelt
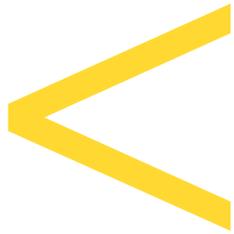
THE UNIVERSITY *of* EDINBURGH

outline

- Early ideation and the different phases
- Divergent thinking
- Convergent thinking

what is ideation?
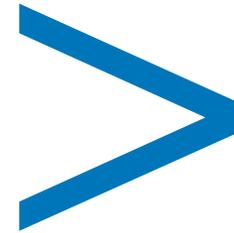
what is ideation?

- Generating as many ideas as possible – for a given design brief

- Goal: To up with lots of new ideas that you did not have initially

- Then narrow down, refine those considered best, and iterate

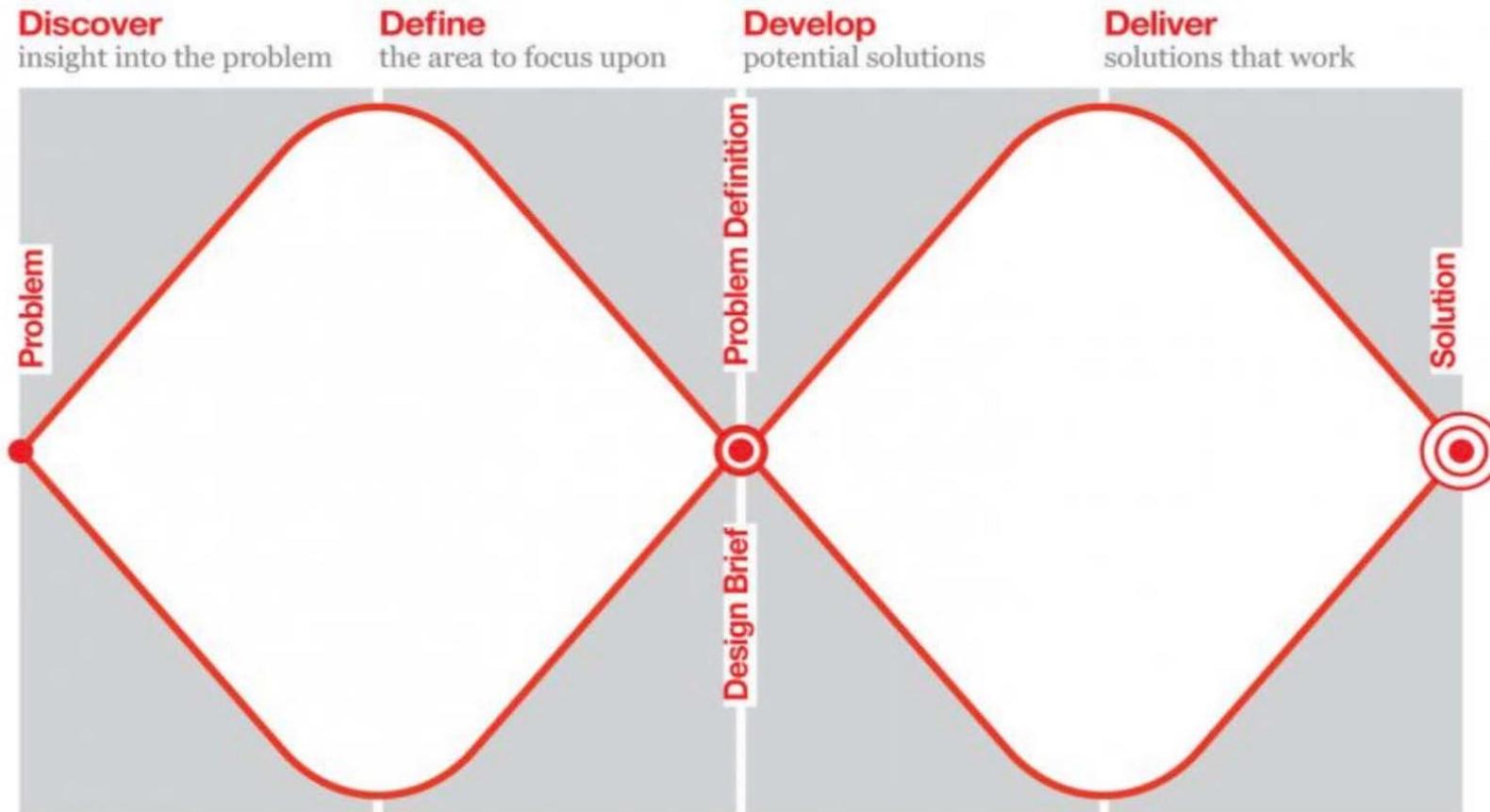# what is ideation?

Divergent thinking

Many possible solutions

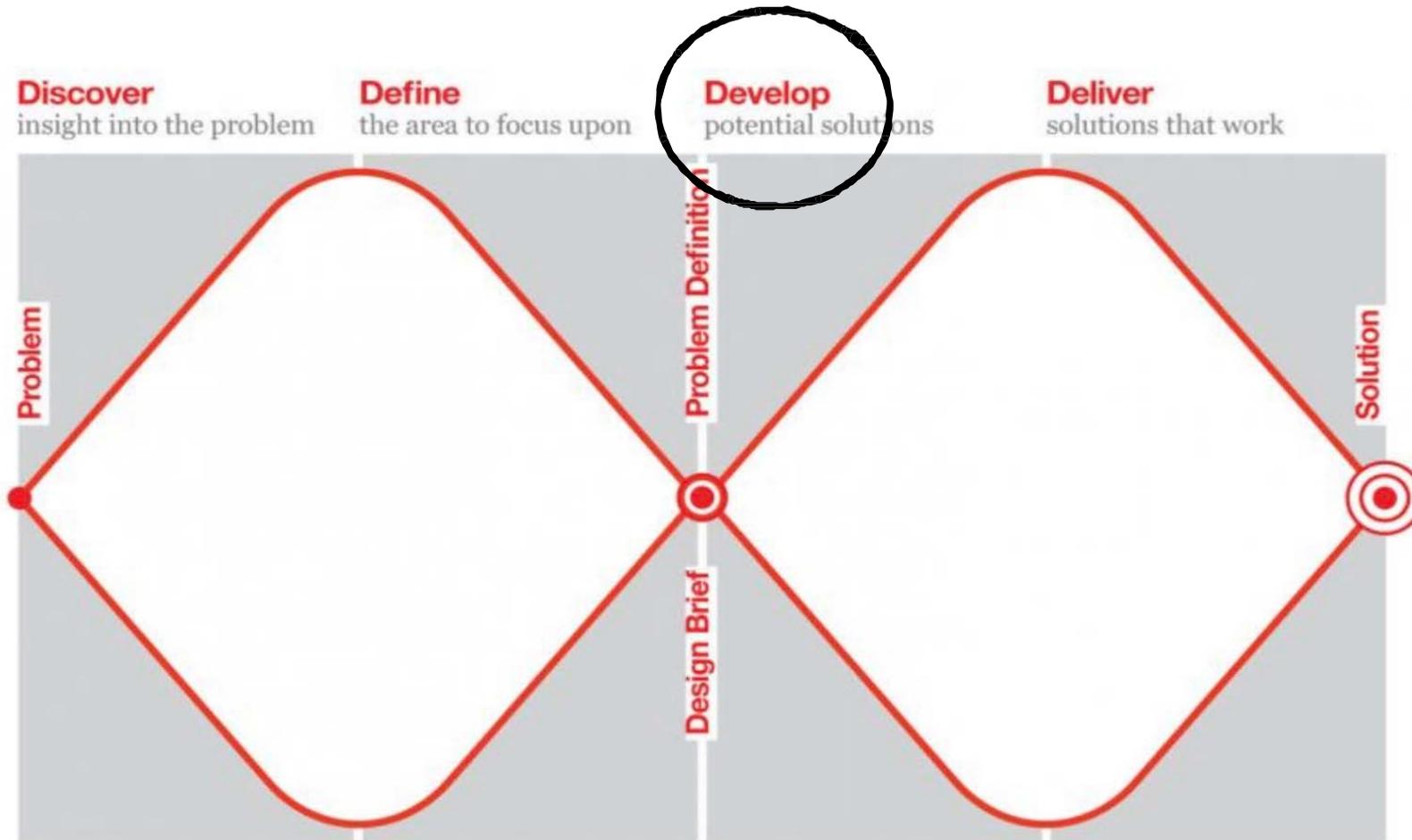**Convergent thinking**

Developing a "good" solution

when do we need ideation?

British Design Council, 2004: The Double Diamond
https://www.designcouncil.org.uk/our-work/news-opinion/double-diamond-universally-accepted-depiction-design-process

when do we need ideation?

Discover
insight into the problem

Define
the area to focus upon

Develop
potential solutions

Deliver
solutions that work

Problem

Problem Definition

Design Brief

Solution

British Design Council, 2004: The Double Diamond
https://www.designcouncil.org.uk/our-work/news-opinion/double-diamond-universally-accepted-depiction-design-process

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

what should we have done before ideating?

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 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
  - …

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
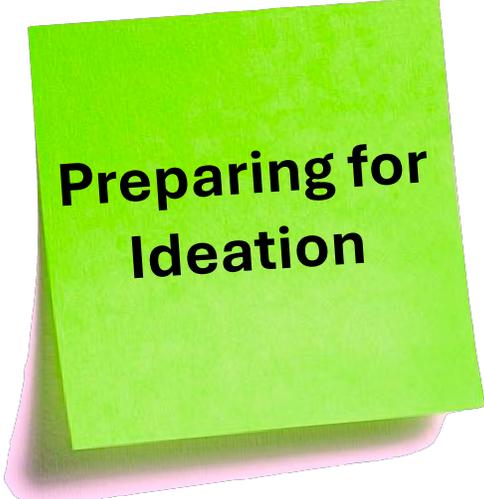
Preparing for Ideation

"how might we..." questions

- One approach to narrow down the problem

- Questions to focus ideation, based on the problem in focus

- 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

"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?
- Each question should afford different ideas, different forms of design

Preparing for Ideation

"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?
- Each question should afford different ideas, different forms of design
- Questions should be broad enough to inspire creativity, rather than point to specific solutions already

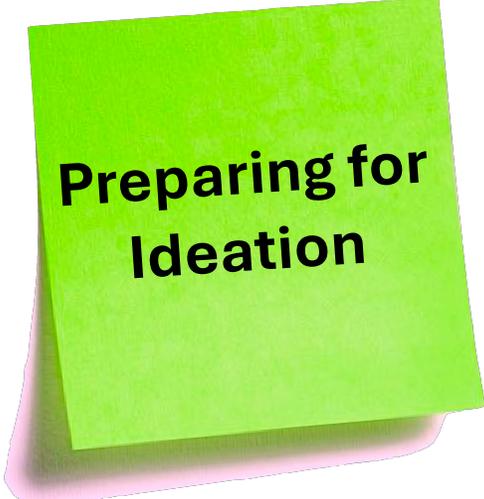Preparing for Ideation

"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?

- Negative example

  - How might we create an app that tells administrative staff when a robot has malfunctioned?

Preparing for Ideation

Activity "how might we…" questions [5min]

- Develop 3 "how might we…" questions based on (early) results of your "do", "say", "make" methods

- Examples: 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?
- Each question should afford different ideas
- Questions should be broad to inspire creativity, rather than point to specific solutions already

Preparing for Ideation

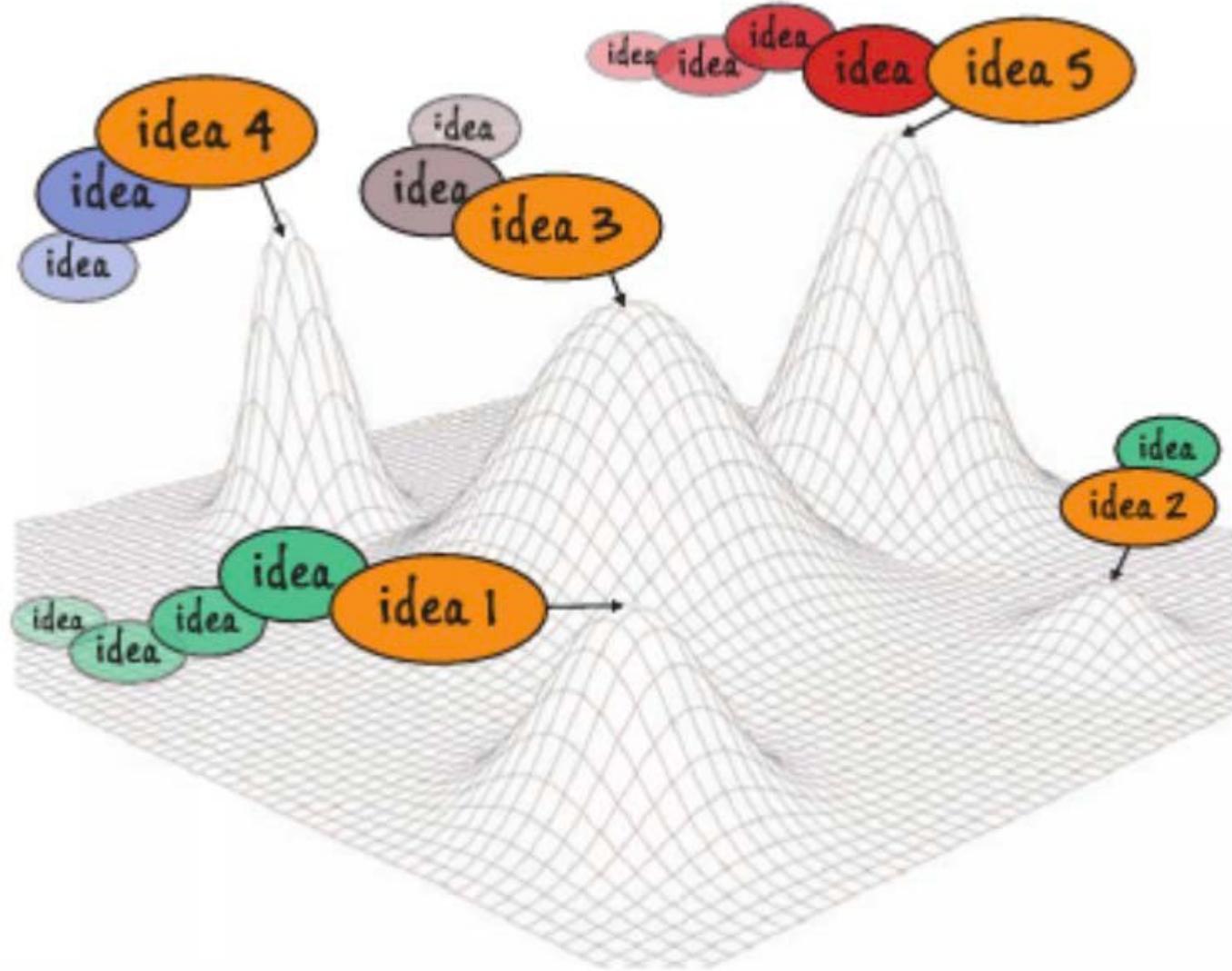# <mark>Activity</mark> "how might we…" questions [3min]

- Discuss the questions within your project group

- Decide on one question to move forward with OR develop a new one together – you will use this in the next activity!

Preparing for Ideation

Divergent thinking

Greenberg, Saul. Sketching User Experiences. 1st edition. Waltham, Mass: Elsevier, 2012. Print.

Sketching
USER EXPERIENCES

The Workbook

Saul Greenberg
Sheelagh Carpendale
Nicolai Marquardt
Bill Buxton

what are the goals of (early) ideation?
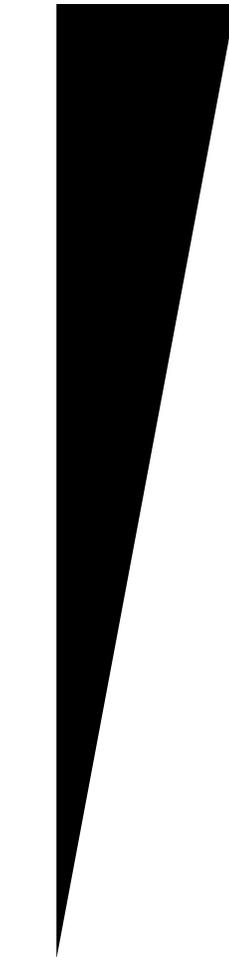
- Quantity > Quality
- Diversity
- Novelty over relevance
- Going beyond the obvious
- Wild ideas welcome
- High level thinking - no details

Divergent thinking

ideation methods

- Brainstorming
- Mindmaps
- Crazy 8s
- Crowdstorming

- Metaphors

- Sketching

- Mash-ups

- Storyboards

- ... Many more

Generative

Iterative

Divergent thinking

ideation methods

- All these are about coming up with ideas
- 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

Generative

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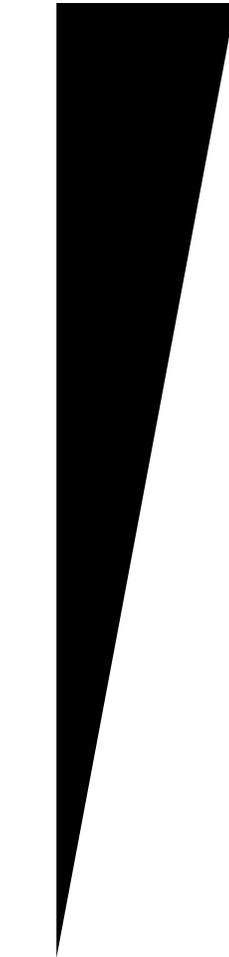- Mash-ups
- Storyboards
- ... Many more

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	Crea technolo virtually feedbac time us phor front-facin	be to er's

Divergent thinking

brainstorming rules

- Typically has a time limit
- Can be done individually and/or in groups

- Ground rules
    - Don't be judgmental - let ideas flow
    - Encourage wild ideas
    - Build on the ideas of others
    - One conversation at a time
   - Be visual (include sketches)
    - Go for quantity

Divergent thinking

brainstorming pros & cons

- Pros
  - Highly generative
  - Enables group discussion and re-framing the problem together

- Cons
  - Not everyone always contribute
  - Some people might dominate the discussion
  - Sometimes the ideas that come out are not very individual

Divergent thinking

mindmapping

Divergent thinking

Image: https://www.ideo.com/blog/build-your-creative-confidence-mindmaps

mindmapping

- Begin with the main concept in the middle
  - e.g., a "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
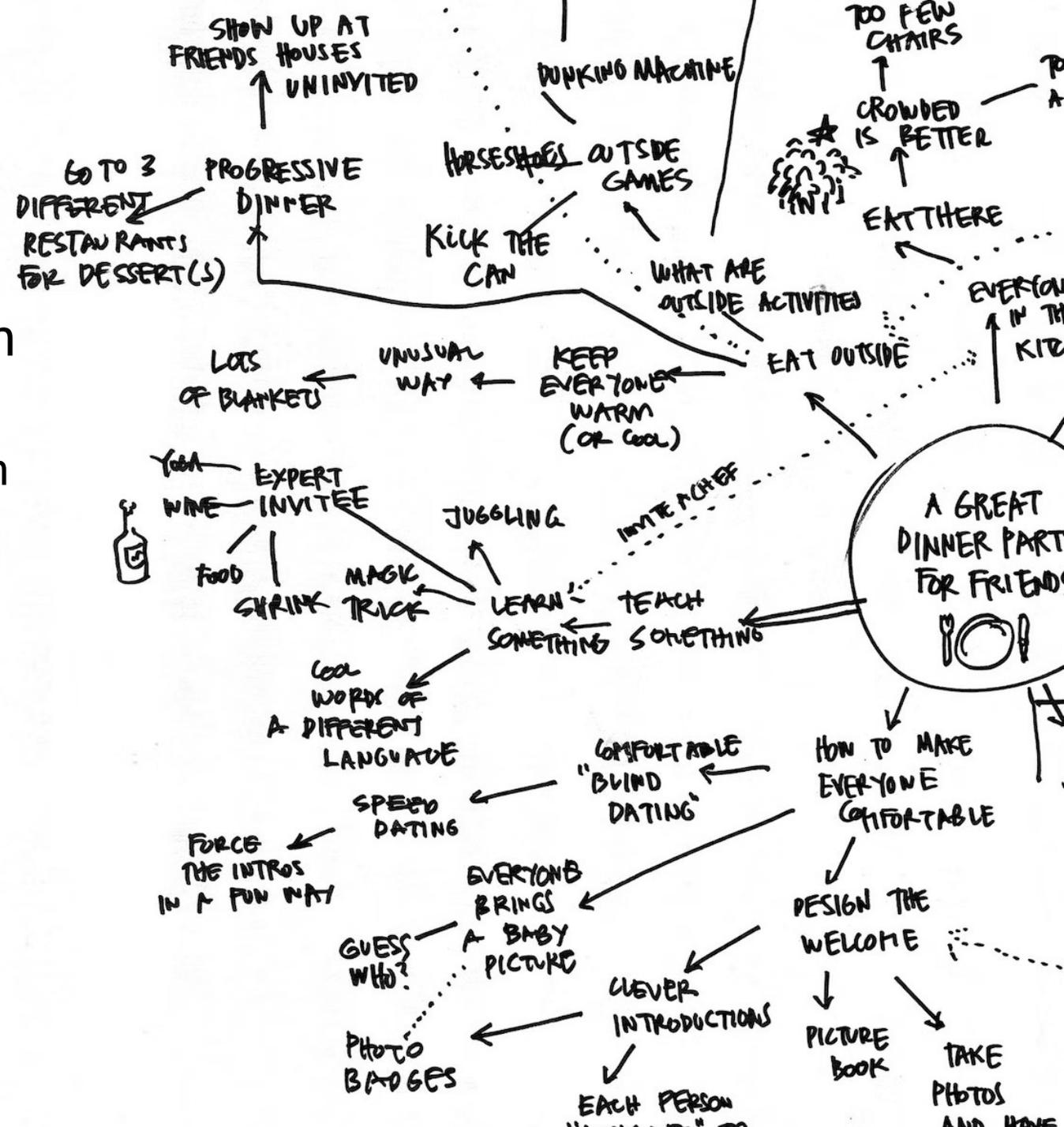
mindmapping

- Pros
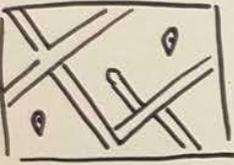 - Very easy to expand concepts (as opposed to brainstorming)
  - Make connections during the ideation session

- Cons
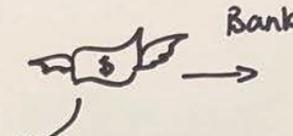 - Can be a bit messy and hard to decipher
  - Easy to get stuck on one branch
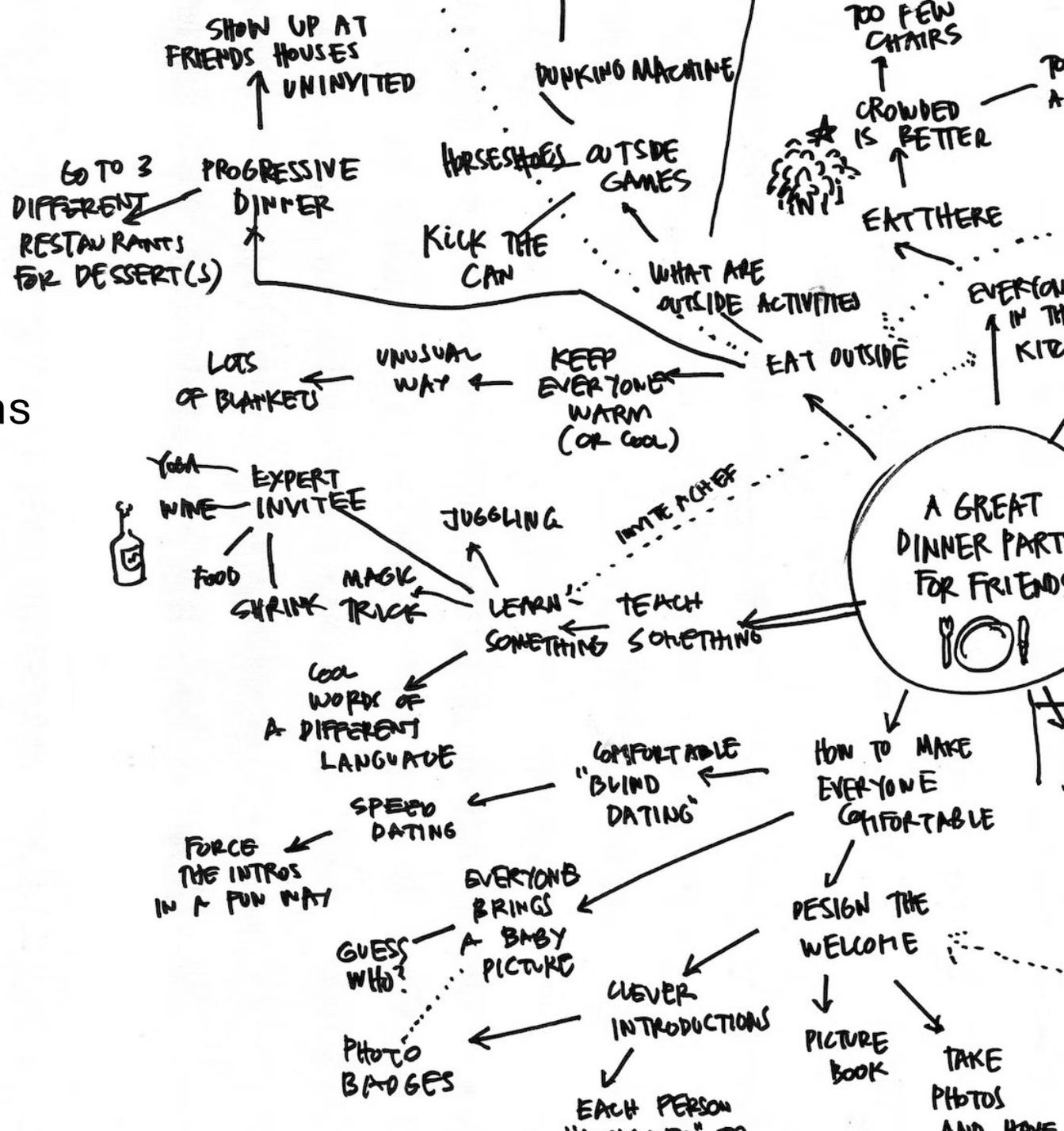
crazy 8s
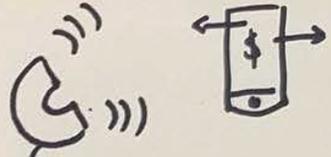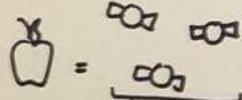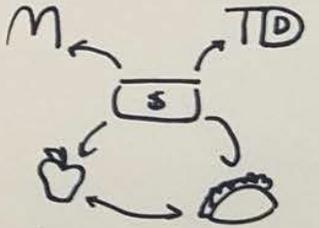
Divergent thinking

crazy 8s

- Fold your piece of paper three times
- Draw 8 ideas in 8 minutes
  - 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 crazy 8s   [2+8min]

- Fold your paper 3 times; unfold again
- Write your "How Might We..." question at the top of your paper
- Sketch 8 ideas in 8 minutes – 1 idea per minute
- 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

<mark>Activity</mark> crazy 8s [5min]

- Explain at least 2 ideas to your group
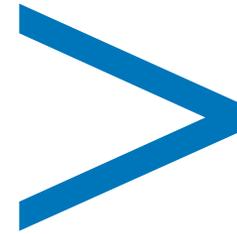
Divergent thinking

how do we refine and narrow down?

< Divergent thinking
Many possible solutions

> Convergent thinking
Developing a "good" solution

Convergent thinking

determining fit, ranking, and clustering

voting

	Round 1	Round 2	Round 3	Round 4

Round 1

Add an Android version

Yang's first idea

Add a social element to the app

Oscar's first idea

Have a section that helps gym goers find a gym buddy

Rachel's first idea

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? ★

Round 2

Provide an incentive if they download the app ★★★★

Users can post pictures and videos so other gym members can see them

Yang's idea after reading Oscar's idea

A lot of people go to the gym to meet people, maybe there could be a way to have your profile public

Oscar's idea after reading Rachel's idea

Phones can track how many steps you take

Rachel's idea after reading Preston's idea

Let's just require members to get the app

We could fine anyone that participates in body shaming

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

Yang's idea after considering the ideas above

Have a news feed with announce ★★

Oscar's idea after considering the ideas above

An option to send a video of lifting weights to a trainer to get help on improving form

Gym-rat free zone!

Round 4

Referral program

App users should be able to share music and playlists they like

Each treadmill should have a QR scanner that scan your app t 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
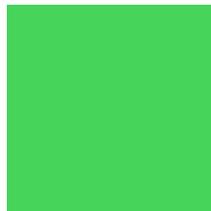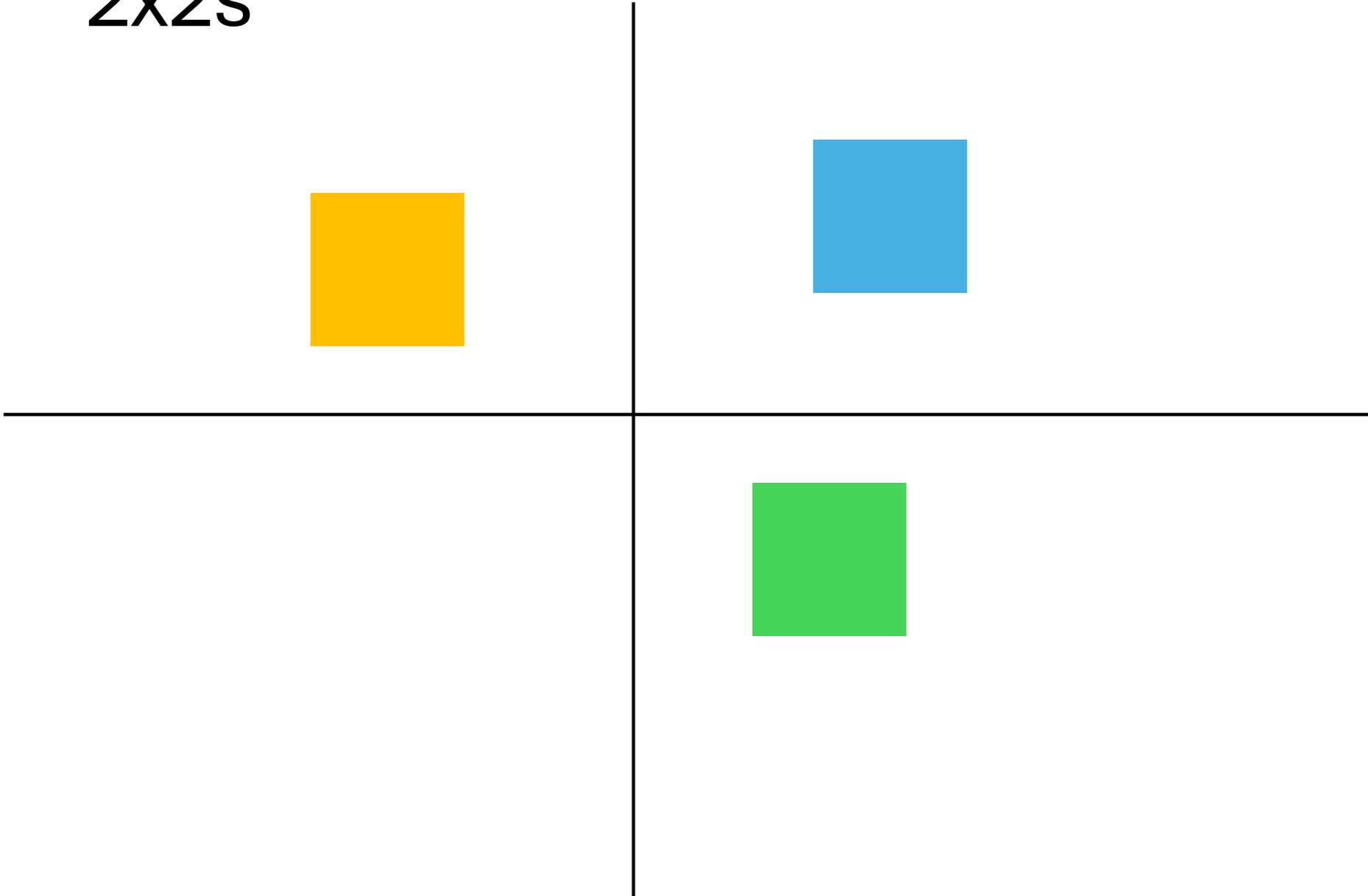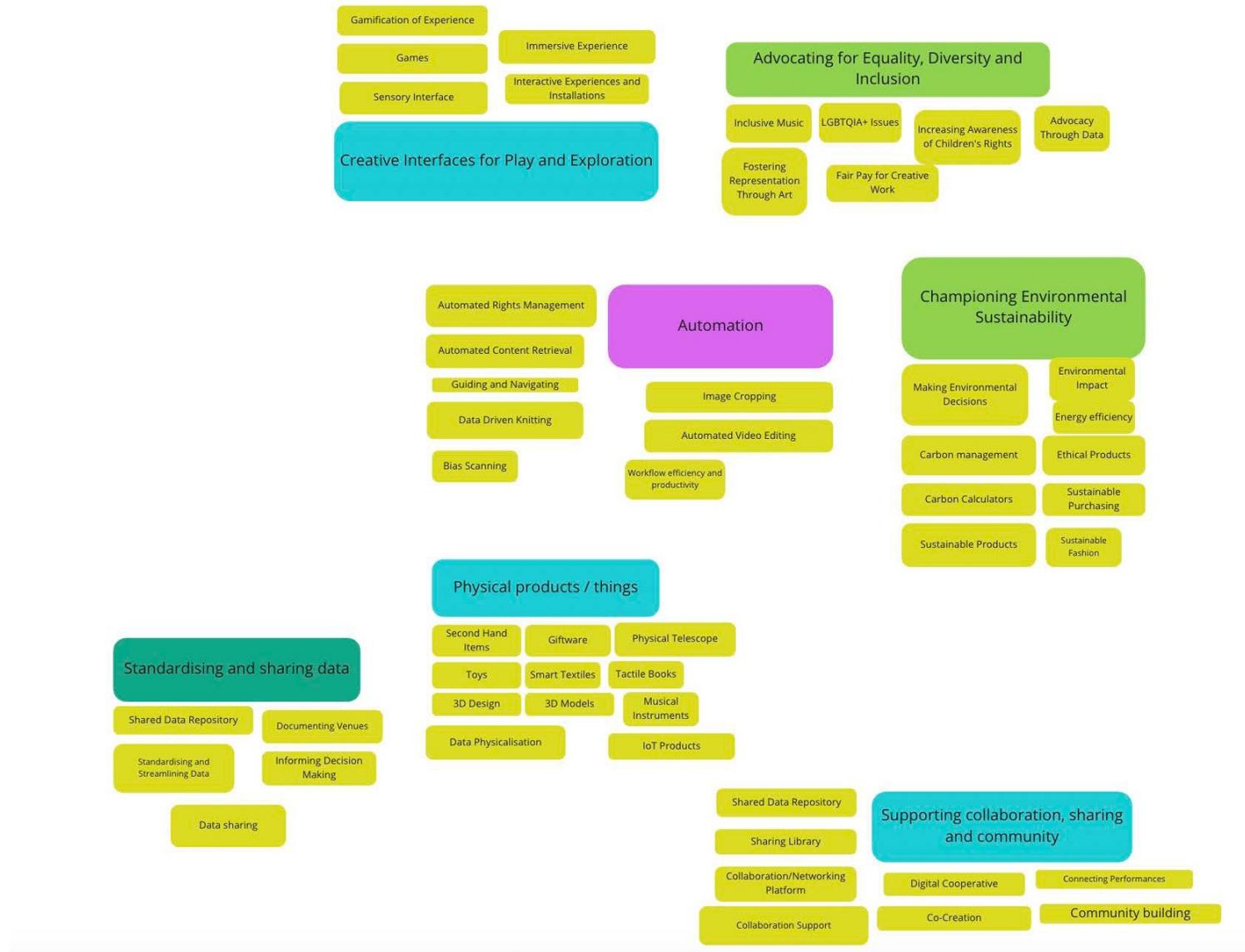
2x2s

Dimension 1

Dimension 2

Convergent thinking
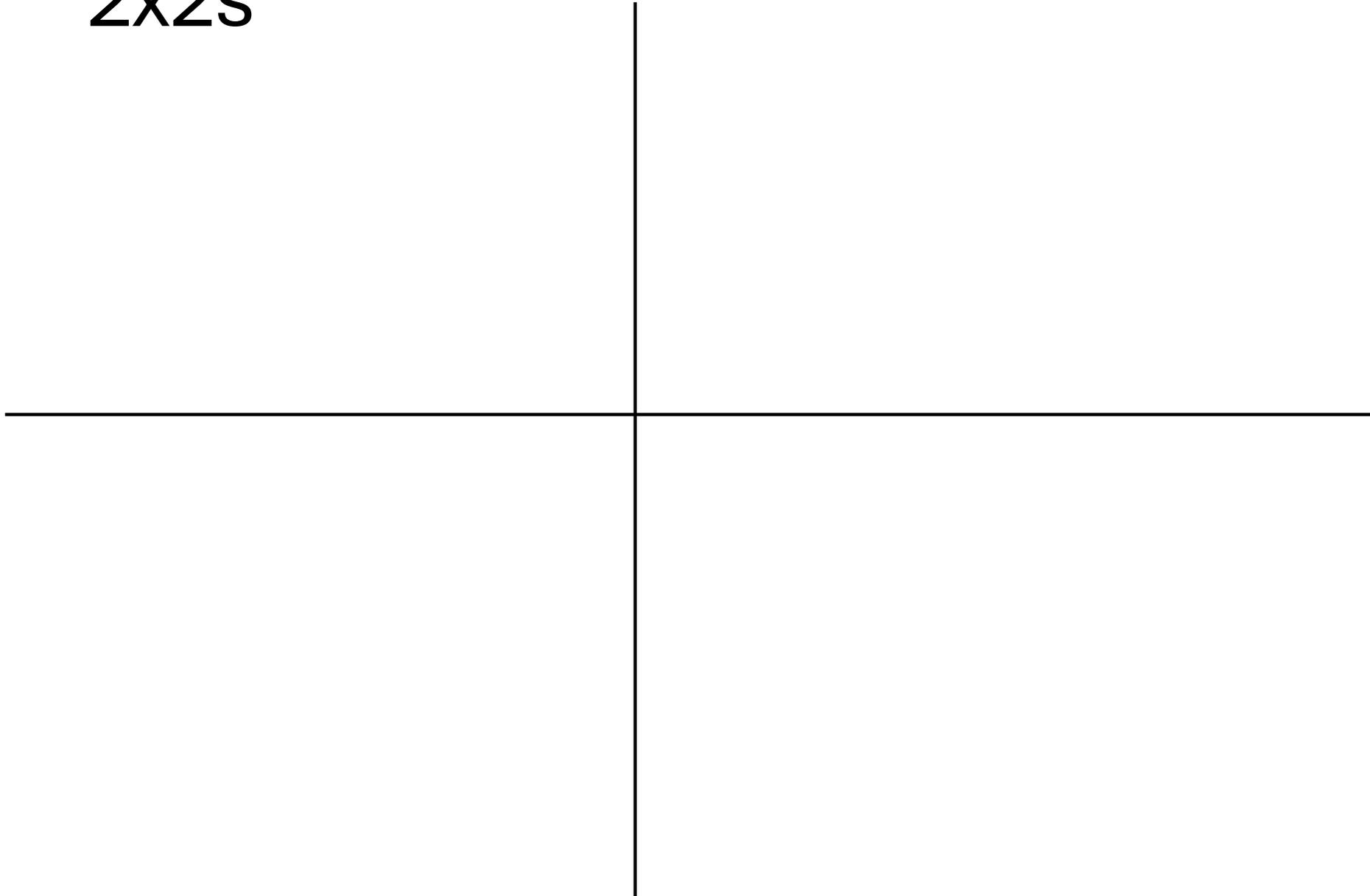
2x2s

Feasibility

Impact

Convergent thinking

affinity mapping

Convergent thinking

Creative Interfaces for Play and Exploration
- Gamification of Experience
- Immersive Experience
- Games
- Interactive Experiences and Installations
- Sensory Interface

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

Automation
- Automated Rights Management
- Automated Content Retrieval
- Guiding and Navigating
- Data Driven Knitting
- Bias Scanning
- 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

Supporting collaboration, sharing and community
- Shared Data Repository
- Sharing Library
- Collaboration/Networking Platform
- Digital Cooperative
- Connecting Performances
- Collaboration Support
- Co-Creation
- Community building

combining ideas

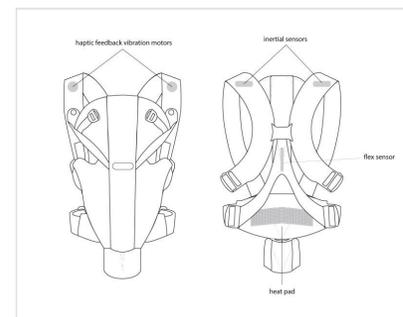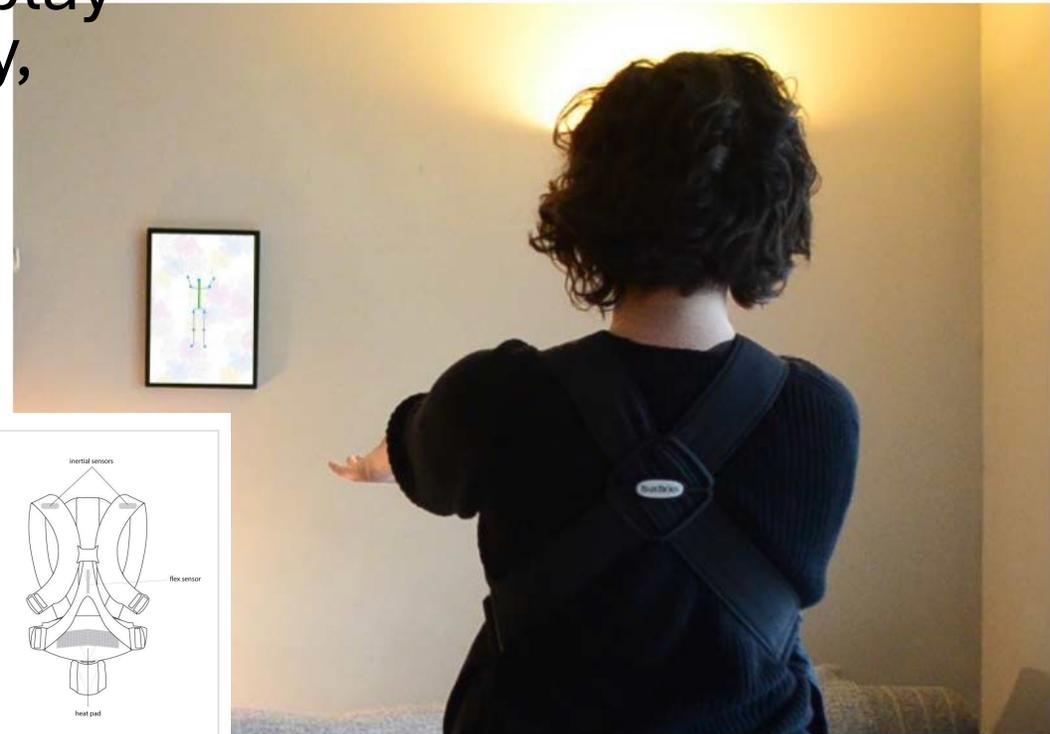- How might we address post-natal chronic back pain?

A wearable baby carrier with posture sensors and a heating pad for providing symptom relief

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

combining ideas

- 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

Di Cuia, D., Janovica, J., Lechelt, Z., Li, S., & Purewal, H. (2016). CarryLine: A Tool for Management and Rehabilitation of Post-Natal Chronic Back Pain. In *Proceedings of the CHI'16* (pp. 26-31).