



# Creativity in Requirements Engineering

## Guest Lecture

DAT231 / DIT285 Advanced requirements engineering

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(some slides used with permission from Richard  
Berntsson Svensson)



# Agenda

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Reminder: requirements elicitation

Requirements Creativity: motivation

Creativity Theories

Creativity Activities

RE Creativity in Practice

Creativity and AI

Overview of (Your) Workshop

# About Me

- Associate Prof. at GU (in shared department with Chalmers)
- Study requirements engineering, specifically:
  - RE for Machine Learning
  - AI for RE Modeling
  - Creativity
  - Business intelligence
  - Anything else (RE-related) that seems interesting...

Marie Curie &  
NSERC  
Postdoctoral  
Fellow  
2014-16

Cass Business School, City University London  
Exploring the synergies between creativity and goal modeling for Requirements  
Engineering.  
Supervisor: Neil Maiden

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# Requirements Elicitation & Creativity Motivation

# What should the system do?

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- Requirements are things people want the system to do
- How do we know what the system should do?
  - Ask people (Requirements Elicitation)
  - Come up with ideas on your own (can be good)
  - Come up with ideas with other people (users of the system)
- Want your ideas to be useful – solve some problem
- Want ideas to be novel – not to create a system like many others

# Typical RE Elicitation

- Traditional Techniques (Easterbrook)
  - Documentation
  - Data Sampling
  - Interviews
  - Surveys/Questionnaires
- Collaborative Techniques
  - Focus groups
  - Prototyping
- Contextual (social) approaches
  - Participant Observation
  - ...
- Cognitive techniques
  - Think aloud protocol
  - ...

What is the  
problem with this  
general approach?

# Creativity for RE

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- Stakeholders are limited by what they perceive to be possible and influenced by their experiences
  - I want the (current) system to do some extra functionality
  - The extra functionality is probably something they've already seen somewhere else
- Creative RE is about discovering requirements stakeholders were not aware of
- Creative requirements are those that are both novel and useful
- Innovation is the implementation of creativity

# Creativity for RE

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- The idea of studying creativity in RE is that there are methods to help average people who are not particularly creative come up with creative ideas
  - You don't have to be a creative genius to be creative
- Creativity in Requirements Engineering includes:
  - Many creativity techniques (usually originating from other disciplines)
  - Adoption of creativity theories
  - Creativity for RE methods (e.g., workshops)

# Why Creativity?

**The customer is a rear-view mirror, not a guide to the future** – George Colony, Forrester Research



- Our job is to give the client, on time and on cost, not what he wants, but what he never dreamed he wanted; and when he gets it, he recognizes it as something he wanted all the time – Denys Lasdon, architect

- Slide courtesy of Richard Berntsson Svensson

# Why Creativity?

"If I had asked people what they wanted, they would have said faster horses. – Henry Ford



- Slide courtesy of Richard Berntsson Svensson

# Example: Parking Lot App

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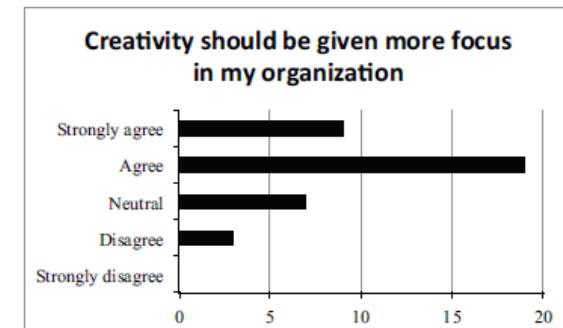
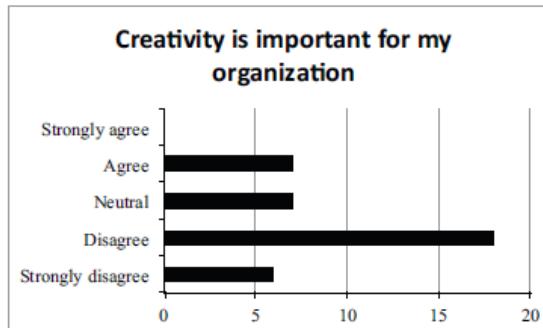
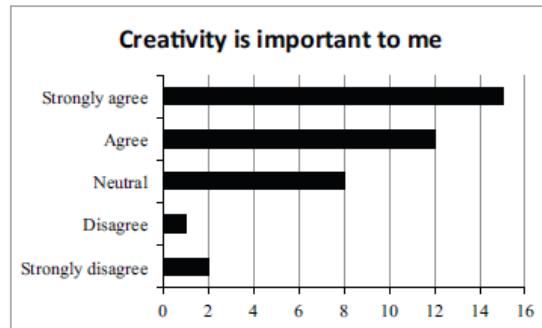
- Imagine you must develop the requirements for a parking lot app, that lets you pay for parking using an app on your phone
- Some basic (but useful) requirements:
  - App should work on all phone types
  - App should accept all payment types (credit, paypal, contactless)
  - App should be able to email receipt
  - Register with facebook/google
  - Make it impossible to cheat app, take spot without paying

# Example: Parking Lot App

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- Some (more) creative requirements:
  - App should alert you when your time is almost up, allow top-ups
  - App should include a parking space finder
  - Promote app in garages
  - Should be able to “pay it forward” with parking credit

# Is creative thinking important?



[R. Berntsson Svensson, M. Taghavianfar, L. Gren, Creativity techniques for more creative requirements: Theory vs. practice, 41<sup>st</sup> SEAA, 2015]

## Extremely important

- **No process**
  - **Part of the requirements engineering process**
  - **Up to the individual employee**
- 
- Slide courtesy of Richard Berntsson Svensson



# Creativity & Elicitation

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- Creativity is not meant to replace elicitation
- Creativity should enhance elicitation
- It is important to listen to an account for the needs and ideas of the stakeholders
  - But... perhaps there are further ideas that may work well
  - These ideas could replace existing requirements or be additional requirements
- Ideally, creativity activities are done with the stakeholders
  - In the end you give them what they want, even if they didn't initially know they wanted it

# Creativity Theories

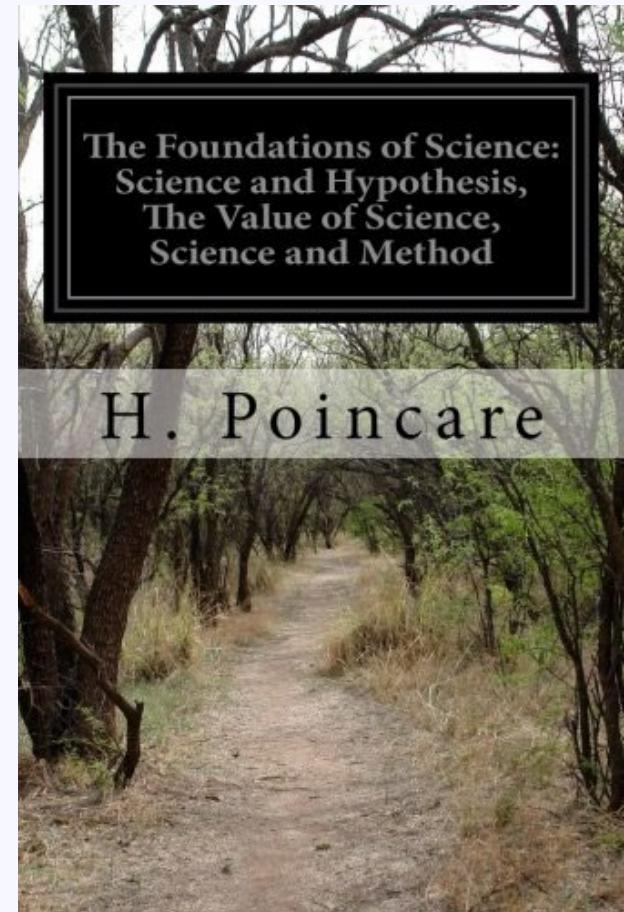
# Creativity Theories

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- Many theories help to shape our understanding and application of creativity to RE
  - Mainly from other disciplines
  - We'll go through some of the most used theories

# Poincaré

- French mathematician Henri Poincaré 1913
- “He never spent a long time on a problem since he believed that the subconscious would continue working on the problem while he consciously worked on another problem.”

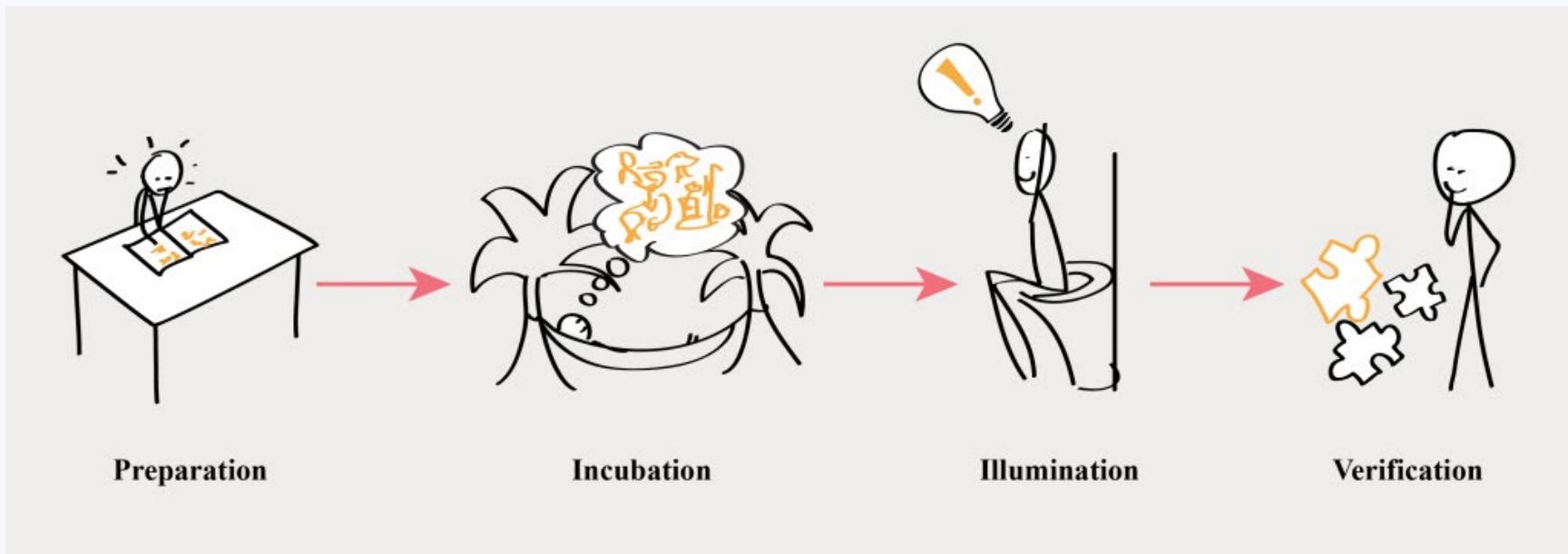


<https://medium.com/@vovakuzmenkov/poincares-creativity-8e31d5031529>

<https://www.brainpickings.org/2013/08/15/henri-poincare-on-how-creativity-works/>

# Poincaré/Wallas

- Graham Wallas, *The Art of Thought*, 1924
- Based on ideas from Poincaré



<https://www.creativityn.com/publication/cq18-preparation-incubation-illumination-verification/>

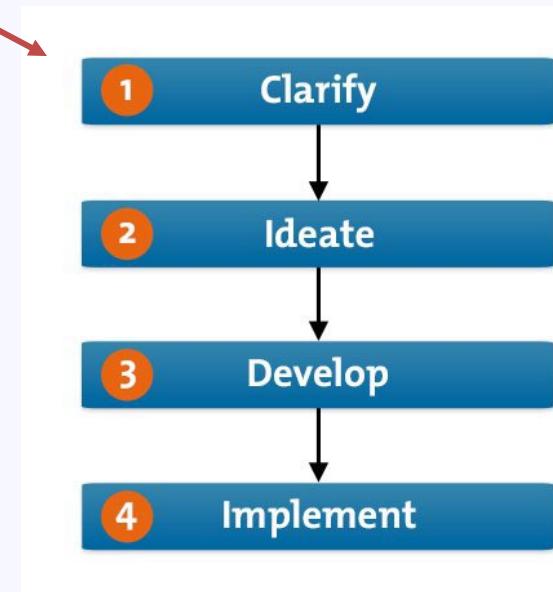
<https://www.brainpickings.org/2013/08/28/the-art-of-thought-graham-wallas-stages/>

# Creative Problem Solving (CPS)

- Developed by Alex Osborn in the 1940s
  - the term "brainstorming."
- Together with Sid Parnes, he developed the Osborn-Parnes Creative Problem Solving Process.

- Divergent thinking
  - Come up with many different ideas
- Convergent thinking
  - Evaluate ideas and choose the best
- Also uses creativity techniques

Elicitation!



<https://www.mindtools.com/pages/article/creative-problem-solving.htm>

# CPS Core Principles

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- Divergent and convergent thinking must be balanced.
- Ask problems as questions.
- Defer or suspend judgment.
- Focus on "Yes, and," rather than "No, but."

<https://www.mindtools.com/pages/article/creative-problem-solving.htm>

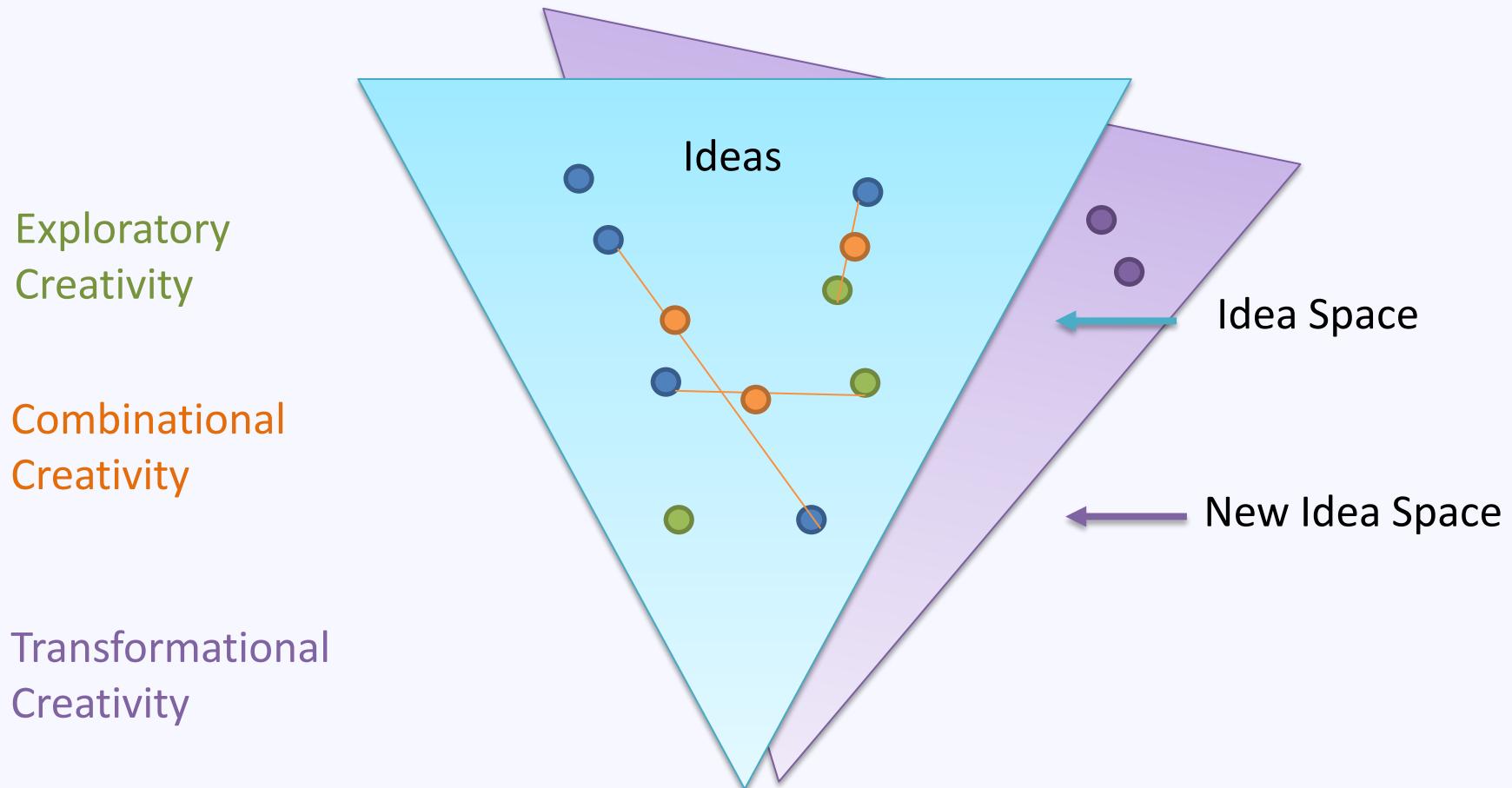
# Boden

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- Margaret Boden
  - Research Professor of Cognitive Science, in the Centre for Cognitive Science, University of Sussex
- CREATIVITY IN A NUTSHELL (2004)
- Exploratory, combinational, or transformational creativity

# Exploratory, Combinational, Transformational Creativity

- (Presentation idea via N. Maiden)

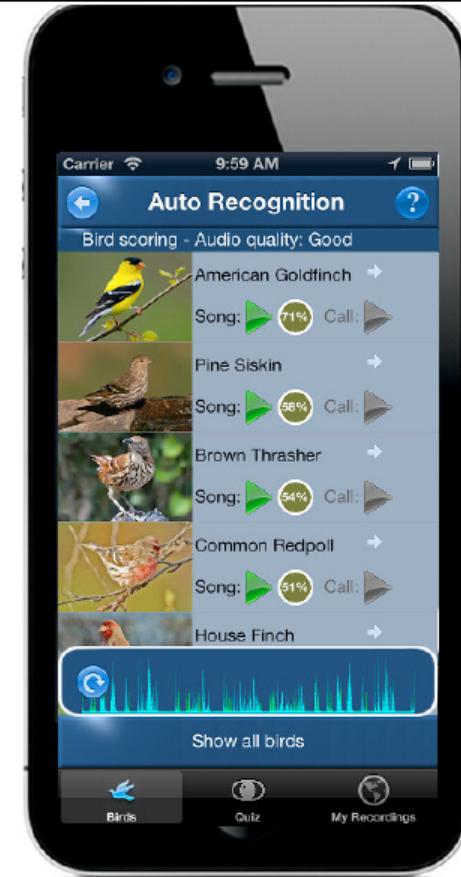


# Types of Creativity

## Forms of creativity

Established creativity categories [Kauffman & Beghetto 2009]

- **Big-C**: clear cut eminent contributions
- **Little-C**: everyday activities for non-experts
- **Pro-C**: professional-level expertise
- **Mini-C**: novel and personally meaningful interpretations of experiences, actions and events



- Slide courtesy of Richard Berntsson Svensson

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# Creativity Activities

# Creativity Activities

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- (Somewhat) structured techniques in order to generate ideas
- E.g., Brainstorming, Hall of Fame/Bright Sparks, Creative Search, Pairwise Comparison, Creativity Triggers, Assumption Busting, Roleplaying, ....
- Can be performed manually, or can be supported by tools
- Usually conducted on groups of people
- Long list found at:
  - <http://becreative.city.ac.uk/>

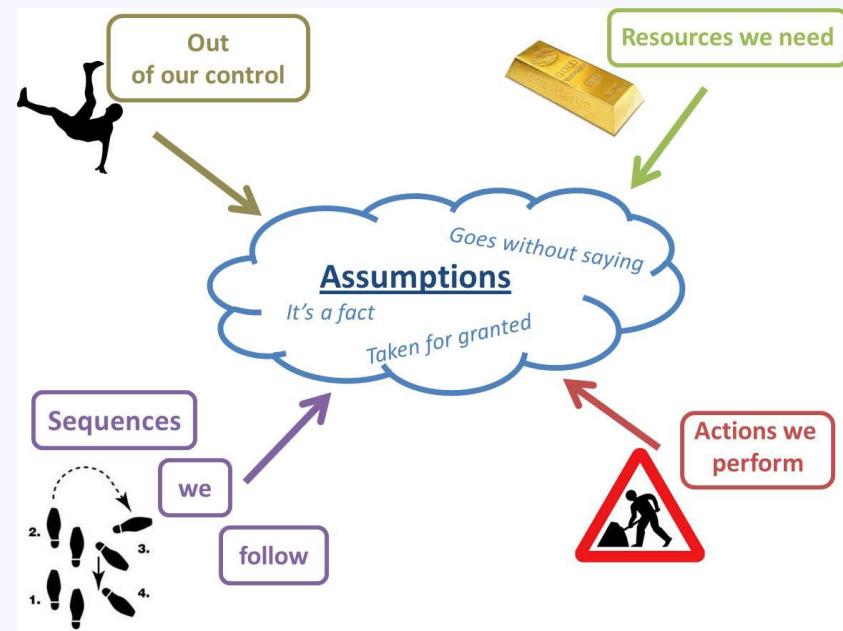
# Brainstorming

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- Brainstorming is the most famous and basic creativity activity
- Best to do this first
  - Get the obvious ideas out of the way

# Example Activity: Assumption Busting

- (Also called constraint removal)
- “Challenging assumptions, often referred to assumption busting, is a simple technique that involves listing all of the assumptions that are important to your problem, including the obvious ones, and then challenging the correctness of each assumption in turn.”



<https://becreative.city.ac.uk/details.php?id=2>

<https://fivewhys.wordpress.com/2012/02/27/assumption-busting/>

# Creativity Triggers

## Light

Try to simplify your solution, to make its structure **slighter**, more **lightweight**

### Consider also to...

... remove parts of the solution to make it more **less busy**, **time consuming**



... revise your solution to make it looks **thinner or smaller**

### Example



Apple initiated the trend of ultra-light portables by reducing the size and weight of its MacBook Air's structure, to make an extra-flat laptop.

Stimulating Stakeholders' Imagination: New Creativity Triggers for Eliciting Novel Requirements  
Burnay, C., Horkoff, J. & Maiden, N.

<https://prezi.com/t9ggh7ymljlc/creativity-triggers/>

## Adaptable

Can you replace multiple products with one **adaptable** product?

### Consider also to...

... add a new feature to your solution to make it able to **change**



... try to make your solution more **malleable**, more **flexible** for the user

### Example



Microsoft's Surface is a tablet that turns easily into a fully functional laptop. It can adapt to multiple contexts of use, and satisfy with various user needs.

Stimulating Stakeholders' Imagination: New Creativity Triggers for Eliciting Novel Requirements  
Burnay, C., Horkoff, J. & Maiden, N.

# Example Activity: BrightSparks

- Personas, but... with famous people
- <http://brightsparks.city.ac.uk/>



New Persona

Film

## MARY POPPINS

**Magical English nanny helping children everywhere.**



### Characteristics

Stern and sensible, she uses magic and self control to take care of her young charges. Along the way she teaches children, and adults, valuable lessons to become the best people that they can be. She has a loving, caring side and an array of magical abilities including talking to animals.

[Learn more about Mary Poppins via the Web >>](#)

PDF



New Spark

Think about how *Mary Poppins* would go about your design challenge...

### Creative clues

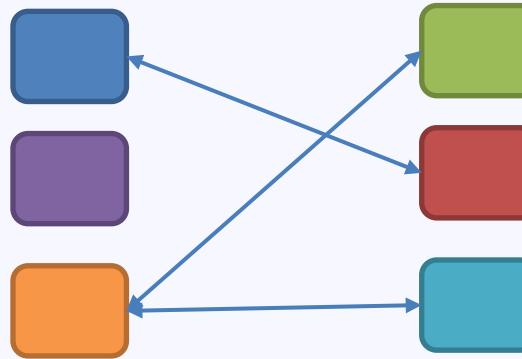
What if Mary Poppins joins your project team? What new ideas and concepts will Mary Poppins come up with? + idea

Imagine you interview Mary Poppins for your project. What do you predict that Mary Poppins would want? + idea

Does Mary Poppins have any friends or colleagues? What new ideas and concepts would you expect this person to come up with? + idea

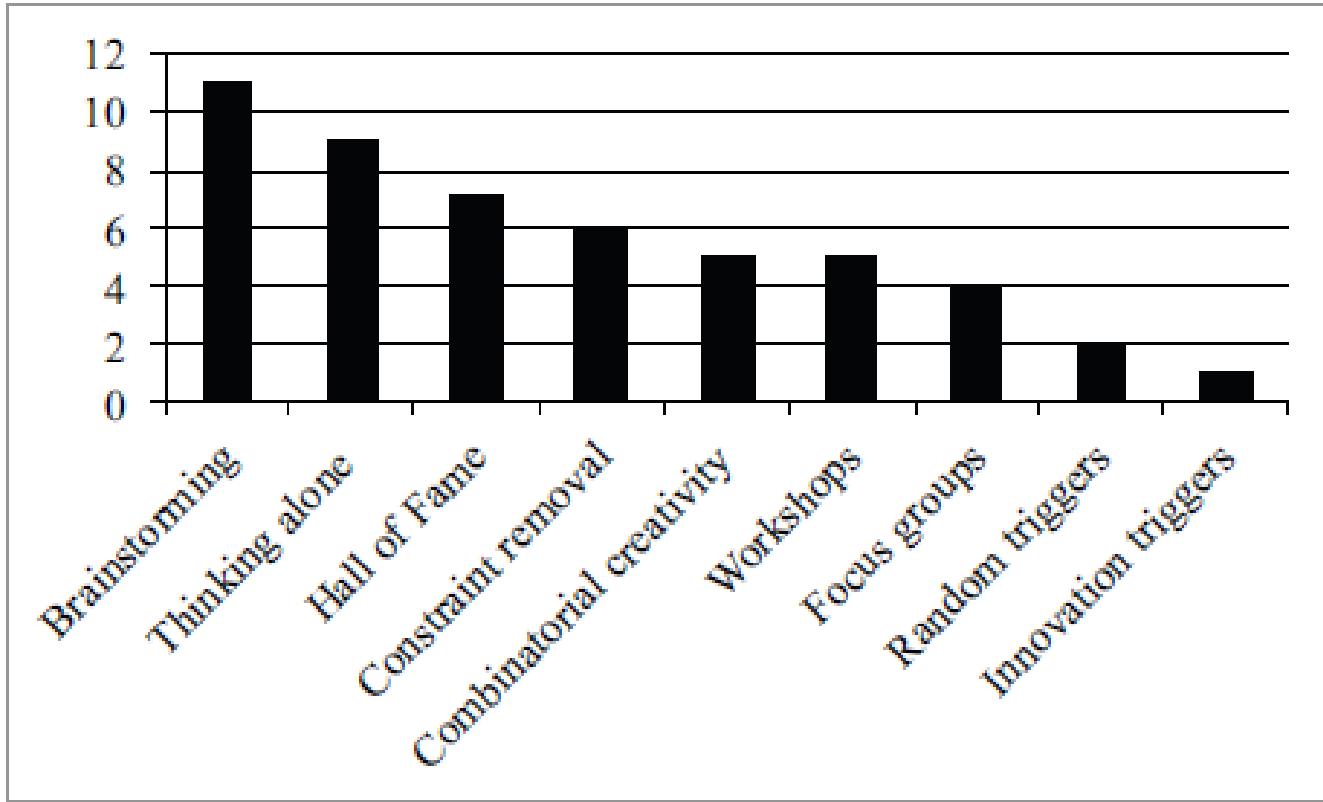
# Example Activity: Pairwise Comparison

- “The Random Pair-Wise Combinations of Ideas technique guides you to connect already generated ideas in order to generate new ideas. Combining ideas to create more and better ideas will help your mind to reach the peak of its creativity efficiency. Pairs of ideas are combined randomly, in order to guide you to explore new ideas and opportunities.”



<https://becreative.city.ac.uk/details.php?id=23>

# What Creativity Techniques are Used in Industry?



[R. Berntsson Svensson, M. Taghavianfar, L. Gren, Creativity techniques for more creative requirements: Theory vs. practice, 41<sup>st</sup> SEAA, 2015]

Fig. 7. Used creativity techniques in industry

# Example

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Museums and galleries want to have better outreach to potential “users”. After COVID, the attendance rate rose, but is still not back to previous levels. It is good to make their collections more accessible, e.g., for people who live far away. They want to share their collections online in a website or app. They want to educate people about history and art (or whatever the gallery is about), but they also want to make money in a way which is comparable to how they make money currently. They would like to attract new people!

Ideas for the website/app: what should it do/not do?

# Creativity Techniques for Virtual Museum/Gallery

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- Open some tool for virtual post-its...

# Another Example: Turning ideas into requirements

- Bike share system
- Can rent pedal bikes in urban areas





# Requirements for Bike Rental

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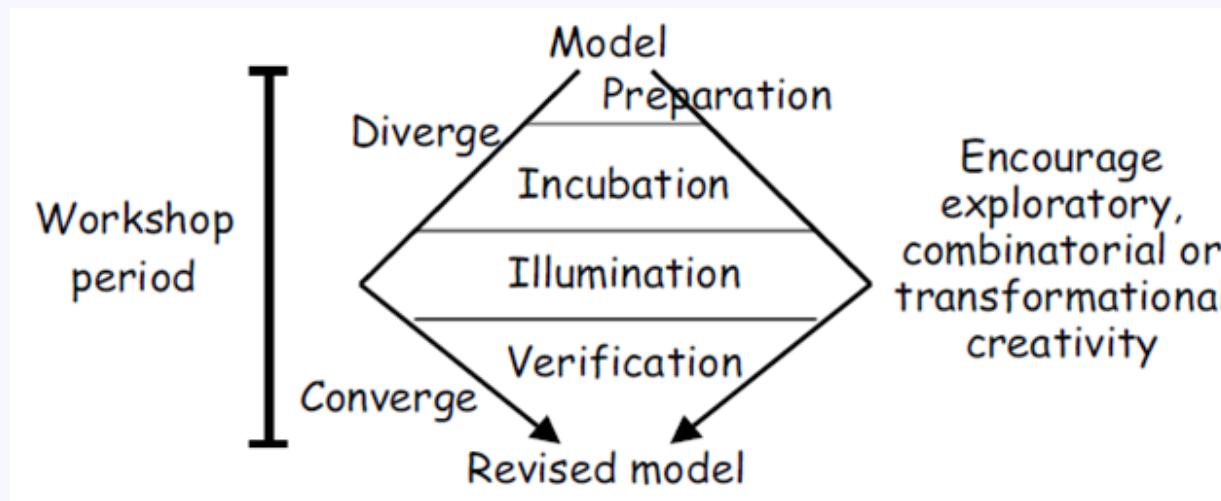
1. The bike system should make available a wide variety of bike sizes, specifically, bikes for smaller people, larger people, and kids. <see X guide>
2. The bike system should make available a wide variety of bike types, specifically, city bikes and mountain bikes.
3. The system shall allow users to rent helmets.
4. The system should provide helmets of a variety of standard sizes < see X guide>
5. The system should provide an option to rent an electric bike.
6. The bike racks should have charging stations available.
7. Bikes should be water resistant.
8. Bike tires should be suitable for driving through water.
9. It should be possible to return a bike without access to a mobile phone.

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# RE Creativity in Practice

# Background: Creativity in RE

- RE Creativity Workshop conducted at City University London (Maiden et al.)
- Applied to Air Traffic Control, Food Safety, Work Integrated Learning
- Output: collages using mappings and pictures, storyboards, idea cards, and mock-ups.



# Example Workshop Outputs

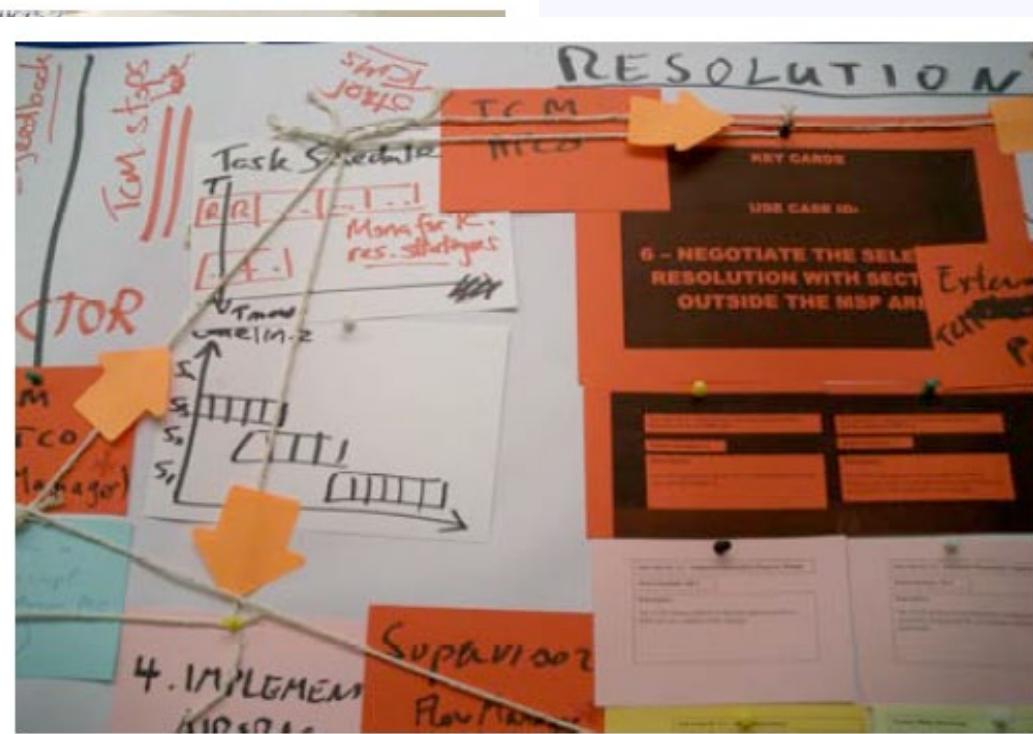


Figure 2. Aircraft conflict storyboards generated by

Figure 9. A section of the rich storyboard for the MSP system.

- Maiden, N. and Robertson, S. (2005). Integrating creativity into requirements processes: experiences with an air traffic management system. Paper presented at the 13th IEEE International Conference on Requirements Engineering, 29-08-2005
- Maiden, N., Gizikis, A. and Robertson, S. (2004). Provoking creativity: Imagine what your requirements could be like. *IEEE Software*, 21(5), pp. 68-75. doi: 10.1109/MS.2004.1331305

# One Example Workshop

[N. Maiden, C. Ncube, S. Robertson, Can requirements be creative? Experiences with an enhanced air space management system, 29<sup>th</sup> ICSE, 2007]

## Case Study – Creativity Workshop

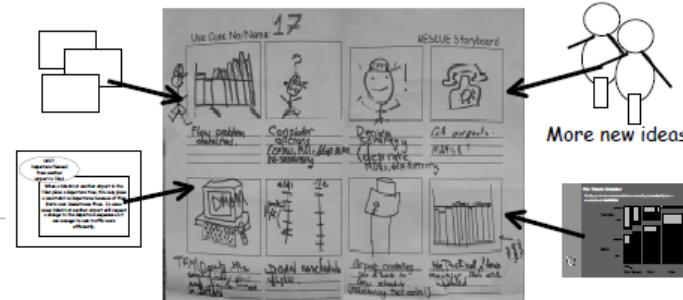
### Study setting

- Two-day workshop
- 2 facilitators, 2 scribes, 2 external experts
- 19 stakeholders
  - Eurocontrol, National air traffic services, Major airlines, military air traffic control
  - Generated 140 ideas (features/requirements)
- Applied creativity techniques
  - Analogical mapping/reasoning, constraint removal, storyboarding, brainstorming

Museum Exhibition	EASM
Explicit decision making	Within time
Barons	National states?
Types of users	Recreational users as well
Vista from different perspectives	Network effect
Argument discussion	Principles, same rules, Arbiter
Creative vs. engineer tension	Try, try and try again
Dislocate expectation	New approaches
Spine	Optimal routes
Take time to review decisions	
Sponsors	Big states support
Numbers through the door	Measures of EASM success
Creative design	Network manager process
Pictorial information	Visualizations
Tensions	Tensions
Education - pre-emptive thinking	Less done in ATM

### Develop simple storyboards

- Integrate all ideas related to a selected use cases



# Measuring Results

[N. Maiden, C. Ncube, S. Robertson, Can requirements be creative? Experiences with an enhanced air space management system, 29<sup>th</sup> ICSE, 2007]

## Results

Deliverable type	Number system-wide	Number use case-specific
Brainstormed ideas	16	12
EASM constraints	34	0
Ideas from EASM constraints	94	0
Ideas from analogical reasoning with museum exhibition	0	15
Ideas from analogical reasoning with TV program scheduling	0	8
Workshop1 storyboards	0	4 storyboards

Technique	Novelty			Impact		
	1	2	3	1	2	3
Brainstorming	1	10	16	11	10	7*
Science Museum Analogy	0	7	8	7	5	3
Programme Scheduling Analogy	0	2	6	2	3	3
Constraint Removal	1	21	67	8	60	21
Totals	2	40	97	28	78	34

- Captured both novel and unoriginal ideas
  - That were useful and affected SRS
  - 106 of 140 ideas were useful
  - 42 of 140 ideas were novel
- More effect on abstract goals and concepts than actual reqs
- Constraint removal effective but needs more structure
- Sometimes hard to record all ideas
- Analogy techniques not very cost-effective

# Some Creativity Measures

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- How do you measure how creative something is?  
The success of a technique?
- # of ideas generated per technique
  - Brainstorming, BrightSparks, Pairwise, Creativity Triggers
- Creativity of each idea
  - Novelty
    - Semantic measure of originality using algorithms and WordNet
    - Ask experts (most work)
    - Fluency
  - Utility
    - Ask experts
- # ideas made it into requirements, product
- Influence ideas had on software (expert judgment)

# How is Creativity Evaluated?

TABLE II. OVERVIEW OF EACH TECHNIQUE

Technique	Type of evaluation	Evaluated metrics	Evaluated against
T1	Experiment	Identification of associations	Random triggers
T2	Experiment	Number of generated ideas	Brainstorming
T3	Experiment	Number of generated ideas	Brainstorming and T2
T4	Workshop	Novelty	Web services similar to the system
T5	Case Study	Novelty and usefulness	ART-SCENE only
T6	Workshop	Novelty and usefulness	T7, T8
T7	Workshop	Novelty and usefulness	T6, T8, T10
T8	Workshop	Novelty and usefulness	T6, T7, T10
T9	Workshop	Novelty and importance; customer satisfaction and dissatisfaction	T10
T10	Workshop	Novelty and importance; customer satisfaction and dissatisfaction	T7, T8, T9
T11	Workshop	Novelty and usefulness	Requirements in the original product backlog
T12	Workshop	Novelty and usefulness	Requirements in the original product backlog

[R. Berntsson Svensson, M. Taghavianfar, L. Gren, Creativity techniques for more creative requirements: Theory vs. practice, 41<sup>st</sup> SEAA, 2015]

# RE Researchers Giving Back!

Series of RE sessions and design-a-thon

**What purpose?**

Help build software for public good

**How?**

Work (@ RE) with stakeholders to

Elicit Requirements

Design Software



# Prior Years



Gochi-Gochi



Icelandic ADHD Organization

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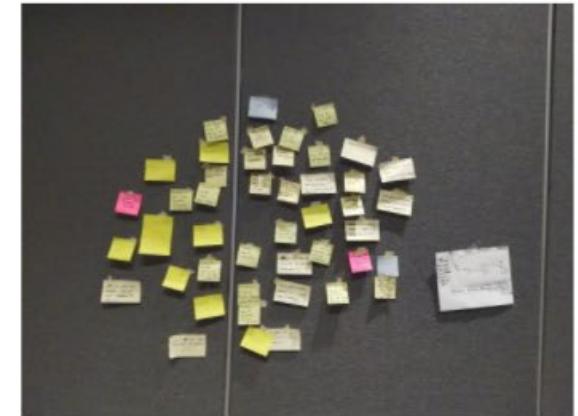


SPIKE:

Security Processes, Issues, Knowledge  
for small, medium Enterprises

# Creativity @ RECare Event

## **Monday: Day Of Requirements**



# Creativity @ RECares Event

## Monday: Artifacts

### Feature List Document

The screenshot shows a Google Slides presentation. The first slide has a title and subtitle:

*(Requirements Specification)*  
**Feature List for The Gochi-Gochi Mobile Application**  
As discussed and adopted by the Monday gathering of the RE Cares

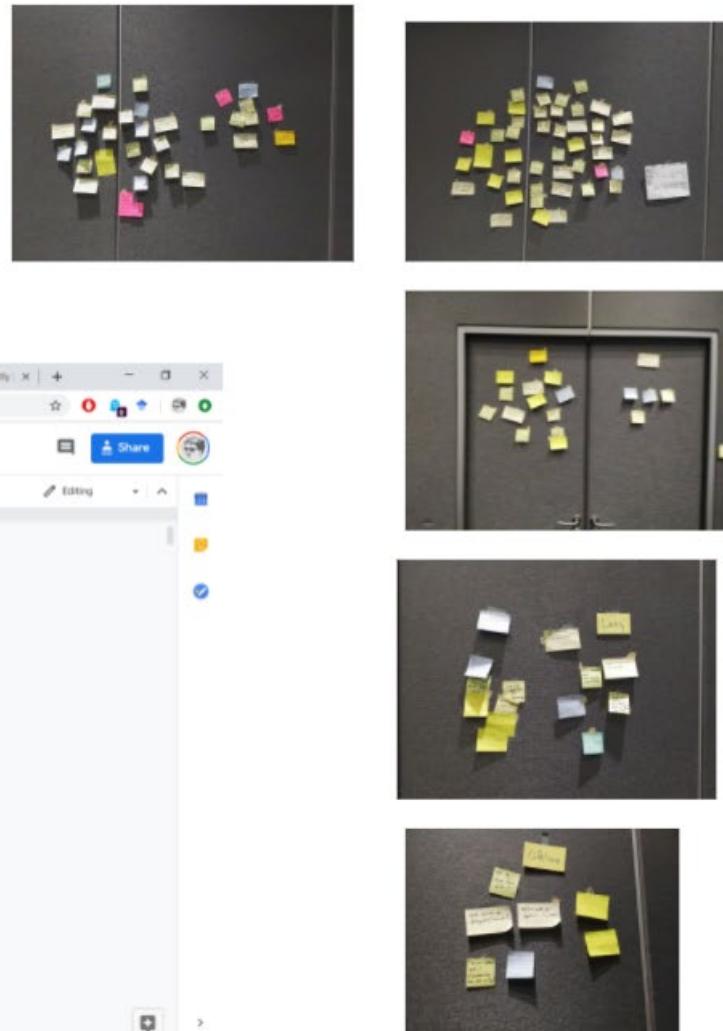
The second slide is titled "Table of Contents (Feature List)" and lists the following sections:

- General Requirements
  - Routing
  - Offline
- User Profiles
- Ratings & Feedback
- Regulations
- Disability
- Language
- Other

Gamification and Social

Data and Internal Structure Requirements

The third slide is titled "1. General Requirements".



# 2022 Stakeholders: **STEM Sisters**



## Empowering STEM Women of Color

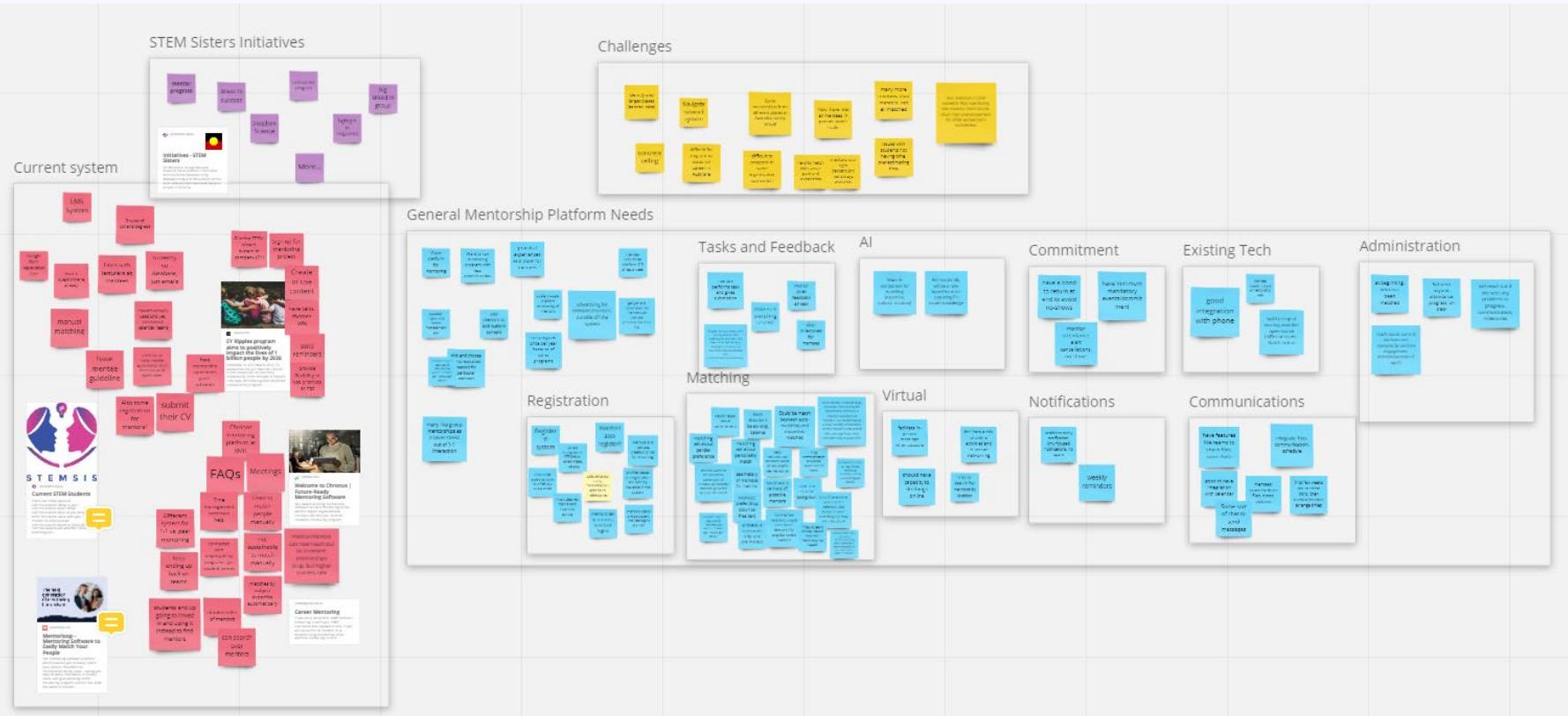
STEM Sisters is home to a diverse group, committed to an intersectional approach for empowering women of Colour in Science, Technology, Engineering and Mathematics fields.

Gender Bias is a massive contributor to the issues women face in trying to secure a STEM job. Additionally, racial bias plays an equally trying role for people of colour in Australia. The difficulty is elevated with the combination of the two, therefore Women of Colour in STEM need more support.

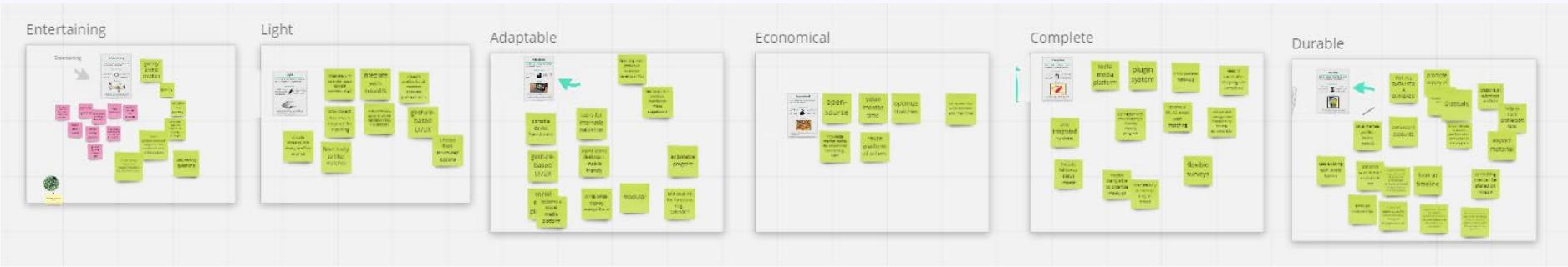


<https://stemsisters.org.au/>

# Monday Ideas Captured in Miro...



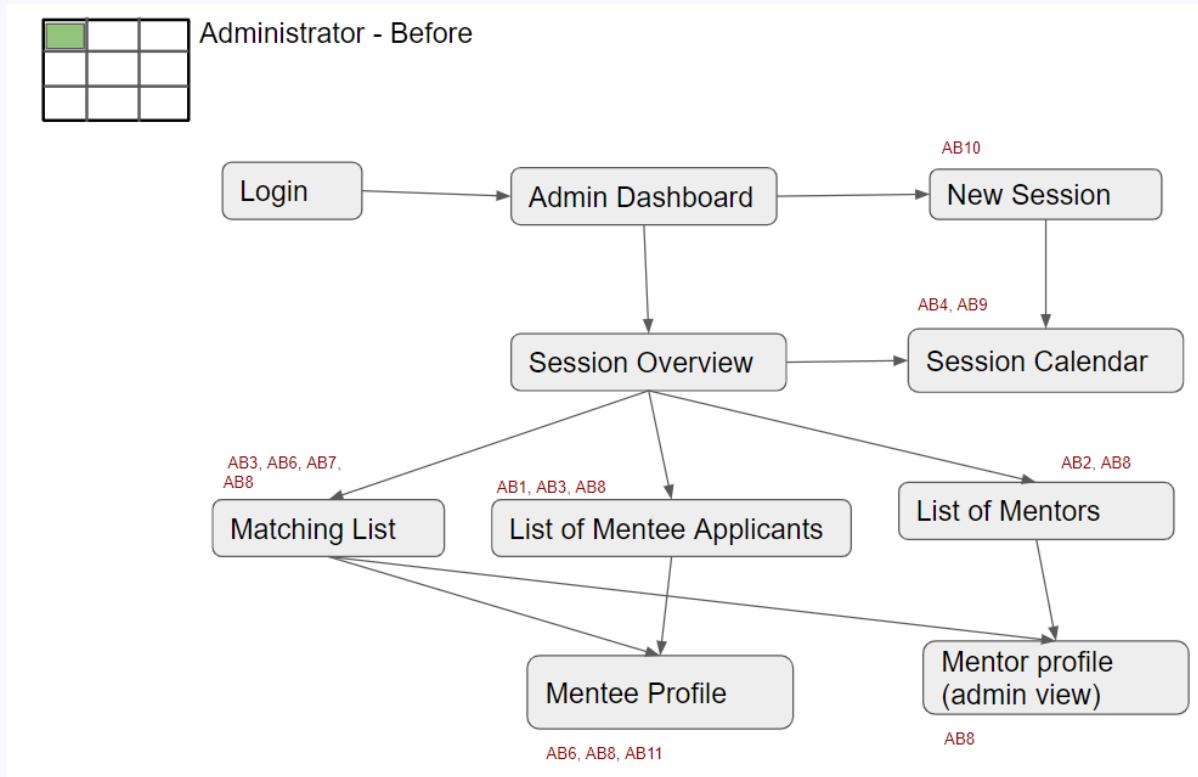
# ... with Creativity Triggers



# to a Spreadsheet of Requirements...

	A	B	C	D	E	F	G	H
1	User Category	Time	Code	Need (Miro)	Requirement/Component/Use Case/User Story	Confirmed?	Priority	MVP, Desired, Optional, Excluded
3	Administrator	Before	AB1	who has been matched	view list of applicants (mentees)			
4			AB2	who has been matched	view list of mentors			
5	"R" = Ruwangi		AB3	who has been matched	view current state of matching (who is matched, who has multiple matches, who has no matches)			
6			AB4	have minimum mandatory events/commitment	choose a list of mandatory events/commitments or set a mandatory event minimum ?			
7			AB5	Could be match between auto-matching and requested matches				
8			AB6	R intervenes when a match is not made, say capabi Please consider future rounds	Please consider future rounds assign a mentor to a mentee whenever a match has not been made via other means			
9			AB7	R intervenes when a match is not made, say capabi Please consider future rounds Could have some open mentor selection, but focus R doesn't need to approve all matches, but wants 1	approve mentor-mentee matches			
10			AB8	Could have some open mentor selection, but focus R doesn't need to approve all matches, but wants 1	review suggested mentor-mentee matches, mentee preferences for mentors, mentor preferences for mentees			
11			AB9	First few weeks are set time intro, then mentor/mentee	administrator sets the program schedule, selects times for events, initial due dates (mentors can adjust those later for individual mentees)			
12			AB10	run program once per year because of other progra	administrator creates a new program (once a year)			
13			AB11	pick and choose skills/resources needed for particu	administrator reviews a profile of one mentee, selects specific skills and/or resources the mentee needs.			
14					This information can be used during the work of the matching algorithm			
15	During		AD1	3rd week beyond, attendance, progress, on track	view attendance report for all mentees/individual mentee			
16			AD2	3rd week beyond, attendance, progress, on track	view progress for all mentees/ progress report for individual mentee			
17			AD3	will reach out if she sees any problems in progress, have features like teams to share files, save chats Some sort of chat to send messages	send message (in-app) to a mentee-mentor pair	?		
18			AD4	will reach out if she sees any problems in progress, have features like teams to share files, save chats Some sort of chat to send messages	send message (in-app) to a mentor	?		
19			AD5	will reach out if she sees any problems in progress, have features like teams to share files, save chats Some sort of chat to send messages	send message (in-app) to a mentee	?		
20			AD6	monitor attendance, alert cancellations, no-shows	receive information about no-shows of mentees at events			
21			AD7	have features like teams to share files, save chats	administrator shall have access to history of all communications with mentors and mentees			
22			AD8	good to have integration with calendar	administrator exports program schedule/individual program events into a calendar platform of their choice.			
23			AD9	good to have integration with calendar	an existing calendar platform (e.g., google calendar) is used to display the program schedule within the mentorship system			

# ...to High-Level Screen Design



# Some Rough Prototypes

PD2 mentee views assigned tasks

PD3 each assigned task has a deadline/due date/time

PD5 mentee's ability to work on subsequent assignments depends on a "green light" from the mentor regarding current assignment (for some selected assignments)

PD6 view e-require

PD10 mente

PD13 mente

PD14 an exi

mento

**Schedule**   **Calendar View**

Week	Theme	Event/Assignment	Date/Due Date
Week 1	Break ice	<a href="#">Welcome Session (mandatory)</a>	Jan 23 2023
...	...	...	
Week 12	Good byes	<a href="#">Final session</a>	April 22 2023

**Current Session Dashboard (Mentee)**

PD2, PD3, PD5, PD6, PD10, PD13, PD14

maria\_logout

**Schedule**

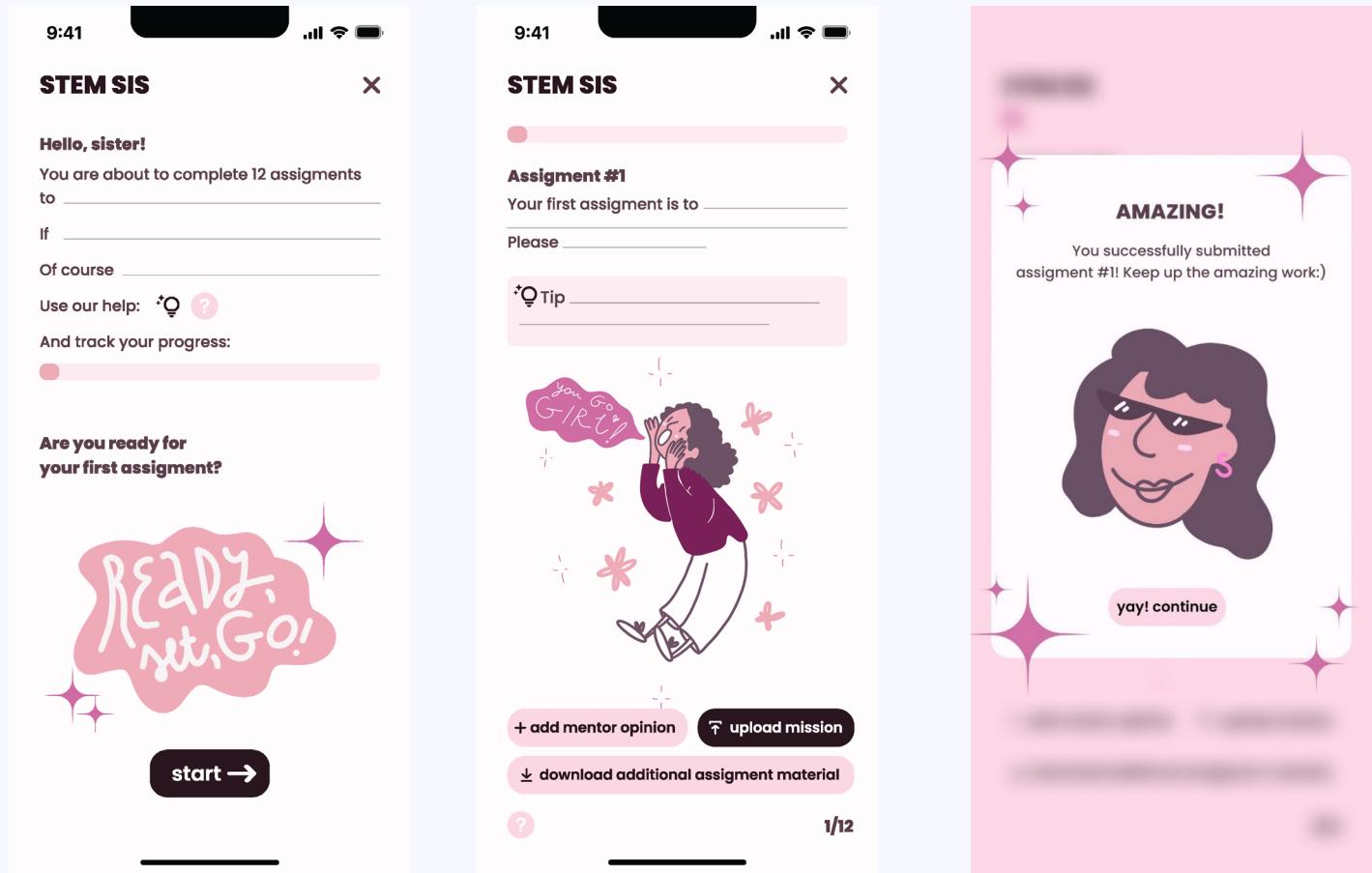
**My Mentor**

**Messages**

- From: Ruwangi (Coordinator)  
Welcome to the program!
- From: Sylvia (Mentor)  
Week 1 feedback
- From Sylvia (Mentor)  
Week 2 meeting date change
- ...

# Shenkar Design Gamification Layer

By  
Daria Yakubovska



# Future Development

- Working on using STEM sister requirements and design as student project course



# Creativity and AI



# Rise of ML and Generative AI

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- (traditional) ML – techniques that use large amount of training data, often labelled, task-specific, often predictive, special-purpose
  - Linear Regression, KNN, Random forest...
- Deep Learning – algorithms in layers, needs more data
  - Convolutional neural networks (CNNs), neural networks...
- LLMs – Large Language Models – Big ML models that can generate human text
  - (Now models, not techniques) BERT, Llama, GPT-3...
- Gen(erative) AI – use even larger amounts of training data, not labelled, general purpose, trained by model creators, often generating content
  - ChatGPT, Copilot, Gemini...

# Relevance to RE

- AI (ML/Gen AI) for RE
  - K. Zamani, D. Zowghi, and C. Arora, “Machine learning in requirements engineering: A mapping study,” RE workshops’21
  - A. Mehraj, Z. Zhang, and K. Systa, “A tertiary study on AI for requirements engineering,” REFSQ’24
- RE for *Systems with AI* (ML/Gen AI)
  - H. Villamizar, T. Escovedo, and M. Kalinowski, “Requirements engineering for machine learning: A systematic mapping study,” SEAA’21
  - K. Ahmad, M. Abdelrazek, C. Arora, M. Bano, and J. Grundy, “Requirements engineering for artificial intelligence systems: A systematic mapping study,” IST 2023

# Statistics: Population vs. Sample

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- The population is everyone you are interested in; a sample is who you actually get data/interact with
  - Random sampling, stratified sampling, convenience sampling...
  - Aim: sample  $\approx$  population, or sample is at least representative
- Population: all current and future users of software
  - Or future users of future software  $\approx$  users of similar software (?)
- Sample: who you elicit data from
  - Sample of social media/reviews, sample of app data...

# Gen AI: Sample

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- What is Gen AI trained on?
- Wide variety of data. Lots of uncertainty.
- GPT-3 as an example:
  - Data from web crawls
  - English language book corpora
  - Wikipedia
- GPT-4 adds data gained through ChatGPT

T. Brown, B. Mann, N. Ryder, M. Subbiah, J. D. Kaplan, P. Dhariwal, A. Neelakantan, P. Shyam, G. Sastry, A. Askell et al., “Language models are few-shot learners,” *Advances in neural information processing systems*, vol. 33, pp. 1877–1901, 2020.

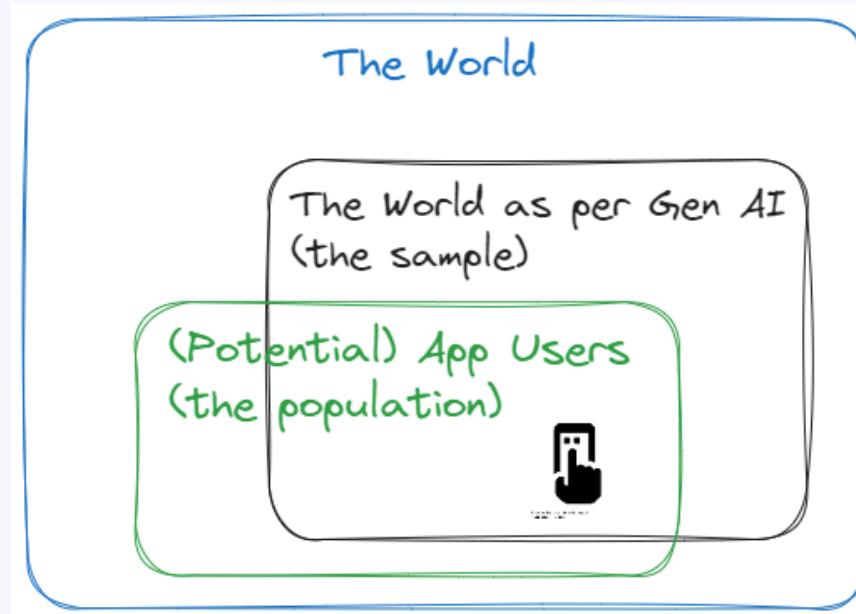
<https://openai.com/index/gpt-4-research>

# 1) Gen AI as the Crowd

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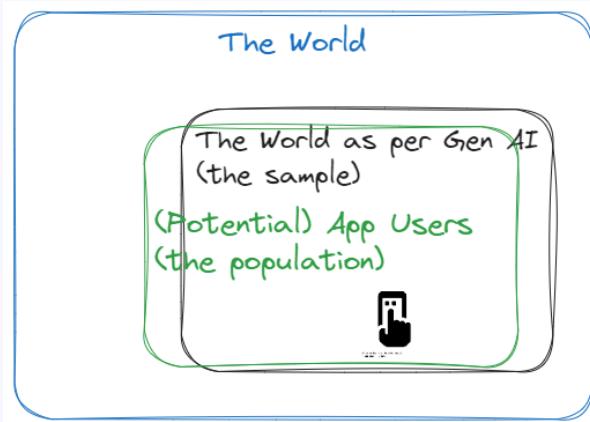
- Does the sample (Gen AI) match the population (Crowd RE)
- Answer: it depends
- Gen AI has an English/western/tech access bias
- Very broad training data
- Could or could not be representative of software/app user base

# 1) Gen AI as the Crowd

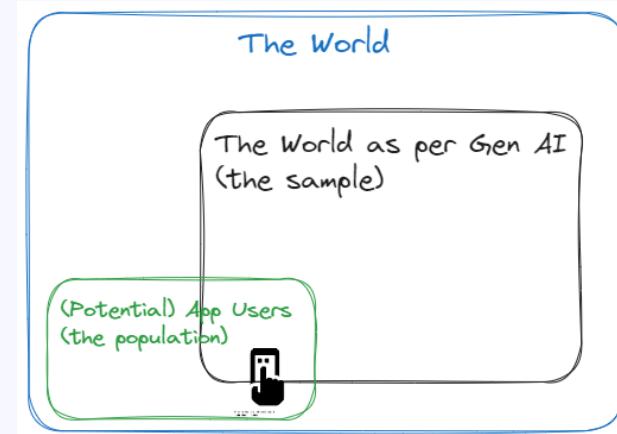


# 1) Gen AI as the Crowd

Probably OK?

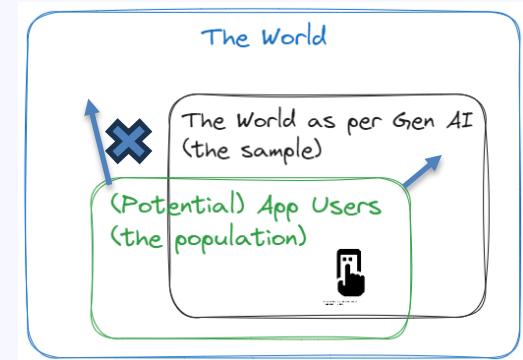


Probably not OK



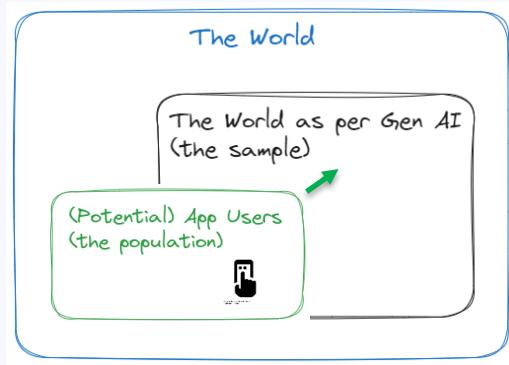
# Bias and Creativity

- Bias
  - Much of the training content for Gen AI is problematic
    - Lovecraft was pretty problematic, “chick magnet”, etc.
  - Typical software users are also biased?
    - Intentionality: perhaps this bias does not show up as much when the data is app specific?
- Creativity
  - If you want to find new, outside-the-box ideas, Gen AI can be great



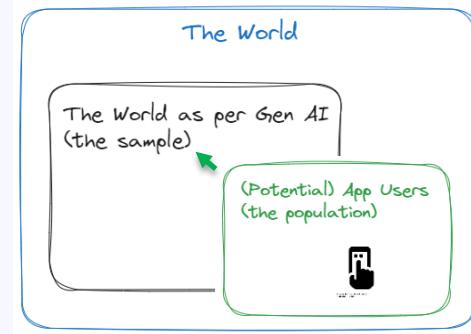
# Risk – Everything becomes similar...

System 1

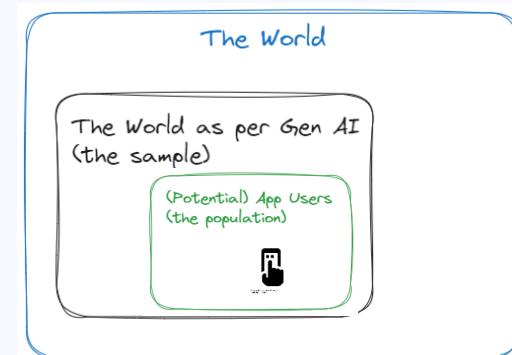
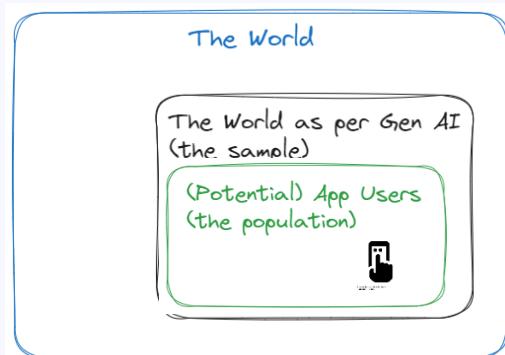


To Gen AI: what are my requirements?

System 2



To Gen AI: what are my requirements?



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# Creativity Workshop



# What we will do?

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- 1:30 hours total
  - 10 minutes: Brief Instructions
  - 15 minutes: Brainstorming
  - 10 minutes: Assumption Busting
  - 10 minutes: BrightSparks (Hall of Fame)
  - 15-minute break
  - 10 minutes: Creativity Triggers (a few triggers)
  - 10 minutes: Pairwise Comparison
  - 15+ minutes: Convergent Creativity (picking best, clustering, prioritizing)
  - 5 minutes reflection

# Tooling

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- In person
  - Post-it notes (I will bring some)
- Miro <https://miro.com/>
  - One person should register
  - Then can share with teammates
- Anywhere you can create post-its
  - Powerpoint, Draw.io, etc.