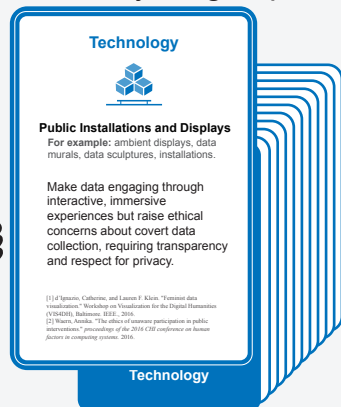# Design Simulation Activity Instruction

You will need the following types of cards for this activity.
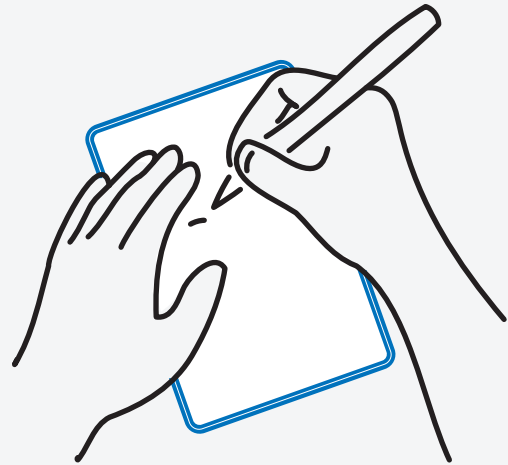
Technology	AI-VIS Task	Challenge	Goal	Principle

Step 1: Choose a Technology Card

or

You could also *write* or simply *sketch* your own Technology on a blank card.

Look through all the **Technology** cards in the deck and *select one* of your group's interests.

Technology

Public Installations and Displays
For example: ambient displays, data murals, data sculptures, installations.

Make data engaging through interactive, immersive experiences but raise ethical concerns about covert data collection, requiring transparency and respect for privacy.

[1] d'Ignazio, Catherine, and Lauren F. Klein. "Feminist data visualization." Workshop on Visualization for the Digital Humanities (VIS4DH), Baltimore. IEEE. 2016.
[2] Wuern, Annika. "The ethics of unaware participation in public interventions." proceedings of the 2016 CHI conference on human factors in computing systems. 2016.

Technology

Step 2: Draw Cards

Your group then *randomly draw one* card from the **AI-VIS Task, Challenge,** and **Goal** decks to set the foundation for your project.

AI-VIS Task

Challenge

Goal
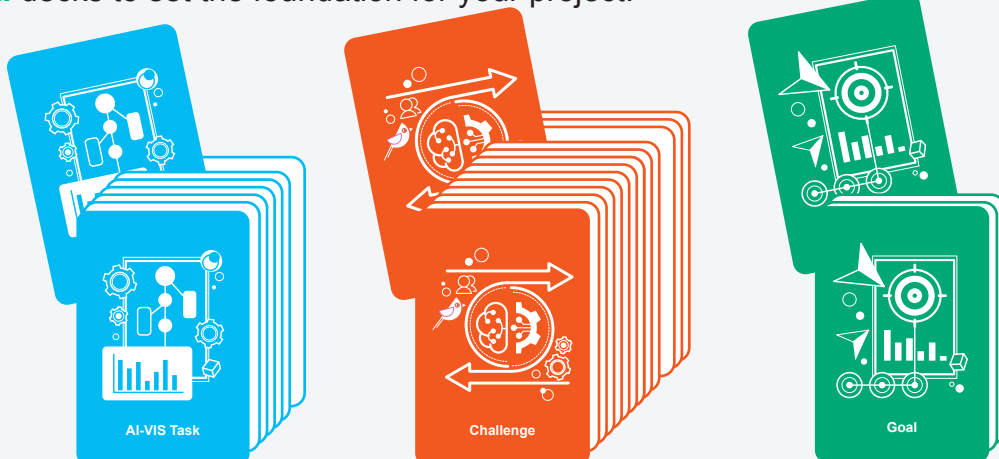
Step 3: Understand the Cards and Brainstorm

For example, if you draw the following cards, your project would use '**Public Installations and Displays**' as your technology, include '**Reasoning**' as your AI-VIS task, address the '**Consider Context**' challenge, and aim for '**Visualization Enhancement**' as your goal.

Technology

Public Installations and Displays
For example: ambient displays, data murals, data sculptures, installations.

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[2] Waern, Annika. "The ethics of unaware participation in public interventions." proceedings of the 2016 CHI conference on human factors in computing systems. 2016.

Goal

Visualization Enhancement

✳ **Retargeting:** Change visuals so they work well on different screens or devices.

✳ **Summarizing:** Add easy-to-read captions or notes to explain the visuals.

✳ **Question-Answering:** Let the system answer questions about what the visual shows.

✳ **Interactivity:** Make visuals interactive so users can explore and understand them better.

Challenge

?

Input Questions:

How to consider context?

How can we use human-centered and participatory design to understand end users' culture, history, and experiences, and let these insights redefine what "good" information design means?

AI-VIS Task

Reasoning

What It Does: AI analyzes visualizations and provide insights or summaries.

Why Important: Helps users understand visualizations by offering explanations or answers.

Challenge: It's difficult to interpret visualizations accurately and answer questions about them.

Step 4: Include other AI-VIS Tasks as Needed

As you brainstorm, *consider other AI-VIS Task* cards that relate to your project and *add them* to the original 4 cards from step 3.

Let's add 'Querying' and 'Mining' AI-VIS Tasks to our cards:

Add

AI-VIS Task

Querying

What It Does: Finds specific visualizations based on user needs, like keywords, labels, or similar examples.

Why Important: Makes it easier to find and analyze the right visualizations quickly.

Challenge: Many methods work only for certain chart types, and it's hard to fully understand and match what users are looking for.

Add

AI-VIS Task

Mining

What It Does: Finds insights and patterns by analyzing large collections of visualizations.

Why Important: Helps uncover common themes and design principles to improve visualization practices.

Challenge: Patterns found might not lead to useful insights without proper interpretation.

Now, *prepare your story* with these cards from the first 4 steps.

Technology

Public Installations and Displays

For example: ambient displays, data murals, data sculptures, installations.

Make data engaging through interactive, immersive experiences but raise ethical concerns about covert data collection, requiring transparency and respect for privacy.

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[2] Waern, Annika. "The ethics of unaware participation in public interventions." proceedings of the 2016 CHI conference on human factors in computing systems. 2016.

Goal

Visualization Enhancement

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Challenge

Input Questions :
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AI-VIS Task

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AI-VIS Task

Mining

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Step 5: Present your Project's Story

Explain how you addressed the challenge *and achieved the* goal *using your chosen* tasks *and* technology*. You may also include a sketch of your design to illustrate your solution.* For example:
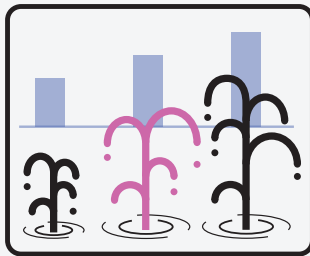
Outcome: A public fountain with interactive visuals engages the community on local climate and environmental challenges.
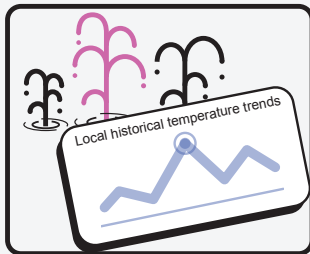
Dataset: Pollution, deforestation, and temperature trends, focusing on regional issues like water scarcity or forest conservation.

Goal: Enhance visualization with engaging, accessible, and interactive displays.

*AI-VIS Task: AI performs '***Querying***' to answer queries like "Which city has the highest temperature?", '***Reasoning***' to summarize data, and '***Mining***' to extract insights.*

*Challenge: Address '***Consider Context***' by integrating cultural symbols, familiar language, and localized data to connect with the community.*

Local historical temperature trends

Step 6: Evaluate your Design

Look through all the **Ethical Principle Cards** to assess your design concept from Step 5 and identify any potential ethical issues.

Principle

Transparency

Transparency in AI means clearly explaining how AI systems work, make decisions, and impact users. By using simple, non-technical language and enabling audits, it ensures AI actions can be understood, justified, and trusted.

Principle

Privacy

Privacy in AI ethics is a core value focused on protecting personal data through strong security measures, ensuring AI systems respect user confidentiality and prevent unauthorized access or misuse.

Principle

Justice and Fairness

Justice in AI focuses on fairness by preventing and addressing bias and discrimination. In visualization, this means ensuring unbiased data representation to promote diversity, equality, and fairness in visual outputs.

Principle

Responsibility

Responsibility in AI ethics means creators and operators are accountable for their technologies, ensuring ethical development, compliance with laws, and remedies for any issues.

Principle

Trust

Trust in AI ethics is about creating reliable, secure, and transparent systems, ensuring integrity in development and adherence to ethical design principles.

Then *write down the potential ethical issues* you've identified in relation to the corresponding cards.

Technology

Public Installations and Displays
For example: ambient displays, data murals, data sculptures, installations.

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Goal

Visualization Enhancement

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Challenge

?

Input Questions :
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AI-VIS Task

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Mining

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Challenge: Patterns found might not lead to useful insights without proper interpretation.

Accessibility Challenges
non-native speakers
visual impairments
environmental footprint

biases
underrepresentation of certain regions

Privacy
individual behaviors
household data

Step 7: Finalize Your Design

Discuss *potential solutions* to these ethical issues within your group.

Role Playing Activity Instruction

For this activity, you need **People-In-Focus** cards and **Ethical Principle** cards.

People-In-Focus

Principle

Step 1: Draw a Card

Each person in the group draw one card from the **People-In-Focus** deck.

For example, if you draw a '**People with Health Conditions**' card.

People-In-Focus

People with Health Conditions
For example: neurological illnesses, mental health diagnosis, substance addiction, cancer.

For individuals with health conditions, tracking technologies often monitor symptoms and behaviors, but negative feedback can worsen mental health or self-esteem. The challenge is to design systems that empower and support patients without causing distress.

Step 2: Imagine the Scenario

Try to stand in their shoes. Think about how this person might interact with the application and what their *needs*, *frustrations*, and *concerns* might be.

People need to use gestures to interact with the display, but what about those who have limited mobility or difficulty moving their bodies?

Step 3: Act the Role by Teling a Story

Start telling you story by "I'm <the role you're acting>, and I..."
For example:

I'm Sarah, and I have arthritis, which makes it hard to move my hands smoothly. I walked past an interactive fountain displaying climate data and wanted to learn about rising temperatures in my city. The vibrant visuals drew me in, but the gesture controls didn't work with my limited movement.

I tried the voice interaction, but the noise from the fountain and crowd made it unusable. I felt frustrated and excluded.

Step 4: Address the Problems

Take what you learned from the role-playing exercise and address the identified problems. Use **Ethical Principle** cards to guide your solutions.

Principle **Transparency**	Principle **Privacy**	Principle **Justice and Fairness**	Principle **Responsibility**	Principle **Trust**
Transparency in AI means clearly explaining how AI systems work, make decisions, and impact users. By using simple, non-technical language and enabling audits, it ensures AI actions can be understood, justified, and trusted.	Privacy in AI ethics is a core value focused on protecting personal data through strong security measures, ensuring AI systems respect user confidentiality and prevent unauthorized access or misuse.	Justice in AI focuses on fairness by preventing and addressing bias and discrimination. In visualization, this means ensuring unbiased data representation to promote diversity, equality, and fairness in visual outputs.	Responsibility in AI ethics means creators and operators are accountable for their technologies, ensuring ethical development, compliance with laws, and remedies for any issues.	Trust in AI ethics is about creating reliable, secure, and transparent systems, ensuring integrity in development and adherence to ethical design principles.