AI TOOLS

&

TRANSPORTATION PLANNING

Robert Hiett
Executive Director
Upper Coastal Plain COG
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Agenda

Introduction to Generative AI

Capabilities and Limitations

Ethical AI

Prompting and Prompt Structure

Live Demonstration

Breakout Activities

Q&A Session

Introduction to Generative AI

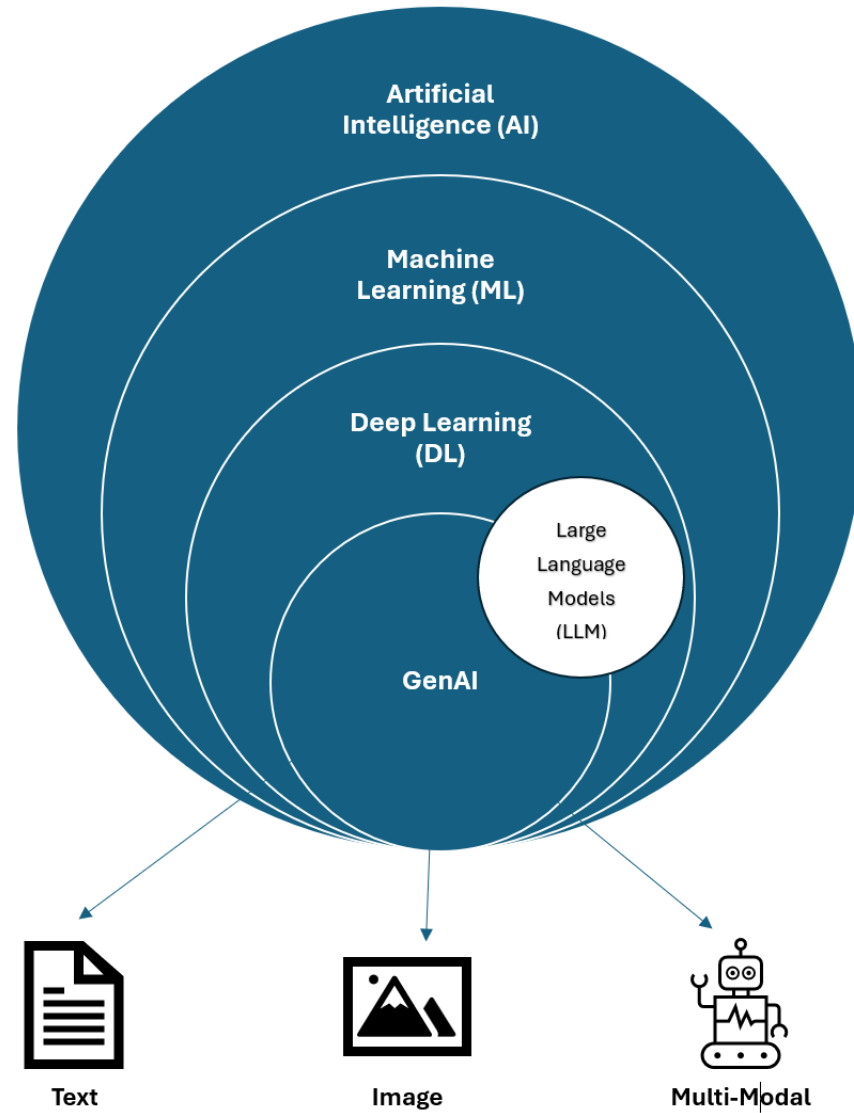**Definition: What is Generative AI?**

— **AI models that can generate human-like text based on input prompts.**

How it works: Basics of machine learning and neural networks.

- Trained on large datasets.

- Uses patterns and structures to generate responses.

AI Hierarchy & Modalities

Artificial Intelligence (AI)

Machine Learning (ML)

Deep Learning (DL)

Large Language Models (LLM)

GenAI

Text

Image

Multi-Modal

Generative AI Examples

Text Generation:
- Writing articles, stories, and reports.
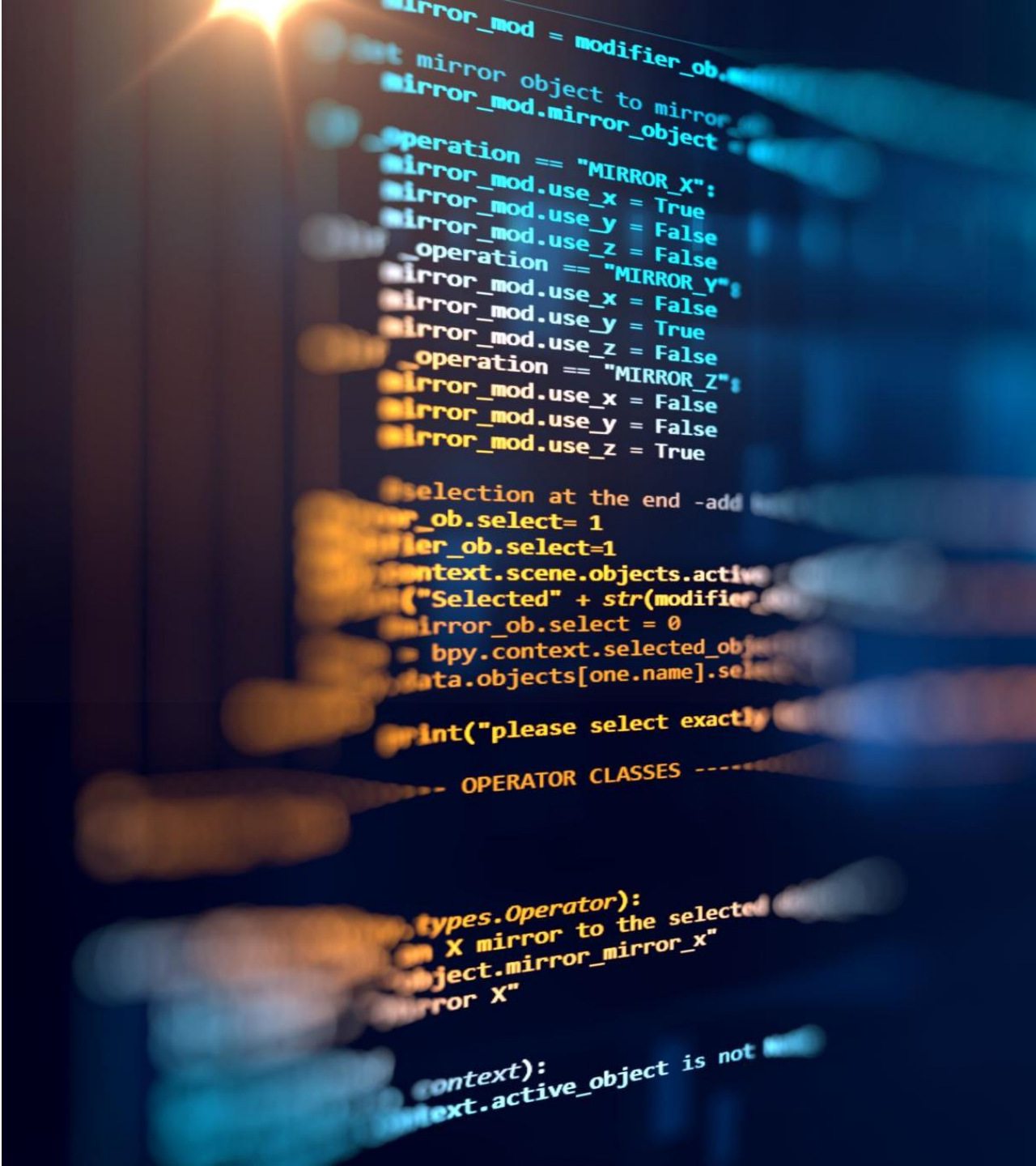
Data Summarization:
- Condensing large documents.

Conversational AI:
- Chatbots and virtual assistants.

Image Generation:
- Creating images from textual descriptions.

Capabilities of Generative AI

Strengths:

- **Natural Language Understanding: Ability to comprehend and generate human-like text.**

- **Data Summarization: Condensing large volumes of information into concise summaries.**

- **Content Creation: Generating articles, reports, stories, and social media content.**

- **Answering Questions: Providing accurate responses to user queries.**

- **Data Analysis: Extracting and analyzing data from reports or datasets.**
  - **Including the ability to create visual charts and graphs**

Limitations of Generative AI

Weaknesses:

Can produce incorrect or nonsensical answers.

Sensitive to input phrasing.

Requires large amounts of data for training.

Challenges:

Understanding context deeply.

Maintaining consistency in long conversations.

Addressing biases in training data.

Ethical AI

Importance of Ethics in AI:

- — **Ensuring transparency and fairness.**
- — **Mitigating biases.**
- — **Protecting user privacy.**

Ethical Considerations:

- — **Avoiding harmful content.**
- — **Accountability for AI-generated content.**
- — **Ensuring accessibility and inclusivity**.

Best Practices for Ethical AI Use

Transparency:
Clearly communicate the use of AI.

Fairness:
Avoid and mitigate biases.

Accountability:
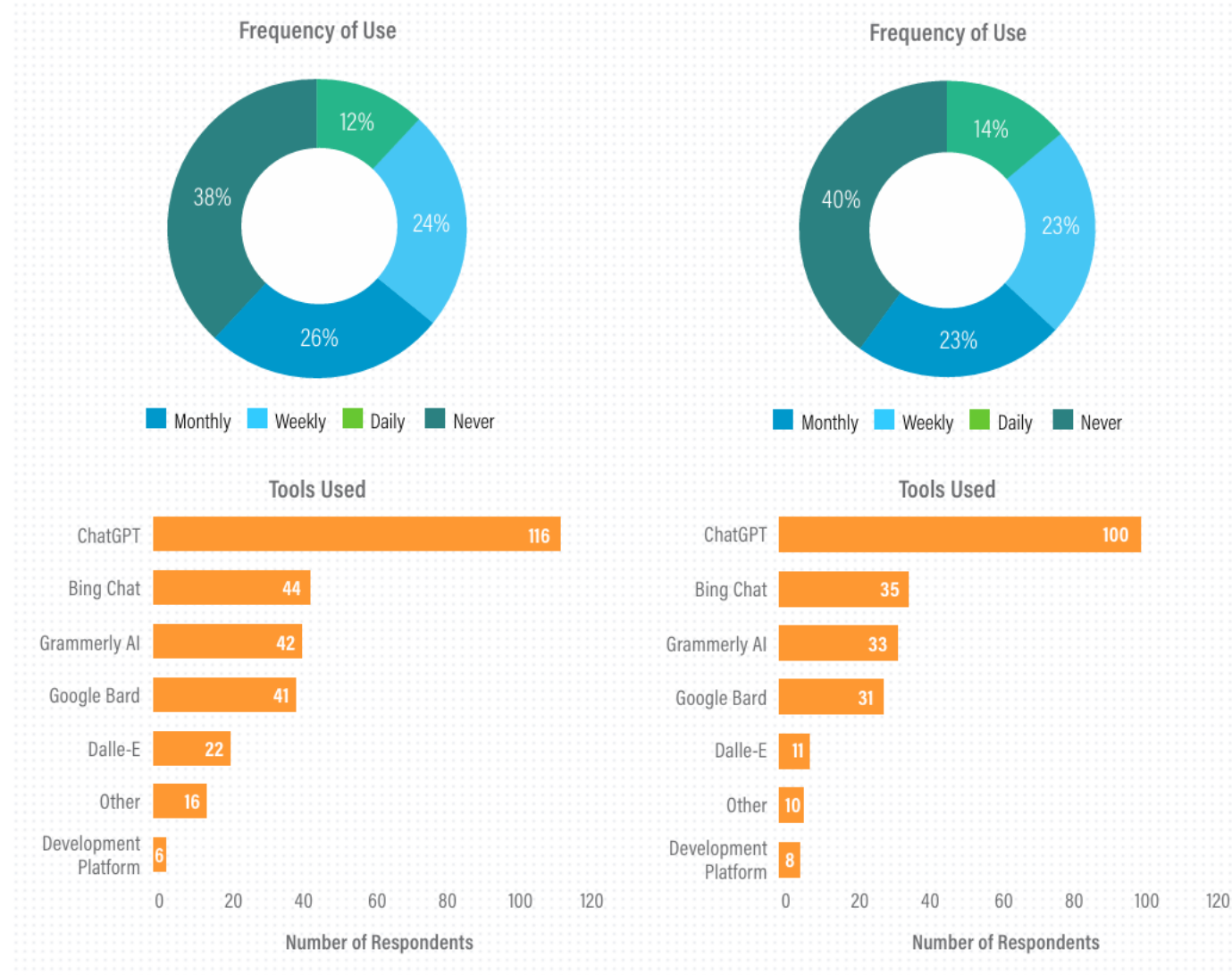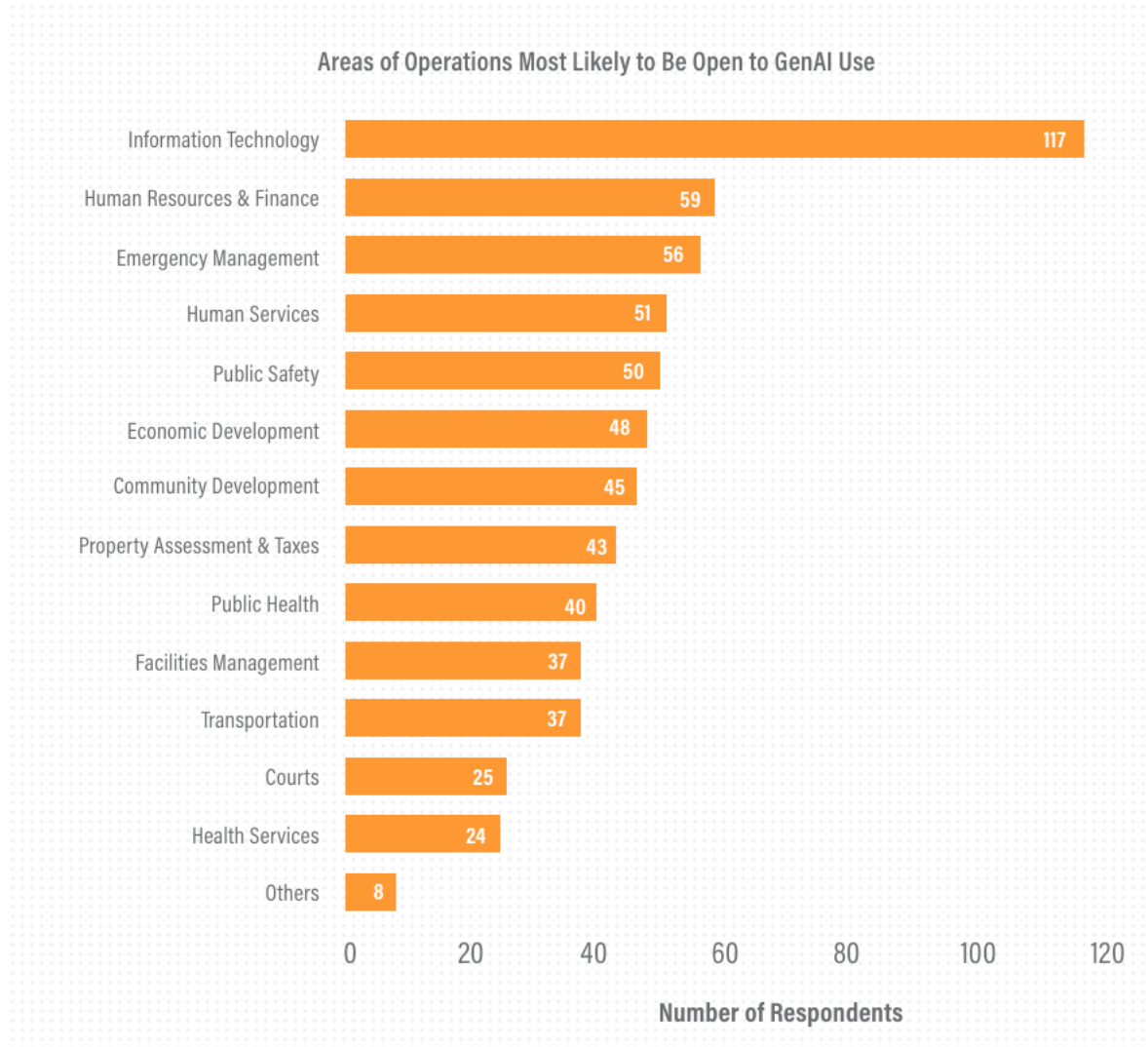Monitor and evaluate AI outputs.

Inclusivity:
Ensure the AI is accessible to all users.

NACo AI Compass – Use Frequency

Frequency of Use

12% 24% 26% 38%

Monthly Weekly Daily Never

Frequency of Use

14% 23% 23% 40%

Monthly Weekly Daily Never

Tools Used

Tool	Number of Respondents
ChatGPT	116
Bing Chat	44
Grammerly AI	42
Google Bard	41
Dalle-E	22
Other	16
Development Platform	6

Tools Used

Tool	Number of Respondents
ChatGPT	100
Bing Chat	35
Grammerly AI	33
Google Bard	31
Dalle-E	11
Other	10
Development Platform	8

Number of Respondents

NACo AI Compass – Functional Area Use

Areas of Operations Most Likely to Be Open to GenAI Use

Area	Number of Respondents
Information Technology	117
Human Resources & Finance	59
Emergency Management	56
Human Services	51
Public Safety	50
Economic Development	48
Community Development	45
Property Assessment & Taxes	43
Public Health	40
Facilities Management	37
Transportation	37
Courts	25
Health Services	24
Others	8

Number of Respondents

Introduction to Prompting

What is a Prompt?

Input given to an AI model to generate a response.

Importance of Clear Prompts:

Specificity leads to better results.

Examples improve understanding.

Effective Prompting Techniques

Clarity:
- Use clear and specific language.

Context:
- Provide relevant background information.
- Give examples to guide the model.

Types of Prompts

- **Zero-shot Prompts:**
  - **Basic prompts without examples.**

- **Example:**
 - **Summarize the key recommendations of the Rocky Mount Greenville Wilson Regional Transit Plan.**

Types of Prompts

- **Few-shot Prompts**:

  - **Prompts with few examples to guide the AI.**

Example:

- **Based on the following summaries, summarize the key recommendations of the Rocky Mount Greenville Wilson Regional Transit Plan"**

  - **Summary of Plan A: The plan recommends increasing bus frequency and expanding service coverage in urban areas.**

  - **Summary of Plan B: The plan recommends improving multimodal connectivity and enhancing the rider experience through new technology.**
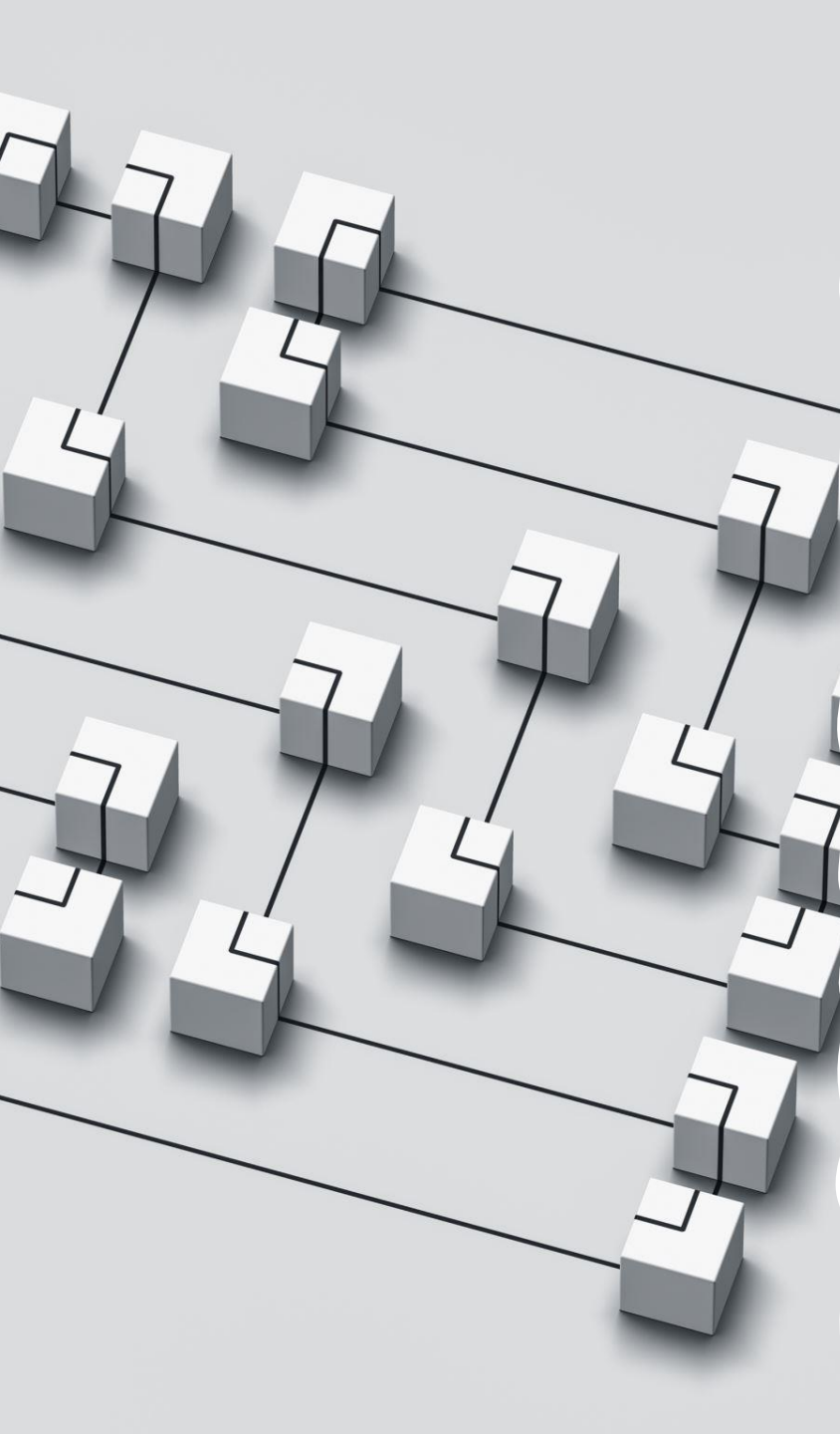
Types of Prompts

- **Chain-of-thought Prompts**:
  - **Step-by-step reasoning prompts.**

- **Example:**
  - **List the steps to extract data from the Rocky Mount Greenville Wilson Regional Transit Plan and format it into a table.**
    - **Step-by-Step Instructions:**
      - **1. Identify key data points related to population growth.**
      - **2. Extract the data points from the relevant sections.**
      - **3. Format the extracted data into a table with columns for year, population, and growth rate.**

Live Demonstration Setup

Objective:

Demonstrate practical uses of ChatGPT.

Steps:

Inject knowledge into ChatGPT.

Load the Wilson-Rocky Mount - Greenville Regional Transit Plan.

Summarize the document and extract highlights.

Summarize & Analyze Document

Prompts:

- Here is the regional transit plan. Summarize the plan and its key recommendations.

- Based on the summary, tell me more about:
    - Bus Frequency
    - Stakeholder Responses

- Perform an analysis of the regional transit plan to identify key   metrics related to ridership, fleet size, and population. Next you will   generate tables for each of them, and lastly you will create visual charts. Go step by step through these instructions to improve your accuracy and results.

Breakout Activities

- Interactive Exercises:
- Practice prompting.
- Group Discussion:
- Share results and insights.
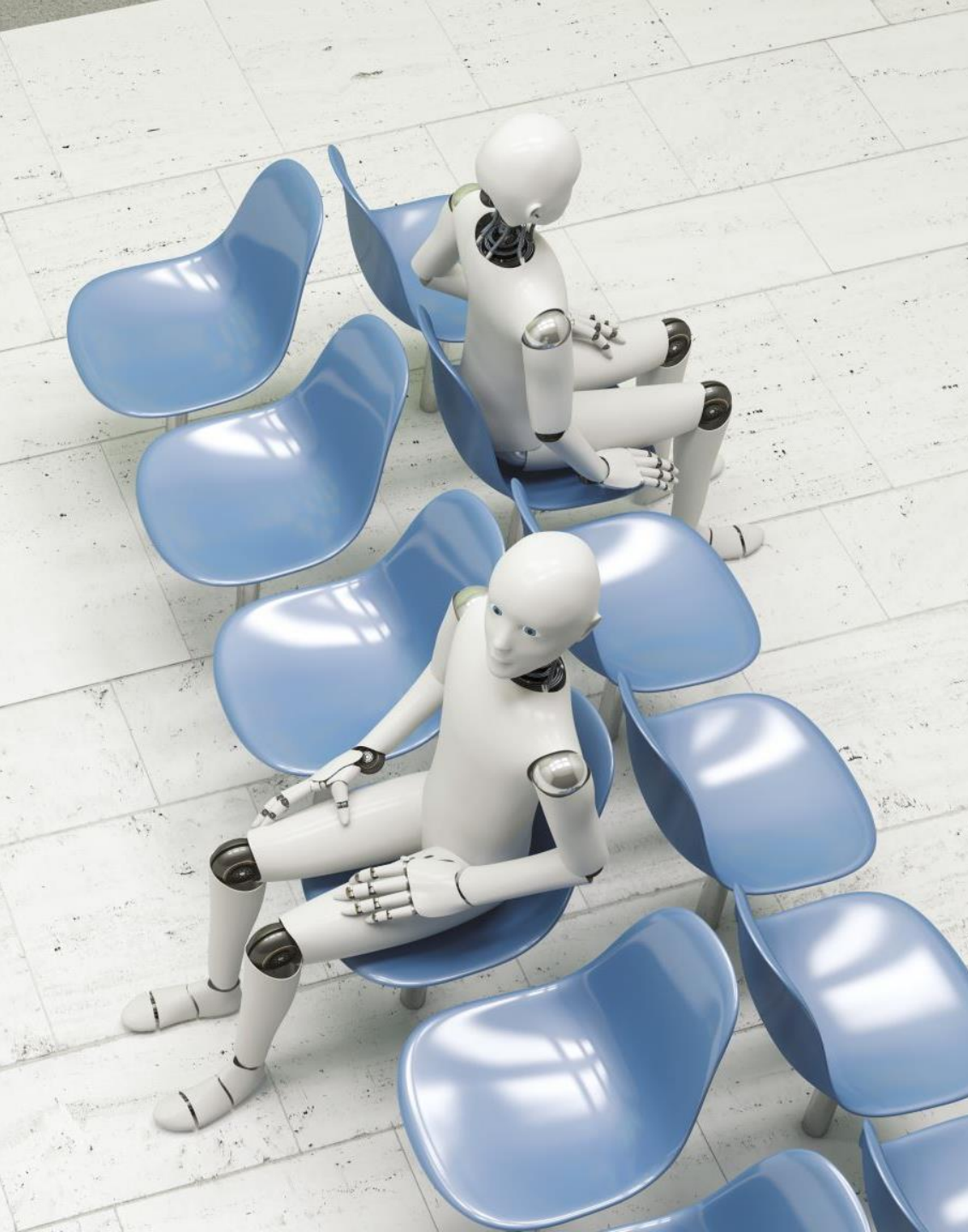
Q&A Session

Open Floor for Questions:

Contact & Keep Learning

Robert Hiett
Executive Director

Upper Coastal Plain Council of Governments

rhiett@ucpcog.org

Social Media

https://youtube.com/@publicsectorlearninglab

References

National Association of Counties. (2024). AI county compass: A comprehensive toolkit for local governance and implementation of artificial intelligence. https://www.naco.org/resource/ai-county-compass-comprehensive-toolkit-local-governance-and-implementation-artificial