

Beyond the Prompt.

Finding and following the golden thread in long-duration, AI-centric GIS projects.

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LIVE · NOW

Demo.

can we look at my license and tell me what we have to work with?

Great question! Let me check what we can see about your ArcGIS Pro environment and licensing. I'll start by getting the context from your current session, which should give us information about your setup.

Map >

I can see your ArcGIS Pro environment, but the context information doesn't directly show licensing details. However, I notice you have a **Utility Network** loaded, which tells us something important - **Utility Networks** require an **ArcGIS Pro Advanced** license (formerly known as ArcInfo).

Let me check if there's a way to get more detailed licensing information through the Python console or if we need to look at it through the UI. A few questions:

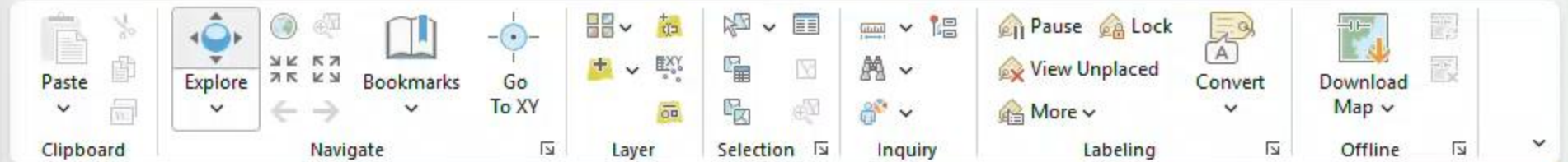
1. **Can you check your license level manually?** In ArcGIS Pro, you can usually see this under:
 - **Project > Licensing > Configure Your Licensing Options**
 - **Or Settings > Licensing**
2. **What specific information about your license are you looking for?**
 - License level (Basic, Standard, Advanced)?
 - Available extensions (Spatial Analyst, Network Analyst, 3D Analyst, etc.)?
 - Concurrent vs Named User licensing?
3. **Why do you want to know?** Are you:
 - Planning to use specific GP tools that require certain licenses/extensions?
 - Troubleshooting why certain tools aren't available?
 - Documenting your environment?

Based on the Utility Network presence, you definitely have at least **Advanced** licensing, which gives you access to all core GP tools. But extensions like Spatial Analyst, Network Analyst, Geostatistical Analyst, etc., would be separate and may or may not be available depending on your organization's licensing.

Reply...

+

Sonnet 4.5

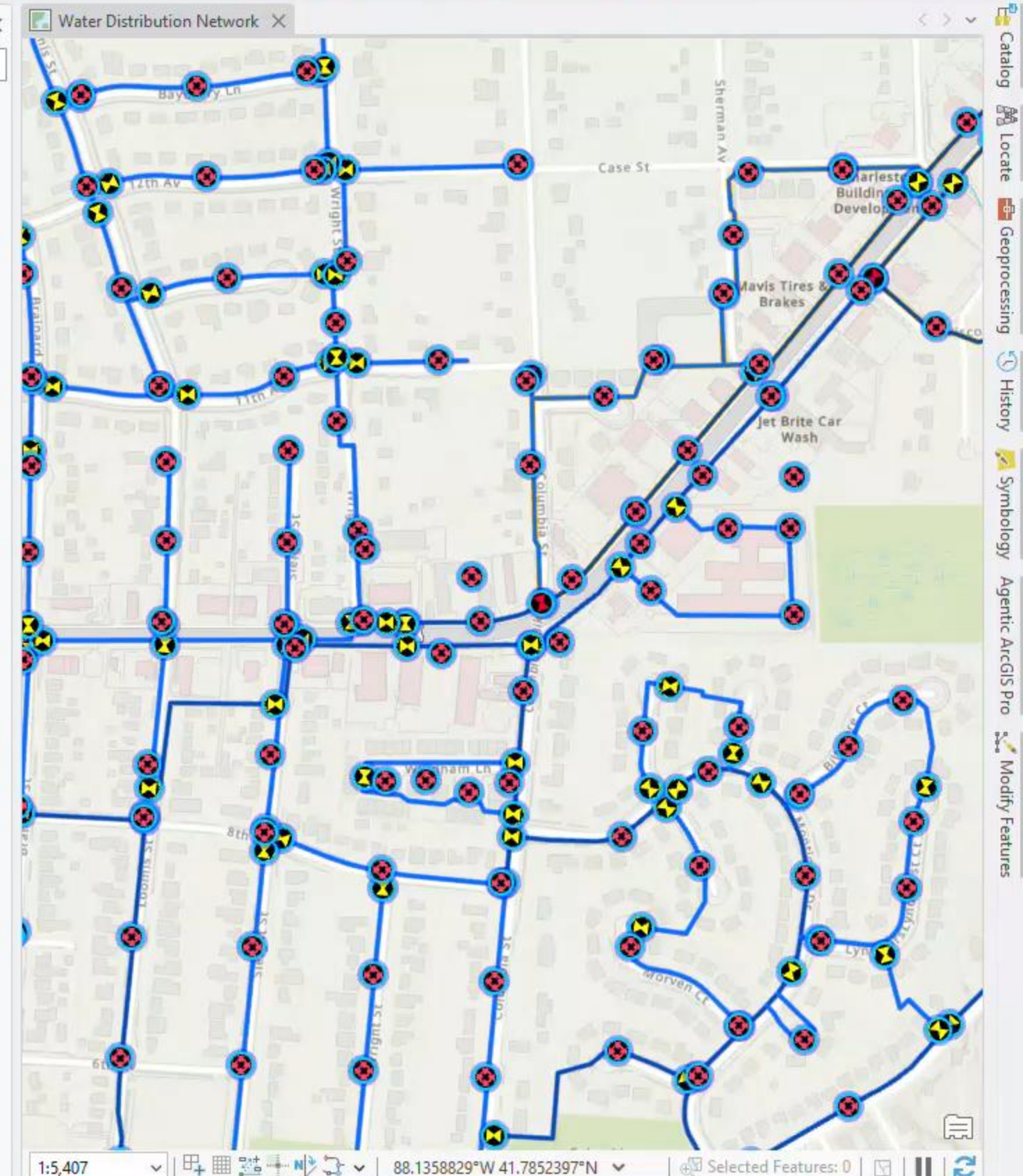


Contents

Search

Drawing Order

- Water Distribution Network
 - WaterNetwork Utility Network
 - Water Device
 - Water Junction
 - Structure Junction
 - Water Line
 - Structure Line
 - Water Network
 - GPS Point
 - Tee
 - Tap
 - Cap
 - Service Valve
 - Service Connection
 - Water Main
 - <all other values>
 - Service Interruptions
 - Service Territory
 - World Topographic Map
 - World Hillshade
 - Standalone Tables
 - Water Junction Object
 - Pump



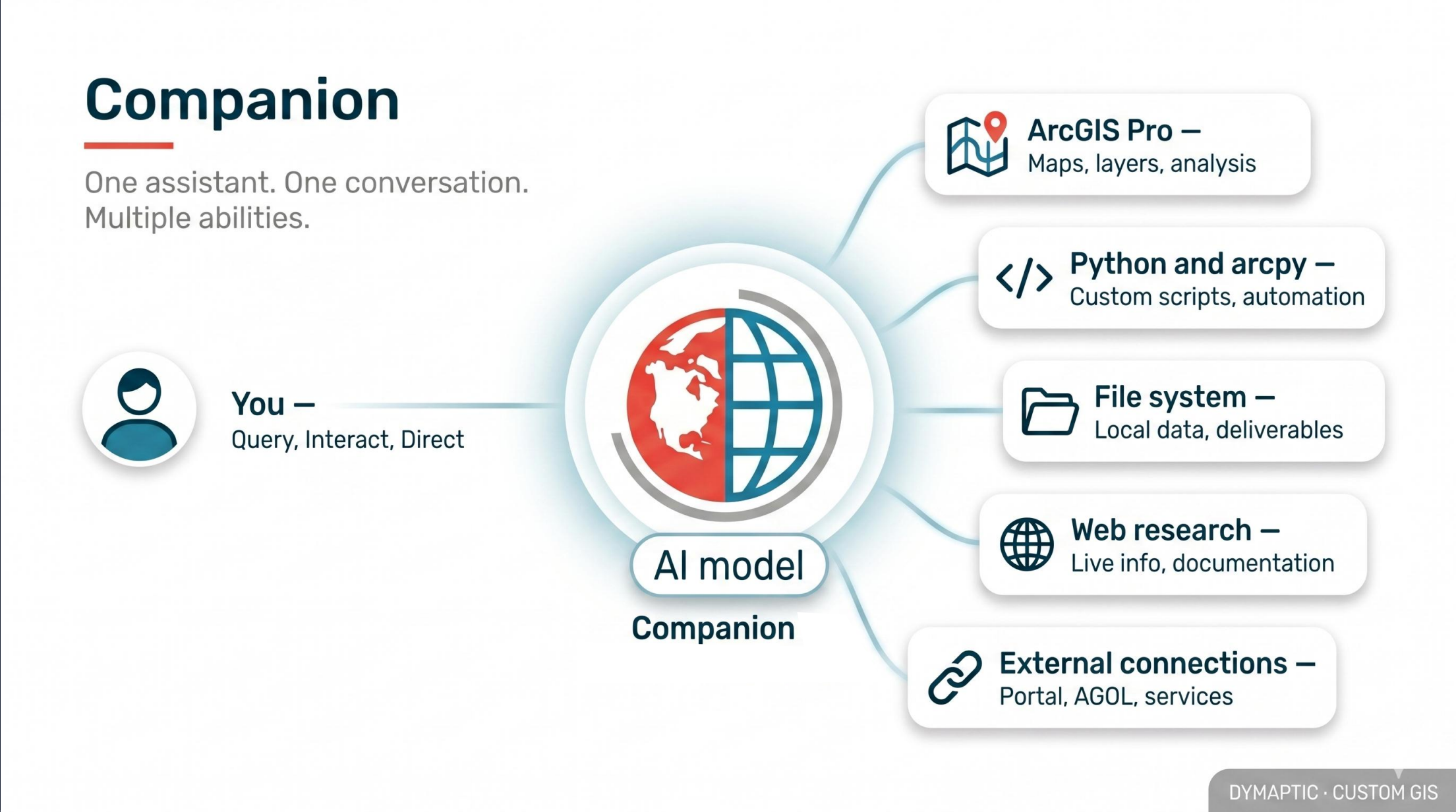
1:5,407

88.1358829°W 41.7852397°N

Selected Features: 0

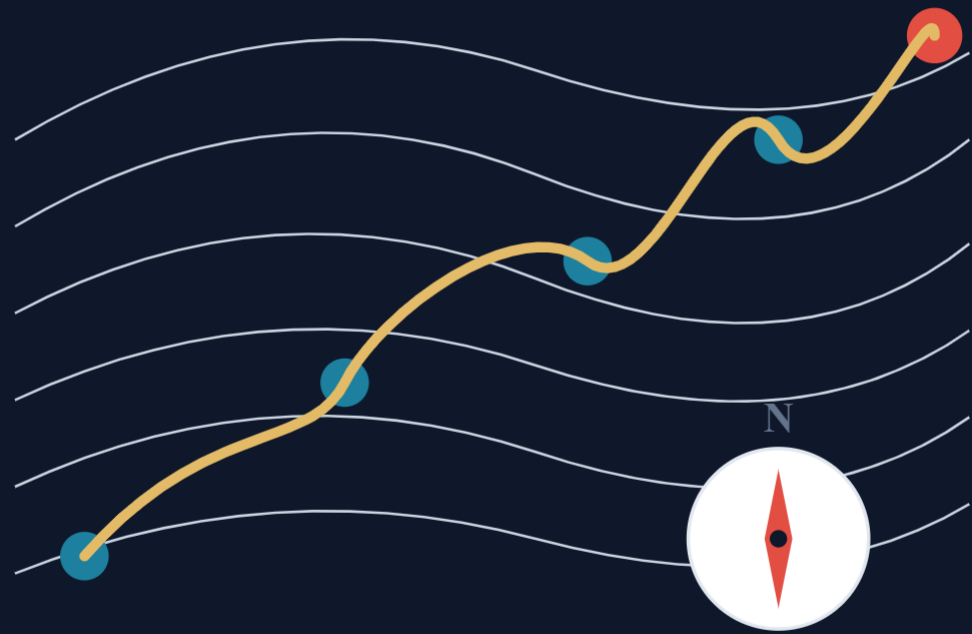
Building the skeleton – the eyes and hands.

- Architect the blueprint
- wire the connectors
- activate the brain



AI can teach you. And what it teaches you changes what you think is possible.

The Golden Thread.



Every long-duration project needs a **through-line**

Enables pivot, stall, regress, and still push forward.

When AI is doing most or all of the work, that thread is what keeps **you** and the **model** aligned.

Like navigating terrain: set an azimuth, identify waypoints, travel, reassess, correct, continue.

This talk is one project's story. The thread will show up in every chapter.

Learning what AI can do – How I started.

A software engineer, an occasional ArcGIS Pro user, and a single question:

THE AMBITION

Learn the kitchen sink — not a beginner's tutorial.

MCPs, skills, agents

Various Data-retrieval methodologies

GIS + non-GIS data together – structured and unstructured

Use and 'Tune' Esri's GEOAI models

THE PREMISE

Experience AI as:

Instructor

Collaborator

Builder

User

The thread starts before you know it's a thread. An idea. A plan. Or just curiosity.

AI designs the 'Phoenix' curriculum.

THE RESPONSE AGENT

A human-in-the-loop damage assessor — synthesizes spatial data (ArcGIS), financial records (SQL), and regulatory docs (vector DB).

THE FORCE MULTIPLIER

An automated admin assistant — data QC, metadata, and system-health monitoring for small GIS teams.

The first shape the thread takes is a plan. The plan may or may not change — the thread won't.

The CTO challenge.

THE SETUP

Leadership liked the direction and capabilities.

THE ASK

Consolidate it. Make it real.

THE CTO

"This is a good start.

I want to challenge you. This is a great idea...

focus this idea into a single project, unified, robust structure ...

...

Don't try to do everything"

Phoenix proved the concept. Pieces of an idea, proven patterns — but no clear destination.

Learning to use the Golden Thread

No plan survives first contact. The terrain continues to change as you move. Hold on to your thread to your thread

Your level of control.

Security posture

What you expose to the model. How you scope access. Boundaries set *before* you travel.

Building confidence

Research, clear expectations, ongoing collaboration — not controlling every line.

Critical State pattern

Always understand current state before changing state.
A coding pattern. A project pattern. A collaboration pattern.

You are the navigator — not the passenger, and not the micromanager.

Silent Failures – Orienting to the terrain.

Information + Instructions?

WHAT DOES THE MODEL NEED TO KNOW? WHAT SHOULD IT DO?
IT DO?

Incomplete/Incorrect actions?

‘PLEASE ENSURE THAT EVERYTHING WAS DONE ACCURATELY AND COMPLETELY’

Focus?

DON'T TALK ABOUT THINGS THAT ARE NOT PERTAINENT TO THE TASK AT HAND

Continuity across contexts, models, and time?

A NEW WINDOW ALWAYS REQUIRES CONTEXT TO OPERATE

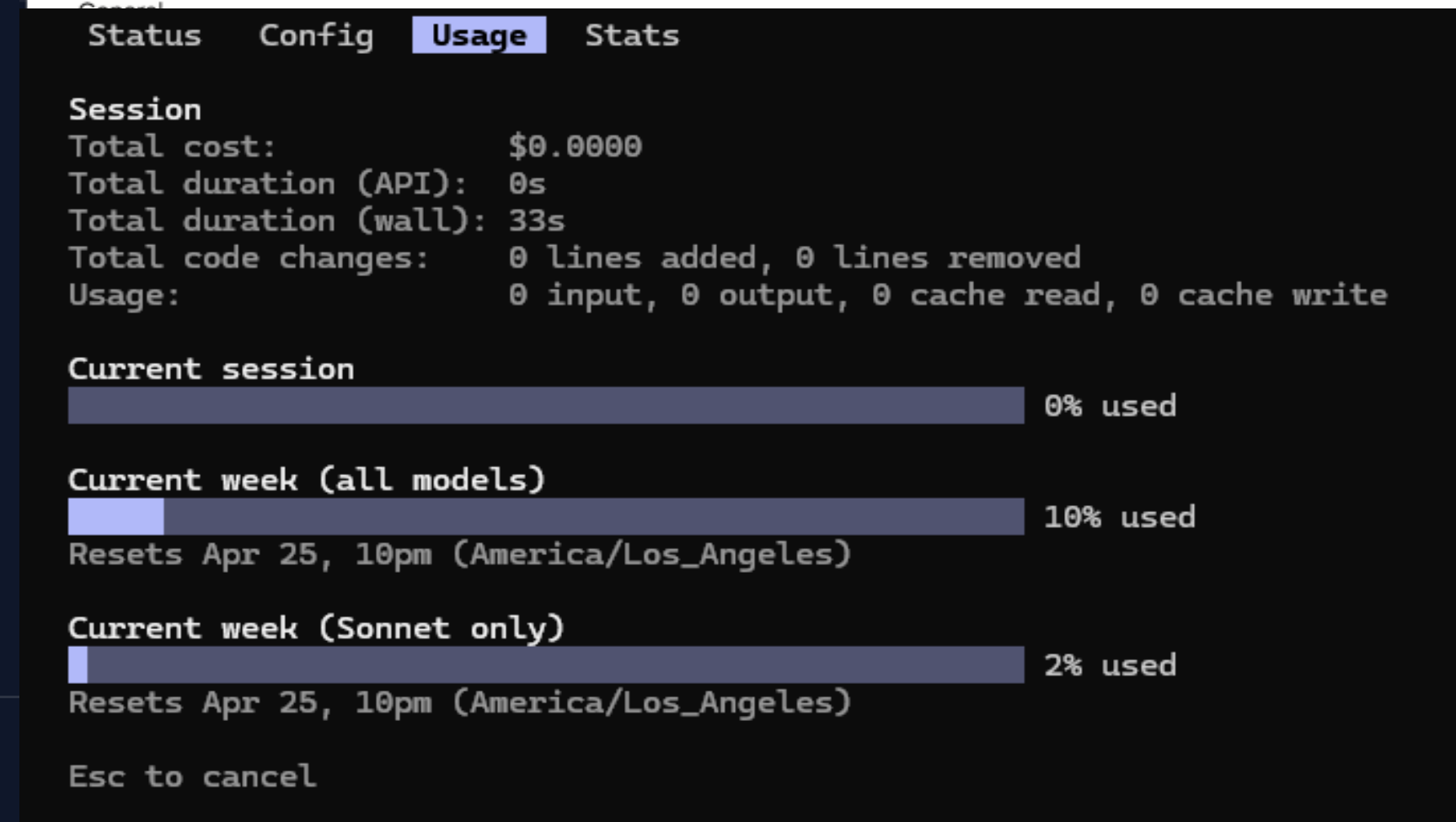
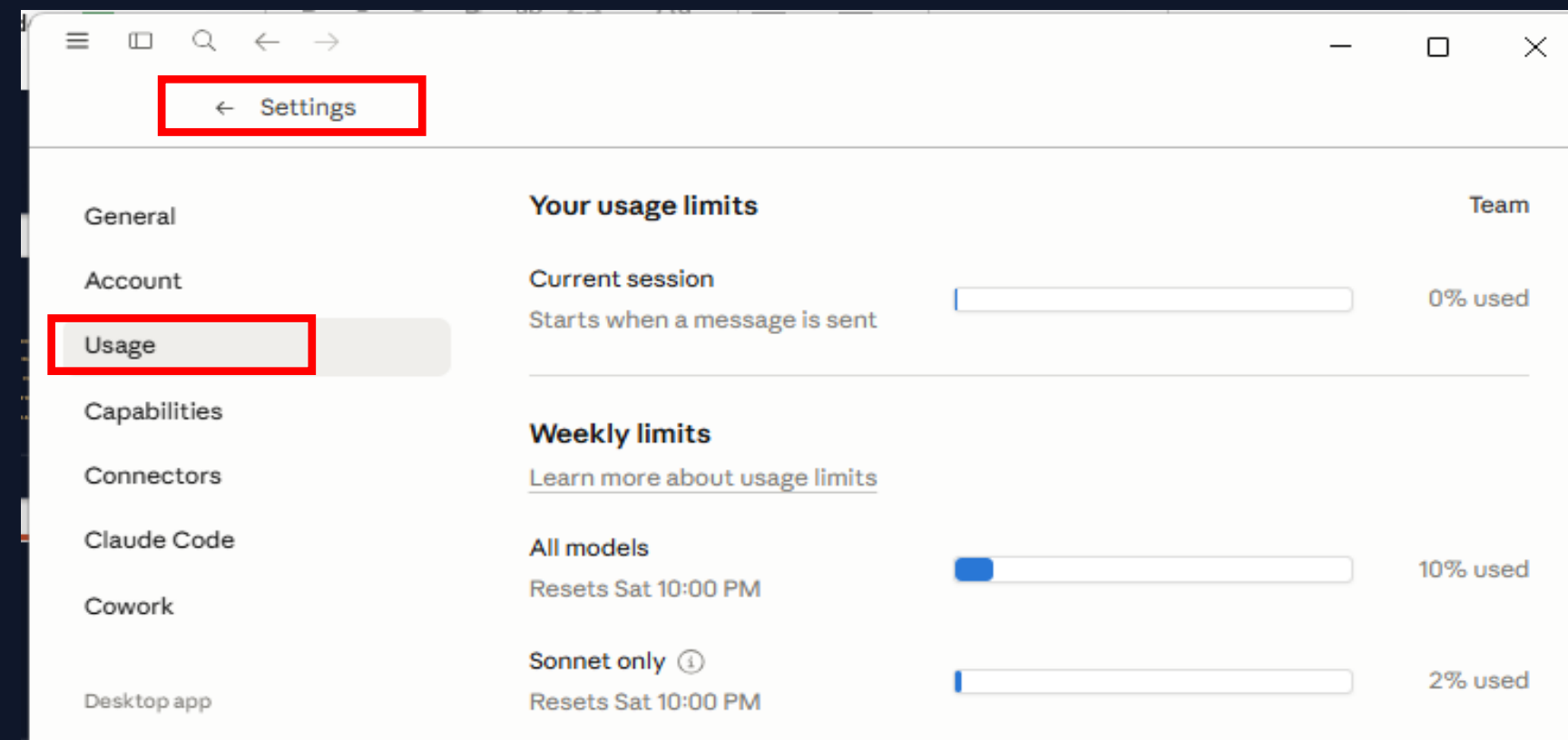
Abilities?

CAN A MODEL DO SOMETHING – ASK IF IT CAN OR WHAT IT NEEDS

Every prompt, action, reaction, teaches you about the model, the context, the abilities.

Tokens – usage...

Learn to track your usage + understand billing



Learn about your model, your usage, your billing, your capabilities and uses.

Tokens - models...

Balancing token consumption v. model capabilities

- Effort
- Thinking
- Speed

```
/model

Select model
Switch between Claude models. Applies to this session and future Claude Code sessions. For other/previous model
names, specify with --model.

> 1. Default (recommended) ✓ Opus 4.7 with 1M context · Most capable for complex work
   2. Sonnet                  Sonnet 4.6 · Best for everyday tasks
   3. Sonnet (1M context)     Sonnet 4.6 with 1M context · Billed as extra usage · $3/$15 per Mtok
   4. Haiku                   Haiku 4.5 · Fastest for quick answers

⊙ xHigh effort (default) ← → to adjust

Enter to confirm · Esc to exit

>_ OpenAI Codex (v0.125.0)

model:      gpt-5.4 xhigh  fast  /model to change
directory:  c:\git

Tip: GPT-5.5 is now available in Codex. It's our strongest agentic coding model yet, built to reason through
large codebases, check assumptions with tools, and keep going until the work is done.

Learn more: https://openai.com/index/introducing-gpt-5-5/

Select Model and Effort
Access legacy models by running codex -m <model_name> or in your config.toml

1. gpt-5.5 (default) Frontier model for complex coding, research, and real-world work.
> 2. gpt-5.4 (current) Strong model for everyday coding.
   3. gpt-5.4-mini    Small, fast, and cost-efficient model for simpler coding tasks.
   4. gpt-5.3-codex   Coding-optimized model.
   5. gpt-5.2         Optimized for professional work and long-running agents.

Press enter to select reasoning effort, or esc to dismiss.
```

*Learn about your model, your usage, your billing, your capabilities and uses.
and uses.*

Iteration is the path.

Evolve your prompt

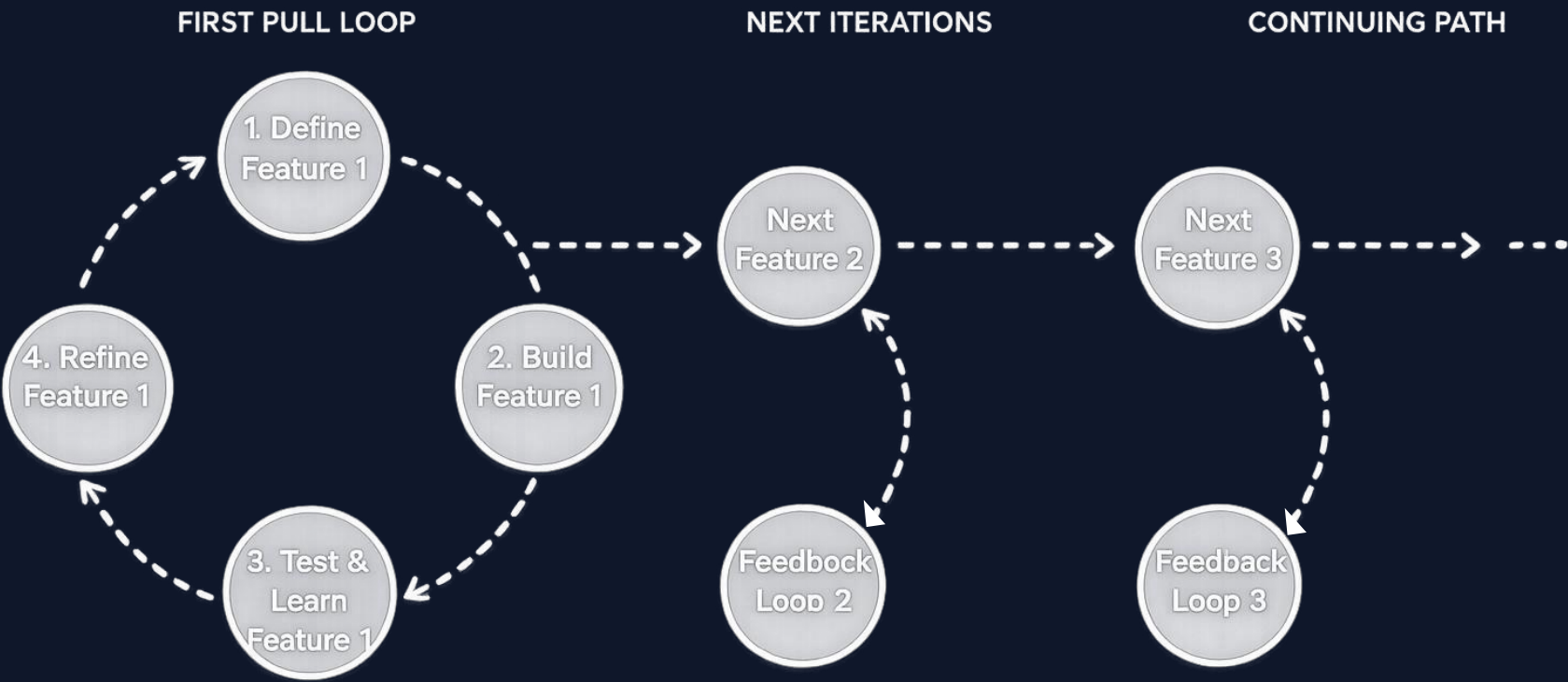
Improve **ONE** thing each iteration

Research + synthesize

Handoffs = continuity

Manage prompts and file sizes

THE FEEDBACK LOOP



*Every prompt you write or action you execute teaches you to manage the next one better.
one better.*

Managing ambiguity and drift.

Ambiguity is not a bug. It's the terrain.

Training data

TRUST, BUT VERIFY EVERYTHING

Use memory to reinforce behaviors!

```
# User Preferences
```

```
**ALWAYS look up the system date to establish today's date NEVER GUESS.
```

```
## Windows-Specific Warnings
```

```
**NEVER use any command containing 'nul' on Windows - THIS CREATES HARM.**  
The word `nul` is a reserved device name in Windows and using it in file  
paths or commands can create files that are extremely difficult to delete,  
requiring special `\\?\\` path syntax to remove. This applies to all  
contexts: file names, paths, redirections, etc.
```

Start with what you know, verify as you go, continue to improve the process.

Managing the flow.

When discovery outpaces planning... Slow down and triage... then adjust how you manage the path.

WHAT APPEARED ALONG THE WAY

ModelBuilder

Multiple Specialty Skills

Python console

UI automation – many Pro versions

Symbology

Multi-model collaboration

“How do I build this?”

↓ *became*

*“How do I **manage** what's being built?”*

Define your level of control. Then give yourself and the model room to build.

Set guideposts from failures.

Every checkpoint started as something that broke.

SILENT FAILURES

Learn to use AI to detect failures

Build a feedback loop.

TOKEN HEMORRHAGING

Learn to watch your tokens. tokens.

Learn where your tokens go. go.

FILE-SIZE CREEP

Learn how AI reads files.

Manage file sizes.

MODEL DRIFT

Documentation needs constant attention.

'When in doubt, Ask!'

CONTEXT LIMITS

What is Context

How it works

Develop Handoffs

A guidepost is a failure you learn from so thoroughly it becomes a checkpoint you never skip.

Curiosity + Experience = Knowledge

The original motivation for me to learn was massively successful.

Experienced AI capabilities as:

- A researcher
- A planner
- A collaborator
- A user/consumer
- An adversary (Tester)



Original Phoenix idea isn't dead. The thread allows flexibility to return to the original training plan or continue in new directions.

The strongest golden threads aren't technical or detailed. They have flexibility and can adapt.

— TAKEAWAY

The thread requires...

Curiosity

Research

Planning

Consistency

Focus + Patience

Collaboration

Tips / Tricks / Lessons Learned

