



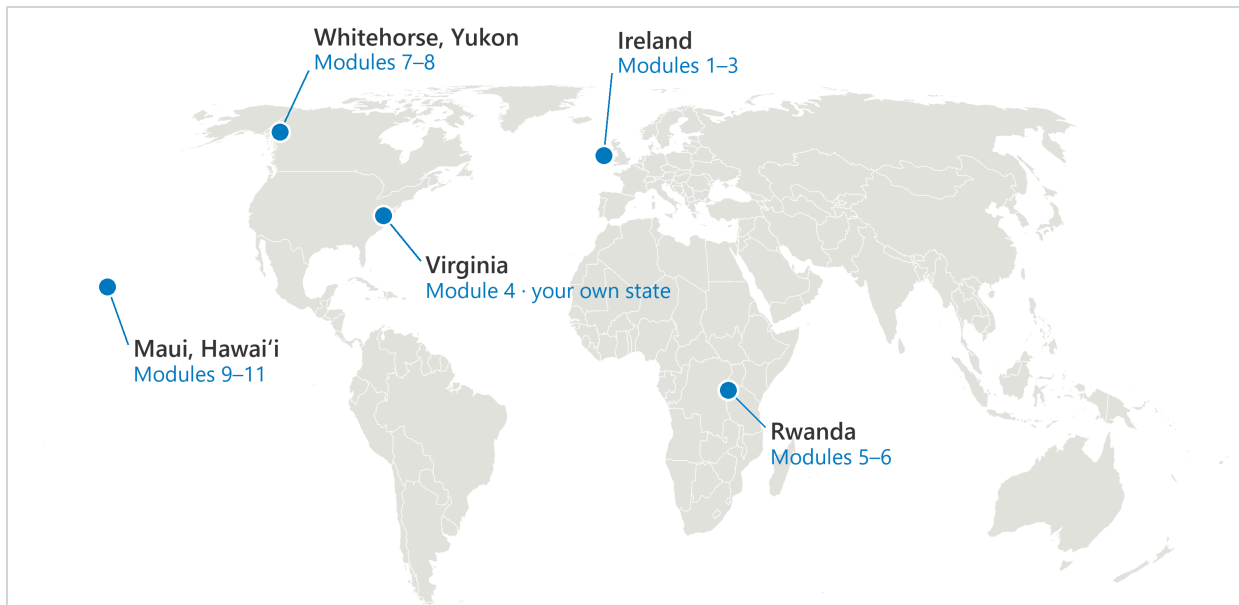
Getting started with Waldo Learning

Introduction to GIS — A Visual Companion · for Waldo Learning in ArcGIS Pro

CHAPTER 0

Start here

Accompanies Module 0 · Setup and Foundations



Countries: World Countries (Generalized), Esri, ArcGIS Living Atlas of the World

WHY THIS MATTERS

This course is taught inside ArcGIS Pro by Waldo, a chat pane that can read your project. Before the first lesson you need three things on your computer: ArcGIS Pro, the Waldo add-in, and a model provider that supplies the language model Waldo uses. This chapter covers the setup up to the start of Module 0's first lesson, and then explains what Module 0 teaches: what a project is and how to keep it safe.

YOU SHOULD BE ABLE TO EXPLAIN

- why a project is a folder, and why deleting the .aprx keeps your data while moving the data breaks a map
- how Waldo checks your progress by reading your saved project, so you can stop at any step and come back
- what Ask mode lets Waldo do and not do, and why every lesson runs in it

IN THIS CHAPTER

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What you need

A Windows PC. ArcGIS Pro runs on 64-bit Windows 11 (and Windows Server). Esri lists 8 GB of memory as the minimum and 32 GB as recommended, with at least 32 GB of free disk space, ideally on a solid-state drive. On a Mac, Pro runs only inside a Windows virtual machine such as Parallels Desktop. Waldo needs **ArcGIS Pro 3.7 or later**; earlier releases cannot load it. Check Esri's system requirements page before you install (see Further reading).

An ArcGIS Pro licence. Pro will not start without one. There are four common ways to get one:

Route	Who it suits	Where to look
Your school or employer	Anyone whose university or organisation already licenses ArcGIS	Ask the GIS or IT office for an ArcGIS account; you sign in with it when Pro starts
ArcGIS Pro free trial	A work or government email address	Esri's trial page (21 days at the time of writing)
ArcGIS for Student Use	Students building skills while in school	Esri's Student Use page
ArcGIS for Personal Use	Personal, non-commercial learning	Esri's Personal Use page

The trial requires a business or government email address, and Esri directs students and hobbyists without one to the two non-commercial licences. Esri sets the prices and terms and changes them, so check them on Esri's pages rather than in this book.

A model provider. Waldo does not include its own artificial intelligence. You connect it to a model provider, and the provider's model reads your project and writes the explanations. Most providers identify you with an **API key**, a long secret string that you create on their website and paste into Waldo once. The free options are listed first in the table below.

Provider (as named in Waldo's Settings)	Cost	What you need
Google Gemini (free or paid tier)	Free tier available	A Google account; create a key in Google AI Studio
OpenAI-compatible → OpenRouter	Free models (ids ending in :free) or pay as you go	An OpenRouter account and key
GitHub Copilot (installed CLI)	Free for verified students (Copilot Student); paid plans	A GitHub account and the Copilot command-line tool
OpenAI-compatible → Ollama or LM Studio	Free, runs on your own computer	A powerful computer; slower and less capable than hosted models
Anthropic (Claude, API key)	Pay as you go	An Anthropic console account and key
OpenAI-compatible → OpenAI, DeepSeek, Groq, Mistral, xAI	Pay as you go	An account and key with that company
ChatGPT (sign in)	Your ChatGPT plan	A paid ChatGPT plan; no key, you sign in instead

The free tiers have usage limits, and Google's allows only a few requests a minute. Because a single Waldo reply can use several requests, expect pauses. Google also states that content sent on the free tier may be used to improve its products. OpenRouter's free models are capped at a small number of requests per day unless you have bought credits. Any provider is enough for the lessons, but a more capable model gives better explanations.

NOTE

Treat an API key like a password. Paste it into Waldo's Settings and nowhere else; Waldo stores it encrypted on your computer. If a key leaks, delete it on the provider's website and make a new one.

Installing ArcGIS Pro

Esri documents the installation of Pro, and you should follow its instructions (see Further reading). In outline, you sign in to your ArcGIS account, download the installer from the **Licenses** page, run the setup wizard, and then start Pro and sign in with the same account. On a school or company licence, an administrator often controls the download. If you see no **Download ArcGIS Pro** link, ask the person who gave you the account.

Starting Pro the first time

When Pro starts, it opens the **start page**, which lists your recent projects and the default project templates (Map, Catalog, Global Scene, Local Scene), with **Start without a template** beside them. Click **Start without a template**. Pro opens an empty, **Untitled** project with no map in it yet. The course begins from this empty project. Module 0 gives the project a name, and Module 1 adds the first map.

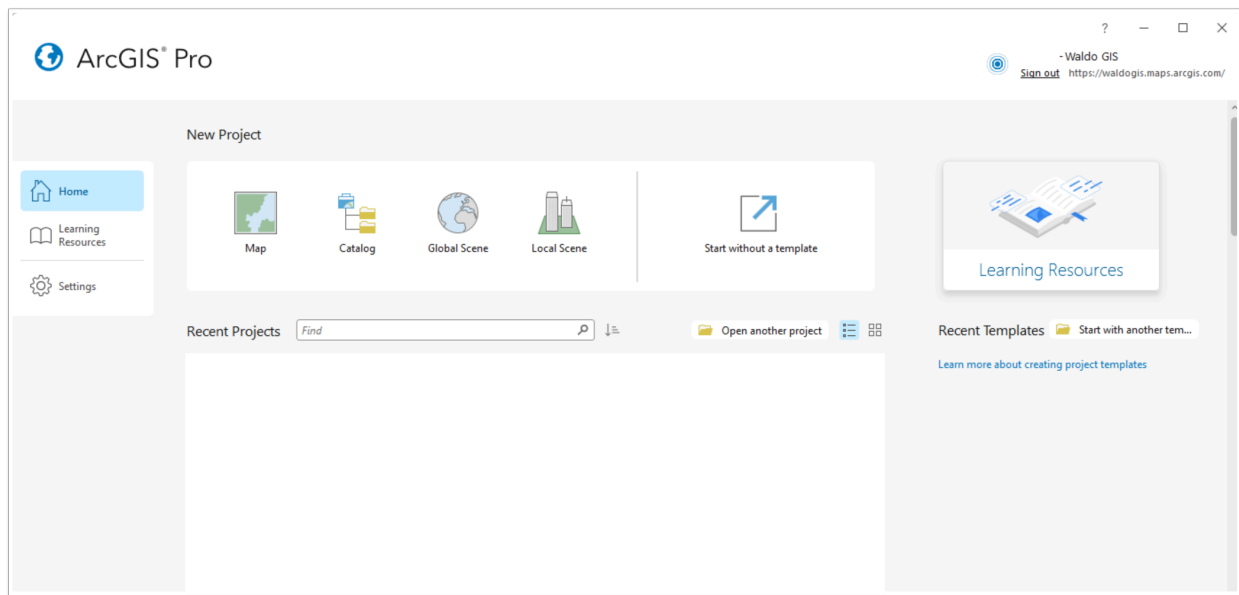


Figure 0.1 The ArcGIS Pro start page. Start without a template is beside the default project templates.

An Untitled project is temporary. Esri's documentation notes that it is deleted when you end the session unless you save it, so the first lesson of Module 0 is a Save As.

Installing Waldo

Waldo is an ArcGIS Pro **add-in**, distributed as a single file ending in `.esriaddinX` that you download from waldogis.com. The course lessons are included in that file, so there is no separate course download.

1. Close ArcGIS Pro. The add-in installs while Pro is closed.
2. Double-click the `.esriaddinX` file.
3. In the prompt that appears, click **Install Add-In**. No administrator rights are needed. The prompt also shows a notice in red that the file is not digitally signed. This notice is expected for this release, because Waldo is distributed directly from its own site rather than through a store.
4. Start Pro again.

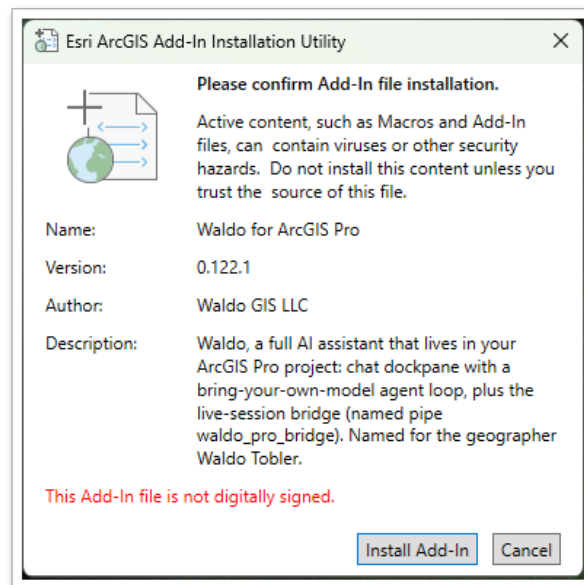


Figure 0.2 The ArcGIS Pro add-in installer, with the prompt to install Waldo.

To update Waldo later, repeat these steps with the newer file. The new version replaces the old one, and your settings and key are kept.

Finding Waldo

With a project open, look at the ribbon, the row of tabs across the top of Pro. The Waldo button is on the **Add-In** tab, in a group called **Waldo**. Clicking the **Waldo** button opens the pane, docked beside the map.

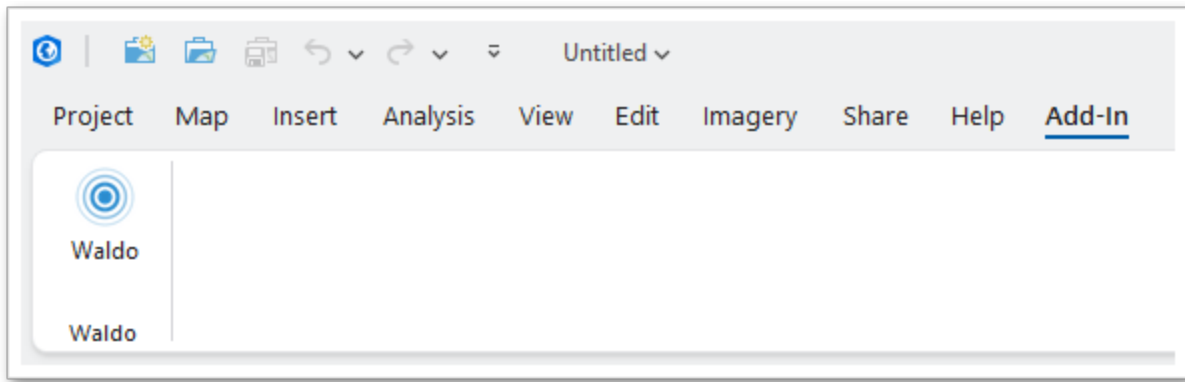


Figure 0.3 The Add-In tab of the ribbon, with the Waldo button.

If you close the pane, it stays closed until you reopen it, and Pro gives no indication of where it went. You always reopen it the same way, with the **Waldo** button on the **Add-In** tab. On a narrow window the ribbon may hide some tabs behind a » at its right end.

Settings

The first time the pane opens, click  **Settings** at the top of it. Under **Model provider**, choose your provider from the list, paste your API key into the key box (or, for the ChatGPT and GitHub Copilot entries, sign in as the panel explains), pick a model, and click **Save**. A link under the key box opens the provider's page for creating keys.

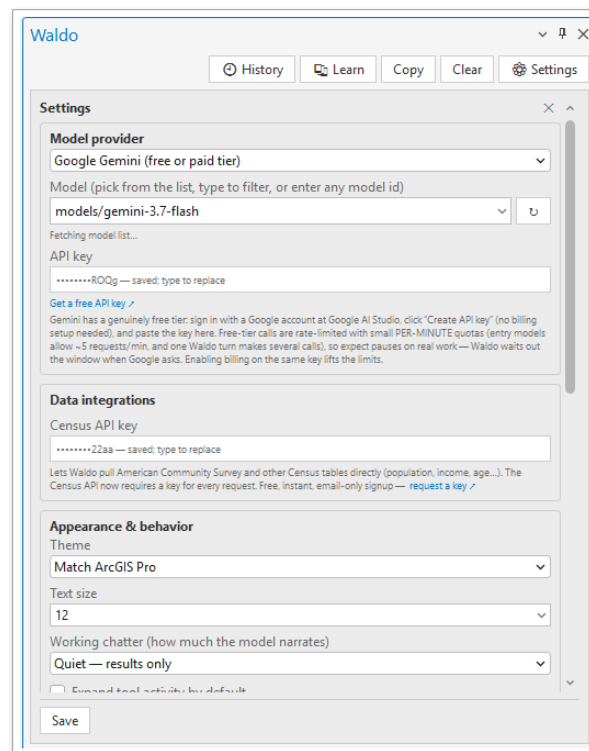


Figure 0.4 Waldo's Settings panel: the model provider, the model and the API key.

A new installation of Waldo starts a free seven-day trial in which Waldo can both explain and act. After the trial it continues in **Ask mode**, in which it can read your project and teach but cannot change anything. Every lesson in the course runs in Ask mode, so you can complete the course with or without a Waldo licence (licences are sold at waldogis.com).

The first thing to click

At the top of the Waldo pane, in the row of buttons beside **History** and **Settings**, is the **Learn** button (its icon is two small books). Click it, click the row **Module 0: Setup and Foundations**, and click **Start** beside its first lesson.

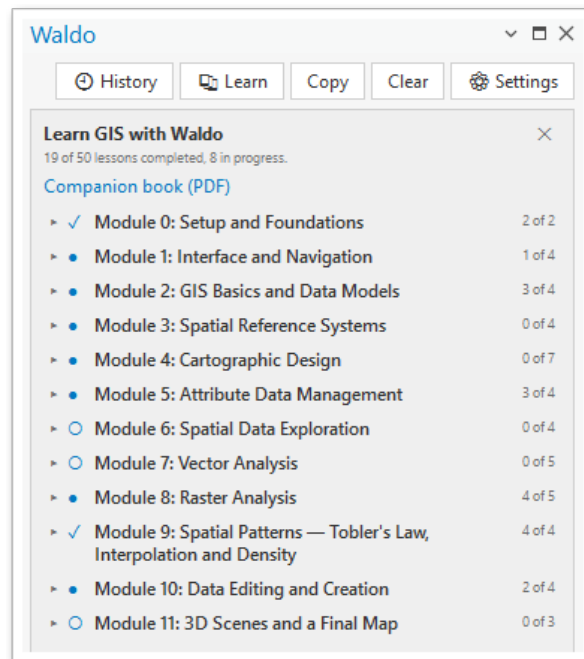


Figure 0.5 The Learn panel: every module of the course, each marked ○ not started, ● in progress or ✓ completed, with how many of its lessons are done.

The Learn panel lists the whole course. Each module row has a mark (○ not started, ● in progress, ✓ completed) and a count of the lessons you have done, and clicking a row shows its lessons. Each lesson has a **Start** button, which becomes **Resume** once you have begun. A started lesson also has a **Check my work** button. Clicking it runs the lesson's checks against your project and reports which of them pass. To come back another day, click **Learn**, then the module, then **Resume**. The **Companion book** link under the progress line opens this book at waldogis.com/learn, where it is free as a web edition and a PDF.

Module 0 has two short lessons. In the first you name and save your project, and the second explains how the lessons work. A lesson is a short series of steps that you carry out in Pro while Waldo explains them. Each of Waldo's replies ends with a few buttons that you can click instead of typing. You can also do everything the panel does by typing into the box at the bottom of the pane:

Type	What happens
start module 0	Begins a module at its first lesson
start lesson m01-103	Begins one particular lesson
list lessons	Shows every module and lesson
resume module 1	Picks up where you left off, even weeks later
explain more	Goes deeper on the current step
skip ahead	Moves past the current step
(close the pane or Pro)	Stops; your progress is kept, because Waldo reads it from the project (save the project first)

A **checkpoint** is the point at the end of a step where Waldo checks your work. Waldo does not rely on what you tell it. It reads your actual project, including the maps, layers and files in it, and reports what it found. Nothing is graded. A step is either done or not yet done, and because your progress is recorded in the state of your project, you can stop at any point and come back.

In a lesson Waldo acts as a teaching assistant and does not do the work for you. It explains, answers questions and checks your work, and you carry out the steps in Pro. When you carry out each operation yourself, you learn what it is for, how to predict its result and what the result does and does not show. A checkpoint checks your project, and the questions in this book test your reasoning.

TRY IT

Open the **Learn** panel after Module 0 and compare its list with the course map below. Then ask Waldo about any button you do not recognise. You can ask questions in the middle of any step.

The course map

The course has twelve modules and fifty lessons, which take roughly fourteen hours in all. Each module uses data from one place, and the course moves to a new place as the topics change. It uses Irish river basins for the basics, a US state for cartography, Rwanda's census for tables and queries, Whitehorse in the Yukon for vector and raster analysis, and Maui for spatial patterns, editing and 3D. The map on this chapter's opening page shows them. Module 4 uses your own US state, with Virginia as the worked example, and Module 11's final map can be of any place in the course.

Module	Title	Lessons	Minutes	Place
0	Setup and Foundations	2	16	Your own project
1	Interface and Navigation	4	52	Ireland
2	GIS Basics and Data Models	4	38	Ireland
3	Spatial Reference Systems	4	51	Ireland and the world
4	Cartographic Design	7	96	A US state (Virginia)

Module	Title	Lessons	Minutes	Place
5	Attribute Data Management	4	63	Rwanda
6	Spatial Data Exploration	4	69	Rwanda
7	Vector Analysis	5	122	Whitehorse, Yukon
8	Raster Analysis	5	112	Whitehorse, Yukon
9	Spatial Patterns	4	70	Maui, Hawai'i
10	Data Editing and Creation	4	57	Haleakalā, Maui
11	3D Scenes and a Final Map	3	75	Haleakalā, then your choice

The minutes are estimates for a first pass. Most lessons add their own data, so you can start almost anywhere. Later modules build on earlier ones, however (Module 8 continues Module 7's project, and Module 11 continues Module 10's), so it is easiest to take the modules in order.

A project is a folder

This idea will be important for the rest of the modules. An ArcGIS Pro **project** is a folder on your computer, and the file you open, the `.aprx`, is only one thing in it.

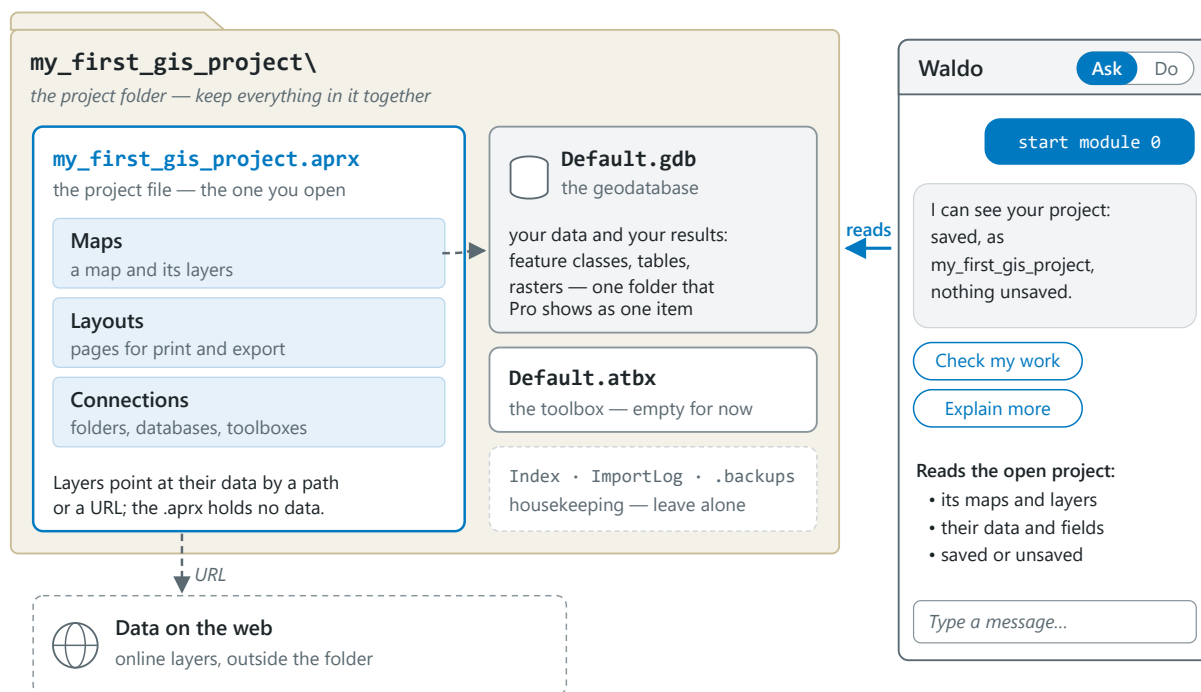


Figure 0.6 An ArcGIS Pro project is a folder. The `.aprx` holds maps, layouts and connections that point to data, the geodatabase holds the data, and the Waldo pane reads the open project.

- The `.aprx` file is the project itself: its maps, layouts and connections. A map's layers do not contain data; each one holds a path to data on your computer or a web address for data online.
- The **geodatabase** (`Default.gdb`) is where your own data and results are stored. In Windows Explorer it appears as a folder of files with unfamiliar names, but Pro shows it as a single item.

Never edit its contents from Explorer.

- The **toolbox** (Default.atbx) holds any tools you build. It stays empty in this course.
- Folders such as Index, ImportLog and .backups hold Pro's own housekeeping files.

This arrangement has three consequences. First, deleting the .aprx does not delete your data. Second, moving or renaming data breaks the path that the project stores, and the layer shows as broken until it is repaired. Third, your own work belongs in the geodatabase inside the project folder, so that the whole folder can be moved or copied as one unit.

RULE OF THUMB

Name projects, folders and data in lowercase, with words joined by underscores and no spaces: my_first_gis_project. Spaces and capital letters can cause problems in paths, scripts and some tools, and names written this way avoid those problems.

Save and Save As. **Save As** (on the **Project** tab) gives the project a name and a folder, and you use it once, at the start. **Save** writes your changes to that same project. You use it often, from **Project > Save** or from the small disk button on the Quick Access Toolbar at the top-left of the window. The button is greyed out when there is nothing new to save and becomes active when you change something. Data that you draw or edit is saved separately, as Chapter 10 explains.

RULE OF THUMB

Save often, and always save before closing Pro. A saved project reopens as you left it, although layers from the web still depend on their services. An Untitled project that was not saved is deleted.

Ask and Do. At the top of the Waldo pane is a two-way switch. In **Ask** mode Waldo can read your project and explain anything, but it cannot change anything. In **Do** mode it can make changes, such as running tools, styling layers and building layouts. The lessons run in Ask mode because you learn by doing the steps yourself. Outside a lesson, you can also learn by switching to Do, watching Waldo perform a task once and then doing it yourself.

IN THE PANE

In Module 0 lesson 1 you save the project with Save As, open the project folder in Explorer to see the .aprx, the geodatabase and the toolbox, and find both Save buttons. Waldo then checks that the project has a real name and nothing unsaved. Lesson 2 shows the course map, the Ask/Do switch (on some installs it is fixed on Ask, and the lessons never need Do), the Learn panel and its Companion book link, the words that move you between lessons and the Add-In tab, and Waldo demonstrates a checkpoint by reading your project live.

Key terms

project	an ArcGIS Pro workspace: a folder holding the .aprx file, a default geodatabase, a toolbox and housekeeping folders.
.aprx	the project file you open; it stores maps, layouts and connections, and points at data rather than containing it.
geodatabase	a container for GIS data (feature classes, tables, rasters); a file geodatabase is a .gdb folder that Pro shows as one item.
add-in	a package that extends ArcGIS Pro with new buttons and panes, installed from an .esriAddinX file.
pane	a dockable window inside ArcGIS Pro, such as Contents, Catalog or Waldo.
provider	the company or program that runs the language model Waldo uses.
API key	a secret string that identifies you to a provider; treat it like a password.
Ask mode	Waldo reads and explains your project but cannot change it; every lesson runs in Ask.
Do mode	Waldo can act on your project: run tools, change symbology, build layouts.
checkpoint	the check at the end of a lesson step, made by reading your actual project.
Learn panel	the list of every module and lesson in the Waldo pane, with your progress marked and Start, Resume and Check my work buttons.
lesson	a short sequence of steps, done in Pro, that teaches one idea.
module	a group of lessons on one topic; the course has twelve, numbered 0 to 11.

Further reading

- Esri. *ArcGIS Pro 3.7 system requirements*. ArcGIS Pro documentation. <https://doc.esri.com/en/arcgis-pro/latest/get-started/arcgis-pro-system-requirements.html>
- Esri. *Download ArcGIS Pro and Install ArcGIS Pro*. ArcGIS Pro documentation. <https://doc.esri.com/en/arcgis-pro/latest/get-started/download-arcgis-pro.html> and <https://doc.esri.com/en/arcgis-pro/latest/get-started/install-and-sign-in-to-arcgis-pro.html>
- Esri. *Create a project*. ArcGIS Pro documentation (the start page, templates and Start without a template). <https://doc.esri.com/en/arcgis-pro/latest/help/projects/create-a-new-project.html>
- Esri. *Run ArcGIS Pro on a Mac*. ArcGIS Pro documentation. <https://doc.esri.com/en/arcgis-pro/latest/get-started/run-pro-on-a-mac.html>
- Esri. ArcGIS Pro free trial, ArcGIS for Student Use and ArcGIS for Personal Use. <https://www.esri.com/en-us/arcgis/products/arcgis-pro/trial>, <https://www.esri.com/en-us/arcgis/products/arcgis-for-student-use/overview> and <https://www.esri.com/en-us/arcgis/products/arcgis-for-personal-use/overview>
- The course's data sources: every layer the lessons use, who publishes it and its licence.