

MAUI + AI

Build mobile apps smarter

Updating to newer technology **with AI**

- Old **.NET Upgrade Assistant** - CLI or VS - **deprecated**
- No LTS for MAUI releases
- Upgrade needed basically every year
- Underlying platforms keep changing - Android, iOS

GitHub Copilot Modernization Agent

- Enterprise-grade, multi-app portfolio transformation
- Workflow: Asses -> Plan -> Execute
- **Assess** - analyze modernization readiness across one or multiple applications
 - **Upgrade** - outdated app stacks, targeted recommendations
 - **Cloud Readiness** - migration guidance for Azure deployment
 - **Security** - identify vulnerabilities and security issues

GitHub Copilot Modernization Agent

- **Plan** -Generate a structured plan to guide the agent
- **Execute** - run the tasks defined in the modernization plan
- Install (CLI)

```
winget install GitHub.Copilot.modernization.agent
```

- Usage

```
modernize
```

- Since September 2025

GitHub Copilot Upgrade Tool

- Targeted, single-project technical upgrades
- .NET version upgrades, project file modernization, focused refactoring (NewtonSoft.Json -> System.Text.Json etc.)
- Workflow: Describe intent -> Get scenario/skill proposal -> Execute & validate
- Install (in Copilot CLI)

```
/plugin marketplace add microsoft/upgrade-agent-plugins  
/plugin install upgrade-agent@upgrade-agent-plugins
```

- Since August 2026

Modernization Agent vs Upgrade Tool

Scenario	Use Modernization Agent	Use Upgrade Tool
Upgrading .NET version in one project	✗	✓
Migrating 50 apps to Azure	✓	✗
Enterprise-wide security scan	✓	✗
Xamarin → MAUI conversion	✓	✗
Batch dependency updates across portfolio	✓	✗

MAUI Sherpa

- App with useful tools for environment setup and app development
- Doctor
- Manage Android and iOS related settings - SDKs, keystore, Bundle IDs, certificates, provisioning profiles, secrets, pub
- Send push notifications - Firebase, APNs
- Android SDK packages - check installed tools and versions
- <https://github.com/Redth/MAUI.Sherpa>
- Download from GitHub **Releases**

MAUI Sherpa - Devices

- See connected devices
- Access logs
- Access file system
- Connect to adb shell
- Capture screenshots and screen recordings
- Send deep links
- Manage installed apps

MAUI Sherpa - App Inspector

- Visual tree
- Network
- Profiling
- WebView
- Logs
- Platform information

MAUI Labs

- **Experimental packages and tooling for .NET MAUI**
- CLI tools
- Comet - experimental MVU UI framework for MAUI
- Go - single-file Comet app server and companion app for rapid prototyping
- Alternative backends - **MacOS AppKit**, **WPF** backend, (Linux **Gtk** also exists but in different repository)
- AppProjectReference - MSBuild package for referencing MAUI app projects and consuming their platform artifacts.

MAUI Labs (AI)

- DevFlow - runtime app **automation, inspection, debugging, and MCP tooling**
- AI Extensions - **Microsoft.Extensions.AI** tool bindings for MAUI
- Essentials.AI - On-device AI APIs
- <https://github.com/dotnet/maui-labs>
- Install: `dotnet tool install -g Microsoft.Maui.Cli --prerelease`

MAUI DevFlow

- Tool for automating and debugging .NET MAUI apps
- Built to enable AI agents to build, deploy, inspect and debug MAUI apps from terminal
- Used in MAUI Sherpa - App Inspector etc.
- Part of maui-labs

MAUI DevFlow - app setup

- Add nuget package `Microsoft.Maui.DevFlow.Agent`
- Configure MauiProgram.cs

```
#if DEBUG  
builder.AddMauiDevFlowAgent();  
#endif
```

MAUI DevFlow - tools (UI)

- ui screenshot - capture screenshot
- ui tree - visual tree as structured JSON
- ui tap - tap a UI element by ID
- ui focus - set focus to an element
- ui fill - fill text into an input element
- ui clear - clear text from an input element
- ui scroll - scroll a ScrollView (by delta, item index, or position)
- ui navigate - navigate to a Shell route
- ...

MAUI DevFlow - tools (others)

- Works as in-app HTTP agent (for communication)
- recording - start, stop, status
- network - list, detail, clear
- storage - preferences, secure-storage
- device - device-info, app-info, battery, connectivity, ...
- webview - DOM, input click, ...
- theme - get, set
- ...
- Complete list: `maui devflow commands`

GitHub Copilot App - MCP Servers

- "Normal" information cap can be about a year old - old .NET versions, old code practices etc.
- Microsoft Learn MCP Server - <https://learn.microsoft.com/en-us/training/support/mcp>
- MAUI DevFlow MCP Server - <https://github.com/Redth/MauiDevFlow?tab=readme-ov-file#mcp-server>

Creating an AI Chat bot

- Package `Microsoft.Extensions.AI.OpenAI`
- **IChatClient**
 - Abstraction layer
 - **GetResponseAsync()** - send message, return complete response
 - **GetStreamingResponseAsync()** - send message, stream response back token-by-token
 - Many AI providers - OpenAI, Amazon Bedrock, Ollama, etc.

Use OpenRouter - setup

- Sign up for an account: <https://openrouter.ai>
- Get API key

Use OpenRouter in project

- Package `OpenAI`
- URL: <https://openrouter.ai/api/v1>
- Model: openrouter/free
- Add API Key
- Use `OpenAIClient`'s method `GetChatClient()`

Use Ollama - setup

- Install ollama: <https://ollama.com/download>
- Download a model: `ollama pull llama3.1`
- Start Ollama app or run `ollama serve`
- Ollama HTTP API runs on <http://localhost:11434>

Use Ollama in project

- Package `OllamaSharp`
- Use `OllamaApiClient`
- Specify **URL** and **model name**
- Consume using **IChatClient**

On-Device LLMs

- Using LLM that is available directly on-device - **Apple Intelligence, Google's Gemini**
- iOS - requires iOS 26+, only physical devices, iPhone 15 Pro and newer
- MacOS - Requires Mac OS 26+, only on ARM chips (M1 and newer)
- Android and Windows - planned but not supported
- Package `Microsoft.Maui.Essentials.Ai`

More AI integrations

- `IEmbeddingGenerator` - using semantic search
- `IImageGenerator` - generating images
- `Microsoft.Extensions.AI.Evaluation.Safety` - evaluating responses for safety
- Function invocations
- Good series from Brandon Minnick: <https://codetraveler.io>
(starting with <https://codetraveler.io/2026/07/16/adding-ai-to-your-net-app-with-ichatclient/>)

Mobile Canvas

- View, create, boot, and interact with local iOS Simulators and Android emulators without leaving GitHub Copilot or VS Code.
- Live H.264 video at ~58 FPS on iOS and ~50 FPS on Android, with real tap, drag, scroll, and keyboard input. Everything runs locally on loopback; nothing is uploaded anywhere.

Punk

- Many of these tools didn't exist at the beginning of this year
- This all is changing rapidly
- In last 6 months:
 - **Polypilot** - archived
 - **GitHub Copilot App** - released
 - **maui-labs** - got created
 - **DevFlow** - moved from Redth to maui-labs
 - **GitHub Copilot Upgrade Tool** - got created

MAUI + AI - Build mobile apps smarter

Q&A

- Sample code: <https://github.com/jasho/chatr>