

VoiceATC Simulator — Manual

Hello, and thank you for playing! Air traffic control can feel like a lot at first, so this manual walks you through everything you need to get started and to make the most of the simulator.

There is also a YouTube playlist with detailed video tutorials available [here](#).

Manual for Early Access 0.6

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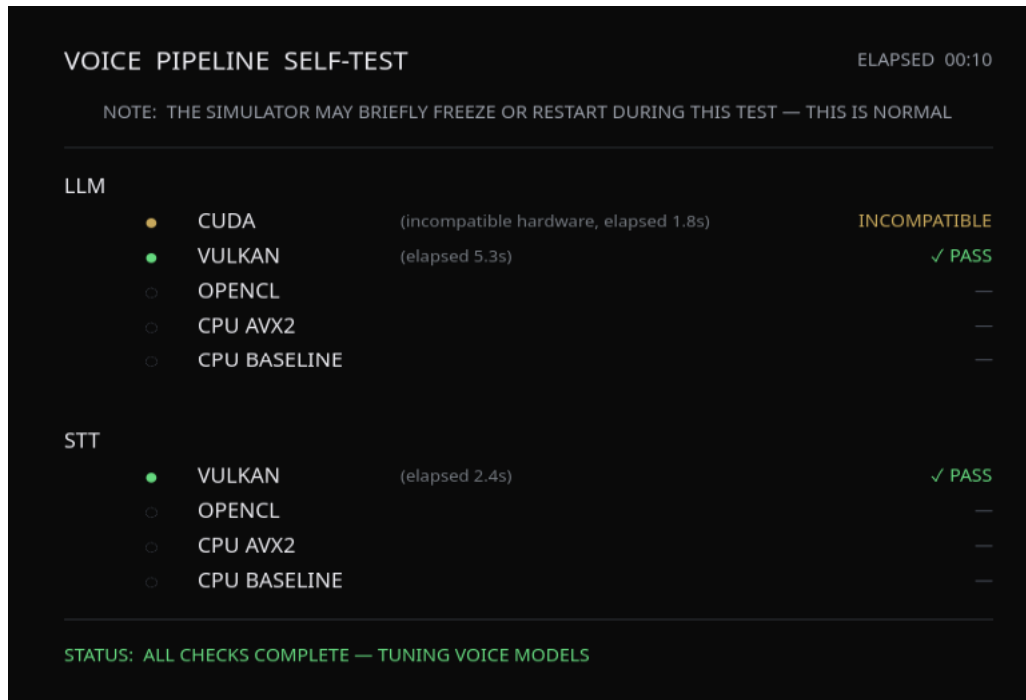
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Installing & first launch

VoiceATC Simulator understands your spoken instructions using artificial intelligence that runs entirely on your own computer — nothing is sent to the internet. The first time you start the game, it needs a one-time setup so it can pick the best settings for your hardware.

You will see a loading message that says “Verifying voice features...”. During this step the game safely tests your computer and tunes speech recognition, command understanding, and the pilot voices to run as well as possible on your machine. This can take a little while the first time; afterwards the result is remembered and start-up is fast.

- **Good to know:** voice features need this one-time setup, but the mouse controls always work even if you turn voice off. If you have a dedicated graphics card the AI features will generally run faster.



The “Verifying voice features...” first-launch screen

Main menu

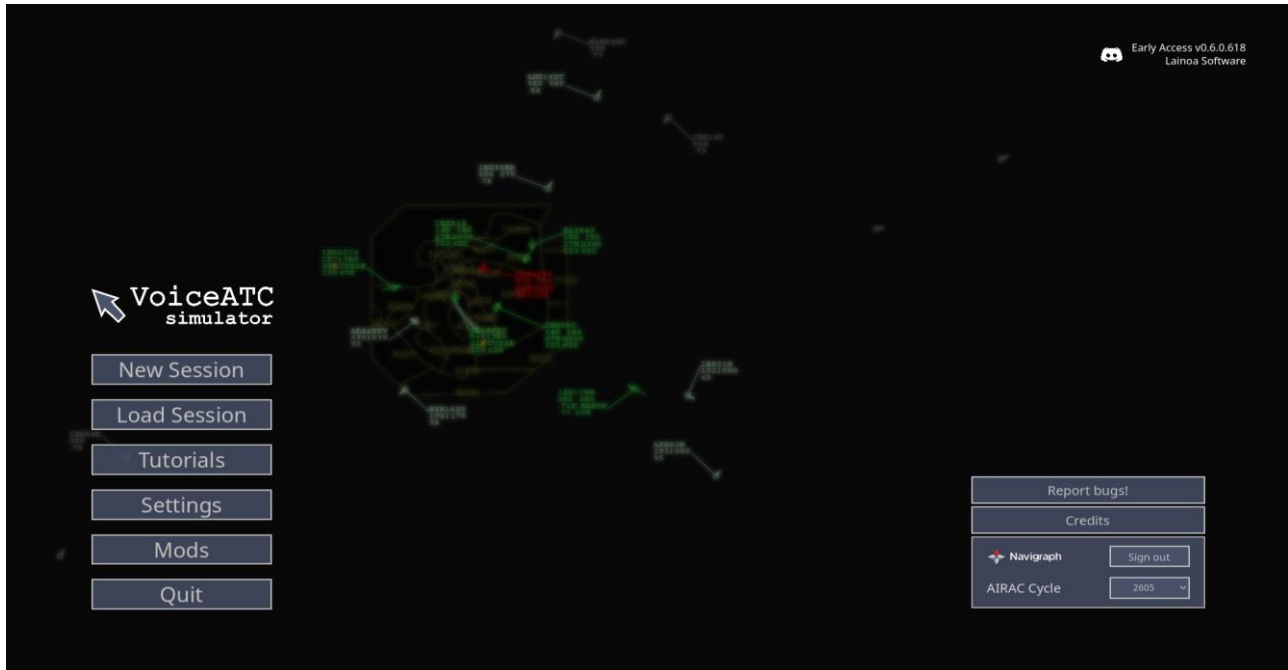
Once start-up finishes you arrive at the main menu — your home base for starting and managing a game.

- **New Session:** set up and start a fresh game (see “Starting a new session”, below).
- **Load Session:** resume a game you saved earlier (see “Loading a saved session”, below).
- **Tutorials:** open the built-in, guided lessons (see “Tutorials”, below).
- **Settings:** open the options menu — Display, Audio, Voice, Privacy, Colors and Controls (see “Settings”, near the end of this manual).
- **Mods:** open the community project on GitHub, where the game’s airports are improved and shared (see “Community content”).
- **Quit:** close the game.

Around the edges of the screen you’ll also find a few extras:

- **Navigraph panel:** shows the navigation-data cycle in use and lets you sign in to Navigraph for your up-to-date cycle. While the data is still downloading, New Session and Load Session wait until it’s ready.
- **Discord & Report bugs:** links to the community Discord, where you can ask questions and report problems.
- **Credits & Legal:** opens the credits and legal information.
- **Version:** the build of the game you’re running, useful when reporting an issue.

On your first visit to the main menu, the game may also show a one-time welcome prompt with quick links to the Discord and the public roadmap. It is dismissible and will not keep appearing.



The main menu

Starting a new session

Choose New Session on the main menu to set up a game. You make a few choices on one screen and then press Start; only the airport is required, and sensible defaults cover the rest.

Airport

Press Select Airport to open the airport picker. Search by ICAO code or by name, pick one from the list, and confirm. You can mark airports as favourites so they're quick to find next time. This is the airspace you'll be controlling.

Runway & sector configuration

Open the diagram to choose how the airport is set up — the arrival and departure runways in use. Until runways are chosen, the arrival/departure indicators show dashes and the screen reminds you to set them from the diagram.

Your controlled sector is chosen for you: a circle around the airport that reaches the furthest point at which arrivals begin their published arrival routes, with two coverage rings beyond it — the SSR ring 100 NM out from the sector, and the PSR ring a further 100 NM out. Airports that have a community-defined sector instead show Sector Config and Chosen Sector pickers so you can select one; airports without one simply read "Default sector". The diagram previews it all: the controlled sector inside the SSR and PSR rings, with the arrival (STAR) and departure (SID) routes drawn in.

- **Delegations:** for community-defined sectors only — a toggle that controls whether neighbouring sub-sectors are handled together with yours.

Traffic

Set how busy the session is using simple sliders. Each can be turned right down to zero for a quiet session or up for a heavy one:

- **Arrivals:** how much inbound traffic to generate.
- **Departures:** how much outbound traffic to generate.
- **Alien:** a light-hearted optional extra — a touch of unusual traffic for variety.

Starting

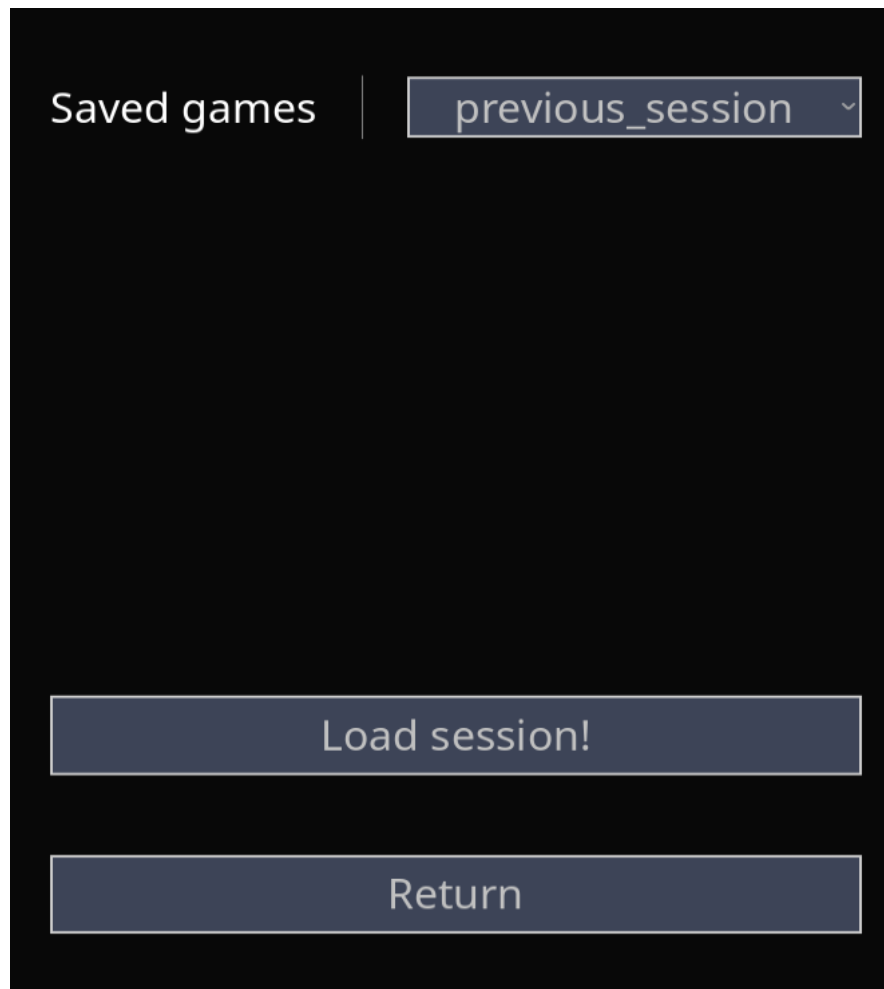
- **Start new session:** begins the game with your choices. If something still needs doing, the button is greyed out and tells you what — for example “Pick an airport” or, briefly on first run, “Syncing route data...” while the latest community routes download.
- **Return:** goes back to the main menu without starting.



The New Session screen: airport, runway/sector and traffic choices

Loading a saved session

Choose Load Session on the main menu to pick up where you left off. The screen lists your saved games; choose one and press Load session to resume it. A saved game comes back with the same airport, runways and sector it was created with — these aren’t re-chosen on load. If you have no saves yet, the list says so; start a New Session first.



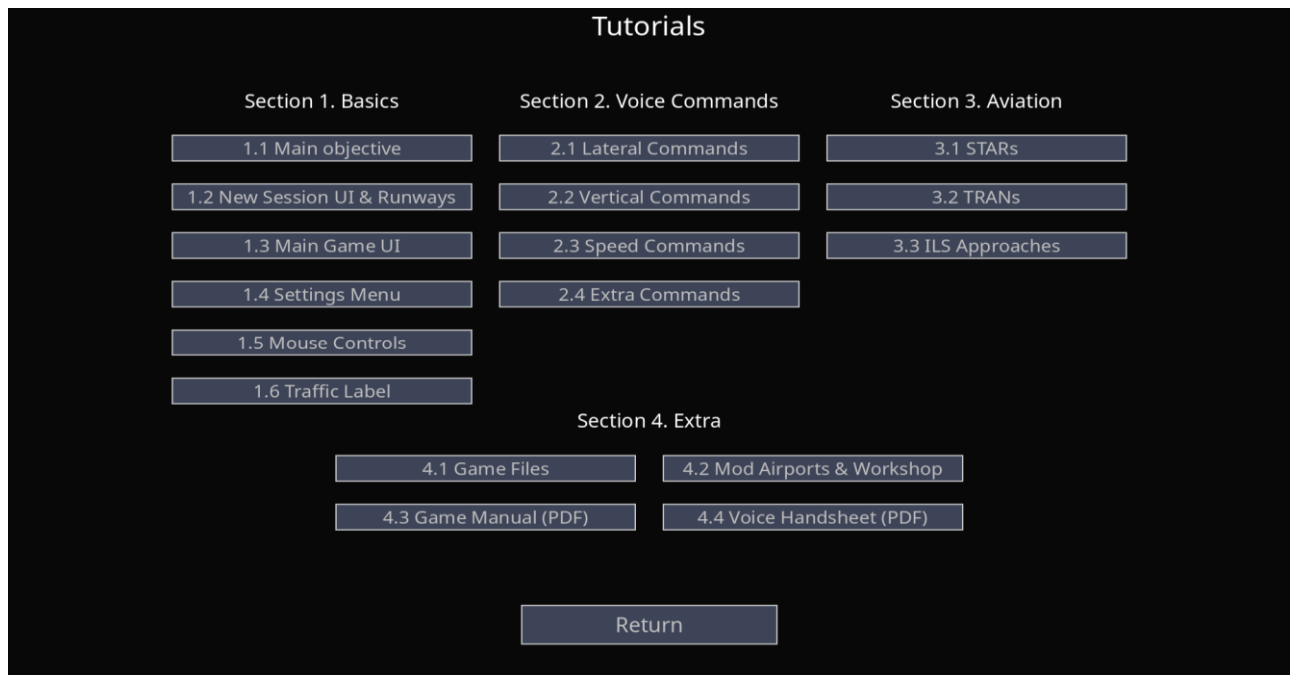
The Load Session screen with the saved-games list

Tutorials

New to air traffic control, or to this game? The Tutorials button on the main menu opens a set of short, guided lessons that walk you through the essentials at your own pace. They're grouped so you can start with the basics and go deeper when you're ready:

- **Basics:** the goal of the game, the New Session and in-game screens, the settings, mouse controls and the traffic label.
- **Voice Commands:** lateral, vertical, speed and the extra spoken instructions.
- **Aviation:** arrivals (STARs), transitions and ILS approaches.
- **Extra:** where the game keeps its files, how community airports work, and quick links to the game manual and the voice-command handsheet.

The Extra group also includes buttons that open this manual and the one-page voice-command handsheet (both PDF) directly, so you can always find them again from inside the game. The Tutorials screen also has a Discord help button, and after the in-game tutorial closes the game may show a one-time Discord help prompt.



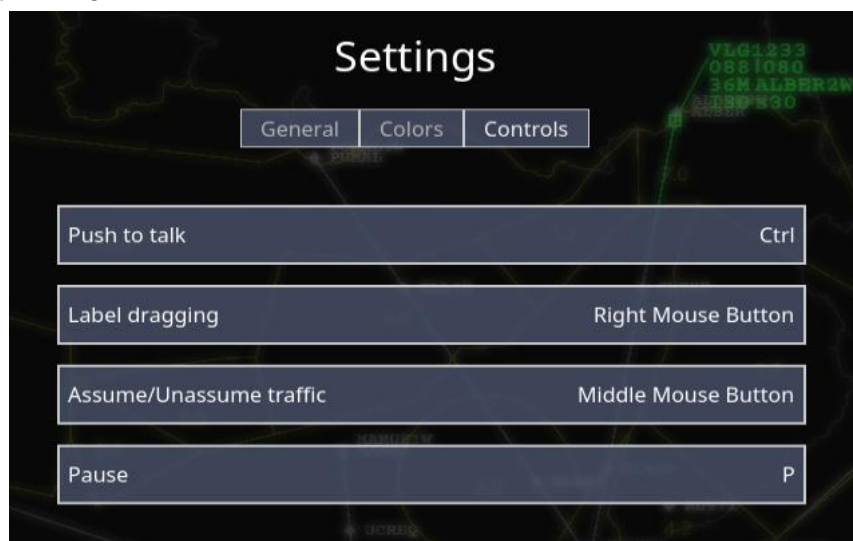
The Tutorials menu

Keyboard & mouse controls

There aren't many controls. Each is listed as action · key or button — what it does, and you can rebind any of them in Settings → Controls.

- **Talk** · **CONTROL** — hold to transmit, release when finished (Push-To-Talk)
- **Pan & move panels** · **Left mouse button** — click and drag the radar or a panel
- **Move a label** · **Right mouse button** — click and drag an aircraft's label
- **Assume / release an aircraft** · **Middle mouse button** — click to take it under control, or hand it back
- **Zoom** · **Mouse wheel** — scroll to zoom the radar in and out
- **Command panel** · **° / °** — open the slash-command panel

The command panel is a keyboard console for traffic utilities. Commands start with “/”. In this version it supports “/spawn origin=LEMD destination=LEBL flight_fraction=0.9” to request a traffic spawn through the normal traffic system, and “/delete callsign=IBE1234” (or “/delete IBE1234”) to remove one live aircraft by callsign.



Settings → Controls: the key-rebinding list

How voice works

VoiceATC Simulator is all about voice — hold CONTROL and speak to instruct an aircraft. Every spoken command, with an example of each, is on the one-page Handsheet that comes with the game (VoiceATCSimulator_handsheet_EN); keep it beside you while you play. To avoid two copies that can fall out of step, the full list lives only there — this manual won't repeat it.

Between them the commands cover lateral navigation (headings, direct-to, deferred direct-to after a fix, and holding), altitude and speed, approaches and arrivals, altimeter settings, and handing aircraft off to tower or center / radar. Several instructions can be chained into one transmission, e.g. "...climb flight level two five zero, turn right heading zero six zero, speed two two zero." Deferred lateral clearances use "after [waypoint]" — for example "...after CASPE, fly direct LOBAR" or "...after RULOS, fly heading one three zero" — see the Handsheet for the full phrasing.

On the handsheet, **[brackets]** mark the details you supply (callsign, waypoint, value) and **(parentheses)** mark optional words.

Understanding your instructions

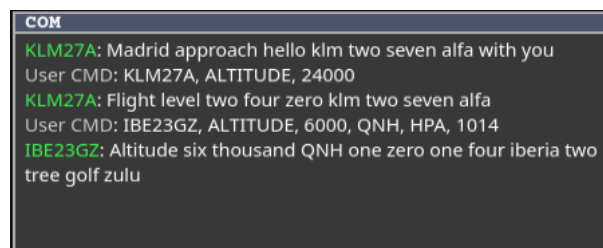
Instead of matching fixed phrases, VoiceATC Simulator uses on-device AI to understand natural controller phrasing, so small variations in how you say something are handled gracefully. The communications panel (COM) shows what it heard and the instruction it acted on.

If the game isn't sure what you said, it will ask you to "say again" rather than guess. When you correct a misheard waypoint, it remembers that for the current airport so it recognises the word next time.

Voice commands apply only to aircraft you have assumed. If you clearly address visible traffic that is not assumed, the COM panel shows "SYS: The aircraft is not assumed." and the instruction is not executed.

If several early voice attempts fail before any command succeeds, a small "Voice not working?" helper can appear. It offers direct access to the microphone test, basic tips, and a Discord help link.

The game may also show one-time voice tips when repeated push-to-talk attempts look clipped or empty, or when your hardware has fallen back to the rule-based parser and strict parsing keeps rejecting commands. These prompts guide you to the microphone test or voice settings; they do not silently change your settings.

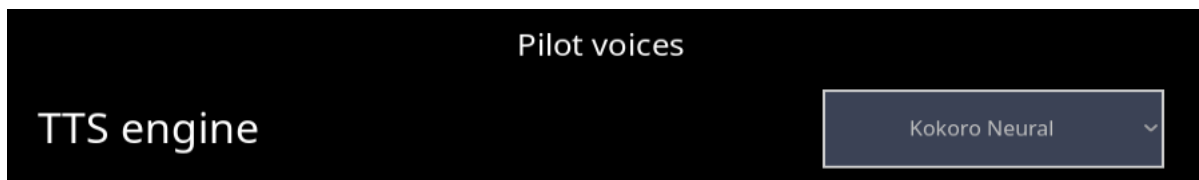


The COM panel showing a pilot readback exchange

Pilot voices

Pilots read your clearances back to you. You can choose how those voices sound in Settings → Voice → Text to speech, under the Text to speech engine option:

- **Windows (SAPI):** the built-in Windows voices. Always available, no extra download.
- **Kokoro Neural:** natural-sounding neural voices for a more realistic feel.



Settings → Voice → Text to speech: the Text to speech engine selector

Top bar

The bar across the top shows session information and lets you open or close panels.

- **ICAO / QNH / TL / RWY:** at-a-glance information for the current airport — its code, the altimeter setting, the transition level, and the runways in use.
- **COM:** opens or closes the communications panel, where you can read your exchanges with aircraft (what was heard and the instruction given).
- **TFC:** opens or closes the traffic panel — the flight strip, with details such as departure/arrival airport, cruise level, aircraft type and wake category.
- **CLOCK:** opens or closes the clock panel, which shows the time and holds the timeline and game-speed controls (see Clock, below).
- **SETTINGS:** opens the options menu (see below).



The top bar

The TFC flight-strip panel

Open this panel with the TFC button on the top bar. It's the flight strip — a compact summary of one aircraft's details, laid out like the paper strips a real controller works from. Click an aircraft on the radar to fill the strip with its details; it follows that one aircraft until you select another, and clears when nothing is selected. Drag the panel to move it anywhere on screen.

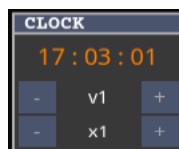
Each cell of the strip shows:

- **Callsign:** the aircraft's callsign, e.g. IBE1234.
- **Airline:** the operating airline's name (or its three-letter code if the full name isn't known).
- **Departure airport:** where the flight took off from (ICAO code).
- **Arrival airport:** the destination (ICAO code).
- **Flight rules:** the rules the flight is operating under — IFR.
- **Cruise level:** the flight level the aircraft is planned to cruise at, shown as F followed by the level, e.g. F360.
- **Aircraft type:** the aircraft model, e.g. A320.
- **Wake category:** its wake-turbulence category (such as Heavy, Medium or Light).
- **Squawk:** the transponder (SSR) code assigned to the aircraft, four digits.
- **Route:** the planned route, beginning with the departure procedure (SID) followed by the en-route waypoints.
- **Cleared waypoint:** the waypoint the aircraft is currently cleared direct to — where it is heading right now.

Clock

Open the clock from the CLOCK button on the top bar. It's a small movable panel — drag it anywhere — that shows the current simulation time and holds the time controls that used to sit on the bar.

- **Time:** the current local time, shown as hours : minutes : seconds.
- **Timeline (v0...v8):** the prediction line on each aircraft, showing where it will be in the chosen number of minutes. Use – and + to step it between 0, 1, 2, 4 and 8 minutes.
- **Game speed (x1...x64):** how fast time runs. Use – and + to speed the simulation up in steps (x1, x2, x4... up to x64) and slow it back down. It always starts at x1.



The clock panel, with the timeline (v) and game-speed (x) controls

Bottom bar

The bar along the bottom of the screen controls what is drawn on the radar. It has three dropdown menus — MAPS, PROCS and AIRSPACES — that open a small panel of toggles, plus a TAG button

on the right. (The time controls used to live here; they now have their own clock panel — see Clock, above.)

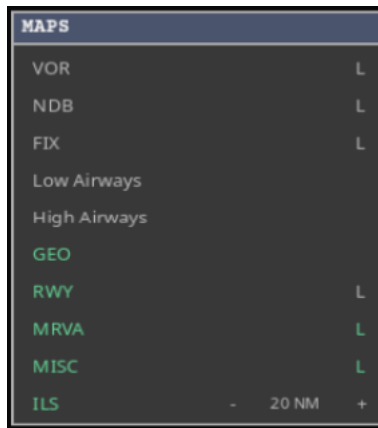


The bottom bar

MAPS — nav aids, airways & background layers

Opens a panel of layer toggles. Each layer can be switched on or off; several also have a small “L” button that shows that layer’s labels.

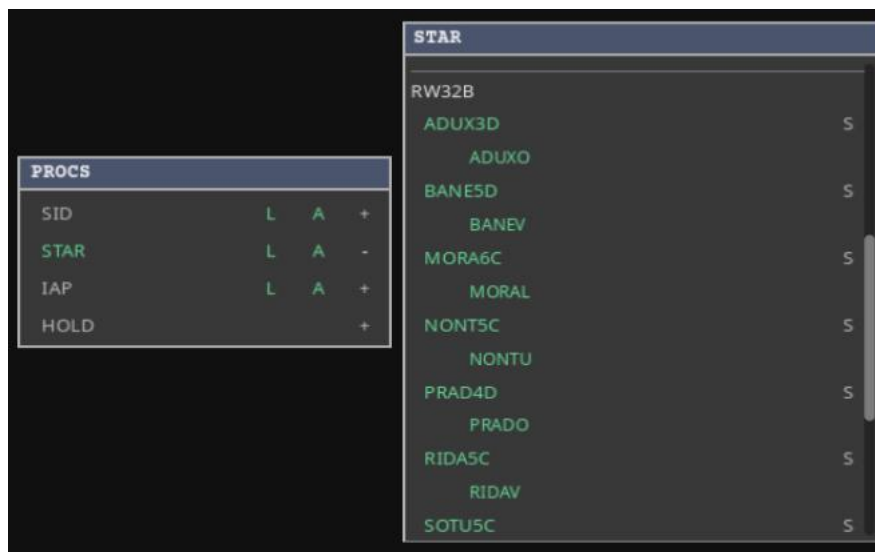
- **VOR / NDB / FIX:** navigation aids and waypoints, each with its own L (labels) option.
- **Low Airways / High Airways:** the airway network.
- **GEO:** coastlines and geography.
- **RWY:** runways, with an L (labels) option.
- **MRVA:** minimum vectoring altitudes, with an L (labels) option.
- **MISC:** extra chart drawings, with an L (labels) option.
- **ILS:** localizer centrelines, with a “- / +” control to set how far apart the distance ticks are drawn (in nautical miles).



The MAPS menu expanded

PROCS — flight procedures

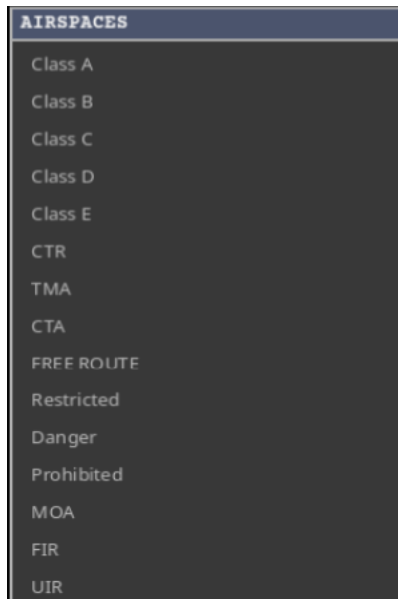
Opens a panel listing the procedure types: SID (departures), STAR (arrivals), IAP (approaches) and HOLD (holding patterns). Each type’s row has a main toggle and, for SID/STAR/IAP, an “L” (waypoint labels) and an “A” (altitude constraints) button. A “+” button opens a detail list where you can pick exactly which procedures — and which transitions of each — to display. Approach transitions are shown automatically with the approaches they belong to.



The PROCS menu expanded (SID / STAR / IAP with L and A sub-toggles, and HOLD)

AIRSPACES — controlled & special-use airspace

Opens a panel of airspace toggles: ICAO classes A–E, CTR, TMA and CTA, free-route airspace, restricted / danger / prohibited areas and MOAs, and region boundaries (FIR / UIR). How far out the radar shows traffic is no longer set here — the SSR and PSR ranges are derived automatically from the size of your controlled sector (see Runway & sector configuration).



The AIRSPACES menu expanded (airspace toggles)

TAG

- **TAG:** controls how aircraft labels are positioned. In its automatic mode labels are placed for you so they don't overlap; switch it off to place a label yourself by dragging it with the right mouse button.

Flight procedures & descent planning

Aircraft fly real published procedures from current navigation data:

- **SIDs** (Standard Instrument Departures) take departing aircraft from the runway out onto their route.
- **STARs** (Standard Arrival Routes) bring arrivals in from the en-route structure toward the approach.
- **Approaches (IAP)** guide an aircraft down to a runway. Types include ILS, RNAV, VOR and others; the game uses the most precise approach available for the runway.
- **Holds:** an aircraft told to hold flies the published pattern, choosing the correct entry (direct, teardrop or parallel) automatically based on its direction of arrival.

Climbs and descents respect the altitude and speed limits published on the procedure, so a descending arrival steps down realistically rather than diving straight at the airport. If you assign a lower level, the aircraft keeps any upcoming altitude restrictions it can still meet and cancels only restrictions that make your clearance impossible.

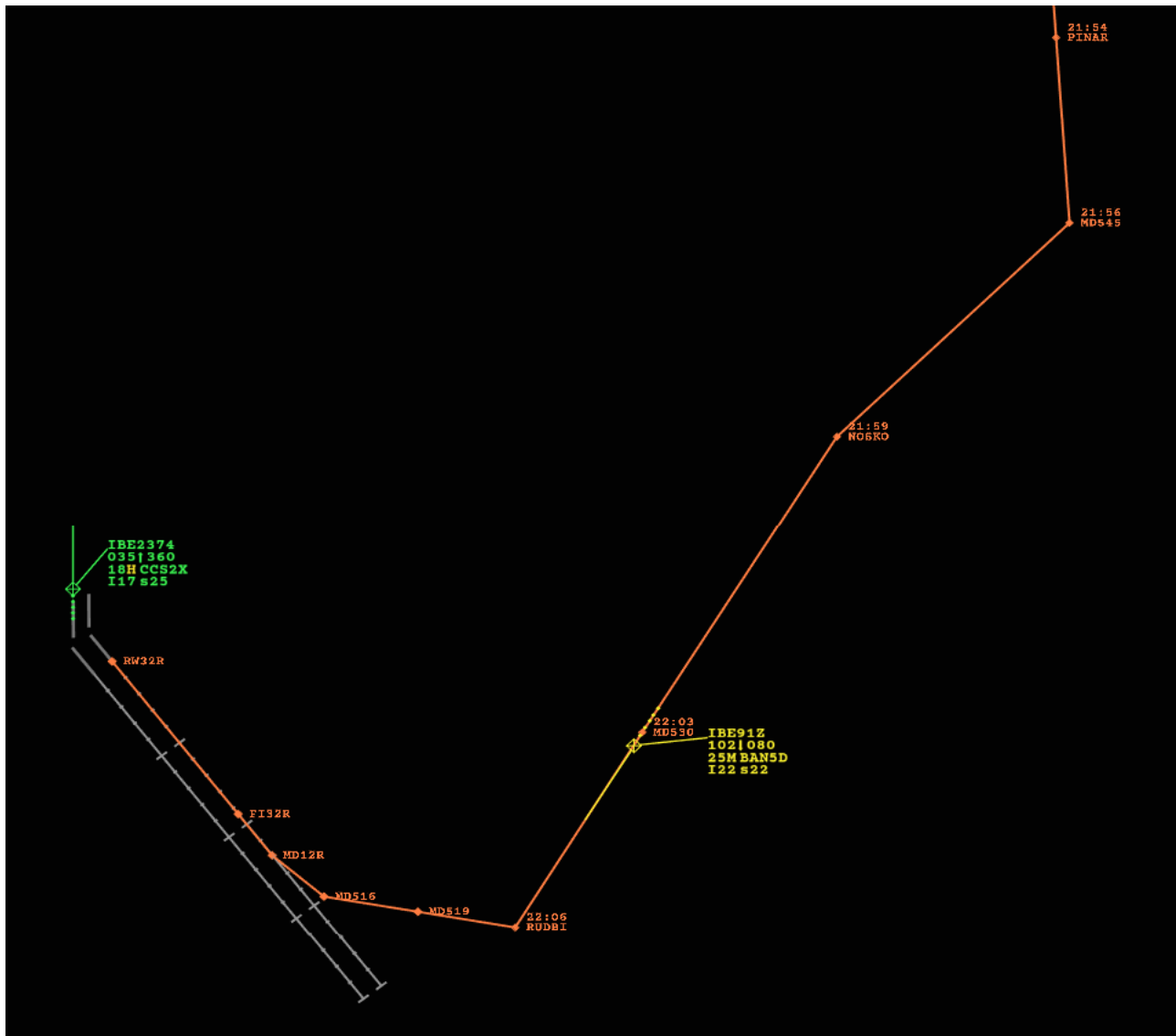
- **Vertical profile (Shift+V):** opens a side-on view of an aircraft's climb/cruise/descent against distance, including its top-of-descent. Cancelled altitude restrictions are shown distinctly so you can tell which limits your clearance has overridden.
- **Route preview (TAB):** shows the selected aircraft's full route with waypoints, estimated times and altitude constraints.



A STAR and approach drawn on the radar with constraints



The vertical profile panel (Shift+V)



The TAB route preview

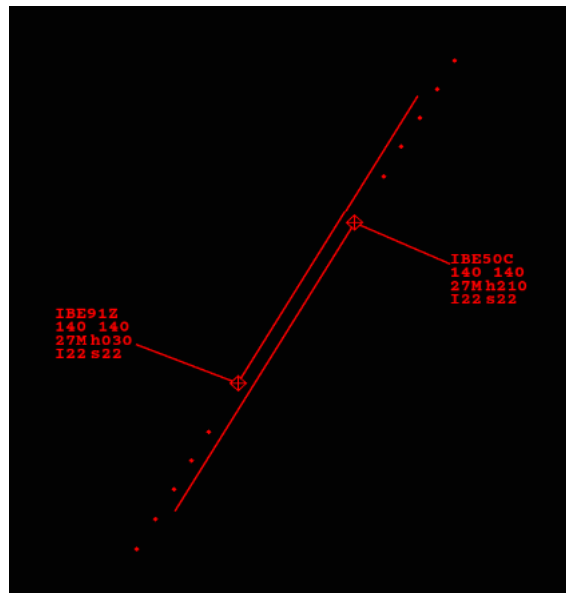
Realistic traffic & navigation data

Traffic is built from real-world routes, with realistic airlines and aircraft types for the flights you'll see — busy city pairs are busy, and the callsigns and aircraft match the routes being flown.

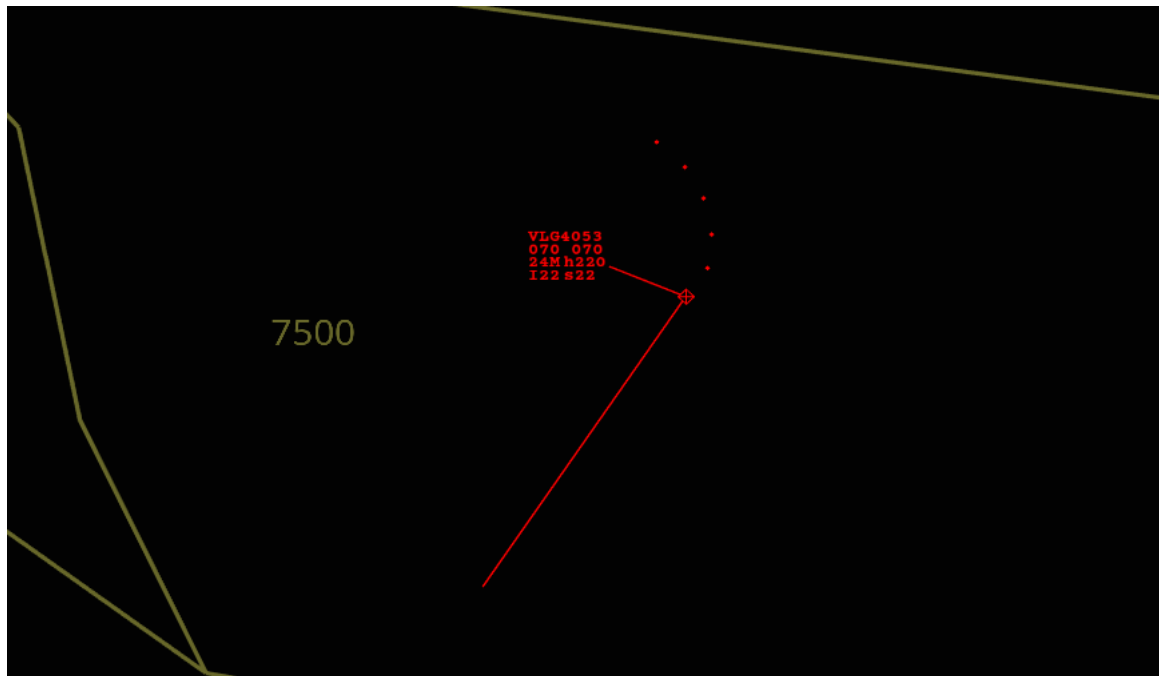
Navigation data (airports, waypoints, airways and procedures) follows the Navigraph AIRAC cycle. If you have a current Navigraph subscription the game uses your up-to-date cycle; otherwise it falls back to a bundled offline cycle so everything still works.

On-screen alerts

- **Conflict / collision alerts (CA):** warn you when two aircraft are getting too close to each other.
- **Minimum-altitude warnings (MVA):** warn you when an aircraft is, or is being sent, below the lowest safe altitude for the area it is in.



A conflict/collision alert (CA) between two converging aircraft



A minimum-altitude (MVA) warning

Pause menu

The pause menu lets you resume, open Settings, return to the main menu, or save and quit. It also includes two help links for moments when you are stuck: Discord help, and the public roadmap so you can see what is planned next.

Settings

Open Settings from the top bar. It has six tabs — Display, Audio, Voice, Privacy, Colors and Controls — shown as bordered cards in the simulator's panel style. Use Save to keep your changes, or Return to go back. Some options (resolution and window mode) only take effect after a restart; the game will offer to restart for you.

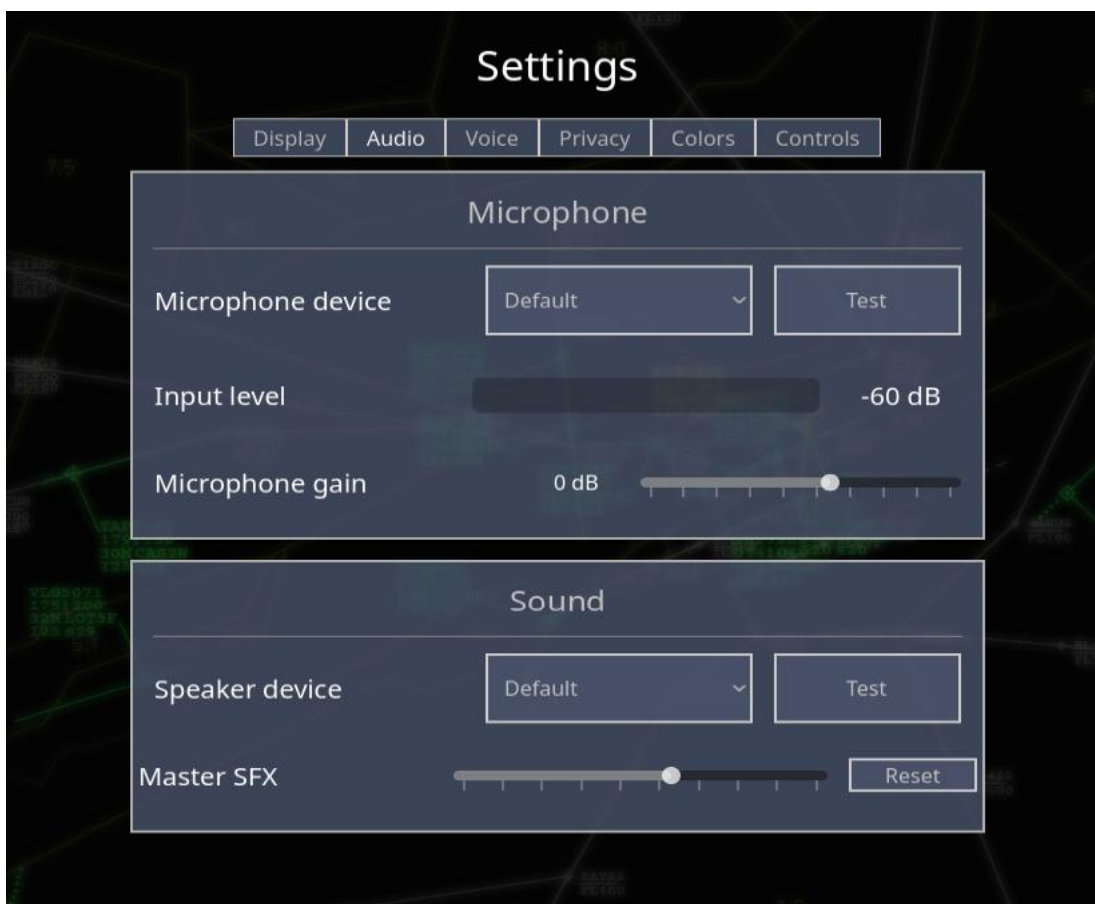
Every option shows its default so you can always find your way back: the default choice is marked “(default)” in each dropdown, a small Reset control appears on any row you have changed away from its default, and a Restore defaults button reverts the whole active tab at once (your telemetry-consent choice is left untouched). A “Join our Discord” help strip sits on every tab if you get stuck.

Display

- **Resolution:** the rendering resolution (applied after a restart).
- **Window mode:** Maximized Window, Windowed Mode, Full-Screen, Borderless Window or Borderless Full-Screen.

Audio

- **Microphone:** choose your input device. A live level meter shows that the game is hearing you, and a Test Audio button lets you check it.
- **Microphone gain:** boost or reduce the input level if your mic is too quiet or too loud.
- **Speaker:** choose your output device, with a test button. Kokoro Neural pilot readbacks play through this device; Windows (SAPI) readbacks always use your Windows default output and can't be redirected in-game, so if you use SAPI in a headset, either switch the pilot voice to Kokoro or set the headset as your Windows default device.
- **Master SFX:** set the overall game-audio volume, including Kokoro pilot readbacks. Move it fully left to mute audio.



Settings → Audio: the Microphone and Sound cards, with the input-level meter

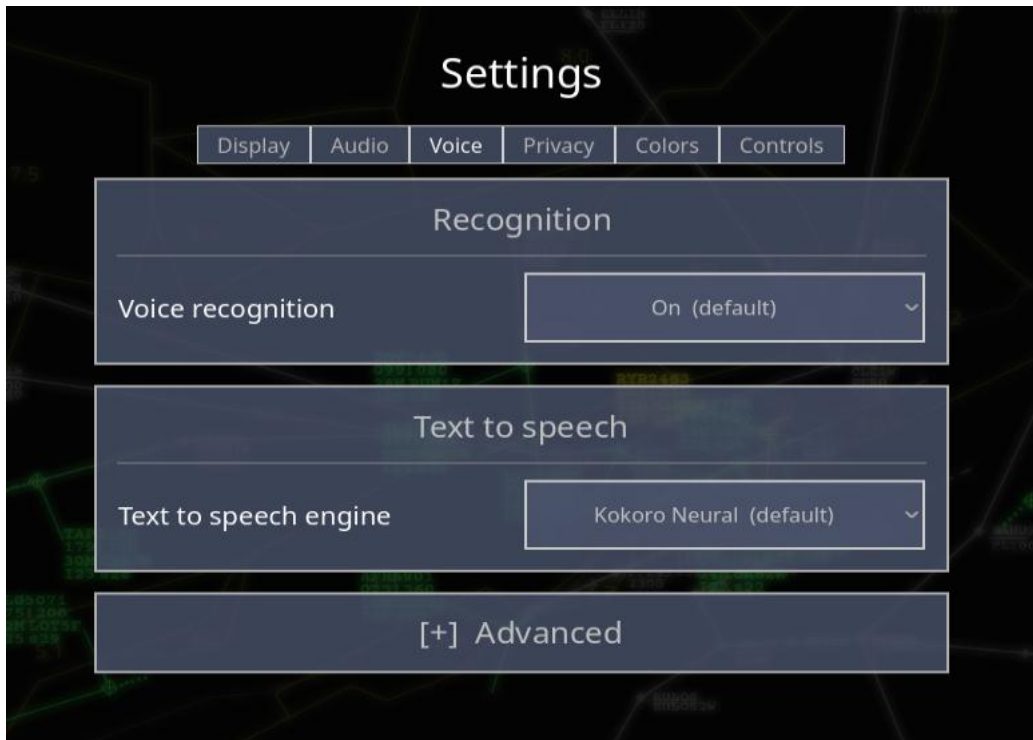
Voice

The Voice tab sets up speech recognition and the pilot-readback voice. The everyday options sit at the top, in a Recognition card and a Text to speech card; the technical options live in a collapsible Advanced card below. The game chooses sensible defaults for your hardware automatically — you usually don't need to touch them, but they are all there if you want to fine-tune.

- **Voice recognition:** On or Off. On enables voice recognition — everyone runs the same on-device model, chosen and tuned automatically for your hardware, so there is no model size to pick. Off disables voice (mouse only) and greys out the Advanced options below.
- **Text to speech engine:** the pilot-readback voice — Windows (SAPI) or Kokoro Neural (see How voice works → Pilot voices, above).

Open the Advanced card for the technical voice options. On hardware that cannot run the smart on-device parser, the simulator falls back to the fast rule-based parser on its own; all standard clearances still work.

- **Speech recognition engine:** which hardware path runs speech recognition — Auto, CPU (basic), CPU (modern), GPU (CUDA), GPU (Vulkan) or GPU (OpenCL). It shows what's active now and what will apply after a restart.
- **Command parser engine:** the same hardware choice for the command-understanding model.
- **GPU acceleration:** how much of the command-understanding work runs on your graphics card — Maximum (recommended), High, Medium, CPU only or Off. Applies on restart.
- **Voice self-test:** shows the result of the first-launch tuning and lets you re-run it, run a deeper test of all options, or retry GPU acceleration after updating your graphics drivers.



Settings → Voice: the Recognition and Text to speech cards with the collapsible Advanced card

Privacy

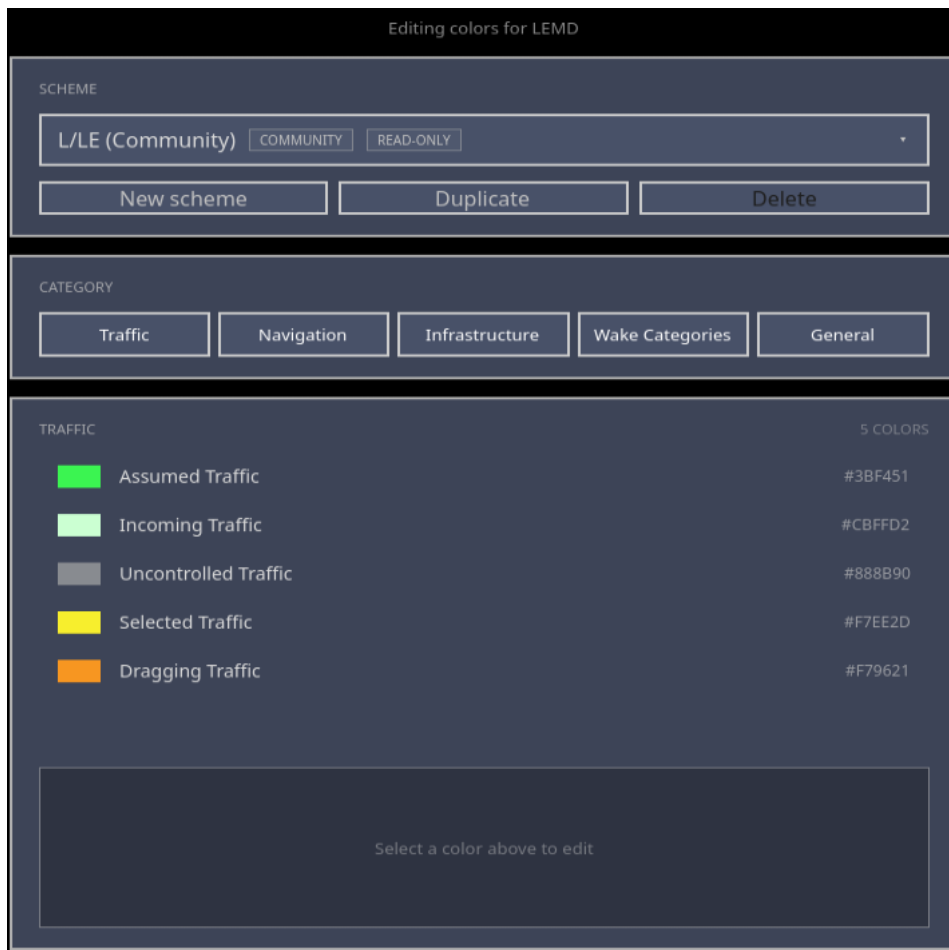
Diagnostic telemetry is optional. If you enable it, VoiceATC may send redacted push-to-talk command text and parser outputs so recognition and command-understanding problems can be diagnosed. Raw audio is not uploaded.

The diagnostic telemetry consent popup uses the game's own panel style, so it matches the rest of the interface.

- **Diagnostic telemetry:** turns automatic redacted voice diagnostics on or off. No transcript or parser-output telemetry is sent unless you consent.
- **Report a problem on Discord:** opens the community Discord so you can describe a voice or other issue and get help. This replaces the old in-app report form.
- **Privacy Policy:** opens the current privacy policy.
- **Reset consent:** returns diagnostic telemetry consent to the first-run state and clears the local telemetry queue.

Colors

The Colors tab is where you make the radar your own. It has three panes: a list of colour schemes, a category picker, and a colour editor for the selected scheme. You can create, duplicate and delete your own schemes. A scheme can be bound to a specific airport, so each airport can have its own look.



Settings → Colors: the three-pane scheme editor

Controls

The Controls tab lists every action and its current key or button, so you can rebind anything — including Push-To-Talk — to suit you.

Community content

The game's airports keep improving thanks to the community — better traffic routes, runway configurations, sector layouts, minimum vectoring altitudes, colour schemes and on-scope drawings. All of this is shared through the VoiceATC Simulator community project on GitHub.

Getting community content

There's nothing to install or subscribe to. Every time the game starts it checks the community project and downloads the latest content automatically, so your airports stay up to date on their own. (Steam Workshop is no longer used.)

Contributing

Anything you see on the scope can be improved, and contributions are very welcome. The Mods button on the main menu opens the community project on GitHub, where everything is managed:

Community project: github.com/lainoa-software/voiceatc-simulator-community

1. Fork the community repository on GitHub.
2. Add or edit the files for the airport or airspace you want to improve, and commit them to your fork.
3. Open a pull request to the main branch, named like [FIR/Airport] Updated/Fixed/Added... — for example “[ESSA] Updated MVAs”.

4. Automated checks run on your submission, then a maintainer reviews it and may ask for changes before it's merged.

Once merged, your contribution reaches every player automatically on their next start.

Need a hand? Ask on the community Discord: discord.gg/Hr4Z8e3cyn