RESCUE-EAGLE SYSTEM USER GUIDE

The RescueEagle system is designed for maximum automation. The rescue scenario (including 3D simulation, Commander interface, and Victim interface) is fully integrated into just 1 mouse click.

PART 1: SYSTEM STARTUP

1. Launch **FORUM8 UC-win/Road** software.
2. Open the project's 3D Project file (.rd).
3. Open the **Python** script console inside UC-win/Road.
4. Select the simulation/main.py file and press the **Run/Play** button.

Immediately, 3 systems will start simultaneously:

- **Screen 1 (3D Simulation):** Weather conditions change (storm/rain) and the landslide scenario simulation begins.
- **Screen 2 (Web Browser):** The **Command Center Dashboard** automatically opens.
- **Screen 3 (Windowed App):** The **Rescue Phone** interface (victim's device) automatically opens.

PART 2: EXPERIENCING THE RESCUE SCENARIO

Step 1: Victim in Distress Sends SOS Signal

- In the 3D UC-win/Road environment, you'll see an elderly man standing in the flood/landslide-affected area.
- He activates the SOS Beacon device (presses the radio transmission button).

Step 2: Command Center Receives Alert & Deploys Drone

- Open the **Command Center Dashboard** web screen.
- The radar system receives the emergency SOS coordinates, and the web screen status switches to red alert.
- The duty officer (judges) presses the red **AUTHORIZE DISPATCH** button on the web interface to issue the drone deployment order.
- Returning to the 3D screen, you'll see the drone automatically take off and fly using an optimized path-planning algorithm toward the victim's coordinates. The drone's status and position are continuously updated in real time on the web dashboard map.

Step 3: Local Network Connection (Offline Network Relay)

- When the drone arrives directly above the victim, it acts as a mobile Wi-Fi relay station.

- On the **Rescue Phone** app screen, the signal indicator turns **green (Connection Good)**, indicating the victim's phone has picked up the drone's local signal.

Step 4: Communication & Supply Drop

- **Two-way communication:** Bandwidth has been established.
    + On the Commander's web interface, you can type messages to send to the victim.
    + On the phone app interface, the victim can press Quick Reply buttons such as *"I'm injured!"*, *"I'm OK!"*, or type a custom message to report the situation back to the command center.
- **Supply drop:** After confirming the situation is stable and the victim's position is correct, the drone in the 3D model automatically drops a supply package down to the elderly man.

- The mission status on the dashboard switches to **Mission Accomplished**.

PART 3: ADVANCED CAPABILITIES

While this demonstration focuses on a single-victim rescue, the underlying RescueEagle architecture is built for large-scale disasters. The system's centralized Dispatcher supports managing multiple drones simultaneously. It can divide the search grid and control a swarm of drones to cover vast flooded areas efficiently.

How to test Multi-Drone capability: The 3D environment is pre-configured with a multi-drone fleet. You can simulate a simultaneous multi-target rescue by following these steps:

1. On the **Command Center Dashboard**, authorize the dispatch for **Drone 1** to respond to Scenario 1 (the first SOS signal).
2. While Drone 1 is executing its mission, immediately select Scenario 2 on the Dashboard and authorize the dispatch for **Drone 2**.
3. Both drones will now operate concurrently without interference.
4. To observe their independent behaviors, **simply click on Drone 1 or Drone 2 on the Web Dashboard**. The system will dynamically command the UC-win/Road 3D engine to switch the camera focus and automatically track your selected drone in real time.

Wishing the judges a complete and impressive experience of rescue technology with Team Mobius!