

# GAME DESIGN DOCUMENT: CYBER KROMA

**Game Name:** Cyber Kroma: The Scam Hunter

**Team Name:** Kroma Code

**Date:** November 24, 2025

**Engine:** Unity 2022.3.47f1 (LTS)

**Platform:** Android (Mobile)

## 1. Game Overview

- **Genre:** 3D Multiplayer First-Person Shooter (Co-op Survivor).
- **Target Audience:** Cambodian teenagers and students (Mobile users).
- **Game Goal:** Cooperate with up to 4 players to survive 5 waves of malware attacks, protect the "Data Core," and rescue the "New User" NPC.
- **Core Concept:** A digital defense game set in a neon "Cyber Phnom Penh" where players use "Digital Literacy" skills (Fact-Checking, Firewalls) to defeat enemies representing real-world scams (Phishing, DeepFakes).

## 2. Story & Setting

- **Setting:** The "Khmer Digital Network"—a futuristic, neon-lit virtual city.
  - **Visual Style:** **Cyberpunk Phnom Penh.** Iconic landmarks like the **Independence Monument** and **Wat Phnom** are constructed from glowing blue circuits and floating binary code.
- **Story:** In 2025, a massive wave of "Dark Data" attacks the Cambodian internet. Players are elite members of **Cyber Kroma**, a digital defense squad. Their mission is to purge the infection and teach the "New User" (a confused civilian NPC) how to stay safe online.

## 3. Core Gameplay

### Player Mechanics (The Agents)

- **Mobile Controls:**
  - **Left Virtual Joystick:** Movement (WASD equivalent).
  - **Touch Screen Swipe:** Aiming (Camera Look).
  - **Shoot Button:** Shoot "Report Blaster."
  - **Skill Button:** Skill "e.g. 2FA Shield."
  - **Additional Button:** Interact (Revive/Shop).
- **Customization :**
  - Players can select their **Headgear** (Kroma Scarf, Apsara Visor) in the lobby.
  - **Network Sync:** Visuals are synchronized so teammates see unique avatars.

### Interactions & NPC (AI Feature)

- **"Lok Ta Digital" (AI Shopkeeper):**
  - Between waves, a holographic Khmer Elder appears.
  - **Logic:** Uses game data to recommend items (e.g., *If player HP is low -> "Chau, buy an Antivirus Potion!"*).
  - **AI Asset:** Voice lines generated via AI Text-to-Speech; Dialogue variations generated via LLM.

## Enemies (Educational Metaphors)

1. **The Phisher (Ranged):** Shoots "Fake Link" projectiles. **Effect:** If hit, the mobile screen is covered in a "Pop-up Ad" UI overlay. Player must tap "X" to close it.
2. **The Ghost Account (Stealth):** Invisible enemies that ignore players and attack the Data Core. Visible only via the "Scanner" class.
3. **The DeepFake (Boss):** A powerful AI that copies the mesh and name of a teammate. Players must communicate to identify the impostor.

## Win/Lose Conditions

- **Win:** Defeat the Wave 5 Boss and keep Data Core health > 0%.
- **Lose:** Data Core reaches 0% or all players are "Disconnected" (HP 0).

## 4. Gameplay Flow

1. **Main Menu:** Start Game, Customization Lobby, Settings (Language: Khmer/English).
2. **Lobby:** Host/Join via LAN or IP. Select Class (Firewall, Debugger, Scanner).
3. **Gameplay Loop:**
  - **Combat Phase (2 mins):** Defend Core from Waves.
  - **Shop Phase (30s):** Interact with NPC "Lok Ta" to upgrade stats.
  - **Educational Popup:** A "Scam Alert" card explains the enemy just fought (e.g., *Telegram Phishing Tactics*).
4. **End Screen:** Scoreboard + Digital Safety Rating.

## 5. Art Direction & UI

- **Style: Low-Poly Synthwave.**
  - **Why:** Best for mobile performance. Uses simple shapes with high-contrast colors (Cyan, Magenta, Gold).
- **UI Design:**
  - **Language:** Supports **Khmer Unicode** (using TextMeshPro) for all menus and tips.
  - **Mobile Layout:** Large, thumb-friendly buttons. Semi-transparent HUD to maximize visibility.
  - **Glitch Effects:** UI flickers when the player takes damage.

## 6. Audio

- **Music:** Upbeat Synthwave mixed with traditional Khmer instruments (Tro/Roneat).
- **Voice Over: AI-Generated** Khmer voice lines for the NPC and system alerts (e.g., "Som Proyat!").
- **SFX:** Digital "Zaps," "Modem Dial-up" noises for enemy spawns.

## 7. Technical Requirements & Graphics Optimization

- **Engine:** Unity 2022.3.47f1 (LTS) with Android Build Support.
- **Pipeline: Universal Render Pipeline (URP)** (Required for performant mobile glow effects).
- **Networking:** Netcode for GameObjects (NGO).
- **Target Platform:** Android (Minimum API Level 24 / Android 7.0 Nougat).
- **Input Handling:** Unity **New Input System Package** (handling Multi-touch).
- **On-Screen Controls:**
  - **Left Stick:** Virtual Joystick for Player Movement (Vector2).
  - **Right Region:** Touch & Drag for Camera Rotation (Delta).
  - **Action Buttons:** UI Buttons mapped to functions (Shoot, Jump, Skill).

To ensure the game runs on Android while looking good:

No.	Requirement	Implementation Strategy (Best Practice)
1	<b>Graphics Optimization</b>	<b>Object Pooling:</b> Bullets and Enemies are recycled, never destroyed/instantiated, to prevent mobile lag spikes (Garbage Collection). <b>Texture Atlasing:</b> Combining UI and Environment textures into single sheets to reduce Draw Calls.
2	<b>PBR (Physically Based Rendering)</b>	Using <b>URP Lit Shaders</b> . We will use Metallic/Roughness maps on the "Robot" characters so they reflect the neon city lights realistically.
3	<b>LOD (Level of Detail)</b>	<b>LOD Groups</b> applied to city buildings. <i>Close:</i> High detail mesh. <i>Far:</i> Simple box mesh. Saves vertex processing on the phone.
4	<b>Camera Culling</b>	<b>Occlusion Culling</b> is baked into the map. Objects hidden behind large buildings will not be rendered by the mobile GPU.
5	<b>Advanced Lighting</b>	<b>Baked Lightmaps:</b> Static city lights are pre-calculated (Baked) into textures. <b>Light Probes:</b> Used so moving players still "catch" the light/shadows from the baked city without expensive real-time calculations.

## 8. Scope & Team Roles

**Timeline:** 5 Weeks (Submission Dec 23)

Role	Member	Responsibilities
<b>Team Leader / Network Engineer</b>	<b>Kimhour</b>	GitHub setup, Netcode (Syncing players/enemies), Android .APK Build & Deployment.
<b>Gameplay Programmer</b>	<b>Pranha</b>	Mobile Touch Controls (Input System), Shooting mechanics, Health/Revive system.
<b>AI &amp; Logic Programmer</b>	<b>An</b>	Enemy behavior (NavMesh), "Lok Ta" Shop Logic, Wave Spawning system.
<b>Level Designer / 3D Artist</b>	<b>Homey</b>	Map creation (ProBuilder), Lighting (Baking Lightmaps/Probes), Neon Shaders.
<b>UI/UX &amp; Audio</b>	<b>Longboren</b>	Main Menu, Touch UI Layout, Khmer Text Integration, AI Audio Generation.