

Software Development Concept – GTA Online Spy Satellite DLC

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TO

This software development project is a sample presentation for interview purposes. The goal is to highlight my PowerPoint development skills as well as a few skills assumed of software engineers.

I assume each company or software engineer has their own way of flowcharting software before it is developed. I have found PowerPoint to be incredibly useful for creating flowcharts.

The presentation is currently in progress. However, the following slides have been completed:

- Top-Level Component View of All Services
- Player Cell Phone Hacking Services

Accessing this presentation through my LinkedIn page (or any other way) does not give you the permission to distribute it nor claim it as your own work.

I am the sole developer of this DLC concept. Please do not distribute this presentation.

Thank you,

Sincerely,

Ed Orejel, MSCS



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Explanation of Shapes, Symbols, Icons and Terminology



The DLC concept that is featured in this software development document is fictional. Since it is intended for GTA Online, a game that is owned by Rockstar Games, it will feature some aspects or concepts of their game to help me illustrate the DLC concept I am proposing.

Any imagery that is owned by Rockstar Games, is only used by me for educational purposes, to help explain a concept that I am proposing.

No type of illegal or unauthorized modification to GTA Online is being proposed in this document. I am only reusing certain aspects of their game in a hypothetical manner. I am also including other components for addition into GTA Online.

Any other images found in this document are used solely for educational purposes and are property of their respective owners.

I will also use the GTA Online logo to help me illustrate some of the concepts I am proposing.



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Explanation of Shapes, Symbols, Icons and Terminology



I will use this square with round corners to diagram certain aspects of the concept DLC. I will also use other shapes. The colors in the shapes have no significance. All colors in all shapes inside of this presentation are randomly chosen by me and there is no significance to their choosing or their placement.



I may also use a rectangle with round corners for the same purpose. The colors are randomly chosen. They do not mean anything.

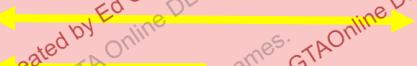


Explanation of Shapes, Symbols, Icons and Terminology

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I will use this dark blue rectangles of various sizes with sharp corners to illustrate some of the concepts in this DLC.

I may use the versions with rounded corners to illustrate some sub-components or some processes that are really unique, and not adequately described by traditional flowchart shapes.



A yellow double-headed arrow will signify communication in both ways, or a two-way relationship between objects.

I will use different shapes of the double-headed arrow. Some double-headed arrows will be bent, and have sharp corners.

Data will travel between two objects, in both directions when this arrow is used.



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Explanation of Shapes, Symbols, Icons and Terminology



A yellow one-way single-headed arrow will be used to signify communication in one direction or a one-way relationship. Different versions of the single-headed arrow will be used. Some will be a straight line. Others will have sharp corners and be bent in various directions.

A yellow dashed double-headed arrow will be used to show a proposed relationship between objects where there is a data flow.

I will use this inverted isosceles triangle to indicate a merging of processes.



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Explanation of Shapes, Symbols, Icons and Terminology

A yellow dashed and dotted double-headed arrow will be used to show an actual relationship between components where there is data flow.

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Data Flow: In and Out

A red circle with a number inside of it, will be used to show a numerical relationship between components. The numbers used will be from 1 to “n” “n” is just some number at the end of the sequence. The “n” is used in math and programming.

Data Flow: In and Out – data in the spy satellite simulation that is moving freely back-and-forth, between in-game systems or hardware components in the game.

This data relationship is assumed to exist for the purposes of the GTA Online game and for the purposes of launching the spy satellite and connecting it to an online status within the game.



Explanation of Shapes, Symbols, Icons and Terminology

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Lines and arrows in this shape will mean to travel from the component at the beginning of the arrow, to the end of the nearest arrowhead, and then move on to the component after the arrowhead.



A red circle with a letter inside of it is a connector between components.



The Top Secret manila folder icon means there is something special about the component that I will only share with Rockstar Developers, if the timing is right.



Explanation of Shapes, Symbols, Icons and Terminology



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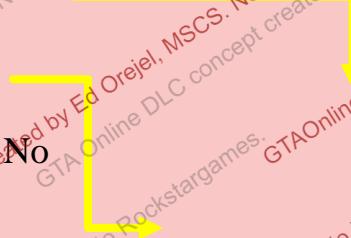
I will use this diamond-shape square to indicate a condition that has to be met before the system can proceed.

The condition will be worded in a way that might not be human-friendly, but it is still a logical condition that the system has to analyze in order to proceed.

The condition is written for the system to make, not for a human to make. The logical condition will only have two alternatives.

The alternatives must be opposite responses.

Yes



I will use the words “Yes” and “No” placed immediately next to arrows to answer the decision-making question that is presented by the diamond-shaped square.

The word “Yes” corresponds to “True” which corresponds to “1” in binary.

The word “No” corresponds to “False” which corresponds to “0” in binary.



Explanation of Shapes, Symbols, Icons and Terminology



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I will use a larger version of this rectangle to write some text related to certain concepts within the DLC.

I will use a dark red accent 1 colored rectangle for the header. It will display the title, using text, of the concept being illustrated. The text of the title will be white, using a Times New Roman font, size 24 in most instances.

I will use a dark red accent 1, 80% lighter colored rectangle for the background. It will have an outline that is dark red. The background will be found on every slide.

Disclaimer: there might be some slight formatting differences in sizes on some backgrounds in the slides. These discrepancies are currently being fixed. The disclaimer will be removed when the discrepancies are corrected.





Explanation of Shapes, Symbols, Icons and Terminology

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I will use the half-oval shape to indicate a delay in a process. The color nor the size affect the meaning of the half-oval shape's significance in this presentation.



I will use the rectangle with squared off top edges to signify the end of a loop. If you see this symbol in a flowchart, there is a loop in a process. The loop will be traversed at least once.



Explanation of Shapes, Symbols, Icons and Terminology



I will use this shape to illustrate a predefined process. Predefined processes can vary, so I will write, in text, the type of predefined process that is being illustrated by the flowchart symbol. The color has no significance.

Assume other predefined processes exist and are hidden, to "give life" to some DLC concepts in this presentation.



I will use this symbol to mean the end of a process.



I will use this shape to illustrate a note that must be read to gain further insight on a topic. The note will be placed immediately next to the component that is being referenced.

This symbol is used to refer to a document in the form of output. The assumption is the document will be read. Hence, I have used repurposed this symbol to be used similar to "sticky notes".

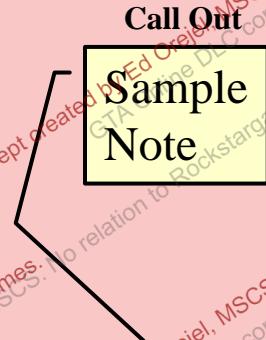
The note will have a number inside of it.



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Explanation of Shapes, Symbols, Icons and Terminology



Call Out
Sample Note

A “call out” would be the usual flowchart symbol for a note to read that may be special.

As stated previously, I repurposed the square with the wavy bottom symbol for special notes because it serves as a document that must be read.

It might be changed later.

Javelin Missile Launcher



The Javelin Missile Launcher was chosen to fire the enhanced missiles because it has a very unique shape.

It also has some interesting firing positions and it is a high tech weapon that aligns well with the overall theme of the GTA Online Spy Satellite DLC.

There's also the mystique of the Javelin in that it is a high-powered military weapon in the form of a “shoulder-fired” missile.

Introducing this weapon into the GTA Online universe really creates an interesting dynamic.

It is a fun concept.



Explanation of Shapes, Symbols, Icons and Terminology



Sitting Position #1



Sitting Position #2



Standing Position #1

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Javelin missiles have a very unique firing animation. The sound of the firing is also unique. The smoke trail the Javelin missile creates as it travels to hit its target is appealing. Overall, the qualities of the Javelin weapon make it worthy to consider for a video game.

It is a high tech weapon that aligns well with the overall theme of the GTA Online Spy Satellite DLC.

The firing positions would require animations. The weapon might also have to be enabled into GTA Online for player use.

Some firing positions might be costlier than others.

Firing positions, carrying positions, and retrieval (spawn) animations would have to be analyzed for costs.

Use-case diagrams will be used for a weapon when appropriate.

Carrying Position #1



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Explanation of Shapes, Symbols, Icons and Terminology



Security Camera Firing Gun



Smart Bullet



The Security Camera Firing Gun (a gun that fires security cameras): is a gun that fires security cameras.

The security cameras will self-stick to any surface when fired.

The security camera firing gun is part of a bigger targeting system that I will create for it.

The security camera firing gun will be connected to the spy satellite for use in targeting of players.

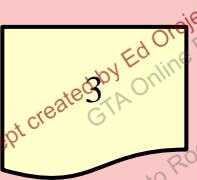
A new smart bullet will be used in conjunction with it, but the smart bullets won't be required to use the security camera firing gun.

When used together, both items will add an interesting dynamic.

The security cameras can also be delivered to other location via a secret delivery drone, or the drone can be the actual camera. The drone would place itself in an advantageous and inconspicuous position to capture security camera footage. This is a very fun concept.



Explanation of Shapes, Symbols, Icons and Terminology



Attack Drone Swarm



Delivery System #1



A crate containing the Ballistic Armor and Minigun has been dispatched.

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Attack Drone Swarm: this function can be enabled using current in-game components. The only issue is how to deliver it, to then target a player.

Delivery System #1 – Secret Spy Plane Airdrop: Ballistic Armor Delivery System – the system used to deliver the ballistic armor to the player, can be used to deliver an attack drone swarm. The spawning of the drone swarm and its effects would have to be created.

A typical spawn for something like an attack drone swarm could be something like this:

1. Crate lands near target player via airdrop from secret spy plane.
2. Immediately after crate impact, a flash of light and colored smoke spawns in.
3. Broken crate spawns away.
4. Attack drone swarm spawns in while there is still smoke visible to the player.
5. Drone finally attack the player after all of them have spawned in. Colored smoke spawns away.



Explanation of Shapes, Symbols, Icons and Terminology

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Delivery System #1



3.1.1

Delivery System #2



3.1.2

Delivery System #1 (cont.): A spawn of attack drones can be spawned in and dropped on a targeted player by a secret spy plane. Either one large box “full” of attack drones can be dropped on a targeted player, or many smaller boxes, each “containing” one attack drone, can be dropped on a player. There are other delivery methods. I will illustrate another method of delivery; a vehicle.

However, I suppose, the least costliest, but most optimized method would be used.

Delivery System #2 – Tactical Truck Launcher: A tactical truck can be used to launch attack drones. This can be done in a few ways. I will highlight two.

- **Method #1 from truck:** launch several attack drones at a player, just like the picture shows. I attack drone is launched per shot fired. Players and vehicles can be locked on and targeted. Players can also be targeted using their mobile devices, courtesy of the spy satellite.
- **Method #2 from truck:** launch one big missile. Inside of the missile case, many drones will spawn out upon impact to attack the player.

The truck would be customizable at Los Santos Customs.



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Explanation of Shapes, Symbols, Icons and Terminology

Delivery System #2



3.1.2

Delivery System #2 (cont.): Sample attack drone swarm delivery truck. The concept was found on the open-internet.

This is an interesting concept.





Explanation of Shapes, Symbols, Icons and Terminology

Delivery System #2



3.1.2



Delivery System #2 (cont.): Drone Swarm Launcher Vehicle.

- **Method #3 from truck:** An AI-powered vehicle with an NPC driver, drives toward target player, and launches the drone swarm. I think this method would work well.
- The vehicle would launch a barrage of drones to attack a target with weapons or small missiles. Alternatively, the barrage of attack drones could also jam the player's communications, hack the player's mobile device, or attach to the player's vehicle to hack the vehicle.
- Using this method, the barrage of attack drones would also function as vehicle hacking drones, but it is more stylistic to have an exclusive drone to hack vehicles.
- It is assumed that all of the functionality for this vehicle to operate seamlessly in the GTA Online world, will be created by the software engineers and developers at Rockstar Games.

Source for concept:

https://www.youtube.com/watch?v=QamGxDNczJw&t=15s&ab_channel=shotasaburi



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Explanation of Shapes, Symbols, Icons and Terminology

Radar-Cloak Reveal Missiles



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Radar Reveal Missiles: Disable all in-game off-radar cloaking technologies for a period of time. The period of time is greater than the combined time limit of all Off-Radar, Ghost Organization, and “other off-radar” technologies.

This service will be delivered through the spy satellite.

This missile will be fired from the Javelin Missile Launcher. See note I.

The system to achieve this technology goal will be created. It is partially in the game.

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Explanation of Shapes, Symbols, Icons and Terminology

Proposed Drones



Hunt the Beast



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Drones reveal all hidden players: Drones will defeat all off-radar/cloaking in-game technologies to reveal any hidden players. This ability will also apply to the free roam lobby contest called “Hunt the Beast.”

All drones will be able to monitor the exact location of the beast using the spy satellite.

The spy satellite will be able to reveal any hidden players.

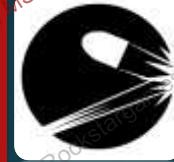
If a player has not unlocked the drones for use, all methods of “hiding from surveillance” in-game will function like they normally would.

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Explanation of Shapes, Symbols, Icons and Terminology



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Ricochet Bullets



Smart Ammunition – Ricochet Bullets: Ricochet bullets will ricochet to a target. This smart ammunition is part of a larger targeting system that will be created using the Camera Firing Gun.

I think this concept can be done in real life. This should probably be a DARPA project. Perhaps DARPA was trying to actually control bullets when they created the smart bullet (maybe DARPA perfected the technology).

My method is a different way to make the concept seem believable in GTA Online. Thus, in GTA Online, when coupled with the spy satellite, players will have the ability to “control bullets”.

I will write the science and technology behind this proposed ammunition concept. It will be updated later.

The ammunition concept should be easy to understand. The concept is great because it will give your target the illusion that you are not aiming at them.

This is a fun concept.



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Explanation of Shapes, Symbols, Icons and Terminology

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Ultra-Infra Sonic Weapon Device



Ultra-Intra Sonic Weapon Device: It is an unconventional long distance microphone made out of a laser pointer. The science and technology behind the concept will be posted later.

Pros: can be used during the day virtually undetected to maximize intelligence gathering. Can be weaponized into a sonic device.

Cons: can be used at night, but risk of use increases.

This is a very fun concept.

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Explanation of Shapes, Symbols, Icons and Terminology

Identity Theft



Identity Theft: The players will engage in identity theft by making phone calls. A system will be created so that players can conduct identity theft using the mobile phone.

This is a fun concept.

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Explanation of Shapes, Symbols, Icons and Terminology

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Social Engineering



Social Engineering: The players will engage in social engineering. There are various ways of enabling this feature.

Good targets for social engineering are the Los Santos Police Department. Systems for social engineering would have to be created.

This is a fun concept.

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Explanation of Shapes, Symbols, Icons and Terminology

Taser Bullets



MKII Pump Shotgun – GTA Online



Taser Bullets: Taser bullets have been included. This is a self-explanatory concept.

The bullets can be designed for the MKII Pump Shotgun.

The bullets can also be designed for a special pistol.

The taser ammunition concept can also be applied to grenades and missiles.

This is a fun concept.



Explanation of Shapes, Symbols, Icons and Terminology

EMP Vehicle



EMP Protection



Oppressor



Electro-Magnetic Pulse Vehicle: Vehicles that emit electro-magnetic pulses to disrupt the electrical systems found in the city of San Andreas.

Specifically, all aircraft and any type of vehicle will be affected by the EMP vehicle. All missiles are affected.

This means the EMP vehicle can take out incoming missiles.

The vehicle that causes that EMP will not be affected.

An ideal EMP vehicle is the Oppressor.

There are other ways to implement this in GTA Online.

I suppose for GTA6, vehicles and all aircraft can be susceptible to EMPs. The players would buy protection against it.

This is a fun concept.



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Explanation of Shapes, Symbols, Icons and Terminology



The Shadow Hacker Group Icon – Through the spy satellite, the Shadow Hacker Group will provide hacking and attacking services to the player.



The Military Services Icon – Through the spy satellite, the Military will provide military services to the player.

1



1. The Satellite Services Icon – The spy satellite will provide military and hacker services to the player. Other services could be provided.
2. A targeting system can be created using the player's in-game cell phone to deliver services to the player from the spy satellite in orbit.
3. One of those services is drones that are controlled by the spy satellite.
 1. One such drone is a vehicle hacking drone.

2



3.1



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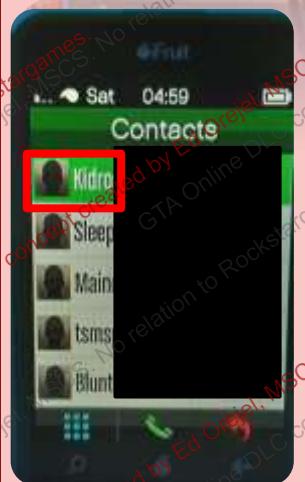
Explanation of Shapes, Symbols, Icons and Terminology



This is the display of all players in a current GTA Online free roam lobby, at any moment, whether the lobby is public or private.

This same list of players also appears in the player's in-game cell phone.

A user has been highlighted with a red rectangle for illustration purposes.



Cell Phone Contact's List – The spy satellite will allow players to target other players from the in-game cell phone's Contact's List.

Both the in-game cell phone, and the current player display in the GTA Online free roam lobbies share the same information relating to the number of players currently in the lobby.

A user has been highlighted with a red rectangle for illustration purposes.



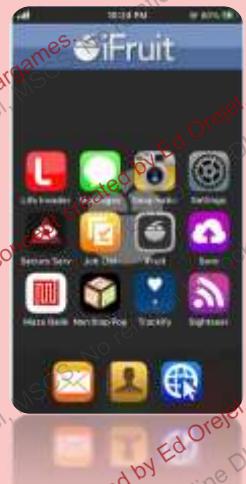


Explanation of Shapes, Symbols, Icons and Terminology



The **GTA Player Cell Phone** – It is the current default in-game cell phone that players use in GTA Online for various in-game services. In GTA Online we imply that mobile data is traveling freely between networks, and that's how we have phone service.

This cell phone will be connected to the spy satellite. The spy satellite will provide another connection to the cell phone. Data will travel freely between the satellite and the cell phone in GTA Online.



Different Version of GTA Cell Phone – This is a different version of the GTA Online cell phone. The difference I am interested in is that it has the Trackify App installed.



Description of Player Tracking and Mobile Device GPS Coordinates

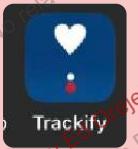


The Targeting System – The components that I am focusing on can be connected to form a radar detection and targeting system. The satellite dishes at the Satellite Relay Station could be connected to the spy satellite.

Satellite Relay Station located in Grand Senora Desert, Blaine County (Optional)



The Contact's List Icon - the player will select other players for targeting using the spy satellite and the Contact's List in their cell phones.



The Trackify Icon –The Trackify App will provide the following functions:

- (1) Radar-tracking – the radar tracking will be to detect in-coming smart ammunition.
- (2) Player targeting via access to the Contact's List of the in-game player cell phone.

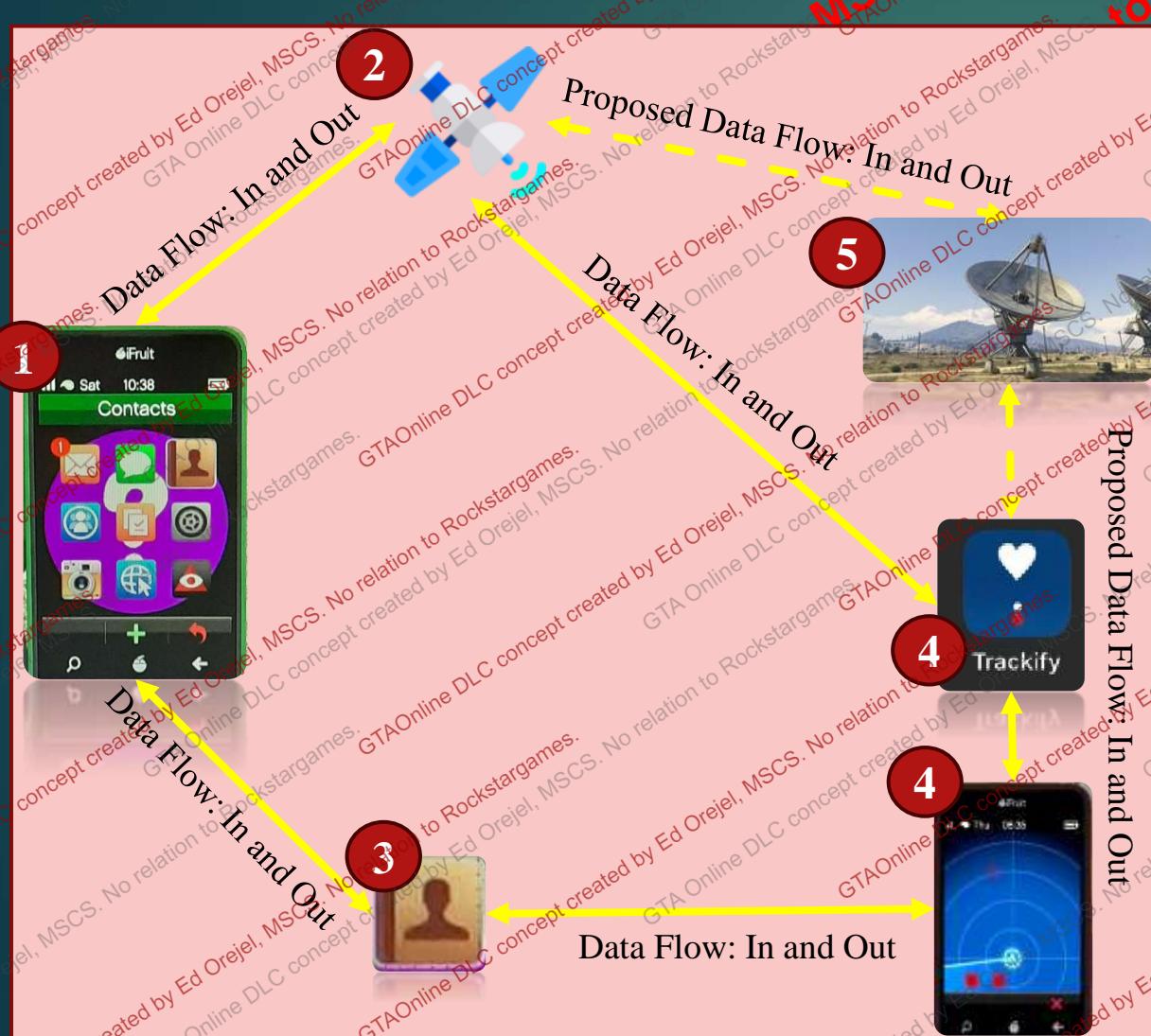


Using the two functions listed above can result in smart weapons, and advanced technological concepts to be used in GTA Online gameplay, once connected to the spy satellite.



Radar and Targeting System Data Flow – Proposed Data Flow Between Components

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This flowchart shows the relationship that I am proposing with current in-game components. The purpose of organizing the components this way, is to create a new piece of technology in the game. The technology is in the form of a radar and targeting mechanism that will be created by the addition of a spy satellite.

The radar detection and targeting mechanism is created using the following in-game components:

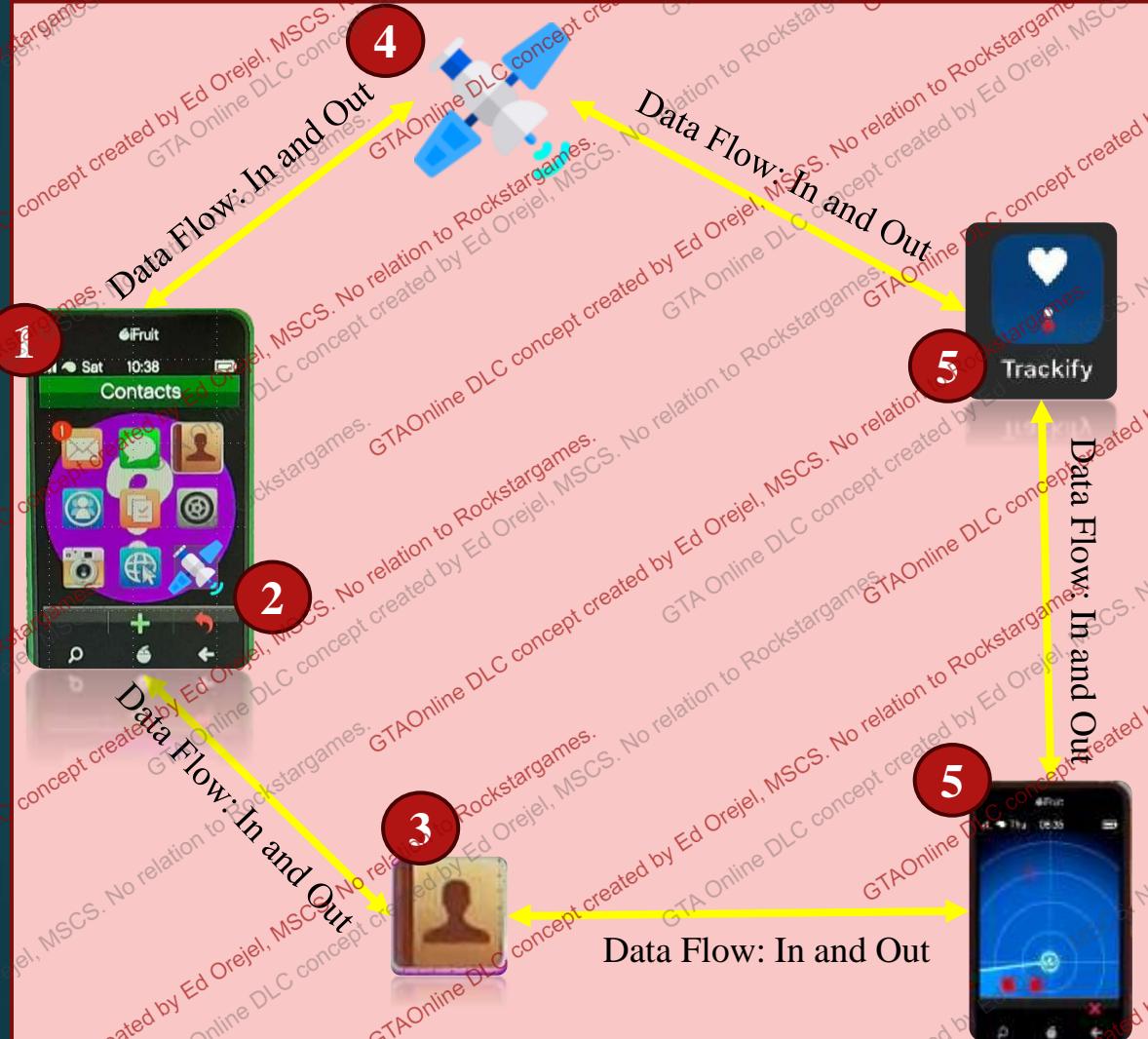
1. The player's in-game cell phone.
2. The newly added spy satellite.
3. The cell phone's Contact's List.
4. A radar system like GTA Online's Trackify App.
5. Satellite Relay Station located in Grand Senora Desert, Blaine County (Optional)

The main function of the spy satellite is to provide GPS latitude and longitude coordinate data of the player's current location, anywhere in the free roam lobby, if the player is not indoors. GPS data of the player will also be tracked while underwater or out in the ocean.

The spy satellite and radar tracking system will allow other new technology to be used in the game.



Radar and Targeting System Data Flow – Actual Data Flow Between Components



This flowchart presents the actual data flow between components, once the spy satellite is launched into orbit.

The radar detection and targeting mechanism is created using the following in-game components:

1. The player's in-game cell phone.
2. The spy satellite linked to the in-game cell phone.
3. The cell phone's Contact's List.
4. The newly added spy satellite.
5. A radar system like GTA Online's Trackify App.

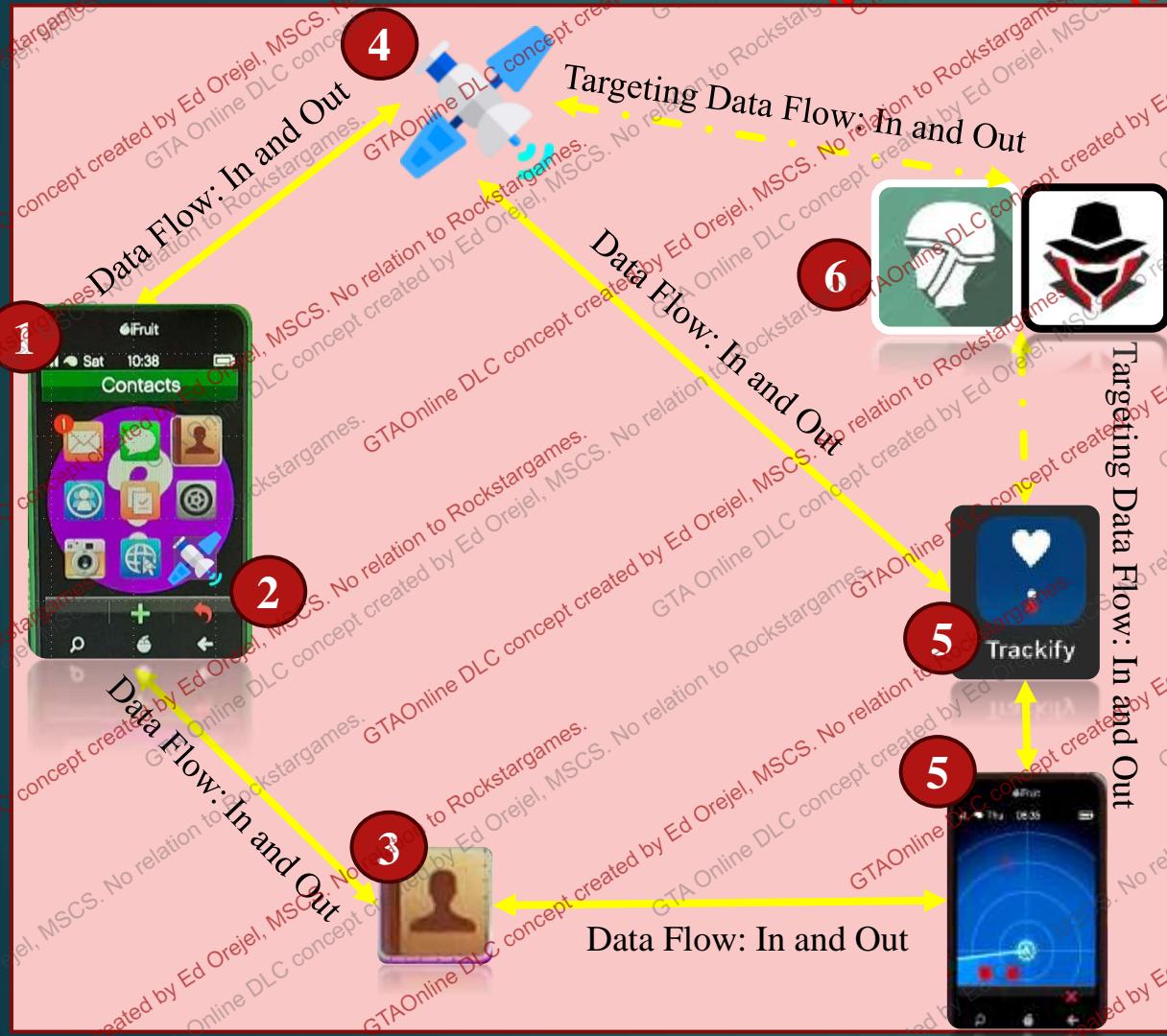
Players in GTA Online use their cell phone, but it is assumed that the service to the cell phone will always have a connection, if the player maintains a cash balance in the game.

If players use a cell phone in the game, then the cell phone can receive a satellite signal or some other type of signal to maintain connectivity.

A spy satellite connection to the cell phone could be created, and new in-game features could be enabled from the spy satellite.



Radar and Targeting System Data Flow – Targeting Data Flow Between Components – Spy Satellite Services Included



Once the components are assembled, the smart weapons would receive data from the spy satellite in the form of GPS latitude and longitude coordinates of the player's cell phone.

1. The player's in-game cell phone.
2. The spy satellite linked to the in-game cell phone.
3. The mobile phone's Contact's List.
4. The newly added spy satellite.
5. A radar system like GTA Online Trackify App.
6. Military services and Hacker services will receive cell phone data.

The smart ammunition fired from the smart weapons would be able to attack enemies that are hiding in hard-to-reach areas.

The smart weapons would be able to fire smart ammunition that would be guided by the spy satellite, to hit an enemy anywhere in the map, even if the enemy is in any type of vehicle or hiding in between houses or apartment buildings.

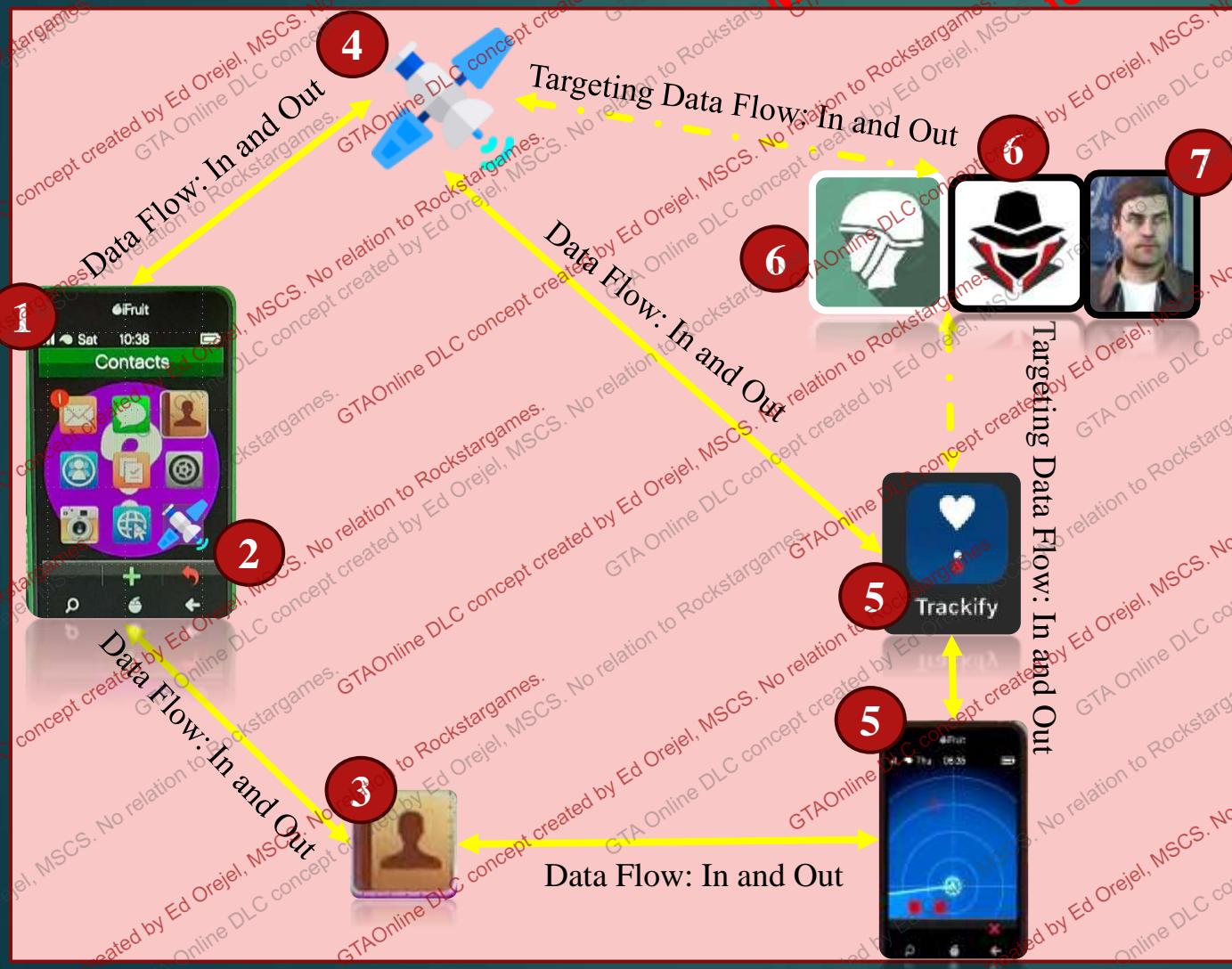
The spy satellite in conjunction with the smart ammunition, would have artificial intelligence (AI) that would adjust its targeting software in real time, thereby, calculating the best vector of attack.

Enemies are other players in GTA Online or players not in the organization of the attacking player.

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Radar and Targeting System Data Flow – Targeting Data Flow Between Components – Spy Satellite Services – Adding Other Services



1. The player's in-game cell phone.
2. The spy satellite linked to the in-game cell phone.
3. The cell phone's Contact's List.
4. The newly added spy satellite.
5. A radar system like GTA Online Trackify App.
6. Military services and Hacker services will receive cell phone data.
7. Additional component(s) added: Agent 14.

The design of the system allows for other components to be added and connected to the spy satellite.

For example, Agent 14 could be given access to the spy satellite. Once Agent 14 is given access, he can call the players on their mobile phones to see if they want to access other in-game missions offered through the spy satellite.

The spy satellite can also be used to connect and add other types of DLCs.

An “Aquatic DLC” focusing on the billionaire lifestyle of expensive yachts, high-end illegal contraband, and power business deals gone bad could be one of many choices.





Military Services – Cell Phone Functionality

Military Platoon Attack Service

- Cell phone functionality required.
- Functionality for the Military Platoon Attack Service app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting upon engaging the satellite icon.



1
Main cell phone screen. Players press the satellite icon to access spy satellite services. They will be directed to a secret menu.



2

Cell phone secret spy menu screen.

Military Service

Military Platoon Attack Service



Military Services: Powered Off

Access Denied



Military Services: Powered On

Access Granted



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Shadow Hacker Group Service – Cell Phone Functionality

Shadow Hacker Group

- Cell phone functionality required.
- Functionality for the ShadowHacker Group app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting upon engaging the satellite icon.



Main cell phone screen. Players press the satellite icon to access spy satellite services. They will be directed to a secret menu.



Shadow Hacker Group Services

Shadow Hacker Group



Cell phone secret spy menu screen.

Shadow Hacker Group

Hacker Services: Powered Off

Access Denied



Hacker Services: Powered On

Access Granted



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Shadow Hacker Group – Vehicle Hacking Drone

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Vehicle Hacking Drone

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting. (Some assumptions left unstated for now)

Cell Phone Contact's List

Cell Phone Vehicle Hacking Drone Icon



Drone: Powered Off

1



2

Main cell phone screen. Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



Cell phone secret spy menu screen.

Access Denied



Drone: Powered On

Access Granted



Remote Vehicle Hacking & Control





Shadow Hacker Group – Attack Drone Swarm

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Attack Drone Swarm

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting.



1
Main cell phone screen. Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



2
Cell phone secret spy menu screen.

Cell Phone Contact's List

Attack Drone Swarm



Drone Swarm: Powered Off

Access Denied



Drone Swarm: Powered On

Access Granted



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Shadow Hacker Group – Robot Drone Attack Dog

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Robot Drone Attack Dog

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting.



2
Main cell phone screen.
Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



Cell phone secret spy menu screen.

Robot Drone Attack Dog

Access Denied

Attack Dog: Powered On

Access Granted

Robot Drone Attack Dog

Attack Dog: Powered Off

Access Denied

Attack Dog: Powered On

Access Granted

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Shadow Hacker Group – Cell Phone Orbital Strike

40



Cell Phone
Contact's List

Cell Phone Orbital Strike

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting.



1
Main cell phone screen.
Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



2

Cell phone secret spy menu screen.

Cell Phone Orbital Strike

Orbital Strike: Powered Off

Access Denied

Orbital Strike : Powered On

Access Granted



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Shadow Hacker Group – Cell Phone Hacking

41



Cell Phone Hacking

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting.



2
Main cell phone screen. Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



Cell phone secret spy menu screen.

Cell Phone Hacking

Access Denied

Access Granted

Cell Phone Contact's List

Cell Phone Hacking



Phone Hack: Powered Off

Access Denied

Phone Hack : Powered On

Access Granted



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Shadow Hacker Group – Loyal Wingman Drone Service – Ruiner 2000 Jet Car

42



Loyal Wingman Service

- Ability for the drone app, while ON, to access the Contact's List to select a player for targeting. (Some assumptions left unstated for now.)

For the Contact's List

- Ability to sort the Contact's List to only have free roam lobby players available for targeting.



1
Main cell phone screen.
Players press the satellite icon to access spy satellite services. They will be directed to a secret spy menu.



2
Cell phone secret spy menu screen.

Loyal Wingman Drone Service

Cell Phone Contact's List

Loyal Wingman Drone Service



Drone Service; Powered Off

Access Denied

Drone Service : Powered On

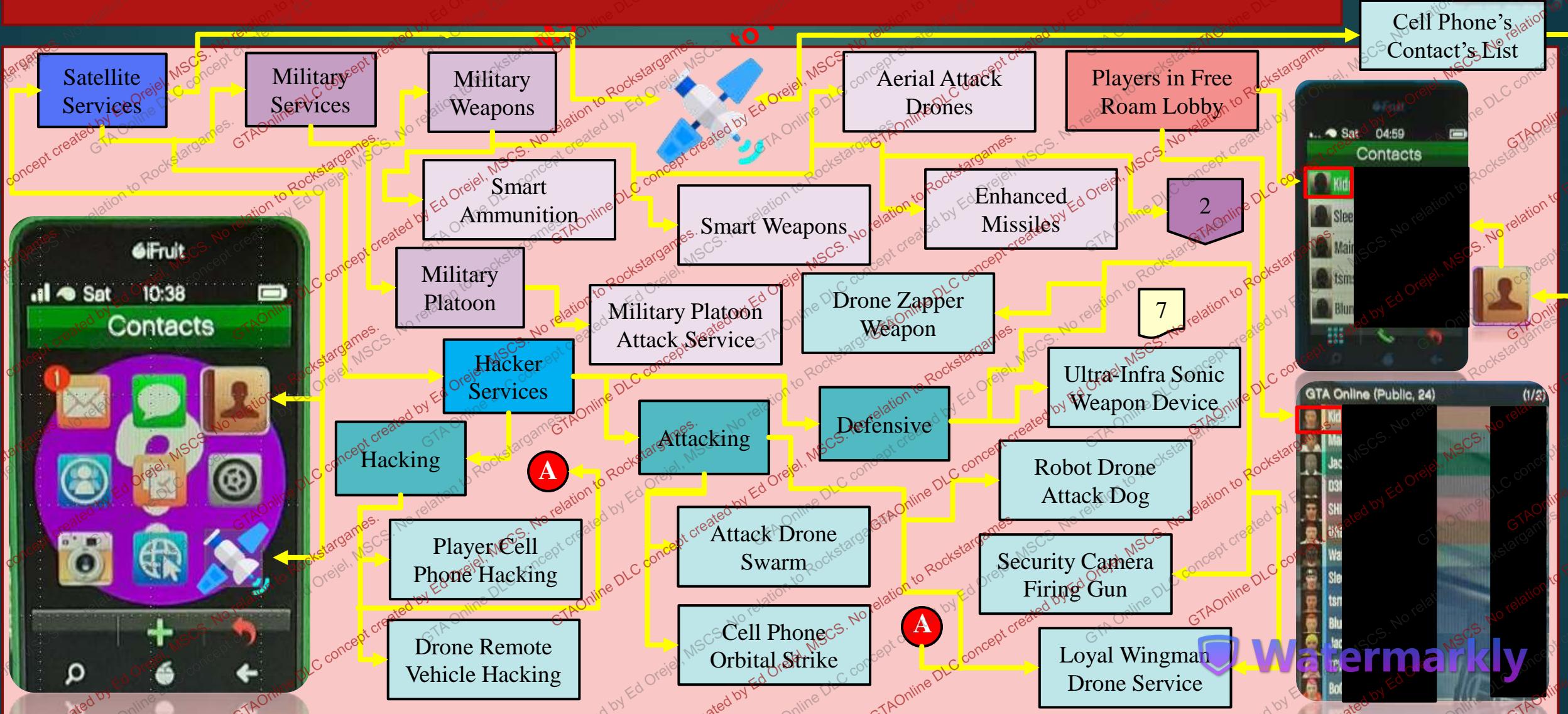
Access Granted

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Conceptual Overview of Spy Satellite Services – Top-Level Component View – All Services

43

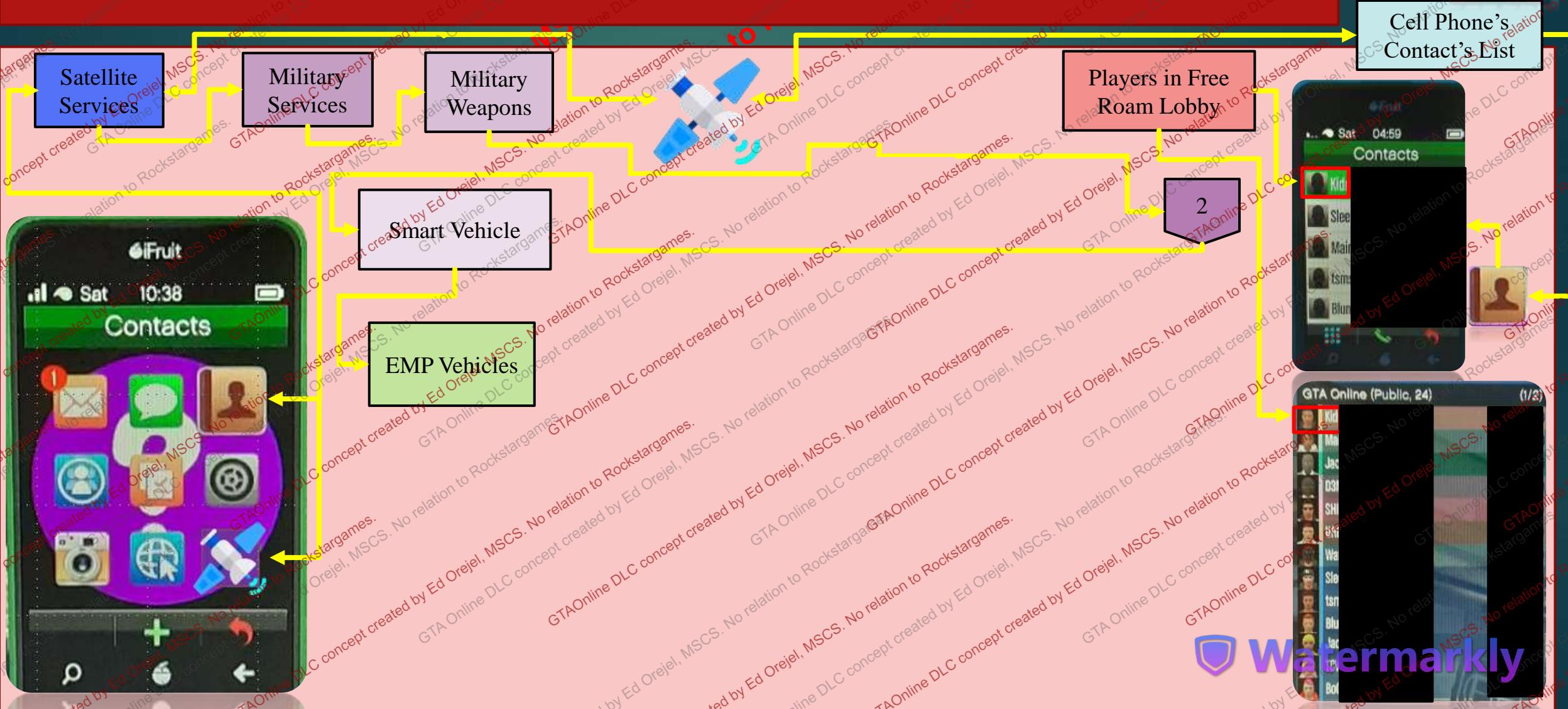


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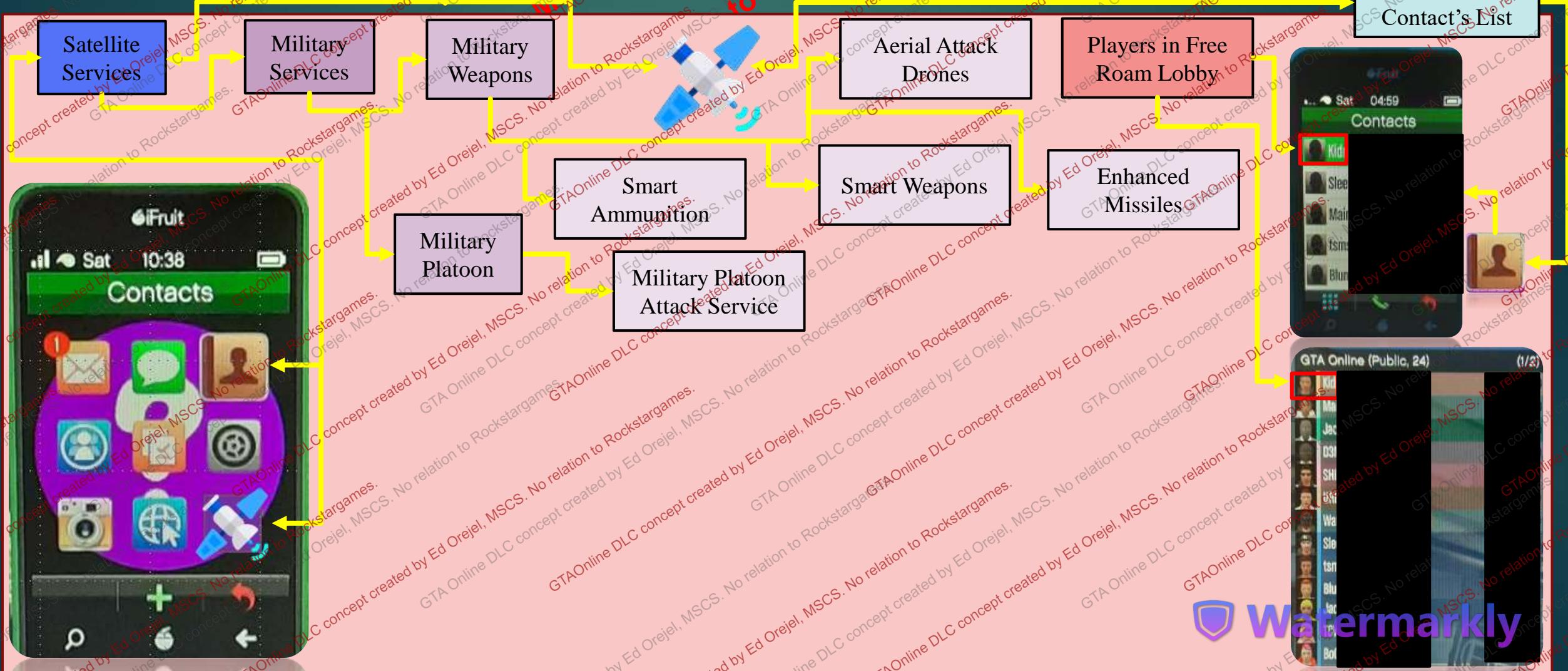
Conceptual Overview of Spy Satellite Services – Top-Level Component View – All Services Continued

44





Top-Level Component View – Military Spy Satellite Services

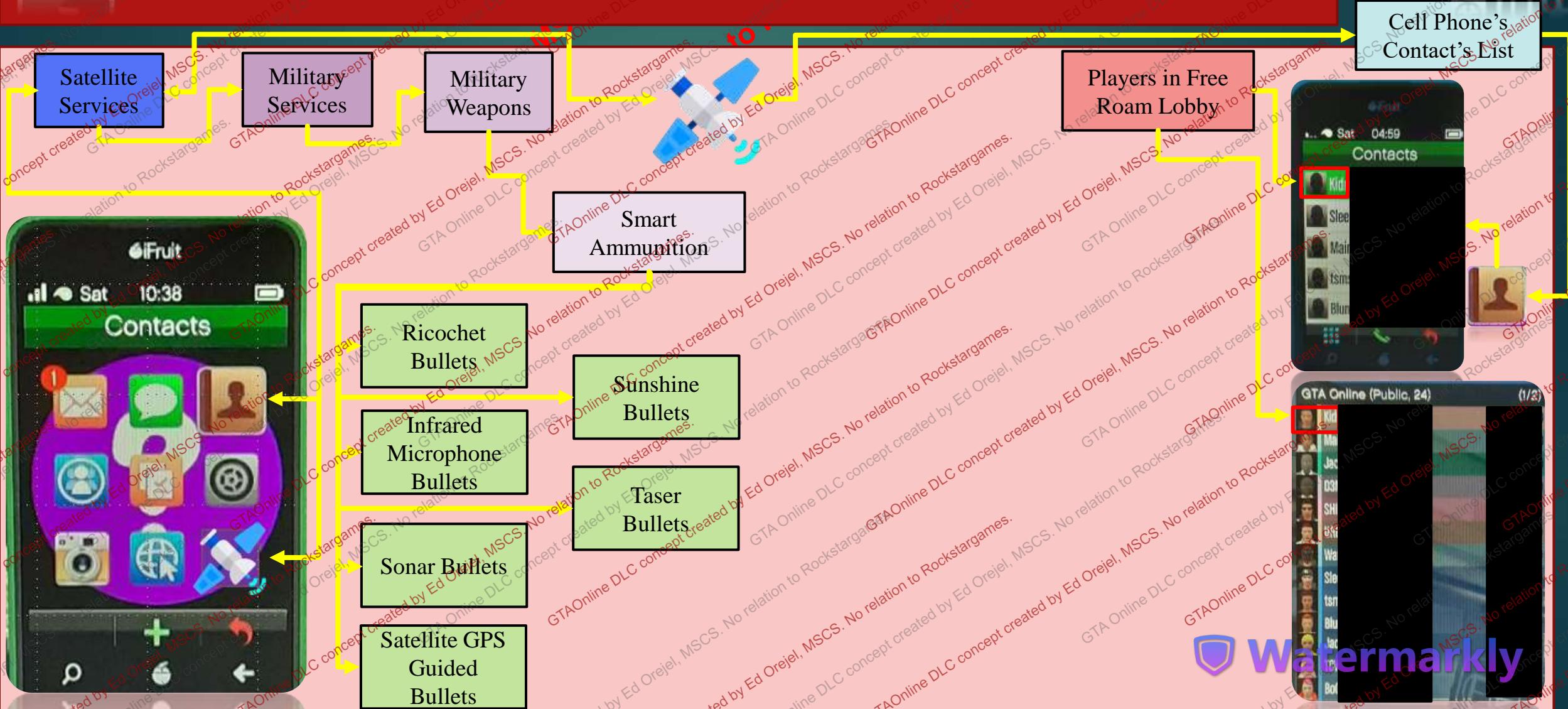


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Top-Level Component View – Military Spy Satellite Services – Smart Ammunition

46

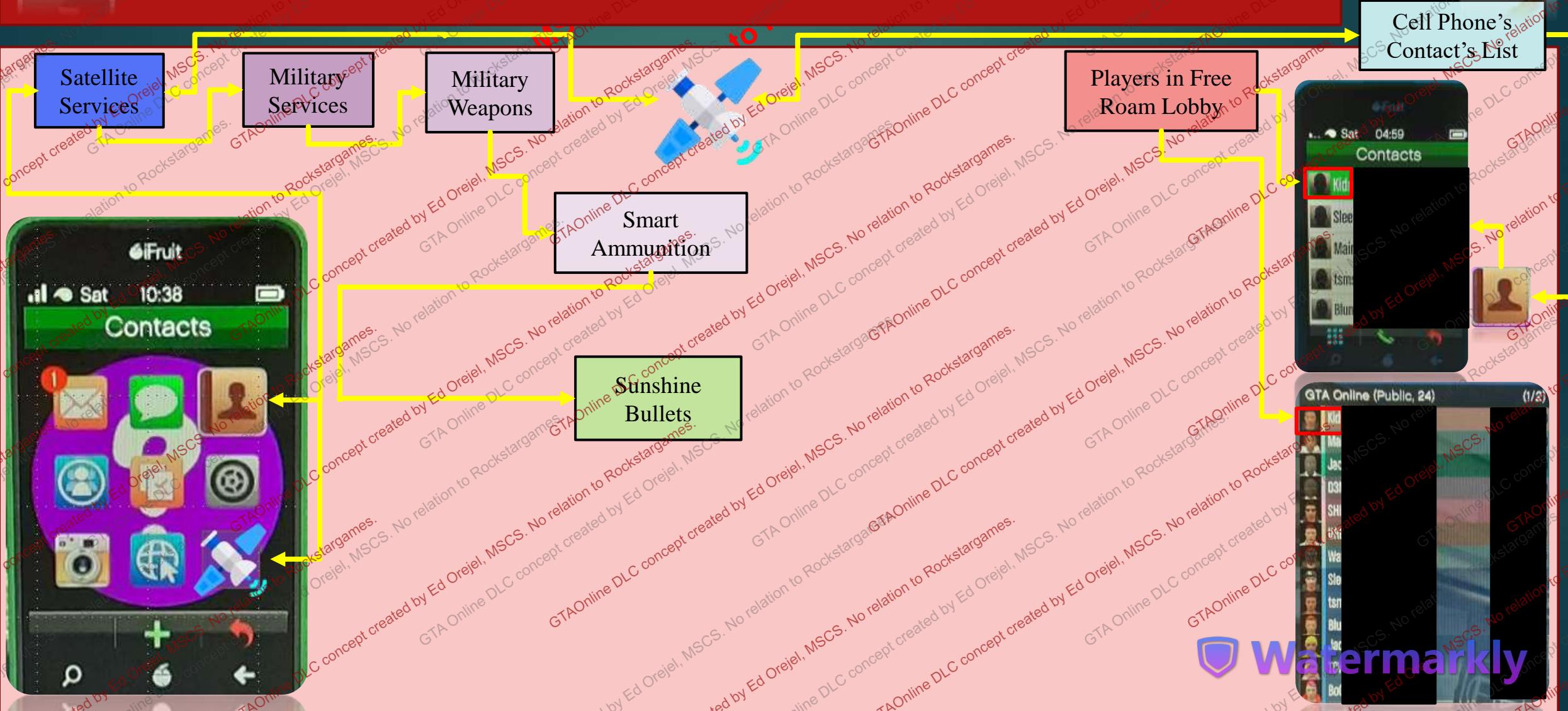


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Top-Level Component View – Military Spy Satellite Services – Smart Ammunition – Sunshine Bullets

47

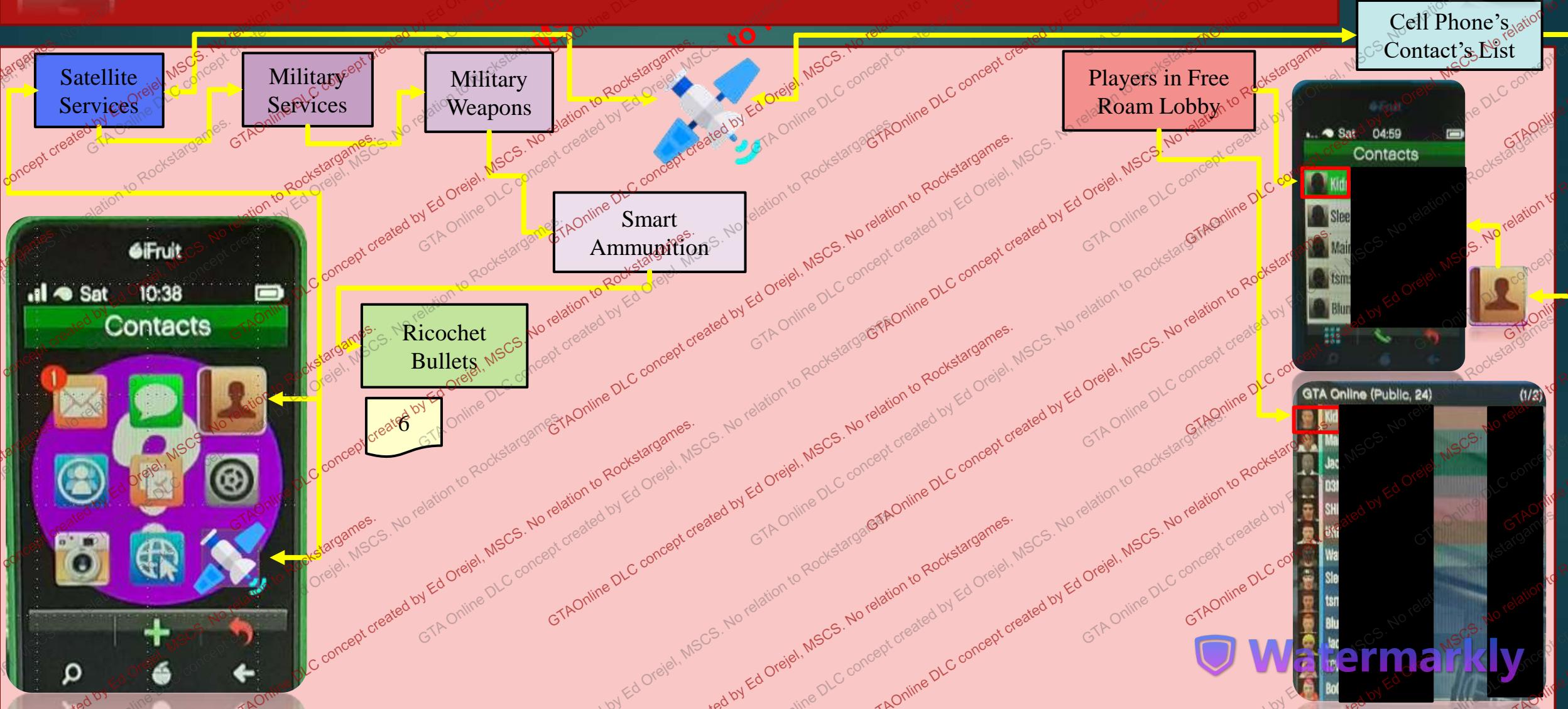


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Top-Level Conceptual Component View – Military Spy Satellite Services – Smart Ammunition – Ricochet Bullets

48

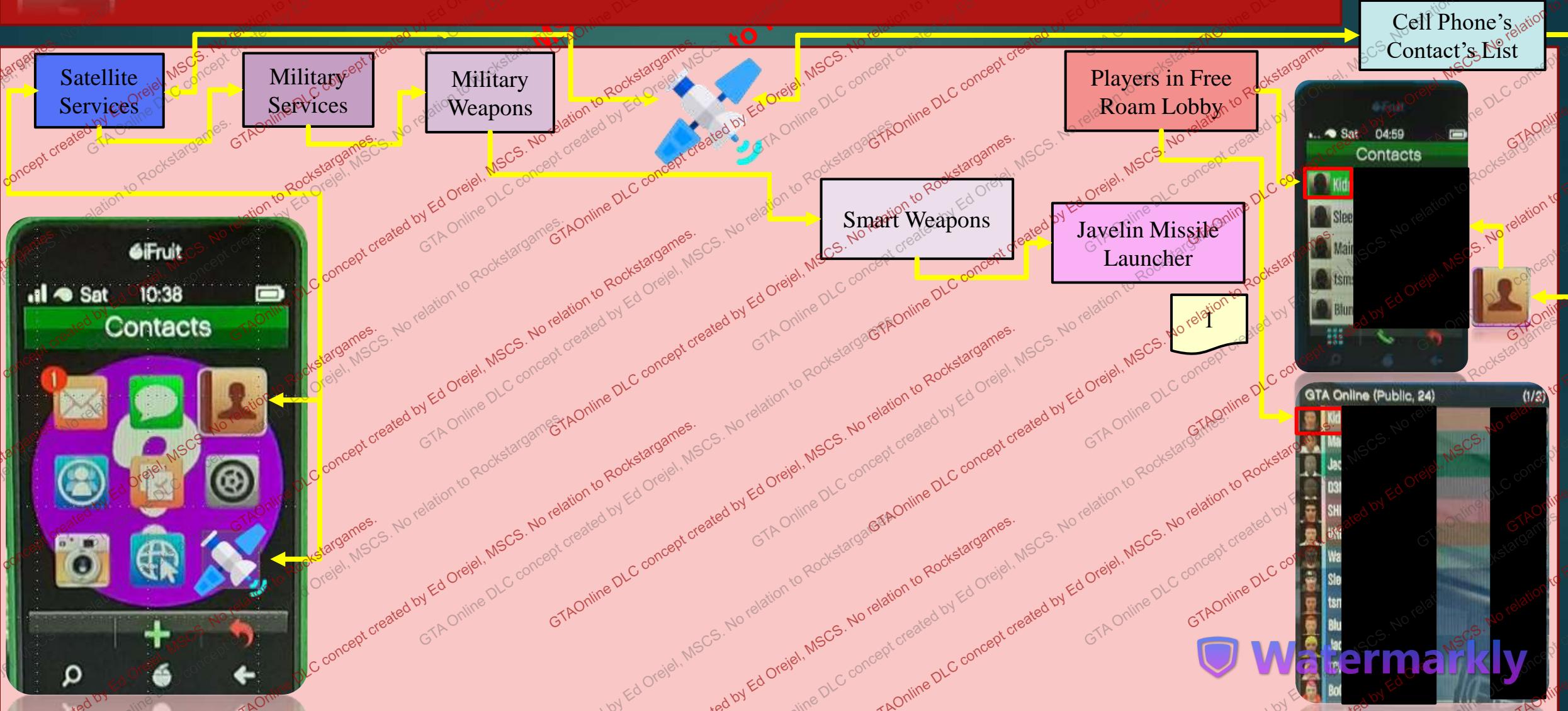


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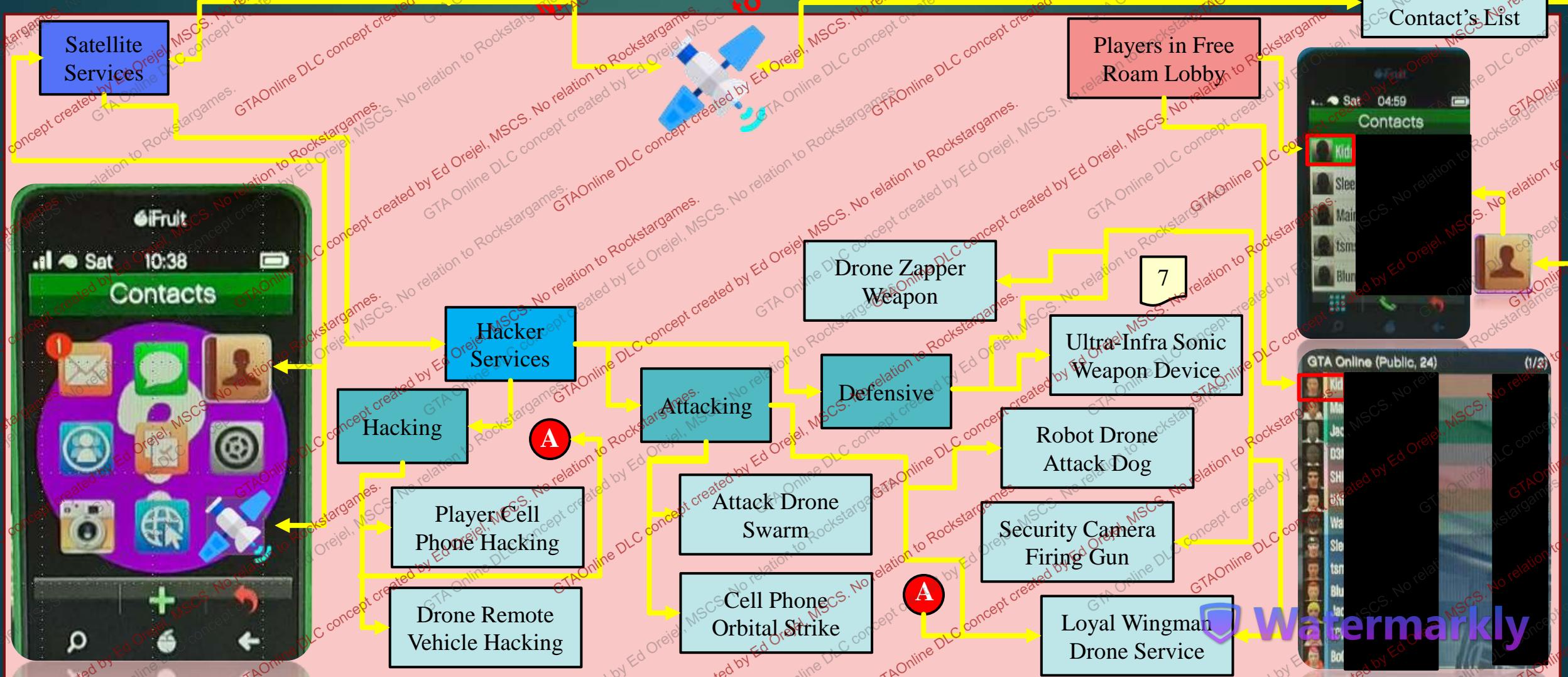
Top-Level Conceptual Sub-Component View – Military Spy Satellite Services – Smart Weapons – Javelin Missile Launcher

49





Top-Level Conceptual Component View – Shadow Hacker Group Services

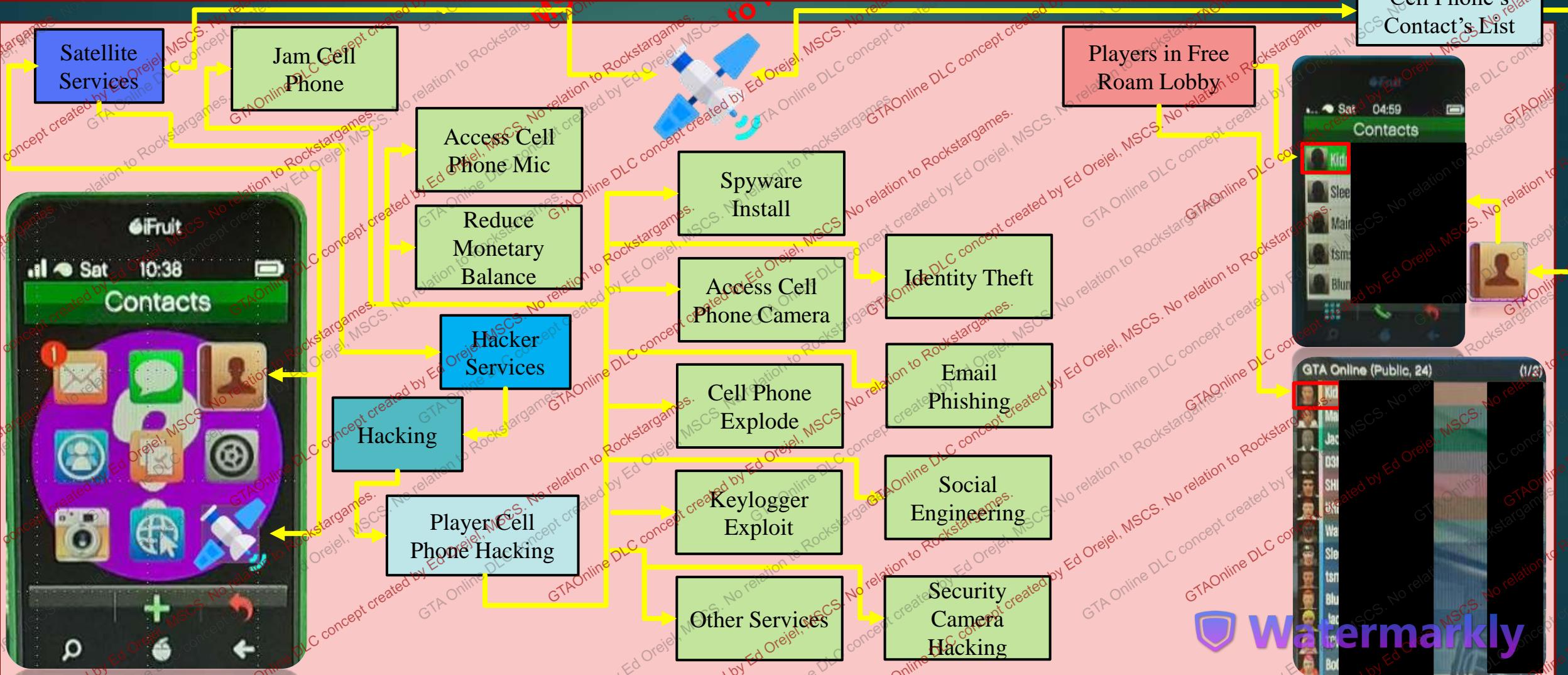


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Top-Level Conceptual Sub-Component View – Hacking Services – Player Cell Phone Hacking Services

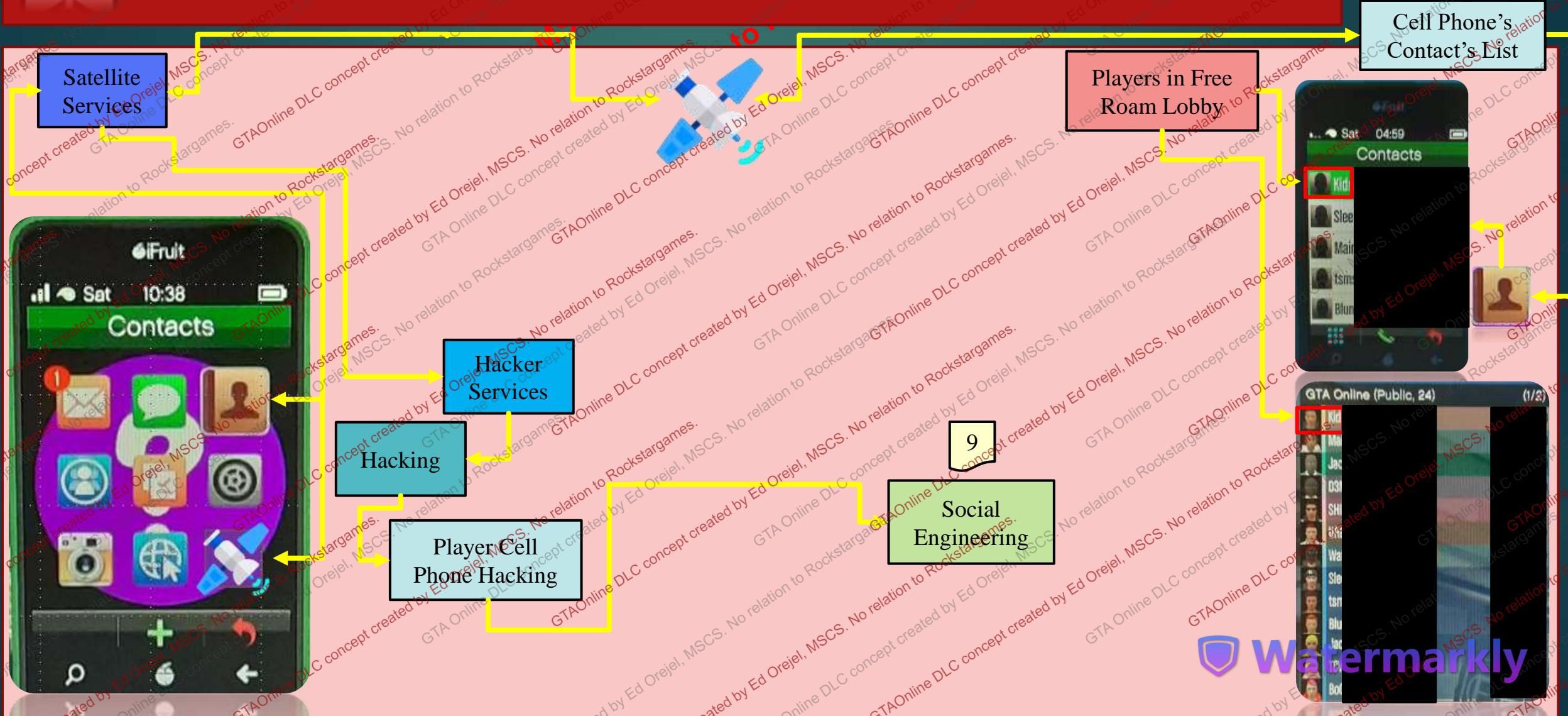
51





Top-Level Conceptual Sub-Component View – Hacking Services – Player Cell Phone Hacking Services – Social Engineering

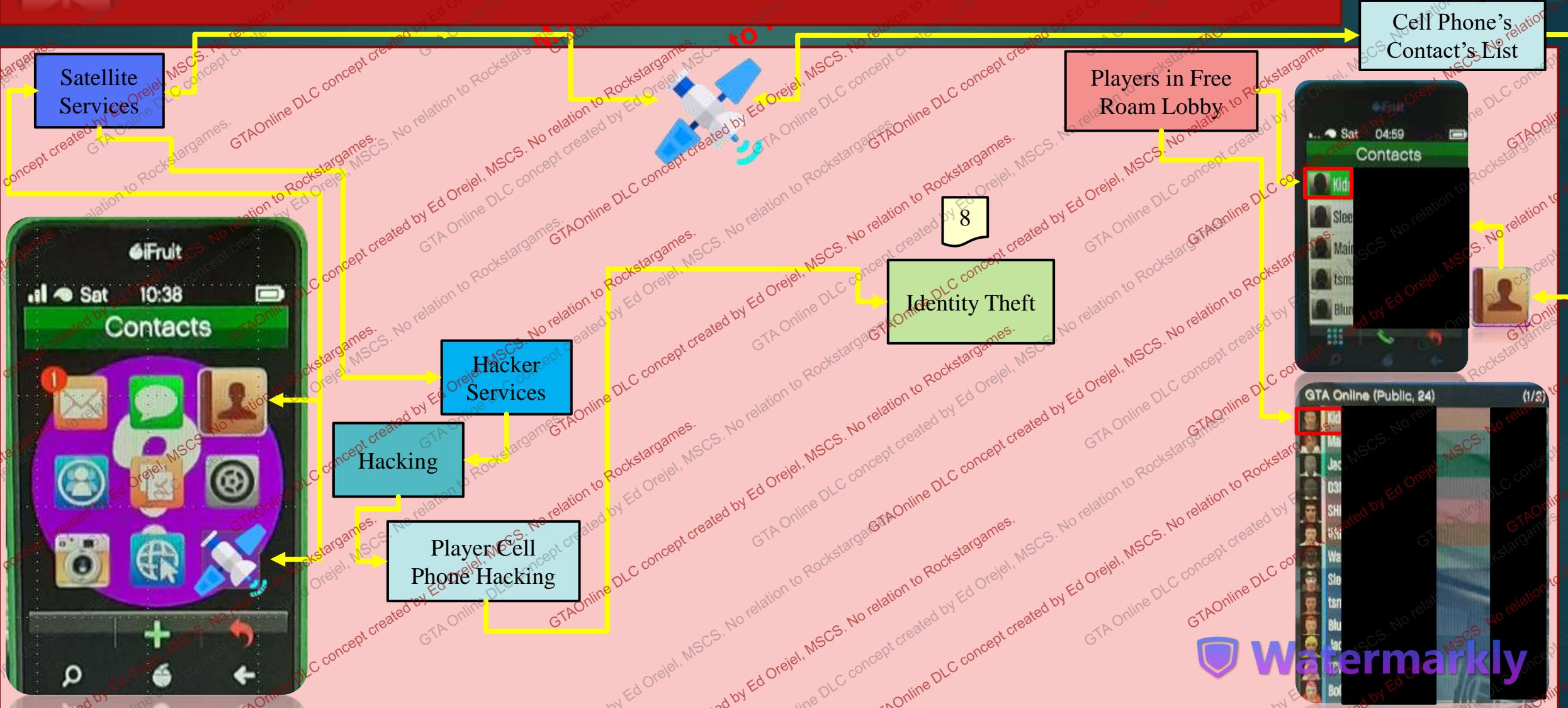
52





Top-Level Conceptual Sub-Component View – Hacking Services – Player Cell Phone Hacking Services – Identity Theft

53

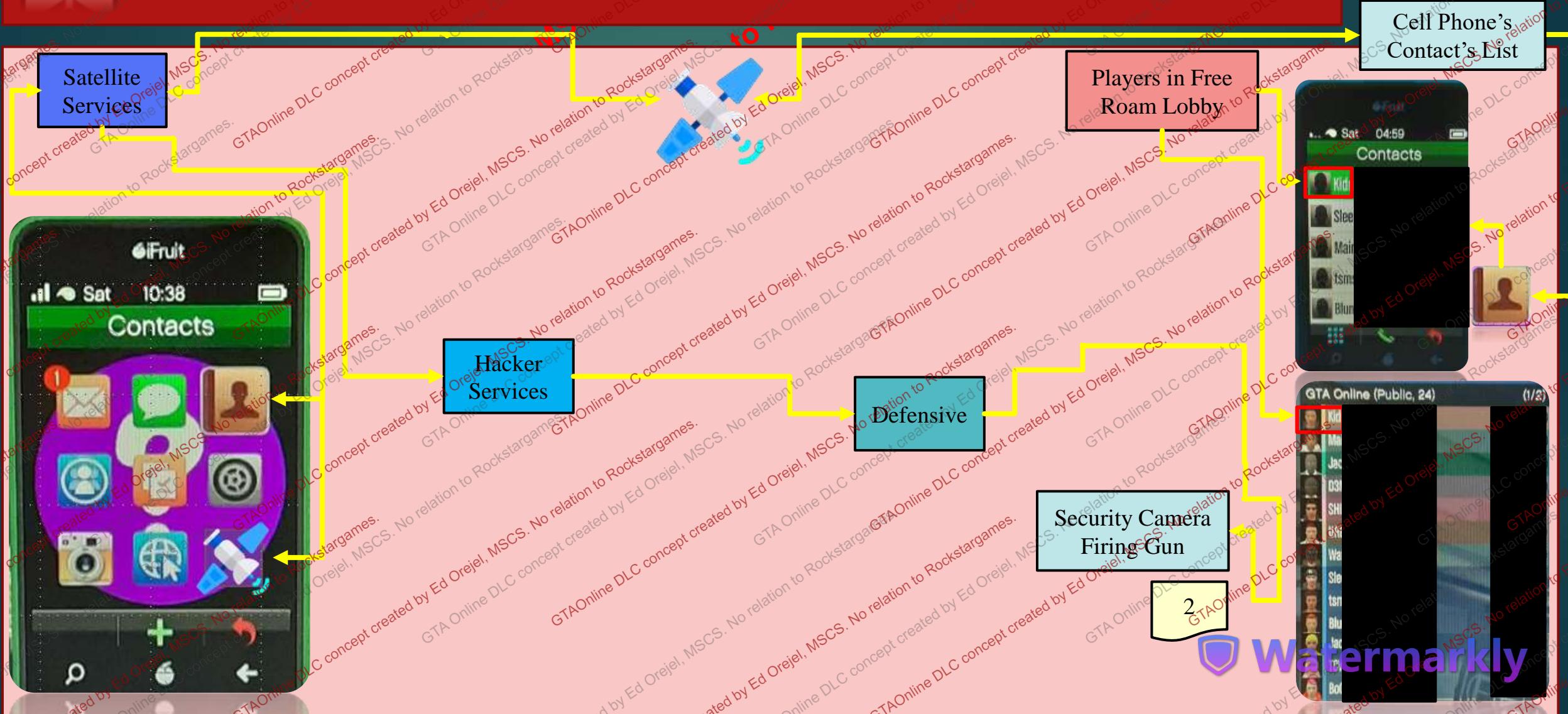


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Top-Level Conceptual Sub-Component View – Hacker Services – Security Camera Firing Gun

54

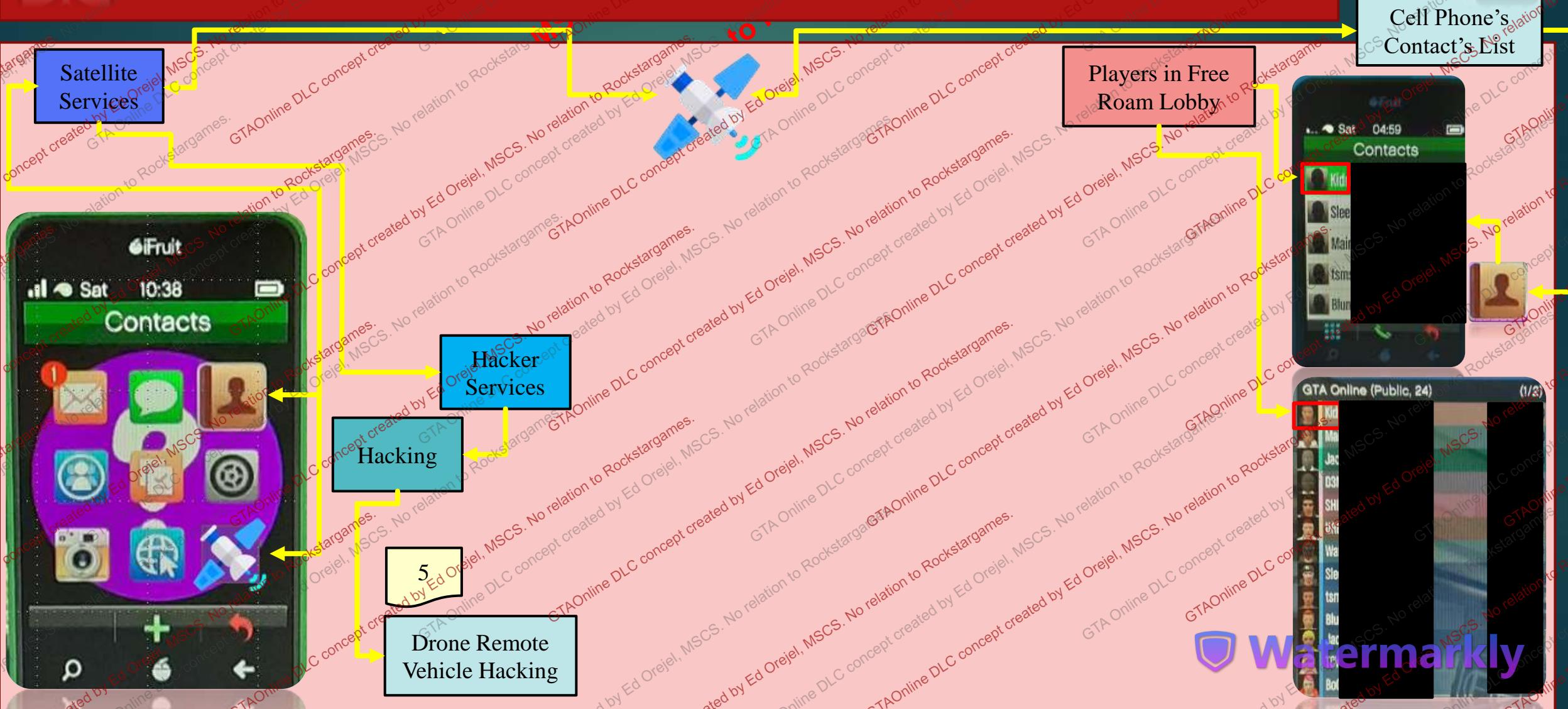


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Top-Level Conceptual Sub-Component View – Hacker Services – Drone Remote Vehicle Hacking

55

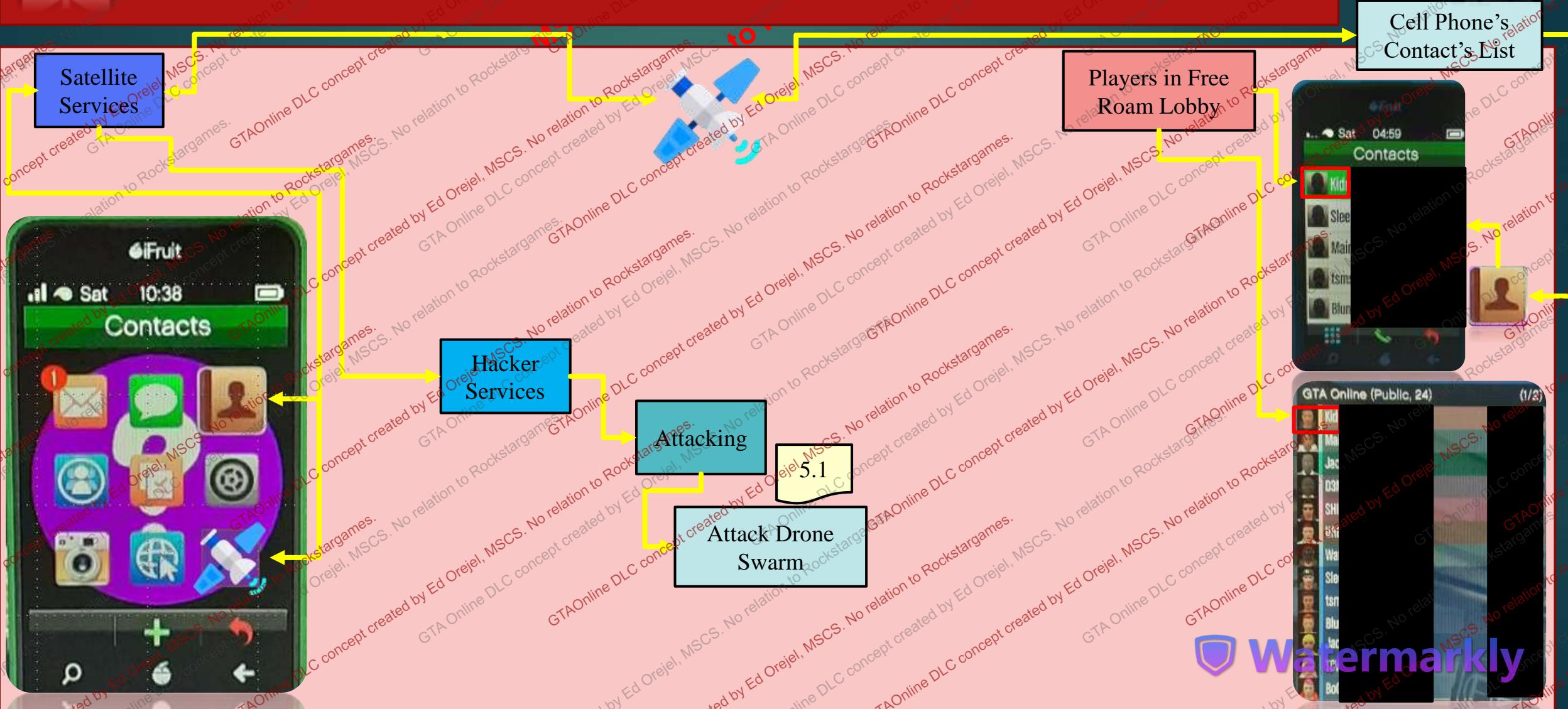


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Top-Level Conceptual Sub-Component View – Hacker Services – Attack Drone Swarm

56

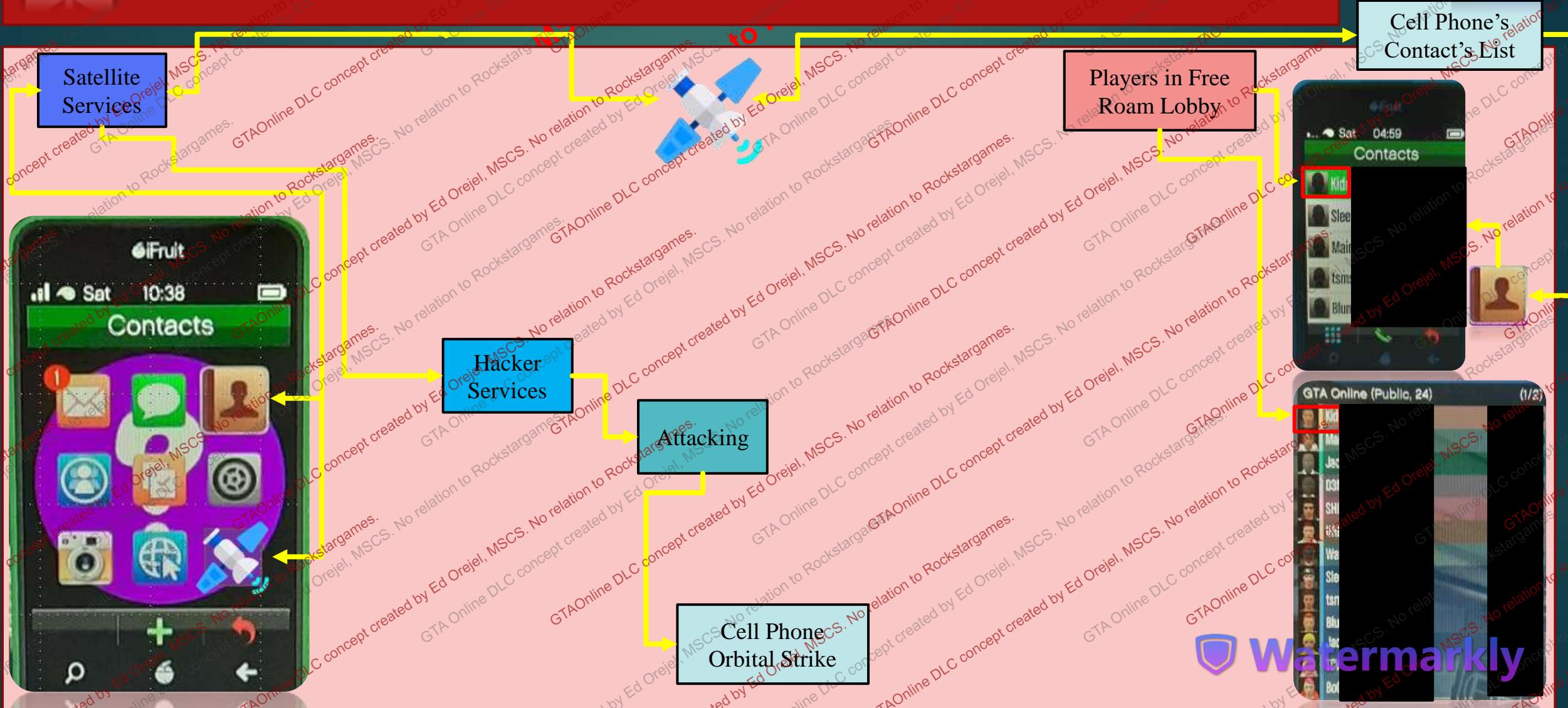


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Top-Level Conceptual Sub-Component View – Hacker Services – Cell Phone Orbital Strike

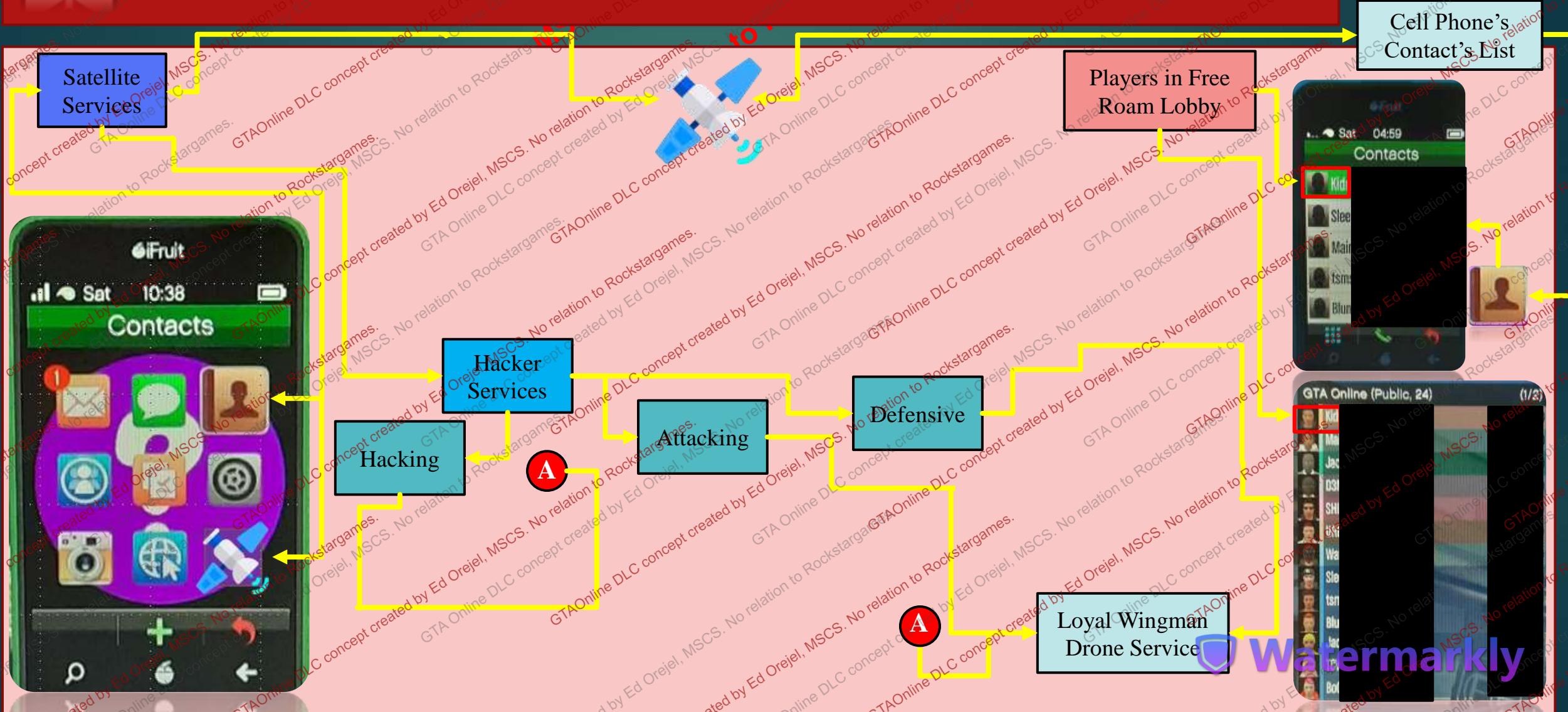
57





Top-Level Conceptual Sub-Component View – Hacker Services – Loyal Wingman Drone Service – Ruiner 2000 Jet Car

58

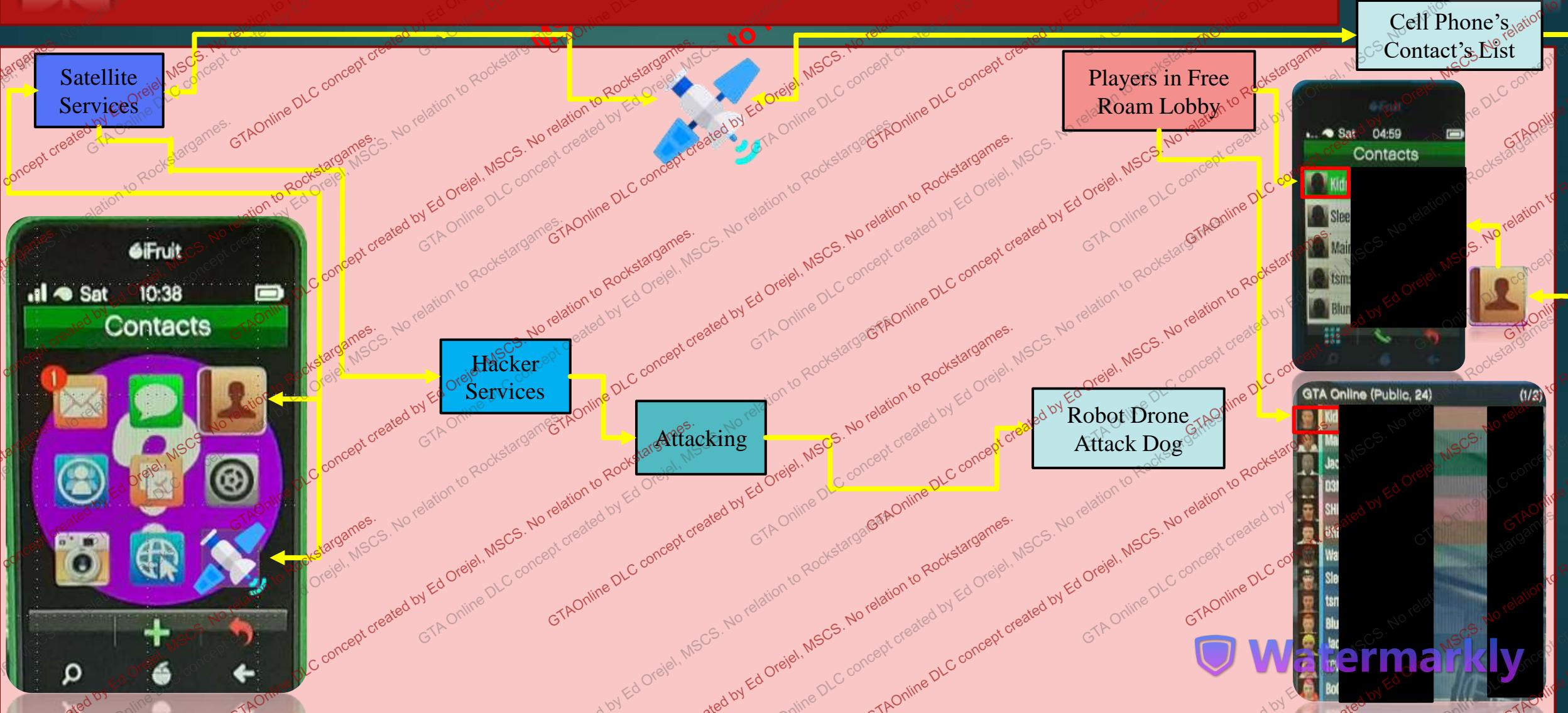


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Top-Level Conceptual Sub-Component View – Hacker Services – Robot Drone Attack Dog

59

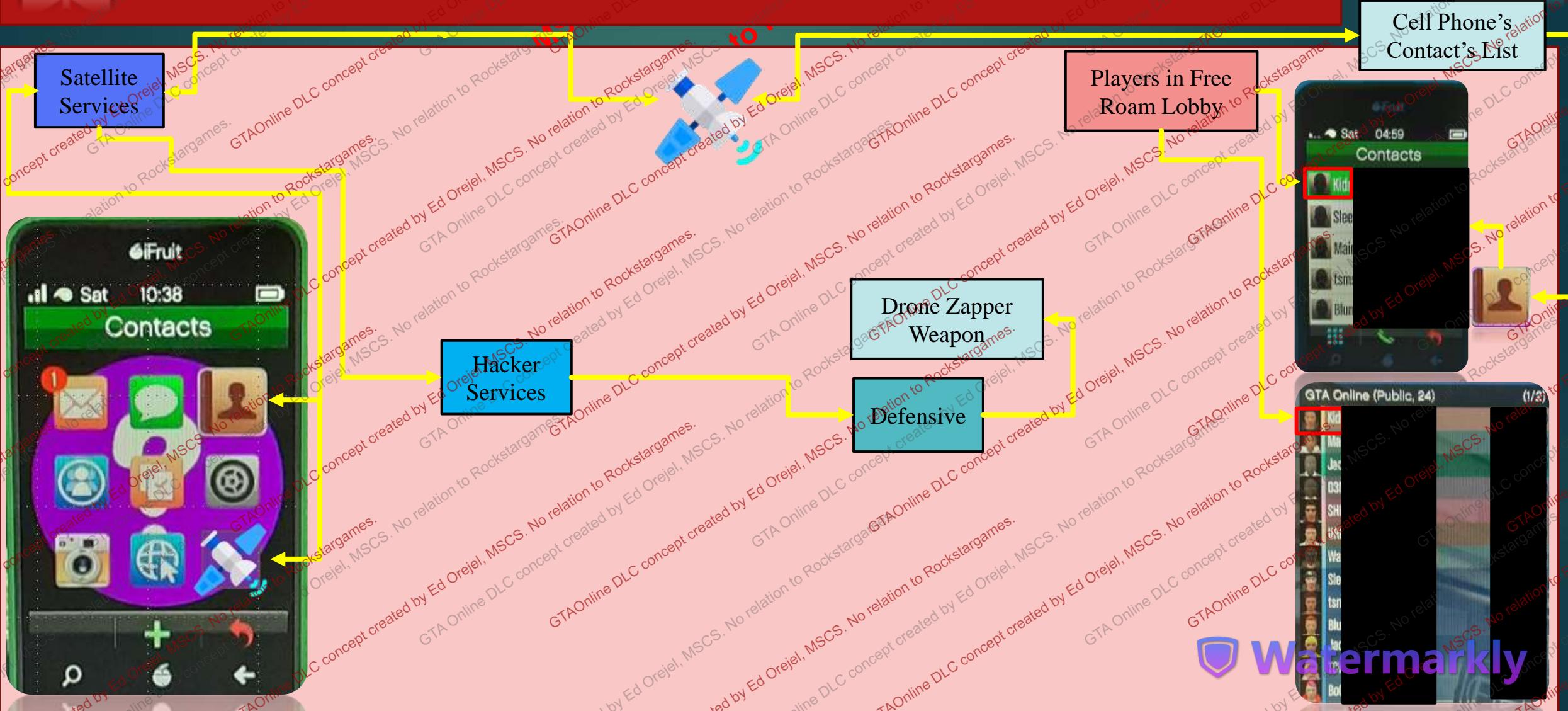


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Top-Level Conceptual Sub-Component View – Hacker Services – Drone Zapper Weapon

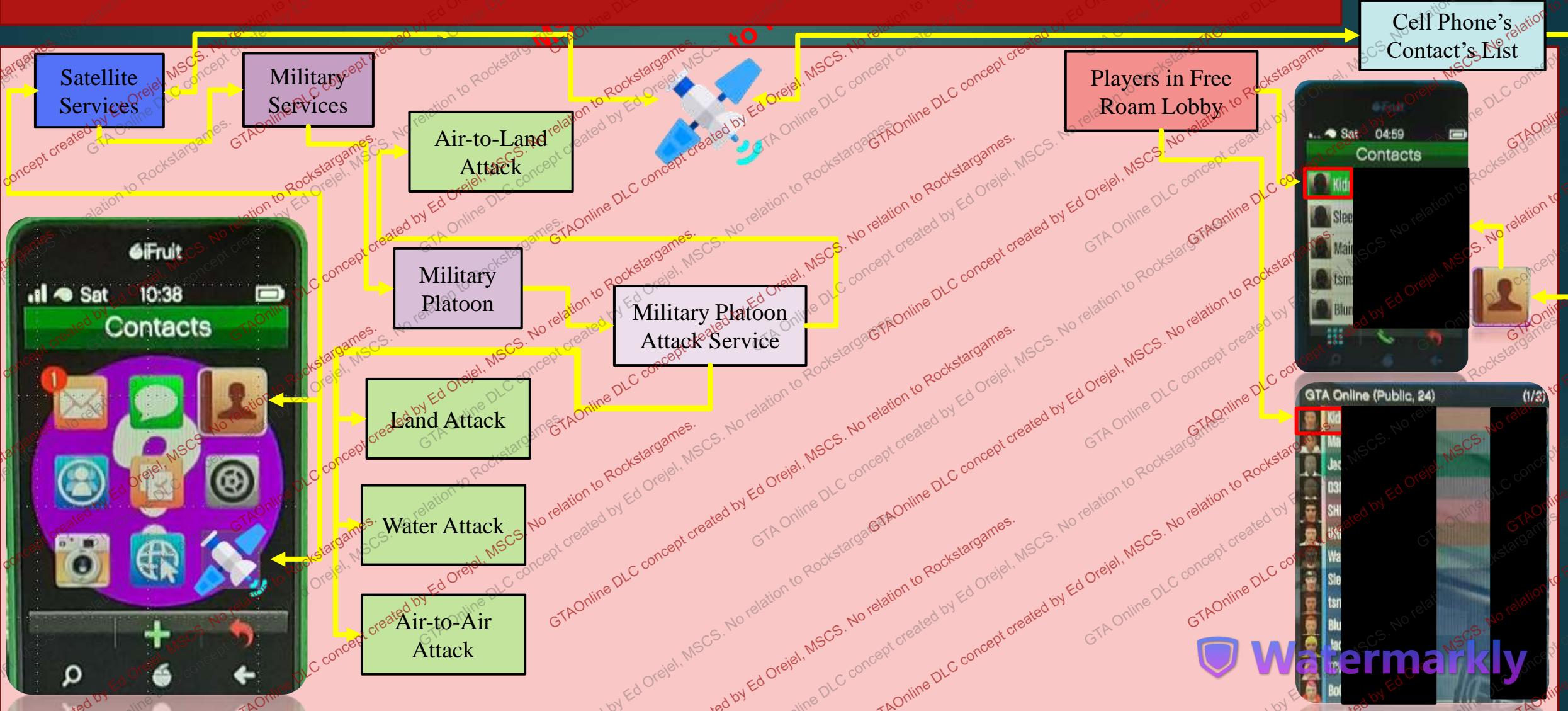
60



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Top-Level Conceptual Sub-Component View – Military Services – Military Platoon Attack Service

61

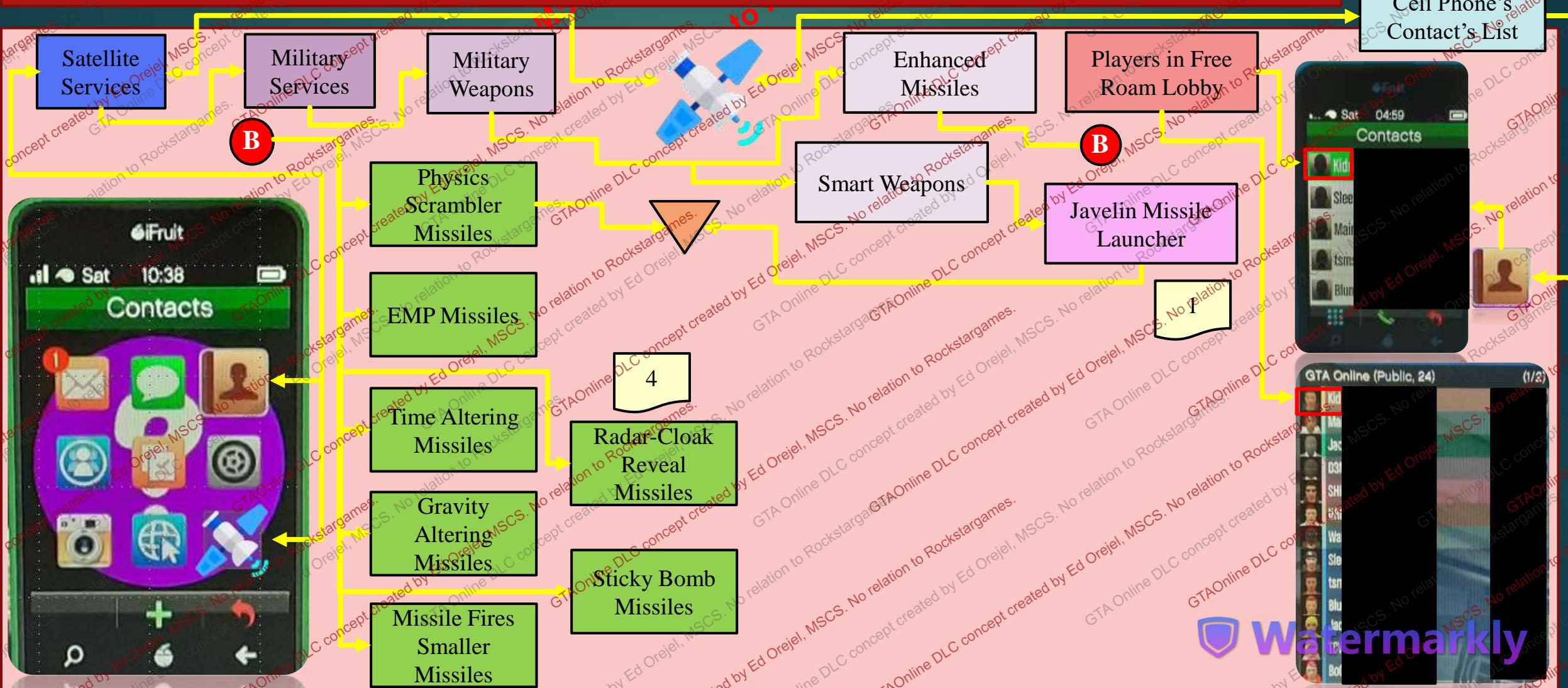


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Top-Level Conceptual Sub-Component View – Military Spy Services – Enhanced Missiles

62

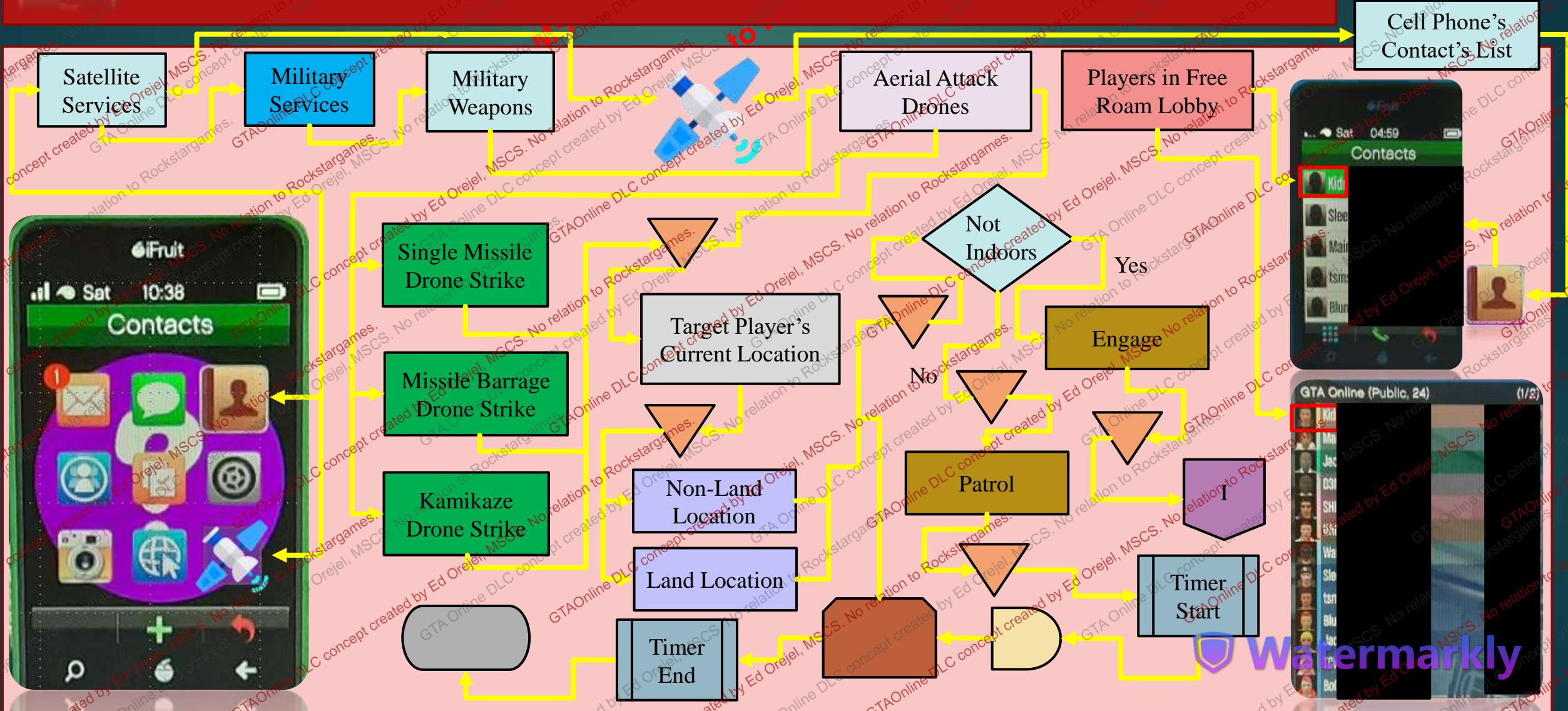


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Top-Level Conceptual Sub-Component View – Military Services – Aerial Attack Drones – Reaper or Predator Drones

63





Shadow Hacker Group – Overview of Services



Phone signal from satellite.

GTAOnline DLC concept created by Ed Orejel, MSCS. No relation to Rockstargames.

GTAOnline DLC concept created by Ed Orejel, MSCS. No relation to Rockstargames.

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Shadow Hacker Group will provide the following spy satellite services to GTA Online players in free roam only:

- Hacking Services
- Attacking Services
- Defensive Services

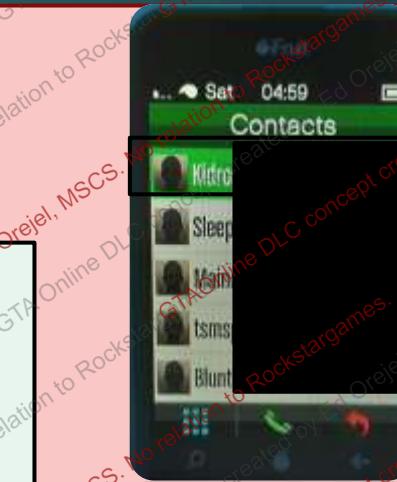
Hacking Services will consist of the following:

1. Vehicle Hacking Drone Service

1. Drone hacks and takes control of targeted player's vehicle allowing remote operation.
2. Drone can also hack other vehicles to create ghost cars, that is, cars driven without a driver, controlled by the drone operator.

2. Cell Phone Hacking Service

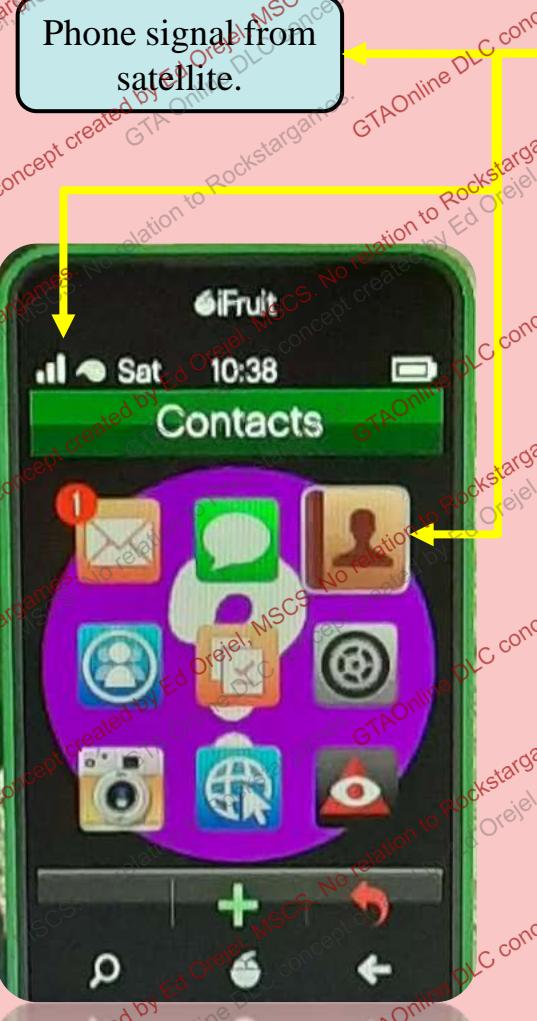
1. Reducing monetary amount from bank account.
2. Other types of cell phone hacking attempts.
3. Jamming the cell phone signal.
4. Access cell phone microphone.
5. Access cell phone camera.
6. Cell phone explode.
7. Keylogger exploit.
8. Spyware Install
9. Security Camera Hacking
10. Social Engineering
11. Email Phishing



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Shadow Hacker Group – Overview of Services Continued



Shadow Hacker Group will provide the following spy satellite services to GTA Online players in free roam only:

- Hacking Services
- Attacking Services
- Defensive Services

Attacking Services will consist of the following:

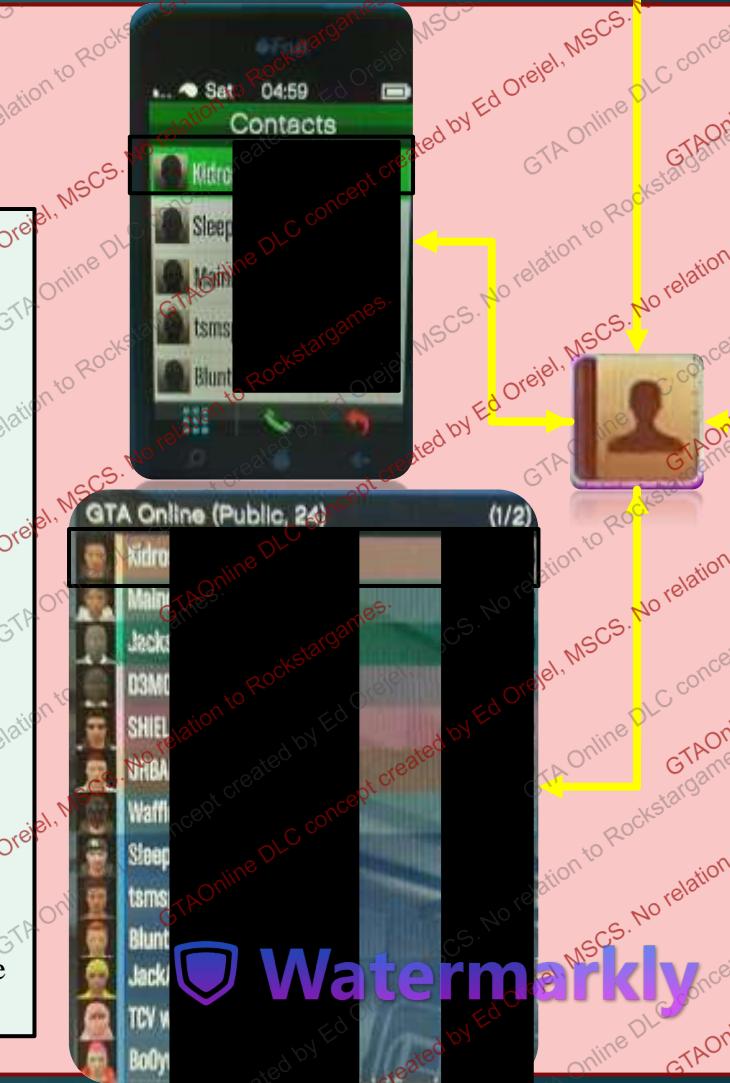
1. Attack Drone Swarm Service
2. Cell Phone Orbital Cannon Service
3. Loyal Wingman Drone / Ruiner 2000 Jet Mode Drone
4. Attack robot drone dog. Four variants:
 1. A sniper rifle equipped robot dog.
 2. A railgun equipped robot dog.
 3. An RPG equipped robot dog.
 4. A grenade launcher equipped robot dog.

Defensive Services

1. Drone zapper weapon
 1. This weapon is required to detect, disable, and destroy all in-game drones.
 2. Drones deployed before the spy satellite launched can also be destroyed by the Drone Zapper.



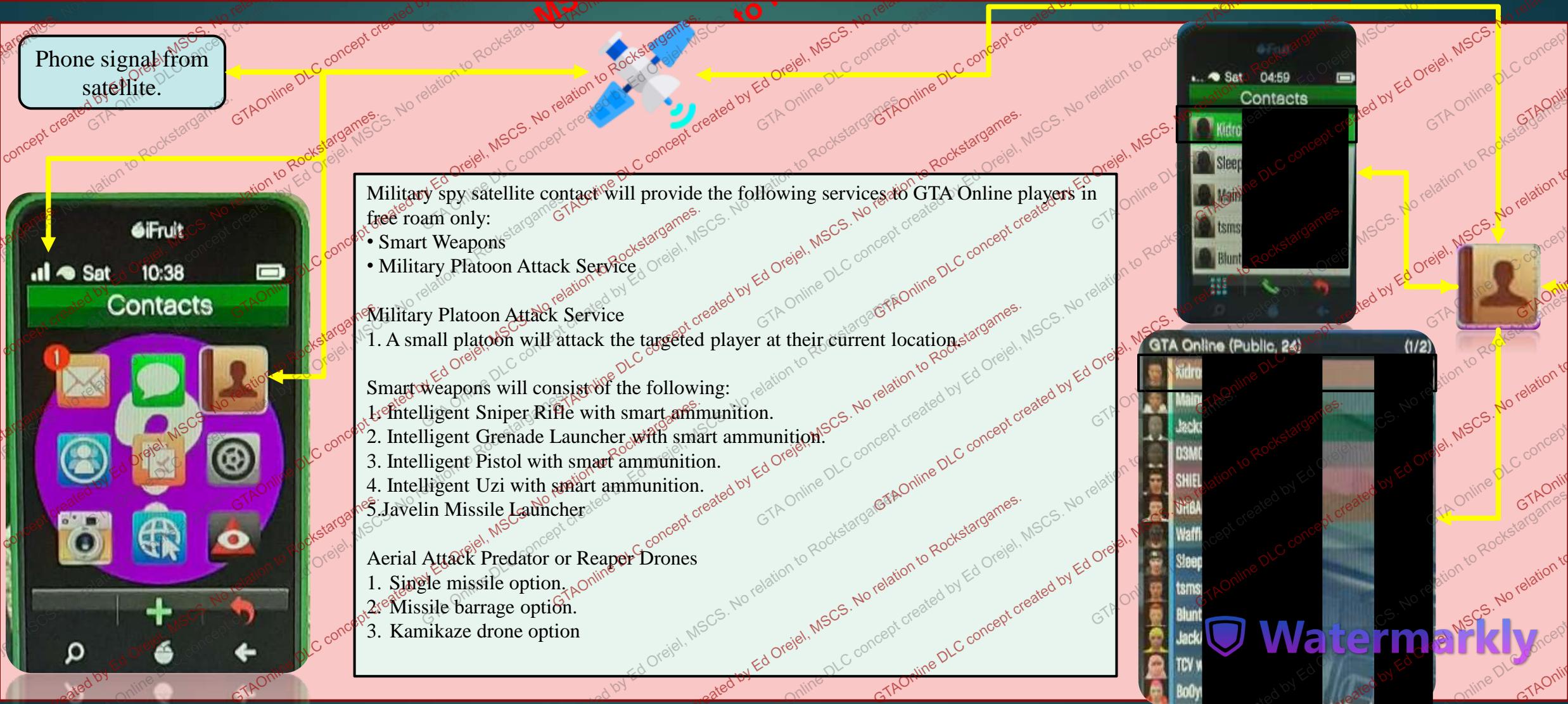
TO



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Military Spy Satellite Services – Overview of Services





Military Spy Satellite Services – Overview of Military Platoon Attack Service



MP
TO

The Military Platoon Attack Service will dispatch a small group of military NPCs to attack the player. It is similar in scope to the Merryweather Mercenaries service. The military platoon attacks will come by land, sea, and air. The service is unlocked, and available from the spy satellite.

The Military Platoon Attack Service will consist of a combination of military attack vehicles, and transport non-attack military vehicles.

All vehicles will travel to the player's current location to strategically attack the player. The military attack vehicles will use their onboard weapons to attack the player. The non-attack military transport vehicles will unload military NPCs to attack the player.

The targeted player will be attacked until their energy level is drained. To beat the platoon attack, the player must defeat all the military platoon NPCs. If this rule is not implemented, the player may just let themselves be killed by the service, and not engage against them. The player must engage!

The total NPC count that the targeted player must fight off should be a decent number of NPCs. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.



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Military Spy Satellite Services – Overview of Military Platoon Attack Service – Player Rewards - Badges

MP
TO



During the Military Platoon Attack Service, if the player decides to take the “easy way out” with a self-inflicted RPG round for example, this will not count as a method to defeat the military platoon.

The player will have to engage against the Military Platoon Attack Service, beat all of the NPCs in the service, be killed by the Military Platoon Attack Service, or leave the lobby for a new lobby, in order to defeat the Military Platoon Attack Service.

There should be a reward earned after each particular outcome that is chosen by the player to “exit out” of the fight against the Military Platoon Attack Service.

Four available outcomes are:

- Victory – award given when player beats the military platoon without losing a life.
- Courage – award given when player dies one time, but still defeats the military platoon.
- Death – award given when player loses a life against the military platoon and cannot defeat them.
- Chicken – award given when player leaves the lobby for a new lobby to avoid the fight.

With each badge that is earned, masks can be awarded to the player.



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Military Spy Satellite Services – Overview of Military Platoon Attack Service – Player Rewards - Masks

MP
TO



Victory Mask



Courage Mask



Death Mask

The mask that are awarded to the players should match the outcome, and the combat award that is given after the fight with the Military Platoon Attack Service.

I have posted these examples to help illustrate the concept:

- Victory Mask – awarded after players earn the Victory Badge.
- Courage Mask – awarded after players earn the Courage Badge.
- Death Mask – awarded after players earn the Death Badge.
- Chicken Mask – awarded after players earn the Chicken Badge.



Chicken Mask

Military Spy Satellite Services -Military Platoon Attack Service – General Configuration – Land Attack

70



Cell Phone's Contact's List



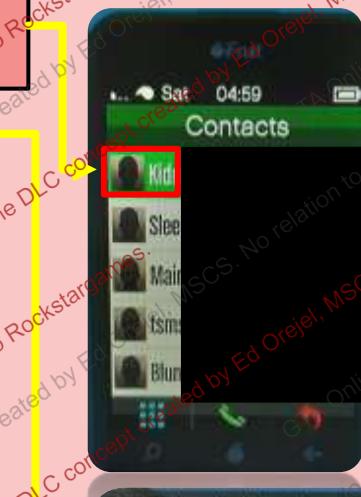
The general configuration covers all possible configurations of the Military Platoon Attack Service regardless of whether the player is targeted in land, sea, or air.

The service will be provided to the player from the spy satellite. The general structure of the service is as follows:

- 2 attack vehicles
- 2 troop transport vehicles
- A small military platoon to attack the targeted player at their current location.
- Adjustments will be made for attacking a player in motion.
- Location of the player must be outside.
- This service functions like the Merryweather Mercenaries service. The difference is the Military Platoon Attack Service will be larger and have more flexibility of where to attack.



Players in Free Roam Lobby



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Military Spy Satellite Services -Military Platoon Attack Service – Specific Configuration – Land Attack – 1st Configuration Implementation

71



Cell Phone's Contact's List



1st configuration of the Military Platoon Attack Service.

Military Platoon Attack Service – Land Attack Vehicles:

- 1 Rhino Tank
- 1 Insurgent Truck
- 1 Barracks
- 1 Military Jeep



TO

Players in Free Roam Lobby



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Military Spy Satellite Services - Military Platoon Attack Service – Land Attack – 1st Configuration Implementation



Vehicle Type: Barracks - Total NPCs in vehicle: 6 to 8

Source: https://gta.fandom.com/wiki/Barracks_OI



Vehicle Type: Canis Crusader - Total NPCs: 4.

Source: <https://gta.fandom.com/wiki/Crusader>



Vehicle Type: Insurgent Pick-up - Total NPCs in vehicle: 2

Source: https://gta.fandom.com/wiki/Insurgent_Pick-Up



Vehicle Type: Rhino Tank – Total NPCs in vehicle: 2

Source: <https://gta.fandom.com/wiki/Rhino>



Entity Type: Military NPC

The total NPC count that the targeted player must fight off should be a decent number of NPCs, if memory resources, and logic keep it realistic. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.

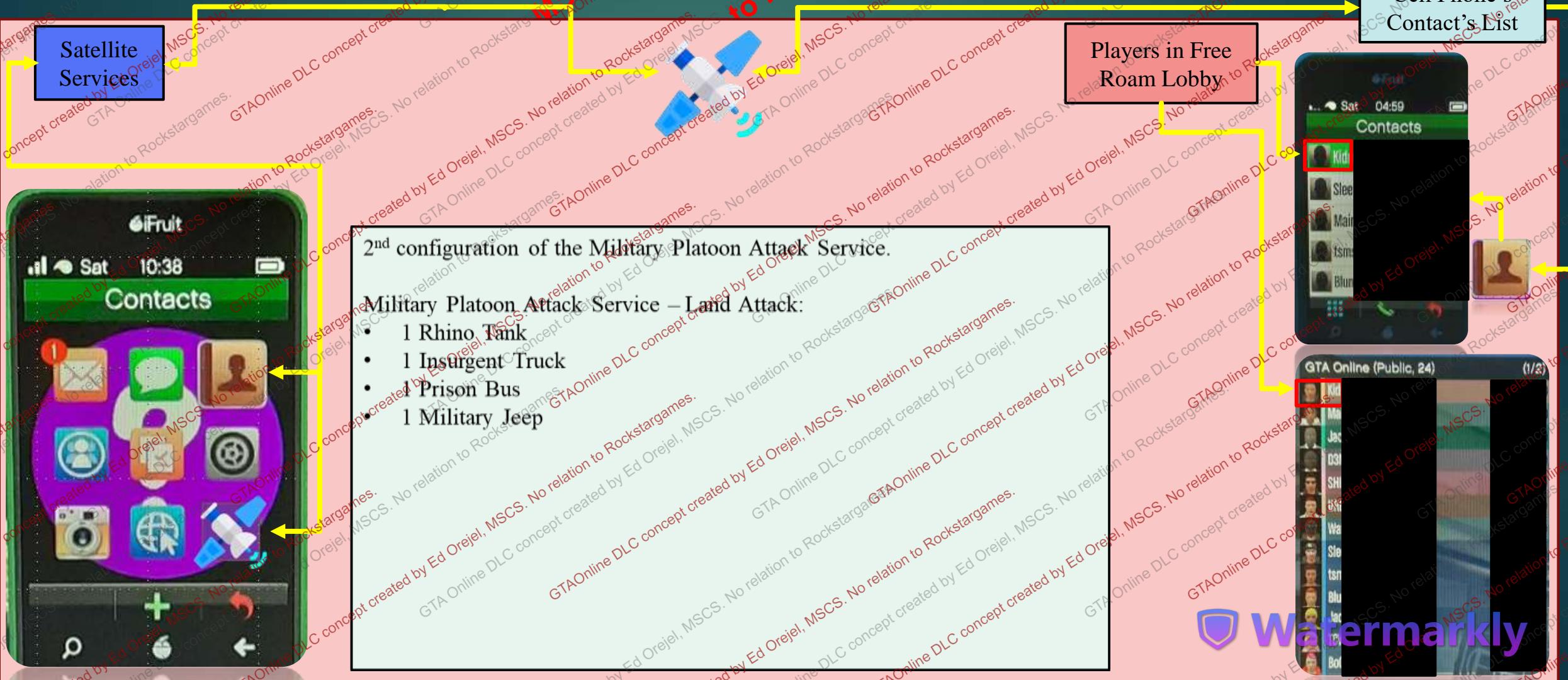


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73

Military Spy Satellite Services – Military Platoon Attack Service – Land Attack -- 2nd Configuration Implementation





Military Spy Satellite Services - Military Platoon Attack Service – Land Attack -- 2nd Configuration Implementation

MP
TO



Vehicle Type: Prison Bus - Total NPCs in vehicle: 6 to 8, but could be a full bus of military NPCs
Source: https://gta.fandom.com/wiki/Barracks_OI



Vehicle Type: Canis Crusader - Total NPCs: 4.
Source: <https://gta.fandom.com/wiki/Crusader>



Vehicle Type: Insurgent Pick-up - Total NPCs in vehicle: 2
Source: https://gta.fandom.com/wiki/Insurgent_Pick-Up



Vehicle Type: Rhino Tank – Total NPCs in vehicle: 2
Source: <https://gta.fandom.com/wiki/Rhino>



Entity Type: Military NPC

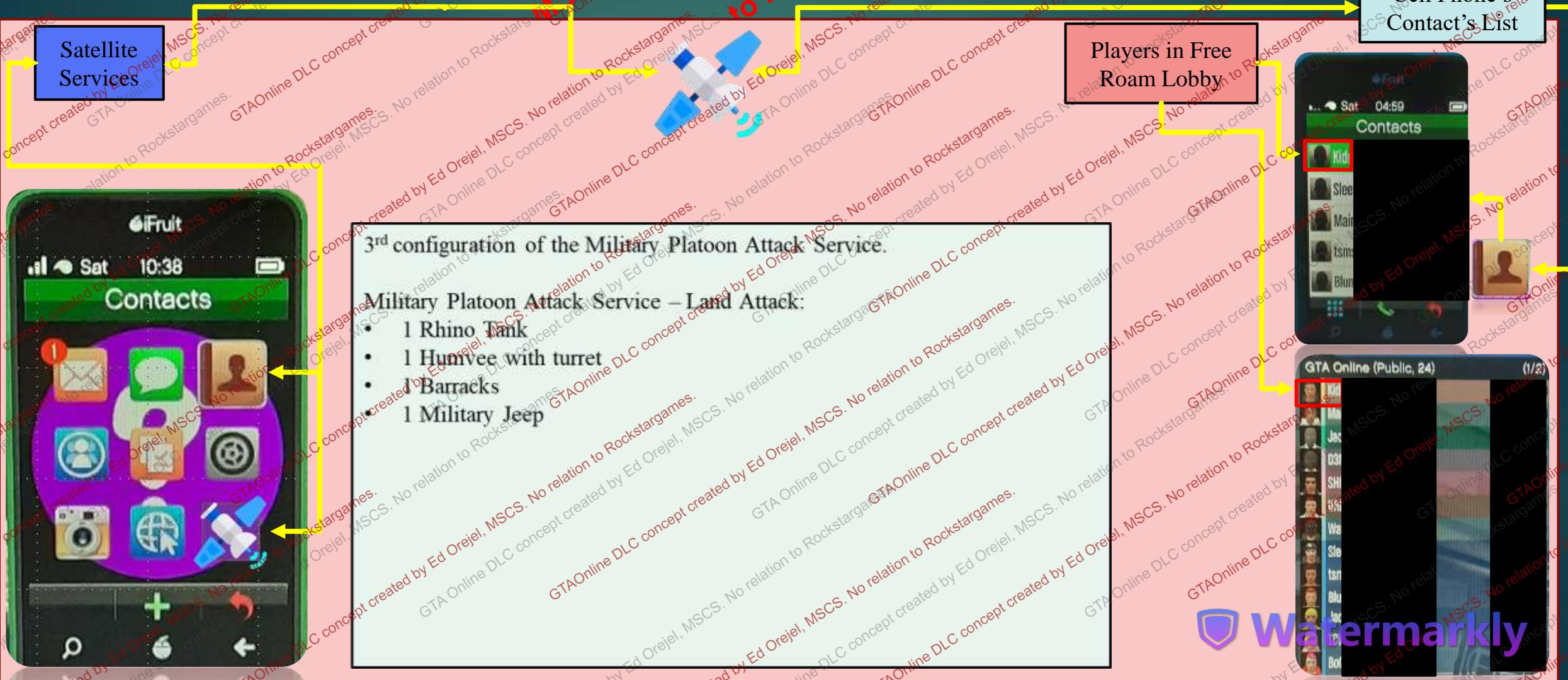
The total NPC count that the targeted player must fight off should be a decent number of NPCs, if memory resources, and logic keep it realistic. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.

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Military Spy Satellite Services – Military Platoon Attack Service – Land Attack – 3rd Configuration Implementation





Military Spy Satellite Services - Military Platoon Attack Service – Land Attack – 3rd Configuration Implementation

MP
TO



Vehicle Type: Barracks - Total NPCs in vehicle: 6 to 8.

Source: https://gta.fandom.com/wiki/Barracks_OI



Vehicle Type: Canis Crusader - Total NPCs: 4.

Source: <https://gta.fandom.com/wiki/Crusader>



Vehicle Type: Humvee with turret - Total NPCs in vehicle: 2

Source: https://gta.fandom.com/wiki/Insurgent_Pick-Up



Vehicle Type: Rhino Tank – Total NPCs in vehicle: 2

Source: <https://gta.fandom.com/wiki/Rhino>



Entity Type: Military NPC

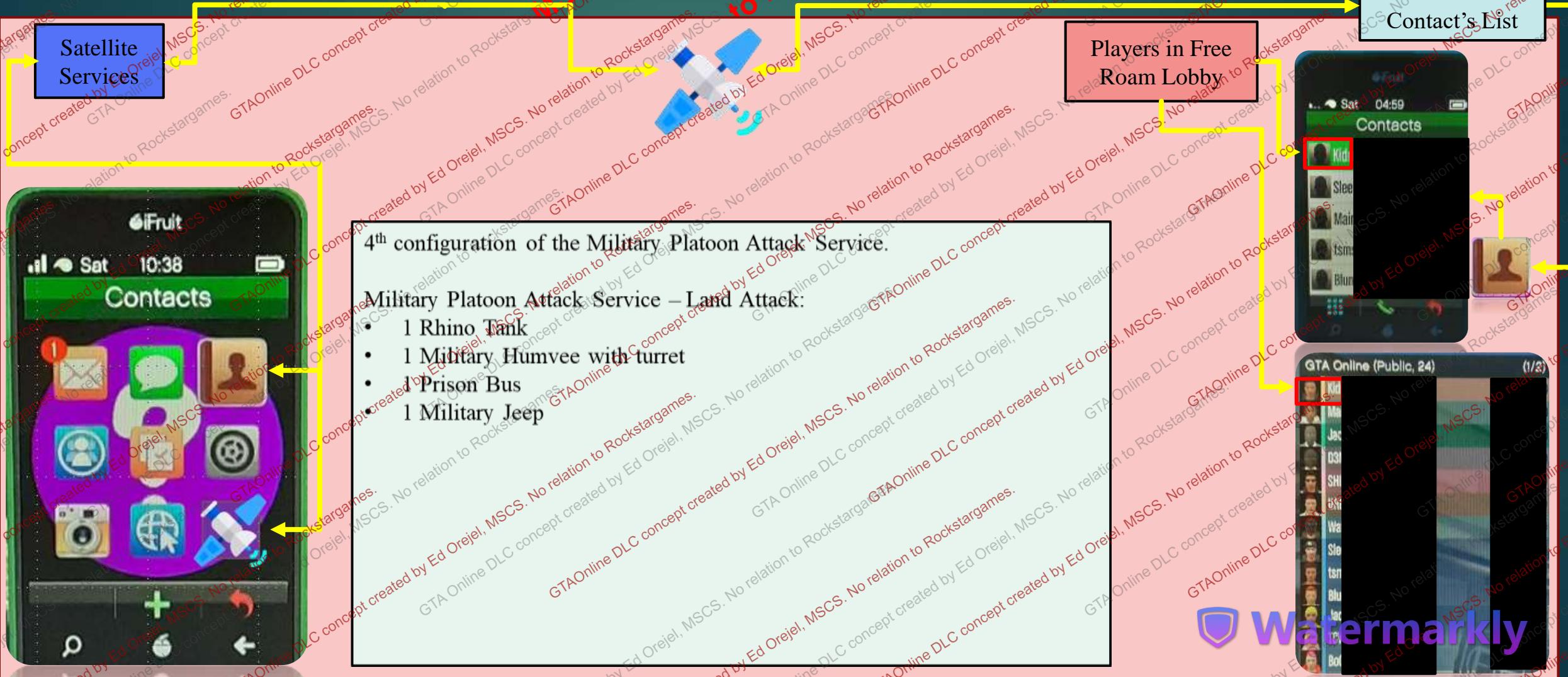
The total NPC count that the targeted player must fight off should be a decent number of NPCs, if memory resources, and logic keep it realistic. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.

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Military Spy Satellite Services – Military Platoon Attack Service – Land Attack – 3rd Configuration Implementation





Military Spy Satellite Services - Military Platoon Attack Service – Land Attack – 4th Configuration Implementation



Vehicle Type: Prison Bus - Total NPCs in vehicle: 6 to 8 but could be a full bus of military NPCs.
Source: https://gta.fandom.com/wiki/Barracks_OI



Vehicle Type: Canis Crusader - Total NPCs: 4.
Source: <https://gta.fandom.com/wiki/Crusader>



Vehicle Type: Humvee with turret - Total NPCs in vehicle: 2.
Source: https://gta.fandom.com/wiki/Insurgent_Pick-Up



Vehicle Type: Rhino Tank – Total NPCs in vehicle: 2.
Source: <https://gta.fandom.com/wiki/Rhino>



Entity Type: Military NPC
Entity Purpose: The total NPC count that the targeted player must fight off should be a decent number of NPCs, if memory resources, and logic keep it realistic. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.

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Military Spy Satellite Services - Military Platoon Attack Service – Land Transport Vehicles

79



Vehicle Type: Prison bus - a military version of the prison bus is also suitable. It will carry 4 or 6 military NPCs to the player's location. The military NPCs will exit the vehicle to strategically attack the player. The NPCs can also attack the target player from the inside of the vehicle.

Total NPCs in vehicle: 6 to 8, or a full bus of military NPCs.

Source: https://gta.fandom.com/wiki/Prison_Bus



Vehicle Type: Barracks - this vehicle will function like the bus. It will transport military NPCs to the player's location. The military NPCs will exit the vehicle, then strategically attack the player.

Total NPCs in vehicle: 6 to 8.

Source: https://gta.fandom.com/wiki/Barracks_OL



Vehicle Type: Canis Crusader - Total NPCs: 4.

Source: <https://gta.fandom.com/wiki/Crusader>



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Military Services - Military Platoon Attack Service – Land Attack Vehicles

80



Vehicle Type: Insurgent Pick-up - this vehicle will carry two military NPCs. A driver and a gunner will both drive to the player's current location. The gunner will operate the turret and try to eliminate the targeted player. The military NPC driver will exit the vehicle and attack the player strategically using a weapon. The target player will be pursued by the Insurgent Pick-up until the player is terminated. Other behaviors may be programmed into the NPCs, as needed. This vehicle could be chosen.

Source: https://gta.fandom.com/wiki/Insurgent_Pick-Up



Vehicle Type: Rhino Tank – this vehicle will travel to the player's current location, and strategically attack the player. The military NPC driver of the Rhino Tank may exit the vehicle to attack the player, when the Rhino Tank becomes immobilized by the player's fire but has not yet exploded. The target player will be pursued until the target player is terminated. Other behaviors may be programmed into the NPCs, as needed. This vehicle is required.

Source: <https://gta.fandom.com/wiki/Rhino>



Vehicle Type: Humvee with turret- this vehicle will carry a driver and a gunner for the turret. It will function like the previously listed attack vehicles. This vehicle could be chosen. It should be included in GTA Online.

Source: generic military weaponized Humvee.



Military Services - Military Platoon Attack Service – Alternative Land Transport Vehicles



Vehicle Type: Pontiac Firebird Monster Truck Shark 1968 - I like this vehicle from GTA San Andreas. It should be included in GTA Online and be made part of the Military Platoon Attack Service, so that it is driven by the military NPCs to the player's location to attack the player.

Source: <https://www.gtaall.com/gta-san-andreas/cars/111580-pontiac-firebird-monster-truck-shark-1968.html>



Vehicle Type: 2008 GMC Yukon Monster Truck Camo – I like this vehicle for the same reasoning shown above. Military NPCs will exit the vehicle to attack the player.

Source: <https://gamemodding.com/en/gta-san-andreas/cars/82068-2008-gmc-yukon-monster-truck-camo.html>

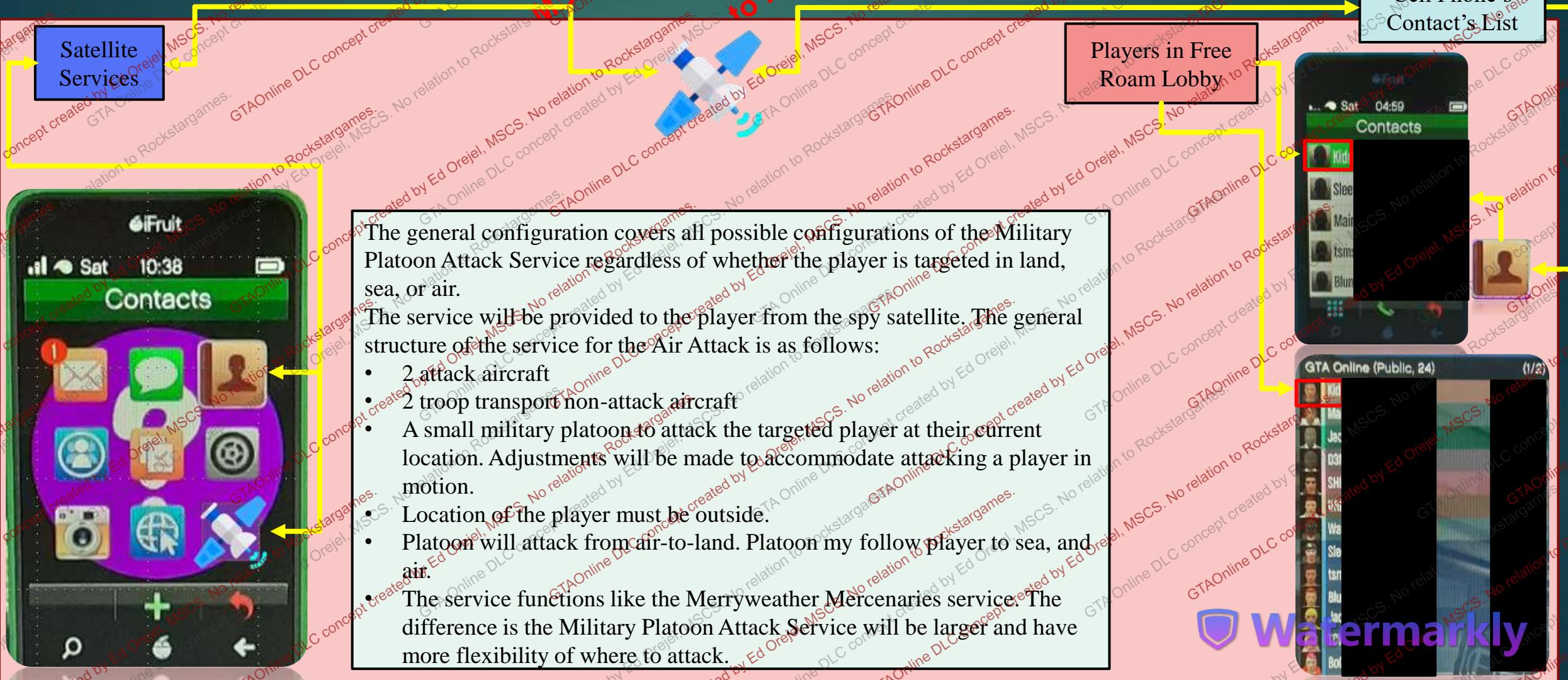


Vehicle Type: Marshall Monster Truck – This vehicle is already in GTA Online, but it can also be used by the military NPCs that will exit the vehicle to attack the player.

Source: <https://gta.fandom.com/wiki/Marshall>



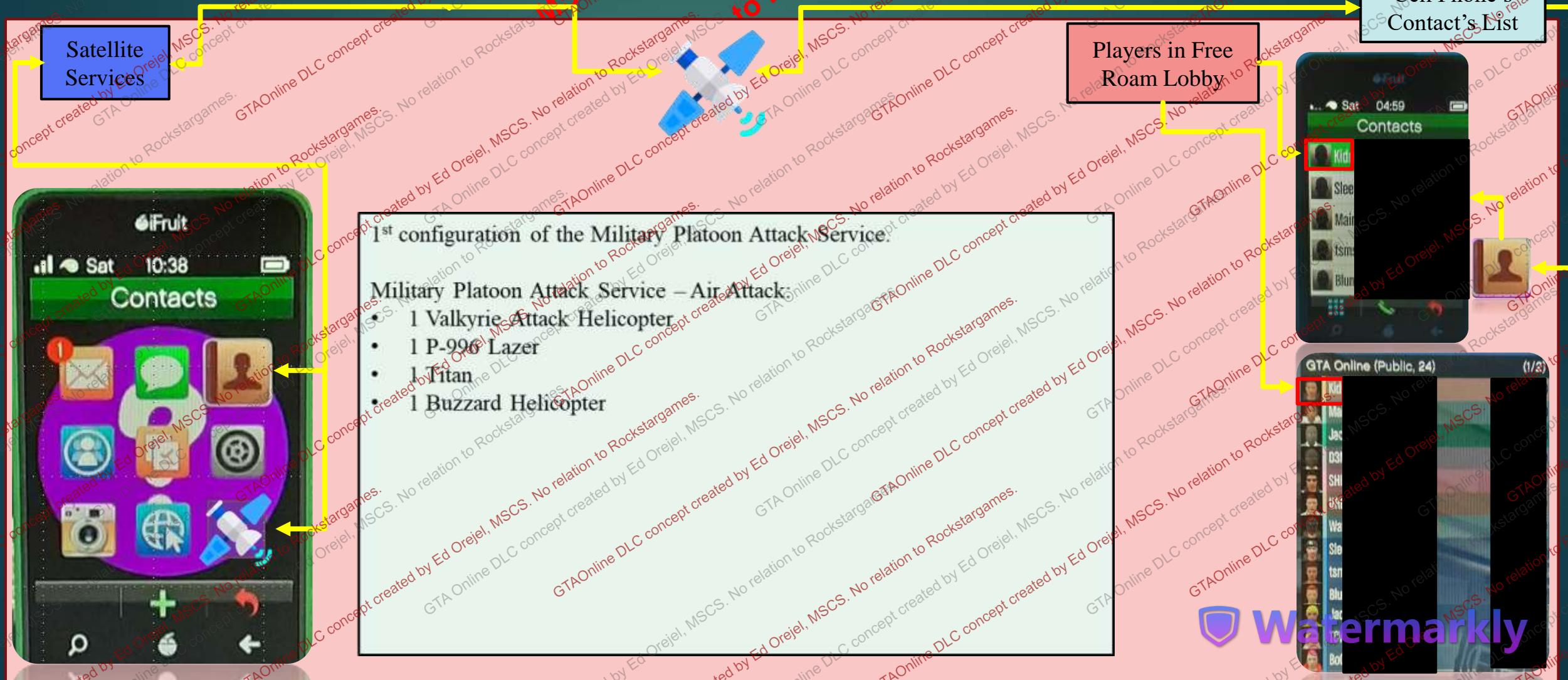
Military Services - Military Platoon Attack Service – General Configuration – Air-to-Land Attack



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Military Services - Military Platoon Attack Service – General Configuration – Air-to-Land Attack – 1st Configuration





Military Services - Military Platoon Attack Service – General Configuration – Air-to-Land Attack – 1st Configuration Implementation



Vehicle Name: Titan

Vehicle Type: Non-Attack Aircraft

Vehicle Purpose: NPCs in aircraft: 6 to 8. NPCs will parachute to player's location to attack.

Vehicle Source: <https://gta.fandom.com/wiki/Titan>



Vehicle Name: Valkyrie

Vehicle Type: Attack Aircraft

Vehicle Purpose: NPCs in aircraft will attack the player using the side-mounted machine gun.

Vehicle Source: <https://gta.fandom.com/wiki/Valkyrie>



Vehicle Name: P-996 Lazer

Vehicle Type: Attack Aircraft

Vehicle Purpose: NPC in aircraft will attack the player using missiles or the jet's machine gun.

Vehicle Source: https://gta.fandom.com/wiki/P-996_LAZER



Vehicle Name: Buzzard Helicopter

Vehicle Type: Non-Attack Aircraft

Vehicle Purpose: Travel to player's location. NPCs in the aircraft will rappel down to the player to attack.

Vehicle Source: https://gta.fandom.com/wiki/Buzzard_Attack_Chopper

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Military Services - Military Platoon Attack Service – General Configuration – Air-to-Land Attack – 1st Configuration Implementation

85



Entity Type: Military NPCs

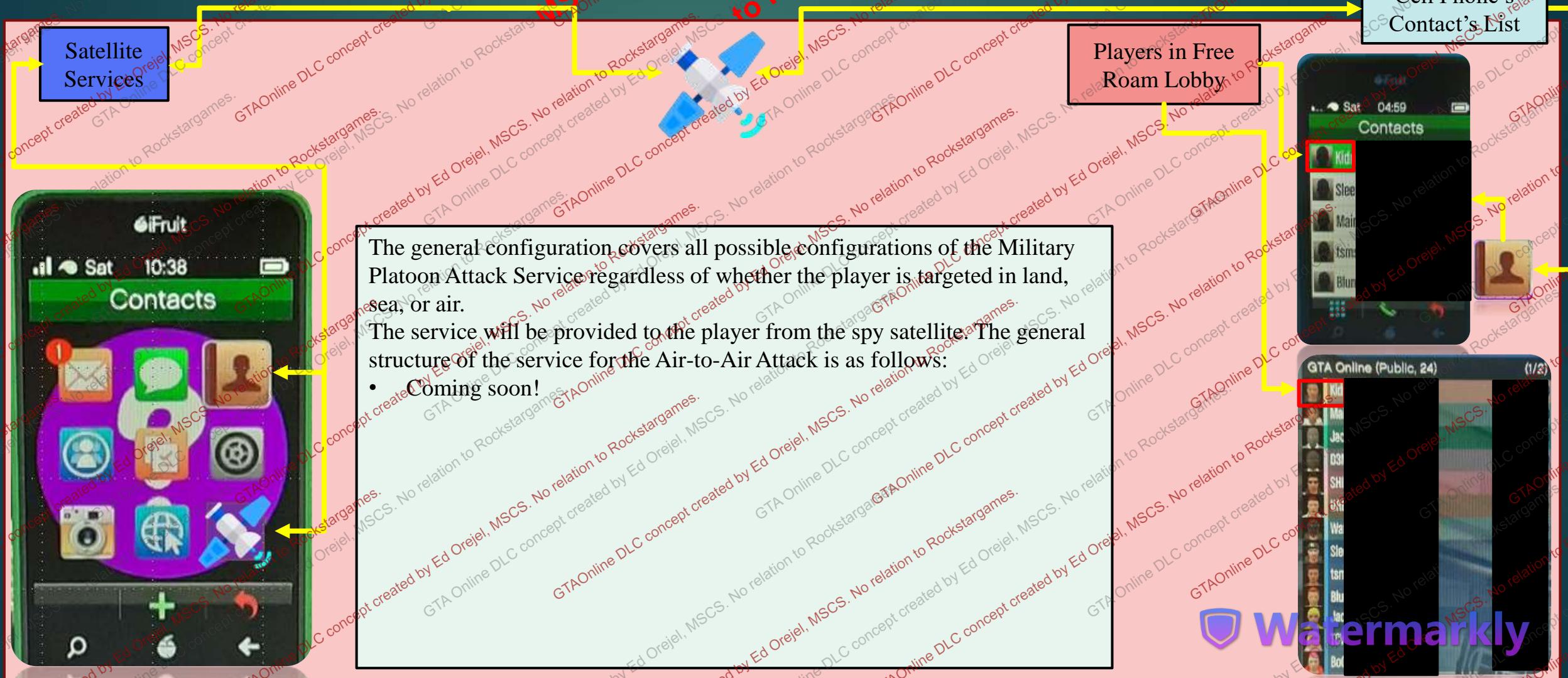
Entity Purpose: NPCs will attack the player until all NPCs are destroyed. Player must destroy all of them or leave the current lobby to exit out or escape from the Military Platoon Attack Service.

Entity Type: Parachuting Military NPCs

Entity Purpose: NPCs will parachute down to player location to attack the player until all NPCs are destroyed. Player must destroy all NPCs or leave the current lobby to exit out or escape from the Military Platoon Attack Service.



Military Services - Military Platoon Attack Service – General Configuration – Air-to-Air Attack

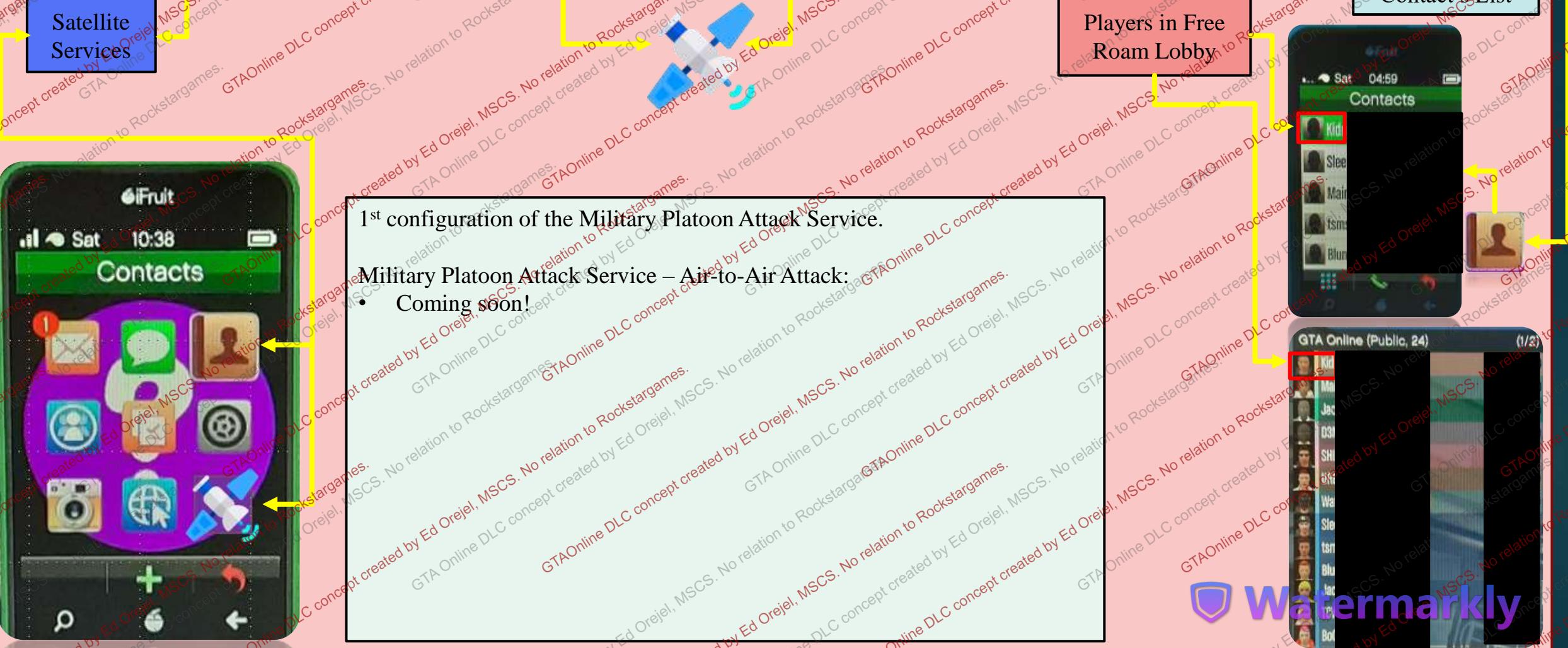


Military Services - Military Platoon Attack Service – General Configuration – Air-to-Air Attack – 1st Configuration

87



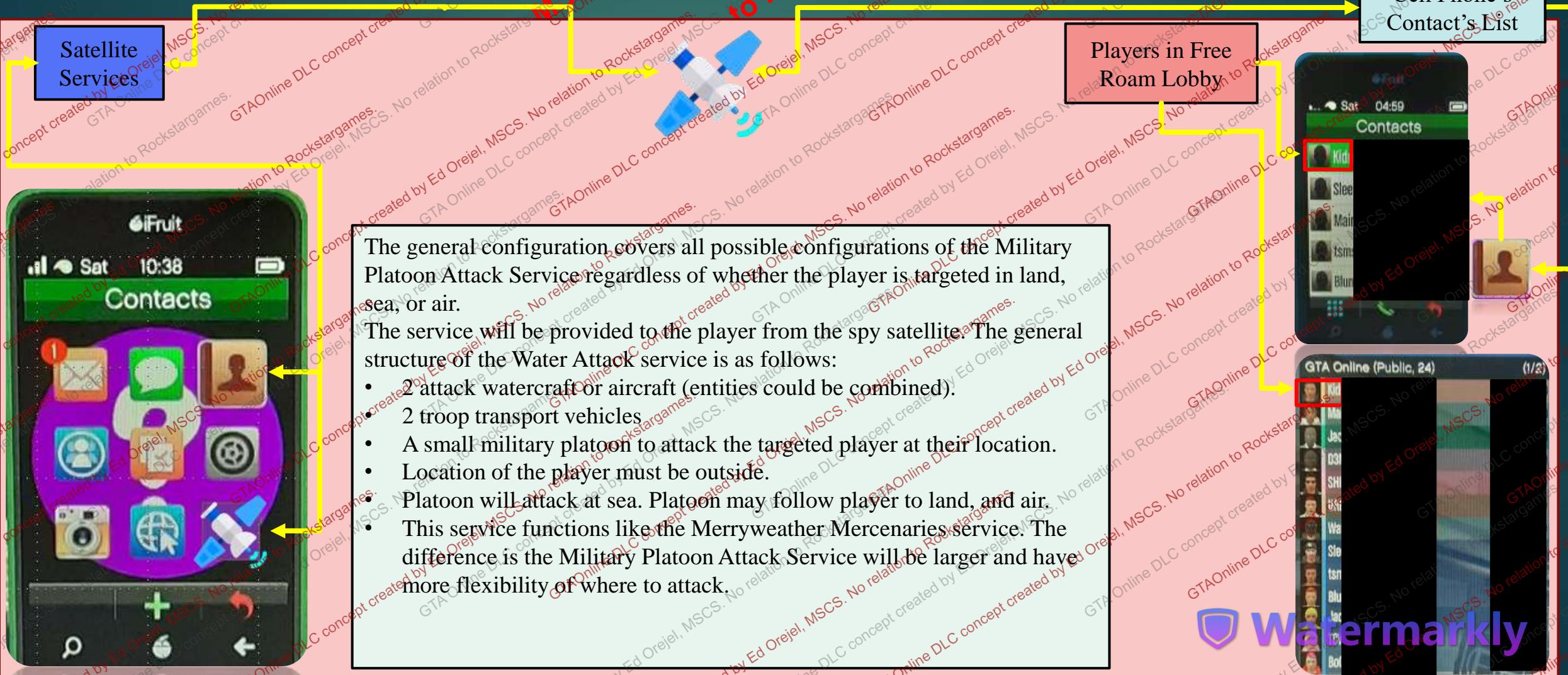
Cell Phone's Contact's List



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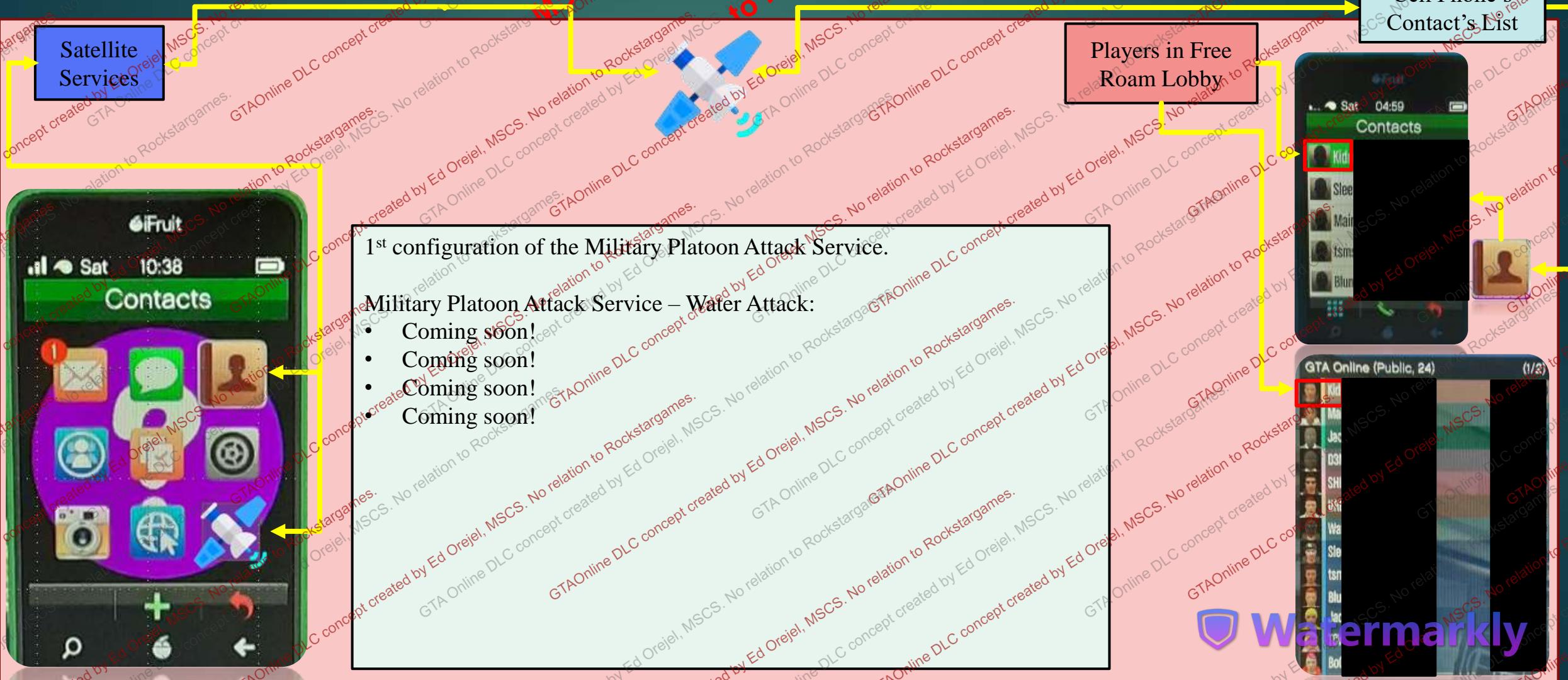


Military Services -Military Platoon Attack Service – General Configuration – Water Attack





Military Services -Military Platoon Attack Service – General Configuration – Water Attack – 1st Configuration



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Military Services - Military Platoon Attack Service – Water Attack – 1st Configuration Implementation

MP TO

Vehicle Type: Coming soon!
Source:



Entity Type: Military NPC

The total NPC count that the targeted player must fight off should be a decent number of NPCs, if memory resources, and logic keep it realistic. Using the Military Platoon Attack Service, a small platoon of 10 to 15 military NPCs should attack the player.



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Military Services – Smart Weapons – Smart Uzis Overview



Smart Uzi – featuring remote control ammunition, and ability to stop other smart bullets in midair (stopping a bullet with another bullet just like in the movies)! More information coming soon!





Military Services – Smart Weapons – Smart Pistols Overview



Smart Pistol – featuring remote control ammunition, and ability to stop other smart bullets in midair (stopping a bullet with another bullet just like in the movies)! More information coming soon!

Military Services – Smart Weapons – Smart Grenade Launcher Overview

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Smart Grenade Launcher – featuring remote controlled ammunition, and ability to stop other smart bullets in midair (stopping a bullet with another bullet just like in the movies)! More information coming soon!



94

Military Services – Smart Weapons – Smart Sniper Rifle Overview



Smart Sniper Rifle - featuring remote controlled ammunition, and ability to stop other smart bullets in midair (stopping a bullet with another bullet just like in the movies)! More information coming soon!



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Military Services – Smart Weapons – Aerial Attack Drones Overview

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Aerial Attack Drone - Coming soon!



Aerial Attack Drone - Coming soon!



Aerial Attack Drone - Coming soon!

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Shadow Hacker Group – Attack Services – Loyal Wingman Drone – Ruiner 2000 Jet Mode Variant

96



Ruiner 2000 Jet Car – The spy satellite will have a live-feed into a Ruiner 2000 Jet Car variant. The current Ruiner 2000 is the base model of the vehicle. The Jet Mode model will be a jet car that will transform from regular car, to a jet car. The Ruiner 2000 Jet Car will have other benefits, I will list those later.



Super Pursuit Mode from TV Knight Rider – The inspiration for a Jet Mode variant of the Ruiner 2000 comes from the Knight Rider TV show. K.I.T.T. has a Super Pursuit Mode enabled. Instead of using that exact mode, I chose to change it to a Jet Mode. GTA Online can finally have an actual jet car in the game. The Jet Mode variant will also have the ability of being a Loyal Wingman Drone using built-in AI software.



Hydra VTOL Aircraft – The Ruiner 2000 Jet Mode variant will have flying and hovering ability that will be equivalent to, if not greater than the Hydra VTOL aircraft.



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Shadow Hacker Group – Attack Services – Ruiner 2000 Jet Mode Vehicle – Sample Storage

97



Ruiner 2000 Jet Car – The Jet Mode variant of the Ruiner 2000 can be used in a robust way, to engage with other GTA Online services, for maximum player benefit. The Ruiner 2000 Jet Mode variant is not enabled for purchase, if the player does not have the original Ruiner 2000 base model unlocked. In progress.



Mammoth Avenger – The Mammoth Avenger will be used to upgrade the Ruiner 2000 base model to the Jet Mode variant. It is stored in a Facility. I assume the Ruiner 2000 Jet Mode variant will also be stored in a Facility. The Ruiner 2000 Jet Mode variant will be upgraded with performance features inside the Mammoth Avenger. These features will be related to the flight ability while engaged in Jet Mode and vehicle mode.



Aircraft Hangars – The AI-software to enable the Loyal Wingman Service will be installed at an aircraft hangar. Only this service is installed here. To access the AI-software for the Ruiner 2000 Jet Mode installation, a player must bring the Avenger into the hangar to install it. The AI-software for the Loyal Wingman Drone service is not installed any other way nor in any other location. I will include more information later.



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Shadow Hacker Group – Attack Services – Loyal Wingman Drone Concept – Infographic

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Boeing teams with Australia on fighter drone

Boeing is partnering with Australia's military to develop a stealthy combat drone capable of flying as a "loyal wingman" alongside manned aircraft, offering fighter jet-like performance at a much lower cost

BOEING AIRPOWER TEAMING SYSTEM
Due to make first flight in 2020

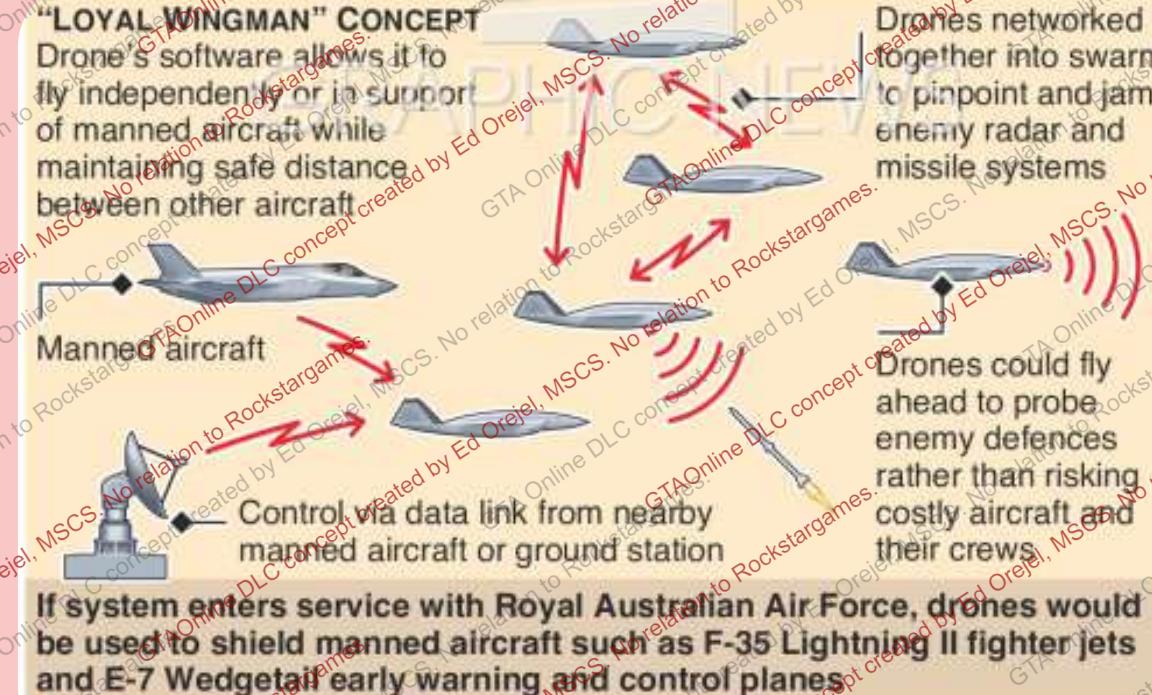
Tail: Outward-canted twin fins

Length: 11.7m

Powerplant: Light commercial jet engine, likely recessed to reduce infrared signature

Fuselage: Possible stealth shaping

Payload bay: Sensors provide intelligence-gathering and electronic warfare capabilities. Could also accommodate weapons



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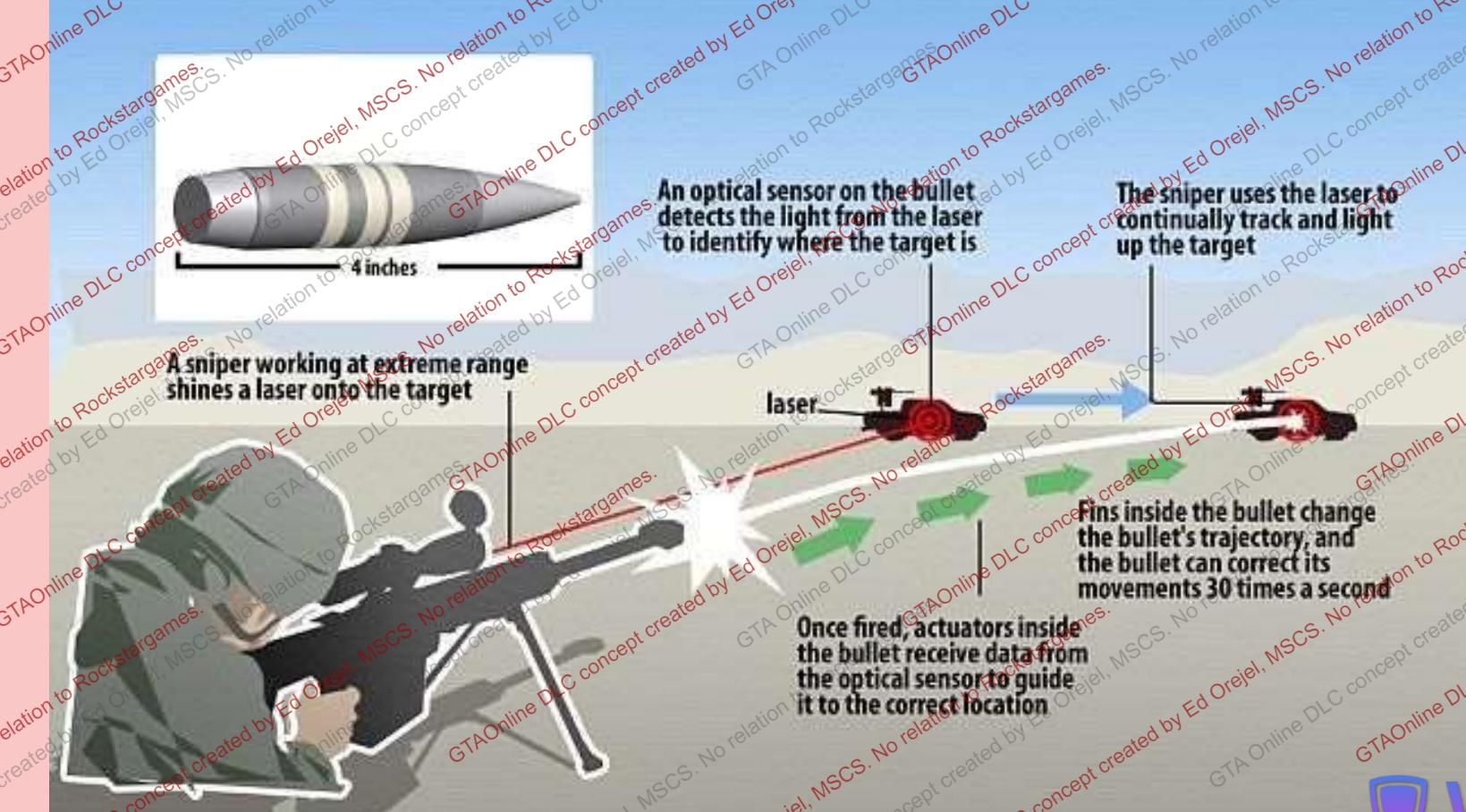


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Military Spy Satellite Services – Smart Ammunition – Smart Bullets – Infographic

99

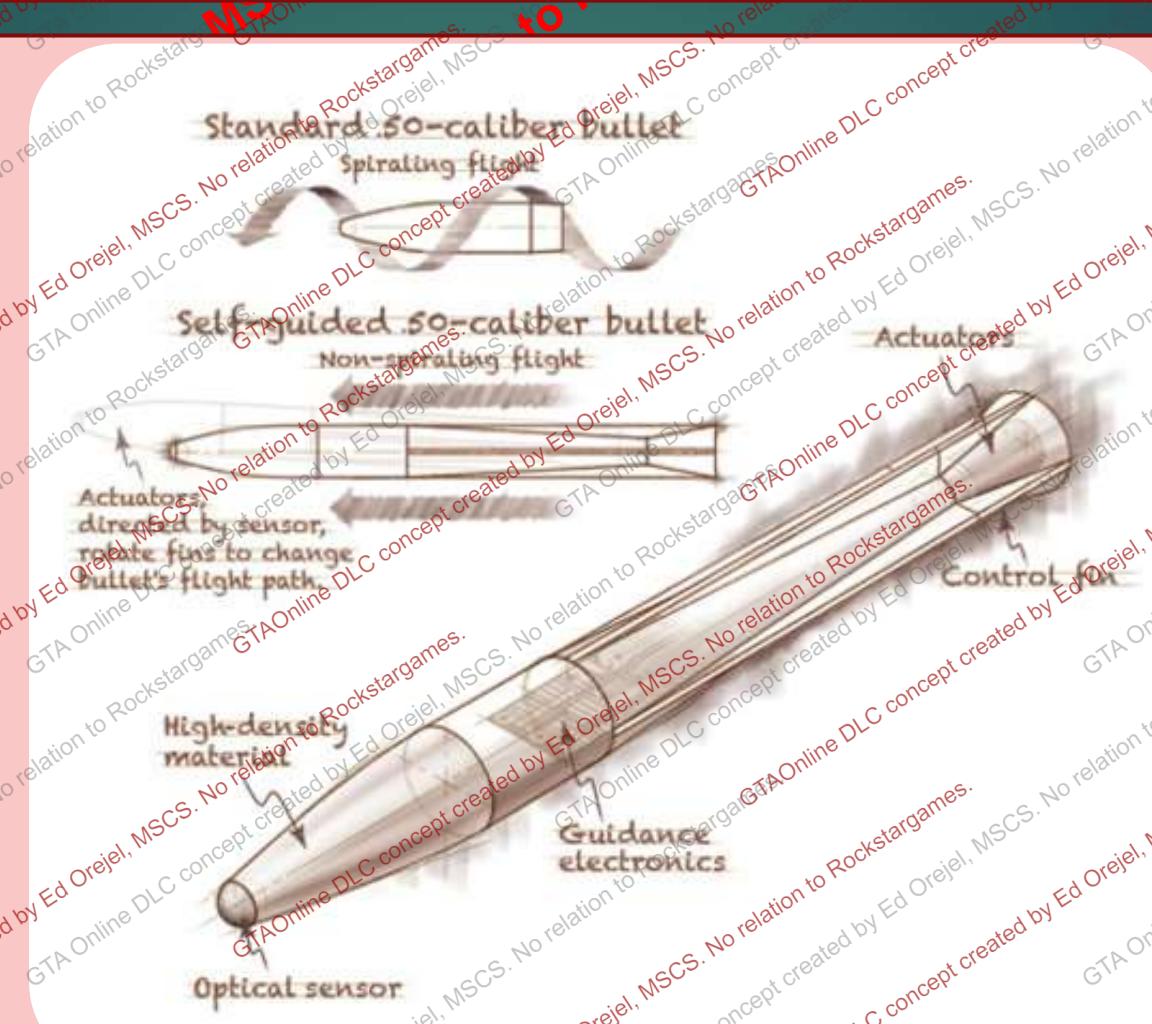


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Military Spy Satellite Services – Smart Ammunition – Smart Bullets – Infographic

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Military Spy Satellite Services – Smart Ammunition – Smart Bullets – Infographic

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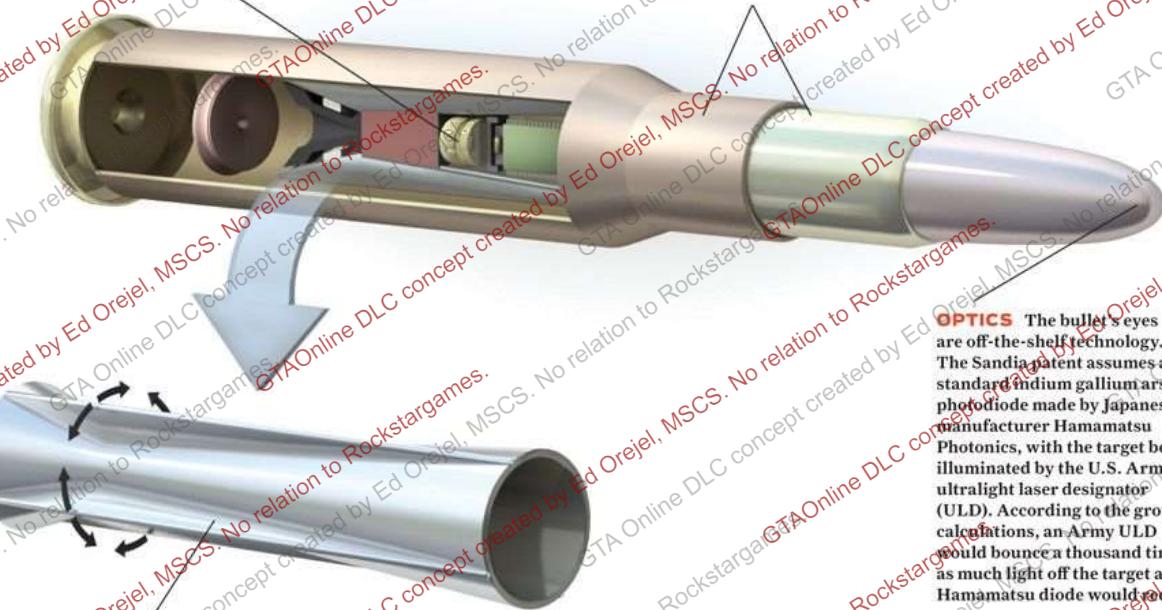
COMPUTER AND BATTERY

When the smart bullet is fired, dry electrolytes in the existing lines of "shock activated" batteries turn molten and can readily provide the bullet with its 5-milliwatt-hour energy budget over the projectile's 5-second flight time. The simple electronics for this guidance system

were first designed in the 1970s for early-generation smart bombs. Larry Shipers of Sandia Labs says that miniaturizing the electronics to fit the bullet isn't the challenge; making a whole system that can survive real, extreme battlefield conditions—while perhaps still not being fired for years—is.

CASING AND SABOT

Rifles—firearms with grooved barrels that impart a stabilizing gyroscopic spin to the bullet—have been the standard military weapon for more than a century. But Shipers said his group had a "back-to-the-future moment" when they realized that without rifling—as in the muskets of the Napoleonic wars and before—bullets would be steerable. The solution: two levels of casing. The inner "sabot" protects the delicate fins and actuators from the bullet's explosive firing. The outer casing holds the gunpowder and firing pin.



FIXED AND MOVEABLE FINS Because it's not spinning, the bullet must have its own aerodynamic stability. So the Sandia design makes it work like a rocket. A counter weight near the nose (made either of tungsten or depleted uranium) pushes the bullet's center of gravity ahead of its center of aerodynamic pressure. Rocket engineers use the same trick. Also like a rocket, the smart bullet has its own fixed tail

fins to keep its trajectory true. However, many times a second, the computer chip sends instructions to its four actuators, which can move a corresponding movable fin to one of three positions: straight ahead, displaced 3 degrees one way, or displaced 3 degrees the other. The bullet is maneuverable enough to overcompensate in one direction and still find its way back to a trajectory closer to the target.

OPTICS The bullet's eyes are off-the-shelf technology. The Sandia patent assumes a standard indium gallium arsenide photodiode made by Japanese manufacturer Hamamatsu Photonics, with the target being illuminated by the U.S. Army's ultralight laser designator (ULD). According to the group's calculations, an Army ULD would bounce a thousand times as much light off the target as the Hamamatsu diode would require.

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Shadow Hacker Group – Hacking Services – Services in Progress

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Mobile Phone Hacking Services – more information coming soon!



Vehicle Hacking Drone – more information coming soon!



Attack Drone Swarm – more information coming soon!

Shadow Hacker Group – Hacking Services – Launching Attack Drone Swarm – 1st Method of Firing Attack Drones – Shoulder-Fired Bazooka

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Shoulder-Fired Drone Swarm – more information coming soon!



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Shadow Hacker Group – Hacking Services – Drone Zapper Weapon

MP
TO

Drone zapper weapon! Destroys all attack drones and aerial drones! This weapon will be the only weapon that can destroy any of the drones that will be available through the spy satellite DLC. Further, this weapon can also destroy drones that were enabled in previous GTA Online DLCs.

More information coming soon!



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