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Satellite phones, the new cell phone

Understanding the use of satellite phones and how they change the way we communicate.

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With new introductions of iPhone's each year, Apple offers a range of new digital and hardware aspects that are often stated as bigger and better. But what about the iPhone 13 that makes it different from the rest? We'll explore how Apple has developed a new way to communicate and how it works.

Through the reveal and debut of the new iPhone 13, speculations have arisen about the new iPhone 13's satellite capabilities. With developments still in process, it is rumoured to only be for emergency calls and text when a cell phone signal can not be detected. It's important to look at satellite communications and why they are a new revolutionary approach to how we can communicate.

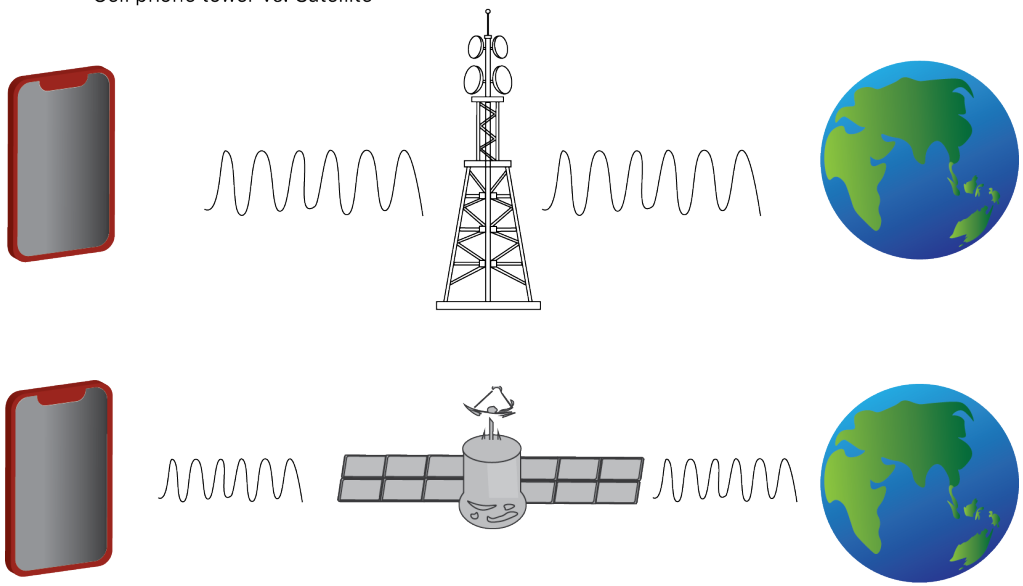
Cell phones use a microchip inside the phone's hardware that is used to modulate a radio wave using electrical signals. These signals travel through the air and are transferred to a nearby cell tower, to which the tower sends that data to the person you are trying to communicate with and vice versa. But with the new feature of using the satellites phones, unlike normal cell phones, satellite phones are able to send the data via orbiting satellites and essentially connect anywhere on Earth and are not reliant on cell towers. This is essential in being able to access emergency services during natural disasters or times of crisis.

However, sat phones are tied to specific satellite companies, the biggest being iridium, inmarsat and Globalstar. Each of which all use different levels of coverage depending on the number of satellites orbiting the Earth. An example of this includes Iridium, stating that having "75 satellites at about 780km above Earth orbiting the globe, giving coverage to most of the North pole".

Globalstar being the second largest due to the amount of satellites, with roughly 1,414km above Earth, meaning that the speeds for connection are slower than Iridium due to longer distance. As well as Globalstar not quite having the same amount of coverage with its competitor either but is able to target much of the North and South America, Europe and Northern Asia, Russia and Australia.

Inmarsat is the smallest satellite system with only 13 satellites as well as being the longest away from Earth at 35,000km above. Without underestimating the distance, although very few, are very important with interacting with the Earth due to giving greater views of the planet. Thus, out of the three leading to the largest area of connection. Inmarsat satellites use geosynchronous orbit or (GEO), meaning that the satellites follow the rotation of the Earth. Meaning that once someone connects with one of Inmarstat's satellites it is unlikely they won't be able to easily disconnect. Usually GEO satellites have an advantage of using an uninterrupted coverage in comparison to using low earth orbit or (LEO) satellites as GEO satellite phones will use more energy when distributing signals, but because of this they can cause more of a delay.

Cell phone tower vs. Satellite



Reportedly Apple will be using Globalstar's satellite constellation as it most likely will be able to make emergency calls and texts from the majority of the world. Unfortunately most of Africa, South and Southeast Asia and much of the Northern hemisphere will have weak to no coverage.

With being a new technology, Apple reveals that there is still a lot in the processes of developing satellite phones and decisions to be made about whether the emergency satellite calls and texts will be integrated automatically in the system or if they will be an add on as well as being unsure on which models will have this feature and stating that there is much to learn and understand the signal strength, usage, price and ways in which we are able to access our signals.

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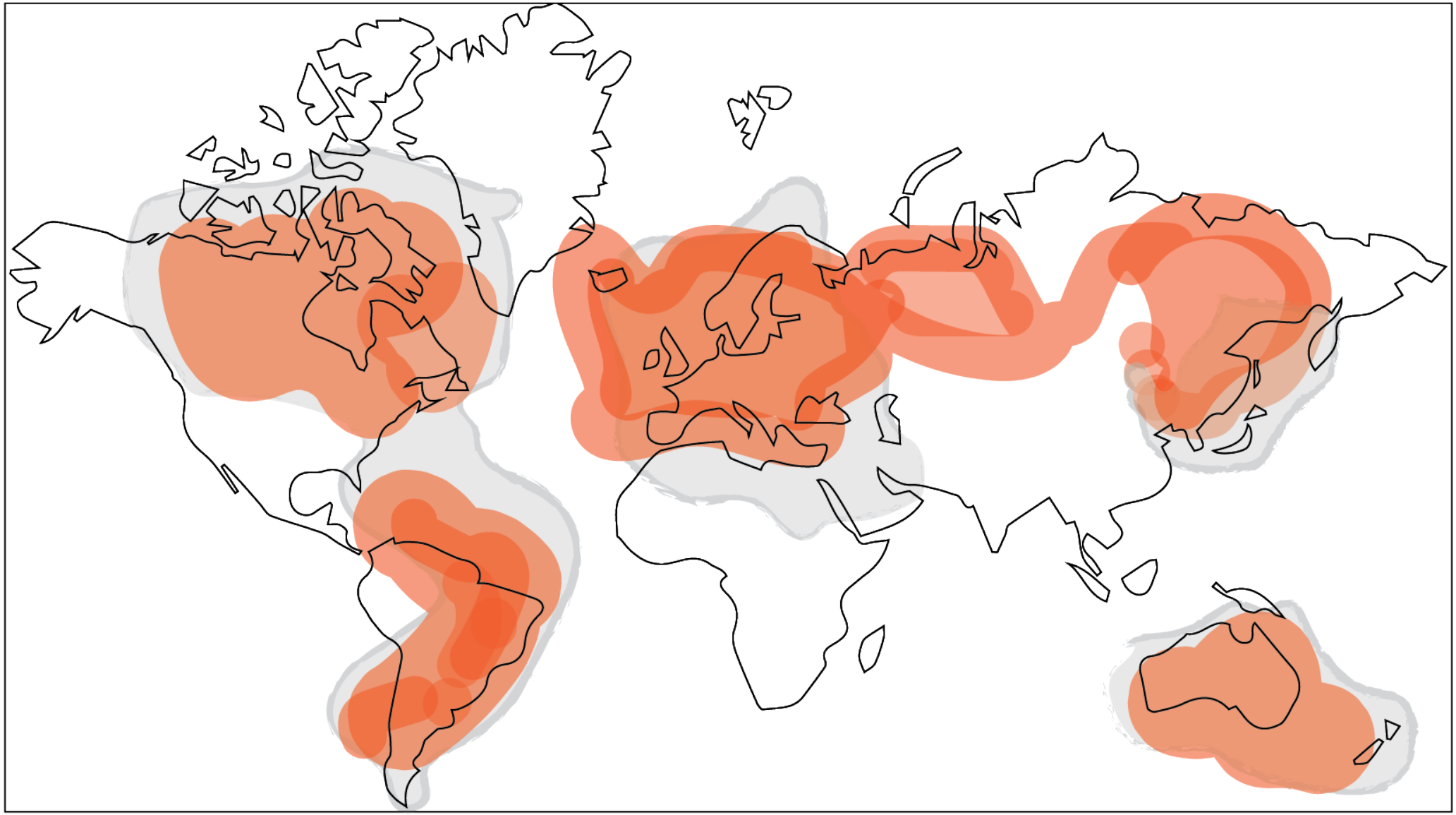
Coverage map of Globalstars satellites



Primary Coverage

Fringe Coverage
(Customers should expect to experience weakest signal)

Map information source: https://www.globalstar.com/en-gb/coverage-maps