

WHAT'S SO SPECIAL ABOUT WEA 3.0 ANYWAY?

According to the FCC, since its launch in 2012, the Wireless Emergency Alert (WEA) system has been used more than 49,000 times. Released in November 2019, WEA 3.0 contains an enhanced geo-targeting capability that makes it even more invaluable to the public's safety.

The Warning, Alert & Response Network (WARN) act established WEA in 2008. WEA is a public/private partnership between the FCC, FEMA and the wireless industry to enhance public safety.

For over a decade, it's fallen to the Alliance for Telecommunications Industry Solution (ATIS) to convert the various FCC WEA regulatory mandates to an implementable WEA system. It's here that the ATIS Wireless Technologies & Systems Committee (WTSC) members play a vital role. They develop the requirements and standards needed to roll out a standards-based interoperable WEA service, including submitting them to 3GPP for global applicability.

■ At the forefront of the alerting evolution

The focus of WEA is that the public safety system provides geographically targeted text alerts using cell broadcast. The initial version – WEA 1.0, went live in April 2012 which among other features, introduced the three classes of Alert Messages:

- Presidential Alert
- Imminent Threat Alert
- Child Abduction Emergency/AMBER Alert

May 2019 saw the release of WEA 2.0. This version included establishing a new alert message class for public safety messages and a host of other features. In November 2019, after extensive testing, IPAWS-OPEN (3.10) was released that contained the WEA 2.0 enhancements.

But what about WEA 3.0?

■ Narrowing geo-targeting requirements

It was FCC Report and Order 18-04 that defined the mandate to improve the geo-targeting accuracy. In WEA 1.0 and WEA 2.0, all devices in coverage of the addressed cells receive the broadcasted message.

Based on the requirements of FCC 18-04, the outcome of the work by ATIS was the introduction of a device-based geo-fencing capability, referred to as WEA 3.0. This new capability applies to 4G and 5G networks.

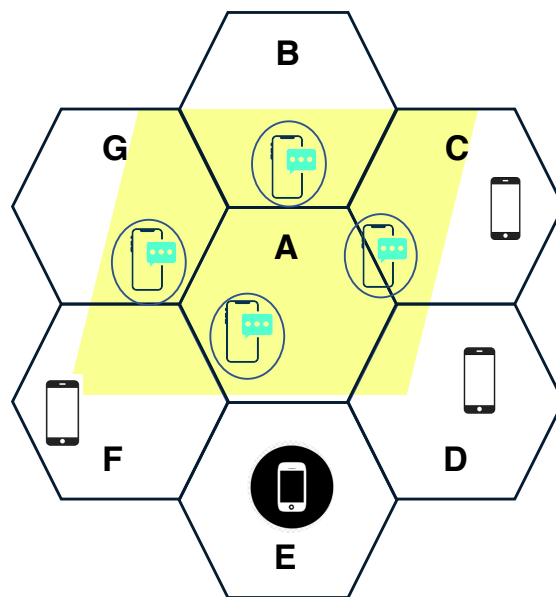
■ How does device-based geo-fencing work?

The alert originator, for instance, a Government Agency official, defines the target area by drawing polygons and circles on a dynamic map in their Public Warning

Platform. It's then passed over to the Cell Broadcast Center that selects the appropriate cells that cover the specified target area. Bear in mind that the exact selection mechanism is based on the MNO policy, which means the broadcast area matches as best as possible the target area. But, over and under-alerting will always occur.

Now in WEA 3.0, the network includes the target area geometries (polygons and circles) in the Cell Broadcast Message itself. WEA 3.0 compatible mobile devices use their location technology to determine if the device is located inside or outside the target area with an accuracy level of fewer than 150 meters (0.1 miles). If the device is inside the target area or the device cannot determine its location, it will display the alert to the user. As this capability is standards-based, it means that it's backward compatible. Mobile devices that support WEA 1.0 and WEA 2.0 will work as before.

Let's see that in a diagram. After all, a picture says a thousand words.



High-level overview of network-based geo-targeting and device-based geo-fencing

As you can see above, the alert originator has defined the target area to include cell sites A, B, C, D, F and G. But the polygon doesn't include cell site E. Based on the target area, the identified cell sites will broadcast the alert for this geometric shape. All mobiles in those target sites will receive the alert.

Now here's where you see the difference with device-based geo-fencing. For a network **without** device-based geo-fencing, all the devices in target cells will receive the alert. In a network **with** device-based geo-fencing, only the mobiles with the green message symbol will receive the alert. The mobile in the black circle will not receive any alert as it's located in cell site E, which was not part of the alert originator's target area.

■ Are there more features included in WEA 3.0?

As well as the ground-breaking device-based geo-fencing, WEA 3.0 includes an alert retention

period. The alert message is required to be preserved on the mobile device for 24 hours, or until deleted by the user.

■ Importance of selecting a standards-based solution

With the continued evolution of Public Warning requirements, one way to make sure that you are keeping up with the latest capabilities is to select a Public Warning Solution that is standards-based, like, for instance, one2many's Public Warning Platform. That way, you're confident that all the latest enhancements are included as part of the product roadmap.

one2many is the pioneer behind cell broadcast. As an active participant in the Standardization bodies, one2many play a leading role in defining the emergency alerting standardization requirements and end-user experience.

This active involvement ensures that upcoming market requirements are incorporated into standards but also that the Cell Broadcast Solution product roadmap is standards-based and future proof, not only customer driven.