SAFETURE®

The difficulties of automatically locating employees during a crisis

Background

During a crisis, finding the location of employees is a crucial function to confirm who is ok and who needs assistance. Using modern smart phones might seem like a simple solution to this problem, but working solutions are far from simple or fully reliable.

In reality, it is very difficult to automatically locate employees reliably, and at the same time provide user friendliness in a stressful situation. Many organizations have failed in this task by underestimating the underlying complexities involved in making this work properly.

The truth is that there is no 100% working solution available in the market, and the existing solutions vary widely depending on how well they tackle the different obstacles.

Common methods used for locating employees

- **Mobile phone location** [1]

- **Travel booking itinerary**

- **Place of work**

- **Manual reporting of location**

- **Special hardware GPS locator**

There are many more location methods, but these are the commonly used methods.

Location methods and challenges

While each method above has unique advantages, there are also a number of challenges and limitations connected to each method.

Whitepaper overview

This white paper provides a brief overview of the different methods and the difficulties of using automated systems for employee location. The paper focuses mainly on technical aspects, but also touches on cultural and behavior aspects. The legal aspects are too complex to fit into this white paper but can be summarized as: locating employees is legal in all countries if the employer fulfils the local legal compliance requirements.

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[1] Mobile phone location include all types of radio based location methods such as GPS, GLONASS, BeiDou and Galileo, assisted GPS, WiFi and other local radio source location lookup methods.

Mobile Phone Location

Background app

All smart phones include location services, a function of the phone which allows the position to be shared with application developers. Smart phones allow installed apps to use the location services to show where people are.

The primary issue with mobile phone location services is that it uses a lot of battery and impacts battery time of the device, resulting in smart phone manufacturers placing restrictions on how the location services may be used.

To get regular updates of an employee location, the mobile app needs to run in the "background" of the phone. Access to location services in background is limited by manufacturers to extend battery time and workarounds are often required.

The workarounds being non-standard often need to be adapted to each new version of the phone's operating system, resulting in significant development resources from the app providers to maintain the location functionality.

Battery drain

Once a workaround for running a location app in the background has been implemented, battery drainage becomes an issue. Because the location services are very battery demanding, developers need to find a solution to make the app and the location services more battery efficient such as only intermittent location updates and reduced accuracy.

If the app drains the battery, the user will end up removing the app. Alternatively, the phone's operating system may stop the app automatically due to high battery consumption.

Data roaming

Reporting a location to a central server assumes a continuous data connection. When travelling abroad the data connection can be limited or even non-existent due to poor or expensive roaming agreements between your home mobile operator and the roaming operator in the destination country.

This results in the mobile phone location services working poorly when abroad, and the device often cannot report the location to the central server.

Compatibility issues

While many appreciate the flexibility of the Android mobile operating systems, a drawback is that manufacturers of Android smart phones make custom changes in the operating system. This in turn affects the compatibility of mobile apps, not only affecting background management but also core features like location services. Each of these custom changes often needs a special workaround.

Mobile app distribution

Countries like China have banned mobile app stores like Google Play. Google Play is the global primary app distribution for Android phones. In the China case there are instead many other app stores, and app distribution in China require that the app is available in local app stores.

Country censorship firewalls

Several countries around the world have content censoring firewalls on all internet traffic between the country and the rest of the world. Since crisis information may contain politically sensitive information, or the entire internet may be blocked during a political crisis, the internet connection may be disconnected between the mobile app and the central server. The app cannot in this case report the location using a normal internet connection.

No mobile phone network coverage

Many organizations operate in areas where poor mobile network coverage is an issue. An app using location services has to be able to operate using data connections going up and down over time depending on the mobile network coverage. Satellite based solutions can solve some of these issues but have other challenges such as indoor coverage, the need for special hardware, and perhaps the most notably the still relatively high costs. An interesting note is that this will probably change in the future with the ongoing significant infrastructure investments in satellite-based internet.

Privacy issues

Today's employee is very aware of location privacy issues. This has resulted in many different types of blocks for using a smart phone's location services. These include settings in the operating systems, as well as pop-ups with request of approval for using location services.

To make this work, any location platform must provide sufficient privacy solutions to make the employee feel in control of their privacy and prevent the employee from blocking the app using the location services.

Travel booking itinerary for business travel

The most common method for locating a business traveler today is the use of travel booking data, particularly flights. Large companies often solve this by having a copy of the travel booking sent from a designated TMC (travel management company) or by having access to all the travel bookings made by the TMC.

While this is a good way to gain an overview of employees expected future locations, there are a number of limitations that make it less useful as an indicator of current location, especially in a crisis.

The most obvious of course being that it only provides locations such as airports and hotels – places where employees are unlikely to be most of the time during a trip. However, there are also a number of other technical and operational challenges using travel booking itineraries:

Multiple local travel management companies

Global companies often use several local TMCs in different countries. To provide a centralized overview using data from all these TMCs, all these data feeds need to be integrated into one platform. Large TMCs can offer this as a central service that works across many countries. Another option is to have a platform that can consolidate data from multiple TMCs.

Bookings outside approved channels

Even in cases where organizations are able to consolidate data from multiple TMCs, employees often book their trips outside the approved TMC suppliers. This causes problems as these travelers end up outside the centralized lists used to assist employees in a crisis. There are solutions that can fill this gap by automatically read and interpret all incoming travel booking confirmation emails.

TMC is unable to book the trip

There are also cases where a TMC, particularly smaller ones, is unable to book a trip using their internal booking system. Many low-cost airlines and hotels are not available for booking in the three major GDS's (Global Distributions Systems) Amadeus, Sabre and Travelport. In such case the TMC needs to do an out of system booking, with all booking data then ending up completely outside the TMC's internal system, making those travelers 'invisible'.

Place of work

Mass communication solutions used for crisis management commonly use the employee's place of work as a method of locating and selecting which employees shall receive a crisis message. While this is simple and avoids many of the issues associated with other methods, it is increasingly unsuitable in a world where work is no longer a single place. The common issues with this method are:

Currently not at work

When working outside the office becomes more common, using the place of work as an indicator of an employee's location becomes increasingly misguiding. Additionally, business travel will always need a different solution, since they are by definition located somewhere else than their official place of work.

Poor database information

Effectively using place of work as a location requires continual updates of:

- Current employees

- A location (e.g office address) for each employee

- Employee contact information such as mobile phone number

Many companies do not have a central database with this information, which is often scattered among multiple systems and many times poorly updated. Even in cases where a central database containing the necessary information exists, the database needs to be integrated with a crisis management platform that can use this information.

Access Control System

Access control systems, for example using key cards for entering buildings or logging into digital platforms with user credentials contain valuable real time location information about employees. The issues with using the location information from access control systems are that these systems are extremely fragmented with many different suppliers, different technical solutions and no standards for extracting the location information. These systems also only provide location information when an employee is actively accessing a building or a digital platform and therefore needs to be complemented with other location methods.
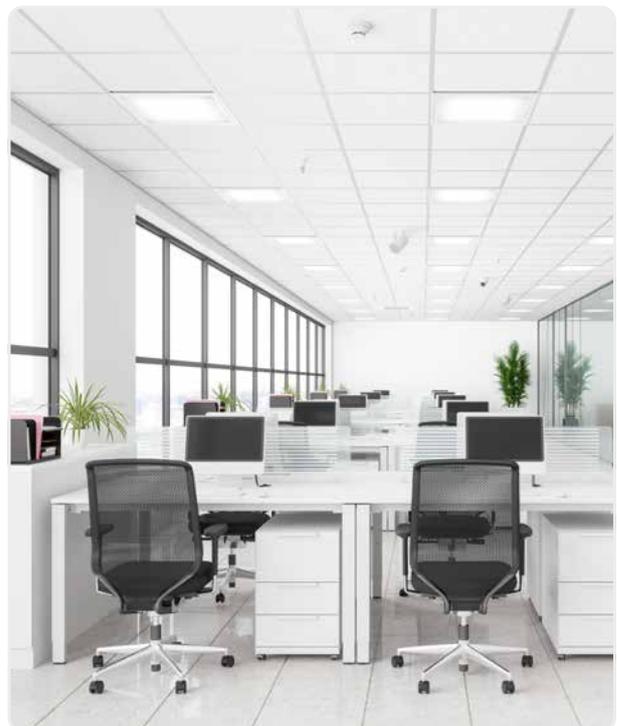
Manual reporting of location

The manual reporting of location requires the employee to make an effort to report their location. Even if a technical solution is used, the manual reporting will be an extra task that the employee may not remember or feel the need to do. Therefore, this method is highly unreliable unless it is an emergency. Even during an emergency, it often requires prompting from the employer.

Special hardware locator device

There are many hardware locator devices available in the market often called GPS trackers. The major issue with these devices is that they require charging like a mobile phone. Unlike mobile phones they have no other use, which means that there is no other motivation for charging the device besides having the location tracked. The result is that these hardware locator devices often end up in a drawer uncharged.

Another disadvantage compared to mobile phones is that they do not use local WiFi. They are also very expensive if used in large scale since it requires purchase of unique hardware and additional mobile airtime.

Privacy culture

A non-technical aspect that needs to be taken into account is privacy culture, which varies around the world. In some regions, the idea that the employer has access to an employee's exact location is very controversial, even for crisis management purposes.

In such cases, any platform or method used must provide a solution to mitigate and work around the local culture. This can include providing the employee complete control over where and when the location is being sent to the employer. Another solution could be the implementation of certain privacy settings that limits the level of detail an employer can access, such as obfuscation of location.

Summary

There is not one single technology and method that solves the problem of locating employees during a crisis. The best solution is using a platform that can combine multiple technologies and methods into a best estimation based on all the different types of location methods.

Every option comes with its unique advantages and disadvantages, and it will ultimately be up to each organization to decide what they need to fulfil their employer responsibility. It is however very important to understand the limitations, particularly when it comes to solutions based on mobile location. All are not created equal and the buyer needs to ensure that the solution chosen is capable to deliver what the organization need during a crisis.

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For more in-depth knowledge visit safeture.com