KdG
University of Applied Sciences and Arts

WI-FI COUNTING

PROCESS

The Wi-Fi counting system registers smartphones, tablets and other Wi-Fi devices that are in the vicinity of strategically placed Wi-Fi sensors, spread across the event site. More specifically, the sensors pick up the MAC addresses stored on the smartphones and other devices carried by visitors. When a device with a MAC address is carried within range of a Wi-Fi sensor, this device is counted, provided that the Wi-Fi on that device is switched on. This information is then immediately pseudonymised, i.e. data that could lead to the identification of visitors is immediately encrypted.

Combination with cameras
With this counting method, it is essential to clearly define the term visitor and to determine the minimum time someone must be present to be considered a visitor. When Wi-Fi counts are combined with the use of cameras, (incidental) passers-by, residents and employees can be excluded from the total number of visitors via an algorithm in the calculation.

Wi-Fi counting makes it possible to estimate the number of people present in a certain area. However, it is difficult to establish how many devices with Wi-Fi signals are being carried by each individual at the event. So, someone carrying a smartphone, a laptop and/or a tablet will be counted two or three times.

However, using periodic scans, Wi-Fi counting can provide a good picture of changes in crowd density in an area. Movements of individuals between the different zones on the event site in which sensors have been placed can also be measured. The dwell times of visitors can also be registered.

ADVANTAGES

+ **Movements:** visitor movements can be measured within sensor-equipped zones.
+ **Varied picture:** in addition to measuring the number of visitors per zone, this method also gives a picture of dwell times within zones and traffic between zones.
+ **Additional visitor data can be gathered**, such as origin (country, province) and the proportion of local to non-local visitors.

DISADVANTAGES

- **No real-time:** counting the number of visitors is possible, but with a delay and therefore not in real-time.
- **Technology-dependent:** not everyone carries a device with an identifiable MAC address. This is a challenge, especially at events that are more family-oriented and include many children (without smartphones) among the visitors.
- **Double counting:** the number of devices is counted, not the number of people. And some visitors have several Wi-Fi devices with them. In order to obtain a correct count, Wi-Fi counting can be combined with the use of camera people counters.
- **Randomisation:** Some mobile devices hide the MAC addresses with which they can be identified, or broadcast several at once.
- **Passers-by:** By clearly defining visitors in advance, random passers-by can be filtered out as much as possible in the counts, but there is still a real chance of inaccuracy.

COST (EXCL. VAT)

The number of Wi-Fi sensors to be installed depends on the total area of the site. Recommended numbers:

- site < 10,000 m²: approximately 3 sensors
- site 10,000 m² - 100,000 m²: approximately 7 sensors
- site > 100,000 m²: approximately 12 sensors

Cost is determined by the number of sensors and the rental period:
(€410 installation cost x number of sensors) + (€125 rent per sensor x number of days x number of sensors)
A report costs, on average, €650 and access to the online portal during the event costs, on average, €250.

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