

# Real Time Location System

## Separating Fact from Fiction

### Ekahau sets the record straight on ten myths about Wi-Fi based Real Time Location Systems

Making a purchase decision based upon informed choices is obviously the right way to go when it comes to selecting the right location system fit for your needs. But before making that decision, it pays to stop for a moment and ask yourself if the information you have received is correct, marketing hype or plain disinformation. The following points seek to clarify the facts behind the fiction and give you the real power to decide for yourself.

#### Myth No. 1

***RTLS solutions that work over Wi-Fi are more expensive than dedicated networks.***

It is all about the money but before you part with yours, consider this question – how much more expensive is it to pay someone to create an RTLS system with separate access points (APs), antennae, readers and other related hardware, deploy it and continue to maintain it over the years it is functional? Compare that to a true software solution which utilizes the existing Wi-Fi network you already have with no additional infrastructure costs. The only additional costs are Wi-Fi tags but your return on investment will still be much quicker and in most cases, scaling up is merely a question of more tags, not additional expensive infrastructure.

#### Myth No. 2

***All Wi-Fi based Real Time Location Systems perform about the same.***

For location software, one of the obvious performance benchmarks is accuracy. You wouldn't buy a gun that didn't shoot straight, so why purchase a location system which might put you in another area or even another floor? Ekahau boasts accuracy to a tolerance of one to three meters or floor accuracy up to 99+% using a patented system built upon fifteen years of research using a system based on a probabilistic framework and particle filtering. Compare that with the competition at accuracies of 5 to 15 meters and significantly lower floor accuracy. If you have 1000 devices to find, is it acceptable that the system reports a hundred of them to incorrect floors?

And one other thing, performance is a scale issue – the purchase of a single Ekahau Positioning Engine can scale up to 10,000 tracked devices – that's performance.

## Solution Overview



### Myth No. 3

#### ***Ultra wide-band (UWB) networks are more accurate than Wi-Fi based RTLS solutions.***

Once again, this is a money argument – theoretically you can derive greater accuracy from a UWB network but the investment vs. the return on accuracy is equivocal. Additionally research shows that UWB sensors are prone to inaccuracies based upon reflections and interactions of human bodies moving through tracked space. And once again you will need to invest in a proprietary system with several expensive sensors per room/location which does little to keep costs down.

### Myth No. 4

#### ***Wi-Fi networks are unreliable and cannot be used in lifeline applications such as hospitals and emergency rooms.***

Wi-Fi is the global standard in most hospitals for delivering data and other wireless applications – the infrastructure exists because it works. In fact, modern Wi-Fi networks are self healing: in the event of the failure of one AP, others will take over. In the event of extensive interference, channels are reallocated and network integrity is restored.

So, even taking into account the possible inaccuracies resulting from your Wi-Fi network, Ekahau's solution will ensure reliable location tracking. If your Wi-Fi network is OK, with Ekahau you are OK.

### Myth No. 5

#### ***The loss of an access point or automatic radio resource management compromises the accuracy of a Wi-Fi RTLS network.***

High frequency radio signal attenuation is not predictable, nor is it static in a given location. Furthermore human bodies, as well as moving doors, equipment and other physical objects all affect signal behavior. This means that the positioning algorithm needs to adapt to the dynamic nature of radio signals caused by laws of physics or by automatic radio resource management.

Ekahau location tracking technology is the sum of 15 years of research and the real-world experience from hundreds of enterprise installations. The latest groundbreaking Ekahau innovation, Ekahau Particle Filtering™, takes the reliability of Wi-Fi location tracking one step further.

Ekahau Engine (EE) takes into account all AP signals, not one. Nor does it rely upon triangulation like other systems. In fact, the Engine “senses” when an AP has broken down and makes suitable adjustments. Location accuracy is always optimal, even in a scenario when only one AP is operational.

In the unlikely event of very low network coverage or a major network break-down in a disaster situation, the required location accuracy may not be achievable. Thanks to Ekahau Engine's built-in Location Quality Filter™, a potentially incorrect location estimate can be ‘tagged’ and disregarded. So all told, the loss of signal can be compensated by the Ekahau system to ensure optimal accuracy in every situation.

### Myth No. 6.

#### ***The battery life of tracking tags in RTLS systems is too short.***

In those situations where a long battery life for a unit is required, typically the case in asset tracking, Ekahau tags have been designed to ‘awaken’ when the unit stops moving thanks to advanced motion detector technology, thus reporting the last known location. Thereafter, it enters sleep mode conserving battery life.

In those situations where people tracking is the issue and more frequent reporting is required, tags are fitted with smaller batteries that have a shorter battery life. Even with these smaller batteries and more frequent reporting, the lifetime is still in the range of weeks or months, and the tags are fully recharged in a matter of hours.

In all instances, with configurable parameters for battery life, Ekahau always has the right tag for the right application.

## Solution Overview



### Myth No. 7

***Because of its dependence on Wi-Fi, RTLS is inherently unsecurable.***

Security is an essential feature of any WLAN – with or without RTLS. Typically a WLAN is secured by such methods as authentication, encryption, firewalls, access control or VLAN. When a Wi-Fi tag transmits a location update, only the access point MAC address (its unique device ID) and signal strength information are sent through the air interface. With Ekahau, this information is encrypted while the same information is sent unencrypted in the 802.11 management frames. Therefore, the addition of an RTLS adds no extra threat to WLAN integrity.

### Myth No. 8

***RTLS systems that operate over Wi-Fi networks cause disruption to other traffic and flood the network.***

The amount of data transferred by location tags is next to non-existent: In the very unlikely even of 600 Ekahau tags waking up at the same time in the same space the traffic created is equal to sending one digital camera photograph over the network. In addition, the activation of tags is selective and in high volume cases, such as asset tracking the greater majority – around 95% of tags are inactive at any given time. Ekahau also employs standard countermeasures such as collision avoidance and back off mechanisms to minimize interference.

### Myth No. 9

***To achieve reasonable accuracy with an RTLS system, many additional access points need to be installed***

Modern high quality Wi-Fi networks are designed with redundancy in mind with overlap being the default, not the exception. Accordingly, virtually no asset tracking deployment needs additional infrastructure. For process automation systems requiring high precision, low cost off-the-shelf APs can be used for beaconing access points but in the majority of cases, this is simply unnecessary with reliable accuracy as the norm for most Wi-Fi networks.

### Myth No. 10

***Which ever location tracking system I choose, the deployment time and effort required is the same – especially so for Wi-Fi RTLS.***

As stated earlier in Myth No. 1, creating a proprietary location system compared to utilizing an existing Wi-Fi network takes time, effort and additional cost – this is an undisputable fact. Any system aiming for high accuracy requires calibration using a client device. The Ekahau system uses leading Wi-Fi survey tools to calibrate survey and fine-tune a Wi-Fi network with speed and accuracy – simply by walking around the site. In addition, Ekahau provides leading edge tools for analyzing positioning accuracy, network coverage and performance. This means fast roll-outs with accurate location data for your needs. If Wi-Fi site survey information already exists, an enterprise location tracking system can be rolled out in as little as one hour!

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