eGUIDE
August 2019

Guidance for events in UK venues

Connectivity (Wi-Fi)
Sub-section

The ACC Liverpool Group

ALEXANDRA PALACE

BUSINESS DESIGN CENTRE

east of england arena and events centre

EventCity MANCHESTER

An ADNEC Group Company
ExCeL LONDON

FARNBOROUGH INTERNATIONAL | EXHIBITION & CONFERENCE CENTRE

HARROGATE CONVENTION CENTRE

Manchester Central

nec group

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QEII CENTRE

RICOH ARENA

SEC

the internationalcentre telford

The O2

Yorkshire Event Centre

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What is the eGuide?

The eGuide brings together guidance for achieving common standards of health, safety and operational planning, management and on-site conduct for events at all participating AEV member venues. The scope and development of the eGuide follows extensive consultation with operations professionals within the exhibition and event industry in order to ensure an overall approach that remains broadly acceptable to the community. The status of the eGuide is similar to that of an Approved Code of Practice. It is an industry-specific guide developed by authorised professionals from the UK event venues. It incorporates health, safety and operational practices that represent compliance with Building Regulations and health and safety legislation.

Now recognised as the industry's best practice document, the eGuide is continually reviewed by working industry professionals who represent the best advice currently available, and who themselves have to work within the guidelines in their own professional capacities. Senior representatives from ACC Liverpool, Alexandra Palace, Business Design Centre, EventCity, ExCeL London, Farnborough International Exhibition and Conference Centre, Harrogate Convention Centre, Manchester Central, NAEC Stoneleigh, NEC, Olympia London, QEII Centre, Ricoh Arena, SEC, Stadium MK, Silverstone, The International Centre - Telford, The Brighton Centre, The O2 and Yorkshire Event Centre currently sit on the **eGuide working group**, meeting twice a year to steer the guidance thematically and address any complex or contentious topics. A number of additional venues also participate in this process and are gradually moving towards formal adoption of the document themselves. Additionally, **the eGuide sub-committee** works all year round to maintain the detail of the document, ensure consistency and simplify rules and regulations to the greatest possible extent.

The current eGuide sub-committee comprises:

Tim Byrne – ExCeL London
Matt Constance - ExCeL London
Ian Tynan - ExCeL London
Michelle Baldwin - NEC
Siân Richards - Olympia London (Chair of the eGuide strategic committee)
Paul Brough - Olympia London
Kimberley Cassidy – SEC
Tracy Mitchell-Slater - SEC

Instructions from this group are subsequently collated and actioned in the document by Alden Arnold, Association of Event Venues.

By coming together, and proactively seeking to identify where working conditions and regulations are common (or, due to unique site circumstance, different), contributing venues are, in essence, providing the answers to questions that organisers and supplier companies may have resulting in more efficient on-site activity, a smoother operation for the event organiser, and, therefore, a more polished product for the client, exhibitor and visitor.

In competent hands these guidelines should be an invaluable tool, simplifying health & safety planning and management and other operational issues on the floor.

Application

For the purposes of this document the word 'event' will generally apply to any event held in the participating eGuide venues. It must be noted that in multipurpose venues where exhibitions, conferences and other like events can be run alongside sporting fixtures or musical entertainment in arenas, other guidance or legislation may be more applicable for specific activities.

How to Use and Engage with the eGuide

The eGuide will save hours of painstaking and detailed work for any AEV venue seeking to maintain regulations that are compliant with UK law. Notwithstanding a few points of detail, which can be separately annotated, any AEV member venue that hosts any degree of exhibition business activity should be able to adopt these guidelines wholesale. The guide equally provides the basis for organisers to plan the operational management of their event and for suppliers and clients/exhibitors to understand what is required of them.

It must be stressed, however, that this is a **guidance** document. If meticulously followed, it should ensure that users are compliant with current health and safety law. Nevertheless, the particulars of each exhibition (or similar event) should still be considered on an individual basis and venues, organisers, suppliers and clients/exhibitors must all remember that it is ultimately their responsibility to ensure that they address health & safety, and other operational issues properly, in compliance with the law.

It must also be stressed that all employers have a legal duty to employ staff that are competent to manage health & safety, and other operations that are relevant to their level and range of responsibilities. This guidance alone is not a substitute for proper training and experience.

The committee welcomes any constructive comment on these guidelines. If you feel you can contribute, please email eguide@aev.org.uk, and your point will be considered at the next committee meeting.

If you require additional health & safety support there are a number of specialist companies providing consultancy, training and floor management capabilities within ESSA and AEO Associate membership.

EIA note on legal compliance

The AEV, AEO and ESSA trade associations are managed by the EIA secretariat. EIA advocates that members of all three associations work within or beyond the requirements of UK law. Where a British standard, HSE guidance, approved code of practice, other central or local government guidance or examples of case law suggest that specific working methods or standards are needed to meet the requirements of UK law, the EIA advocates that members adopt these. In instances where groups of members wish to collaborate on finding alternative, but equally as safe, methods of work that they feel are more suited to the operational constraints of the event industry than those described elsewhere, the EIA will facilitate that collaboration and any benchmarking or HAZOP activity that is required, advise members of their specific duties and liabilities and where requested publish their findings, typically within the eGuide. The EIA cannot and does not however officially advocate any standard or working practice other than those produced by HSE, BSI or other government agencies and offices, whether published within the eGuide or not, and reminds all organisations, members and non-members alike, that it is their individual responsibility to assess the risks of their work and to establish practices that comply with the law and that prevent work related injury and ill-health.

Connectivity (Wi–Fi)

General Guidance

1 Event organisers are strongly advised to consider the complexities of providing Wi-Fi technology for a large number of users in an event environment and to liaise with the venue well in advance of the event to avoid disappointment.

2 The demands placed on Wi-Fi technology have increased dramatically from the basic domestic or bar/cafe environment to the requirements of the professional business user. The high density and complex live event environment generally requires advanced planning with experienced partners to avoid congestion and connectivity problems – deployment of "out of the box" solutions will typically lead to disappointing results.

3 The primary Wi-Fi challenges within a live event environment are that networks not specifically designed to serve large numbers of modern laptops, smartphones and other devices will not generally be powerful enough, plus the impact of competing "rogue" Wi-Fi networks set up unofficially by exhibitors and other event participants causes interference and impedes performance further still.

4 PMSE (Programme Making and Special Events) licences must be obtained from Ofcom for any wireless equipment, such as radios, microphones and cameras. Organisers, exhibitors and suppliers bringing wireless equipment to an event are responsible for ensuring that it is compliant. Systems that operate in the following ranges are exempt from licensing:

- UHF: 863.100-864.900MHz (hand-held transmitters of 10mW and body-worn transmitters of 50mW)
- VHF: 173.700-175.10MHz
- Audio equipment below 10 mW: 2.400-2.4835GHz

Licence exemption does not provide users with any form of protection from other users and there may be heavy sharing at certain locations. The ability of equipment to withstand interference may depend on its design, quality and robustness.

Further information on wireless equipment licensing can be obtained from Ofcom at PMSE@ofcom.org.uk / 020 7981 3803 (weekday office hours) / 07866 423619 (outside office hours).

5 The following section provides some technical guidance to Wi-Fi technology, explaining the factors organisers will need to consider to ensure their expectations are realistic and achievable.

Answers to Frequently Asked Questions

What is Wi-Fi?
6 Wi-Fi technology allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high-speed internet connections. A device that can use Wi-Fi (such as a personal computer, video game console, smartphone, tablet, or digital audio player) can connect to a network resource such as the internet via a wireless network access point. Such an access point (which may broadcast a hotspot) has a range of about 20 meters (65 feet) indoors and a greater range outdoors depending on the model and power of antennas. Wi-Fi coverage can be restricted to an area as small as a single room, by walls that block radio waves or extend to many square miles, achieved by using multiple access points.

What are its limitations?

7 Connecting to poorly planned Wi-Fi networks in busy enclosed event environments can be problematic. This is often due to either of the factors described in para 3: either a network not designed to service the density of the devices that require connections or because other systems are causing interference.

8 Wi-Fi devices use one of two bands to connect. These are 2.4 GHz (802.11b, g or n) and 5 GHz (802.11a or n). The majority of smart phones (including the older generation Apple iPhones), and older laptops, all work on the 2.4 GHz band which due to the limited amount of separate channels to communicate on may become congested quickly. This limitation is typically due both to insufficient planning of the wireless network and to the way some devices interact with the network (regardless of how robust it is). 5 GHz Wi-Fi currently offers a much better performance in these environments due in most part to it having more channels to communicate on and fewer devices at the current time that can use it.

Are there technological solutions available to remedy this?

9 Yes, with the appropriate planning, communication and expectation setting, thousands of people can connect to 2.4 GHz and 5 GHz Wi-Fi networks. In the longer term 5 GHz networks will ease the current congestion of 2.4 GHz networks, which still work well and are widely used by businesses on a daily basis. However, Wi-Fi technology should still be considered as a "good" connectivity option by organisers as opposed to the "best" option of wired connection. Wired connections will perform better since the risk of external factors impacting the service is considerably less.

Why is the provision of Wi-Fi in event venues different from coffee shops, hotels etc.?

10 Size, scale and use. Whilst a coffee shop or hotel bar/lounge Wi-Fi infrastructure is generally adequate for a small number of users checking emails, it would not be able to cope with a much larger number of business users accessing more data-intensive functionality. The expectations of business users in an event environment are much higher too. Therefore, it may be important to convey to your event participants that a paid-for, "Business Class" Wi-Fi solution is necessary in order to give them the same experience and capabilities that they have to pay for in their office locations or, generally, in hotel rooms.

What causes interference with Wi-Fi that is different to other installations?

11 The following are some of the factors that can cause interference to Wi-Fi connectivity:

- Third-party wireless networks in close proximity
- Some lower specification microwave ovens
- Some older cordless phones
- Bluetooth devices
- Wireless video cameras
- Some audio senders
- Outdoor radio links
- Some wireless game controllers
- Zigbee devices (input devices such as mice/keyboard/wands etc. with longer range than say infrared that does not rely on 'line of sight')
- Some fluorescent lights
- Some poorly maintained electric motors
- Some industrial equipment
- Some physical barriers (including exhibition stands and other event structures)
- People – the human body is anywhere from 45 percent to 75 percent water depending on age and fitness level, and water can hamper Wi-Fi speeds as radio waves do not penetrate water as well as air

Does Wi-Fi need wires?

12 In most cases yes; because of their permanent nature access points within a venue will be wired to provide the highest quality connectivity to the core network. Additional access points can be added wirelessly (a technology called meshing) – typically this is done to add more Wi-Fi coverage in outdoor areas.

When should Wi-Fi use be planned?

13 As soon as possible. Early planning is strongly recommended and encouraged by venues, many of whom offer discounts for early orders. This allows any potential issues to be discussed and worked through rather than encountering problems during the event.

What to Discuss with the Venue

14 To ensure that you understand exactly what Wi-Fi connectivity the venue will be able to deliver during your event and can accurately set your customers' expectations, you will need to discuss the following with your Event Manager:

15 How much Wi-Fi bandwidth does the venue have to offer?

16 Does the venue have a Wi-Fi provision in the:
- Public areas
- Meeting rooms
- Halls

17 Is the Wi-Fi provision free of charge or a paid for service in the:
- Public areas
- Meeting rooms
- Halls

18 Is the Wi-Fi provision likely to cope with the way you expect it to be used at your event, for example:
- Checking emails
- Streaming video
- Research projects
- Running websites & demos

19 What is the maximum number of concurrent users your system allows for, and how much bandwidth could each user expect as a minimum during maximum utilisation?

20 Can the venue increase the amount of internet access? This may solve "slow" Wi-Fi networks since it's actually the internet connection that is the bottleneck.

21 Is this number based on an even spread throughout the venue?

22 Do you have any way of increasing capacity in high density areas, such as cafes?

23 What system does your venue use for logging users on, how easy is it and is there any opportunity for the landing page to be sponsored and provide a possible revenue stream?

24 Do you allow event participants to create their own Wi-Fi networks following the purchase of a hard wired connection? Note: most venues will not allow this as independently set-up Wi-Fi networks will cause interference with the official infrastructure, impacting on the quality of all other networks.

25 Do you actively manage and potentially shut down rogue/unauthorised Wi-Fi networks? Note: most venues will do this although in cases where they do not, or where they make concessions from time to time then your event participants will still need to be completely familiar with the technology and follow the following guidelines:
- Hide the SSID so only specified devices can find it

- Avoid open Wi-Fi access, as allocated bandwidth will very quickly be used up by surrounding exhibitor and visitor devices. This may then result in an inferior experience
- If the wireless router has the option it should be set to the lowest power setting so it does not broadcast across the venue and cause interference with other networks
- If a wireless router is being used for hard wired distribution then the wireless element should be turned off
- Where the option is available and the client is compatible, only the 5 GHz frequency should be broadcast. 2.4 GHz is unlikely to work so it will simply add to the interference in the venue. If it can be turned off better connectivity will result
- If an access point has multiple radios from which it may broadcast and only one is required the others should be disabled
- Most venues reserve the right to terminate connections should they cause interference with the rest of the show

What to Ask Exhibitors and Other Event Participants

- What do you intend to use the Wi-Fi network for?
- Hard wired solutions offer a more robust connection, would this serve your needs better?
- How many devices are you intending to connect to the network?
- How many concurrent users do you expect?
- What levels of data transfer are you anticipating?
- Are those devices using the latest software upgrades (iPhones, iPads etc.), as this may affect their connection as opposed to the infrastructure that is put in place?
- Even on wired connections do you have the 'Administrator' right and credentials for any computers and devices you plan to use as these may be needed to configure the connection?
- Will the event be utilising a mobile app? If so what size is it (e.g. 10Mb), will users upload the app before attending the event, or on-site, and would there be updates/downloads for the duration of the event?