ADVANCE GUARD

The Boston Marathon bombings had an immediate impact on security arrangements at stadia across the USA. The challenge for these venues is to implement effective safety measures efficiently yet cost effectively

Illustration courtesy of Alex Williamson

Killing three people and injuring 264 more, the Boston Marathon bombings on 15 April 2013 prompted a swift reaction from the National Football League. Within days of the atrocity, NFL security chiefs had convened in New York City to draft a new security policy for its 32 teams.

"The attack completely altered the way we think about security at sporting events," confirms Ray DiNunzio, the NFL's director of strategic security programmes. "Such an incident was no longer something that *could* happen; it actually did happen. By 26 April we had the new NFL policy draft in place and that's led to dramatic changes in how we deal with security outside venues."

Revised best practice

Two of the biggest revisions for the new 2013 season are much greater restrictions on bags allowed into stadia and the creation of buffer zones outside the inner perimeter, which is defined by the stadium gates and walls. "The buffer extends well beyond the back of the most densely populated queues and public plaza areas," explains DiNunzio. "We'll be doing a preliminary screening of anyone standing at a second perimeter and we'll prevent anyone gaining access to the zone with a prohibited bag."

The stricter bag policy is designed to speed up security searches as well as to make it harder to conceal weapons and explosives. All large bags and rucksacks are prohibited; the only types allowed are clear plastic, vinyl, or PVC ones with dimensions no bigger than 12 x 6 x 12in. Women's clutch bags are permissible if they are no larger than a hand.

"By restricting the type, size and style of bags, we can quickly sight-screen people passing through this secondary perimeter without slowing down the flow," DiNunzio continues. "Then we'll conduct the more thorough searches before they enter the stadium. We considered introducing stop-and-

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search at the secondary perimeter, but we ruled this out as we would just be moving the risk out to another perimeter and crowds would be densely queued there."

Striking a balance

Speeding up the flow of fans into the stadium is more of an issue at NFL games than at other major sporting events in the USA. The NFL's security procedures are more stringent and time-consuming than in Major League Baseball (MLB) and can have the unwanted consequence of creating congestion at the gates. In the NFL, bag checks, pat-downs and wanding with a handheld metal detector are mandatory, whereas the MLB requires only bag checks and recommends the other checks. "Ironically, the greater security at NFL stadia can result in dense crowds stagnating outside the walls, which exposes them to the kind of danger we saw in Boston, so anything we can do to speed up the process reduces the risk," DiNunzio feels.

Despite the speed issues, the NFL security chief says introducing compulsory wanding and pat-downs in late 2011 was a giant step forward. There is, however, the potential for fan discomfort. "A lot of them find the procedures intrusive, and some stadia, such as the San

(Above) Security screeners at CenturyLink Field check fans with a metal detector as they enter the stadium **(Right)** Major League Baseball reviewed its security procedures following the Boston attacks. Here, walkthrough magnetometers are used at the Detroit Tigers' Comerica Park

DIFFERENT BALL GAME

The annual NFL Super Bowl is designated as a 'Level I' National Security Event by the Department of Homeland Security, which means it is considered to be the type of event most likely to be targeted by terrorists.

Once an event is placed in this category, the federal government takes over security plans, which means it pays for Super Bowl security.

Security planning for the most recent Super Bowl XLVII began 18 months before it took place on 3 February 2013, at the Mercedes-Benz Superdome in New Orleans. More than 70 local, state and federal agencies were involved in putting the plans together. To prevent any terrorist attacks by air, federal helicopters enforced a flight restriction zone on the day of the game, meaning no aircraft were allowed to fly within 30 miles of the stadium

Officials hired 4,000 private security guards to pat down fans and monitor metal detectors and x-ray machines. The New Orleans Police had black tank vehicles on hand to use in the event of a hostage situation. And security extended beyond the event itself. For instance, starting six days before the game, all cargo entering New Orleans ports had to be scanned with metal detectors. Additionally, the Coast Guard worked to secure all marinas, and Customs Enforcement was on the lookout for counterfeit Super Bowl goods.

Approved bags

12 x 6 x 12in clear plastic bag

One gallon plastic freezer bag — Clutch with shoulder strap — Clutch with wrist strap

Non-approved bags

Backpack — Binoculars case — Camera case — Clear backpack — Tinted plastic bag

Printed pattern plastic bag — Waist pack — Seat cushion

Oversized tote bag — Baby changing bag — Mesh bag — Handbag

Francisco 49ers and the Atlanta Falcons, are moving to walkthrough magnetometers," he reveals. Other venues, such as the MetLife Stadium in New Jersey, are using portable magnetometers on some entry gates. Fans walk through an archway and the scan is almost imperceptible to them. The National Basketball Association (NBA) is ahead in this respect – a lot of its arenas have magnetometers."

Wanding and pat-downs have become more common in the MLB this year and could be made compulsory next season. "We re-evaluate security every year and there could be a change in policy in place for the 2014 season," explains Joe Abernathy, vice president of stadium operations for the St Louis Cardinals at Busch Stadium. "What happened in Boston really caused everyone to think again about how best to ensure we prevent people entering with any type of explosives. We also have a concern here about the number of active shooters."

According to Abernathy, the MLB and NFL consult regularly on matters of security and he suggests that there are many parallels in their approaches. The two central issues in both leagues, he reveals, are ensuring that no dangerous vehicles

enter the safe perimeter area, and carrying out effective checks on fans as they enter the gates.

However, there are differences in security policies, which reflect the nature of the two games. "MLB has games pretty much every day from April to September – that's 162 games per side and 81 home games," he estimates. "There are only 16 games in the regular NFL 17-week season, so it doesn't have such big variances in attendance as we do. There are also more adult males in an NFL crowd, which arguably creates greater security issues."
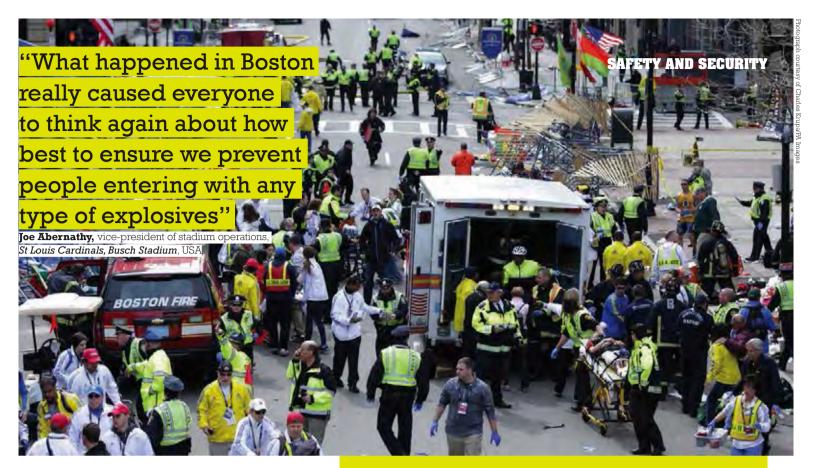
Tailgating and technology
Abernathy claims the NFL has suffered more than the MLB with alcohol-related incidents in recent years, but Steve Miller, an associate director at the National Center for Spectator Sports Safety and Security (NCS4), says there has been a rise in violent incidents right across US sports stadia.

"We have problems with alcohol both inside the stadia and outside before games start," he says. "Violent incidents overshadow safety concerns. For example, there's a big issue with tailgating, where multitudes gather outside events several hours before kick-off.

(Above) A security worker has clear plastic bags to give to fans outside Candlestick Park before an NFL game **(Top)** As part of the enhanced NFL public safety policy, there is now a list of approved and non-approved bags

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They drink alcohol, cook food and socialise. The longer it goes on, the more dangerous it becomes as they drink more and more alcohol. Opposing fans will intermingle and the rival groups can get nasty."

Alcohol consumption

Rules have also been introduced to curb alcohol abuse. During NFL games, alcohol is no longer on sale after the third quarter and, to curtail the tailgating habit, NFL stadia are now prohibited from opening car parks more than 3.5 hours before kick-off. "They used to arrive at 7am and drink all day when there was an evening kick-off," DiNunzio recalls.

Technology, too, is helping to control the tailgating phenomenon. Many stadia, according to Miller, have installed video surveillance cameras at tailgating hot spots, and are monitoring videos and pictures posted on the internet from smartphones. The phones, however, are a double-edged sword: helping tailgaters to organise their gatherings as much as they help stadium security to police them.

Technology is also central to monitoring incidents during games and the vast majority of US stadia have introduced incident management system (IMS) software in recent years. More than half of the professional venues use the ISS 24/7 system, which is also in use at half of the collegiate football venues, some of which are larger than typical NFL stadia.

Erik Waldman, director of event operations at Georgia Dome, says the ISS 24/7 system enlists the help of fans in rooting out trouble. "It enables them to text our central management centre, which we call Dome Control, with information about any issues they see," he explains. "It could be anything from a spillage to a violent incident. The advantage is, they can report

READY, SET, GO!

In addition to stadia security, CCTV video technologies are also being used to regulate outdoor sporting events. For example, every year there are hundreds of competitive canoe, kayak and rowing races across the world that need to be judged accurately. In the interest of fairness, all the competitors must start from the same place on the course. However, from 100m away, it can be difficult for the land-based judges to properly ascertain whether the competitors have correctly positioned their boats into the start gates. Following a rigorous evaluation by both FISA (International Federation of Rowing Associations) and the ICF (International Canoe Federation), race course systems from Polaritás – which include Mobotix CCTV cameras – were selected to govern the London 2012 Olympic and Paralympic competitions. The video monitoring and start systems were a success, and similar systems will be used to regulate the canoe, kayak and rowing events at the Rio 2016 Olympic and Paralympic Games.

Despite officials sweeping the area for bombs twice before the Boston Marathon started, two bombs were smuggled into the area in backpacks and exploded, prompting the NFL to review its security practices

incidents with total privacy so there's no need to talk to an usher or a security guard. Once it's in our IMS, it can be assigned to a security company and our response is rapid."

The more sophisticated IMS software creates comprehensive reports of all incidents during a game. The logs detail when and where they occurred, the response times and the frequency of each type. These detailed reports help clubs to monitor trends and train their personnel accordingly. League headquarters can also study the incident reports from games and look for patterns.

According to Scott Meyers of ISS 24/7, until a couple of years ago most US stadia were using pen and paper to track incidents. "This wasn't efficient enough when there were issues of liability," he says. "It could be a nightmare finding the right documents out of

MAN'S BEST FRIEND

Bomb dogs sweep sports stadia in the USA as soon as they go into lockdown 24-48 hours before a game. The Arlington Fire Department's canine unit patrols the AT&T stadium, formerly known as the Cowboys Stadium. Seven Labradors are used that can detect 19,000 explosive chemicals. One of the dogs, Jasper, is a vapour-detection canine and has been trained to smell explosives being carried or worn by a person in crowded areas. The other six often work with police officers carrying firearms and so are trained to ignore smells emanating from people. Their task is to search vehicles and buildings. All the dogs go through daily training, such as sweeping buildings for hidden explosive compounds.

Arlington also recently used US$243,119 of Homeland Security grant funds to buy an explosive ordnance disposal robot. Equipped with four cameras, it has both tyres and metal tracks that help it to climb stairs. It can also be fitted with cable cutters, cordless drills and saws to slice through walls or vehicles. Using a claw, the robot can pick up suspicious objects and place them inside a 'total containment vessel'.

(Above left) Despite the new policy on car park opening times, fans will still be able to enjoy tailgating, knowing they'll get into the stadium more quickly **(Above right)** NFL teams are committing more money to security tech **(Below left)** Security was tightened at the 2013 London Marathon, held a week after the one in Boston

Photograph courtesy of Bimal Sharma/Demotix/PA Images

hundreds of bits of paper, then everything would have to be logged on paper again after the case was closed."

Digital divide

Last year, the NFL began a policy that requires any fan ejected from a stadium for breaking the NFL Code of Conduct to take a four-hour online course before they are allowed to return to games. The course was co-designed by psychotherapist Dr Ari Novick and the MetLife Stadium security director, Daniel DeLorenzi. It is focused on alcohol abuse, anger management and crude behaviour.

"They have to receive a certificate of completion and send a letter of apology to the director of security at the stadium. If they are considered truly remorseful, they will be let back in at future games," says DiNunzio. "Until that moment, we prevent them coming back in by using advanced pan-zoom digital camera technology inside and outside the bowl that monitors for people who have been ejected. A number of stadia also have very aggressive units looking for banned individuals."

According to DiNunzio, the cost-effective use of technology is the biggest issue faced by stadia today. While the online incident management systems are not prohibitively expensive, other technology is. "You can take security to an unnecessary level, or you can focus on what a reasonable person might regard as defending against common-sense expectations of threats," he says. "That's the balancing act we're always striving for."

One example of an innovation that is currently too costly for sports stadia is liquid explosives detection system (LEDS) technology, in use at many major airports. Sophisticated software algorithms compare atomic number and material density to detect threats. "It can scan two liquids that look equally innocuous, but one could be lemonade and the other one a liquid explosive," DiNunzio reveals. "It's amazing but it's far too expensive for now. The average NFL stadium has 120 gates and one of these devices costs US$250,000."

A more likely development in the near future would be the replacement of bomb dogs with robotic canines. "We are looking at ways to implement this at NFL stadia, and there's potential for greater accuracy in detection than with dogs, but we're not quite there yet in terms of cost-effectiveness," DiNunzio says.

Miller predicts that unmanned aerial vehicles (UAVs), or drones, will be used in the near future to patrol sports stadia. US-manufactured drones have proved a cost-effective way of protecting rhino from poachers in South Africa. "We're doing research into their potential and it's exciting," he notes. "They can be loaded with surveillance cameras, explosives and chemical detection sensors. Prices are falling fast as the military is not buying them any more and private manufacturers are eager to find new buyers." ■

AUTHOR

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