

## Collaboration brings innovative new security solutions

### Case Study: Threat Sensing Post (2008)



#### Introduction

Nuctech is a prestigious high-tech company originating from Tsinghua University - Asia's equivalent to MIT in Boston. After 10 years of rapid development, the company has become a leading worldwide specialist in the research, development and manufacture of patented security inspection technology for customs, rail and aviation, logistics, industrial manufacturing, medical, environmental and food processing applications. Their products are exported globally, with our very own HMRC Customs relying upon Nuctech's state-of-the-art equipment to detect illegal movement of people, goods and substances at a number of major UK ports.

In their planning for the 2008 Beijing Olympic Games, the organising authorities knew such a mammoth event would attract some of the largest pedestrian flows in history. Naturally they wanted to maximise security to deliver a safe Olympics, but also make it discrete so visitors could enjoy the sport and good mood in the city. With such a strong reputation in the security sector, Nuctech was commissioned by the Olympic organising committee to develop some safeguarding solutions for this purpose, and as their long-standing product design partner, we were asked to be involved too.

#### Brief

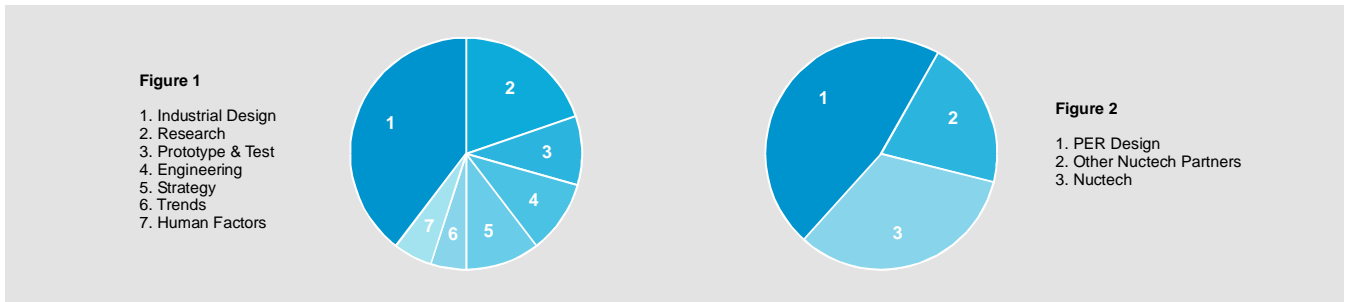
The central brief for this project was to develop a device that could speedily and remotely detect levels of radioactive matter, explosives or illegal drugs being carried by passing crowds in major public places. Nuctech identified 3 areas for us to focus on:

- Inspection had to be non-contact using distant sensing technology. The device would be sited in or outdoors, and at safety sensitive locations where large groups of people gather - especially airports and the Olympic Park venues. It needed to directly warn ground staff of a security incident, plus also wirelessly transmit alarm data for remote monitoring by security services.
- They wanted to keep to the principle of a one-stop security check. Multiple stops and checks cause queues, frustration and often knock-on security issues. It also costs money to duplicate staff and facilities.
- Nuctech wanted to make the process as discrete as possible, to keep a positive mood amongst the public.

PER Design has worked with Nuctech for many years, pioneering the industrial design elements of almost every product they've released. For this project we were once again required to work closely with their engineering department, with the task needing completion in just five months.

#### Activity

We assigned a team of 3 industrial designers, 1 mechanical engineer and 1 project manager to work with Nuctech's experts. Our collaboration was deep - sharing, exploring and refining many ideas in the initial phase, followed by frequent contact whilst each side worked to realise their respective area of the project. Figure 1 overleaf shows just how much of a leading role we took in this project, and figure 2 highlights the division of our work.



In the early stages, our teams looked at a number of quite radical concepts like a purpose designed venue entrance/exit way, sensing tiles embedded into the floor, and so on. None of them were quite right, but further research and brainstorming identified temporary barrier systems used in queue management as the best way forward. They're familiar and discrete, provide space to fit the necessary internal parts, and modular therefore easily scaleable. Moreover they also help to physically guide waiting crowds along a controlled route.

We then engineered this concept into a free-standing weatherproof and tamperproof structure, powered by mains or battery, and with a highly visible red warning light on top. Nuctech could equip each post with any one of their 3 sensing modules (radioactive, explosives or narcotics), but as the Olympic authorities were mostly concerned with bombs and drugs, just these 2 modules would be used. This gave us the idea to colour code the posts according to the sensor technology inside. For example when a black post alarms, ground staff would immediately know that explosives was within proximity, and a light on the silver post indicates a narcotics alert. Our customer saw this very simple visual feedback solution as a real innovation, one that would greatly increase awareness and response times. Clearly we also wanted to add some visual appeal to the product, so we designed the polished metal post caps taking inspiration from the beautiful gold and jade winner medals for these Olympics.

**Results**

PER Design successfully completed the project within the time required, and the devices were widely used to direct and protect visitors during the 2008 Beijing Olympic Games. The event proved to be a resounding success for China, with great sport and no safety incidents. It's testimony to our client's excellent technology and vision, plus the creative foresight and skill of our design team.

Here's what our customer had to say about working with PER Design:

**"The scrutiny and efficiency side of PER Design's professional staff really showed through in this project, and we were always surprised by their pursuit for perfection and innovative possibilities. Our cooperation with PER Design was enjoyable and rewarding. They not only created us a satisfactory product, but also upgraded our own design level, for which we are most grateful. In the near future, we will continue our collaboration with PER Design."**

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