

# Case Study: Safety Incident Reporting

## London Bridge Station Redevelopment

### ***Recommendations for future projects to improve the collection, submission and feedback to safety incidents in a site environment***

At the start of the London Bridge Station Redevelopment, it was identified that the workforce would need a system to report their 'near-misses' and safety incidents upwards to the safety team for immediate action or recording.

The frequent incident reports from the work sites needed to be captured accurately including the good as well as the practice that needed improvement that the operatives had seen. It was important that the workforce believed there was no risk of the person reporting the incident getting blamed or getting in trouble. This factor was key to getting the workforce to buy into the process and proactively report everything they came across.

Typically, incident reports might include:

- Unsafe or untidy work sites
- Unsafe activities and operations
- Unsuitable, faulty or damaged pieces of equipment in use
- Any situations with a high-potential for an accident.

The system would need to be simple to access, easy to use for a wide range of users, very strong and weatherproof, reliable and embraced in everyday use by the workforce.

Such a broad-ranging variety of inputs and a critical importance of the information collected meant a very robust system was needed that could collect, collate, share and report the data. It needed to work remotely, in tough conditions and in multiple locations.

On many construction sites, the immediate answer is to use a smartphone based 'app' reporting system but on a live railway site, this is not an option and so the challenge began. It isn't just a railway issue either – this can be an issue out on the roads, at airports and at high-security facilities where phone use is forbidden.

### **The chosen system setup**

The system specified was as follows.

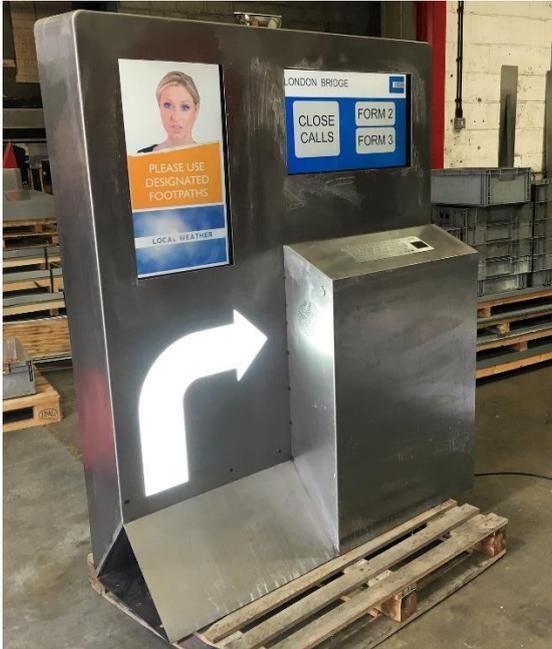
1. The system would be known as 'Close Call' reporting.
2. It would operate through a set of ten identical, standalone, dual-screen computers, each with a keyboard and trackpad.
3. The computers would need to run on the Windows operating system and data entry would be via a browser-based form.
4. The on-screen forms would be created on the Salesforce software platform.
5. Each Close Call machine would have a proximity sensor that would detect passing operatives which would wake it up from standby.
6. Each machine would require a data connection and a 240v power supply.
7. Each machine would require sound.
8. Each machine would need to be tamper and vandal proof, very sturdy and weather proof.
9. Each machine would be painted and branded the same.

## The many challenges thrown up by the first iteration

The first prototype machine that was built by Hard-Hat Media looked like this prior to painting. The front of the machine featured a large light-up arrow to draw attention to it and act as a reminder to the workers to report what they saw.

The computer itself was fully encased to prevent tampering and the structure was engineered to be very strong to avoid accidental damage. The keyboards were made from metal to avoid damage and a touchpad was used instead of a mouse.

The prototype:



The machines looked like this once painted and branded:



The online form that users interacted with was based on the Salesforce application. Each form was linked from: <http://closecall1.lbstation.co.uk/>

[This video](#) shows a demonstration of how the form had to be completed at the terminals.

## There were several issues to overcome after launching the first version



- There were connectivity problems reaching the local ethernet network and there was no wi-fi on site.
- The physical size of the units could make them difficult to position.
- The usability of the keyboard was tricky as the keys were very stiff.
- The trackpad interface wasn't great.
- The machines required regular maintenance and software updates.
- Positioning of the machines had to be within signal coverage area.
- Connecting to the project's online systems caused some problems initially.
- It was difficult to monitor the up-time of the Close Call machines and their internet connection.

## The design iterations

Firstly, remote software control access was added using an application called Team Viewer. This meant all machines could be accessed from any online terminal. The trackpads were replaced with 'track-balls and keyboards' to make them easier to use and new touchscreen monitors were added.

To encourage use, a weekly prize-draw for vouchers was set up for operatives that submitted close-call forms. The user interface was improved with links to information such as Transport for London status updates and weather etc.

Content was improved over time by adding audio and video soundbites of people talking straight to camera (i.e. at the viewer creating eye-contact) to encourage people to submit close calls. Alongside these, eye-catching animated screens were intended to be thought-provoking and attention grabbing as operatives were passing by.

A motion-sensor was added to each machine to wake it up as operatives approached and remind them to input any close calls.



## Key lessons learned

- Keep the data entry form as simple as possible to encourage use.
- Automate as much of the data entry form as possible to encourage use. For example, pre-filled dates, times, geo-tags, tick boxes and pre-filled data choices.
- Don't set quotas or targets for close call reporting. This dilutes the data which becomes irrelevant. Provide operatives with a tool for simple data entry and people will use it without targets.
- Number or name the machines to help identify and locate them on site.
- Don't make the terminals too heavy or they become problematic to regularly re-locate.
- Provide the user with a method to receive feedback about what happened after they submitted their close call.
- Use of 3G or 4G data-cards may be the simplest way to get the machines online.
- Use prioritisation categories for data being submitted to channel the urgent and most important cases to the top of the list.
- Try to keep the list of submission categories concise. reached 37 and
- Set aside time and resource to manage the feedback for any close calls submitted. The process requires quite a bit of administration, especially at the peak of site activity and if it's not done, operatives will not use the system.
- Most computers can run on voltages between 110 and 240V so no additional transformers should be required.



## The key recommendations for future projects

- Make your terminals weather-resistant and tamper-resistant.
- Make sure the content is continually updated to keep people interested.
- Be prepared for frequent power interruptions and ensure the machines will restart with minimal requirement.
- Encourage operatives constantly to use the machines and consider incentives.
- Regularly promote the submission of close calls at committee meetings, daily briefings, on monthly reports etc.
- Assign resource to look after the system and be prepared for the high number of responses that will come in.

### Author

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### Further information

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