recognized as a valued part of the process. The time allowed for the review will depend to a large extent upon the nature and size of the population concerned. If it is too short, people will feel you are trying to put pressure on them; if it is too long, people will tend to forget. You need to strike a reasonable balance. Perhaps a week or two might be about right, but you are best placed to make such judgments.

At the end of this initial review period, go through the feedback, consider the value and implications of what people are saying, and implement any changes which are called for.

At the end of this initial review period, go through the feedback, consider the value and implications of what people are saying, and implement any changes which are called for. The result will be the working draft version of the plan (or plans), which will then be distributed to everybody. If no significant changes were made as a result of the initial review, then you should inform all the recipients that they already have the approved version – the approval having come from their own peer group review.

6.4 Conducting Tests and Exercises

6.4.1 Testing

As discussed earlier, testing is a vital step in the development process, and each of the elements should be tested separately before embarking on a full-scale, end-to-end test. Obviously, there will be exceptions to this; where the plan and the evacuation procedures are relatively straightforward, you may feel you can embark on a full test immediately.

Whichever approach you use, make sure that the testing is properly planned and the results are documented. Your main aim is to ensure that the procedures, resources, and facilities are fit for purpose and to gain some indication of the timings involved. The documentation provides evidence of the fact that you and your colleagues have applied due diligence in connection with the welfare, health, and safety of those who are likely to be using or visiting your premises.

At the end of each significant test and all exercises, hold a debriefing immediately to give all the people involved a chance to air their views and permit you to capture any useful comments or points for improvement. Such debriefings should be a regular feature of all emergency evacuations, whether they are tests, exercises, or the real thing. It is an opportunity to share ideas and build a sense of camaraderie as well as a chance to learn and seek improvements.

6.4.2 The Launch Test

Once the plan has been finalized and all its elements have been proven through some form of testing, it is time to embark on the "launch stage" of the EEP program. Apart from its practical significance in demonstrating the recently developed evacuation procedures, your launch should also be a kind of cceremony – a marketing or public relations event – which marks the delivery of the completed work. Use it to remind everyone of the importance and significance of being prepared to deal with a dangerous situation, should it ever occur. There are plenty of examples you can use to reinforce the message you are trying to get across – "Safety is something we have to prepare for; we can't take it for granted. It doesn't happen automatically!"

This test is as much a demonstration as it is a test. Its principal and published objective is to check how long it will take to evacuate a representative number of people. Obviously, you will have checked and tested all of the elements in advance, and so you will know that everyone will be able to hear and recognize the alarm, follow the instructions, and reach a place of safety without difficulty.

Choose a group of people, a department, or a section of the building which you intend to invite to be part of the launch test, and check with whoever has overall responsibility for activities in that area. Explain to the responsible person what you have in mind, including the purpose of the test and the public attention which you will be trying to create as an integral part of your ongoing awareness campaign. I would expect that you will get their full and enthusiastic support, but if the person has any doubts or reservations, then I would suggest your response should be: "Okay, we can try somewhere else." It is most unlikely that anyone would want to resist this opportunity, but it is always best for you to prepare an alternate strategy. Once you know how long it takes for this number of people to evacuate the premises and reach the emergency assembly area, it is relatively straightforward to estimate the time it will take for a complete evacuation. (Details of how to carry out such a procedure are explained in the United Grand Lodge of England case study later in this section.)

To ensure that you obtain the measurements for your calculations, make sure that a couple of marshals or observers are in position before the start of the test with stop watches ready to time the whole proceedings. Make sure that these people are able to hear the initial alarm so they know when to start timing. If you have any doubt about their ability to recognize the alarm from where they are positioned, arrange for some form of signaling arrangement to alert them. The easiest way is often to use mobile phones to keep them advised of what is happening. In some situations, it might be possible to use a visual signal such as waving or dropping a flag. One client of mine actually

uses a smoke signal to act as the trigger for the alarm and as a signal to the observers that the test was under way. They adopted the smoke signal idea as the trigger for all of their subsequent exercises; thus, even their neighbors are familiar with their EEP program of regular evacuation exercises. Their local emergency planning officer regards them as model citizens.

If the exit routes or evacuation paths are anything other than straightforward, arrange for observers to be present at any of the decision points or bottleneck points along the way so they can report back on how the people coped. During the subsequent debriefing, you should also give the participants a chance to comment on any difficulties or problems which they experienced.

Make the results of the test known to everyone together with the calculations regarding total evacuation time. Remember to make it clear that the total evacuation time is an estimate based on the assumption that a larger crowd would act in the same manner and that larger volumes would not lead to unexpected difficulties in the evacuation procedure. This clarification is important because it leads naturally on to the necessity for a full exercise to confirm the prediction that the procedures you have in place will ensure that everyone can reach safety within a reasonable period of time.

...for this first demonstration of your emergency evacuation procedures, check whether there is any relevant legislation, regulation, or guidelines regarding the frequency or importance of such exercises.

6.4.3 Exercising

Everyone was made aware of the launch test, which was promoted as a significant event in the development and delivery of the EEP program. The first full-scale exercise warrants the same, or even more, publicity. It is an ideal opportunity to reinforce the need for, and the benefits of, your EEP program.

Before making the announcement and final preparations for this first demonstration of your emergency evacuation procedures, check whether there is any relevant legislation, regulation, or guidelines regarding the frequency or importance of such exercises. You may identify regulations which apply locally, that are industry-specific, or that apply to your particular group of people. If you discover any rules that need to be taken into account, then you should make sure that everyone is made aware of them to accentuate the importance of what you are doing.

Because it is the first event of its kind, you need to give plenty of notice to all parties so that everybody is properly prepared. Depending on the audience and the complexity of the plans and procedures, invite everybody to a briefing

meeting or perhaps simply ask them to read through their plans in order to make sure they fully understand what is expected of them. In some situations you may even arrange an escorted walkthrough for some members of your group prior to the actual exercise.

If your plan calls for, or allows, marshals to assist, direct, or guide the evacuees, then ensure they are deployed before the start of the actual evacuation so that they are already in position when the crowd begins to respond to the first signal. If they have high visibility vests or jackets they should put them on when they are first deployed – people will get to see and recognize them as they get ready and move into position. Having the marshals in place and ready for the start will ensure that it all happens in an orderly controlled manner. Once everybody is familiar with the procedure and the marshals know where to place themselves to the best advantage, then you can run a more realistic version of the exercise in which everybody starts at the same time.

While you should try to ensure that this important initial exercise is a public display, be careful not to turn it into a pantomime. It should be experienced, and consequently remembered, as a serious educational event rather than a frivolous entertainment.

From the perspective of timing, ensure that your exercise doesn't coincide or conflict with any other important occasion within the organization or the community. This will ensure that attention is not diverted or split between the two. Avoid any peak periods when an exercise might be regarded as an unnecessary and inconvenient disruption. On the other hand it isn't necessary to take pains to ensure that every single person is available; aim to involve the majority rather than the entirety of your population. Those who miss this exercise will catch up at the next one. If a real incident should occur in the meantime, they will be able to follow the lead of others who will have previous experience.

Monitor the performance of all those who take part and let everybody know what was learned during the exercise; inform them of any planned changes or improvements which the event has highlighted. Any changes should be discussed at the debriefing and comments noted for your report. Hopefully, it will all have run smoothly and no changes will be required. In this case the overall evacuation time will be the main piece of information for your report.

In any case, your report should give an indication of the likely date, or at least the timeframe, for the next one.

The marshal and observers should be asked to share their views about the plans, procedures, and their interpretation during the debriefing, but you should discourage them from making any negative comments about the

performance or capabilities of any specific individuals; any criticisms should be expressed in very general terms. If you permit criticism of the performance of specific individuals, you face a distinct danger of a debriefing that does more harm than good. I would be happy to hear this: "Some of the signs or the instructions were not very clear, which probably caused some people to take the wrong direction." I would not want to hear comments like this: "Charlie seemed to ignore all the signs," or "The accounts team made loads of mistakes and ended up in the wrong place."

Ideally, every exercise should be arranged and managed in such a manner that the result can be seen as a success and the participants congratulated on their performance and positive attitude. If the result is anything less than this, then it is the development and delivery of the exercise which is at fault – not the participants. I always like to end an exercise with a few words of praise such as: "Despite all the little problems we threw at you, you did very well. Congratulations!"

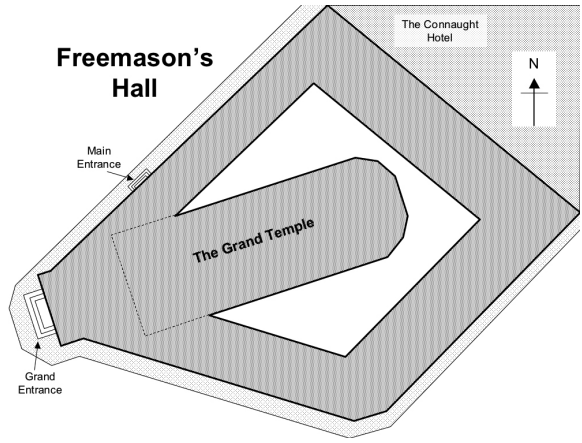
You may choose to introduce a few additional problems for the participants to deal with when taking part in an exercise, especially when you believe that the majority of the people have developed a reasonable level of competence. This will make it more interesting and stretch the minds of all those involved. However, you should refrain from any attempt to complicate or confuse the evacuation proceedings. Extra challenges can be very useful in those situations in which we are trying to get the players to think on their feet and prepare to tackle all sorts of difficulties under stressful circumstances. In a crisis management or business continuity exercise, for example, such unexpected occurrences would add to the realism and provide additional learning opportunities; however, introducing the unexpected has no place in an emergency evacuation exercise where the aim is to develop confidence in, and familiarity with, the prescribed procedures. This is not the time and place to start playing games or to introduce unnecessary complexities.

6.5 Review and Update

The review and update stage of your EEP program is in many ways the simplest but also the most arduous. Theoretically, it is just a matter of keeping track of what is going on and making sure that the plans and arrangements are in line with the needs and expectations of those who occupy or visit the premises. In practice, this stage consists of a series of routines which are easy to ignore, forget, or neglect. It takes a special mind set to pay attention to the administrative detail on a long-term basis. The thinking here is very different from that which is required when you are setting out to explore and develop something new. Those early stages are a series of projects with defined outcomes and timeframes; as each deliverable is complete, one gets a sense of

6.7 Case Study: United Grand Lodge of England

The following case study looks closely at emergency evacuation planning carried out by a progressive business continuity manager working in a unique environment and supported by an imaginative group of executives.



Peter Jack comes from a disciplined high-tech back ground, working as a technical officer in the Royal Navy before he joined the United Grand Lodge to manage its IT. Gradually, over time, he was given other tasks and expanded his responsibilities, which eventually included aspects of security and business continuity. Whenever he starts on a project in which he is likely to get out of his depth, he calls someone in to give him advice and support while he is learning the tricks of the new trade. He is a quick learner, and this approach has always stood him in good stead, which is perhaps why the company keeps stretching his boundaries.

The United Grand Lodge of England (UGLE) is the main governing body of Freemasonry within England and Wales and districts overseas. It is the oldest Grand Lodge in the world, with a history going back to 1717. The headquarters building is known as Freemasons' Hall, located close to Covent Garden in central London. It is an imposing art deco building, covering almost nine acres (404,000 sq ft) of accommodation.

Freemasons' Hall is a "Grade II" listed historic building, i.e., "a particularly important building of more than special interest." This designation means it comes under severe protective restrictions and may not be demolished, extended, or altered without special permission from the planning authorities.

Within the Hall are a number of discrete areas; the principal area is the Grand Temple which can hold up to 1,600 people. In addition, it contains 23 other Masonic temples with capacities from 25 up to 450 people. These are all in constant demand by lodges and chapters which hold regular meetings there. The building also houses a shop, a library, and a museum as well as the four major Masonic charities and the administration to support these various operations. During the week, the building is open to the general public for guided tours of the main features of the Hall.

Freemasons' Hall is unique in its layout. Because the site is a rather strange shape and doesn't align with the compass, the Grand Temple was built on a diagonal to the rest of the structure in an attempt to have it facing, more or less, towards the East, in common with most Christian places of worship. This unusual design makes it very easy for a new or infrequent visitor to get lost or disoriented within the complex building.

With so many visitors – many of whom are elderly, frail, or disabled – emergency evacuation planning in such a complex building is a considerable challenge. Additionally, the structure must be considered as an iconic building, and hence a potential target for terrorism.

When I first met Peter, he was looking for help with his business continuity plan, but it soon emerged that evacuation planning was rather more important for the United Grand Lodge. By its very nature, the business would continue, no matter what interruption might occur. However, the health and safety of the many thousands of visitors who visit this prestigious building regularly was, by comparison, a matter of primary importance and concern.

***How long will it take us to empty the building*?** The principal question was: "How long will it take us to empty the building?" Clearly, there was no chance of carrying out a live test with a capacity audience gathered together in the Grand Temple, all attired in their full Masonic regalia. The normal exit time for such a large assembly was anything up to an hour as they gradually changed into their street clothes and withdrew from the building, perhaps calling into the shop or visiting the museum on their way out.

My inclination was to develop a mathematical way of estimating the evacuation time based upon a limited, controlled exercise using a small group of volunteers.

Working from the premise that egress would be limited by the throughput or flow rate at the slowest point – that is, the narrowest or most difficult section, of the escape route – I came up with the following method of estimating the overall evacuation time.

Below, our case study explores a practical example of estimating evacuation time in the field. At first we used a rather simple mathematical model, and later we were able to confirm our conclusions using a sophisticated computer based modeling tool.

6.7.1 Hypothesis

The total time taken to evacuate a crowd from a venue is the sum of travel time plus crowd time, where *travel time* is defined as the amount of time taken for the average person to exit the venue and reach a position where he or she can be reckoned to be safe. *Crowd time* is the total time taken for the rest of the crowd who are inside the venue to follow through and join the others within the safety zone or assembly area.

We are using the term *venue* here to indicate a space in which large numbers of people are likely to gather, such as a meeting room, a lecture theatre, or an auditorium. It is assumed that the venue is contained within a larger structure or complex which we are referring to as the *building*. The path from the venue to the point of exit from the building, called the exit, is referred to as the *exit route*. The path from the exit to the area of safety or assembly area is known as the *escape route*.

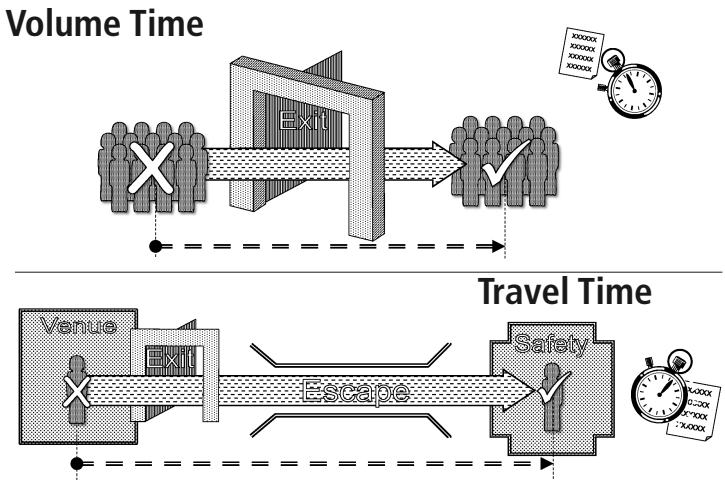
Crowd time, or the total evacuation time, is reckoned to be the flow rate multiplied by the crowd size where flow rate is defined as the number of persons per unit of time. The overall flow rate is controlled or determined at the *pinch point*, the narrowest or most difficult part of the exit route. Crowd size is taken to be the maximum number of persons likely to be inside the venue at the time of the evacuation.

Crowd Time = Flow Rate x Crowd Size

6.7.2 An Estimation Procedure

Data Capture: In order to capture some realistic data upon which to base our calculations, it is necessary to simulate the logistics of an evacuation. This simulation can be accomplished by arranging for a small crowd, of say 100 people, to take part in an evacuation exercise. In our calculations, we will refer to this crowd as a *volume*.

At the emergency assembly area, which we will refer to as the place of safety, we measure the time taken for the first person to respond to the alarm or a start signal, exit route, reach the exit via the exit route, travel along the escape route, and enter into the place of safety. The total time taken for this journey should be recorded as the travel time. For example, it may take someone 5 minutes to emerge from the venue and reach safety.



Measure the time taken for the rest of the crowd, or the volume, to follow the first person. Record this as *volume time*.

Calculation: Divide the total volume time by the actual volume to determine the average individual flow rate. This gives us the average time taken for each person to pass through the slowest point in the evacuation procedure. For example, if a crowd of 100 people should take 10 minutes to reach safety, the flow rate would be:

5 minutes / 100 = a flow rate of one person every 3 seconds

Then if we wish to know the crowd time for a much larger group, say 1,000, we can calculate the time as volume times flow rate like this:

Crowd Time = Volume x Flow Rate
for 1,000 people
=
1,000 x 3 seconds = 3,000 seconds or 50 minutes

To this figure, we need to add the travel time, which is how long it takes these people to complete the full journey of the evacuation procedure. We assume that they will all travel at the same average speed, i.e., normal walking pace.

In our example, we arrive at a total evacuation time like this:

Total Evacuation Time = Travel Time plus Crowd Time
=
5 + 50 minutes = 55 minutes

Phase 6 Key Actions

- Work with the users to assure the quality and accuracy of the plans before distributing them.
- Develop and deliver an introductory test and exercise program – element testing, end-to-end testing, and a formal exercise.
- Plan how you will deliver and service the various types of plans.
- Make the standard plans or templates available to everyone.
- Customize and deliver personal plans for all those with unique needs.
- Launch the EEP program.
- Train the EEP support team(s).
- Create a permanent program of regularly scheduled full tests and exercises, capturing and applying the lessons learned.
- Make a strong case to your sponsors to adopt the smart fire drill approach.
- Conduct "smart" fire drills, collating the results and reporting your findings.
- Create notification systems to communicate with your audience immediately before, during, and after an emergency.
- Develop and distribute a communications protocol to cover all eventualities, making sure everyone is happy and familiar with the plan.
- Prepare for the long haul, noting what has to be done to maintain the momentum of the EEP program which you have designed and developed to ensure the lives and safety of your population.