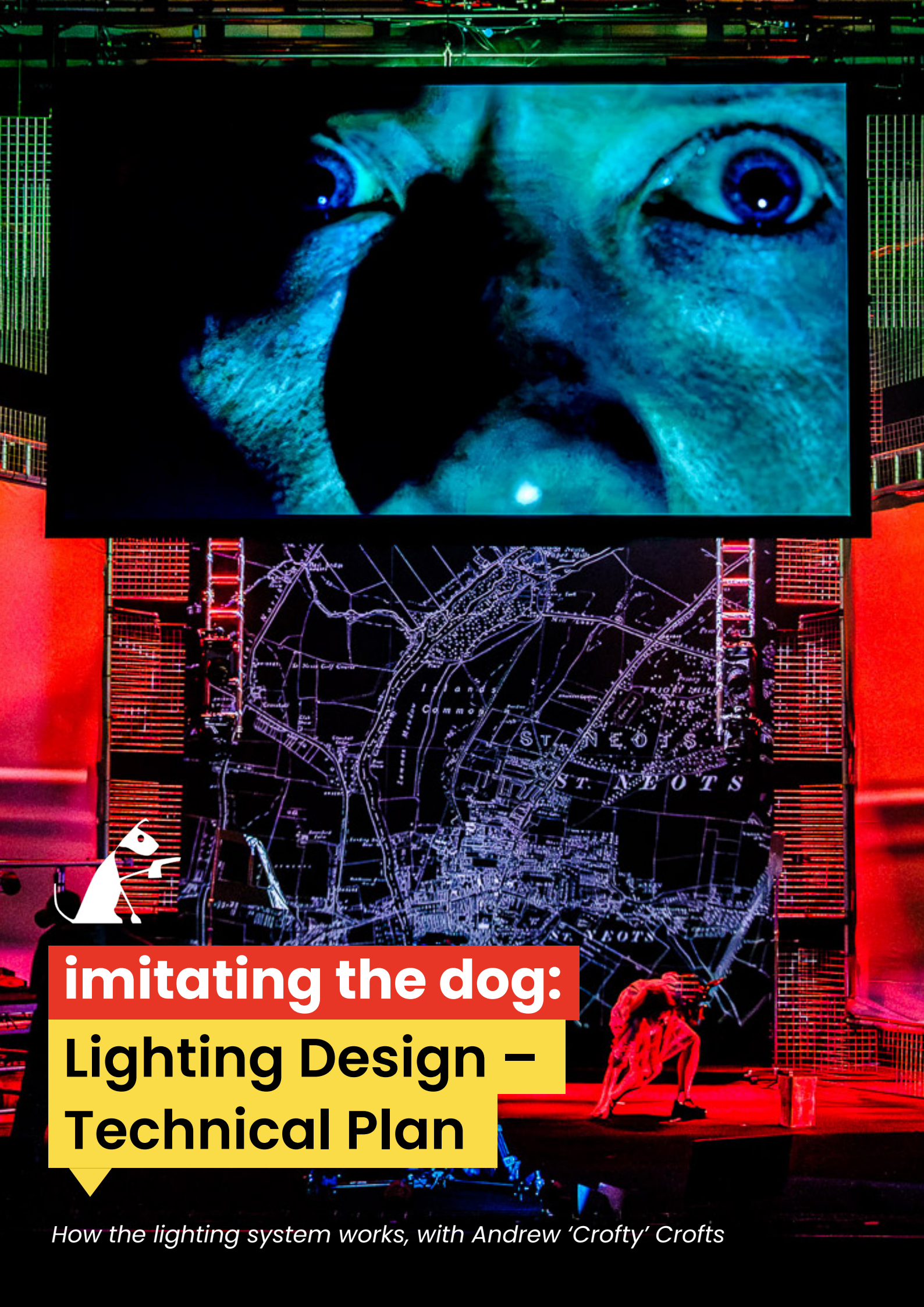


imitating the dog: Lighting Design – Technical Plan

How the lighting system works, with Andrew 'Crofty' Crofts

introduction

This document describes the technical basis of the lighting set-up for a typical imitating the dog production: what the rig is made of, how it's controlled, and what changes from venue to venue. It's written for design pathway students and teachers who want a clear mental model of how the system works, rather than a full technical specification. The words are Crofty's own, edited from a written interview into continuous prose, and the document includes his annotated *War of the Worlds* lighting plan.

› Read this alongside the companion document: Lighting Design: Andrew Crofts interview (Section 3)

the system

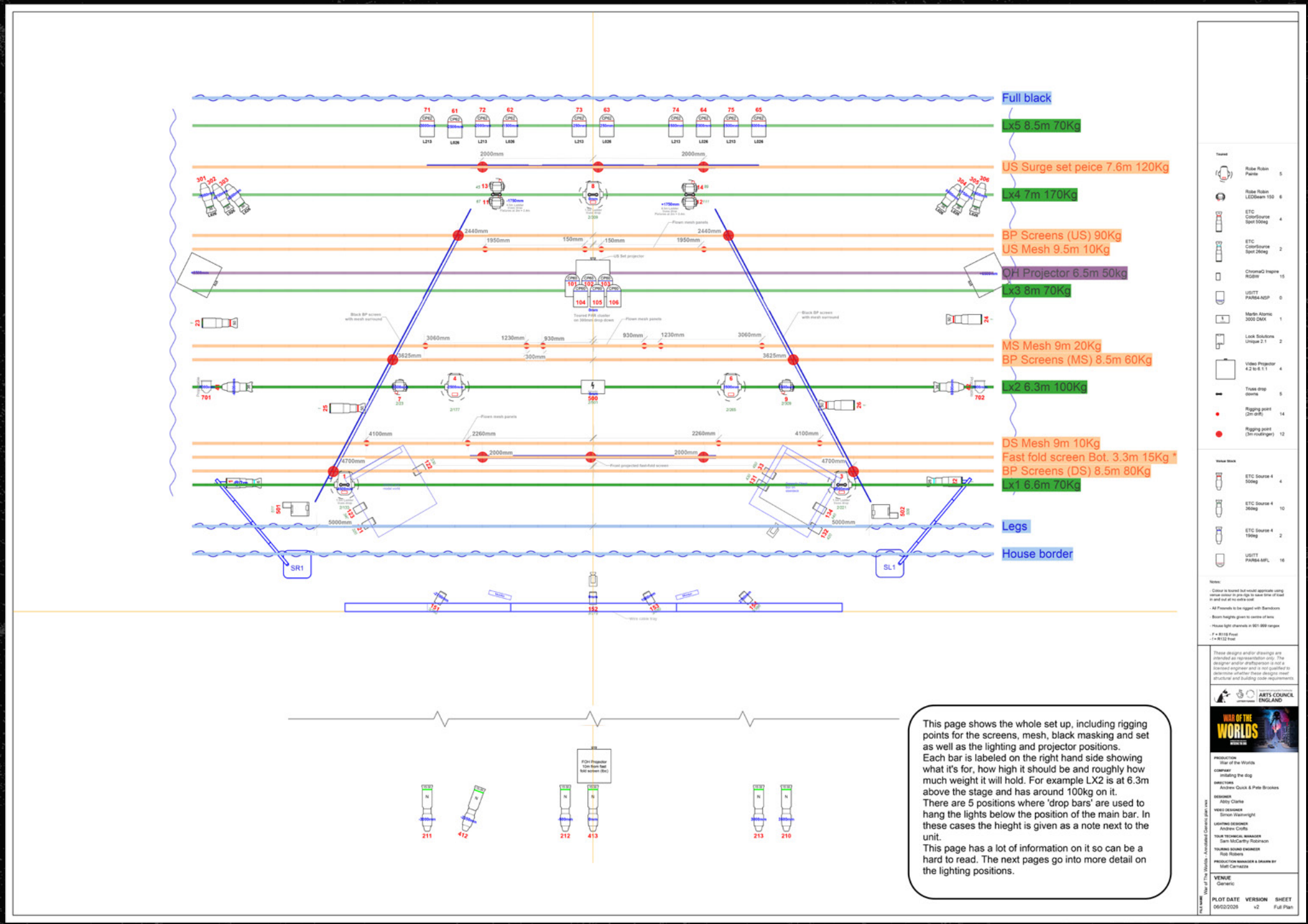
The rig: fewer lights, more jobs

The way we light ITD shows has changed over the years, as technology has improved and become more affordable to us. Ten or twelve years ago we would have a rig with lots of 'specials', all doing very specific jobs for certain moments, and the 'systems' in place — say, a row of backlights — would all be duplicated multiple times to allow for different colours to be used with different gels, as we didn't have access to colour-changing fixtures. This meant that setting up the lighting in each venue took a long time, as you'd be going round focusing 40, 50, maybe 60 lights. That can be a huge amount of work as you're moving access equipment around to reach the lights, getting the focus right and moving on. With that many units, even spending a few minutes per light makes it a huge amount of time.

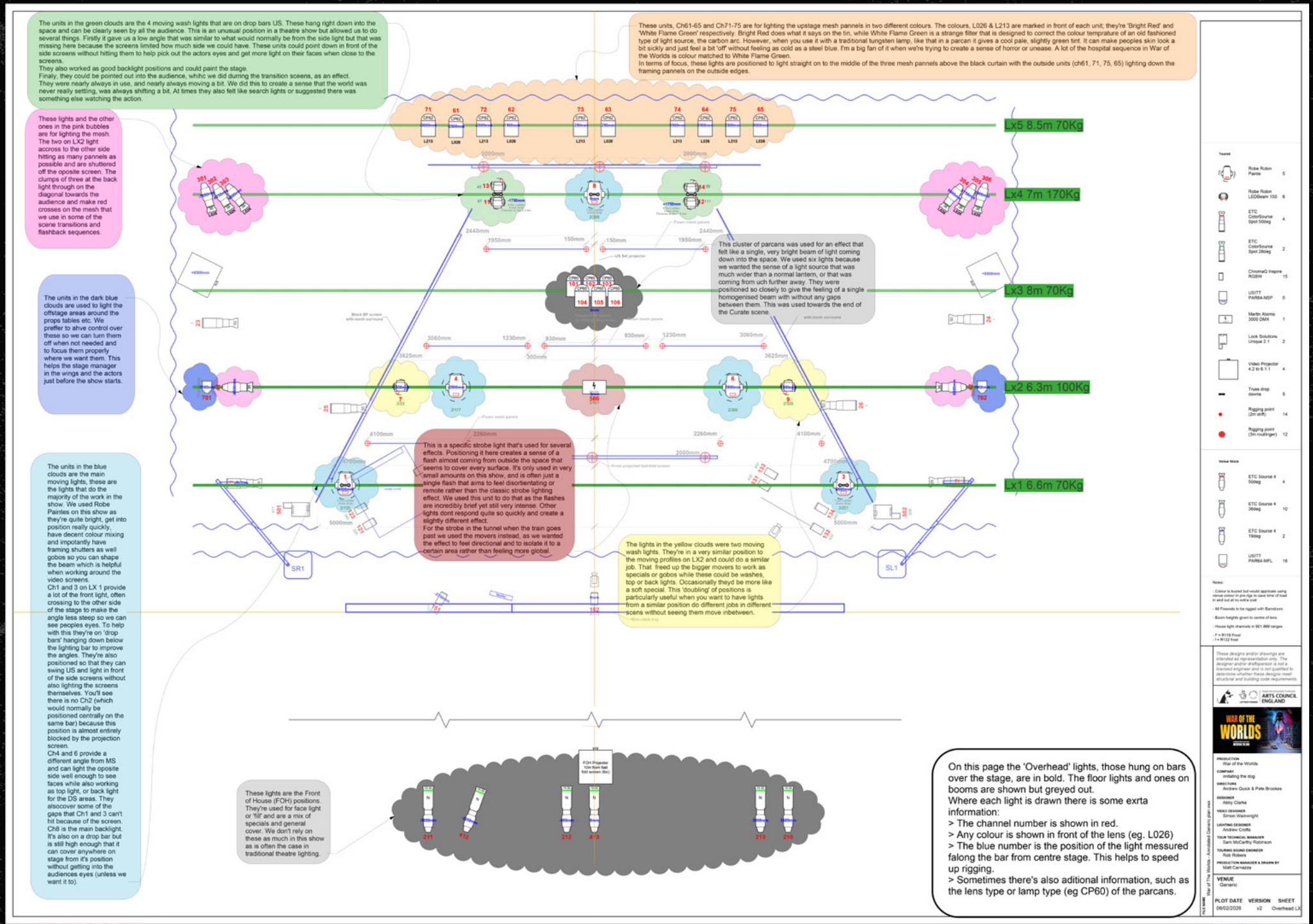
Our rigs now are much smaller in terms of the number of units, as we use moving lights, allowing a small number of lights to do lots of different jobs. We also use static LED lights in positions where we want to keep the same focus but change the colour — often on booms, or on the floor in side-light positions. I tend to work in terms of 'systems' of lights: a number of movers positioned in a pattern that means I can cover specials across as much of the stage, and from as many angles as possible. Where the set allows, I'll include side light covering as much of the space as it can, some back- and/or top-light positions, and some units to specifically light the set in interesting ways, or to be 'eye-candy' lights, where the audience can see the units, and they become part of the stage picture. I'll only add specials for more specific jobs where we have to, and I don't tend to start rehearsals with any in place.

War of the Worlds is a good example of this: the annotated plan on the following pages shows what does what. Each bar is labelled on the right-hand side showing what it's for, how high it hangs and roughly how much weight it holds, and Andrew's notes explain the job each group of lights is doing, from the moving lights that do most of the work in the show to the floor units that make the Pepper's ghost effect possible.

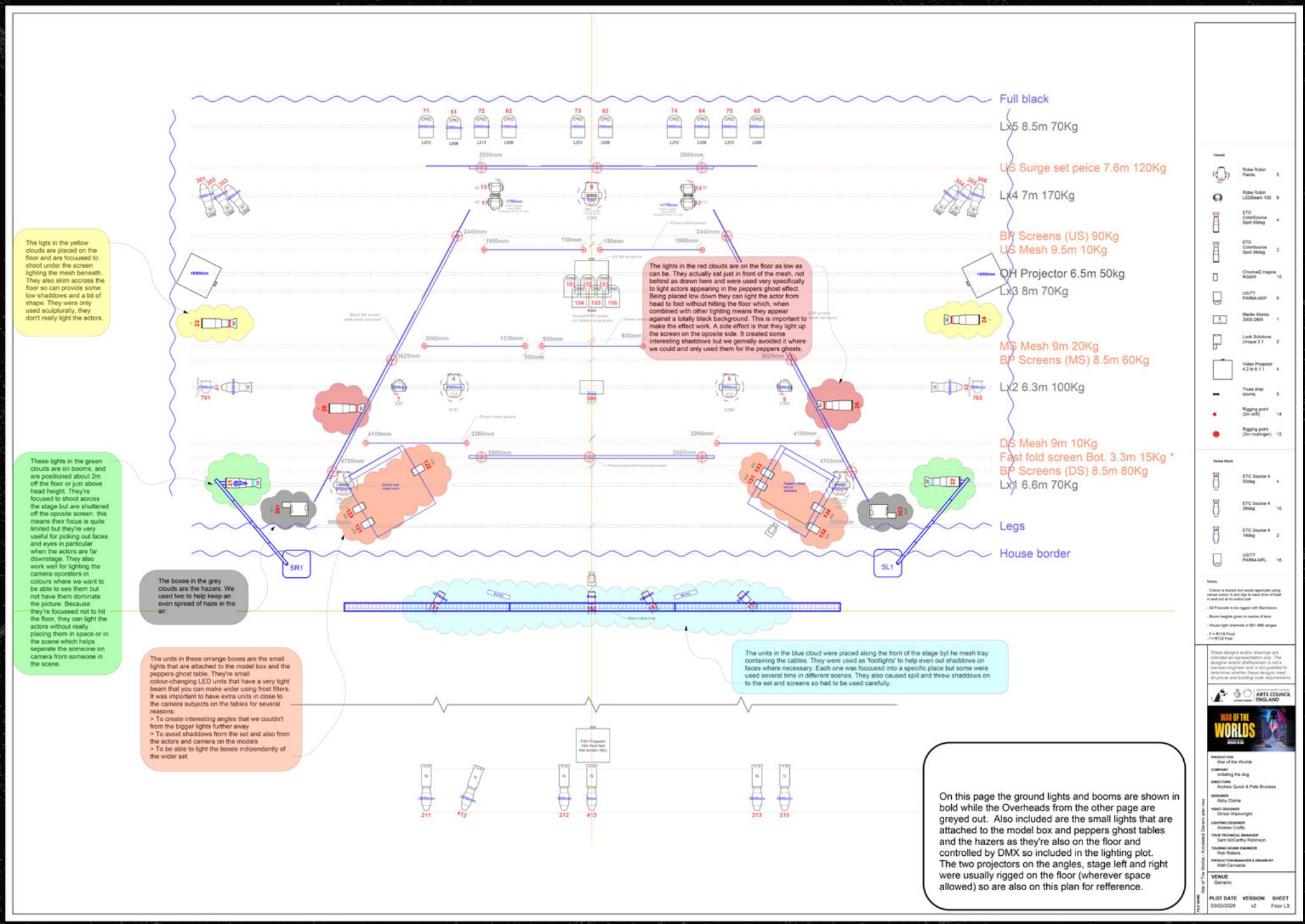
A note on this plan: this annotated lighting plan is reproduced exactly as Andrew supplied it, including his own notes and a small number of spelling slips. We've chosen not to correct these, this is a genuine piece of production paperwork, not a diagram redrawn for print, and there's value in seeing what an actual working lighting plan looks like, imperfections included.



Sheet 1 — Full Plan: the whole set-up, including rigging points for the screens, mesh, black masking and set, alongside the lighting and projector positions.



Sheet 2 — Overhead LX: the lights hung on bars over the stage, with Andrew's notes on what each system does — the main movers, the mesh-panel colours, the parcan cluster used in the Curate scene, and the strobe.



Sheet 3 — Floor LX: the ground lights and booms, including the low units that make the Pepper's ghost effect work, the small LED units on the model box, the footlights and the hazers.

Control: one operator, one button

I'm most at home on an ETC desk, and that's what we use on almost every ITD theatre production. I can only think of one exception: *All Change* in 2025, where we made a show on a specific site and had to use a lot of their in-house equipment. That included the desk, which was a grandMA2. We had a specialist MA programmer help us for that project.

Occasionally on our installations, which sometimes have very simple lighting, we use QLab to control lighting. This will usually be because we already have a QLab system in place and it's not worth the expense of a desk or Nomad, or because we have a more sophisticated control system in the building but can't run cables to every space or room from our central control point. This is often the case at Castle Howard, where the complex building means some rooms are closed off from the rest of the install. It's more efficient to put a single QLab system in some of those hard-to-reach places than an additional lighting desk. We only do this for the simplest of set-ups, however.

In terms of control, usually the lighting cues are triggered by QLab using OSC commands, or by the whole system following a timecode. Sometimes, like on *War of the Worlds*, it's a bit of both. But it's been a long time since someone 'operated' a lighting desk during one of our shows: all the cues are taken by a single operator on QLab, which then triggers all of the other systems. The full explanation of how this shared signal chain works across video, sound and lighting, with a diagram, is set out in Video Design and Projection Mapping – Technical Plan (Section 3). It works the same way for lighting as it does for the other two departments.

The get-in, the focus and the cue-to-cue

The focus time for a get-in is much the same as any other show: we focus any conventional overhead lights once the set has been built, as well as the booms and side light, and the front-of-house positions. We also look at the focus palettes and presets of the moving lights, to check that they're roughly correct. The emphasis with movers, however, is to get them physically placed as close as possible to their original positions, in terms of all three axes: upstage/downstage, left/right and height. Because we often have a fairly small number of movers doing a lot of different focuses, the whole process is made easier by having them correctly positioned, as we then don't need to adjust the palettes and presets as much.

The most important part of the process is a cue-to-cue rehearsal with the actors and full tech team, which we aim to do in each venue. It allows us to check every single cue: the lighting, each blocking position for the actors, each camera shot, and so on. This allows the palettes and presets to be updated on a cue-by-cue basis, and any adjustments to be made for the different venues. It may be, for example, that the lights are all ideally positioned, but for sightline reasons the screen has to be positioned a bit lower down. That could mean some of the focuses certain lights normally do are impossible, because the screen is now in the way. In that case we might use another light to replicate the same look, or slightly re-block the action to somewhere the original light can still reach. It's a bit of give and take between the different needs of the lighting, the actors and the cameras.

Adapting the rig on tour

We try to adapt as little as possible! In terms of lighting, I tend to think there are always two types of lighting positions: those that light the actors in a functional way, and those that just help make things look cool. The ones that light the scenes we try to rig as close as possible to where they would ideally be, and we plan this from the beginning. It's pretty much guaranteed that there will be an LX1 position (a bar basically over the setting line) in every theatre, so I always have units there, as I know we'll always be able to use that position. Similarly, we try to keep the rest of the units in positions we think will be easy to replicate.

The second type of units — the ones that are less specific but help create the overall look — are more flexible. These are often units that light the set or floor, or that create a sense of depth by being further away. *War of the Worlds*, for example, had various lights solely to light the mesh panels. Ideally these were overhead, but in some venues there weren't enough bars, or they weren't in the right place, or there just wasn't space, so sometimes they'd move onto the floor and uplight the mesh, or round to the side on a different bar to light across it. They'd give a slightly different feel in that venue, but still do the job of adding colour and depth.

practical guidance for students

Getting started

The minimum set-up a student needs to start experimenting is just some lights and a way of turning them on and off! This could be torches, handheld lights or camera lights. Ideally you'd get a desk as a means of control, but you can get started with anything really. The main things to consider are the angles used when lighting for camera, and the balance you achieve between how something looks on screen and how it appears on stage. I talk about this in more detail in the practitioner interview. This also creates great opportunities for making things appear different on stage to how they appear through the lens. That's often where the fun starts.

glossary

Specials — Lights rigged and focused for one specific job or moment, rather than general coverage.

Gels — Coloured filters placed in front of conventional lights to change their colour, largely replaced now by colour-changing LED fixtures.

Boom — A vertical pole at the side of the stage that lights can be rigged on, giving low side-light angles.

Drop bar — A short bar hung below a main lighting bar, lowering a light to improve its angle.

Parcan — A simple, robust stage light that produces a strong, fixed beam. No focusing lens, just raw punch.

Lighting desk — The console used to program and play back lighting states. ETC and grandMA are two major manufacturers; Nomad is ETC's software-only version that runs on a laptop.

QLab — Software widely used in theatre to build and play back a show's cues; usually sound, and in ITD's system, video and lighting cues as well.

OSC — A simple network protocol that lets one machine send commands to another. In ITD's system, the QLab computer uses OSC to trigger the lighting desk and video server, so all three departments fire their cues from a single button press.
Timecode — A running clock signal that keeps sound, video and lighting automatically in sync during set-piece sequences.
Focus palettes / presets — Stored positions and settings for moving lights, so a single unit can point at many different targets across a show.
LX1, LX2… — The numbered overhead lighting bars, counted from the front of the stage. LX1 (a bar basically over the setting line) exists in almost every theatre.
Get-in — The process of loading a touring production into a venue and setting it up.

› Try it yourself: Visible Mechanics (Exercise 6) in Adaptation and imitating the dog: Practical Exercises (Section 4), and Reverse-Engineering the Rules (Exercise 2) in The Rules of the Game: How ITD Builds Its Worlds (Section 2).

Published 2026 as part of imitating the dog's learning resources (Section 3: How We Make Work).

Photography of *War of the Worlds*: Ed Waring.