

Client

Universal Studios Florida

Scope of Work

Provide an integrated Show Control System that will control and monitor one of the world's most complex theme park attractions.

Challenge

The complexity and state of the art effects for the show presented many design challenges for the ITEC technical team including:

- Providing a control system intelligent enough to safely incorporate live actors into a variety of complex special effects.
- Integrating and controlling non-traditional special effects and show equipment in a film based show.
- Automating the system to allow a single operator to run the show.
- Providing a high level of system monitoring for ease of maintenance and troubleshooting.

The ITEC Solution

Flexible Control System: One of the greatest challenges for the T2/3D attraction was the integration of the live actors into a traditional film based experience. While the effect of the live actors greatly increases the visual impact of the overall attraction, they also introduce some unique control system challenges. Each of the effects in which the actors interact with the screen must be designed so that the effect does not activate unless the actor is in the correct position and the technical director acknowledges that position. Through a series of sensors, the show control computer and the sub-system computers track the positions of the actors. If anything is incorrect, the effects will not activate. The show control system is programmed to trigger alternative show sequences if a major effect does not trigger because of a problem. This keeps the show going under most types of failures.

Large Variety of Equipment: Due to the show's complex nature and special effects, it demands a large amount of equipment: specialized motion controllers, boilers and synchronized large-format 3-D projectors. Each piece of equipment is considered a "sub-system" and typically contains a computer system to control and monitor each effect. All of these "sub-systems" report and react to commands generated by the ITEC Show Control System, much as a stage director calls out a live performance. There are over 30 of these systems which must be perfectly choreographed to create the desired show.

Automating the System: Another challenge for the design team was the need to create a system simple enough for a single operator in the



technical director's booth to manage the show. Shows less complex than T2/3D often require many operators to queue each of the show segments. This was not going to be technically feasible as the pace and timing of the show required split second accuracy to create the desired illusions. The solution was to use a graphical interface for the technical director. This graphical interface automatically switches screens as the show progresses, ensuring the technical director is always aware of the status of each effect as it is triggered. This allows the technical director to concentrate on the information on the screen and visually monitor each actor. It also simplifies the duties of the technical director and reduces the chances of an operator error.

System Monitoring: Due to the level of complexity of each of the sub-systems, the ITEC team was challenged to design a system to monitor the sub-systems and report any problems. Tracking and logging of these types of problems can be a daunting task if not correctly designed into the system. Many of the sub-systems are located outside of the show facility making routine inspection difficult. ITEC's solution was to allow remote monitoring and logging of all localized sub-system faults to a centralized graphical display. This allows maintenance personnel to read all of the system fault messages in one location and then switch to a screen, which displays the current status of the equipment. This reduces downtime because the technician can arrive at the faulty equipment prepared to resolve the problem.



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