

Airport Information & Alerts System Overview

A Keywest Technology White Paper
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Overview

The Keywest Technology Airport Information and Alerts System leverages the company's intellectual history and technological experience creating a dexterous video information system. This system provides local information capability as well as critical emergency alert and instructional indicators for airports and is suitable for other public facilities.

The system built on MediaXtreme and InfoZone technology allows scheduled media playback on any number of monitors. The media content is under complete control of the operator. The content can be static pages, video clips, PowerPoint© presentations, Flash© media, real-time data, audio, as well as interactive emergency displays. For example, a typical schedule could playback flight arrival and departure information, local art, local information, and advertisements, on a 25% duty cycle. The displays can simultaneously display different elements (movies over static backgrounds) as well as playing each element serially.

Perhaps the most important aspect of the system is the interactive emergency module. The operator can trigger an instant or emergency display on all monitors. The operator can further enhance the public safety by directing evacuation routes through the displays.

If desired, the players and displays can show flashing text and colors as well as audio signals to garner the most attention possible.

In the interest of Public Safety and Homeland Security, the system can also tie in the existing National Emergency Alert System, Amber Alert Systems, and/or Homeland Security notification systems. The system also provides the only on-facility, local video emergency notification system.

Keywest Technology is the leading provider of Emergency Alert Systems (EAS) to Cable Television (aka Community Antenna Television or CATV) in the United States. The company provides several different devices and interfaces for analog and digital cable. Keywest Technology is uniquely qualified to bring EAS out of the broadcast only realm and into the most critical of Closed Circuit Television (CCTV) environments such as airports, hospitals, malls, schools, etc...

Status Quo

Currently, there are up to six different video display systems in airports:

CNN Airport—available in 39 airports, CNN Airport provides satellite dishes and receivers feeding dedicated monitors at over 1,700 gates.

HMS Host and Equivalent—Simple cable feeds in restaurants and retail outlets within the airport

Flight Arrival and Departure—Monitors dedicated to showing only flight arrival and departure schedules, based on messaging software extracting SQL data.

Information Screens—Various and miscellaneous displays used for local passenger information (baggage claim info, ground transportation info, rules and regulations, etc...)

Ticketing & Check In—Miscellaneous gate and ticketing information ranging from “Next Please” type displays at check in to enplanement information such as Stand-by lists, Loading Groups, etc...

LED—Typically located at gates with current or next flight information and schedule. The company VisionTron is the major provider—these displays are split between remotely controllable types and those with simple attached keypads.

While each of these systems meet specific needs within the airport, they are not commonly linked and have no unified, real-time emergency interfaces. Also, the existing video devices do not offer any significant local information capability.

Emergency needs are the most pressing. Currently, if an emergency occurs and possibly an evacuation is required, most airports utilize strobe light and siren indicators to notify the public. In some locations pre-canned or live audio augments the emergency message.

These systems typically do not offer enough information or guidance to passengers for efficient response. Anyone experiencing an airport evacuation or emergency may relate to the following two actual occurrences:

- Incident 1--The alarms were triggered, strobe lights flashed, sirens blared and unintelligible audio came across the speaker system. A few gate agents moved through the terminal semi-indicating that passengers should follow them out of the terminal. Most people sat and looked around, not leaving. Approximately five minutes after onset, the alarms system shut off. The emergency turned out to be triggered by smoke alarms at a terminal restaurant, so no real danger existed—which was fortunate considering the lack of evacuation guidance and information available to passengers.

- Incident 2—Different airport...alarms trigger, strobes flashing, sirens and unintelligible audio over the speaker system. In this incident the agents did evacuate the passengers through security and out of the terminal completely. The complete evacuation took over 15 minutes, delaying the search for a person suspected of breaching security. Further delayed then was patron reentry. The ripple from the incident delayed flights nationwide and the over two-hour ordeal reduced revenue at the terminal outlets.

A new system that effectively gave instructions such as where to proceed and the urgency of the situation, would have ensured the evacuation took place in the first incident (critical if the smoke indicates fire) and would have aided timely evacuation in the second incident, reducing the negative ripple effects. An effective system will increase security and safety and reduce delays and down time. That new and effective system is the Keywest Technology Airport Information & Alerts System.

System Components

The Keywest Technology Airport Information System is a unique combination of the powerful MediaXtreme and InfoZone systems technologies along with Public Venue specific command and control. Hardware is adaptable to the configuration required for the location. The base modules are Players, Servers, and Control.

Players

Players are the hardware platforms and embedded software modules that are mixed and matched for particular applications.

All configurations are PAL-B and NTSC capable—suitable for international deployment.

Hardware Configurations:

MX1

- 2RU Rack mountable Chassis 19 x 20 x 3.5
- Weight: 20 pounds
- Power Internal Switching
- Outputs: Composite, Y/C RGBHV
- Inputs: Optional Composite Y/C
- Audio: Stereo Audio Out, Dolby© 5.1 support; Stereo Audio Pass-through Inputs (Line Level and Mic Level)



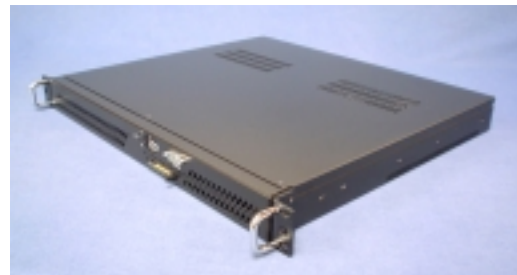
MX3

- Bookshelf Size: 7" x 2" x 10"
- Weight: 4 pounds
- Power: External 12V Transformer
- Outputs: Composite, Y/C, RGBHV
- Inputs: None
- Audio: Stereo Audio Out, Dolby© 5.1 support;
Stereo Audio Pass-through Inputs (Line Level and Mic Level)



MX4

- 1RU Rack mountable Chassis: 19 x 15 x 1.75
- Weight: 12 pounds
- Power: Internal Switching supply
- Outputs: Composite, Y/C, RGBHV
Optional SDI, ASI
- Inputs: Optional Composite, Y/C, SDI, ASI
- Audio: Stereo Audio Out, Dolby© 5.1 support; Stereo Audio Pass-through Inputs
(Line Level and Mic Level)



MX5

- 1RU or 2RU Rack mountable Chassis
- Weight: 12 pounds or 20 pounds
- Power Internal Switching Supply
- Outputs: Composite, Y/C, RGBHV, Optional SDI, ASI,
- Inputs: Optional Composite, Y/C, SDI, ASI
- Audio: Stereo Audio Out, Dolby© 5.1 support; Stereo Audio Pass-through Inputs
(Line Level and Mic Level)

Additional Generic Hardware Features and Options

*Some configuration combinations may not be feasible

- 10/100 Fast Ethernet
- 1 to 6 Serial I/O (for external device integration)
- 4 USB 2.0
- Optional Firewire (IEEE 1394)
- Optional DVD or CD-R/W Drive
- Minimum 30 GB Internal Storage
- Optional Expanded Hard Drive(s) (up to 500 GB—translates to around 200 Hours of MPEG2 data encoded at 5Mbps (appx DVD quality))
- Optional LCD confidence monitor
- Optional Front Panel control Interface and Indicator
- Optional Keyer (Key graphics and crawls over Live Video)
- Optional Picture-In-Picture (PiP)(Squeeze video into a graphics page)

*Not all Features and Options are available on all chassis styles. Ultimate chassis selection will depend on size as well as final application. Physical dimensions of optional items will help determine which chassis is used per application.

Each chassis configuration is a rugged, sleek design made for a variety of applications. They are designed to run in controlled, dry, and relatively dust-free environments. However, environmental modifications can be applied for filtering and shock in hostile environments.

Each unit is rated to function from 0 to 70 degrees Celsius—optimum-operating temperature for full capacity is 20 degrees Celsius.

The chassis are designed to be unobtrusive whether attached to the back of a flat panel display with Velcro, or professionally mounted in a cable head-end rack.

The chassis expected to be typical for airport systems is the 7" x 2" x 10" bookshelf. This agile platform can mount virtually invisibly to or behind Plasma Display Panels (PDP). By mounting the players at the actual displays, extensive coaxial wiring will not be required throughout the facility—nor will a head-end be required. Each device will simply require a Cat-5 network connection for data and control. This setup also allows for effective use of RGBHV direct to PDPs in native resolution for the sharpest of displays.

Player Software Modules

**Note: Not all software modules are available with all hardware versions

Each software module is designed to present content on a scheduled basis. The content can be included in a continually rotating Playlist. Multiple Playlists can be loaded into the player. Each Playlist can run as a continual loop, or be scheduled to appear at certain times and or days. Each Playlist can have multiple entries in a schedule.

Special Playlists can be scheduled for emergency or special events (such as 4th of July special pages or movies, or maybe alerts such as “Stand-by” notices for emergency action).

Playlist creation is covered more in-depth in the **Control** section of this report.

Base Module:

The base module is capable of playing scheduled graphics pages, or graphic pages with full screen or embedded MPEG video and audio, as well as independent audio tracks (.wav files or .mp3 files) as ambient sound.

Emergency Alert Module:

The Emergency plug-in interfaces the devices with existing Emergency Alert System (EAS) devices such as ENDECs and Receivers. These EAS devices are currently used in broadcast radio and television as well as cable television systems. The EAS is responsible for advising the public of weather, national, and local watches, warnings, and instructions (including weather, safety, and national defense). The Keywest Airport system is the only similar system that can interface with and respond to current EAS gear. To top off the capability, the response is completely automatic—the EAS system takes control as though it were a broadcast or CATV facility.

If not already present at the facility, EAS equipment will be included in the Airport Information System package.

Amber Alert Module:

The Amber Alert module utilizes a portion of the display to relay critical information about suspected abducted or missing children. This data can be descriptions as well as actual pictures of the child. A likely location for an abducted child to be spirited away is via an airport—airports, along with then new Variable Message Highway Signs, are

critical interception points for successful resolution of Amber cases. This module fills a large yet unnecessary void in the Amber system.

Intruder Alert Module:

This plug-in empowers public assistance in intruder apprehension within an airport environment. For example, should an individual on a watch list enter an airport and disappear into a crowd, their image can be displayed on the Airport Systems monitors aiding speedy apprehension. Or, should an individual bypass security, and have their image captured by security camera, the Airport System could interface with that security system to display the intruder, again for improved chances of speedy apprehension.

Emergency Evacuation Module:

This module is perhaps the most powerful in reducing down time due to evacuation as well as improving safety and security by effectively disseminating information to passengers during an emergency or evacuation.

The software interface displays a graphical representation of the airport layout. The operator is able then, through mouse movements or touch screens to route the passengers out of the airport through the most effective means, as well as route the passengers away from dangers.

The displays will indicate which direction passengers should evacuate based on the mouse or touch screen settings of the operator. The displays will also contain pertinent information such as what type of emergency is underway and hazards to avoid as well as collection points post-evacuation.

This creates the most effective and a highly unique capability in emergency conditions that simply can't be achieved by other means.

Data Acquisition Module:

The Data Acquisition Module is used to tie the system into existing databases (SQL or others). This allows the system to display flight arrival and departure information in real-time, with the same accuracy as the current flight arrival and departure systems. The System will tie into the existing data network and extract the appropriate schedule data.

Keywest Technology will develop multiple page templates for the operators that will allow for screen sharing—perhaps the flight data is always displayed in 25% of the screen, and the remainder is used for local art, ads, and information. Keywest's templates will also allow for different configurations at different locations or times.

Crawl Module:

The Crawl plug-in introduces broadcast quality anti-aliased crawling text. The crawl will key over the graphics pages and/or the MPEG video clips—this produces the bottom-line crawl that can be used for advertising or data updates.

Logo Module:

The Logo plug-in brings the capability to brand the “channel” with a high-quality graphical “bug” logo.

Other Options/Upgrades:

Other optional future features will include animated background graphics, Macromedia Flash© support, Animated GIF support.

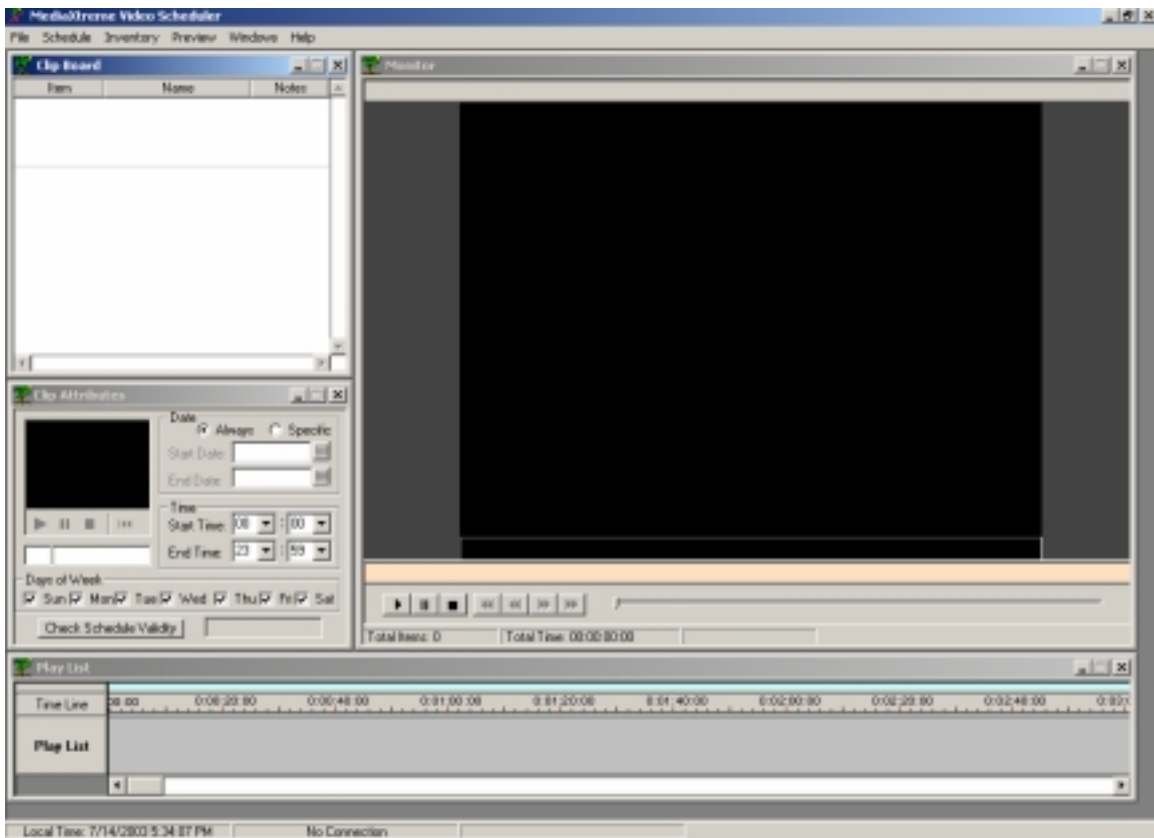
Software modules and plug-ins can be mixed and matched based on application. Also, multiple players can be utilized in the same system—the players can have all the same features or various modules in various locations (see drawing at end of report).

Control

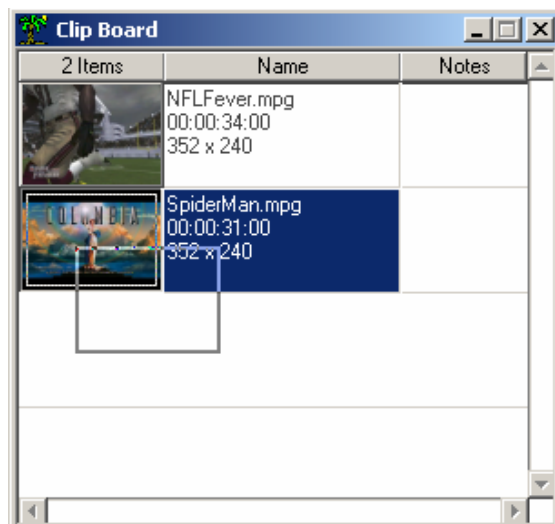
An integral part of any such system is ease of control. A single operator may be responsible for 100 displays in 1 terminal, up to thousands in an entire airport, or even a nationwide network. This makes scheduling and controlling imperative.

Control and scheduling consists of organizing data (creating Playlists) and getting that data to appear at the designated player at the designated time (scheduling).

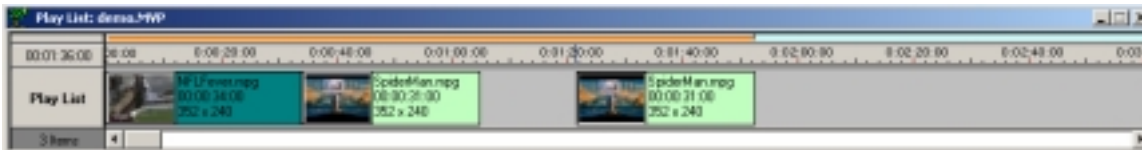
Creating Playlists is accomplished through extremely user-friendly drag and drop interfaces (example below).



The operator clicks and imports the data (MPEG video, still pages, audio, logos, crawls) onto a clipboard.



Next, drag the content from the clipboard to the timeline. Saving that timeline creates the Playlist.



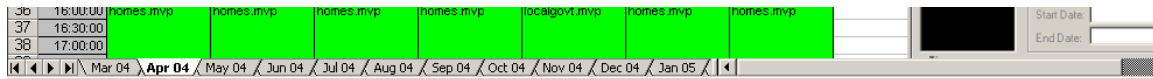
Each element of media has it's own timeline—crawls, mpegs, logos, events, pages.

The next step is scheduling. Keywest Technology Airport Systems InfoZone scheduling is done via a familiar interface—Microsoft Excel®. Keywest Technology has developed components that work within an Excel spread sheet to drag and drop large play schedules.

Through the use of simple color codes and time elements, an operator can drag their Playlists, MPEG clips, sounds, crawls, logos and such into an easy to read and even easier to modify grid format.

When familiar with the software, it is feasible that this Excel© interface is the only portion used by the operator. Playlist creation can in fact be accomplished by laying out each item individually on the spreadsheet.

The Scheduling can cover one day or 20 years. The schedule has intelligence—it will compensate for items added in or items removed (ripple effect).

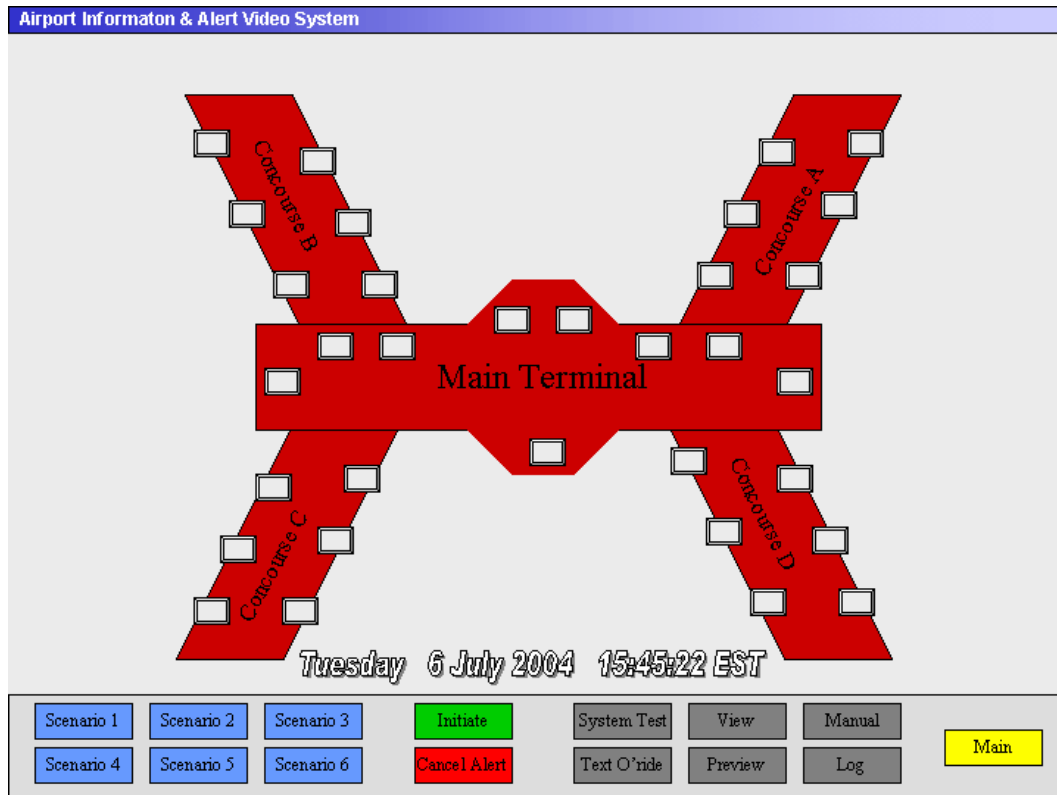


Once the schedule is created, it is uploaded to a central server. Keywest Technology can provide data management service as part of an Airport InfoZone agreement. We can take all the headaches out of the process and manage the entire backbone of the system. The operator's schedule is uploaded to the server—the players check in at the designated time and acquire their new listings.

A schedule can be designated as an Instant schedule. In that case, once uploaded, the data server will contact the designated player, instructing it to report immediately for updates.

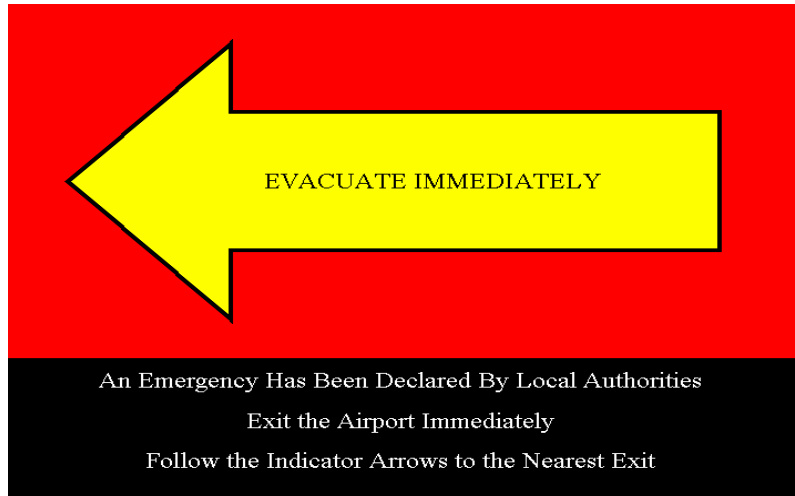
A schedule can be sent unchanged to multiple units or multiple units can each have their own unique schedule. The user simply designates the location to receive a schedule, and which of any number of saved schedules that it'll receive.

Emergency control is done through the default screen on the Media Creation and System Control Station. The default screen represents a footprint diagram of the facility as in the example below.



The facility control screen provides the operator the means to monitor the status of every display in the system (represented as icons on the layout—icons change color based on status of the displays as reported by built-in-test software). The control screen also allows the operator to initiate any one of several pre-programmed emergency routines. These could be different evacuation routes based on anticipated events.

The operator can also use this screen to initiate a manual evacuation route from one or multiple locations in the airport to designated directions. For example, if the operator clicks or touches the screen at the far end of Concourse A and drags the mouse or their finger toward the main terminal, all displays will indicate directional arrows toward the terminal.



In other words, the data on each monitor reacts precisely to input from the operator—giving the passengers a no-doubt path for evacuation and up-to-the-second accuracy. The accuracy is important as passengers are easily rerouted around hazards (fires, suspects, structural damage, any dangerous situation).

The system, in conjunction with existing security systems, becomes the single central control point for foot traffic within the facility. This is the type of tool that once installed, users and patrons alike will wonder how “we got along without it”.

This system also features dial-in capability. With this module, the operator or other local authority can dial-in from any touch-tone phone worldwide (land-line, cellular, etc...) and initiate emergency responses. Most likely, this would be an authority outside the command center that gains first-hand knowledge of an event and dials the control machine from the nearest phone. By entering a password, the operator gains entry to the control menu—from the control menu, the user is able to trigger any of the pre-programmed scenarios.

SERVER

As part of the complete system, Keywest Technology developed proprietary FTP management software and data management software that resides on a data server. The server is a top-end machine on a dedicated broadband connection that can reside within the airport facility or even reside remotely. Keywest Technology offers data management services when requested or required.

Keywest Technology can expend the resources to manage and monitor high-volume networks as part of an agreement. If desired, critical data transfers can be monitored in our data command and control center. This service can be included in a system monthly service plan.

The server application and proprietary data management system can be installed on user-controlled servers as well. All of the function remains, however bandwidth control, access control, and process monitoring is maintained by the server owner.

The server is the central point of control for the system and functions as the file server for future and past content.

Interface Existing Systems

Again, Keywest Technologies unique history and portfolio provides a simple means to tie all current airport systems together in the future. The company's experience in CATV and CCTV coupled with an extensive EAS product line would make transitioning existing hardware and systems into emergency compliant systems a very simple decision indeed. Keywest Technology owns the ability to add crawl devices, ENDECs, Receivers, Switchers, Keyers, Picture-In-Picture devices, Timers, Schedulers, GPI/GPO Triggering Equipment, Serial Control Equipment, and customer software applications to control any existing system.

Best of all, the company's existing equipment is capable of control under the Airport Information System. Keywest Technology could aid in transforming all displays on an affordable timeline thus creating the ultimate early warning system within a closed environment.

Typical System Block Diagram

The main operator can be located anywhere there's an Internet connection. The operator creates schedules and uploads content to a central server (reminder—the central server provides automatic management of the system and is optimally located on the premises, but can also be located anywhere an internet connection is present).

Each schedule the operator uploads contains functional data for each player machine as well as actual content. The functional data can be report in time (the time the player checks in for a new schedule), Instant or Standard schedule data, System Housekeeping instructions, and routine log downloads.

The schedule contains all the day/time events to play the crawls, logos, pages, movies, as well as external device events such as triggering tape decks or switching switchers should existing systems become interfaced.

The operator at this time also starts the ftp media upload to the server's media storage. This media is any new content (MPEGS, pages, audio files, logos, etc).

At their assigned times, each player checks into the server and downloads any new content. We preserve bandwidth with smart downloads and transfer only the data that has changed.

Remote player maintenance can also be conducted at this time (clear off unused files, clean directories, etc...).

It is key to remember any combination of any number of units can be integrated into a system and controlled all from a single point. If necessary, control can be shared over many locations—a system can be one operator/one player or one-operator/multiple players or multiple operators/multiple players or even multiple operators/one player. The choice is the customer's, and like a fingerprint may be different for every installation.

