PUBLIC INFORMATION SYSTEMS

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Information is the means through which human beings communicate. All human activities will virtually grind to a halt without information communication. No government, nation or state can be effective without proper information dissemination to its citizens. Society would not function, progress or prosper without information exchange.

Outdoor LED Video Information Display Board viewable day or night

INFORMATION TECHNOLOGY

Being so fundamentally important to the development and progress of human society, it is little surprising that governments, nations and business enterprises invest massively on the development of information communications infrastructures. Substantial amount of research and development funds worldwide pour into the development of information technology. Fundamental research on information theory helps to establish an exact, theoretical and quantitative understanding on the abstract concept of information. These studies help to define the way information is measured and the coding that will maximise the amount of information that can be transmitted through an information channel.

To be effective, information needs to be captured, stored and processed. The progress of information technology must grow along side with computer and data processing technology and digital electronics technology. The sub-nanosecond switching speed of modern semiconductor devices coupled with the capability of integrating hundreds of thousands of these devices into a single chip enable a colossal amount of computing power to be packed into a small chip. The same is true for semiconductor memory chips in which the packing density and speed has grown beyond the realm of human imagination. Parallel progress, also to the same unbelievable scale, is seen in the development of magnetic and optical mass storage devices which can store massive amounts of information in a small space.

INFORMATION COMMUNICATIONS

Semiconductor and computer technology development has become the main driving force behind the explosive development of information technology. However, information by itself is of little use unless communicated. Communications channels provide the highway for information flow. Over the past decade, information communications technology also experienced exponential growth enabling a virtually seamless flow of information across the globe at ridiculously low cost. Today, digital communications technology has enabled data to be sent around the world at speeds of gigabits per second to provide broadband digital access to business and home users.

THE INTERNET

The combined power of modern day information, computer and communications technologies has brought the world into a new era; the era of the Internet. The Internet was an old concept, but it has only become a reality today because of the advancements in information, computer and communications technologies. The Internet will permanently and irrevocably change the way human society communicate and exchange information. The Internet has created a borderless society where information communication is distance-independent. An email can just as cheaply be sent to a neighbour or a person at the opposite end of the world.

PUBLIC INFORMATION DISSEMINATION

For society to operate effectively, information need to be constantly accessible to the public at any moment of

time. The information source may be from government organisations, public service providers, financial institutions or business organisations. Effective public information systems play an important role to promote efficiency and orderliness in human activities, productivity, peace and stability.

Public information systems can be broadly divided into two categories. One system involves the maintenance of an information database that is accessible at all times by the public on demand access basis. The other system involves broadcasting of information either to the whole nation or to targeted audience or viewers in specific locations.

Flight Information Display Systems

INFORMATION ON DEMAND
In many instances, the public requires to be able to obtain information on demand. For example, a person at home, office or on the road may want to know the weather forecast, arrival of a certain flight at the airport or the current price quotation of a particular stock. Before the availability of the Internet, this information is normally communicated via a human interface. This is totally ineffective and often there is delay or difficulty in getting the information. The Internet is now the perfect media to communicate information on demand to the public. The information provider must maintain a constantly updated information database at their Web site to which the public can access to retrieve whatever information he requires. In this manner, the information can be disseminated to an unlimited number of users without any human supervision. The Internet has thus transformed a previously human-to-human interactive public information system to a human-to-machine interactive system which, of course, greatly enhances the quality of service and information throughput. A Web-based

information system is by far the most effective means to deliver information on demand to the public. At any time, users can download a substantial amount of information from any Web site around the world. Through the same Web site, users can supply the information required to execute business transactions with the companies concerned.

For mobile users, a voice interactive system can be used for information retrieval. Examples of interactive voice response applications are the retrievals of flight information, bank balances or stock price information via a handset.

Public information kiosks can also be used to provide interactive information access to the public. To prevent vandalism, touch screen CRT or liquid crystal display (LCD) monitors are used both as a display as well as a keyboard to input information from the user.

INFORMATION BROADCAST
A classical example of public information broadcasting is the radio and television broadcast. This is a unidirectional information flow from the information provider to the information recipient. Most of the air

time for radio and television broadcasts are however devoted to entertainment like music and video programmes and less for information transmission.

Another important class of public information broadcast is the broadcasting of information to targeted groups of people in public concourses, airports, rail and bus stations, stadiums, convention centres, stock exchanges, financial institutions and highways.

Audio and video systems are used in public information broadcasts. The public address system remains the only means of sound broadcasting. Because the audio space cannot be easily segmented, it is difficult to

Variable Message Signs for Intelligent Transportation Systems (ITS)

Full Colour Video Matrix Scoreboard for Stadium applications

address different audio information packages to different groups of people in an open public premise. Hence a single public address sound system can only be used. Also a sound system has low bandwidth and only limited amounts of information can be transmitted.

VIDEO DISPLAY SYSTEM

Video based public information display systems can be used for various groups of viewers in a public premise. The displays must be large enough for the information to be communicated within the viewing distance of the people gathering around the display. If the information is text based, a simple rule of thumb is that the maximum viewing distance in which the character is just discernable is 500 times the character height. Examples of video based displays are CRT monitors and, plasma or LCD flat screen display monitors. The displays must be large enough for public information applications. Typically the screens should be larger than 28cm. Analogue TV sets designed for domestic applications are not recommended for public information display applications.

To provide clear and noise free video display for public viewing, digital information transmission is used to send information to the display monitors. Different banks of

monitors can display different information but the digital signals to all monitors can be transmitted via a single broadband fibre network. All information can be processed, managed and transmitted from a single control centre. Besides text and graphic information, a monitor based public information system can also display full colour video if required.

Monitor based public information systems are commonly used in airports, rail/bus stations, convention centres, hotels, stock/commodity exchanges and other commercial and shopping complexes.

LARGE SCREEN VIDEO DISPLAYS

In a very large public concourse, where video information has to be seen by hundreds of people in the area, large screen video displays can be used. Two factors need to be considered in determining the type of display to be used; the screen size and the display brightness.

The screen size is dependent on the size of the public concourse. A good empirical rule to use is that the screen height should be more than the maximum viewing distance divided by 30.

The video screen must of course be bright enough to be viewed comfortably by the public in the ambient brightness conditions of the concourse. For indoor applications, the screen brightness should be in the range of 500 to 2,000 Nits (candela per metre²) depending on the ambient brightness conditions.

With current technology, two types of screen are now commonly in use: the video projection screen or the LED (light emitting diode) video screen.

Where the limited screen size and lower brightness is not the determining factor, the lower cost

video projection screen would be a good option to choose. However, for very large video screens operating in very high ambient brightness conditions, LED video matrix display boards would be the preferred choice.

OUTDOOR FULL COLOUR VIDEO DISPLAYS

In applications where a giant size outdoor full colour video display board is required, LED technology is currently the only choice. For daylight viewability, the display brightness needs to be at least 5,000 Nits which is easily achievable with today's LED technology.

Thanks to the recent development of high brightness red, green and blue LEDs with spectral emission close to the primary colour spectrum, LEDs are now the devices of choice for outdoor video displays. Giant size LED video display boards are used in stadiums, advertising billboards and many other public premises. These boards are capable of showing full colour video on a giant size screen viewable day and night.

LED MESSAGING BOARDS

Besides the high cost full colour video boards, lower cost single colour or tri-colour LED boards are widely used in many applications. For outdoor applications, LED displays are used as variable message boards, (VMS) in highways, electronic messaging boards for bus arrival information, general purpose electronic bulletin boards and eye-catching running message display boards. LED messaging boards can be used in countless indoor and outdoor applications. Animated graphics can also be displayed on these boards. LED messaging boards

provide very clear and electronically variable information displays.

There are also countless applications for LED messaging boards or electronic bulletin boards in indoor applications. For example, a small, eye-catching bulletin board can be installed at the entrance of every function room in a hotel or convention centre. These boards are linked to a control room from where the messages on the room usage for the day is preprogrammed. At any time, the display outside each room will show clearly the function that is being conducted in the room. Another electronic bulletin board can be located at the entrance of the hotel to give arrival guests instant information of where the various functions are held in the hotel for the day.

LED real time stock pricing display boards are installed in the public gallery of stock broking houses.

LED or LCD display boards can be installed in public concourse areas of airports to show the arrival and departure time of all flights in the airport.

CONCLUSION

Public information dissemination and display systems are essential installations to service modern human communities. Nationwide and localised infrastructure must be put in place to provide an effective public information service. A well designed public information network will help to improve productivity and economic progress of the country. Modern advancements in information, computer and communications technology should be fully exploited to improve public information systems. Appropriate electronic display technologies should be deployed for specific public information applications. ∎