BROADCAST & TV WORKFLOW

For a

Satellite channel

By: AwatNajmaddin

Broadcasting is the distribution of audio and video content to a dispersed audience via radio, television, or other. Receiving parties may include the general public or a relatively large subset of thereof. It could also be for purposes of private recreation, non-commercial exchange of messages, experimentation, self-training, and emergency communication such as amateur (ham) radio and amateur television (ATV).

Economically there are a few ways in which stations are able to broadcast continually. Each differs in the method by which stations are funded:

- In-kind donations of time and skills by volunteers (common with community radio broadcasters)

- Direct government payments or operation of public broadcasters

- Indirect government payments, such as radio and television licenses

- Grants from foundations or business entities

- Selling advertising or sponsorships

- Public subscription or membership.

The first regular television broadcasts began in 1937. Broadcasts can be classified as "recorded" or "live". The former allows correcting errors, and removing superfluous or undesired material, rearranging it, applying slow-motion and repetitions, and other techniques to enhance the program. However, some live events like sports television can include some of the aspects including slow-motion clips of important goals/hits, etc., in between the live television telecast.

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American radio-network broadcasters habitually forbade prerecorded broadcasts in the 1930s and 1940s requiring radio programs played for the Eastern and Central time zones to be repeated three hours later for the Pacific time zone. This restriction was dropped for special occasions, as in the case of the German dirigible airship Hindenburg disaster at Lakehurst, New Jersey, in 1937. During World War II, prerecorded broadcasts from war correspondents were allowed on U.S. radio. In addition, American radio programs were recorded for playback by Armed Forces Radio radio stations around the world.

A disadvantage of recording first is that the public may know the outcome of an event from another source, which may be a "spoiler". In addition, prerecording prevents live radio announcers from deviating from an officially approved script, as occurred with propaganda broadcasts from Germany in the 1940s and with Radio Moscow in the 1980s.

Many events are advertised as being live, although they are often "recorded live" (sometimes called "live-to-tape"). This is particularly true of performances of musical artists on radio when they visit for an in-studio concert performance. Similar situations have occurred in television ("The Cosby Show is recorded in front of a live studio audience") and news broadcasting.

A broadcast may be distributed through several physical means. If coming directly from the radio studio at a single station or television station, it is simply sent through the studio/transmitter link to the transmitter and thence from the antenna on the tower out to the world. Programming may also come through a communications satellite, played either live or recorded for later transmission. Networks

of stations may simulcast the same programming at the same time, originally via microwave link, now usually by satellite.

Distribution to stations or networks may also be through physical media, such as analog or digital videotape, compact disc (CD), DVD, and sometimes other formats. Usually these are included in another broadcast, such as when electronic news gathering (ENG) returns a story to the station for inclusion on a news programme.

The final leg of broadcast distribution is how the signal gets to the listener or viewer. It may come over the air as with a radio station or television station to an antenna and receiver, or may come through cable television or cable radio (or "wireless cable") via the station or directly from a network. The Internet may also bring either internet radio or streaming media television to the recipient, especially with multicasting allowing the signal and bandwidth to be shared.

The term "broadcast network" is often used to distinguish networks that broadcast an over-the-air television signal that can be received using a television antenna from so-called networks that are broadcast only via cable or satellite television. The term "broadcast television" can refer to the broadcast programming of such networks.

Broadcast television systems are encoding or formatting standards for the transmission and reception of analog television signals. Today, there are three main analog broadcast television systems in use around the world. These are NTSC, PAL, or SECAM. These systems have several components, including a set of technical parameters for the broadcast signal, a system for encoding color, and possibly a system for encoding multi-channel audio.

In digital television, all of these elements are combined in a single digital transmission system.

Analog television signal standards are designed to be displayed on a cathode ray tube (CRT), and so the physics of these devices necessarily controls the format of the video signal. The image on a CRT is painted by a moving beam of electrons which hits a phosphor coating on the front of the tube. This electron beam is steered by a magnetic field generated by powerful electromagnets close to the source of the electron beam.

In order to reorient this magnetic steering mechanism, a certain amount of time is required due to the inductance of the magnets; the greater the change, the greater the time it takes for the electron beam to settle in the new spot.

For this reason, it is necessary to shut off the electron beam (corresponding to a video signal of zero luminance) during the time it takes to reorient the beam from the end of one line to the beginning of the next (horizontal retrace) and from the bottom of the screen to the top (vertical retrace or vertical blanking interval). The horizontal retrace is accounted for in the time allotted to each scan line, but the vertical retrace is accounted for as phantom lines which are never displayed but which are included in the number of lines per frame defined for each video system. Since the electron beam must be turned off in any case, the result is gaps in the television signal, which can be used to transmit other information, such as test signals or color identification signals.

The temporal gaps translate into a comb-like frequency spectrum for the signal, where the teeth are spaced at line frequency and concentrate most of the energy; the space between the teeth can be used to insert a color subcarrier.

PAL, short for Phase Alternating Line, is an analogue television colour encoding system used in broadcast television systems in many countries. Other common analog television systems are NTSC and SECAM.

576i is a standard-definition video mode used in (former) PAL and SECAM countries. In digital applications it is usually referred to as "576i", in analogue contexts it is often quoted as "625 lines". Its NTSC counterpart is 480i; these are the two common forms of standard-definition television.

The 576 identifies a vertical resolution of 576 lines, and the i identifies it as an interlaced resolution. The field rate, which is 50 Hz, is sometimes included when identifying the video mode, i.e. 576i50; another notation, endorsed by EBU/SMPTE, includes the frame rate, as in 576i/25.

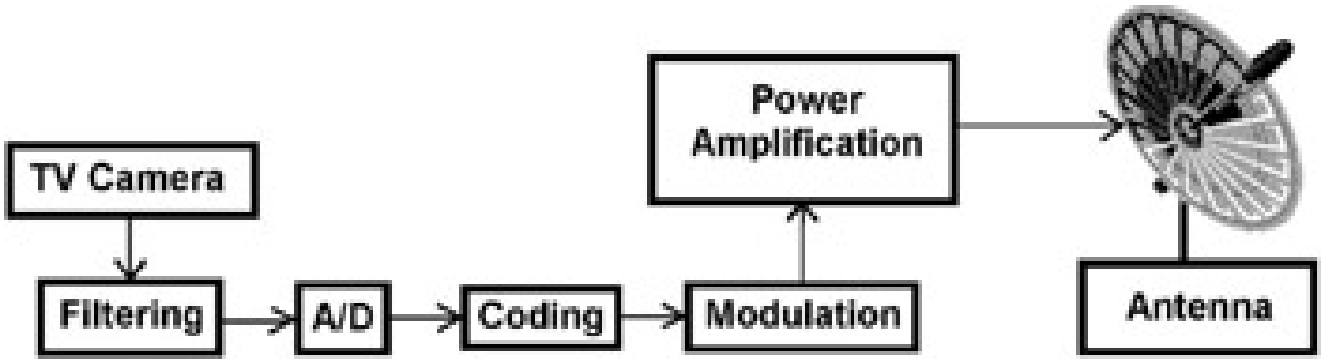
Its basic parameters common to both analogue and digital implementations are: 576 scan lines of picture content, 25 frames (giving 50 fields) per second. Also in analogue, 49 additional blank lines for the sync pulse are added, resulting in 625 lines. Analogue television signals have no pixels; they are rastered in scan lines, but along each line the signal is continuous.

Above was a brief on broadcasting, ech TV station (satellite) must have those parts that we will show.

1- EARTH STATION (GROUND STATION).

An earth station, ground station, or earth terminal is a terrestrial terminal station designed for extra planetary telecommunication with spacecraft, and/or reception of radio waves from an astronomical radio source. Earth stations are located either on the surface of the Earth, or within Earth's atmosphere. Earth stations communicate with spacecraft by transmitting and receiving radio waves in the super high frequency or extremely high frequency bands (e.g., microwaves). When an earth station successfully transmits radio waves to a spacecraft (or vice versa), it establishes a telecommunications link.

Satellite channels in our country (IRAQ) must have this part to communicate with the global teleports to transmit their own signals because there is no optical connection or other connections between Iraq and those teleports.



2- RECORDING AND SATELLITE ROOM.

Recording and satellite room is focusing on recording and monitoring some satellite channel or recording own TV feeds and Live show outside the station.

3- MASTER CONTROL ROOM (MCR).

Master control is the technical hub of a broadcast operation common among most over-the-air television stations and television networks. It is distinct from a production control room (PCR) in television studios where the activities such as switching from camera to camera are coordinated. A transmission control room (TCR) is usually smaller in size and is a scaled down version of centralcasting.

Master control is the final point before a signal is transmitted over-the-air for terrestrial television or cablecast, satellite provider for broadcast, of sent on to a cable television operator. Television master control rooms include banks of video monitors, satellite receivers, videotape machines, video servers, transmission equipment, and, more recently, computer broadcast automation equipment for recording and playback of television programming.

Master control is generally staffed with one or two operators around-the-clock, every day to ensure continuous operation. Master control operators are responsible for monitoring the quality and accuracy of the on-air product, ensuring the transmission meets government regulations, troubleshooting equipment malfunctions, and preparing programming for playout. Regulations include both technical ones (such as those against over-modulation and dead air), as well as content ones (such as indecency and station ID).

4- STUDIO.

A television studio is an installation in which a video productions take place, either for the recording of live television to video tape, or for the acquisition of raw footage for post-production. The design of a studio is similar to, and derived from, movie studios, with a few amendments for the special requirements of television production. A professional television studio generally has several rooms, which are kept separate for noise and practicality reasons. These rooms are connected via intercom, and personnel will be divided among these workplaces.

Studio Floor:

The studio floor is the actual stage on which the actions that will be recorded take place. A studio floor has the following characteristics and installations:

- Decoration and/or sets

- Professional video camera (sometimes one, usually several) on pedestals

Microphones

- Stage lighting rigs and the associated controlling equipment.

- Several video monitors for visual feedback from the Production control room (PCR)

- A small public address system for communication

- A glass window between PCR and studio floor for direct visual contact is usually desired, but not always possible

While a production is in progress, people composing a television crew work the studio floor.

The on-screen "talent" themselves, and any guests - the subjects of the television show.

A floor manager, who has overall charge of the studio area stage management, and who relays timing and other information from the television director.

One or more camera operators who operate the professional video cameras, though in some instances these can also be operated from the PCR using remotely controlled robotic pan tilt zoom camera (PTZ) heads.

Possibly a teleprompter operator, especially if this is a live television news broadcast.

Production-control room:

The production control room (PCR), also known as the "gallery" or Studio Control Room (SCR), is the place in a television studio in which the composition of the outgoing program takes place. Master control is the technical hub of a broadcast operation common among most over-the-air television stations and television networks. It is distinct from a PCR in television studios where the activities such as switching from camera to camera are coordinated. A transmission control room (TCR) is usually smaller in size and is a scaled down version of centralcasting.

Facilities in a PCR include:

- A video monitor wall, with monitors for program, preview, VTRs, cameras, graphics and other video sources. In some facilities, the monitor wall is a series of racks containing physical television and computer monitors; in others, the monitor wall has been replaced with a virtual monitor wall

(sometimes called a "glass cockpit"), one or more large video screens, each capable of displaying multiple sources in a simulation of a monitor wall.

- A vision mixer, a large control panel used to select the multiple-camera setup and other various sources to be recorded or seen on air and, in many cases, in any video monitors on the set. The term 'vision mixer' is primarily used in Europe, while the term 'switcher' is usually used in North America.

- An audio mixing console and other audio equipment such as effects devices.

- A character generator (CG), which creates the majority of the names and full digital on-screen graphics that are inserted into the program lower third portion of the television screen

- Digital video effects, or DVE, for manipulation of video sources. In newer vision mixers, the DVE is integrated into the vision mixer; older models without built-in DVE's can often control external DVE devices, or an external DVE can be manually run by an operator.

- A still store, or still frame, device for storage of graphics or other images. While the name suggests that the device is only capable of storing still images, newer still stores can store moving video clips and motion graphicss.

- The technical director's station,with waveform monitors, vectorscopes and the camera control units (CCU) or remote control panels for the CCUs.

- Intercom and IFB equipment for communication with talent and television crew.

5- SERVERS & NETWORK.

The modern TV workflow is in need for a high speed network with some powerful servers including (Storage, Video and Graphics….etc.) most of those operation (Daily Use) will be done by clients that they have access to the servers and scheduling daily program, most of TV channels using storage server to archive their on materials and reusing them through those servers instead of using tape.