

## Vigo Overview

Vigo transforms a Patient Television into an interactive communication and education system, which assists hospitals in improving quality of care, patient satisfaction and patient safety. Vigo PC operates with a variety of LCD<sup>1</sup> High-Definition Televisions and monitors. Hospitals can choose a TV or ATI can aid in this process. This document describes the requirements for a TV that works with Vigo.

## TV Selection

There are many factors to considering when selecting an TV. ATI has simplified the selection process by focusing on those factors essential to Vigo operation and those that are most beneficial to Vigo users.

- Aspect Ratio: Old-style CRT TV's use a 4:3 aspect ratio (width to height). Vigo works best with the newer 16:9 aspect ratio.
- Resolution: Normally this is expressed as two numbers (vertical x horizontal), or as a single number (vertical). The Vigo should use a minimum vertical resolution of 720, but 1080 is recommended.
- Input & Output Ports: The Vigo system requires the TV to have the following ports:
  - Coax input for TV failover, TV must include internal tuner:
  - One of the following video inputs: HDMI, DVI or VGA



- One of the following control ports: RS-232-C (usually a serial input DB-9), or an MPI port (hospital-grade TVs). These input ports allow patients to turn the TV on or off, control the volume and change the channel.

Other factors to consider when selecting a TV are: refresh rate, viewing angle, matrix type, colors, brightness and contrast. However, only a handful of companies make LCD displays. A TV manufacturer packages an LCD with its electronics. If the TV is a name brand from a reputable vendor, the variability between manufacturers of these other factors is negligible. Active Display Area or Viewable Size: Size is measured diagonally. The size of the display depends on the distance the patient is from the TV.

## Company Overview

Allen Technologies' mission is to enhance the patient's journey to better health. Through Vigo, Allen provides the tools to facilitate and integrate education into everyday nursing practice and make bedside patient education meaningful and effective.

## Vigo Overview

Vigo is an interactive patient TV system, which can provide various types of patient entertainment. Examples are TV, movies-on-demand, games, books-on-line and Internet access.

Vigo also provides patient education in the form of videos (short movies or interactive tutorials), which include content-based questionnaires to ensure adequate learning of the material.

Health education videos can be auto-prescribed based on nursing unit, diagnosis (DRG, ICD, or text), or information contained in a patient's ADT record.

Health videos can be manually prescribed to a patient, or a patient can view titles of his or her choosing. Videos can also be blocked, so L&D videos cannot be viewed in Pediatrics.

Hospital staff can view reports and get alerts when a patient doesn't fully comprehend the material.

### Vigo Platform

The Vigo patient portal runs on the following TVs and Monitors:

- Vigo OneTouch™: Touch screen monitor mounted on a medical grade swing arm<sup>2</sup>
- Vigo PC: Wall mounted TV
- Vigo PC: Wall mounted monitor

### Viewing Distance

The quality of the Vigo experience depends on the visual acuity of the patient.

If you wish to test your visual acuity, perform the following test. Display some text on a TV, then step back from the TV until the text is unclear. This is similar to, but less accurate than, how an optometrist tests a person's vision.

In Figure 1, the vertical lines show different size LCD TV's, the curved line indicates how large a TV is needed based on how far away the patient is. In most cases, a patient is 12 to 15 feet from the TV.

Remember TV size is measured diagonally.

If a patient is 10 feet from a TV, then a 32 inch TV is needed (center diamond). Be sure to measure the exact distance from the patient's head to the TV. The width of the room is not accurate. The patient's head may be on the pillow and the bed inclined. TV's are normally mounted high on the wall.

Since it will vary from patient-to-patient, a viewing distance measurement does not have to be exact.

### Patient Satisfaction

TV Technology evolved slowly for many years. We had CRTs for a long time, and then LCDs came along. However, the pace of technological change was slow. In the last few years, this has all changed. The rate of technological advancement in TVs has increased dramatically. Based on its relationships with various TV manufacturers, ATI envisions that this rate of change will continue.

What this means for a hospital is patients will expect a TV viewing experience at least comparable to what they have at home.

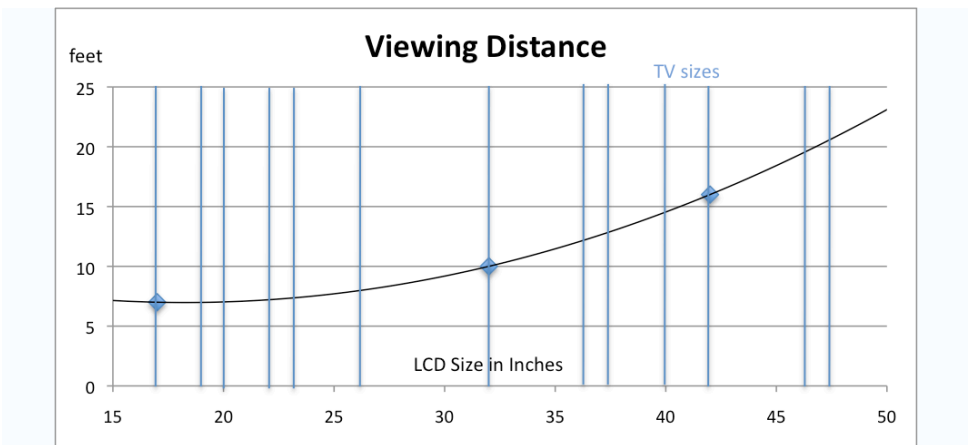


Figure 1. Viewing Distance in feet from Patient's Head to TV

## Resolution

Figure 2 shows resolution as it relates to the distance a patient is from the TV in feet and the size of the LCD in inches. The lines indicate the point at which the different resolutions come into play. For swing arm mounted units, a patient will usually be 2 to 10 feet from an LCD TV that is 26 inches or less (blue box). So a resolution of 720 is more than sufficient. For a wall mounted TV, the patient will be 15 or more feet from an LCD TV that is 36 inches or larger. So a resolution of 720 is more than adequate (red box). A lower resolution will allow the hospital to save some money when buying TV's.

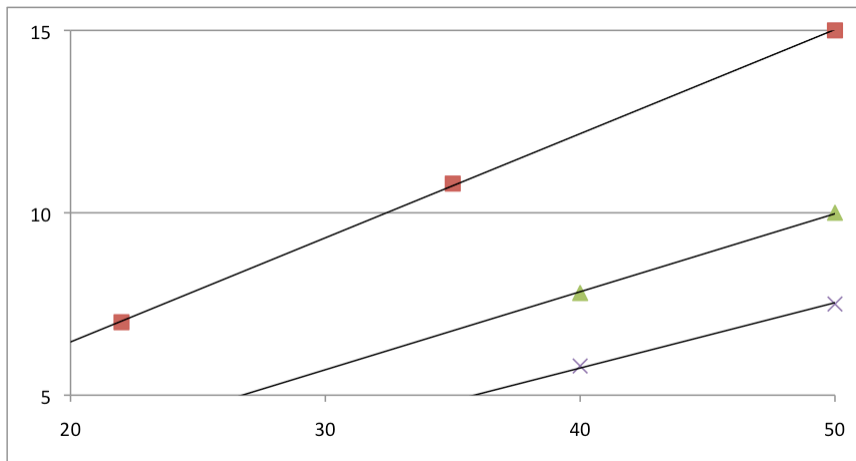


Figure 2. Resolution

## Monitor or TV

Monitors are generally cheaper than a TV.

## Commercial or Hospital-Grade

The primary difference between a hospital-grade TV and a commercial-grade TV is the hospital-grade TV adds a very expensive processing device and an input port, which handles pillow speaker input. The input port is known as an MPI port. The MPI port converts pillow speaker commands to TV commands.

Both commercial and hospital-grade TVs are FCC compliant. Both TV types conform to UL standards 6500 and 60065, and both conform to NFPA 70. The difference in cost between commercial-grade and hospital-grade TVs can be significant.<sup>3</sup>

Vigo uses a much less expensive device to convert pillow speaker commands to serial input. So, Vigo works with either Commercial or Hospital-Grade TVs.

## About the Author

Jeff Cartwright, VP Technology

Jeff has 30 years of experience developing high tech products. His undergraduate degree is from the University of Illinois, and he has a Masters degree from Johns Hopkins University. His older brother is an Oncologist, and his father was the Executive Director of the College of American Pathologists and received the layperson of the year award from the American Medical Association.

## References

1. A Vigo system will also work with other display types, such as CRT, LED, Plasma, DLP or Projection. CRT's are not recommended. At this time LCD's seem to be more cost effective than LED or Plasma. However, TV technology is changing rapidly.
2. The Vigo OneTouch comes with a built-in monitor so there is no need to choose one.
3. Comparison of requirements from Federal Communications Commission (FCC), Underwriter Labs (UL), and the National Fire Prevention Association (NFPA).