http://www.pcguide.com/ref/video/overMemory-c.html

Video Memory (Frame Buffer)

The screen image that you see on your monitor can contain a fair bit of information: at the upper end, a 1600x1200 pixel screen display in true color contains almost 6 MB of data! And this is just for the displayed image, not for the data itself that the image represents.

In the early days of PCs the amount of information displayed was much, much less. A screen of monochrome text, for example, needs only about 2 KB of space. Special parts of the upper memory area (UMA) were dedicated to holding this video data. The processor would compute what needed to be displayed, would put it into this area, and then the video card would read it and display it.

As the need for video memory increased into the megabyte range, it began to make more sense to put the memory on the video card itself. In fact, to preserve existing PC design limitations, it was necessary (there simply isn't any more space in the UMA to hold the bigger screen images). The memory that holds the video image is sometimes called the *frame buffer*. A big advantage of having the memory on the video card is that it can be customized to the task at hand for greater efficiency, instead of using regular system RAM. The memory on the video card comes in many different sizes and flavors, and new technologies to improve performance are being invented all the time.

Some motherboard designs integrate the video chipset into the motherboard itself, and then use part of the system RAM for the frame buffer. This is called *unified memory architecture*.

The main use of the video memory is as the frame buffer. This is the place where the information is stored about the video image itself. Each pixel on the screen has associated with it typically 4 to 32 bits of data that represent its color and intensity. The video processor (along with the system CPU) manipulate this data to change the screen image and the RAMDAC reads it and sends it to the monitor.