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ENHANCING COMPUTER BUSINESS SIMULATION WITH THE USE OF VGA GRAPHICS

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Introduction

This paper demonstrates the highly sophisticated nature of VGA color graphic resolution that should be incorporated into business personal computer simulations by game developers and programmers. The inexpensive technology and simplistic programming routines are within the reach of all business game designers. Included in this paper are numerous illustrative computer video VGA graphics displayed and presented on video tape. The objective of this paper 's to illustrate the dramatic affect in the use of VGA graphics and to demonstrate the ease in incorporating VGA graphics into business computer simulations.

The incorporation of VGA graphics is important for four reasons: 1) The use of VGA graphics will assist students in the analysis of data. Trends are often lost in vast arrays of rows and columns, but can be easily visualized and noticed with graphics. 2) VGA graphics are a professional medium for presentation. Business students need be aware of the graphics available when presenting work reports to clients and co-workers. 3) The use of VGA graphics augments the verisimilitude of the, business computer game. The more realistic the game, the more students will be provided a framework for a learning environment. 4) The use of VGA graphics adds a razzle-dazzle genre to the simulation. The razzle-dazzle should not be too overused or be ornamentally superficial. The VGA graphics will allow the student to say "WOW!", but not too often. The razzle-dazzle ingredient is necessary, after all, students are cognizant of the real nature of computers, simply 0's and 1's in binary form.

The potential applications of VGA graphics in computerized business games are numerous. A few of the more salient and interesting applications will be presented below:

The use of a company logo when the initial game begins, a picture of company headquarters, a drawing of the product in CAD/CAM, a prototype picture of the product, a sample newspaper, magazine or TV advertisement, spreadsheets market share bar-charts or pie-charts with real-time changes in percent share instantly on the screen, the demographics of the customers, an animation of your boss at their desk complete with office surroundings, a production line in operation (an animation of products moving on a conveyor belt being assembled), the stock value of an offering, financial analysis, an animation of the Product Life Cycle (PLC) moving through time, a close-up picture of the largest industrial customer, maps of the United States illustrating market share by region, by state, by SMSA, profit and loss

statements, graphic videos of managerial experiential situations, robots manufacturing a product, plant layouts, the list goes on . As can be seen, the potential applications are only left to one's imagination.

The Technology

A computer screen's made up of a series of dots called pixels (from picture elements). Each pixel on the screen can be illuminated individually. An image can be considered a series of tiny pixels. The sore pixels a computer can illuminate on the screen at any one time, the higher will be the picture resolution or quality of the image.

Video Graphics

In order to draw a simple box, the command LINE (10,30)-(30,50),8~F is given in Microsoft's QuickBasic, the (10~30) means the upper left corner of the box begins 10 across and thirty spaces down, the lower right corner of the box is (30,50), thirty across and 50 down, the "SF" is box fill. The 8 refers to the color of the box, given the formula:

PALLETTE 8, (65536*0) + (256*0) ÷ (63)

The 63 amount is for the amount of red, the color intensity parameters are from 0-63. To get blue the command:

PALETTE (65536*63) + (256*0) +-(0) is used.

Green = PALETTE (65536*0)(256*63)+-(0)

Purple = PALETTE (65536*63)+(256*1)+63

Yellow = (65536*1)+-(256*63)+-63

Since there are 64 values of each of the three primary colors 0-63, the total amount of colors available in VGA is $64*64*64=262,144$.

The VGA graphic, SCREEN 13, is able to display 256 colors on the screen at the same time out of a total of 262,144 colors at a resolution of 320 pixels by 200 pixels.

The highest resolution possible, 640 pixels by 480 pixels, only allowed 16 colors on the screen at any one time. The 16 colors are from a total amount of 262,144 colors available.

FUTURE GRAPHICS

Video graphics will only continue to improve in speed, colors and resolution. The new super VGA mode available today has a screen resolution of 1024 pixels by 768 pixels, a total of 786,432 pixels in color. This paper has attempted to encourage today's and future P.C. business simulation'; designers to incorporate into their computer program the use of VGA graphics.