

Mattel

 MEMO

DATE: June 9, 1982
TO: Dave Chandler
FROM: Ronald M. Goldman
SUBJECT: Magnavox v. Mattel

You have been advised that the trial in which you are being called upon as an expert witness and fact witness will commence June 21 and may continue for 3-1/2 weeks, which, as you have noted, covers your long planned vacation.

Mattel will reimburse you for any deposits you may lose should you choose to cancel, or pay for the additional cost of travel, etc. should you choose to return on vacation on those days in which trial is not held. We will also reimburse your costs applicable to that portion of your vacation which you were not there present vacationing. Obviously, you will be entitled to retain any unused vacation time. We regret the inconvenience and appreciate your efforts and hope that you have an understanding spouse.

Regards,



RMG:ce

cc: Josh Denham
Stav Prodromou
Tim Reames

RECEIVED
JUN 10 1982
D. CHANDLER

1 (Whereupon, the witness left the
2 witness stand.)

3 THE WITNESS: Exhibit 157 is a schematic diagram
4 of the accused game, the Mattel Intellivision game,
5 master component. It includes many components which
6 we have already illustrated schematically in the
7 block diagram which is contained in this -- I don't
8 know if we need to bring that back out again, but we
9 indicated a number of devices. There is a player control
10 which are indicated over here. There is an RF modulator.
11 These are devices which we clearly delineated. The
12 output from this would be such that it can be connected
13 to the antenna terminals of a receiver.

14 We indicated before a CPU, which is a micro-
15 processor, which is in this particular circuit diagram
16 a General Instruments 1610 microprocessor and it is this
17 component.

18 Another component which we specifically
19 identified was the so-called STIC chip also manufactured
20 by General Instruments. That's indicated by this
21 portion in the middle of the Exhibit 157.

22 BY MR. ANDERSON:

23 Q As Mr. Cook indicated, that means standard television
24 interface chips.

25 A This works in conjunction with another chip called

406
*check with
for instructions
R*

1 The position information, which is coded voltages,
2 is interpreted by the STIC chip. The STIC chip creates
3 a set of voltages on five leads, which working together
4 with the color chip creates a set of voltages on four
5 leads which are combined through a set of resistors to
6 make the composite video signal.

7 There is an expanded version, a block diagram,
8 semi-complete block diagram of the STIC chip, which
9 indicates some of the important features. There is an
10 item labeled --

11 MR. ANDERSON: The witness is referring to
12 Plaintiffs' Exhibit 158.

13 THE WITNESS: Excuse me.

14 THE COURT: Surely.

15 THE WITNESS: There is block 1, which is
16 described as an 8 x 8 content addressable memory
17 cam. *maybe delete R*

18 There's a block next to that which is
19 identified as a dynamic shift register and which
20 has the number 6.

21 There is a block labeled No. 7 which is
22 labeled as a moving object interaction matrix and
23 on the lower portion there is a block labeled
24 Y position 8 x 7 bit RAM which has the No. 2. *maybe delete R*

25 There is a block which is numbered 4

1 And so there has to be a decision made as to what is going
2 to get presented at that particular spot on the screen.

3 There is a priority structure established
4 for these eight moving objects and their relationship to
5 the background object. And based on that priority scheme,
6 the one that has the highest priority is the one the STIC
7 chip presents, the highest priority that is asking to put
8 a picture out.

9 Q Would you describe the relationship, if any,
10 between priority and coincidence?

11 A You can probably do that better by putting up
12 another chart here.

13 The chart that I have just put up is DX-E-11.
14 A confidential chart which is a block diagram of the STIC
15 chip that we have been talking about quite a bit. And let
16 me identify some of these elements in the STIC chip that are
17 relating to what we have just been describing.

18 THE COURT: And that is exhibit what?

19 THE WITNESS: That is Exhibit DX-E-11.

20 BY THE WITNESS:

21 A The block up toward the upper left-hand end, which
22 is labeled 8 by 9 bit dynamic bit register, video data,
23 is the set of shift registers that I indicated would have
24 stored in it by the time the display line begins the
25 eight pattern words for the eight moving objects that are
involved on that particular horizontal line.

To the left of that block is the Content Address Memory that I talked about, CAM it is called. And it contains the X position registers for the eight moving objects.

The register below it is the counter that is keeping track of the horizontal position of the display. And any time there is a match between those two, there is an output on the corresponding line that says to the shift registers, "Time to start shifting out your data."

It does shift out that data, and contrary to what, the way this particular block diagram got drawn would imply, these data streams that come out bypass the next block, which I will talk about in just a minute, and go on over to the display portion of the circuitry, display selection portion of the circuitry.

The first part of that is a visible, invisible lock. It is possible for the computer to come in and set information in each of the bits that are associated with each of the eight moving objects there, to indicate whether we want that object to be visible or not.

It is possible for us to describe an object that we decide not to show it on the screen. And that's one of the options that is in the system.

Beyond that then is a block that's the video priority block. And that is the block that picks the highest priority signal that is currently present in

While we are discussing how this part of the rates, let me go back and identify the fact that in the lower left-hand corner of the left-hand side of the bottom of the DX-E-11 is the place where the registers are stored, registers that the computer uses to store the desired Y position for the moving objects into. This is used during the horizontal retrace times as the computer goes out and gets the correct line, and then it gets a word of information out of the graphics ROM or RAM so that it can perform the right functions.

Now, I have been sidestepping one of the things in the system here and --

This is on DX-E-11?

That's still on DX-E-11.

And that's a box that's called interaction. And in order to -- before we get into that, I need to talk some about what coincidence is.

To go back to DX-AH-7 for a moment, there's a discussion about coincidence and what's used to store the position when there has been an interaction between objects of a certain sort of thing. And I guess I would like to talk in terms of what real coincidence is.

What I have on DX-AH-14 is a plastic sheet with a little black block in it which corresponds in this respect to the size of a ball in the baseball game.

ago. It is a device that has a characteristic that
with inputs to it are high, its output is high. If
one of the inputs are low or both of them are low, the
output is low.

So not until you have an input from two different
streams that at the same time exist in the high state,
you get an output from that gate.

That's the essential detector of coincidence.

And what we do with it in our case is quite
different from what Baer and Rusch did.

We used the output to store memory in what we
call an interaction matrix. Interaction matrix is a set
of registers, each register has 10 bits in it.
Each register is associated with one of the moving objects.
Each of the bits in that register is associated with one
of the other moving objects; plus there is a bit for a
bound object and a bit for a border.

And what happens here is if we get a situation which there is a simultaneous presentation of being asked from two different objects, it sets the bit in each of the two moving objects that correspond; in other words, if it is the first two objects that are, they are simultaneously, it sets the second bit in the first register and the first bit in the second register and just leaves it there. Nothing happens as a result of it directly. The only thing that anything can happen from that is during the CPU time or sometime after that, it doesn't make any difference which.

When the CPU is coupled back to the STIC bus, it can go in and can read that register, if it wants to, and take action in computing changes in the projectory or whatever it may want to do as far as game play is concerned. There is no automatic response to that kind of coincidence.

Would you like to describe in greater detail the operation of the STIC chip?

I think I pretty well covered the STIC chip. There is a tiny aspect that we probably ought to talk about, and I think we can finish this up very quickly.

We have been talking about there being two main processors: The digital computer, which is the main processor; and the display processor; pointing out that the display processor inherently has to have things

1 BY MR. ANDERSON:

2 Q I think perhaps then what we should do is
3 actually look at the STIC chip drawing and explain for the
4 Court in a little more detail how the various hit and
5 hitting symbols are produced on the television screen by
6 the Mattel game, and if I may borrow Defendants' E-11.

7 Dr. Chandler, E-11 is a diagram of the STIC
8 chip that is used in the Mattel games, is that correct?

9 A That's correct.

10 Q And it is correct that the STIC chip has the
11 ability to store information about up to eight moving
12 objects that are going to be displayed?

13 A That's correct.

14 Q So just for the sake of this explanation,
15 perhaps we can assume that the first two, the object 0
16 and 1, which I gather would be the first two lines in all
17 of these boxes here, are a hit and a hitting symbol, is
18 that a reasonable --

19 A If you want to define that, that would be fine,
20 yes.

21 Q Now, can you explain for us how the STIC chip
22 takes the information that is in the X position moving
23 object to the Y position and the video data blocks, which
24 I understand describe or enable one to display a hit or
25 hitting symbol, how that is taken and processed through