


M E M O R A N D U M

4 April 1979

TO: Pete Bonfield

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FROM: Rex Naden 

SUBJECT: TECHNOLOGY

Attached are some thoughts on Home Computer technology requirements.

Let me know when you want to discuss.

Thank you.

RAN/dc

PERSONAL COMPUTER DIVISION
HOME COMPUTER TECHNOLOGY THRUSTS

<u>PARAMETER</u>	<u>APPROACH</u>
COST	PROCESSOR, RAM/ROM MEMORY, DISK MEMORY
POWER	REDUCED CHIP COUNT, CMOS PROCESSOR
USER INTERACTION	<ul style="list-style-type: none">① SPEECH INPUT AND OUTPUT① VIDEO DISK① DATA TABLET
FEATURES	<ul style="list-style-type: none">① APPLIANCE/ENERGY CONTROL① HEALTH SIGNS MONITOR① IMPROVED GRAPHICS SPEED① IMPROVED "BASIC" SPEED, VOCABULARY① FULL SCREEN GRAPHICS

PERSONAL COMPUTER DIVISION

HOME COMPUTER SUPPORT COMPONENTS

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<u>TIME</u>	<u>NEED</u>	<u>RATIONALE</u>
1982	12 BIT MULTIPLEXING A/D CONVERTER FOR \$2	HEALTH ENVIRONMENTAL SENSING
1982	TRANSDUCERS FOR BLOOD PRESSURE, WEIGHT, MOISTURE, WIND DIRECTION, WIND VELOCITY, TEMPERATURE	
1981	ELECTRONIC MICROPHONE FOR \$.50	• INPUT FOR SPEECH RECOGNITION CHIP
1981	POWER LINE CARRIER COMMUNICATIONS CHIP	HOME ENVIRONMENT AND APPLIANCE CONTROL
1980	1000 WAT/220 VOLT SOLID STATE AC SWITCH WITH LOGIC INPUT FOR \$.30	
1981	COMBINATION MUSIC/SOUND/SPEECH SYNTHESIS CHIP WITH AUTOMATIC ATTACH/DECAY, PROGRAMMABLE ENVELOPE CONTROL, SIMULTANEOUS VOICE WITH FOUR TONES	• ADD MUSIC AND SPEECH CAPABILITY TO CONSOLE AT NO INCREASE IN COST • PROVIDE SPEECH PROMPTING IN ALL SOFTWARE PACKAGES

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HOME COMPUTER SUPPORT COMPONENTS

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<u>TIME</u>	<u>NEED</u>	<u>RATIONALE/COMMENT</u>
1982	INTEGRATED FIBER OPTIC DATA DROP - OPTICAL SENSE/DRIVE - BUS PROTOCOL LOGIC - LOCAL PROCESSOR CAPABILITY - 8 BIT LATCHED INTERFACE	• LOW COST, SMALL SIZE, LOW RADIATION I/O BUS FOR HOME COMPUTER PERIPHERALS • HIGH NOISE IMMUNITY
1985	ONE CHIP VIDEO DISK INTERFACE - COUPLES TO OPTICAL READ HEAD - ACCEPTS COMMANDS/TRANSFERS DATA ON 8 BIT DIGITAL BUS	• 100 M BYTE LOW COST CONSUMER READ-ONLY MEMORY • EDUCATIONAL MATERIAL AND PROGRAM STORAGE
1981	9918 FUNCTION WITH 64K BYTE ADDRESS SPACE AND 8 SPRITES/LINE	• ONGOING NEED FOR MORE RAM - 64K WILL BE "REQUIRED" BY 1983 • COMPETITIVE ADVANCES WILL REQUIRE INCREASING GRAPHICS CAPABILITY
1980	ONE CHIP 1200 BAUD MODEM FOR \$2	• DICTATED BY COMPETITION
1981	ONE CHIP DAA FOR \$4	• DIRECT TELEPHONE LINE HOOKUP FOR AUTO DIAL/AUTO ANSWER • MUST MEET FCC PART 68

PERSONAL COMPUTER DIVISION
HOME COMPUTER S/C LEADERSHIP DEVICES
MEMORY

<u>TIME</u>	<u>NEED</u>	<u>RATIONALE/COMMENT</u>
1980	4K x 8 DYNAMIC RAM AT 250 mw POWER WITH 100 mw STANDBY	<ul style="list-style-type: none"> • REPLACE SIX RAM CHIPS IN SYSTEM • REDUCE POWER SUPPLY COSTS
1981	16K BYTE GROM AT \$1	<ul style="list-style-type: none"> • REDUCE MINIMUM SOFTWARE MODULE PRICE TO \$9.95
1983	16K x 8 DYNAMIC RAM	<ul style="list-style-type: none"> • OFFER UP TO 64K BYTES IN CONSOLE • FULL SCREEN DOT GRAPHICS CAN BE PROVIDED WITH 8K BYTES DEDICATED RAM
1981	1K x 8 NONVOLATILE MEMORY	<ul style="list-style-type: none"> • "PERSONALIZE" SOFTWARE MODULES • PROVIDE PERSONAL REMINDER FUNCTION (ADDRESSES, PHONE NUMBERS, APPOINTMENTS) WITH- OUT TAPE OR DISK
1981	100K BYTE ADD DISK DRIVE WITH ELECTRONICS FOR \$25 MLO	} NEED CONSUMER DISK MEMORY FOR \$150 PRICE
1981	ONE CHIP ADD CONTROLLER FOR \$5 MLO	

PERSONAL COMPUTER DIVISION
HOME COMPUTER S/C LEADERSHIP DEVICES
CPU

<u>TIME</u>	<u>NEED</u>	<u>RATIONALE/COMMENT</u>
1981	5 MHZ 9985 AT \$2	<ul style="list-style-type: none"> • REPLACE 9900 + 9 LS CHIPS • SIGNIFICANT RFI REDUCTION DUE TO ONBOARD CLOCKING • REQUIRES S/C MARKETING THRUST IN 8 BIT PROCESSOR MARKET
1983	MICROCOMPUTER - 9985 FUNCTIONS PLUS 8K BYTE ROM, 512 BYTE RAM AND ONBOARD I/O PROCESSOR	<ul style="list-style-type: none"> • REMOVE ROM AND RAM FROM SYSTEM • REMOVE 9901 I/O CHIP FROM SYSTEM
1985	MICROCOMPUTER WITH ABOVE FUNCTIONS AND WITH MICROCODE FOR DIRECT EXECUTION OF GPL	<ul style="list-style-type: none"> • 5X SPEED UP OF GPL, BASIC • 5X IMPROVEMENT IN GRAPHICS MOTION • FUNCTIONS CURRENTLY DONE IN 9900 ASSEMBLY LANGUAGE CAN BE DONE IN GPL
1985	LOW POWER (10 mw) MICROCOMPUTER WITH 8K ROM, 512 BYTE RAM	<ul style="list-style-type: none"> • PORTABLE HOME COMPUTER

PERSONAL COMPUTER DIVISION
HOME COMPUTER S/C LEADERSHIP DEVICES
TECHNOLOGIES

<u>TIME</u>	<u>NEED</u>	<u>RATIONALE</u>
1981	"PHONEME" BASED GENERAL PURPOSE SPEECH SYNTHESIS SET (ENGLISH LANGUAGE) - SYNTHESIS CHIP W/PREPROCESSOR - SERIAL MEMORY CHIP 256K BITS - SOFTWARE TO RUN IN 16K BYTES - USER INTERACTION REQUIRED FOR WORD "OPTIMIZATION"	<ul style="list-style-type: none"> • PRESENT DISCRETE WORD SPEECH APPROACH TOO INFLEXIBLE • NEED FOR USER INTERACTION TO FORM WORDS IS NOT A PROBLEM IN 1981
1983	ABOVE BUT ADD GERMAN, FRENCH, AND SPANISH	<ul style="list-style-type: none"> • AVOID NEED FOR PHONEME MEMORY FOR EACH DIFFERENT LANGUAGE
1985	GENERAL SPEECH FROM TEXT CHIP SET	<ul style="list-style-type: none"> • COMPUTER CONTROLLED WORD FORMATION INCLUDING INFLECTIONS
1981	FLAT PANEL BLACK AND WHITE DISPLAY WITH INTERACTIVE "LITE PEN" FOR \$50 MLO	<ul style="list-style-type: none"> • LITE PEN INTERACTION WITH COLOR TV FEASIBLE BUT IMPRACTICAL DUE TO HEALTH EFFECTS • BLACK AND WHITE DISPLAY COULD MAP TO COLOR TV SCREEN
1982	SPEAKER-DEPENDENT VOICE RECOGNITION CHIP (20 WORDS)	<ul style="list-style-type: none"> • USE WITH NONVOLATILE MEMORY TO PERSONALIZE • 10 NUMBERS PLUS 10 PROGRAMMABLE WORDS