Shugart Technology



Monder 1996

BUSINESS PLAN

FEBRUARY 6, 1980

COMPANY CONFIDENTIAL

COPY # 1

SUMMARY

Shugart Technology (the Company) was incorporated in the State of California in November, 1978, but remained inactive until October of 1979. At that time, Al Shugart and Finis Conner, both founders of Shugart Associates in 1973, began to put together a program to develop, manufacture, and market a 5½" Winchester disc file; the ST500.

Three key professional people were recruited to participate in formation of the Company, facilities were located in Scotts Valley, California, the Dysan Corporation agreed to develop and manufacture the disc, and Dysan also agreed to provide financial support through the product development phase.

Office facilities were occupied in December, 1979, and the engineering laboratory was completed in January, 1980.

Plans call for formal announcement in April and demonstration of the product at the National Computer Conference in May, 1980, followed by production startup during the last half of 1980. In keeping with the Corporate strategy to obtain and keep market share through early high volume production, the Company plans to manufacture 1200 units in 1980 and 56,300 units in 1981. Reception by potential customers has been excellent, and the Company has already received one order for an excess of \$2 million over an 18 month period.

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PRODUCT

The ST500 is a Winchester technology fixed disc file, with the outside dimensions and mounting holes identical to the Shugart Associates Minifloppy file. The storage capacity is 5 million formatted bytes, stored on both surfaces of two discs approximately 5 inches in diameter (actual dimensions: 130mm OD; 40mm ID). The ST500 interface is nearly identical to the Shugart Associates SA1000 8" Winchester file, with power and physical connectors identical to the SA400 Minifloppy. The ST500 product specifications are included in the Attachments section of this plan.

MARKET

The major immediate market of the ST500 is related to the market for minifloppy files used in small business systems, word processing systems, personal computers, intelligent terminals, and micro/mini computer systems. The storage capacity provided by minifloppy files in these applications is nearly always marginal, and as systems manufacturers and users expand these applications, it becomes insufficient.

Available alternatives to solve this insufficient capacity problem have been: 8 inch floppy file (still insufficient capacity and physically too large); 8 inch hard disc (physically too large); 14 inch hard disc (physically too large and too expensive).

The only correct solution to this data storage problem is a fixed hard disc file, physically the same size as the minifloppy file, that will provide 14 times the minifloppy storage capacity at 3 times the cost; e.g. the ST500. Such a storage device will enjoy a 10 to 30 percent share of the minifloppy market.

Using the Creative Strategies minifloppy forecast, the market potential for the ST500 is depicted in chart 1 on the following page.

MINIFLOPPY MARKET (units)

	1980	1981	1982	1983
Creative Strategi	les			
minifloppy fore	ecast 430,000	630,000	900,000	1,200,000
ST500 Market Pote	ential			
High	129,000	189,000	270,000	360,000
Low	43,000	63,000	90,000	120,000

CHART 1

Other markets for the ST500, not as quantifiable are:

Add-On Market

Most of the <u>installed</u> systems using minifloppies are candidates for <u>adding</u> the ST500, such as the TRS 80, Apple, and Pet computers.

8" Hard Disc Market

There are applications where an 8 inch hard disc file was chosen for storage due to the small physical size compared with a 14 inch file. A portion of these applications would prefer an even smaller size like the ST500.

New Applications

Applications exist that require small physical size for disc storage, yet capacity and reliability beyond that of the minifloppy, such as cash registers and POS terminals. These new applications provide yet another market opportunity for the ST500.

COMPETITION

5" Hard Disc Files

At the present time, the Company is aware of only one announced product that would directly compete with the ST500, that being the recently announced 5½ inch file by IMI. Rumors persist that product development efforts are underway at several companies including Tandon Magnetics, Micropolis, and two new startup companies. The Company believes that most of the successful manufacturers of 8 inch hard disc files will eventually develop a 5 inch file.

Minifloppy Files

Minifloppy files will be used as a removable backup for the ST500. Technology increases in the capacity of minifloppies will enhance the backup capability but will always be insufficient as a practical solution to the total storage requirement.

8" Files

Eight inch files, both floppy and hard, will continue to enjoy a share of the total disc file market. However, the physical size of these devices will prohibit direct competition with the ST500 where size is a key parameter.

Bubble Memory

Bubble memory is not expected to be cost competitive with moving head disc files in the foreseeable future.

FACILITIES

All facilities are located in the Carbonero Creek Industrial Park in Scotts Valley California, owned by the Stekoll Development Corporation.

Building 01

2300 square feet---office space 700 square feet---laboratory space \$1500/month 5 year lease; cancellable upon occupancy of Building 02.

Building 02A

16,000 square feet---office, lab, and manufacturing space \$9,500/month
To be occupied upon completion (August, 1980)
5 year lease; cancellable upon occupancy of Building 03.

Building 02B

16,000 square feet First right of refusal

Building 03

32,000 square feet First right of refusal

Building 04

32,000 square feet First right of refusal

Shugart Technology



ST500

PRELIMINARY SPECIFICATIONS

Performance Specifications	ST	503	ST	506
Capacity				
Unformatted				
Per Drive	3.19	Mbytes	6.38	Mbytes
Per Surface	1.59	Mbytes	1.59	Mbytes
Per Track	10417	Bytes	10417	Bytes
Formatted		-		
Per Drive	2.5	Mbytes	2.5	Mbytes
Per Surface	1.25	Mbytes	1.25	Mbytes
Per Track	8192	Bytes	8192	Bytes
Per Sector	256	Bytes	256	Bytes
Sectors/Track	3	2	. 3	2
Transfer Rate	5.0 Mbit	s/sec	5.0 Mbo	ts/sec
Access Time				
Track to Track	3	ms	3	ms
Average	170	ms	170	ms
Settling Time	15	ms	15	ms
Average Latency	8.33	ms	8.33	ms
Functional Specifications				
Rotational Speed	3600	rpm	3600	rpm
Recording Density	7690	_	7690	bpi
Flux Density	7690	fci	7690	
Track Density		tpi	254	tpi
Cylinders	15		15	_
Tracks	30)6	61	.2
R/W Heads	2		4	ŀ
Index	1		1	
Reliability Specifications				
MTBF:	- 8000	POH typic	al usage	
PM:	None			
MTTR:		ninutes		
Component Life:	5 ye	ears		
Error Rates:		10		
soft	1/10	10 bits re	ad	
Hard	1/10) bits real	ad	
Seek	1/10	seeks		

Physical Specifications

Environmental Limits

Ambient Temperature 50 F to 115 F (10 C to 46 C)

Relative Humidity 8-80%

Maximum Wet Bulb 78 F non-condensing

AC Power Requirements - None

DC Power Requirements

+ 12VDC +/- 10% xx amps typical during stepping (xx amps typical)

+ 5VDC +/- 5% xx amps typical

Mecanical Dimensions

Height = 3.25 inches

Width = 5.75 inches

Depth = 8.00 inches

Weight = 3.5 lbs.

Heat Dissipation = 75 watts (250 BTU/HR)

PROFESSIONAL SERVICES

CORPORATE COUNSEL

John A. Wilson Wilson, Sonsini, Goodrich & Rosati Two Palo Alto Square Palo Alto, CA 94304

PATENT COUNSEL

Aldo Test Flehr, Hohbach, Test, Albritton, & Herbert 260 Sheridan Avenue Palo Alto, CA 94306

AUDITORS

Ernst & Whinney 99 Almaden Boulevard San Jose, CA 95113

BANK

Bank of America Scotts Valley Branch 4525 Scotts Valley Drive Scotts Valley, CA 95066

CAPITALIZATION & FUNDING

The five founders of the Company have invested \$131,000 in capital stock as follows:

	\$131,000.00	3,100,000	
Doug Mahon	12,677.41	300,000	9.68
Syed Iftikar	12,677.41	300,000	9.68
Tom Mitchell	21,129.04	500,000	16.13
Finis Conner	42,258.07	1,000,000	32.26
Alan Shugart	\$42,258.07	1,000,000	32.26%
	Ş	# shares	8

The Company has entered into an R&D contract with Dysan Corporation which will provide the Company with \$437,640 through May, 1980.

Dysan Corporation has an option to purchase 48% of the Company (2,861,538 shares) at \$.01/share.

The Company has adopted a non-qualified stock option plan, reserving 310,000 shares of capital stock. No options have yet been awarded.

D. TOM MITCHELL

Personal

37 years old Married Resident of Saratoga, California

Education

BS in Business Management Montana State University, 1964

Experience

1978-1979

Commodore Business Machines, Santa Clara, CA General Manager

1977-1978

Bendix Corporation, San Francisco, CA Corporate Director of Material and Distribution

1976-1977

Casetel, Inc., Santa Ana, CA
President of company manufacturing .
watch cases.

1973-1976

Fairchild Semiconductor, Mountain View, CA Director, Material and Distribution Manager, Central Logistics Manager, Production Control

1970-1973

Memorex Corporation, Santa Clara, CA
Director, Manufacturing Planning
Manager of Distribution
Manager of Production and Inventory Control

1967-1970

Honeywell, Inc., Minneapolis, MN
Manager, Production Control
Manager, Interdivisional Sales

ALAN F. SHUGART

Personal

49 years old Married Resident of Aptos, California

Education

BS in Engineering/Physics University of Redlands, 1951

Patents

US #2,913,456; Assigned to IBM Computer logic design US #2,956,789; Assigned to IBM Computer logic design

Experience

1975-1979 Independent Consultant

1973-1974

Shugart Associates, Sunnyvale, CA Founder, President, and CEO.

1969-1973

Memorex, Santa Clara, CA Vice President, Product Development

1951-1969

IBM Corporation, Santa Monica, CA Riverside, CA San Jose, CA Harrison, NY

Field Engineer
Design Engineer
Product Engineering Manager
Processing Systems Program Manager
1301 Disk Storage Program Manager
2321 Data Cell Drive Program Manager
Technical Manager, Random Access Memory Programs
Systems Manager, Education Systems
Systems Manager, Information Storage & Retrieval
Product Manager, Direct Access Storage
Director of Engineering, Systems Development Div.

FINIS F. CONNER

Personal

37 years old Married Resident of Scotts Valley, California

Education

B.S. in Industrial Management
San Jose State, 1969
Graduate studies at University of Santa Clara

Experience

1979

IMI, Cupertino, CA
 Vice President of Marketing

1973-1979

Shugart Associates, Sunnyvale, CA Founder and Western Regional Sales Manager.

1971-1979

Memorex, Santa Clara, CA
Disc file product planning.
Equipment OEM Marketing Manager.

1969-1971

Mastec Corporation, Cupertino, CA
President of integrated circuit artwork
company.

SYED H. IFTIKAR

Personal

36 years old Married Resident of Fremont, California

Education

BSME, University of Madras, India, 1967 MSME, University of California, Berkeley, 1970 MSEE, University of Santa Clara, 1979

Patents

US #3,805,290; Assigned to Memorex Recording head flexure US #4,030,132, Assigned to Memorex Linear Motor Servo Control

Experience

1970-1979

Memorex, Santa Clara, CA Various mechanical engineering assignments in disc file development. (3660, 3670, 3675)

Mechanical Engineering Manager of several disc file development programs. (3652, 3650, 3644, 3657)

Project Manager for a disc file development program. (3690)

1967-1968

Buckingham & Carnatic Mills, Madras, India Mechanical engineer responsible for process equipment.

DOUGLAS K. MAHON

Personal

38 years old Single Resident of Boulder Creek, California

Education

18 months electronics schooling in US Marine Corps. Taught circuit analysis one year in US Marine Corps.

Patents

Four patent applications while at Diablo Systems related to track seeking and servo encoding.

Experience

1977-1979

Shugart Associates, Sunnyvale, CA
Manager of Electrical Engineering

1975-1976

Diablo Systems, Hayward, CA
Electrical Engineer responsible for read/write circuitry.

1974-1975

Storage Technology, Louisville, CO Read/write and servo design consultant.

1973-1974

Bright Industries, Sunnyvale, CA
Design Engineer; read/write and control
circuits for tape drives.

1972-1973

Century Data, Anaheim, CA
Member of Technical Staff; read/write
and servo design.

1969-1972

Babcock Electronics, Costa Mesa, CA Circuit design for military use of transmitters, receivers, encoders, and decoders.

PROFORMA INCOME STATEMENT 1980 (\$ x 1000)

SHIP SCHEDULE (UNITS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Model 503 Model 506 Total Units						<u>50</u>	. <u>75</u> 75	75	100	200	300	400	1200
SALES Model 503 Model 506 Total Sales						— 75 75		112	130 130	<u>240</u> 240	300	400	1369 1369
COST OF GOODS Materials Direct Labor Mfg. Overhead Prod. Engr. Depreciation Warranty Total						23 2 27 30 2 1 85	35 30 36 3 1	35 39 39 39 1 120	48 4 57 42 9 1	93 5 63 42 10 1 214	137 7 68 42 11 1 266	184 8 68 42 11 2 315	555 32 352 273 49 8 1269
GROSS PROFIT (LOSS)						(10)	4	(8)	(31)	26	34	85	100
PERIOD EXPENSES Marketing R & D G & A OTHER EXPENSES (INCOME) TOTAL EXPENSES	51 (57) (6)	118 (95) 23	115 (94) 21	109 (110) (1)	131 (113) 18	33 8 19 0	33 9 20 —	35 10 22 —————————————————————————————————	45 11 22 7 85	45 11 24 — 10 90	45 11 24 — 17 97	45 11 24 	281 595 155 (406)
NET PROFIT (LOSS) BEFORE TAXES	6	(23)	(21)	1	(18)	(70)	(60)	(81)	(116)	(64)	(63)	(16)	(525)
TAXES													
NET PROFIT (LOSS) AFTER TAXES	6	(23)	(21)	1	(18)	(70)	(60)	(81)	(116)	(64)	(63)	(16)	(525)
RETAINED EARNINGS	(24)	(47)	(68)	(67)	(85)	(155)	(215)	(296)	(412)	(476)	(539)	(555)	

PROFORMA BALANCE SHEET 1980 (\$ x 1000)

END OF	- JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ASSETS Current Assets Cash Accounts Receivable	86	63	42	21	10	10 75	10 187	10 224	10 242	10 370	10 540 278	10 700 324
Inventories Other Total Current Assets	<u>8</u> 94	<u>8</u> 71	8 50	13 8 42	43 8 61	55 8 148	23 281	98 23 355	167 23 442	236 23 639	23 851	23 1057
Furniture & Equipment At Cost	39	39	39 (3)	39 (4)	59 (5)	89 (7)	122 (10)	153 (13)	427 (22)	488 (32)	503 (43)	538 (54)
less depreciation TOTAL ASSETS	132	108	86	77	115	230	393	495	847	1095	1311	1541
LIABILITIES Current Liabilities					69	92	104	136	439	294	287	367
Accounts Payable Taxes Payable Other	22 - 3 - 25	21 3 24	20 3	13 0 13	- 69	<u>1</u>	2 106	3	443	5	6 293	<u>8</u> 375
Total Current Liabilities Long Term Debt	25					161	371	492	656	1112	1397	1561
TOTAL LIABILITIES	25	24	23	13	69	254	477	631	1099	1411	1690	1936
STOCKHOLDERS' EQUITY Common Stock Retained Earnings	131 (24)	131 (47)	131 (68)	131 (67)	131 (85)	131 (155)	131 (215)	160 (296)	160 (412)	160 (476)	160 (539)	160 (555)
TOTAL STOCKHOLDERS' EQUITY	107	84	63	64	46	(24)	(84)	(136)	(252)	(316)	(379)	(395)
TOTAL LIABILITIES & STOCKHOLDERS' EQUITY	132	108	86	77	115	230	393	495	847	1095	1311	1541

PROFORMA CASH FLOW 1980 (\$ x 1000)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	· OCT	NOV	DEC
BEGINNING CASH COLLECTIONS LOANS	57 57	. 86 95	63 94	42 110	21 113	10 0 161	10 0 210	10 75 121	10 112 164	10 112 456	10 130 285	10 240 164
EQUITY TOTAL AVAILABLE CASH	<u>45</u> 159	181	157	152	134	171	220	29 235	286	578	425	414
EXPENDITURES MATERIALS DIRECT LABOR					6	22 2 27	32 3 30	38 3 39	57 4 57	94 5 63	140 7 68	170 8 68
MFG. OVERHEAD MARKETING ENGINEERING G & A	73	118	115	131	118	33 38 19	33 45 20	. 35 49 22	45 53 22	45 53 24	45 53 24	45 53 24
CAPITAL EQUIPMENT WARRANTY COSTS DEPOSITS						20	30 15	33	31	274	61	15
TOTAL EXPENDITURES INTEREST PAYMENT	73	118	115	131	124	161	208	219 6	269 7	10	398	383 21
LOAN REPAYMENT ENDING CASH	86	63	42	21	10	10	10	10	10	10	10	10

PROFORMA INCOME STATEMENT 1981 (\$ x 1000)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
SHIP SCHEDULE (UNIT: Model 503	s) 50	150	150	300	500	1000	1500	2000	2500	3000	3500	4000 6000	18650 37650
Model 506 Total Units	<u>450</u> 500	<u>650</u> 800	1000	2000	3000	4000	3500 5000	4000 6000	7000	5000 8000	9000	10000	56300
	500	000	2000										
SALES Model 503	60	150	120	210	350	700	900	1200	1500	1500	1750	2000	10440
Model 506	382	552	722	1445	2125	2550	2800	3200	3600	3750	4125	4500	29751
Total Sales	442	702	842	1655	2475	3250	3700	4400	5100	5250	5875	6500	40191
COST OF GOODS							1077	3200	1483	1676	1883	2080	12489
Materials	172	276	343	672	672	875	1077	1280 49	1483 55	62	70	70	484
Direct Labor	12	17	18	26	28	35 97	42 106	110	116	124	128	133	1224
Mfg. Overhead	73	75	82	87	93 31	31	11	11	11	11	11	11	252
Prod. Engr.	31	31	31	31 20	20	20	22	23	24	24	26	31	249
Depreciation	12	12	15	7	7	9	11	13	15	17	20	22	130
Warranty	2	414	493	843	851	1067	1269	1486	1704	1914	2138	2347	14828
Total	302	414	493	043	031	1007	2005						
GROSS PROFIT (LOSS)	140	288	349	812	1624	2183	2431	2914	3396	3336	3737	4153	25363
PERIOD EXPENSES							150	172	164	168	183	195	1553
Marketing	47	53	60	96	130	131	153	173 44	51	53	59	65	440
R & D	21	21	21	21	21	21	42 37	44	51	53	. 59	65	476
G&A	27	27	27	27	27	32	37	44	31	55			
OTHER EXPENSES		2.5	20	22	38	44	39	25	4				259
(INCOME)	23	<u>26</u> 127	136	176	216	228	271	286	270	274	301	325	2728
TOTAL EXPENSES	118	127	136	170	210	220	272						
NET PROFIT						3.055	2160	2628	3126	3062	3436	3828	22635
BEFORE TAXES	22	161	213	636	1408	1955	2160	2028	3126	3002	3430	3020	22033
TAXES				238	704	977	1080	1314	1563	1531	1718	1914	11038
NET PROFIT							1005	2224	1562	1521	1710	1914	11597
AFTER TAXES	22	161	213	398	704	978	1080	1314	1563	1531	1718	1914	11597
	(533)	(372)	(159)	239	943	1921	3001	4315	5878	7409	9127	11041	
RETAINED EARNINGS	(533)	(3/2)	(133)	200									

PROFORMA CASH FLOW 1981 (\$ x 1000)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BEGINNING CASH COLLECTIONS LOANS	10 300 174	10 400 155	10 442 271	10 702 353	10 842 436	10 1655	10 2475	10 3250	10 3700	1453 4400	3608 5100	6266 5250
EQUITY TOTAL AVAILABLE CASH	484	565	723	1065	1288	1665	2485	3260	3710	5853	8708	11516
EXPENDITURES	,									1		
MATERIALS	205	268	425	584	704	887	1089	1293	1495	1699	1901	2042
DIRECT LABOR	12	17	18	26	28 -	35	42	49	55	62	70	70
MFG. OVERHEAD	73	75	82	87	93	97	106	110	116	124	128	133
MARKETING	47	53	60	96	130	131	153	173	164	168	183	195
ENGINEERING	52	52	52	52	52	52	53	55	62	64	70	76
G & A	27	27	27	27	27	32	37	. 44	51	- 52	59	65
CAPITAL EQUIPMENT	35	37	21	151	206	15	32	83	60	75	30	93
WARRANTY COSTS						1	1	1	1	1	1	2
DEPOSITS TOTAL EXPENDITURES	451	529	685	1023	1240	1250	1513	1808	2004	2245	2442	2676
INTEREST PAYMENT LOAN REPAYMENT	23	26	28	32	38	44 361	39 923	25 1417	4 249			
ENDING CASH	10	10	1.0	10	10	10	10	10	1453	3608	6266	8840

PROFORMA BALANCE SHEET 1981 (\$ x 1000)

END OF	- JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ASSETS Current Assets Cash Accounts Receivable Inventories Other Total Current Assets	10 842 458 20 1330	10 1144 726 20 1900	10 1544 1007 20 2581	10 2497 1120 20 3647	10 4130 1436 20 5596	10 5725 1752 20 7507	10 6950 2069 20 9049	10 8100 2386 20 10516	1453 9500 2703 20 13676	3608 10350 3030 20 17008	6266 11125 3227 20 20638	8840 12375 3227 20 24462
Furniture & Equipment At Cost less depreciation	575 (66)	596 (78)	747 (93)	953 (113)	968 (133)	1000 (153)	1083 (175)	1143 (198)	1218 (222)	1248 (246)	1341 (272)	1573 (303)
TOTAL ASSETS	1839	2418	3235	4487	6431	8354	9957	11461	14672	18010	21707	25732
LIABILITIES Current Liabilities Accounts Payable Taxes Payable Other Total Current Liabilities	467 10 477	727 	1056 	1312 238 24 1574	1405 942 31 2378	1726 1919 39 3684	2082 2999 49 5130	2363 4313 61 6737	2683 5876 75 8634	2943 7407 <u>91</u> 10441	3185 9125 110 12420	3362 11039 <u>130</u> 14531
Long Term Debt	1735	1890	2161	2514	2950	2589	1666	249	8634	10441	12420	14531
TOTAL LIABILITIES	2212	2630	3234	4088	5328	6273	6796	6986	8634	10441	12420	14001
STOCKHOLDERS' EQUITY Common Stock Retained Earnings	160 (533)	160 _(372)	160 (159)	160 239	160 943	160 1921	160 3001	160 4315	160 5878	160 7409	160 9127	160 11041
TOTAL STOCKHOLDERS' EQUITY	(373)	(212)	1	399	1103	2081	3161	4475	6038	7569	9287	11201
TOTAL LIABILITIES & STOCKHOLDERS' EQUITY	1839	2418	3235	4487	6431	8354	9957	11461	14672	18010	21707	25732