MY SGI Memories
Dec 1981 to Dec 1989

by Abbey Silverstone, Co-founder SGI

This is my brief history of SGI from the 6 months leading up to the official beginning of SGI on June 25, 1982 and finishing in November 1989 when I left SGI. Any additions or corrections from the early SGI crew would be appreciated. Most of my comments in the next section on graphics came from the 4 ½ months that Jim and I and Jerry Richardson worked on the business plan. I made the trip to Palo Alto every week from Feb 1982 to June 1982 where Jim and I with Jerry worked on accounting issues for the business plan.

Dinners and evenings were spent on issues concerning the future company. It also included Jim educating me on the technology. My background was with the producibility and production of the Xerox Alto 'personal computer'. The prototype was built by Xerox PARC in Palo Alto in 1973. Xerox Special Programs Group (SPG) firmed up the producibility and was responsible for all future changes. The Altos that Jim and his students used at Stanford were provided by Xerox El Segundo.

Project Background

SGI grew out of the DARPA funded Stanford University project. It would lead to the development of Graphic workstation products of at least 2 major computer corporations - Silicon Graphics (SGI) and SUN Micro systems (SUN).

The Stanford 'gang' was led by Jim Clark, who was the administrator of the DARPA grant. Jim had been working on a VSLI chip since his days in Utah (PhD in physics). His thinking, as explained to me, was that by developing a super large VSLI chip and putting them in series, he could accelerate the graphics process so as to achieve real time graphics manipulation in a smart terminal rather than on the main frame. Jim and Marc Hannah had been working on the chip for many months and

was now having a prototype made for actual use in a product. This occurred in 1981-2. At that time Jim was working as an Associate Professor of Computer Science at Stanford University. The students working on the DARPA project were a mix of bachelors, masters and doctorate candidates. They were working on a smart, graphics terminal which could be used over an 'internet' (developed at Xerox PARC in the mid 70's), to connect to a main frame such as a Digital Equipment Corporation's PDP6.

<u>The Start Of SGI</u>

In mid-December 1981 Jim reached out to me to work on the packaging design of the Stanford terminal concept. I was a former manager in the Xerox SPG in El Segundo, CA. From 1973 to 1980 SPG had been responsible for the ALTO redesign and production program. The Alto computer was a personal computer used in Xerox PARC offices which were connected to the PARC designed main frame via the Xerox Ethernet network. A test program of the hardware had been installed in President Carter's White house in 1977 and included 30 Altos and a Dover laser printer (1 page per second) connected to an Ethernet network.

Jim wanted a graphics-oriented terminal which would be connected to a main frame via the internet. The terminal would use 7 'Geometry Engines' connected in series to accelerate the graphics software and allow real time manipulation of graphics images. This was late 1970's dreaming.

I had been recommended to Jim by Chuck Thacker at Xerox PARC - a member of the Computer Hall of fame - as a product designer/Operations manager at Xerox. I had started in 1973 with building Alto S/N 2, and managed the production of over 2000 Alto's until 1979 when I left Xerox.

We worked on the business plan business plan for 4 months of long days. The next step was shopping the SGI plan. We began visiting the VC's on

Sandhill Road as a development team which included Jim Clark, Abbey Silverstone, Jerry Richardson (Accountant) and Andy Bechtolshein, a student at Stanford in Jim Clark's DARPA project. Among several VC's that the team visited, was Don Valentine who was recognized as one of the most successful VC in Silicon Valley. He informed us that that building both a high-end graphics terminal and an affordable workstation in a startup wouldn't work. So, Andy went in a different direction and started Sun Microsystems and Jim and I continued pursuing funding for an SGI graphics terminal.

<u>SGI Seed Money Startup</u>

After visiting several VC companies, Mayfield agreed to 'fund' us with $800,000. They took approximately 20% of the company and put two of their people on the Board of Directors along with Jim, and Abbey (briefly). SGI was legally incorporated and funded on June 25, 1982. We immediately hired Vern Anderson as CEO. Vern was a successful entrepreneur in the 1960's and 70's.

Technically, by the terms of the legal documents, Jim, Abbey and Jerry were the co-founders of SGI. However, Vern Anderson and the entire team from Stanford have always been considered co-founders of SGI. The students at Stanford that technically started at SGI in August 1982 included Marc Hannah, Tom Davis, Mark Grossman, Kurt Akeley, Charles "Rocky" Rhodes, John Hennessy and David J. Brown.

On June 25 SGI started with Vern Anderson, CEO, Jim Clark, VP of Engineering and Chairman of the Board of Directors, Abbey Silverstone, VP of Operations and Jerry Richardson as CFO. Jerry resigned in September 1982 to pursue other options.

On August 1, 1982 SGI moved from a small office area that they had occupied for 2 months and moved into a 15,000 sq ft facility on Clyde Court in Mountain View across from Moffett Field. Hiring began in July/August 1982. The Engineering crew moved from Stanford into the new building and SGI focused on a prototype/mock-up of the first IRIS

model. As I remember IRIS stood for Intelligent Raster Imaging System. It was used to show potential customers the capabilities of a 'smart' terminal that was connected to their in-house mainframe via an ethernet network. We hired a VP of sales and marketing - Don McKinney – and demo trips began. By the end of 1982 we had started working on the second round of funding. On March 31, 1984 we closed a private funding of - $16.667.56 from a group of investors led by Mayfield and NEA.

The New Direction

However, all was not well in the computer workstation market. Andy Bechtelshein, the SUN founder was selling a desktop work station. SGI pivoted from a smart terminal and began focus on an IRIS workstation.

By mid-year 1983 we had our work station ready thanks to Kurt Akeley. He designed the processor PCB. Our great team of software and hardware designers designed the rest of the IRIS 1000. The result was rapidly growing sales. We quickly built a manufacturing group led by former members of the successful Xerox SPG team and sales took off.

Sales Take Off

By early 1984 we were bursting at the seams. We leased the building next door and the one across the street for a total of 90,000 sq feet. We celebrated by holding a 'roller skating party' in the empty building. We quickly realized that we had a 'tiger by the tail'. We began expanding at a rapid rate in all departments. Sales grew and we successfully grew the company until 1986 when we moved into the new facilities across from the Mountain View garbage dump on Shoreline Rd. After more than a year of our cars being bombing targets for seagulls the city dump across the street became the Shoreline Amphitheater. We started with 2 buildings – Bldg 1 was operations which occupied more than 100,000 sq feet and Bldg 2 occupied by Executive offices, Sales, Accounting and Marketing on the first floor and Engineering on the second floor.

SGI Public Offering

SGI continued to expand at a rapid rate and went public (IPO) on April 5, 1986 with annual sales of more than $140,000,000. It was an exciting time to be part of the "Dot-com boom'

Abbey Leaves SGI - But Doesn't

By mid-1987 I was burned out. I had 5 levels of management between me and the floor. I had always been a hands-on Engineer and I foresaw growth beyond my imagination and so I resigned in June, 1987 and moved back to Southern California.

I was recalled for consulting purposes in December 1987. The administration in Washington, DC had imposed tariffs on memory chips. Market prices soared after adding tariffs and greedy increases by the importers. Prices rose from $9 per chip to $20+ per chip. I was tasked with using my connections in Japan and Korea to lock in commitments from the overseas suppliers for the next 18-24 months at factory prices including tariffs of $3 per chip. The $12 per chip large quantity contracts was well beneath our competition. All the USA designed workstations used over 100 chips per unit. Cost savings at SGI allowed us to prosper even more while competitors suffered flat sales.

SGI Innovations

SGI changed the Movie industry as well as the Automobile industry. Computer graphics in the movies expanded production efforts by using SGI computers to generate action scenes which appeared real. No one was hurt and Cinematographers could allow their imaginations to run wild. Automobile design was reduced from 7 years cycles for a new model to 2 years or less. Innovation in manufacturing floor layout and flow could be simulated.

From the beginning of production SGI did not out-source assembly work. We purchased monitors, power supplies, sheet metal cages and

panels from outside manufacturers. This approach allowed us to control manufacturing schedules. In early 1984 SGI purchased a series of software control modules so that by late 1985 we were operating industries first ERP.

ERP stands for Enterprise Resource Planning, which is the complex software that helps businesses, organizations, and other enterprises figure out what resources they have while providing tools for planning with these resources. It allows them to make changes to all functions within the company in a very rapid manner,

We purchased a DEC PDP 9 to run our software system in 1986. For the next 10 years SGI was able to meet shipment schedules and estimated material costs on existing products and new products. SGI was able to control costs and schedules as well as new product introductions much more efficiently than most of the other rapidly growing tech companies. I recently learned from Cal Poly faculty that Universities teach that ERP started in 1989. SGI started their ERP in 1986.

SGI's Slow Demise

Obviously, SGI was responsible for many, many technical innovations. However, Jim Clark wanted to compete with Apple and IBM in the low end of the market. He left SGI in 1994 and invested in Netscape. Ed McCracken, CEO of SGI bought Cray Computer in 1996. A move to the high end is looked on by most analysts as the main cause of SGI's demise. I'll leave that part of the story to members of the great Engineering team that grew under the SGI management staff. Jim Clark, Vern Anderson, Ed McCracken and other leaders that ran SGI after I left SGI in 1989 have their accounts of the successes and failures in SGI history.

SGI 'lost its way' in the mid 90's and was, as we all know, eventually purchased by HP in October 2016.

Those that came after me in the late 90's can analyze, criticize, and

speculate on the causes of the SGI demise.



SGI Executive team Dec 1982

Left to Right:
Don McKinney, VP Sales & Marketing
Abbey Silverstone, VP Operations
Jim Clark, Chairman, VP of Engineering
Vern Anderson, CEO
Dave Barram, CFO