

Trillium Digital Systems Case Study: 1988 – 1995

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Abstract:

This paper presents a brief overview of Trillium Digital Systems, a company that developed and licensed communications software to telecommunications equipment manufacturers for the wireless, broadband, Internet and telephone network infrastructure. Trillium was founded in 1988, self funded through 1999, raised its first round of funding in 1999, and acquired by a public company in 2000. Trillium's product, financial, and organizational history are presented from its founding in 1988 thru 1995. A future paper will cover Trillium from 1996 thru 2003.

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The Industry

The Internet, wireless, broadband and telephony in 1988 were not anything like they are today. The Internet was known primarily in academic and government circles, wireless consisted of large radio transmitters and receivers, broadband in the form of DSL didn't exist, cable was in its infancy and telephony was undergoing a significant change in the underlying network infrastructure that it was based upon.

Against this backdrop another significant change was starting to occur. In the years prior to 1988 most computer and communications systems were proprietary and closed. Manufacturers did this to ensure their customers remained captive to their equipment and could not easily interconnect or move to other manufacturer's equipment. Customers found this difficult and started pressuring the telecommunications industry to open up its products so that equipment from different manufacturers could interconnect and communicate seamlessly. A necessary and prior step to open systems was agreement on the standards and protocols that would be used to communicate between the equipment. These standards and protocols were developed by engineers from industry and government that participated in different international, national and industry standards bodies.

In the late 1980's the dominant technology was time division multiplexing which was starting to be supplanted by statistical multiplexing in the form of packet switching. One of the first widely implemented packet switching protocols was X.25. As the technology improved other protocols were developed including Frame Relay and Asynchronous Transfer Mode (ATM). In parallel, the Internet Protocols (IP) were moving from the academic and government world to the commercial world. Telephony was undergoing a major shift in technology as large, closed switching systems were being opened up and the Signaling System 7 (SS7) protocol was being widely deployed. SS7 enabled numerous new advanced telephone services as well as cellular and mobile phone networks.

The major computer companies at the time were IBM, Amdahl, DEC, Burroughs, Sperry, Cray and others. Telephone networks were still tightly regulated monopolies throughout the world. The major communications equipment manufacturers supplying the telephone networks included companies such as AT&T, Northern Telecom, Siemens, and Alcatel for public networks; Timeplex, NET, Newbridge, and others for private networks. Cisco had 170+ employees and net sales of \$5+ million. At this time cell phones didn't exist and fax machines were just becoming popular.

A number of communications equipment manufacturers were located in Los Angeles (see Table 1), although the center of gravity for the industry was in the San Francisco bay area, Boston, and Dallas.

Table 1 - Companies

Timplex	Amdahl	Micom	Xylan
Sync Research	Andrew	Retix	Gateway
Fujitsu	Emulex	Fibermux	

There was also significant activity in other countries including Canada, Japan, Korea, England, France, Israel, Sweden and Finland and Germany. There was very little manufacturer activity going on in China, Russia and India during this time. Interestingly, the significant activity for Ireland and India was the exporting of people, their knowledge and skills. Equipment manufacturers were located throughout the world and were not solely focused on selling their products only into their local markets and in fact, they were almost always focused on the worldwide market.

In the 1980's and earlier computer and communications equipment manufacturers generally developed all of their hardware and software themselves. If they couldn't do it they might hire a consultant. Over the course of the 1990's this evolved to a very different paradigm. Instead of looking to develop everything themselves they looked towards buying or licensing hardware and software from other technology providers, companies like Trillium. If they couldn't find the technology they needed from other technology providers then they would hire a consultant to develop it for them and in worse case they might develop it themselves. This transition was painful for many companies as they fought the "Not Invented Here" syndrome. Ultimately, the need to get to market quickly and get ahead of or at least stay even with competitors drove the transition.

Founding

The DJIA reached 2722 in August 1987 and crashed to 1738 by October 1987. The market moved up a bit in 1988 and 1989 but this was then followed by a 9 month recession starting mid 1990 and ending in the 2nd quarter of 1991. The crash in 1987 laid the seeds of Trillium, a story that initially revolved around three people, Jeff, Larisa and Mr. A.

Jeff received a BS Electrical Engineering degree from UCLA. His dad was self-employed and in the record business. His wife's parents were self-employed and owned a small air conditioning company. At the time Trillium was founded he was married and his wife was pregnant with their first child. His wife worked as an engineer in the aerospace industry. Prior to Trillium, Jeff worked as a system engineer and individual contributor at a couple of communications equipment manufacturers. He also had almost no management experience; he once managed a single person at the first company he worked at after UCLA.

Larisa received a MS Applied Mathematics degree from Russia. She immigrated to the U.S. in 1979 with her husband and while pregnant with her first daughter. Her husband worked as a programmer. Prior to Trillium, Larisa worked as a system engineer and individual contributor at a few communications equipment and software manufacturers. She never managed any people.

Mr. A received a MS Electrical Engineering degree from Italy. He immigrated to the U.S. in the late 1970's with his wife. At the time Mr. A joined Trillium he was married with children. Prior to Trillium, Mr. A worked as a system engineer, individual contributor, director of product development, director of development, and director of engineering. He had managed large engineering teams as well as account, marketing and manufacturing efforts at a few communications equipment and software manufacturers.

Jeff worked after coming out of school for Mr. A at Amdahl, and then Doelz. Larisa worked for Mr. A at Amdahl, Doelz and Retix. Mr. A hired Jeff and Larisa to Doelz and then was recruited away from Doelz a few years later to join Retix. Doelz offered two telecommunications products for the wide area and local area network. (see Doelz brochure). Retix was offering Open Systems Interconnection (OSI) portable source code software for file transfer, virtual terminal, email, directory services and other applications. Jeff and Larisa were laid off from Doelz in February 1988 when it experienced financial difficulties after the stock market crash in 1987. Jeff always wanted to start a business although he didn't have anything specific type of business in mind. After being laid off Jeff and Larisa did an informal self assessment and concluded they were good at software development, had some understanding of communications systems, understood the X.25 communications protocol and had no money.

Jeff started consulting as Trillium. Jeff figured he didn't have much to lose. Larisa joined Retix to work for Mr. A in February 1988 and then left Retix to join Trillium in July 1988. Jeff became CEO and Larisa became VP of Technology at Trillium.

When Jeff and Larisa formed Trillium they had to decide on a name, how much to capitalize the company, whether to be an S or C corporation and where to locate its office. The name Trillium came about because of a mistake. Jeff and Larisa asked for company name suggestions from family and friends. Someone suggested a character named Trillian from the book "Hitchhiker's Guide to the Galaxy". They thought the suggestion was supposed to be trillium, a flower in the lily family. They liked the sound and symbolism of the name Trillium so decided to use it as the name of their new company.

The initial capitalization of Trillium when it was incorporated was \$1,000. Jeff, Larisa and Mr. A went on to put a total of \$60,000 into Trillium by the end of 1991. No additional capital was paid into the company through 1995. There was no organizational difference between an S and C corporation, although there were some tax differences. Jeff and Larisa didn't want to be double taxed so they started Trillium as an S corporation. Trillium elected out of S to C corporation status a few years later when the desire to avoid double taxation was replaced by the desire to operate and be perceived as a regular corporation.

Jeff and Larisa located Trillium in Los Angeles because that was where they lived. Trillium had the choice of being located in a dense urban area (West Los Angeles) or a less dense suburb (Thousand Oaks or the San Fernando Valley) of Los Angeles. Rental rates for office space were significantly less in the less dense suburbs. Trillium

always leased its office space although during one move Trillium considered buying a building but concluded that given its increasing growth rate it might be stuck with a building that was too small and that its real expertise wasn't property management (i.e., owning a building would be distracting). Trillium located in West Los Angeles and found that this had advantages for their less senior staff. There was plentiful rental housing within walking distance to the office, access to amenities and access to entertainment. This was important since many newly arriving engineers from other countries didn't drive.

Trillium had a few customers in Los Angeles but most of its customers were elsewhere. In general, the mix between domestic and international customers ranged between 60 – 40%. Los Angeles turned out to be a convenient location simply because of its easy accessibility to customers during the product sales and support cycles. In later years Los Angeles also proved to be a fortuitous choice for unexpected reasons. Trillium had a somewhat bifurcated staff. It had a few experienced people and many people just out of school or early on in their careers. Many of the early Trillium people were from Los Angeles but as Trillium grew it recruited from around the world. This was especially relevant post 1995. There simply weren't people with the experience it needed in Los Angeles. It was difficult to recruit senior people because of perceived quality of life issues in Los Angeles (e.g., housing prices, quality of schools, crime, and earthquakes). It was easier to recruit less senior people since they tended to rent and not have families. They were also very mobile. Since the telecommunications industry wasn't as well developed in Los Angeles, it was less likely they would move to other companies in Los Angeles. This was unlike other companies in the San Francisco bay area and the Boston area where mobility between companies was very high and retention was difficult. People tended to stay with Trillium, other than for life event reasons, for many years.

Consulting

Jeff's first consulting job as Trillium started in April 1988. After Larisa joined Trillium in July 1988 both she and Jeff continued consulting. Mr. A joined Trillium as president in September 1989, near the end of Trillium's consulting phase, when Jeff, Larisa and Mr. A felt there was enough revenue to support three people. Jeff's, Larisa's, and Mr. A's spouses all worked, so their respective families all had some income from other sources. Jeff, Larisa and Mr. A made sure to pay in order of priority; Trillium's expenses and employees followed by themselves. Generally Trillium spent money on only what it needed. On a few occasions in the early years Jeff, Larisa and Mr. A would hold onto the checks written to themselves and deposit them a little later. On a few occasions, they made small personal loans to the company that were paid back to them with interest. They made sure to document each loan so it was an arms length transaction.

The initial consulting contracts were time and materials based although the cost uncertainty was a concern with potential customers. Over time most of their consulting contracts became fixed price. They quickly learned that it was very important to have a clear and mutual understanding of the customer's requirements and expectations. Quite often customers couldn't clearly articulate what they needed or wanted. Software was very fluid and as such it was very hard to constrain expectations. This became an important lesson for the future when they tied the description of their software products to the license agreement. They also found that they were poor at estimating project timelines. It was hard for them to judge how long it would take to do something since they were working with fairly complicated technologies. They did not really know how to market their consulting services in the beginning. They created a small brochure that it turns out wasn't really used (see Attachment 4). As a matter of luck, almost all of their consulting contracts were the direct result of somebody they already knew referring them to someone looking for a consultant (see Table 2).

Table 2 - Consulting Activities (in approximate chronological order)

Company	Location	Project	Reference
Quotron Systems (division of Citicorp)	Los Angeles, CA	Developed point to point bisynchronous protocol for communications controller	Person at Quotron Systems was previously co-worker of Jeff at Amdahl
Quotron Systems (division of Citicorp)	Los Angeles, CA	Developed application program interface and underlying communications services for transaction application	Additional project
Franklin Datacom (division of Franklin Telecommunications)	Westlake Village, CA	Enhanced performance of PC based multi-protocol packet assembler and disassembler (PAD)	Person consulting to Franklin Datacom was previously co-worker of Jeff and Larisa at Amdahl

Sync Research	Tustin, CA	Determined requirements for PC based multi-protocol PAD to support frame relay	Founders of Sync Research previously consulted to and worked at Amdahl
Franklin Datacom (division of Franklin Telecommunications)	Westlake Village, CA	Enhanced PC based network management services controlling multi-protocol PADs	Additional project
Sync Research	Tustin, CA	Developed iso-asynchronous protocols for PC based multi-protocol PAD	Additional project
Retix	Santa Monica, CA	Developed spanning tree protocol for LAN bridge	Mr. A previously worked at Retix
Retix	Santa Monica, CA	Enhanced PC based network management services controlling LAN bridges	Additional project

The consulting phase continued through the end of 1990. Consulting was interesting, fun and okay economically but Jeff, Larisa and Mr. A concluded that a product focus would be even more interesting, fun and potentially much better economically. Consulting revenue was proportional to the number of hours in the day they worked. They focused on exploring the idea of developing products that could be sold or licensed to many companies and provide a high degree of leverage for the effort put into developing it. Consulting and one off product development efforts wouldn't fit that bill. As Trillium developed and licensed products it had many requests by its customers to consult and help integrate its software products into its customer's communications equipment. Beyond its normal product training and support Trillium did not do any additional significant consulting through 1995. Trillium felt product development should be its focus and that consulting did not provide enough leverage to make it worth its while. This proved to be a competitive disadvantage at times since some of Trillium's competitors offered not only software products but also consulting and integration services.

Conception

Jeff, Larisa and Mr. A didn't have anything specific in mind when they started thinking about developing products. They examined what others were doing, examined what they thought would have made their lives easier as system engineers building communications equipment and then looked at what they thought they could do well given their economic, knowledge, experience and skill constraints. This led to the conclusion that they should try and develop portable source code software for communications protocols that could be licensed to communications equipment manufacturers. Source code is a symbolic language (e.g., the C programming language) which is run through a compiler to generate binary code which can run on a particular microprocessor. Communications systems had a variety of hardware and software architectures, used a variety of microprocessors and used a variety of software development environments. It wasn't technically possible to develop a single piece of binary code that could run on many different systems. Source code, if properly designed and supported, could provide a highly leveragable solution usable in all possible environments.

Jeff, Larisa and Mr. A went through the iterative process of evaluating potential source code software products that they could try to develop. During this process they thought about how the software products they were thinking about could be used and integrated into the communications equipment they had previously worked on at Amdahl, Doelz, Retix and other companies they were familiar with. They didn't do any market research or speak to any potential customers. In fact, with the exception of the model Retix was pursuing with OSI portable source code software, it wasn't clear if a real market existed for the software products they were going to develop.

Jeff, Larisa and Mr. A developed a software architecture they thought could address potential customer's technical, integration and support issues. Their first product was for the X.25 communications protocol since they were familiar with this protocol from previous jobs. The proper way to test source code would be to compile it for all possible environments it might run in and then run and test it in those environments. There were as many environments as there were pieces of communications equipment. That testing approach was impossible. To overcome this difficulty they developed an operating system that could run and provide a simulation environment under commercially available operating systems such as DOS, Windows and Solaris. This environment proved indispensable for their development, testing, quality assurance and support activities. These initial conception and development activities were incremental and systems oriented. They created pieces, tried to put them together, identified design problems, went back and tried again. After a few months they were satisfied with the architecture and what the resulting products would look like. They then settled in to develop their first products. This whole process occurred in parallel and separately from their consulting activities.

In the early years Trillium software engineers would perform many functions. They would develop the products, perform quality assurance testing, provide training, provide customer support, write the technical documentation, and also participate in marketing and sales activities. Trillium’s software development started on individual PCs and moved to a networked LAN with Sun workstations. Trillium developed its own configuration management and testing tools. Configuration management became important because the combinatorics of Trillium products were challenging. The first customer shipment (FCS) of its X.25 source code software product occurred in June 1990. By 1995 Trillium offered over 35 products, many of which shared the same programming interfaces. Each product had extensive documentation which meant that for 35 products Trillium had to maintain over 150 different and unique documents. After each product was initially released it underwent additional releases every 3 – 9 months to add new features and fix bugs.

Birth

Jeff and Larisa did not start Trillium with a business plan or strategy for realizing a return on their investment if Trillium became successful. They were content to enjoy the intellectual challenge of designing new software products and taking pride in the development of a growing business.

Jeff and Larisa were engineers. Mr. A was an engineer but also had broader, practical business experience in the technology industry. They lived and spoke technology and were most comfortable with employees and customers that were very technology oriented. Engineering drove the rest of the company and everybody else was effectively there to support engineering. This mind set and the expectations that came long with it created numerous challenges as Trillium grew and other parts of the organization such as marketing, sales and quality assurance tried to establish themselves, build their credibility and assert their influence and authority.

Jeff, Larisa and Mr. A wrote a number of internal documents that they used to collect and organize their thoughts and activities. They were fairly ad hoc and evolved spontaneously. These documents included executive summaries; product plans and schedules; headcount plans and organization charts; compensation, benefit and stock information; customer, release and ship status, and others. Trillium initially kept its books on a cash basis for financial reporting since it didn’t really know or understand accrual based financial reporting. Trillium moved to accrual based financial reporting a few years later as it moved towards GAAP. Trillium initially filed its tax returns on a cash basis since it didn’t want to pay taxes on money it hadn’t received yet. Trillium moved to accrual based tax reporting a few years later as it approached certain statutory requirements. Trillium made the change a bit earlier than necessary but felt it could take the tax hit in the year it changed since its bank balances were good.

Before Trillium shipped its first source code software product there were a number of issues that needed to be resolved. These included defining the product deliverables, pricing, licensing terms, configuration management of the various elements for the product and determining when the product was finished enough to ship. The deliverables consisted of software, documentation, training, and support (see Table 3).

Table 3 - Deliverables

Software	Source code software, test software, make files and release notes
Documentation	Functional specification, programming interface specification, portation and integration guide, test description
Training	Training course at Trillium facility provided by Trillium engineer describing software architecture, theory of operation and portation and integration issues
Maintenance support	Software updates and upgrades as they became available fixing bugs and adding new features.
Technical support	Unlimited phone, email and fax support provided by Trillium engineer.

Jeff, Larisa and Mr. A had significant concerns about how to value and protect their intellectual property. As consultants to other equipment manufacturers all of their efforts were works for hire. This meant that any intellectual property that they created was owned by their customer. They saw how easily code could jump between unrelated programs and products and were very sensitive to the need of ensuring that code they developed for one product was not used in other products. They wanted to ensure everything they did was clean and not contaminated by others intellectual property. This was a strong driving principle for their business practices and their own software products. They didn’t want to put themselves or their customers at risk. They relied on copyright and trade secret protection to establish proprietary rights and protect the value of what they

were developing and consciously chose not to rely on patent protections. They couldn't afford the money or time for patent applications and they also felt that for software products the best protection was the speed at which the industry moved. The need to publicly expose claims in patent applications coupled with their perception that it would be difficult to find anybody that might be violating their patents seemed to be a big negative compared to not exposing the software at all. Trade secret protections depended on business practices as well as the usage of non-disclosure agreements, software license agreements and employee product development and secrecy agreements. They relied on the economic importance of their software and access to their future software and support to prevent companies from using software in non-licensed applications.

At the time Trillium initially drafted its software license agreement (see Attachment 11) there were few people, if any, that truly understood the issues of licensing source code. Jeff, Larisa and Mr. A took a combination of some books that they read, along with portions of some other software license agreements from other companies that they had seen, to stitch together a first pass at a license agreement. After they put it together they then went to an attorney and had him review it to ensure it was in proper legalese, would do what they wanted it to do and have no unintended legal consequences. The license agreement evolved over time and from the beginning consistently generated discussion with Trillium's customers on the topics of liability, indemnification and the definition of the designated equipment. Residual knowledge developed as an additional topic of discussion in the mid to late 1990s.

Pricing software products with a manufacturing cost of almost zero (the cost of burning a floppy and photocopying the documentation) consisted of triangulating between three data points, Trillium's cost to develop the product, what its competitors were charging, and the perceived value of the software to its customers. Trillium's software products consisted of 10,000's to 100,000's lines of source code (two of its ATM products combined consisted of over 250,000 lines of source code). Trillium would typically license multiple products to the same customer. The person time and calendar time for customers to develop and test these products themselves was significant. By licensing Trillium software products and integrating them into their communications equipment customers could save man years of effort and get to market much more quickly with less risk than if they did it themselves. This translated into reduced expense and increased revenue for the customer. Trillium blended the data points together to arrive at a single use buyout license fee. This was the number that drove all of Trillium's other related product pricing.

All of Trillium's product development was unfunded (i.e., companies did not pay it ahead of time or even commit to being a customer for its software products). Trillium generally didn't start marketing or licensing a product until development was completed. It would take anywhere from 3 to 18 calendar months to develop and release a product. Trillium didn't sell software; it licensed software. This meant that Trillium's customers didn't own Trillium's software products; they simply paid for the right to use them. Trillium had a few different licensing models. The typical license required the customer to pay a one-time up front fee for a single specified use, also known as the designated equipment. No royalty payments were required. Customers had mixed feelings about this type of license. Some customers liked this model and others wanted a no up front fee and royalty only model. Those customers that wanted the one-time up front fee (also known as the single use buyout) license liked knowing the software was going to be a fixed cost, especially if they were optimistic they were going to ship large quantities of communications equipment. Customers that wanted the royalty only model typically had one of two different perspectives; they were cash poor and wanted to conserve cash or they wanted to ensure that Trillium was strongly motivated to ensuring that the customer's communications equipment was going to work using Trillium's software products. Even though Trillium had significant pressure from its early customers to offer royalty based models, it only offered the one-time up front fee model. This limited Trillium's upside but it also meant it didn't assume the development and marketing risk of its customer in a royalty based model. License fees differed for domestic and international customers. Individual product single use domestic license fees ranged from \$10,000 to \$70,000. Customers frequently licensed multiple products at the same time. A typical multiple product license fee ranged from \$50,000 to \$250,000.

Trillium's license fees were structured to allow it to manage and predict its cash flow and also provide its customers with some real and perceived leverage over Trillium. Customers wanted to feel that Trillium was on the hook with them. The customer would pay one half the license fee within 30 days of delivery and then pay the remainder of the license fee within 30 days after the end of an acceptance period. The acceptance period was defined in the license agreement as a period of time in which the customer could determine if the software did

what its associated documentation said it was going to do, not necessarily what the customer wished, hoped or wanted it to do. Trillium found these could be very different things and it wanted to ensure it could manage potential differences of opinion on its own terms. This put the burden on Trillium to ensure that the documentation describing the architecture, functions and performance of its software products was complete and accurate. This close ended approach allowed Trillium to manage and predict its cash flow as well as provide a sound basis for booking revenue when it moved to accrual based financial and tax reporting.

Trillium also offered a product warranty period as part of the license after which ongoing support and maintenance contracts were available (i.e., support, updates, and upgrades) for an annual fee ranging between 10 – 20% of the single use buyout license fee.

Trillium did not really know how to market its software products in the beginning, all it did initially was print out individual data sheets as customers asked for them. A French company heard about Trillium's first product through the grapevine, contacted them, and discussed with them what they were doing. The French company licensed the X.25 source code software product for a PC card that it was developing in June 1990. At this point in time Trillium had 3 employees and 3 products. It appears the French company licensed from Trillium because Jeff, Larisa and Mr. A exhibited a strong technical knowledge and commitment to ensure that Trillium's software products would work in the French company's PC card.

Child

Trillium's product development efforts continued and in fact, accelerated. The nature of communications equipment was that many protocols had to be put together to enable a piece of equipment to work. Trillium wanted to provide all of those protocols and it went on to develop operating system, ISDN and Frame Relay products. After some investigation Jeff, Larisa and Mr. A decided to start development of products for SS7. The SS7 protocols were fundamentally different than what Trillium had been doing before. They are used for voice communications rather than the data communications. Trillium spent some time trying to understand the SS7 technology, its applications and the market. At the time, it wasn't entirely clear Trillium was up to the task of developing and marketing the SS7 products.

Other than for recruiting purposes, Trillium did not advertise through 1995. Trillium shared its first trade show booth in Germany in the early 1990's and made its first formal product announcement at the Paris Interop trade show a couple of years later. Trillium's marketing activities consisted of printing some brochures and releasing press releases on Business Wire. Trillium didn't do any form of direct mail although it started early using the Web as a marketing resource. Trillium's products were very technical so it took an educational and consultative approach to selling. Trillium started participating in some of the standards bodies meetings. The meetings were probably Trillium's strongest marketing tool since the attendees were quite often engineers from other companies building equipment that might need Trillium's software products. In short, Trillium relied on a few articles about its products that appeared in the technical press and word of mouth to market its software products.

Trillium's growth was driven by quickly changing technology, equipment manufacturers entering different national and international markets, equipment manufacturers expanding their product lines and equipment manufacturers being resource bound. Trillium was able to follow the standards bodies' activities and usually deliver software supporting these standards quickly after ratification. This allowed the manufacturers to meet the basic product requirements needed by their customers and concentrate on distinguishing themselves from others and adding value by focusing on the applications they put on top of Trillium's software.

Resellers offered Trillium software products under their own names. Trillium negotiated its first reseller arrangement with Retix for a few of its X.25 and ISDN software products in the early 1990's. This arrangement came about because of Mr. A's previous association with Retix. Retix paid Trillium a portion of the license fees it collected for any Trillium software products that it licensed to its own customers. The contract was in Retix's favor since Trillium didn't have much negotiating experience or leverage at the time it was originally signed.

Another company, Mitel, also negotiated a reseller arrangement with Trillium after the Retix reseller arrangement. Mitel made the initial contact with Trillium. Somebody at Mitel had been following Trillium and felt Trillium's software products would be a good complement to Mitel's telecommunications semiconductor products.

The Retix arrangement wasn't very successful and the Mitel arrangement was moderately successful for a period of time.

Mitel, as part of its agreement, could directly ship Trillium's software products and provide support. Because of the technical complexity of Trillium's software products it was difficult, at best, for Mitel to provide support. This turned out to be unsatisfactory to Mitel's customers and Trillium concluded that its brand and reputation were potentially suffering as a result. Trillium terminated the agreement with Mitel in August 1994. The fallout of this was that many of Mitel's distributors contacted Trillium and asked to continue their distribution relationship with Trillium directly. In a short period of time Trillium could claim distributors for its software products in Germany, Israel, France, Ireland, Switzerland, Italy, United Kingdom, Japan and Taiwan. Trillium would not have been able to develop this network on its own in any reasonable amount of time. The network was uneven in its commitment and ability to support Trillium's software product line but it did create a presence in markets that it simply wouldn't have known about or been able to reach otherwise. It should also be noted that during this period Jeff and Larisa met a person at Mitel that would become Trillium's third VP of Marketing and Sales.

Trillium also started developing marketing relationships with other technology providers. Generally these relationships were not financial but marketing in nature. Partners recommended Trillium software products and Trillium recommended partner's component, board, software and/or system products. All of the relationships were non-exclusive in nature. By 1995 Trillium's partners included Wind River Systems (operating systems), Motorola (microprocessor components), Siemens (telecommunications components), Zilog (telecommunications components), Fujitsu (telecommunications components), IMP (hardware fault tolerant systems) and Sun Microsystems (workstations).

Jeff was focused on technical and some business issues, Larisa was focused on technical issues and Mr. A split his time between business and some technical issues. In the first few years, Jeff, Larisa and Mr. A would set the product direction and overall business priorities of the company. Others were welcomed to criticize, comment and suggest. This created a very open and at times rigorous environment that encouraged employee involvement that was challenging at times. Although Jeff, Larisa and Mr. A wanted to be open and transparent they found it wasn't always possible or appropriate since legal and business restrictions sometimes prevented them from doing or saying certain things.

Trillium hired somebody that Mr. A knew as its first VP of Marketing & Sales in September 1991. Mr. A wanted to grow Trillium quickly, with a view to positioning the company for an early sale so that he could retire by the time he turned 40, which at that point in time was a few years in the future. Towards this end Mr. A developed the opinion that Trillium needed to bring in additional senior management, bring in senior technical people to assist with their SS7 product development activities and raise money to finance their future growth and success. The VP of Marketing and Sales supported this view but Jeff and Larisa did not feel many of these things were necessary or wise given the maturity of their organization. It became apparent over time that Jeff and Larisa's vision of Trillium differed from Mr. A's. Mr. A tried to enlist Larisa's help to either change Jeff's responsibilities or have him step aside. Jeff, Larisa and Mr. A had many discussions about the business, personal and financial issues related to their differing visions. In the end, Larisa aligned with Jeff and Mr. A resigned in June 1992.

There were 3 shareholders at the time, Jeff, Larisa and Mr. A. At the time Mr. A resigned Jeff and Larisa had discussions about what to do with the 20,000 shares of Trillium stock that he owned. Jeff and Larisa didn't think Mr. A should be allowed to continue to hold the stock and share in any future growth, so they negotiated a buy back of the stock. He initially asked for 1/3 of \$1 million. Jeff and Larisa bought the stock from Mr. A for \$61,000 and he also signed a non-compete agreement with Trillium for an additional \$60,000. A few months after Mr. A left the VP of Marketing & Sales resigned. Mr. A was well liked and respected by the employees. The departure of Mr. A and VP of Marketing & Sales around the same time created immense concern with the employees. They didn't understand why they left and wondered if this signaled something negative about Trillium's future. Jeff and Larisa had to deal with this concern, manage engineering and now manage all of Trillium's accounting, marketing and sales efforts.

Adolescent

By 1992 Trillium had licensed its X.25, ISDN, Frame Relay and first SS7 products to a range of domestic and international companies that were designing and building communications equipment for the private and public networks (see Table 4).

Table 4 - Some customers in 1992

ARINC	Sistema	Dassault	Sharp	NEC America
NET	Multipoint	Net Express	Alenia	Andrew
Penril	Harris	RND	Scitec	Memotec

Trillium was seeing competition from companies offering similar software products and in some cases, also offering consulting and integration services. Trillium was even with its X.25 competitors, behind with its ISDN competitors, even with its Frame Relay competitors and very behind with its SS7 competitors. Trillium tried to distinguish itself from its competitors by offering a broad range of software products but this put intense pressure on its development and support activities. Open source was not an issue yet but would become a temporary issue in the mid-1990s. The first open source competition Trillium truly encountered was with its upcoming ATM products, although this didn't turn out to be as significant problem as it thought it might be. Communications equipment manufacturers building commercial products needed to have a single point of responsibility, guaranteed support and an unambiguous and predictable commitment to support new features and capabilities. Open source did not easily meet these requirements.

The ATM protocol was starting to become important to the communications industry. There was significant activity related to ATM in the standards bodies in 1992 and 1993. At this point the Internet Protocols were still in the background. Trillium became a significant participant in the ATM standards bodies and as a result, it was able to develop its first ATM products in parallel with the writing of the standards. When the standards were ratified in mid-1993 Trillium was able to ship its first ATM products within months. Trillium became one of the two leading providers of ATM source code software very quickly and experienced rapid revenue growth, going from annual revenue of \$961,000 in 1992 to \$4,777,000 in 1994. ATM was about 50% of its product revenue and SS7 was about 25% of its product revenue in 1994. The ATM unit volume was higher, but SS7 made up for this with much higher license fees.

Teenager

Jeff and Larisa were getting stretched thin with all of their responsibilities by 1993. Around that time another senior person, Mr. B, entered the picture. Mr. B had contacted Trillium in 1991 or 1992 as a potential customer and then contacted Jeff again, after Mr. A and the VP of Marketing & Sales left in November 1992, to discuss the possibility of joining Trillium. Mr. B was married and had children. Prior to Trillium, Mr. B worked as a marketing director and product development director at a number of communications equipment manufacturers and network operators. He had managed large engineering, account and marketing teams.

Mr. B joined Trillium in February 1993 although the employment agreement had not been completed and some ancillary terms of employment had not been settled. While working on Mr. B's employment contract Jeff and Larisa met their new legal counsel, Mr. C, who would become Trillium's COO in the future. Mr. B became responsible for marketing and sales. He unexpectedly had to move to Northern California to care for an ill family member in June 1993. Jeff and Larisa tried to be accommodating. This was the first remote employee relationship they had to manage. Mr. B had worked at a number of large communications companies before Trillium and he felt that he had knowledge and experience that could contribute to Trillium's success. He felt that at some point he could and should be president of Trillium. Mr. B moved back to Los Angeles in July 1994.

Trillium was very busy in 1994 and found itself still straining to keep up with all of the development, support, marketing and sales activity. As Trillium grew it was organized into four groups (see Table 5) although the reality was that in the early years of their formation the distinction between the groups was often blurred.

Table 5 - Groups

Group	Department	Functions
Engineering	Core technology, emerging technology	Product development, some customer support, some training, some publications, some marketing and some sales
Marketing & Sales	Marketing, sales, business development	Marketing, sales, business development, product management, product marketing, sales engineering, marketing publications,

		account management, corporate communications
Customer Support & Quality Assurance	Customer support, quality assurance, publications, training, product release	Customer support, quality assurance, technical publications, training, information technology, product release, tools
General & Administrative	Administration, accounting & finance, legal, information technology	Administration, human resources, accounting, finance, legal, shipping, information technology, system administration, contract administration, purchasing, recruiting, facilities

The assignment of responsibilities and coordination between people was okay until 1995 but became more difficult as Trillium grew. Trillium had over 100 customers by the end of 1995. This became a serious issue on numerous occasions as engineering spent time supporting products rather than developing products. Disruptions in product development plans and schedules were quite common. Engineers were under intense pressure to deliver products and it became a challenge to balance the need to do it right versus the need to get it to the customer. The technology, the market and competitors were all moving very quickly. Marketing and sales simply could not keep up with the demand for information and support from their potential customers. Trillium found it hard to meet their product delivery schedules and very difficult to be consistently responsive to its customers and even more troubling, difficult to be consistently responsive to its employees.

Trillium was fortunate that its cash flow supported its activities. Trillium leased a little bit of equipment in the early years but when it started building a bank balance it bought equipment. Leasing was a little bit better for managing cash flow but once Trillium had a bank balance it seemed wasteful. Trillium didn't rely significantly on vendor financing (i.e., their accounts payable were generally current and they didn't finance their purchases). Its biggest capital equipment expense was PCs and Sun workstations. In 1991 Trillium arranged a line of credit. This was very difficult to get because of its short history, and it had to be personally guaranteed by Jeff, Larisa and Mr. A. Trillium may have used the line of credit once or twice for a short period but it didn't renew it in 1994 since it found it didn't really need it and it was uncomfortable using it. Trillium also took out two bank loans in 1993 for \$72,000 to buy some equipment which it then paid off in 1995.

Operating strictly from cash flow constrained the organization and modulated Trillium's growth and activities. The reality was that if Trillium needed to raise any significant amount of money Jeff and Larisa wouldn't have known how to do it. They didn't have any contacts or experience with the private or public equity markets. They were also very philosophically resistant to giving up ownership of the company and owing people money. Trillium started receiving inquiries from potential investors in 1993. Jeff and Larisa discussed their industry and company with these potential investors but did not engage them. Jeff and Larisa found that as potential investors became educated about Trillium they quite often would refer their portfolio companies to Trillium as potential customers.

Trillium's biggest expenses were salaries, bonuses and benefits. These were completely driven by headcount. In the early years salaries, bonuses and benefits were greater than 60% of operating expenses. In the first few years the biggest part of Trillium's headcount was engineering. Trillium was very careful to manage its hiring. It would hire people when it saw that its bank balance and accounts receivable could take care of its run rate for the next 6 to 12 months.

Trillium's first employee, after Jeff, Larisa and Mr. A was hired in 1990. She was initially paid an hourly wage. Months later Trillium started paying her a salary. From that point onwards Trillium had no hourly employees and all of its employees were salaried. Trillium wanted people to have the security of a salary and not have to worry about counting every minute they were working.

As Trillium grew it gradually added bonuses, benefits and stock options. Salaries were probably a bit low but Trillium started providing bonuses based on individual performance early on. This was received well. A few years later Jeff and Larisa realized everybody was getting individual bonuses so it shifted the basis of the bonuses to Trillium's company performance. In the beginning the company performance bonus plan started with two tiers, high and low, which evolved to three tiers; officers, key employees and employees (although it didn't identify it that way to the employees). The payout was a percentage of base salary and was determined by its pre-tax profit. The 1995 bonus range was from 10% - 40%. Jeff and Larisa felt this shifted the emphasis to everybody working together for the company good by focusing on generating revenues and watching expenses. Jeff and Larisa also felt this might relieve some pressure to grant stock options since people were sharing substantially in the

profitability and growth of the company. In addition to the company performance bonuses Trillium also layered on individual performance bonuses and on some occasions provided a cash signing bonus to new hires.

Trillium's benefits evolved over time. It started by providing medical and dental insurance a few years after its founding (gradually increasing the percentage of the premium that it paid). Trillium then added disability insurance, and a 401(k) (gradually increasing its match). One thing Jeff and Larisa quickly realized that although benefits start as a privilege, employees quickly treated it as an obligation of the company that couldn't be taken away. Through 1995 Trillium's only facility was in Los Angeles. In 1995 Trillium relocated its first employee from another country to Los Angeles. Trillium started paying legal fees for visas and some, but not all, relocation expenses. The employees spent many hours with each other at work and Jeff, Larisa and Mr. A felt it was important for everybody to be comfortable in the work environment. They provided semi-private offices and many opportunities to socialize. They had holiday parties, took everybody out for birthday lunches and brought food in occasionally for breakfast. An outside observer once remarked that Trillium in the early years exhibited a culture of "casual determination".

Jeff and Larisa felt strongly that they didn't want to share stock ownership of the company with employees in the early years of Trillium. This changed by 1994 when they started developing a stock option plan. Jeff and Larisa became convinced of the importance of a stock option plan by 1995. They engaged a Big 6 accounting firm to develop the stock option plan and then used their business attorney to extensively review and modify the plan to suit their needs. The stock option plan was the legal document. The stock allocation plan was an internal policy document that was used to provide a framework for stock allocation that ensured enough stock was set aside to cover future headcount and dilution. Jeff and Larisa's experience in the early years was that anybody who asked for stock options generally wanted a large percentage of the company. Unfortunately they didn't have any knowledge to judge what was appropriate and they couldn't find anybody who could tell them. If they gave out what everybody thought they deserved they would have had to give away 100's of percent of the company. The stock allocation plan they developed had a few basic principles. Each and every existing and future position was placed in one of a few tiers based on the perceived potential and real contribution of the tier to the company's success as well as the knowledge and, experience required to be in the tier. The number of options available for a tier decreased over time, the range of options for each tier narrowed over time and vesting was 3 to 5 years, depending on the number of options granted. Setting the grant price of the stock options was the responsibility of the board of directors.

There is always a tension in a private company between setting the grant price of stock options low so employees could capture greater upside and setting it high to create greater upside for the employees that already had options. In either case the price had to be supportable for financial reporting and tax purposes. Trillium commissioned formal valuations on average once per year that were used to provide support for the grant price of Trillium stock options. The first formal valuation of Trillium using the income (discounted cash flow) approach was commissioned in mid 1995 and performed for June 1994. At that time the fair market value of 100% of Trillium equity on a closely held, minority interest basis was determined to be \$3.5 – 4.0 million. Another valuation using the income approach and the market approach was commissioned towards the end of 1995 and performed for June 1995. At that time the fair market value of 100% of Trillium equity on a closely held, minority interest basis was determined to be \$9.5 – 10.5 million. The amount for the market approach calculation was determined by the offer of a willing buyer that was then discounted by a marketability discount since the shares would have been restricted, discounted by the value attributable to the employment and non-compete agreements that would have been required for Jeff and Larisa and discounted by the inherent control premium that the buyer would have paid for a controlling interest in Trillium.

In November 1994, a buyer's agent ("Club") contacted Jeff indicating it represented a publicly held telecommunications company ("Golf") that manufactured ATM hardware and software products. Golf had gone public in May 1994 at a price of \$16 per share. Club told Jeff that Golf was interested in buying Trillium (which for purposes of the deal was known as "Tee"). Golf was trading in the \$13 - \$18 per share range during November and December 1994. Golf requested some financial information which Trillium then provided. This was Jeff and Larisa's first real contact with the private or public equity markets and its associated legal and financial issues. They had no experience with this sort of thing so they engaged a Big 6 accounting firm that they had previously used for some tax work to be their seller's agent. Jeff, Larisa and Mr. B visited Golf. Upon returning from the visit Trillium received a brief offer from Golf for \$25 million in stock. This was based on a valuation analysis performed

by Club (see Attachment 8). Trillium told Golf no and at the advice of their seller's agent contacted other possible buyers such as Cisco and Newbridge to see if they had any interest in Trillium. In the meantime, Golf contacted Trillium again and asked what it wanted. Trillium said \$40 million in cash. Golf made a counter offer of \$35 million in stock, employment contracts with the officers and a commitment that Mr. B could have a significant role at Golf. Mr. B negotiated his possible position with Golf while in Pennsylvania and without Jeff's or Larisa's prior knowledge. Jeff and Larisa's future roles at Golf were not specified. Trillium made a counter offer to Golf. Golf came back with yet another counter offer of \$36 million in stock for the three officers, \$1.5 million stock for the employees, employment contracts for the officers, and 1 board observer seat for Jeff or Larisa (see Attachment 9). Golf backed out of offering Mr. B a significant role and this upset Mr. B. Jeff, Larisa and Mr. B visited Golf for another meeting.

Cisco made an offer for \$40 - \$60 million in stock and then backed out later when they heard another deal was on the table. They told Trillium that as a matter of policy, they didn't want to get into a bidding war against another company.

Trillium didn't have any audited financial statements. Golf's auditor, another Big 6 accounting firm, started a 3 year financial audit of Trillium. During the audit process Jeff and Larisa met an audit manager that would become Trillium's CFO in the future. Because of SEC disclosure rules Jeff and Larisa couldn't tell employees about the possible deal and they had to make up a story why the auditor was in their office.

Golf and Trillium started negotiating a definitive agreement. This was Golf's first acquisition attempt and according to Mr. C it showed, the definitive agreement contained many errors, omissions and in some cases too much legalese. Golf performed extensive financial and legal due diligence on Trillium but refused to allow Trillium to do any significant diligence on them. Golf's view was that as a public company Trillium shouldn't have access to any more information than any other shareholder. Golf thought Trillium's files were not very complete or organized. Golf was concerned about "liabilities" they might inherit. In the middle of all of this Trillium made a planned move to a larger building and unveiled a new brand identity and logo.

Trillium had been working on a stock option plan for employees during 1994. It was preparing to submit the plan to the state for approval in early November 1994 when it received the call from Club. Once Trillium received the call it stopped pursuing adoption of the plan and its subsequent implementation, since the granting of options in the middle of the deal discussion might queer the ability to do a pooling of interests transaction. The timing was unfortunate. Mr. B's stock options, along with the timing of the stock option plan, a still unsigned employment agreement between Mr. B and Trillium and the proposed grant by Golf to Trillium employees as part of the deal may have prevented pooling. Golf stock was strong, but they were not cash rich and felt they could only do a pooling deal. The ability to do pooling became a significant issue and Golf asked its auditor to do a detailed investigation and analysis of the deal. The conclusion was almost everything seemed to be okay with the exception of the proposed grant of stock to employees that would occur when the deal closed (this could queer pooling).

Golf was still very unwilling to share information and at times seemed to be poorly coordinated and contradicting itself. Jeff and Larisa had many conversations between themselves, with their various advisors and as the board of directors to determine what might be the best for themselves, the employees and the customers. The answers were different for each.

In the early years Trillium board meetings were very informal and infrequent. They primarily dealt with legal housekeeping issues. Jeff and Larisa treated them as something you simply had to do. There was no clear separation between the roles of being the founder, director, officer and a shareholder and as Trillium grew they learned that the expectations and accountability requirements were very different for each of these roles. In 1994 they started having more formal and thoroughly documented board meetings. This was driven partially by their Mr. C as well as the Golf acquisition attempt, the beginning of significant key and other employee hiring, the stock option plan, stock valuation for purposes of the stock option plan and employment matters.

In parallel to the Golf deal Mr. B and a product marketing engineer were becoming unhappy with Jeff and Larisa's vision and management of the company. They had a variety of concerns and complaints about the vision, strategic direction and operational issues, many of which Jeff and Larisa didn't feel were warranted.

Even with all of these challenges the deal was still on the table and in March 1995 Jeff arranged for a conference call between Golf's and Trillium's officers and advisors to discuss and reach a final go/no-go decision for the deal.

Case Questions:

Did Golf, Jeff and Larisa decide to close the deal?

Evaluate the offer from Golf. Is it fair? Would you accept it? What are the risks in accepting the offer? What are the personal and company considerations Jeff and Larisa should have weighed in evaluating the Golf offer?

What are the major obstacles Jeff and Larisa faced in getting the company off the ground in 1988? What does a CEO do during the startup and what are the important personal characteristics of the CEO?

What are the lessons from the Mr. A episode? What are the lessons from the Mr. B episode?

What are the pros and cons of fixed price and time and materials consulting?

What are the pros and cons, from an investor, customer and company perspective, of licensing source code?

What are the pros and cons of the different forms of intellectual property protection?

Why wasn't Trillium attractive to venture capital at its startup? At what point should venture capital money have been raised? How would having venture capital money change the business?

What was Trillium's sustainable advantage? What were Trillium's keys to success?

What are your takeaways from this case?

Can this be done again?

Additional Information

This paper was focused on the factual aspects of Trillium's life from 1988 to 1995 and doesn't adequately convey some of the ambiguity, challenges, excitement, changes and lessons learned during this period. Some additional information is available at:

"Trillium Digital Systems Case Study: 1988 – 1995" (this paper)
by Jeff Lawrence at <http://www.cliviasystems.com/general/trilliumCaseStudy95.pdf>

"Trillium Digital Systems Case Study: 1996 – 2003" (upcoming)
by Jeff Lawrence at <http://www.cliviasystems.com/general/trilliumCaseStudy03.pdf>

"A Founders Journey thru Growth and Change"
by Jeff Lawrence at <http://www.cliviasystems.com/company/growthChange.htm>

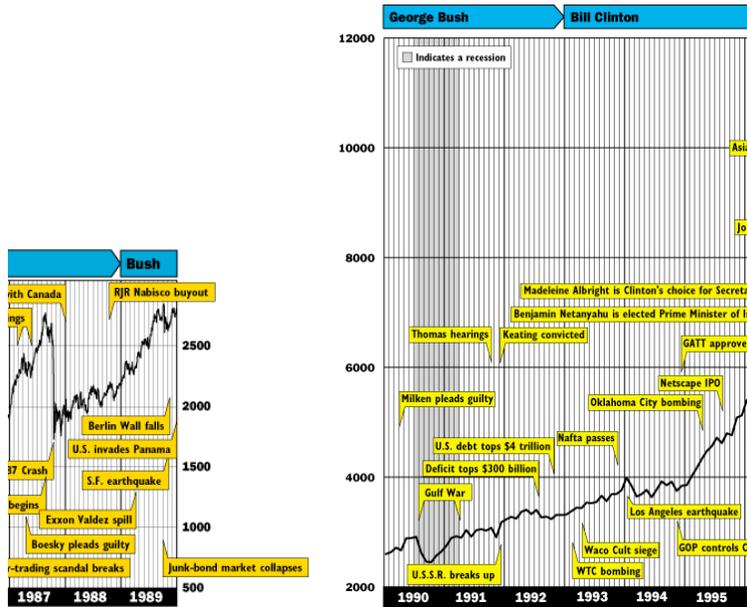
"Risk, the Game of Life"
by Jeff Lawrence at <http://www.cliviasystems.com/activities/risk.htm>

"Why Be an Entrepreneur?"
by Jeff Lawrence at <http://www.cliviasystems.com/activities/whyBeAnEntrepreneur.htm>

Attachments:

- 1 - DJIA and historical events (1987-1995)
- 2 - Doelz Brochure (partial)
- 3 - Founder's Resumes
- 4 - Trillium's First Brochure (1988)
- 5 - Trillium's Early Product Brochure (partial, 1990)
- 6 - Trillium Product Brochure (partial, June 1995)
- 7 - Trillium Product Release Status (August 15, 1995)
- 8 - Club Valuation Analysis (December 23, 1994)
- 9 - Golf Term Sheet (February 3, 1995)
- 10 - Trillium Facts and Figures
- 11 - Software License Agreement (early to mid 1990's)

Attachment 1 - DJIA and Historical Events (1987 – 1995)



Source: Dow Jones

Attachment 2 - Doelz Brochure (partial)

Introduction

The Esprit One switch is designed to function as a major node within a data communications network. The Doelz product family, consisting of the Esprit One switch and the Elite One distributed concentrator, satisfies the data communications network requirements of:

- Wide Area Networks
- Local Area Networks
- Data Distribution Networks

The Esprit One Network may consist of a stand-alone switch or up to 99 geographically dispersed Esprit One switches.

Each Esprit One switch can support up to 100 interface units. Each interface unit can interface any one of the following:

- Elite One Network Link
- Local Port Cluster
- Trunk to Another Esprit One Switch

ELITE ONE NETWORK LINKS

One Esprit One node can be configured to interface multiple Elite One network links. Each network link may have multiple Elite One units which together function like a sub-network within the larger Esprit One network.

All the Elite One subnetworks connect on one Esprit One switch may be viewed as a distributed network belonging to that Esprit One switch.

LOCAL PORT CLUSTERS

The Esprit One switch normally resides at a host computer site. Local ports are provided to allow direct connection to the host front-end processors and various microprocessors.

Terminals, attached to Elite One nodes on any of the local subnetworks, can access any other terminal on any other Elite One node or

any of the local ports connected to the host front-end processor or microprocessors.

TRUNK TO ANOTHER ESPRIT ONE

Esprit One switches may be connected to other Esprit One switches via high-speed trunks. Esprit trunks may be configured between individual Esprit One nodes. The trunking between Esprit One switch nodes creates a large wide area network consisting of multiple Esprit One nodes, each with its own regional data distribution and local networks.

NETWORK OVERVIEW

A three node Esprit One network is shown in figure 1. Each Esprit One node has a regional data distribution network consisting of multiple network nodes with Elite One distributed concentrators. Each Esprit One also has local port clusters to connect the regional host microprocessors to the switch. All three switches form a wide area network via the trunking between Esprit Ones.

INTER-NETWORK SWITCHING

All inter-network switch functions are distributed across the Esprit One network link interface. Traffic from one port on a network link, moving to a port on a different link, moves through the Esprit One. See example, port A to port B.

Traffic moving from one port on a network link attached to an Esprit One can move through several Esprit One switches and high-speed trunks to reach the destination network link and port on that Elite One unit. See example, port A to port C.

The diagram illustrates a three-node Esprit One network. Each node consists of an Esprit One switch connected to a local port cluster. The switches are interconnected via high-speed trunks. The diagram shows how traffic can move between different network links and ports across the network.

Figure 1. ESPRIT ONE Network

Source: Doelz Networks

Attachment 3 - Founder's Resumes

Jeff Lawrence

Experience

CHIEF EXECUTIVE OFFICER February 1988 - Present
Trillium Digital Systems, Inc

Performs business functions necessary for operation of corporation, with full responsibility for the company technology. TRILLIUM provides off the shelf state of the art communications software products for WANs, LANs and MANs (ISDN, X.25, OSI, IBM protocols), and at the same time custom solutions to specific problems, including product definition, design, implementation and testing in the final environment.

MEMBER OF TECHNICAL STAFF February 1985 - February 1988
Doelz Networks, Inc.

Participated in all aspects of product development from conception to beta test of a real time, multiprocessor CCITT X.25 and X.25 to asynchronous communications controller. Formulated product requirements and collaborated in the specification and design of hardware, software and development system architecture. Implemented controller elements (network management system, real time operating system, I/O drivers, etc.) utilizing C and Motorola assembly language. Performed all hardware and software integration. Selected and/or implemented all tools required to provide a fully integrated development system on a minicomputer running UNIX.

SENIOR SYSTEMS DESIGN ENGINEER November 1980 - February 1985
Amdahl - Communications Systems Division

Managed and conducted a market, competitive and technological analysis used to formulate product requirements for next generation data switch.

Managed, specified, designed and brought to production new features and enhancements for a high performance CCITT X.25 packet switch. Implemented switch elements (LAPB link level protocol, interprocessor data movement protocols, diagnostics, etc.) for the mini, micro and bit slice processors of the system utilizing PL/M, Intel assembly and two proprietary microcode languages. Responsible engineer for system hardware. Initiated, reviewed and approved engineering changes. Consultant to customer, product support and manufacturing personnel for problem determination and resolution. Wrote, reviewed and approved, in collaboration with publications system documentation. Trained customer, development, product support and manufacturing personnel on system design and operation.

CONSULTANT October 1984 - June 1985
Norco Insurance

Conceived, designed and implemented an automobile insurance rate quote program for the IBM PC running DOS.

Education

University of California, Los Angeles, USA
B.S. Electrical Engineering, December 1979

Larisa Chistyakov

Experience

VICE PRESIDENT July 1988 - Present
Trillium Digital Systems, Inc

Performs business functions necessary for operation of corporation, mainly in the area of software development. TRILLIUM provides off the shelf state of the art communications software products for WANs, LANs and MANs (ISDN, X.25, OSI, IBM protocols), and at the same time custom solutions to specific problems, including product definition, design, implementation and testing in the final environment.

SENIOR SOFTWARE ENGINEER March 1988 - July 1988
Retix

Designed and implemented new features and enhancements to operating system of IEEE local bridge utilizing C and Motorola assembly language. Designed and implemented CCITT X.25 LAPB multilink protocol, I/O drivers, etc. for IEEE remote bridge utilizing C and Motorola assembly language.

MEMBER OF TECHNICAL STAFF March 1985 - February 1988
Doelz Networks, Inc.

Participated in all aspects of product development from conception to beta test of a real time, multiprocessor CCITT X.25 and X.25 to asynchronous communications controller. Formulated product requirements and collaborated in the specification and design of hardware, software and development system architecture. Implemented controller elements (X.25 packet level protocol, X.3, X.28 and X.29 Asynchronous PAD protocol, etc.) utilizing C and Motorola assembly language.

SENIOR SYSTEMS DESIGN ENGINEER July 1982 - March 1985
Amdahl - Communications Systems Division

Specified, designed and brought to production new features and enhancements for a high performance CCITT X.25 packet switch. Implemented X.25 and X.75 call processing, routing and supervisory subsystems for the minicomputer of the system utilizing a proprietary assembly language. Responsible engineer for node administrator. Consultant to customer, product support and manufacturing personnel for problem determination and resolution. Trained customer, development, product support and manufacturing personnel on system design and operation.

SYSTEMS PROGRAMMER March 1980 - July 1982
Delphi Communications

Designed and implemented new features and enhancements for a voice messaging system. Implemented system resource allocation and configuration subsystems utilizing Pascal. Involved in software integration and installation.

Education

Odessa State University, Odessa, USSR
M.S. Applied Mathematics, June 1976

Attachment 4 - Trillium's First Brochure (1988)

<p>OUR SERVICES</p> <p>The feature, performance and price envelopes of electronic products are moving forward at a dizzying pace. A wide range of companies are finding it increasingly important to provide a variety of voice and data communications capabilities within their products to maintain a competitive edge. As the complexity of communications protocols and their associated technologies increases, quick and efficient resolution of these capabilities becomes more difficult.</p> <p>Trillium Digital Systems can help bring the voice or data communications capabilities you need to your new or existing products.</p> <p>We are an experienced product development team with a wide range of skills in the computer and communications industries. Our team can provide complete, low risk, cost effective and timely solutions to your simplest to most complex product development projects involving communications protocols (ISL, CCITT, IEEE, etc.) and microprocessor based systems (personal computers, communications controllers, protocol converters, protocols, network management systems, etc.).</p> <p>We can provide all or part of the product definition, design, implementation and support services necessary to bring your product to market.</p>	<p>OUR SKILLS AND EXPERTISE</p> <p>Trillium Digital Systems has been involved in the following activities, communications protocols, architectures and technologies.</p> <p>ACTIVITIES</p> <ul style="list-style-type: none"> Market and competitive surveys to determine product feasibility and provide background information for functional requirements. Functional requirement specifications for product development effort. Technical surveys to provide background information for system architectural design. System hardware and software architectural design. Selection, design, implementation and integration of hardware and software elements used to provide a product development and test environment. System software implementation. System hardware and software integration. Documentation, training and maintenance. <p>COMMUNICATIONS PROTOCOLS</p> <ul style="list-style-type: none"> ISL protocols for data communications. CCITT X.25 protocols for Integrated Services Digital Networks. CCITT X.25 protocol for interconnect DTEs and public data network. 	<ul style="list-style-type: none"> CCITT X.75 protocol for interconnect public data networks. CCITT X.3, X.30 and X.31 protocols for asynchronous to X.25 protocol conversion. IEEE 802 series protocols for Local Area Networks. Started ring protocols for Local and Wide Area Networks. Network management protocols. <p>ARCHITECTURES</p> <ul style="list-style-type: none"> Real time multi-processor systems consisting of multi, micro and bit slice processors used together as intermediate or endpoint communications systems. Personal Computers acting as intermediate or endpoint communications systems. Microcomputers acting as endpoint communications systems. <p>TECHNOLOGIES</p> <ul style="list-style-type: none"> C, Pascal, PL/M, Intel assembly, Motorola assembly, microcode and database query languages. UNIX, DOS and real time multiprocessor operating systems. Intel, Motorola and Zilog microprocessors. Various LAN communications and Data protocols. 	<p>OUR BACKGROUND</p> <p>Trillium Digital Systems offers over 30 years of experience in system design and project management within the computer and communications industries. This experience consists of engineering development and management positions with companies that have designed and manufactured:</p> <ul style="list-style-type: none"> Facial services for Local and Wide Area Networks. Protocol converters. Protocol transparent concentrators. Local Area Network interfaces for personal computers. Bridges and gateways for Local Area Networks. Circuit switches for Wide Area Networks. Voice messaging systems. Network management systems. Minicomputers. 	<p>Please feel free to contact us for more information. We'd be glad to meet with you, discuss your requirements and show what Trillium Digital Systems can do for you.</p> <p style="text-align: center;">TRILLIUM DIGITAL SYSTEMS</p> <p style="text-align: center;">TRILLIUM DIGITAL SYSTEMS 11300 SANFORD AVENUE, SUITE 200 LOS ANGELES, CALIFORNIA 90047-2120</p>
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Source: Trillium Digital Systems, Inc.

Attachment 5 - Trillium's Early Product Brochure (partial, 1990)



TRILLIUM
DIGITAL SYSTEMS

SOFTWARE OVERVIEW

APPLICATION LAYER - Asynchronous FAX
Standard implementation of the 1980 1981 1982 CCITT X.26, X.29 and X.30 protocols. All parameters are variable. A complete set of management capabilities are supported.

NETWORK LAYER - G.930-G.931
Standard implementation of the 1980 CCITT G.930-G.931 (G.930-G.931). Packet level implementation. This is the lowest layer protocol used with ISDN. A complete set of management capabilities are supported.

NETWORK LAYER - X.25 - End System
Standard implementation of the 1980 1981 1982 CCITT X.25 Packet Level Recommendation. All facilities are supported. A complete set of management capabilities are supported.

NETWORK LAYER - X.25 - Intermediate System
Standard implementation of the 1980 1981 1982 CCITT X.25 Packet Level Recommendation. To be used in ECE for intermediate and end system. A complete set of management capabilities are supported.

DATA LINK LAYER - MultiLink
Standard implementation of the 1984 1985 CCITT X.25 and X.25 MultiLink Packet Recommendation. A complete set of management capabilities are supported.

DATA LINK LAYER - LAPB & LAPD
Standard implementation of the 1980 1981 1982 CCITT X.25 LAPB and X.25 LAPD. Link level implementation. A complete set of management capabilities are supported.

DATA LINK LAYER - LAPD
Standard implementation of the 1980 1981 1982 CCITT X.25 LAPD Link Level Recommendation. This is the data link layer protocol used with ISDN. A complete set of management capabilities are supported.

DATA LINK LAYER - LAPB
Standard implementation of the 1980 1981 1982 CCITT X.25 LAPB Link Level Recommendation. A complete set of management capabilities are supported.

PHYSICAL LAYER - SDCC
Performs conversion of serial and parallel data. Supports necessary to meet or exceed times through the use of Communications Controller (CROSS) device. A complete set of management capabilities are supported.

MULTIPROCESSOR OPERATING SYSTEM
High speed real time operation of general purpose hardware. Multi processor Operating System suitable for use in computer operation (operating). Provides multiprocessor (including hardware support, digital real time and/or management) A complete set of management capabilities are supported.

8000 DESIGNER
Implementation of a general purpose 8000 designer. Specially used for communications protocol implementation in the 8000 based system.

NETWORK LAYER - X.75
Standard implementation of the 1980 1981 1982 CCITT X.75 Packet Level Recommendation. All facilities are supported. A complete set of management capabilities are supported.

SPANNING IEEE
Implementation of IEEE 802.10/802.11/802.12/802.15/802.16/802.17/802.18/802.19/802.20/802.21/802.22/802.23/802.24/802.25/802.26/802.27/802.28/802.29/802.30/802.31/802.32/802.33/802.34/802.35/802.36/802.37/802.38/802.39/802.40/802.41/802.42/802.43/802.44/802.45/802.46/802.47/802.48/802.49/802.50/802.51/802.52/802.53/802.54/802.55/802.56/802.57/802.58/802.59/802.60/802.61/802.62/802.63/802.64/802.65/802.66/802.67/802.68/802.69/802.70/802.71/802.72/802.73/802.74/802.75/802.76/802.77/802.78/802.79/802.80/802.81/802.82/802.83/802.84/802.85/802.86/802.87/802.88/802.89/802.90/802.91/802.92/802.93/802.94/802.95/802.96/802.97/802.98/802.99/803.00/803.01/803.02/803.03/803.04/803.05/803.06/803.07/803.08/803.09/803.10/803.11/803.12/803.13/803.14/803.15/803.16/803.17/803.18/803.19/803.20/803.21/803.22/803.23/803.24/803.25/803.26/803.27/803.28/803.29/803.30/803.31/803.32/803.33/803.34/803.35/803.36/803.37/803.38/803.39/803.40/803.41/803.42/803.43/803.44/803.45/803.46/803.47/803.48/803.49/803.50/803.51/803.52/803.53/803.54/803.55/803.56/803.57/803.58/803.59/803.60/803.61/803.62/803.63/803.64/803.65/803.66/803.67/803.68/803.69/803.70/803.71/803.72/803.73/803.74/803.75/803.76/803.77/803.78/803.79/803.80/803.81/803.82/803.83/803.84/803.85/803.86/803.87/803.88/803.89/803.90/803.91/803.92/803.93/803.94/803.95/803.96/803.97/803.98/803.99/804.00/804.01/804.02/804.03/804.04/804.05/804.06/804.07/804.08/804.09/804.10/804.11/804.12/804.13/804.14/804.15/804.16/804.17/804.18/804.19/804.20/804.21/804.22/804.23/804.24/804.25/804.26/804.27/804.28/804.29/804.30/804.31/804.32/804.33/804.34/804.35/804.36/804.37/804.38/804.39/804.40/804.41/804.42/804.43/804.44/804.45/804.46/804.47/804.48/804.49/804.50/804.51/804.52/804.53/804.54/804.55/804.56/804.57/804.58/804.59/804.60/804.61/804.62/804.63/804.64/804.65/804.66/804.67/804.68/804.69/804.70/804.71/804.72/804.73/804.74/804.75/804.76/804.77/804.78/804.79/804.80/804.81/804.82/804.83/804.84/804.85/804.86/804.87/804.88/804.89/804.90/804.91/804.92/804.93/804.94/804.95/804.96/804.97/804.98/804.99/805.00/805.01/805.02/805.03/805.04/805.05/805.06/805.07/805.08/805.09/805.10/805.11/805.12/805.13/805.14/805.15/805.16/805.17/805.18/805.19/805.20/805.21/805.22/805.23/805.24/805.25/805.26/805.27/805.28/805.29/805.30/805.31/805.32/805.33/805.34/805.35/805.36/805.37/805.38/805.39/805.40/805.41/805.42/805.43/805.44/805.45/805.46/805.47/805.48/805.49/805.50/805.51/805.52/805.53/805.54/805.55/805.56/805.57/805.58/805.59/805.60/805.61/805.62/805.63/805.64/805.65/805.66/805.67/805.68/805.69/805.70/805.71/805.72/805.73/805.74/805.75/805.76/805.77/805.78/805.79/805.80/805.81/805.82/805.83/805.84/805.85/805.86/805.87/805.88/805.89/805.90/805.91/805.92/805.93/805.94/805.95/805.96/805.97/805.98/805.99/806.00/806.01/806.02/806.03/806.04/806.05/806.06/806.07/806.08/806.09/806.10/806.11/806.12/806.13/806.14/806.15/806.16/806.17/806.18/806.19/806.20/806.21/806.22/806.23/806.24/806.25/806.26/806.27/806.28/806.29/806.30/806.31/806.32/806.33/806.34/806.35/806.36/806.37/806.38/806.39/806.40/806.41/806.42/806.43/806.44/806.45/806.46/806.47/806.48/806.49/806.50/806.51/806.52/806.53/806.54/806.55/806.56/806.57/806.58/806.59/806.60/806.61/806.62/806.63/806.64/806.65/806.66/806.67/806.68/806.69/806.70/806.71/806.72/806.73/806.74/806.75/806.76/806.77/806.78/806.79/806.80/806.81/806.82/806.83/806.84/806.85/806.86/806.87/806.88/806.89/806.90/806.91/806.92/806.93/806.94/806.95/806.96/806.97/806.98/806.99/807.00/807.01/807.02/807.03/807.04/807.05/807.06/807.07/807.08/807.09/807.10/807.11/807.12/807.13/807.14/807.15/807.16/807.17/807.18/807.19/807.20/807.21/807.22/807.23/807.24/807.25/807.26/807.27/807.28/807.29/807.30/807.31/807.32/807.33/807.34/807.35/807.36/807.37/807.38/807.39/807.40/807.41/807.42/807.43/807.44/807.45/807.46/807.47/807.48/807.49/807.50/807.51/807.52/807.53/807.54/807.55/807.56/807.57/807.58/807.59/807.60/807.61/807.62/807.63/807.64/807.65/807.66/807.67/807.68/807.69/807.70/807.71/807.72/807.73/807.74/807.75/807.76/807.77/807.78/807.79/807.80/807.81/807.82/807.83/807.84/807.85/807.86/807.87/807.88/807.89/807.90/807.91/807.92/807.93/807.94/807.95/807.96/807.97/807.98/807.99/808.00/808.01/808.02/808.03/808.04/808.05/808.06/808.07/808.08/808.09/808.10/808.11/808.12/808.13/808.14/808.15/808.16/808.17/808.18/808.19/808.20/808.21/808.22/808.23/808.24/808.25/808.26/808.27/808.28/808.29/808.30/808.31/808.32/808.33/808.34/808.35/808.36/808.37/808.38/808.39/808.40/808.41/808.42/808.43/808.44/808.45/808.46/808.47/808.48/808.49/808.50/808.51/808.52/808.53/808.54/808.55/808.56/808.57/808.58/808.59/808.60/808.61/808.62/808.63/808.64/808.65/808.66/808.67/808.68/808.69/808.70/808.71/808.72/808.73/808.74/808.75/808.76/808.77/808.78/808.79/808.80/808.81/808.82/808.83/808.84/808.85/808.86/808.87/808.88/808.89/808.90/808.91/808.92/808.93/808.94/808.95/808.96/808.97/808.98/808.99/809.00/809.01/809.02/809.03/809.04/809.05/809.06/809.07/809.08/809.09/809.10/809.11/809.12/809.13/809.14/809.15/809.16/809.17/809.18/809.19/809.20/809.21/809.22/809.23/809.24/809.25/80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40/816.41/816.42/816.43/816.44/816.45/816.4

Attachment 7 - Trillium Product Release Status (August 15, 1995)

Most Current Release of Software and Documentation
As of August 15, 1995

Product Name	Release Date	Part No.	Curr. Rel.	Curr. PS	Curr. SD	Curr. PB	Curr. TC	Curr. STS	Curr. BS	Curr. PVC
SCC	05/13/94	1000001	2.3	1.7	1.5	1.5	1.3	-	1.2	
LAPD	06/18/95	1000002	4.1	1.8	2.6	2.4	2.3	1.3	1.4	
LAPD	04/18/95	1000003	3.1	2.1	3.1	3.1	2.2	2.1	1.4	
LAPBLAPD	06/20/93	1000005	2.4	1.3	2.4	2.4	1.1	1.1		
X.25 ES	06/09/94	1000007	2.3	1.5	2.4	2.2	1.3	1.2	1.2	1.2
X.75	06/01/95	1000008	2.1	1.6	2.4	2.2	1.3	1.3	1.2	1.4
G.930/G.931	03/15/95	1000009	3.1	3.1	3.1	3.1	3.1	3.1	1.4	
Async. PAD	06/07/95	1000010	3.1	1.9	2.1	2.1	1.3	1.4	1.1	
MOS	04/27/95	1000011	3.2	2.1	2.1	2.1	1.4	2.1	1.4	
X.25 EAI	06/01/95	1000014	3.1	1.3	2.3	2.4	1.2	2.1	1.4	1.1
BFR	09/21/93	1000017	2.2	1.7	2.2	2.1	1.1	1.3		
EFH	09/21/93	1000018	2.1	1.3	1.2	1.1	1.1	1.2		
K31	10/17/92	1000023	1.6	2.1	2.1	2.1	2.1	1.4		
TCPIP	06/18/92	1000026	1.4	1.6	1.4	1.2	-			
MTP Level 2	04/27/95	1000027	2.3	2.1	2.1	2.1	2.1	2.1	1.4	
MTP Level 3	06/18/95	1000028	2.4	2.4	2.4	2.2	2.4	2.2	1.4	
ISUP	06/18/95	1000029	2.3	2.2	2.2	2.2	2.2	2.2	1.4	
SCCP	04/27/95	1000030	2.2	2.2	2.2	2.1	2.2	2.1	1.4	
TCAP	06/29/94	1000031	2.2	2.2	2.3	2.2	2.3	2.2	1.4	
ISAC	11/16/94	1000034	1.4	2.1	2.1	2.1	-		1.4	
68302 MOS/SCC	04/27/95	1000035	2.2	2.2	2.2	2.2	-	2.2	1.4	
UDPIP	06/17/92	1000049	1.1	1.1	1.1	1.1	-	1.1		
TUP	05/18/95	1000042	1.3	2.1	2.1	2.1	2.2	2.1	1.4	
Q.93B	12/29/94	1000043	2.3	2.3	2.2	2.3	2.2	2.2	1.4	
Q.SAAL	12/29/94	1000044	2.2	2.3	2.3	2.3	2.2	2.3	1.4	
UME	12/29/94	1000048	2.2	2.1	2.1	2.1	2.1	2.1	1.4	
LAN EC	12/29/94	1000050	1.2	1.3	1.2	1.1	1.1	1.1	1.4	
68360 SCC	07/14/95	1000060	1.1	1.1	1.1	1.1	-		1.4	
LES/RLS	06/14/95	1000066	1.1	1.1	1.1	1.1	1.1	1.1	1.4	
pSOS Sys Services	02/16/94	1020026	1.3							
Vix Sys Services	04/01/94	1020030	1.1							
VuWorks	12/23/94	1020031	1.4	1.1						
LGI Vixas	05/11/94	1020033	1.1	10170001.1						
Simple Router	12/30/94	1020035	1.1	1027036						
MFP3 Wrapper	06/13/94	1020034	1.1	10170071.3	1017008 1.1					
Relay	05/22/95	1020036	1.1							
Microsoft Visual C++	06/07/95	1068001	1.2	-	-	-	-	-	-	-
SST SUNVME	06/14/95	4000001	1.6	1056004 1.5	106001 1.3	10670 01 1.2	10590 04 1.5			
SST IMP	06/14/95	4000004	1.1	1056003 1.3	106001 1.3	10670 01 1.2	10590 04 1.5			

Attachment 8 - Club Valuation Analysis (December 23, 1994)

Valuation Summary

Methodology	Median Multiple	x	Applicable Figure	=	Unadjusted Company Value	x	Private Company Discount Factor	=	Private Company Value	-	Net Debt (Excess Cash)	=	Value of Equity	x	Weighting	=	Weighted Value
Public Market Comparables																	
Revenue Based Analysis																	
Comparable Compan	4.9		\$4.5		\$22.2		30%		\$15.5		(\$1.2)		\$16.7		20%		\$3.3
Earnings Based Analysis																	
Comparable Compan	23.9		\$1.7		\$41.6		30%		\$29.1				\$29.1		20%		\$5.8
Transaction Comparables																	
Revenue Based Analysis																	
Comparable Deals	3.3		\$4.5		\$14.9		0%		\$14.9		(\$1.2)		\$16.1		40%		\$6.5
Discounted Cash Flow																	
Earnings Based Analysis																	
Using "Realistic" Forecast													\$46.7		20%		\$9.3
Weighted Average Valuation															100%		\$25.0

Public Market Comparables

Company	Trailing 12 month revenues	Trailing 12 month net income	Common shares outstanding	Stock price 11/30/94	Growth in trailing 12 month revenues	Total market capitalization (TMC)	TMC / R ratio	P / E ratio
Netmanage	\$45.3	\$12.1	19.5	\$25.25	197.4%	\$421.3	9.3	40.4
FTP Software	\$81.7	\$19.4	22.4	\$25.75	53.8%	\$502.7	6.15	35.3
Hummingbird	\$24.6	\$8.5	11.9	\$14.50	82.8%	\$142.5	5.78	20.1
Cheyenne Software	\$100.6	\$40.4	38.8	\$12.38	60.6%	\$410.5	4.08	12.1
Novell	\$1,821.3	\$255.3	362.7	\$19.88	15.2%	\$6,453.6	3.54	27.2
Santa Cruz	\$184.1	\$14.2	30.6	\$9.25	3.3%	\$205.7	1.12	20.6
Median					57.2%		4.93	23.9

Transaction Comparables

Date	Buyer	Seller	Seller Description	Price (\$millions)	Revenue (\$millions)	Price / Revenue Multiple
12/92	Novell	Unix Systems Laboratories	Unix operating systems	322	80	4.02
7/91	Novell	Digital Research	Dr. Dos, other operating systems	136	41	3.32
11/93	TA Associates	TGV	TCP/IP modules	Investment		2.70
Median						3.32

Discounted Cash Flow

Tee's forecast partially modified with Golf's assumptions

	Actual 1994	Forecast 1995	Projected 1996	Projected 1997
Revenues	\$4.50	\$7.95	\$10.92	\$15.00
Operating Expenses	\$1.82	\$4.16	\$5.46	\$7.50
Operating Income	\$2.68	\$3.79	\$5.46	\$7.50
Net Income	\$1.74	\$2.46	\$3.55	\$4.88
Net income is used as proxy for cash flow				
Discount rate: 25%				
Period: 3 years				
Terminal value multiplier: 16 (70% of public company multiple of 23)				
Present value of cash flows:		\$6.74		
Terminal value:		\$78.00		
Present value of terminal value:		\$39.94		
Total:	\$46.67			

Attachment 9 - Golf Term Sheet (February 3, 1995)

February 3, 1995

TERMS OF PROPOSED ACQUISITION

Purchase of Stock:

At the closing (defined below), Golf ("Purchaser") would purchase all of the equity of Tee ("Seller"), either directly from Seller's two stockholders and one option-holder (the "Holders") or by merger of Seller with a wholly owned subsidiary of Purchaser.

Purchase Price:

\$36 million in the aggregate to the Holders, payable (i) with respect to the two Seller stockholders, in newly issued shares of Purchaser common stock, valued at the average closing price for the 45 trading days immediately preceding the Closing and, (ii) with respect to the Seller option-holder, Purchaser options valued in the same fashion and having an aggregate strike price equivalent to the strike price of his Seller options.

Employee Participation:

Immediately following the Closing, Purchaser would issue to employees of the Seller who become Purchaser employees ("Continuing Employees") restricted shares worth, in the aggregate, \$1.5 million valued at the closing price per share of Purchaser stock on the day prior to the Closing. The restricted shares would vest proportionately over a five-year term and any non-vested portion would be forfeited on termination of a Continuing Employee's employment with Purchaser. The restricted share would become freely tradeable upon vesting. In addition, Continuing Employees would receive base salaries, bonuses and stock options commensurate with those of Purchaser employees at similar levels of responsibility.

Registration Rights:

Seller's stockholders would have the right to register up to 33-1/3% of the Purchaser shares issued to them (the "Shares") if Purchaser files a registration statement (other than in connection with its employee benefit plans or an acquisition or merger) (a "Company Registration") or, if no Company Registration occurs within six months following the Closing, Seller's stockholders may require Purchaser to file a registration statement covering up to 33-1/3% of the Shares. In addition, (i) Seller's stockholders could require a second registration statement covering up to 33-1/3% of the Shares twelve months following the Closing, and (ii) during the period beginning six months following the Closing and ending twenty four months following the Closing, Seller's stockholders would have the right to participate in Company Registrations to the extent that they may have not, at the time of any such Company Registration, previously sold a percentage of the Shares (either through a Company Registration or a demand registration) equal to the percentage they are entitled to sell at or prior to such time as set forth above. Seller's option-holder would proportionately share in these registration rights with respect to vested options which have been exercised. Registration rights would be subject to customary limitations as to payment of costs, underwriter cutbacks, timing, and blackout periods. The Holders would not be required to pay more than \$100,000 in costs (and, in addition, would pay underwriting commissions, if applicable) for any demand registration and in a Company Registration would pay only underwriting commissions and counsel fees for any counsel retained by them.

Observer Rights:

For as long as the two Seller stockholders retain in the aggregate at least two-thirds of the Shares, one of them (at their choice) may attend Purchaser Board of Directors meetings as an observer.

Due Diligence:

Purchaser would have the right to conduct a review of Seller's business, including but not limited to, interviews with key managers and product developers (whether employees or consultants), review of technology, licensing and distribution arrangements and other contracts and information relating to Seller's business.

Closing:

Purchaser anticipates executing a definitive agreement by February 14, 1995 and closing the transaction by March 31, 1995, but may, in its discretion, extend the closing date to April 30, 1995 (the date, as it may be extended, is referred to as the "Closing").

Conditions to Closing:

Closing would be subject to the execution of a definitive agreement containing customary representations, warranties and indemnities from Seller's stockholders; regulatory approvals (including expiration of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act); Seller would not have distributed extraordinary bonuses or other compensation outside the ordinary course of business or issued shares, options or other rights to acquire stock, or redeemed stock or made other distributions to stockholders; no material adverse change affecting Seller's business; accuracy of representations and warranties; an audit of Seller satisfactory to Purchaser by Purchaser's accounting firm; an opinion from Purchaser's accounting firm that the acquisition qualifies as a pooling-of interests; customary legal opinions from Seller's counsel; execution of one-year employment agreements and worldwide non-competition agreements with the Seller stockholders and a six-month employment agreement with the option-holder (the length of the Seller stockholder's non-competition covenants would depend on how long the individual remains employed by Purchaser, with a 3-year term after one year of employment, a 2-year term after two years of employment, and a one-year term thereafter; the length of the Seller option-holder's non-competition covenant will be one year); and signed letters accepting employment with Purchaser by no fewer than seven of the Seller's eleven technical staff and substantially all of the Seller's engineers engaged in ATM development.

Escrow:

Ten percent of the shares issued in the acquisition would be held in escrow for a two-year time period to provide for claims arising out of break of a representation or warranty or an indemnity claim.

Publicity:

The proposed transaction and all discussions relating to it will be kept secret. No public announcement will be made unless and until a definitive agreement is executed, unless Purchaser is required by law to make such an announcement.

Attachment 10 - Trillium Facts and Figures

	Dec 1987	Feb 1988	Apr 1988	Dec 1988	Dec 1989	Dec 1990	Dec 1991	Dec 1992	Dec 1993	Dec 1994	Dec 1995
Environment											
NASDAQ Composite	330	367	379	381	455	374	586	677	777	752	1,052
DJIA	1,939	1,988	2,031	2,169	2,753	2,634	3,169	3,301	3,754	3,834	5,117
Corporate											
Corporate entity	n/a	n/a	S	S	S	S	S	C	C	C	C
Financial reporting method	n/a	n/a	cash	cash	cash	cash	cash	accrual	accrual	accrual	accrual
Tax method	n/a	n/a	cash	cash	cash	cash	cash	cash	cash	cash	cash
Events	n/a	Founded	Incorporated in California							Golf acquisition attempt starts in Nov	
Compensation, stock and benefits											
Salary	n/a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual bonus paid	n/a	No	No	No							
Company bonus paid	n/a	No	No	No					Yes	Yes	Yes
Medical and dental insurance	n/a	No	No	No	No	No	No	No			
Disability insurance	n/a	No	No	No	No	No	No	No	No	No	No
401(k) plan	n/a	No	No	No	No	No	No	No	No	No	Yes
Stock											
Authorized	n/a	n/a	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
Shares issued	n/a	n/a	1,000	1,960	3,000	55,000	60,000	60,000	60,000	600,000	600,000
Total paid in capital	n/a	n/a	\$1,000	\$1,960	\$3,000	\$55,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
Number of shareholders	n/a	n/a	1	2	3	3	3	2	2	2	2
Options											
Stock option plan	n/a	n/a	No	No	No	No	No	No	No	No	Yes
Non qualified options granted	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6,000	60,000	39,500
Number of option holders	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	1	5+
People											
Functional											
Engineering	n/a	1	1	2	3	3	6	7	8	11	16
General & Administrative	n/a	0	0	0	0	1	1	2	2	4	6
Marketing & Sales	n/a	0	0	0	0	0	1	1	1	2	2
Customer Support & Quality Assurance	n/a	0	0	0	0	0	0	0	0	0	1
Total	n/a	1	1	2	3	4	8	10	11	17	25
Title											
Board Directors	n/a	1	1	2	3	3	3	2	2	2	2
CEO	n/a	0	0	0	1	1	1	1	1	1	1
President	n/a	1	1	1	1	1	1	0	0	0	0
President & CEO	n/a	0	0	0	0	0	0	0	0	0	0
VP Technology	n/a	0	0	1	1	1	1	1	1	1	1
CTO	n/a	0	0	0	0	0	0	0	0	0	0
VP Marketing & Sales	n/a	0	0	0	0	0	1	0	1	1	0
Product Marketing Engineer	n/a	0	0	0	0	0	0	0	0	1	1
Project Manager	n/a	0	0	0	0	0	0	0	0	1	3
MTS	n/a	0	0	0	0	0	1	0	6	6	9
AMTS	n/a	0	0	0	0	0	2	6	0	3	3
Finance Manager	n/a	0	0	0	0	0	0	0	0	1	1
Accountant	n/a	0	0	0	0	0	0	0	0	0	1
Administrative Assistant	n/a	0	0	0	0	1	1	2	2	2	3
Staff Assistant	n/a	0	0	0	0	0	0	0	0	0	1
System Administrator	n/a	0	0	0	0	0	0	0	0	0	1
Total	n/a	1	1	2	3	4	8	10	11	17	25
External											
Accounting	n/a	n/a	n/a	Tax - Small private practice	Tax - Small private practice; Audit - Big 6 firm	Tax - Small private practice; Audit - Big 6 firm	Tax - Big 6 firm; Audit - Big 6 firm	Tax - Big 6 firm; Audit - Big 6 firm			
Bookkeeping	n/a	n/a	n/a	Internal part-time	External part-time	Internal full-time	Internal full-time				
Legal	n/a	Business - Large firm	Business - Large firm	Business - Large firm	Business - Large firm	Business - Large firm	Business - Large firm	Business - Large firm	Business - Large firm	Business, licensing, securities - Small private practice	Business, licensing, securities - Small private practice
Banking	n/a	n/a	n/a	Large retail bank	Large retail bank	Large retail bank	Large retail bank				
Events				Larisa joined Jul	Mr. A joined Sep			Mr. A separated Jun	Mr. B joined Feb		Mr. B separated Aug; First foreign national relocated to Los Angeles

Trillium Facts and Figures (continued)

	Dec 1987	Feb 1988	Apr 1988	Dec 1988	Dec 1989	Dec 1990	Dec 1991	Dec 1992	Dec 1993	Dec 1994	Dec 1995
Money											
Status	n/a	n/a	n/a	Unaudited	Unaudited	Unaudited	Unaudited	Audited	Audited	Audited	Audited
Income											
Products	n/a	n/a	n/a	\$0	\$0	\$269,000	\$495,000	\$839,000	\$1,086,000	\$4,458,000	\$8,983,000
Services	n/a	n/a	n/a	\$51,000	\$168,000	\$40,000	\$70,000	\$122,000	\$167,000	\$319,000	\$691,000
Total	n/a	n/a	n/a	\$51,000	\$168,000	\$309,000	\$565,000	\$961,000	\$1,253,000	\$4,777,000	\$9,670,000
Operating expenses	n/a	n/a	n/a	\$62,000	\$165,000	\$184,000	\$589,000	\$983,000	\$1,135,000	\$2,127,000	\$2,742,000
Net income	n/a	n/a	n/a	-\$11,000	\$3,000	\$125,000	-\$24,000	-\$23,000	\$76,000	\$1,767,000	\$5,029,000
Stock valuation	n/a	n/a	par	par	par	par	par	negotiated	book	valuation and willing buyer	valuation
Space											
Office (square feet)	n/a	210	210	210	210	487	1,514	2,800	2,800	2,800	10,000
Products											
Consulting				x	x	x					
X.25						x	x	x	x	x	x
Operating System						x	x	x	x	x	x
ISDN						x	x	x	x	x	x
Frame Relay							x	x	x	x	x
Integrated							x	x	x	x	x
Signalling System 7								x	x	x	x
Asynchronous Transfer Mode									x	x	x
Internet Protocol											

Attachment 11 – Software License Agreement (early to mid 1990's)

This Agreement is entered into as of the ____ day of 19__ (the "effective date"), by and between _____, a California corporation ("**LICENSOR**"), having its principal office at: _____ and facsimile number _____, and _____, a _____ organized under the laws of _____ ("**LICENSEE**"), having its principal office at _____, and facsimile number _____.

LICENSOR is in the business of developing and marketing communications software and expertise and is willing to make available to **LICENSEE**, and **LICENSEE** desires to obtain, a license to use certain computer software on the terms and conditions set forth in this Agreement.

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the parties hereby agree as follows:

1. Definitions

For purposes of this Agreement:

- 1.1. "Designated Equipment" shall be the equipment specified in Exhibit A attached hereto, as amended from time to time by **LICENSOR** and **LICENSEE** ("Exhibit A"), as being the equipment upon which a Licensed Program is run.
- 1.2. "Documentation" shall mean the documentation listed on Exhibit A and including all Updates thereof.
- 1.3. "Licensed Program" shall mean each program in software form specified in Exhibit A (collectively, the "Licensed Programs"), and shall specifically include any Updates and Upgrades to such program furnished to **LICENSEE** by **LICENSOR** under this Agreement for use in connection with or replacement of such program.
- 1.4. "Maintenance Service" shall mean the maintenance services defined in Exhibit D attached hereto ("Exhibit D").
- 1.5. "Object Form" shall mean any machine translated version of the Source Form suitable for execution by computer equipment, or any intermediate form derived from Source Form which can be made executable by computer equipment.
- 1.6. "Public Release" shall mean, in respect of a Licensed Program, an Update or Upgrade of such Licensed Program that is made available by **LICENSOR** to its licensees generally, and shall mean, in respect of Documentation, an Update of such Documentation that is made available by **LICENSOR** to its licensees generally.
- 1.7. "Source Form" shall mean, in respect of a Licensed Program, the original form on any media of such Licensed Program in the language as delivered by **LICENSOR** to **LICENSEE**, or any translation or modification thereof which substantially preserves its original identity.
- 1.8. "Update" shall mean, in respect of any Licensed Program, a Public Release of a new version of such licensed program which corrects errors in the previous version of such Licensed Program, and shall mean, in respect of Documentation, a Public Release of a new version of such Documentation.
- 1.9. "Upgrade" shall mean, in respect of a Licensed Program, a Public Release of a new version of such Licensed Program which adds features or functionality which differs from the specifications of the previous version of such Licensed Program as set forth in the Documentation relating to such previous version.
- 1.10. "Use" shall mean the copying or duplicating of any portion of a Licensed Program from storage units or media into equipment for processing, or the utilization of any form of a Licensed Program in the course of the operation of the Designated Equipment.

2. License Grant

2.1. Use of Source Form for Development. **LICENSOR** hereby grants to **LICENSEE** for the term of this Agreement a non-exclusive, non-assignable license to copy, use, and modify the Source Form Licensed Programs specified in Exhibit A herein for the purpose of adapting or incorporating such Licensed Programs for operation in connection with Designated Equipment or modifying the Licensed Programs to correct errors or add features or functionality within the scope of the specifications referenced in paragraph 2 of Exhibit A. No license is granted to use any Licensed Program on any configuration of equipment which is different from the configuration specified in Exhibit A as the "Designated Equipment". **LICENSEE** shall respect **LICENSOR**'s proprietary rights and copyrights and shall not use such Licensed Program except for the purposes for which it is being made available as set forth in this Agreement and shall not create similar like programs based, in whole or in part, on **LICENSOR**'s proprietary rights and copyrights.

2.2. Right to Grant Sublicenses. If the license type specified in Exhibit B attached hereto ("Exhibit B") is a Single Use Buyout license or a Business Unit Buyout license, then **LICENSOR** hereby grants **LICENSEE** for the term of this Agreement a nonexclusive, non-assignable right to grant, and to grant others the right to grant, non-exclusive, non-assignable, sublicenses to Use the Object Form on the Designated Equipment, provided that such sublicensees are bound by all of the terms and conditions set forth in Exhibit C attached hereto. Notwithstanding anything to the contrary contained elsewhere in this Agreement, no other type of license, if any, granted hereby entitles **LICENSEE** to grant any sublicense.

2.3. Right to Use Documentation. **LICENSOR** hereby grants **LICENSEE** for the term of this Agreement a non-exclusive, non-assignable right to use the Documentation for **LICENSEE**'s own internal use, subject to the restrictions imposed under Paragraph 9, in connection with its Use of the Licensed Programs. No other use is permitted, unless expressly approved in writing by **LICENSOR** prior to such use.

2.4. Sublicenses to the U.S. Government. **LICENSEE** represents and warrants to **LICENSOR** that **LICENSEE** is not an agency, department or unit of any governmental or quasi-governmental entity and is not procuring any Licensed Program as part of or in connection with any government contract or subcontract. If **LICENSEE** grants any sublicense hereunder to any agency, department or unit of any government or quasi-governmental authority, **LICENSEE** shall take whatever actions and precautions are necessary in order to preserve and protect all ownership and other rights of **LICENSOR** in the Licensed Programs, Documentation and related materials. In addition, if **LICENSEE** grants any sublicense hereunder to any agency, department or unit of the United States Government, the sublicense shall contain the following provisions:

UNITED STATES GOVERNMENT LEGENDS

For units of the Department of Defense:

The software is commercial computer software as defined in 48 C.F.R. 211 and therefore is provided to units of the Department of Defense under the terms of this License Agreement, which is **LICENSEE**'s standard commercial agreement for the software. In the alternative, if 48 C.F.R. 211 is not invoked, the software is licensed as follows: Restricted Rights Legend: Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software Clause at 48 C.F.R. 252.227-7013. [Insert **LICENSEE**'s name and address.]

For civilian agencies:

Restricted Rights Legend: Use, reproduction, or disclosure is subject to restrictions set forth in subparagraph (a) through (d) of the Commercial Computer Software-Restricted Rights clause at 48 C.F.R. 52.227-19 and the limitations set forth in **LICENSEE**'s standard commercial agreement for the Software. Unpublished rights reserved under the copyright laws of the United States.

2.5. Sublicense enforcement. **LICENSEE** agrees to enforce its rights under any sublicense granted by **LICENSEE** under this Agreement and, upon the request of **LICENSOR**, to enforce the rights of **LICENSOR** with respect to any such sublicense and to cooperate with **LICENSOR** in any action by **LICENSOR** to enforce its rights (and/or by **LICENSOR** in **LICENSEE**'s name to enforce **LICENSEE**'s rights) with respect to any such sublicense, including without limitation by providing to **LICENSOR** all information and assistance **LICENSOR** considers reasonably useful to pursue such action.

2.6. Territory. **LICENSOR**'s grant to **LICENSEE** in this Paragraph 2 shall be worldwide, subject to the provisions of Paragraph 15.

2.7. No Other License. Notwithstanding any other provision of this Agreement, no license or right is granted to **LICENSEE** by implication, estoppel or otherwise, except the licenses and rights expressly granted in this Paragraph 2.

3. Deliverables

3.1. Source Form Programs. **LICENSOR** shall deliver to **LICENSEE**, effective at **LICENSOR's** shipping point by delivery to a common carrier, in accordance with the delivery schedules as specified in Exhibit A, one copy of the Source Form of the Licensed Programs listed in Exhibit A. Such programs will be in machine readable form and may be examined and/or modified with any ASCII text editor.

3.2. Documentation. **LICENSOR** shall deliver to **LICENSEE**, effective at **LICENSOR's** shipping point by delivery to a common carrier, in accordance with the delivery schedules specified in Exhibit A, the Documentation. All Documentation and related materials intended for human comprehension shall be provided in the English language. The Documentation and related materials are sufficient to provide reasonably qualified personnel a technical understanding of the Licensed Programs and to enable reasonably qualified personnel to perform the portation of the Licensed Programs into the Designated Equipment and to allow modification and enhancement of the Licensed Programs by reasonably qualified personnel who did not originally develop the Licensed Programs.

3.3. Training. **LICENSOR** shall provide to **LICENSEE**, free of any additional charge, training courses, for the number of hours as specified in Exhibit B, at **LICENSOR's** headquarters for a group of **LICENSEE** personnel not to exceed ten (10) persons. **LICENSEE** shall bear the cost of travel time and travel, lodging and related expenses of its staff for the period of training. At **LICENSEE's** option, **LICENSOR** will provide training at one (1) of **LICENSEE's** sites at **LICENSEE's** expense, including but not limited to travel time and travel, lodging and related expenses of **LICENSOR** personnel who provide such training. Such training courses, in all events, shall be on such day or days as is mutually acceptable to the parties hereto, but in no event shall **LICENSOR** have any obligation to furnish any such training courses after the date that is three (3) months after the date of delivery of the Licensed Programs. **LICENSOR** will provide **LICENSEE** training course materials for the Licensed Programs during the training course at no additional charge. Arrangements for additional training may be provided at the expense of the **LICENSEE** upon terms and conditions to be agreed upon by **LICENSOR** and **LICENSEE**.

3.4. Media. The media used for delivery of machine readable items shall be the media mutually agreed upon by **LICENSOR** and **LICENSEE** prior to the time of delivery or, failing such agreement, as selected by **LICENSOR**. Title in and to the media used for delivery of machine readable items shall be owned by **LICENSEE**.

4. Acceptance

4.1. Acceptance. Each Licensed Program and the related Documentation shall be deemed accepted by **LICENSEE** thirty (30) days after delivery unless, within such thirty (30) day period, **LICENSEE** delivers to **LICENSOR** a notice of rejection in accordance with this Paragraph 4.1. The sole criterion for rejection of any Licensed Program or related Documentation shall be its failure to conform to the specifications referenced in paragraph 2 of Exhibit A or the requirements of Paragraph 3.2. Any notice of rejection shall be valid only if (i) it is delivered to **LICENSOR** within such thirty (30) day period and (ii) it specifies in reasonable detail each of the specifications to which such Licensed Program fails to conform, or each requirement to which such Documentation fails to conform, and the basis for **LICENSEE's** assertion of nonconformance.

4.2. Rejection and Cure Procedure. If **LICENSEE** timely and rightfully rejects a delivered Licensed Program, **LICENSOR** shall have thirty (30) days from the date of rejection to cure any nonconformance described in **LICENSEE's** valid notice of rejection and to deliver to **LICENSEE** a version of the Licensed Program or Documentation that conforms to such specifications or a written statement, as applicable, providing the cure after which the provisions of Paragraph 4.1 shall again apply, calculated from the date of delivery of the new version of the Licensed Program or Documentation. If the new version of such Licensed Program is again timely and rightfully rejected by **LICENSEE**, **LICENSEE** may, as its sole and exclusive remedy (notwithstanding any other provision of this Agreement), declare this Agreement terminated, in which event the provisions of Paragraph 13.2 shall apply and **LICENSOR** will promptly refund to **LICENSEE** all license fees paid by **LICENSEE** with regard to such rejected Licensed Program; otherwise, **LICENSEE** shall afford **LICENSOR** another cure period to correct the nonconformance and the provisions of Paragraph 4.1 shall again apply.

5. Payment

5.1. Payment Terms For Deliverables. As payment for the license grants and deliverables specified in this Agreement for each Licensed Program, **LICENSEE** agrees to pay **LICENSOR** the license fee amount specified in Exhibit B for such Licensed Program. The license fees for each such Licensed Program as specified in Exhibit B shall be paid:

5.1.1. Fifty percent (50%) within thirty (30) days after delivery of the Licensed Program as provided in Paragraph 3.1; and

5.1.2. Fifty percent (50%) within thirty (30) days after acceptance of the Licensed Program as provided in Paragraph 4.

5.2. Payment Terms For Maintenance. The fees for Maintenance Service specified in Exhibit B are due and payable within thirty (30) days of the date of each invoice therefor.

5.3. Currency. Unless otherwise agreed in writing by **LICENSOR**, all payments under this Agreement shall be made in United States Dollars at the **LICENSOR** office specified in Paragraph 16 (as the same may subsequently be changed in accordance with such Paragraph). All payments will be made in the form of a check or wire transfer.

5.4. Records. **LICENSEE** agrees to keep all usual and proper records and books of accounts and all usual and proper entries therein relating to sublicense of the Licensed Programs hereunder. Upon reasonable notice, **LICENSOR** or its duly appointed representative shall have the right to audit **LICENSEE's** manufacturing and shipment records related to the Licensed Programs for any period of time at any time. These examinations shall occur during normal business hours at **LICENSEE's** place of business and shall not occur more frequently than two times per year.

5.5. Administrative Service Charge. In addition to its other rights hereunder, including the right to terminate, **LICENSOR** shall charge, and **LICENSEE** agrees to pay, an administrative service charge of one and one-half percent (1.5%) of the unpaid amount of any invoice per month (or fraction thereof), but not to exceed the maximum rate permitted by applicable law, from the due date of the invoice until the date paid for any invoice not timely paid in accordance with the terms of this Agreement. This administrative service charge is intended to defray part of **LICENSOR's** costs in processing and handling late payments.

6. Warranty

6.1. Product Warranty. **LICENSOR** warrants that the Licensed Programs will perform substantially to the specifications referenced in paragraph 2 of Exhibit A at the time of delivery for a period of six (6) months following delivery and that the media used for delivery of the Licensed Programs and Documentation will be free from defects in materials and workmanship for a period of ninety (90) days following delivery.

6.2. Remedy. **LICENSOR** shall repair or replace, at its discretion, without charge at **LICENSOR's** facility all defective media used for delivery of the Licensed Programs and Documentation which are returned for inspection to such facility within ninety (90) days following shipment to the **LICENSEE**, provided that such inspection discloses that the defects are not the result of misuse, improper handling, negligence, accident or otherwise attributable to **LICENSEE's** acts or omissions.

6.3. Definition of Services. During the period of Warranty defined in Paragraph 6.1, **LICENSOR** shall provide to **LICENSEE** the Maintenance Services defined in Exhibit D.

6.4. Limitation. **EXCEPT AS PROVIDED IN THIS PARAGRAPH, LICENSOR MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH REGARD TO ANY PRODUCT, SERVICE OR RELATED MATERIALS PROVIDED UNDER THIS AGREEMENT.**

6.5. Fee for Service. Warranty service will be provided for one (1) **LICENSEE** site without additional charge except as provided in Exhibit D. Warranty service for more than one (1) **LICENSEE** site will be provided only upon terms and conditions to be agreed upon by **LICENSOR** and **LICENSEE**.

7. Maintenance

7.1. Definition of Maintenance Service. During any period of Maintenance Service for which **LICENSEE** has paid, **LICENSOR** will provide to **LICENSEE** the services defined in Exhibit D.

7.2. Period of Maintenance Service. By checking the applicable box on Exhibit B, **LICENSEE** may purchase Maintenance Service for the Licensed Programs for one (1) **LICENSEE** site for the first year following the end of the six (6) months warranty period specified in Paragraph 6.1 for the fees specified in Exhibit B. If, on the other hand, **LICENSEE** checks the box on Exhibit B to decline to order the first year of Maintenance Service at the time **LICENSEE** executes this Agreement (or otherwise fails, to check the applicable box to purchase such Maintenance Service), then, subject to acceptance in writing by **LICENSOR**, **LICENSEE** may subsequently purchase Maintenance Service for the Licensed Programs for fees to be quoted by **LICENSOR**

at the time such Maintenance Service is ordered (which fees may vary from the fees set forth in Exhibit B). The minimum period for which **LICENSEE** may purchase Maintenance Service is one (1) year for one (1) site. Maintenance Service periods greater than one (1) year are available in one (1) year increments; Maintenance Service for more than one (1) site will be provided only upon terms and conditions to be agreed upon by **LICENSOR** and **LICENSEE**.

7.3. Renewal. Maintenance Service is renewable annually. **LICENSOR** will endeavor to notify **LICENSEE** two (2) months prior to the expiration of the warranty period or any then-current Maintenance Service period. Whether or not **LICENSOR** has so notified **LICENSEE**, at any time prior to or within thirty (30) days after the expiration date of the warranty period of any then current Maintenance Service period **LICENSEE** may renew the Maintenance Service for the ensuing year (commencing on such expiration date). If **LICENSEE** fails to renew the Maintenance Service within such period of time, any renewal order shall be subject to acceptance in writing by **LICENSOR**, and **LICENSEE** shall pay the applicable fees for Maintenance Service for the ensuing year plus, on a prorated basis, all fees that would have been payable from the day following the original expiration date to the date of renewal, and such fees shall be as quoted by **LICENSOR** at the time of **LICENSEE**'s order (and may vary from the fees specified in Exhibit B).

8. Rights of Licensor

8.1. Rights Retained By Licensor. Nothing in this Agreement shall prohibit **LICENSOR** in any manner from using, developing, marketing, licensing or otherwise disposing of **LICENSOR**'s Licensed Programs or concepts embodied therein anywhere in the world; nor shall anything herein be construed to grant to **LICENSEE** or any sublicensee any rights in or to any other present or future products of **LICENSOR** whether or not similar to Licensed Programs.

8.2. Proprietary Rights. All information and material, including but not limited to the Licensed Programs and Documentation, supplied by **LICENSOR** hereunder is owned by **LICENSOR** and/or its licensors and is proprietary in nature. **LICENSEE** (i) shall respect such claim of proprietary right, (ii) shall protect such information at least to the extent that it protects its own proprietary information, (iii) shall not use such information except for the purposes for which it is being made available under this Agreement, and (iv) shall not reproduce, print, disclose, or otherwise make said information available to any third party, in whole or in part, in whatever form, except for the purpose for which it is being made available as set forth in this Agreement.

8.3. Preservation of Notices. **LICENSOR** shall retain title and copyrights to the Licensed Programs, Documentation and related materials that are provided by **LICENSOR** to **LICENSEE**. The Source Form Licensed Programs and Documentation contain copyright notices, proprietary notices and restricted rights legends. **LICENSEE** shall retain all such notices on all copies thereof (whether full or partial), and **LICENSEE** agrees to reproduce and include in all copies (whether full or partial) of the Object Form Licensed Programs all such notices and legends contained in the Source Form Licensed Programs.

8.4. Rights Retained By Licensee. Nothing in this Agreement shall prohibit **LICENSEE** in any manner from using, developing, marketing, licensing or otherwise disposing of any software independently developed by **LICENSEE** or any third party. **LICENSEE** shall own all modifications made by it to the Licensed Programs, except for error corrections and feature enhancements to any Licensed Program, Documentation or related materials disclosed or suggested to **LICENSOR** in the course of training, warranty service or Maintenance Service provided by **LICENSOR**, which corrections and enhancements shall be owned by **LICENSOR**.

9. Confidentiality

9.1. **THE SOURCE FORM LICENSED PROGRAMS AND DOCUMENTATION THAT ARE THE SUBJECT OF THIS AGREEMENT ARE CONFIDENTIAL AND PROPRIETARY TO LICENSOR.** **LICENSEE** shall not Use, reproduce, duplicate, copy or otherwise disclose, distribute or disseminate any Source Form Licensed Program or Documentation or related materials or information provided under this Agreement or in the course of the training provided under this Agreement, in any form or media, other than as expressly provided for in this Agreement.

9.2. For purposes of this Agreement, "Confidential Information" of a party (the "Discloser") shall mean any information which is disclosed to the other party (the "Recipient") during the term of this Agreement that relates in any way to any Licensed Program and which (i) is in written, recorded, electronic, graphical or other tangible form and marked confidential and/or proprietary or with a similar legend or other notation denoting the confidential nature of the information or proprietary interest of the Discloser, (ii) is disclosed orally and is identified orally as confidential and/or proprietary at the time of disclosure and is identified as confidential or proprietary by the Discloser in a writing delivered to the Recipient prior to or within thirty (30) days after the time of disclosure, or (iii) the Recipient, exercising reasonable business judgment, should understand to be confidential and/or proprietary; and "Confidential Information" shall include all notes, memoranda, analyses, compilations, studies, and other documents and records prepared by or for the Recipient, which contain or otherwise reflect or are generated by using any Confidential Information. **LICENSOR** "Confidential Information" shall in all events include but not be limited to the Licensed Programs, Documentation and related materials. Notwithstanding the foregoing, "Confidential Information" shall not include any information which (a) is in the public domain at the time of disclosure or becomes public domain information other than through a breach of this Agreement, (b) has been lawfully acquired by the Recipient from an Unrelated Party, (c) is already in the Recipient's possession from an Unrelated Party at the time of disclosure (as evidenced by the Recipient's business records), or (d) is demonstrated by the Recipient to have been independently developed by the Recipient. For purposes hereof, the term "Unrelated Party" shall mean a person who is not the Discloser, not an affiliate, employee or agent of the Discloser, and not a person known by the Recipient to be prohibited from disclosing the Confidential Information to the Recipient by any contractual, legal or fiduciary obligation.

9.3. The Recipient shall not use any of the Discloser's Confidential Information other than to carry out the purposes of this Agreement and as expressly permitted by this Agreement. The Recipient (i) shall treat the Discloser's Confidential Information as confidential and proprietary, using at a minimum the same degree of care as it uses for its own trade secrets, but in no event less than reasonable care; (ii) shall not disclose or afford access to any such Confidential Information to any person who has not executed a confidentiality agreement with the Recipient protecting such information, having terms no less stringent than those in this Agreement; (iii) shall not disclose or afford access to any such Confidential Information to any person who does not have a specific need to know such information for the purpose of this Agreement; and (iv) shall use its best efforts to ensure that such persons to whom the Recipient discloses or affords access to any such Confidential Information shall not disclose any such Confidential Information to any other person or use any such Confidential Information other than to carry out the purposes of this Agreement and as expressly permitted by this Agreement (and, in any event, shall be liable to the Discloser for any breach of the provisions of this clause (iv) of this Paragraph by any person to whom the Recipient discloses or affords access to any such Confidential Information); provided, however, that the Recipient may disclose Confidential Information as compelled by legal, judicial or administrative proceeding if the Recipient gives the Discloser reasonable prior notice to enable the Discloser to seek a protective order or other relief to prevent or limit disclosure of such Confidential Information and the Recipient cooperates with the Discloser in such effort.

10. Indemnification Against Infringement

10.1. Indemnity. **LICENSOR** represents and warrants that it has the sufficient right, title and interest in the Licensed Programs to enter into this Agreement. **LICENSOR** agrees, at its own expense, to defend **LICENSEE** and hold **LICENSEE** harmless against any suit, claim, or proceeding brought against **LICENSEE** alleging that any use of the Licensed Programs as delivered by **LICENSOR** infringes any patent, copyright or trademark or any trade secrets of any third parties, provided that **LICENSEE** (i) promptly notifies **LICENSOR** in writing of any such suit, claim or proceeding, (ii) allows **LICENSOR** at its expense, to direct the defense of such suit, claim, or proceeding, (iii) gives **LICENSOR** all information and assistance **LICENSOR** considers reasonably useful to defend such suit, claim or proceeding, and (iv) does not enter into any settlement of any such suit, claim or proceeding without **LICENSOR** written consent.

10.2. Remedies. Following written notice of a suit, claim or proceeding or a threat of suit, claim or proceeding requiring indemnification under Paragraph 10.1 above, **LICENSOR** shall, at its sole option, either (i) procure for **LICENSEE** the right to use the Licensed Programs as furnished hereunder, or (ii) replace or .modify the Licensed Programs to make the same non-infringing, or if (i) or (ii) are not feasible, (iii) return to **LICENSEE** fees applicable to the infringing Licensed Program and to accept return of same Licensed Programs and related documentation without further liability of **LICENSOR**. If **LICENSOR** elects to replace or modify the Licensed Program, such replacement shall substantially meet the specifications for the Licensed Program as set forth in its Documentation.

10.3. Limitation. **LICENSOR** shall have no liability for any claim that **LICENSOR** lacks right, title and interest to the Licensed Programs or any claim of copyright or patent, if either is based on **LICENSEE**'s modification or combination of the Licensed Programs with non-**LICENSOR** hardware or software, including the Designated Equipment, if such claim would have been avoided had the Licensed Program not been modified, combined or integrated with the Designated Equipment and/or non-**LICENSOR** software programs. **LICENSEE** agrees, at its own expense, to defend **LICENSOR** and hold it harmless against any suit, claim or proceeding arising under this Paragraph 10.3 provided that **LICENSOR** (i) promptly notifies **LICENSEE** in writing of any such suit, claim or proceeding, (ii) allows **LICENSEE**, at its expense, to direct the defense of such suit, claim, or proceeding, (iii) gives **LICENSEE** full information and assistance necessary to defend such suit, claim or proceeding, and (iv) does not enter into any settlement of any such suit, claim or proceeding without **LICENSEE**'s consent.

11. Limitations of Liability

LICENSOR's aggregate liability to **LICENSEE** and its sublicensees under, arising out of or related to any provision of this Agreement, or at law or in equity (including without limitation pursuant to any claim for indemnification), or any transaction contemplated by this Agreement, shall be limited to the amount actually paid by **LICENSEE** to **LICENSOR** under this Agreement. **LICENSOR**'s limitation of liability is cumulative with all of **LICENSOR**'s payments to **LICENSEE** in satisfaction of **LICENSOR**'s liabilities under this Agreement being aggregated to determine satisfaction of the limit.

IN NO EVENT SHALL LICENSOR BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THIS AGREEMENT, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY, OR OTHERWISE, AND WHETHER OR NOT IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

12. Indemnification

LICENSEE shall indemnify and defend LICENSOR and its affiliates and hold them harmless from and against any loss, claim, liability, expense (including without limitation reasonable attorneys' fees), or damage to persons or property arising out of or related to the use or possession of the Licensed Programs or any Documentation or related materials by LICENSEE or any of its sublicensees, provided that such loss, claim, expense or damage (i) is not the subject of indemnity by LICENSOR under Paragraph 10.1 or (ii) was not caused solely by the negligence of LICENSOR or of LICENSOR employees or representatives.

13. Termination

13.1. This Agreement shall terminate either:

13.1.1. Upon mutual agreement of the parties hereto; or

13.1.2. If either party commits a breach of any provision of this Agreement, the party committing the breach (the "defaulting party") shall be deemed in default and the other party (the "non-defaulting party") may terminate this Agreement, including all rights granted herein (and without liability on the part of the terminating party for terminating this Agreement, and without prejudice to the terminating party's other rights and remedies), upon thirty (30) days written notice to the defaulting party. Such termination shall become effective at the end of such thirty (30) day period (or such later date, if any, as may be expressly provided in such notice) unless the defaulting party shall cure all aspects of the default to the reasonable satisfaction of the non-defaulting party and so notify the non-defaulting party of the cure in writing within such thirty (30) day period; or

13.1.3. Without liability on the part of the terminating party for terminating this Agreement, and without prejudice to the terminating party's other rights and remedies, by either party by notice given at any time if at any time (i) the other party commences dissolution or liquidation proceedings or ceases to carry on its business, (ii) a receiver or similar officer is appointed for such other party and is not discharged within ninety (90) days, or (iii) such other party makes an assignment for the benefit of, or a composition with, its creditors, or another arrangement of similar import, or if proceedings under any bankruptcy or insolvency law are commenced against it and are not discontinued within ninety (90) days.

13.2. Certain Obligations Upon Termination. If this Agreement is terminated, LICENSEE, on the effective date of termination, shall immediately discontinue the Use of each Licensed Program and Documentation and related materials, and any and all parts thereof. Within five (5) days after the date of termination, LICENSEE shall deliver to LICENSOR every original copy and reproduction (in any form or media) of each Licensed Program and all Documentation and related materials and LICENSOR Confidential Information; provided that, notwithstanding the other terms of this Paragraph 13.2, LICENSEE may retain one (1) copy of the Licensed Programs for use solely in supporting its then-existing sublicensees (if there are any such sublicensees). In lieu of such delivery, if LICENSOR permits, every original copy and reproduction (in any form or media) of each Licensed Programs and all Documentation and related materials and other Confidential Information of LICENSOR shall be destroyed by LICENSEE, who shall then provide LICENSOR with written certification that LICENSEE has complied with this provision. Termination of this Agreement shall not abridge the right of continued use on the part of LICENSEE's sublicensees who have rightfully received the Object Form of the Licensed Programs under a sublicense granted by LICENSEE as permitted by this Agreement; provided, however, that all further rights on the part of LICENSEE to use Source Form or Object Form, or to distribute or sublicense Licensed Programs shall be canceled upon termination. Termination of this Agreement shall also terminate the rights of all other persons, to whom LICENSEE has granted any right to sublicense under Paragraph 2, to grant additional sublicenses after the date of termination, and, upon such termination, LICENSEE shall promptly notify each such sublicensee accordingly.

13.3. Unpaid Amounts. Immediately upon termination, any earned but unpaid fees shall become immediately due and payable by LICENSEE to LICENSOR.

13.4. Unshipped Orders. Immediately upon termination, all unshipped orders may be canceled by either party without liability to either party.

13.5. Survival of Provisions. The following provisions shall survive any termination of this Agreement:

- Paragraph 5 Payment
- Paragraph 8 Rights of Licensor
- Paragraph 9 Confidentiality
- Paragraph 10 Indemnification Against Infringement
- Paragraph 11 Limitations of Liability
- Paragraph 12 Indemnification
- Paragraph 13 Termination
- Paragraph 14 Assignments
- Paragraph 15 Export Controls
- Paragraph 16 Notices
- Paragraph 17 General provisions

13.6. Term. The term of this Agreement shall be perpetual and shall not expire unless and until this Agreement is terminated in accordance with its provisions.

14. Assignments

The rights and obligations of LICENSEE under this Agreement may not be assigned or delegated (by operation of law or otherwise) by LICENSEE without the prior written consent of LICENSOR except for an assignment of this entire Agreement to an affiliate of LICENSEE that does not compete with LICENSOR and only if such assignment is incident to a transfer of the business that includes the Designated Equipment as specified in Exhibit A, and in all cases, any assignment may be made only upon ninety (90) days prior written notice to LICENSOR and shall be effective only upon the execution by the proposed assignee of an assignment agreement acceptable in form and substance to LICENSOR, which shall include without limitation the proposed assignee's assumption of and agreement to be bound by all of the terms and conditions of this Agreement and all amendments thereto. LICENSOR's rights and obligations under this Agreement may with notice to the LICENSEE be assigned and/or delegated by LICENSOR to any affiliate of LICENSOR or incident to the transfer of the business of LICENSOR to which this Agreement relates. LICENSOR may upon notice given at any time to LICENSEE assign its rights to receive fees and other monies hereunder. Subject to the limitations on assignment contained in the foregoing provisions of this Paragraph, this Agreement shall be binding upon and inure to the benefit of the successors and assigns of the parties hereto.

15. Export Controls

The Licensed Programs are subject to United States Government export controls. LICENSEE agrees not to Use, export, import, re-export, transfer or otherwise dispose of the Licensed Programs except in compliance with United States and foreign government requirements.

16. Notices

Any notice required or desired to be given with respect to this Agreement shall be in writing and shall be deemed delivered when sent by registered or certified mail, return receipt requested (if being sent from within the USA to an address within the USA), or by confirmed facsimile transmission (regardless of the points of sending and receipt), or by overnight express courier (such as FedEx) marked for the earliest possible delivery (regardless of the points of sending and receipt), in each case addressed to the other party as set forth below, or to such other address as that party may have specified by prior notice to the other given in the manner herein provided:

LICENSEE:

Facsimile No.: _____

LICENSOR:

Facsimile No.: _____

If no address is given for **LICENSEE** in this Paragraph, then the principal office address of **LICENSEE** shall be the address for notices to **LICENSEE**.

17. General provisions

17.1. Agreement Prevails. In the event that any provision of any purchase order, receipt, invoice, or other document issued by either party is inconsistent with the provisions of this Agreement, then the terms of this Agreement will prevail. In the event of a conflict in the provisions of the body of this Agreement and any exhibits or other attachments hereto, the provisions of the body of this Agreement shall govern.

17.2. Taxes. Fees shown in Exhibit B are exclusive of all sales, use and other taxes and all other governmental charges and assessments. Any tax **LICENSOR** may be required to collect or pay upon the transactions contemplated by this Agreement, other than taxes based on the income of **LICENSOR** and any foreign withholding taxes, shall be paid by **LICENSEE**, or in lieu thereof, **LICENSEE** shall provide a tax exemption certificate acceptable to the taxing authorities. On transactions occurring outside the United States, in whole or in part, all required import/export duties, license and other fees shall be payable by **LICENSEE** in addition to the stated payments to **LICENSOR**.

17.3. Shipping. Shipment will be made as specified in Exhibit A. In the absence of specific written instructions from **LICENSEE**, **LICENSOR** will select the carrier but shall not thereby assume any liability in connection with shipment, nor shall the carrier be construed to be the agent of **LICENSOR**. Title to all media used for delivery of machine readable items to be delivered hereunder shall pass to **LICENSEE** on an FOB basis, at **LICENSOR's** shipping point. The **LICENSEE** shall bear all risk of loss thereafter. All shipping and handling charges shall be paid by **LICENSEE**.

17.4. Force Majeure. Neither party shall be considered in breach or default under this Agreement for any delay or failure in performance (other than the payment of money) resulting from acts beyond the control of such party. Such acts shall include but not be limited to acts of God, labor conflicts, acts of war or civil disruption, act of terrorism, governmental regulations imposed after the fact, public utility failures, industry wide shortages of labor or material, or natural disaster.

17.5. Complete Agreement. This Agreement (including the exhibits attached hereto and referenced herein) contains the entire agreement between the parties with respect to the subject matter hereof. No other prior or contemporaneous agreements, representations, warranties, or other matters, oral or written, actually or purportedly agreed to or represented by or on behalf of either party by any of its employees or agents, or contained in any sales material or brochures, shall be deemed to bind the parties with respect to the subject matter hereof. The terms of this Agreement may be altered only in a writing signed by both parties, except as otherwise expressly set forth in this Agreement for changes to certain exhibits to this Agreement.

17.6. Waivers. The failure or delay of either party at any time to exercise any right under any provision of this Agreement shall not limit or operate as a waiver thereof, nor shall the single or partial exercise thereof preclude or limit any other or further exercise thereof, nor shall the waiver of any breach of any provision be a waiver of any other or further breach of any provision or a waiver of the provision itself or of any other provision of this Agreement.

17.7. Applicable Law and Construction. This Agreement shall be governed by and construed in accordance with the laws of the State of California, USA, excluding the conflict of laws principles thereof. Neither this Agreement nor any provision of this Agreement shall be construed against either party due to the fact that this Agreement or such provision was drafted by such party. In construing this Agreement, the headings shall not be considered part of this Agreement, but are for convenience of reference only. Wherever the context of this Agreement dictates, the plural shall be read as the singular and the singular as the plural.

17.8. Severability. If any provision of this Agreement is held by a court or arbitrator of competent jurisdiction not enforceable to its full extent, then such provision shall be enforced to the maximum extent permitted by law, and the parties hereto consent and agree that such scope may be modified by such court or arbitrator accordingly and that the whole of such provision of this Agreement shall not thereby fail, but that the scope of such provision shall be curtailed only to the extent necessary to conform to the law.

17.9. Disputes. In the event any dispute arises under, in connection with or relating to this Agreement or any transaction contemplated thereby, whether to enforce any of the terms or conditions of this Agreement or otherwise, the prevailing party in any suit, arbitration or other proceedings shall, as an additional item of damages, recover its reasonable attorneys' fees and court costs, arbitration costs or costs of such other proceedings as may be fixed by any court, arbitrator or other judicial or quasi-judicial body having jurisdiction thereof, whether or not such litigation or proceedings proceed to a final judgment or award.

17.10. Arbitration. Any claim, controversy, or dispute of whatever nature arising out of or related to this Agreement or its formation shall be resolved by final and binding arbitration administered by the American Arbitration Association ("AAA") according to the Commercial Arbitration Rules ("Rules") of the AAA, except as modified herein. The arbitration shall be conducted by a single arbitrator chosen from a list of attorneys who are members of the AAA's large complex case panel and who are also knowledgeable in the area of software licensing and the software industry. If the parties cannot agree on an arbitrator within thirty (30) days from the filing of a demand for arbitration with the AAA, the arbitrator shall be chosen pursuant to Rule 13 of the Rules. The costs and administrative expenses of arbitration, including the arbitrator's fees, shall be shared equally by the parties. The arbitration shall be conducted in the City of Los Angeles, California. In rendering any award, the arbitrator shall apply and follow applicable principles of the substantive law of California. The parties shall be entitled to conduct full discovery as permitted by the California Discovery Act, C.C.P. § 2016 et seq., and any amendment thereto or successor statutes. The period for conducting and completing discovery shall be limited to three months from the date of the arbitrator's appointment. The arbitration shall be completed within six months from the date of the arbitrator's appointment. To the extent otherwise available under applicable law, either party may seek provisional relief from any court of competent jurisdiction as to any matter that is subject to arbitration under this Agreement. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties consent to the jurisdiction of the state and federal courts located in Los Angeles County, California for all judicial proceedings.

17.11. Provisional Relief. The parties agree that any breach of this Agreement by **LICENSEE** would result in irreparable harm to **LICENSOR**, the extent of which would be difficult and/or impracticable to assess, and that money damages would not be an adequate remedy for such breach. Accordingly, **LICENSOR** shall be entitled to immediate equitable and other provisional relief, including without limitation specific performance of this Agreement and a temporary restraining order and/or preliminary and/or permanent injunction, as a remedy for such breach in addition to all other remedies available to **LICENSOR** at law or in equity and without prejudice to any such other remedies.

17.12. Further Acts. Each party to this Agreement agrees to execute and deliver all documents and to perform all further acts and to take any and all further steps that may be requested by the other party and are reasonably necessary to carry out the provisions of this Agreement and the transactions contemplated hereby.

17.13. Counterparts. This Agreement or any amendment hereto may be executed in several counterparts and, as executed, shall constitute one agreement binding on all the parties hereto, notwithstanding that all of the parties are not signatory to the original or the same counterpart.

17.14. Language. All amendments of this Agreement, notices and communications between the parties, and all material supplied under this Agreement by either party to the other shall be in the English language.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed by their respective duly authorized representative as of the date first above written.

LICENSEE:

Company: _____
Signature: _____
Name: _____
Title: _____
Date: _____

LICENSOR:

Company: _____

Signature: _____

Name: _____

Title: _____

Date: _____

Attachments:

- Exhibit A - Licensed Programs
- Exhibit B - License and Maintenance Fees
- Exhibit C - Sample End User License Agreement
- Exhibit D - Maintenance Service
- Exhibit E - Licensor Action Request
- Exhibit F - Licensor Standard Rates

EXHIBIT A
Licensed Programs

1. Licensed Programs:

The Licensed Programs are:

Part No.	Options	Name	Version	Ship Date

If used above:

ARO" means "after receipt of order", which contemplates receipt of **LICENSEE's** purchase order and a fully signed Software License Agreement acceptable to **LICENSOR**.

"Latest" means the version that is the current Public Release.

"Beta" means a version that is not a Public Release.

2. Documentation:

The following documentation shall be supplied with each Licensed Program:

- Functional Specification
- Service Definition
- Portation Guide
- Training Manual
- Software Test Sample

3. Operating Environment (for LICENSOR reference purposes only)

Compiler: _____

Compiler Platform: _____

Runtime Processor: _____

Runtime Operating System: _____

4. Licensee's "Designated Equipment":

EXHIBIT B

License and Maintenance Fees

1. License and Maintenance Fees:

The license and maintenance fees for each of the Licensed Programs are:

Part No.	Options	Name	License Type	License Fee (1)	Maintenance Fee (Annual) (2)	Training (Hours)

The total license and maintenance fees are:

(1) Total License Fees: \$ _____
 (2) Total Maintenance Fees (Annual): \$ _____

If Maintenance Services are requested for more than one (1) **LICENSEE** site, additional maintenance fees may be charged.

2. Maintenance Service: (check applicable box)

By checking this box, **LICENSEE** orders Maintenance Service for the Licensed Programs for the first year following the end of the applicable warranty period. **LICENSOR** will invoice **LICENSEE** for the applicable fees for such Maintenance Service (as specified above) at the appropriate time.

By checking this box, **LICENSEE** declines to order Maintenance Service for the Licensed Programs for the first year following the end of the applicable warranty period. **LICENSEE** may subsequently order Maintenance Service as provided in this Agreement, but the fees for such Maintenance Service will be as quoted by **LICENSOR** at the time such Maintenance Service is ordered and may vary from the fees set forth above.

3. License Type Definitions:

Single Use Buyout ("SUB") - License granted per terms of this Agreement to Use Source Form and distribute an unlimited number of copies of Object Form with the Designated Equipment as specified in Exhibit A. There is a one time fee with no per Object Form royalty due.

Development Use Buyout ("DUB") - License granted per terms of this Agreement to Use Source Form but does not grant right to distribute copies of Object Form. Up to two (2) copies of the Object Form may be created and Used in the **LICENSEE's** facilities for test purposes. There is a one time fee with no per Object Form royalty due.

4. Additional Designated Equipment (Applies to SUB licenses only):

LICENSEE shall be entitled to obtain additional SUB licenses for a Licensed Program on the following terms: (a) the license fee for the second SUB license will be 75% of the fee for the first license, (b) the license for the third SUB license will be 50% of the fee for the first license, (c) the license fee for the fourth SUB license will be 25% of the first license fee and (d) the license for all subsequent SUB licenses will be without additional charge. Additional fees may be due for maintenance and training.

EXHIBIT C

Sample End User License Agreement

This agreement grants a limited license to the Purchaser of Equipment ("**END USER LICENSEE**") to use object code embodied in the following Software or Firmware ("Licensed Program") solely in connection with the equipment listed. Installation and use of such equipment constitutes **END USER LICENSEE**'s acceptance of the Terms and Conditions contained herein.

1. Definitions

1.1 "Licensed Program" shall refer to: _____

1.2 "Designated Equipment" shall refer to: _____

1.3 "Use" shall mean the copying or duplication of any portion of a Licensed Program from storage units or media into the equipment for processing or the utilization of any Licensed Program in the course of the operation of the Designated Equipment.

2. License Grant

Use of Object Licensed Program with Designated Equipment. **LICENSOR** hereby grants **END USER LICENSEE** a non-exclusive, non-transferable, except as provided in Paragraph 5, license to Use in machine readable form the Licensed Program solely on the Designated Equipment. No license is granted to Use any Licensed Program on any configuration of equipment which is different from or less than the configuration indicated in Paragraph 1.2.

3. Proprietary Rights

3.1 Proprietary rights. The Licensed Program is owned by **LICENSOR** and/or its licensors and is proprietary in nature. **END USER LICENSEE** shall respect such proprietary rights and shall not use such Licensed Program except for the purposes for which it is being made available as set forth in this agreement and shall not reproduce, print, sublicense, duplicate, reverse engineer, distribute, disclose, or otherwise make the Licensed Program available to any third party, in whole or in part, in whatever form.

3.2 Confidentiality. **END USER LICENSEE** shall take all actions required to maintain control of the Licensed Program including securing written records, agreements, and other reasonable measures with its employees and agents to satisfy its obligations under this agreement.

4. Limit of Liability

4.1 No Warranty. **LICENSOR AND ITS LICENSORS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH REGARD TO ANY LICENSED PROGRAM OR RELATED MATERIALS TO BE FURNISHED TO END USER LICENSEE.**

4.2 No Consequential Damages. In no event shall **LICENSOR** or its licensors be liable for any indirect, special or consequential damages in connection with or arising out of the existence, furnishing, failure to furnish, or use of any Licensed Program and/or related material and/or device.

4.3 Limitations. **LICENSOR** and its licensors shall have no liability for any claim of copyright or patent infringement based in (i) Use of other than a current unaltered release of the Licensed Program available from **LICENSOR** if such infringement would have been avoided by the use of such current unaltered release of the Licensed Program, or (ii) Use or combination of the Licensed Program with programs not supplied by **LICENSOR** and which Use or combination results in the infringement of any patent or copyright.

5. Transfer of License

This license may only be transferred in connection with the transfer of all of the Designated Equipment; provided all copies of the Licensed program are delivered to the transferee and no copies or related materials are retained by **END USER LICENSEE** and provided further that the transferee agrees to be bound by all the Terms and Conditions of this End User License Agreement.

EXHIBIT D

Maintenance Service

Maintenance Service with respect to Licensed Programs entitles **LICENSEE** to receive Updates and Upgrades of the Licensed Programs, technical bulletins and Documentation Updates as they become Public Releases. Maintenance Service also entitles **LICENSEE** to receive telephone, FAX or e-mail technical support of **LICENSEE's** use of the Licensed Programs.

1. Error Corrections. **LICENSOR** shall use reasonable efforts to correct any documented reproducible program errors in a Source Form Licensed Program within a reasonable time, and to use due diligence to rectify such errors that have been notified in writing by **LICENSEE**; provided, however, that such program errors have not been introduced through modifications made by **LICENSEE**.

Such service, with respect to a given program error, will be provided after **LICENSOR** receives a request in writing from **LICENSEE** on **LICENSOR's** form of Action Request as set forth in Exhibit E. **LICENSOR** reserves the right, from time to time, to modify the form utilized for this purpose as may be reasonable and necessary and so shall notify **LICENSEE** in such event.

If **LICENSEE** reports a program error to **LICENSOR**, **LICENSEE** shall give **LICENSOR** reasonable access to the Designated Equipment, a copy of the Licensed Program as being used by **LICENSEE** and all relevant Documentation and records, and shall provide all reasonable assistance as **LICENSOR** may request, including without limitation sample output and other diagnostic information to assist **LICENSOR** in providing the Maintenance Service.

Three classes of program errors are provided for, and **LICENSOR** shall respond under this Agreement as follows:

1.1. **CRITICAL.** Program errors that cause software crashes, or similar events. The maximum time from notification to initiation of **LICENSOR** response shall be one (1) business day.

1.2. **MODERATE.** Program errors that do not cause software crashes or for which a work-around is possible. The maximum time from notification to initiation of **LICENSOR** response shall be less than fifteen (15) business days.

1.3. **NON-CRITICAL.** Program Documentation errors. The maximum time from notification to initiation of **LICENSOR** response shall be less than sixty (60) business days.

2. Product Update. For every error found by **LICENSEE**, and properly reported to **LICENSOR**, or found by **LICENSOR** in a Source Form Licensed Program, **LICENSOR** will undertake to:

2.1. Incorporate an error correction in the next Public Release of that specified Licensed Program which initially contained the error; and

2.2. Supply **LICENSEE**, subject to the applicable warranty or maintenance provisions of this Agreement, the latest Public Release of the Licensed Program containing such error correction no later than four (4) calendar months after the program error has been reported to or by **LICENSOR**.

3. Product Upgrade. Should **LICENSOR** make any Upgrade of a Licensed Program, **LICENSOR** will undertake to:

3.1. Inform **LICENSEE** of any such Upgrade; and

3.2. Supply **LICENSEE**, subject to the applicable warranty or maintenance provisions of this Agreement, the latest Public Release of the Licensed Program containing such Upgrade.

4. Licensor's Support To Licensee Exclusively. **LICENSEE** shall be solely responsible for directly supporting and providing maintenance of all or any part of the Licensed Programs and documentation as provided to **LICENSEE's** customers. **LICENSOR** shall have no obligation to provide any direct consultation or maintenance support to **LICENSEE's** customers with respect to all or any part of the Licensed Programs or other subject matter of this Agreement.

5. License Grants to Updates or Upgrades. Any rights and obligations of **LICENSEE** as to Source Form and Object Form of the Licensed Programs and Documentation shall extend to any Updates or Upgrades thereof upon delivery thereof by **LICENSOR** to **LICENSEE**. **LICENSOR** shall have no responsibility under this Agreement to correct any alleged error if **LICENSEE** fails to incorporate any Update or Upgrade of a Licensed Program that **LICENSOR** has provided to **LICENSEE**.

6. Limitations. If **LICENSOR** is requested, pursuant to the applicable warranty or maintenance provisions of this Agreement, to correct an error and such error is found to be caused by **LICENSEE's** negligence, modification by **LICENSEE**, **LICENSEE** supplied data, operator error or misuse, or any other cause not inherent in the Source Form Licensed Programs, **LICENSEE** agrees to pay for such support services on a time and material basis at **LICENSOR's** then prevailing standard rates, as specified in Exhibit F, when invoiced by **LICENSOR**. Under no circumstances does **LICENSOR** warrant or represent that every error can or will be corrected.

EXHIBIT E

Licensors Action Request

Licensee Name: _____

Contact Name: _____

Address: _____

Phone: _____ Fax: _____

Best Time to contact: _____

Date Problem Observed: _____ Date Problem Reported: _____

Requested priority: Critical ___ Moderate ___ Non-critical ___

Product Name: _____

Product Part No.: _____ Product Version: _____

Describe Configuration: _____

Describe Problem: _____

Describe Attached Materials: _____

Date Received: _____ Date Closed: _____ Report Number: _____

EXHIBIT F
Licensor Standard Rates

These rates are referenced in Paragraph 6 of Exhibit D to this Agreement.

1. **LICENSOR's** standard rates at the date of this Agreement are:

Personnel Class	Hourly Rate
Principal	\$ 250.00
Senior MTS	\$ 150.00
MTS	\$ 125.00
Associate MTS	\$ 100.00
Technician	\$ 75.00
Clerical	\$ 35.00

MTS = Member of Technical Staff

2. Personnel Class Definitions.

Clerical	An employee who performs mainly non-professional, clerical work (e.g., documentation, filing, shipping, etc.)
Technician	An employee involved in non-professional, technical activities (e.g., setting up of test equipment, repair submodules, assisting in debugging and testing, creating test submodules, etc.)
Associate MTS	Typically an employee with a professional degree (e.g., BS or MS) but minimal work experience, whose work requires detailed supervision.
MTS	Typically an employee with a professional degree and 1-4 years of work experience who is able to produce basic software modules to specifications and test them independently.
Senior MTS	An MTS with at least five years experience who is able to manage a complete project from inception to completion with minimal management direction.
Principal	A senior architect who participates in the design of the overall Licensor software architecture, and has a full visibility of the complete product line.

In addition to payment for personnel services, **LICENSOR** will be reimbursed for all reasonable expenses including, but not limited to: approved travel, shipping, supplies and rental equipment.

These rates are subject to change at the sole option of Licensor.