Oral Recollections from the Professional Services History Meeting

Moderated by:
Burton Grad
The Software Business History Committee

Participating Pioneers:
Werner Frank
Jay Goldberg
Barry Goldsmith
Lee Keet
Robert Patrick
Oscar Schachter
Larry Schoenberg
George Trimble

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Professional Services History Meeting

Abstract: The Software Business History Committee organized a meeting with eight of the professional services industry pioneers to discuss their experiences in starting, growing (and later selling) computer programming services and consulting firms during the 1950s through the 1980s. Among the topics discussed were: successful (and unsuccessful) business models; systems and application programs; selling services and establishing customer relations; recruiting and retaining employees; competition and cooperation; the significance of ADAPSO; financing companies and selling companies; and key events which shaped the industry's growth and culture. Lists were constructed of many of the principal companies and some of the other industry pioneers. This will serve as the starting point for constructing a professional services industry genealogy. In addition, oral histories were taken of four of the pioneers in attendance: Werner Frank, Jay Goldberg, Barry Goldsmith and Robert Patrick, the transcripts of which are posted at this CHM oral history website. There are previous oral history interview transcripts of Lee Keet , Oscar Schachter and Larry Schoenberg posted at cbi.umn.edu and an extensive memoir written by George Trimble that was published in the *IEEE Annals of Computing History.*

Introduction

The Professional Services History Meeting was moderated by Burton Grad, Chairman of the Software Business History Committee, which is part of the Computer History Museum and is focused on collecting materials and recollections from computer software and services industry pioneers.

The purpose of this meeting was to start to construct a history and then a genealogy of the computer professional services industry from its beginnings in the 1950s through the 1980s. The meeting was audio recorded and transcribed and then edited by Carol Anne Ances to produce this report.

Four groups of people attended the meeting:

- Professional Services pioneers
- Computer historians
- Other industry participants

- Computer History Museum management and professional staff

The attendees are listed in Appendix A along with their current affiliations and, where appropriate, the companies with which they were previously involved.

The companies referenced are listed in Appendix B and some of the key industry pioneers are listed in Appendix C. Appendix D provides a brief background description of the computer professional services industry as prepared by the moderator. Appendix E describes the IT Corporate Histories Project and Appendix F describes the Software Business History Committee.

The story starts with the first few Professional Services companies that were formed in the 1950s and then traces the industry's growth during the 1960s and 1970s, leading to its maturing and consolidation in the 1980s. The companies represented at the meeting designed and implemented programs for business and computer manufacturing companies and for government and institutional customers. These programs were for systems operations and commercial and scientific applications running on large, medium and small machines,

The 1950s

[Because of technical difficulties, the first portion of the meeting was not recorded and therefore the following notes reflect a summary of what was discussed and is not based on a recording of the meeting]

George Trimble, Bob Patrick, Larry Schoenberg and Werner Frank recalled that with the delivery of the Univac by Sperry Rand for commercial (e.g. non-government) use in 1954 and IBM's delivery of the 701 for scientific applications in 1953 and the 702 for business applications in 1954, the need for help in designing and programming applications became apparent to the early computer users. While the manufacturers providing some help in building what were later called systems programs and provided support in programming some scientific and business applications, the principal workload fell to the companies leasing the computers. Since there was no existing body of programmers, companies had to recruit and train the programmers themselves. But with the large cost of computers, the user companies were eager to get applications running as soon as possible. This provided an opportunity for industry pioneers Elmer Kubie and John Sheldon to start what was arguably the first computer software professional services firm in 1954: Computer Usage Company (CUC).

Two years earlier, Richard Canning and Roger Sisson had formed a partnership (Canning, Sisson and Associates) to provide general consulting to companies interested in acquiring and

using electronic computers, but they did not provide specific design or programming services to users.

CUC basically had the professional services field to itself until it was joined later in the 1950s by C-E-I-R, Adams Associates and then Computer Sciences Corporation (CSC) and Applied Data Research (ADR), all of which provided systems and applications programming to manufacturers and commercial and government users.

Bob Patrick who was one of the co-founders of CSC in 1959 although he left the company within a year of its founding, described founding the company and its first contract in his oral history taken after the meeting. Patrick had worked for C-E-I-R prior to helping to found CSC. C-E-I-R was started in 1956 by Dr. Herbert W. Robinson. They were providing computer services primarily to the Pentagon, which did not have enough of its own computers at that time. C-E-I-R was growing rapidly and adding machines as fast as they could, moving up from an IBM 650 to a 704 and then to two 709s. They were a secure classified facility and were often sole sourced on analysis, programming and production projects. In the early 1960s, C-E-I-R overextended itself by ordering a number of STRETCH computers from IBM. When they were unable to pay for the machines, IBM worked out a settlement with C-E-I-R for them to provide IBM with a linear programming system for the IBM 7040 (to be produced by William Orchard-Hays, then a key executive at C-E-I-R). C-E-I-R never really recovered from that debacle.

Besides the independent Professional Services companies listed above, there were two other companies of note. Systems Development Corporation (SDC) had been spun off from RAND as a non-profit company to take responsibility as the system manager to build the SAGE system. This was a massive effort, funded by the US Department of Defense to establish an early warning system in case of an air attack by the USSR. The system required a complex of radar installations (the DEW line), connected through an extensive communication system to a number of special purpose computers (built by IBM) using a massive amount of custom programming to interpret all of the information being acquired. SDC itself did the design and programming of this software. It has been reported that SDC trained over 50% of all of the programmers in the United States during the 1950s.

The other significant professional services operation was IBM's Service Bureau Corporation (SBC). As a longtime service bureau providing support for IBM's punch card customers, SBC quickly took on both scientific and commercial applications work for IBM's computer customers. Because of the 1956 Consent Decree that IBM signed, SBC was an "independent" operation within IBM, although many questioned its degree of independence. However, the availability of SBC encouraged many of the new Professional Services companies to focus on servicing the users who bought computers from vendors other than IBM and to produce systems programs for those other manufacturers.

So, at the end of the 1950s, there were a half dozen software-focused professional services firms (see Appendix B) doing analysis, design and programming work for the key user companies and starting to produce systems software for the U.S. manufacturers then entering the computer business (GE, Burroughs, NCR, RCA and Honeywell in addition to Univac (Sperry Rand) and IBM). To learn more about Professional Services in the 1950s, please look at the following references:

- *IEEE Annals of Computing History*, Volume 16, No. 2, written by Elmer Kubie and published in 1994.

- *IEEE Annals of Computing History*, Volume 23 No. 3, written by George Trimble and published in 2001.

- The *IEEE Annals of Computing History* has also published articles about C-E-I-R, CSC and ADR.

- Robert Patrick transcript, CHM Oral History Program website (www.computerhistory.org)

- From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry, by Martin Campbell-Kelly, published by the MIT Press in 2003

The 1960s

With the stage set, although with just a few players, the Professional Services industry was ready to gain real momentum in the 1960s. There were a number of significant events that provided the opportunity and stimulus for industry growth.

Key Events

- The COBOL language – COBOL made a big difference because it gave a framework for writing programs for multiple machines, instead of writing in assembler language or specialized languages for each machine. Schoenberg said that it was difficult to train people for a variety of languages and platforms. The commonality of COBOL made a huge difference.

- Large increase in the number of computers – One of the most obvious changes in the 1960s was that there were a lot more computers around. The decade started with a few thousand installations, but there were maybe 40 thousand by the end of the decade so there were 20 times as many computer installations and that meant 20 times more programming. So you'd expect the Professional Services business to get 20 times bigger, even if it just had the same share of the available programming market.

- Government procurement – This created a large market for services in the 1960s. According to Werner Frank, Informatics played a large role in government projects during that time. There were massive government procurements during that time period because of the space program and because of bringing data processing into the operations of the various departments and there were many government contracts available. Although some work was given to body shops, project-oriented Professional Services companies got substantial contracts. In some cases, the projects called just for adding people, but most were project-oriented requiring some pretty good technical and project management skills. Contracts were typically time and materials (T&M) or cost plus fixed fee (CPFF) which were incentive based. Informatics had one disastrous project under a fixed price contract with Budd a little later and it was the last fixed price contract they did.

- Introduction of the IBM S/360 (in 1964) – Keet said that before the 360, computers were run by the "tab guys," DP people who originally ran the punch card machines and graduated to the 1401s and 1440s. Many of them were inadequate to do the job once the 360 came out. This caused a whole explosion of more professional programmers and systems engineers. Customers had to restaff and a tremendous demand was built up. The downstream effect of the introduction of the 360 on the growth of the Professional Services business was immense.

A lot of senior managers left IBM in the 1967-68 time period to start companies. Ed LaHay remembers that many user companies went from unit record equipment to 360s. They went from having people who could plug wires into a board to needing many 360 programmers. The gap was partially filled by ex-IBM branch managers who went out and formed their own Professional Services businesses. They had made a lot of money in IBM in 1964 and in 1965 selling 360s that didn't get delivered until 1966 and they then made a second killing by selling professional services to companies that got delivery in 1966 and 1967 and had no programmers to do the applications.

The systems platform really wasn't standardized until OS and DOS were available for the 360 and they were released in 1966. Most of the new commercial Professional Services companies were founded in the late 1960s.

- The 1403 printer – George Trimble stated that commercial companies wouldn't go with the drum printers and their wavy printout. The financial people just wouldn't stand for it. When the chain printer came out, he felt it was the beginning of the end of the punch card era. The 1401/1403 started a large mass of punch card guys rising up to whatever their level of skill could be; some of them went into 360 programming.

- Key to disk and key to tape – In 1965-66 turnkey systems, inc. (tsi) had key to tape, followed by key to disk. Direct entry was much later and turnkey systems inc. released KeyMaster in 1974.

- Transition from systems software to applications software – In the early 1960s the percentage of software work for Professional Services companies that was systems software was greater than at any later time. The trend was away from systems software in the mid-late 1960s to application software. All of a sudden business had a new tool, the 360, and people in all user departments were saying they wanted to do something using the new tool that they couldn't do before. This required applications programming.

  The mix of systems and applications software varied by company. For example, CUC did primarily systems work. Their customers were IBM, Honeywell and other manufacturers. When Larry Schoenberg joined Computer Sciences, its New York office did a mix of systems and applications work although most was applications. At that time, the percentage of systems software for Computer Sciences in New York City was larger than it ever was after that. Part of the reason for that was that Larry's background was in systems software so that was the type of work his branch got. The perception was that CAI did commercial software and CUC did systems software although they both did a bit of both.

  During the first half of the 1960s manufacturers were trying to flesh out their operating systems and compilers and all the systems tools they needed. But by the end of the

1960s with the 360 having become so prevalent with its standards, the burgeoning of applications programs took over. At the same time the "Seven Dwarfs" (Control Data had been added to the mix by then) started to disappear so that some of the equipment manufacturing customers weren't there any more for Professional Services business.

- Introduction of the 2260 display terminal – Lee Keet felt that this was an important event because the user departments could use the system directly. As a result, access to functions moved outside of the computer center to the user departments. Many user applications were demanded and developed once IBM introduced the 2260 in 1967-68. That created a whole new market for programming. That was the whole market for turnkey systems inc because they did online programming.

- Database and Communications – Bob Patrick said that in the mid to late 1960s, database and communications first came into play. The big 360s were delivered in 1966. While he was working as a consultant at Rockwell, they put in their first IBM system. It had tentacles all over and that was what got the Apollo space capsule built. Then the Sabre system that had been developed on the 7094s was switched to the 360. That was the beginning of the implementation of major systems based on communications along with databases.

  The earliest use of IMS was in 1968-1969. The evolution of communications software went back before IMS with Intercom being one such package. These products facilitated applications but control of the data bases that had to have many access points was one of the key applications. The applications that controlled the Apollo inventory looked just like a banking application. If you looked at the flowcharts, the configuration would be the same.

- Introduction of Clones – RCA started producing IBM clones in the 1960s; Spectra started in 1965. Schoenberg noted that companies that were competing with IBM, RCA and Honeywell for example, had to clone IBM software (assemblers, compilers). They contracted with Professional Services companies to get former IBM programmers to do their systems development. AGS had a huge amount of business doing this type of software; they probably wrote 15 assemblers. The 360 introduced an increase in the need for software for the computers themselves and the equipment companies competing with IBM didn't have the resources to do the necessary programming themselves. CSC, for example, had a large amount of work in the early 1960s doing systems software. They did the UNIVAC 3 and in fact there were two totally separate versions of UNIVAC 3 system software packages; the first was done by UNIVAC, the second by CSC.

  Bob Patrick said that when the 360 came out with a large amount of systems software, the Seven Dwarfs tried to compete and that caused a surge in software requirements.

But there was a lot of ego in the Seven Dwarfs and the hardware guys couldn't resist fooling with the compatibility. Bill Lonergan was the epitome of an egotist because he screwed up the compatibility of the RCA line and basically killed the company. But he almost had it right. Amdahl came later and didn't make the same mistake and it worked.

- Timesharing – Timesharing had an effect on system design and applications. Bob Patrick felt that timesharing had a negative effect on the ability to get projects done because it sopped up a lot of the programming talent that could have been used elsewhere.

  According to George Trimble, CUC wasn't expecting to get any great return except for being paid for its people and refused to get into timesharing as a business. They felt it was not economical since communications were too expensive and response time was too slow for the users. Everyone was going into the timesharing business but CUC saw it as a loser, and it was. They knew it was a "flash in the pan."

- Leasing – Leasing enabled companies to get machines for less money so it contributed to the wide proliferation of computers. IBM pricing on the 360 led to a lot of leasing. A number of companies went public and raised money for their leasing portfolios in 1967-68. But the 1969 crash killed off most of these companies and they went out of business. Sol Steinberg with Leasco discovered the pricing spread in IBM's rental policy and he invented the business. Burt Grad reported that people in IBM were driven crazy trying to figure out how to legally get rid of the leasing companies since they were not providing any added value. In the 1970s IBM worried about the Japanese and the clones, but in the 1960s the big issue was the leasing companies.

- Availability of public investment funds – ADR went public in the early 1960s. CGA went public in 1969 and took in $300,000; AGS went public in 1968

- IBM's Unbundling of Hardware and Software Services in 1969 – IBM unbundling created an environment where it was acceptable to use outside services because IBM was no longer giving programming away.

  As an interesting aside, as part of the unbundling project, IBM conducted a comprehensive study that showed that there was relatively little programming being done by IBM system engineering personnel. But after unbundling went into effect, the previous use of IBM system engineering programming was shown to have been quite large. Many believe that David Kearns, the man who ran the system engineering study for IBM, lost his IBM future over that. He had been on track to be president of the Data Processing Division (DPD) but when he did the study, he had been lied to throughout the company. It turned out that well over 10% of IBM's US systems engineering time was devoted to programming work for customers during the 1960s.

Ed LaHay said that prior to unbundling, IBM in Canada did what they needed to do to sell machines. That meant that they gave services away to make the sale. But in the Systems Engineering and Service Bureau part of Canada they sold professional services to build software applications. Once the customer bought the machine, they sold services to have applications to run on the machine.

- The 1969-70 recession – This coincided with the IBM unbundling which actually had a positive impact on the Professional Services companies. IBM didn't train programmers for free anymore and most companies wouldn't train their own so there was almost a half generational gap in the availability of programmers. This led to a large opportunity for Professional Services companies.

  However, the recession also had a negative effect since there was very little commercial contracting work available during this period. In fact, one of the participants remembers that as he sat in his office one day, he heard that PMI (a competitor of his company) had received a contract and he felt happy about it because at least someone had bought something.

Company Startups

Bob Patrick felt that the field changed in the 1960s in that companies that were doing projects under contract, supplying bodies, saw whole new segments of the business. Harry Markowitz (CACI) and John Postley (Informatics) each saw this and went after them; they made successful pockets of business that had a different focus than just being a body shop. Markowitz was later voted out of CACI because he wanted to focus on the product Simscript but Herb Karr and the others wanted to sell big contracts to federal and state governments. Still, more new body shops were being established in the 1960s.

Patrick added that PRC was another spin-off from the Rand Corporation. The people who founded it had almost identical backgrounds to some of the founders of C-E-I-R. They all had PhDs, they were all academically oriented and they were all skilled at the higher systems design level; they were not programming oriented. But when they got contracts, they were forced to go into the programming business. They hired many SDC and Rand people and people from the west coast aerospace industry to provide programming services, first for their military contracts and then for their commercial contracts. They actually did a hotel reservation system one time in competition with CSC.

ACT was formed in 1962 and it existed until the early 1990s. Oscar Schachter reported that it did both military and commercial work and its philosophy was to be a general supermarket of computer services. ACT provided professional services, education, data processing services and systems software; they worked with manufacturers to produce operating systems and compilers; they worked for Lincoln Labs and Mitre and other companies doing scientific

programming including work on missile systems. And they also operated as a service bureau and did processing services work.

Lee Keet noted that IBM's introduction of System/360 in 1964 unified the platform for the purposes of program development. After it was available, there was a real shortage of programmers because it was the first commercial multi-tasking/multi-processing system. Before the 360 the Univac 1108 and other machines were sequential batch processing machines. The 360 opened up a level of complexity that couldn't be satisfied by the staffs in most user companies. By 1967, when turnkey systems inc was established, there was such a shortage of qualified programmers that tsi went into the business exclusively to provide high level custom contract programming support for the 360. There were a lot of other companies that started that way. They were selling projects, not people.

Informatics had $17,000,000 in total revenue in 1970. $10,000,000 of that was from professional services. At $40-50K per person, this meant that Informatics had about 200 people in professional services. For many years, Informatics was the largest software company although its revenue was based on a mix of processing services, software products and professional services. Informatics acquired Computing Technology Inc. (CTI) in 1968.

Jay Goldberg started Software Design Associates (SDA) at the end of the1960s for a practical reason. He was working for Auerbach and they were charging Equitable Life $300/day for his services but were paying him only $15,000 a year. This seemed like a business he could do and he set up a company first called Systems Discipline with a partner who had a contract with the City of NY but they had a falling out and he and the other partner left to form SDA. They were financed by a small NY-based public software company called EDP Associates that had gone public in the 1960s, raising $425,000 in capital. EDP invested $25,000 to help them start SDA.

Markets and Competition

The NY metropolitan area was a big focus for the early Professional Services companies. One reason was because that's where the customers were. For every one Chicago company, there were 10 in the NY area. The main users of programming services were companies where the computer was their factory (not like the manufacturers) such as banks, brokerage houses, insurance companies, telephone companies and they were mostly in and around NY. This was a large market of early adopters. In addition, Hartford, CT was the main center for insurance work.

The Professional Services companies didn't feel much competition from small independent brokerage-style companies until the mid 1970s. There were more independents in the UK than in the US in this period. Grace Gentry was the founder of NACCB (for services brokers). The

members were many small services companies around the country that provided services but they were small independent companies of 1-3 people and the contracts weren't that big.

Most of the Professional Services companies did project work; they were not just body shops. The leverage for these companies was in taking responsibility for projects. Informatics had permanent employees. When a project ended, Informatics found another place for them.

In most cases, companies kept accounting records and information for time spent by project so that they could cost the project. Although AGS kept records by project so they could bill the customer, it was not until considerably later that they had someone responsible for supervising groups of employees on specific projects. Only later did they have non-technical support people aligned with projects. Other companies didn't add non-billable project management staff until the mid-1970s. Before that time they primarily had fixed priced projects with relatively few people and they didn't need to manage the staff as such. At ACT, every week, everyone who worked on a project had to produce a project report that went to upper management detailing their exact tasks and what next week's tasks were and where he/she was against schedule.

Large companies that had a lot of software development were banking and big insurance applications plus AT&T billing. These were the applications that presidents and vice presidents discussed on the golf course and said, "We've got to have that!" If companies had one of these applications up and running and were successful, their competition knew they would get their lunch eaten.

Recruiting

Where did companies find programmers? AT&T trained all of its own programmers. There were among the very large companies that had massive training programs and the people had to stay for 18 months. Then they would leave because AT&T would bring in a wave of new people every year. There was an enormous amount of training being done by big companies in those days. AT&T's pay scale was lower than at Professional Services companies because AT&T didn't value the programmers that highly; but Professional Services companies could bill programmers out and get more money.

Finding good programmers was often difficult. ACT was in same building as CAI at 555 Madison Avenue in New York City. CAI had a computer room on one floor and programmers on another floor and ACT watched for people going up the elevator with stacks of cards in their hands. ACT people stopped them and asked them who they worked for and then suggested they come upstairs to see what ACT did. They got a lot of people that way.

Professional Services at Decade's End

As of the end of 1960s, some of the largest professional programming services companies were:

- CSC
- CUC
- PMI – they had much government business
- Informatics
- SDA (with 25 people)
- AGS
- CACI
- Cap Gemini Sogeti (HQ in France) was the largest professional services company on the continent in 1960s. They worked in all of Europe
- PRC with several hundred programmers

The end of the decade was a real turning point because of the convergence of IBM's unbundling and the recession. Because of the recession, there was very little commercial programming being done at this time. However, government work was a very significant percentage of the programming work going on in the late 1960s and companies like CSC, CACI and PRC blossomed during this period because of their large focus on government contracts.

There were a number of pioneering, landmark applications in the 1960s that now seem like real monuments in the history of IT:

- Point of sale (Scott Larkin) and bar codes
- MICR/ERMA coding (Bank of America)
- PARS/SABRE – online reservation systems
- Online banking, including teller and back room. John Diebold did online banking in NY State using 2740 terminals
- Big insurance applications
- AT&T billing
- Manufacturing control applications

The 1970s

There were a number of key events at the end of the 1960s that helped increase the number of Software Products and Professional Services companies as the 1970s began:

- Software products were now being sold. IBM announced 17 program products, priced them and said they weren't giving away any more programs except for operating systems.

- IBM said there would be no more free System Engineering services except for selected activities. There would be no more free programming. This was relatively well enforced after 1969.

- Education, maintenance, field service and custom programming were no longer free from IBM; they were being charged for.

- The ratio of computer cost to programmer cost was changing. Ed LaHay remembers that in 1966 they used to rent out 7044 hourly machine time at 1 1/3 times the monthly salary of the typical programmer; they rented out 7044 time at about $800 an hour while they were paying programmers $600 a month. But by the end of the 1960s that ratio had changed significantly so that clearly opened up an opportunity for business.

Value of Professional Services

During the 1970s, there was beginning to be a transition from custom programming to packaged applications. While IBM was still giving away its software in the 1960s with Type I and Type II and Type III programs, as a practical matter, it wasn't viewed as real software. At some point things started to switch over but at the end of the 1960s there still wasn't was very much packaged software available. The breakthrough came in 1969. The sheer number of applications desired increased dramatically but there were no applications packages to satisfy those needs. So everything was being done on a custom or semi-custom basis.

According to Larry Schoenberg, at this time, people were suddenly seeing the value of programming services. Most programming schools were turning out relatively poor quality programmers, not necessarily because the schools were poor but the quality of the students was poor. So now the customers had the perception that they could pay for these services. You had an IBM pricing umbrella. It was natural that you would have a tremendous dearth of people to do programming. The recession really was a double whammy in that for the first few years no one was training their people. You had a higher acceptance on the part of the customers of the need to pay for programs, because of lower supply and less training.

Although a lot of companies went out of business at that time, it wasn't because of lack of work. There was a huge increase in demand although different companies saw it at different times. AGS saw it in 1972 while CGA didn't see a pickup in demand until 1975-76.

In the early 1970s there was no venture capital money and people didn't have cash or public equity to buy companies. Although there was the general perception that the services businesses weren't worth anything because the assets could walk out the door, people in the business were willing to pay because they knew this wasn't true. It was only people outside the business who thought this was so and made it difficult to get outside financing.

Earlier in the 1970s, CGA had a lot of conversion business for companies that were running applications on RCA and Burroughs equipment that wanted to switch to IBM equipment so they needed to convert their applications. They got a lot of that kind of work during the period when there weren't a lot of new things going on. They were doing straight batch conversions. CICS conversions started going on in the later 1970s.

Changing Business Models

From 1967 to 1976, tsi ran one division that did custom contract programming. The projects were all fixed- fee projects of 6 figures or bigger. At end of the 1960s, there were so many computers and there was starting to be so much standardization that tsi started looking toward turning their projects into programs for reuse as products. At that time they were still running custom contract programming for customers. But it was obvious to them at the end of this period that there was a lot more money to be made in standard products that would be sold competitively. At the beginning of the process, they didn't have a clue that there was a software products market.

MSA was originally a professional services company. They later opened up a lot of branches to sell packages and they went bankrupt. When they brought in John Imlay they had a couple of products as a very minor part of their business and they had a whole lot of services going on including such ancillary things as interior decorating services. Imlay just cut everything out and said they would only do products. That was in about 1971.

The 1970s were characterized by the sense that almost all of the Professional Services companies didn't like the business and tried it get out of it by moving into other businesses. Other than PMI, of the maybe 15 companies Informatics acquired in that time frame, all were niche companies in specific application areas; the common thought was they had to get out of professional services.

Jay Goldberg felt that if you look at the demise of many companies, most of the companies that failed went out because they were in other businesses that sunk them. The classic case is CAI.

CAI had one of the most robust professional services businesses in NY and they started a business called Speedata where they were going to have warehouse data collected from supermarkets and sell it back to the grocery producers like Kraft. They spent enormous amounts of money and it drew them under. Spiradellis was doing facilities management in Texas and it wound up sinking them.

Many of the Professional Services companies opened up products businesses or they became OEMs or VARS. They tried as hard as they could to get out of the business that was their bread and butter. Some of them survived that process and went on to become bigger professional services businesses although many others failed.

For example, Information Sciences blew up because they got the exclusive right to market Fujitsu computers in the United States. Instead of it being the coup they expected, it brought them down. Most companies when they went out of business were not bought; they just closed their doors. Spiradellis was bought but it was a fire sale.

Many of the 1960s companies were gone by the end of the 1970s. Auerbach was gone; ACI was greatly diminished; ASI was gone, PMI had been sold and Comress had become a products company with a simulation product.

Of the companies that continued to succeed, CACI was doing fine in the 1970s, CSC was doing well, Computer Dynamics was doing fine; MSA had turned into a products company and Analysts International was and is still independent. But a significant percentage of the Professional Services companies that were active in the 1960s closed up shop – not because of the professional services business, which was very robust, but because of their entry into other businesses.

In the 1970s, ADR switched from services to become a products company and by the end of the 1970s, they were primarily a products company although they still had a government services component. Another company, Compuware, started a services business in around 1972 or 1973 and then became a products business. It is now a billion dollar company.

In the 1970s the professional services business wasn't growing but for some companies it was still their bread and butter. Even though there was an attempt to get into the new, sexy areas, it was realized that professional services was paying for these expansions. Although the companies felt pressure all the time, many of the founders continued in the area and started new companies in the 1970s and 1980s.

The professional services business was very different from a products business. tsi's first attempt to move into products was based on a project that they were paid to do by the Burndy Corporation. According to Lee Keet, they got the idea to make it into a software product and

they took it out on the road, hired guys to try to sell it and discovered very rapidly that they didn't know the first thing about making a product. The software hadn't been documented properly, it wasn't generalized enough, it wasn't packaged properly and there was a large capital investment required in getting a software product out the door. A lot of what happened to the Professional Services companies is that they walked blindly into this golden land of opportunity without realizing that going from services to products was not simple. In addition, services has a low barrier to entry. A lot of people could get into the services business without a lot of capital. But you couldn't get into the products business, even back then, without enough capital to sustain the company while the market was growing. There were two entirely different financial models for these two types of businesses.

The 1970s were a transition period and a lot of things changed during that time. The market was changing, the nature of the work was changing, and a number of companies felt that professional services wasn't the place to be.

Bob Patrick saw a maturing of the clients. Prior to the 1970s transition, the clients were often old financial people and they definitely knew how they were going to run the business. They had set reports and they didn't want a single field moved on any of the reports and they didn't want a single definition changed; they wanted you to do it their way. That required major changes to the packages. But somewhere along the line, the customers matured enough to where they seemed to understand that if they wanted it just the way they always had it, they would have to pay a great deal. They started to question what was really important; was a specific missing feature really important to their business? If it was not, they asked how much cheaper could they get it. That affected the sales and the delivery.

Another thing that was changing was that in the 1970s you were dealing with the departmental people and the focus was just on getting the resource to get the project done. But then things started to change. In 1978 Barry Goldsmith went to his first meeting with Bell Labs where the client said he wanted to take the people but they had to first see the purchasing agent. This is something that started to happen only at the end of the 1970s. There was more competition and the clients started getting leverage over what was happening.

Application and System Specialization

Anderson had a special situation because of their audit business. ADAPSO tried to make Arthur Anderson get out of the professional services business, along with trying to keep the banks from being able to sell payroll services. ADAPSO fought hard during the 1970s to make this happen. Later on there were some companies with mystique in scientific or technical areas doing professional services work. But that didn't seem to be true in the 1970s.

However, in the 1970s there were a few companies that developed a cachet and had a special niche that enabled them to command premium prices. For example, there was a utilities software company in Chicago called that had real cachet because it only worked with utilities. Every utility company in the country knew their name and they sold their product at a very high premium.

AUXCO had a premium business with premium pricing because of their position. They did all the Telcos and they developed a cellular billing system. They had a project methodology before all the rest of the companies did. They would go into the big companies and sell professional services around their methodology. They did a good job of marketing but then they tried to chase the high margin business, spent money on infrastructure and a lot of other things like great offices. They had a couple of bad years, they threw out one executive and they brought in a man named John Francis who ended up going to jail for tax evasion. They then moved the business to Orlando and then were bought by Cincinnati Bell. They focused on telephone companies mainly because they had a strong cellular billing system.

Monchik-Weber developed an expertise in Wall Street and Hogan developed a specialized business with banking software during the 1970s. However, Hogan was an example of a company that did well as a professional services company but then went into products and failed.

Equimatics (Informatics) did successful professional services business in the 1970s in the insurance industry. They had contracts directly and then they bought a company that had a product. After that, the company continued both professional services and products.

CGA had a contract with Blue Cross to do claims processing systems where they got a share of the product and they marketed it (with help from Blue Cross) to all the Blues across the country. Blue Cross got most of the software revenue but CGA got most of the services revenue. That helped the company start selling services in other locations.

SAP was getting premium prices for their consulting work on manufacturing control applications.

ACT was kept alive for 5 or 6 years doing a logistics system for the Iranian Air Force. At one point, they had 60 people in Iran and it was a very profitable high margin business. They continued doing work overseas for Honeywell and Olivetti.

Another company with a special expertise was American Management Systems (AMS). They developed an expertise in municipal finance systems built around NY City and others and were able to charge premium pricing in the government market. It was run by Charlie Risotti who wound up as the commissioner of the IRS years later. One company had developed a tax system for the City of New York under Lindsay and Risotti came in and grabbed the business.

Informatics had two big professional services operations: one was a government services operation with secret stuff in Omaha and NASA AMES and Don Toy had an operation in the US and in the UK. Professional Services was a big part of Informatics' business and it made money for the company.

Early on, there were applications analyses and systems analyses that were mature and had been performed by mathematicians over decades, but there wasn't the computing power to process them. When Bob Patrick was working on the General Motors assembly and test proposal against Boeing, they took equations out of the British Interplanetary Journal that were 30 years old. They took that information and adopted it and automated it. Some of the 1960s applications were just ripe for plucking. When you look at a basketball court filled with 5-drawer files filled with punched cards and each one is one insurance policy, it just cries out for a better solution. But in the 1970s, all the easy things had been done. Companies had to do hard systems analysis to come up with new applications and some of them were quite large, like Sabre was in the 1960s. The implementation of UPC codes on the back of all products was not a small application; you revolutionized the world when you did that. Companies were into these larger things because all of the easy things had been done.

At the end of the 1960s with CICS, IMS and the other database/data communications systems available, you suddenly had the option to do online applications. These were much more complex to build and were far more powerful; it was a whole new generation of things. This was a great opportunity for the Professional Services companies because there were no packages available that would do the applications.

Although many of the successful products companies in the 1970s were data base management companies, MSA, Pansophic, McCormick and Dodge and other companies did have application packages. During the 1970s, the applications moved from the back office to the front office. In the 1960s, everyone was automating their AR, AP and other accounting applications that were migrating from tab equipment to the 1400s and then the 360s. With CICS and IMS, it allowed them to look at front office applications and because it was new, there were no packaged solutions. So SDA started doing claims processing systems and other applications that were more difficult and more complex and for which there were no packages.

There were a number of companies that were offering insurance products, banking products and others that were just starting to evolve as packages. Professional Services companies were doing one-offs. The mentality of the time of the customers was that they weren't going to change their business to work with a standard application package; they wanted to have a custom product because that was what they were used to. But that certainly changed.

Data base management systems products were much more successful than many application systems products. One of the reasons was that the success of the data base management systems in encapsulating the complexities of random access and other functions meant that it

was much easier to write applications on top of it. Companies didn't have to face the same challenges as the Sabre system did because the hard stuff was generalized which meant it was economically viable with an affordable level of programmers to do the custom applications.

Oscar Schachter felt that the growth of minicomputers in the late 1970s made possible the implementation of departmental applications rather than just corporate-wide applications. This provided opportunities for the Professional Services companies. ACT implemented a payroll system for Pinkerton at the end of the 1970s. They installed Data General minicomputers in each of their more than 40 branch offices around the country. They were used to aggregate all of the time worked information for their guards and then sent it to a larger DG minicomputer in New York to produce the payroll. Putting the system together at that time, with communications being what it was, was extremely difficult. But there was a lot of work generated around branch office applications rather than centralized applications.

The minicomputers produced a lot of body shop business for some of the Professional Services companies. CGA started an applications software company in the mid-1970s with a vertical (industry) focus but it didn't make it. AGS bought a business in Boston that had a whole group that did System 34 work and it was very successful for AGS. It kept a lot of people very busy and this was important because in his business, moving people from 90% to 100% utilization was very significant relative to their profit margin. But what often happened was that they could take the same people, cross train them and move them up to large scale systems and make more money because they could then charge a higher price for the same service.

In general, it seemed that work on the minis generated less money than larger systems. It may have been that it wasn't all about the billing rate but it may have been about the sales effectiveness.

But none of the Professional Services companies made a lot of money in the mini area. The small departmental computers were just as complex as the large ones. But the customers looked at the cost of them and said they weren't going to pay a month's rent to work on their application. They said they would get cheap people because they had a cheap computer. After they dumped a lot of money that way, they were willing to pay to get some real talent to come and straighten it out.

Informatics tried it with System/3. They bought Ferguson's small company and terminated it relatively soon because clients just wouldn't pay the bill for what was required. Clients for years wouldn't question any of the charges for work done for the large computers. But the same clients looked at every penny when the work was for the minis.

SDA had an expensive sales resource. It made more sense to allocate that sales resource selling to a Blue Cross/Blue Shield or Bell Labs for a mainframe application that could employ

20 programmers than to go after a DEC departmental computer in a small area of a company that would employ 3-4 programmers and would take the same amount of effort to sell.

Geographic Expansion and Acquisitions

Many Professional Services companies closed shop or were bought during the recession of 1969 and 1970. However, sometime in the early 1970s there was starting to be a large geographic dispersion of companies using computers and there was a real gap in the availability of qualified programmers in the early 1970s.

PMI was started in 1975. Werner Frank knew George Langness and he called on him in NY not knowing anything about the company at the time. It turned out that PMI was in shambles; it was mismanaged and they were losing money. The company was owned by General Telephone and GTE was interested in selling them but Langness didn't know that yet. By the way, that's where InterCom came from. Werner went back to Walter Bauer and told him about the meeting with Langness and said Informatics should go after the company and they did. At the same time, Langness tried to do a management end run to buy the company back from GTE while Informatics was negotiating with GTE. That's why Informatics got rid of him when they finally bought the company; in fact, they wiped out the whole top management team but kept the second layer.

Langness might have sold it twice before and bought it back and then sold it again. PMI at that time was a $14 million operation and Informatics bought it with no money changing hands and in fact they actually got some money from GTE because they owed Informatics some money. Informatics cleaned house quickly and turned the operation around.

CGA did their first acquisition in 1975 of a services company. They did a product acquisition which they eventually sold to Werner Frank. Allen Services was bought in 1981. They did a company called Packmaster, a DB2 product, they bought a government services company in 1975 called Cytran. They were actively acquiring companies in the late 1970s.

One of the significant factors during the 1970s was the geographic decentralization of computerization, especially away from the NY City area. Companies had to start chasing their clients and it was very important to get capabilities in the places where the clients wanted it. AT&T was clearly a dominant customer of almost every company. They put out a lot of work in places like Chicago and Denver.

Another thing that happened in the 1970s was that Bell Labs started the BIS project where they hired 100 or 200 consultants for a five-year period to build one system for all of the AT&T operating companies. So as companies went in there and developed a specialty in BISCUS and

other applications, they would deploy them in Mountain Bell, Chicago Bell and others. So that led to a lot of geographic expansion.

When CGA expanded, it always started new in each location. They opened up 8 or 9 offices and never bought a company to open an office. CTG had a big training operation and they basically built their own operations in each location.

CGA went out and bought 4 or 5 software products businesses and by the time the company was sold, 50% of the business was in software products. Barry Goldsmith doesn't remember that professional services was a great business and felt that it was a tough business in the 1970s. It was very competitive. Every time you went to a bidder conference, all the other companies would be there as well.

During the 1970s, the Professional Services companies expanded internationally. PMI had business in the UK in the 1970s, SDA opened an office in the UK in the late 1970s and AGS opened an office in London in the mid-1970s. CGA opened an office in the UK in the late 1970s but just for recruiting. Informatics was operating overseas relatively early in the 1960s with two kinds of businesses. One was professional services primarily in the Netherlands with about 10 people and offices for products in London, France, Germany, Switzerland and Scandinavia. Computer Science formed a joint venture with Phillips in Europe.

In the 1970s, the Europeans weren't competing with American companies in the professional services arena in the United States.

CGA bought one professional services company that got them into the government business and all the other expansions in the services area were done by growth. They generally didn't buy Professional Services companies.

The professional services business as a whole was dramatically larger at the end of the 1970s than at the beginning of the 1970s, in spite of the growth of the packaged software business. Companies were as much as 15 times larger at the end of the decade. Geographic expansion was generated organically, not through acquisition.

The computer geniuses in the colleges and universities got focused on the languages and on techniques for proving that software would work and on testing, but there wasn't very much in the literature or R&D in building generalized applications that could be readily customized. OS/360 came out with a whole back-end package called Sysgen. What you fed into Sysgen was a table of your hardware and software configuration and it produced a running system. This type of solution wasn't translated over into the front-end applications. Front-end applications were produced by programmers with coding pads and someone else telling them what to do. There

was a big gap in that there wasn't a big backlog and there weren't the tools that made it possible to get the job done quickly so you could show it to the customer for his feedback.

Larry Schoenberg felt that when you moved to the front office, you had people with a lot more money to spend. At that point, the gross margins improved because you could charge more. In theory, packages produced a quick solution. But in practice, unless you had a really advanced product, customers could see accomplishments faster in a custom solution. The period was characterized by people who were willing to pay more and they had no tolerance for time delays.

Although gross margins increased at that point, net margins decreased because companies increased the levels of overhead in terms of management levels and HR staffs.

According to Lee Keet, another factor that was significant was the specialization that happened around the products and it happened in professional services. And that's a trend that has continued until today. For example, SAP required a lot of support. Firms started to recognize that customers wanted packaged software but getting it installed required specialists in IMS, CICS, SAP or other areas. Companies ended up in specialties in professional services to help get these products installed. This was one of the major reasons for the growth in the business. It's also what attracted the Big 8 accounting firms at the time.

The Equimatics/Informatics Story

In Informatics, life continued in the early 1970s because of big government contracts that didn't subside, although they weren't doing a lot of commercial projects at that time. But one of the indicators of what was going on was in a deal Informatics had with the Equitable in 1971. The law in NY State changed with respect to what insurance companies could do and could not do. Prior to that, insurance companies were limited to insurance business. The law changed in about 1970 and it let insurance companies broaden their scope into general financial activities.

The Equitable, being the 3rd largest insurance company in the US at that time, decided to take advantage of that. They wanted to leverage their huge in-house data processing capacity and their national communication network, thinking that they were going to become the giant in this field. They wanted to make their communication network available to other insurance companies and any other company that wanted to use it. In those days there were severe restrictions on what you could do and could not do with a dedicated line. There was a jurisdictional issue with AT& T Long Lines that had to be overcome.

That was one side of the economic fence. The other side was they were very dependent on data processing to run the business. They couldn't hire enough programmers and they were afraid they were going to lose people. In 1970-71, they decided to associate themselves with a

large software company. They came to Informatics to see about buying it but Walter Bauer didn't want to sell and said, "Why don't we do a joint venture instead?" Equitable agreed to look into that. Werner Frank was the Informatics representative and for a 6-9 month period in 1971, he was essentially located in New York City at Equitable's headquarters putting together the business plan to create a new entity that would ultimately become Equimatics. He became president of Equimatics with the intent of doing what Equitable wanted which was leveraging their in-house capacity through this subsidiary. The Equitable owned the majority of the subsidiary and Informatics owned the minority interest. This was an example of the broadening of the scope of American business in an attempt to get into the business of data processing services and supplying people.

Equimatics was going to do three things:

- Custom work: The first contract was with Home Life for half a million dollars to do a back office life insurance system.

- Services: They were one of the first to get an IBM 360/145 to be a service center and build a network through the Equitable.

- Products: They bought USI in Dallas which had an insurance product.

Within 2 years, Equimatics was an ongoing business of about five or six million dollars in revenue.

In the meantime Informatics had hit a roadblock and their stock tumbled around 1973 and that was the opportune moment when Werner Frank went to the Equitable and said, "Let's buy Informatics and fold it into Equimatics. They did that and then changed the name of Equimatics to Informatics.

So Informatics truly became a private company and ceased to exist in 1974 and Equimatics which was founded in 1971 was the continuation of the Informatics company. At that time, Informatics was private. The original Informatics was bought so it disappeared. The new Equimatics which was named Informatics went public when Equitable sold off its holdings. So the rebirth of Informatics which was later called Informatics General was really the Equimatics company.

Valuation of Professional Services Businesses

Larry Schoenberg felt that AGS got more money for its small products business than they did for the professional services business. It was a stock market phenomenon since they were all

public companies. The valuation of Professional Services companies in the 1970s and well into the 1980s continued to be a very low multiple compared to the revenues or the profits.

CGA sold at what was considered a premium value at 50% of revenue. But products companies were getting 2 to 4 times revenue. The reason for the low valuation was that there was fundamentally no leverage in the business. They were consistently profitable businesses. Return on equity was really good, but return on sales was relatively poor. In terms of running the business, this didn't matter, but it mattered to the buyers. If you look forward on the earnings and do a discounted cash flow on what the value is you're going to come up with .5 or .75 times revenue on the business. It's the nature of the business that keeps the value down.

Return on capital is almost identical in a products business as in a professional services business and the product distribution business. How can this be? Different reasons, but they all produce approximately same return on investment. But none of the buyers cared about that because they were public companies and they only cared about accretion/dilution; they didn't care about ROI.

This was true because it was not a balance sheet business so people didn't care what the return on assets were. They didn't look at these companies like a bank or a company with high inventory; they were trying to get leverage in the stock market to get a higher value on their stock and net worth for themselves and the stock market rewarded on a P/E ratio. So they looked at what would generate higher earnings and revenue for themselves. It was not an 8% margin business.

Every company that got out of the professional services business and into the products business did it for two reasons: one was the expansion of computers which said both to those running the professional services business and to the marketplace that this market was going to expand after the development costs were sunk. This meant that the low variable costs of distribution and support were going to increase the profit margins as the market grew. And secondarily because of the external forces; they were getting big multiples because if you did the discounted cash flow in the growing market you'd say these businesses were worth two times revenues, not one half times revenue.

Everyone also felt that the professional services business couldn't grow at the same rate as the products businesses. You'd go to the analyst meetings and everyone would say, "Why are you in the services business when your software business makes so much more money?" It had no allure or attraction.

When Larry Schoenberg had analyst meetings at AGS, he would try to point out that almost everyone in those days who was in the products business preferred to buy products rather than make them. He felt that the reason for this was that no one accounted for the failures; everyone

always talked about the results of the successes. He concluded that if it's true that it's cheaper to buy than to make, then maybe it's not really true that the products business is a better business. And the answer is that the products business has more leverage and therefore you might argue it has more potential. But it also has more risks and that was the other side of it. So if you add up all of the products businesses until 1985, probably they had a total profit of zero. The market only looks at potential upside; it doesn't look at risk.

The 1970s were an odd period. There was no public market for any software companies; Cullinet, a software products company, was the first one to go public (in 1978) since the 1969-70 period. Even by the end of the 1970s, almost all of the Professional Services companies were relatively small. With a couple of exceptions, the software products companies weren't very big at that time either. The professional services and products companies were together in one section at ADAPSO. But something dramatically changed at the end of this period.

Reasons for Success or Failure

The Professional Services companies that stuck around made money. If business was slow, they had to let go of people but they made money consistently and they grew reasonably. But software products were a hit or miss business. Some were tremendously successful but an awful lot of them failed. If they had a bad product they didn't go anywhere. Although a lot of Professional Services companies failed, they didn't fail at professional services; they failed at the transition into products. A few companies succeeded, like CGA. SDA made three false starts, maybe more; AGS struggled; Dave Campbell had a whole series of false starts at Computer Task Group; but all of them persevered in professional services. The guys that really rolled the dice in other services, like Spiradellis and CAI, failed; they went out of business. There didn't seem to be any company that failed at professional services.

It seemed that it was relatively easy to succeed fairly well but difficult to succeed spectacularly. To succeed, some firms tried to establish some type of image or mystique that would help them sustain a high margin. That's what all companies strived for. Arthur Anderson Consulting was a company with a franchise; they were able to do that and everyone else tried to emulate that.

George Trimble felt that in the 1970s it was increasingly difficult to get projects. There were more and more general purpose application software products on the market. More and more, companies could take one of these products and adapt it for their own business. This resulted in a shrinking market in custom contract services. Many felt that CUC was well respected by its competitors for its ability to produce quality programs. Maybe they weren't selling what the customers wanted at that point in time because there was a lot of staff supplementation going on in the 1970s as customers developed management skills in their own operations. If you were trying to sell project control, project management and solutions at a time when the market was just trying to find people, then that might have been part of the reason for their decline. Statistically, the market was growing at a fairly rapid rate for most of the 1970s. Others felt that

CUC was where other companies wanted to get. CUC was the class act of the late 1960s and early 1970s and then it just seemed to go off the radar screen.

To try to tie these things together, there were low capital barriers to entering the professional services business. But what organizational structures separated successful companies from the unsuccessful ones? Jay Goldberg felt that it had a lot to do with sales and marketing. Like any other technology business, if you had a good sales people and a decent message, and you called on the right customers, you wound up being successful. It wasn't a very complicated business. That was one of the reasons many of the companies tried to get out of the business because it didn't get the grey matter going. It was more like blocking and tackling. Supplemental staff was a lot of the business by the end of the 1970s; it might have been as much as 80%.

Larry Schoenberg felt that at this time, the clients were starting to look at more and more suppliers because they had had a lot of bad experiences. This reinforced the sales and marketing issue, it reinforced the positional issue and it reinforced the view of "geographic-ness."

According to Barry Goldsmith, although there was an element of luck to success, it was primarily the quality of leadership. What differentiated the companies that made it from the ones that didn't, had to do with a certain culture, of setting certain standards in the organization that allowed it to create an organization that could grow from one with just a single salesrep and 20 people to one that had structure and an infrastructure and repeatability. Looking at the successful ones, they were all ones that established a good culture, hired good people and had good leadership.

Werner Frank said that when Equitable acquired Informatics and folded it into Equimatics and became private during the early 1970s, Bauer came up with the ultimately unsuccessful idea that since the company was now private, they didn't need to show a profit because the market wasn't observing the company. Before that they were driven by quarterly performance. But then Bauer felt they could spend money for the future to do the products they wanted. They went on an acquisition binge and bought various niche companies. In the process, the management of the company lost its discipline of looking at their performance and the bottom line. Later, when the time came to go public again, and to become profitable, the company management had lost its ability to produce a profit and the company suffered as a result which ultimately led to its acquisition by Sterling Software.

During the 1970s, while ACT was doing compilers for the government and the Air Force, it acquired a facilities management company. ACT was a very opportunistic company that never stuck with one thing. When an opportunity came up, they grabbed it and very often the opportunities became fairly good but they were limited in scope and duration. The baseline business at the end of the 1970s was the compiler business (the Jovial compiler and the ADA

compiler); this was their bread and butter business. Oscar Schachter didn't feel they were good managers. They were not focused in their business and they didn't have a good strategic plan to decide what the business should be and where they should go or what resources they needed to do the new businesses.

Pricing and price pressure was a major factor that separated the successful from the unsuccessful companies by the end of the 1970s, according to Lee Keet. At the beginning of the era, it was wide open; there weren't many competitors and the rules of the game were simple: if you could bill your people out at 3 times direct cost and keep them off the bench 80% of the time, you would be a profitable business. By the end of the decade the price pressure was intense because there were a lot of competitors. The differentiation was difficult because you couldn't just peddle COBOL programmers at that point; you had to have some specialty and train your people better to differentiate yourself. The management pressures to run a business that had become more complex were greater. Companies that survived did so because they were smarter and had better managers. It had a different characteristic from a business that was easy to enter, where you didn't need to have a lot of money in your pocket to go out and peddle COBOL programmers.

By the end of the 1970s, ADAPSO had become a meeting place for many of the significant players in the business. Most of the independent commercial companies that were in the business were attending the meetings, and the big government services companies were part of the Systems Integration Section. ADAPSO was big in the commercial world. The people in the commercial professional services firms could meet each other through ADAPSO.

During this time the government and the commercial business became two separate businesses with two separate dynamics. The government still continued to be a very high percentage of custom programming contract work while the commercial business was not growing.

Like any other business, the depth of management determined whether or not a professional services company was going to succeed or was going to fail. The same thing happened in this industry as happened in every other industry. Intelligence, management skills and discipline were all essential elements in the companies that succeeded.

Over time, whatever the business is, businesses go to either natural monopolies or to commoditization. The low priced provider wins in a commoditized business.

Most companies didn't start out to be a commodity business; they started out to be a high value added business. As professional services became commoditized, many left the business.

One of the things that differentiated the industry was the fact that it was new. If you look at the early entrepreneurs, none of them had formal business training, unlike in established industries.

There were no internships; people who started these businesses couldn't sit and learn from the masters. Most of the people who started these businesses were in their 20s. Most of these founders had worked for companies like IBM and RCA as a salesman or technician, not as a manager. Very few went through a formal management training program before starting a company. Almost all learned on-the-job.

After serving on some boards, Larry Schoenberg is astounded to see the self-centeredness of today's management. On the other hand, one of the characteristics of the people who joined ADAPSO was that they were willing to share. In Schoenberg's manuscript collecting world, the academics are stunned that he is willing to give them information on what he has and he never asks for something in return. Larry never had a stock option in his own company and never looked to get a large bonus. The point is that he always put the company first. He always asked what would make AGS a better company and was willing to pay the personal price to make it happen. Today that doesn't seem to be true. Today's management seems to feel entitled and see the world as something that should give to them. The difference between success and failure is usually not a major thing; it is one day, one event, one not having spent the last quarter million dollars on something else. A lot of the people that he knows were successful because they really cared about the business. They cared about the people and they took actions commensurate with that philosophy which made them a lower risk proposition.

There are lots of factors affecting an industry. There may be capital barriers to entry, there may be talent barriers to entry, there may be control of distribution channels, there may be specific knowledge of an application domain. There are a whole set of things that could be the major factors determining success. What seemed to be the consensus of this group is that none of these factors came into play. This says something of the nature of the industry.

Ed LaHay felt that a number of the companies he was associated with were not successful because of the ego of one of the principals who put his ego ahead of the business. In addition, he had a more general observation that most of the professional services business that he was associated with started off with one or more opportunities; the companies were very opportunistic. And whether they were successful or not depended on how they handled the first significant problem. If they had lots of opportunities and were making significant margins, it almost didn't matter how the business was managed. But when they got to their first significant problem and didn't know how to deal with it, that's when they went under.

That may be why people say that in the computer software products industry, there were lots of companies that succeeded with their first product but they couldn't do number two. The problem with many companies was that when they had their first successful product, they thought they knew what they were doing. For example, with VisiCalc, VisiCorp thought they knew what they were doing but the second product never made it for a variety of reasons. Lotus Development never came up with a second product after Lotus 1-2-3 until Ray Ozzie came up with Lotus Notes. Many other products failed before Lotus had another successful one.

Professional Services has its own characteristics. Because it’s so people dependent, it doesn’t have the same multiplier that the others do. It’s just a different business.

The 1980s

Business Environment

According to Ed LaHay, IBM protected all of its employees from the realities of business problems. For example, it never taught its employees that they might have to use their credit cards to pay their employees. One of the thoughts at the time was that hiring someone who had been a manager at IBM for his first job after leaving IBM, was the worst thing you could do. He had no idea of how to solve practical business problems because it was all done for you as an IBMer. You might want to take him for his second job, after he failed at his first one; that might be OK.

Competition

The independent contractors were competing heavily by that time. They had a real price advantage in that they didn't have to deduct all the tax payments. ADAPSO companies felt this was unfair competition. The result of ADAPSO's efforts to stop this practice was that they lost the independent contractors from the organization.

Another trade organization was the National Association of Computer Consultant Brokers. These were separate companies that would do the selling and would then turn the contract over to independent contractors. Because these brokers didn't have employees, they weren't paying FICA and other taxes. The brokers were the heart of the issue, not the independent contractors.

It worked both ways. Some companies just had 1099 employees and never paid taxes for them. In general they didn't have any trouble except that Grace Gentry was challenged by California in the early 1980s on the FICA issue. They eventually had to pay a lot of back FICA taxes on one big contract. ADAPSO and the Professional Services companies were not successful in beating back the inroads that these independent contractor companies made.

Temporary services agencies had been placing secretaries and other administrative people at 3%-4% margins that were purely a day or week at a time. They started looking at the higher margin of the information technology services where they could get 8-9% margins and decided to enter that business too. Although some of the earliest companies, for example Automation Sciences, started as a body shop in the 1950s and 1960s, this phenomenon really exploded in the late 1980s or early 1990s.

Although in the 1950s and 1960s, companies wanted project management and other services, in the 1980s, the brokerage business became very significant. By the 1990s, companies that were basically in the body shop business became professional brokers.

A number of Professional Services companies from the east coast of the U.S. went to California and were not successful because California was primarily a temporary labor market because of all the engineering projects. California has always been a body shop, hourly business.

Acquisitions and Consolidation

One of the themes of the early 1980s was that the acquisition process really started. AGS started buying companies in 1981; it bought a company in Boston, bought some others in 1982 and SDA in 1984.

At the end of the 1980s, Lee Keet was buying Professional Services companies for 40 cents on the dollar of revenues. This was in Europe, but it probably wasn't much different in the US. The reason he was able to do this was because of the increased commoditization of the business. There was an opportunity to repackage those businesses by giving them a consistent value added across the territories they served and therefore getting billing rates up dramatically because they'd be working with software products.

Nothing changed dramatically at the end of the 1970s. Companies were on the slippery slope of commoditization all the way down to the point where these companies weren't worth that much. Because you could buy these companies so cheaply, it was possible to put together a pretty good-sized company very cheaply.

By the end of the 1980s, there was a lot of consolidation of companies. AGS bought many companies through the 1980s until it was bought by Nynex in 1988. Implicit in their decision to buy and keep these companies was their assumption that their business would stay. They were looking for geographic expansion and someone younger who could manage the business. SDA bought only products companies; they didn't buy services companies. There was also the purchase of some companies on a geographic basis.

Keane bought a lot of companies including GEISCO and others. ECSoft bought 9 European companies; the whole strategy was European. Updata did 135 service transactions in the M&A business. 88% of the CEOs of those companies were gone within 12 months.

Selling the Businesses

The business of ACT really declined by the end of the 1980s because of the advent of the microcomputer and the fact that there were so few large mainframe companies still standing.

Instead, they focused on the medical systems companies. In 1980 there was a tremendous drive to build new systems in the area of human services. They developed a system in human services and started selling it and were somewhat successful. That business, within the successor to ACT, was a $25 million business by the beginning of 2005 and is now a $50 million business because it acquired its principal competitor in the business of servicing the behavioral healthcare institutions. By the end of the 1980s, they did contact Broadview and CGA but it wasn't an interesting enough business. It was part services and part product and it wasn't attractive to other companies.

AGS didn't consider being bought because no one asked them, but then Jack Pendry came to AGS and said they had a buyer in 1987. However, AGS was destroyed after it was bought by Nynex; it was broken up into many pieces. That seems to be what happened whenever one of the big telephone companies bought professional services businesses. It was very unsatisfactory to have a company become part of a big company like Nynex. Nynex recognized companies like AGS were in an area of business that they wanted to get into and it was a logical extension of what they wanted to do with their customers but they didn't have a clue how to manage these companies. Joe Abrams, one of the founders of AGS, was asked what the biggest difference in the company was after it was bought by Nynex. He answered that he had to buy a bigger trash basket. The first thing Nynex did was they decided that AGS couldn't sell to other telephone companies. Up to that point, Telco business was something like 30% of AGS's business. The second thing they did was put out a contract for implementing their billing system and gave it to American Management Systems. It was very unsatisfactory because they didn't get the jobs they were suited for and Nynex threw out much of the business they were able to do.

In contrast, when CGA was bought by Cap Gemini, it flourished. They had 1,000 people and $55 million in revenue and grew during the Y2K boom to 3,000-4,000 people and $300-400 million in revenue. But it went down when everything else went down in 2001. Bob Sywolski stayed with Cap Gemini America until about 1998-9 and was running the entire US business. One of the factors that made this work was that the purchasing company was itself in the same business as CGA.

Trimble left CUC in 1968. They had started a service bureau business, an educational business, and a communications business that didn't pay off at all. The company went downhill from that point on. They tried operating data centers but they continued to lose money and finally they went bankrupt in 1986. They had 900 people at the peak.

Summary

The reflections of the professional services pioneers about the dramatic growth of the business starting in the mid-1950s to its being a firm part of the total computer services industry is a wonderful story of entrepreneurship, primarily by young people in the United States. While these

recollections stop in the late 1980s, many changes have occurred since then. But that's another story.

There were not any Bill Gates or Larry Ellisons in the commercial professional services business, but a number of these entrepreneurs ended up becoming comfortably wealthy after enjoying long careers in the industry.

Meeting Attendees

Name	Participants	Relevant Company Affiliations
Bill Aspray	Historian	
Glenn Bugos	Historian	
Werner Frank	Pioneer	Informatics and Sterling Software
Jay Goldberg	Pioneer	Software Design Associates (SDA)
Barry Goldsmith	Pioneer	CGA, Updata
Burt Grad	SBHC	IBM, BGAI
Tom Haigh	Historian	
Gardner Hendrie	CHM	
Paula Jabloner	CHM	
Doug Jerger	SBHC	Fortex, ADAPSO
Luanne Johnson	SBHC	Argonaut, ADAPSO
Lee Keet	Pioneer	tsi, Vantive Atlantic, ECsoft
Ed LaHay	SBHC	IBM
Bob Patrick	Pioneer	CSC, Consultant
Jan Phillips	SBHC	DEC
Oscar Schachter	Pioneer	ACT
Larry Schoenberg	Pioneer	AGS
Len Shustek	Historian	
Dag Spicer	CHM	
Kirsten Tashev	CHM	
John Toole	CHM	
George Trimble	Pioneer	CUC, Consultant
Sarah Wilson	CHM	
Jeff Yost	Historian	

SBHC: Software Business History Committee
CHM: Computer History Museum

A Sample List of Early Professional Services Companies

1950's Companies

Adams Associates
ADR
C-E-I-R
Computer Sciences Corporation (CSC)
Computer Usage Company (CUC)
SBC
SDC

1960's Companies

ACI
ACT
AGS
AISC Group
Analysts International
ASI
Auerbach
Brandon Applied Systems (BAS)
CAI
CAP (France)
CAP (UK)
CGA
CGI (French)
CACI
Computing Associates
Computer Dynamics
Computer Horizons
Computer Task Group (CTG)
Computing Technology Inc.
Comress
EDP Associates
Hoskyns
Informatics
Keane
MSA
NSA
PMI
PRC
SAIC
SDA (Software Design Associates)
SDL (Systems Dimension)
Spiradellis
SPR
tsi (Turnkey Systems, Inc.)

1970's Companies

AMS
AUXCO
CIBER
Compuware
Lambda
Monchik-Weber

A Sample List of Early People in the Professional Services Industry

1950's Individuals

Charles Adams
Bob Bemer – IBM, Honeywell
George Beverage
Sherman Blumenthal
Dick Brandon
Charlie Cooper
Joe DeLario
Marty Goetz – ADR
Julian Green – IBM
Fletcher Jones – CSC
Elwood Kauffman
Elmer Kubie – IBM
Dave McFadden
Tom Mott
Roy Nutt
William Orchard-Hayes
Bob Patrick
Bernard Riskin
Herbert R. J. Robinson
John Sheldon
George Trimble
Robert Wickenden
Stephen Wright

1960's Individuals

Walter Bauer - Informatics
Dick Brandon
Frank Casagrande
Shel Dansiger - SDA
John Diebold
Werner Frank – Informatics, Sterling Software
Norman Friedman
Serge Kampf
Herb Karr – CACI
George Langness
Charley Lecht – ACT
Harry Markowitz – CACI
John Postley – Informatics
Tom McDonough
Don Toy – PMI, Sterling Software
Frank Wagner – Informatics

1970's Individuals

Stuart Monchick – Monchick-Weber
Charley Risotti – AMS

Appendix D

The Professional Services Sector

Burton Grad, 6/1/2006

The Professional Services Sector of the computer software and services industry had a number of components in terms of the providers, the customers and the types of work done over the years.

Types of Companies:

1. There were standalone private and public companies whose principal work was doing contract services for clients on a project-oriented or a "body-shop" basis. The project contracts might be fixed price, cost plus fixed fee (CPFF) or time and materials. The body shop contracts were invariably on a time and materials basis. In these cases, materials meant principally the travel and living costs for the consultants. These companies tended to split between those primarily doing work for commercial customers and those doing work for government agencies and public institutions.

2. There were divisions of organizations which were in another primary business. These companies could be manufacturers of computer equipment in which case the consulting services were typically related to the use and operation of their equipment or in providing design and programming services to use their equipment. They could be accounting firms which added computer consulting services to their non-auditing services for their clients. They could be any financial services or consulting services firms that wished to extend their practice and provide additional services for the clients. A number of these firms developed into Systems Integrators that would provide comprehensive project planning and management for their clients and retain and/or manage the subcontractors needed to carry out these projects.

3. There were a few "not-for-profit" organizations formed to provide full-scale system design and programming work, usually for military or government clients. These organizations would tackle state of the art, extremely large projects often dealing with defense and high technology issues.

4. There were a very large number of individual contractors who made direct connections with clients and sold their services on a project or time and materials basis. They were often represented by so-called brokerage firms, which had no employees, but used

these freelance contractors to perform the projects which they sold. These varied from those who simply connected the contractor with the client, obtained a commission and had no further relationship to those that maintained project coordination and oversight and paid the contractors from the fees received from the clients.

5. There were also VARs, OEMs and retailers that provided either turnkey or consulting services to assist their customers in using the equipment which they sold.

6. There were a number of software products companies that provided professional services as an adjunct business or consulting services on the installation, use and customization of their products for particular clients.

7. In addition, processing services companies (service bureaus, remote processors, time-sharing companies) would provide custom application programming for the clients who used their computers. Facilities management was another mode by which a company would effectively be an outsourcing capability managing program development and maintenance and operating the customer's computers.

Types of Customers:

1. The largest group of customers for professional services work, particularly in the early years, were the largest corporations with emphasis on those in communications, insurance and banking. Later, this expanded to include manufacturing and process companies as well as retail, wholesale and every other industry in the world, large, medium and even small. This was called the commercial segment of the industry and the tradeoff decision for the customer was between doing the design and programming in house or outsourcing part or all of it to one of myriad of professional services firms available.

2. Government agencies (Federal and state) were also major buyers of professional services, particularly to develop large new applications.

3. Various nonprofit institutions like hospitals and universities were sort of a mixture between commercial and government buyers of professional services.

4. In the early days, the computer manufacturers themselves were a large part of the market, primarily buying the development of systems programs of various types. They often used professional services firms to assist them in major new developments of operating systems and language compilers.

Types of Work:

1. Commercial applications are those programs required to perform various business operations. Because there were no package programs and there were relatively few experienced programmers, this became a significant area of work for most professional services firms early on. The trouble was often that the programmers didn't know the business applications and so the need to work with the customers' staff to define the specs led to many serious errors in specification and to customer unhappiness. Overruns on estimates were common and losses on fixed price contracts discouraged most professional services firms from tackling these projects on anything but a time and materials basis.

2. Scientific applications were bread and butter applications for a few professional services firms that had the necessary scientific and technical skills. A number of individual consultants also thrived in this area. There were a few specialized firms that focused on particular technologies or application areas.

3. Systems, language and utilities programs were a major revenue source for the early professional services firms. The manufacturers (the seven dwarfs and IBM) were key customers and the professional services firms would often work for many different manufacturers on the same type of operating system or compiler.

4. Program development tools and systems became an area of interest, but this quickly turned into package programs rather than custom work. Some professional services firms developed their own proprietary development languages and implementation systems that they then used for their custom programming work for their clients. They felt that this gave them a cost advantage and locked the client into them for maintenance and follow on projects.

