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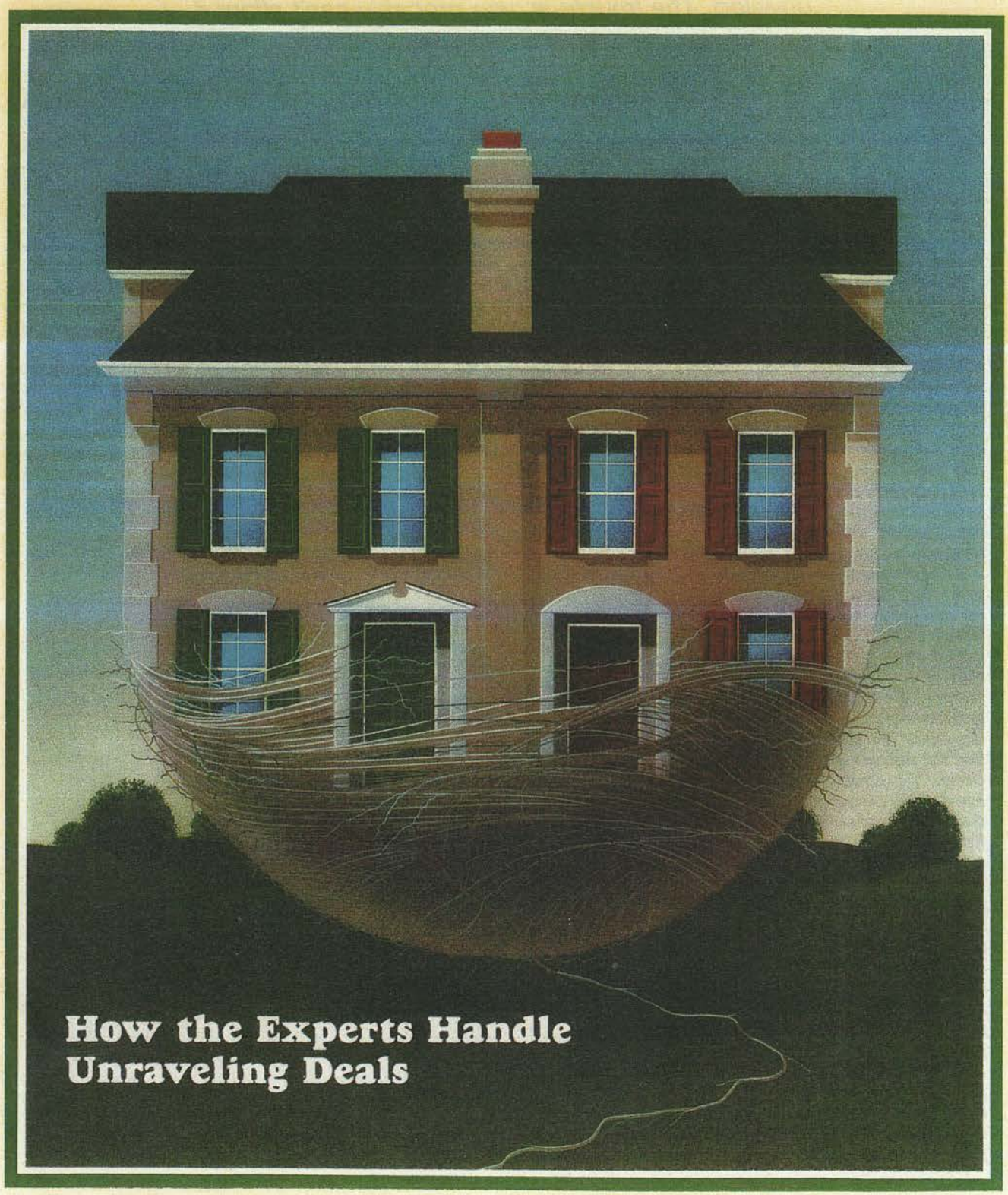

How the Experts Handle Unraveling Deals

FINANCIAL PLANNING
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Planner in a Box

An exciting new generation of financial planning software is about to be unveiled. The trouble is, you probably can't afford it.

by Jeffrey R. Lauterbach

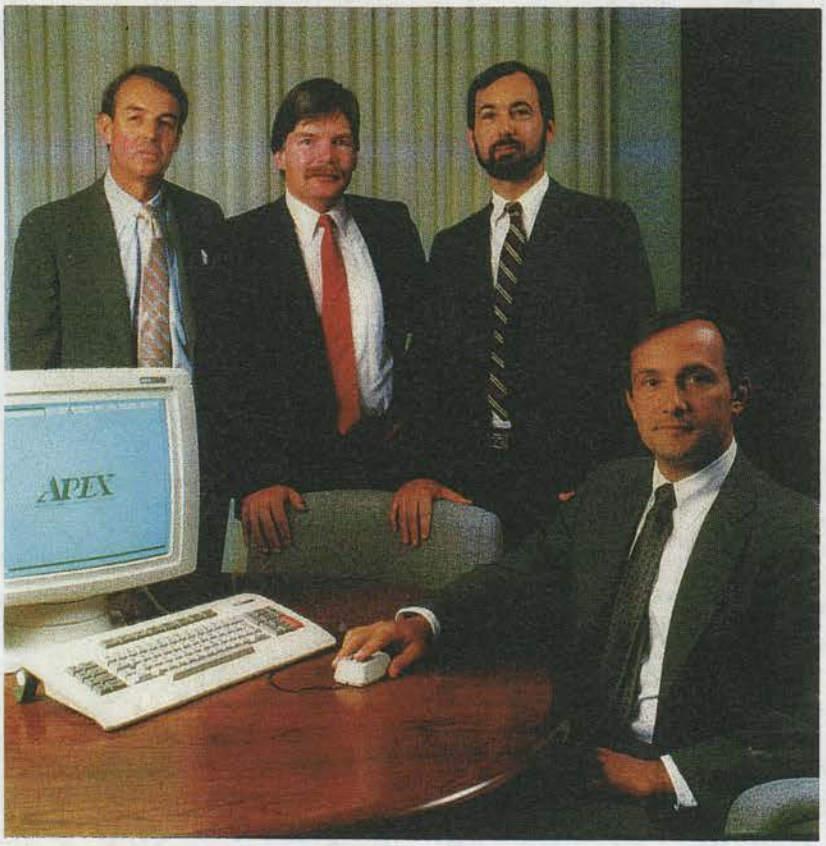
A client calls, concluding a discussion begun several days ago. The husband and wife, who display a number of inexpensive museum prints in their home, would like to buy more expensive paintings to fill out the tangible portion of their portfolio—as an alternative to investing in a collectibles fund.

To modify the couple's plan-in-progress, the planner switches on his desktop minicomputer and calls up screens off a new and very expensive piece of financial planning software. Using a mouse, he consults a number of "what if" windows, quickly establishing a money market account for $57,000, which the clients could draw on to buy paintings as they found them. The amount has already been agreed upon, but the planner wants to know how the additional investment interest will impact his clients' marginal tax rate in 1987 and 1988.

A few flicks of the mouse, and the 19-inch screen displays a comparison of the tax situation in the existing plan and in one of several new plans with the money market amendment. Implicit in the software is a recommendation: a $2,000 purchase of a leveraged oil drilling program to bring the clients back to their tax goals. The planner wants to know how the software arrived at this "conclusion"; a screen outlines the logic, based on the clients' risk tolerance from the files, on write-off and performance figures from the investment data base, and on the preset goals themselves. Fifteen minutes later, the planner has compared the overall effects of six different drilling programs called up from his product data base, selected the best alternative and reviewed the entire case once again.

Before sending the files to the printer for a customized recommendation, the planner decides to look further into the insurance situation. The current strategy, largely generated through parameters imbedded in the software, calls for the $17,000 cash value of a whole life policy to be cashed into a municipal bond fund. With the files on the screen, the planner decides to look for a better solution. He calls up a data base of investment newsletters, selects several which offer technical information in the insurance field and has the computer perform an electronic word-by-word search of each article over the past five months. Finally he comes across a technical description of how to perform a tax-free swap of cash value for a single premium whole life policy—despite the provisions of the new tax act. In 20 minutes, he has removed the 1986 income generated by cashing in the policy. An equally satisfying result is that the client can continue to reassure his father that he has whole life insurance coverage in case of emergency.

When Randy Davis, Ph.D., and Jim Joslin, CFP, met in the fall of 1982, they knew almost nothing about each other's specialties. The jovial Davis, who sports a full-fledged handlebar moustache, had recently moved to M.I.T.'s Artificial Intelligence Laboratory from California, where he had done pioneering work in expert systems development at Stanford. Joslin, a tall and lanky Harvard graduate with 15 years at bank trust departments and institutional portfolio management firms, had switched to financial planning in 1978 and had built a successful practice. Dr. Fred Luconi, who arranged the meeting, recalls, "Randy said, 'financial what?' and Jim said, 'artificial what?' " But from this unlikely beginning has grown a potentially



Left to right are James L. Joslin, Richard I. Karash, Norton R. Greenfield and Fred L. Luconi: Software logic.

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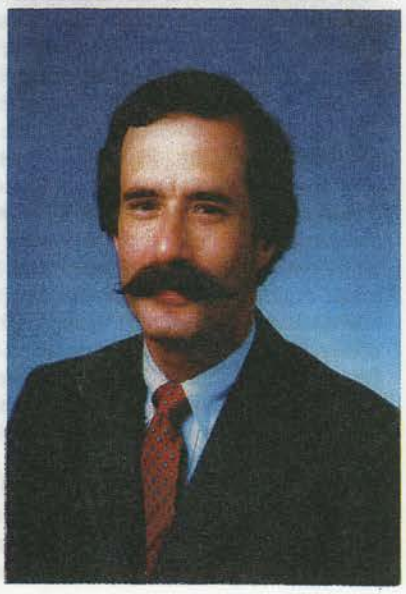


From the top: James Joslin, Fred Luconi and Randall Davis: Fifth-generation technology.

momentous development. Applied Expert Systems (APEX), the company that Luconi, Davis and Joslin subsequently founded in early 1983, has announced the development and imminent distribution of PlanPower, the world's first commercial-grade expert software system for financial planners.

As *Financial Planning* has previously reported ("Expert Software," July 1984), a small group of companies, including APEX, Berkeley-based Teknekron Financial Systems and the consulting firm Arthur D. Little, have been working on applications of so-called "fifth generation technology" to financial planning since the early '80s. These software firms have worked in obscurity for the most part, since much of their funding has come from large financial services organizations which were less than anxious to let competitors know what they were up to. Moreover, the firms themselves are well aware that precipitate claims for speculative projects based on unproven technology would be met with a level of disbelief that would handicap future marketing efforts. Accordingly, they have refused to talk about their efforts except in vague theoretical terms. APEX has been particularly closemouthed, refusing to confirm or deny a host of widespread rumors, and Luconi has earned a reputation, even among his reticent peers, for being sphinx-like.

In recent months, however, the veil of secrecy surrounding these efforts has begun to lift. *Financial Planning* has seen demonstrations of several expert planning systems, and the identities of some of the major financial services companies funding or closely following expert system development in planning are now known. These include Travelers, John Hancock, CIGNA, Metropolitan, and New England Life among insurers; Merrill Lynch and Shearson on the Street; and Citicorp, Chase, Bank of America, American Express and Sears. Finally, as the systems themselves have neared completion and their creators have stepped up marketing efforts, some of the implications of this new technology for the financial planning industry have become clear.

Back in 1982, however, neither Luconi nor anyone else knew whether expert system technology could be applied to financial planning. At the time, the M.I.T. graduate and former professor was executive vice president of Index Systems Inc., a Cambridge-based consulting firm specializing in decision support and information systems planning for the financial services industry. Some of his work, which cut across the securities, banking and insurance industries, had led him to conclude that emerging financial services companies needed a responsible, consistent and comprehensive distribution method for the expanding number of products and services they had begun to offer. Looking for a way to fill that need, Luconi had talked with Joslin, whom he'd known for a decade, about financial planning. But it was an introduction to Davis, who informed Luconi about the inherent potential of expert systems, that became the catalyst for the trio's first meeting in Luconi's Kendall Square office overlooking the Charles River.

First, Davis educated Joslin, no stranger to computers, on expert system technology. Then Joslin began to explain financial planning, and, Davis recalls, "it became clear that the technology could, theoretically, provide significant economic leverage by substantially decreasing the analytical time required in the process." To test this assumption, Luconi recruited one of his associates as a financial planning client, and over the next three months, while Joslin did a financial plan, Davis, Luconi and systems analyst Barry Zack sat in on interviews, asked countless questions, and developed a prototype. It addressed the issues of whether a client should buy a tax shelter, if so what kind and how his assets should be reordered to accomplish the transaction considering his risk tolerance and current asset allocation. Al-

Richard Karash: Replacing fourth-generation systems.

though the task appears simple, the prototype's ability to deal with it, says Luconi, "proved that the technology could solve a range of problems that existing software could not solve."

Unlike almost all existing software, most expert systems are written in symbolic languages, such as LISP, which allow programmers to create rules and manipulate concepts, like those involved in financial planning, more easily than they could with more widely known languages like BASIC and FORTRAN. A true expert system, says Davis, "is a high-performance program dealing with a narrow, specialized field and is capable of explaining the reasoning process it followed to reach a given conclusion. There are two essential separate parts: the knowledge base or what the program knows, and the inference engine, which directs the system in applying what it knows to a given set of data." A financial planning expert system, then, would map the analytical portion of a planner's expertise and, at some level of generalization, select the most appropriate mix of strategic and product solutions to help a client reach goals.

Both existing systems and those currently under development differ from each other in three distinct ways. The first is in set-up configuration. The AD Little system, developed for a major national bank which will announce and begin licensing efforts late this year or early next year, will run in a batch processing mode in tandem with an IBM mainframe. Back-office experts will be able to run "what ifs," but customer interface personnel will function only as well-trained report deliverers. All other expert systems are interactive planning tools. With the exception of PLANMAN by Sterling Wentworth Corp., which can update securities portfolios from stock wire services, these state of the art systems are as yet incapable of pulling consumer financial information off the mainframe data bases of banks and securities firms.

Many institutions want to see this automatic update feature before they buy. "The key issue is an ability to continue to render service in some fashion that will preserve the relationship you've established by providing objective advice," says John Hancock's Doug Cowley. Acknowledging this need, programmers at APEX and The Mandell Institute are working furiously to add this capability to their companies' systems. Atlanta-based IFS is also reportedly in this race, although its software apparently will not include a planning expert system; instead, it is directed at institutions wishing to offer one-account service to a mass market.

A second difference between existing expert systems is the language in which the systems are written. PLANMAN is written in PASCAL, and the Mandell Institute system, under development for what Lew Mandell will only say is "a major financial company," is written in compiled BASIC. In spite of claims to "artificial intelligence," however, neither of these systems fits Davis' definition because of their inability to recall an applied train of reasoning. In fact, the rules governing the operation of both the Sterling Wentworth and Mandell software are embedded in and indistinguishable from encoded knowledge. PlanPower and the ADL software, both written in LISP dialect, have separate knowledge bases and inference engines. This dual nature provides greater power and more flexibility. PlanPower users, for example, can call up an explanation window and ask questions like *How was that computed?*, *What is the definition of an irrevocable insurance trust?* and *So what?* regarding any observation or recommendation made by the system. This ability allows these systems to be used for training as well as for plan preparation, and it will allow experienced users to check the logic of their strategies against that of the expert system.

The final difference between these systems lies in the depth of analysis available. In the shelter area, for example, the simplest software might recognize that a client is not using some tax saving methods and plug in canned paragraphs which describe in general terms a group of underutilized alternatives. On the other hand, PlanPower, which is the most detailed package of the four, analyzes more than 50 types of strategies and investments that provide shelter and recommends the combination that will most readily enable the client to attain not only his tax sheltering goals, but his overall goals for retirement, estate planning, risk protection, liquidity and maximization of net worth. Moreover, PlanPower's recommendations of any product for any purpose are controlled by an almost universally overriding set of portfolio diversification principles.

It is this ability to coordinate recommendations with a client's actual assets and prioritize recommendations to achieve a client's goals that developers hope will distinguish these expert systems from other financial planning software. "Planning expert systems replace fourth generation products," contends Richard Karash, APEX vice president of Individual Financial Services. "PlanPower does everything they do faster and easier and goes well beyond." Indeed, it is one thing for a computer to calculate how much money is necessary to provide a given income for retirement, but quite something else for a machine to concoct a reasonably specific, realistically workable strategy that is acceptable to a living, breathing, changing client. But as every planner knows, that task is only a small part of preparing a comprehensive plan.

Joslin knew that, and Luconi and Davis had an inkling of the size of the task they had taken on, but today they all admit that building PlanPower turned out to be a much more extensive project than originally anticipated. Building in the feedback loops that verify the accuracy of client data was a complex task in itself, but one deemed essential if the software were to accurately replicate the lengthy data collection and analytical processes of true planning. Nonetheless,

Reisa Bunick (L), Rick Antell (C) and Margaret Jacks: "Knowledge engineers" grilling in-house pro, Jim Joslin (R).

Stewart Gassel, president of Travelers subsidiary First Financial Planners Services (FFPS), which funded a significant amount of the APEX effort, says, "The project was completed remarkably close to original budget, capability and time projections." By the time PlanPower's parts were completed and assembled last August, APEX had invested over $5 million and 20 man-years.

The technical development team, led by Davis, natural language expert Bill Woods and Norton Greenfield, who specializes in LISP and operating environments, solved a number of problems which had plagued academic researchers for years. Along the way they created a new LISP dialect, a method for encoding the approximately 2000 formulas PlanPower uses, and an English language generator that allows the program to produce highly customized texts and lets users communicate easily with the system. They also wrote an IBM compatibility program for the new XEROX machines PlanPower will run on, devised an automatically updated client-tracking system, and supervised the growth of a technical support team that has been helping FFPS planners use their current planning software, another APEX product, since 1984. In tandem with that effort, Joslin and Suzanne Laurent built APEX Advisory Services, a wholly owned subsidiary and registered investment advisor that provides planning support from an experienced in-house team and a cadre of outside specialists on retainer.

None of these developments would have been possible, of course, without the APEX team of eight "knowledge engineers." Starting from scratch, this group conducted countless interviews with professionals selected for their expertise in estate planning, insurance, tax, financial planning and investments. The goal, says Greenfield, who supervised the group, was to understand and model analytical methods. To do so, the KEs probed and prodded their experts, in some cases to the point of exhaustion. "The process was absolutely excruciating," declares Bob Wegner, a New Jersey-based fee-only planner. Wegner ruefully recalls making the offhand comment, in an early interview, that when and from where a prospective client calls a planner's office can be very revealing about his attitudes. "We spent the next three hours determining exactly what I meant," he groans.

As the KEs learned their experts' expertise, they developed a peculiar expertise of their own. "I would talk for two or three days, and then Bruce Henderson would create a 20-minute outline of how I think," says Natalie Choate, a partner in the Boston law firm of Deutsch, Williams, Glass, Brooks & Drensis and for-

An Expensive Centerpiece

Since its introduction in 1984, First Financial Planner Services, a subsidiary of $40 billion Travelers Corp., has been less than an unqualified success. To date, fewer than 30 independent financial planning shops have paid their first bill for FFPS' combination of training, software, marketing, regulatory and compliance support, and strong due diligence on a full line of products. But Stew Gassell, president, refuses to be dismayed. "We're properly financed to conduct business well into next year," he says, "and feeling much better about our prospects."

Travelers is rumored to be pumping a million dollars a month into this effort to capture a large share of the independent planner support market. (See "New Gamble in a New Market," *Financial Planning*, November 1983.) But so far a plethora of promises regarding future features, tales of a less than perfect back-office operation at affiliate Securities Settlement Corp. and Travelers' "country club" reputation have left many planners cold. Grouses one disgruntled planner: "They're going to do it because they dreamed it up in Hartford, regardless of what you need."

In the past few months, however, says Gassell, as FFPS has worked out bugs and completed its assembly of programs, interest has markedly increased among the hundreds of "regional, growth-oriented professional planning organizations" through which FFPS now hopes to reach the thousands of independent planners "who don't want a big practice but do want proper support." Perhaps it should have been obvious that annual fees starting at $15,000 were too rich for most independents, but FFPS has only recently adopted this pyramid-type marketing plan.

Much of the company's success or failure will depend on the planning community's acceptance of the FFPS version of PlanPower. Increasingly over the next six months, leaders of the nation's largest independent planning groups will have an opportunity to examine some special bells and whistles, available only through FFPS. Says Gassel: "My intuition tells me that PlanPower's abilities will be very heady stuff for most planners. It will solve the basic conflict between their human inability to deal efficiently with massive amounts of information and their desire to give good, accurate advice. From the beginning we've believed that this technology should be the centerpiece of proper support for professionals. It's a very important facet of FFPS, and we're relying on it."

Norton Greenfield: Keeper of the KEs.

mer co-chairman of the estate planning committee of the Boston Bar Association. In addition to contributing estate planning expertise, Choate served as an expert on retirement planning. Tax expertise came from a number of Big Eight firms, risk planning from Dennis A. Shaw at Travelers and from Boston planner and former Northwestern Mutual agent Warner Henderson, and overall planning expertise from Wegner and Joslin, among others. Working with PlanPower, these experts have acquired respect for its abilities. "It's a fail-safe system," says Choate. "Each planner has his strengths, but by using PlanPower it's a mathematical certainty that all the right options will be considered. It's even useful for sophisticated planners to check intuitive judgments in their areas of expertise." More than once in the debugging process, what first appeared to be program glitches turned out to be planning options that the experts hadn't imagined.

At the heart of PlanPower is a cash flow-driven philosophy incorporated in an asset allocation model based primarily on historical world economic data compiled by R.H. Ibitsen Associates, the noted economic research firm. As the system runs—a total plan requires about one hour of processing time—the software makes two sweeps over the client data. First it analyzes the situation and makes observations: "You are over insured," for example. On the second pass, observations are converted to recommendations, with suitable strategies taking precedence over 125 types of generic investments, which are ranked in terms of client goals, risk and diversification. The system checks data input, like the expected inflation rate over the next five years, and varies the allocated weight of six different areas: cash, intermediate and long-term debt, commercial investments (primarily stocks), natural resources, real estate and tangibles. Users, notes Joslin, can modify the allocation rules in a variety of ways, stressing income over capital accumulation by prohibiting certain types of investments, for example, or changing the risk parameters by altering the inflation assumption. But the essential maximization of net worth philosophy cannot be changed.

"One of our primary purposes has been to build a planning tool that will raise the level of dialogue between planners and clients," says Joslin. "Too much planning today concentrates on quick fixes to save taxes. Tax planning is important, but it should be subsidiary. Planners need to be creating understandable, comprehensive, long-term investment strategies that give clients confidence to implement and help create lasting relationships."

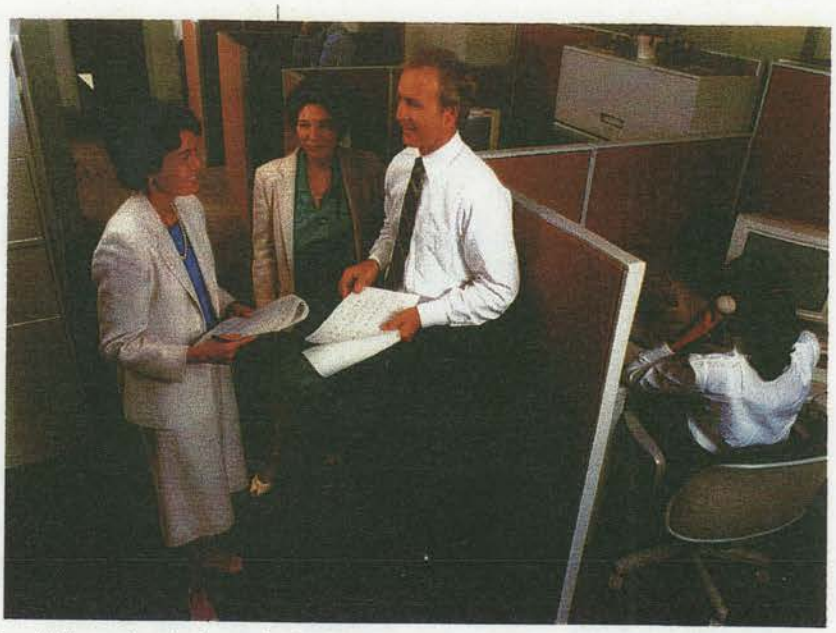
Wegner, who teaches alongside Joslin at training sessions for FFPS planners, amplifies this argument. "You may complete a plan quickly and sell some products, but unless you build a relationship, that client will be gone," he tells his classes. "In dealing with upper-income clients relationships are vital, not just to hang onto a client, but because of who that client will refer to you in the future. These are productive people, and their incomes, almost by definition, increase faster than the middle-class average. If you start with them when they're making $150,000, their friends are making $150,000. But in two or three years, after you've built a solid relationship and start getting referrals, that client is making $200,000 or $250,000 and so are his friends. A good, sophisticated planner shouldn't have to market his services for the rest of the century."

What PlanPower does is make building relationships a more economical proposition. "It won't replace any planners," says Luconi. "It's a time-saving tool that will let them do a faster, better job on analysis and spend more time in hands-on consultation." Former Vice President for Marketing Ken Morse, who was recently recruited away from APEX to run a start-up biotechnology firm, adds, "Most of the power of the machine goes into making it easier for the planner." Among features designed to make the system easy to use are mouse and window technology, the giant screen on the Xerox 1185, and straightforward menus, which make the system transparent.

For the foreseeable future, however, the only way independent planners will get their hands on PlanPower is to sign up with FFPS, which has an exclusive distribution deal for the independent planner market. (See box on page 221.)

Financial institutions will be able to buy installations beginning early next year. The price, says Karash, will be mid-five figures, with an industry standard maintenance charge of 10% for updates at least quarterly. This covers the new Xerox hardware with its 2 megabyte main memory and 1.5 megabyte processor, a laser printer and 7 megabytes of software. The company already has several flagship accounts, some of which provided functional guidance for the development process; Karash, Henderson, and National Accounts Marketing Director Gary Hoppe have been out hustling for more since last summer. Fees to participate as a beta (field test) site are roughly double what PlanPower will sell for next year, but APEX argues that the banks, insurers, and accounting and securities firms that participate will gain a leg on their competitors through hands-on experience with the system.

So far, most institutional attempts to deliver planning to the heartland of America have suffered from a largely unformed market, an inability to apply human expertise economically and inconsistency in the quality of the necessary human delivery component. Developers hope that expert systems technology will help overcome the latter two of these problems and contribute to solving the first. "As a training device, a helper for human experts, and a centralized, easily updated source of consistent expertise, expert systems will have a sig-



From the left are Eve Hoar, Suzanne Lorant and Gary Hoppe: APEX's support team for planners.

nificant impact on the industry,'' says Price Waterhouse's Stan Breitbard.

Freed of the necessity to turn salespeople into highly skilled planners, the theory goes, large financial services companies will now be able to use their source of planning expertise to help educate ''relationship managers'' through the rationale feedback function, and get them thinking first about the broad needs of the customer instead of their commissions. Moreover, central control of a planning system will considerably simplify what Alex Jacobsen, president of Inference Corp., calls ''distribution of corporate policy.'' The combination paper and electronic records created by these systems will cut down the costs of legal defense, and may ultimately decrease the number of lawsuits brought by disgruntled customers. In other words, quality control will at last become feasible. With these advantages in place, the big players can then afford to unleash megabuck marketing campaigns designed to create a demand for financial planning without fearing the embarrassment of being unable to deliver on a promise.

Despite several recent examples of companies that have attempted to cash in on the cachet of planning, with varying degrees of success, *Financial Planning's* conversations with financial services executives indicate that most large companies are unwilling to risk reputations built up over decades for short-term gains. However, many now believe that suitably enhanced expert planning systems will allow delivery of quality customer-oriented advice and also present a striking opportunity to turn salespeople around.

Clearly, this transformation of the industry, hopefully predicted by expert systems developers, is not going to occur overnight. As compensation schedules change dramatically to conform to new corporate policies, and thousands of salespeople learn how to ask for information and forget how to tell stories, the move from a transaction mode to a customer relationship mode will be wrenching. ''The cultural change in both society at large and within financial services companies will take years to evolve,'' says Luconi. Awareness of this paced change has APEX and its competitors, as well as financial services companies themselves, working on expert systems designed not to provide financial planning, but to inculcate and support consultative selling.

Shearson, for example, has developed the Personal Review Outline, or PRO, which ''puts the right questions on the table and gets our financial counsellors to look at the situation from the clients' point of view,'' says Joel Karasik, who runs the company's Financial Counsellor Support Center in New York. Designed to allow FCs to disagree with its prioritized recommendations, the PRO was carefully written to be non-threatening. ''We extracted most of the good things financial planning has to offer and packaged them in a way acceptable to 5000 financial counsellors who not long ago were brokers,'' says Karasik. ''The PRO will help create and identify a demand for real financial planning, and we'll build capacity to supply it as necessary.''

This type of expert system, as well as those devoted to pure planning, has substantial potential to be used as a sales management tool and a manufacturing aid. Armed with a copy of a client's plan, for example, a manager can uncover holes in his employee's knowledge and work more efficiently to reduce prejudiced recommendations. As for manufacturing, the data base created by thousands of plans should allow product designers to ferret out specific attitudes important in the implementation decisions of identified market segments, and massive numbers of recommendations prioritized over a five-year time span should provide plenty of guidance to help packagers meet future demand. As the efficiencies created by improved supervision and better targeting of manufacturing activities work their way through large organizations, giant companies will be able to offer quality financial planning to lower income groups, more and more of the nation's wealth will be intelligently allocated, and the financial planning movement will begin to make a major contribution to the welfare of the nation. ''PlanPower will move the cutoff for comprehensive planning down considerably,'' believes Karesh. ''Someone with a $60,000 or $70,000 income and $100,000 of assets can be helped a great deal for a reasonable fee.''

Independent planners should not be dismayed at the prospect of giants armed with automated experts moving in force onto their turf. As public awareness of quality financial planning increases, the resulting demand will create more than enough business to go around. Better products, too, are in the offing, and therefore so are more satisfactory ways to help clients reach goals, although commissions will likely decline and professional fees rise as institutional manufacturers adopt compensation schemes designed to promote relationships rather than move products. ''The competent independent with established relationships in his community and strong communication abilities will never lack for clients,'' says Luconi. Nor need he fear being undercut by the giants' economies of scale. The only leverage that exists is embodied in technology that will be as available to independents as it is to the likes of Citicorp and Sears. The keys to building a successful practice will continue to be the ability to elicit information, quality, high touch time with clients and a reputation as a source of caring assistance.□