

meeting. Faris says the implication is dead wrong that Primavera can control the way its software is used. The company makes a robust and versatile product geared to the needs of its users, he says. Primavera can't be responsible for abuses any more than a spreadsheet company is responsible for those who use its product to draw up faulty or deceptive reports, he contends.

These critics "would like us to put in things that make people use the program in a certain way, but people don't want to buy a tool like that," says Faris, who founded the company with partner Joel Koppelman 20 years ago after they had both worked in the construction industry. "People want tools that are flexible, and if they are flexible they can be abused."

With annual sales of \$77 million, 85% of it in scheduling software, Primavera is the biggest player in its market niche. Its P3 product, which sells for about \$4,000 per concurrent license, is complemented by a simpler \$500-per-user product called SureTrak. Competitors include Microsoft Corp., whose product is in the lower range. Meridian Project Systems also acquired technology in 2001 and began offering a CPM scheduling program.

With what it claims is 300,000 scheduling users around the world, Primavera is now answerable to a marketplace far wider than the handful of innovators at universities and corporate labs who gave birth to CPM scheduling. The software company also shapes the way the industry works through its popular product.

In its first decades, critical path method scheduling was the near-exclusive province of full-time project management consultants and construction managers. No longer. Thousands of contractors and many firms in other industries now are using low-cost scheduling software. Calculations that once needed



TOOLS Faris says Primavera provides what users want.

mainframes routinely are performed on desktops.

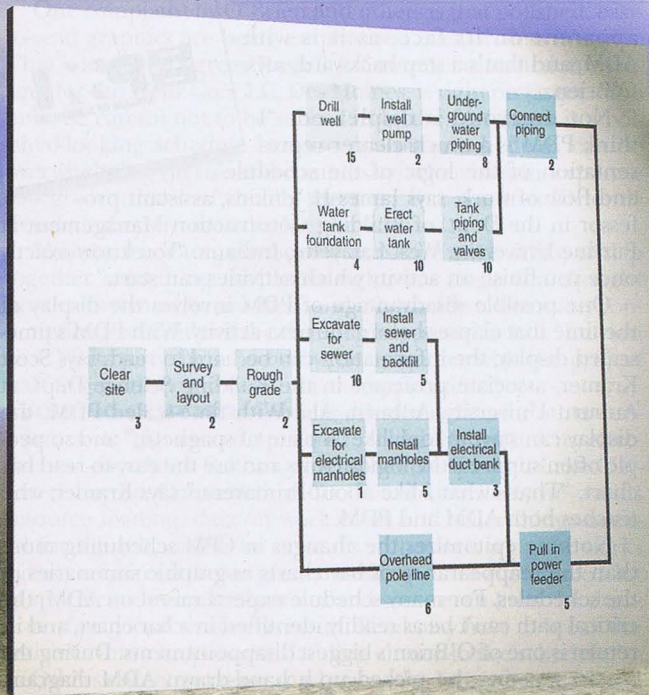
To prevent errors by inexperienced users, one construction manager centralizes planning and scheduling within each company unit. "The new versions that are out are relatively inexpensive and relatively easy to learn, and that leads to the temptation to have relatively inexperienced people doing some of the scheduling," says Dennis K. Bryan, director of scheduling for St. Louis-based McCarthy Co. In doing the work, fundamentals of CPM can be ignored, he says.

"Scheduling has moved away from the priests of scheduling to the common man and there are less knowledgeable people doing it," says Faris. He says training is therefore vital.

Among the four critics who attended the Philadelphia meeting was at least one who qualifies as a scheduling priest. James J. O'Brien, an engineer and CPM pioneer, was the co-founder of O'Brien Kreitzberg (subsequently acquired by URS Corp.). The firm was the oldest and largest specializing in program and construction management. He was joined by Fredric L. Plotnick, an attorney, engineer and consultant who co-authored with O'Brien the latest edition of *CPM in Construction Management* (McGraw-Hill, 1999). The two other critics were Jon M. Wickwire, a Vienna, Va.-based attorney and consultant who has written extensively on CPM, and Stuart Ockman, a project management consultant based in Wallingford, Pa.

What they have seen they have sometimes described as rotten bananas in a software paradise: flawed schedules produced with powerful new tools.

In particular, the current method of CPM scheduling, Precedence Diagramming Method (PDM) (see chart), which became the *de facto* standard in the U.S. in the mid-1990s, is open to manipulation and deception, they say. For example, PDM allows users to assign different calendars to different activities, which means if those activities are on the same logic path they won't show up with the same amount of float, the cushion of days in a



Precedence Diagramming Method (PDM)

Developed in the early 1960s into current form by H.B. Zachry in cooperation with IBM, this popular and flexible technique avoids using the dummy activities to maintain logic relationships needed in ADM. It represents activities as boxes that are assigned properties of the activities they represent. Includes the four types of lag relationships: finish-to-start, finish-to-finish, start-to-start and start-to-finish.