

Flowcharting Software Selection For Case Tool Simulation In An AIS Course

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Abstract

Assuming that at least an acquaintance with CASE Tool technology is a desirable skill for AIS students, this paper examines how inexpensive flowcharting software products can be used to demonstrate CASE Tool software functions. To accomplish this, certain functions are necessary in the flowcharting software and these requirements need to be included in the software selection process. An examination of these requirements, the selection process, and a review of flowcharting software are included. Three inexpensive software products are identified that meet the requirements.

Introduction

Undergraduate Accounting Information Systems, (AIS) courses should include at least a minimal amount of the use of flowcharting documentation. Students in these courses are not expected to be Systems Analysts but are expected to be able to work with these professionals and understand the documentation tools. The tools range from inexpensive flowcharting software that can cost nothing for shareware products to very sophisticated Computer-Aided Software (or systems) Engineering (CASE) Tools costing thousands of dollars. In conjunction with researching the use of CASE tools in school of business curriculums nationwide, the author distributed a survey instrument to AIS faculty.¹ The results indicated many AIS faculty members did not really know what CASE Tools were. Only 2 out of 220 responding to the questionnaire used one in their classes. The reasons ranked first for not using

CASE Tools included:

- 27% - Faculty are not familiar with the technology.
- 27% - There is not enough time in the curriculum.
- 24% - It is not necessary for undergraduate accounting students.
- 13% - The software is too expensive.
- 09% - We do not have the computing facilities.

Some of these reasons are probably still true today. AIS faculty are still not familiar with the technology other than knowing what it is. There is still not enough time in the undergraduate accounting curriculum to include many items that are desirable. Knowledge of how to fully utilize CASE Tools is probably not necessary for an undergraduate student and many CASE Tool software products are still very expensive. One purpose of this paper is to explain how students can be exposed to CASE Tool functions and

Readers with comments or questions are encouraged to contact the author via e-mail.

minimize the objections to covering the topic.

PC Magazine (Going With the Flow, 1997) comments that flowcharting software has changed a great deal in the last few years. The more advanced programs are moving away from being simply a diagramming tool to "an environment for creating applications". This is another way of saying they are taking on the characteristics of CASE Tools. Only the more expensive flowcharting software has these application creation functions built in. If there is time in the AIS course to devote to teaching these more complex flowcharting functions, and the cost can be justified, then the user should adopt this type of software.. If the objective is to provide the student with a feel for CASE applications, then there is an inexpensive method of meeting it.

Case Tools

To simulate CASE Tool software a working definition is required and the following is typical (Romney, Steinbart, Cushing, 1997, p 378).

"CASE Tools are an integrated package of computer-based tools that automate important aspects of the software development process. CASE tools are used to plan, analyze, design, program, and maintain an AIS.Front-end (or upper) CASE tools support the early stages of the SDLC, such as analysis and design.Back-end (or lower) CASE tools support the later SDLC phases.

A data repository or CASE encyclopedia stores and manages project data dictionaries. It contains information about the system and is cross-referenced to other system components such as data bases, programs, files, and input and output screens."

Reading this definition does not really provide the student with a clear understanding about the functions of a CASE Tool. This can

be demonstrated somewhat by using the multi-tasking capabilities of Windows 95. Even better, some inexpensive flowcharting software applications include functions that allow the user to develop background documentation using word processing, database management software, spreadsheets, or other software packages. This capability should be built into the requirements for selecting flowcharting software for AIS classroom use.

To demonstrate what a CASE Tool does, it is necessary to develop text or other types of files in the background for any symbol or line in the diagram. These files should contain as much detail to document the item as required by the designer and user. The automated functions of CASE Tools will not be available but students can get a better understanding of these functions.

The "Typical" AIS Course

AIS instructors have their own specific requirements for flowcharting and other computer projects or applications. An assumption is made here that there is a "typical" undergraduate AIS course and it includes most of the items listed in the next two paragraphs. Determining the objectives and usage is the first step in any software selection.

An assumption is made that an instructor in a "typical" AIS course emphasizes:

- Hands on computer projects using off-the-shelf industry software and yet inexpensive enough that the students can purchase it to include in their "tool bag" after graduation.
- Software for classroom use that provides network licensing so students don't have to purchase it.
- The use of basic software product standards such as Word, Excel, and Access.
- The use of transaction processing applications such as Simply Accounting, and Peachtree Complete for Windows.

- The use of a flowcharting package as opposed to an advanced applications development package or CASE Tool.
- A basic, non-technical, textbook and teaching approach.
- Practical applications through projects.

More specific to the flowcharting software and applications, an assumption is made that the instructor in a "typical" AIS course emphasizes:

- Flowcharting project applications with a limited number of diagramming techniques such as:
 - Document Flowcharts
 - Control Flowcharts
 - Data Flow Diagrams, (DFD)
 - Entity Relationship Diagrams, (ERD)
- The use of a limited number of symbols to prepare the diagrams.
- Symbol groups that are specified by the instructor.
- A minimum amount of time to learn the diagramming techniques.
- The use of the student's diagramming skills throughout the course in several projects.

Requirements List

To the extent that an AIS course is similar to the assumptions listed above, and using the previously described definition of a CASE Tool, a requirements list can be prepared to evaluate flowcharting software for the course. If an instructor's course is not "typical" as defined above, one should still find the information about the flowcharting software useful for making a decision regarding the course.

The software must:

- Be networkable.
- Be inexpensive for site licensing as well as for student purchases.
- Be used in industry.
- Be easy to learn and use.

- Contain symbols to prepare Document Flowcharts, Control Flowcharts, DFDs, and ERDs or enable the user to develop the required symbols.
- Allow the instructor to develop sets of symbols that students use to prepare the diagrams.
- Allow the user to associate files in other programs with symbols and lines in the diagrams to simulate a CASE Tool.

Flowcharting Software Contenders

A search of the web indicated the following products for consideration:

- AllCLEAR 4.0
- EDGE Diagrammer
- FlowCharter 7
- Flow Charting PDQ
- Flow Charting PDQ Lite
- RFFlow Professional Flowcharting 4.0
- SmartDraw
- TopDown Flowcharter 5.0
- Visio Professional 5.0
- Visio Standard 5.0

The list is certainly not exhaustive but represents a reasonable list of current choices. It includes some of the "flowcharting standards" as well as some new smaller unknown software developer's products.

Flowcharting Software - Brief Review

Many of the following review comments come from other reviewers or developer notes. Obtaining trial versions of most of the products was not possible other than by purchasing a single user version with a right of return. If a free trial version was available for a viable product, it was obtained and reviewed. Each review indicates the educational price when available, the classification of being a basic diagramming tool, or a more advanced diagramming and application development tool.

The single user regular price is \$395.00. The educational price for a single user is \$345.00, not much of a discount. A much more economical choice is the 10 workstation network price of \$890.00.

The strongest selling point for this software seems to be the ease of diagram preparation. Developer comments (AllCLEAR 4.0, SPSS Incorporated) indicate it:

"...delivers faster, smarter flowcharting than any drawing package. Faster, because all-CLEAR turns your simple text outline into a flowchart automatically. Smarter, because you can add data and launch other applications - even connect to the web - directly from your diagram."

A call to an SPSS representative indicated the software does not include the capability to develop applications. Carrillo (Carrillo, 1997) indicates the user can import Visio and Micrografx files and the program supports OLE object technology. Quality Magazine published several user comments about the program and most of them dealt with the ability of the software to develop diagrams from text outlines.

EDGE Diagrammer Version 2.10c

Pacestar Software offers a free 30 day trial of the full functioning EDGE Diagrammer program by downloading it from their web site (EDGE Diagrammer Version 2.10). Single user regular price is \$129.95. Very favorable educational pricing is available. The educational single user price is \$49.00 and a 10 user educational network license, called a classroom pack, is \$249.00. The network price is a special quote because their published network prices start with 20 units for \$399.00.

External reviews of the software were not found other than a five star rating by Ziff

Davis (ZDNet Software Library). The software was downloaded and tested. It was easy to load and has a very friendly user interface. It is easy to attach word processing or other application program files to any symbol. Symbol libraries are easily accessible and modifiable. The program does not support the IntelliMouse. It allows the user to create multi-segmented straight lines but does not support creation of curved lines.

FlowCharter 7

The regular price single user price for this software is \$299.00. For educational use, the price is reduced to \$129.95 for a single user and a 10 - 49 user network license is priced at \$88.00 per user or \$880.00 for 10 users. The features included make this a good price if they are needed (FlowCharter 7).

PC Magazine (Flow Charter 7 Software Review, 1997) reviewed this software and gave it runner-up status for Editor's Choice. It is one of the two higher end packages that include application development functions. The reviewer states that "If you demand powerful and diverse traditional flowcharting or business-process analysis and an instant application builder, look no further than Micrografx's FlowCharter 7." It can create Visual Basic scripts automatically based on any chart. More application development functions are expected in the near future.

Flow Charting PDQ

The single user regular and educational price is \$125.00. A network license for 10 users is \$1,110.00. There is no educational pricing.

A PC Magazine review (Flow Charting PDQ Software Review, 1997) of this software indicates this is a basic flowcharting tool that has some deficiencies. The size of an object doesn't automatically expand with the text and has to be manually resized. The user cannot rotate objects or preview what will be printed.

A Computer Shopper review (Yankal, 1996) indicates that it has an "unusually clean, simple interface." Although the user must resize objects, she states "Patton & Patton's SensibleShapes technology resizes objects smoothly without distorting them."

Flow Charting PDQ Lite

This scaled down model of Flow Charting PDQ is available to download from their web site (Flow Charting PDQ) for 30 days free trial for single user use only. After the trial period it sells for \$49.00. There is no educational pricing and network licenses are not available.

The trial version was downloaded for review. The comments above for the full version are true for this version plus some other restrictions such as spell checking is not available in PDQ Lite. A method to attach text to lines so it would move with the line was not found. It was very easy to set up a new shape template and diagramming is very intuitive. The author did not find a way to attach a word processing document to objects in this flowcharting tool. Curved lines are handled by clicking on four points to control the curvature of the line. This makes the control of the curvature easier. The program does not support the IntelliMouse.

RFFlow Professional Flowcharting Version 4.00

Version 4.00 came on the market Fall 1998, and is designed to take full advantage of Windows 95 features. The single user regular price is \$79.00 and single user educational price is \$59.00. A 10 user educational network license costs \$39.00 per user or \$390.00 and includes two users manuals. The full program, without the printed manual, can be sold through a university bookstore to students for \$20.00. A limited free trial version of the software can be downloaded from their web site (RFFlow Professional Flowcharting) and used by students for small projects. The trial version is limited to

using sixteen symbols on a chart.

The software is easy to learn, intuitive, and packed with diagramming features. Associating any object on the diagram with a word processing or other document is a snap. Curved lines are handled by clicking on four points to make it easier to control the curvature of a line.

A few of the new features in version 4.0 include:

- Improved text editor; multiple fonts per shape, bold, italic, underlining, superscript and subscript.
- Built in spell checker.
- Auto symbol numbering.
- All shapes can be rotated and mirrored.
- Stencils (groups of shapes) are easily accessible and modifiable.
- Automatic rounding of corners and insertion of line crossovers.
- Support for the IntelliMouse.

SmartDraw

This is the least expensive program that was reviewed. The single user regular price is \$49.00 without a manual. The manual can be purchased separately. A 10 user educational network license is \$20 per user or \$200.00. Students taking a course get an undisclosed discount for a Personal Educational License to purchase the software for home use.

Potential buyers can download a free 30 day trial from their web site (SmartDraw) of the full functioning program. The program was downloaded and investigated. Don't let the low price fool you. This is software that deserves serious consideration. PC Magazine (SmartDraw Software Review, 1997) states "An excellent resource for the graphically challenged. SmartDraw is for those who need to create occasional diagrams but don't want to learn how to use a more complex tool."

Reviewer comments all seem to be good for this product. Many comments are listed on the web site www.smartdraw.com/reviews2.htm. They include PC Magazine, FileMine, SoftSeek, PC Plus Magazine (UK), and Michael E. Callahan aka Dr. File Finder & Trade.

The free 30 day trial of the full functioning program was downloaded from Smart-Draw's web site and investigated. It is very easy to attach word processing or other application program files to any symbol. Symbol libraries are easily accessible and modifiable. Individual symbols can be edited to expand with text inside the symbol in any direction including proportionately. This was the only program in this price range that provides this feature. The program does not support the IntelliMouse.

TopDown Flowcharter 5.0

The web site for this software (Top-Down Flowcharter 5.0) did not disclose educational pricing. An educational price was obtained from PC Zone 800-258-2088. A single user educational price is \$195.00 and it is not available in a network version.

Since the program is rather expensive and is not networkable, this review is extremely brief. A reviewer for Quality Magazine (Parr, 1997) indicates that the program has the ability to attach text windows to any chart node to include information or to attach a Word file to a chart node. The text window feature might be somewhat unique but the ability to attach word processing files is not. This was the only review of this software that was found.

Visio Professional 5.0

Pricing for this product is not available directly on their web site (Visio Standard 5.0 and Visio Professional 5.0). However, one can connect to their resellers list. The regular price for Visio Professional stand alone version is \$359.00. The educational price from

www.journeyed.com is \$229.98. Network licensing is available but there is no educational price break and it is not for concurrent users but by workstation. The regular price per workstation is \$315.00 so it is less expensive to purchase individual copies at the educational price.

Visio Professional 5.0 is probably the most advanced software included in this paper. PC Magazine (Visio Professional Software Review, 1997) indicates "The granddaddy of point-and-click diagramming software, Visio Pro has managed to retain its superb ease of use and flexible interface, while doing an out-standing job of introducing integration with applications."

While no negative reviews were found for this product, the pricing is prohibitive for the purpose of this paper and therefore, it was not included in the software selection decision.

Visio Standard 5.0

The regular price for Visio Standard 5.0 is \$149.00 for a stand alone version. The educational price was obtained from www.journeyed.com and is \$99.98 for the stand alone version. Network licensing is available but there is no educational price break and it is not for concurrent users but by workstation. The regular price per workstation is \$135.00 so it is less expensive to purchase individual copies at the educational price.

A trial version of the software is not available and therefore the software was not investigated. No negative reviews were found for this product.

A license to use the software on 10 machines in a network would be \$999.00. This would be expensive for the brief use in an AIS course and therefore, it was not included in the software selection decision.

Table 1
Summary of Pricing and File Attachment Functions

Flowcharting Software Name	Network Site License 10 Work Stations	Student Individual Price	Can Associate Symbols with Other Files/Programs
AllCLEAR 4.0	\$890.00	\$345.00	Yes
EDGE Diagrammer	249.00	49.00	Yes
FlowCharter 7	880.00	129.95	Yes
Flow Charting PDQ	1,110.00	125.00	Not Determined
Flow Charting PDQ Lite	Not Available	49.00	No
RFFlow Professional Flowcharting Version 4.0	390.00	20.00	Yes
SmartDraw	200.00	Under 49.00	Yes
TopDown Flowcharter 5.0	Not Available	195.00	Yes
Visio Professional 5.0	2,299.80	229.98	Yes
Visio Standard 5.0	999.80	99.98	Yes

Summary

All of the packages reviewed are available for industry use and sold primarily to industry users. The Windows Graphical User Interface is the standard so they are easy to learn and use. Another standard seems to be the ability to easily establish a set of symbols to use for projects. They seem to have an ample supply of symbols to choose from. Visio Professional 5.0 and FlowCharter 7 were the only products researched that contain applications development functions. If this is the type of software desired, then the FlowCharter 7 network price for 10 workstations brings the price into reach for educational use.

The major differences among these packages are in pricing and the ability of the less expensive packages to attach other program files to symbols and lines. Table 1 summarizes these differences. The three least expensive networkable products, SmartDraw, EDGE Diagrammer, and RFFlow Professional Flowcharting, also contain the function of being able to develop files in other programs for all symbols. Each of

these is capable of being used to demonstrate the functions of CASE Tool technology.

RFFlow Professional is the only one of these three that supports the IntelliMouse. It is also the only one that provides good control over drawing curved lines. It is the most expensive for the 10 user network version but it has the most favorable student use and pricing. The trial version can be downloaded from their web site and allows the user to develop small diagrams with no time limit. The price of \$20.00 through the bookstore for the full version is very favorable for the student. All three of these flowcharting products are available to download free from their respective web sites. Try them out and give students the advantage of developing a skill that may be extremely useful in the future. ☐

Endnotes

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