

REVIEW COPY.

Comments appreciated.

TYPESET-10 PRODUCT

PROPOSAL

This is the proposed Typeset-10 Product Proposal which will be submitted to the Product Line on October 22 and ultimately to the Products Committee on October 30, 1973. Your comments would be sincerely appreciated.

October 22, 1973

Richard L. Hill

SECTION I: BACKGROUND AND GENERAL PHILOSOPHY

The current Typeset-10 software has evolved in a manner quite different from traditional DECsystem-10 software products. The concept of "time-shared" typesetting and the capability associated with such a concept were sold and delivery scheduled prior to any studies on the feasibility of the approach or its planned implementation.

During the pre-sales effort, technical input was received from a myriad of sources--including Typeset-8/11 personnel, DAS-10 personnel, DECsystem-10 Product Line personnel, and Software Engineering personnel. At this time, it was assumed that the Typeset-10 would be a logical and straight-forward extension of many of the plans and capability conceived for the Typeset-11 System. Because of the power of the DECsystem-10 and its mature Monitor environment, it was assumed that applications software required could be easily accomplished.

As the product evolved and promised delivery dates approached, the problem most difficult to overcome was a lack of clear goals and specifications for the product. The system was sold to the first of our customers--Palm Beach Newspapers, Incorporated--with the idea that we would work with them to formulate product goals and performance "beneficial to both parties". We are now at a point where the system is in daily use at the newspaper; however, the software has been written and rewritten, schedules have been made and altered, and goals have been established and changed.

this philosophy has changed considerably. The software conceived and implemented under the "react" mode operation described above has been dubbed as "Phase I" software. For the most part, functional and design specifications have now been written (sometimes after the fact) reflecting actual implementation of Phase I code.

All Projects which have commenced since April of 1973 have been planned and scheduled to include functional and design specifications reviewed by a review committee in Maynard and, in most cases, by a designated customer representative. This procedure has resulted in a much more efficient and organized implementation as well as allowing desired performance specifications to be formalized prior to writing of code. It has also resulted in acceptance by the customer of the code when delivered, installed, and demonstrated. Software delivered under this operating philosophy is labelled Phase II software.

Much of the Phase I software has or will be rewritten for one reason or another, usually to allow reasonable maintenance. Some of the Phase II software, which was developed for, and has succeeded in achieving satisfaction of contractual commitments cannot yet be considered as completely acceptable to deliver to additional customers as a "standard" product.

The packages within the Typeset-10 software system which will be required to achieve full customer satisfaction, enhance maintainability, and improve product performance will be identified as Phase III software.

Shortly after the initial Typeset-10 contract with Palm Beach was executed, contracts were signed with The Kansas City Star and The London Free Press. Evidentially the thinking at the time was that three "identical" systems would be as easy to install as one. Unfortunately, the dissimilarity between the operations, people, requirements, and implementation were significant.

With this lack of firm, uniform, contractually defined specifications, an extremely difficult time has been experienced in the achievement of full acceptance with associated payment. Specification review meetings were held with the three customers nine months after the project began, and these meeting resulted in both major and minor changes to software and implementation of key packages. The review sessions further emphasized that the "identical" systems were more divergent than originally planned.

Acceptance of the Typeset-10 software and operation has thus often been based on "trying the system" rather than testing its performance according to mutually acceptable test plans and operational criteria. Failure of any aspect of this "testing" procedure would result in major or minor rewrites of the existing code, usually under extreme schedule duress. Often this "failure" of testing was based on personal preference of one or more newspaper personnel rather than system design or operational soundness criteria.

With the advent of the Typeset-10 Project falling within the DEC-system-10 Product Group and more recently the formation of the Typeset-10 Cost Center as a more formal and dedicated organization,

Phase III software is being designed and planned, reviewed and evaluated, scheduled and tested. This operating procedure is an integral part of the Typeset-10 "Project Management" structure which is described in Section II of this plan. Goals are as follows:

1. To ensure a competitive, highly reliable, and maintainable product;
2. To ensure that technical and business decisions concerning the product are either made or approved by appropriate levels of technical or Corporate management;
3. To provide an environment conducive to optimum productivity and satisfaction to all concerned; and
4. To develop framework for successful and continuing development of applications packages.

SECTION II: PROJECT MANAGEMENT

Under the current Typeset-10 Product and Project Management implementation, functions required to deliver, install, and maintain a working and profitable product are clearly defined and implemented. Dick Hill is the Product Manager for Typeset-10 and has overall responsibility for the Product as well as Cost Center 469, established July 1, 1973, for Typeset-10. Cost Center 469 resides within Product Line 65, managed by Ulf Fagerquist.

Reporting to Dick are three supervisors: Valdeane Alusic, Supervisor of Typeset-10 Software Engineering; Bob Maguire, Supervisor of Typeset-10 Support; and the Supervisor of Installations (currently unfilled). Charters of each of these three individuals and the groups they manage are enclosed as Appendix A.

Under the direction of this organizational structure, specific guidelines have been established and are currently being followed for the Project. They are as follow:

A. Project Control

1. The goals of the Project Control and Management plan currently implemented within the Typeset-10 Product Group are:
 - a. To bring the systems and procedures in the Group up to standard software engineering systems and procedures;
 - b. To produce a Typeset-10 system acceptable to the customers such that they will pay for their systems and become a good reference base;

- c. To produce a Typeset-10 System that is now and will remain competitive in the marketplace; and
 - d. To plan for the future while allowing enough flexibility to "put out fires" until such time as that aspect of development is no longer necessary. There still may be times when a programmer must go to a site, with tape under arm, and stay until a problem is solved; however, no specification changes will be made during such site visit, and this mode of activity should diminish drastically during the ensuing weeks.
2. More generally, the Project Management Plan has been designed to institute procedures and systems which help the development programmers to define problems, and determine the best approach to the solution. Procedures set forth in the Software Engineering Department Project Leader's Notebook are being followed, for example:
- a. Institution of procedures which will make it possible for Typeset-10 to fit in with and use currently-available services, such as Release Engineering, Software Communications, and Software Support;
 - b. Establishment of realistic staffing and time schedules for software projects;
 - c. Establishment of contact with the field such that critical problems can be identified and corrected in a timely and well-controlled manner. CCO's, SPR's and limited direct customer contact will be used as vehicles toward this goal.
 - d. Evolve the necessary hardware availability and testing environment required for a software Project the magnitude and importance of Typeset-10. Previously all "patches" and new versions were delivered to the existing customers after simulated production testing in Maynard. This has often resulted in expensive final debugging at the customer's location and often shaky confidence level such mode creates. Hardware availability in Maynard can result in a well-planned environment in which system development, debugging, software evaluation, and Quality Assurance can be accomplished.
3. Specifically, the Project Management Plan has been broken into three parts for planning and implementation:
- a. PHASE I: The poorly planned (from an overall systems operation viewpoint), largely undocumented projects necessary for system acceptance by current customers. These projects are either too close to completion or too large to rewrite, given current staffing and time constraints, or both.

- b. PHASE II: Better defined, well planned, properly documented Projects that frequently interface with, or are a subset of the Phase I Projects in such a way that Phase I obsolescence implies Phase II obsolescence.
 - c. PHASE III: Well defined, well planned, properly documented Projects which will become the Typeset-10 system software. Some are underway at the present time, and will satisfy contractual requirements currently in force; others are not yet approved, planned, and scheduled.
4. The over-shadowing goal of the Typeset-10 Group at the present time is achieving full acceptance and payment for the three currently-installed Typeset-10 systems. This still necessitates violation of guidelines established herein for Project Management. In each such case, however, an analysis of the problem is conducted and written recommendations reviewed by the management staff prior to proceeding with indicated solutions and distribution.

This approach appears to be successfully converging on acceptance of the system, with its associated payment, while establishing longer-term Project Management expertise within the members of the Group.

5. Written, formalized, Project reviews are prepared by each programmer weekly. Because of rather heavy travel to the field, full implementation of the personalized review procedures targeted by our Software Engineering Supervisor are not fully met, but weekly improvement is noted.
6. Any new software project, no matter how small, requires a project plan, functional specification, and design specification, all properly reviewed. A minimum quorum for approval consists of the Typeset-10 Steering Committee, consisting of each Supervisor (delineated in Appendix A of this document), Q. A. representative, and the applicable Project Leader. At the current time, excellent plans are now being generated and the review meetings have been informational, well attended, and have, on occasion, pointed out possible problems before valuable coding time was expended in an incorrect direction.
7. The Project Plan for any software Project must include all necessary support functions required for successful delivery of a finished product. These include software evaluation, Quality Assurance, and documentation. All Phase III software must have both software evaluation and Q. A. scheduled. Phase II must schedule some sort of Q. A.; however, most Phase II software has been designed and implemented to meet a contractual commitment which often doesn't allow formally scheduled evaluation.

8. A firm requirement for all software released for testing is the inclusion of .DOC files as an integral part of the release tape. All packages will include such files in the October release of Typeset-10. The .DOC file indicates the changes made since the last version and provides the installation team with essential information concerning installation procedures and indicated areas to be tested prior to use in live production.

B. Software Quality

1. SPR procedures have been established at the Kansas City Star and Palm Beach Newspapers, Incorporated and are being installed at The London Free Press. The Typeset-10 Group is currently handling Typeset-10 SPR processing, logging, and responses at least until January, 1974, when the procedure is well established and the software stable.

When an SPR is received, it is review by the Supervisor of Software Engineering, logged, and assigned to the appropriate programmer for action. A copy is routed to Q. A. to allow design of a test to verify correct operation of the software when indicated problem is corrected.

Upon successful testing of SPR solution in Maynard (wherever possible due to hardware limitations here), a letter containing the solution is forwarded to the originator of the SPR. The corrected version is then injected into the Release procedure for inclusion in the next release.

2. We have three people currently devising an automated test package for Typeset-10 as a total system. Prior to each release, the Typeset-10 package will be tested using these tests and others which are constantly being developed. This test sequence will also be used in testing SPR fixes to assure that correction of an individual problem does not impact correctly-operating code.

In addition, The London Free Press has devoted a man year to developing an extensive acceptance test involving some six hundred text files which individually and collectively test nearly all aspects of Typeset-10 system and package operation. We will incorporate these tests into our package once London has achieved acceptance.

3. Software Change Orders (CCO's) are written for all software changes in Typeset-10 software. This allows coordination within Version Numbers and releases and control over the status of various software packages within the system.

C. Software Releases

1. The first formal Typeset-10 release was accomplished in September, 1973. Because of the "interrupt" operation which had been prevalent within the Project previously, various versions of the software were "floating" around at various customer's sites. As problems unique to a given installation were encountered and fixed, some control was sacrificed with respect to maintenance of sound software images available for testing in Maynard. This situation has now been corrected with the successful September release and will be firmly controlled in the future.
2. Monthly releases are now planned by the Typeset-10 Group from now until December, 1973. It is planned that starting in January of 1974, Release Engineering can then release the Typeset-10 software.

Our September through December releases are designed to make each programmer thoroughly familiar with formal software release procedures, which are being followed.

D. Documentation

Software documentation is being funded by Typeset-10 and accomplished by John O'Rourke's group with one full time and an additional contract writer. It is our goal to typeset all Typeset-10 documentation. It has been determined that in dealing with upper management of newspapers, as we do in the Typeset-10 product, that our written correspondence and especially technical documentation exhibit good editorial and typographical qualities. To provide such capability, on-house typesetting equipment is included within this Proposal.

Perhaps the single most important element in the indicated success of the Typeset-10 as an important Corporate offering will be the continued realization that applications packages (such as Typeset-10) are fraught with the same installation, acceptance, and support problems, (with commensurate per unit costs) as our Monitor or CUSP's and that the Projects which ultimately result in these applications packages must be managed and controlled with full cognizance of this fact.

SECTION III: INSTALLATION AND SUPPORT

Our experience in installing the three existing Typeset-10 systems has provided considerable insight into installation and support requirements for "end-user" products such as Typeset-10. These installations have been handled with heavy involvement from Typeset-10 development programmers. This procedure is partially explained by the nature of the product itself, the history of its evolution, and the schedule slip-pages and specification changes that occurred along the way. As the product moves from its current "development" status into the reliable, specified, and controlled product expected, Field Installation teams will play an increasingly important part of the Typeset-10 operation.

All future Typeset-10 contracts will include detailed specifications concerning all aspects of the product being sold. Firm acceptance criteria and testing procedures used to verify correct operation to these specifications will also be included. Measures have also been taken to assure careful control of each customer's milestones (both hardware and software) from contract execution until full acceptance and payment. This function will be coordinated by the Support and Installation Supervisors, described in Appendix A herein.

In addition, all Typeset-10 contracts will include resident software support personnel as line items under current pricing policies for such service as well as selective Operations Services packages to meet the individual requirements and experience level for each customer.

In particular, experience dictates the follows areas of installation support will be required for each Typeset-10 installation.

A. General DECsystem-10 Start-up Support

As with any DECsystem-10 installation, it is expected that the six man weeks of Software Support will be required for the training of customer personnel in system use. This support would also accomplish the standard Monitor installation and acceptance tests.

B. Data Processing Support

Each Typeset-10, which is also to be used for data processing would include, as a priced line item, the SWSDP-10 Data Processing Support package, consisting of twenty man weeks of on-site support. In most instances, a phased implementation of the system will be accomplished. Under this plan, a single processor system will be installed, accepted, and paid for to be used for Data Processing conversion and implementation. It is expected that this installation would precede dual (high-availability) system installation by six months.

C. Typeset-10 Installation Support

After installation of the high availability configuration required for typical newspaper production, Typeset-10 software would be installed and a three-month training period initiated. It is expected that the system would be accepted for typesetting and payment made within thirty days from completion of the high-availability installation. On-site typesetting software support is planned during this entire three-month period.

D. Operations Support

An extremely critical aspect of Typeset-10 installations is the training of operations personnel in the use of the DECsystem-10, relationship of the Typeset-10 software to the rest of the system, and maintenance of system integrity to allow availability for typesetting which approaches 100%. Experience indicates that to achieve high competence in fault identification and isolation, system reconfiguration, and recovery from error conditions, will require three to six months of on-site support in the areas of operation and system integrity maintenance.

All of the above support services will be included in all Typeset-10 contracts as appropriately-priced line items. Resources for these services will be available as indicated in the ensuing paragraphs.

There are four operating groups within Digital who will provide the installation and support resources for Typeset-10. Each group's involvement will require adequately and timely budgeting in line with Marketing forecasting for Typeset-10 deliveries. It is essential that the Typeset-10 Project Group provide adequate documentation and training for each of the participating groups prior to their involvement in actual support functions.

These operating groups consist of the following:

1. Field Software Support
2. Home Office Software Support
3. Operations Services
4. Typeset-10 Software Engineering

The following procedures and services should be provided for each Typeset-10 installation, by the appropriate individuals:

1. Each Typeset-10 installation should have a resident Field Software Support Specialist included (as a correctly priced line item) on-site for a period of six months. It is expected that this six month term will begin one month prior to system delivery and continue for five months after delivery. This software specialist would be available to assist the customer in data processing conversion or design, training of customer software and operations personnel (as appropriately conducted on-site), and coordinate all aspects of the "non-typesetting" software installation process.

2. This resident should become familiar with customer software implementation schedules and guide customer through to successful installation of their software to assure satisfaction with the DECsystem-10 system.
3. Field Software Support, as part of the Account Management Team should be involved in all customer decisions involving DECsystem-10 usage.
4. Field Software Support, should assure that qualified customer programmers attend appropriate training courses in Maynard.
5. For the present, a team of development programmers from Typeset-10 Software Engineering, will install Typeset-10 software and conduct agreed upon training courses on-site. Typeset-10 Software Engineering personnel will conduct the Typeset-10 acceptance and verification testing.
6. Field Software Support will coordinate and conduct the standard DECsystem-10 software acceptance testing.
7. Field Software Support will instigate and coordinate SPR procedures at each customer's site for standard DECsystem-10 software and Typeset-10 software.
8. Field Software Support should conduct a Data Processing Manager's course on site.

9. Home Office Software Support (HOSS) should include one specialist dedicated to Typeset-10. While it is not reasonable to expect that HOSS can assume maintenance of the Typeset-10 software package for some months, they are currently committed to maintenance of the DC44 code and associated Monitor Service for the DC44 support. That requirement will continue with the DC44/DC76 capabilities within 5.07/6.01.
10. Because of the urgent and critical requirement for high-availability operation within the newspaper production environment, Operations Services should be included as a properly priced line item on all Typeset-10 systems. If the account team ascertains that the customer's operations staff can do an adequate job of facilities management, then and only then shall these terms be negotiated. In such a case, operations training courses should be attended by key personnel from customer's operations staff.
11. Part of the on-site training should include "crash" recovery sessions and drills. Emphasis must be placed on maintaining system maintenance procedures which allow the system availability to approach 100% for the typesetting "production data path".
12. All Typeset-10 systems should include one data set to allow access from Maynard for problem diagnosis.

SECTION IV: THE PRODUCT

The goals for Typeset-10 and therefore the "nature" of the product must be divided into three areas: 1) short term (existing KA-based installations); 2) long term (KI-based systems); and 3) future (KL-based) systems. The short term goals encompass satisfying the contractual commitments of the three existing contracts to achieve acceptance of the systems and full payment of associated monies.

The long-term KI-based goals are concerned with continued development of the Typeset-10 as a viable entry into the Graphic Arts marketplace. Specific areas of emphasis will include enhancements of each of the separate packages which make up the software system, heavy concentration on the overall system aspects of a product as advertised to be a "total solution" to the typesetting and data processing requirements of the newspaper community, and a well-planned and implemented solution to the needs of the industry. In addition, a workable, well-defined, and well-documented configuration and procedure for the high availability operation required in the daily newspaper environment must be evolved and implemented.

The future of the Typeset-10 as a profitable and competitive product will then move into the high volume KL-based systems delivery phase. To assure the success of this venture, a separate development effort will be initiated to fully capitalize on the features and capabilities of the KL-10 Processor, peripherals, and Monitor environment.

The Typeset-10 software system, as currently conceived and implemented, consists of a number of functional software packages which accomplish the various tasks required to input, process, and output text-oriented files.

Input (Copy input, wire input, editing) - Six separate packages currently accomplish the overall input and editing functions for the system.

Processing (Justification and Hyphenation) - The heart of any typesetting system is the Justification and Hyphenation (J & H) program. Its implementation and operation determine the typographic "power" of the system in the eyes of the typesetting users.

Output (Allotting, machine drivers) - After processing, the text files must be efficiently and correctly "routed" or allotted to on-line photocomposition or off-line hot metal (via paper tape) equipment. We currently offer machine drivers for the TXT, Linotron 505, Pacesetter Mark II, and both bands and no bands hot metal equipment. Additional drivers will be developed on a firm order, customer-paid basis.

Classified Advertising - Classified advertising storage and retrieval is the single capability which most cost-justifies the pricing requirement for the Typeset-10 configuration. Both interactive and batch input versions are offered.

The individual software modules which implement these various functions, and the current status of each module, are described in Appendix B, herein.

In addition to the current capability, the long-term success of Typeset-10 in the marketplace will require continued development in several well-defined areas. The Project Management procedures as outlined in Section II herein, will be followed in each case.

Pagination of Classified Advertising - Of extreme interest to newspapers would be the ability to produce full pages of classified advertising output which would not require paste-up or processing by the composing room at all. There are currently no commercially-available full page pagination systems on the market; however, photocomposition equipment is moving toward such capability (100 pica widths).

Page Production - A substantial marketplace exists in the book and document publishing area. Even though Typeset-10 was designed and implemented for newspaper requirements, the typographic quality exhibited by our J & H is fully adequate for book and document publishing. Additional effort will be required in the area of "page" breaking and numbering, but J & H currently includes unimplemented but receptive interfaces for such capability.

Two important markets would be opened up by inclusion of this "page" capability. The first is the book publishing industry. The second would be in-house printing for large Corporations

(such as Digital) who already have a DECsystem-10 or would be prospects for a -10 for more general use. The ability of the Typeset-10 software to operate in the multi-task environment of the DECsystem-10 makes such capability extremely attractive. Immediate benefits would be received within DEC's own in-house printing operation.

Full Page Pagination - The ability to produce all newspaper pages on a 100 pica machine requiring almost no paste-up or processing by composing room personnel is the ultimate goal of every medium to large newspaper. Although a number of studies have been completed, or are in progress, no systems to accomplish this "pagination" tasks are commercially available. The cost savings over current operating techniques for a good-sized newspaper are significant.

A large CRT to allow the interactive placement of all copy prior to output is required to accomplish the pagination effort. Such screens are currently under development by several vendors and would be available in the near future. Preliminary market surveys indicate that newspapers would be receptive to software charges of \$200,000 for this capability alone.

SECTION V: BUSINESS PLAN

The business-related goals of the Typeset-10 product and product group may be summarized as follows:

1. To provide a "top-of-the-line" Graphic Arts system to complement the Corporation's typesetting offerings and maintain our leadership in this marketplace.
2. To provide a product which is profitable and marketable.
3. To provide an expanding customer base for DECsystem-10 and Corporate sales.
4. Penetrate and firmly establish a marketplace for KI-10 processors and associated hardware for a period of three years (20 systems).
5. Establish a "ready-made" marketplace and software capability to expand the KL-based system potential (43 systems).
6. Provide operational and organizational capability to market profitable "added value" applications software compliant with Corporate contribution guidelines.

To accomplish these objectives, the technical goals outlined in previous sections must be successfully attained. Again, a three-phase attainment of important milestones must be accomplished.

We must achieve full acceptance and payment from our three existing customers for the KA-based Typeset-10 systems now installed. This is an essential prerequisite to all other plans. The successful accomplishment of this task will not only "clear" the three large accounts receivable that currently exist, it will demonstrate that Typeset-10 is a viable, usable, marketable product as currently implemented.

We must then move forward with enhancement of the current system toward the KI-based Typeset-10 and achieve our marketing goals of twenty system deliveries over three years. With income received from the Typeset-10 software package, additional capability can be included in the system, with commensurate pricing. A goal of twenty system deliveries appears both reasonable and realizable over the three year target "window". It is envisioned that the deliveries of KI-based Typeset-10 systems can continue well after announcement and delivery of KL systems due to the "packaged" nature of the Typeset-10 system.

In parallel with KI-based deliveries, the KL-based Typeset-20 project will be conducted to take full advantage of the KL features. It is expected that forty-three KL-based systems could be sold and shipped through Fiscal Year 1979. With the decreased price and expected higher performance of the KL systems, it is envisioned that the "added value" software revenue will become an important part

of the income received from Typeset-10 systems. Although more detailed analyses will be required to establish firm capability and thus pricing figures for the KL-based Typeset-10, it is possible that the "added value" share of the total system price could be as high as 40%.

Based on current market analyses, and considering the advent of the attractive cost/performance KL-based system, the following marketing forecast appears both reasonable and realizable:

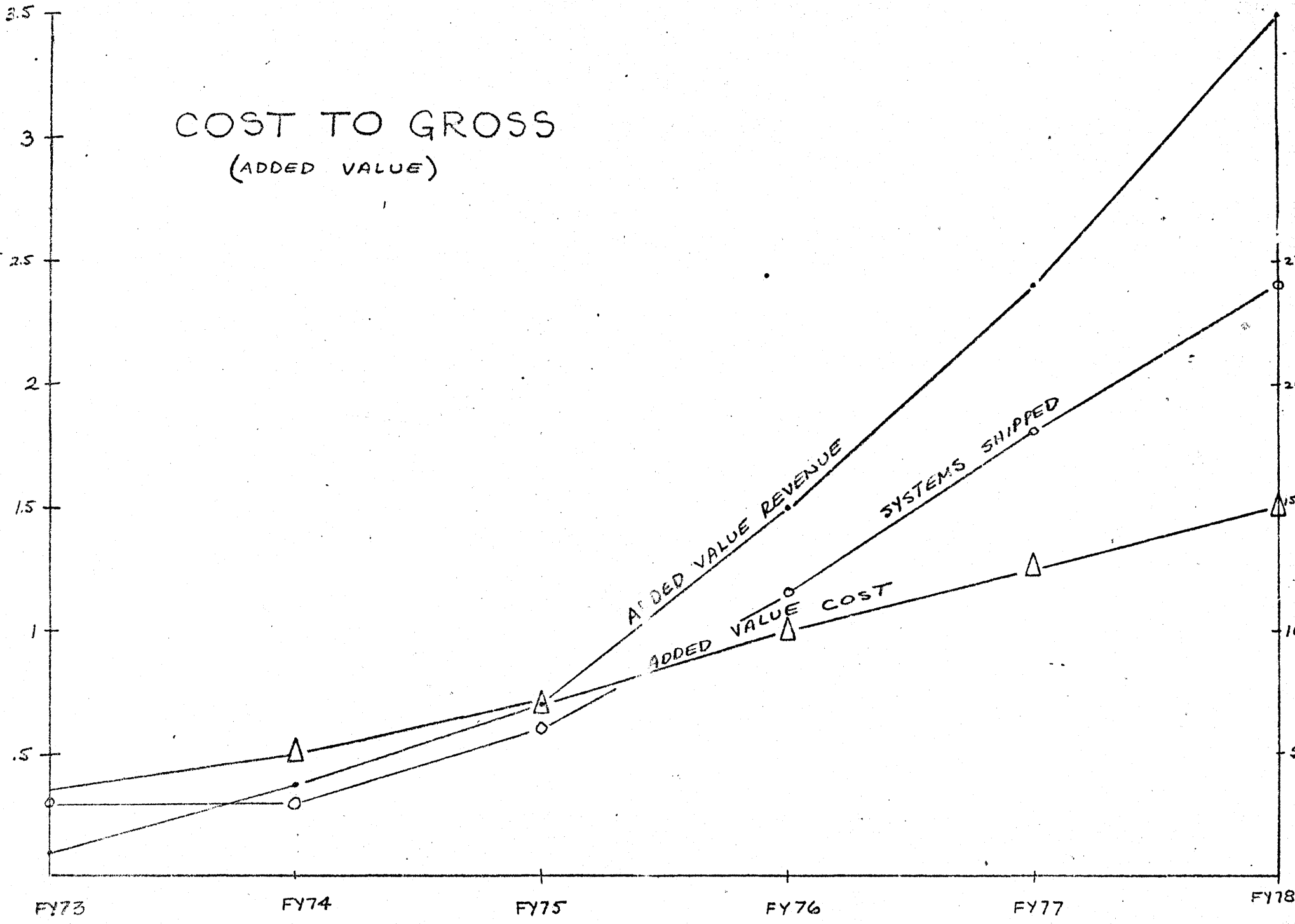
<u>Year</u>	<u>Systems</u>	<u>Total Revenue</u>	<u>Added Value Revenue</u>
FY 74	3 (KI-based)	\$ 3,000,000	\$ 360,000
FY 75	6 (KI-based)	\$ 6,000,000	\$ 700,000
FY 76	12 (KI-based)	\$ 12,000,000	\$ 1,500,000
FY 77	18 (KL-based)	\$ 15,000,000	\$ 2,400,000
FY 78	24 (KL-based)	\$ 20,000,000	\$ 4,000,000

Cost to "added value" gross figures are included for the next five years, based on this marketing and pricing projection as Figure V-1.

An important consideration in the realization of the Corporate profitability and contribution goals, will be the pricing structure of the Typeset-10 software and services package. The proposed package and system pricing is based upon similar and competitive software pricing and input from our current and prospective customer base relative to the value and payback such capability provides to them.

COST TO GROSS (ADDED VALUE)

MILLIONS OF DOLLARS



TYPESET-10 PRICE LIST

- | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1. | Basic Text Processing Package | \$50,000 |
| | Includes :
COPYED (terminal)
PRUFED (VT20)
WIPTIN (Wire and paper tape)
J & H
AUTODELETE
QMANAGER
ALLOTTER
UNIVERSAL OUTPUT DRIVER
MACHINE DRIVERS (2)
FONGEN (Font generator)
REPORTS AND MANIFESTS
DC44/DC76 (Monitor and COMTEX) | |
| 2. | Basic Classified Advertising Package | \$40,000 |
| | Includes:
OFF LINE INPUT
ON LINE INPUT
DUMP
UPDATE
ADMANAGER | |
| 3. | Classified Advertising Billing Package | \$10,000 |
| 4. | Additional Machine Driver | \$ 5,000 |

Each of the above "packages" includes installation, documentation, four training credits, and four weeks of on-site (non contiguous) typesetting support.

Detailed specifications and acceptance procedures will be included within the contractual document describing the capabilities included for the above pricing. Additional or alternate capabilities will be quoted on an individual basis.

Although market research, scheduled completion date, and firm specifications have not been established/completed on the following, an indication of preliminary figures for added capabilities would be:

- | | | |
|----|---------------------------------------------|-----------|
| 1. | Book publishing/document preparation system | \$60,000 |
| 2. | Pagination of Classified Advertising | \$40,000 |
| 3. | Full page (interactive) Pagination | \$100,000 |

Additional details and an amended product proposal (specifications and pricing) will be submitted when appropriate.

APPENDIX A

TYPESET-10 ORGANIZATION

APPENDIX B

CURRENT STATUS
OF TYPESET-10

STATUS OF TYPESET-10 SOFTWARE

A. Phase I Software

- ALLOTTER:** The Allotter is a program which takes properly prepared files and "routes" them to the appropriate typesetting machine (or paper tape punch)
- The current version has reported bugs which are being corrected at the current time. Reliable Allotter is scheduled for release with October release tape.
- AUTOD:** The Autodelete program is a file maintenance program which deletes files concerned with text which has been processed and set, based upon Delete Codes inserted by installation.
- Successfully operating at West Palm Beach. Additional testing required before installation at Kansas City or London. Documentation on maintenance and installation required. Scheduled for release on October release tape.
- COPYED:** Used extensively for production at West Palm. Original version was nearly impossible to maintain and hardly usable by customer. This is the copy input and editing program that was based on LINED and modified by several people during its evolution. It has been replaced by a Phase II COPYED package.
- DC44:** The DC44 code is the Monitor and PDP-11/DC44 package which interfaces to reader/punch and on-line photocomposition interfaces through the DC44. Currently there is no PA611 or LPC11 hardware in Maynard to support testing of this package, so major effort has been accomplished in the field. HOSS has agreed to continue responsibility for maintenance until Phase III DC44/5.07 Monitor release.
- FONGEN:** A utility program to generate font tables required by machine drivers and justification program. It is reliable with no known bugs. Documentation due as .DOC file. Since this program is used only upon initial installation or when new photocomposition capability is installed at a newspaper, this will be the final version.

HYPH10:

The hyphenation program for Typeset-10. There are still bugs which appear from time to time, but are easily fixable. A change is due to do French Hyphenation (contractual requirement at London Free Press). This change will proceed under Phase II rules with Project Plan reviewed by customer during October. A Phase III version may be required to allow a disk-resident dictionary to be used thereby increasing hyphenation accuracy. Additional testing and experience will be required before this decision is made.

JUSTIF:

The heart of the typographic portion of Typeset-10 which generates justified lines of type and implements the Composition Commands language of the system. As each of the three installations uses the system more and more, bugs appear, which are typically fixed within 48 hours. Some additional features are required by London Free Press contract by Q3 of FY74. Documentation is being completed now.

MACHINE
DRIVERS:

The Typeset-10 "Universal Output Driver" design and implementation allows JUSTIF to operate in a "machine independent" mode with information and support from a machine driver unique to each typesetting machine type. This implementation greatly enhances our ability to communicate effectively with all types of such machine and greatly lowers the cost of writing new drivers. In essence, the Machine Dependent Drivers (MDnnnn) provide actual characters required to drive a machine under direction and with close communication from the JUSTIF program.

MD505 - Driver for the Linotron 505 Photocomposition machine (London and Kansas City). Installed at London and Kansas City. No known bugs. Documentation due as .DOC file.

MD513 - An obsolete, very slow machine that they still use at West Palm and desired as backup for their primary equipment in case of failure. Has been written but not debugged. There is some question that West Palm will ever go through with their plans to maintain the 513's as backup.

MD713 - The current photocomposition equipment at West Palm, which is being replaced by Pacesetters. Required for backup if Pacesetters fail. Driver has been written and installed at West Palm. Under their limited testing, no bugs reported.

MDHOTB - The hot metal (bands) driver which will be used extensively at London and Kansas City until successful photocomposition conversion complete. Has undergone severe testing at London and is being used daily at Kansas City. Bugs still appear, but typically can be fixed within 48 hours.

MDHOTN - The hot metal (no-bands) driver which will be used at Kansas City. Under daily use at Kansas City. No known bugs.

MDPACE - the Pacesetter driver which is the mainstay of West Palm operation. In daily use at Palm Beach. In SPR status. Good turnaround on fixing bugs has been experienced when they do turn up. No known bugs.

MDTXT - TXT driver developed for use in Maynard. Currently being debugged in low priority status.

CLASAD:
(Off line)

The Off-line Classified Advertising is a program to accept paper tapes or OCR output containing classified ad text and descriptive information about the ad (number of days to run, billing info, classification, etc.) and upon command from the composing room, perform selective and sorted dump to a photocomposition machine of the entire classified section for setting in the newspaper. Required for Kansas City. This package will be a Phase II Project which is in final functional specification phase at the current time. No schedule has yet been established for its delivery to the customer.

CLASAD:
(On line)

The On-line Classified program was written specifically for West Palm utilizing their inputs for both input and output design. It has currently been installed and we are awaiting their live testing of the system. Known bugs are minimum.

RNM:

The Reports and Manifests Program is a production information program which tracks movement of files (stories) through the system and allows printed and formatted reports upon request. It is a COBOL program which has been written for several months. Minor modifications are being made for West Palm (at their request), and can be installed when desired by other installations. This program is the "last" usually scheduled as it's usefulness is minimal until large volumes of data are moved through the system when its value is significant (yes, essential).

UOD: The Universal Output Driver provides the interface between JUSTIF and each MD Driver. It is up and running at all installations and unless redesign considerations of Phase III software indicate so, it will not be changed.

VERTJ: The Vertical Justification Program will output galleys of classified ads that are "leaded" to exactly fill one newspaper column eliminating manual trim. It is a contractual commitment for Kansas City Star, but has not yet been scheduled. It will become an integral part of the Off-Line Classified Ad package for Kansas City.

WIPTIN: A real Phase I Project. This package is the heart of the input for paper tapes and wires which are utilized extensively by London and Kansas City. This package was written by a contract worker who had neither -10 nor typesetting background. It is currently working acceptably at both London and Kansas City but probably has undiscovered bugs and yet to be found missing features. It is being replaced by a Phase II software package.

B. Phase II Software

COPYED: The original COPYED was too difficult to maintain, and due to customer dissatisfaction with its operation, was rewritten by Mike Spier. He has done a super job, and it is now installed and being used daily to accomplish all of the text input and editing at West Palm Beach. A Phase III extension of this package to include Wire and Paper Tape capabilities (replace current shaky WIPTIN) is now being implemented.

VT20: The VT20 software (or NEXUS/PRUFED) performs -10 functions necessary to support the Typeset-11-developed VT20 cursor-oriented VT20. The software (and hardware--4 screens) currently installed at London Free Press and should move into SPR status within two weeks. A larger problem surrounds the VT20 (PDP-11)-resident software which may require a Phase III project to provide Typeset-10 capability for this terminal. Heavy interest in the VT20 has been exhibited by Kansas City and other possible Typeset-10 prospects. It must be a solid and viable product since it provides the interface to the "computer" for the entire (non-EDP) newspaper and its operation reflects significantly on the success of the Typeset-10 as a product.