not sent

Sterling - Product Valuation
Reexamination of amortizable balances for Consistency with FASB86 NRV Rules

Compare total unamortized value to NRV (Revenue ~~Test~~ Forecast for remaining product life - not necessarily the remaining amortization period - less estimated completion and disposition costs)

Questions:
- How to deal with maintenance revenue
- How to deal with remaining life (new sales, maintenance?)
- How to handle enhancements - costs, revenues, life
- How to determine revenue offsets (how about variable cost of sales, e.g., commissions)

Logic:
1. If projected current year NRV is greater than total ~~"a"~~ amortizable value, then probably no problem.

   Problems/situations
   - CS IV
   - M V
   - ~~Am~~/Ext
   - Ans/IR
   - Smart/DASD

2. If total new rev ~~test~~ forecast is much smaller than original rev ~~test~~ forecast:

   Case 1 - current year relatively high
   Case 2 - current year low

B. Grad
9/18/86

831D

STERLING SOFTWARE

List of Products
As of 09/15/86

SYSTEMS SOFTWARE GROUP - 36 Products
- Answer Systems Division - 11 Products
  - MARK IV
  - MARK V
  - ANSWER DB (Extractor)
  - Lotus/ANSWER (Answer/micro)
  - dBase/ANSWER
  - ANSWER IR
  - ANSWER PR
  - SHRINK MVS
  - SHRINK IMS
  - SHRINK IDMS
  - SMARTdasd
- Dylakor Division - 12 Products
  - DYL-280 II
  - DYL-280
  - DYL-270
  - DYL-260
  - DYL-250
  - DYL-VLINK
  - DYL-AUDIT
  - DYL-SECURITY
  - DYL-IB
  - DYL-INQUIRY
  - DYL-ONLINE
  - DYL-CALC
- Software Labs Division - 7 Products
  - DMS/OS
  - DMS/PC
  - SHRINK
  - SmartDASD
  - TRACS
  - PC TRACS
  - SUPER TRACS
- Systems Software Marketing Division - 5 Products
  - COMPAREX
  - DRS
  - QUICKTUBE
  - PC TRACS SNA
  - INFOPAK (Europe only)
- Sterling Software International - 1 Product
  - INFOMANAGER

STERLING SOFTWARE

List of Products
As of 09/15/86

FINANCIAL SOFTWARE GROUP - 44 Products
- Check Consultants Division - 31 Products
  - ACLS - Automated Cash Letter
  - CLCS - Cash Letter Control
  - TUTR - Online Tutorial
  - OTG - Online Table Generator
  - SuperFiche Audit Trail Reporting
  - TRAK - Online Task and Settlement Tracking
  - APTS
  - DEPOSIT
  - AUTONOTE
  - ENDPOINT
  - FISH-OS
  - FISH-DOS
  - CASH
  - EXTRACT-2000
  - M-ROUTE
  - IMBS
  - BANNER
  - GUARDIAN
  - MULTI-FILE
  - JOBS
  - CCISORT
  - ZOOM
  - OPTION-4
  - SPRAYER
  - CONTINGENCY
  - ALLO
  - DRS
  - CCIFLOAT
  - EXPAND
  - CPCS EDITOR
  - MULTI-SITE
- Decision Systems Division - 6 Products
  - SOLUTION I - Check Clearing Optimizer
  - SOLUTION II - Cash Letter Collection
  - SOLUTION III - Automated Adjustment Processing
  - SOLUTION IV - Automated Return Item Processing
  - SOLUTION V - Automated Proof Correction
  - SOLUTION VIII - Automated Bank Reconcilement
- Directions Division - 7 Products
  - Vector 3 - Bulk Filing/Online Fine Sort
  - Vector 4 - Online Adjustment Processing
  - Vector 5 - Online Returns/Exceptions Processing
  - Vector 7 - Online CPCS Reconcilement/Balancing
  - Vector 8 - Online Bank Reconcilement
  - Vector 9 - Online Collections Processing
  - Vector 10- Transaction Analysis

STERLING SOFTWARE

List of Products
As of 09/15/86

INFORMATION SERVICES GROUP - 7 Products
- Creative Data Systems Division - 3 Products
  - SYSTEM FOR RETAILERS
  - SYSTEM FOR DISTRIBUTORS
  - THIS
- Distribution Services Division - 2 Products
  - DISTRIBUTION IV
  - DDPS
- OrderNet Division - 1 Product
  - ORDERNET
- IHIA
- Legal Information Services Division
- Publishing Systems Division - 1 Product
  - COMPOSITION V

FEDERAL SYSTEMS GROUP
- Application Systems Division
- Intelligence & Military Division
- Systems & Scientific Division

PROFESSIONAL SERVICES GROUP
- Domestic Division
- International Division

BURTON GRAD ASSOCIATES, INC.
570 TAXTER ROAD
ELMSFORD, NEW YORK 10523
(914) 592-4700

September 23, 1986

Mr. Kevin Smith
Sterling Software, Inc.
8080 North Central Expressway
Suite 1140, LB53
Dallas, Texas 75206-1895

Dear Kevin:

Software Capitalization

1. Need to review all acquired products to establish:
   - Unamortized value
   - Projected amortizable life
   - Actual unit sales and revenue for past three years (new sales and maintenance)
   - Current cost analysis (FY86) for marketing/sales, technical (new development, maintenance, enhancement), management and administration, corporate allocations
   - Latest business projections by product

2. Construct NRV for each of the above products and determine if it is sufficient to effectively cover the unamortized value.

3. For all products, establish expected technical costs for FY87 subdivided between new development, maintenance and enhancement.

4. Establish timing for new releases or new products or separately priced functions or options. Also establish timing for determination of technological feasibility for each release.

5. Establish procedures for Divisions to perform necessary actions: determination of technological feasibility, recording of capitalizable costs, calculation of net realizable value, projection of amortizable life.

Sincerely,

Burton Grad (cdl)

Burton Grad

Enclosure
BG:838D

Telephone Call with Kevin Smith - 9/24/86

* When does software capitalization start?

* Product list:

  - current asset value
  - remaining amortizable life
  - revenue history (product and maintenance)
  - 1987 technical costs (maintenance, enhancement, new development)
  - revenue forecast and life projection (product and maintenance)
  - technical status (released, under development/detailed design completed or under development/detailed design not completed)

* Amortizable cost elements:

Function	. programming . testing . documentation . packaging for release
Timing	. after technological feasibility . before general release
Accounts	. technical personnel, salaries and fringes . computer and terminal usage . direct management and administrative costs (travel, telephone, facilities) . general & administrative?

* Procedure for tech feasibility:

  - New
  - Enhancement

* Procedure for NRV:

  - New
  - Enhancement

* Estimate 1987 impact

FILE

BURTON GRAD ASSOCIATES, INC.
570 TAXTER ROAD
ELMSFORD, NEW YORK 10523
(914) 592-4700

June 4, 1986

Mr. George Ellis
Sterling Software, Inc.
8080 N. Central Expressway
Suite 1140, LBS 3
Dallas, Texas 75206-1895

Dear George:

Enclosed are some of my suggestions for completing the instructions to be provided to the Group Presidents regarding software capitalization. All of these items have been discussed with Tom Annala (but not all agreed to).

I suggest the following guidelines:

1) Take a reasonably aggressive posture towards capitalization with internally developed and enhanced products.

2) Avoid setting up situations which would require unplanned writeoffs in future years.

3) Because the actual numbers will be fairly large (possibly as much as $8M-10M in the first year) consistency and solid documentation are essential.

   - proof of feasibility
   - actual capitalized costs
   - revenue forecast (units and dollars)
   - costs of obtaining revenue
   - product life

4) Spell out the rules for use of third parties (within group, within Sterling, with auditors, with consultants).

5) Assign a corporate-wide role to someone on an on-going basis.

The following items are enclosed:

a. Activities
b. Instructions
c. Coverage

I look forward to discussing these items with you.

Sincerely,

Burton Grad

BG:726B
Enclosures

cc: Elizabeth Virgo
Sterling Williams
Don Annala

Enclosure (a)

Software Capitalization - Activities

1. Set up separate instructions for the following categories:

   - Internally Developed

     - new product
     - enhancement
     - replacement

   - Acquired

     - prior to technical feasibility
     - after technical feasibility but prior to release
     - after release

   Include examples and models

2. Establish Schedule of Activities

   - Annual
   - Quarterly
   - Event driven

Software Capitalization - Instructions

New Product - Internally Developed

1. Establish development plan

   - functions
   - module tasks
   - effort
   - schedule

2. Record development costs (for r&d expense)

   - people time and cost
   - machine time and cost
   - support facilities and cost

3. Prepare product specifications

   - function
   - environment
   - performance

4a. Complete detail design

   - flow charts
   - program specifications

4b. Complete working model - (capable of Beta Test Entry)

5. Prepare revised construction completion plan

   - functions
   - module tasks
   - effort
   - schedule

6a. Determine technological feasibility of detail design

   - completed detail design
   - verify product specification match
   - committed resources
   - high risk assessment
   - QA and management affirmation

6b. Determine technological feasibility of working model

   - customer, QA and management affirmation

7. Estimate capitalizable cost

   - detailed list of accounts noting which can be and which cannot be capitalized

8. Compute net realizable value

   - see footnote (a)

9. Establish capitalization limit and amortizable life

   - based on NRV
   - revenue forecast period is economic life

10. Record construction costs for product capitalization

11. Release Product

Footnote (a) Net Realizable Value Calculation

	Include	Do not include
Revenue	all sales revenue all lease or rental revenue all "maintenance and enhancement" revenue except for error correction	education revenue installation revenue custom/special services revenue error correction revenue

Enclosure (c)

Software Capitalization - Coverage

1) Identify all current products and classify as:

   - in development
   - post release

2) For each product establish whether it was acquired; if so determine:

   - year acquired
   - original capitalization
   - cumulative amortization

3) Set up planning and review schedule for each current product

4) Set up plan for handling future acquired products

Software Cap.

Draft letter to private companies / subsidiaries

It seems to me that the standard letter is OK for this purpose.

Paragraph 2 page 1 might have the magic words "for tax benefit" added ???

I like the phrase "market assessment of the company" for private cos, but it doesn't apply to subsidiaries directly, does it.

What do you think.

Net Realizable Value Calculation

Gross Revenue

- new sales, features, upgrades, maintenance and enhancements whether leases, rentals or one-time charges (software only not including separately priced training or installation).
- for an appropriate period with the present product (not including any separately priced enhancements or product replacement)
- at current dollars

Less applicable costs (e.g., "completion" and "disposal")

- costs to provide future maintenance and enhancement within gross revenue definition above
- incremental costs to sell, deliver, install, train and support accounts (matching the time period above) as contractually committed
- at current dollars

B. Grad
E. Virgo
10/17

827B

Sterling

Software Capitalization

Agree on Single rules and procedures for divisions/groups to use for steps on soft cap:

- Product/Enhancement Definition
- Task Team for detailed design
- Task Team for working model
- Cost Elements to be capitalized time, function, work effort or cost record.

BC
Soft Copy

BURTON GRAD ASSOCIATES, INC.
570 TAXTER ROAD
ELMSFORD, NEW YORK 10523
(914) 592-4700

July 31, 1986

Mr. Kevin Smith
Sterling Software, Inc.
8080 North Central Expressway
Suite 1140, LB53
Dallas, Texas 75206-1895

Dear Kevin:

After reviewing your excellent summary of July 29, 1986 on SFAS 86, I have the following questions or suggestions:

- Technological Feasibility -- We suggest a business unit or division management certification in addition to the proposed review process to establish that resources have been committed to the completion of the project.

- Net Realizable Value -- As we discussed, this seems to be a very weak control mechanism since it appears that SFAS 86 calls for full revenues not revenues less applicable marketing, sales, support and administrative costs. Note that we would not, in any case, include technical costs (development, maintenance and enhancement). Since technical costs are typically 15%-20% of revenues (including maintenance in both costs and revenues), the NRV without deductions should be close to ten times the capitalizable costs (excluding the design costs).

  This figure will not correspond to our product valuations since we have deducted all business costs (including technical costs) from the projected revenues. We have included "maintenance" revenue in full over the product life (which may be longer than the amortization period). Therefore, it is our belief, at this time, that there will not be any writedowns unless the market for a product disappears entirely. Please understand that this makes me very uncomfortable, and I would be concerned that the NRV calculation procedure could be changed within 1-2 years.

I disagree with the concept of using discounting factors on the NRV calculation. I would prefer to see a conservative expected value approach taken by the divisions (or use a group level forecast) to avoid excessive amortization values.

It would appear to me that you should analyze the "maintenance" revenue stream for each product (or division) to split it between the value of error correction and the value of improvements and "free" enhancements. As a guideline, I would suggest that you use a cost-based analysis to make this split. As an estimate, I would expect that time maintenance revenue should be around 25%-33% of the total annual ongoing support fees. Therefore, 67%-75% of these fees could be included in your NRV calculation.

- Accounting and Record Keeping -- The statement that "outside contracted software development will be expenses in any case" seems incorrect to me. I believe that these costs would be treated identically to internal costs although different allocation factors might be used.

- Other -- Let's review the implications of SFAS 86 on the previous software valuations. Remember, we not only have to look at the 1985 assessment, but also look at previous Sterling Software valuations of acquired products (and possibly previous Informatics' valuations).

Please call to discuss these items at your convenience.

Sincerely,

Burton Grad

Burton Grad

BG:782D
cc: Mr. P. Moore
Ms. E. Virgo

copy to EV
orig to BS

STERLING SOFTWARE

MEMORANDUM

To: Distribution

From: Kevin Smith KBS

Date: July 29, 1986

Subject: Statement of Financial Accounting Standards 86 (SFAS-86)

The session on Statement of Financial Accounting Standards 86 at the Group Financial Officers' meeting held in Dallas on July 10, 1986 consisted of a brief presentation by Don Annala outlining the specific requirements and key concepts of the standard. Following Don's presentation there was a brainstorming session which covered a number of conceptual questions and concerns. These points were categorized by the various related topical areas and certain conclusions were reached on the implementation approach. However, in a number of cases we concluded more research and discussion is needed. Those points were noted for follow up by Kevin Smith and other members of the group. The following outlines the topics addressed and the conclusions reached.

TECHNOLOGICAL FEASIBILITY

- Documentation - We concluded our documentation supporting the decision that products or enhancements had reached technological feasibility will be relatively simple and straightforward. In some cases a single page memorandum could suffice. However, we also concluded that it is important that technology, sales and marketing and financial personnel be involved in the decision and document their concurrence. In particular, while a product may be technologically feasible, there may be concerns as to the economic feasibility of product development. Active participation of the financial officers is appropriate to insure sound judgments regarding the economic aspects of technological feasibility.

- Large vs. Small Projects - While it was generally agreed large projects will not pose a problem in terms of documenting technological feasibility, there was some concern regarding the method of documenting technological feasibility for minor enhancements. Some of these smaller projects might take only a few man days of development effort and the question was raised as to whether it was worth the effort to go through the formal documentation process of technological feasibility. The group consensus was that minor enhancements should be bundled in

groups and handled together. We should prepare a technological feasibility memorandum covering the key concepts to be addressed in the various minor enhancements. This would require some planning and organization prior to the documentation and design process. In addition, a related questions was raised as to what constitutes a minor enhancement and what constitutes a bug fix or a free maintenance modification. In the case of maintenance and bug fixes, capitalization of the related development costs is not appropriate under SFAS-86. This question will receive further research and follow-up by Kevin.

NET REALIZABLE VALUE

- Maintenance Revenue - The question was raised whether it is appropriate to include maintenance revenues and the related costs in the determination of net realizable value of a product. This was the methodology employed by Burton Grad and Associates in their valuation of Informatics Software. The group concluded that this question required more technical research and it was determined Kevin Smith should follow up on this point. It was also determined we will need to review the software valuation done by Burt Grad last year prior to finalizing our purchase price allocation and goodwill determination in the 1986 financial statements. We want to be sure last year's appraisal has not assigned value to a software package which is not supported by our current estimates of future economic utility. This would necessitate a write-down under the provisions of SFAS-86 in the near future. Kevin and Regie are to provide the information regarding the Burt Grad appraisal to the divisions and follow up on their review.

- Risk Factors - Kevin and George made the point that it will be appropriate for us to apply discounting factors in our net realizable value calculations to reflect the relative risk associated with the various software products being evaluated. Discount factors are not specifically addressed in SFAS-86 but this approach will allow us some leeway for conservatism in managing the amounts recorded on the balance sheet.

ACCOUNTING AND RECORD KEEPING

- Identification and Collection of Costs - All members of the group agreed they would individually organize a simple cost accounting system to capture costs associated with software product development. This system will include allocation methods for overhead and computer time. In terms of what costs should be included in the overhead allocation pool, it was agreed each division would provide a list to Kevin Smith of those costs they proposed to include in their overhead pool.

Kevin will then circulate the various proposed costs among the groups to reach a consensus on what we will allocate and what allocation methodology is most appropriate.

- Project Scheduling, Tracking and Communications - Under the Sterling method of implementing SFAS-86, subsidiaries will expense software development costs on their ledgers. For management reporting purposes development costs will be capitalized at a higher level of consolidation. Within this framework Don Annala questioned whether this would pose a disincentive to the various division managers since there is no P&L reward for capitalizing development costs. George stated the capitalization or expensing decision ought not have an impact on the individual managers business decisions and, that was one of the reasons for excluding the capitalization decision from the individual division's performance measurement. Further, the fact that all development costs are expensed will pose an incentive to the managers to effectively administer the product development process, i.e., should the reported developments costs for a given product become excessive, it is anticipated managers will take remedial actions to control excess development related expenses.

- In-house Development vs. Outside Contracted Software - Several members of the group noted it is currently the practice to hire outside consultants to do software development in order to be able to capitalize the software purchased from those sources. Under SFAS-86 this will no longer impact the management decision since outside contracted software development will be expensed in any case.

- Bureaucratic Impact on Software Developers - The group strongly agreed the accounting treatment of development costs under SFAS-86 must have no bureaucratic effect on people doing the actual software development work. Software development personnel are to be shielded from any constraints or motivational influences which result from these accounting decisions and left free to concentrate their efforts on creative software development.

- Cost/Benefits and Materiality - We agreed significant effort should not be expended in capturing and capitalizing immaterial amounts. Specifically, although SFAS-86 requires that costs to produce hardcopy documentation and instructional manuals, etc. be capitalized and treated as inventory, the group agreed in most cases such inventories would be immaterial. As long as they continue to be immaterial, these costs will be included in the overhead pool for allocation.

INTERNAL REPORTING

- Decision Making Authority - The group agreed that internal reporting of information, both with respect to the capitalization decision and also regarding net realizable value adjustments, will begin at the division/subsidiary level. Amounts to be capitalized and net realizable value information will be reported by the division to the group financial officers. Capitalization and write-off decisions will be made at the group level. This information will be forwarded to corporate for overall review at that level. This will provide for appropriate consensus in making P&L related decisions while at the same time providing for appropriate review of those decisions.

- Effective Date - George Ellis directed everyone in the group to continue to compile information related to SFAS-86 on the assumption the effective date of implementation for Sterling Software will be June 30, 1986. To date it has not been determined whether Sterling will adopt SFAS-86 in fiscal 1986 or wait until fiscal 1987. However, George noted that he wants to be in a position to adopt the statement this year if it proves appropriate.

OTHER

- Software Products Now on the Books - It is clearly stated in SFAS-86 that the capitalized costs of software products now on the books will be subjected to the same criteria for amortization and net realizable value tests as those costs to be capitalized in the future. As noted above, this makes it important to review Burt Grad's valuation appraisal of existing capitalized software to minimize the likelihood of any software net realizable value write-downs in the near future.

- Aggressiveness - There was some confusion regarding Sterling's attitude towards aggressive or conservative implementation of SFAS-86. George Ellis proposed breaking this treatment down into several categories. Specifically, we should be aggressive regarding the determination of technological feasibility (i.e., we should determine feasibility at the earliest date). This will facilitate maximum flexibility in the determination of costs to be capitalized. Similarly, George proposed an aggressive posture in the identification of those costs to be capitalized. This includes identification of overhead items for allocation and the maintenance versus enhancement costs determination. This too will provide Sterling maximum flexibility in what to capitalize. However, George proposed that we be somewhat more conservative in our net realizable value write-down policy. As noted above, he recommended the use of discounting factors to cushion for the relative risk associated with the various software products. It appears the financial

markets are not giving much weight to the SFAS-86 implementation question. In other words, those companies who have early adopted SFAS-86 have not suffered in terms of the valuation of their stocks. Given this apparent environmental consideration it appears an aggressive posture is warranted based on apparent industry practice. We would not want our stock to suffer by comparison with similar companies because we were inconsistant with the rest of the industry.

- o Use of Outside Experts - There was a good deal of discussion as to the appropriateness and necessity of using outside experts such as Burt Grad or Arthur Young & Company. The group concluded it would likely be necessary in the early implementation phase to make use of such outside experts to the extent they can assist us in policy formulation and provide guidance on industry practice. However, on an ongoing basis it is anticipated the use of outside experts would be reduced to occasional consultation regarding specific questions requiring expert judgment, i.e., specific net realizable value determination points. In most cases we would expect to do our own net realizable value determinations and monitor our own performance regarding the quality of our estimation process.

- o Outside Auditors Expectations - The group agreed that at a minimum we would plan to provide the outside auditors with (1) written documentation of the process surrounding the determination of technological feasibility, (2) detailed analysis regarding costs captured through out cost accounting system for capitalization and (3) detailed support to corroborate our net realizable value calculations. Each group will be expected, at a minimum, to support the above information requirements.

At the conclusion of the group session we agreed Kevin Smith would compile the above notes and serve as a clearinghouse for questions and ideas regarding the implementation of SFAS-86. Kevin is expected to be in touch with other software firms as well as Arthur Young & Company, Burton Grad and other outside experts to be sure we keep abreast of trends in the industry. Additionally, he will prepare a detailed gameplan for final implementation of SFAS-86. This will include input from Regie regarding the impact of SFAS-86 on the 1987 annual plan. As more information becomes available, Kevin will communicate this information to the divisions via periodic update memos.

Distribution: Dick Tucksmith
Bill Dywer
Sue Johnson
Steve Shiflet
Mark Alexander
Don Annala
George Ellis
Regie McHone
Dwight Riley
Jim Jenkins
Vicki Hill

ccs. Burton Grad
Kris Magnuson
Phil Moore

Ref to Bs
J/ Software

STERLING SOFTWARE

MEMORANDUM

copy to EV. Row

To: Group Financial Officers

From: Kevin Smith

Date: August 25, 1986

Subject: Incorporation of Divisions

The following information is provided as a status update on the incorporation of the various Informatics divisions. This is the result of our research here in Dallas, as well as comments brought to my attention by several of the group financial officers and division personnel.

Transfer of Assets from Informatics to the Divisions - The form of the transactions is still being researched by Jim Jenkins with the assistance of Arthur Young & Company. Our objective in transferring these assets is to achieve a tax free exchange under Section 351 of the Internal Revenue Code. To achieve this objective it is likely the transfer will be of assets (net of liabilities) for equity securities.

The transfer will be in the form of a blanket assignment of all assets and obligations including receivables, inventories, fixed assets, software, contract and lease rights, copyrights, trademarks, payables, etc. While it is not necessary for you to compile a detailed listing of assets and liabilities to be transferred, you may wish to do so for your own record keeping purposes.

The accounting balances to be transferred will include all general ledger balances at September 30, 1986, as well as push down amounts representing Sterling's adjusted basis in the net assets of Informatics at acquisition and as subsequently amortized. This will include valuation adjustments for software, fixed assets, goodwill, reserves and deferred taxes. In certain cases we will need to separate trial balances of divisions whose assets and liabilities are now comingled in a single ledger. I will be in contact with each of you to discuss the push down accounting process.

Software Appraisal - Under separate cover, I am forwarding a Lotus 123 summary worksheet of the software valuation estimate done by Burt Grad at July 31, 1985 for review by those of you whose divisions have software assets. This was the basis of the allocation to software in the purchase price allocation. As part of the finalization of the purchase price allocation process we need to review the reasonableness of those estimates in light of our current knowledge of those facts

which existed at July 31, 1985 (not new facts which have since come into existence). Please review the detail of this Lotus file as it relates to your divisions and forward your comments to me. I will likely request Burt Grad to participate in our review, particularly if it appears some reallocation of value may be appropriate.

Fixed Assets - Please remember it is important to reconcile your fixed asset detail as reported in Bob Couvillion's Accounting IV fixed asset system to your general ledgers at the end of August, 1986. We intend to use the Accounting IV fixed asset system as our detail through September 30, 1986 for both financial reporting and tax return purposes. It is important the date be accurate. After September 30, 1986 we would like to begin running payroll with the Accounting IV system. To do this you will need to be prepared to load your fixed asset detail listing onto your own fixed asset subledger systems. The systems you select should have the capability to maintain fixed asset accounting records for both tax and financial reporting purposes. Accordingly, the Accounting IV data must be accurate and agree to the general ledgers.

State and Local Income Taxes - Jim Jenkins and Arthur Young & Company are researching the income tax strategy by state. They will require the information regarding our qualification to do business, by state, prior to finalizing a conclusion on a tax strategy. This information will be disseminated as soon as practicable.

State and Local Sales Taxes - Bill Hewell of Majors & Hewell will begin visiting the divisions during the week of August 25. Bill will distribute the state sales tax handbook which his firm has prepared for us. He will also answer questions about state filing requirements and explain your options for filing this information at that time. You are expected to file state and local sales tax returns beginning with the month of October, 1986.

Federal and State Unemployment Taxes - Cindy Therriault of Jim Jenkins staff will provide a 1 day seminar in Dallas during September for those personnel whom you designate to process FUTA and SUTA information. More detail about this training will be provided at a later date.

Leases and Other Contractual Obligations of Informatics Which May Require Assignment - Please advise me of any contractual situation which may require assignment and in particular, those where the other party may object to such assignment. Do not formally request assignments until Jeannette and I have discussed these situations with you.

Intangible Asset Valuation Review - David Katzen has begun his schedule of site visits to the divisions to review for unidentified and/or unvalued intangible assets. David and Jim Jenkins will contact you personally to fit their travel plans in with your schedule.

Please advise me if any of the above information poses problems for your divisions or if you become aware of any problems/opportunities as a result of your efforts to incorporate your divisions which you believe should be brought to the attention of the corporate staff of the other divisions.

Thank you for your cooperation.

Kevin B. Smith

KBS:kem

cc: George Ellis
Jeannette Meier
Regie McHone
Vicki Hill
Jim Jenkins
Burt Grad

× Kevin Smith Dallas

FASB

Thanks

per G. Ellis

NRV
Tech has
mktg data

71

Burton Grad Associates, Inc.
570 Taxter Road
Elmsford, New York 10523

June 10, 1986

George H. Ellis
Chief Financial Officer
Sterling Software, Inc.
8080 N. Central Expressway
Suite 1100, LB 53
Dallas, Texas 75206-1895

Re: Software Capitalization

Dear George:

To assist in my planning for the balance of 1986 I would appreciate understanding what role, if any, you expect Burton Grad Associates, Inc. to play in your software capitalization efforts.

There are a number of ways in which I believe we could be of help, but this depends upon the level of internal resource you expect to use, the role that Arthur Young will play and your possible use of other consultants.

Specifically BGAI could perform the following tasks if requested by Sterling:

1. Helping to set up plans and procedures to be followed for 1986 and 1987 software capitalization.

2. Reviewing detailed work plans, records and proposed procedures for each affected division.

3. Participation in technological feasibility sign-off.

4. Participation in Net Realizable Value determination.

5. Quarterly review of all software products to establish capitalization plans and project future values.

6. Annual review of software capitalization results including certification prior to Arthur Young audit.

Based upon your wishes in this area I will be glad to give you specific cost and schedule estimates.

Sincerely,

Burton Grad

ccs. Sterling L. Williams
Elizabeth Virgo
Don Annala

Sterling

R+D Expenses

1986 $16.5 M

8 - 11 M might qualify

minimum would be 20%.
max " " 80%.
1.6 - 8.8

after tax
10 - 40 ¢/share

Software Capitalization

Objectives - words, #'s (say num 1985/6?)

Ident products - sel div
new - sig-words
old - enhancements
old - capitalized

Initial
~~Review~~ Plan -
intend div
requirements

Tech Feasibility
technical
review
~~to~~

NRV - unit/$ forecast of revenue
cost of revenue

Cap. Costs -

Review Plan - Qtly, Annual, Event

Documentation - Records
Approval/committee -
3rd parties

Audit by AY

Responsibilities - Comm
Grp
Div
3rd party
Auditors

Sterling - Soft word telephone

To Burt Grad
Luanne James

From Elizabeth Virgo

Sterling FASB 86

May 26th

I have actually left my notes at home so am doing this from memory. And there is plenty to say, even though this may be somewhat disjointed.

I think we never got the message from George right. It was not a meeting to discuss FASB but really to settle on implementation guidelines. There was even a draft outline document at the meeting , prepared by Don.

George is very unversed in the topic. I would guess he has speed read it a couple of times at most. Don has gone through it very carefully- that is the package we sent. Chris Magnusson(?) is very chary of taking positions= I would describe it as a typical "won't take any responsibility/lead" role auditors often do. She was constantly worried about the AY audit role. She was less well informed than I personally think she should have been. These views are mine and should not be repeated to anyone Burt.

The three met for about half an hour before I joined them. No agenda. After a round-the-table-introduction, we set to. After threequarters of an hour George tried to put up an agenda, to which we worked.

The first part was mainly a conversation between Don and myself about the concerns we both had. Most of xhat was news to George. Or appeared to be. I have to say that I think he likes to project this southern country boy image and is very committed to the idea of a smal-headquarters staff so you openly admit you don't know all the answers etc. But is it a facade? Is he playacting? If so, how much? Chris tended to shelter behind the office and is willing to go ask what AY feels on a number of points - she was not well primed.

It is clear that George's approach leaves it to the Groups to decide what to roll up for capitalisation. There is not to be a policy downwards. We came to the conclusion that if they go this route, which I find less than satisfactory in purist terms though I do understand it fits SW's philosophy, the Groups must include it as a budget item so some financial planning can be done ahead of time. The key people are the equivalents of Don and Steve Shifflett. Don is to be chief Guru. He already wears two hats- special helper to his Group Manager for forecasting and budgeting and his own line role as accountant or whatever.

It is clear thta there are defanitional differences between groups/divisions- Don said even within that, mainly as to how costs are classified. R and D will not include some manuals of a technical nature in some instances which have been put to overhead etc. I think this will be tackled in the instructions. (which, by the way, were sent to you with my meeting notes on, on Friday Burt).

I think that much will depend on the management style within the Groups. Where you have a manager who likes to know how many cups of coffee were drunk or paperclips used, he should be very much in at the grassroots level, which seems to me to be from where FASB 86 will spring. If not then it will be an after-the-event-affair. This perturbs me more than George. His argument that the figure will average out is one he used just about every level or topic raised. He may be right.

He had not realised that this would need to be captured quarterly, nor that it would start September. Just as well I went to Dallas.

I suggested we consider what was invloved by either counting products or the Product managers. George was agin a bit surprised to find everyone was involved, mainly because of enhancements. It also seems clear that International has bought product- Italy etc. There is also probably product in Professional Services. Maybe not in Federal though they were

not sure.

What was interesting was that we then got into the document trying to critique it so a redraft would emerge quickly. George is anxious to get time to put it in at the June5/6 meeting in a very much downplay mode so as to minimise fears about extra admin, extra costetc.

I am only too aware that you would have challenged George on this but I did not feel Burt t that I should do this in front of a fairly junior member of staff and the auditor. I also felt that if I did not antagonise George and set out to straigyten it up as much as one cou could, then he may feel more relaxed asking for help.

The role he sees for BGAI is, I think, quite clear a de minimus one. We are to be written in to give help and guidance whenever anyone has a problem. They go first to Don, maybe AY and if they cannot cope, to someone outside "like BGAI".

George totally failed my test on the NRV. He was proposing to extend a revenue line by appl ing a percentage to history. And that was all. Even Chris expostulated at this. I gave the usual EV lecture on market appraisal, which got Chris's blessing. I do not think they will do anything more about that in the draft. And this gives us an opportunity I think. The new draft will go to you Burt and to me and comments have to be turned round fast, by the 4th to give it a chance of making 5/6th June. I believe there will be no instructions about how to do the NRV. I saw George alone afterwards and explained that I had seen the Strategy Product History/Facts section as ideal for collecting the necessary data for the FASB NRV. He feels that this is not a job the Accounting function should do but should be done by Marketing/Sales. My comment is that first they tend not to know how to do it and then are far too optimistic and unrealistic about market opportunity etc.Has SW left this part in the Strategy?

As may be clear by now, the way in whuch I was using Luanne's work was to check on specific points. None of them were decision points Burt. They were all "who does what, when and how". We needed tipics like enhancements, purchase software, costs included/ excluded/, documentation required.

I think I made a very solid contribution by wearing a proper consultancy hat and seeing a great many of the problems. For example, by leaving the decision making so low down, why and when would there be incentives to capitalise. I suggested that anyone with any sense would declare on October lst, so they have a full year to get it right. George proposed to take the effects of FASB 86 right out of the group or lower level accounts and to handle it at corporate level. However, if someone makes a real lulu, they will be forced to eat the regorged costs as an expense. Both Chris and I felt that noone would ever "own up" at that rate. Chris is worried that the spirit of FASB 86 would not be implemented- I think she may be right. I was also concerned that the record keeping would be very cavalier. There is to be blanket record keeping I think. No time sheets but a manager's best guess. And use of a multiplier to give direct overhead costs on that which I think will include thinsg like computer time etc. ie some costs which could be directly tracked.....

AY is going to fulfill a policing role. They will add this to their topics to be dealt with at the quarterly review they make with each Group (Division?). Chris has UCCEL(?) anxious to meet with George to see what they are doing. And two others. She is helpful but no initiator nor leader on this front.

George agreed that some control would have to be in place. He suggested measuring two. Actula R and D as % of planned and actual capitalisation as % of planned, each on a monthly basis. Any divergence to be raised at the quarterly Group meeting. I said that would mask a range of performance ie the ahead of budget could mask a behind budget. He was not concerned. Only Chris and I understand that the NRV calls for a fresh estimate to b be made each year, I think. So the capitalisation may further decline and they won't know

until far too late to have any flexibility in any one eyar. I am also not sure I like the a auditor so close so soon in the financial year but felt I couldn't say that while Chris was t there.

This was also premised on the be conservative approach, which I understand may change things.

I think that the combination of Don and George may be against the corporate interest. Don feels he can handle it quite well, through having his background. George obviously feels this as he has given Don a free hand. Chris is worried- her firtst concern interestingly enough was the documentation. She suggested they may have to bring in a technical compuet auditor to look at detailed specs etc. I added that they need someone to do the outside market appraisal for NRV and would the suaditor have that knowledge? She said that she hoped BGAI wouldbe used. Where appropriate.

I hope this gives you a flavour of what was a very disappointing day. I feel George was just being polite in asking us/me there. I think he feels this is relatively unimportant and just a nuisance. Do as little as you can and get to more important things.

If you get the chance, talk to him about it carefully. I am curious to see whether you make the same diagnosis.

I was asked at different tiems whether I thought we were making progress. I had to say yes as we ecrtainly were, compared to where we were at the start. But I do not really think in the right direction nor in the right way.

Sad.

7/ soft copy

BURTON GRAD ASSOCIATES, INC.

570 TAXTER ROAD
ELMSFORD, NEW YORK 10523
(914) 592-4700

May 13, 1986

Mr. George Ellis
Sterling Software, Inc.
8080 N. Central Expressway
Suite 1140, LBS 3
Dallas, TX 75206-1895

Dear George:

As you requested, I have enclosed the following materials:

- copy of FASB86
- copy of FASB86 analysis from:
  - Arthur Young
  - Touche Ross Seminar
  - Touche Ross Erickson/Herskovits
  - Everett Buck of Continental Airlines (ex Deloitte Haskins Sells)
- selected draft papers from ADAPSO project on application of FASB86 rules; other are being drafted (B. Grad and R. Vines are co-chairmen):
  - Marcus - Software Product Development & Support
  - Cooper - Technical Feasibility
  - McCallion - Guidance on Applying FASB86
  - Virgo - Information Record Requirements

Elizabeth Virgo and I look forward to the opportunity of working with you in planning for Sterling's use of the new software capitalization guidelines.

Sincerely,

Burton Grad
BG:401B

Enclosures

Questions -

When does Fed Cloth Start -
10/1/86 - ?
should we take 1985/86 cap ?

all products released prior to
9/30/86 would not need
any dual cost analysis.

products not released as of 9/30/86
would be treated as under
development + tech fees not
get demonstrated.

Hamburg
Soft Cap.

FASB 86 - Ellis, Hamburg 6/5/86

1) Tech Feas point - devel cycle
division based
identify high risk products

2) NRV - revenue expectation
cost assignment
NPV

3) set up "control valves"
on tech feas
on NRV

Ellis who manages the balance sheet (with Soft Cap significance)

not include amortization in unit measurement

Concerns: apply reason acctg to devel activities
avoid abuses (expense vs cap)
development decisions should not be
made for acctg reasons
people should not be measured
in ways inconsistent with
past or peers
cap decision should be consistent

Solutions: Corporate
Policies/Guidelines on capitalization
Implementation -
meas. profits - but not
consider interest or amount
of funds Soft/company

not consider (at all) level of opt amortization

allowed it be applied in FY 1986

work out NRV procedure to provide reasonableness test

STERLING SOFTWARE

MEMORANDUM

To: George Ellis

From: Don Annala

Date: May 28, 1986

cc: Werner Frank
Phil Moore
Burt Grad
Kris Magnuson (AY)
Elizabeth Virgo

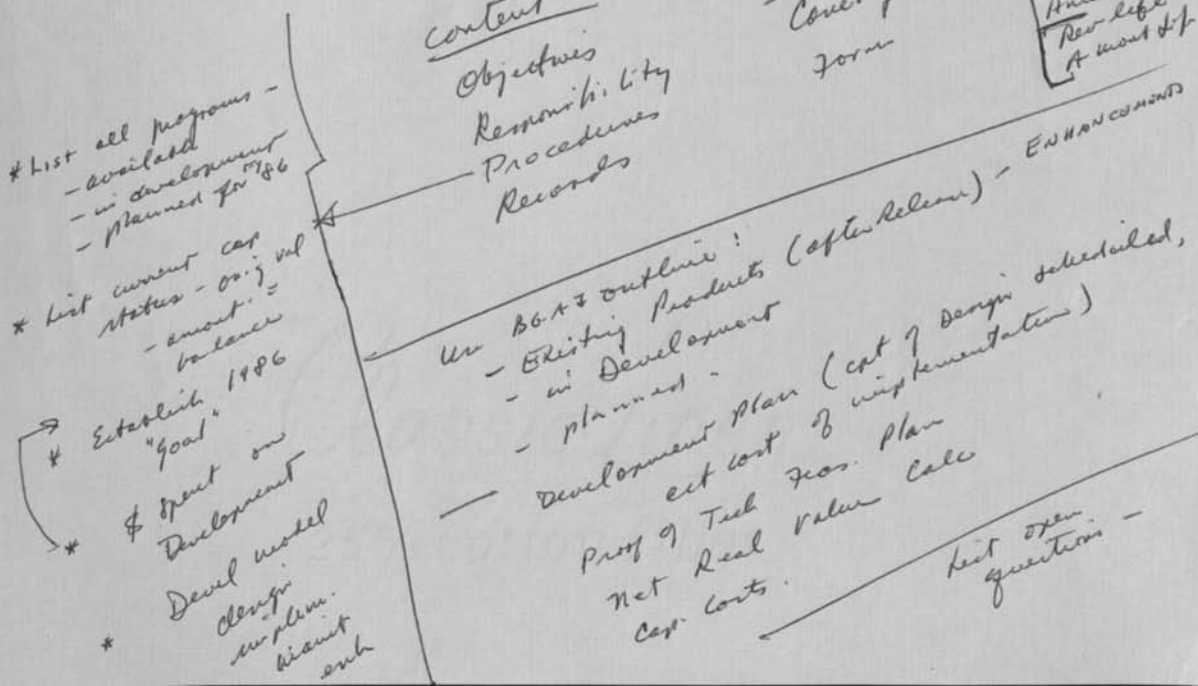
Subject: FASB 86 Implementation Guidelines Draft Document

Attached is the revised draft for review and comment. To meet the schedule you documented during our meeting of May 23, comments should be back by June 4. If there are no radical changes in this draft, another draft will be available on June 6 for the Group President's meeting. The target date for distribution of the final paper to the field is June 10, 1986

Upon receipt of comments from the President's meeting, a cover letter, including a timetable for implementation, will be prepared to accompany the final paper.

Please call me if you have any questions.

DA:sh
05280036



ROUGH DRAFT

STERLING SOFTWARE, INC.

Statement of Financial Accounting Standards Number 86 (FASB 86), "Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed".

I M P L E M E N T A T I O N G U I D E L I N E S

ROUGH DRAFT

May 28, 1986

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EXECUTIVE SUMMARY

It will be the business practice of Sterling Software, Inc., to maintain a conservative posture in implementing FASB 86* for our operating groups and divisions. This practice will mean expensing all appropriate costs associated with software development and minimizing the amount of dollars reflected in the corporate balance sheet for software assets. Operating groups and divisions will be required to report all development costs as expenses for management reporting. Hence, for financial reporting, and financial planning and performance measurement at the group and division level, there will be no impact to operating profit. Group and division software development costs associated with capitalization and amortization will be reported separately.

This Standard applies to all operating groups and divisions that sell software, whether the software is sold separately or sold as part of another product, process or service. Further, the Standard applies to all operating groups that develop or buy software.

This Standard is clear in stating that certain costs must always be expensed and others must always be capitalized. R & D costs are to be expensed. Upon determining technological feasibility, either through a working model or a detailed program design, costs are to be capitalized. (See Appendix B, Technical Feasibility). Product distribution, customer support, and maintenance costs are to be expensed.

Standard 86 requires disclosure of both the balance of unamortized costs, and the amount charged to expense for amortization and write-downs to net realizable value (NRV). An (NRV) discussion and example is provided in Appendix B. This disclosure requirement is in addition to research and development expenses disclosed under Statement 2.

Reporting will be required on a product-by-product and project-by-project basis.

FASB 86 will be applicable to Sterling Software operating groups effective October 1, 1986.

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* As in the FASB 86 Standards document itself, the term "FASB 86" is referred to synonymously in this paper as "the Standard", "Standard 86", "this statement"; and "FASB No. 86".

I. FASB 86 SUMMARY

The following summary is quoted from the FASB 86 document:

This Statement specifies the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process. It applies to computer software developed internally and to purchased software. This FASB project was undertaken in response to an AICPA Issues Paper, "Accounting for Costs of Software for Sale or Lease," and an accounting moratorium imposed by the Securities and Exchange Commission precluding changes in accounting policies related to computer software costs pending FASB action.

This Statement specifies that costs incurred internally in creating a computer software product shall be charged to expense when incurred as research and development until technological feasibility has been established for the product. Technological feasibility is established upon completion of a detail program design or, in its absence, completion of a working model. Thereafter, all software production costs shall be capitalized and subsequently reported at the lower of unamortized cost or net realizable value. Capitalized costs are amortized based on current and future revenue for each product with an annual minimum equal to the straight-line amortization over the remaining estimated economic life of the product.

This Statement is applicable, on a prospective basis, for financial statements for fiscal years beginning after December 15, 1985. The conclusions reached in this Statement change the predominant practice of expensing all costs of developing and producing a computer software product. [1]

II. IMPLICATIONS TO OPERATING GROUPS

Statement 86 is an accounting Standard; it should not control our business. In applying FASB 86, there will be a minimum of documentation and reporting required within the guidelines set forth in the Standard.

It will be the responsibility of operating group presidents and the division presidents with assistance of their financial officers to implement and comply with this Standard.

Cost of software product capitalization and amortization will be recorded in group and division books, but will be reported separately from normal monthly financial reporting. Hence, there will be no P&L impact, or short term P&L benefit, at group and division levels. Software development costs will be expensed when incurred for monthly financial reporting. Only at the corporate consolidated level will capitalization and amortization cost be reflected in income statements.

III. IMPLEMENTATION GUIDELINES

Accounting treatment for costs under FASB No. 86 consists of three steps: (1) classifying all types of software costs, (2) determining and documenting the occurrence of technological feasibility, and (3) assessing the net realizable value of each software product on a product-by-product basis.

The business practice of maintaining accurate records on cost and revenue on a product-by-product and project-by-project basis becomes mandatory under the Standard. On the cost side, expenses will be fully loaded for all types of software costs. The loading should include labor and fringe, other direct costs, other indirect costs, and direct overhead. G&A costs are not to be included. Costs must be captured for software product research, design, developing a working model, production development including master documentation, and product distribution. Cost capture will be done on all new products and all product enhancements on a enhancement-by-enhancement as well as on a product-by-product basis. It is recommended that a sufficient number of project cost accounts are used to record cost for each development phase. A larger number of project cost accounts would permit more selective write offs of costs if write offs are required.

Purchased software will be expensed for financial management reporting and follow the FASB 86 rules for consolidation reporting. Outside capitalized software development projects will be handled by expensing all progress payments prior to technical feasibility.

Purchased software should be accounted for on a consistent basis with the costs normally incurred during internal software product development. Further, the alternative future use provision of Statement 2 applies to purchased software as well. If the purchased software meets the technological feasibility test, the costs are to be capitalized.

"If the technological feasibility test for the software product as a whole is not met at the time that the software is purchased but the software being purchased has an alternative future use (for example, for use as a tool in developing another product or for direct resale), the cost will be capitalized and subsequently accounted for according to its use. The alternative future use test will also apply to purchased software that will be integrated with a product or process in which the research and development activities for the other components are not complete." [1]

Software production development costs that are recoverable from future revenues will now be capitalized and amortized once technological feasibility has been established.

FASB No. 86 specifies that the net realizable value (NRV) of each software product must be assessed, or tested, for each reporting period on a product-by-product basis. The NRV test is required to ensure that the software product asset value amount reported by operating groups as an asset has future economic benefit. If the unamortized capitalized costs exceed the NRV of each software asset, then the amount of the excess must be written off to expense and separately disclosed. The NRV is the maximum amount that may be capitalized. Moreover, once costs are written off, they may not be written up.

The NRV test will be performed on a product-by-product basis including all product enhancement amounts capitalized for the product. That is, when assessing NRV, add capitalized product enhancement amount to the current asset balance for each product. Note that this is different from the requirement to capture enhancement costs where costs are recorded for each product enhancement.

Adding capitalized enhancement costs to the software asset is analogous to the recording and reporting of other traditional capital improvements.

IV. REPORTING REQUIREMENTS

External Reporting

The new rules may have an effect on the financial statements and disclosure requirements to report the effect of applying FASB 86 on earnings and earnings per share.

Internal Reporting and Performance Measurement

New periodic financial reporting will be required under the Standard. This new reporting, however, will be kept to a minimum. Some of the required internal documentation will be presented and reviewed with senior management during Quarterly Operational Reviews. Note that all backup documentation supporting cost, expense, amortization, NRV, and asset balances must be retained for __#____ years.

Internal reporting will include:

1. Monthly reporting on a product-by-product basis the asset balance, amount capitalized, and the amount amortized.

2. Monthly reporting of revenue by product.

3. Quarterly reporting on progress to date on each development project showing planned, forecast, and actual delivery dates, and resources consumption in dollars

4. Development project documentation for each product or enhancement should include:

    a) Project plan
    b) Adequate detail of project costs
    c) Documentation of demonstration of technical feasibility
    d) Revenue projection

V. COMPLIANCE GUIDELINES

Complying with FASB 86 will require appropriate documentation. Some or most of the required documentation and procedures may already exist for each software development project depending on the software project management practices currently in place.

The software development process should be documented. This should include a project name, name of the project manager, estimated man months of effort, estimated useful life, a Gantt chart describing the project elements including man months and total cost for each project phase, documentation supporting the completion of technical feasibility or working model, and documentation of the capitalization period.

Recording and reporting of costs to be capitalized should include labor, fringe, other direct, other indirect, and direct overhead on a product-by-product basis. G&A cannot be capitalized.

Also, on a product-by-product basis, accurate schedules based on expected future revenue and revenue-to-date should be maintained to support the estimated useful life, capitalization period, asset value, amortization schedule, and any write downs to NRV.

A procedure should be in place to evaluate, on a product-by-product basis, the NRV of the software assets.

VI. REFERENCE

[1] FASB 86, No. 004, August, 1985

[2] N. Erickson and D.H. Herskovits, "Accounting for Software Costs: Cracking the Code" Journal of Accounting, November, 1985

[3] Arthur Young, "Software Costs: Implementing the new Accounting Standard", booklet: IHT85-1127, 186-SRI-1180-10M

[4] A.D. McCallion, "Computer Software: Guidance on Applying Statement 86", Highlights of Financial Reporting Issues, FASB, February, 1986

VII. Glossary

Source for this glossary is this Standard, Appendix C.

Coding

Generating detailed instructions in a computer language to carry out the requirements described in the detail program design. The coding of a computer software product may begin prior to, concurrent with, or subsequent to the completion of the detail program design.

Customer support

Services performed by an enterprise to assist customers in their use of software products. Those services include any installation assistance, training classes, telephone question and answer services, newsletters, on-site visits, and software or data modifications.

Detail program design

The detail design of a computer software product that takes product function, feature, and technical requirements to their most detailed, logical form and is ready for coding.

Maintenance

Activities undertaken after the product is available for general release to customers to correct errors or keep the product updated with current information. Those activities include routine changes and additions.

Product design

A logical representation of all product functions in sufficient detail to serve as product specifications.

Product enhancement

Improvements to an existing product that are intented to extend the life or improve significantly the marketability of the original product. Enhancements normally require a product design and may require a redesign of all or part of the existing product.

Product masters

A completed version, ready for copying, of the computer software product, the documentaton, and the training materials that are to be sold, leased, or otherwise marketed.

Testing

Performing the steps necessary to determine whether the coded computer software product meets function, feature, and technical performance requirments set forth in the product design.

Working model

An operative version of the computer software product that is completed in the same software language as the product to be ultimately marketed, performs all the major functions planned for the product, and is ready for initial customer testing (usually identifed as beta testing).

Appendix A FASB 86 Text

Statement of Financial Accounting Standards No. 86

Appendix B ADAPSO Draft Guidelines for FASB 86

Selected draft papers from ADAPSO project on application of FASB 86 rules; others are being drafted (B. Grad and R. Vices are co-chairmen).

NO. 004 | AUGUST 1985

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Statement of Financial Accounting Standards No. 86

Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed

August 1985

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Summary

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Statement of Financial Accounting Standards No. 86

Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed

August 1985

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Statement of Financial Accounting Standards No. 86

Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed

August 1985

INTRODUCTION

1. This project was undertaken in response to requests by the Securities and Exchange Commission (SEC) and the Accounting Standards Executive Committee (AcSEC) of the American Institute of Certified Public Accountants (AICPA) to clarify the accounting for the costs of internally developed and produced computer software to be sold, leased, or otherwise marketed. They indicated that existing accounting pronouncements contain only general guidance that has been interpreted inconsistently.

SCOPE

2. This Statement establishes standards of financial accounting and reporting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process, whether internally developed and produced or purchased. It identifies the costs incurred in the process of creating a software product that are research and development costs and those that are production costs to be capitalized, and it specifies amortization, disclosure, and other requirements. As used in this Statement, the terms *computer software product, software product,* and *product* encompass a computer software program, a group of programs, and a **product enhancement.**[1] This Statement does not address the accounting and reporting of costs incurred for computer software created for internal use or for others under a contractual arrangement.

[1]Terms defined in the glossary (Appendix C) are in **boldface type** the first time they appear in this Statement.

Research and Development Costs of Computer Software

3. All costs incurred to establish the technological feasibility of a computer software product to be sold, leased, or otherwise marketed are research and development costs. Those costs shall be charged to expense when incurred as required by FASB Statement No. 2, *Accounting for Research and Development Costs.*

4. For purposes of this Statement, the technological feasibility of a computer software product is established when the enterprise has completed all planning, designing, **coding**, and **testing** activities that are necessary to establish that the product can be produced to meet its design specifications including functions, features, and technical performance requirements. At a minimum, the enterprise shall have performed the activities in either (a) or (b) below as evidence that technological feasibility has been established:

a. If the process of creating the computer software product includes a **detail program design**:
   (1) The **product design** and the detail program design have been completed, and the enterprise has established that the necessary skills, hardware, and software technology are available to the enterprise to produce the product.
   (2) The completeness of the detail program design and its consistency with the product design have been confirmed by documenting and tracing the detail program design to product specifications.
   (3) The detail program design has been reviewed for high-risk development issues (for example, novel, unique, unproven functions and features or technological innovations), and any uncertainties related to identified high-risk development issues have been resolved through coding and testing.
b. If the process of creating the computer software product does not include a detail program design with the features identified in (a) above:
   (1) A product design and a **working model** of the software product have been completed.
   (2) The completeness of the working model and its consistency with the product design have been confirmed by testing.

Production Costs of Computer Software

5. Costs of producing **product masters** incurred subsequent to establishing technological feasibility shall be capitalized. Those costs include coding and testing performed subsequent to establishing technological feasibility. Software production

value is the estimated future gross revenues from that product reduced by the estimated future costs of completing and disposing of that product, including the costs of performing maintenance and customer support required to satisfy the enterprise's responsibility set forth at the time of sale. The reduced amount of capitalized computer software costs that have been written down to net realizable value at the close of an annual fiscal period shall be considered to be the cost for subsequent accounting purposes, and the amount of the write-down shall not be subsequently restored.

Disclosures

11. The following shall be disclosed in the financial statements:

a. Unamortized computer software costs included in each balance sheet presented
b. The total amount charged to expense in each income statement presented for amortization of capitalized computer software costs and for amounts written down to net realizable value.

12. The disclosure requirements for research and development costs in Statement 2 apply to the research and development costs incurred for a computer software product to be sold, leased, or otherwise marketed.

Amendments to Other Pronouncements

13. The following sentence in paragraph 31 of Statement 2 is deleted:

> For example, efforts to develop a new or higher level of computer software capability intended for sale (but not under a contractual arrangement) would be a research and development activity encompassed by this Statement.

14. The following portions of FASB Interpretation No. 6, *Applicability of FASB Statement No. 2 to Computer Software*, are deleted:

a. The sentence in paragraph 3 that states:

> For example, efforts to develop a new or higher level of computer software capability intended for sale (but not under a contractual arrangement) would be a research and development activity encompassed by this Statement.

b. The phrase in the first sentence of paragraph 6 that states:

> or as a product or process to be sold, leased, or otherwise marketed to others for their use

c. Paragraphs 7 and 9

d. The two sentences in paragraph 8 that state:

> Developing or significantly improving a product or process that is intended to be sold, leased, or otherwise marketed to others is a research and development activity (see paragraph 8 of Statement 2). Similarly, developing or significantly improving a process whose output is a product that is intended to be sold, leased, or otherwise marketed to others is a research and development activity.

15. This Statement supersedes FASB Technical Bulletin No. 79-2, *Computer Software Costs*.

Effective Date and Transition

16. This Statement shall be effective for financial statements for fiscal years beginning after December 15, 1985 and shall be applied to costs incurred in those fiscal years for all projects including those in progress upon initial application of this Statement. Earlier application in annual financial statements that have not previously been issued is permitted.

17. Costs incurred prior to initial application of this Statement, whether capitalized or not, shall not be adjusted to the amounts that would have been capitalized if this Statement had been in effect when those costs were incurred. However, the provisions of paragraphs 8 (amortization), 10 (net realizable value test), and 11 (disclosures) of this Statement shall be applied to any unamortized costs capitalized prior to initial application of this Statement that continue to be reported as assets after the effective date.

The provisions of this Statement need not be applied to immaterial items.

This Statement was adopted by the affirmative votes of five members of the Financial Accounting Standards Board. Messrs. Kirk and Mosso dissented.

Mr. Kirk and Mr. Mosso dissent from this Statement because (a) it unduly restricts capitalization of software costs, (b) it extends the research and development classification of Statement 2 to a major class of routine production activities, and (c) it permits significantly different amounts of capitalization depending upon a company's choice of production methods.

In discussing the first point, the requirement in this Statement that either a detail program design or a working model be completed before capitalization can begin is likely to result in expensing most computer software costs, even though software is a significant, and often the only, revenue-generating asset of many companies. Assessing the probability of future benefits from computer software is difficult in the software industry, but no more difficult than in some tangible output industries such as fashion clothing and oil and gas drilling, or even in other creative process industries such as motion pictures. In each of these cases, capitalization of costs is accepted despite the inherent uncertainties.

The second point is related. This Statement sets the stage for extending the reach of Statement 2, with its mandatory expensing requirement, to a broad sweep of routine production activities because it assigns the bulk of computer programming activities (detail program design, coding, and testing) to the classification of research and development. Certainly, much research and development-type activity does take place in the computer software industry. However, most detail program design and coding activities are not discovery- or design-oriented in the sense of Statement 2; they are just the meticulous execution of a plan—skilled craftsmen applying proven methods as in any production process.

The third point is that this Statement makes capitalization dependent upon how the programming process is arranged, that is, the extent to which detail program design is separated from or integrated with coding and testing. The amount capitalized could differ significantly for comparable program outputs and, within the range of permitted capitalization, results would be essentially a matter of choice of approach to the programming process.

Mr. Mosso's dissent is based on the view that computer software is a key element in the ongoing shift of emphasis in the U.S. economy from tangible outputs and physical processes to intangible outputs and creative processes. Changes of that nature are evident in both emerging and old-line industries. In his view, accounting should accommodate this transition by reporting the results of creative processes on the balance sheet when those results comprise reasonably probable future economic benefits. Otherwise, financial statements will lose relevance as creative activities proliferate.

Messrs. Kirk and Mosso would support capitalization of costs incurred after an entity had completed the software product design and determined that proven technology is available to produce a deliverable product. The research and development classification of Statement 2 would apply only to those costs of designing the product and determining the availability of proven technology.

Members of the Financial Accounting Standards Board:

Donald J. Kirk, *Chairman*
Frank E. Block
Victor H. Brown
Raymond C. Lauver
David Mosso
Robert T. Sprouse
Arthur R. Wyatt

Appendix A

BACKGROUND INFORMATION

18. The SEC imposed a moratorium effective April 14, 1983 that precluded an enterprise from capitalizing the costs of computer software that is internally developed and produced to be sold, leased, or otherwise marketed if that enterprise's financial statements had not previously disclosed a policy of capitalizing those costs. Enterprises that had capitalized software costs and had disclosed doing so were permitted to continue to capitalize. The SEC rule specified that the moratorium would be rescinded when the FASB provided guidance on the subject.

19. In February 1984, the FASB received an Issues Paper, "Accounting for Costs of Software for Sale or Lease," prepared by the AICPA Accounting Standards Division's Task Force on Accounting for the Development and Sale of Computer Software and approved by its Accounting Standards Executive Committee. The task force included members of ADAPSO—The Computer Software and Services Industry Association (formerly known as the Association of Data Processing Service Organizations) and the National Association of Accountants. That Issues Paper recommended that certain costs incurred in creating computer software for sale or lease be recorded as an asset. Subsequently, the Board expanded the scope of its project to encompass purchased software that is to be sold, leased, or otherwise marketed and reached somewhat different conclusions from the recommendations in the Issues Paper.

20. On August 31, 1984, the Board issued an Exposure Draft of a proposed Statement on the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process. That Exposure Draft proposed that the costs incurred internally in creating a computer software product would be charged to expense until cost recoverability had been established by determining market, technological, and financial feasibility for the product and management had or could obtain the resources to produce and market the product and was committed to doing so. Thereafter, the costs of the detail program design would have been charged to expense, and the costs of producing the product masters, including coding and testing, would have been capitalized. The capitalized costs would have been reviewed periodically for recoverability. All costs of planning, designing, and establishing the technological feasibility of a computer software product would have been research and development costs.

21. The Board received 210 letters of comment. Issues raised by respondents included the iterative nature of the software product process, the risks and uncertainty inherent in the software product process and industry, the costs of implementing the proposed Statement in relation to its benefits, the subjectivity and possible inconsistent application of the proposal, and the difficulty in implementing the portion of the proposed Statement related to software as part of a product or process.

22. As a result of the input received in the comment letters, the Board held two educational Board meetings during March and April 1985, which were open to public observation. Representatives from a total of nine software companies participated in those meetings. In May 1985, the Board held a public hearing on the Exposure Draft and the issues set forth in the public hearing notice. Thirty-four organizations and individuals presented their views.

23. After considering the comment letters and testimony received, the Board concluded that a final Statement should be issued. The principal changes in this Statement from the Exposure Draft are:

a. Completion of a detail program design or, if a company's software product process does not include a detail program design activity, completion of a working model is the minimum requirement to establish technological feasibility. The minimum requirement to establish technological feasibility under the Exposure Draft was the completion of a product design.
b. All software creation costs incurred prior to establishing technological feasibility are charged to expense when incurred as research and development costs. Under the Exposure Draft, the costs of coding and testing after establishing technological feasibility but prior to demonstrating recoverability would have been charged to expense as other than research and development.
c. All software creation costs incurred subsequent to establishing technological feasibility are capitalized and reported at the lower of cost or net realizable value. The Exposure Draft would have required capitalization of software production costs after meeting recoverability criteria consisting of technological, market, and financial feasibility and management commitment, with capitalized costs reviewed periodically for recoverability.

Appendix B

BASIS FOR CONCLUSIONS

CONTENTS

Appendix B

BASIS FOR CONCLUSIONS

Introduction

24. This appendix summarizes considerations that were deemed significant by members of the Board in reaching the conclusions in this Statement. It includes reasons for accepting certain views and rejecting others. Individual Board members gave greater weight to some factors than to others.

Scope

25. This Statement addresses concerns about internally developed computer software raised in SEC Release No. 33-6476, *Accounting for Costs of Internally Developing Computer Software for Sale or Lease to Others*. That Release prohibited future capitalization of costs incurred to develop a computer software product by SEC registrants that had not previously done so and disclosed their accounting policy. This Statement also addresses issues raised in the AcSEC Issues Paper, but it establishes a more stringent capitalization requirement for computer software costs than was recommended in that Issues Paper.

26. In March 1985, the Board received an Issues Paper, "Accounting for Software Used Internally," submitted by the Management Accounting Practices Committee of the National Association of Accountants, proposing that the costs of internal-use software should be capitalized in certain situations. As a result, the Board considered broadening the scope of this project to include costs incurred for an enterprise's development of computer software for its own use. After evaluation, the Board concluded that accounting for the costs of software used internally is not currently a significant problem and, therefore, decided not to broaden the scope of this project nor add a project on internal-use software to its present agenda. The Board recognized that the majority of companies expense all costs of developing software for internal use, and the Board was not persuaded that this current predominant practice is improper. Also, this Statement clarifies activities that are research and development activities and establishes a high capitalization threshold that is likely to be applied to costs incurred in developing software for internal use as well as for sale or lease to others.

27. The Board also considered broadening the scope to include guidance on recognizing revenue from the sale of computer software but decided to postpone a decision on whether to deal with that subject until the AcSEC task force completes its research thereon and submits an Issues Paper to the Board for its consideration.

Research and Development and Production Costs of Computer Software

28. The Board recognized that the process of creating a computer software product varies among companies. Reasons for the variations include management style and differences in the types of products being developed. In defining those activities in the software product process that are research and development, the Board used the following definition of development presented in paragraph 8 of Statement 2 as a frame of reference:

> . . . the translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plants. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, and other ongoing operations even though those alterations may represent improvements and it does not include market research or market testing activities.

Paragraph 9 of Statement 2 provides several examples of activities that would be included in research and development. The Board concluded that the specific example in paragraph 9(i) closely describes the activities that lead to the existence of a detail program design or in its absence, a working model. That example states:

> Engineering activity required to advance the design of a product to the point that it meets specific functional and economic requirements and is ready for manufacture.

The above definition of development and the relevant example formed the foundation for the Board's final conclusions on what activities in the software product process should be classified as research and development.

29. Some activities in the software product process closely correspond with the example in Statement 2 while the correspondence of other activities is less clear. Some respondents viewed nearly all software creation activities as research and

development, and others viewed very few activities in the creation of a software product as research and development.

30. In the Exposure Draft, the detail program design activities were considered similar to the development activities described in Statement 2. The Exposure Draft generally considered coding and testing to be production activities and proposed that they be segregated from detail program design activities. However, a majority of respondents disagreed with that approach. Some asserted that coding and testing, as well as detail program design activities, are research and development and should therefore be charged to expense as incurred. Others stated that the detail program design is a production activity and, therefore, should be eligible for capitalization. Many respondents indicated that the costs involved to segregate the detail program design activities from coding and testing activities would far exceed the benefits derived from doing so. Others suggested that detail program design activities may cease to be required as future technological advances occur.

31. The Board considered the information received from respondents and concluded that requiring the segregation of the costs of the detail program design from the costs of coding and testing activities would not provide an objective point for evidence of a computer software product's technological feasibility and in some circumstances would be difficult to implement. The Board further concluded that, for purposes of applying this Statement, research and development activities should be considered incomplete until technological feasibility has been objectively established and that research and development activities in the software product process include (a) all planning and designing (both product design and detail program design) and (b) any coding and testing necessary to establish technological feasibility. Some respondents indicated that coding and testing activities that precede establishing technological feasibility should be considered production activities. However, the Board concluded that, until technological feasibility can be objectively established, the future economic benefits from such coding and testing activities are too uncertain to qualify for recognition as an asset and should be classified as research and development.

32. Some respondents suggested that the process of creating a particular software product may not involve the development of a detail program design. The Board decided that, absent a detail program design, the completion of the working model would be acceptable evidence of technological feasibility. That provision permits the application of this Statement if the detail program design activity is, for any reason, omitted from the software product process employed.

33. The Board recognized that some comparability may be lost if an enterprise's software process does not include a detail program design but concluded that virtually no comparability would be achieved if capitalizing the costs of computer software were dependent upon a somewhat subjective determination of technological feasibility at an earlier, less well defined stage of the development process. However, the Board concluded that objective evidence of technological feasibility must be available before the research and development phase can be considered to be complete and the production phase can begin. Consistency in applying Statement 2 among industries is an important consideration. In addition, the Board selected alternative criteria for evidence of technological feasibility to ensure future applicability in the event that the software product process employed in the future does not include a detail program design.

34. The Board also recognized that the technological feasibility of some products cannot be established with completion of the detail program design because high-risk development issues remain. Resolution of all uncertainties related to identified high-risk development issues is therefore included as a requirement for establishing technological feasibility. The discussion of technological feasibility in the Basis for Conclusions of the Exposure Draft included the need to resolve all high-risk development issues. Several respondents encouraged the Board to incorporate that consideration into the standards section of the final Statement. The Board agreed with that suggestion and included the requirement in paragraph 4.

35. The Exposure Draft proposed that the recoverability of the cost of a product be established prior to capitalization. The four criteria used to establish a product's recoverability were technological, market, and financial feasibility and management commitment. Some respondents to the Exposure Draft suggested that those criteria were subjective and effectively would permit optional application of the proposed Statement. However, many respondents agreed that at some point in the computer software product process an asset exists and some costs should be capitalized.

36. The Board recognized that, in some cases, an enterprise may believe that a software product is technologically feasible before the criteria for establishing technological feasibility as set forth in this Statement are met. To provide a more objective measure of technological feasibility, the Board concluded that completion of a detail program design is the earliest point in the process that technological feasibility can be considered to be established for purposes of applying this Statement.

Purchased Computer Software

37. Some enterprises purchase software as an alternative to developing it internally. Purchased computer software may be modified or integrated with another product or process. The Board concluded that the costs of purchased software should be accounted for on a consistent basis with the costs incurred to develop such software internally. The Board further agreed that the alternative future use provision of paragraph 11 of Statement 2 should apply to purchased software; that is, if the purchased software is not capitalizable under the provisions of this Statement but has an alternative future use, the portion of the cost attributed to the software's alternative future use should be capitalized and accounted for according to its use.

38. Applying the provisions of this Statement to the costs of purchased software will result in the capitalization of the software's total cost if the criteria specified in paragraph 4 are met at the time of purchase. Otherwise, the cost will be charged to expense as research and development. For example, if the technological feasibility of a software product as a whole (that is, the product that will be ultimately marketed) has been established at the time software is purchased, the cost of the purchased software will be capitalized and further accounted for in accordance with the other provisions of this Statement. The cost of software purchased to be integrated with another product or process will be capitalized only if technological feasibility is established for the software component and if all research and development activities for the other components of the product or process are completed at the time of purchase.

39. If the technological feasibility test for the software product as a whole is not met at the time that the software is purchased but the software being purchased has an alternative future use (for example, for use as a tool in developing another product or for direct resale), the cost will be capitalized and subsequently accounted for according to its use. The alternative future use test will also apply to purchased software that will be integrated with a product or process in which the research and development activities for the other components are not complete.

Internally Developed Computer Software to Be Used as Part of a Product or Process

40. Computer software may be developed as an integral part of a product or process and not marketed or marketable as a separate product. In that case, even though the software has been completely developed, there may be no assurance that a salable product will exist, and the software may have no alternative future use. The Expo-

sure Draft proposed the establishment of cost recoverability for the product or process as a whole prior to capitalization of any software costs.

41. Some respondents to the Exposure Draft and participants in the educational sessions objected to that provision on both conceptual and practical grounds. They suggested that the requirement to demonstrate recoverability for the product or process as a whole conflicted with Statement 2, which defines research and development activities and requires those activities to be charged to expense when incurred. In their view, the cost of a product that has hardware and software components would be accounted for differently under the Exposure Draft than currently required under Statement 2. For a product with hardware and software components, certain costs of the software could be capitalized when recoverability of the product cost was established, but all costs of the hardware would be expensed until completion of a prototype. That accounting treatment would require maintenance of separate cost records for the hardware and software components of the product.

42. The Board concluded that both establishing technological feasibility of the software component and completing research and development activities for the hardware component are necessary for capitalization of software costs to begin. The intention of this provision is to achieve consistency with Statement 2, consistency with the accounting for other software costs included in the scope of this Statement, and recognition of the related risks and uncertainties involved in developing a product or process that has more than one component. This approach does not require maintaining separate cost records for the hardware and software components of the same product.

Amortization of Capitalized Costs

43. A key objective in requiring the capitalization of certain costs incurred to purchase or internally produce computer software is to recognize the asset representing future economic benefits created by incurring those costs. Because a net realizable value test, which considers future revenues and costs, must be applied to capitalized costs, the Board concluded that amortization should be based on estimated future revenues. In recognition of the uncertainties involved in estimating revenue, the Board further concluded that amortization should not be less than straight-line amortization over the product's remaining estimated economic life. The Board also concluded that amortization expense should be computed on a product-by-product basis and that amortization should begin when the product is available for general release to customers.

Inventory and Other Costs

44. The costs incurred for a computer software product after coding, testing, and producing the product masters are production costs similar to costs incurred to produce any other product. Thus, the Board concluded that unit-specific costs, such as making copies from the product masters and physical packaging of the product, should be accounted for as costs of inventory as they are for other products.

45. Paragraph 6 requires the costs of other activities, such as customer support, maintenance, and training, to be charged to expense when related revenue is recognized or when the costs are incurred, whichever occurs first. When the sales price of a product includes customer support for several periods and the price of that support is not separately stated, the estimated related costs should be accrued in the same period that the sales price is recognized.

Evaluation of Capitalized Software Costs

46. The Exposure Draft proposed that an enterprise establish the recoverability of the costs of a computer software product prior to capitalization of software costs. An assessment of the recoverability of capitalized costs was required in each reporting period. If recoverability was determined to be no longer established, capitalized costs were to be written down to an amount for which recoverability could be established.

47. Respondents indicated that the ongoing recoverability test used was described in terminology different from that used to describe a net realizable value test in accounting for other assets, such as motion picture films. The Board concluded that a net realizable value test should replace the recoverability test because the net realizable value test will accomplish the same objective and uses terminology consistent with other accounting literature. The Board agreed that the capitalized costs of each software product should be subsequently valued, in each reporting period, at the lower of its remaining unamortized cost or net realizable value.

48. The concept of net realizable value is similar to that discussed in paragraph 9 of ARB No. 43, Chapter 4, "Inventory Pricing," which addresses inventory valuation. The Board determined that a test of "cost or market, whichever is lower" is not entirely appropriate for capitalized software costs because a replacement cost for the product will not always be available.

Disclosures

49. Because of the significance of computer software costs to enterprises in the computer software industry and because some of those costs are required to be capitalized and some charged to expense when incurred, the Board concluded that the disclosures specified in paragraphs 11 and 12 are necessary. Those disclosures are intended to assist users of the financial statements in making their assessments of the operations, potential risks, and financial status of enterprises that produce computer software.

Amendments to Other Pronouncements

50. The portions of Interpretation 6 that remain after the amendments specified in this Statement pertain essentially to the costs of software for internal use. Paragraph 5 of that Interpretation states that "costs incurred to purchase . . . computer software . . . are not research and development costs . . . unless the software is for use in research and development activities." The phrase "for use in research and development activities" includes tools used to facilitate research and development or components of a product or process that are undergoing research and development activities. The aforementioned reference to purchased software in Interpretation 6 is consistent with the requirements of this Statement.

Transition

51. Most enterprises in the computer software industry currently expense all computer software development and production costs when those costs are incurred. Those that capitalize some computer software production costs apply criteria that differ among enterprises and differ from the criteria specified in this Statement. The information that would be necessary to determine the amounts that would be capitalized if this Statement were applied retroactively is not necessarily available. The Board concluded that the cost of requiring such a determination retroactively would exceed the benefits it might offer. The Board concluded that such a retroactive determination should not be made. However, the Board decided to permit, but not require, application in financial statements for a fiscal year for which financial statements have not been issued. The Board further concluded that costs capitalized before the application of this Statement should be subject to the net realizable value test specified in paragraph 10, but should not otherwise be adjusted to an amount that would have been capitalized had this Statement been applied. Classifying, amortizing, and disclosing previously capitalized costs in accordance with the provisions of this Statement should result in an acceptable level of comparability and understandability.

Appendix C

GLOSSARY

52. This appendix defines certain terms that are used in this Statement.

Coding

Generating detailed instructions in a computer language to carry out the requirements described in the detail program design. The coding of a computer software product may begin prior to, concurrent with, or subsequent to the completion of the detail program design.

Customer support

Services performed by an enterprise to assist customers in their use of software products. Those services include any installation assistance, training classes, telephone question and answer services, newsletters, on-site visits, and software or data modifications.

Detail program design

The detail design of a computer software product that takes product function, feature, and technical requirements to their most detailed, logical form and is ready for coding.

Maintenance

Activities undertaken after the product is available for general release to customers to correct errors or keep the product updated with current information. Those activities include routine changes and additions.

Product design

A logical representation of all product functions in sufficient detail to serve as product specifications.

Product enhancement

Improvements to an existing product that are intended to extend the life or improve significantly the marketability of the original product. Enhancements normally require a product design and may require a redesign of all or part of the existing product.

Product masters

A completed version, ready for copying, of the computer software product, the documentation, and the training materials that are to be sold, leased, or otherwise marketed.

Testing

Performing the steps necessary to determine whether the coded computer software product meets function, feature, and technical performance requirements set forth in the product design.

Working model

An operative version of the computer software product that is completed in the same software language as the product to be ultimately marketed, performs all the major functions planned for the product, and is ready for initial customer testing (usually identified as *beta testing*).

Appendix B ADAPSO Draft Guidelines for FASB 86

Selected draft papers from ADAPSO project on application of FASB 86 rules; others are being drafted (B. Grad and R. Vices are co-chairmen).

Mike Marcus.

(2)

SOFTWARE PRODUCT DEVELOPMENT AND SUPPORT

PRODUCT DEVELOPMENT ACTIVITIES

Development of a software product entails a set of identifiable activities which normally includes most, if not all, of the following:

1. Product Specification - Identification, definition and analysis of the functions and features of the product and clarification of its scope (what it will and will not do). Description of the environments in which it will operate.

2. Development of External Specifications - Creation and documentation of the user interface and of the product's interaction with other systems/products.

3. General System Design - Identification of major system components and their functions; how, in general, each is to work; definition of the interrelationships and interfaces between them.

4. Detail Design - The working out and documentation of how each major system component and each support component is to operate; its inputs, outputs, processing logic, control logic, data requirements, etc.

5. Programming - Transformation of the detail design into programs, sets of computer instructions which can be (1) executed by a computer directly or (2) operated on by a language translator (e.g., a compiler or assembler) to produce executable code. Programming includes the coding of programs and their testing for accuracy and completeness.

6. System Integration and Test - Integration of programs into larger software modules and into a working system, sometimes requiring the development of special software modules to act as surrogates for modules not yet available, or to provide a system structure before it exists; normally includes the generation of a set of test cases, the proper execution of which will provide reasonable assurance that the system is ready for release.

7. Documentation - Generation of: system and program reference documents; user manuals; installation guides; operating instructions; etc. Much of this activity takes place as a concomitant part of other activities listed here.

8. Development of Training Aids - Creation of courses and training materials for customers (installers, users, administrators, etc.) and for the vendor's sales and technical support personnel.

9. Packaging - Creation of a "deliverable" by pulling together the software, documentation and support materials into a package.

10. Product Release - Distribution or delivery of the product to customers.

11. Installation and Training - Some products are installed by the vendor; some by the customer. Some require training; some do not. Installation of some products requires development of a considerable amount of conversion software to enable the customer to move from the use of existing manual or automated systems to use of the product.

12. Maintenance - Modification of the product to correct errors or omissions, and to keep it current (e.g., to accommodate changes in operating systems, to support additional hardware components of the same general type already supported, to utilize new tax tables, etc.). Maintenance modifications are necessary to keep the product marketable. Maintenance releases are distributed on an ad hoc, as needed, basis or, if scheduled, often occur at about six-month intervals or less. Maintenance modifications normally do not result in an increase in the product price.

13. Improvement - Modification and extension of the product to improve performance, enlarge capacity, support a new type of hardware peripheral and add features; without adding significant new functions or changing the structure of the system. Improvement releases are distributed on an ad hoc basis or, if scheduled, normally occur within six to twelve months of one another. Improvement modifications and extensions normally do not result in an increase in the product price or in separately priced components.

14. Enhancement - Modification and extension of the product to provide substantial improvements in existing functions or to add new functions. Enhancement releases usually are designated as new versions and occur no more frequently than once a year. They sometimes change or extend the basic structure of the software and often result in a price increase for the product or in separately priced options.

15. Replacement - Redesign of the software and re-doing of all work required as a result. Replacement of a product is normally undertaken when a product is needed which addresses the same markets and/or performs the same overall functions as an existing product, but overcomes inherent weaknesses in the existing product and/or takes advantages of advances in technology. The vendor often intends to discontinue support of a replaced product and encourages migration to the new one.

The above activities are often grouped into phases as follows:

1. Specification and Design - Product specification, development of external specifications, general system design, detail design.

2. Construction - Programming, system integration and test, documentation, development of training aids, packaging.

3. Release.

4. Post Release - Maintenance, improvement, enhancement, replacement.

Throughout the entire process, there is, of course, a set of activities related to the management and administration of all the work and of the resources involved.

APPROACHES TO PRODUCT DEVELOPMENT

The spectrum of approaches to developing a product ranges from one of the two described below to the other, with all manner of variations in between.

1. A product specification and possibly an external specification are developed, the software is designed, constructed, and released, substantially in that order.

2. Construction of the software begins without a definitive specification, with or without benefit of an explicit design, with or without the use of existing code. The product is packaged and released.

Historically, systems and products were developed via a process more in keeping with Approach 2 than Approach 1. Recognition of the greater cost associated with Approach 2, (particularly the high cost of maintenance), and the availability of improved software development tools and techniques have been moving more organizations toward Approach 1. Four development tools and/or techniques are worth mentioning because of their impact on pre- and post-release costs.

1. Structured analysis and structured design. The impact of these techniques is to increase effort and costs in the earlier phases of development, to reduce costs in the construction and later phases and to reduce overall development costs; to, in effect, front load costs but reduce the total. For example, one set of statistics from AGS Management Systems, SDM/70 and SDM/Structured system development methodologies for development of large systems (exclusive of any additional packaging and training that may be required for a product as opposed to a system), indicates the following:

	Pre Construction Activities	Construction to First Installation Inclusive
Without use of Structured Techniques	44%	56%
With use of Structured Techniques	59%	41%

The overall effort for development can be expected to be 15% or so smaller for projects that utilize the structured techniques as opposed to those that don't, and would be significantly greater than that if product life is long enough to require significant modification, improvement, enhancement or replacement.

2. Application and code generators. These systems require an up-front investment and reduce the cost of construction and subsequent phases.

3. System developer workstations (e.g., Index Technology's Excelerator). Workstations require an up-front investment but reduce total development costs. Pre-construction costs are reduced because these workstations (a) automate the drawing of structured analysis and design diagrams, (b) automate the building of data dictionaries and (c) perform completeness and compatability tests between diagrams and data dictionaries. Construction and subsequent phase costs are reduced as well, particularly if the workstation software ties in with an application or code generator.

4. Prototyping. A prototype is a model of the system, often built for a particular purpose.

   a. User interface prototypes. These models are built to assist in the development of, and to clarify, user interfaces: screen layouts, input formats, report layouts, etc.

   b. Performance prototypes. These models are built to ascertain whether a system's performance, throughput and/or capacity will be acceptable.

   c. Functional prototypes. These models are built to test the correctness and/or completeness of particular algorithms.

   Prototypes can be of the expendable type, namely, after performing their particular function, they are discarded, or they can be used as a basis on which to build a system.

The nature of most prototypes, however, limits their usefulness as components in a product because:

a. Rapid prototyping often necessitates use of a language different from the one used for the product.

b. Issues like data integrity and security, recoverability, etc. are usually not addressed.

User interface prototyping can significantly reduce the effort involved in system specification. Performance prototyping and functional prototyping address the issue of technological feasibility.

The Methodology used for product development and the tools and techniques utilized vary from company to company and vary from product to product within company. Moreover, they may vary from sub-system to sub-system within a single product.

(3)

FASB86 Topic 3: Technical Feasibility

Section 1

from W. Ison Cooper
3/27/86

Introduction and Summary

Two events in the product development cycle are specified in the Statement to delineate the time during which product development costs are to be capitalized: the establishment of technical feasibility, which marks the point at which product development costs cease to be classified as research and development costs; and availability of the product for general customer release, which marks the point at which point product development is completed and the maintenance and support phase begins.

Alternative criteria are provided in the Statement for defining the date at which technical feasibility has been established. If the development methodology includes a detailed program design, then all of the following conditions must be met:

- the detailed program design is complete,
- the completeness of the design is verified,
- high risk issues are resolved, through coding and testing, if necessary, and
- the resources required to develop the product are available.

Alternately, a working model may be completed, and its consistency with the product design verified through testing.

The Statement makes it clear that technical feasibility must be established for all components before capitalization can be begun for any of the product components. Further, the Statement constrains the working model approach by requiring that it be written in the same software language as the final product, that it be essentially functionally complete, and that it be ready for pre-release customer test.

The administrative requirement for beginning capitalization seems straightforward: to capture and date the evidence that technical feasibility is complete. The evidence might include:

- the product design document,
- the detailed program design document,
- the record of the technical review that verified the completeness of the design, whether by a design walkthrough approach or by testing the working model,

- the record of the technical review that isolated high risk issues, or concluded there were none,

- the code and test results from work on high risk issues, if any,

- the code and test results from the working model, if any, and

- the management report or project plan that specifies the resources and time required to complete the product.

The style for managing the development of software products varies enough among companies (and, indeed, frequently from project to project within a company) that the amount of work capitalized will vary from a large percentage of the development cost (well over half) to a very small percentage (zero, in some cases.) Among the reasons for this variance are the following:

- One company will begin code and test of part of a product before detailed program design is complete for the entire product, while another will not. The first company is seeking to shorten overall development time, and perhaps to take advantage of actual coding experience in one product subsystem while completing design of another.

- One company will require detailed program design to be done to a much greater level of detail than another. This is frequently a function of the team approach to design, program and test, and of the talent level of the people who do the coding.

- What is a high risk development issue for one company may not be for another because of different technical capabilities within the respective companies.

- A discardable prototype model for one company may become a working model (according the definition of the Statement) for another because the second company selects a methodolgy which preserves the source language of the prototype in the final product.

The remainder of this Topic 3 further explores the concept of technical feasibility. The next section comments upon the text of the applicable portion of the Standard and how it relates to industry practice. The final section outlines three development scenarios as examples of how the criteria for technical feasibility might be met.

FASB86 Topic 3: Technical Feasibility

Section 2

Text and Commentary

In this section the Text relevant to establishing technical feasibility is quoted from the Statement, interspersed with comments about industry practice.

Text

> 3. All costs incurred to establish the technological feasibility of a computer software product to be sold, leased, or otherwise marketed are research and development costs. Those costs shall be charged to expense when incurred as required by FASB Statement No. 2, Accounting for Research and Development Costs.
>
> 2. ...the terms computer software product, software product, and product encompass a computer software program, a group of programs, and a product enhancement.
>
> 52. Product enhancement (definition): Improvements to an existing product that are intended to extend the life or improve significantly the marketability of the original product. Enhancements normally require a product design and may require a redesign of all or part of the existing product.
>
> 52. Product design (definition): A logical representation of all product functions in sufficient detail to serve as product specifications.

Comment

Since improvements made to a product after its initial release can represent, in toto, an investment far in excess of the cost of initial product development, the question of when to capitalize product enhancements is crucial. For example, consider the following spectrum of improvements:

- clarify computer responses to the user
- convert computer responses to French
- convert computer responses to a language of the user's choice as an installation option.

The first item is normally a routine maintenance function, neither significantly improving marketability nor requiring a product design. The second item could contribute to opening a new end user market, but might be performed by a bi-lingual coder as a routine translation with at most a trivial product design step. The third item could not only contribute to opening up a worldwide market, but also require significant product design work because of its generality.

Similarly, a 10% performance improvement might be achieved through maintenance level tuning with no product design work or effect on market share, while a 50% performance improvement could require a major redesign or result in a clear competitive edge.

Text

4. For purposes of this Statement, the technological feasibility of a computer software product is established when the enterprise has completed all planning, designing, coding, and testing activities that are necessary to establish that the product can be produced to meet its design specifications including functions, features, and technical performance requirements.

Comment

Management confidence that a product can be produced to meet its design specifications is never absolute, of course; rather it is a function of the size of the evolutionary step being taken, the experience of the management and development personnel to be assigned, the level of confidence that the team can be kept together as planned, and the availability of contingent resources to deal with the unforeseen.

The manner in which functions and features are called out in the product design can provide enormous latitude to the subsequent detail program design step. For example, consider the alternative product requirements:

- "provide a state-of-the-art query capability for ad hoc use," versus
- "support the xyz query syntax against the abc application data base for ad hoc use."

It is much more difficult to be confident that the first feature can be provided than the second.

The technical performance characteristics of a software product are frequently difficult to predict, particularly in an initial product development effort. This becomes important if performance is a critical product requirement or has an agressive set of boundary conditions. For example,

- one second response time for processing a transaction on a single user system could be a critical but unagressive requirement, the meeting of which would be "obvious" to an experienced designer, while

- one second response time for processing a similar transaction on a large multi-user system with a large data base could be both very agressive and very difficult to predict, and require design experimentation using some prototype code.

Text

4. (cont.) At a minimum, the enterprise shall have performed the activities in either (a) or (b) below as evidence that technological feasibility has been established:

Comment

The minimum conditions specified for technical feasibility are more ambitious than what many technical managers require before they feel a project is "feasible" and are ready to commit to a plan to move to production coding. This is particularly true when experienced managers are building products intended to hit a near-term market window. In practice, the company which desires to capitalize frequently will have to change its technical management methodology to emphasize completeness of the pre-coding steps.

Text

4.a. If the process of creating the computer software product includes a detail program design:

(1) The product design and the detail program design have been completed, and the enterprise has established that the necessary skills, hardware, and software technology are available to the enterprise to produce the product.

52. Detail program design (definition): The detail design of a computer software product that takes product function, feature, and technical requirements to their most detailed, logical form and is ready for coding.

52. Coding (definition): Generating detailed instructions in a computer language to carry out the requirements described in the detail program design.

Comment

The management interpretation of "ready for coding" varies both by technical management style and the capabilities of the coder. For example,

> Company A has a software development methodolgy in which analysis and coding are performed by different groups of people. The analyst's role is to specify the software design right down to the level of subroutine interfaces and logic blocks within subroutines. The coder's role is to translate the logic blocks in a mechanical way to the selected computer language, getting the analyst's approval whenever he feels it necessary to deviate from the detailed design.
>
> Company B also separates the design and coding steps, but employs a project management approach in which the same people perform both the analysis and the programming. The detailed program design describes the software architecture and the interfaces among the major software subsystems, but leaves the details of subroutine interfaces and logic blocks to be worked out during coding (more likely to be called "programming" by the people who do it.) A high level programming language is used, in which a skilled software engineer can write subroutine interfaces and program logic in code as quickly as he can using a manual design methodology.

In each case the development project manager legitimately argues he has completed a detailed program design. However, the coders in company A would not be skilled enough to code from the detailed design prepared in company B, and the software engineers of company B might argue the detailed design from Company A was archaic and uninteresting.

Establishing that the "necessary skills, hardware, and software technology are available" is normally demonstrated through a project plan. Such a plan typically lists all of the tasks to be performed, projects a sequencing of tasks on a time grid, and specifies the number of hours of what type of resource (people, hardware, facility) are required to perform each task. In the best of cases the people who will work on each task are named; otherwise they are profiled by skill with a plan to acquire them.

The completion of the detailed program design is a practical time to prepare the plan for the remainder of the project in some detail; the eventual accuracy of the plan will be a function of a number of variables, not the least of which is the experience of the project manager and his knowledge of the capabilities of the team with which he is working.

Text

4.a. (cont.)

(2) The completeness of the detail program design and its consistency with the product design have been confirmed by documenting and tracing the detail program design to product specifications.

Comment

If the program designer is thorough, he will refer to the product specification as he goes, documenting the relationship in the design text or summarizing in a matrix which checks off product specifications against design sections. Indeed, structured design approaches carefully link the product specification to the detailed design, using a central dictionary of terms, and layering the design specifications so that the highest level is the product specification and the lowest is the detailed program design (if not machine processable code.)

In less formal methodologies the tracing may be the by-product of a design walkthrough, in which skilled designers (normally not the people who are the design authors) work step-by-step through the detailed design, often in a group setting, to verify both its internal consistency and its completeness.

Technical performance characteristics, again, may be difficult to validate thgough documentation or inspection, being the sum of the results of multiple design and coding techniques employed throughout.

Text

4.a. (cont.)

(3) The detail program design has been reviewed for high-risk development issues (for example, novel, unique, unproven functions and features or technological innovations), and any uncertainties related to identified high-risk development issues have been resolved through coding and testing.

Comment

A high-risk development issue may arise not only because leading edge technology is being attempted; it may also arise because proven technology is being packaged in a new way, or because the company which is developing a product has no experience in the technology to be used. Thus:

- A developer of a batch accounting product may be innovative when he moves the same functions to a distributed system, even though operating system vendors have already learned to manage the distributed resource.

- The same developer may be at risk because he does not have access to people with know-how in distributed systems, even though his competitor has successfully made the same transition.

Text

4.b. If the process of creating the computer software product does not include a detail program design with the features identified in (a) above:
(1) A product design and a working model of the software product have been completed.
(2) The completeness of the working model aqnd its consistency with the product design have been confirmed by testing.

52. Working model (definition): An operative version of the computer software product that is completed in the same software language as the product to be ultimately marketed, performs all the major functions planned for the product, and is ready for initial customer testing (usually identified as "beta testing").

Comment

The working model alternative for establishing technological feasibility suggests the "breadboard" approach of a hardware prototype. However, whereas the hardware developer discards the prototype when he builds a production model, the software developer moves from the product shown to customers in a beta test to the deliverable product with as little rework as possible. Typically bugs will be ironed out, a feature may be added to respond to customer feedback, performance will be tuned - but, more often than not, no major recoding will occur.

Prototypes of parts of the system may be coded in higher level languages - report generators or screen painters, for example, to get feedback from prospective customers on the user "feel" of the product. Prototyping techniques are evolving for linking these inputs and outputs through processing algorithms using sample data bases to illustrate functionality.
A development strategy that is gaining some popularity to evolve from a prototype to a production system. The typical scenario is:

- Prepare sample input screens and output reports using the screen painting and report generation capability of a "higher level language." Show these samples to prospective customers to get their reaction to the user's "feel" of the product.

- Still in a higher level language, link inputs and outputs through processing algorithms, illustrating screen flow with sample data.

- Round out the system as required.

So long as the step of rounding out the system can be performed without recoding the previous "prototype," the requirements for a working model are filled when the major functions can be tested.

FASB86 Topic 3: Technical Feasibility

Section 3

Development Scenarios

The following development scenarios illustrate different approaches to establishing technological feasibility.

Scenario A

Company A employs a "classical" product development methodology, proceeding sequentially through product requirements, functional specification, high level design, detailed design, code, and test. Management sign-offs are obtained at each step to insure an orderly development process, as well as to sustain an on-going management committment as the project proceeds.

This methodology has been used when:

- management believes control is improved and costs are minimized by proceeding through each step sequentially (perhaps with analysis and coding performed by different groups), or

- the software is sufficiently intertwined that individual elements of the design may be perturbed as subsequent design is completed (e.g., real-time operating systems.)

Company A is positioned to capitalize all coding and testing activities.

Scenario B

Company B begins programming of each piece of a product as fast as the detailed design for that piece is completed. Completed code is occasionally reworked to accomodate subsequent design changes, but the code is essentially complete when the detailed design is signed off. Indeed, the final program design document may evolve with the code to constitute the internal documentation.

This methodology has been used when:

- management wishes to minimize the overall delivery cycle, even at the expense of retrofitting or discarding completed code, or

- the software can be partitioned with well-defined interfaces between subsystems (e.g., batch systems with sequential subsystems for posting, processing, and reporting.)

Company B will capitalize only a portion of its coding and testing, that (if any) which is implemented after the detail program design is comp[illegible] the detail program design is <u>never</u> complete independent of the code, can only capitalize after the product is ready for beta test.

Scenario C

Company C limits its formal program design work to defining the overall architecture. It then defines the inputs and outputs by prototyping them with the screen painting and report generation facilities of a higher level language. These inputs and outputs are modified based upon sample user feedback; the final formats are defined iteratively by having the high level language programmer interact with a set of users. The procedural portions of the product are added using a combination of the higher level language and COBOL as appropriate; the product cycles and can be demonstrated throughout an evolutionary development process.

This methodology has been used when:

- definition of the product externals requires on-going modification based upon acutal user feedback, or

- management believes that the high level language provides a substantial time advantage in implementation, and that the language can both support the product functionality and meet the performance requirements.

Company C has bypassed much conventional program design activity. However, it can capitalize development when all major functions are available in the working model for testing.

HIGHLIGHTS of Financial Reporting Issues

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Computer Software: Guidance on Applying Statement 86

by Anne D. McCallion, FASB Staff

FASB Statement No. 86, "Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed," was issued in August 1985 and applies to costs incurred in fiscal years beginning after December 15, 1985. The Statement changes the predominant practice of charging all costs of creating a computer software product to expense. Software companies and others involved in the creation of computer software products have raised a number of detailed implementation questions subsequent to the Statement's issuance.

FASB staff members are frequently asked for their personal views on questions about implementing a new standard. This HIGHLIGHTS summarizes the staff's responses to the questions received about Statement 86. Those who have not yet had to deal with Statement 86 in financial statements may find these questions and responses useful. An important point is that the responses constitute the views of the author and are not positions of the FASB.

A brief synopsis of the principal provisions of Statement 86 precedes the questions and responses. A more detailed understanding of the Statement's provisions may be needed as background for some of the more complex questions.

Overview of Statement 86

Statement 86 specifies the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process. In other words, the Statement applies to the costs of (a) a software product, (b) software contained in a product having a software component that cannot function or be sold separately from the product as a whole, and (c) software used in providing a service from which the company derives revenues and that is dependent upon the software for its timeliness, accuracy, capacity, or other qualities that contribute to its marketability. The Statement applies to computer software developed internally or purchased.

Costs incurred internally in creating a computer software product are to be charged to expense when they are incurred as research and development (R&D) until *technological feasibility* has been established for the product. According to the Statement, technological feasibility is established when either of two sets of criteria is met: (a) the detail program design (defined in Statement 86) has been completed, documented, and traced to product specifications and its high-risk development issues have been resolved or (b) a working model of the product (also defined in the Statement) has been finished and determined to be complete and consistent with the product design.

After establishing technological feasibility, all software production costs are to be capitalized and subsequently reported at the lower of unamortized cost or net realizable value. Capitalized costs are amortized based on current and future revenue with an annual minimum equal to the straight-line amortization over the remaining estimated economic life of the product.

Questions and Responses

The following questions and responses are organized according to the topical headings presented in the Statement. Questions related to other issues appear after the topical headings. The first group of questions and responses relates to the scope.

Scope

Question 1: Paragraph 2 indicates that the Statement applies to the costs of computer software "as a separate product." What is a software product?

Response: A software product is most easily defined by describing its necessary qualities. As a product, it is complete and has exchange value. As software, it is a set of programs that interact with each other. A program is further defined as a series of instructions or statements that cause a computer to do work.

Question 2: The costs of software that is marketed "as part of a product or process" are included in the scope of the Statement. What types of software would be included in this description?

Response: Software is sometimes embedded in a product and sold as part of the product as a whole. Examples are calculators and robots. This type of software is sometimes known as "firmware." Also, some services provided to cus-

Anne D. McCallion

Anne D. McCallion joined the FASB staff in 1984 as a technical associate. She was a staff member on the Board's project on computer software costs that led to the issuance of FASB Statement No. 86. Currently, she is handling implementation issues regarding that Statement.

tomers would not be possible without software. Time sharing and service bureaus are two straightforward examples. Other situations are not as clear, for example, whether software used to prepare monthly checking account statements is "part of a process" (and therefore included in the scope of Statement 86) or is for internal use (and therefore not included in the scope of the Statement).

Indications that the software in question falls under the Statement's scope include the dependence of the company on the software to provide the service. In other words, could the company earn revenue from providing the service without the software? Would the service be as timely or accurate without the software? If the answer to any of these questions is no, that may indicate that the software is part of a process and is included in the scope of Statement 86.

Question 3: Do the costs of computer software that is created or purchased for internal use and is subsequently offered for sale fall under the scope of the Statement?

Response: The company's intentions at the time the software costs are incurred determine the accounting. If the software is intended solely for internal use, the company would follow its current accounting policy on internal use software. If the software is subsequently sold, the revenues would be recognized in income at that time. On the other hand, if the company plans both to use the software internally and to market it, a cost allocation (based on anticipated future use or some other systematic and rational method) would be made. The portion of the total costs attributed to the product offered for sale would be accounted for in accordance with Statement 86.

Question 4: Should companies use Statement 86 as a guide in accounting for the costs of software for internal use?

Response: Paragraph 2 indicates that the Statement "does not address the accounting and reporting of costs incurred for computer software created for internal use." This topic is discussed, only in general terms, in FASB Interpretation 6, "Applicability of FASB Statement No. 2 to Computer Software." However, many accountants faced with a question that is not specifically addressed in the current accounting literature look for an analogous situation on which specific guidance has been provided. Paragraph 26 of Statement 86 discusses the Board's decision not to address the topic of software created for internal use because the issue is not a significant problem; most companies currently charge all costs of developing software for internal use to expense. Those whose accounting policy is to capitalize some costs of internal use software may want to refer to Statement 86 for determining the point at which capitalization begins. However, one of the Statement's major controls is the net realizable value test (which will be discussed later), and that test cannot be applied easily to software from which revenues will not be realized.

Research and Development Costs

Question 5: What is the relationship of Statement 86 to FASB Statement No. 2, "Accounting for Research and Development Costs"?

Response: The FASB undertook the project on computer software largely because persons from the software industry questioned the applicability of Statement 2 (and other FASB standards based on Statement 2) to the software process. Many of them asserted that, at some point in the creation of a software product, the company had an asset with future economic benefits. The questions were *when* in the process this happened and *how* that point could be objectively identified. Statement 86 indicates which activities in the process of creating a computer software product are R&D activities, the costs of which are charged to expense as incurred, and which activities are production activities, the costs of which are capitalized.

Question 6: Can a company defer capitalization until after meeting the "working model" criteria of paragraph 4(b), even though technological feasibility had previously been established by meeting the criteria in paragraph 4(a)?

Response: The lead-in phrase of paragraph 4(a) states, "if the process of creating the computer software product includes a detail program design," and specifies three criteria relating to the detail program design to be satisfied before capitalization begins. Companies whose software product process fits the description in paragraph 4(a) should look to that paragraph for the applicable technological feasibility criteria. However, if the three criteria of paragraph 4(a) are not met until a working model is completed, the Statement requires capitalization to begin upon completion of the working model and satisfaction of the other criteria of paragraph 4(b).

Question 7: Can management require more stringent criteria than specified in paragraph 4 to begin capitalizing software production costs?

Response: No. As discussed in the response to question 5, one of the purposes of Statement 86 is to identify an objective point in the software product process at which research and development activities end and production activities begin. If management were to modify the Statement's criteria or impose additional criteria of its own, this objective would be thwarted.

Question 8: If a company has established technological feasibility by meeting the criteria in either paragraph 4(a) or (b) and a high-risk development issue subsequently arises, what is the proper accounting for the previously capitalized costs and the costs to resolve the high-risk development issue?

Response: According to paragraph 13 of APB Opinion No. 20, "Accounting Changes," a change in accounting estimate results from new information or subsequent developments. The discovery of a high-risk development issue after the company's personnel thought technological feasibility was established appears to meet this definition. Any previously capitalized costs for that product, as well as any additional costs incurred to establish technological feasibility, should be charged to expense as R&D until the criteria in paragraph 4 are met.

Question 9: When a product comprises various modules that are not separately saleable, is technological feasibility established for the product as a whole or on a module-by-module basis?

Response: Technological feasibility is established for a software product as a whole; that is, the detail program

design or the working model of the *entire* product (all modules linked together) must be completed prior to capitalization.

Question 10: Some companies in the industry use the term *working model* to mean a prototype in which critical parts of the product have been coded or written in pseudocode. Is this definition of working model acceptable to meet the criteria in paragraph 4(b)?

Response: The glossary of Statement 86 defines a working model as having several key characteristics not found in the above description of a prototype. To meet the Statement's criteria, the working model must be (a) operative, (b) in the same language as the product that will be marketed, (c) complete with all the major functions that were planned for the product, and (d) ready for initial customer testing.

Production Costs

Question 11: Are indirect costs appropriate for capitalization as part of the production costs of computer software?

Response: Current accounting literature does offer precedent for capitalizing an allocated amount of indirect costs, such as overhead related to programmers and the facilities they occupy. However, an allocation of general and administrative expenses would not be appropriate because those costs relate to the period in which they are incurred.

Maintenance and Customer Support

Question 12: How should the costs incurred to keep systems software current with revisions in the hardware be accounted for if this service was promised at the time the software was sold?

Response: This activity appears to meet the definition of maintenance because it keeps the product updated with current information. The cost of maintenance is to be charged to expense when related revenue is recognized or when those costs are incurred, whichever occurs first. The distinctions among maintenance, customer support, and product enhancements are sometimes very fine lines; in each case, the particular circumstances and intentions of the company should be evaluated in light of the definitions in the Statement for each activity.

Purchased Computer Software

Question 13: What factors, if any, may determine whether the cost of purchased software that will be integrated into another software or hardware product will be capitalized?

Response: Assuming that purchased computer software has no alternative future use, its costs can be capitalized only if the technological feasibility of the product to be ultimately marketed has been established at the time of purchase. Such factors as the timing of receipt or the status of hardware and internal software development may be crucial in determining whether technological feasibility is established at the time of purchase.

Question 14: How would a company account for purchased software with a cost of, for example, $100,000 if technological feasibility was not established at the time of purchase and the software could be resold for $75,000?

Response: The amount of $25,000 would be charged to R&D; $75,000 would be capitalized and, if the software product reached technological feasibility, included in the cost of the software product. If the technological feasibility of the software was never established, the $75,000 would be classified as inventory.

Amortization

Question 15: How is straight-line amortization to be computed for a software product?

Response: Paragraph 8 indicates that straight-line amortization is computed over the remaining estimated economic life of the product. As such, the unamortized cost of the product should be divided by its remaining life, including the current year.

Question 16: Is it possible that estimates of future revenues or the remaining economic life for a product will change over the period in which the software product is being amortized?

Response: Yes. Amortization for any asset is based upon estimates of future events, and software is no exception. The most recent information should be used to determine if changes to a previously adopted amortization policy should be made.

Question 17: How should amortization expense of capitalized software costs be classified in a company's income statement?

Response: Since the amortization relates to a software product that is marketed to others, the expense would be charged to cost of sales or a similar expense category.

Disclosure

Question 18: Paragraph 11(b) indicates that companies must disclose the total amount charged to expense for amortization and amounts written down to net realizable value. Should this disclosure be one combined amount or two separate amounts?

Response: The amortization and write-down amounts may be combined with only the total of the two expenses being disclosed.

Effective Date and Transition

Question 19: How should companies implement the transition provision of paragraph 16 for "earlier application in annual financial statements that have not previously been issued" when interim periods in the year of initial application have previously been reported on?

Response: Apply the guidance set forth in paragraph 14 of FASB Statement No. 16, "Prior Period Adjustments." In financial reports for the interim period in which initial application occurs, disclose the effect of applying the standard on income and the related per share amounts for each prior interim period of the current fiscal year. The next time the financial information of the prior interim periods is presented, the restated amounts, not the originally reported amounts, should be shown.

Question 20: If a company cannot have the systems in place to capture all of the data necessary to implement the Statement in the first quarter after the effective date, how does the company present that quarter's results? Does the

Statement permit a company to implement the standard sometime before the end of the initial year of application?

Response: Paragraph 16 indicates that the Statement is to be applied to costs incurred after the effective date for *all* projects. Quarterly reports for periods in fiscal years beginning after December 15, 1985 must, therefore, present software costs incurred during that quarter in conformity with the Statement. Quarterly financial statements for a fiscal year beginning after the effective date that do not present software costs accounted for according to the Statement would not be in conformity with Statement 86.

Other Issues

Balance Sheet Presentation

Question 21: Where should capitalized software costs be presented in the balance sheet?

Response: Software costs having a life of more than one year or one operating cycle should be presented as an "other asset" because the costs are an amortizable intangible asset.

Modifications to the Product

Question 22: What happens if the completed product does not include all features that had originally been planned?

Response: If the product is saleable without the features that were dropped, no specific accounting is required. The net realizable value test controls the amount of capitalized costs. If the product is not saleable without the dropped features, the technological feasibility of the product is not established (question 8). Further, application of the net realizable value test may result in a write-off of some or all of the product's capitalized costs.

Product Enhancements

Question 23: How is the Statement applied to costs incurred for product enhancements?

Response: Costs incurred for product enhancements are charged to expense as research and development until the technological feasibility of the enhancement has been established. If the original product will no longer be marketed, any unamortized cost of the original product should be included with the cost of the enhancement for purposes of applying the net realizable value test and amortization provisions. If the original product will remain on the market along with the enhancement, an allocation of the unamortized cost of the original product between the original product and the enhancement will be necessary.

Question 24: Is the estimated useful life of a product enhancement equal to (a) the remaining life of the original product, (b) the estimated life of the enhancement, or (c) the remaining life of the original product for any costs of the original product included in the enhancement and the estimated life of the enhancement for all other costs?

Response: The estimated life of the enhancement. All costs of a product enhancement, including any costs carried over from the original product, should be amortized over the enhancement's estimated useful life.

Question 25: Must the technological feasibility criteria (paragraph 4) be met for a product enhancement if the criteria had been met for the original product?

Response: Yes. Product enhancements are specifically included in the scope of the Statement and, as such, are subject to the same requirements as any other software product. However, technological feasibility may be more easily established for a product enhancement than for a new product, and capitalization of costs may, therefore, begin relatively earlier in the software process. For example, an enhancement that adds one function to an already successful product may require only minor modifications to the original product's detail program design to establish technological feasibility. Similarly, in some cases, software that is ported (made available for a different piece of hardware) may not require a new detail program design, and capitalization of the enhancement costs may begin once any high-risk development issues have been resolved.

Expressions of individual views by members of the FASB and its staff are encouraged. The views expressed in this article are those of Ms. McCallion. Official positions of the FASB are determined only after extensive due process and deliberation.

ILLUSTRATION OF AN APPLICATION OF STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 86, ACCOUNTING FOR THE COSTS OF COMPUTER SOFTWARE TO BE SOLD, LEASED, OR OTHERWISE MARKETED

Presented by
Anne D. McCallion
Technical Associate
Financial Accounting Standards Board

ACCOUNTING UNDER STATEMENT 86

To highlight the effects that Statement 86 has on current accounting practice, an example of a typical application is provided. The initial capitalization and expensing of computer software costs are shown, along with the amortization of capitalized costs over the estimated economic life of the product, the net realizable value test, and required disclosures. The example is based on the following assumptions:

1 The software company is creating a relatively conventional product to complement its existing product line.
2. The development and production costs are all incurred in one calendar year, and technological feasibility is established in the same year.
3. The product is available for general release to customers on January 1 19X2.
4. All amounts are for financial reporting and do not consider income tax implications.
5. The company's year ends on December 31.

Company A is developing a product to handle an accounts payable function for a specialized industry. The technological feasibility of the product is established on February 1, 19X1. The costs incurred are shown in Table 1. Additional data for the product are shown in Table 2. The amounts that are expensed in 19X1 by applying Statement 86 are shown in Table 3.

The amounts that are capitalized by applying the Statement are:

Coding	$25,000
Testing	20,000
Preparation of documentation and training materials	15,000
Modification of product design and detail program design	3,000*
	$63,000

*If technological feasibility is established.

Any costs that may be incurred after January 1, 19X2 are either treated as a product enhancement (and are therefore subjected to the accounting requirements specified in the Statement for a new product) or are charged to expense as maintenance or customer support.

AMORTIZATION

Under Statement 86, capitalized costs are amortized on a product-by-product basis. Amortization is the greater of the amount computed by the straight-line method over the remaining estimated economic life of the product or by multiplying the unamortized cost by a fraction, in which the numerator is current period revenue and the denominator is the total of current and estimated future revenue. Table 4 shows the amount of amortization expense computed by each method for each year.

To apply the Statement in computing amortization for a product enhancement, the book value of the original product is brought forward and increased by the costs incurred for the enhancement. The asset is amortized over the new estimated life of the enhancement.

NET REALIZABLE VALUE TEST

At each balance sheet date, the unamortized capitalized costs of a computer software product are compared to that product's net realizable value. Any amount by which the capitalized costs exceed the net realizable value is written off. After costs are written down, they may not be subsequently reinstated as assets, even if the original amount subsequently appears to become realizable.

A product's net realizable value is its estimated future gross revenues reduced by the estimated future costs of completing and disposing of it, including maintenance and customer support costs required to satisfy the company's responsibility set forth at the time of sale.

Comparison amounts used in applying the net realizable value test are shown in Table 5. Here, no write-down of the basis of this product to net realizable value is necessary because, for each year, the net realizable value (column 4) is greater than the unamortized costs in column 1.

DISCLOSURE

The unamortized computer software costs included in each balance sheet presented are to be disclosed, as well as the total amount charged to expense in each income statement presented for amortization expense for the period and any amounts written down to net realizable value. The disclosure requirements in Statement 2 apply to the research and development costs of a

computer software product to be sold, leased, or otherwise marketed. An example of the disclosure for each year is shown in Table 6.

TABLE 1
Costs Incurred to Develop and Produce Product

Date	Description	Amount
Prior to 2/1/X1	Performing market and financial research	$10,000
	Development of product design	9,000
	Completion of detail program design	15,000
	Other costs, such as coding and testing, incurred to establish technological feasibility	10,000
2/1/X1-12/31/X1	Coding	25,000
	Testing	20,000
	Preparation of documentation and training materials	15,000
	Modification of product design and detail program design	3,000
	Total costs incurred	$107,000

TABLE 2
Additional Sales and Cost Data

Year	Projected sales	Actual sales	Estimated future costs to complete and dispose of product
19X2	$80,000	$70,000	$40,000
19X3	100,000	90,000	20,000
19X4	130,000	150,000	15,000
19X5	100,000	130,000	5,000
19X6	70,000	90,000	3,000

TABLE 3
Amounts That Are Expensed Under the Statement

Expense as R&D:	
Development of product design	$9,000
Completion of detail program design	15,000
Other costs incurred to establish technological feasibility	10,000
	34,000
Expense as other than R&D:	
Performing market and financial research	10,000
Total amount expensed	$44,000

TABLE 4
Amortization Expense

Year	Amortization expense computed by: Straight-line	Future revenues	Amortization expense for year
19X2	$12,000(a)	$8,936(b)	$12,000
19X3	12,000(c)	11,077(d)	12,000
19X4	12,000(e)	16,875(f)	16,875
19X5	9,563(g)	12,431(h)	12,431
19X6	6,694(i)		6,694
Total			$60,000

(a) $60,000 x 1/5 = $12,000
(b) $60,000 x [70,000/(70,000 + 100,000 + 130,000 + 100,000 + 70,000)] = $8,936
(c) $48,000 x 1/4 = $12,000
(d) $48,000 x [90,000/(90,000 + 130,000 + 100,000 + 70,000)] = $11,077
(e) $36,000 x 1/3 = $12,000
(f) $36,000 x [150,000/(150,000 + 100,000 + 70,000)] = $16,875
(g) $19,125 x 1/2 = $9,563
(h) $19,125 x [130,000/(130,000 + 70,000)] = $12,431
(i) $19,125 - 12,431 = $6,694

TABLE 5
Comparison Amounts for Net Realizable Value

Year	(1) Unamortized software costs	(2) Estimated future revenue	(3) Estimated future costs of completion & disposal	(4) Net realizable value (2) - (3
19X1	$60,000	$480,000	$83,000	$397,000
19X2	48,000	400,000	43,000	357,000
19X3	36,000	300,000	23,000	277,000
19X4	19,125	170,000	8,000	162,000
19X5	6,694	70,000	3,000	67,000
19X6	0	0	0	0

TABLE 6
Illustration of Footnote Disclosure

The total amount of unamortized computer software costs included in the balance sheet at December 31, 19XX is $ (a). The total amount charged to expense during 19XX for computer software costs (other than research and development costs, which are disclosed in note xx) is $ (b).

The appropriate amounts for each year are:

Year	(a) Unamortized software costs	(b) Total amount charged to expense	R & D costs
19X1	$60,000	$0	$34,000
19X2	48,000	12,000	0
19X3	36,000	12,000	0
19X4	19,125	16,875	0
19X5	6,694	12,431	0
19X6	0	6,694	0

(8)

(NOT PROOFED)

Information Record Requirements

by Elizabeth Virgo

For many years, there has been a statutory requirement for a company to keep financial records for at least ____ years. A well-run accounting department sees to it that good archives are set up. This documentation will include sales invoices, purchase invoices, canceled checks, bank statements and ledgers. Normally, these are kept either in date or numerical order. Any recourse to them is usually in response to a question raised by auditors or the IRS and is, therefore, accounting oriented.

With the introduction of FASB 86, an information recordkeeping need arises. For one thing, it seems much more likely that the records will, in fact, have to be used rather than just kept in case there is a problem. A more thorough and detailed approach is now called for. The first requirement is to ensure that appropriate information is archived and kept in a well-indexed form. Since the accounting department has always been the focal point for this function in the past, it is suggested that they broaden their role to include FASB 86 responsibility too. FASB 86 calls for archives to be created from outside the accounting department in two main areas:

- Research and Development
- Sales and Marketing

Research and Development

For each of the following phases of Cost Element Analysis, there needs to be a signed- off document, or affidavit, for each product. It is suggested that this be broken down to program module level for easy identification purposes:

- computer coding which implies the use of high level or assembly level languages
- the construction of test cases for unit testing
- conducting test cases
- making modifications and corrections after examining test results
- integrating various programs to make a larger program or a complete system
- providing scenarios and test cases for the entire system
- user testing including thorough examination and exploration of the user interfaces
- competent technical testing to ensure that all paths have been explored and that they are operationally consistent
- preparation of technical documentation for later maintenance and modification
- additional documentation for operation or installation use
- user documentation to describe the program functions

- training materials including manuals, computer based training, stand-up courses

- marketing and support materials

This affidavit should clearly show the names of all those working on the module, together with the aggregate time spent, broken down by financial year. The affidavit should have attached the makeup of the time in some detail, for example, a hard copy of the time recording records.

The same procedure should be applied to any subsequent analysis for improvements or replacements. Each affidavit should be scrutinized carefully to ensure that all personnel have been accounted for and the information put in a format that will be easily understandable by anyone at a much later date (full names, positions, no shorthand abbreviations, time periods covered, fiscal years involved, etc.).

The affidavit should then be dated and signed by the systems analysts and programmers involved, together with the VP-Technology and CFO.

The affidavits should be summarized by the accounting function which would presumably be the first point of contact on any review. Such summaries should carefully show delineation by fiscal year.

It seems sensible to keep an index of this documentation, and it may prove useful to have assigned some kind of numbering code to a product and subsets to the underlying programs.

If this routine approach is used, all "clouded issues" would be raised then and there for early resolution. This documentation must be stored within the accounting archives.

Sales and Marketing

In order to calculate the potential net realizable value of any product, it is necessary to include an appraisal of the marketplace for which it is designed. While it is possible for many companies to avoid making formal assessments for their own purposes, FASB 86 would indicate that this is a necessary step.

The Sales and Marketing function will normally have recourse to a wide range of free information such as that published in trade magazines or by government as well as "paid for" data from research organizations, conferences or specially commissioned studies. Information about competitors and their products will come from these sources and from the sales force too.

The information should be collected on a continual basis and a review and update written to coincide with:

- the appropriate state of a new product's development
- the end of the financial year.

Such information should cover (over time):

- identification and size of market opportunity, plus history
- U.S. versus non-U.S. (if appropriate)
- competitors and products
- prices
- product comparability
- distribution channels

It is the responsibility of the accounting department to press for this on a timely basis. Probably, the document should be signed off by the Marketing/Sales Manager and CFO.

Accounting Department

Proof of marketability calls for accounting records to be kept, as indeed they should be, to show the history for:

- Sales and revenue - Invoices are naturally kept in invoice number order. A summary on a fiscal basis is called for showing (ideally) for each marketable product:

  - type of sale (rental, perpetual license, term license, U.S. or non-U.S., etc.), excluding all user trials and the initial very special deals in order to get the first users. It should also make clear the revenue recognition procedure used.

  - revenues by type of sale.

  - weighted price (U.S., non-U.S.) with enough underlying analysis to show in how many cases discounts are given, by type of discount (multi-product, multi-lease years, multi-site, multi-CPU's, etc.), extent of discount. This is particularly useful for building up profiles for creating potential net realizable values.

  - If prices vary with program components, numbers of machines, CPU's, etc., sufficient underlying analysis should be done to establish the average size.

- Maintenance

  It is important to establish a unit of measure (installations, customers, sites) and ~~source~~ count:

  - how many new units for any product took maintenance at the end of the free period.

- The subsequent history eventually yielding the average length of maintenance taken, measured in years.

- units of maintenance sold (for one year, two years, three years, etc.).

- revenues from maintenance, by product.

- the non-U.S. experience.

Again, this information is particularly useful in building up forecast maintenance revenues for a new product. It should probably be put in as an affidavit once a year to be signed off by the Maintenance Manager and the CFO.

Costs

Most of the information is kept but is not always analyzed at the time to the level of detail required by FASB 86. In essence, the records must be particularly clear from the point of demonstration of technical feasibility. The direct cost records for each product will have to show for each stage:

- gross salaries
- fringe benefits
- machine usage (either suppliers' bills or intercompany charges for the hours used, etc.)
- any appropriate third-party costs incurred for testing, evaluation, documentation, training materials, marketing materials, etc.

Since indirect costs are allowable, it seems sensible to create a record of some unit of measure to which overhead might be applied. It is suggested that a fiscal record be made of:

- total number of employees by department (G&A, Sales and Marketing, R&D broken down by product wherever possible, maintenance, etc.)

- total space occupied by department; space occupied by R&D in total and by product.

A summary should be created to show an analysis of costs for each product under consideration. Ideally, this would be crosscast in such a way it tied into the fiscal accounts (the management accounts for a start). It should be an affidavit signed by the CEO and CFO.

It is important to recognize that FASB '86 requirements move the requirement for recordkeeping and analysis from an activity which can be considered more as a bookkeeping function to one needing judgmental ability and an awareness that the paperwork must be in place and the figures and information able to stand up to close scrutiny. Too much may depend on it.