Special short-term planning studies of specific business segments may also be prepared. These reports may relate to the following:

- Product line expansion.
- Plant location feasibility.
- Product distribution by territory.
- Warehouse handling.
- Salesperson compensation.

Long-range planning reports include five- to ten-year projections for the company and segments therein.

INFORMATIONAL REPORTS

Informational reports may be prepared by a controller for submission to management personnel. These reports are frequently used to depict trends over long periods of time. Accordingly, informational reports may be used to report trends in sales and purchase requirements over the last five years. The format of information reports is generally left to the preparer's judgment, although graphic depiction (including charts) is popular.

ANALYTICAL AND CONTROL REPORTS

Analytical and control reports contain data derived from analytical procedures. Analytical procedures involve comparisons of financial and nonfinancial information. As a result, analytical and control reports are often utilized to disclose current-period versus prior-period changes in financial statement accounts. For example, analytical and control reports might disclose the increases and decreases in selected expense accounts over the past two years. Analytical reports are also used to summarize and describe variances from forecasts and budgets. Analyses of variances may be by revenue, expense, profit, assets, territory, product, and division.

EXCEPTION REPORTS

Exception reports are used to present detailed listings of problems that have arisen during a specified period of time. Exception reports might encompass internal control deficiencies or questionable areas pertaining to the application of generally accepted accounting principles (GAAP). This type of report may be used by or prepared by the controller. In an organization that utilizes electronic data processing, exception reports should be computer generated and should normally detail problems that may have arisen during the input, processing, and output stages of data processing.

FINANCIAL REPORTS

The controller is relied on to prepare complete and accurate financial statements that fairly present the financial position, results of operations, and cash flows of the company. The financial statements must include adequate and informative disclosures. The controller must keep in mind that the year-end financial statements must be audited by an independent certified public accountant. Accordingly, the year-end financial statements may have to include information that might not have been

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• *Funding.* The Act also provides independent funding for the Financial Accounting Standards Board. Although both the SEC and American Institute of Certified Public Accountants (AICPA) have recognized the FASB as the standards-setting body for accounting principles, federal authority to issue auditing, quality control, ethics, and independence standards may seriously affect the AICPA's role in official pronouncements. The budget for the board and the FASB will be payable from "annual accounting support fees" set by the board and approved by the Commission. The fees will be collected from publicly traded companies and will be determined by dividing the average monthly equity market capitalization of the company for the preceding fiscal year by the average monthly equity market capitalization of all such companies for that year.

Other Requirements for CPA Firms

Other requirements for CPA firms include the following:

• *Most consulting is banned for audit clients.* Title II of the Sarbanes-Oxley Act prohibits most "consulting" services outside the scope of practice of auditors. These services are prohibited even if pre-approved by the issuer's audit committee. Prohibited services include:

— Bookkeeping and related services.

— Design and implementation of financial information system.

— Appraisal or valuation services (including fairness opinions and contribution-in-kind reports).

— Actuarial services.

— Internal audit outsourcing.

— Services that provide any management or human resources.

— Investment or broker/dealer services.

— Legal and "expert services unrelated to the audit."

— Any other service that the board determines, by regulation, is impermissible. Services that are *not* prohibited are tax services (including tax planning and tax compliance) or others that are not listed, provided the firm receives pre-approval from the board. However, certain tax planning products, like tax avoidance services, may be considered prohibited nonaudit services.

• *Audit reports require concurring partner review.* Concurring or second partner's review and approval is required of all audit reports and their issuance.

• *"Revolving door" employment of CPAs with audit clients is banned.* A registered CPA firm is prohibited from auditing any SEC registered client whose chief executive, CFO, controller or equivalent was on the audit team of the firm within the past year.

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• *Audit partner rotation is required.* Audit partners who either have performed audit services or been responsible for reviewing the audit of a particular client must be rotated every five consecutive years. CPAs should read carefully the requirements for rotation of both the partner-in-charge and the concurring review partner for certain organizational constraints. However, though firm rotation is *not* required, the U.S. Comptroller General will study and review the potential effects of mandatory rotation and will report its findings to the Senate Committee on Banking, Housing, and Urban Affairs and the House Committee on Financial Services.

• *CPA firms are required to report directly to the audit committee.*

• *CPA firm consolidations are to be studied.* The U.S. Comptroller General will conduct a study analyzing the impact of the merger of CPA firms to determine if consolidation leads to higher costs, lower quality of services, impairment of auditor independence, or lack of choice.

• *Corporate and criminal fraud accountability.* Changes to the securities laws can penalize anyone found to have destroyed, altered, hidden, or falsified records or documents to impede, obstruct, or influence an investigation conducted by any federal agency with fines or up to 20 years imprisonment, or both.

• *Current requirements for audit firms.* Accountants are required to maintain all audit or review workpapers for a period of five years from the end of the fiscal period in which the audit or review was concluded.

• *Additional rules and penalties.* The law requires the SEC to promulgate rules and regulations on the retention of any and all materials related to an audit, including communications, correspondence and other documents created, sent or received in connection with an audit or review. For violating the requirement or the rules that will be developed will result in a fine, or up to 10 years imprisonment, or both.

Requirements for Corporations, Their Officers, and Board Members

As indicated in Exhibit I-1, criminal penalties for violations of the Sarbanes-Oxley Act of 2002 are greatly enhanced. Requirements for corporations, their officers, and board members include the following:

• *No lying to the auditor.* The Act makes unlawful for an officer or director or anyone acting for a principal to take any action to fraudulently influence, coerce, manipulate or mislead the auditing CPA firm.

• *Code of ethics for financial officers.* The SEC is mandated to issue rules adopting a code of ethics for senior financial officers.

• *Financial expert requirement.* The SEC is required to issue rules requiring a publicly traded company's audit committee to comprise at least one member who is a financial expert.

• *Audit committee is responsible for public accounting firm.* The Act vests the audit committee of a publicly traded company with responsibility for the

appointment, compensation, and oversight of any registered public accounting firm employed to perform audit services.

• *Audit committee independence.* Requires audit committee members to be members of the board of directors of the company, and to otherwise be independent.

• *CEOs and CFOs are required to affirm financials.* CEOs and CFOs must certify in every annual report that they have reviewed the report and that it does not contain untrue statements or omissions of material facts. If material noncompliance causes the company to restate its financials, the CEO and CFO forfeit any bonuses and other incentives received during the 12-month period following the first filing of the erroneous financials.

• *CEOs and CFOs must enact internal controls.* CEOs and CFOs will be responsible for establishing and maintaining internal controls to ensure they are notified of material information.

• *Penalties for fraud.* The Act also has stiffened penalties for corporate and criminal fraud by company insiders. The law makes it a crime to destroy, alter, or falsify records in a federal investigation or if a company declares bankruptcy. The penalty for those found guilty includes fines, up to 20 years' imprisonment, or both.

• *Companies affected by the Act.* Publicly traded companies affected by the Sarbanes-Oxley Act are those defined as an "issuer" under Section 3 of the Securities Exchange Act of 1934, whose securities are registered under Section 12 of the 1934 Act. An issuer also is considered a company that is required to file reports under Section 15(d) of the 1934 Act, or that files or has filed a registration statement that has not yet become effective under the Securities Act of 1933.

• *Debts are not dischargeable in bankruptcy.* The Sarbanes-Oxley Act amends federal bankruptcy law to make nondischargeable in bankruptcy certain debts that result from a violation relating to federal or state securities law, or of common law fraud pertaining to securities sales or purchases.

• *Expanded statute of limitations for securities fraud.* For a civil action brought by a nongovernment entity or individual, an action involving a claim of securities fraud, deceit or manipulation may be brought not later than the earlier of two years after discovery or five years after the violation.

• *No listing on national exchanges for violators.* The SEC will direct national securities exchanges and associations to prohibit the listing of securities of a noncompliant company.

• *No insider trading.* No insider trading is permitted during pension fund blackout periods. The insider must forfeit any profit during this period to the company.

• *SEC rules on enhanced financial disclosures:*

— *Off-Balance-Sheet Transactions.* All quarterly and annual financial reports filed with the SEC must disclose all material off-balance-sheet transactions, arrangements, obligations (including contingent obligations), and other relationships of the issuer with unconsolidated entities. Disclosure must be made on significant aspects relating to financial condition, liquidity, capital expenditures, resources, and components of revenue and expenses.

— *Pro Forma Figures.* Pro forma financial information in any report filed with the SEC or in any public release cannot contain false or misleading statements or omit material facts necessary to make the financial information not misleading.

• *No personal loans.* No personal loans or extensions of credit to company executives either directly or through a subsidiary, except for certain extensions of credit under an open-ended credit plan or charge card, home improvement and manufactured home loans, or extensions of credit by a broker or dealer to its employee to buy, trade, or carry securities. The terms of permitted loans cannot be more favorable than those offered to the general public.

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Analyst Conflicts of Interest

There are two major provisions regarding analyst conflicts of interest: (1) retaliation against analysts is not permitted, and (2) conflicts of interest must be disclosed. Brokers and dealers of securities are not allowed to retaliate or threaten to retaliate against an analyst employed by the broker or dealer as a result of an adverse, negative, or unfavorable research report on a public company. Securities analysts and brokers or dealers are required to disclose conflicts of interest, such as whether:

Exhibit I-1: Enhanced Criminal Penalties

Behavior	Sentence
The alteration, destruction, concealment of any records with the intent of obstructing federal investigation.	Fine and/or up to 10 years imprisonment.
Failure to maintain audit or review "work-papers" for at least five years.	Fine and/or up to 5 years imprisonment
Knowing execution, or attempts to execute, a scheme to defraud a purchaser of securities.	Fine and/or up to 10 years imprisonment.
Reckless violation by any CEO or CFO of his or her certification of the company's financial statements.	Fine of up to $1,000,000 and/or up to 10 years imprisonment.
If violation is willful.	Fine of up to $5 million and/or up to 20 years imprisonment.
Conspiracy by two or more persons to commit any offense against or to defraud the U.S. or its agencies.	Fine and/or up to 20 years imprisonment.

needs for greater visibility and transparency, corporations need to address a series of questions, including:

- What key performance indicators do investors use to evaluate and monitor a corporation?
- How easy is it for an investor to navigate the labyrinth of financial and non-financial information to evaluate both current and future performance?
- Are public disclosures open, widely distributed, and consistent? Is Regulation FD (Fair Disclosure) met for management advisement and consistency of segmented disclosures?

Regulatory Bodies. The Sarbanes-Oxley Act provided greater resources for monitoring and enforcement by the SEC, but the role of monitoring and enforcement extends well beyond that agency to the stock exchanges; accounting bodies, such as American Institute of Certified Public Accountants (AICPA), FASB, the Public Company Accounting Oversight Board (PCAOB), the International Accounting Standards Board (IASB) and other international organizations; and even state attorneys. In most cases, the corporations' relationship with regulatory bodies is not adversarial: both have the same goal of restoring investor confidence. Corporations should thus determine how they can improve their interactions with the various regulatory bodies by:

- Creating and adjusting policies and controls according to advisements and recommendations.
- Improving procedures and processes based on recommendations.
- Effectively responding to requests for clarity or additional information.
- Participating in the shaping of regulations and standards.

With such vast and diverse information requirements, most companies are unlikely to be completely prepared to effectively manage the content and processes required to meet stakeholder and compliance needs. Corporations typically use a variety of online and offline tools and processes which, most often, are unconnected and lack security, audit, and long-term archiving capabilities. Although most corporations would agree that collaboration is critical, their collaboration efforts are based on e-mail, phone, voicemail, conference calls, and fax. These tools are necessary but insufficient to systematically and securely communicate complete responses to the kinds of questions being asked by stakeholders.

The Role of Corporate Governance and Compliance Solutions

A new set of solutions is required to address the unique needs of each stakeholder and to manage the interactions required between each group. This section introduces a series of solutions and describes the key features and associated benefits of each.

Solutions fall into two broad categories: (1) collaborative workplaces that increase visibility, collaboration, and participation; and (2) enterprise compliance solutions that deliver the underlying content and records management capabilities.

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Collaborative Workplaces. Collaborative workplaces can ease compliance processes by providing greater visibility, collaboration, and training support and by maintaining a secure repository containing critical documents and records. Three examples of collaborative workplaces follow.

1. *Compliance program workplaces.* CEOs, CFOs, and SBU heads need high-level information and oversight, which requires broad communication, discussions, and coordination for which e-mail alone is not well suited. This workplace should make it easy for CEOs, CFOs, and SBU heads to:

   a. Communicate program objectives and initiatives.

   b. Manage the overall program and key activities.

   c. Provide self-assessment instruments and data analysis.

   d. Engage with business units around control gaps and remediation.

   e. Provide overall program management visibility with drill down.

2. *Control design workplace.* As companies merge, divest, introduce new products, and change business focus, they must modify or develop new internal controls. Because this is a multistep process requiring collaboration with individuals inside and outside of the organization, the workplace should enable participants to:

   a. Access controls from an internal controls repository.

   b. Create and manage workflows leading to agreement on final controls.

   c. Provide a design workplace with defined access controls and roles.

   d. Capture changes, track versions, and create alerts to ensure participation.

   e. Publish final changes to targeted audiences to assure adoption.

3. *Board of directors workplace.* Sarbanes-Oxley has had a significant impact on the role of the board and corporate governance, making them much more accountable for monitoring the corporation and driving key board subcommittees governing audit, compensation, nominating, and disclosure processes. A board of directors workplace can help to assure the effectiveness of board members by enabling them to:

   a. Access board meeting schedules, briefing documents, and issue logs.

   b. Create subcommittee workrooms designed for each specific function.

   c. Archive past board meetings and other final-form content.

   d. View the status of internal controls and key business performance indicators.

Enterprise Compliance Solutions. Collaborative workplaces depend on tight integration into an underlying platform to manage content. An internal controls repository, document and records archive, and a records management system

Technology would seem the obvious solution to the corporate governance and compliance problem. Much of governance is a matter of putting rules in place and ensuring that they are followed. Corporate finance systems, historically among the first business systems to be computerized, have always worked in just such a fashion. Why not tweak them to take new rules into account?

Unfortunately, it is not quite that simple. The scale of new governance standards brings many corporate systems—not just the finance function—into the picture. Customer databases, human resources systems, document management and electronic collaboration tools all can contain data relevant to corporate governance. In addition, the changing nature of regulation means that systems have to be kept up-to-date. This requires constant planning and monitoring on the part of the IT director.

The main problem for companies is documentation, including internal controls and the retention of documents. For this reason, good document management systems—which trace the history of all documents and allow for their fast retrieval—are key to any company seeking to comply with corporate governance standards. Specialized secure electronic storage areas must be established to store documents, a task made slightly less onerous thanks to the falling price of storage hardware. In addition, corporate policies on the retention of documents must be clearly articulated, whereas in the past they may have been only implicit.

Even e-mail has fallen under scrutiny. New accounting standards dictate that audit trails must be established showing exactly how executives arrived at conclusions such as the valuation of assets. As such discussions are now just as likely to take place electronically as at physical meetings, any e-mails in which valuation was discussed would also be implicated. Currently, these vital communications are simply thrown onto a server along with every other e-mail and, after a period of time, deleted to make room for more. Rooting out and keeping these documents can be an IT management nightmare.

The most important issue is trying to make the accounts that companies present as meaningful and accurate as possible so that investors and auditors can have confidence in what is being presented. In achieving this, one of the greatest difficulties that companies face is grappling with the subtle distinctions between accounting and finance systems in different countries. Companies need to put in place systems that allow them to compare apples with apples across different territories. That can be very detailed but is necessary to achieve the transparency needed.

The sheer volume of data presents further problems. Companies should try to simplify their systems, bringing more of their databases within a single overarching structure and reducing the number of points at which data enters the system. At all costs, companies must avoid rigid IT systems that will become a headache to change every time the accounting regulations are tweaked or new regulations come into force. Flexibility is key, and anything hard-coded is a dead end.

Technology is just an enabler. Once a governance structure has been agreed to at a corporate level, IT can be used to support it. Governance must not be built

around a company's existing IT; the IT systems should be made to fit the business. Policies and procedures should be worked out first, in detail, to calculate the best ways of complying with all the regulations that pertain to a company. Only then should the IT department be brought in to figure out what updates need to be made to the existing systems, to decide whether new technology investments are needed, and to implement the changes and the procedures that have been deemed necessary.

To a large degree, successful corporate governance depends on people: this is a management issue. People require training around governance and must be taught the needed skills. For a company specializing in electronic invoicing, however, the real answer may not lie with people, nor with the strict implementation of dedicated compliance systems to enforce every detail of corporate governance regulation, but with eliminating manual intervention. Automation of existing processes can achieve this. Automated systems, such as enterprise resource planning applications, are more transparent than those requiring manual intervention, and less prone to fraud.

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Six Technologies That Can Assist with Compliance

Much of governance is a matter of putting rules in place and ensuring that they are followed. Technology can provide the solutions to the corporate governance and compliance problem. It includes computer software for the following six functions:

1. *Business intelligence.* Because regulatory requirements stipulate real-time disclosure of factors that affect financial performance, executives need access to timely, relevant data from all areas of the business. By drilling down into financial and company data and providing sophisticated reporting and analysis tools, business intelligence software can help ensure the accessibility of information.
2. *Business process management (BPM).* Businesses have traditionally been built around functional "silos," making it difficult to share information and obtain a consistent, enterprisewide view. By extracting businesses processes from the underlying application code into an independent management layer, BPM software can help improve visibility.
3. *Document management.* Because of new corporate governance standards, companies need an efficient system for storing and retrieving important records and documents. Software packages that maintain audit trails of documents and set controls over how, where, and for how long files are stored can help companies meet these obligations.
4. *E-mail management.* As the volume of e-mail continues to soar, the logistics of storing essential e-mails and being able to retrieve them quickly become increasingly complex. And with new regulatory requirements around internal controls and disclosure obligations, the need for comprehensive e-mail management software becomes more compelling.
5. *Financing and accounting.* To help comply with new standards, such as Sarbanes-Oxley, many vendors are giving their traditional financing and accounting software a boost with additional modules that help with risk manage-

d. Integrity in not compromising professional values for the sake of personal goals.

e. Objectivity in presenting information, preparing reports, and making analyses.

Standards of Ethical Conduct for Financial Officers. Corporate financial officers consisting of practitioners of management accounting and financial management have an obligation to the public, their profession, the organizations they serve, and themselves, to maintain the highest standards of ethical conduct. In recognition of this obligation, the Institute of Management Accountants (IMA) has promulgated the following standards of ethical conduct for practitioners of management accounting and financial management. Adherence to these standards, both domestically and internationally, is integral to achieving the Objectives of Management Accounting. Practitioners of management accounting and financial management shall not commit acts contrary to these standards nor shall they condone the commission of such acts by others within their organizations.

Competence. Practitioners of management accounting and financial management have a responsibility to:

- Maintain an appropriate level of professional competence through ongoing development of their knowledge and skills.
- Perform their professional duties in accordance with relevant laws, regulations, and technical standards.
- Prepare complete and clear reports and recommendations after appropriate analyses of relevant and reliable information.

Confidentiality. Practitioners of management accounting and financial management have a responsibility to:

- Refrain from disclosing confidential information acquired in the course of their work except when authorized, or legally obligated to do so.
- Inform subordinates as appropriate regarding the confidentiality of information acquired in the course of their work and monitor their activities to assure the maintenance of that confidentiality.
- Refrain from using or appearing to use confidential information acquired in the course of their work for unethical or illegal advantage, either personally or through third parties.

Integrity. Practitioners of management accounting and financial management have a responsibility to:

- Avoid actual or apparent conflicts of interest and advise all appropriate parties of any potential conflict.
- Refrain from engaging in any activity that would prejudice their ability to carry out their duties ethically.
- Refuse any gift, favor, or hospitality that would influence or would appear to influence their actions.

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- Refrain from either actively or passively subverting the attainment of the organization's legitimate and ethical objectives.
- Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.
- Communicate unfavorable as well as favorable information and professional judgments or opinions.
- Refrain from engaging in or supporting any activity that would discredit the profession.

Objectivity. Practitioners of management accounting and financial management have a responsibility to:

- Communicate information fairly and objectively.
- Fully disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, comments, and recommendations presented.

Resolution of Ethical Conflict. In applying the standards of ethical conduct, practitioners of management accounting and financial management may encounter problems in identifying unethical behavior or in resolving an ethical conflict. When faced with significant ethical issues, practitioners of management accounting and financial management should follow the established policies of the organization bearing on the resolution of such conflict. If these policies do not resolve the ethical conflict, such practitioners should consider the following courses of action:[1]

- Discuss such problems with the immediate superior except when it appears that the superior is involved, in which case the problem should be presented initially to the next higher managerial level. If satisfactory resolution cannot be achieved when the problem is initially presented, submit the issues to the next higher managerial level. If the immediate superior is the CEO, or equivalent, the acceptable reviewing authority may be a group, such as the audit committee, executive committee, board of directors, board of trustees, or owners. Contact with levels above the immediate superior should be initiated only with the superior's knowledge, assuming the superior is not involved. Except where legally prescribed, communication of such problems to authorities or individuals not employed or engaged by the organization is not considered appropriate.
- Clarify relevant ethical issues by confidential discussion with an objective advisor (e.g., IMA Ethics Counseling Service) to obtain a better understanding of possible courses of action.
- Consult your own attorney as to legal obligations and rights concerning the ethical conflict.

[1] *Statement on Management Accounting 1C (Revised), Objectives: Standards of Ethical Conduct for Practitioners of Management Accounting and Financial Management*, April 1997, pp. 69–70).

- Liability valuation (such as aging accounts payable) and liability classification (such as breaking down notes payable into current and noncurrent portions).
- Expense calculations and reports such as for depreciation, amortization, leases, pensions, and accrued expenses.
- Breakdown of expenses by category (e.g., selling expenses into promotion and entertainment, commissions, and travel).
- Cash flow analysis (e.g., debt levels, interest rates) and balancing the checkbook.
- Formulation of integrated business plans in which income statements, balance sheets, statements of cash flows, and other related schedules can be integrated into one model.
- Financial statement analysis.
- Ratio computations.
- Rate of return (i.e., assets, equity).
- Cost/revenue relationship (i.e., advertising to sales).
- Input/output relationship, such as effect of volume on costs.
- Horizontal and vertical trends over the years.
- Capital expenditure analysis.
- Capital budgeting analysis.
- Present value.
- Payback.
- Internal rate of return.
- Ranking index.
- Varying assumptions (i.e., interest rate) and determining the effect.
- Future value analysis, such as with the future value table calculations.
- Break-even analysis.
- Asset management (cash, accounts receivable, inventory, and securities).
- Credit control management and analysis and means to improve credit management.
- Lease versus buy.
- Manufacture versus buy.
- Determination of the effects of inflation (i.e., the impact of price changes).
- Productivity measures.
- Loan amortization tables.
- Acquisition analyses of other companies.
- Investment selection.
- Portfolio investment transactions and balances preparation.
- Optimal financing mix (i.e., debt-equity).

- Debt covenant compliance.
- Cost and managerial accounting.
- Divisional and departmental performance evaluation (i.e., cost center).
- Product line measures.
- Overhead calculations.
- Variance determination (standard to actual, budget to actual) in dollars and percentage terms.
- Job costing.
- Tax preparation.
- Tax planning.
- Departmental control and analysis.
- Entity statistics for evaluation and reporting purposes.
- Generation of data files compatible with certain statistical packages for conducting regression analysis and other statistical procedures. (Here, a single data file may be utilized for multiple applications.).
- Marketing aspects, such as product line evaluation by market share, revenue and costs by geographic area, and sales by customer.

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When utilizing spreadsheets, the controller should be concerned with the reliability of the input and output data, program support, verification methods, and ability to detect operating bugs. Even the smallest error in a spreadsheet application can mushroom into a disastrous situation. The more complicated the formula or data, the greater the likelihood of input error. Potential errors include the rounding of numbers, the incorrect order of arithmetic functions, and the incorrect order of cell calculation and recalculation. Formula development can also result in errors, as when an absolute formula should have been entered as a relative formula. Macros, in which a single keystroke invokes a series of commands, if incorrectly structured, may also result in spreadsheet problems. Similarly, problems may arise when linking or consolidating financial spreadsheets as well as when data are transferred from one source to another.

According to research from the University of Hawaii, between 78% and 97% of spreadsheets contain serious material errors with a potential to devastate the bottom line. The evidence is as follows:

- A number incorrectly recorded in a cell of a spreadsheet meant one company had to drastically reduce its fourth quarter outlook. Thus, its shares lost more than 25% of their value.
- A cut-and-paste error led to another company underbidding for an electricity supply contract.
- A missing minus sign caused a fund's projected earnings to be overstated by $2.6 billion.
- Falsely linked spreadsheets covered up a fraud totaling $700 million at one bank.

- Area graphs.
- Pie graphs.
- High-low-close charts.
- Bubble charts, which depict the relative values of items by size and position of circles (bubbles) in a coordinate range.
- Surface area charts.
- Scatter diagrams.
- Spherical diagrams.

Graphics may be useful to controllers in creating displays for

- Charting revenue and costs by product line, market share, and customer.
- Analyzing trends in major expense categories.
- Analyzing trends in capital expenditures.
- Performing break-even analysis.
- Depicting variance between budgeted and actual amounts.
- Appraising backlog figures.
- Reflecting personnel statistics, such as the number of employees and productivity measures.

While the features included in graphics packages vary, selection of the appropriate package should be, in part, based on:

- Compatibility with other packages and applications.
- User-friendliness, including menu options and help functions.
- The maximum number of actions and symbols included.
- The maximum number of columns and rows in charts, automatic overlapped column specifications, and three-dimensional columns.
- The maximum number of bars.
- Included and available image libraries, which allow the merging of pictures with a chart or other image.
- Formatting aspects, such as screen resolution display and multiple sizes of graphs.
- The ability to modify predefined or drawn images.
- Editing abilities pertaining to titles, labels, and graph types.
- The ability to adjust plot orientation and page size.
- The ability to rotate graph axes.
- Types of graphs supported.
- Printing features such as bold type, underlining, pattern handling, and multiple copies.
- The existence of chart legends.
- Extent of color choice.

DATABASE MANAGEMENT SOFTWARE

A database is an organized collection of readily accessible related information that may be used on a recurring basis by the corporate controller.

Database management (DBM) software, such as *Microsoft Access*, may be useful in numerous applications, including accounts receivable and inventory monitoring.

Database software allows the controller to enter, manipulate, retrieve, display, extract, select, sort, edit, and index data. DBM software packages define the structure of collected data, design screen formats for data input, handle files, and generate reports. DBM software permits the creation of financial statement formats and the performance of arithmetic calculations. In essence, a database is an electronic filing cabinet providing a common core of information accessible by the programs. Programs and applications may be customized by specifying the data to be entered and what should be done to it in order to generate the desired output.

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Of the different types of DBM software, the relational database manager software appears to be the most popular and useful. A relational database manager has data sets of information in a table of rows and columns (i.e., matrix). Information is stored in two-dimensional data sets or tables similar to a traditional file processing system. The reports produced from this type of database can have greater complexity and utility than those generated from other types of database systems.

A relational database allows for the access of data fields by enabling the user to ignore the traditional one-to-one relationship and permitting access to a particular grid or cell. For example, if a relational data base includes first and last names of customers as well as their street addresses, cities, states, zip codes, area codes, and telephone numbers, data can be accessed by specifying any one of these parameters.

The basic operations possible with relational DBM software include:

- Creating or deleting tables and attributes.
- Copying data from one table to another.
- Retrieving or questioning a table or attribute.
- Printing, reorganizing, or reading a table.
- Combining tables based on a value included in a table.
- Manipulating data in creative ways.

DBM software may be used by the controller for a multitude of applications, including the following:

- Retrieving information based on varied criteria. For instance, check information may be recalled based on date of issuance, payee, amount, or account posted to. This may assist in the internal audit function.

- Does the vendor have a good implementation team with the required skills?
- Does the vendor have the Certification of Excellence given by other customers?
- What is the minimum implementation time for the modules you have chosen?
- What is the maximum implementation time for the modules you have chosen?

Business processes

- Does the vendor promise any reduction in lead times of those business processes in which you have some interest?
- What is the minimum processing time for material requirement planning (MRP)?
- What is the maximum processing time for MRP?
- What is the minimum processing time for master production schedule (MPS)?
- What is the maximum processing time for MPS?
- Does the software optimize the business processes after implementation?
- Does the software use a built-in business process modeler?

Hardware and software

- What kind of hardware support does the vendor offer?
- How many years of experience does the vendor have with the hardware/software that will be used for your project?
- Who are the alliance partners for the hardware support?
- What is the upgrade support for the software?
- Does the software have any interface to support the latest technology?
- How is the vendor maintaining the documentation for the software?
- Is the software Web-enabled?
- Will the software be implemented in modules?
- Will the software be purchased in modules?
- Will the software accounting adhere to international standards and to each country's standards?
- How many operating systems does the software support?
- Does the software allow transactions to be posted both in batch mode and online?
- Does the software support a multilingual operation?

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Support

- What support will the vendor provide after implementation?
- If the vendor is out of the country, how is support provided?
- How much time will the vendor devote to ERP training for end users?
- Describe the user interface (UI)/graphical user interface (GUI) package support and how each will give end users ease of operation.
- Did the vendor complete any customization at any previously implemented sites? (Describe by percent and module.)
- How will the vendor complete the reports' customization?
- Does the software have any built-in programs to handle data conversions?
- Is the front-end application developed using proprietary software?
- Is the customization cost included in the ERP cost?
- Can the vendor give approval for accessing other customers' data?
- Does the vendor have any test data built into the software for proper training?
- If any bugs are found in the software during or after implementation, what is the replacement support?
- Is the vendor prepared to work with third-party tools and software?

Supply Chain Management Systems

Supply chain management (SCM) is the organization of activities between a company and its suppliers in an effort to provide for the profitable development, production, and delivery of goods to customers. By sharing information, production lead times, and inventory holding costs have been reduced, while on-time deliveries to customers have been improved. SCM software systems provide support in filling orders and tracking products and components among companies in the supply chain.

Wal-Mart and Procter & Gamble (P&G) are two companies that have become well known for their cooperation in the use of SCM. When P&G products are scanned at a Wal-Mart store, P&G receives information on the sales via satellite and, thus, is able to meet demand on a timely basis by shipping additional products as necessary to specific store locations. Related cost savings are passed on, at least in part, to Wal-Mart customers.

Customer Relationship Management Systems

Customer relationship management (CRM) systems automate customer service and support. They provide for customer data analysis and support e-commerce storefronts. In its evolution, CRM has already led to some remarkable changes in the way companies interact with customers. For example, Federal Express allows customers to track their packages on the Web. Although this service is becoming

of projections every month. More powerful versions also include a tool for consolidating projections. Cashflow Plan will aid in planning a business's cash requirements, improving control over cash flows, and conserving cash resources. It is especially useful when cash flows must be forecast in the context of:

a. Tight cash/profit margins.
b. Limited financial resources.
c. Planning for growth or radical change.
d. Compiling cash budgets.
e. Preparing business improvement plans.

Cashflow Plan is preformatted to handle the wide range of the variables and functions normally encountered when preparing cash flow and financial projections. Based on the assumptions input, it compiles detailed, fully integrated financial projections for the coming year on a monthly basis and, for the initial three months, on a weekly basis. It automatically produces more than 20 pro-forma financial and management reports together with numerous graphs for key variables.

4. *Budget Maestro (www.centage.com)*. Budget Maestro is cash flow forecasting software that provides managers with what-if capabilities by which to model and test alternative budgeting or financing scenarios. A limitless number of what-if scenarios can be created to gauge the impact of projected changes of operations on cash flow, balance sheets, and income statements. Rolling forecasts—monthly or several years out—can be used to predict the impact on operations and cash flow based on changing variables.

ACCOUNTING SOFTWARE PACKAGES

Several software applications are of particular interest to accountants. The following discussion includes the major players in the area, and some important features to look for when considering a particular type of software.

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Many factors must be weighed when selecting a computer software package. Besides determining the software features currently needed and required in the future, the buyer must have a thorough understanding of the firm's existing system, and whether proposed software will integrate with all areas of that system and business. Some of the basic considerations include features and capabilities, compatibility and integration, ease of customization, ease of use, written documentation and technical support, price, and vendor's reputation and stability.

Vendors began to compete by improving integration and customization. With Windows interfaces, data can more easily be linked and exchanged with all types of applications, such as spreadsheets, databases, and even e-mail. Thus, compatibility with existing systems and data is an extremely important consideration when selecting new software. Likewise customization of input screens and reports to conform to a firm's needs can more easily be done, and capabilities vary between packages.

Although the price of a system is an important consideration, it should never be the deciding factor. Often, the cost of software is relatively insignificant when compared to the costs of implementation, training, ongoing maintenance, and support. Training costs can be reduced if the program has good context-sensitive online help. Installation will be much simpler if the program has a checklist or "wizard" that actually walks the user through the installation procedure.

Before buying any package, financial managers should try calling the customer support department of the vendor. Customer support can provide detailed information about the features of a package. Vendors typically offer a demo or a free or low cost trial of their computer software product. Information about specials or discounts is also available to professionals such as practicing accountants.

Accounting Software

The fundamental task of accounting software is to automate the routine chore of entering and posting accounting transactions. This information is organized in an electronic format so as to produce financial statements and can be accessed immediately to assist in the management of the firm.

An accounting software package consists of a series of highly integrated modules. Each module corresponds to a specific accounting function (e.g., payroll, accounts receivable, and accounts payable). In an integrated system, after the details of the transaction are entered in one of the modules, the chart of accounts from the general ledger is "read." The transaction is then automatically posted to the accounts in the general ledger. For example, when a sale on account is entered in the accounts receivable module, a debit is automatically made to the accounts receivable account in the general ledger and an offsetting credit made to the general ledger sales account.

Module Descriptions. The basic modules typically required by a firm and often integrated in an accounting software package include general ledger, accounts receivable and invoicing, accounts payable and purchase order processing, inventory, payroll, job costing, and fixed assets.

General Ledger. The general ledger is the heart of the accounting system. It contains the chart of accounts of the business. A general ledger module should contain a sample chart of accounts that can be customized to a particular business. In addition, it should contain predefined reports that support budget data and prior-year comparisons, which can be tailored to a firm's specific needs. Other essential features include the capability of generating automatic reversing and recurring journal entries, the capability of having at least 13 periods open at one time, and the ability to make prior-period adjustments or post entries to another year without closing the current year.

Accounts Receivable and Invoicing. The accounts receivable and invoicing functions are often combined in the same module. This module allows the controller to enter sales data and permits extensive sales analysis. It provides customer receivables management by tracking customers' balances and generates invoices, monthly statements, and aging reports. It should allow for setting up credit limits

costing, both packages allow the user to accumulate service or manufacturing costs by project. **Note:** All web-based accounting packages listed offer free trial periods of from 14 to 30 days.

Customize the accounting system. Web-based accounting packages are general-purpose software, and a company needs to use and customize only the features required for its business. Working from the predefined chart of accounts, forms, and reports, a small business can set up and customize its accounting system in hours.

Prepare system documentation. Companies need to prepare system documentation so that new staff can learn how to use the system. System documentation should provide detailed procedures, including system activation and deactivation, a chart of accounts, a sales cycle, a purchase cycle, employee and payroll cycles, cash receipts, cash disbursements, journal entries, inventory, financial reports and queries, and error corrections. The system designer should copy the predefined forms, screens, and reports and include them within the system documentation.

Good system documentation should be easy to read, make it easy for users to find specific information (i.e., include a table of contents, page numbers, and an index), and be well organized (i.e., by cycles or accounts). The procedures should be complete and easy to follow (i.e., showing all relevant forms, screens, and reports). The overall presentation should be professional, and the system documentation should be kept in a safe place.

Outsourcing. Web-based (or cloud-based) accounting makes the data easily accessible to multiple remote users at one time, and offers the usual benefits of web-based software: server-side upgrades; maintenance; and backups. The general ledger, accounts payable and receivable, invoicing, and reports functions can be outsourced to companies such as the following:

- SAGE *(http://na.sage.com/sage-300-erp/)*. SAGE accounting solutions sells what it calls a complete business management system integrating an electronic storefront with a complete back-office system. It serves businesses doing e-commerce with a system connecting everything from inventory to invoicing. The SAGE system automates inventory control, purchase orders, Web site orders, credit checking, fraud protection, accounts payable and receivable, general ledger, and payroll.
- *Intacct (http://us.intacct.com)*. Intacct, of Los Gatos, California, views itself as "an accounting utility company." The company serves businesses employing up to 500 people with a full-function package—general ledger, financial reporting, budgeting, accounts payable and receivable, invoicing, expense reporting, human resources reporting, and payroll services.

A small operation interested in low cost and ease of use may be interested in the following:

- *Intuit QuickBooks.* While Quickbooks may be the market leader in small-business accounting software, the company has lagged in developing a Web-based version. QuickBooks for the Web—http://quickbooks.intuit.com—is

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a significantly stripped-down version of the desktop product. Oddly, one thing it lacks is the ability to import QuickBooks data (something NetLedger offers). Other no-shows in the Web incarnation include estimates, graphs, online banking or bill paying, custom fields, time tracking, and the ability to export data into a spreadsheet or other file format. However, the Web version is easy to set up, and allows for the billing of customers via e-mail.

A small or medium-sized operation interested in functionality and scalability may be interested in the following:

- *SAGE 50.* The online offering—http://na.sage.com/sage-50-accounting-us/services/hosting-providers is more robust than QuickBooks for the Web. It can import a Peachtree Office Accounting file, though some features from the desktop version have been altered or dropped. For example, customized reports are not imported. However, reports and forms can be exported to Excel, Word, Rich Text, or Crystal Reports format. A wireless service allows the user to check inventory as well as customer and vendor information from various Web-enabled cell phones or from a Palm.

Advice and Caveats. A recent survey published by Financial Executives International (FEI) (www.financialexecutives.org) revealed that outsourcing would continue to be a solution for areas where management does not believe that in-house efforts can be cost-effective. The same survey also revealed that financial executives' satisfaction levels with shared services are as high as 90%. Web-based accounting packages enable small businesses to outsource their accounting function at an affordable price and web-based inventory control software allows small businesses to track their inventories in real time. Web-based software has the added bonus of always being up-to-date because providers continuously provide incremental upgrades and new features.

To embrace web-based software, a small business must first develop a technology plan. This plan should be based on a thorough review of the company's existing computing resources, and focus on what the business plans to do with technology. The plan should clearly state the goals, prioritize the goals, and tie the goals to a budget and a timetable. The firm must complete this prioritizing process before making any purchase decisions.

Once the company completes the technology plan, it must then match software products to the company's goals and objectives. The business should be flexible regarding the technologies and should consider all available products in the market. At this point, the company can either handle the process with its own staff or use consultants to expedite the process.

Purchasing equipment can be overwhelming when facing all the choices in the market. Categorizing the available products can simplify this process. When evaluating competing services, the value-added features—unlimited free nationwide dial-up, robust Web-based e-mail, and hosting web content—can be extremely beneficial. For example, outsourcing the tasks of maintaining a Web server, managing the

associated traffic, and maintaining the continuous server uptime may result in savings of $2,000 to $3,000 per year.

Write-Up Software

With the development of easy-to-use and inexpensive accounting software, many companies that previously relied on CPAs to keep their books are doing it themselves. CPA firms can counter this trend with dedicated write-up software, which is easy-to-use and provides more features so as to add value to their write-up services.

Write-up software should allow the controller to do more than just record transactions. One of the biggest features to look for is the ability to easily create an array of printouts and reports that a client might need. This includes being able to link and transfer data from other software packages and applications.

Another important feature is the ability to customize the input screen so that it is consistent with the layout of the client's source documents, thereby reducing unneeded keystrokes. Easy setup is another means of reducing the cost of write-up service. The package should contain sample company data and the ability to copy common information and make changes to default information included in the setup "on the fly." WebCPA (http://www.webcpa.com) provides a comprehensive review of write-up software.

Exhibit 6-1 lists four write-up software products.

Exhibit 6-1: Write-Up Software

Client Write-Up System Pro Systems, Inc. www.prosystems.com/writeup.htm	*Write-Up CS* Creative Solutions http://cs.thomsonreuters.com/cs-accounting/write-up.aspx
CYMA Client Write-Up CYMA Systems, Inc. www.cyma.com	*Client Write-Up* CertiflexDimension www.clientwrite-up.com

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Compliance Software

The Sarbanes-Oxley Act, passed by Congress in July 2002, is the most significant change to U.S. business regulations in 70 years. The Act creates tough new penalties for corporate fraud, prevents accounting firms from offering consulting services to audit clients, and places restrictions on financial analysts. Section 404, *Management Assessment of Internal Controls*, requires each annual report of an issuer to contain an "internal control report" that shall:

(1) State the responsibility of management for establishing and maintaining an adequate internal control structure and procedures for financial reporting; and

(2) Contain an assessment, as of the end of the issuer's fiscal year, of the effectiveness of the internal control structure and procedures of the issuer for financial reporting.

Much of compliance is a matter of putting rules in place and ensuring that they are followed. Technology can provide the solutions to the corporate governance and compliance problem. It includes computer software for the following six areas:

1. *Business intelligence.* Regulatory requirements for "real-time" disclosure of factors that affect financial performance mean that executives need access to timely, relevant data from all areas of the business. Business intelligence software can help ensure the accessibility of information by drilling down into financial and company data and providing sophisticated reporting and analysis tools.
2. *Business process management (BPM).* Businesses have traditionally been built around functional "silos," making it difficult to share information and obtain a consistent, enterprise-wide view. By extracting businesses processes from the underlying application code into an independent management layer, BPM software can help improve visibility.
3. *Document management.* New corporate governance standards mean that companies need an efficient system for storing and retrieving important records and documents. Software packages that maintain audit trails of documents and set controls over how, where, and for how long files are stored can help companies meet these obligations.
4. *E-mail management.* As the volume of e-mail continues to soar, the logistics of storing essential e-mails and being able to retrieve them quickly become increasingly complex. With new regulatory requirements around internal controls and disclosure obligations, the need for comprehensive e-mail management software becomes increasingly compelling.
5. *Financial and accounting software.* To help comply with new standards such as Sarbanes-Oxley, many vendors are giving their traditional financing and accounting software a boost with additional modules that help with risk management, more accurate budgeting and forecasting, financial analysis, and the establishment of internal financial controls.
6. *Enterprise resource planning (ERP).* ERP software can provide organizations with a consistent financial view across all divisions, thereby helping to maintain the accuracy of financial information. Many ERP providers are adding modules to their software to assist with compliance with Sarbanes-Oxley and other corporate governance standards.

Tax Preparation Software

Computer technology has had a significant impact on the way tax returns are prepared. Computerized tax return preparation enables the user to prepare a return quickly and accurately and to quickly analyze different tax planning strategies. Some software packages have built-in tools for tax research and permit for the electronic filing of tax returns. The software also lets the user easily do what-if planning and then quickly makes all the necessary changes. Furthermore, data can be imported directly from accounting packages or electronic spreadsheets into tax preparation software.

well: (1) extensible business reporting language (XBRL), (2) cloud computing, and (3) wireless technology (mobile computing). XBRL represents a major step in the preparation, publication, exchange, and analysis of financial data. XBRL results in a simpler process for issuing financial reports and making investment and credit decisions. XBRL standardizes financial reports by clearly specifying and defining each item of data, using clearly defined tags. This allows computers to accurately read and understand the figures.

The precise definitions, or tags, are necessary because terms such as "revenue," "income," "fees," "stock," and "inventory" can have a variety of meanings depending on the organization. Humans use judgment to interpret financial data, but for computers to make sense of it, they need precise definitions. The SEC has been adopting a three-year phased approach in the United States, where XBRL was voluntary for public companies in 2009 and will be mandatory by 2013, with an increasing number of data elements required.

The accountant must also stay current on the latest developments in cloud computing and mobile computing to properly advise client companies. This requires becoming familiar with the various business applications of wireless networks, the benefits, the drawbacks, and getting the most out of the system to enhance efficiency, productivity, timeliness, and profitability. The use of wireless networks will optimize computer operations and corporate activities.

XBRL

Many data formats on the Internet prevent users from analyzing financial information without labor-intensive conversions. Excessive time is devoted to extracting useful information from available accounting and financial data. Further time is wasted rekeying the same information into a spreadsheet. The Securities and Exchange Commission's (SEC's) database, referred to as EDGAR (Electronic Data Gathering, Analysis, and Retrieval System), for example, performs automated collection, validation, indexing, acceptance, and forwarding of submissions by companies and others who are required by law to file forms with the SEC. The comparison of numbers and ratios requires significant effort and time-consuming rekeying, and EDGAR's data cannot be imported directly into spreadsheets.

XBRL does not require additional disclosure from companies to outside audiences. It was developed to provide the financial community with a standards-based method to prepare, publish in a variety of formats, reliably extract, and *automatically exchange* financial statements of publicly held companies and the information they contain. XBRL uses a framework based on the Extensible Markup Language (XML) to make available financial information in an easy-to-use format on the Internet, its objective being to enhance the usability of existing accounting standards and allow the financial community to communicate in a universal language. Simple examples are associating numbers with variables and matching a name to a picture.

XBRL is an *intelligent* Internet language that can be used in business by preparers and users of financial statements including corporate accountants, CPAs, financial analysts, business managers (in reviewing reports), loan officers at banks,

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investors, suppliers, securities exchanges (e.g., New York Stock Exchange), over-the-counter market members of NASDAQ, and federal and local governmental agencies (e.g., the SEC and Internal Revenue Service). By comparison, the Hyper Text Markup Language (HTML) format is not intelligent enough as a language to understand and reveal relationships in accounting and financial data. HTML is not designed to be aware of the information it presents. XBRL closes the "communication gap" between the preparers and users of financial data on the Internet. Because it is based on XML, content and relationships may easily be understood.

XML is a general-purpose markup standard for creating languages to standardize the data exchange between different computing platforms and applications. XML uses tags to identify (i.e., mark up) pieces of data but leaves the interpretation of the data to the user, such as one who is reviewing the financial numbers and their significance for a database management application. A tag is a command inserted into a document that specifies how the document, or a portion of it, should be formatted. Tags are used by all format specifications that store documents as text files, including SGML and HTML.

XML is extensible and platform independent and it supports both internationalization and localization. It is self-describing. Like HTML, XML files are also text files that users should not have to read but may when the need arises. XML enables users to define new document formats by combining and reusing other formats to exchange in environments that do not share common platforms. It has the capability to retrieve information from any computer (e.g., PC, Macintosh, or mainframe) with any operating system (e.g., Windows or Unix). XML adds structure and context to unstructured information.

Today, XML is accepted as the standard data interchange tool for the Internet. Yet implementing XML-based projects can be confusing, especially when the same term is ascribed different meanings across different industries.

CFOs and CPAs should refer to the following Web sites to learn more about XML:

- Oasis: http://xmlcoverpages.org/xml.html
- Microsoft: http://msdn.microsoft.com/en-us/data/bb190600.aspx
- IBM: http://www.ibm.com/developerworks/xml/

The following Web sites post a complete list of XML applications:

- http://xml.coverpages.org/siteIndex.html
- http://xml.coverpages.org/xmlApplications.html

XBRL as a Universal Business Reporting Language

The XBRL working group was initiated by the American Institute of Certified Public Accountants (AICPA). The current XBRL Consortium comprises more than 140 of the world's largest accounting, technology, governmental, and financial services bodies. Members of XBRL International include the International Accounting Standards Board, PricewaterhouseCoopers, Deloitte & Touche, Ernst & Young, KPMG, BDO Seidman, Grant Thornton, Bank of America, Deutsche Bank, CCI-1 Tax Compliance, Institute of Management Accountants, Canadian Institute of Chartered

2. The circumstances in which a company should recognize events or transactions taking place after the balance sheet date.
3. The disclosures that should be made for subsequent events or transactions.

The Statement applies to interim and annual financial periods.

Subsequent events are events or transactions that take place after the balance sheet date but before the financial statements are issued or available to be issued. The two types of subsequent events are:

1. Event or transaction that provides additional evidence about conditions that existed at the balance sheet date, including the estimates inherent in the process of preparing financial statements.
2. Event providing evidence about conditions that did not exist at the balance sheet date but arose after that date. This is a nonrecognized subsequent event.

A company shall recognize in the financial statements the effect of a subsequent event that provides additional evidence about conditions existing at the balance sheet date. Recognized subsequent events of this nature include a settlement amount in a lawsuit different from that estimated at the balance sheet date and a customer's bankruptcy filing after year-end but before the issue date of the financial statements.

A company should not recognize subsequent events providing evidence about conditions that did not exist at the balance sheet date but arose after the balance sheet date but before the financial statements are issued. Examples are the sale of stocks or bonds after the balance sheet date but before the financial statements are issued, a business combination taking place after the balance sheet date, fire loss on fixed assets and inventory after the balance sheet date, and issuing significant guarantees after the balance sheet date but before the statements are issued.

Disclosure should be made of the date through which subsequent events have been appraised, and whether that date is the date the financial statements were issued or available to be issued.

Some nonrecognized subsequent events may need to be disclosed to keep the financial statements from being misleading. For this type of event, the company should disclose the nature of the event, and an estimate of its financial effect, or a statement that such an estimate cannot be made.

A company should consider supplementing the historical financial statements with pro forma financial information. In some cases, a nonrecognized subsequent event may be so material that disclosure can best be made by way of pro forma financial data. Such data shall give effect to the event as if it had taken place on the balance sheet date.

According to Accounting Standards Update (ASU) No. 2010-09 (February 2010), *Subsequent Events* (ASC Topic 855), a company must appraise subsequent events up to the time of the issuance of the balance sheet and income statement.

A revised financial statement includes one resulting from an error correction or restatement of previous years because of the adoption of a new accounting method.

COLLABORATIVE ARRANGEMENTS

According to ASC 808, *Collaborative Arrangements*, a collaborative arrangement is a contractual agreement in which the parties are active participants and have significant risks and rewards that depend on the eventual commercial success of the endeavor. Many collaborative arrangements apply to developing and commercializing intellectual property. A collaborative arrangement can start at any point in the endeavor's life cycle.

According to ASC 808, transactions with third parties (i.e., revenue generated and cost incurred by participants from transactions with parties outside of a collaborative arrangement), should be shown gross or net on the appropriate line item in each participant's respective financial statements. For example, a participant in a collaborative arrangement that is considered to be the principal for a given transaction should record that transaction on a gross basis in its financial statements. Further, the equity method should not be applied to an arrangement that is performed by the participants without creating a separate legal entity for the arrangement.

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If one party to an arrahgement must make a payment to the other party to reimburse a part of that party's research and development (R&D) cost, that portion of the net payment may be an R&D expense in the payor's financial statements.

A participant in a collaborative arrangement should disclose the following:

- Amounts owed to or due from other participants.
- Accounting policy for collaborative arrangements.
- Rights and obligations under collaborative arrangements.
- Nature and purpose of the arrangement.
- Life cycle stage.
- Classification in the income statement and amounts attributable to transactions between participants.

ENVIRONMENTAL REPORTING AND DISCLOSURES

Companies are faced with federal and local compliance requirements regarding environmental issues. Environmental laws provide rigorous specifications with which companies must comply. The costs of compliance could significantly increase a company's expected cost of projects and processes. Failure to abide by environmental dictates could result in substantial costs and risks, including civil and criminal prosecution and fines. The company must police itself to avoid legal defense fees and penalties. An effective compliance program, such as having preventive and detective controls, is crucial in minimizing environmental risks. The corporate manager must be assured that appropriate accounting, reporting, and disclosures for environmental issues are being practiced by the firm.

Legislation

The Environmental Protection Agency (EPA) enforces federal laws regulating pollution, solid waste disposal, water supply, pesticide and radiation control, and ocean dumping. EPA regulations require adherence to specific pollution detection

stock. An alternative, but less preferable, approach is to include in consolidation the subsidiary's earnings subsequent to the acquisition date.

The retained earnings of a subsidiary at the acquisition date are not included in the consolidation financial statements.

When the subsidiary is disposed of during the year, the parent should always be consolidated.

Consolidation is still permissible without adjustments when the fiscal year-ends of the parent and subsidiary are three months or less apart. Footnote disclosure is needed of material events occurring during the intervening period.

The equity method of accounting is used for unconsolidated subsidiaries unless there is a foreign investment or a temporary investment. In a case where the equity method is not used, the cost method is followed. The cost method recognizes the difference between the cost of the subsidiary and the equity in net assets at the acquisition date. Depreciation is adjusted for the difference as if consolidation of the subsidiary were made. There is an elimination of intercompany gain or loss for unconsolidated subsidiaries to the extent the gain or loss exceeds the unrecorded equity in undistributed earnings. Unconsolidated subsidiaries accounted for with the cost method should have adequate disclosure of assets, liabilities, and earnings. Such disclosure may be in footnote or supplementary schedule form.

There may be instances when combined rather than consolidated financial statements are more meaningful, such as where a person owns a controlling interest in several related operating companies (e.g., brother-sister corporation).

There are cases in which parent company statements are required to properly provide information to creditors and preferred stockholders. In this event, dual columns are needed—one column for the parent and other columns for subsidiaries.

With respect to a consolidation, U.S. GAAP mandates a parent company to prepare consolidated financial statements, while IFRS allows exemptions if a parent is wholly owned.

ASC 810, *Consolidation* (ASC 810-10-30), requires variable interest entities to be consolidated by the primary beneficiary. The primary beneficiary is the entity that holds the majority of the beneficial interests in the variable interest entity.

The accounting for business combinations is discussed in "Mergers and Acquisitions" in Part XI.

Although the FASB provides significant guidance on how consolidated financial statements are prepared under the acquisition method, little attention has been given to how an acquired subsidiary should present its assets and liabilities on the books. One perspective is that the subsidiary should retain its prior recording basis (e.g., historical cost, market value). Under that view, fair value adjustments to prepare consolidated financial statements would only be shown on the worksheet and not posted to the subsidiary's general ledger.

Under another perspective, the change in ownership arising from buying the subsidiary results in a new measurement basis, fair value, for that company. The

balances on the subsidiary's general ledger are adjusted to fair value. Thus, there is no need for consolidated worksheet adjustments, as these are made directly to the accounts of the subsidiary on its books. This process is called "push down accounting." Under this perspective, the acquired company generally will have higher asset and liability values on the acquisition date because the net assets of the acquired entity have been increased to fair value. In addition, goodwill will have been recognized.

Accounting Standards Update (ASU) No. 2014-08 (November 2014), *Presentation of Financial Statements* (Topic 205) *and Property, Plant, and Equipment* (Topic 360), *Reporting Discontinued Operations and Disclosures of Disposals of Components of an Entity,* eliminates previously issued SEC staff guidance, which required that acquired entities either use, or be prohibited from using, pushdown accounting based on the percentage of ownership change of an acquired company (e.g., SEC required push down accounting when ownership was greater than 95% and objected to it when ownership was less than 80%). In addition, the update now makes the use of pushdown accounting by an acquired entity optional.

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The decision to utilize pushdown accounting generally is made in the reporting period in which an acquirer obtains control of another company (acquiree). This is referred to as a change-in-control event. When the pushdown accounting option is chosen, the acquired company will record its assets and liabilities at fair value. In general, this is the value used by the acquiring company for the acquiree in a business combination. In addition, goodwill should be recognized by the acquiree because it is purchased by the acquirer in the combination. A bargain purchase gain, on the other hand, should not be recognized in the acquired company's income statement. Instead, the gain should be recognized in the acquiree's equity section as additional paid-in capital.

It is also important to note that the choice to use push down accounting by an acquired company under ASU 2014-08 is irrevocable. However, if an acquired entity has not made the election in the accounting period in which a change-in-control event has taken place, then it may make such an election in a later period. In this case, the election would be considered a change in accounting principle requiring a retrospective adjustment of the acquired company's financial statement back to the period in which the change-in-control event took place.

Accounting Standards Update (ASU) No. 2010-02 (January 2010), *Consolidation* (Topic 810), *Accounting and Reporting for Decreases in Ownership of a Subsidiary—a Scope Clarification*, provides the following amendment.

A deconsolidation of a subsidiary by a parent is when the parent no longer has a controlling financial interest. An ensuing gain or loss is recognized by the parent; and a change in a parent's ownership interest is treated as an equity transaction. As a result, gain or loss is not recorded. A parent's ownership changes if it buys, sells, or reacquires shares in the subsidiary.

A deconsolidation should include disclosure of the nature of activities, any related-party transaction, valuation method to determine fair value, fair value inputs, and resulting gain or loss.

- The investee is against the investment such as by filing a lawsuit or a complaint to the SEC.

- Significant influence exists by a small group of stockholders excluding the investor representing majority ownership of the investee.

The accounting under the equity method can be illustrated by examining the following "T-accounts" (which will be described in more detail shortly):

Investment in Investee	
Cost Ordinary profit	Dividends Depreciation on excess of fair market value less book value of specific assets Permanent decline

Equity in Earnings of Investee	
Depreciation	Ordinary profit

Loss	
Permanent decline	

The cost of the investment includes brokerage fees. The investor recognizes his or her percentage ownership interest in the ordinary profit of the investee by debiting investment in investee and crediting equity in earnings of investee. The investor's share in the investee's earnings is computed after deducting cumulative preferred dividends, whether or not declared. The investor's share of the investee's profit should be based on the investee's most recent income statement applied on a consistent basis. Prior period adjustments are also picked up as shown on the investee's books. Dividends reduce the carrying value of the investment account.

The excess paid by the investor for the investee's net assets is first assigned to the specific assets and liabilities and depreciated. The unidentifiable portion of the excess is considered goodwill. Depreciation on excess value of assets reduces the investment account and is charged to equity in earnings. Temporary decline in price of the investment in the investee is ignored. Permanent decline in value of the investment is reflected by debiting loss and crediting investment in investee.

When the investor's share of the investee's losses is greater than the balance in the investment account, the equity method should be discontinued at the zero amount unless the investor has guaranteed the investee's obligations or where

immediate profitability is assured. A return to the equity method is made only after offsetting subsequent profits against losses not recorded.

When the investee's stock is sold, a realized gain or loss will arise for the difference between selling price and the cost of the investment account.

The mechanics of consolidation essentially apply with the equity method. For example, intercompany profits and losses are eliminated. Investee capital transactions impacting the investor's share of equity should be accounted for as in a consolidation. Investee's capital transactions should be accounted for as if the investee were a consolidated subsidiary. For example, when the investee issues its common stock to third parties at a price in excess of book value, there will be an increase in the value of the investment and a related increase in the investor's paid-in capital.

Interperiod income tax allocation will occur because the investor shows the investee's profits for book reporting, but dividends for tax reporting. This results in a deferred income tax credit account.

If the ownership goes below 20%, or the investor for some reason is unable to control the investee, the investor should cease recognizing the investee's earnings. The equity method is discontinued but the balance in the investment account is maintained. The fair value method should then be applied.

If the investor increases ownership in the investee to 20% or more, the equity method should be used for current and future years. Further, the effect of using the equity method rather than the fair value method on prior years at the old percentage (e.g., 15%) should be recognized as an adjustment to retained earnings and other accounts so affected, such as investment in investee. The retroactive adjustment on the investment, earnings, and retained earnings should be applied in the same manner as a step-by-step acquisition of a subsidiary.

Disclosures of the following should be made by the investor in footnotes, separate schedules, or parenthetically: percentage owned, name of investee, investor's accounting policies, material effects of possible conversions and exercises of investee common stock, and quoted market price (for investees not qualifying as subsidiaries). Further, summarized financial data as to assets, liabilities, and earnings should be given in footnotes or separate schedules for material investments in unconsolidated subsidiaries. Material realized and unrealized gains and losses relating to the subsidiary's portfolio occurring between the dates of the financial statements of the subsidiary and parent must also be disclosed.

> ***EXAMPLE 6:*** On January 1, 2X12, X Company bought 30,000 shares for a 40% interest in the common stock of AB Company at $25 per share. Brokerage commissions were $10,000. During 2X12, AB's net income was $140,000 and dividends received were $30,000. On January 1, 2X13, X Company received 15,000 shares of common stock as a result of a stock split by AB Company. On January 4, 2X13, X Company sold 2,000 shares at $16 per share of AB stock. The journal entries are as follows:

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ASC 842 notes that *reasonably certain* is a high threshold that is consistent with and intended to be applied in the same way as the *reasonably assured* threshold in the previous leases guidance. In addition, also consistent with the previous leases guidance, ASC 842 states that a lessee (and a lessor) should exclude most variable lease payments in measuring lease assets and lease liabilities, other than those that depend on an index or a rate, or are in substance fixed payments.

For leases with a term of 12 months or less, ASC 842 permits a lessee to make an accounting policy election by class of underlying asset not to recognize lease assets and lease liabilities. If a lessee makes this election, it should recognize lease expense for such leases generally on a straight-line basis over the lease term.

Under ASC 842, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee have not significantly changed. ASC 842 continues the differentiation between finance leases and operating leases; however, the principal difference from previous guidance is that the lease assets and lease liabilities arising from operating leases should be recognized in the statement of financial position.

ASC 842 requires a lessee to do the following for finance leases:

- Recognize a right-of-use asset and a lease liability, initially measured at the present value of the lease payments, in the statement of financial position;
- Recognize interest on the lease liability separately from amortization of the right-of-use asset in the statement of comprehensive income; and
- Classify repayments of the principal portion of the lease liability within financing activities and payments of interest on the lease liability and variable lease payments within operating activities in the statement of cash flows.

ASC 842 also requires a lessee to do the following for operating leases:

- Recognize a right-of-use asset and a lease liability, initially measured at the present value of the lease payments, in the statement of financial position;
- Recognize a single lease cost, calculated so that the cost of the lease is allocated over the lease term on a generally straight-line basis; and
- Classify all cash payments within operating activities in the statement of cash flows.

Discount Rate for Lessees That Are Not Public Business Entities. In November 2021 the FASB issued ASU 2021-09, Leases (Topic 842), Discount Rate for Lessees That Are Not Public Business Entities, to provide more flexibility in how non-public lessees determine the discount rate for their leases and make the risk-free rate election to reduce their initial adoption and ongoing implementation costs associated with ASU 2016-02, Leases (Topic 842). ASU 2021-09 affects lessees that are not public business entities, including all not-for-profit entities (whether or not they are conduit bond obligors) and employee benefit plans (whether or not they file or furnish financial statements with or to the U.S. Securities and Exchange Commission).

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Topic 842 currently provides lessees that are not public business entities with a practical expedient that allows them to elect, as an accounting policy, to use a risk-free rate as the discount rate for all leases. ASU 2021-09 allow those lessees to make the risk-free rate election by class of underlying asset, rather than at the entity-wide level. An entity that makes the risk-free rate election is required to disclose which asset classes it has elected to apply a risk-free rate. The ASU 2021-09 requires that when the rate implicit in the lease is readily determinable for any individual lease, the lessee use that rate (rather than a risk-free rate or an incremental borrowing rate), regardless of whether it has made the risk-free rate election.

Under the current guidance, a lessee that is not a public business entity that makes the risk-free rate election is required to use a risk-free rate for all leases. ASU 2021-09 provides more flexibility for those lessees by allowing them to make the election by class of underlying asset, rather than at the entity-wide level. ASU 2021-09 requires that a lessee use the rate implicit in the lease when it is readily determinable, instead of a risk-free rate or incremental borrowing rate.

The effective date for ASU 2021-09 is different for entities that have not yet adopted Topic 842 as of November 11, 2021, and those that have. Topic 842 becomes effective for private companies and not-for-profit organizations that are not conduit bond obligors for fiscal years beginning after December 15, 2021, and interim periods within fiscal years beginning after December 15, 2022. Because earlier application is permitted (and Topic 842 is already effective for certain not-for-profit organizations that are conduit bond obligors), some private companies and not-for-profit organizations have already adopted Topic 842.

Entities that have not yet adopted Topic 842 as of November 11, 2021, are required to adopt ASU 2021-09 while they adopt Topic 842. Those entities should apply the existing transition provisions in paragraph 842-10-65-1. Those provisions require that an entity use either of the following transition methods: (1) apply the guidance to existing leases retrospectively with the cumulative-effect adjustment from transition recognized at the beginning of the earliest period presented or (2) apply the guidance to existing leases on a modified retrospective basis with the cumulative-effect adjustment from transition recognized in the opening balance of retained earnings at the beginning of the period of adoption.

For entities that have adopted Topic 842 as of November 11, 2021, ASU 2021-09 is effective for fiscal years beginning after December 15, 2021, and interim periods within fiscal years beginning after December 15, 2022. Earlier application is permitted. Entities are required to apply the amendments on a modified retrospective basis to leases that exist at the beginning of the fiscal year of adoption of a final Update. The adoption of the amendments should not be considered an event that would cause remeasurement and reallocation of the consideration in the contract (including lease payments) or reassessment of lease term or classification.

Lessor Accounting

ASC 842 leaves the accounting applied by a lessor largely unchanged from that applied under previous U.S. GAAP. For example, the vast majority of operating leases will remain classified as operating leases, and lessors will continue to

January 1, 20X1

Account	Debit	Credit
Cash	103,555.53	
Lease Receivable		103,555.53

On December 31, 20X1, Lessor Inc. recognizes the interest revenue on the lease receivable during the first year through the following entry:

December 31, 20X1

Account	Debit	Credit
Lease Receivable	15,857.78	
Interest Revenue		15,857.78

On January 1, 20X2, Lessor Inc. records receipt of the second year's lease payment as follows:

January 1, 20X2

Account	Debit	Credit
Cash	103,555.53	
Lease Receivable		103,555.53

On December 31, 20X2, Lessor Inc. recognizes the interest revenue on the lease receivable during the second year through the following entry:

December 31, 20X2

Account	Debit	Credit
Lease Receivable	12,349.87	
Interest Revenue		12,349.87

On January 1, 20X3, Lessor Inc. records receipt of the third year's lease payment as follows:

January 1, 20X3

Account	Debit	Credit
Cash	103,555.53	
Lease Receivable		103,555.53

On December 31, 20X3, Lessor Inc. recognizes the interest revenue on the lease receivable during the third year through the following entry:

December 31, 20X3

Account	Debit	Credit
Lease Receivable	8,701.60	
Interest Revenue		8,701.60

On January 1, 20X4, Lessor Inc. records receipt of the fourth year's lease payment as follows:

January 1, 20X4

Account	Debit	Credit
Cash	103,555.53	
Lease Receivable		103,555.53

On December 31, 20X4, Lessor Inc. recognizes the interest revenue on the lease receivable during the fourth year through the following entry:

December 31, 20X4

Account	Debit	Credit
Lease Receivable	4,907.49	
Interest Revenue		4,907.49

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On January 1, 20X5, Lessor Inc. records receipt of the fifth year's lease payment as follows:

January 1, 20X5

Account	Debit	Credit
Cash	103,555.53	
Lease Receivable		103,555.53

The asset is not returned to Lessor Inc. until December 31, 20X5. Lessor Inc. makes the following entry on December 31, 20X5:

December 31, 20X5

Account	Debit	Credit
Lease Receivable	961.56	
Interest Revenue		961.56

Interest revenue of $961.56 is recognized for the year 20X5 as the residual value and accretes up to $25,000 at the end of the lease.

At December 31, 20X5, the leased asset is returned to Lessor Inc., the Lease Receivable account is reduced to zero, and the asset returned is recorded in inventory.

December 31, 20X5

Account	Debit	Credit
Inventory	25,000	
Lease Receivable		25,000

Lessee Accounting for an Operating Lease

To illustrate the accounting of an operating lease for a lessee, assume that Lessor Inc. and Lessee Corp. sign a lease agreement dated January 1, 20X1. The lease agreement specifies that Lessor Inc. will grant right-of-use of its non-specialized equipment to Lessee Corp. The terms and provisions of the operating lease agreement are as follows:

- The lease agreement is non-cancelable with a term of three years.
- The equipment has a cost and fair value on January 1, 20X1, of $180,000, an estimated economic life of five years, and a residual value at the end of the lease of $36,000 (unguaranteed).
- The lease contains no renewal options. The equipment reverts to Lessor Inc. at the termination of the lease.
- The implicit rate of Lessor Inc. is 6% and is known by Lessee Corp.

Calculations:

The fair value of the leased equipment is $180,000.00.

Less: The present value of the residual ($36,000 × .83962 (PVIF for 3 periods @ 6%)) is $30,226.32.

The amount to be recovered through lease payments is $149,773.68.

Lessee Corp. will make three lease payments at the beginning of year that will earn Lessor Inc. a 6% return $149,773.68 ÷ 2.83339 (PVIF for an annuity due for 3 periods @ 6%) is $52,860.24 annuity payments.

equity when an entity initially applies ASC 842 retrospectively to each prior reporting period.

Transition Guidance for Leases Previously Classified as Capital Leases. ASU 2018-10 corrects a reference to the subsequent measurement guidance applicable to capital leases. The FASB notes that paragraph 842-10-65-1(r) provides guidance to lessees for leases previously classified as capital leases under ASC 840 and classified as finance leases under ASC 842. Paragraph 842-10-65-1(r)(4) provides subsequent measurement guidance before the effective date when an entity initially applies ASC 842 retrospectively to each prior reporting period, but it refers readers to the subsequent measurement guidance in ASC 840 about operating leases. ASU 2018-10 corrects that reference.

Transition Guidance for Modifications to Leases Previously Classified as Direct Financing or Sales-Type Leases. ASU 2018-10 corrects the inconsistency regarding how the lease is classified before the modification to be consistent with the guidance provided in paragraphs 842-10-25-16 through 25-17. The FASB notes that paragraph 842-10-65-1(x) provides transition guidance applicable to lessors for leases previously classified as direct financing leases or sales-type leases under ASC 840 and classified as direct financing leases or sales-type leases under ASC 842. For modifications to those leases beginning after the effective date, paragraph 842-10-65-1(x)(4) refers readers to other applicable guidance in ASC 842 to account for the modification, specifically paragraphs 842-10-25-16 through 25-17, depending on how the lease is classified after the modification. ASU 2018-10 corrects that inconsistency.

Transition Guidance for Sale and Leaseback Transactions. ASU 2018-10 clarifies the transition guidance for sale and leaseback transactions that occur after the earliest comparative period presented in the financial statements in which an entity adopts ASC 842 but before the effective date. The FASB notes that transition guidance for sale and leaseback transactions in paragraphs 842-10-65-1(aa) through (ee) applies to all sale and leaseback transactions that occur before the effective date and corrects the referencing issues.

Impairment of Net Investment in the Lease. The FASB notes that paragraph 842-30-35-3 provides guidance to lessors for determining the loss allowance of the net investment in the lease and describes the cash flows that should be considered when the lessor determines that loss allowance. ASU 2018-10 clarifies the application of the guidance for determining the loss allowance of the net investment in the lease, including the cash flows to consider in that assessment.

Unguaranteed Residual Asset. The FASB notes that paragraph 842-30-35-4 provides guidance explaining that if a lessor sells the lease receivable associated with a direct financing lease or a sales-type lease and retains an interest in the residual value of the asset, the lessor should not continue to accrete the unguaranteed residual asset to its estimated value over the remaining lease term. ASU 2018-10 clarifies that a lessor should not continue to accrete the unguaranteed

residual asset to its estimated value over the remaining lease term to the extent that the lessor sells substantially all of the lease receivable associated with a direct financing lease or a sales-type lease.

Effect of Initial Direct Costs on Rate Implicit in the Lease. ASU 2018-10 more clearly aligns the illustration in Case C of Example 1 to the guidance in paragraph 842-10-25-4 about how initial direct costs factor into determining the rate implicit in the lease for lease classification purposes for lessors only.

Failed Sale and Leaseback Transaction. ASU 2018-10 clarifies that a seller-lessee in a failed sale and leaseback transaction should adjust the interest rate on its financial liability as necessary to ensure that the interest on the financial liability does not exceed the total payments on the financial liability. The ASU 2018-10 clarification is also reflected in the relevant illustration on failed sale and leaseback transactions that is contained in Subtopic 842-40.

Comparative Reporting at Adoption

In July 2018, the FASB issued Accounting Standards Update (ASU) No. 2018-11 (July 2018), *Leases* (Topic 842), *Targeted Improvements*, to address targeted improvements in the new leases standard relating to comparative reporting requirements for initial adoption. ASU 2018-11 provides entities with an additional and optional transition method to adopt the new leases standard. Under the transition method issued in ASU 2018-11, an entity initially applies the new leases standard at the adoption date and recognizes a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Consequently, an entity's reporting for the comparative periods presented in the financial statements in which it adopts the new leases standard will continue to be in accordance with ASC 840.

The FASB notes that an entity that elects the additional and optional transition method under ASU 2018-11 must provide the required ASC 840 disclosures for all periods that continue to be in accordance with ASC 840. ASU 2018-11 does not change the existing disclosure requirements in ASC 840; for example, ASU 2018-11 does not create interim disclosure requirements that entities previously were not required to provide.

Practical Expedient: Separating Components of a Contract

In July 2018, the FASB issued ASU 2018-11 to address targeted improvements in the new leases standard relating to the separation of lease and non-lease components in a contract by lessors and the allocation of consideration in the contract to the separate components. ASU 2018-11 provides lessors with a practical expedient, by class of underlying asset, to not separate non-lease components from the associated lease component and, instead, to account for those components as a single component if the non-lease components otherwise would be accounted for under the new revenue guidance (ASC 606) and both of the following are met:

- The timing and pattern of transfer of the non-lease component(s) and associated lease component are the same.
- The lease component, if accounted for separately, would be classified as an operating lease.

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- Nature and effect of items affecting interperiod comparability.
- Cost recognized for the period.

According to Accounting Standards Update (ASU) No. 2010-25 (September 2010), *Plan Accounting—Defined Contribution Pension Plans* (Topic 962), *Reporting Loans to Participants by Defined Contribution Pension Plans,* participant loans should be presented as notes receivable and are to be segregated from plan investments and valued at their unpaid principal amount plus any accrued but unpaid interest.

Fully Benefit-Responsive Investment Contracts

Fully benefit-responsive investment contracts may be issued to defined benefit plans. These contracts provide contract value protection to plan participants for certain permitted transactions defined by the contract. Permitted transactions include, for example, transfers initiated by participants to other funds within the plan, withdrawals for benefits, and loans. ASC 962, *Plan Accounting—Defined Contribution Pension Plans*, required that fully benefit-responsive investment contracts be valued at contract value. It also required that if this measurement was different from fair value, an adjustment was to be made to reconcile contract value to fair value on the face of the plan financial statements. As part of the FASB's ongoing Simplification Initiative, ASU 2015-12 Part I, *Plan Accounting: Defined Contribution Pension Plans* (Topic 962), now requires that contract value should be the sole measure to value fully benefit-responsive investment contracts. Contract valuation was chosen as the sole measure because it represents the amount that participants would receive if they were to execute permitted transactions under the defined benefit plan. In addition, fully benefit-responsive investment contracts are reported at contract value for regulatory purposes.

Defined Benefit Pension Plan

ASC 715 applies only to single-employer plans, not multiemployer plans. The pronouncement makes it easier for financial statement users to comprehend an employer's financial position and its ability to fulfill its obligations under its benefit plans. ASC 715 is intended to communicate the funded status of defined benefit postretirement plans in a clear and comprehensive way. Although the pronouncement changes the recognition and disclosure requirements for defined benefit postretirement plans, it does *not* change the measurement of pension or other postretirement expense. ASC 715 is expected to have a pronounced effect on corporations. Upon adoption, most companies will report a very significant increase in liabilities as well as a reduction in stockholders' equity. This is because most companies are underfunded. The effect on pension expense from ASC 715 is expected to be none or very little, because the amortization requirements for actuarial gains and losses and prior-service costs are *not* changed. Further, the computation of other components of pension expense, including service cost and interest on projected benefit obligation, remain intact.

Upon initially applying ASC 715 and in later periods, an employer should continue to follow the dictates of FASB Statement Nos. 87, 88, and 106 in measuring

plan assets and benefit obligations as of the balance sheet date and in determining the net periodic benefit cost.

The components of pension expense in a defined benefit pension plan are as follows:

- Service cost.
- Amortization of any prior-service cost or credit included in "accumulated other comprehensive income."
- Expected return on plan assets (reduces pension expense).
- Interest cost on projected benefit obligation.
- Net gain or loss.
- Amortization of net transition assets or obligation existing at the adoption date of ASC 715 and remaining in accumulated other comprehensive income.

Service Cost. Service cost is based on the present value of future payments under the benefit formula for employee services of the current period. It is recognized in full in the current year. The calculation involves actuarial assumptions, such as promotion and early retirement service cost increases pension expense.

Employers must incorporate future salary levels in measuring pension expense and the present obligation if the plan benefit includes them. ASC 715 adopts the benefits/years-of-service actuarial method, which computes pension expense based on future compensation levels. The employer is required to fund at least the annual service cost computed under the plan.

Accounting Standards Update (ASU) No. 2017-07 (March 2017), *Compensation—Retirement Benefits* (Topic 815), *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*, states that an employer must report the service cost component in the same line item or items as other compensation costs for employee services performed. The other components of net benefit cost must be shown in the income statement separately from the service cost component and outside a subtotal of income from operations. Further, only the service cost component is eligible for capitalization.

Prior-Service Cost. Prior-service cost is the pension expense applicable to services rendered before the adoption or amendment date of a pension plan. The cost of the retroactive benefits is the increase in the projected benefit obligation at the date of amendment. It involves the allocation of amounts of cost to future service years. Prior-service cost determination involves actuarial considerations. Amortization is accomplished by assigning at the amendment date an equal amount to each service year of active employees who are expected to receive plan benefits. The amortization of prior-service cost may take into account future service years, any change in the projected benefit obligation, the period employees will receive benefits, and any decrement in employees receiving benefits each year. "Other

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$$\text{Total future service years equals: } \frac{n(n+1)}{2} \times P$$

n is the number of years services are to be made

P is the population decrement each year

$$\frac{10(10+1)}{2} \times 9 = 495$$

Amortization of prior-service cost in 2X12 equals:

$$\$500{,}000 \times \frac{10 \times 9}{495} = \$90{,}909$$

Return on Plan Assets. The expected return on plan assets (e.g., stocks, bonds) typically reduces pension expense. Plan assets are valued at the moving average of asset values for the accounting period.

The expected return is the anticipated increase in plan assets arising from investment activities. The FASB mandates that expected return on plan assets be included as a component of pension expense.

The annual pension expense is adjusted for dividends and interest earned by the pension fund in addition to the appreciation or decline in the market value of the fund assets.

Pension assets are increased from employer contributions and actual returns, but pension assets are decreased from benefit payments to retirees. Actual return on plan assets increases the fund balance and reduces the employer's net cost of providing employees' pension benefits. Again, return increases pension funds from dividends, interest, and realized and unrealized gains in the fair market value of plan assets. Using hypothetical numbers, actual return on plan assets is computed as follows:

Fair market value of plan assets—end of year		$600,000
Less: Fair market value of plan assets—beginning of year		400,000
Increase in fair market value of plan assets		$200,000
Less: Employer contributions	$70,000	
Deduct retiree benefit payments	20,000	50,000
Actual return on plan assets		$150,000

An alternative way to calculate the actual return follows:

Fair market value of plan assets—beginning of year	$400,000
Add: Contributions	70,000
Less: Benefit payments	(20,000)
Add: Actual return	?
Fair market value of plan assets—end of year	$600,000

Actual return must be $150,000 (the missing number).

Note: Actual return reduces pension expense. However, if there is an actual loss (such as when there is a significant decline in the fair market value of plan assets during the year because of a sharp stock market decline), pension expense increases.

Interest is on the projected benefit obligation (PBO) at the beginning of the year. Interest on the PBO increases pension expense. The settlement rate is employed representing the rate that pension benefits could be settled for. Interest equals:

Interest Rate × Projected Benefit Obligation at the Beginning of the Year

Because a pension is a deferred compensation arrangement, a time value of money factor exists. The assumed interest (discount) rate should reflect the rate companies can settle pension benefits. In ascertaining these settlement rates, return rates on high-quality fixed-income investments, whose cash flows match the amount and timing of the anticipated benefit payments should be considered. The purpose is to derive a discount rate to measure an amount that, if invested in a high-quality debt portfolio, generates the needed future cash flows to pay the pension benefits when due.

Accounting Standards Update (ASU) No. 2017-06 (February 2017), *Plan Accounting: Defined Benefit Pension Plans (Topic 960), Defined Contribution Pension Plans (Topic 962), Health and Welfare Benefit Plans (Topic 965), Employee Benefit Plan Master Trust Reporting*, requires that for each master trust, a plan's interest in the master trust and any change in that interest should be shown in separate line items in the statement of changes in net assets available for benefits. There should be disclosure of the master trust's balances in each general type of investments. Disclosure is also required of a master trust other asset and liability balances.

Gains and Losses. Actuarial gains and losses are the differences between estimates and actual experience. For example, if the assumed interest rate is 10% and the actual interest rate is 12%, an actuarial gain results. There may also be a change in actuarial assumptions regarding the future. Actuarial gains and losses are deferred and amortized as an adjustment to pension expense over future years. Actuarial gains and losses related to a single event not related to the pension plan and not in the ordinary course of business are immediately recognized in the current year's income statement. Examples are plant closing and segment disposal.

Gains and losses are changes in the amount of either the projected benefit obligation or pension plan assets because of experience different from that assumed from changes in assumptions. Gains and losses that are *not* recognized immediately as a component of pension expense shall be recognized as increases or decreases in other comprehensive income as they arise.

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Fixed overhead budget variance =
Actual fixed overhead versus budgeted fixed overhead
(Denominator or budget hours × Standard fixed overhead rate)

Note: Budgeted fixed overhead may also be referred to as a lump sum amount.

Fixed overhead volume variance =
Budgeted fixed overhead versus standard overhead
(Standard hours × Standard fixed overhead rate)

The breakdown of the volume variance follows:

Fixed overhead efficiency variance =
(Actual hours versus standard hours) × Standard fixed overhead rate

Fixed overhead pure volume variance =
(Actual hours versus budgeted hours) × Standard fixed overhead rate

Fixed overhead variance data provide information about decision-making astuteness when buying some combination of fixed plant size variable production inputs. However, variances for fixed overhead are of questionable usefulness for control purposes, since these variances are usually beyond the control of the production department.

The volume variance is a measure of the cost of deviating from denominator (budgeted) volume used to set the fixed overhead rate. When actual volume is less than budgeted volume, the volume variance will be unfavorable. In the opposite case, the volume variance is favorable because it is considered as a benefit of better-than-anticipated utilization of facilities.

EXAMPLE 7: Standard hours are two hours per unit. Standard fixed overhead rate is $20 per hour. Actual hours per unit are two. Total production is 9,500 units. Actual hours are 20,200. Actual fixed overhead is $420,000. The denominator activity is 10,000 units. The fixed overhead variances are:

Fixed Overhead Budget Variance		
Actual fixed overhead	$420,000	
Budgeted fixed overhead (10,000 × 2 = 20,000 × $20)	400,000	
Budget variance	$ 20,000	U
Volume Variance		
Budgeted fixed overhead	$400,000	
Standard fixed overhead (9,500 × 2 = 19,000 × $20)	380,000	
Volume variance	$ 20,000	U

The production volume variance of $20,000 is now broken down into the efficiency and pure volume variances.

Fixed Overhead Efficiency Variance

(Actual hours versus standard hours) × Standard fixed overhead rate		
(20,200 versus 19,000) × $20	$ 24,000	U

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Fixed Overhead Pure Volume Variance

(Actual hours versus budget hours) × Standard fixed overhead rate		
(20,200 versus 20,000) × $20	$ 4,000	F

Variances for Total Overhead

One-way, two-way, and three-way analysis may be used for total overhead.

One-Way Method. The total (control, net) variance is:

Total Overhead Variance

Actual overhead

Standard overhead (standard hours × standard overhead rate)

Two-Way Method. Under the two-variance method, the overhead variance comprises the controllable (budget, flexible-budget, spending) and volume (capacity, idle capacity, activity, denominator) variances.

Controllable Variance

Actual overhead

Budget adjusted to standard hours

Fixed overhead (denominator hours × standard fixed overhead rate)

Variable overhead (standard hours × standard variable overhead rate)

Volume (Production) Variance

Standard overhead

Budget adjusted to standard hours

The controllable (budget) variance may indicate changes in the amount charged for overhead services or in the correlation between overhead items and the variable used to measure output. If such changes are of a permanent nature, output levels may have to be revised.

Management uses the overhead budget variance as a basis for determining the extent to which the cost centers were within their budgeted cost levels. Such variances are useful in formulating decisions regarding cost center operations.

The controllable variance is the responsibility of the supervisor, since he or she influences actual overhead incurred. An unfavorable variance may be due to price increases, a lack of control over costs, and waste.

The volume variance is the responsibility of management executives and production managers, since they are involved with plant utilization. **Note:** A consistently unfavorable volume variance may be due to having purchased the incorrect size plant. An unfavorable volume variance may arise from controllable factors such as poor scheduling, lack of orders, shortages or defectiveness in raw materials, inadequate tooling, lack of employees, machine breakdowns, long operating times, and incompetent workers. Uncontrollable factors for the overhead volume variance

one reengineering project before proceeding to the next, because the manager becomes more focused and learns from experience.

Scenario analysis should be undertaken, looking at high, low, and average situations. Probabilities, weights, and rankings may be assigned to alternative scenario situations as part of the evaluative process. There is a link between scenario planning and business reengineering. Scenario analysis considers uncertainties, range of possibilities (outcomes), what is critical and what is not, controllable and uncontrollable factors, the effect on other areas of implementing a strategy in one area, contingent possibilities (a course of action is valuable only in particular scenario settings). Scenario analysis considers advisable steps to take now or in the future, or if a particular change in circumstance occurs. It is similar to a simulation to determine what will happen in the "real world." "Red flags" should be recognized and corrective action taken. What are the positive and negative outcomes from implementing a particular procedure or strategy? Scenario analysis assists in reducing risk and focusing on reengineering efforts. The scenario program provides "visions" as to the future. Its results suggest what activities should be emphasized or deemphasized, and what actions should be eliminated. Scenario analysis looks at the alternative possibilities available and aids in timely implementation. A priority ranking of alternatives may be established.

Reengineering in the plant may take the form of automating operations, updating manufacturing approaches, and accomplishing greater flexibility. It may involve reorganizing the human resource function to achieve economies and eliminate duplication. Internal organizational processes and product/service deliveries may be redesigned.

One must be careful that reengineering does not result in "dumb-sizing," whereby the entity's long-term financial position and operating results are adversely impacted. Does the reengineering program lay off experienced personnel, cut vital services, increase risk, result in legal liability, cause conflicts with vendors or customers, result in worker mistrust, cause injuries or malfunctioning of equipment, or cause other negative aspects that outweigh any benefits achieved? The authors are aware of instances when in fact a reengineering program that was improperly administered was counterproductive.

The reengineering team should consist of those who are representative of those to be affected within the department by the ultimate outcome of the proposed reengineering. The group should be a cross section of individuals within the company. In other words, there should be organizational diversity. Determine who is responsible for what and how, and how often performance will be measured. If individuals are trying to sabotage the reengineering effort, take necessary steps to remove the roadblock, such as dismissing uncooperative employees.

OUTSOURCING

A corporate policy must be established regarding outsourcing. Outsourcing is contracting to others work that was formerly done within the company. It includes buying goods and services from vendors. As a general rule, outsourcing is more appropriate for "core" activities than "noncore" operations. Companies more suitable for outsourcing are those that are decentralized, are engaged in restructuring (e.g., downsizing), and are out-of-date.

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There are many outsourcing service providers in areas such as finance, administration, engineering, manufacturing, buying, human resources, customer service, real estate management, computer systems, marketing and sales, investment management, maintenance, product procurement, distribution (e.g., shipping) and logistics, technology, and transportation. For example, information technology services are provided by Integrated Systems Solutions of White Plains, NY. Xerox Corporation offers many business services related to office work and duplication functions.

Before outsourcing, consideration should be given to whether it makes sense in light of expectations, company objectives and needs, business plans, major sources of revenue, cost (including conversion costs), risk (including business uncertainties), contract period, legal liability, availability, security, confidentiality, time constraints (including time to implement and schedule), capacity limitations, employee expertise and proficiency, employee morale, time concerns, nature of item (e.g., critical importance), compatibility, corporate culture, degree of control sought, innovation and creativity, logistics, and cost of redeployment and relocation. A company may be able to outsource an aspect of its operations for less than it costs to train and manage employees to conduct the same function within the business. If a function is "mission critical," it probably should not be outsourced because management would want to retain control over it. An activity that gives the company a significant competitive advantage (differentiation) should most likely stay within the company.

Outsourcing allows a business to be more efficient and effective, engage in subcontracting legacy systems, reduce costs (e.g., staff), reduce risk, streamline and simplify operations, improve quality, focus on core activities and competencies, free up capital and human resources, improve existing processes, improve delivery of activities, generate efficiencies and effectiveness, enhance flexibility, obtain a competitive advantage, redeploy staff and assets, achieve economies, enhance productivity, convert fixed costs to variable costs, and obtain improved up-to-date technology.

In selecting an outsourcing vendor, consider reputation, contacts, references, reliability, experience, specialty and focus, fees, flexibility, stability, expertise (specialized skills), cost, quality of service, creativity and innovation, upgrade potential, communications, commitment, contract provisions and restrictions (e.g., penalty and cancellation clauses), and "fit."

Ask the outsource vendor for a "trial period" to see how things are going before entering into a regular contract. However, avoid long-term contracts, especially those that are rigid in their terms. You want flexibility and do not want to be locked in for the long term. We recommend renewable, short-term contracts. The contract should be updated as the environment and circumstances change.

Insist that outsourcing contracts contain provisions regarding performance expectations (e.g., service-level goals) and measurement guidelines. Undertake

employed to a limited extent outside of school hours in nonhazardous work. Finally, a child who is either 16 or 17 years old may be employed to perform nonhazardous tasks.

The Equal Pay Act

The Equal Pay Act makes it illegal for an employer to discriminate on the basis of gender by paying different wages for substantially equal work. The Act does, however, permit payment of different wages based on seniority, merit, quantity or quality of work, or any other factor not relating to gender. Should an employer violate the Act, it may be directed to discontinue its illegal pay structure and it may be required to provide back pay to any injured employees.

The Civil Rights Act of 1964

The Civil Rights Act makes it illegal for an employer to discriminate on the basis of race, color, religion, gender, or national origin. The Act also prohibits sexual harassment but not discrimination based on sexual preference. The Act is applicable to entities that employ 15 or more employees for 20 weeks in the current or preceding year. After enactment, the Act was modified to include The Pregnancy Discrimination Act Amendment, which forbids employment discrimination based on pregnancy, childbirth, or related medical conditions. It should be noted that employment discrimination based on gender, religion, and national origin (but not race) is allowable if the employer can show it to be a bona fide occupational qualification. Employment practices dependent on seniority systems and work-related merit are also permitted. Violations of the Civil Rights Act may entitle victims to up to two years' back pay in addition to recovery of reasonable legal fees. Reinstatement, injunctive relief, and affirmative action represent possible equitable remedies.

Age Discrimination in Employment Act

The Act, which is applicable to nonfederal employers with 20 or more employees, forbids employment discrimination based solely on age. ADEA is applicable to all employees at least 40 years old; the Act also contains a prohibition against mandatory retirement of nonmanagerial employees based on age. Subsequent to enactment, the ADEA was amended to ban age discrimination with respect to employee benefits. The Act does, however, allow age discrimination where justified by a bona fide seniority system, a bona fide occupational qualification, or a bona fide employee benefit plan. Injured individuals may seek injunctive relief, affirmative action, and back pay.

Rehabilitation Act of 1973

The Rehabilitation Act of 1973 was enacted to prevent discrimination on the basis of handicap by any employer that is the recipient of federal assistance or contracts. While employers subject to the Act are required to make reasonable efforts to accommodate the handicapped, they are not required to hire or promote handicapped persons who are unable to perform the job after reasonable accommodations are made. Persons with physical and mental handicaps are covered by the Act, while persons with alcohol or drug abuse problems are not.

Americans with Disabilities Act

Americans with Disabilities Act (ADA), which is applicable to entities employing 15 or more individuals, prevents an employer from employment discrimination against qualified individuals with disabilities. A qualified individual with a disability is an individual who is able to perform the essential job function, with or without reasonable accommodation. A disabled person is an individual with or without a history of a physical or mental impairment that substantially limits one or more major life activities. In this connection, ADA affords protection to persons afflicted with cancer and HIV infections; recovering alcoholics and drug addicts are also protected. The Act bars employers from asking job applicants about disabilities but does allow inquiry about the applicant's ability to perform job-related tasks. Prospective employees are also protected by the Act's prohibition of pre-employment medical exams. However, if such exams are required of all other job applicants, the employer is not barred. The Act does afford protection to an employer as well. Accordingly, an employer may refuse to hire or promote a disabled person in situations where (1) accommodation would present an undue hardship, (2) the disabled person cannot fulfill job-related criteria that cannot be reasonably accommodated, and (3) the disabled person would represent a direct threat to the health of other individuals.

Consolidated Omnibus Budget Reconciliation Act of 1985

The Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) mandates that employers allow voluntarily or involuntarily terminated (and certain disabled) employees to continue their group health insurance coverage for a period not to exceed to 18 (if disabled, up to 29) months following termination. The terminated employee must, however, bear the expense of the premiums. COBRA applies to nongovernmental entities (1) employing at least 20 individuals and (2) offering an employer sponsored health plan to employees. An employee's spouse and minor children must also be given the right to continue their group health coverage.

Worker Adjustment and Retraining Notification Act

The Worker Adjustment and Retraining Notification (WARN) Act, which is applicable to employers of more than 100 employees, requires that employees be given 60 days notice of plant closures or mass layoffs. A plant closing is defined as the permanent or temporary closing of a single plant or parts of a plant but only if at least 50 employees will lose their jobs within a specified 30-day period. A mass layoff arises when the jobs of at least 500 employees are terminated during a 30-day period, or the jobs of at least one-third of the employees are terminated at a given site, if that one-third equals at least 50 employees.

The Family and Medical Leave Act

The Family and Medical Leave Act (FMLA), which is applicable to entities with at least 50 employees, requires an employer to provide 12 weeks unpaid leave each year for medical or family reasons. While on leave, an employee is entitled to continued medical benefits, and upon return, an employee is entitled to the same or an equivalent job.

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SECURED TRANSACTIONS

A secured transaction is defined as any transaction that is aimed at creating a security interest in personal property or fixtures. When an agreement between a debtor and creditor has been reached, whereby the creditor shall have a security interest, a security agreement results. The security agreement must be in writing, must be signed by the debtor, and must delineate any collateral, if the agreement pertains to a nonpossessory interest.

When an interest in personal property or fixtures that secures payment or performance of an obligation exists, by definition, a security interest is created. Security interests may be either possessory or nonpossessory. Attachment must occur in order for rights of a secured party to be enforceable against the debtor. Perfection is necessary in order to make the security interest effective against most third parties.

In order for attachment to occur, (1) the secured party must have collateral pursuant to an agreement with the debtor (or the debtor must have signed a security agreement delineating collateral), (2) the creditor gives value, which may be any consideration that would support a simple contract, and (3) the debtor is afforded property rights in collateral.

Once the security interest has attached, perfection is said to have occurred. In general, the filing of a financing statement with the appropriate public official accomplishes perfection. The content of the financing statement is usually governed by state law, but generally includes, at a minimum, the names and addresses of the secured party and debtor, specification of the collateral, and the signature of the debtor.

Perfection may also be accomplished by attachment alone, without filing, through the use of a purchase money security interest (PMSI) in consumer goods. This form of perfection provides protection against a debtor's other creditors and a debtor's trustee in bankruptcy.

Finally, perfection is achieved when the creditor is in possession of the collateral. This means of perfection is useful for a security interest in goods, instruments, negotiable documents, and letters of credit. In the case of negotiable instruments, this is the only acceptable means of perfection.

It should be understood that there are two types of secured transactions; namely, a secured credit sale and a secured loan transaction. The former concerns a sales transaction in which the creditor is involved either as a seller or a money lender. The creditor takes a purchase money security interest (PMSI). Possession and risk of loss pass to the buyer, but the creditor retains a security interest in the goods until he or she has been paid in full. In the case of the latter, there is no sale of goods. Rather, the creditor lends money while simultaneously accepting a debtor-pledged security interest in collateral.

Essentially, there are four types of collateral; i.e., goods, negotiable instruments, intangibles, and fixtures.

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Goods include consumer goods, inventory and equipment. Consumer goods consist of items that are used or purchased for use primarily for personal, family, or household purposes. Inventory, on the other hand, includes goods held for sale or lease, including unfinished goods. A security interest in inventory may result in a "floating lien," whereby the lien attaches to inventory in the hands of the dealer as it is received by the dealer. Equipment, it should be noted, may also be subject to a "floating lien."

Negotiable instruments include commercial paper, documents of title, and investment securities.

Intangibles include both accounts receivable and contract rights.

Perfecting a Security Interest

As previously noted, to accomplish perfection, a financing statement must be filed with an appropriate public official. In instances where conflicting interests exist, the order of perfection is crucial and will decide priority, regardless of attachment. The first security interest to attach is afforded priority in cases where none of the conflicting security interests have been perfected.

If, within a ten-day period before or after the debtor takes possession of the collateral, a purchase money security interest in noninventory collateral is filed, the creditor will be protected as of the day on which the security interest was created (i.e., the day on which the debtor takes possession of the collateral) against any nonpurchase money security interest previously filed during the ten-day period. Creditor protection also applies to previously filed floating liens. In the event that the security interest is perfected after the ten-day period, the secured party will be afforded protection as of the date of filing but will not be able to secure protection against previously perfected non-PMSI.

A PMSI in inventory takes priority over conflicting security interests (i.e., previously perfected non-PMSI) but only if both (1) the PMSI-holder perfected the interest in the inventory on or before the date the inventory was received by the debtor and (2) the PMSI-holder furnished written notice (before the debtor takes possession of the inventory) indicating the acquisition of the interest and describing the secured inventory to all holders of conflicting security interests that previously filed a financing statement pertaining to the same type of inventory.

A filing will be necessary to protect against an innocent, nonmerchant purchaser from the consumer/debtor, even though no filing is required in order to perfect a purchase money security interest in consumer goods.

The written financing statement needed to perfect a security interest must generally include the names and addresses of both the debtor and the creditor. Only the debtor must sign the statement. The financing statement must also describe the collateral covered, and is effective for a five-year period commencing on the date filed. In order to extend the original five-year period for another five years, a continuation statement, signed by the secured party, is necessary and must be filed by the secured party within the six-month period prior to the original statement's expiration date.