Solutions Manual

For

Accounting Information Systems

16th Edition

CHAPTER 1

ACCOUNTING INFORMATION SYSTEMS: AN OVERVIEW

SUGGESTED ANSWERS TO DISCUSSION QUESTIONS

1.1 The value of information is the difference between the benefits realized from using that information and the costs of producing it. Would you, or any organization, ever produce information if its expected costs exceeded its benefits? If so, provide some examples. If not, why?

Most organizations produce information only if its value exceeds its cost. However, there are two situations where information may be produced even if its cost exceeds its value.

a. It is often difficult to estimate accurately the value of information and the cost of producing it. Therefore, organizations may produce information that they expect will produce benefits in excess of its costs, only to be disappointed after the fact.
b. Production of the information may be mandated by either a government agency or a private organization. Examples include the tax reports required by the IRS and disclosure requirements for financial reporting.

1.2 Can the characteristics of useful information listed in Table 1-1 be met simultaneously? Or does achieving one mean sacrificing another?

Several of the criteria in Table 1.1 can be met simultaneously. For example, more timely information is also likely to be more relevant. Verifiable information is likely to be more accurate.

However, achieving one objective may require sacrificing another. For example, ensuring that information is more complete may reduce its timeliness. Similarly, increased verifiability and accuracy may reduce its timeliness.

The decision maker must decide which trade-offs are warranted in each situation.

1.3 You and a few of your classmates decided to become entrepreneurs. You came up with a great idea for a new mobile phone application that you think will make lots of money. Your business plan won second place in a local competition, and you are using the $10,000 prize to support yourselves as you start your company.

a. Identify the key decisions you need to make to be successful entrepreneurs, the information you need to make them, and the business processes you will need to engage in.
b. Your company will need to exchange information with various external parties. Identify the external parties, and specify the information received from and sent to each of them.

The author turns this question into an in-class group activity. Students are divided up in groups, told to close their books, and given 15 minutes to:

a. Think through the business processes, key decisions, and information needs issues in their group.

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b. Identify the external users of information and specify the information received from and sent to each of them.

One group is selected to present their answers to the class. The other groups are told to challenge the group's answers, provide alternative answers, and chip in with additional answers not provided by the selected group. Since the group that presents is not selected until after the time has expired, students are motivated to do a good job, as they will be presenting to their peers.

The value of this activity is not in arriving at a "right answer" as there are many right answers and student answers will vary. Instead, it is in thinking through the issues presented in Table 1-2 (business processes, key decisions, and information needs) and Figure 1-1 (interactions with external parties). Student answers should contain many of the things in Table 1-2 and Figure 1-1 as well as others not shown, as a retail operation differs from an application development enterprise.

The author concludes the exercise by having the students turn to Table 1-2 and Figure 1-1 while he emphasizes the need for owners, managers, and employees of organizations to identify the information needed to make key decisions in the company's business processes and the key information interchanges with external parties. All the data needed to produce this information must be entered into the AIS, processed, stored, protected, and made available to the appropriate users.

While this active learning activity takes more time than a lecture does, it drives the point home much better than a lecture would. It also keeps the students more engaged in the material.

1.4 How do an organization's business processes and lines of business affect the design of its AIS? Give several examples of how differences among organizations are reflected in their AIS.

An organization's AIS must reflect its business processes and its line of business. For example:

- Manufacturing companies will need a set of procedures and documents for the production cycle; non-manufacturing companies do not.
- Government agencies need procedures to track separately all inflows and outflows from various funds, to ensure that legal requirements about the use of specific funds are followed.
- Financial institutions do not need extensive inventory control systems.
- Passenger service companies (e.g., airlines, bus, and trains) generally receive payments in advance of providing services. Therefore, extensive billing and accounts receivable procedures are not needed; instead, they must develop procedures to account for prepaid revenue.
- Construction firms typically receive payments at regular intervals, based on the percentage of work completed. Thus, their revenue cycles must be designed to track carefully all work performed and the amount of work remaining to be done.
- Service companies (e.g., public accounting and law firms) do not sell physical goods and, therefore, do not need inventory control systems. They must develop and maintain detailed records of the work performed for each customer to provide backup for the amounts billed. Tracking individual employee time is especially important for these firms because labor is the major cost component.

1.5 Figure 1-5 shows that organizational culture and the design of an AIS influence one another. What does this imply about the degree to which an innovative system developed by one company can be transferred to another company?

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Since people are one of the basic components of any system, it will always be difficult to transfer successfully a specific information systems design intact to another organization. Considering in advance how aspects of the new organizational culture are likely to affect acceptance of the system can increase the chances for successful transfer. Doing so may enable the organization to take steps to mitigate likely causes of resistance. The design of an AIS, however, itself can influence and change an organization's culture and philosophy. Therefore, with adequate top management support, implementation of a new AIS can be used as a vehicle to change an organization. The reciprocal effects of technology and organizational culture on one another, however, mean that it is unrealistic to expect that the introduction of a new AIS will produce the same results observed in another organization.

1.6 Figure 1-5 shows that developments in IT affect both an organization's strategy and the design of its AIS. How can a company determine whether it is spending too much, too little, or just enough on IT?

There is no easy answer to this question. Although a company can try to identify the benefits of a new IT initiative and compare those benefits to the associated costs, this is often easier said than done. Usually, it is difficult to measure precisely the benefits of new uses of IT. Nevertheless, companies should gather as much data as possible about changes in market share, sales trends, cost reductions, and other results that can plausibly be associated with an IT initiative and that were predicted in the planning process.

1.7 Apply the value chain concept to S&S. Explain how it would perform the various primary and support activities.

The value chain classifies business activities into two categories: primary and support.

The five primary activities at S&S:

a. **Inbound logistics** includes all processes involved in ordering, receiving, and temporarily storing merchandise that is going to be sold to S&S customers.
b. S&S does not manufacture any goods, thus its **operations** activities consists of displaying merchandise for sale and protecting it from theft.
c. **Outbound logistics** includes delivering the products to the customer.
d. **Sales & marketing** includes ringing up and processing all sales transactions and advertising products to increase sales.
e. **Service** includes repairs, periodic maintenance, and all other post-sales services offered to customers.

The four support activities at S&S:

a. **Firm infrastructure** includes the accounting, finance, legal, and general administration functions required to start and maintain a business.
b. **Human resource management** includes recruiting, hiring, training, evaluating, compensating, and dismissing employees.
c. **Technology** includes all investments in computer technology and various input/output devices, such as point-of-sale scanners. It also includes all support activities for the technology.
d. **Purchasing** includes all processes involved in identifying and selecting vendors to supply goods and negotiating the best prices, terms, and support from those suppliers.

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1.8 Information technology enables organizations to easily collect large amounts of information about employees. Discuss the following issues:

These questions involve traditional economic cost/benefit issues and less well-defined ethical issues.

a. To what extent should management monitor employees' e-mail?

Generally, the courts have held that organizations have the right to monitor employees' email. Such monitoring can have disastrous effects on employee morale, however. On the other hand, it might provide legitimate information about group members' individual contributions and productivity.

b. To what extent should management monitor which Web sites employees visit?

Students are likely to argue whether or not this should be done. One potential benefit that could be argued is the likelihood that if employees are aware that they will be monitored they will be less prone to surf the Web for non-work-related uses.

c. To what extent should management monitor employee performance by, for example, using software to track keystrokes per hour or some other unit of time? If such information is collected, how should it be used?

Arguments pro and con can be generated about the effects of such monitoring on performance and on morale. Clearly, the specifics of any incentive schemes tied to such metrics are important.

d. Should companies use software to electronically "shred" all traces of e-mail?

Arguments can be raised on both sides of this issue. Try to get students to go beyond the legal ramifications of recent news stories and to explore the ethical implications of destroying different kinds of email.

e. Under what circumstances and to whom is it appropriate for a company to distribute information it collects about the people who visit its Web site?

Direct students to the guidelines followed by organizations that certify how various web sites use the information they collect. Students are likely to make the argument that personal information is inherently private and sacrosanct. To challenge that view, ask them about the legitimacy of developing and maintaining a reputation. Doesn't that involve the divulgence and sharing of personal information among strangers? Ask the class if it is feasible (or undesirable) to totally prevent or prohibit such sharing of information.

The instructor should also refer the students to GAPP, as one of its criteria concerns sharing information with 3rd parties. The instructor and the students could read the GAPP criterion about sharing data together, and then discuss what they think. Remind the students that GAPP is not regulatory law – just recommended best practice.

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SUGGESTED ANSWERS TO THE PROBLEMS

1.1 IT is continually changing the nature of accounting and the role of accountants. Write a two-page report describing what you think the nature of the accounting function and the accounting information system in a large company will be like in the year 2030.

Numerous answers are possible. Several articles addressing this topic have appeared in *Strategic Finance* and the *Journal of Accountancy*.

1.2 The annual report is considered by some to be the single most important printed document that companies produce. In recent years, annual reports have become large documents. They now include such sections as letters to the stockholders, descriptions of the business, operating highlights, financial review, management discussion and analysis, a discussion of company internal controls, segment reporting, inflation data, and the basic financial statements. The expansion has been due in part to a general increase in the degree of sophistication and complexity in accounting standards and disclosure requirements for financial reporting.

The expansion also is reflective of the change in the composition and level of sophistication of users. Current users include not only stockholders but also financial and securities analysts, potential investors, lending institutions, stockbrokers, customers, employees, and—whether the reporting company likes it or not—competitors. Thus, a report originally designed as a device for communicating basic financial information now attempts to meet the diverse needs of an ever-expanding audience.

Users hold conflicting views on the value of annual reports. Some argue that they fail to provide enough information, whereas others believe disclosures in annual reports have expanded to the point where they create information overload. Others argue that the future of most companies depends on acceptance by the investing public and by its customers; therefore, companies should take this opportunity to communicate well-defined corporate strategies. Adapted from the CMA Examination

a. Identify and discuss the basic factors of communication that must be considered in the presentation of the annual report.

The annual report is a one-way communication device. This requires an emphasis on clarity and conciseness because there is no immediate feedback from the readers as to what messages they are receiving.

The preparer must attempt to identify the users/audience of the report, and to determine their values, beliefs, and needs. Then the preparer can determine the language, i.e., words and phrases that would be appropriate and familiar to the users/audience.

The preparer must also consider the organization of the material in the report. Logical ordering and attractive formatting facilitate the transmission of ideas.

b. Discuss the communication problems a corporation faces in preparing the annual report that result from the diversity of the users.

The different users of annual reports have differing information needs, backgrounds, and abilities. For some users, the annual report may serve as an introduction to the company and/or

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the only significant information about the company. By using the report to communicate to all users, the problems the corporation faces include the following.

- In an attempt to reach several audiences, a company may include information for each audience. Consequently, the annual report may grow in size and complexity to the point where it contains more information than many users want to receive or are able to comprehend, i.e., information overload. In some cases, technical concepts may be reduced to concepts that are more common; this reduces precision and conciseness thereby leading to more generalizations.

- Care must be taken in the presentation of information. Words and phrases familiar to one user group may not be understood by those in other user groups. Graphic displays that are meaningful to some may be meaningless to others.

c. Select two types of information found in an annual report, other than the financial statements and accompanying footnotes, and describe how they are helpful to the users of annual reports.

Other than the financial statements and accompanying footnotes, an annual report provides information concerning

- Management's discussion and analysis of results.
- Organizational objectives, strategies, and management's outlook for the future.
- Board of Directors members and the officers and top management of the organization.
- Segment data and performance information.
- New initiatives and research information.
- Recent stock price history and stock information.

Students will have many and varied answers as to how the information is helpful, which should lead to a rich class discussion. This discussion can be combined with the discussion of part e.

d. Discuss at least two advantages and two disadvantages of stating well-defined corporate strategies in the annual report.

Stating well-defined corporate strategies in a company's annual report accomplishes the following:

Advantages:
- Communicates the company's plan for the future and resolves any disparate issues.
- Provides a vehicle for communicating the company's strengths.
- Builds investor confidence and portrays a positive image.

Disadvantages:
- Locks management into fulfilling stated objectives and strategies, causing inflexibility.
- Communicates to unintended users who could put the company at risk (i.e., competitors).

e. Evaluate the effectiveness of annual reports in fulfilling the information needs of the following current and potential users: shareholders, creditors, employees, customers, and financial analysts

Annual reports fulfill users' information needs as discussed below.

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1. Shareholders. Annual reports meet the statutory requirement that publicly held corporations are to report annually to stockholders and report on the stewardship of management to both current and potential stockholders. The annual report gives shareholders financial and operating information such as income from operations, earnings per share, the Balance Sheet, Cash Flow Statement, and related footnote disclosure that potential shareholders need to evaluate the risks of and potential returns on investment. However, the volume of data presented in annual reports can result in information overload that reduces the value of the reports. Confusion can result from reducing technical concepts to common concepts or by the presentation of duplicate messages by different forms of media.

2. Creditors. The annual report of public companies provides financial information as well as trend information. This allows creditors to project financial solvency and to evaluate the company's ability to repay loans.

3. Employees. The annual report gives the employees information such as a description of the company's pension plan and the employee stock incentive plan. This gives employees a base from which to compare their benefits program to those of other companies. Annual reports also provide employees with a year-end review of the results to which they have contributed during the year. In this sense, the annual report provides reinforcement and rewards. The annual report also informs or reminds employees of the organization's values and objectives and sensitizes them to the aspects of the organization with which they are not familiar. On the other hand, the employee already knows how the organization is performing so the annual report does not provide any substantive additional information.

4. Customers. The annual report provides customers with trend information and management performance information. They can use this to assess the company's past and current performance.

5. Financial analysts. The set of audited comparative financial statements provides the basis for analysis done by financial analysts. Notes, which are an integral part of the statements, describe or explain various items in the statements, present additional detail, or summarize significant accounting policies. Financial analysts are the most sophisticated class of users of annual reports. However, some data may be too condensed. Analysts may also need information in addition to that provided in annual reports to facilitate their analyses.

f. Annual reports are public and accessible to anyone, including competitors. Discuss how this affects decisions about what information should be provided in annual reports.

Management may omit information entirely from the annual report or disguise it because competitors have access to annual reports. The objective of reporting should be to reveal as much as possible without giving away proprietary information or a competitive edge.

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1.3 United Services Automotive Association (USAA) is one of the largest diversified financial services companies in the United States, with close to $111 billion in assets under management. One reason for its success is the use of IT to lower costs and improve customer service. USAA operates one of the most advanced and successful information systems in the world. Most of its communication with its widely scattered customers, mostly military officers and their families, is digital. It was the first U.S. bank to implement a remote deposit capture application for the iPhone.

Early on, USAA made a strategic choice to become one of the more technology-intensive companies in the world. It views IT as a strategic weapon and uses it in several ways, including the following:

- **When customers call, USAA personnel greet them personally by name. Unlike many diversified companies, a customer representative can handle inquires and transactions about all of USAA's products using a highly integrated database.**
- **USAA uses its extensive database to keep track of minute details, such as which auto parts are fixed most frequently. It also uses its database to find ways to reduce claims costs. For example, USAA discovered that repair shops would rather charge up to $300 to replace a windshield with punctures than to charge $40 to repair it. USAA began offering to waive the deductible if the owners would repair the windshield rather than replace it.**
- **USAA spent extensively to develop an image-processing system that digitizes all paper documents sent in by claimants. It takes only a few keystrokes for a policy service representative to retrieve pictures of all the documents in a customer's file. The system can sort and prioritize documents so that employees are always working on the most important and urgent tasks.**
- **USAA is a world leader in mobile banking. Customers can use their cell phones and other mobile devices to access and execute banking, investment, stock trading, and insurance applications such as filing claims. More than 70% of USAA's logins are from cell phone users.**
- **USAA was among the first financial institutions to use text and email messaging and notification technologies, person-to-person payment applications, and social networking and personal financial management tools connected to bank accounts.**

a. Why should USAA collect data on which auto parts are fixed most frequently? What could it do with this data?

Companies should gather and store data if the benefits received from the data are greater than the cost of collecting it. The data regarding the auto parts that get fixed most frequently is probably not costly to gather. It would probably be part of the claims information submitted by the insured parties. Therefore, the only significant cost would be to store the data and process it.

USAA passes the data on the parts to parts manufacturers, suppliers, and the Big Three automobile manufacturers. These companies use the data to improve their parts. Some use the data to determine which new products to offer. For example, one supplier may see that other suppliers are producing low quality products and determine that they could produce a better product for the same or a lower price.

b. Even though USAA offered to waive the deductible, the repair shops still managed to convince 95% of the owners to replace rather than repair their damaged windshields.

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How could USAA use its AIS to persuade more shop owners to repair rather than replace their windshields?

USAA began capturing data on the repair records of the various shops that worked for them. They published this information in the newsletter sent to repair shops. The shops noticed how they compared to other shops and began repairing more windshields. Over a four-year period, the number of repaired windshields rose from 5% to 28%.

c. How does the image-processing system at USAA add value to the organization?

The system adds value by streamlining business processes and making them more effective and efficient. Before the image-processing system was installed, policy service representatives had to work with paper documents. Customer files were often missing or incomplete and documents were misfiled. The result was delays, multiple phone calls, and an inability to bring problems to timely closure. Now the documents are never missing or misplaced and service representatives have all the information they need to make a decision on the first phone call.

d. How do the remote deposit capture and mobile banking system at USAA add value to the organization?

USSA's customers are widely scattered and USAA does not have local offices everywhere there are military personnel. In addition, military personnel also are deployed in areas where they have ready access to cell phones but not personal computers. Therefore, USAA needs a way to deposit funds on a timely basis and to interact by phones that are able to access the internet. The new applications meet these needs.

e. Do an Internet search and find out what other advancements USAA has introduced. For example, see if you can find out how USAA is using artificial intelligence, data analytics, blockchain, or so other emerging technology. Write a one-page report on each new application or other newsworthy item you find (maximum limit of three applications or items).

Students should be able to find numerous applications or newsworthy items. The objective is to get the students to do the research necessary to learn more about new technologies and their real world uses. Of particular interest is the use of artificial intelligence, data analytics, and blockchain.

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1.4 Match the description in the right column with the correct information characteristic in the left column.

I 1. Access restricted	a. A report was carefully designed so that its data was easily comprehended by the reader.
E 2. Accurate	b. A manager working on the weekend needed information about a customer's production requests and found it on the company's network.
B 3. Available	c. Before production reports are accepted, two clerks working independently must produce the same information.
H 4. Reputable	d. An accounts receivable aging report included all customer accounts.
D 5.Complete	e. A report was checked by three different people to make sure it was correct.
K 6. Concise	f. An accounts receivable aging report is used in credit-granting decisions.
L 7. Consistent	g. An accounts receivable aging report was received before the credit manager had to decide whether to extend credit to a customer.
M 8. Current	h. Needing help with a decision, a manager sought the opinion of a highly regarded expert.
N 9. Objective	i. To protect intellectual property, a company encrypted the data, stored it in a very secure facility, and limited its use to five people.
F 10. Relevant	j. Tired of keying supplier prices into a database, a purchasing manager insisted the data be sent in machine readable form.
G 11. Timely	k. After a lengthy, rambling presentation, a CEO insisted future presentations contain only pertinent facts and last no more than 30 minutes.
J 12. Useable	l. A new manager insisted that monthly reports look the same so she could compare a new month's results to those of previous months.
A 13. Understandable	m. After making a decision based on outdated data, a new CFO required all analysis to be conducted with up-to-date data.
C 14. Verifiable	n. Reluctant to rely on his personal feelings about a decision, a manager sought the opinion of an outside expert.

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1.5 Classify each of the following items as belonging in the revenue, expenditure, human resources/payroll, production, or financing cycle.

a. Collect payment on customer accounts. – Revenue cycle
b. Complete a picking ticket for a customer order. – Revenue cycle
c. Decide how many units to make next month. – Production cycle
d. Disburse payroll checks to factory workers. - Human resources/payroll cycle
e. Draw upon line of credit. – Financing cycle
f. Establish a $10,000 credit limit for a new customer. – Revenue cycle
g. Hire a new assistant controller. – Human resources/payroll cycle
h. Obtain a bank loan. – Financing cycle
i. Pay federal payroll taxes. - Human resources/payroll cycle
j. Pay for raw materials. – Expenditure cycle
k. Pay off mortgage on factory. – Financing cycle
l. Pay property taxes on office building. – Expenditure cycle
m. Pay sales commissions. - Human resources/payroll cycle
n. Pay utility bills. – Expenditure cycle
o. Purchase raw materials. – Expenditure cycle
p. Put purchased goods into the warehouse. – Expenditure cycle
q. Record factory employee timecards. - Human resources/payroll cycle
r. Record goods received from vendor. – Expenditure cycle
s. Sell concert tickets. – Revenue cycle
t. Sell DVD player. – Revenue cycle
u. Send an order to a vendor. – Expenditure cycle
v. Send new employees to a business ethics course. - Human resources/payroll cycle
w. Update the allowance for uncollectible accounts. – Revenue cycle

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1.6 This chapter discusses several technologies that impact accounting information systems: XBRL, artificial intelligence, data analytics, and blockchain. Research and then write a three-page report on one of these four technologies. Be sure to describe the technology's current impact on the AIS and how it is used in actual businesses or how an attempt to implement it failed.

Students should be able to find numerous ways each of these technologies impact an AIS. They should also be able to find how the technologies are being used in actual businesses. They are less likely to find how an attempt to implement the technology failed.

The objective is to get the students to do the research necessary to learn more about the new technologies and their real world uses.

1.7 Match each of the following terms with its definition.

1. _J__Accounting information system	a. Exceeding the amount of information a human mind can absorb and process
2. _P__Artificial intelligence	b. Use of software and algorithms to find and solve problems and improve business performance
3. _Y_ Blockchain	c. The benefit provided by information minus the cost of producing it
4. _D__Business processes	d. A set of activities and tasks that help accomplish a specific organizational goal
5. _R_ Data	e. An agreement to exchange goods or services in exchange for cash
6. _B__Data analytics	f. Process of capturing, processing, and storing transaction data for later use and for producing information output
7. _U__Data dashboard	g. Frequent exchanges such as surrendering cash for inventory and paying employees for labor
8. _N__Expenditure cycle	h. Activities associated with selling goods and services in exchange for cash or a future promise of cash
9. _X__General ledger and reporting system	i. Value chain activities that produce, market, and deliver products to customers and provide post-delivery support
10. _G__Give-get exchange	j. A system that collects, records, stores, and processes data to produce information for decision makers
11. _Z_ Goal congruence	k. Linking all the primary and support activities in a business
12. _T__Information	l. Activities such as firm infrastructure and technology that enable main activities to be performed efficiently and effectively
13. _O__Machine-readable	m. An organization's value chain as well as its vendors, distributors, and customers
14. _I__Primary activities	n. Activities associated with purchasing inventory for resale for cash or a promise to pay cash
15. _S_ Production cycle	o. Data in a format that can be processed by a computer
16. _H__Revenue cycle	p. Computer systems that simulate human intelligence processes such as learning, reasoning, and self-improvement
17. _M__Supply chain	q. Procedures and routines that carry out specific activities, achieve objectives, or solve problems
18. _L__Support activities	r. Facts collected, recorded, stored, and processed by an information system
19. _Q__System	s. Activities associated with using labor, raw materials, and equipment to produce finished goods
20. _E__Transaction	t. Organized and processed data that provide meaning and improve decision making

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21. _K__Value chain	u. Display of data points and performance indicators in easily understood charts, tables, or gauges
22. _C__Value of information	v. Activities associated with hiring, compensating, promoting, and terminating employees
	w. Major give-get exchanges that occur frequently in most companies
	x. Information-processing operations involved in preparing reports for internal and external parties
	y. Individual digital records linked using cryptography in a single list called a chain
	z. A subsystem achieves its goals while contributing to the overall goal

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