

Describing a set of data and evaluating its integrity

A backgrounder of illustrative use cases for applying criteria

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ASEC's mission is to support the profession in serving the public interest by continuously anticipating, identifying, assessing, and addressing evolving market needs and demand for assurance and advisory solutions. In pursuit of this mission, the committee develops guidance and criteria, thought leadership, tools, and other deliverables to help members provide high-quality, value-added, innovative assurance and advisory services to their clients and organizations.

Introduction

Because of the important role that data has in decision-making, the AICPA Assurance Services Executive Committee has developed criteria for evaluating the integrity of a set of data. The criteria can be used to assist management, boards of directors, internal auditors, and other stakeholders in determining the relevance of the data to the users' purpose and in making decisions based on that set of data. Management may also use the criteria when defining the set of data and documenting that definition in a description to help users understand a set of data and its individual members. The criteria may also be used by a CPA in an attestation engagement on the integrity of the set of data or on the description alone. An attestation engagement is performed in accordance with the AICPA Statements on Standards for Attestation Engagements. In such an examination or review engagement, the CPA uses the criteria when evaluating the description and, when applicable, whether the set of data is consistent with its definition. The criteria may also be used by a CPA in agreed-upon procedures engagements and consulting engagements on the description or the set of data.

The purpose of this document is to provide examples of how and under what circumstances the [AICPA Criteria for Describing a Set of Data and Evaluating Its Integrity](#) can be used by entities and CPAs.

Background

We live in an era of data-based decision-making, with ever-increasing amounts of data being accumulated and that data being analyzed through increasingly sophisticated processes, such as data mining and data analytics. Decision rules derived from analysis of data and application of machine learning algorithms are being incorporated into decision aids and business processes. Organizations are making various types of data available to management, investors, regulators, shareholders, and other interested parties. This can include data that is simply accumulated without needing to be processed, such as a list of temperatures or images of traffic passing through a particular intersection. It may also include supporting information for financial statements, such as details of inventories or accounts receivable, production volumes or other data from company records, and key performance indicators. Data is developed and used by other organizations, in addition to businesses, for a variety of purposes. For example, government and nongovernment entities publish employment statistics for use by economic analysts, businesses, and the general public. Service organizations routinely produce reports that provide data on performance measured against metrics defined in service-level agreements and commitments. Stakeholders use this data to help them make decisions, interpret or use other data, and increase their knowledge about the subject matter. In addition, data as a service is growing, with companies specializing in obtaining, aggregating, and processing data from third parties and selling it to others.

Knowing how the data included in the set of data has been defined and how it is consistent with that definition helps users make more informed decisions. Because data is increasingly being used for decisions that were not contemplated when the data was created, users benefit from understanding the definition of a set of data, including the purpose and nature of data within the set and what determines membership in the set. Unless a user of the set of data participated in the development of the definition or in the collection and preparation of the set of data, he or she is likely to need to obtain a complete and accurate description of the definition to make the most effective use of the set of data.

Objective

The objective of the data integrity criteria is to provide consistent guidance for use by management, or other responsible parties, in preparing a description that discloses the attributes of a set of data. This description allows users to understand the nature of data within the set, its purpose, and what determines membership in the set, and it can be used by internal or external decision-makers. (See the “Use Cases” section for use cases for these criteria.)

The criteria could also be used by a CPA to perform an attestation engagement on the description of a set of data to provide trust and confidence in that set of data and in its ability to be used for decision-making purposes. In such an engagement, the CPA evaluates the description, the set of data, or both, such as whether the description is presented in accordance with the criteria or the description presents the set of data in accordance with the description criteria.

Additionally, CPAs can use these criteria in an advisory or consulting capacity. For example, a CPA may use these criteria when engaged to assist management in defining a set of data, documenting management’s description of that definition, and collecting, processing, and presenting the set of data for use in internal reporting.

Use Cases

The following are use cases for the [AICPA's Criteria for Describing a Set of Data and Evaluating Its Integrity](#). The use cases presented in this document are not intended to be all-inclusive; rather, they are included to illustrate how and under what circumstances the criteria may be used. Use of these criteria provides a more consistent means of articulating how a set of data is defined and whether the data is presented in accordance with the description to inform decision-makers.

Uses	Use Case
Financial Related Data	<p>An entity enters into a transaction to factor receivables without recourse. It needs to provide the factoring company a set of data regarding the receivables being factored and the entities from which the amounts are due. The description would include items such as the following:</p> <ul style="list-style-type: none">• The debtors' receivable balances• Payment history of the debtors• Debtors' contact information <p>In order to reduce the factoring company's uncertainty and, consequently, obtain better terms for the transaction, the entity may engage a CPA to perform an attestation engagement, such as an agreed-upon procedures engagement, in which the procedures address the consistency of the set of data with the criteria.</p>
Transaction Processor	<p>A transaction processing entity is required to report periodically to its customers on the effectiveness, efficiency, and processing integrity of its transaction processing operations by tracking the data received from customers and measuring various attributes of the data as it is processed into its final output. The entity prepares a description of the attributes of the data that are tracked through the processing phases. This description permits the entity to communicate to its customers that it is fulfilling its processing obligations in accordance with its agreements with customers and that the periodic reports on effectiveness, efficiency, and processing integrity of customer data are reliable.</p> <p>The entity may engage a CPA to perform an attestation engagement on the integrity of the data provided to one customer, in addition to having a SOC 2® examination performed on the processing integrity of the system used to produce customer data, to meet specific demands of that particular customer.</p>

Uses	Use Case
Call Center	<p>A call center outsourcing entity prepares a description of a set of data that is used by call center management to understand the pattern of customer service calls and report to its customers on the types of service calls received and the performance of call center personnel in identifying and addressing the root causes of service calls. This description, and the analysis of the set of data described in it, permit entity management to evaluate its call center activities and communicate about its performance to its customers.</p> <p>The entity may engage a CPA to perform an attestation engagement on the integrity of the data on call center performance contained within the reports, in addition to having a SOC 2 examination performed on the call center services, to enhance the credibility of the entity's reports to its customers.</p>
Call Center	<p>A call center outsourcing entity may prepare a description of the raw data recorded on calls received and provide that description to those who pay for the call center service (customers) along with the data. This would enable customers to perform their own analysis on how calls are being resolved and whether the resolution is in accordance with the protocol and outcome the customers would expect.</p>
Insurance Company	<p>A life insurance company cedes a block of business to a reinsurer. As part of the transaction, the ceding company provides the reinsurer with the policyholder files, underwriting data on the policies, and claims data.</p> <p>The assuming company may require the ceding company to provide a CPA attestation report on the integrity of the data in order to prepare its reserves for financial statement purposes.</p>
Finance Company	<p>A finance company securitizes loans on used cars through private placements. The company uses a service organization to manage its loan portfolio and requires the service organization to extract car, borrower underwriting, title lien, and loan data from its system. In addition to a SOC 1® report, the company requires the service organization to provide a description of the data extracted to support the securitization.</p> <p>The finance company may engage a CPA to perform an attestation engagement, such as an agreed-upon procedures engagement, on the extracted data as part of the securitization process.</p>
Oil Pipeline	<p>An oil pipeline entity prepares a description of a set of data (for example, measured pressures at various points along the pipeline over time), which is used by its operations department to anticipate pipeline failures. The entity shares the description with its regulator to communicate the purpose and limitations of the set of data used to monitor pipeline activity.</p> <p>The pipeline entity may engage a CPA to perform an attestation engagement on the data used to monitor pipeline activity.</p>

Uses	Use Case
Health Provider	<p>A hospital is required by its funding entity to periodically produce an analysis of the effectiveness and efficiency of its patient management process in order to qualify for renewal of its funding. The entity provides a description of a set of data that is used by its patient management department to track the flow of patient information from admittance to discharge and produce the required report to the funding entity.</p> <p>The hospital may engage a CPA to perform an attestation engagement on the patient monitoring data to enhance the credibility of its report to the funding entity.</p>
Employee Benefit Plan	<p>An entity has an employee benefit plan whose operations are outsourced to a third-party administrator. The entity decides midyear to change third-party administrators. As a result, all plan data (for example, names, Social Security numbers, years of service, percentage contributions, accounting balances) are transferred to the new third-party administrator.</p> <p>The entity may use the data integrity description criteria to help ensure that the former administrator and the new administrator have a mutual understanding regarding the nature of the transferred data.</p>
Agriculture	<p>An agribusiness entity provides a description of a set of data that is used by its operations department to track the sources of its food products and their characteristics. The data is provided to food and beverage companies to support product labeling for marketing and health and safety purposes.</p> <p>The agribusiness uses the data integrity description criteria to prepare a description of the data provided to its customers.</p>
Facilities Location	<p>An entity plans to locate distribution facilities in various geographical locations to ensure its products and services are located close to its customers and on efficient transportation routes. This exposes it to a variety of taxes and other costs associated with those locations. Analytics can be applied to the attributes of the potential locations to minimize transportation costs, taxes and duties paid, security issues, and other costs of managing those locations. The description of the data to be used for performing the analytics would specify pertinent information needed for the analytics to be effective. For example, the data would need to accurately reflect distances between locations, the costs of traveling to each location, and the current tax rates for all relevant activities and transactions that might be performed at each location as well as other costs of establishing and staffing those branches.</p> <p>The entity may engage a CPA in a consulting engagement to assist it in identifying its information needs and preparing a description of the definition of the data that will meet those information needs in order to reduce the company's risk of locating branches in unsuitable locations and enhance the likelihood of achieving more profitable operations.</p>

Uses	Use Case
Marketing	<p>The IT department of an entity prepares a description of a set of data that is used by the marketing department to develop go-to-market strategies. Using the criteria allows the IT group to develop a comprehensive description that provides the marketing group with information to evaluate whether the data will be responsive to its needs.</p>
Sales	<p>The IT department of an entity prepares a description of a set of data that is used by a machine learning algorithm to set prices dynamically on the company's ecommerce website. This description permits the IT department to communicate the purpose and limitations of the set of data to the sales department.</p> <p>The entity engages its internal audit group to evaluate the data description and the integrity of the data used by the machine learning algorithm to ensure that the pricing decisions are in accordance with expectations and are not biased against certain customer demographics.</p>
Monitoring Segregation of Duties	<p>The IT department of an entity uses the data integrity description criteria to prepare a description of the set of data systematically collected by the internal audit department. This data, regarding access roles designed to segregate duties, is collected from cross-platform financial applications. The description permits the IT department to communicate the purpose and limitations of the set of data to the internal audit department. The data is compared periodically to the defined access roles to monitor when approval capabilities have been granted that are not commensurate with job functions and to identify trends.</p>
Aggregator of Third-Party Data	<p>An entity obtains data from multiple third parties and aggregates and processes that data before providing the processed data to its customers. The aggregator obtains the description of the definition of the data, and a CPA's examination report on the integrity of the data provided, from each third party. The aggregator prepares a description of the definition of the aggregated and processed data using, in part, the descriptions provided by each third party. The aggregator may also engage a CPA to perform an attestation engagement on the integrity of the data provided, in addition to having a SOC 2 examination performed on the processing integrity of the system used to produce aggregated data, to enhance confidence in the data provided.</p>



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