



# INFORMATION QUALITY: THE FOUNDATION FOR JUSTICE DECISION MAKING



United States  
Department of Justice

## A SIGN OF THE TIMES: INCREASING ELECTRONIC DATA EXCHANGE INCREASES THE NEED FOR INFORMATION QUALITY

Recent events, such as terrorist threats and catastrophic natural disasters, have revealed a critical need for increasing information sharing across disciplines, jurisdictions, agencies, and geographic areas. As these needs are addressed by the application of new technologies and cross-agency interaction, it is also imperative to address the quality of the information that the justice system depends on for sound decision making.

## WHAT IS INFORMATION QUALITY?

Few professionals in any discipline will dispute that “good information is good business.” But what constitutes “good,” or “quality,” information? Conventional wisdom typically equates good information with accurate information. Good information, however, should also be timely, reliable, and complete. Today, information quality (IQ) is understood to be a multidimensional concept that encompasses critical relationships among multiple attributes, such as timeliness, accuracy, relevancy, and others. Together, these attributes contribute to the validity of the information. Quality information is the cornerstone of sound agency decision making and inspires trust in the justice system and in the law enforcement entities that use information. Such information enables agencies to perform their jobs efficiently and effectively.

## WHAT PROBLEMS ARISE FROM POOR INFORMATION QUALITY?

The typical triggers for poor information quality are commonplace business challenges such as incomplete records, delays, failure to update record information, data-entry mistakes, or improper releases of information. Additionally, technical issues, information volume, and the widespread availability of data may lead to IQ concerns.

The routine nature of day-to-day business processes underscores the potential for inadvertent generation of inferior IQ. As data is increasingly shared and becomes more readily and rapidly accessible, justice agency control over IQ becomes a bigger challenge.

Poor information quality can be harmful to the individual, the community, and the justice entity. Failure to actively and continuously evaluate and improve IQ in justice-related information sharing practices may result in harm or injustice to individuals, lawsuits and liability, population of other agency databases with inaccurate data, public criticism, inefficient use of resources, or inconsistent actions within agencies.



The following scenario demonstrates why quality information is critical for justice information sharing.

On a busy holiday weekend, a police officer pulls over a speeding driver. After checking whether the vehicle is stolen and whether there are warrants for the registered owner, the officer approaches the vehicle. The driver presents his driver's license, and the officer observes that there are two young girls and an adult female in the car. The officer runs a routine driver's history check and a search of the state's criminal history file. She discovers that the driver has recently been released from prison after serving a term for third-degree sexual conduct with a child. The conditions for parole indicate that the driver is not to be in the company of minors. The officer is able to make an arrest because an appropriate amount of justice information was accessible, complete, and available at the time it was most critical.

More scenarios on page 4.



# Information Quality: The Foundation for Justice Decision Making



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## A Sign of the Times: Increasing Electronic Data Exchange Increases the Need for Information Quality

Recent events, such as terrorist threats and catastrophic natural disasters, have revealed a critical need for increasing information sharing capacities across disciplines, jurisdictions, agencies, and geographic areas. As these needs are increasingly addressed by the application of new technologies and cross-agency interaction, it is imperative to also focus on information quality. The justice system depends on information sharing. With the rapid proliferation and evolution of new technologies, increased data sharing requires increased responsibility for information quality to ensure sound justice decision making.

## What Is Information Quality?

Few professionals in any discipline will dispute that “good data is good business.” But what is “good” data? Information quality is a multidimensional concept encompassing critical relationships among multiple attributes, such as timeliness, accuracy, and relevancy. Together, these attributes contribute to the validity of the information. Good information quality is the cornerstone for sound agency decision making and inspires trust in the justice system and in the law enforcement entities that use information.

Quality information meets the needs of the officials within the agency, as well as those outside the agency who rely on the data. Such information must enable agencies to perform their jobs efficiently and effectively.

## What Problems Can Arise From Poor Information Quality?

The typical triggers for poor information quality are commonplace business challenges such as incomplete records, delays, failure to update record information, data-entry mistakes, or improper releases of information. Human data-entry error, technical issues, increasing information volume, and widespread availability of data (part of day-to-day business issues encountered by justice agencies) may lead to information quality issues. Their very routine nature underscores the potential for routine and inadvertent generation of inferior information quality. As data is increasingly shared and becomes more readily and rapidly accessible electronically, justice agency control over data quality becomes a bigger challenge.

Poor information quality can be harmful to the individual, the community, and the justice entity. Failure to actively and continuously evaluate and improve information quality in justice-related information sharing practices may result in:

- Harm or injustice to individuals
- Lawsuits and liability
- Population of other agency databases with inaccurate data
- Public criticism
- Inefficient use of resources
- Inconsistent actions within agencies



**The following scenario demonstrates why quality information is critical for justice information sharing.**

On a busy holiday weekend, a police officer pulls over a speeding driver. After quickly checking whether the vehicle is stolen and whether there are warrants for the registered owner, the officer approaches the vehicle. The driver presents his driver's license, and the officer observes that there are two young girls and an adult female in the car. The officer runs a routine driver's history check and a search of the state's criminal history file. She quickly discovers that the driver has recently been released from prison after serving a term for 3rd-degree sexual conduct with a child. The conditions for parole indicate that the driver is not to be in the company of minors. The officer is then able to make an arrest because an appropriate amount of justice information was accessible, complete, and available at the time it was most critical.

**See page 4 for more scenarios.**

## A Framework for Information Quality

Conventional wisdom typically equates good information with accurate information. Yet good information should also be timely, reliable, and complete. In the justice system, the notion of good information must expand beyond accuracy, timeliness, and completeness to include all of those attributes that, when taken together, provide a sufficient foundation for good justice decision making.

Today, information quality is well accepted by academics, industry, and government as a multidimensional concept. There have been and continue to be developing models of the necessary attributes for information quality. For example, the following table, based on research conducted at the Massachusetts Institute of Technology (MIT),<sup>1</sup> demonstrates the multidimensional nature of one information quality model. MIT's research expands the conventional view of information quality from the traditional attributes of timeliness and accuracy to include accessibility, security, and ease of manipulation, as well as other attributes that work together to produce valid information.

To meaningfully address issues related to information quality and sharing, the justice community must also look beyond accuracy and timeliness to define the complex and interrelated dimensions needed for good justice decision making.

<sup>1</sup> Fisher, Craig, Eitel Lauria, Shobha Chengalur-Smith, and Richard Y. Wang, *Introduction to Information Quality*, Massachusetts Institute of Technology Information Quality Publication.

### MIT's Information Quality Dimensions

Accessibility	The extent to which data is available or easily and quickly retrievable
Appropriate Amount of Data	The extent to which the volume of data is appropriate for the task at hand
Believability	The extent to which data is regarded as true and credible
Completeness	The extent to which data is not missing and is of sufficient breadth and depth for the task at hand
Concise Representation	The extent to which data is compactly represented
Consistent Representation	The extent to which data is presented in the same format
Ease of Manipulation	The extent to which data is easy to manipulate and apply to different tasks
Free of Error	The extent to which data is correct and reliable
Interpretability	The extent to which data is in appropriate languages, symbols, and units and the definitions are clear
Objectivity	The extent to which data is unbiased, unprejudiced, and impartial
Relevancy	The extent to which data is applicable and helpful for the task at hand
Reputation	The extent to which data is highly regarded in terms of its source or content
Security	The extent to which access to data is restricted appropriately to maintain its security
Timeliness	The extent to which information is available in time to perform the task at hand
Understandability	The extent to which data is easily comprehended
Value-Added	The extent to which data is beneficial and provides advantages from its use



## What Can You Do About Information Quality?

- **Make information quality a priority.**

Make it clear that you and your organization are committed to improving and controlling information quality. Raise awareness among staff by measuring the costs, missed opportunities, and decreased agency effectiveness caused by poor information quality. Educate leaders regarding their role in implementing policies, communicating their commitment to information quality, and providing resources to make it happen.
- **Incorporate information quality into your strategic plans.**

Your commitment to information quality should be incorporated into your organization's vision, mission statements, and strategic plans.
- **Assess the level of information quality in your organization.**

You should conduct self-assessments to measure information quality and identify and address areas that need improvement. Such assessments should be part of a continuous process that contributes to strong data quality.
- **Move from “need to know” to “write to share.”**

It is important that you and the employees in your organization understand and acknowledge that any information that is written or entered into your system has the potential to be accessed or shared in an internal or external justice information sharing environment. As such, you and your employees should write or enter the information according to the tenet “write to share.”
- **Hold the entire organization accountable for information quality.**

You should build accountability mechanisms and processes into your routine business practices so that every person in the organization knows his or her responsibility and is held accountable for ensuring information quality.

### About Global

The U.S. Department of Justice's (DOJ) Global Justice Information Sharing Initiative (Global) serves as a Federal Advisory Committee to the U.S. Attorney General on critical justice information sharing initiatives. Global promotes standards-based electronic information exchange to provide justice and public safety communities

## How Does Information Quality Intersect With Privacy?

Information quality plays an extremely important role in the protection of privacy rights of individuals. Issues of privacy and information quality are inherently linked. Both concepts share multiple information attributes that influence appropriate treatment of personally identifiable information. Practitioners must ensure that sufficient integrity and context exist for mere snapshots of an information picture to prevent distortion of the whole information picture. Ensuring quality of information furthers the integrity of the entire justice process and supports decisions that affect employment, housing, licensing, and myriad other day-to-day needs and activities of citizens and residents of the United States.

with timely, accurate, complete, and accessible information in a secure and trusted environment. Global is administered by the U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Assistance.

### Justice Leaders on Information Quality

DOJ's Global Advisory Committee (GAC) recommends that local, state, tribal, and federal justice decision makers make information quality a priority. GAC specifically advocates the active and continuous improvement of data and information quality efforts in all information sharing activities. GAC also encourages justice entity efforts to improve information quality through policies and regulatory and statutory frameworks that support the need to address information quality at every level.

The Global Privacy and Information Quality Working Group (GPIQWG) is one of four Global working groups composed of volunteer practitioners, industry representatives, and justice leaders. GPIQWG also focuses attention on privacy and information quality. Other Global working groups concentrate on security, infrastructure/standards, and intelligence sharing issues.

### Where Can I Turn for More Information?

The U.S. Department of Justice and Global member organizations are committed to helping you to improve information quality by providing further resources that will be made available online at:

[www.it.ojp.gov/IQ\\_Resources](http://www.it.ojp.gov/IQ_Resources).

## Additional Information Quality Scenarios (Continued from front page.)

The following are additional examples of commonplace events that can occur in any jurisdiction across the country: local or state, small or large, urban or rural. Although these describe situations of poor information quality, it is important to note that every day, justice practitioners also receive quality information in a timely manner and, based on that information, have been able to effectively perform their jobs. Had information quality issues in the following scenarios been addressed, each one would likely have had a positive outcome.

- Police question a man as a result of an auto accident. A warrant check, based upon name and date of birth, is completed. A response supplied from another state shows the suspect's name listed as one of several known aliases used by a career criminal. The man claims his innocence, but because the information supplied by the out-of-state warrant regarding the suspect's description is close but vague, the officer decides to err on the side of caution and takes the man into custody. Back at the station, the officer is better able to check with the out-of-state sheriff's office and determines that a mistake has been made based upon a name-only warrant hit with insufficient identifying data. The suspect is released. However, he is threatening legal action.
- A failure to enter complete terms of a restraining order allowed a noncustodial parent to abduct a child.
- An unsubstantiated comment to police that a certain member of the community might be a "suspect" in a boat theft permanently linked that resident's name to a database-stored theft report. This resulted in the person being denied government employment.
- A clerk failed to enter complete violent-history information on a defendant without known security risk information. This resulted in insufficient security precautions and the death of a judge in the courtroom.
- A 27-year-old man with mental retardation is found severely beaten near his home because his address, a group home for the disabled, was mistakenly entered in an Internet registry as the residence of a child molester.
- A court clerk failed to promptly enter a recall of an arrest warrant in the warrant database. As a result, a wrongful arrest was made during a routine traffic stop.
- A middle-aged job applicant was unable to pass an employment background screening due to a prison guard mistakenly typing in the social security number of an incarcerated convicted murderer as the job applicant's number.
- A restraining order extension was not reported to a statewide database, causing the order to appear "expired." Ultimately, when police responded to a domestic disturbance report, they were unable to confirm the restraining order and unable to make an arrest, endangering an at-risk mother and child.



## Additional Research and Resources

Fisher, Craig, Eitel Lauria, Shobha Chengalur-Smith, and Richard Y. Wang, *Introduction to Information Quality*, Massachusetts Institute of Technology Information Quality Publication.

English, Larry P., *Improving Data Warehouse and Business Information Quality*, INFORMATION IMPACT International, Inc.

Wang, Richard Y., Yang W. Lee, Leo L. Pipino, and Diane M. Strong, "Manage Your Information as a Product," *Sloan Management Review*, Massachusetts Institute of Technology, Summer 1998, Volume 39, Number 4.

English, Larry P., *The Essentials of Information Quality Management*, INFORMATION IMPACT International, Inc.

U.S. Department of Justice's Global Justice Information Sharing Initiative, *Privacy Policy Development Guide and Implementation Templates*.

U.S. Department of Justice's Global Justice Information Sharing Initiative, *Privacy and Information Quality Policy Development for the Justice Decision Maker*.



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