
White Paper:
Linking Images With Applications

The TWAIN Working Group
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TWAIN
Linking Images With Applications

Introduction

The TWAIN initiative was originally launched in 1992 by leading industry vendors who recognized a need for a standard software protocol and applications programming interface (API) that regulates communication between software applications and imaging devices (the source of the data). TWAIN defines that standard and is maintained by the TWAIN Working Group.

The three key elements are the application software, the Source Manager software and the Data Source software. The application uses the TWAIN toolkit which is shipped for free.

The word TWAIN is not an official acronym, however, it is widely known as “**T**echnology **W**ithout **A**n **I**nteresting **N**ame.”

For more information on the history of TWAIN, see our White Paper, [The Origin of TWAIN](#).

Vision

The TWAIN Working Group is a not-for-profit organization which represents the imaging industry. TWAIN’s purpose is to provide and foster a universal public standard which links applications and image acquisition devices. The ongoing mission of the organization is to continue to enhance the standard to accommodate future technologies.

Goals of the TWAIN Standard

TWAIN was designed to provide a consistent, easy integration of image data between sophisticated input devices and software applications. The following remain the Working Group’s goals for the standard:

- Ensure image-handling software and hardware compatibility
- Keep the specification current with state of practice software and hardware
- Maintain backward compatibility
- Multiple platform support
- Maintain and distribute a no-charge developer’s toolkit
- Ensure ease of implementation
- Promote the adoption of the standard
- Define TWAIN test guidelines

Milestones

Since the initial 1.0 release, TWAIN has been dramatically enhanced to meet the ongoing needs of the imaging industry. Significant milestones for TWAIN include:

- Version 2.1 – Supported on Windows 7 (32 and 64 bit), and support for automatic color detection
- Version 2.0 – Unix/Linux support, check scanning support, open source; and 64-bit
- Version 1.9 – ICC Color profiles and Mac support for Cocoa
- Version 1.8 – Further enhanced production scanning support
- Version 1.7 – Production scanning feature set
- Version 1.6 - Page length detection and buffer transfer
- Version 1.5 – Performance enhancements

Attributes of the Standard

- Royalty free – TWAIN is free to be used by any hardware manufacturer or software application provider.
- Multiple platform support – TWAIN provides cross platform support for Windows, Unix/Linux and Macintosh. The standard offers native support for 32-bit and 64-bit systems. It also works on virtual machines such as WOW64 on Window 64-bit systems.
- Wide range of capture devices – suitable for a wide range of devices including digital cameras and all segments of scanners from personal to high-end production.
- Speed – TWAIN is capable of handling scanners' rated speed from the smallest and slowest models to the largest and fastest production models.
- Self-Certification – Complimenting the standard are free testing tools that enable manufacturers to certify their TWAIN data sources and drivers against the latest version of the TWAIN specification. This provides assurance to application developers that the drivers maintain a high standard of compliance and robustness. A list of self-certified drivers is available from the TWAIN web site at www.twain.org.
- Feature rich – The standard provides a rich set of capabilities and operations ensuring its suitability for a wide variety of image capture devices.
- Customizable – TWAIN permits developers to enhance their data sources with their own custom features and support this seamlessly with the standard feature set.
- Active standard – The TWAIN specification undergoes continuous active development. TWAIN provides a [forum](#) to solicit feedback and suggestions from the TWAIN community. Community feedback is reviewed weekly by the technical subcommittee.

The technical committee makes enhancement recommendations to the TWAIN's board of directors at their quarterly meetings.

- Open source Data Source Manager (DSM) – The TWAIN 2.x DSM is open source under the LGPL license. This improves logging to help developers diagnose problems, allows the community to examine the source code and encourages the developer community to make recommendations for enhancing the standard.
- Open source Sample Application and Data Source code – Aids developers working on applications and data sources.
- Backward and forward compatibility since 1992 –Applications and data sources are able to communicate and perform their functions regardless of the version of the TWAIN protocol they support or the data source manager operating between them.
- Easy implementation - The interface, its documentation and sample code are well structured, well written, and intuitively designed for developers to learn and write the code for it.
- Production capable – TWAIN describes interfaces for high-end production scanning solutions that aid in indexing and batch management. Capabilities include duplex scanning, printing and endorsing, barcode and patch code detection.
- Multi-data capacity – The TWAIN data interchange mechanism enables data transmission in most existing file formats and will accommodate future formats as they become available.
- Profile management – The TWAIN standard describes a method for an application to manage snapshots of data source settings allowing complete control of a Data Source's full feature set with minimal programming.
- Asynchronous notification – TWAIN provides ways for applications to be immediately notified of important events such as paper jams and device disconnects.
- Multiple images of single document –TWAIN allows applications to capture multiple images of the same document, for instance, one suitable for archival purposes and one for optical character recognition (OCR).
- Longevity – The on-going goal of the standard is to provide a single solution for the industry that will last for many years and will accommodate all future technologies.
- Broad adoption – The well-defined interface has enabled the majority of leading hardware and software developers to provide drivers for their devices or include support through their applications.
- Market visibility – TWAIN provides visibility for its supporters including hardware, manufacturers, application providers, developers and providers of testing services and tools via the [resource section](#) of the TWAIN website.

Future Direction

The TWAIN Working Group is responsive to the needs of the industry. Careful analysis of the community's feedback has helped the working group to target four key initiatives to keep TWAIN as the continued image acquisition standard of choice for developers worldwide.

- *Enhanced Communication* – TWAIN will offer a new API specification for applications, allowing access to any TWAIN data source (32-bit or 64-bit), while also maintaining the legacy TWAIN API.
- *Driverless Support* – The new TWAIN API will be suitable for direct communication with a device, obviating the need for an installed driver from the vendor.
- *Remote Access* – Scanners and applications will be able to run on separate systems, enabling various kinds of cloud solutions.
- *Out of Process* – Legacy data sources will run in a backend process under the new TWAIN API, freeing resources for the application, making better use of multi-processor systems and improving robustness.

We believe these initiatives provide a viable technological strategy that result in the following *significant enhancements*:

- A suitable TWAIN interface for any mobile or desktop device
- Simplified API for application developers
- The same level of standard and custom control of the scanner provided today
- Ease of use with any programming language
- Improved problem diagnosis and debugging capabilities
- Greater reliability
- Complete platform independence
- Improved localization support using UTF-8

The TWAIN deliverables will remain:

- A Data Source Manager,
- The specification, and
- Appropriate Sample Code

The TWAIN Working Group remains committed to backward compatibility as it has through every phase of the TWAIN Specification's evolution.

Members

The TWAIN standard is backed and supported by leading hardware and software manufacturers who are committed to the broad interest of the industry. TWAIN members lay aside their own company interest in order to represent a wide spectrum of application developers and hardware manufacturers.

Current Board Members include:

- Adobe Systems Incorporated
- AnyDoc Software Inc.
- Atalasoftware
- Avison
- Fujitsu Computer Products of America
- J.F.L. Peripheral Solutions Inc.
- Eastman Kodak Company

Current Associate Members include:

- Epson
- Dynamsoft
- Hewlett-Packard

Membership

Maintaining the TWAIN standard requires extensive research and development. The TWAIN Working Group is always looking for new members who:

- Embrace the technology
- Are committed to furthering the standard
- Will make a significant contribution with technical and marketing expertise

For information on Associate or Board membership and to review our bylaws, please email admin@twain.org.