WIA on TWAIN

Version 1.0

December 4, 2009

Table of Contents

1

Installation

Chapter Contents

Requirements

Installing the SDK

- Visual Studio 2008
- Administrative privileges to the Program Files directory

Minimum System Requirements

- Intel Pentium 1.3GHz processor or AMD equivalent
- 512MB or RAM

TWAIN Data Source

- It has to be TWAIN 1.9 compliant
- It has to support MSG_ENABLEDS with ShowUI parameter equal to FALSE. It does not allow TWAIN DS to interact with the user (no message boxes), because it runs in the LOCAL SERVICE account
- CAP_INDICATORS has to support FALSE
- CAP_XFERCOUNT has to support 1. It is required by WIA compatibility layer if Application is 1.0 (most common case)
- ICAP_PIXELTYPE has to support at least one of TWPT_BW, TWPT_GRAY or TWPT_RGB
- If TWAIN DS uses COM objects in its "main thread" they must be Both model.
- It needs 32bit TWAIN DS for 32 bit OSs and 64 bit TWAIN DS for 64 bit OSs

- WIA UI extension requires TWAIN DS to support MSG_ENABLEDSUIONLY. WIA driver still can be used with default WIA UI
- WIA UI extension requires TWAIN DS to support MSG_GET/MSG_SET for DAT_CUSTOMDSDATA. WIA driver still can be used with default WIA UI

What's Provided

The following items are installed on the computer.

- Template files for the Wizard
- TWAIN DSM (2.1)
- Sample TWAIN DS
- WIA driver for Sample DS
- Source code project for "WIA driver for Sample DS"
- Using WIA on TWAIN - this is document
- Shortcuts

Known Limitations

The following list are the known limitations of WIA on TWAIN version 1.0

- Sample implementation does not include an installer.
- Sample implementation does not include a UI.

2

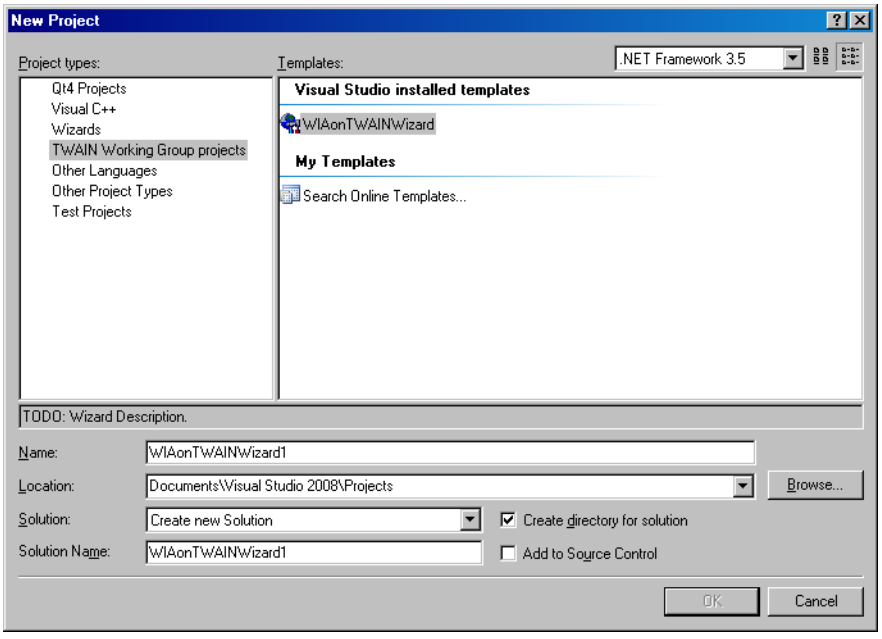
Creating WIA on TWAIN

Chapter Contents

Getting Started

1. Launch Visual Studio 2008
2. Go to **File > New > Project**
3. Select the Project Type: **TWAIN Working Group projects**
4. Select the Template: **WIAonTWAINWizard**

Figure 2-1



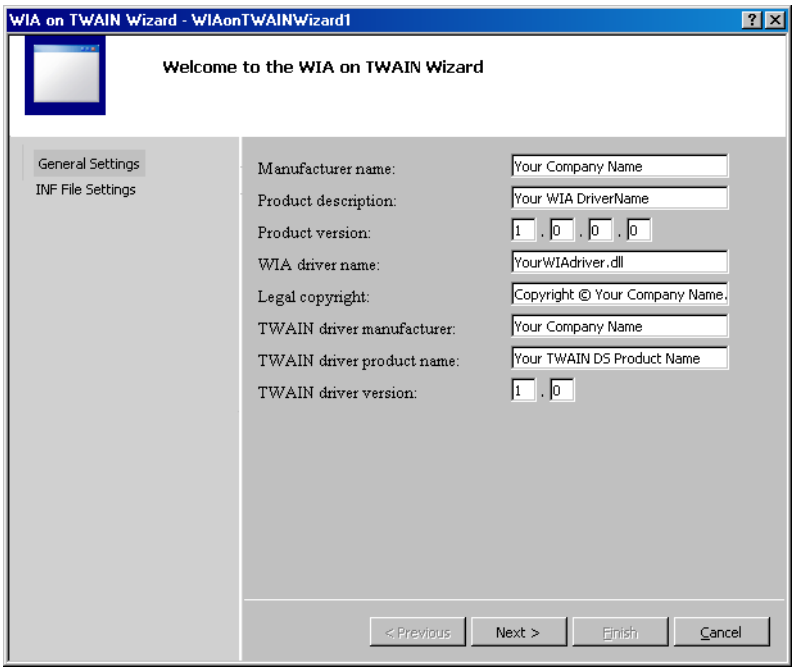
5. Change the information in the fields **Name**, **Location**, **Solution**, and **Solution Name** as needed for the new project.
6. Click on **OK** to launch the WIA on TWAIN Wizard.

Using the WIA on TWAIN Wizard

The WIA on TWAIN wizard collects information for creating a WIA driver, INF file, and merge module.

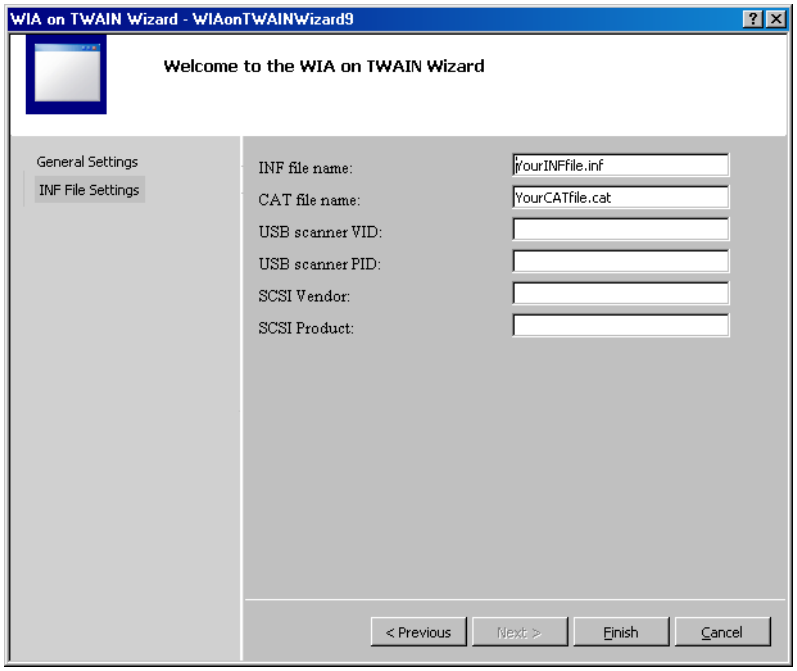
1. In the *General Settings* window, change the data in each field to match your product information.
   - **Manufacture name** - Scanner manufacturer
   - **Product description** - Description of the WIA driver
   - **Product version** - Version in format #.#.#.#
   - **WIA driver name** - Vame of the WIA driver file
   - **Legal copyright** - The company's legal copyright statement
   - **TWAIN driver Manufacturer** - must be the same as TW_IDENTITY.Manufacturer reported by TWAIN DS
   - **TWAIN driver Product Name** - must be the same as TW_IDENTITY.ProductName reported by TWAIN DS
   - **TWAIN driver Version** - must be the same as TW_IDENTITY.Version.MajorNum and TW_IDENTITY.Version.MinorNum reported by TWAIN DS

Figure 2-2



2. Click **Next >** to proceed to the *INF File Settings* window. Or, click the **INF File Settings** link on the left side of the window.
3. Input the file name and hardware information for the INF file in the fields.
   - **INF file name** – The name of output INF file
   - **CAT file name** - The name of output CAT file
   - **USB scanner VID** – USB Vendor ID of the scanner (if it has a USB interface)
   - **USB scanner PID** – USB Product ID of the scanner (if it has a USB interface)
   - **SCSI Vendor** – SCSI Vendor name of the scanner (if it has a SCSI interface)
   - **SCSI Product** - SCSI Product name of the scanner (if it has a SCSI interface)

Figure 2-3



4. Click **Finish** to complete the wizard.

What the Wizard Generates

The WIA on TWAIN Wizard generates a driver package and five projects - WIA driver, WIA UI Extension, Merge Module, and two Installers (32 and 64 bit).

Driver package includes - INF file, CAT file, WIA driver and WIA UI extension DLLs (32 and 64 bit). The following indicates whether the generated data is specified by the user or the wizard.

INF file

- [MANUFACTURE_NAME] – User input in the Wizard
- [TWAIN_DS_PRODUCT] – User input in the Wizard

- [WIA_DRIVER] – User input in the Wizard
- [WIA_DRIVER_UI] – User input in the Wizard
- [WIA_GUID] - Generated by the Wizard
- [WIA_UI_GUID] - Generated by the Wizard
- [LEGAL_COPYRIGHT] – User input in the Wizard
- [VERSION] – User input in the Wizard
- [INF_NAME] – User input in the Wizard
- [CAT_NAME] – User input in the Wizard
- [DATE] - Generated by the Wizard
- [VID] – User input in the Wizard
- [PID] – User input in the Wizard
- [SCSI_ID] – User input in the Wizard
- [INSTALLATION_MEDIA_NAME] - Generated by the Wizard

WIA driver and WIA UI Extension

- [MANUFACTURE_NAME] - User input in the Wizard
- [PRODUCT_DESCRIPTION] – User input in the Wizard
- [PRODUCT_VERSION] – User input in the Wizard
- [WIA_DRIVER] – User input in the Wizard
- [WIA_DRIVER_UI] – User input in the Wizard
- [WIA_GUID] - Generated by the Wizard
- [WIA_UI_GUID] - Generated by the Wizard
- [LEGAL_COPYRIGHT] -User input in the Wizard
- [TWAIN_DS_ MANUFACTURE] – User input in the Wizard
- [TWAIN_DS_PRODUCT] – User input in the Wizard
- [TWAIN_DS_VER_MAJOR] – User input in the Wizard
- [TWAIN_DS_VER_MINOR] – User input in the Wizard

Merge module and Installers

- [MANIFACTURE_NAME] – User input in the Wizard
- [PRODUCT_DESCRIPTION] – User input in the Wizard
- [PRODUCT_VERSION] – User input in the Wizard
- [PRODUCT_CODE] - Generated by the Wizard
- [UPGRADE_CODE] - Generated by the Wizard

Projects Description

WIA UI extension

It generates a WIA driver for a specific TWAIN DS. It works as a WIA 1.0 driver on Windows XP and as a WIA 2.0 driver on the latest versions of Windows.

The WIA driver acts as a TWAIN application and loads TWAIN DSM (2.1). It recognize TWAIN DS by TW_IDENTITY.Manufacturer, TW_IDENTITY.ProductName and TW_IDENTITY.Version. If the TWAIN DS is common for the whole family of scanners then TW_IDENTITY. ProductFamily has to be used instead of TW_IDENTITY.ProductName.

The WIA driver supports BMP file format only. And, it gets images from TWAIN DS using Native transfer. It can be extended to support more file formats, and to use Memory and File transfers from TWAIN DS. It is not possible to transfer files directly from TWAIN DS to a WIA application. It has to store the file locally and copy its contents into the IStream. See http://msdn.microsoft.com/en-us/library/aa488645.aspx for details.

The WIA driver supports the minimum number of WIA properties required for passing a WINQUAL test, and required to work with most common WIA applications. The WIA driver maps WIA properties to TWAIN capabilities using tables. TWAIN capabilities are listed according to the "**TWAIN Capability Ordering**", located at http://www.twain.org/. Adding new TWAIN capabilities to these tables has to follow this order. Because the WIA compatibility layer transfers very few properties from WIA 1.0 application to WIA 2.0 driver, it is recommended to do a test before adding new WIA properties to the driver.

WIA UI extension

It generates the WIA UI extension for specific TWAIN DS.

It acts differently for different WIA applications. If the Application is WIA 1.0, then it adds a property page in the Advanced Properties dialog box of a standard WIA UI. If the Application is WIA 2.0 it replaces the whole UI (because adding a property page is not possible) and then does the image transfer. It may show the default WIA UI by pressing "Default UI" button.

WIA UI extension communicates with TWAIN DS using the same method as the WIA driver.

WIA UI extension is based on profiles. It creates/changes/deletes profiles based on CUSTOMDSDATA received from TWAIN DS.

WIA driver uses custom properties to specify full path to a file, which WIA UI extension uses to store a selected profile. If no profile is selected then the file is empty.

WIA UI shares few source files related to TWAIN DS with WIA driver.

Figure 2-4 - default WIA 1.0 UI dialog

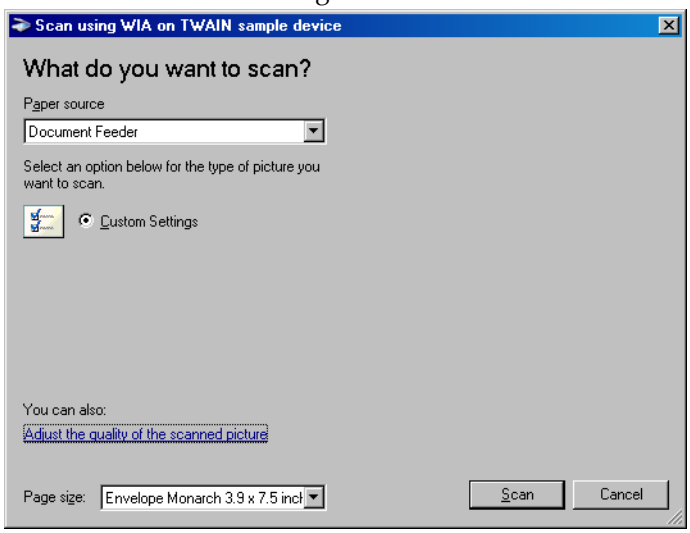
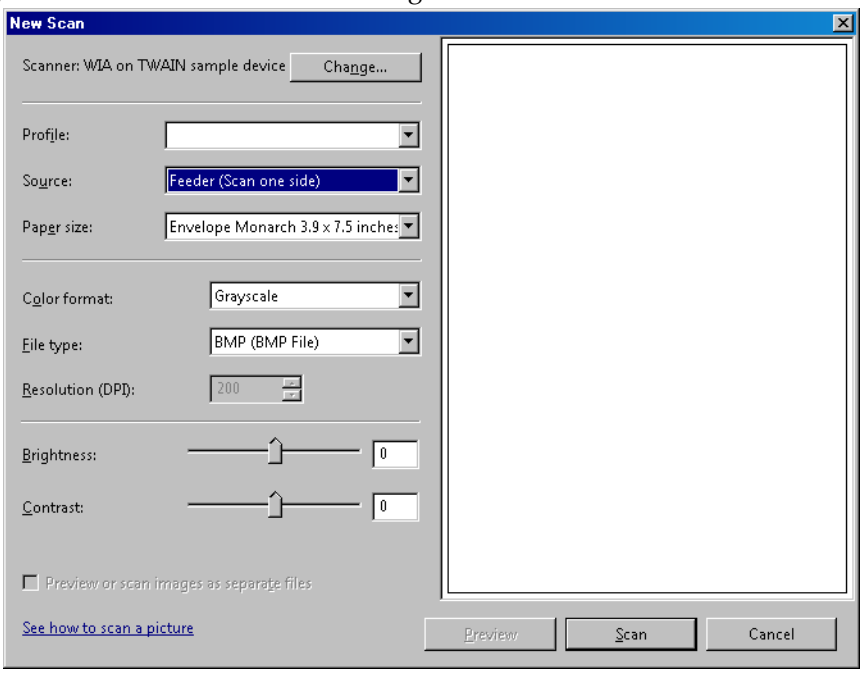
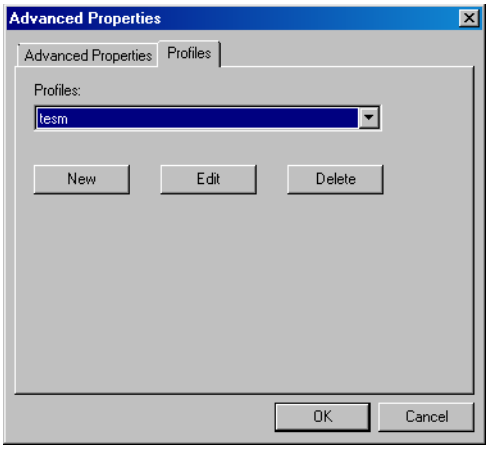


Figure 2-5 - default WIA 2.0 UI dialog



WIA 1.0 UI extension

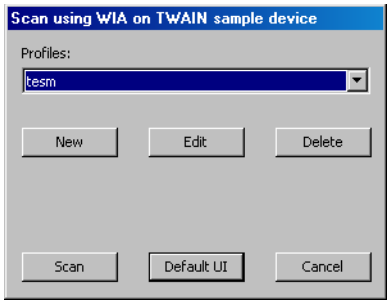
Figure 2-6



Property page added by WIA UI extension (displays when you click "Adjust the quality of the scanned picture" on default WIA UI Dialog)

WIA 2.0 UI extension

Figure 2-7



- **New**—Click to open the prompt for a new profile name. This launches the TWAIN DS UI and the new profile will be stored after closing the TWAIN DS UI.
- **Edit**—Select the profile you want to edit from the Profiles list and then click Edit. The profile will load, set CUSTOMDSDATA, and then display the TWAIN DS UI. The edited profile will be stored after closing the TWAIN DS UI.
- **Delete**—Select the profile you want to delete from the Profiles list then click Delete. The profile will be deleted from the profile directory.
- **Scan**—Clicking the Scan button (WIA 2.0 application only) will do an image transfer from WIA driver to WIA application.
- **Default UI**—Clicking the Default UI button (WIA 2.0 application only) will display the default WIA UI.

Merge Module

It generates the Merge Module used by installers. The Merge Module includes the driver package - INF file, CAT file, WIA driver and WIA UI extension DLLs (32 and 64 bit).

The INF file is based on the assumption that the TWAIN driver communicates with the scanner via USBSCAN.SYS and/or SCSISCAN.SYS. If the TWAIN DS uses third party drivers, then the INF file has to be manually modified.

This project module applies transformation on a generated Merge Module to add an INF file component ID to MsiDriverPackages table. If the INF file is deleted by the project and then added again, the component ID will be different and transformation will not work. It will be required to generate new transformation or do it manually

32 bit Installer

It generates an installer file for 32 bit OS. It includes the driver package merge module, DIFx merge module (32 bit), and TWAIN DSM merge module (32 bit version). It is recommended 32 bit version of TWIAN DS be added.

64 bit Installer

It generates an installer file for 64 bit OS. It includes the driver package merge module, DIFx merge module (64 bit), and TWAIN DSM merge modules (32 and 64 bit versions). It is recommended both 32 and 64 bit versions of TWIAN DS be added.