

Anoto penDocuments Pro

Configuration & Development Guide

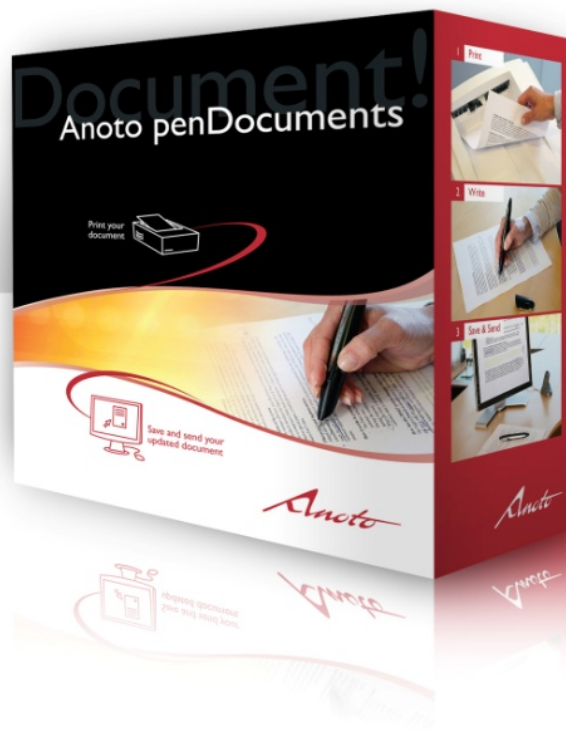


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1. Introduction

Anoto penDocuments Pro is an excellent tool to make pen and paper based workflows and applications.

The basic functionality of Anoto penDocuments Pro is like scanning paper document. The user prints a document, writes on the document with the digital pen, docks the pen in the USB cradle and a PDF document is created with the original document and the handwritten data. The basic functionality of how to use Anoto penDocuments Pro is described in detail in the online manual.

There are a number of applications/processes that can be done on the paper document once the paper and digital ink is stored in the computer. Anoto penDocuments Pro provides third party developers with a tool to easily develop applications based on digital pen and paper. This document describes how documents can be stored and handled, how workflow of documents can be defined, how new Connectors (an integration from Anoto penDocuments Pro to any back-end application) are developed and how more advanced pen and paper applications can be designed using Anoto penDocuments Pro.

2. Document Setup

Documents properties and information are configured in the Setup menu. The properties and information that can be configured are;

- a) storing of documents (Digital Paper Libraries),
- b) preload of documents that are commonly used (Quick Print Documents)
- c) categorization of documents (Document Categories).

The Setup menu for the Document properties and information are shown below.

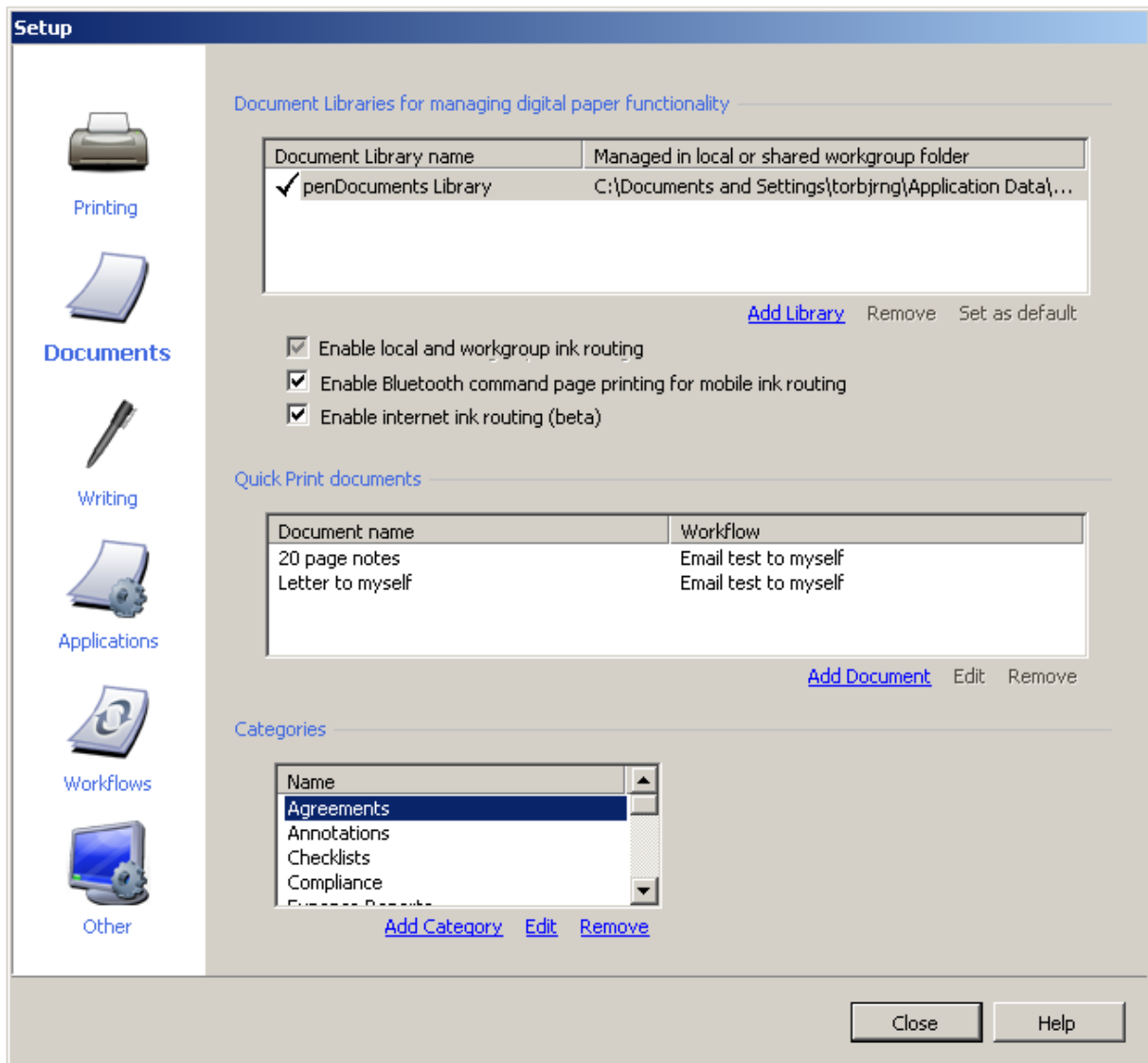


Figure 1. Documents Setup

Digital Paper Libraries

Paper libraries are places where you store your Anoto penDocuments Pro documents, *especially those that you have printed, but have not written on yet*. By default, there is already a "local" library setup for you to use, which is fine when all you want to do is use Anoto penDocuments Pro "by yourself" (I print from my computer and I dock my pen at my computer).

By adding other paper libraries in shared locations, you can use Anoto penDocuments Pro together with other users (print from computer A, dock pens at computer B).

The checkbox function “Enable Bluetooth command page printing for mobile ink routing” shall only be enabled when you develop a mobile solution including mobile phone software by yourself. When the checkbox is selected it is possible to send data over Bluetooth to a mobile phone. You have to, however, have a software application installed on the phone that receives the data from the pen.

Ink can be routed from one computer to another through an Internet ink routing service that is enabled by checking the “Enable ink routing (beta)”. The Internet Ink routing service will first look at the local and shared libraries if the digital ink belongs to any of the documents stored in these libraries. If the digital ink does not belong to these documents, it means that a third party has been printing the paper documents. The internet ink routing service will then send the digital ink up to a server that will route the digital ink to the Anoto penDocuments Pro client that the ink belongs to. Once the digital ink has reached the client that can access the local or shared library, the documents that the digital ink corresponds to, will be looked up in the local and shared library and the digital ink will be merged with the correct document. Then, the workflow assigned to that document will be performed.

Quick Print Documents

Commonly used documents can be defined as Quick print documents. These documents can be added to Anoto penDocuments Pro and setup to always use a certain workflow. How to set up a workflow is described in the section “Defining Workflows”. The defined Quick print documents can then easily be found and printed in the “File” menu in Anoto penDocuments Pro.

Document Categories

Documents can be sorted in different Document Categories to easier find the documents. Simply add, edit or delete the Categories of interest.

3. Defining Workflows

This section describes how to set up a workflow that gets associated with a printed document. The Workflow setup window is shown in figure 2 below. Part of the workflow can also be seen as a configuration of one or many action that will take place on a document.

Here are some different examples of what Workflow configuration can help you accomplish:

- Open the application and show me my document.
- Open my default PDF viewing software to show me my document.
- Do nothing. Just download the ink.
- Put a copy of my document in a shared folder.

- Put a copy of my document in a folder being monitored by a document management system, and have it automatically initiate a workflow as if it was a scanned document.
- Put a copy of my document in my forms processing inbox along with ink stroke information, then start my forms processing program to perform handwriting recognition and export the data to a backend database.
- Add a time stamp to the document file name, assign it to the Patient Intake Forms category, put a copy on the network drive along with all of the file and ink metadata, start Internet Explorer, point to our online CRM, and post all files in the right place

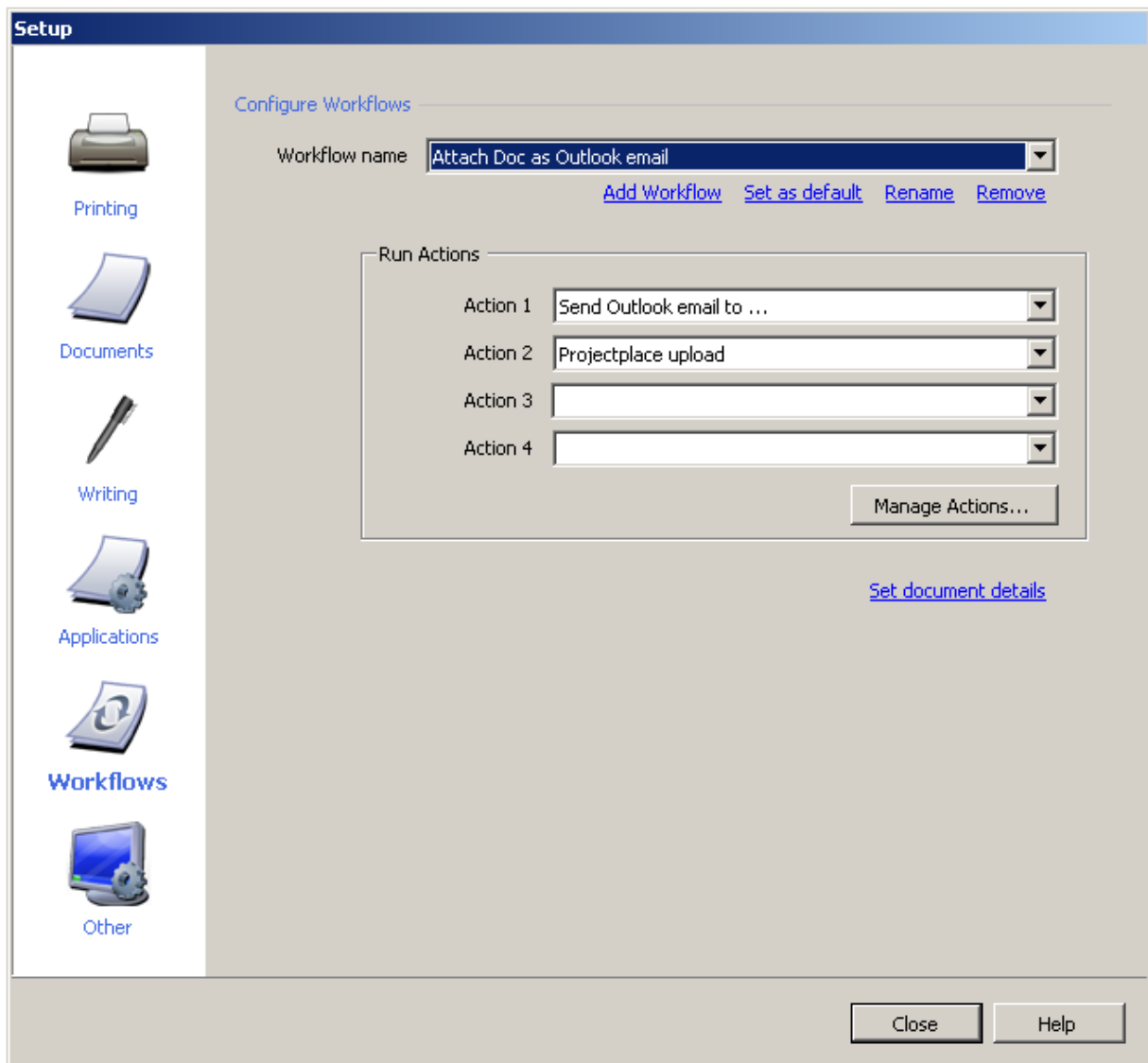


Figure 2. Workflow setup.

Follow these steps to setup a new workflow;

Define a name of a workflow. This is simply done by the “Add workflow” function shown on the Window.

Then, choose up to four actions that will be executed on each document when the pen is docked in the digital pen cradle and the digital ink is sent from the pen to Anoto penDocuments Pro.

With Actions it is possible to configure and develop the following actions...

- Launch any other application or URL
- Post a copy of the completed PDF or TIFF to any folder your computer can access (shared folder on LAN or VPN, FTP, index and integrate into CRM, etc...)
- Archive "incremental" copies of your PDFs as ink is added at different times (basically, seeing a history of how your final document came to be what it has become)
- Gain direct access to all of the underlying digital pen and ink stroke data, along with other digital paper information ("metadata")

Anoto penDocuments Pro includes the following basic Actions:

- **Open** This application starts.
- **Open with PDF viewer** Your computer's default PDF viewer opens and displays your document.
- **Copy to My Documents** A copy of the completed digital document is created in your My Documents folder.
- **No Action** Nothing opens. Ink gets applied, digital PDF copies get updated.

Select “Managing Actions” if you want to set up a new action or edit an existing action. Follow the wizard that will guide you through the process of defining a new action or editing an existing action.

- Select if you want to create a new action or edit an existing action. If an action shall be edited, select the action to edit.
- Select if an application shall be run or not. If an application shall be executed, enter the path to the executable.
- If an application shall be run, mark what data that should be saved (PDF, TIFF and Metadata file). The content of the metadata file is explained in the next section “Developing more advanced pen and paper based application”. Add other arguments to the command line if necessary.
- Specify if the documents shall be stored and in what format.
- Name or rename the action.

Thereafter, select “Set documents details” as a part of the workflow setup. Set the document properties of the naming format of the stored document that has the digital ink on it. Scroll down the window to select one of the options. Choose the Categories, and what Digital paper library the document shall be stored in. The Categories and Digital paper libraries are added and changed in the Document Setup

section as described in the Document Setup section. Enter Tags (search words) optionally to each printed document.

4. Developing Connectors

It can be very easy to develop a new Connector (a native integration from Anoto penDocuments Pro to any back-end application) with Anoto penDocuments Pro. The new connector can be as simple as to define a new Action and to pass the right arguments to the backend-applications without any actual programming. There exists, for example, many document management solutions that can be started with the PDF file as an argument. Thus, an action can be created by configuring a connector that passes the right arguments to the backend application.

Example of a Simple Connector

One example of a simple connector is a connector to Nuance eCopy PaperWorks™, the desktop software from Nuance managed scanned documents. In the action, the PDF file is simply passed as the argument to the executable of Nuance eCopy PaperWorks™.

An execution of a Workflow with this action results in that the Nuance eCopy PaperWorks™ opens automatically when the pen is docked and displays the PDF document with the handwritten information.

Connector Builder (a tool to build connectors) will be available shortly to streamline the creation and deployment of connectors.

5. Developing more advanced pen and paper based applications

The metadata file (an XML file) needs to be processed to develop more advanced connectors or applications where for example the actual digital ink, the pen user or printout time data is needed. A description of the metadata file is described below.

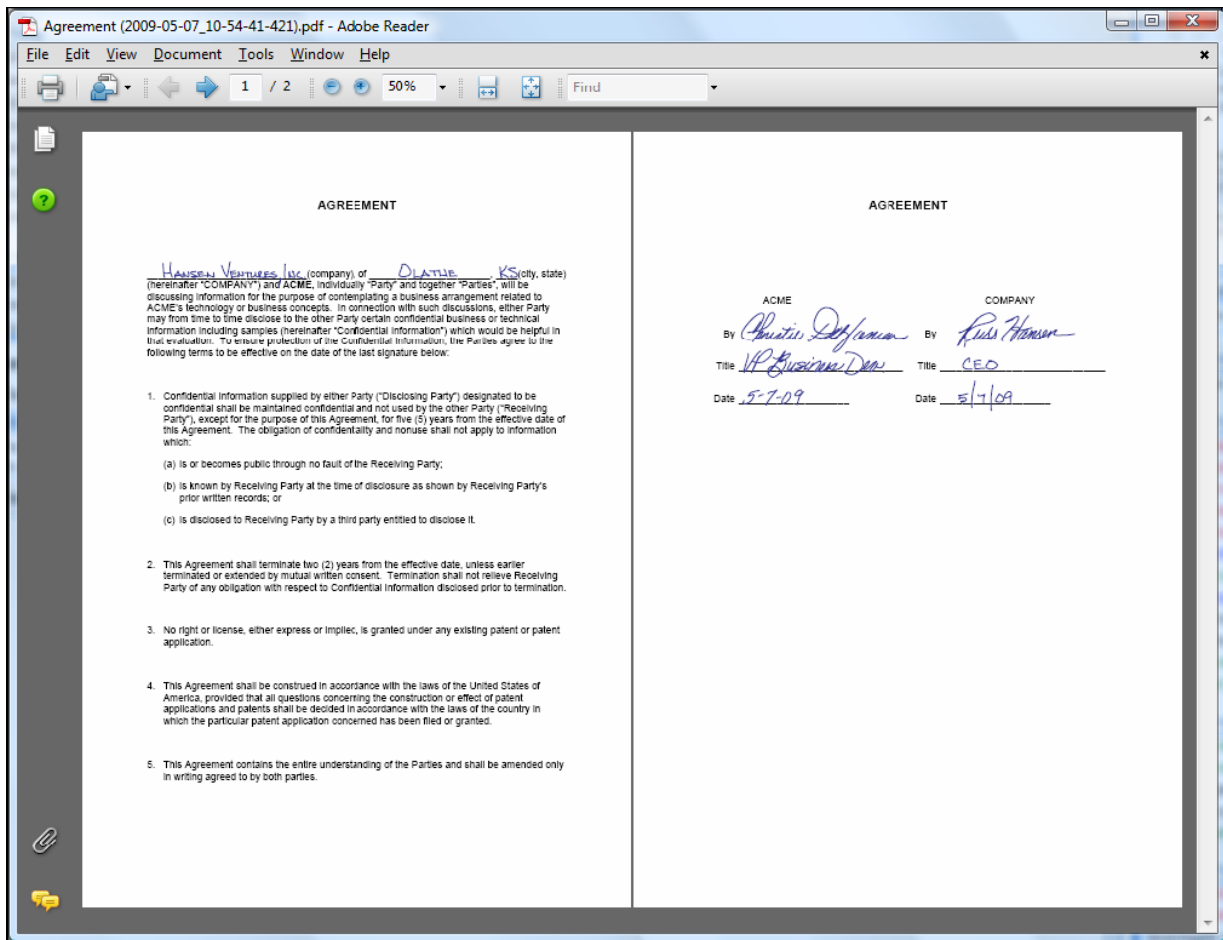
Grouping	Attribute	Description
xml	Schema	XML schema version
Document	Guid	Globally unique identifier assigned to document
	Name	Document name (as displayed in "Name" property field) at ink download time
	PageCount	Number of pages in the document
	Category	Document category (as displayed in "Category" property field) at ink download time
	Keywords	Document keywords (as displayed in "Keywords" property field) at ink download time
	PrinterName	Name of physical printer (as displayed in Windows print dialog) that printed the document
	PrintTime	Date/time that document was printed, localized to printing computer and expressed with printing user's "Short Date" and "Time" Regional and Language settings
	PrintUser	Name of logged in Windows user at print time
	PrintComputer	Name of computer used for printing
	PdfByteArray	Document in PDF format stored as a Base64 encoded byte array
	TiffByteArray	Document in TIFF format stored as a Base64 encoded byte array
Page	Address	Address of digital paper page, as [segment.shelf.book.page]
	Number	Ordinal page number within document
Ink	InkId	Unique identifier (within XML document) for ink strokes added to an individual page during an individual download
	PenId	ID of pen that recorded digital ink strokes
	PgcByteArray	Ink stroke PGC file stored as a Base64 encoded byte array
Stroke	Color	Ink stroke color, as decimal form of hex RGB values as BBGGRR, e.g., 9109545 (decimal) = 8B0029 (hex) = 29-00-8B (RGB hex) = 41-0-139

		(RGB decimal)
	Duration	Ink stroke duration, in milliseconds
	LineWidth	Ink stroke line width, expressed as a multiple of 0.3mm
	StartTime	UTC date/time when ink stroke was initiated, expressed as [yyyy/mm/dd hh:mm:ss.###]
	Points	<p>Ink stroke point data, expressed as XYF, with points separated by pipe character (“ ”), where:</p> <p>X = distance to the right of upper left corner of document page, expressed as a multiple of 0.0003mm</p> <p>Y = distance down from upper left corner of document page, expressed as a multiple of 0.0003mm</p> <p>F = downforce on pen tip (min=0, max=127000)</p>

Metadata example

The metadata file below was produced by the following digital paper scenario:

- A two-page Microsoft Word document was printed with the digital paper virtual printer, having selected an Action configured to create both PDF and metadata files.
- One digital pen was used to complete the first page of the document, and then sign the last page.
- A second digital pen was used approximately thirty minutes later to countersign the document on the last page only.
- Both pens were docked individually. (In this example, the first pen was docked prior to the second pen writing. However, the pens could have written and docked in any order or combination, and the resulting PDF and metadata files would contain similar data.)
- A PDF copy of the paper document was instantly generated and updated with each successive pen dock. (document below in Acrobat Reader)
- The metadata file that follows was automatically generated.



Agreement (2009-05-07_10-54-41-421).xml

```
- <xml Schema="2.1">

- <Document Guid="d4bbb5df-4186-4732-ab57-0afa552d9566" Name="Agreement" PageCount="2"
  Category="Agreements" Keywords="ACME Hansen Ventures" PrinterName="OKI C6100(PS)"
  PrintTime="5/7/2009 10:09 AM" PrintUser="DELL-438517E\User" PrintComputer="DELL-438517E"
  PdfByteArray="JVBERi0xLjMNCg0KMTMgMChvYmoNCjw8DQovRSA0MDc4MgOKL0ggWyAxNjQwIDE4NiBd
  DQovTCAxMDM5ODQNCi9MaW5lYXJpemVkIDENCi9Qpzdj (more byte array data...) ">

- <Page Address="50.603.14.33" Number="1">

  - <Ink InkId="31" PenId="AR5-AAA-UDD-PB"
    PgcByteArray="AQAAGAAP/////////AiUADwACAIAAQABAAEAADICWwDgIQAAABc0AAAABAEF
    ub3RvIFNURiB2MS4wAEs4UgAAASEboO+kBDQGRCO//mwlAAIQ (more byte array data...) ">

    <Stroke Color="9109545" Duration="240" LineWidth="1" StartTime="2009/05/07 15:11:20.484"
      Points="X102500Y168500F0|X102625Y168125F80000|X102625Y168000F102000|X10362
      5Y181250F114000|X104500Y184500F114000|X104500Y184500F108000|X104375Y1845
      00F92000|X104250Y184125F14000|X104000Y183625F0" />

    <Stroke Color="9109545" Duration="133" LineWidth="1" StartTime="2009/05/07 15:11:20.811"
      Points="X103750Y178625F0|X103875Y179125F90000|X104375Y179375F104000|X10562
      5Y179625F110000|X106250Y179750F110000|X111000Y179250F90000|X112125Y17900
      0F12000" />

    (more stroke elements...)

  </Ink>

</Page>

- <Page Address="50.603.14.34" Number="2">

  - <Ink InkId="32" PenId="AR5-AAA-UDD-PB"
    PgcByteArray="AQAAGAAP/////////AiUADwACAIAAQABAAEAADICWwDgIlgAABBsAAAABAEF
    ub3RvIFNURiB2MS4wAEs4UgAAASEbodFDdGEl8ygX20MOI IjEI (more byte array data...) ">

    <Stroke Color="9109545" Duration="226" LineWidth="1" StartTime="2009/05/07 15:12:32.869"
      Points="X435250Y295125F0|X435250Y295625F80000|X435250Y295750F100000|X43525
      0Y297625F114000|X435250Y298625F116000|X435500Y299875F116000|X435625Y3011
      25F116000|X435750Y301875F116000|X435750Y302000F116000|X435750Y302000F116
      000|X435625Y300875F106000|X435500Y300125F88000|X435500Y299000F6000" />

    <Stroke Color="9109545" Duration="173" LineWidth="1" StartTime="2009/05/07 15:12:33.203"
      Points="X434625Y293500F0|X434500Y293875F86000|X434500Y293750F104000|X43475
      0Y293250F116000|X438250Y292000F116000|X441875Y291875F106000|X442750Y2920
      0F80000|X442750Y292500F0" />

    (more stroke elements...)

  </Ink>
```

```
- <Ink InkId="33" PenId="AR5-AAD-FN4-2C"
  PgcByteArray="AQAAGAAP////////AiUADwACAAIAAQABAAEAADICWwDgI gAABloAAAABAEFu
  b3RvIFNURiB2MS4wAEtYAR0AAAEhG8e1nwYLCIkSHChR37erg (more byte array data...) ">

  <Stroke Color="9109545" Duration="106" LineWidth="1" StartTime="2009/05/07 15:53:44.155"
    Points="X190750Y249125F0|X189875Y249625F0|X189875Y250125F36000|X190750Y250
    750F48000|X195000Y251625F90000|X201500Y251000F82000|X204750Y250500F48000"
  />

  <Stroke Color="9109545" Duration="133" LineWidth="1" StartTime="2009/05/07 15:53:44.570"
    Points="X248375Y244125F0|X246375Y245500F0|X229500Y261875F4000|X224125Y2663
    75F26000|X222875Y266750F24000|X222125Y266375F2000|X221875Y265375F0" />

  <Stroke Color="9109545" Duration="306" LineWidth="1" StartTime="2009/05/07 15:53:45.463"
    Points="X241125Y263625F0|X247750Y261250F48000|X253000Y258750F56000|X255750
    Y257000F54000|X260750Y252625F34000|X262000Y251000F12000|X261875Y250375F0|
    X261375Y250125F0|X258625Y251500F0|X256750Y253125F0|X252375Y258000F0|X250
    375Y261375F0|X250625Y262125F0|X252750Y262750F0|X256500Y262375F0" />

  (more stroke elements...)

</Ink>

</Page>

</Document>

</xml>
```