



**V i A 2** platform

Version 2.0

## **Product Overview**



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## Introduction

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We live in a visual century. Video, audio and image production has not ceased to grow over the last decades, and today many companies and organizations face the challenge of organizing, accessing and distributing their rich media assets in a simple, cost-effective and practical way. This is a difficult, time-demanding task due to the nature of audiovisual content, which until recently had to be viewed and/or reproduced to be located.

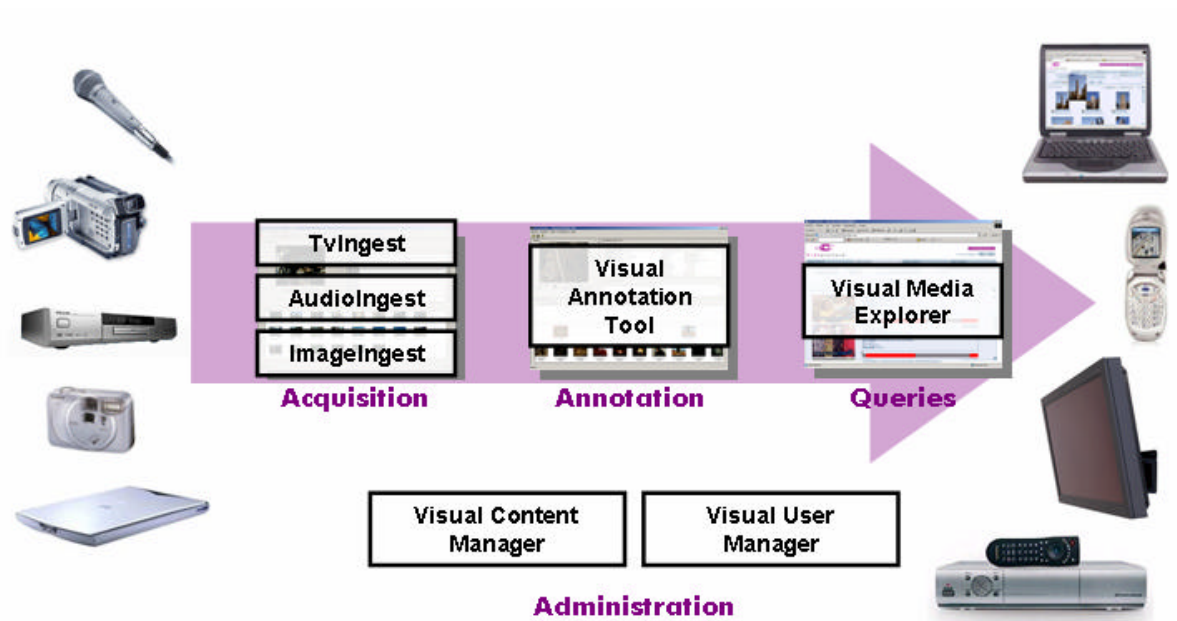
The key to the solution is the extraction of metadata - such as representative images, audio transcriptions and keywords about the content - that will act as a reference to locate video or audio fragments and specific images stored in a database. ViA2 Platform, a rich media asset manager specialized in multimedia content indexation, annotation and organization, includes advanced analysis tools that facilitate the compilation of metadata and thus the access to stored video, audio and image content.

ViA2 Platform has a modular architecture that can be adapted to the content organization, management and location needs of companies in a variety of industries, always ensuring a high degree of usability, security and flexibility. With ViA2 Platform, rich media assets are captured, digitized and annotated, to be later searched through a user-friendly, Web-based interface. The application of intelligent analysis techniques simplifies the cataloguing process and the organization of contents, as it maximizes the amount of metadata automatically extracted from the assets entered in the system.

The open architecture of ViA2 Platform is XML-based and works over Tamino XML Server of Software AG. This makes it very flexible and easy to integrate with other applications. XML language also facilitates the publication of stored assets in a variety of supports, such as the Internet, multimedia digital signage, mobile phones, set-top boxes and other content distribution systems that may appear in future.

The ViA2 Platform process consists of three main steps: content acquisition, content annotation and content search or location. ViA2 Platform is made up of several applications dealing with these different

aspects of video, audio and image processing which together provide a complete rich media asset management solution, as shown by the figure below:



## The Via2 Platform Process: Acquisition

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The acquisition process comprises the ingest of assets into the system and the extraction of metadata on real-time from them. Metadata is stored in Tamino XML Server, and digitized video, audio and image files are sent to separate content repositories. For the acquisition process, ViA2 Platform uses TvIngest (for video), AudioIngest (for audio) and ImageIngest (for images).

### **TvIngest**

TvIngest is a tool developed by Visual Century that works over the technology of VideoIngest, an automatic catalogue in use in broadcast environments. Inside ViA2 Platform, TvIngest analyzes video and automatically extracts metadata from it on real time. Automatic video analysis is a must in those environments dealing with large amounts of audiovisual data, as it saves viewing time and requires a minimum human assistance.

Metadata extracted by TvIngest is stored in an XML server, classified into descriptors and used for video indexation purposes. In parallel, digitized video that will be later annotated using the Visual Annotation Tool is stored in video repositories

The main features of TvIngest are the following:

- Local or remote access to and management of digital video files in Windows-compatible formats.
- Capture of external (analog or digital) video signals. Selection of captured video quality (VHS, Streaming, High quality, etc.).
- Keyframes preview in storyboard format on real time, along with associated timecodes.
- Optional: asynchronous video analysis, accelerating the video cataloguing process.
- Remote control of several TvIngest stations at the same time via TCP/IP (scheduling of sessions, continuous channel capture and analysis, etc.).

- Simultaneous generation of video files in different formats.
- Control of video reproduction devices (VTR) through Sony's RS-232 and RS-422, and of video capture devices (DV cameras) through IEEE 1394 (I-Link).
- Support of PAL and NTSC standards.

To increase its metadata extraction capabilities, TvIngest can be complemented with analysis plug-ins (VCR Speech-to-text, VCR SatDetector, VCR MovDetector, keyframe VCR CBIR, etc.).

### **AudiIngest**

To carry out the ingestion and indexing of audio documents, ViA2 Platform uses AudiIngest. AudiIngest analyzes audio and automatically extracts metadata from it on real time. Automatic audio analysis is ideal to manage audio archives, as it makes information accessible in a fast and efficient way with the minimum human assistance.

Extracted metadata, stored in an XML server, is classified into descriptors and is used in audio indexing. In parallel, digitized audio is stored in audio repositories to be subsequently recovered and annotated with Visual Annotation Tool.

The main features of AudiIngest are the following:

- Local or remote access and management of digital audio files in Windows-compatible formats.
- Capture of external (analog or digital) audio signals from sound board entry lines or microphones. Selection of captured audio quality (Streaming, High quality, etc).
- Optional: asynchronous audio analysis, accelerating the audio cataloguing process.
- Preview of audio segmentation, along with associated timecodes.
- Remote control of several AudiIngest stations at the same time via TCP/IP (scheduling of sessions, continuous channel capture and analysis, etc.).

To increase its metadata extraction capabilities, AudioIngest can be complemented with the VCR Speech-to-text analysis plug-in.

### **ImageIngest**

To carry out the ingestion of images, ViA2 Platform uses ImageIngest. With ImageIngest, ingested images are stored in image repositories to be subsequently searched and annotated with Visual Annotation Tool.

The main features of ImageIngest are the following:

- Local or remote ingest of digital images in Windows-compatible formats.
- Capture of images from TWAIN or DirectShow (snapshot) devices. Selection of captured image quality.
- Zoom in and zoom out of image preview.
- Image rotation, flip and cut.

To increase its metadata extraction capabilities, ImageIngest can be complemented with the VCR CBIR (content-based image retrieval) analysis plug-in. VCR CBIR allows searching images according to their content (colors, shapes and textures).

## The Via2 Platform Process: Annotation

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The annotation process comprises the manual expansion of metadata automatically extracted during the ingest process. Once completed, added metadata is stored in the XML server to be later searched with Visual Media Explorer.

ViA2 Platform uses Visual Annotation Tool in the annotation process. Visual Annotation Tool provides fast and convenient access to contents, along with annotation templates and other documentation tools, to make the process as efficient as possible.

### Visual Annotation Tool

The aim of Visual Annotation Tool is to obtain the most adequate and useful indexing for further queries and publications of video, audio and image documents stored in ViA2 Platform. To do so, Visual Annotation Tool includes a number of tools that makes content navigation fast and easy, avoiding the traditional playback of the whole audio or video file.

Visual Annotation Tool provides the user with annotation templates adapted to the type of asset being annotated, be it a video, an audio or an image file. Visual Annotation Tool also allows the user to enter free annotations and to associate any type of file to the annotated document. All information manually entered in the system is stored in an XML server for subsequent searches with Visual Media Explorer.

In the case of video and audio, Visual Annotation Tool provides the means to segment the document into scenes, creating three hierarchic tree levels for every asset. This segmentation greatly simplifies the management and localization of rich media.

The main features of Visual Annotation Tool are the following:

#### Video

- Structuring videos into segments or scenes.
- Intuitive viewing of the tree-like structure of videos.
- Template-based annotation using keywords, descriptors and descriptions.

- Generations of clips from the annotated video scenes for streaming purposes.
- Preview of annotations and video fragments for each of the scenes.

#### Audio

- Structuring audio documents into segments or scenes.
- Intuitive viewing of the tree-like structure of audio documents.
- Template-based annotation using keywords, descriptors and descriptions.
- Preview of annotations and audio fragments for each of the scenes.

#### Images

- Template-based annotation using keywords, descriptors and descriptions.
- Preview of annotations and documented images.
- Annotations with Visual Annotation Tool are very flexible and totally customizable, thanks to the use of XML language.

## **The Via2 Platform Process: Search**

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Queries of rich media assets with Visual Media Explorer, the content navigation environment of ViA2 Platform, are focused on interactivity and ease of use to maximize the reuse of stored contents and metadata. Besides of efficient and intuitive searches, Visual Media Explorer does not require the entire reproduction of audio and video documents when looking for a particular fragment, saving time and bandwidth.

### **Visual Media Explorer**

Visual Media Explorer is the tool used to navigate the ingested and annotated contents stored in ViA2 Platform. Visual Media Explorer allows the user to view the list of assets permanently to the left of the main screen, organized in a tree-like file structure. Visual Media Explorer also facilitates the search of documents by keyword, by description, by descriptors, by date, by media type (video, audio and images) and even by images (with the VCR CBIR plug-in).

Search results can be viewed in detail format, in thumbnails format (with representative images), or with the Visual Context Line, an innovative system entirely developed by Visual Century. The Visual Context Line provides important advantages to system administrators and users when searching contents, as it simplifies and speeds up the process of looking for a specific asset. It also saves bandwidth (Intranet or Internet) and is very intuitive, even for inexperienced users.

ViA2 Platform provides example templates of Visual Media Explorer and the Visual Context Line, but also gives total freedom to customize the way search results are presented to users.

## **Administration Tools**

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ViA2 Platform includes two management tools to facilitate the administration of contents and users in the system: Visual Content Manager and Visual User Manager.

### **Visual Content Manager**

Visual Content Manager is the ViA2 Platform tool used to administer the contents stored in the system database. The main functionalities of Visual Content Manager are the management of video, audio and image repositories; the management of annotation templates; the management of sessions; setting up the system parameters; and repairing the database.

### **Visual User Manager**

Visual User Manager is the ViA2 Platform tool used to administer the user, user groups and user roles in the platform, and to establish the default access permits of all elements.

## Benefits

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Implementing ViA2 Platform has the following advantages:

- High ROI through the reuse of rich media assets.
- Reduced costs by serving multiple channels from a single source.
- Increased productivity by clearly organizing the location of content.
- Powerful searches and video preview without overloading the network.
- Smoother workflows and increased team collaboration.
- Interactive preview and control of video and audio reproduction.
- More effective communication through the use of high-impact content.
- New revenue opportunities for intellectual property.
- Adaptable to new devices and publication channels as soon as they emerge.

## Applications

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ViA2 Platform is an extremely useful tool in a wide range of application scenarios. Some of them are:

**Video Archives:** ViA2 Platform facilitates the reuse and exploitation of available rich media assets, which reduces costs and enhances productivity. It also ensures that video is carefully stored, easily retrievable and readily available to the appropriate audience, improving the service and efficiency of public and private audiovisual archives.

**Web portals with rich media content:** Contents analyzed and annotated with ViA2 Platform can be easily published on the Internet and are retrievable online. Their attractive presentation and the possibility of carrying out visual and interactive searches online without bandwidth problems result in websites which provide innovative, interactive and highly visual internet experiences to their visitors.

**Digital Signage:** Integrated with VisualPublisher of Visual Century, ViA2 Platform provides a complete solution to manage and publish all types of digital contents in private broadcasting circuits and digital signage systems. Video can be attached to other contents such as images, text or URLs and remotely distributed to plasma screens attached to PCs or set-top boxes to reach target audiences in a simple and effective way.

**E-learning:** ViA2 Platform provides e-learning experience with a simple and seamless integration of all available audiovisual materials. Students can locate, browse and access specific course or lecture video segments and trainers and educators can easily control course contents and their presentation to improve the learning process.

**Video On Demand:** Integrated with ISIS of Interactive Streams, ViA2 Platform provides a complete video on demand solution, which allows the search and preview of all stored contents with the Visual Context Line and gives simultaneous access to different users to the same audiovisual item at different reproduction times.



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