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# **MT APIA: Better Ad Monitoring**



# MT APIA: Advanced Platform for Image Analysis

# APIA Core Functionality

- **Monitoring is described as the capturing of TV program- and spot-information, which can be analysed in combination with measured TV data. MT APIA enables the automatic breakdown of regular programming and advertising, an automatic recognition of ad spots and a partially automatic recognition of programming content.**
- **The MT APIA software system is made up of a capturing, monitoring and operating software modules. The monitoring module controls the automatic monitoring process with minimal human intervention. The operating software secures the control and monitoring of the entire advertising monitoring software system.**

# MT APIA Core Functionality

As previously mentioned, MT APIA is based on a fully automated process for spot recognition and an automated process for recognizing program information with minimal human intervention. MT APIA implementation for advertising monitoring can be split into three steps:

- Capturing and recording of the TV program content;
- Processing: automated splitting of program and advertising content, automated and semi-automated recognition of program content and automated recognition of the advertising content;
- Data storage: in the capturing step, all desired TV channels are recorded and stored, and then further reworked for the processing step.

# MT APIA Core Functionality

- MT APIA capturing module leads and controls the recording of channel content. The capturing server is accessible via remote access, which enables access from anywhere – if for example a disruption in the recording or a signal failure occurs, or if client software requires access to visualize some of the data.
- After successful recognition and verification of program content (program, advertisement or trailer) all parts are compressed and stored in a centralized network storage (NAS), where they can be accessed. The content is saved in video and audio format and can – if requested – be made accessible to the customer for the duration of the contract period.

# MT APIA Core Functionality

**Fingerprinting:** In the core of MT APIA is a patent pending proprietary fingerprinting technology.

- Every ad video in compressed format is a subject to image processing and pattern extraction. The result of this process is the so called advertisement fingerprint.
- The process of extracting the ad fingerprint is called fingerprinting. For search the system uses fingerprints only (not the actual ad video).
- The process of fingerprinting allows the decreasing of the search ad index size and increasing the speed of ad index search. The fingerprinting algorithm has been optimized to work with low resolution video streams, further increasing the speed of ad index search.
- Furthermore, the extraction algorithm itself has been optimized to provide more than 99% accuracy when matching an ad fingerprint within video stream, and close to 0 false positives. Thus, near real time results can be obtained (e.g. a 4 hour stream can be searched and all ads can be detected)


# MT APIA platform overview

Home Dictionary Library Monitoring Rate card Program Log

Dictionary Add item Import Delete items Export Filter: Apply Clear

Program log 2015 BTV ACTION - program log BTV - program log Versions Rate card Properties

Play video (BTV - 29-04-2015 19:26:49)



Results Markers

Ad. name	Begin time	End time	Length
WALMARK PROSTENAL PERFECT, ...	19:42:43.863	19:43:00.796	00:00:16.933
RAMA BUTTER, маргарин, проду...	19:43:00.870	19:43:20.736	00:00:19.866
ДУЛКОЛАКС, слабително лекар...	19:43:20.403	19:43:52.269	00:00:31.866
ЛЕКИ, кренвирши, семейство ок...	19:43:52.267	19:44:21.800	00:00:29.533
TELENOR, смартфони, Джовани,...	19:44:21.937	19:44:41.870	00:00:19.933
FINETI, течен шоколад, шокола...	19:44:42.070	19:45:06.870	00:00:24.800
БЪЛГАРСКИ СПОРТЕН ТОТАЛИЗ...	19:45:06.553	19:45:21.819	00:00:15.266
DEGASIN, лекарство при стомаш...	19:45:21.820	19:45:36.686	00:00:14.866
FERRATUM, кредити, жена дои...	19:45:36.567	19:46:06.500	00:00:29.933
BILLA, верига хипермаркети, ки...	19:46:06.460	19:46:18.393	00:00:11.933
ORBIT, дъвка, Аштън Къчър на ...	19:46:18.793	19:46:48.726	00:00:29.933
TOTAL QUARTZ, моторни масла, ...	19:51:52.130	19:51:55.330	00:00:03.200
ОРЕХИТЕ, добруджанска луканк...	19:51:54.997	19:52:16.863	00:00:21.866
АРИАНА РАДЛЕР, бира, резени о...	19:52:16.863	19:52:38.729	00:00:21.866
PIRAEUS BANK, банка, мъж на п...	19:52:38.727	19:53:10.793	00:00:32.066
ACC, лекарство, втечняващо бр...	19:53:10.930	19:53:32.796	00:00:21.866
ПИКАДИЛИ, супермаркет, Пика...	19:53:32.597	19:53:47.463	00:00:14.866
GILLETTE VENUS 3, дамска самоб...	19:53:47.333	19:54:02.199	00:00:14.866
www.emag.bg, онлайн магазин, ...	19:54:02.467	19:54:22.400	00:00:19.933
EASY CREDIT, кредити, семейст...	19:54:22.463	19:55:22.462	00:00:59.999
H & M, мода, четири жени вървя...	19:55:22.460	19:55:37.459	00:00:14.999
TUBORG, бира, човек вади бира...	19:55:37.460	19:56:07.393	00:00:29.933

0 - 54900 (3660.00 seconds, 54900 frames) Frame: 24128 (00:26:48.531)



# MT APIA overview

- **MT APIA implementation in admonitoring works based on recording all desired channels as video streams, extracting ad fingerprints and then searching for the fingerprints within the recorded video streams.**
- **Once a fingerprint is detected a frame by frame check is performed to secure the accuracy of the detection and the exact length of the ad spot.**
- **The results are then placed into a database, accessible for MT AMIRA (Advanced Media Intelligence Research and Analytics) software and allowing to superimpose TAM data, such as ratings, etc. on top of the admonitoring data.**

# MT APIA overview

- Furthermore, various mobile applications are in the development process allowing to visualize these data on mobile devices to create quick and visually appealing access to the collected data.
- The mostly automated program monitoring works based on the same algorithms with the exception of ad hoc programming (e.g. breaking news, etc.) where a manual step would be needed due to lack of a priory knowledge of the program content (i.e. the program cannot be indexed beforehand.)

**In terms of speed, for example 24 hours of video stream are searched by MT APIA in 7 minutes while using a database with approximately 1,700 ad clips.**

# Algorithms implemented in MT APIA

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## ➤ Indexing:

- 1. N markers are extracted from the ad video, where N is the indexing parameter. The larger N is, the more memory is required for indexing. Also N affects the accuracy of searching. For each marker metadata are known: a distance from previous marker (or ad beginning) in frames/secs, ID of the ad, etc;**
- 2. Every marker is fingerprinted;**
- 3. The fingerprints are combined with metadata into single fingerprint of the ad video.**

# Algorithms implemented in admonitoring software

## ➤ Ads search

- 1. The following algorithm is used for searching ads in the recorded video streams;**
- 2. The frame of the video stream under examination is fingerprinted with the same parameters as ads;**
- 3. Search is performed for a fingerprint in the search index that is similar to the fingerprint of the frame under examination. When a fingerprint is found, the search engine returns the related metadata.**
- 4. The scanner uses these metadata for estimation. The distance between markers in the ad video is known, thus if the first marker in input video stream is found the software waits for the next one after a certain number of frames/sec. The more markers are found, the higher the probability of detecting an ad in the stream.**
- 5. When an ad is found, the scanner determines its exact position in the video stream and saves this information into the database.**

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**Thank You**

