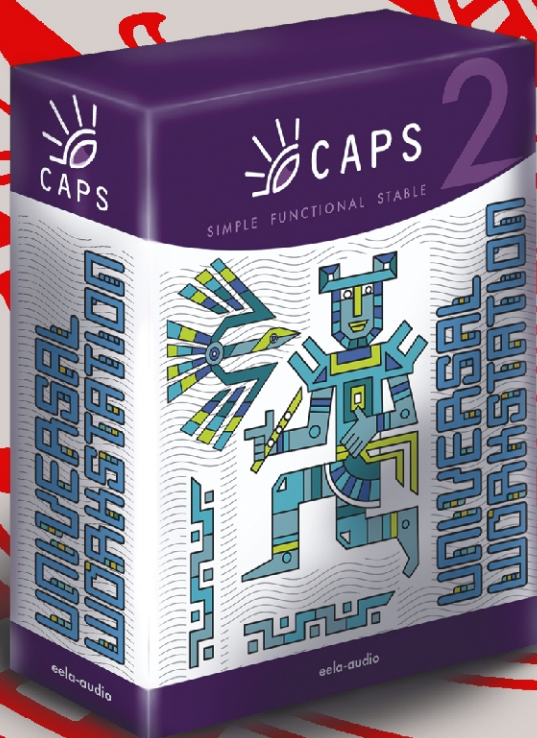
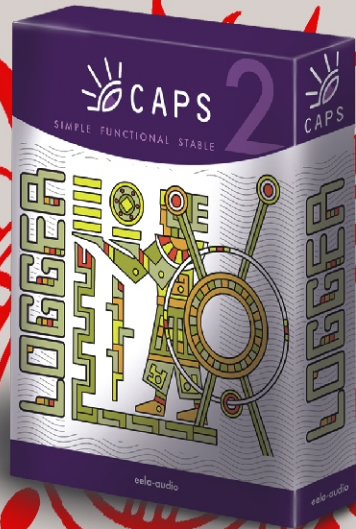


CAPS 2

**SOFTWARE BOX-PRODUCTS
FOR RADIO BROADCASTING**

**M A G Music Rotation
User Instruction and Manual**



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- pro audio with a smile



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Broadcast products

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1. WHAT IS MAG?

MAG is the computer program intended for compilation of play-lists for radio stations of different formats, both musical, and news. It is very convenient, accessible, easy to use system developed for needs of musical editors, program directors, producers and advisers of modern radio stations.

1.1 System requirements

CAPS 2 software works under the control of Microsoft Windows XP system (file system NTFS) on Intel-compatible computers. Following technical requirements are made to system performance:

- **RAM:** optimum requirements of operational system + 128 / 256 Mb (depending on configuration of the CAPS 2 software).
- **HDD:** minimum 50 Mb of an empty space on hard disk is required for installation and beginning of work. Working requirements are put forward depending of final configuration of broadcasting automation system CAPS 2.
- **Processor:** could be different for different components of automation system. Minimal requirements are the same as minimal requirements of operational system. We recommend using higher parameters for editing stations and loggers.
- Local area network 100 Base-T port (at least 100 Mb/s, in case if more than one workplace is used).
- USB-ports.
- Keyboard and mouse.
- CAPS 2 user interface is designed for the screen resolution beginning from 1024x768 pixels.
- Connection of remote control (for example, radio mixing console) requires presence of LPT-port or a special interface device (for example, TP-312).
- In case of MDB installation, one of local network computers should have Microsoft SQL Server 2000 Standard Edition (or higher) installed.
- The type of an audio card is determined depending of the type of working place.

Much more important is reliability of hardware PC components, and appropriate settings of the Windows operational system. It is highly not recommended to assemble the system on a principle "the best from cheapest". Repair or replacement of the broadcasting computer leads to temporary infringement of work of radio station, transition to reserve broadcasting equipment and, most likely, to temporary deterioration of broadcasting. And it, in its turn, leads to outflow of auditory and, finally, to financial losses which can exceed the "economy" on a cost of the equipment.

2. WORKING WITH THE PROGRAM

Do not have illusions and do not think that specialized computer programs and, in this case, MAG, will solve all questions. The person continues to play a determining role in creation of a play-list. The computer program is only the tool assisting to the person and the basis of broadcasting, its structure and so on is created first in a human head, and only then brought to the machine according to individual vision of the expert engaged in musical programming. It is the main element! Therefore before starting of work with MAG it is necessary to master the bases of musical programming first. One of tasks of the given manual is to help you with it.

Not the computer makes everything instead the person, but the person implements his creative potential through the computer. The special cards for all songs form music database of radio station. All songs are divided in categories. Within the category songs form virtual working piles, which are rotated in conformity with the time grid created by the person. The person determines search-depth of songs in a pile for the computer; creates rules necessary for rotation of music material and places them according to priorities created by him. Thus the easier are these rules, the better and more in full radio record library is used for generation of a play-list.

Let us talk more detailed about it. MAG is the generator of play-lists providing some methods or opportunities for the control over rotation of music material. These methods can be conventionally sorted into two big groups: artistic characteristics of songs and "historical"-mathematical rules. First group allows carrying out the control over propagation of songs according to those artistic rules which you determine for them, for example: tempo, texture (density of music material), mood, etc. Second group of rules is based on the control of time of broadcasting of the song (at which minute of an hour, on which date) in relation to previous time when this song was on air.

During programming MAG follows the rules set by the person. Rules as though suggest to the system how to interpret either artistic characteristic of a composition or time of its previous broadcasting. For one run it examines the song according to each rule determined by turns depending on importance (priority) of this rule. Remember that above-stated priority is also determined by yourself.

Speaking about rules, we mean first of all separately taken system settings. For example, if to talk about the "mood", the program follows your instructions in definition of mood of separately taken songs in a mix. The "Mood" concerns the group of artistic characteristics (rules). If to talk about clock rotation the system analyzes the previous appearance of the song in the same hour, but yesterday, the day before yesterday, etc. and permits or does not permit broadcasting of this composition here and now (it depends on you). It is clear that the given rule concerns the group of "historical" rules.

Take into account, that all rules are very flexible. You can use them in absolutely another way comparing with how it is made by your colleagues. Observing suggested rules, you decide yourself whether you use them or not. Everything depends on basic principles of your work and tasks put before you.

However, we would like to warn too "zealous" musical editors. Irrespective of rich resources of suggested application, the theory recommends using reasonable number of rules. It is better not to complicate, but to simplify programming.

Everything is very logical. To make broadcasting more harmonious, it is necessary first of all to classify songs by their sound. The concept of sound includes style features of a song, its arrangement, instrumentation, texture, energy, tempo and a lot of other characteristics. If the records library is classified by a sound, there will be no necessity to apply numerous "artistic" rules while programming and it will be quite possible to use only "historical" rules determining rotation mathematics of songs of various categories on broadcasting. Once again we repeat: the less is a number of rules and the simpler are they, the more fully used is radio records library and the "sound" of your radio station is richer.

2.1 Beginning working with the application

The MAG configuration is a set of interface windows, allowing working with different functions of the program depending on necessity.

After opening the application we are in the first window.

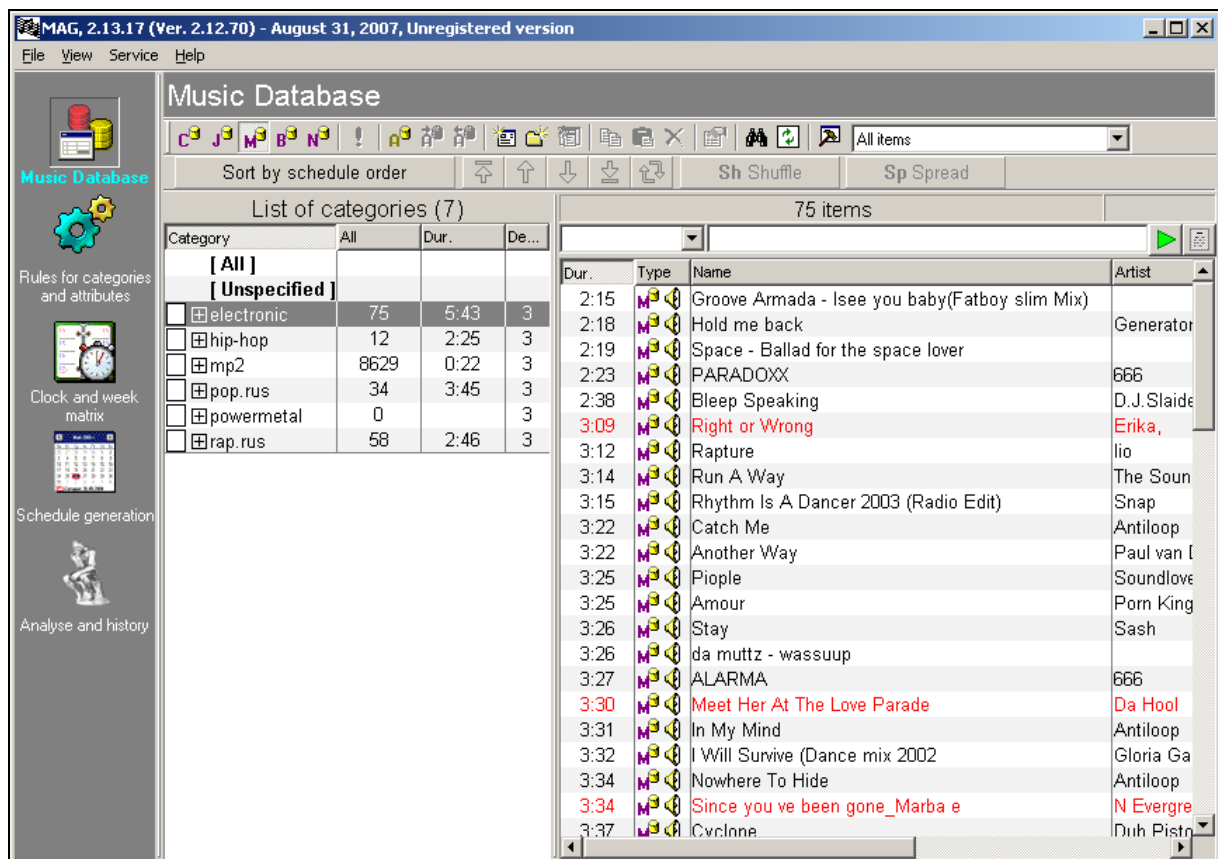


Fig.1. Main window of MAG application

In the top horizontal field of the main window you can see basic working menu points, which will be repeatedly referred to.

In the left vertical field the main push-button menu is located, which allows to pass from one functional program window into another. These windows are only five: **Music Database**, **Rules for categories and Attributes**, **Clock and week matrix**, **Schedule Generation** and **Analysis and history**.

Functional buttons are located in the central horizontal field.

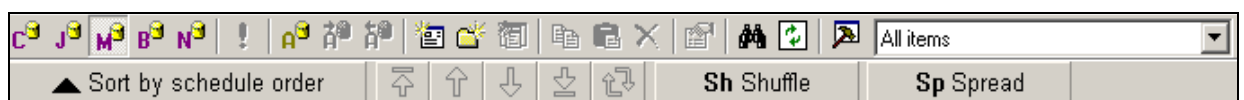


Fig.2. Functional buttons of MAG application

The first line features the following functional buttons:


- **C** – the folder "Commercials";
- **J** – "Jingles";
- **M** - "Music";

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- **B** – “Broadcasts”;
- **N** - "News";
- **!** – “Ready for broadcasting”;
- **A** - "Archive";
- **A** with an arrow to the right – “Into archive”;
- **A** with an arrow to the left - “From archive”;
- The picture with an asterisk – “Add new object”;
- The folder with an asterisk – “Add new category”;
- Small sheet on a big one – “Add new value of attribute”;
- Two sheets – “Copy to the clipboard”;
- Sheet on a case background – “Paste from the clipboard”;
- **X** - "Delete";
- A hand holding a sheet – “Object’s properties”;
- Binocular - "Search";
- Two green arrows "Update";
- Hammer - "Settings".

The second has:

- **Sort by schedule order** – ‘Line up audio tracks in the order of categories”;
- Arrow upwards resting against a line – “Move selected audio tracks to the beginning of the list”;
- Arrow upwards – “Move selected audio tracks one position closer to the beginning of the list”;
- Arrow downwards – “Move selected audio tracks one position closer to the end of the list”;
- Arrow downwards resting against a line – “Move selected audio tracks to the end of the list”;
- Two -shaped arrows – “Swap the selected audio tracks in the list”;
- **Sh (Shuffle)** – “Reshuffle the order of audio tracks”;
- **SP (Spread)** – “Evenly spread the order of audio tracks”.

The list of all categories is resulted in the left vertical column and the list of elements (songs and other components of broadcasting - commercials, jingles, broadcasts, news) - in the right column.

To add or remove fields necessary for work in lists of categories and elements, place the cursor of the mouse at the heading of the list and click right button. The window **List Customization** appears on the screen.

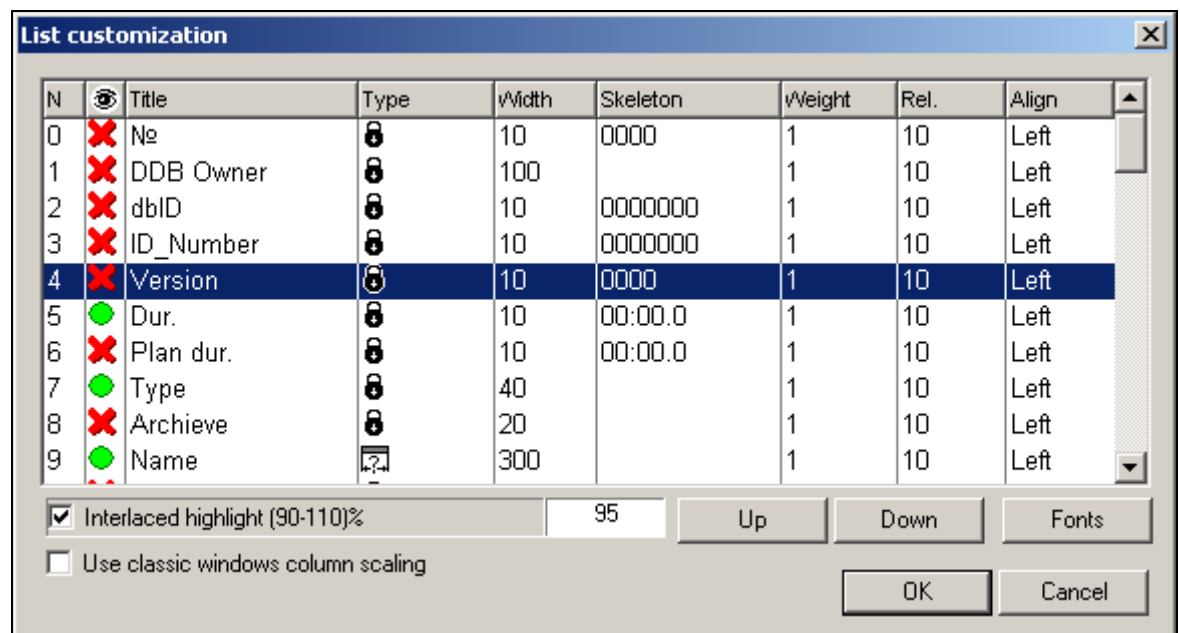


Fig.3. The List customization window

Second column in the given window allows switching on or off the needed fields. These and other functions are described in more details later in this manual.

2.2 Index Card

Before starting description of work directly with MAG, we would like to say some words about general principles of music programming as such. Despite of distinction of approaches, the basic laws remain constant already more than forty years. In their time they were defined on the basis of manual rotation system of a musical material "Index Card". The term "Index Card" was borrowed from library practice, when a corresponding card is set up for each book and then placed in one or another box depending on classification of the book. The same way was taken for setting up of card index of the songs reflecting records library of radio station. Thus a card was set up for each song. All cards were put in different boxes (or piles) depending on their category. The number of boxes corresponds to number of categories. This card index was located in radio studio. There was the clock greed scheme in front of the DJ reflecting the structure of an hour: order of broadcasting of categories, news, commercials, rubrics, etc. According to the clock the play-list was formed, i.e. those songs of corresponding categories which cards were at the top of a pile were selected. After airing the already played back card was moved to the bottom of the pile and became the last one. This was rotation in a circle. From here the word "rotation", i.e. "circulation", has appeared on radio. Depending on the size of categories songs were appearing on air with different rate and in different combination, creating illusion of variety and richness of radio station's records library.

There were own rules of musical material rotation on each radio station according to which these or those songs could not be played in some determined combinations, for example, the same artist existing in different categories, could appear on air every other song or one after another song at all. To avoid similar issues a presenter was enforced to take not only the first card in a pile, but also the second, the third, etc. i.e. the depth of search of a musical material was determined.

Theoretically the "Index Card" system seemed ideal, but its practical performance was not such cheerful. People are people, and everyone has his own weaknesses. Some presenters wishing to listen to their favorite song got deeper search-depth than allowed, breaking not only rotation rules, but generally the majority of rules determining the structure of the clock. There were cases when some "knights of broadcasting" simply destroyed

cards of unloved songs.

But even if DJs worked with observance of all instructions, some rules regulations often clashed with each other. In result the program left much to be desired, as the rules of rotation constantly became more complicated, and there were more and more rigid requirements to software product in conditions of tougher competition.

The card system has simply gradually become obsolete, because it was enough primitive and did not cope any more with the tasks put before it. Then its basic computer variants which began to work much better, without human problems or restrictions have been created. However don't think that computer programs could solve all questions. The person continues to play a determining role in creation of play-lists. The computer program is only the tool assisting to the person, and a basis of broadcasting, its structure, etc. is created first in a head, and only then brought into machine according to individual vision of the expert engaged in musical programming. It is the main element! To master MAG virtuously it is necessary first to acquire bases of musical programming. And I'll help you with a pleasure!

Not the computer makes everything instead of the person, but the person realizes his creative potential through the computer. There are also the cards for every song forming a database in a form of radio records library. All songs are divided into categories. Within the frames of a category songs form working virtual piles, which are rotated in conformity with the clock grid created by the person. The person determines the depth of search of songs in a pile for the computer; creates rules necessary for rotation of a musical material and places them according to priorities created by him. Thus the easier rules, the better and more in full radio records library is used for play-list generation.

Let us talk more detailed about it. MAG is the generator of play-lists providing some methods or opportunities for the control over rotation of music material. These methods can be conventionally sorted into two big groups: artistic characteristics of songs and "historical"-mathematical rules. First group allows carrying out the control over propagation of songs according to those artistic rules which you determine for them, for example: tempo, texture (density of music material), mood, etc. Second group of rules is based on the control of time of broadcasting of the song (at which minute of an hour, on which date) in relation to previous time when this song was on air.

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Everything is very logical. To make broadcasting more harmonious, it is necessary first of all to classify songs by their sound. The concept of sound includes style features of a song, its arrangement, instrumentation, texture, energy, tempo and a lot of other characteristics. If the records library is classified by a sound, there will be no necessity to apply numerous "artistic" rules while programming and it will be quite possible to use only "historical" rules determining rotation mathematics of songs of various categories on broadcasting. Once

again we repeat: the less is a number of rules and the simpler are they, the more fully used is radio records library and the "sound" of your radio station is richer.

2.3 Categories

I introduce here a new base concept - "category". To avoid a different interpretation, I suggest understanding as a category a group of songs united together on some one main principle. For example, dancing hits of 80th, slow songs, rock - ballads, compositions of the hottest rotation, etc. There can be any principles of uniting of songs in categories and giving names to categories. Only you determine them, proceeding from your own vision of broadcasting.

So, depending on a broadcasting format the radio records library of the radio station consists of one part or is divided into some parts: songs united in categories of so-called hot rotation (novelties, compositions of the current year), songs united into categories of usual rotation (last year's compositions), so-called "golden hits", and songs united into auxiliary (additional) categories (ballads, romances, compositions from movies' soundtracks, etc.). These parts are not always equivalent by their quantity, but often equivalent on an occupied broadcasting time and, hence, on their value.

In Contemporary Hit Radio formats (CHR) small on volume hot rotation (from 50 up to 100 compositions) occupies from 80 % up to 100 % (!) of air time. Of course in the last case the entire radio records library consists only of one part.

In Modern Music For Adults (AC) formats (adult contemporary) the ratio of hot and usual rotation changes from 30/70 up to 50/50, etc.

There are a lot of broadcasting schemes of categories of hot and usual rotation. Here, for example, one of them. If you are focused on an active audience younger than 35 years, there can be 5 categories in your rotation:

- **A-Heavy Current-** hottest hits;
- **C-Medium Current-** as a rule, new songs, coming in this category from *Light Current* and from *Heavy Current* categories;
- **B-Light Current (New)-** completely new songs added this week or on last week;
- **D-Re-Current-** former hot hits;
- **G-Gold-** golden smash hits, etc.

Here is one more scheme for "older friends", let say, after 35:

- **A-** hot hits (it is important that these are songs for the concrete grown-up, instead of for more younger audience);
- **C-** former hot hits (songs, which are from 4 about 8 months of issue);
- **G-** gold smash hits;
- **B-** ballads;
- **S-** slow love songs, etc.

There are a lot of variants. The main thing here is in the presence of a certain logic while forming of the list of categories.

To pass in a musical part of a database, press the button **M** on toolbar which means "music".



Then press the button **Add new category** . The window **New category creation** appears on a screen.

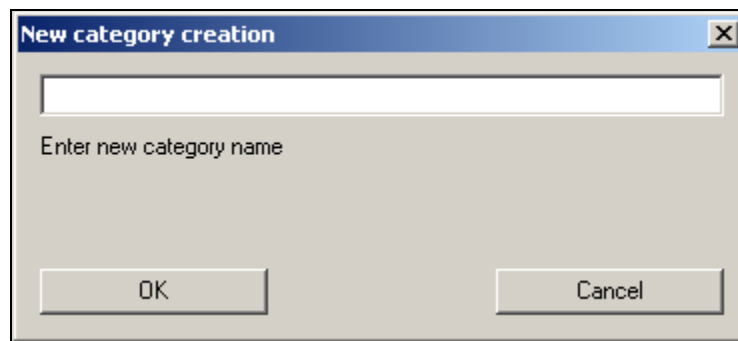
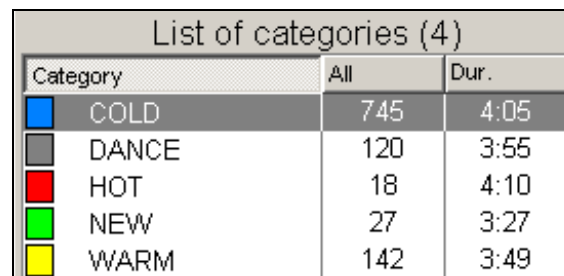


Fig.4. New category creation window

You have to enter the name of a new category, for example "HOT" – it will be a category of hot hits, and press OK. The new category "HOT" appears in the left column List of categories. You can also choose its color by double clicking on a small square, located to the left of the name of a category. Thus you can create so much categories, as you need, proceeding from your vision of the musical program, for example:








Category	All	Dur.
 COLD	745	4:05
 DANCE	120	3:55
 HOT	18	4:10
 NEW	27	3:27
 WARM	142	3:49

Fig..5. List of created categories

Folders **Jingles**, **News**, etc. are filled in the same way.

You can delete previously created categories with the help of the context menu opened by right button mouse click on the list of categories. Similarly with the help of the same-named commands you can **Add new subcategory**, **Print selected categories**, **Export selected categories to file**. Besides items of the context menu allow to expand the tree of viewed categories.

Let's note that at deleting of a category elements belonging to it are not erased but rather transferred to the category "Unspecified".

2.4 Filling in a card

After we have defined and created all necessary categories, we proceed directly to filling in song cards. It is possible to make it in two ways: by means of the **Add new object** button, located on the toolbar, or by adding several files to the chosen musical category simultaneously.

In the first case the **Properties** window is opened where you have to register all parameters of a created element. To use the second way, select the category in the **List of categories** where you are going to add new songs. Select **View - File browser** in the main menu.

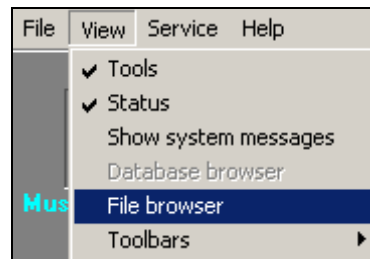


Fig..6. View - File browser command

The files window with address line appears on the screen. Select the location of already recorded music, for example:

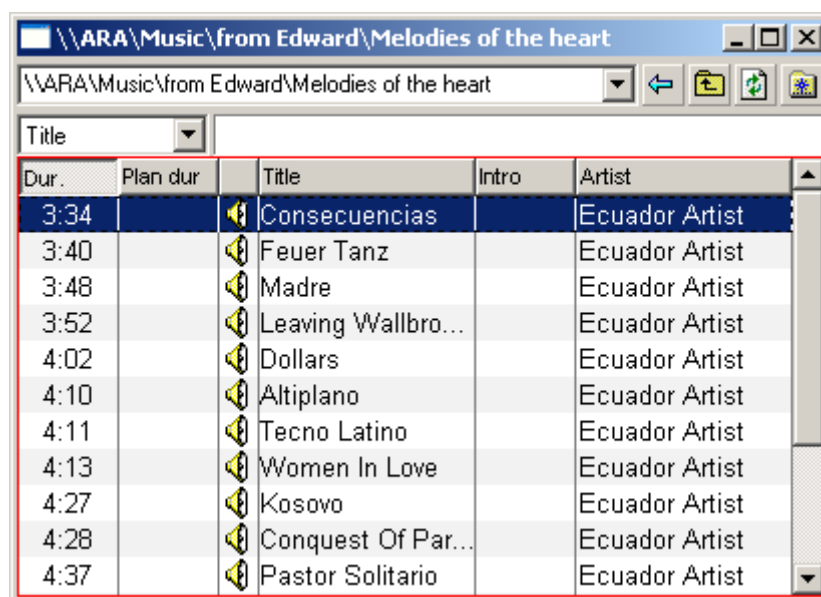


Fig..7. Window of files (File browser)

Mark the chosen song (or songs) and drag it with a mouse in a field with the list of category elements or directly on the name of category in the list of categories. This way allows adding several elements of category simultaneously what speeds up the process of creation of musical base.

The card is filled automatically. Thus the duration of composition is taken on the basis of file marking (see section "Marking").

Now it is necessary to "click" on the song itself to open the card. You can fill in properties of an element of the Musical database (Media Database).

2.4.1 Properties of an audio item

The first tab is the section **General**.

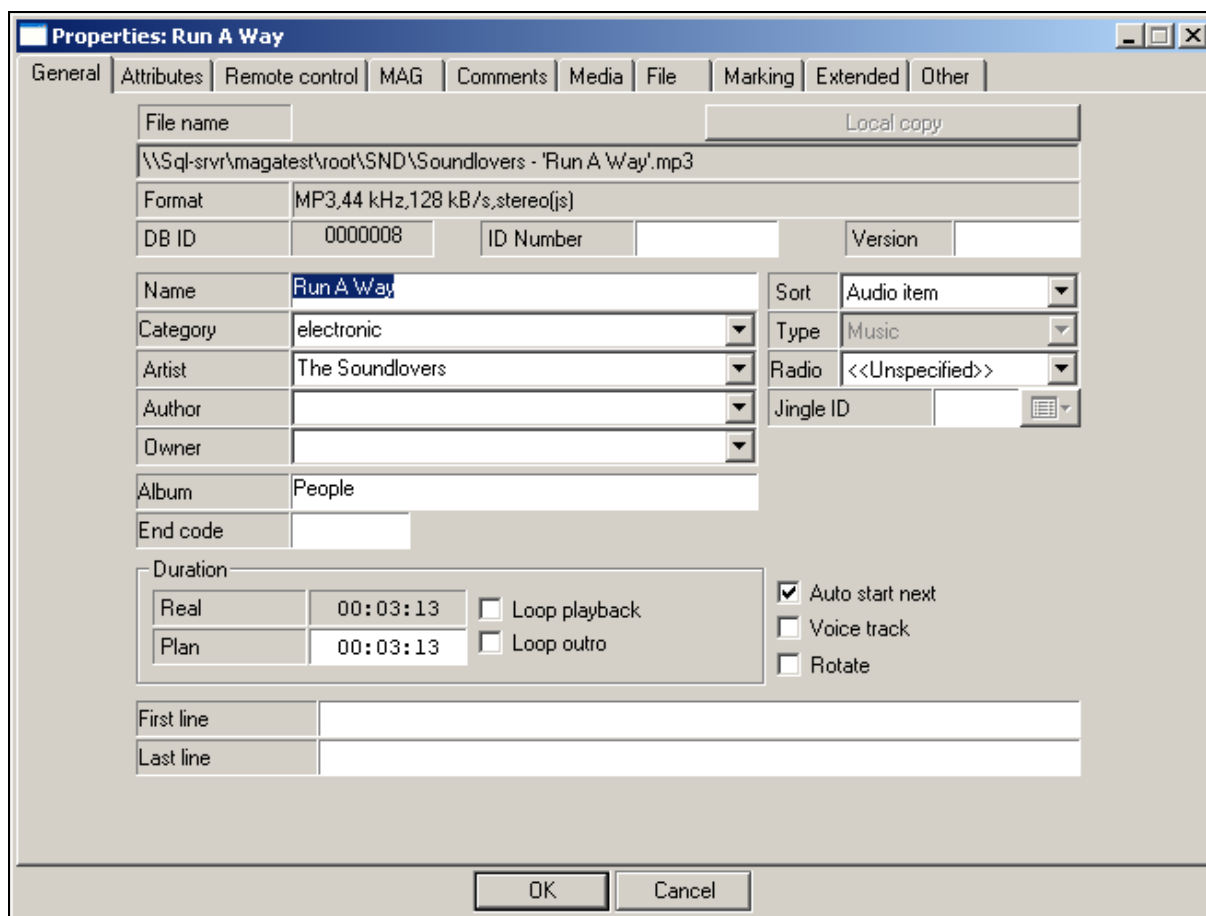


Fig.8. The Properties window. General tab

First three lines are File name, its location, its Format, if necessary, its identification number (ID Number) and Version, for example, No 123, version 3.

Further one after another there is the Name of the song which is possible to edit, and it happens more often that it is necessary to edit. Below there are Category and Artist. It is very important, that the artist is equally "registered" in cards of all songs, otherwise at a different interpretation the program will perceive him, as two (or more) different artists!

If the given artist there is already in data base, it is necessary to click on an arrow downwards in the given field. The list of artists appears from which is possible to choose required one.

The tab Attributes allows to look through and change values of the "user" attributes of an element of database, and also value of attribute Vocal.

After setting of the program on this tab for elements from the section Music and Jingles the only attribute Vocal will be present. This attribute allows specifying the sex of an artist of composition or type of performance. Predetermined values are:

- Male (Man's vocal);
- Female;
- Chorus;
- Duet;
- Instrumental - instrumental composition, without vocal.

If necessary you can create your own attributes with any set of values. It can be done from the DB settings window, on the tab **Attributes and their values**.

For attributes displayed on the given tab, special rules, named **Restrictions and limitations** for the XXXX attribute (xxxx - the name of the concrete attribute) are

created in the program. These rules allow limiting the number of elements going successively with identical value of attribute, maximum number of specified values in one hour and so on.

With the help of the tab **Remote control** is possible to create commands and attach them to the chosen elements of the schedule. For example, it is possible:

- To create command for switching on / off of an indicator panel (MIC ON) during operation of "Microphone insert" element of the schedule;
- To start the tape recorder for playing back at a pause inserted in the schedule and to provide thereby it's filling with an external source;
- To submit a command about switching over of retransmission router.

Besides options of the tab **Remote control** allows to implement many other things which require complex decision, technology and automation of radio station. Methods of physical implementation of command can be very different, but the main thing, that in the certain moment the certain command comes out of a serial port of broadcasting station which can be interpreted and transformed unequivocally in GPO or other form for performance of the planned action.

For more detailed information concerning opportunities of tabs **Attributes** and **Remote control** address to the DJin manual.

The fourth tab of the card describes different artistic characteristics of composition.

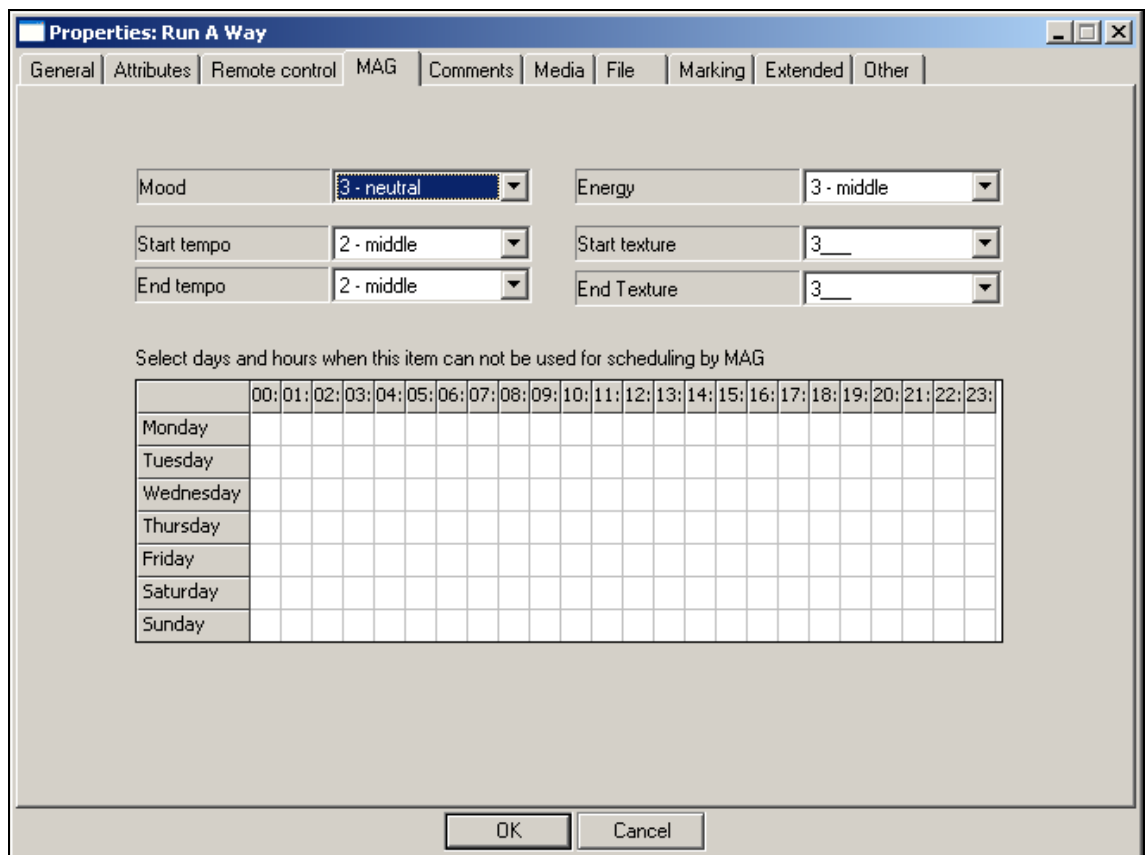


Fig.9. The **Properties** of an audio track window. Tab **MAG**

The first left line is **Mood**. It is emotional constituent of a song. The mood is estimated on a five-point scale.

Mood	3 - neutral
Start tempo	1 - very sad 2 - sad 3 - neutral
End tempo	4 - happy 5 - very happy

Fig.10. Mood of an audio track

The rule **Mood** is very flexible because criteria of estimation are individual. The second left line is **Start tempo**. Start tempo of composition is estimated on a three-point scale.

Start tempo	2 - middle
End tempo	1 - slow 2 - middle 3 - fast

Fig.11. Start tempo of an audio track

The third left line is **End tempo**. This characteristic is equivalent to **Start tempo**. The first right line is **Energy**. Energy has something similar with Mood, however, it is not the same.

Energy	3 - middle
Start texture	1 - very low 2 - low 3 - middle
End Texture	4 - high 5 - very high

Fig..12. Energy of an audio track

The composition can be very sad, but very much "energetic". First of all it concerns songs in "rock" style. And on the contrary cheerful "pop" song can be very "light" with enough low energy.

Usually while programming we choose one of these characteristics depending on format to which we orient. For example, in "rock" formats is more used **Energy**, and in "pop" is more likely used **Mood**.

One more important characteristic is **Start texture**. The texture is understood as "density" of a musical substance.

Start texture	3
End Texture	1 2 3 4 5
for scheduling by MAG	

Fig..13. Start texture of an audio track

For example, texture 1 – it can mean lonely voice, or lonely violin, flute, or another "silent" instrument, and texture 5 can mean a "roar" of rock group while sounding of final part of composition.

- Usually the **Start texture** and **End texture** of composition are marked.
- The End texture is similar to the Start texture.

The table resulted below designates restrictions of sounding of a song in this or that time interval. For example, some composition cannot be played in workdays from

7.00 till 9.00 inclusive. To make active this restriction, place the mouse cursor on the necessary cell and perform a click.

Select days and hours when this item can not be used for scheduling by MAG																								
	00:	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:
Monday								X	X	X														
Tuesday								X	X	X														
Wednesday								X	X	X														
Thursday								X	X	X														
Friday								X	X	X														
Saturday																								
Sunday																								

Fig..14. Table of time restrictions of sounding of audio tracks

The tab **Comments** allows to look through and edit the text comments concerning given audio track. Contents of the comment is absolutely free, it is determined only by desires of the user.

The tab **Media** allows setting all information concerning the media of a musical composition.

Options of the **File** tab allow user to clear / appoint / or change a name of the file which is associated with the given element of Music Database. Necessity of change of the file name can arise, for example, in following cases:

- The element is created in MDB without a file, and then the file appeared. And it is necessary to "bind" the file to element.
- The file associated with the given name is absent or inaccessible due to technical reasons - for example, it is deleted; there is no access to a file which is stored on another computer; the file is not found while importing.
- It is necessary simply to replace a file - for example, for an element "Morning" of a folder of "Station breaks". The difference between replacement of a file of element from removal of an element and subsequent addition of a new element is in the fact that at replacement of a file all descriptive information is kept (except for those which concerns directly to contents of an audio file: labels, playback levels).

The tab **Marking** allows to specify key points in the audio track: Start, Stop, Intro, Outro, etc. As a matter, the elementary audio editor is implemented on this tab, allowing to carry out a number of operations of non-destroying editing when no changes are brought in the content of digital audio. Non-destroying editing comes to programming of playback process of an audio file. Thus there are the following opportunities:

- To set those part of an audio track which will be really played back by a player when comes the time of playing back of block of the schedule to which this audio track belongs;
- To organize smooth increase of audio volume while playback in the beginning of the block (FadeIn);
- To organize smooth decrease of audio volume while playback in the end of the block (FadeOut);
- To change a playback level;
- To form labels of playback start of the next block and playback stop of the current block and also some other labels facilitating operator's work.

The tab **Other** contains groups of parameters describing the given element of data base, and parameters which are changed very seldom; they are collected on the tab **Extended**. For detailed information concerning elements of the interface of tabs **Comments**, **Media**, **File**, **Marking**, **Extended** and **Other** address to the DJin

manual.

2.5 Mix, non-musical event, clock hand and week grid

Radio-programming for a long time has turned into exact science, based on mathematical calculations. All stations, maybe, with rare exception, follow this or that mathematical formula in broadcasting of their program material including musical material. For development of this formula the program can be considered in different scales, i.e. as though from different "heights": it is possible to do it from the height of "hillock" of your working shift how some DJs frequently do it, or also from "mountain" height in the limits of a week or even a season as editors-in-chief and general producers of stations are obliged to look through. Let us stop on it in more detail.

2.5.1 Mix

The smallest measurement unit of air program is so called Mix or scarce term - Music Sweep. Mix (sweep) is understood as a sequence of songs between non-musical inserts (for example, between news and commercials). Usually mix does not exceed 15-20 minutes and includes 3-6 compositions (less often 1-2). In particular mix is the "image" of radio station determining its "color", i.e. contents of its musical component.

2.5.2 Clock

Following there is the main element: program hour grid or **Clock**. This is a basic element of air program, its main building block, a "brick", reflecting the image of radio station in its all completeness. Each of program elements - music, commercials, news, weather-reports, DJ's performance, etc. are strategically placed inside the clock with the purpose of keeping on dynamics of sound stream and optimization of influence on audience. Thus it is very important to keep balance and the certain order of songs of different categories.

Prior to start creating of clock, it is necessary to determine those categories of songs and other program elements which will be included in the concrete clock. For example, the clock which we conditionally name O1 is the basic clock No1. It will consist of 3 mixes of three songs in every mix, 3-minute news release and three commercial blocks of 3 minutes each.






Category	All	Dur.
 COLD	745	4:05
 DANCE	120	3:55
 HOT	18	4:10
 NEW	27	3:27
 WARM	142	3:49

Fig..15. Created categories

Usually at mentioned above order, there are 12-13 songs fitting in one hour. If we decide, that we have more smash hits in our program than songs of hot rotation, we get HOT - 2 broadcasts per hour, NEW - 2, WARM - 3, COLD - 4, DANCE-1. Now we have to prepare all non-musical elements which are present in clocks except for categories. We have 3 commercial blocks and one news block in our clock.

2.5.3 Non- musical event

Besides mixes there are also non-musical events in clocks; usually they are commercial and news blocks, but you can have also any other time interval which is

not filled with music. Inserting of non-musical event in clock reserves necessary time interval in it, and forces the program to generate the block of corresponding type in the resulting schedule.

Non-musical events are added in clock from the list of non-musical events. Initially the list is empty, you have to create yourself all necessary events for your clock. To create non-musical event open the tab **Non music**. Let's create needed events starting with news. Press the button **Add**, located in the bottom of the list. The standard window of block of the schedule properties (**block properties**) of the CAPS 2 system will be opened. It occurs because non-musical event at forming of the resulting schedule turns into the separate block of the schedule. Key parameters of the block are selected with Bold font in this window:

Fig..16. Non-musical event News

- **Start time fixed** - allows setting predetermined start time of non-musical event. For the case, when there is no need to fix event rigidly in time, there

is a flag “count automatically” which allows creating non-musical event which is not bound to time. For such event the airing time is calculated by the program proceeding from its position in clock. By default the program suggests to create in particular such non-bound to time non-musical events.

- **Duration** is a planned duration of event which is used for calculation of clock timing.
- Specify some name of the block in the top field **Name** which will be displayed in the list of non-musical events, in clock and in resulting schedule.

Let's set the following parameters:

- Type - N (news),
- Name - News,
- Duration - 3 minutes, and let's set the flag **Count Automatically**.

If necessary we can set any other parameters of the block which in result will get in the air schedule. For deeper acquaintance with block properties and their influence on process of playback of the schedule we recommend to address to the complete manual of the CAPS 2 system. Press the **OK** button. The newly created event appears in the list of non-musical events.

Repeat the given operation, and create 3 commercial blocks, they will differ one from

another only by their names - Commercial 1, Commercial 2 and Commercial 3. The example

of the list with the created non-musical events is resulted in the figure 17 .



	Music	Jingles	Non music	Commands
	Time		Title	Dur.
Folder icon			Commercial 1	03:00
Folder icon			Commercial 2	03:00
Folder icon			Commercial 3	03:00
Folder icon			News	03:00

Fig..17. Created non-musical events

2.5.4 Forming of clock

Let us generate a clock using previously prepared elements. We start with creation of a new clock. For this purpose click the mouse on the mentioned below icon.

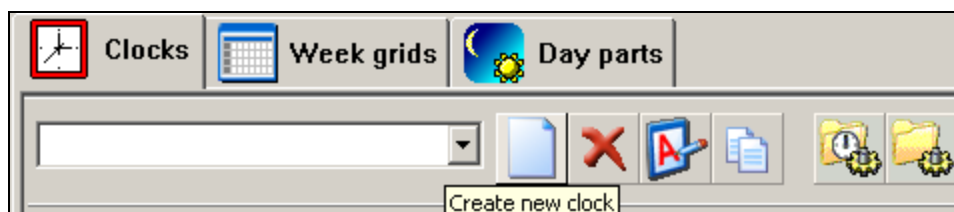


Fig..18. Create new clock

In the result the new window appears on the screen, allowing to give a name to the new clock. Let us name it, for example, O1 (the basic first clock). By clicking OK we confirm this action. Now we start "to assemble" the clock. Click **Non music** tab in the left window and drag the non-musical news event, created earlier, to the right window displaying contents of the clock. Pay attention that dragged element is inserted in the resulting list prior to selected one, to add an element in the end of the list you have to drop it on an empty place below the last element. If necessary, the order of elements in clock can be changed by moving them with a mouse.

Now let us switch over to the **Music** tab and collect the first mix consisting from 3 categories by dragging necessary categories. Essentially important point at forming of clock is the order of following of categories in mixes and, perhaps, most important thing - what categories will be placed in the position “opener”. Opener is the first song of a mix representing the image of radio station and being its “face”. Pay attention to this!

Similarly we place commercial blocks and collect 3 other mixes.

The example of the formed clock is resulted in figure **Fig.19**.

Technically the clock usually starts not with the song, but rather with the identification jingle (ID jingle), further usually follow the news (thus the news, as a rule, consist of three elements: introductory jingle, musical background or bed, final jingle) and only then a song. Let us bring elements necessary for us into just created block. For this purpose first open the floating database window, selecting **View-> Database browser** in the main menu of the program.

Drag the necessary jingle, for example, beginning of the clock 1, from the DB window to the window of clock contents.

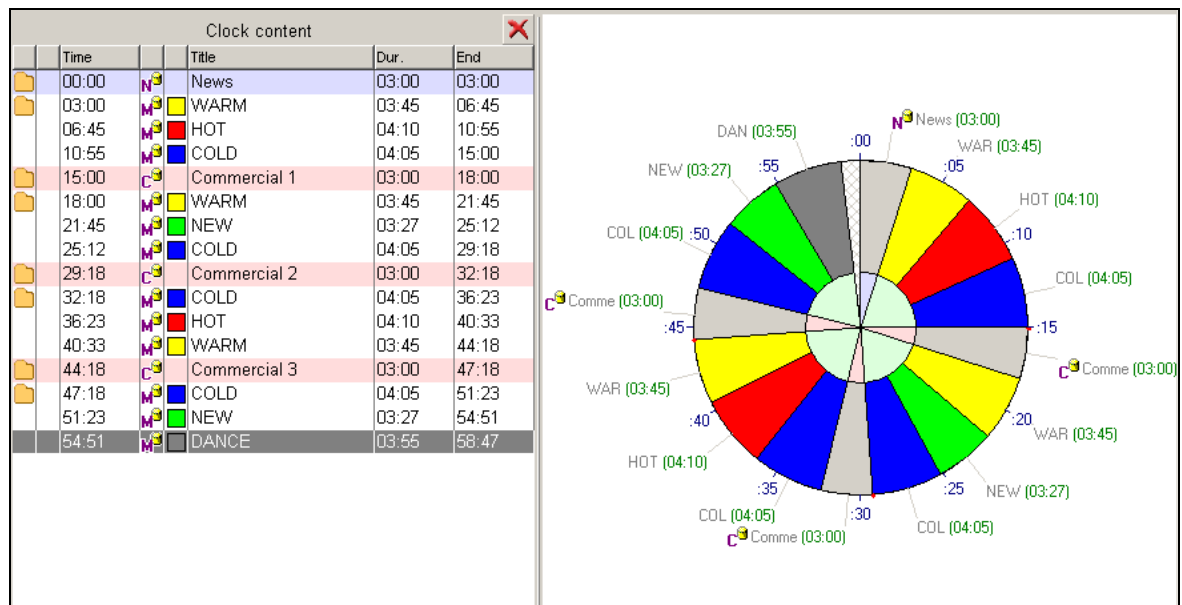


Fig.19. Created Clock

In the result we get the following picture:

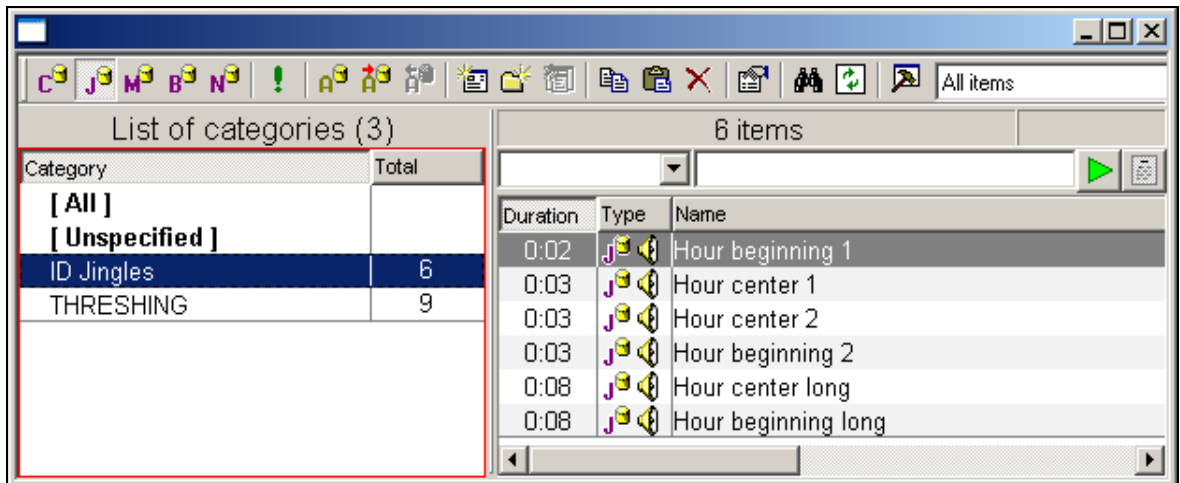


Fig..20. Adding of a jingle in clock

Note, that similarly you can add audio tracks from any categories of MDB in a clock. Some more words about jingles. These airing elements can be either inserted manually

already at a stage of "live" broadcasting, or to be programmed together with music. We have already seen above how the so-called "obligatory" or "formal" jingles are being programmed ("clothes" of news, different rubrics, etc.). Common or "artistic" jingles are programmed

by an insert of this category between songs. Let us place categories of jingles in clock to the necessary positions by dragging them from the list on the **Jingles** tab. Thus we completely finish formation of one hour clock, the example of result of work is shown on fig. .21.

Total "average" time-keeping of clock is 59 minutes and 30 seconds. The real generated schedule will be either little more than an hour or little less, depending on durations of real audio tracks.

More often several clocks are used for creation of more flexible program. Also the so-called working special clocks which are the copies of the basic clock are created, but they include the certain events taking place just in this hour this day of week, for example, a rubric or interactive insert, etc.

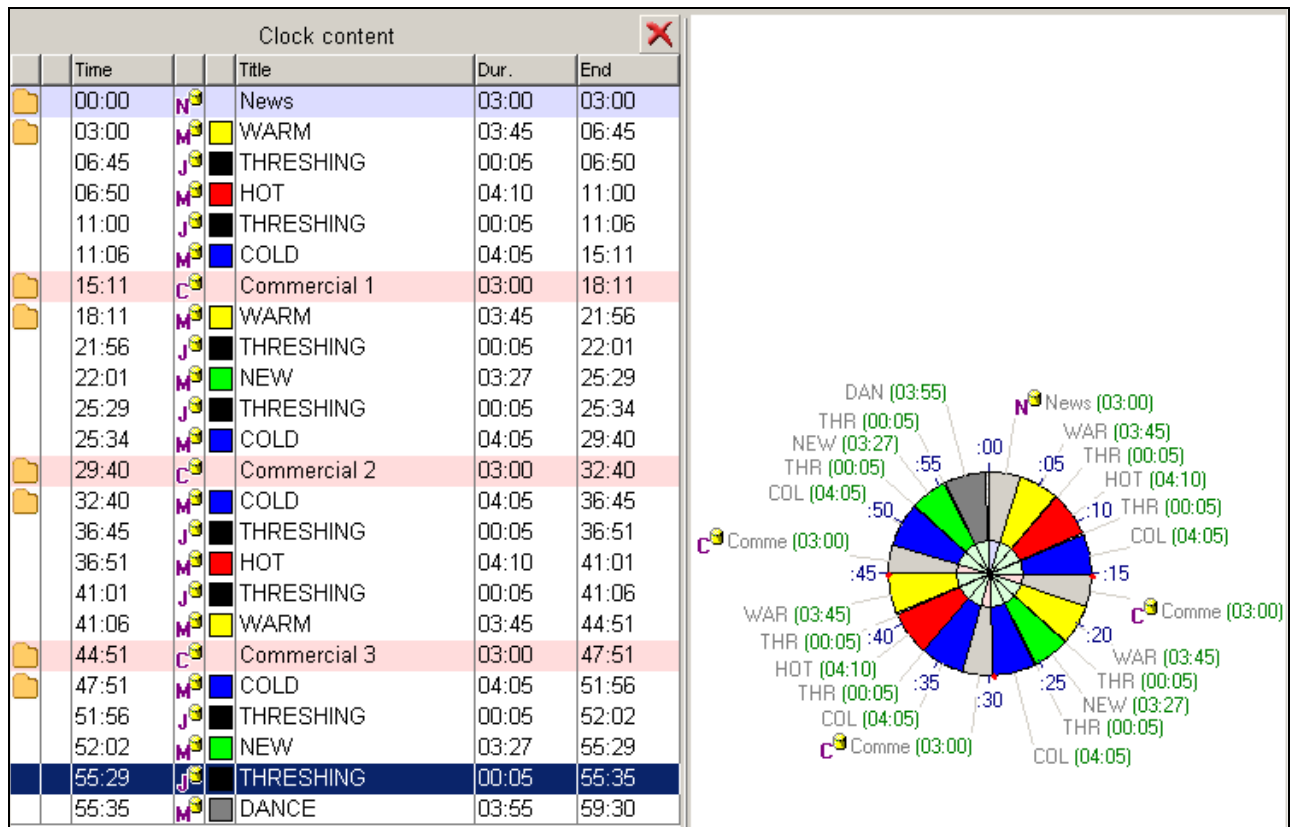


Fig..21. Ready clock

2.5.5 Week grid

The week grid is necessary for placing of created hourly clocks within the limits of a week pattern. In the air program you can have several week grids, but only one of them marked as active week grid is used. For creation of the grid open the tab **Week grid**.

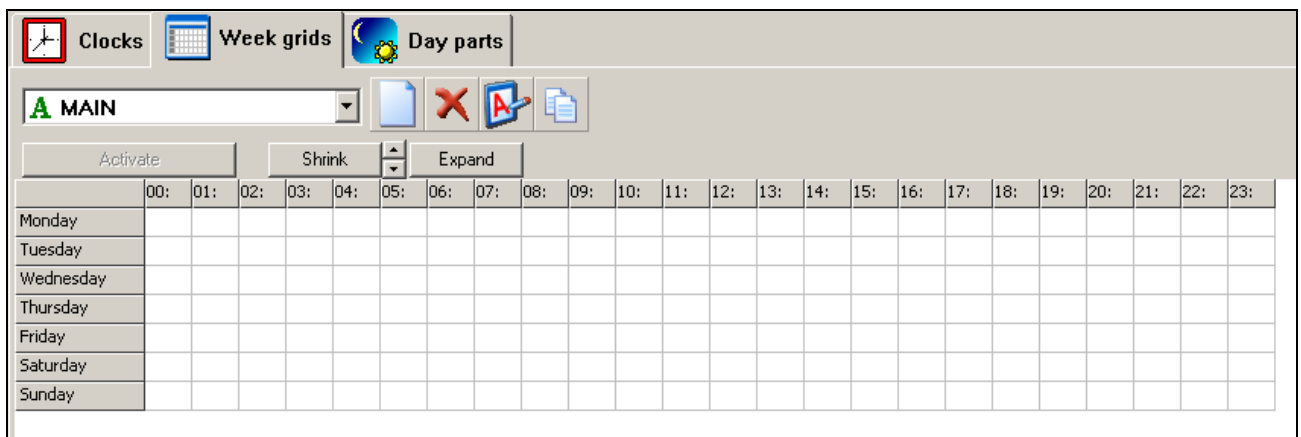



Fig.22. Tab **Week grid** of the **Clock** and **week matrix** window

For creation of a new grid press the button  and specify the name of a new grid,

for example, MAIN. The first created grid automatically becomes active. The active grid is indicated by letter A in the list of grids: 

Assignment of clocks to cells of a grid is carried out as follows: first, select the necessary cells. Selecting of cells is possible in two ways:

- By pressing of the left mouse key on any cell, except for active (it is outlined by a thick frame) and "expanding" of zone of selection by moving the mouse;
- By the keyboard, expanding a zone of selecting by keys "upwards", "downwards", "to the left", "to the right" with pressed **Shift** key.

After that open the context menu by the right key click and select the command **Set clock to selected hours** from it.

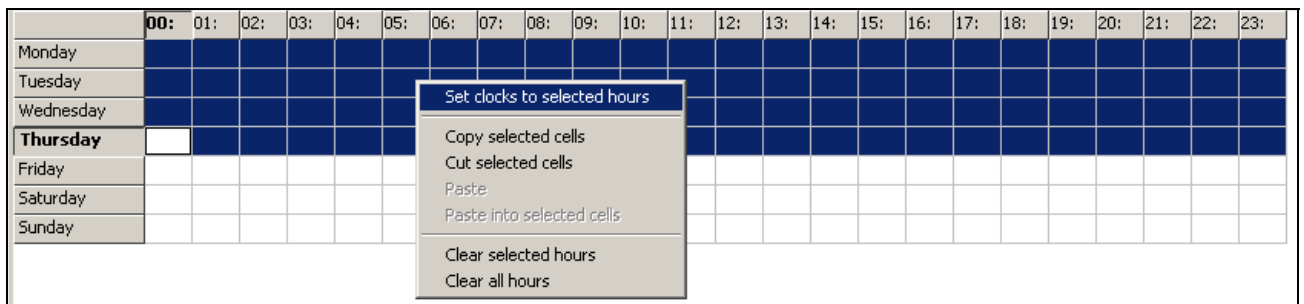


Fig.23. Selecting of cells and assignment of clock

In the opened list choose a clock which will be placed on selected cells. In our case you have to select all cells of the grid (it can be made by pressing **Ctrl+A**, and to choose our clock O1 for all hours.

2.5.6 Day parts

One more important element which allows distributing songs in day-long parts more regularly is a special grid **Day parts**.

It allows breaking the day up into more functional blocks. It can be 4 blocks - morning, day, evening, and night or 8 blocks - early morning, late morning, first half of day, second half of day, early evening, late evening, first half of night, second half of night.

They are marked by figures in the week grid (1,2,3,4) and used at assignment of a rule "Number of plays before placing to same daypart"» (see section 2.6.4).

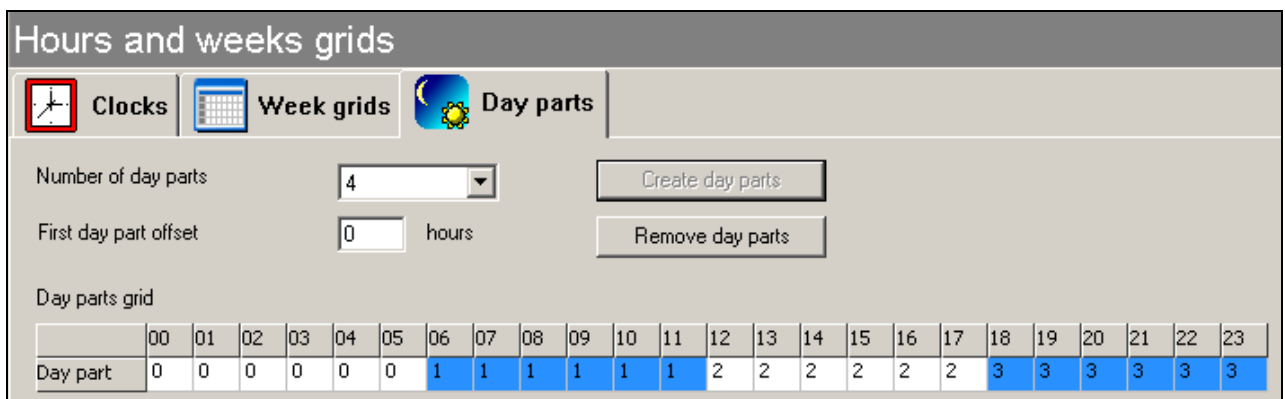


Fig.24. Day parts

To create day parts you have to choose required number of intervals in the list

Number

of day parts and to press **Create day parts** button. If necessary you can specify a shift of the first day part. In this case the first interval will start not from the beginning of the day, but on specified number of hours later. To remove day parts press the **Remove day parts** button.

Note, that times of day are used only in a rule **Number of plays before placing to same daypart**. Use of this rule and creation of day parts are not obligatory.

2.6 Configuring the program

2.6.1 Plot numbers

Cards are filled, songs are distributed on categories, clocks and week grids are created. Further it is necessary to set priorities in the order of programming of categories. The matter is that MAG is filling clocks not in one run, but in several runs. And for one run it programs only one category. If we give a palm of supremacy to categories of hot rotation, what happens more often because they are the most important and smallest in sizes, they should be programmed the first. Programming function in MAG is called **Plot numbers**. To get access to this function open menu **Rules for categories and attributes** and press the **Plot numbers** button. In the result the **Plot numbers editor** window appears on the screen.

Now with the help of mouse cursor place categories in such order, in which you are going to program them and “cut off” auxiliary categories, which do not participate in ordinary linear programming, with a double dotted line.

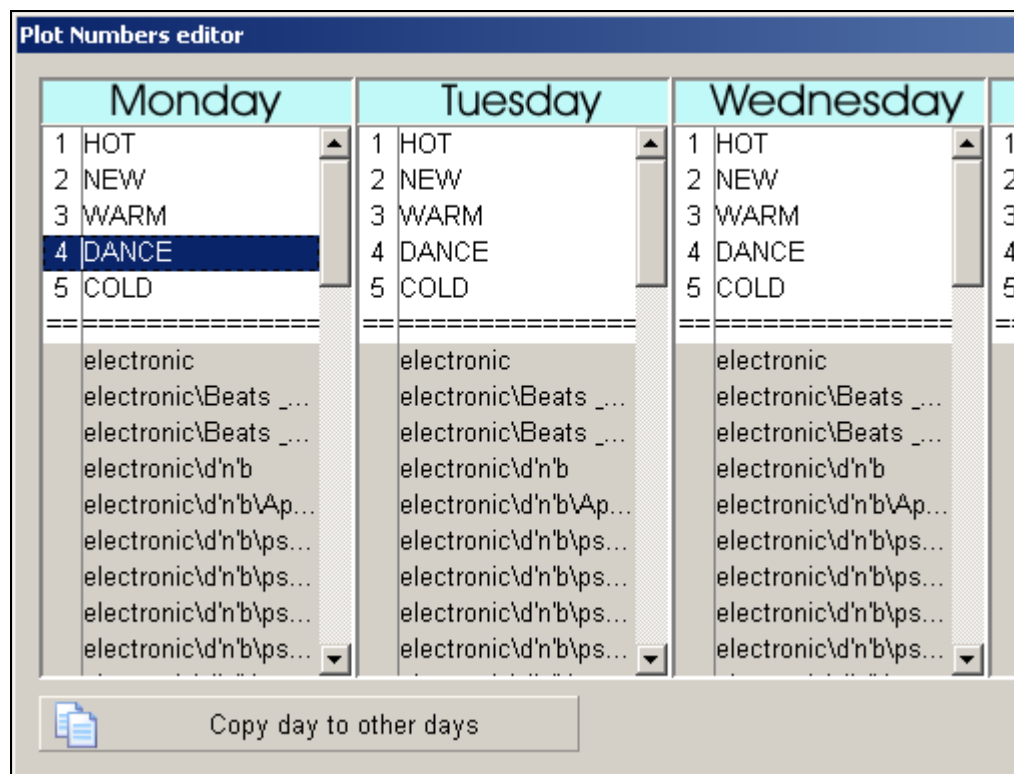


Fig.25. Plot number editor

If you decide to keep the order of programming identical in all week-days, you have to press the **Copy rules** button. If you want to program some certain week-days in a different order (for example, other categories), than in every week-day the above-stated order is determined individually and manually.

We see, that the first for a day forward the category "HOT" (the hottest hits) is programmed, after goes "NEW" category (candidates to hits). The last goes "COLD" category. It is fundamentally important, because this category is the biggest one (there is an opportunity to choose) and due to it MAG solves artistic questions.

2.6.2 Search Depth

Now we will determine the search depth. We came to very important point. Generator of play-lists gives us the opportunity of definition of search-depth by number of songs above a pile. By default, the search depth of 5 elements for all categories is set in the program. Search-depth is displayed in a column **Depth** in all windows displaying the lists of categories. But it is possible to change it only in the window **Rules for categories and attributes**. For setting of search-depth of a concrete category select it in the list, press the right key of the mouse and choose the **Search depth** item from the context menu. In the opened window enter required search-depth.

In categories of hot rotation we usually use this parameter equal to 1. Thus, we force the machine to put obligatory only the first next song from a pile and we guarantee harmonious and full presence in broadcasting of entire category.

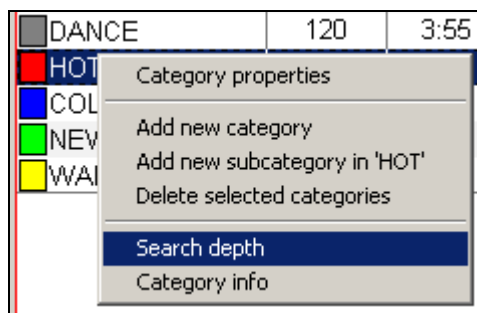


Fig.26. Setting of search-depth

In "gold" categories we will use the bigger number. It means that if, for example, we have 745 songs in a category, MAG can easily select the necessary song from 10-15 compositions which are taking place in the top part of a pile if the radio record library is balanced. And it is quite enough!

At correct selection of the record library 15 songs are quite enough for machine to make correct choice adequate to all necessary criteria.

2.6.3 Rules of rotation

Here we will set the direct rules of rotation of musical material and artistic rules. Let us consider them in more details on the example of the next table regulating mathematical (mechanical) restrictive and artistic rules of broadcasting of songs.

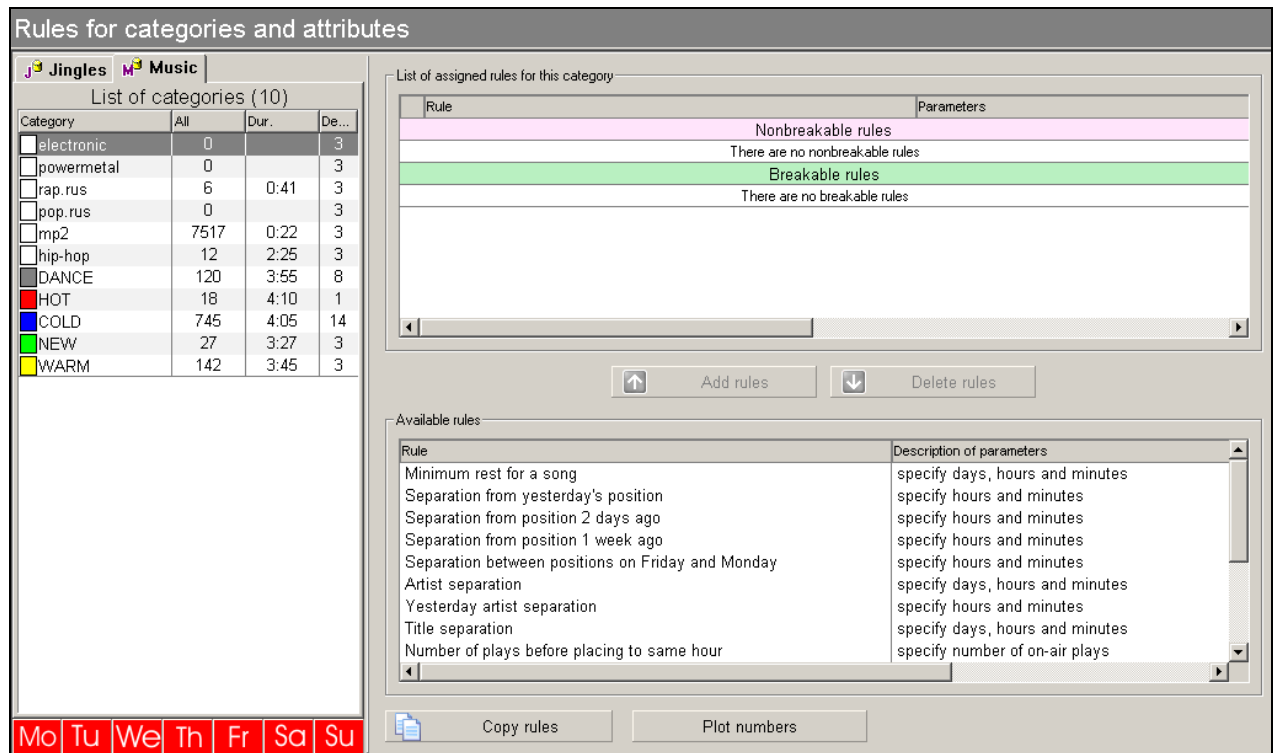


Fig.27. The window of **Rules for categories and attributes**

All rules of programming (generating) of categories can be divided into two big groups: nonbreakable and breakable. If the rule gets in nonbreakable category it becomes absolute and firm, i.e. at programming of the schedule the computer cannot break it under any circumstances. If the computer has no choice, it leaves a line of the song blank. There is a positive moment in the given fact. It allows determining errors in "settings" of rules.

If we determine the rule as relative, or soft, we send it in the group "breakable". By that we are telling to computer: "Try also to take into account these rules at programming. And, well, if it will be impossible for you at all, you can break it slightly".

If in the group "nonbreakable" the position of rules one relatively another does not play any role, in the group "breakable" the higher is the rule in the list, the more important it is and more priority it has. The last usually are the softest rules and restrictions.

2.6.4 Mathematical rules of rotation

The first rule is **Minimum rest for a song**. It determines the minimal time interval during which the song cannot be broadcasted, i.e. you may set the value less than this one, but you are not allowed to set it more! This time interval is calculated as follow.

In our case there are 745 songs in category COLD. There are 4 positions COLD in every clock. There are 24 hours in a day, i.e. 96 positions. To divide 745 songs : by 96 positions = 7, 76 day, i.e. 7 days, 18 hours and 14 minutes. Now deduct a number of songs readable for the search-depth from this category. If the search-depth is 14 songs it will make $745 - 14 = 731$.

Now with the help of the same simple mathematical manipulations let's calculate an average time of rotation of songs without 14 compositions readable for the search-depth.

In result we get approximately 7 days and 15 hours. It just will be in our case the time of minimal rest for songs for COLD category.

If we decide to use this rule (it is absolutely non-obligatory!), we mark it in the bottom field, then with the help of the mouse or with the help of the **Add rules** window we move it in the top field. Thus there is one more window of value of a rule appears where we set the required value (in our case 7 days and 15 hours) and confirm our decision by pressing OK.

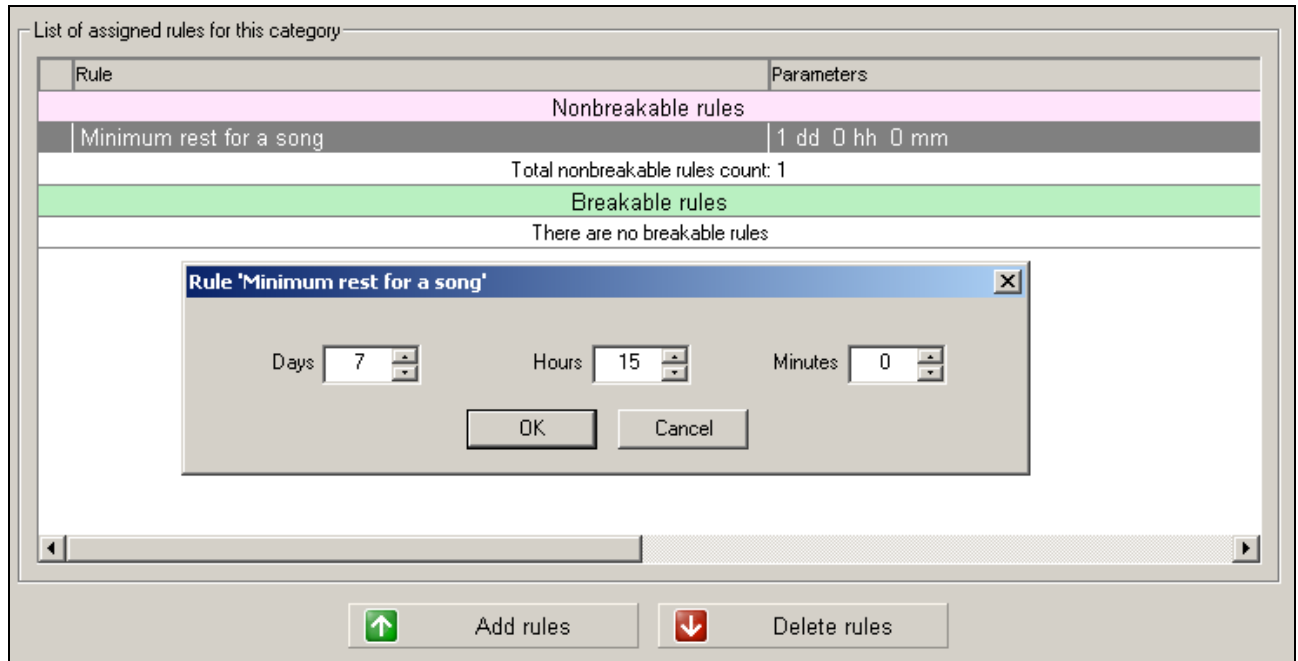


Fig.28. The rule “Minimal rest for a song”

To change parameters of already added rule, select it in the list and double click it. Now the rule is programmed and adjusted and we can go further.

The next rule is the **Separation from yesterday's position**. As well as the previous rule, it is used for compositions of “gold hits” and similar categories. We assume that an average listener usually switches on radio in certain time of a day (each of them in his own time). If categories are small and rotations are frequent he can get on the same composition at the same time every day. To avoid this we will use above-stated rule **Separation from yesterday's position**. This value is determined taking in account the average time of continuous listening to radio at once, and this time in each city differs from another cities. Let us suppose that in your city a person continuously listens to radio at once for about one hour. To avoid a situation when he gets on the same song twice for two days in the same time, we “drag” an interval taking in account the small addition of 35 minutes. We get 1 hour and 10 minutes.

Separation from position 2 days ago is a similar rule, but of the day before yesterday. It is set and activated similarly to previous rule.

Separation from position 1 week ago is a rule similar to previous two rules and existing for those who listens to the radio, for example, only on the days off or once a week at such condition that rate of rotation of songs in this or that category is 3,5 or 7 days.

And one more rule from this group: **Separations between positions on Friday and Monday**. It exists for those who listens radio on weekdays without Saturday and Sunday at such condition that rate of rotation of songs in the programmed category is 3 days.

Artist separation is the only rule which is set with the same value for all categories of songs performed in one language, for example, Russian-speaking, English-speaking songs, etc. because the same artist can be found both in categories of hot

rotation and in “gold hits”.

Rate of airing of the same artist is determined proceeding from opportunities of radio record library and average time of continuous listening. It is different in each concrete case.

Yesterday artist separation is a similar rule only with a difference that it concerns yesterday. For example, if the singer N sounded yesterday at 16.40, today in case of value of this parameter of 1 hour we will not hear him from 15.40 until 17.40.

The rule **Title separation** regulates the rate of airing, for example, the same version of the song but performed by different singers.

Sometimes at a dense rotation the same song can get into the same hour. To avoid it, there is a rule **Number of plays before placing to the same hour**. It means, how many times the song should be played back in any other hours to appear in the same hour again.

But there are certain "hidden dangers" here. If not to limit time during which this rule will operate the computer sooner or later refuses to program according to this rule.

To avoid it we enter a special restrictive rule **Number of days to check**. Depending on a format of radio station this rule can change from 3-4 days to 3 weeks. The more songs of the “gold hits” category are in radio record library, the more is the value of this rule.

The next rule, **Number of plays before placing to the same day part**, is absolutely similar; simply here we deal with larger unit, such as time of the day (morning, day, evening, night). Daily radio grid is divided into 4 blocks of 6 hours or even more finely, for example, on 8 blocks of 3 hours, named them as early morning, later morning, first half of day, second half of day, etc. (the order of division of the day to a “time of the day” is described in section 2.5.6). And just this line regulates the getting of the song in the same interval only when it appears in other daily intervals so many times how many times you specify in setting of the rule.

2.6.5 Artistic rules of rotation

Now some words about artistic rules.

One of them is the rule of mood of songs **Average mood for 3 or 5 songs**, determined on a five-ball scale.

The rule has two important "settings": **Maximum in a row** and **Maximum step**. The first rule designates how many songs of the same mood we admit in a row. The second – which of the values, more or less comparing with given one, is allowed regarding the song around which the others are programmed.

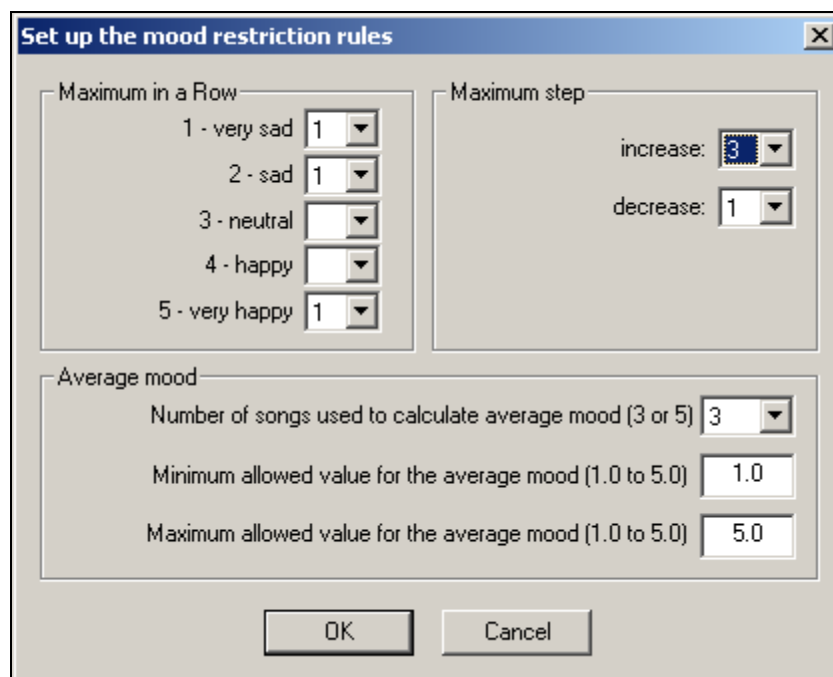


Fig..29. The window **Step up the mood restriction rules**

If the first rule is clear enough, the second one requires certain explanations. This rule regulates smoothness of a mix on mood, proceeding from analysis of three songs one after another. For example, if we program a song with the mood 4 first, it means, that the generator of play-list will not put close to it a song lower on its mood, than 3, i.e. it can put a song with the mood 3, 4 and 5, but not 1 and 2. Similarly this function works towards increases of mood inside a mix. Thus it is important to take into account the following factor: the rule works only inside a mix under condition of direct mix of songs, i.e. without jingles. If there is a necessity to program through jingles they cannot be given of a mood.

Note that there is no necessity to specify values for all variants of moods for group **Maximum in a row**. It is necessary to specify only those situations which should not appear in the resulting schedule. On an example (.29) the program does not allow to put in a row two sad or very cheerful compositions. This setting will not influence compositions with other mood.

The group of parameters **Average mood** allows limiting change of mood of the neighbor elements with an alternative way. This way allows to calculate average value for 3 or 5 neighbor compositions and to limit the maximal and minimal value of average. Correspondingly if the checked composition deduces average value of mood out of the specified range it breaks the given rule.

The second rule similar to previous one is **Average energy for 3 songs**. The only difference is that energy and mood are noncoincident concepts. To avoid a jumble we recommend using either one or another rule. Usually **Mood** is used in various "pop" formats, and **Energy** in "rock".

Some more artistic rules determining a structure of a mix will be described below.
Restrictions and limitations for "Vocal" attribute

The window below shows the example of setting of a rule on vocal (female, male, duet, chorus, instrumental). To avoid uniformity, the songs are usually divided into the songs with an identical vocal. For example, it is not recommended to program two female or two choral vocals one after another.

Fig. 30 shows the rule set for: it is forbidden to play back one after another 2 and more compositions with a choral vocal. Besides, there cannot be more than two compositions with such vocal in one clock. Thus if there are 2 compositions in one clock they cannot be closer

to each other in time, than 15 minutes.

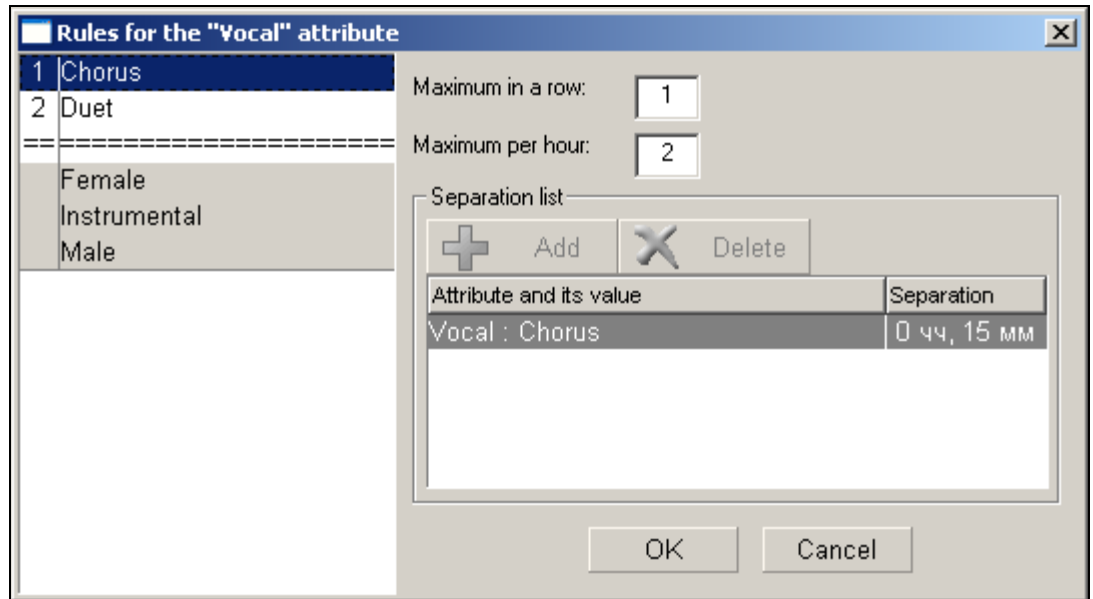


Fig.30. Restrictions and limitations for "Vocal" attribute

For attribute Duet some settings are also done, you can review them selecting a line with the name of attribute into the left list. Other variants of vocal do not get under the action of this rule; they are separated with the dotted double line in the list and are not active.

Note that the rules **Restrictions and limitations for XXXX attribute** will appear automatically in the list of rules of MAG program for each new attribute created by the user. Thus, you can add in the system new artistic rules based on your own attributes. More details about creation and editing of user attributes are given in the full manual of CAPS 2.

Restrictions of transition on tempo allow avoiding monotony in a mix. For example, to avoid a failure on tempo we recommend not to put the slow beginning after the fast ending. The question is, certainly, about those cases when you program air without jingles.

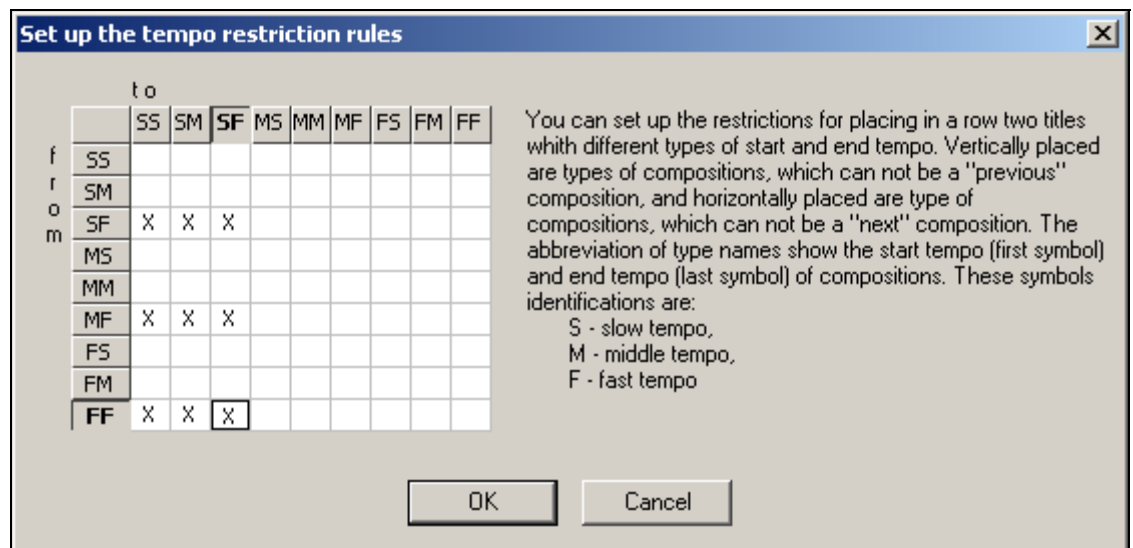


Fig..31. The window Set up the tempo restriction rules

Similarly works the **Restrictions by texture** rule.

And, finally, here we have the last rule **Restrictions for items using by day time**. Restrictions are set in a card of every song in the MAG window. Here they are only activated.

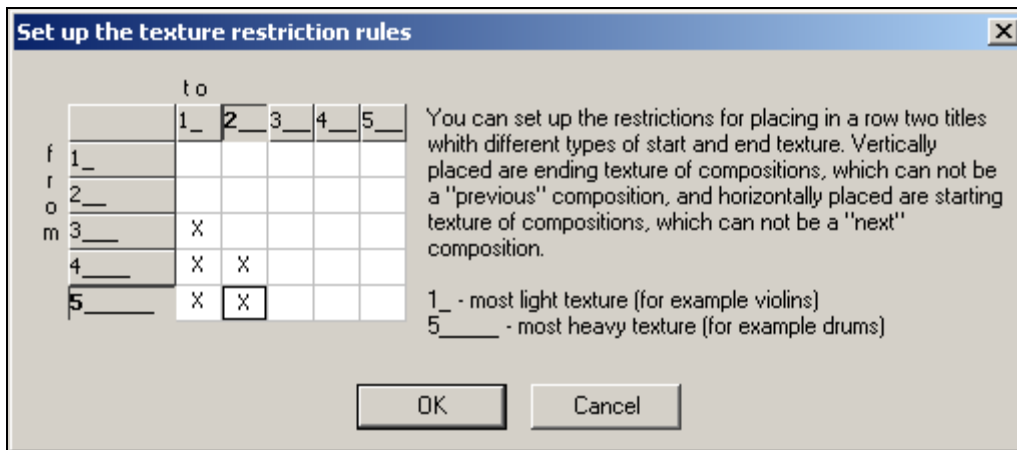


Fig.32. The window **Set up the texture restriction rules**

2.6.6 Remarks on using of rotation rules

In conclusion, some comments to the general rules of programming.

At making of the list of rules of programming, and first of all of artistic rules, it is very important to set up priorities which determine the general picture of broadcasting.

Prior entering rules for certain categories, it is necessary to answer to one very important question: "If for some reasons I have to refuse use from some rule what rule I would reject the first? And the second? And the third?"

In the process of programming and manual editing of play-list excess rules which are quite possible to be omitted will begin "to appear". However, if the rule is the last in the list of priorities, it does not mean at all, that it is not important. It means that concerning other important rules it is simply the last in the list.

Remember, that importance of rules is also determined depending on priority of category and the order of its programming. For example, the rule **Tempo** is possible to apply only in categories which are programmed at last when hot rotation already presents in a play-list. In any case remember, that rules of a mix (**Tempo**, **Texture**, **Mood**, etc.) are absolutely not important for categories which are programmed at first. The generator of play-list simply doesn't notice them. The matter is that when the songs of categories worth to be in the head of the list of priorities are programmed, they simply do not have opportunity "to clash" with compositions from other categories for a simple reason, that the last are simply not placed in a play-list yet.

In order to achieve situation when songs inside hot rotation categories do not conflict first of all because of the **Artist separations** rule, it is necessary to adhere to a principle of presence of only one song of the certain artist in all these categories.

If we bring changes in clocks or change the number of songs in categories, especially in "hot" categories, or enter significant number of songs in the "gold hit" category, frequently creating the new general spirit of radio record library, it is necessary to reconsider all rules of rotation, not only artistic, but also mathematical. Speaking about rules it is necessary to remember, that there are no obligatory universal rules for everybody. Your radio station differs from other just by the fact that you can have your own ideas about organization of broadcasting and what is important and what is not important. Generators of play-lists are set individually by

every person engaged in making and editing. However, some remarks on this topic. First, it is recommended to use "iron" or non-breakable rules for resolving of questions which you count essentially important. It will be better, if during automatic programming the play-list generator throws a song away, leaving the certain position not programmed, and you will know that there are serious miscalculations, than to break vitally important rules. Simultaneously it is necessary to avoid temptation to transform all rules into non-breakable.

A lot of non-programmed positions in a play list show that there are important defects: either radio record library does not correspond to set tasks, or the same rules in different categories are initially determined on the base of different criteria, or you have simply determined rules in song's metadata incorrectly. In any case non-programmed positions indicate a serious mistake. If you are able to make analysis, you will easily cope with a situation. It is much better, than to agree blindly and powerlessly with defective programming. If there is a serious conflict, only you can solve it. The computer is not able to do it.

Second, while manual editing of play-list pay special attention to possible violation of rules at selection of equivalent of songs. Analyze a situation. Perhaps, it is quite enough to make a rule "softer" or to increase search-depth while automatic programming to some points. Do not neglect fine details. Your self-estimation and professionalism will start to grow, as soon as you feel, that you can solve complicated questions more easily.

Thirdly, we strongly recommend using all accessible tools of analysis. You are expected by a lot of interesting discoveries. Pay special attention to a history of broadcasting of separately taken songs and separately taken artists. It could tell you very much about. There can be so, that a selection of a record library is fine, but the record library is unbalanced on artists (there are no packages) or there are banal mistakes in a spelling of a name of the same artist, but in different songs metadata cards.

Fourthly, before the first programming, after carrying out of large-scale work with a radio record library, and also regularly once a week from Friday to Saturday (or, at worst, once per two weeks) before programming of a play-list for tomorrow mix (Sh) "gold hits" categories (but not hot rotation categories!). Thus the structure of a pile will change, what allows avoiding block effect and, as a result, guessing of playing the same songs by audience. In the days off people listen to radio at another time in comparison with working days, therefore nobody will notice small failures in programming on Saturday.

Fifthly, at introduction of new songs in a category of hot rotation obligatory put them in a pile on a place of those songs which you move up to other categories. It allows to keep the order of rotation of old songs in a category and to avoid their possible repetition in the same time next day.

Sixthly, previous experience shows, that at observance of all sound rules of forming of a radio record library, its balance due to packing on artist inside the categories, competently counted number of songs in categories and categories in clocks it is quite enough to use only one "historical" rule - minimal time of airing of the same artist and one art rule - no more than two female vocals one after another. The computer will work as watches, and a play-list will caress hearing.

And now comes the final statement. Of course, adjustment of the play-list generator to all mathematical rules of programming as well as skilful use of artistic rules is very important. However, with all this the keystone to success is the competent selection of a record library with observance of «principle of hits» and harmonicity of sounding of a program. Only "pearls" should be played on air and you should always remember about it.

2.7 Creation and editing of play-lists

2.7.1 Generating of a play-list

After all above mentioned configuration steps are made safely, you can start generating and editing of play-lists.

However, it is necessary to arrange radio record library in working condition first. For this purpose press the **Sort by schedule order** button on the **Music Database** page in "gold hit" categories and bring categories in position before generating. Cursorily overlook the order of songs before programming and remove manually (drag apart) close located songs of the same artists or press the button **Sh (Shuffle)** or **Sp (Spread)**, in order to make more deep arrangement inside a category in an automatic mode. We'd like to warn you from doing this too often. It is quite enough to do it once a week. **Shuffle** - changes the order of generating of audio tracks in a random way, and **Spread** - distributes audio tracks in such way that the distance between audio tracks with the same artist will be, whenever possible, maximal. Thus the program tries to keep the current sequence of audio tracks, making the minimal changes in order of generating. After initial forming of categories it is necessary to execute the **Shuffle** function, and then **Spread** since otherwise audio tracks will be programmed in the same order in which they were added to a DB (most likely, grouped by the artist). Note that this function is carried out for all categories selected in the **List of categories** window.

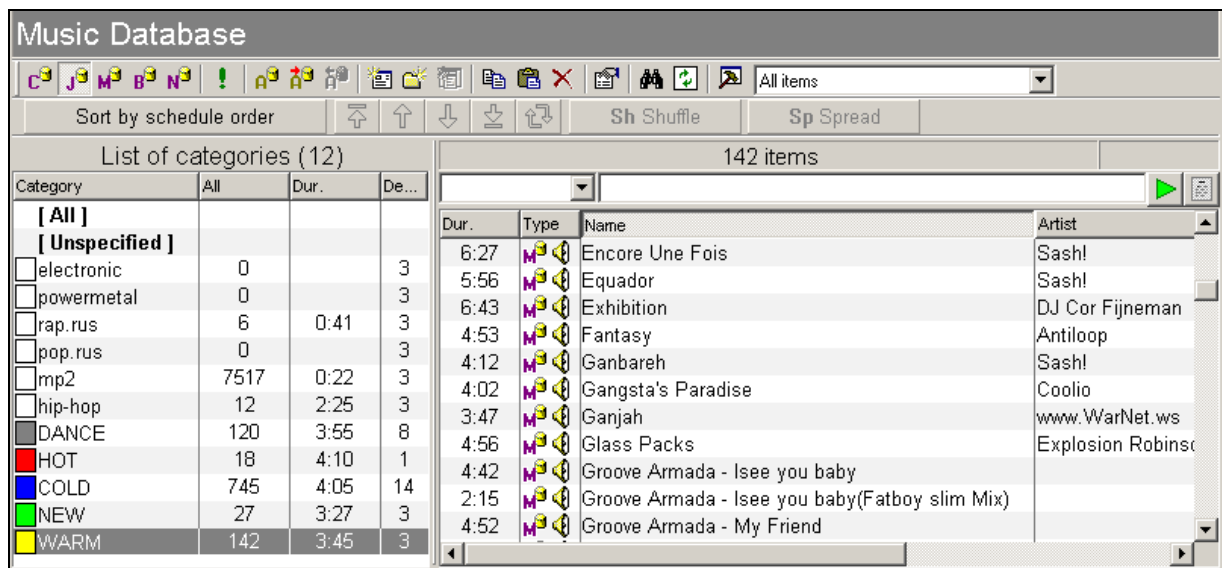


Fig.33. Music Database window

Now we pass to the following page - **Schedule generation**, by pressing corresponding button in the leftmost list.

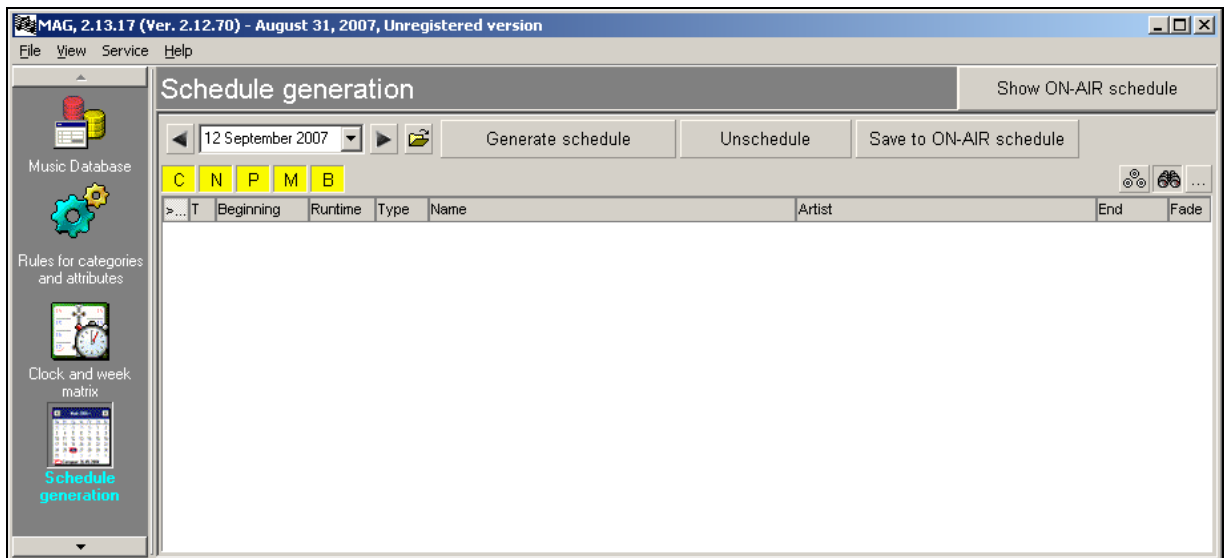


Fig.34. Schedule generation window

First you have to select a date with the help of the date selection panel in the top left part of the window. Besides the date can be selected with the help of the button



. Thus opens the window with the list of dates and a condition of the schedule for corresponding date. The example of the window is resulted on fig. 35.

To generate a schedule for the chosen date press the **Schedule generation** button (fig. 33). Deleting of the existing schedule is performed by pressing of the **Unschedule** button. Note, that schedules are generated and deleted consistently; it means that it is impossible to generate first the schedule on 2d date, and only then on the first date. Before starting of schedule generating the application checks the presence of schedules on later dates than the generated one. In case of their presence it will be offered to delete them and only after that the process of schedule generating starts. The function of deleting of the schedule works similarly - all schedules, beginning from the current date and further in the future will be deleted.

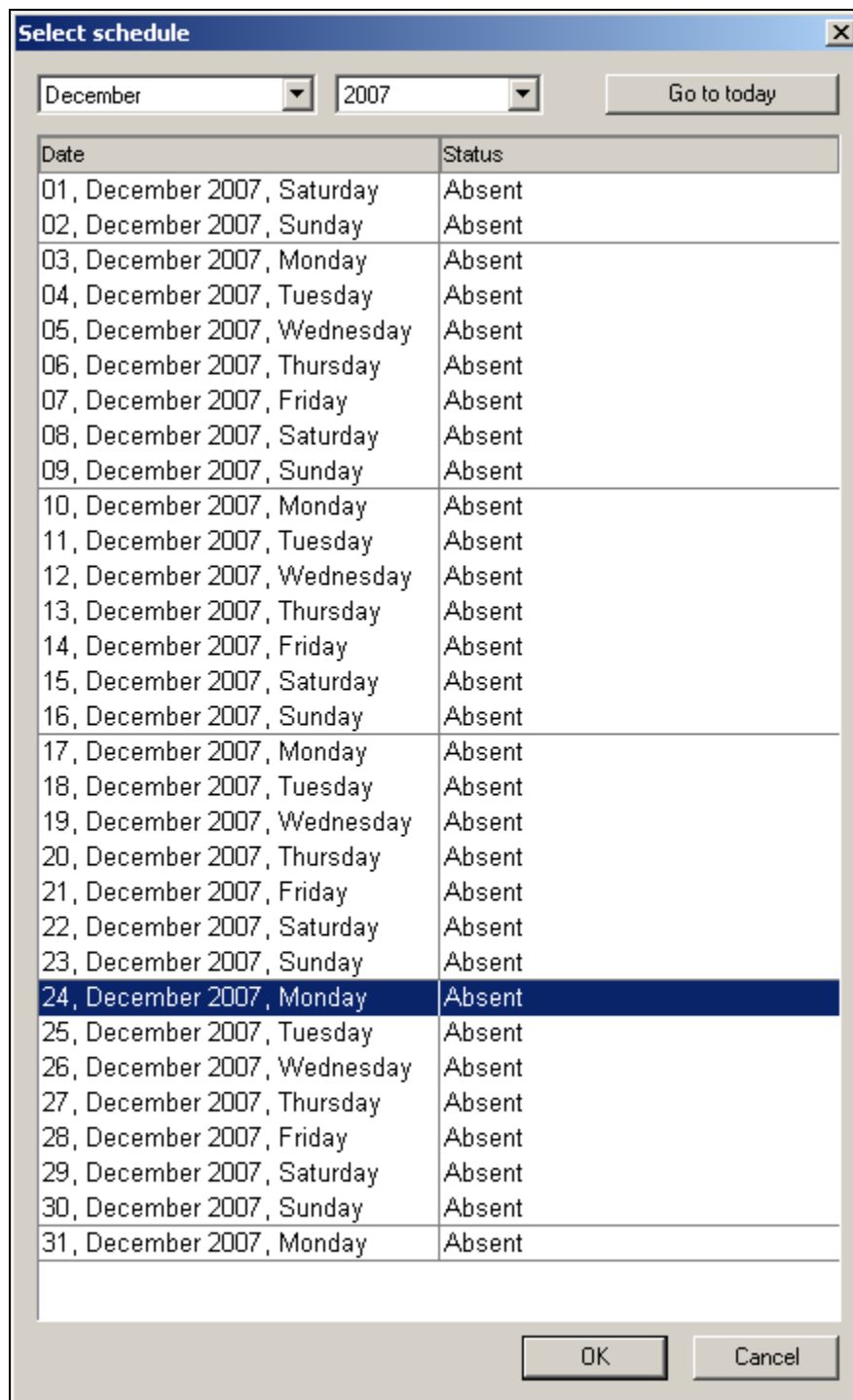


Fig.35. Select schedule window

Note, that if you have generated the schedule, and then removed it, the order of generating of elements of all categories will be returned in the condition in which they had been prior to the start of generating of deleted schedules. Repeated generation without change of parameters of rules and so on gives the result identical to removed schedule.

After pressing the **Schedule generation** button, the window of log with showing percent of performance and number of generated elements appears on the screen; positions for which the program could not pick up suitable audio tracks are also shown. After finishing of generating of the schedule in case if the program cannot pick up an audio track for some positions, the list containing a history of selection of elements on these positions with the indication of tested elements and rules broken

by them will be displayed. If necessary you can overlook entire log of the schedule generation by pressing of the button **Show all logs**. The example of the window of log with generation errors is shown on fig. .36.

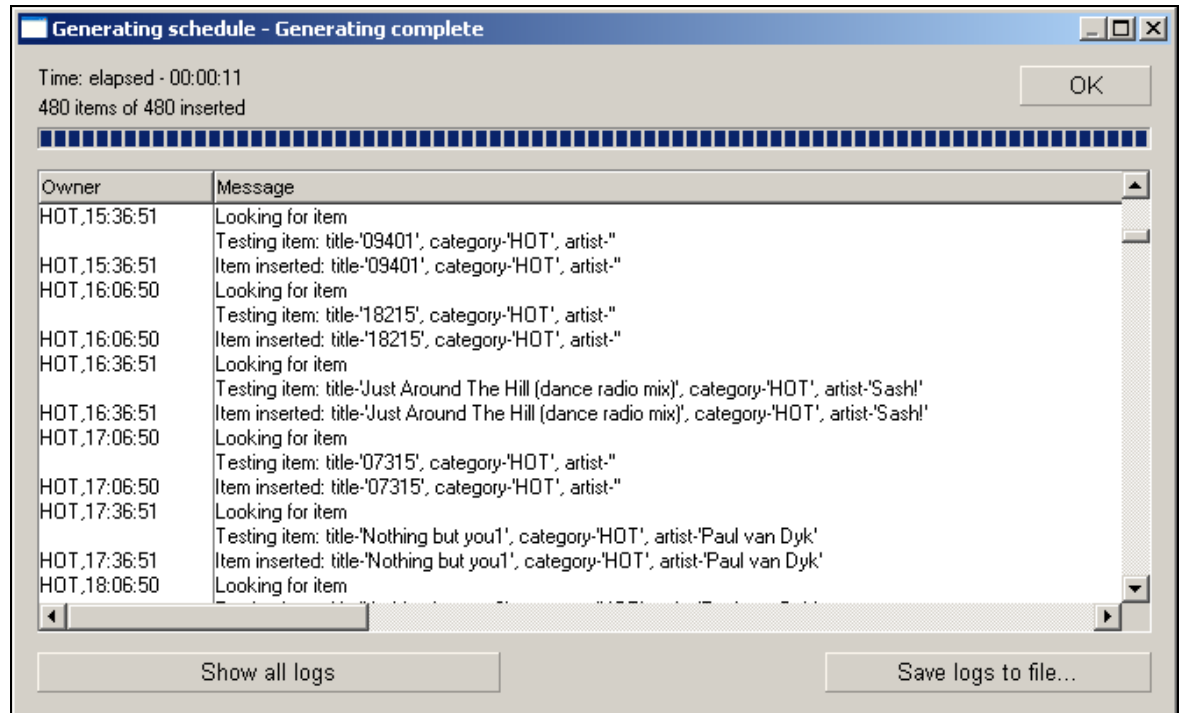


Fig..36. The window of log of the schedule generation

After finishing of the process, generated schedule will be displayed in the list. Note that appearance of the schedule: displayed columns and the order of following can be changed. For this purpose you have to open a window of settings of the list by clicking of the right key of the mouse on heading of the list and to make necessary changes.

2.7.2 Manual editing of play-list

Some recommendations on the current topic. First, before editing a clock pay attention to its time-keeping and clarify yourself whether it is necessary to fit it to 60 minutes or not.

Second, never touch songs from categories of hot rotation while editing. At the worst it is possible to move a composition on one position upwards or downwards. Thirdly if there is a necessity to change a song in a clock (to fit its time-keeping, to change energy of a mix, etc.), change only one song and only of the “gold” category.

Fourthly, pay attention to “image” positions in clock (openers). If computer puts obviously uninteresting song from the point of view of energy or image after a commercial, swap it with more worthy song of the same category, but don't make anything more! If you are using songs of hot rotation categories as openers it is not necessary to touch anything.

Fifthly, after editing of clock overlook songs. Try "to hear", how your mixes sound, how much they are harmonious. If you don't remember some composition by heart, or cannot see how it will be mixed in an audio scale, take advantage of a special option (see the figure below - an option **PFL crossfade**).

And the last: interfere with your hands in what is already done by the play-lists generator as little as possible. If program is correctly configured, the computer will

not give you a pleasure to bring a lot of editorial corrections.

For editing you have some opportunities: to delete a song, to add a song, to replace a song. It is done first of all to bring the real time of clock to 60 minutes. Thus it is desirable, that total time more likely exceeds 60 minutes, than it is less. Total time of a clock is specified at the very bottom on a grey dividing strip, time of ending of blocks is underlined in the right column **End**.

By pressing the right button of the mouse a context menu appears. There are standard for the system CAPS 2 editing functions of the schedule in it, but except for them there are some of them, specific for the MAG program. Let us look at them in more details.

Schedule item - allows adding one more element from the specified category to the schedule. The program first suggests selecting a category, and then some elements from the chosen category taking in account order of their programming and violation of the rules set for the given category.

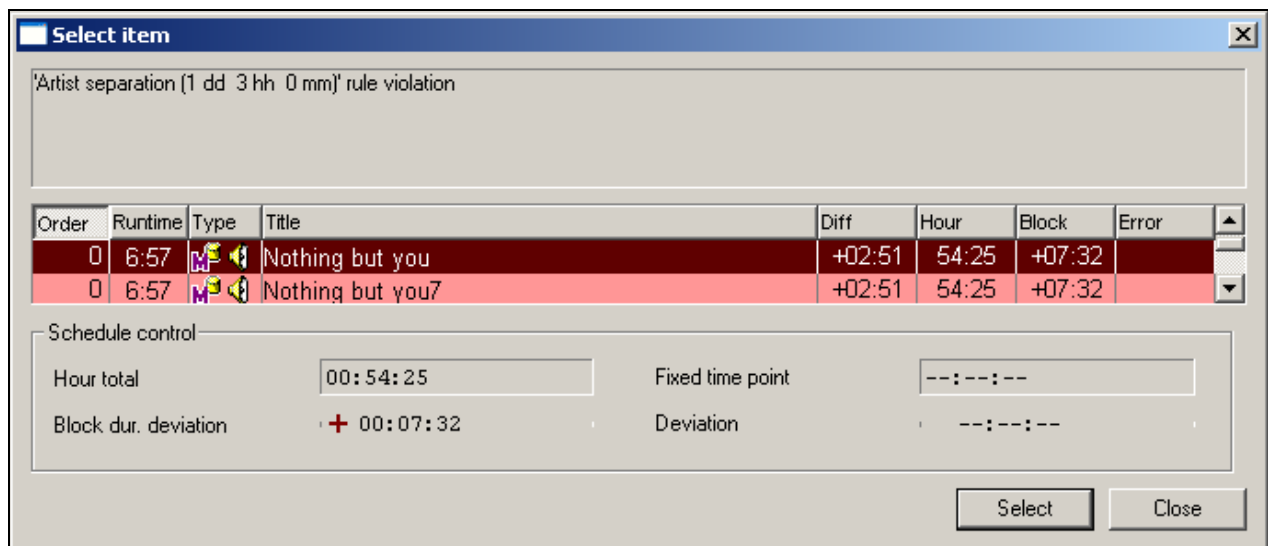


Fig.37. Select item window

The number of suggested elements corresponds to the search-depth. This number can be changed by specifying it in the window of program settings by selecting from the main menu **Service-> MAG Settings**. Value is set in the parameter **Number of testing alternate item**; 0 - according to search-depth for the given category; otherwise specified number of elements is checked. Various time characteristics are specified in columns to the right peculiar in case of replacement to the clock, to the block, etc.

Selected audio track becomes the last in the order of programming in its category.

- **Unschedule item** - removes appointed soundtrack from the specified position, but does not delete a position. It can be required at manual editing of fragment of the schedule. Removed audio track becomes the first in the order of programming in its category.
- **Remove item** – is similar to previous one, but with removal of a position.
- **Check rules** - allows looking, how the rules appointed to the corresponding category are carried out for a checked element.
- **Show variants** - the program will suggest variants for replacement of the current audio track similarly to the **Schedule Item** command. In case if this command is used for the filled position the replaced audio track becomes the first in the order of programming in its category, and chosen alternative audio track – the last. This command can be also used for filling of free positions resulted, for example, by the command **Remove Item**.

- **Show history** - opens a window in which the history of airing of an audio track for some period is displayed.

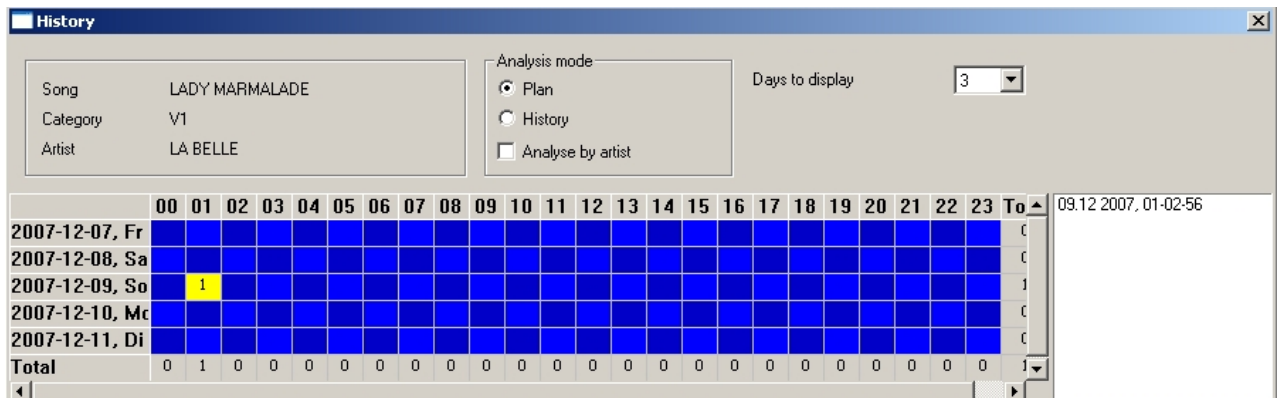


Fig.38. History of element window

The given window displays the history of airing of element. The history is displayed as the table with the cells containing the information about number of times the element was played in corresponding clock. The cell corresponding to that position in the schedule for which the command is called, is highlighted by a yellow background. In the right part of the window there is the list containing the same information, as the table, but as simple enumeration of dates and times of broadcastings of the given audio track.

The **Plan / History** switch located in the top part of a window allows specifying a source of the information for displaying. In the position **Plan** the information is displayed under the planned by program MAG schedules, and in position **History** - under the information from broadcasting application DJin which keeps in a DB the data about real broadcasting of elements of the schedule. The position **Plan** is the basic, and the mode **History** is auxiliary, it allows to define how the real broadcasting differed from planned one. For example, the operator could interrupt broadcasting for announcement of the urgent message, and a part of audio tracks planned by MAG, has not been broadcasted.

The tick **Analyse by artist** switches on displaying of a history about all audio tracks belonging to the same artist, as initial audio track.

The list **Days to display** allows to choose the number of days displayed in a history (lines of the table).

Let's note, that the similar command **Show History** is also accessible from the window of musical database (the context menu of properties of an element of base). The only difference is that by a call from the schedule the window of history displays the history of element on specified number of days in both directions from the date of schedule (at presence of more later schedules), and by a call from the MDB window the counting out always goes from the latest generated schedule.

All other commands of editing the schedule accessible in the program MAG, coincide with accessible commands in the application for broadcasting and editing of the radio schedule of the CAPS 2 system - Djin. For detailed information about them address to the full manual of this system.

Let's result the brief description only of the most frequently used commands:

- **PFL** – prelistening of an element;
- Commands of editing of transition from one element of the schedule to another, following it **Crossfade** and **Crossfade3**;
- Listening of before created crossfade **PFL Crossfade**.

Fragments of the full manual of the CAPS 2 system describing given commands are given below in a Compendium.

2.7.2.1 The prelistening technology

To monitor contents of audio elements you need to have possibility of their prelistening, but thus the sound should not come to the main output of the program. To support this requirement we have a flexible system technology for prelistening. The prelistening window helps to play only one element; and you can play the transition (crossfade) between two or three elements from the schedule or from playback queue of a player.


It is possible to prelisten an element in several ways: by selecting of the **PFL** option from the context menu, by pressing of a key appointed to this action (by default -

<Spacebar>) or pressing the button  on the **Tools of an element** panel.

Prelistening also can be activated from an external push-button field.

Prelistening can be activated practically in all modules of system by pressing the Spacebar.

To prelisten the crossfade between elements you have to select **PFL Crossfade**

from the context menu, or by pressing the button  on the **Tools of the schedule** panel, or by pressing of the appointed key (by default <C>). Thus in the prelistening window (fig. 39) the sequence of two or three elements is played back. Playback of crossfade starts with the ending of first element, 3 seconds prior to the beginning of playback of the following element, and proceeds up to the end of last element. If prelistening is activated for the element of the jingle type or for a voice track, 3 elements will be loaded in prelistening window: preceding to jingle, jingle itself and subsequent element. Playback begins from the ending of the first element preceding to jingle. Names of all elements participating in playback will be displayed in the PFL window. Before their names the line **CROSS** will be displayed (fig. 40).

The prelistening window opens in the list on a place of prelistened element.

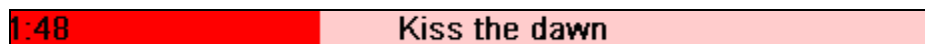


Fig.39. Example of the PFL window for one element

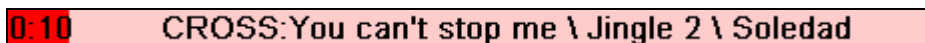


Fig.40. Example of PFL window of crossfade of three elements

There is no difference in control of the PFL window of an element and PFL window of crossfade.

In the PFL window the name of monitored element is displayed (or names of all elements which are included in crossfade). In the left part there is a position of playback. The darker part of the bar displays the played back area.

Control of playback is carried out by the mouse or from the keyboard. With a mouse click in any place of the window playback "jumps" to a corresponding position.

Control from the keyboard is carried out by following keys:

- Left and Right arrows move playback position to the beginning or to the end for three seconds from the current position, respectfully;
- Up and Down arrows similarly move position of playback, but with step of 10 seconds;
- <Home> key restarts playback from the beginning;
- <End> key moves playback point to the end of an audio track, 5 seconds prior to its end;
- <T> key sets the playback counter to a mode of reverse counting;
- The window is closed by pressing of < Spacebar> key, <Esc> key, and also by clicking of the mouse in any place of the screen outside of the PFL window.

There are some special features while working with this window. If the user has pressed no key from the moment of activation of pre-listening before the end of

playback and did not interfere in playback process with the mouse, the window will be closed automatically after the end of playback. If the user interfered in playback control, the window will be closed 5 seconds after end of playback if during this time the he has not started playback again.

The PFL window can also be displayed full-scaled. The example of full-scaled window is shown on fig. .41. Switching to the full-scaled mode and back is carried out by pressing of <Ins> key.



Fig.41. Full-scaled PFL window

Full-scaled window displays the Meta data of prelistened audio track including soundfile details. It is impossible to close the window in this mode by a mouse click outside of the window. Control of playback in this mode does not differ from described earlier.

At the next call of the window it will be opened in the same mode in which it was previously closed.

There are some specific combinations of keys for prelistening of an audio track (not a crossfade):

- <Ctrl> + < Spacebar> opens a PFL window for monitoring of the beginning of an audio track. After the first 5 seconds of playback the window will be closed, if the user did not interfere into playback process.
- <Shift> + < Spacebar > opens the PFL window for the monitoring of the end of an audio track. Playback starts 5 seconds prior to the end of an audio track. After the end of playback the window will be closed, if the user did not interfere into playback process.

The PFL window is present practically in all modules and windows of the program containing audio tracks in a list or in other representation (jingle-machine). Such program module does not contain a special item of the context menu for execution of this operation - by default, the key <Spacebar> is used for PFL activation.

Note, that after installation of the program prelistening is forbidden; to allow PFL you have to specify the playback device in **Service > Settings > PFL**

2.7.2.2 Crossfade Editor

The crossfade editor could be opened by clicking **Crossfade** or **Crossfade 3** items from the context menu of the schedule. **Crossfade** item opens the crossfade between two or three elements for editing, and **Crossfade 3** opens three audio elements: the element previous to selected one, selected element and the element next after it. There can be elements such as **Info** between audio elements, they do

not influence activation of the editor. The example of the crossfade editor window is shown on fig. 42.

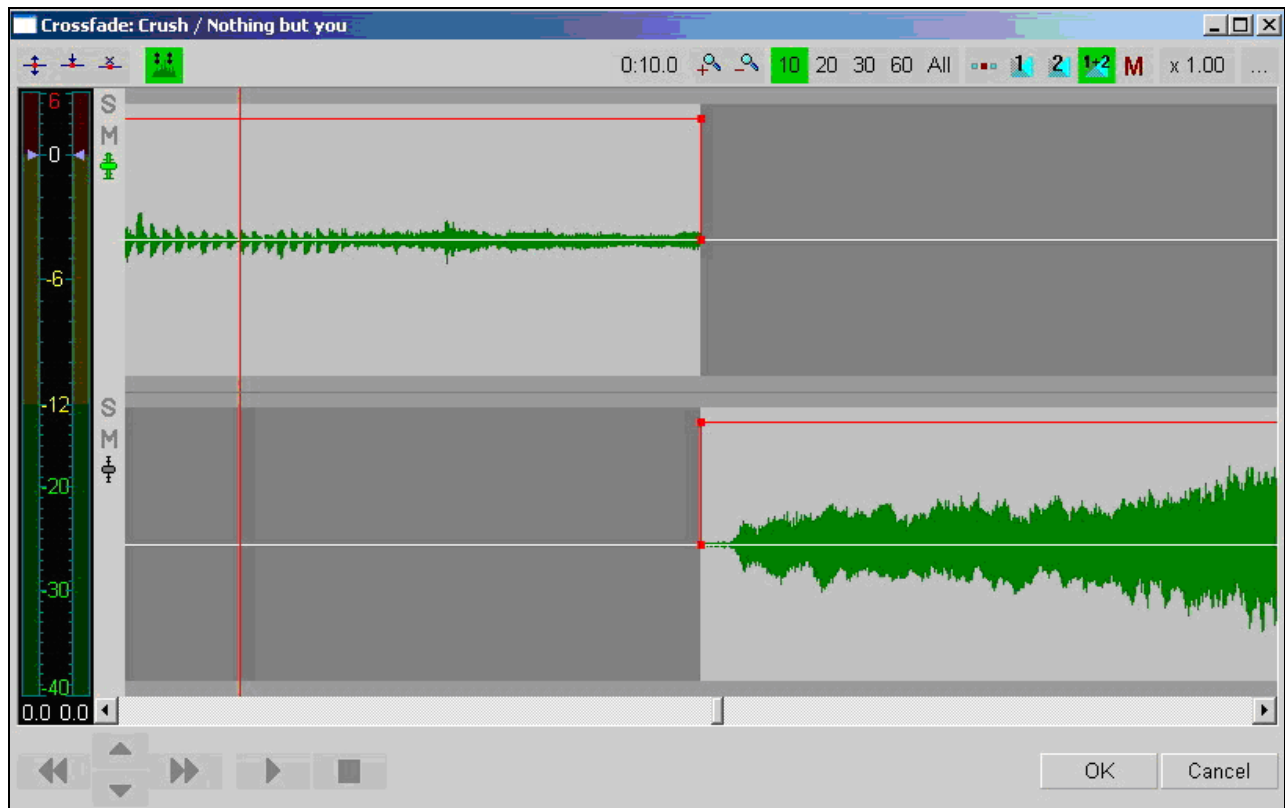



Fig.42. Crossfade Editor

If you are opening crossfade editor by selecting of **Crossfade** item, three elements will be opened in case if selected element has a type Jingle or Voice track.

Elements of the given types usually have short duration, therefore it is more convenient to carry out joint crossfade of three elements at once: previous to jingle element, jingle itself and next after it.

Elements in the crossfade editor are displayed per line, each subsequent lays below previous. For each of elements its waveform is shown, graphically displaying a level of a signal of an element. The top half of a track corresponds to a level of the left channel; and bottom half – of the right channel. Each element has a frame with 4 knots; by moving them with a mouse you can edit certain parameters of an element. An active audio track (in particular, for which indications of the level indicator are valid in the moment) is selected with the help of the buttons  located to the left of the waveforms window, under buttons S and M. The element is selected by the click of the left key of the mouse in the area limited by a frame. In the simplest case crossfade editing is made by means of "dragging" of one of glued together elements in such way that elements impose to each other in time (an axis X). Thus we can determine the position of a point of the beginning of the following element for top one from the pair of them. In general, for elements which are taking place in the editor, following parameters of an element can be changed:

- The point of playback start (label **Start**);
- The point of playback end (label **Stop**);
- Fade in (**Fade in**);
- Fade (**Fade out**);
- The point of playback start of the next element (**Start Next**);
- The point of start of playback at transition from other element on a point

Start This

- Playback level of an audio track;
- Adjustment of playback level by a rubber line.

Prelisting of any part of crossfade is possible from any position, for this purpose make a double click with the left key of the mouse in any place of any track. Playback starts from position of a click. A single click by the left button of the mouse on any track stops playback. It is possible to control playback using buttons S and M (Solo and Mute), located in the left part of a track. Pressing of the button M excludes a track from playback, and pressing of button S excludes all other tracks. Button S can be pressed only on one track. Buttons can be switched during playback.

Scrolling and dragging of audio tracks is carried out with the help of the mouse (dragging of the mouse at the pressed left key). Scrolling and dragging of audio tracks at crossfade of two and three elements submits to the following general laws:

- Dragging of any audio track for the top half of waveform, except for the first one from above, reduces or increases the time of imposing of dragged audio track and audio track located above it;
- Dragging of any audio track, except for the lowermost one, "grasps" with it all audio tracks located below, simply moving all "picture" on the screen; at such dragging times of imposing of selected audio track and all other audio tracks located below, do not change. For the lowest audio track this rule is carried out only if capture is made for the bottom half of waveform;
- Dragging of an "empty place" without dependence of its location (a place behind borders of envelopes of all waveforms) scrolls a "picture" on the screen.

Let's note that it is impossible to create a break between elements, i.e. to move an element in such way that between the end of one element and start of another one there was a pause.

Controlling of a fade is done by means of the mouse; you have to "grasp" and move the top knots of the frame of envelope of the waveform. Process of editing of fade-in is shown on fig. 43.

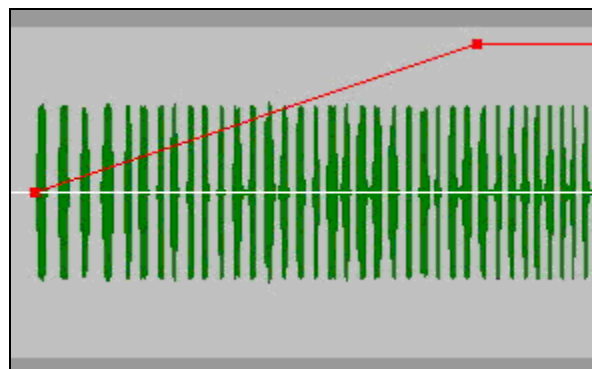



Fig.43. Editing of fade-in




Level controlling is made by means of the combined level indicator / regulator located in the left part of the main window of the program.

At playback of the audio track selected with the help of the button , the indicator displays a level of the left and right channels (if there is no track with the chosen mode Solo, all tracks are played back at which the mode Mute is not switched on, but the indicator displays the level of only one of them). When playback is stopped you can use the dark blue toddler for setting gain for entire track. Double click on the bottom area of the level indicator (on a fragment of the window in which


numerical values of gain are displayed) resets all changes. It is possible to control level separately in the left and right channels. To control level in one channel move the mouse not on the center of regulator, but on its left or right part (a part where the level is displayed and in which there is a cursor of controlling of the corresponding channel) and press the left mouse button. At moving the mouse with the pressed button gain in only one channel will be changed. Editing of element signal level with the help of "rubber string" could be done as follows.




Fig.44. Panel of tools Drawing of a level

1. Press the  button on a **Drawing of a level** (fig. 44) toolbar. This will switch on mode of editing with a string.
2. Press the  button. This will switch on mode of arrangement of knots of a string. Now by the left mouse button click on a track you can insert a knot of a string in a place of click.
3. Insert in such a way the required number of knots.
4. Switch off this mode by a second press of the  button or just by right mouse button click on any place of a track.
5. Now you have to move knots to certain positions on a string for obtaining desirable picture of signal level change in time. To move a knot you have to capture it with the mouse (move the cursor over the knot, press and hold firmly the left mouse button) and drag the knot. Moving mouse upwards - downwards changes gain in the given point. Moving mouse to the left - to the right moves knot, changing thus its position in time. Releasing of the left key fixes a new position of a knot. Pressing of the right button while left button is still pressed cancels moving a knot; and it is placed back to its initial position. You can also move a segment of a string between two knots. For this capture a segment of a string (green line) and move it in the same way as a knot.

The example of track with rubber string is shown on fig. 45. The green line displays the gain diagram versus time. Red points are knots of a string.

To remove envelope knots between green and red markers just press the  button on **Drawing of a level** toolbar; after this button is activated, all knots will be removed in any area selected by the mouse.

Second pressing of the  button switches of the mode of editing by rubber string. Thus the level diagram of tracks will be still displayed by a green line, but editing of a string will be impossible.

Changing of scale of displaying is carried out by means of the toolbar **Scale** (fig. 46). The panel consists of several groups of buttons. The first group allows setting the size of viewing zone respectively to 10, 20, 30, 60 seconds. The **All** button changes the scale so that all edited elements are visible completely.

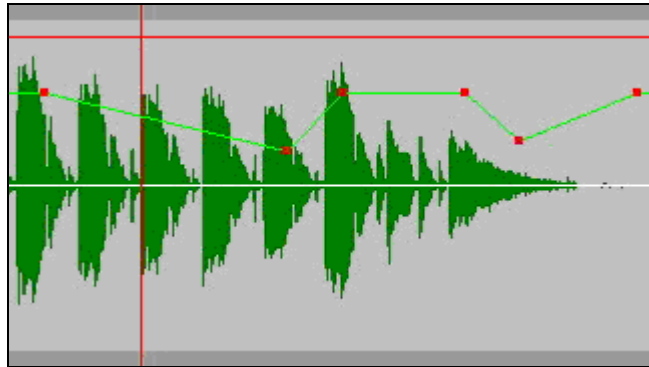


Fig.45. Rubber string

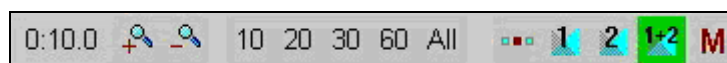





Fig. 46. Toolbar View Area

The  button increases the view area (zoom-in) on $\frac{1}{4}$ of the current one, and the  button reduces it on $\frac{1}{4}$. There is a button which sets a reference point for performance of scaling operation and has two states . If the first state of the button is fixed, the scaling is carried out from the center of the screen, in the case of the second state - from a left edge.

The following three buttons 1, 2 and 1+2, are intended for viewing of crossfades. Pressing of the button 1 changes the point of viewing and the view area in such way that entire first crossfade is placed onto the screen. The button 2 allows to view the second crossfade (in case if three elements are opened), and the button 1+2 sets such scale that both crossfades completely fit onto the screen. If one of these buttons remains pressed it redefines the reference point by scaling. In this case the center of scaling can be the center of one of crossfades or the central point between two crossfades.

The button M enables the scale memorization mode. If it is pressed, the program remembers the scale of the image when saving a crossfade and when the next crossfade is opened the similar view area is set. If the button is not pressed before an exit, the scale specified in **Service > Settings > Other > Audio Editor > Crossfade editor > View area** will be set for the next opened crossfade. Also an additional window showing the current playback speed can be referred to parameters of displaying. Editing of crossfade is finished with saving of changes in the schedule by pressing the **OK** button in the lower left part of the program window. Pressing of the **Cancel** button ends the editing of crossfade without saving of changes.

2.7.3 Saving of the edited play-list

Play-list or, in terminology of the CAPS 2 system, the schedule, formed by the MAG program is inaccessible from another workplaces of the CAPS system 2 until it is saved as an On-air schedule. As a matter it is a project of the schedule. You can generate schedules, cancel generation, bring necessary changes in system of rules and patterns and repeat generating up to desirable result. After generating you can "finish" it manually. But the result of your actions will be accessible only for you, on your workplace with the MAG program installed on it.

For saving of the schedule as on-air schedule, accessible from all other workplaces of the CAPS 2 system set up on your complex, press the **Save to On-Air Schedule** button in the **Schedule generation** window (fig. 34) and press the **To keep as radio ()** button. Thus the schedule prepared by the MAG program, will be saved as

on-air schedule of system CAPS 2 for corresponding date.
 MAG Schedule and On-air schedule are completely independent, therefore, after saving of MAG schedule it is necessary to make all further changes already in On-air schedule. For viewing and editing of On-air schedule press the **Show On-Air Schedule** button. Thus the picture of a window changes a little (fig. 47).

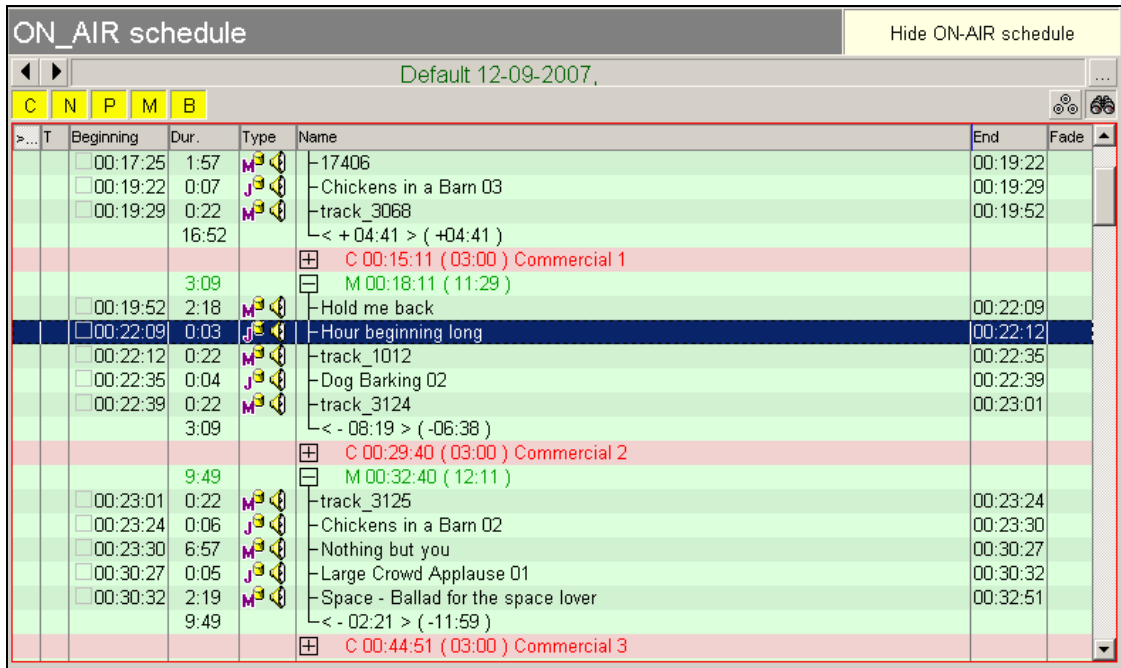


Fig.47. On-Air Schedule

At work with On-air schedule the set of editing functions is similar to functions accessible in the program DJin, therefore it is recommended to address to the full manual of the system for detailed information.

It is possible to return to displaying of the MAG schedule by repeated pressing of the same button.

2.7.3.1 Import of commercials

Import of contents of commercial and other blocks is possible both in MAG schedule and in On-air schedule. For import of the schedule it is necessary to adjust preliminary an import format after what an import of contents of commercials is carried out directly in the generated schedule.

For import of the schedule select the **Import from text file** item from the menu opened by pressing the button in the top right corner of the schedule window. Process of import in the program MAG does not differ from import operation in the program DJin. Therefore for more detailed information address to the full manual of the CAPS 2 system.

2.8 Analysis and history

Analysis and history are functions very interesting and important for correct setting of the program. To use these functions, it is necessary first to create clocks and to set the order of use this or that clock (to fill in a week grid).

There are 3 tabs on the window **Analysis and history**: **Clocks**, **Rotation pattern** and **Distribution**.

2.8.1 The Clocks tab

The information about categories involved in a grid chosen for the analysis (the **Week grid list**) is submitted on the **Clocks** tab (fig. Fig.48).

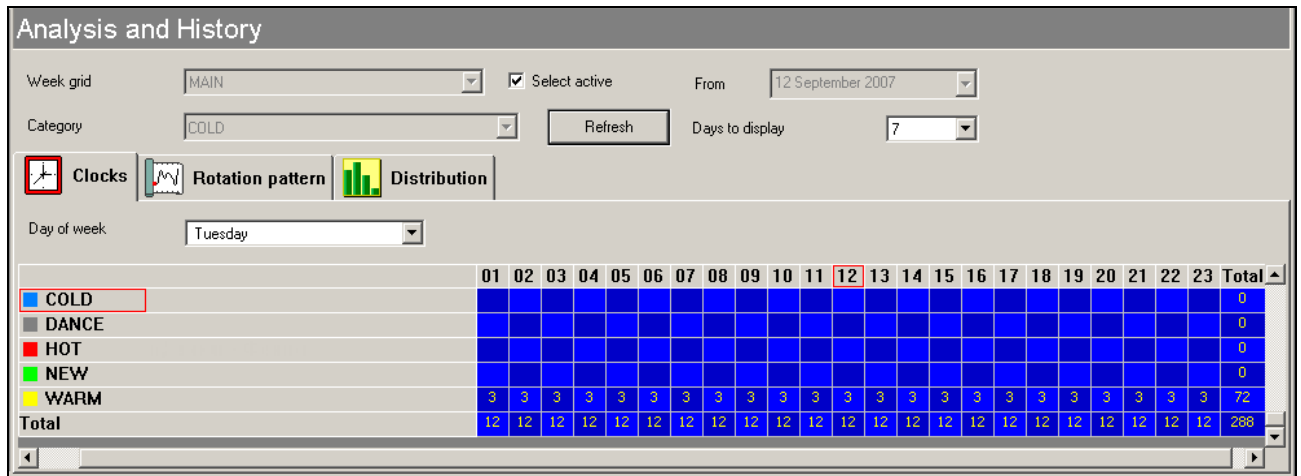


Fig.48. The tab **Clocks**

The day of week on which the statistics is displayed, is selected in the **Day of week** list. Since in our case only one clock is used for all hours of all days of week, the information in all columns of the table is identical. The most right column displays the number of broadcastings of corresponding category in 24 hours.

2.8.2 The Rotation pattern tab

The second tab **Rotation pattern** (fig. .49) allows executing several different tasks. In the **Week grid** position of the **Analysis mode** switch this tab helps to calculate correctly and to view the project of possible rotations of songs of the category determined by you.

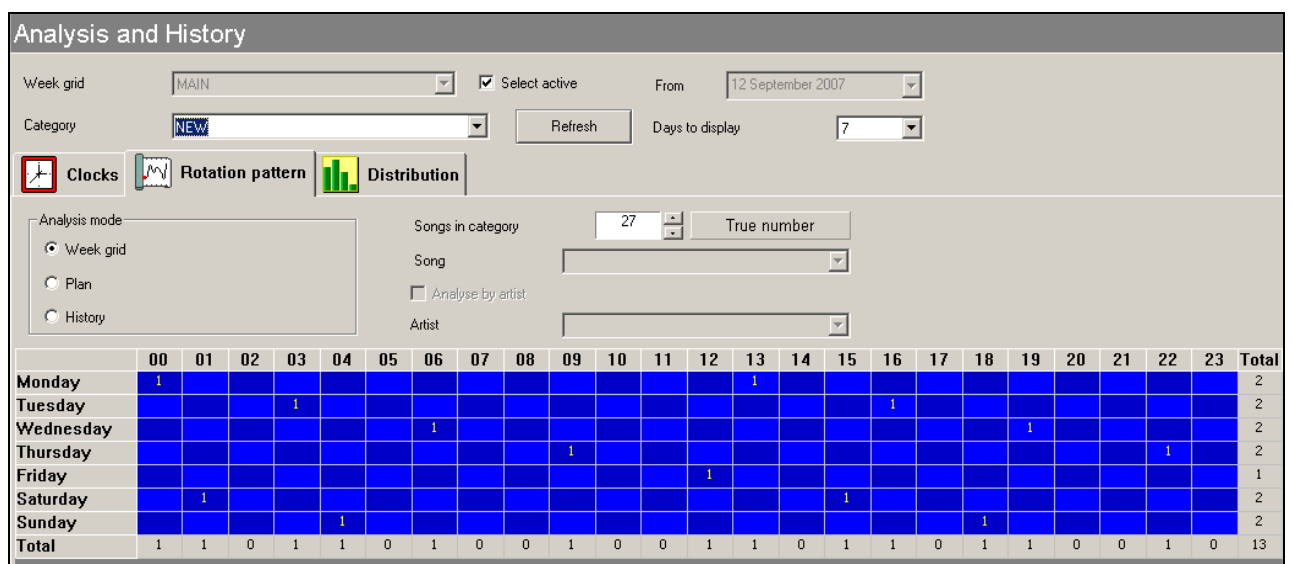


Fig..49. The **Rotation pattern** tab of the **NEW** category

In the given figure the possible diagram of rotation of the **NEW** category is shown, at such condition, that there are 27 songs in a category (the **Songs in category** field).

The table on the figure shows, how the same element of a category (the **Category** list) will be placed in the schedule, depending on a number of elements of this category and selected week grid (the **Week grid** list). On fig. .49 you can see that

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the same element of a category will be aired 2 times a day on average, thus in each next 24 hours its position will be moved from previous last day to 3 hours. Besides, positions of the same element on Monday and Friday are very much far from each other (to 12 hours). On Monday of the next week the element also appears moved far enough (to 7 hours). That is, even without addition of special rules of type: an interval concerning a position in previous day, 2 days ago and so on, elements of the given category will be distributed regularly in formed schedules, and will not be aired in the same time, what can cause an irritation of audience.

Of course this picture is ideal and hypothetical, it does not take into account influence of other rules, consequences of manual editing and so on, but just such distribution will be a basis of real rotation of this category.

And now let's imagine that we have virtually changed a number of songs in category by reducing of their number up to 12. For this purpose we enter a number into the **Songs in category** field and press **Enter**. The picture of rotation will change (fig. Fig.50).

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Monday	1						1						1						1						4
Tuesday	1						1						1						1						4
Wednesday	1						1						1						1						4
Thursday	1						1						1						1						4
Friday	1						1						1						1						4
Saturday	1						1						1						1						4
Sunday	1						1						1						1						4
Total	7	0	0	0	0	0	7	0	0	0	0	0	7	0	0	0	0	0	7	0	0	0	0	0	28

Fig.50. Rotation pattern for 12 elements of the NEW category

If previous picture of rotation, for 27 elements, is supposed to be very good, the picture obtained for 12 elements in a category is close to ideally bad. The same element of a category will try to get into the same hour every day. And at all attempts to improve this picture, using mathematical rules of rotation we get nothing good. Therefore, at planning of clocks and grids, and at changing of number of elements in categories always check the result of using this function.

In general, it is possible to say beforehand that categories, number of elements in which is multiple to any divider of 24 (2,3,4,6,8,12,24), and also categories which number of elements multiply to a number of positions of this category in 24 hours will give similar to this "vertical" distribution. For example, the category DANCE is broadcasted 24 times in 24 hours and consists of 120 elements. The example of figure of rotation is resulted fig. .51, and an example of figure for 111 elements on fig. .52.

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total	
Monday	1																								1	
Tuesday																										0
Wednesday																										0
Thursday																										0
Friday																										0
Saturday	1																									1
Sunday																										0
Total	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Fig..51. Rotation pattern for 120 elements of the DANCE category

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total	
Monday	1																									1
Tuesday																										0
Wednesday																										0
Thursday																										0
Friday																1										1
Saturday																										0
Sunday																										0
Total	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2

Fig..52. Rotation pattern for 111 elements in the DANCE category

To return to real number of elements in categories press the **True number** button. On the same tab it is possible to trace a history of airing of a concrete composition or audio tracks of one certain artist. You can determine the arrangement of compositions of the required artist in the given category and make corrections in case of violation of the scheme harmony.

To use this function set the **Analysis mode** switch in **Plan** position (or, what is necessary much less often, in **History** position, more detailed the difference is described in section 2.7.2 in description of the **History** window). In this mode a window repeats functions of the window **History**, but with an opportunity of selecting of an analyzed audio track and artist.

After that you can select one of audio tracks of the current category in the list **Song**, or, with setting of a tick **Analyze by artist** to select the artist in the **Artist**. The date from which the analysis will be executed, is displayed and set in the **From** field in the right top part of the window, and the number of analyzed days (lines in the resulting table) is set in the list **Days to display**.

The example of a history of rotation of one audio track from the NEW category is resulted on fig. .53.

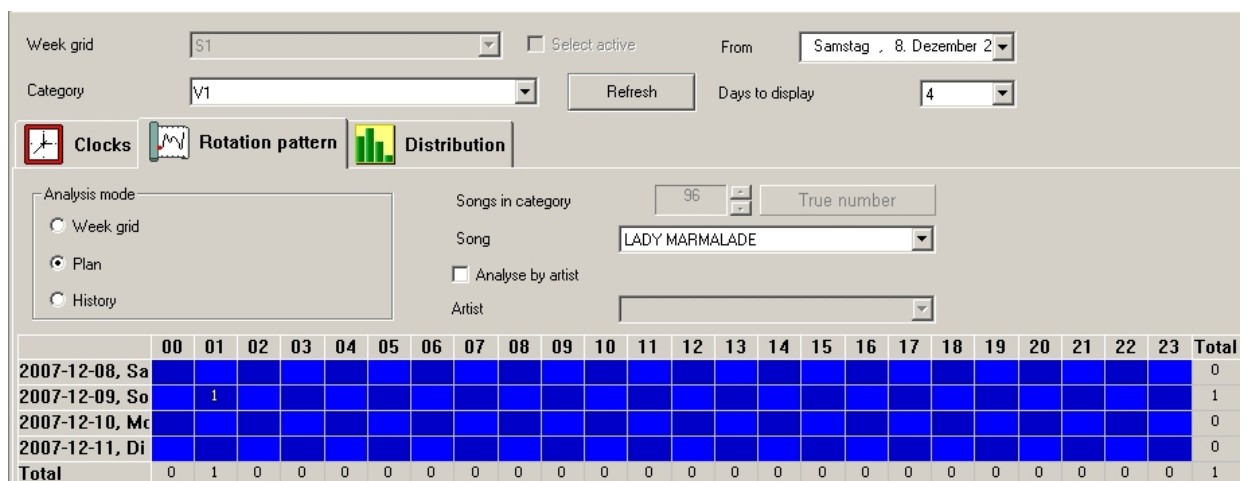


Fig..53. Rotation pattern of one audio track

Pay attention, that the given rotation pattern repeats the rotation pattern (with time-shift) of the NEW category resulted on fig. .49.

Figure of rotation of one artist is resulted on fig. .54.

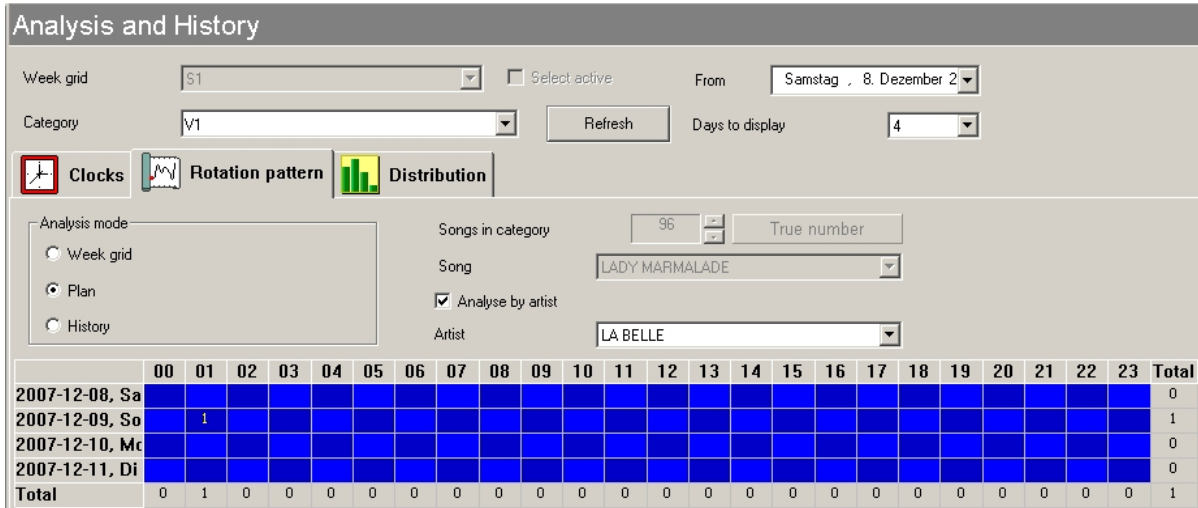


Fig..54. Rotation pattern for one artist

2.8.3 The Distribution tab

The third tab is **Distribution**. It allows to see, how many times songs of the necessary for you category have been broadcasted for the certain term. If received results are differed not so much there are no mistakes in using of musical material by the generator of play-lists. If at a “once in three days” rate of songs rotation for the 30-days period you receive the result when the part of compositions was played back 20 times, and a part of them 1-2 times, instead of average figure “10” for the overwhelming majority of songs, it means, that your record library is badly balanced or there are serious mistakes in settings of the generator of play-lists (the superfluous or incorrectly set rules, small search-depth, etc.).

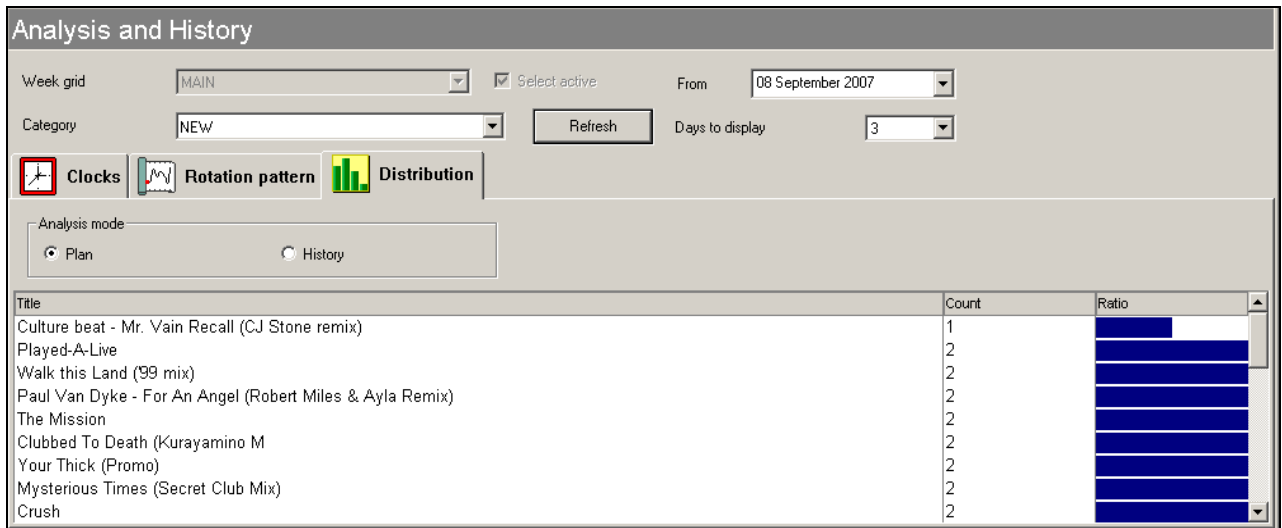


Fig..55. Distribution of elements of the NEW category

2.9 Settings of the MAG program

The MAG program as well as any other program of the CAPS 2 system, has a system of settings. In the **Service** menu the commands providing access to windows where it is possible to do various settings, are concentrated, including configuration of the CAPS 2 system and settings of many parameters. We characterize general commands of settings of the CAPS 2 system available in the menu.

Settings - the **Settings** window in which settings of the concrete program are made (in this case, MAG). No one of the programs which are included in the CAPS 2 system read out the settings of another programs and "are not interested" in their contents.

Global settings - the **Global settings** window in which settings of parameters common for all programs which are included in the CAPS 2 system are made simultaneously for all workplaces. For example, the sound format by default, rules of addition of files in the storage, catalogues of external storage.

Workstation settings - the **Workstation settings** window in which settings of all programs of the CAPS 2 system available on the given workplace are carried out. Changes brought from one program, influence on other programs.

MAG settings - the window of settings of parameters specific just for MAG application. Among them are: search-depth by default, number of audio tracks tested at selection of alternative and so on.

Customize keyboard - the **Customize keyboard and remote keypads** window.

Import formats –the **Import formats** window.

For more detailed information concerning parameters which are set in listed above windows, address to the manual of the system CAPS 2.

3. Contact information

If any further Information or assistance is needed for the installation procedure or details to the general usage of the CAPS 2 Broadcast system Software application , please send your request to the following e.Mail.

support@eela-caps.com

The CAPS 2 Support Center will get in contact with you within shortest possible time. Please include in your e.Mail a short and precise description of your request., and add your personal e.Mail address.