



TRX Krzysztof Kryński

TRX Dispatcher console

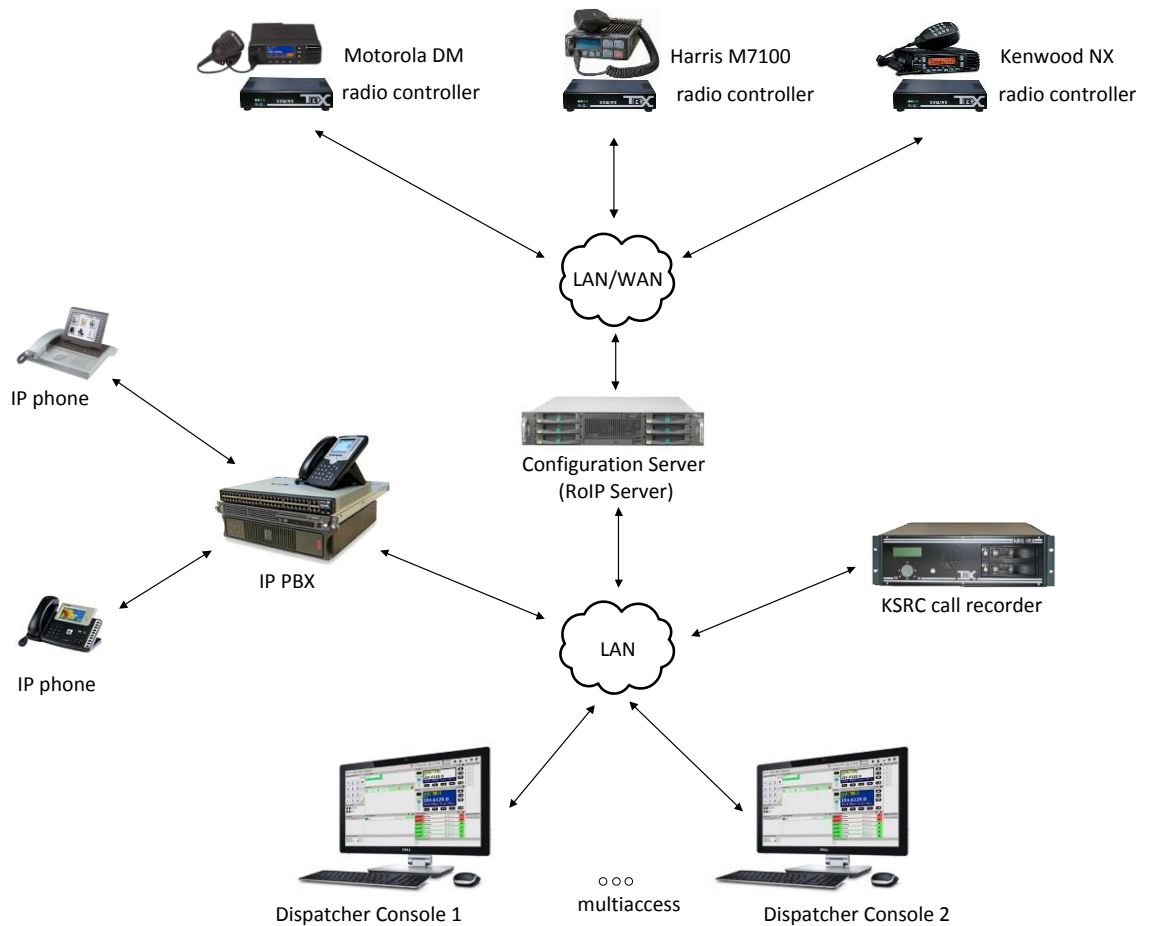
- system functionality

Version **1.03** May 2016
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1. General purpose

TRX dispatcher console allows you to serve your fixed IP lines and some radio model (both analogue and digital) by a single, computer-based device. Our main customers are fire brigade and emergency medical service.



The dispatcher receives computer-based device equipped with touch screen, loud-speaker and microphone (or headset). Thus he can handle different types of means of communication. Dispatcher has the ability to monitor and listen to radio communications for several radio group / channels.

The built-in recording system allows access to early recorded calls. This makes you has the opportunity to re-play any messages in case something go unnoticed.

The map module enables radio visualization, so you can see the current position of vehicle or foot patrols on the map and store this data in memory.

2. Technical details and features

The hardware solution for TRX dispatcher consoles is based on All-In-One touch-screen desktop PC with Full HD (1920x1080) display. Loudspeakers and USB microphones (or headset) of renowned companies like Sennheiser or Plathosys are used for voice communication.

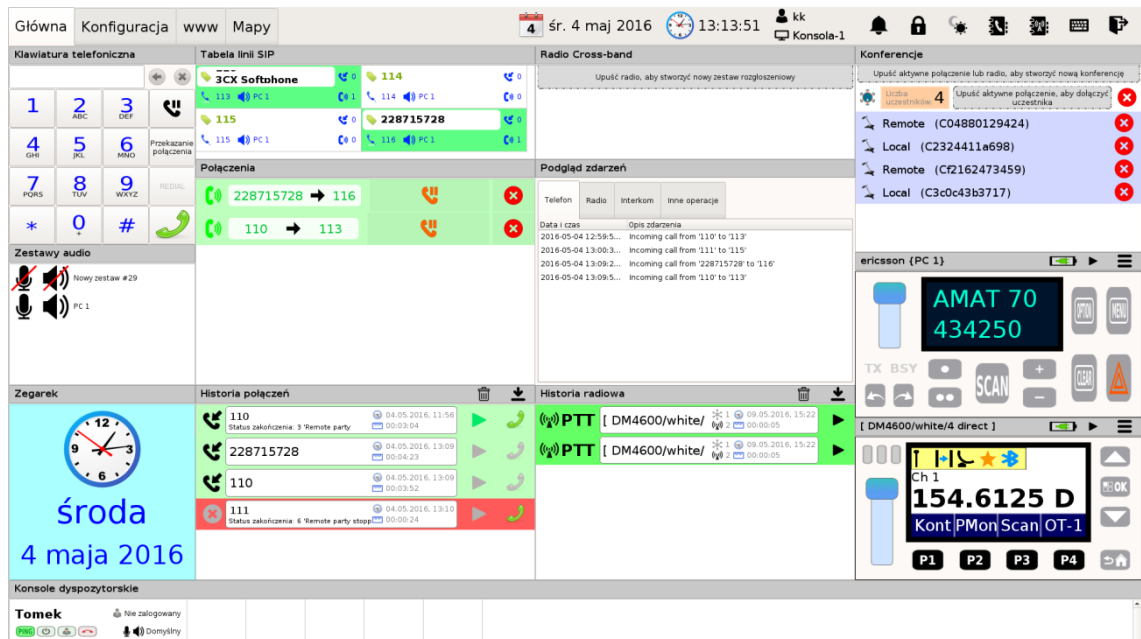


Basic features:

- Holding voice calls over SIP lines or two-way radios.
- Preview of call queuing.
- Preview of missed calls.
- Access to the records from the local stored call history.
- Speed dial buttons with defined phone number and outgoing line.
- Radio shortcuts buttons with defined radio action.
- Possibility of radiotelephone remote control (dispatcher can have granted access to all or specified radio buttons).
- Intercom feature (peer-to-peer connection between dispatcher consoles).
- Picking up, holding, transferring and finishing phone calls using any of pair of devices connected to the dispatcher console.
- Possibility of monitoring radio conversations during holding any phone, radio or intercom call.
- Ability to share a single radio channel in transmitting-receiving mode by a lot of dispatcher consoles
- Possibility of crossband connections (connection between dispatcher console and at least two radios).
- Possibility of control operating system sound volume.
- Polish and English (in progress) language support.

The work with TRX dispatcher console requires log on user to the system by using login and password. Each user can have own account with associated individual configuration of components displayed on the application window.

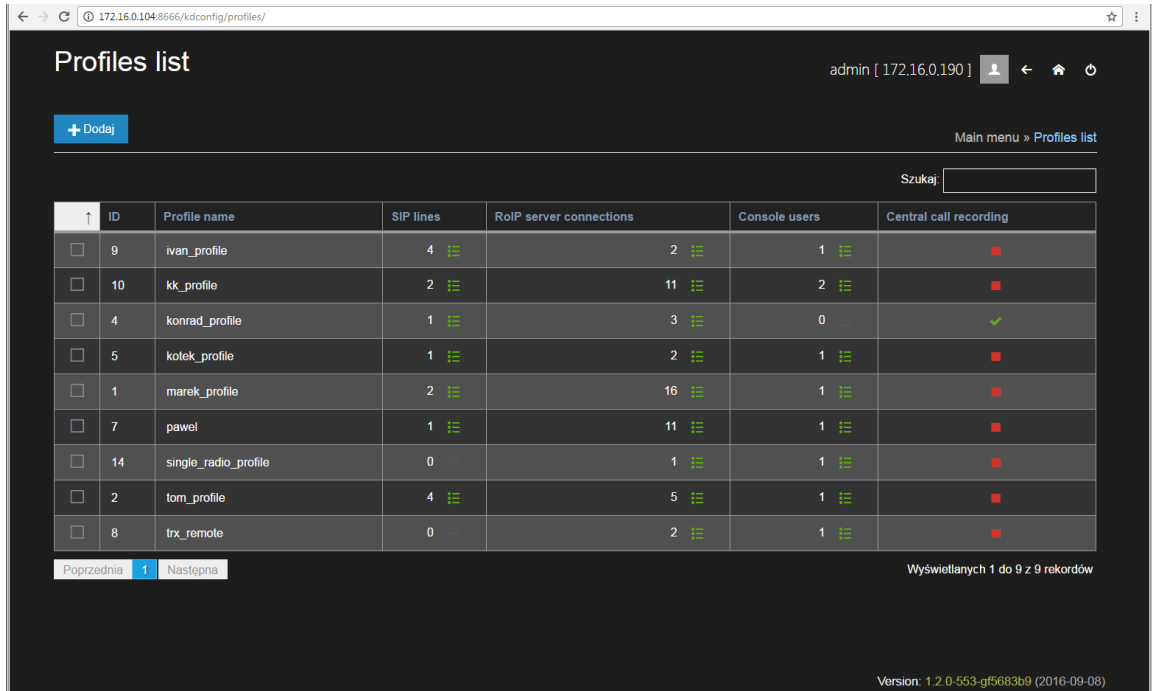
All components e.g. telephone keypad or radio control widget a grouped in tabs. For each component you can change height and/or width size and place in any position on the screen.



Any change of component size or screen position doesn't cause breaks at work of the dispatcher console.

3. Configuration Server

User's settings for all dispatcher consoles are stored in database on the configuration server. The configuration server can be installed on the same computer that runs the dispatcher console, or on an external server available via LAN/WAN. Regardless of the solution, the configuration is done using the web interface.

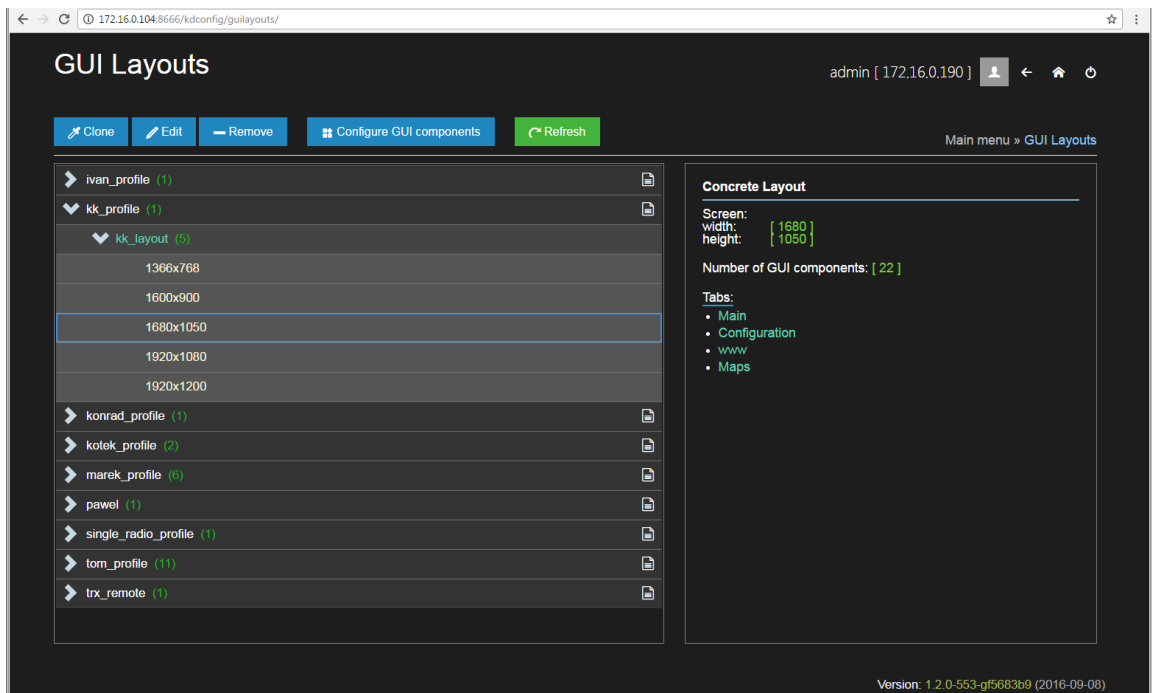


The screenshot shows the 'Profiles list' page in a web browser. The page title is 'Profiles list' and the user is logged in as 'admin [172.16.0.190]'. There is a '+ Dodaj' button and a search bar labeled 'Szukaj:'. Below the search bar is a table with the following data:

ID	Profile name	SIP lines	RoIP server connections	Console users	Central call recording
9	ivan_profile	4	2	1	■
10	kk_profile	2	11	2	■
4	konrad_profile	1	3	0	✓
5	kotek_profile	1	2	1	■
1	marek_profile	2	16	1	■
7	pawel	1	11	1	■
14	single_radio_profile	0	1	1	■
2	tom_profile	4	5	1	■
8	trx_remote	0	2	1	■

At the bottom of the table, there are navigation buttons 'Poprzednia' and 'Następna', and a status message 'Wyświetlanych 1 do 9 z 9 rekordów'. The version information at the bottom right is 'Version: 1.2.0-553-gf5683b9 (2016-09-08)'.

A set of GUI components displayed on the desktop tabs can be freely defined for individual users (profiles) in the GUI layouts configuration.



The screenshot shows the 'GUI Layouts' page in a web browser. The page title is 'GUI Layouts' and the user is logged in as 'admin [172.16.0.190]'. There are buttons for 'Clone', 'Edit', 'Remove', 'Configure GUI components', and 'Refresh'. The main content area shows a list of profiles and their associated GUI layouts:

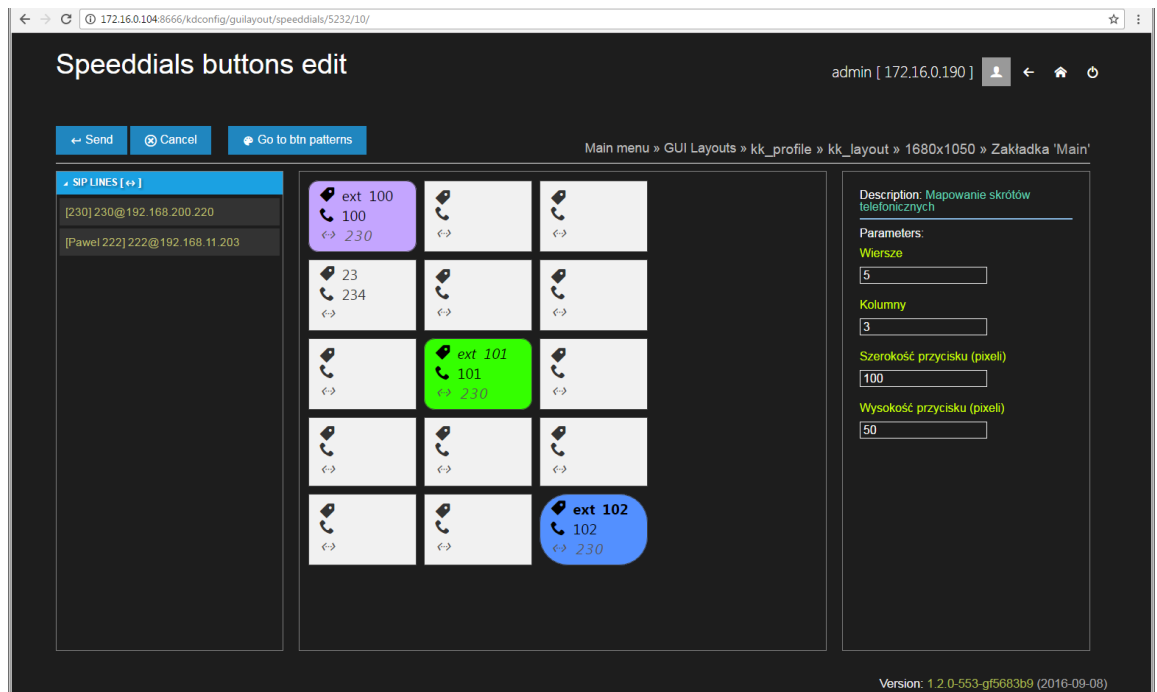
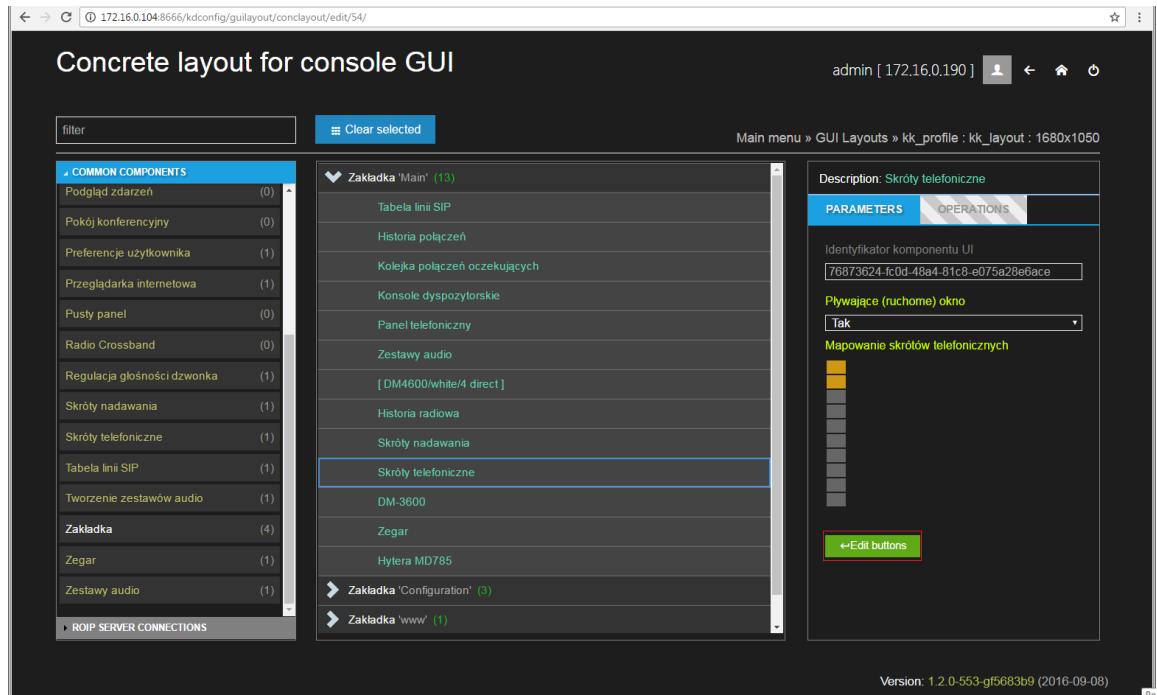
- ivan_profile (1)
- kk_profile (1)
 - kk_layout (5)
 - 1366x768
 - 1600x900
 - 1680x1050 (selected)
 - 1920x1080
 - 1920x1200
- konrad_profile (1)
- kotek_profile (2)
- marek_profile (6)
- pawel (1)
- single_radio_profile (1)
- tom_profile (11)
- trx_remote (1)

On the right side, there is a 'Concrete Layout' configuration panel with the following details:

- Screen: width: [1680], height: [1050]
- Number of GUI components: [22]
- Tabs:
 - Main
 - Configuration
 - www
 - Maps

The version information at the bottom right is 'Version: 1.2.0-553-gf5683b9 (2016-09-08)'.

For the user profile you can create a few Concrete layouts appropriate to the present dispatcher console screen resolution.
 For each Concrete layout you can create one or a few tabs grouping several GUI components (e.g. telephone keypad, speed dial buttons).



4. Landline phone systems support

For other telephone systems (e.g. exchanges) the TRX dispatcher console is a SIP terminal which uses one or a few unique telephone numbers. The system allows you to handle any number of SIP lines and allows you to make and receive calls from public and/or private network.



On the console screen you can find information about:

- active calls,
- calls queues,
- call history (including missed calls).

If the local recording feature is enabled, you can playback saved calls after click on the ► icon.

To make outgoing calls you can use telephone keypad:



or speed dial buttons:



Dispatcher console also allows you make call forwarding (transfer calls):

The screenshot displays the TRX Dispatcher console interface. At the top, the status bar shows the date and time as '20 pon. 20 cze 2016 9:56:52'. The main interface is divided into several sections:

- Klawiatura telefoniczna:** A numeric keypad with letters assigned to numbers (e.g., 2-ABC, 3-DEF).
- Połączenia:** Shows active calls. One call is highlighted: 115 → 0609601802, with a secondary call 115 → 110 shown below it.
- Historia połączeń:** A list of recent calls with columns for call ID, status, and time. For example, call 228715728 is shown with a status of 'Local p' and a time of 00:00:49.
- Tabela linii SIP:** A list of SIP lines with their status (e.g., 'Domyślny').
- Zestawy audio:** Audio settings for different devices like 'Pulpit-gf', 'Pulpit', and 'PC 1'.
- Konferencje:** A section for managing conferences, currently showing 'Upuść aktywne połączenie lub radio, aby stworzyć nową konferencję'.
- Konsole dyspozytorskie:** A section for managing dispatch consoles, showing 'Marek' and 'Konsola-1' with their respective status.
- Zegarek:** A clock widget showing the current time and date: 'poniedziałek 20 czerwca 2016'.
- Skrócone wybieranie:** A section for quick dialing, showing options like 'GSM 0609601802' and 'Numer 110'.

and teleconferencing.

The screenshot displays the TRX Dispatcher console interface. At the top, the status bar shows the date and time as '20 pon. 20 cze 2016 9:43:30'. The main interface is divided into several sections:

- Klawiatura telefoniczna:** A numeric keypad with letters assigned to numbers (e.g., 2-ABC, 3-DEF).
- Połączenia:** Shows active calls. One call is highlighted: 228715728 → 115, with a secondary call 113 → 110 shown below it.
- Historia połączeń:** A list of recent calls with columns for call ID, status, and time. For example, call 228715728 is shown with a status of 'Local p' and a time of 00:04:32.
- Tabela linii SIP:** A list of SIP lines with their status (e.g., 'Domyślny').
- Zestawy audio:** Audio settings for different devices like 'Pulpit-gf', 'Pulpit', and 'PC 1'.
- Konferencje:** A section for managing conferences. It shows 'Upuść aktywne połączenie lub radio, aby stworzyć nową konferencję' and a list of participants: Remote (Ca40a260c5), Local (C31db5b2e10), Remote (C15004f1917), and Local (Cd117a44e20).
- Konsole dyspozytorskie:** A section for managing dispatch consoles, showing 'Marek' and 'Konsola-1' with their respective status.
- Zegarek:** A clock widget showing the current time and date: 'poniedziałek 20 czerwca 2016'.
- Skrócone wybieranie:** A section for quick dialing, showing options like 'GSM 0609601802' and 'Numer 110'.

5. Radio systems support

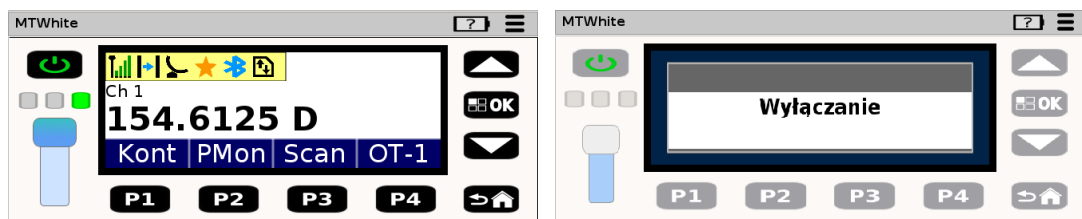
Handling of radiotelephones is being carried out through the communication of TRX dispatcher console with radio controller using RoIP Server application as proxy.

RoIP Server service can be installed directly on radio controller, on external radio communication server or on dispatcher console itself.

At the present TRX solution provides support for the following models of radios:

- Motorola GM series
- Motorola DM series
- Motorola MTM5400 (TETRA)
- Ericsson Edacs Orion
- Harris M7100
- Hytera MD785
- Kenwood NX700/NX800 (NexEdge)

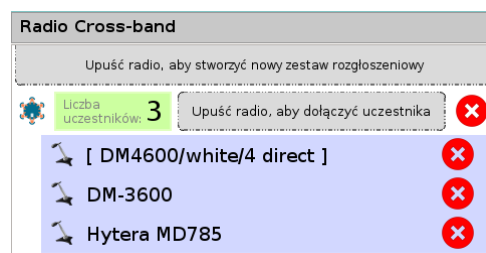
On dispatcher console screen you can see a widgets allows you to remote radios handling. You can also see current content of theirs displays.



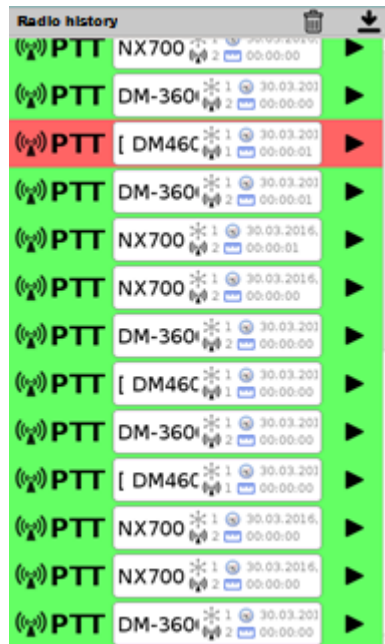
Remote handling is also possible by using user defined radio shortcuts buttons.



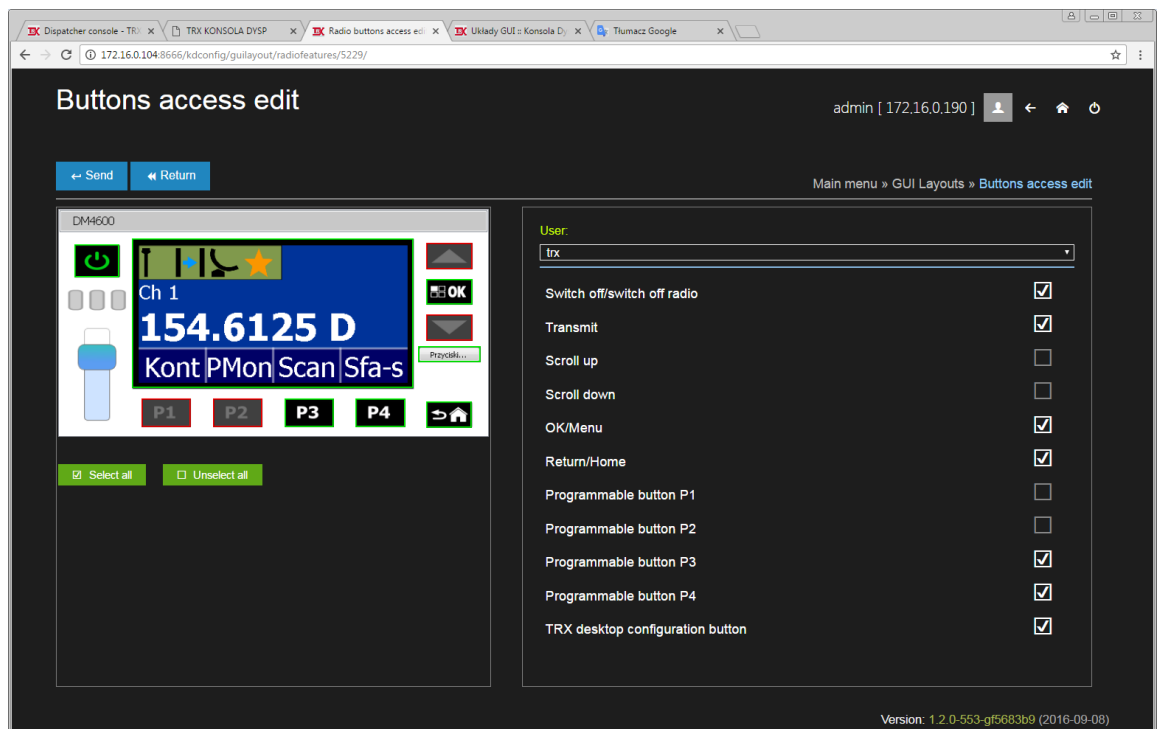
The crossband connections feature allows for communication between dispatcher console and at least two radios.



Dispatcher console user can see the history of radio conversations. If the local recording feature is enabled, you can playback saved calls after click on the ► button.

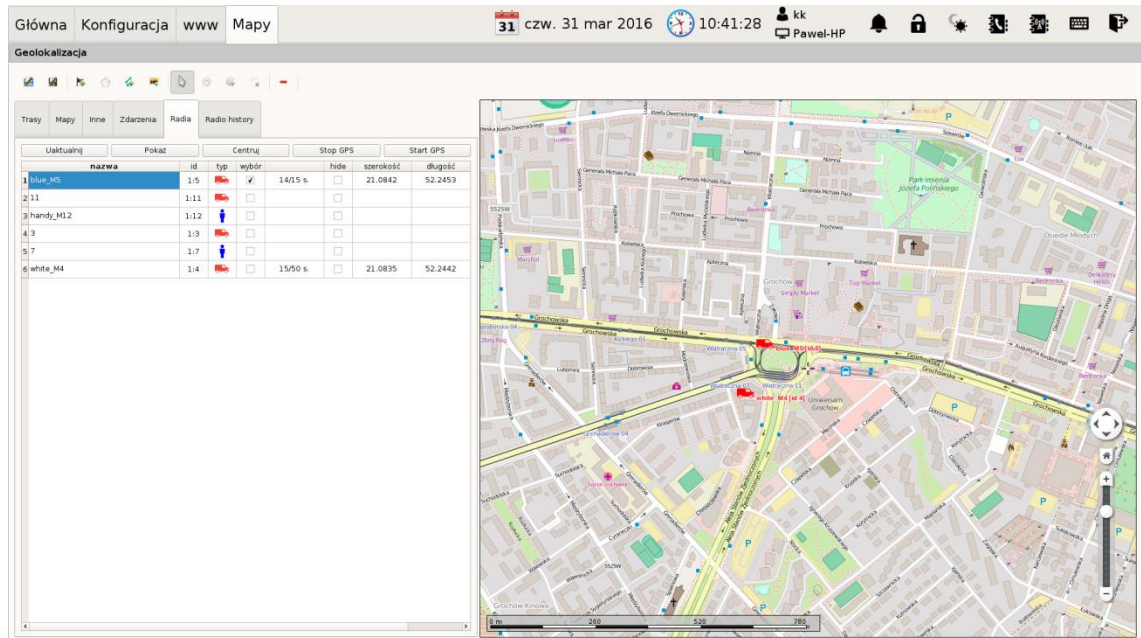


TRX solution allows for granted access for current user only to specified radio buttons

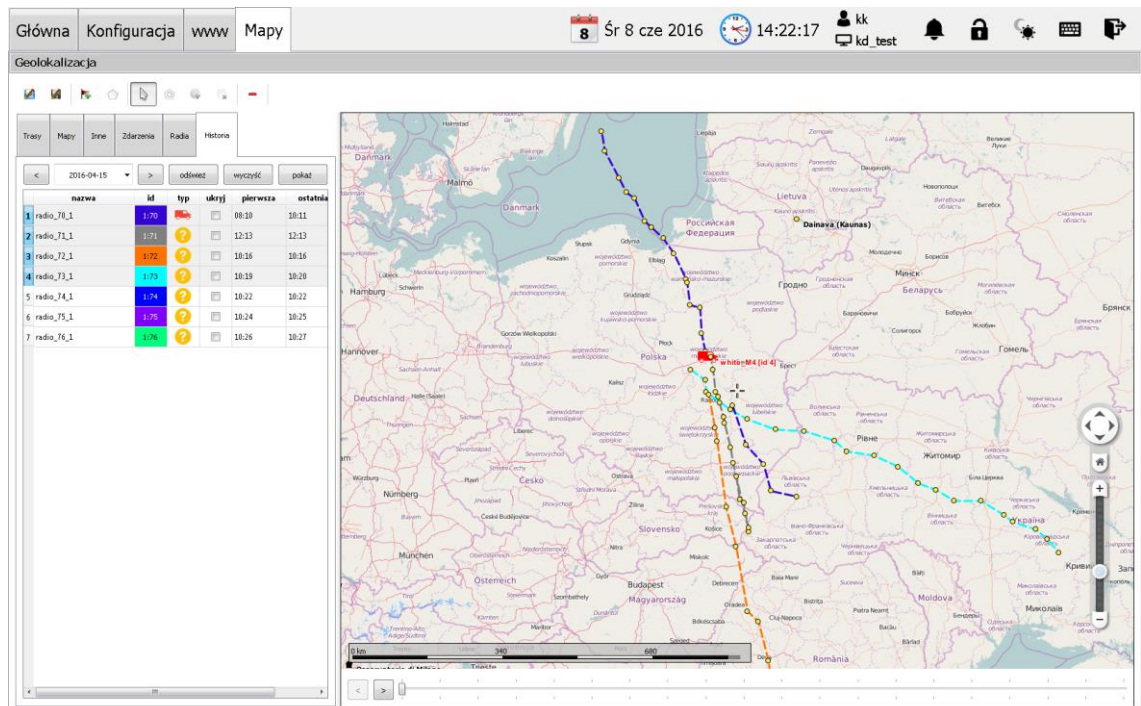


6. Map module

The map module enables radio visualization. You can see the current position of yours portable or mobile radios on the map from OpenStreetMap resources. The location of radiotelephones is being established based on build-in GPS receiver.



TRX solution besides tracking current position also gives possibility to store this data on the server. Afterwards you can read and display track traversed on the selected date.



7. Playback call from external KSRC recorders

Telephone and radiotelephone correspondence can also be recorded with external of KSRC series call recorders.

These recordings can be played on the dispatcher console using Web Browser component.

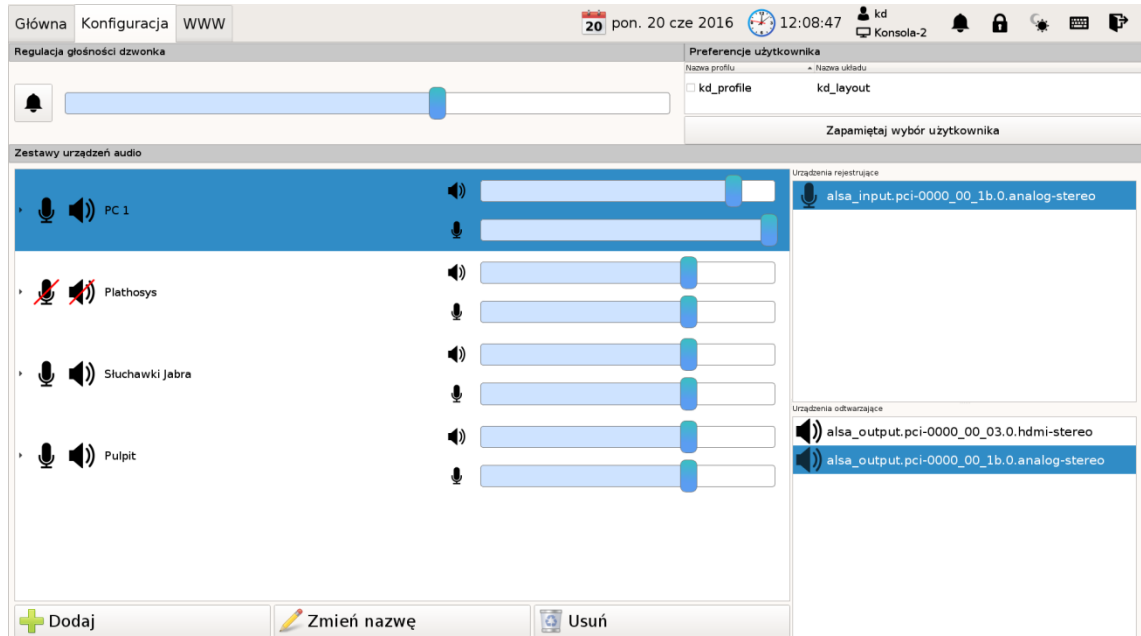
The screenshot shows the TRX WebInterface 2. The top navigation bar includes 'Główna', 'Konfiguracja', 'www', and 'Mapy'. The main header displays the date 'Śr 8 cze 2016' and time '15:05:25'. The page title is 'LISTA ROZMÓW [172.16.0.199] TRX WebInterface 2 ver. 2.1.1.2 / 30.05.2016'. Below the header, there are filters for 'Wybór kanałów', 'Ostatnia 1 h', 'Ostatnie 24 h', 'Ostatnie 7 dni', 'Ostatnie 31 dni', 'Wskazany zakres', and 'Odtwórz'. A table of call records is visible, with columns for 'Indeks', 'Nazwa kanału', 'Data i czas od', 'Czas do', 'Długość', 'Kto', 'Do kogo', 'Kierunek', 'COLP', and 'Komentarz'. A modal dialog box titled 'Wybór zakresu czasowego' is open, allowing selection of a time range. It includes radio buttons for 'Od najstarszego nagrania' and 'Od początku wskazanego dnia', a date input field showing '2016-03-23', and a calendar for 'Marzec 2016'. The calendar shows days from 1 to 31. There are also options for 'Określ dokładny czas:' and 'Koniec zakresu' with similar options and a date input field.

After choosing the target recording you can playback audio content.

The screenshot shows the TRX WebInterface 2. The top navigation bar includes 'Główna', 'Konfiguracja', 'www', and 'Mapy'. The main header displays the date '30 śr. 30 mar 2016' and time '12:11:15'. The page title is 'LISTA ROZMÓW [172.16.100.15] TRX WebInterface 2 ver. 2.1.1.0 / 25.02.2016'. Below the header, there are filters for 'Kanały', '1 godz.', '24 godz.', '7 dni', '31 dni', 'Zakres', and 'Odtwórz'. A table of call records is visible, with columns for 'Indeks', 'Nazwa kanału', 'Data i czas od', 'Czas do', 'Czas trwania', 'Kto', 'Do kogo', 'Kierunek', 'COLP', and 'Komentarz'. A modal dialog box titled 'Odtwarzacz nagrań' is open, displaying a waveform and playback controls. The dialog box includes fields for 'Indeks: 1174', 'Kanał: SiemensCAP (253)', 'Data od: 2016-03-23 11:53:54', 'Data do: 2016-03-23 11:57:11', 'Kto: 229', and 'Do kogo: 206'. There are also playback controls like play, pause, and stop buttons, and a progress bar showing '00:06 / 03:17'.

8. Acoustic sets configuration

TRX solution allows you to configure acoustic sets being used for carrying voice communications between the dispatcher and dispatcher console.



You can set volume level of the microphone and loudspeaker (or handset) independently for every acoustic set. A changing of volume for incoming calls ringer is also possible.

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