wrx – A Program for scheduling weather receivers

Concept

- Wrx does not depend on any hardware or software.
- Wxr can schedule any radios.
- The minimal prerequisition for the radio is, it must deliver signal that can read from sound card.
- All works, decoding signals, shoing results, tuning receivers is done by external programs.
- The daly schedule is stored in a .ini file.
- For running jobs, progress and waterfall is shown.
- For RTTY and NAVTEX, a internal decoder can show and save the result.
- The job configuration is stored separatly from program preferences.

Configuration

The Configuration contains all information needed for run a job. The wrx program does not write to the configuration file.

Configuration file name: `~/.wrx/wrx-config.ini`

Structure of wrx-config.ini file:

All entries use these pattern:

`line-key="key1=value", "key2=value" ...`

The line key consist of letter specific to the section, a hyphen and a number. The number must be unique in the section. There is no need for the numbers to be continuously or ordered.
All keys and it's values are case sensitive.
In the following description:

- mandotary entries are marked by "!".
- A set of possible values is printed in normal letters.
- Examples for the value are printed cursive.

[Radios]

Line key: `radio-000`

Name	!	A short working name without spaces or special characters	*radio1*
Load	!	Says to load or not the radio at program start up.	Y N

The name for the radio must be unique. For presentation in the program, you will set a better readable name in the program preferences later.

[Frequencies]

Line key: fq-000

Define here all frequencies that you plan to listen.

Callsign	!	The call sign or a other short synonym. Must be unique fro the section. No spaces, special characters.	*DDK2*
Name	!	The Name that is shown in wrx.	*DWD RTTY .1 Programm*
Frequency	!	Frequency in Hz	*4583000*
OpMode	!	Kind of broadcst	RTTY-450 RTTY-85 FAX NAVTEX SPEACH-AM SPEACH-NFM SPEACH-WFM SPEACH-SSB SPEACH
Radios	!	List of radios defined in [Radios] section. At least one radio is required. No spaces	*radio1|radio2|radio4*

[ParameterSet]

Using this section is optional. It does prevent you for repeted typing the same information.
The keys are the same as described for the [RadioSetup] section. `Callsign` and `Radio` are not allowed, the must be defined in the [RadioSetup] section.
The is no definition for a line key.

[RadioSetup]

Line key: `rs-000`

In this section you will define all you need to tune your radio and decode the result.
You need exacty one line for each combination of frequency/call sign and radio.

Callsign	!	Callsign from [Frequencies] section	*DDK2*
Radio	!	One of the radios you spcified to the Callsign in the [Frequencies] section	*radio1*
CenterFreq		Offset to the transmitters frequency	*1000*
Offset		A correction for small frequency errors of th receiver.	*-20*
SampleRate	!	Sample rate used for saving and processing	*8000*
Channels	!	Sound is mono or stereo/iq	1 2
DecoderType	!	What kind of decoder should run.	`intern` `extern` `none`
DecodedFileExt	!	File extension for result file.	*txt*
PostCommand		A program call, started when sound saving is completly.	
FFTSize		For the internal decoder, if used	*256*
WindowSize		For the internal decoder, if used	*40*
WindowFunc		For the internal decoder, if used	*6*
SubDevice		If the sub device of your sound card not 0 you can here	*1*

	specify the sub device.	

ResamplerQuality	Not all sound cards do work with the sample rate you wish. In these cases, the sample rate will be generated. You can choose the quality if it.
	For RTTY, SRC_SINC_FASTEST is sufficient, for FAX shold SRC_SINC_BEST_QUALITY be used.
		`SRC_SINC_BEST_QUALITY`
		`SRC_SINC_MEDIUM_QUALITY`
		`SRC_SINC_FASTEST`
		`SRC_ZERO_ORDER_HOLD`
		`SRC_LINEAR`

StartParameter	If you want to give addional parameters to program that does tune the radio, you can specify this here.	
isWaterfall	Switch on or off the waterfall diagramm. Default is on.	Y N
isWaveRecord	When DecoderType=intern, you can save the sound too.	Y N
isDecoder	When DecoderType=extern, you can activate the internal decoder too. For RTTY, NAVTEX only.	Y N
ParameterSet	The line key for a entry in the [ParameterSet] section.	*RTTY450-radio1*

[ReceiveJobs]

Set here the properties for the receiving jobs.
All values are mandotary.

Line key: `rj-000`

Load	Should this job be loaded at program start?	Y N
Start	Starting time in UTC Format: HH:MM:SS	*18:18:50*
Duration	Duration in Seconds	*1520*
Name	The name shown in the program‘s job list.	*Seewetter N u. O-See*
FileName	File name for the result without extension. Consider common restrictions for file names. Spaces are not a good idea. The name is prependet by date and time. Together with starting time, it must be unique.	*Seewetter-NO*
Frequencies	List of frequencies specified in [frequencies] section.	*DDK2|DDH7|DDK9*

Settings

Program settings are stored in `~/.wrx/wrx-preferences.ini`.
All settings are written by the program. There is no need to configure any thing manually.

Setting for developers

For developing purpose, an alternave pair of configuration file can be used.
`~/.wrx/wrx-test-config.ini`
`~/.wrx/wrx-test-preferences.ini`

To activate this, in the `wrx-test-preferences.ini` set
```
[Application]
test=Y
```
`Now`, all starting times are interpreted as offset from current time.

Radio

You can use every radio whose sound can be read from a sound card. It is not neccesary that the radio can be tuned by program call, but very helpful.
To tune the radio, you need a command line tool therefor. For some radios does one exists. If not, have a look to the **hamlib** project. https://hamlib.github.io/. It is in the most Linux distributions present.

Soundkarte

A difficult problem is the reliable assignment between radio and sound card. There exists no method which works under all circumstances. How long only one radio is used, it should be simple to identify it.
On the programs settings page you can choose one of four mehtods. Each method has it‘s pro and cons.

ID	Works reliable if your sound card has a ID. The most ones does not. You need external programs to read the ID‘s and find out the card nr. to a given ID.
Card name	Does work how long the card names are unique. You can find different cards with the same name or you use two identical devices – does not work.
Physical path	Does work how long the same USB plug is used.
Sound card nr.	Only good for the internal card with nr. 0.