Software Modeling

Modeling and Implementation Phase

"Radio Simulator"

- Models -

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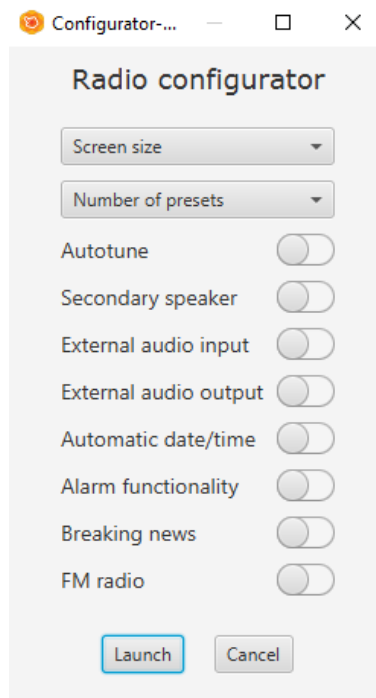
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Contents

Note that both models are in an "alpha" version, which means that they are subject to change in the future (implementation phase).

1 Configurator

Before launching the radio itself, we must choose what functionalities are available and what are not. In order to do that, the first window we encounter when launching the simulation is the radio configurator.
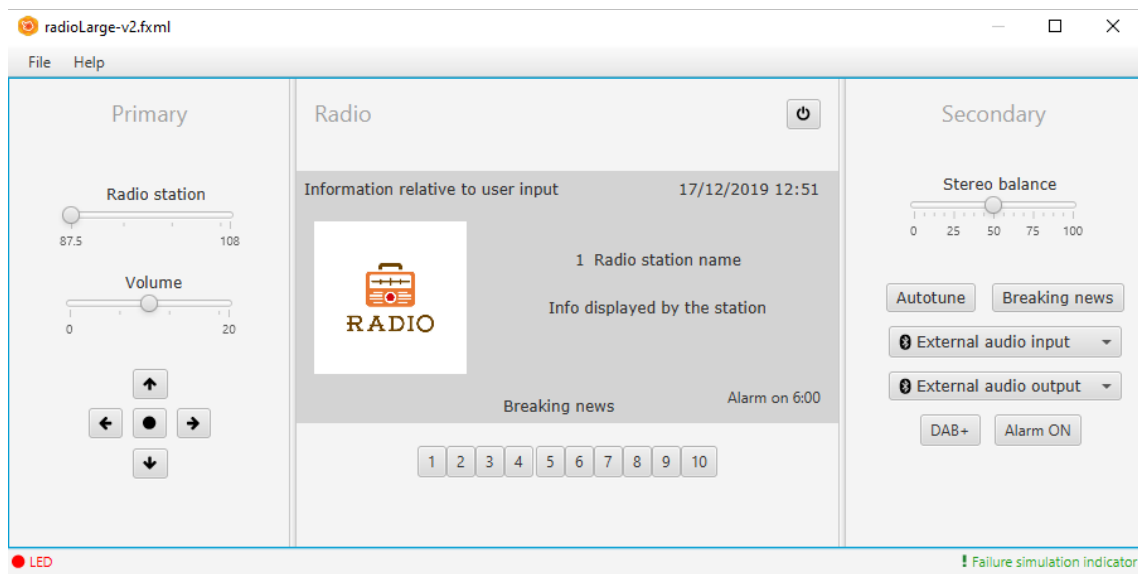
The configurator allows the selection and variation of the radio type:

- Screen size selection (small, medium or large) which changes the amount of data displayed

- Number of presets available (ranging from 3 to 10)

- Enable or disable optional features from the secondary dashboard (see Use case diagram in diagrams report)

2 Radio

As mentioned above, the configurator allows for three types of displays: large, medium and small. The only difference is the amount of information displayed in the radio screen. In order to reduce the amount of figures, we assume that every functionality has been chosen in the configurator.
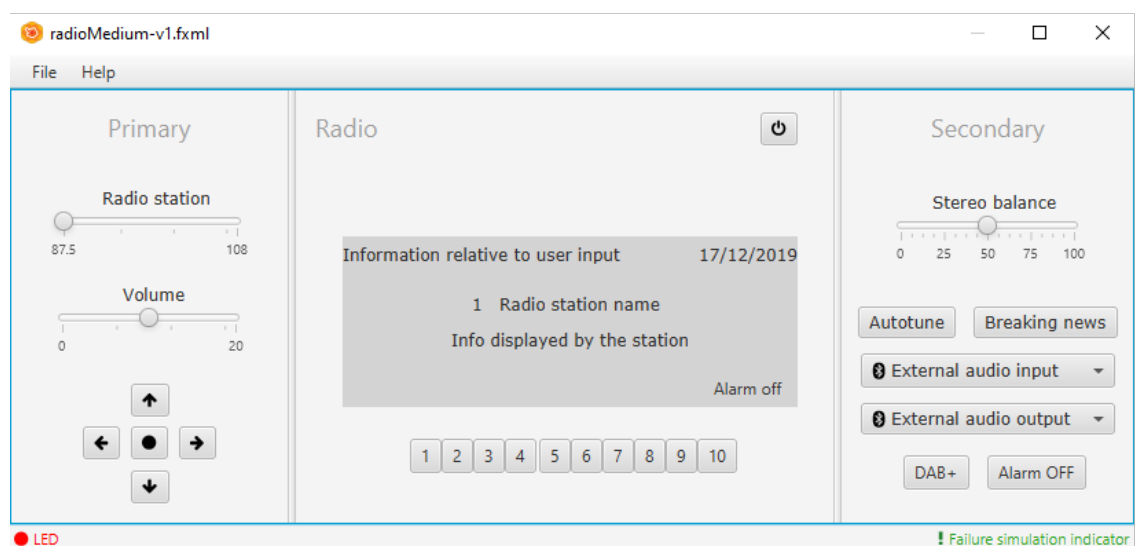
2.1 Large screen size

When choosing all the available functionalities and a large screen, we are met with the window above.

Going from top left to bottom right, we will discuss the different window elements throughout the report:

- Menu: File: contains multiple options such as:

  - Failure simulation: allows to test and observe the radio's behavior following different types of malfunctions.

  - Back to configurator: allows to go back to the configurator in order to use a different type of radio without having to close the window and restart the simulation.

  - Breaking news: simulate a breaking news broadcast from the currently selected station

- Menu: Help: contains information about the radio, simplified user manual and miscellaneous informations.

- Primary: the primary functionalities the radio has, they come in every radio regardless of its screen size; radio station selection slider, volume slider and navigation controls. The latter has many uses. Please refer to the use cases' description in the diagrams report for detailed description. We will briefly enumerate these uses:

  1. Choose what information is displayed in the monitor: the user uses the four arrows to navigate the screen, the selected text is highlighted. It is possible to hide or show the information using the center button.

  2. Change the date and time

  3. Set the alarm time

- The 10 preset buttons are displayed in the center of the window despite being part of the primary dashboard, this is simply a design choice.

- Power button: allows to turn the radio on of off, the LED indicator bellow changes accordingly.
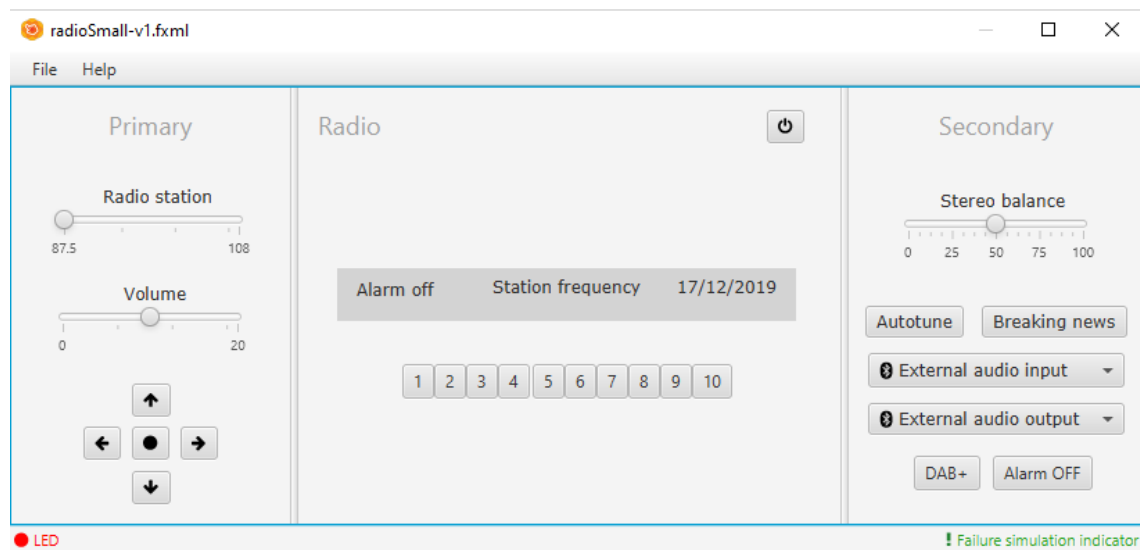
2.2 Medium screen size

When choosing a medium screen size, we can no longer see the radio station's image and breaking news. In this case the user can only hide/display the initially available information (they can not show the radio's image since it does not exist due to the limited screen size). Moving on to the screen display:

- Top left: the relative information to the user's input. For example: if the user changes the volume, the radio displays the information here.

- Top right: the current date and time

- Center: the radio station's number and name followed, underneath it, by its informations.

- Center left: the radio station's image (logo, ad, ...)

- Bottom center: breaking news, which are only displayed when receiving the information from the radio channel.

- Bottom left: alarm status (on/off) and the time it is set to.

2.3 Small screen size

When choosing a small screen size, the only available information in the screen is the radio station's name and the date and time.

The secondary dashboard contains the optional features chosen in the configurator:

- Stereo balance: allows the user to balance the audio between left and right speaker

- Autotune and breaking news

- External audio input: allows the user to plug in an external audio input allowing the radio to receive sound from an external device. There are three choices (USB, audio jack and bluetooth)

- External audio output: allows the user to plug in an external audio output allowing the radio to redirect the sound to external speakers. There are two choices. (audio jack and bluetooth)

- DAB+: allows to switch from DAB+ to FM standard and vice versa.

- Alarm ON/OFF: activate or deactivate the alarm.

- Failure simulation indicator: displays the state of the radio following a simulated malfunction.