

Wishful Srslte Extension (WISE)

Goals

To introduce the srsLTE software radio platform as a usable testbed within the Wishful architecture and by doing so enable the following functionality:

1. To allow experimenters to manipulate a standards-compliant LTE radio link.
2. To extract detailed metrics on the performance of the link and the impact of different configurations/manipulation.
3. To enable experimenters to carry out detailed measurement and analysis of live 4G LTE networks

Challenges

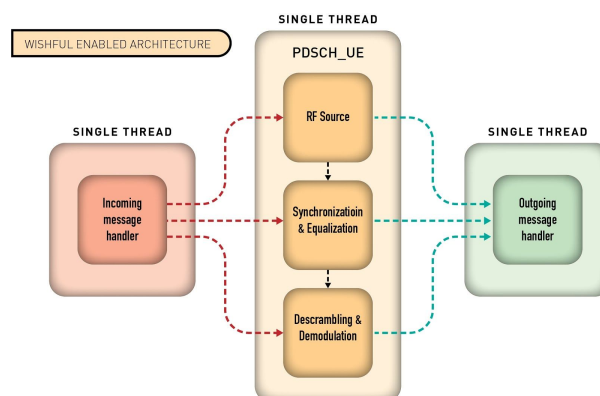
To update the capabilities of the Wishful UPIs where necessary to enable proper control of the srsLTE.

To Construct a Local Monitoring & Configuration Engine (LCME) that will fully and properly control the srsLTE software radio platform, as well as interact with the appropriate UPIs in the standard manner.

To develop a method of using the TCD N series USRPs at LTE sampling rates.

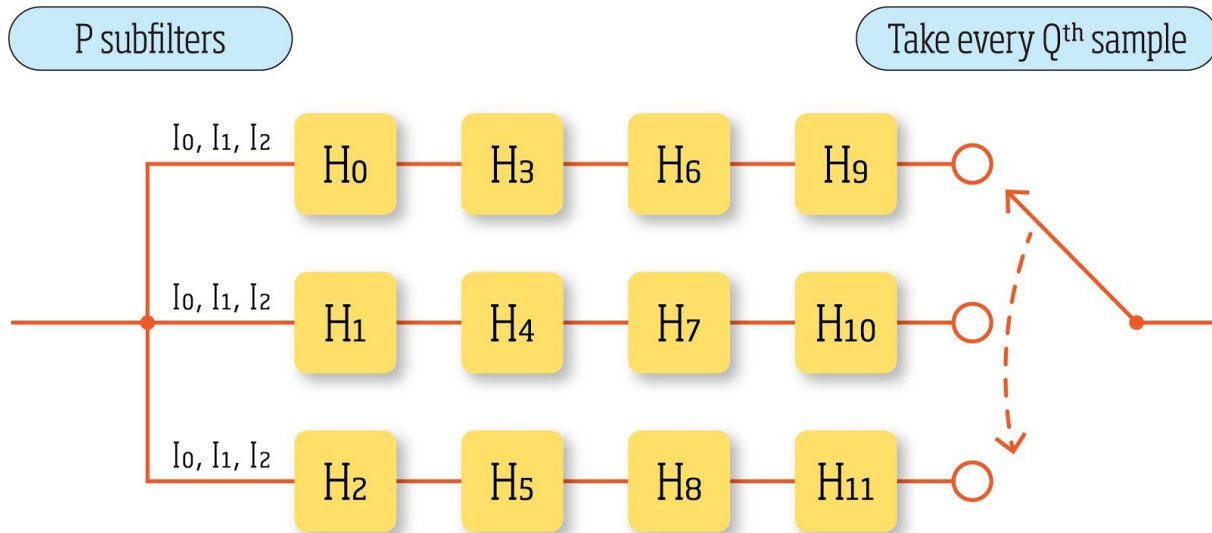
Description of Extension

The WISE extension consisted of three distinct parts. First the augmentations made to the srsLTE platform to allow for interaction with the Wishful framework. Figure 1 shows the modified UE which with threads for handling Wishful framework interaction.



Second was the Local Monitoring & Configuration Engine (LMCE). This component acted as the hook from the srsLTE platform into the Wishful framework. It consisted of several TCP connections between the srsLTE platform and the component as well as the logic to manage the commands being sent and received by the Wishful platform.

Thirdly, Figure 2 shows the polyphase arbitrary fractional resampler that was constructed in order to enable use of the TCD testbeds N series USRPs at the standard LTE rates.



Conclusions

Through this extension, we were able to integrate the srsLTE platform into the wishful framework and run a successful PHY LTE link, change parameters of the link in real time and observe metric outputs. The API conforms with the standard set by other LTE platforms available in the framework, and should be intuitive for researchers to use.

Feedback

The general administrative interaction has been timely and efficient, with all relevant information and documentation provided where appropriate. The technical support from the TCD patrons was comprehensive and very helpful at all stages.

Thanks to the software tools and hardware provided to us by WiSHFUL we were able to successfully integrate our software radio platform in the wider framework for use by future researchers.