Interlock

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Summary

- The goal of this presentation to explain the concept of interlocked transmitters and the requirements set by the contest rules

- Through block schemes it explains the differences among station control architectures for different *modus operandis*

- Shows an a simplistic example highlighting the challenges interlocking presents

- Encourages the audience to experiment

Concept

- SO2R is mostly based on a single-computer setup where the controlling signals are switched by the controlling device. This solution offers interlocking control signals

- SO2R is also done with two computers – which requires an interlock between them – referred as SO2C

- Since WRTC-2010 intra-band operation has gained popularity in Multi-Ops, often a requirement to score near or on the top

- Contest rules explicitly require interlock and current results show disqualifications resulted by the lack of a functioning interlock

Current rulings of interlock requirements for SO

- CQ WW: IX/7, CQ WPX X/G: *Only one signal on a band is allowed at any time. When two or more transmitters are present on the same band, a hardware device MUST be used to prevent more than one signal at any one time. Alternating CQs on two or more frequencies on a band is not permitted.*

- IARU HF: 4.2.4: *Single operator stations are allowed only one transmitted signal at any given time.*

- RDXC: 5.2 *Single Operator participants may change bands and modes without restrictions. Only one signal can be transmitted at any given time.*

- ARRL DX: 2.2.2. *Single Operator Unlimited stations are allowed only one transmitted signal at any given time, not including transmissions on a spotting net.*
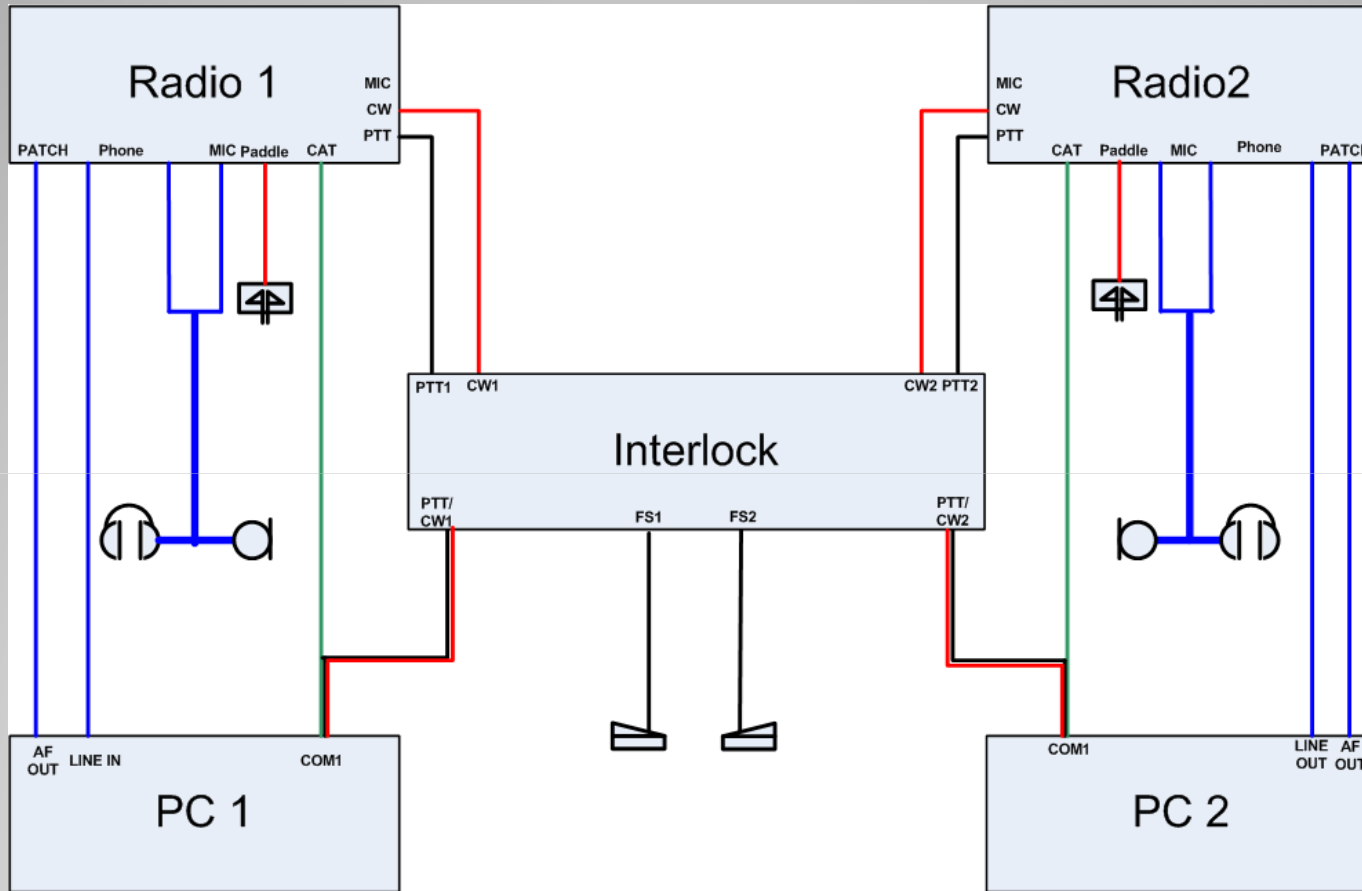
SO2R Block scheme
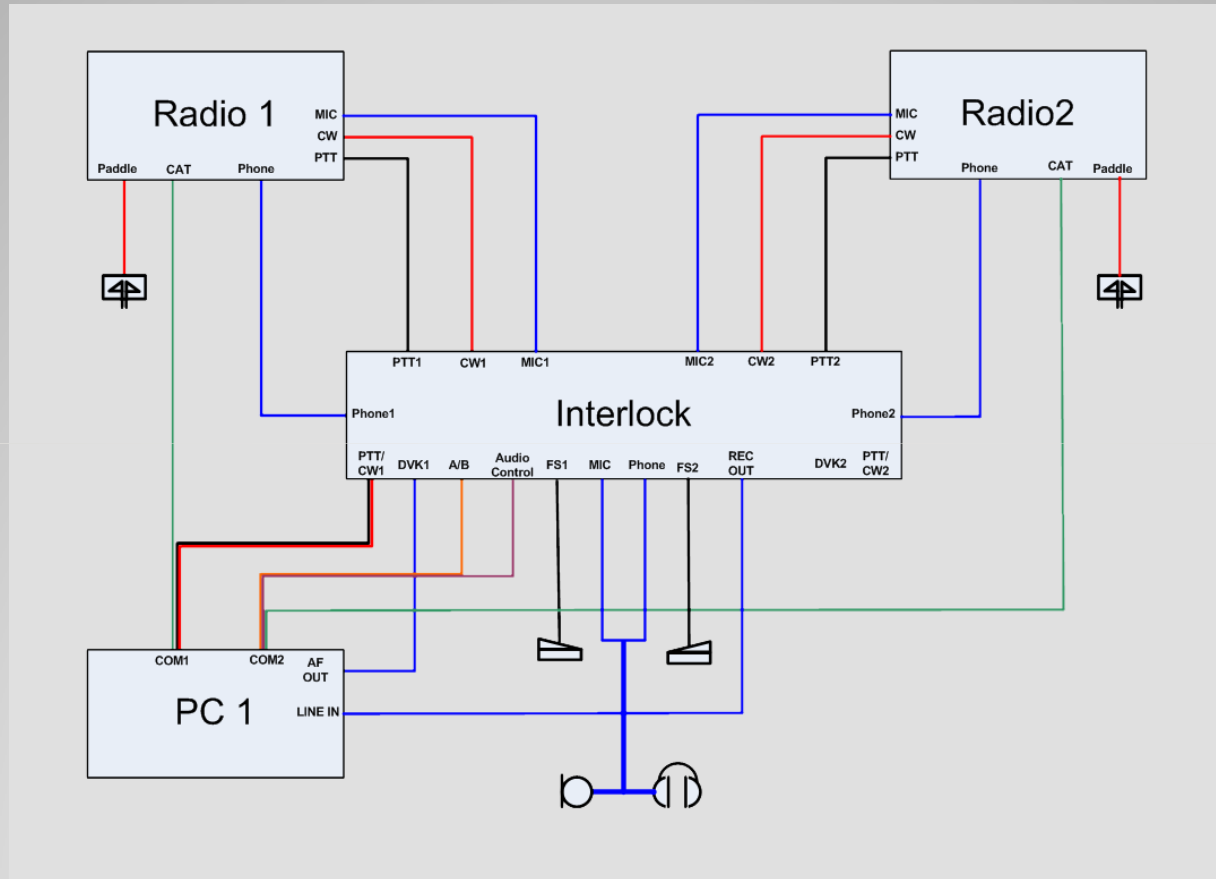
SO2C Block scheme
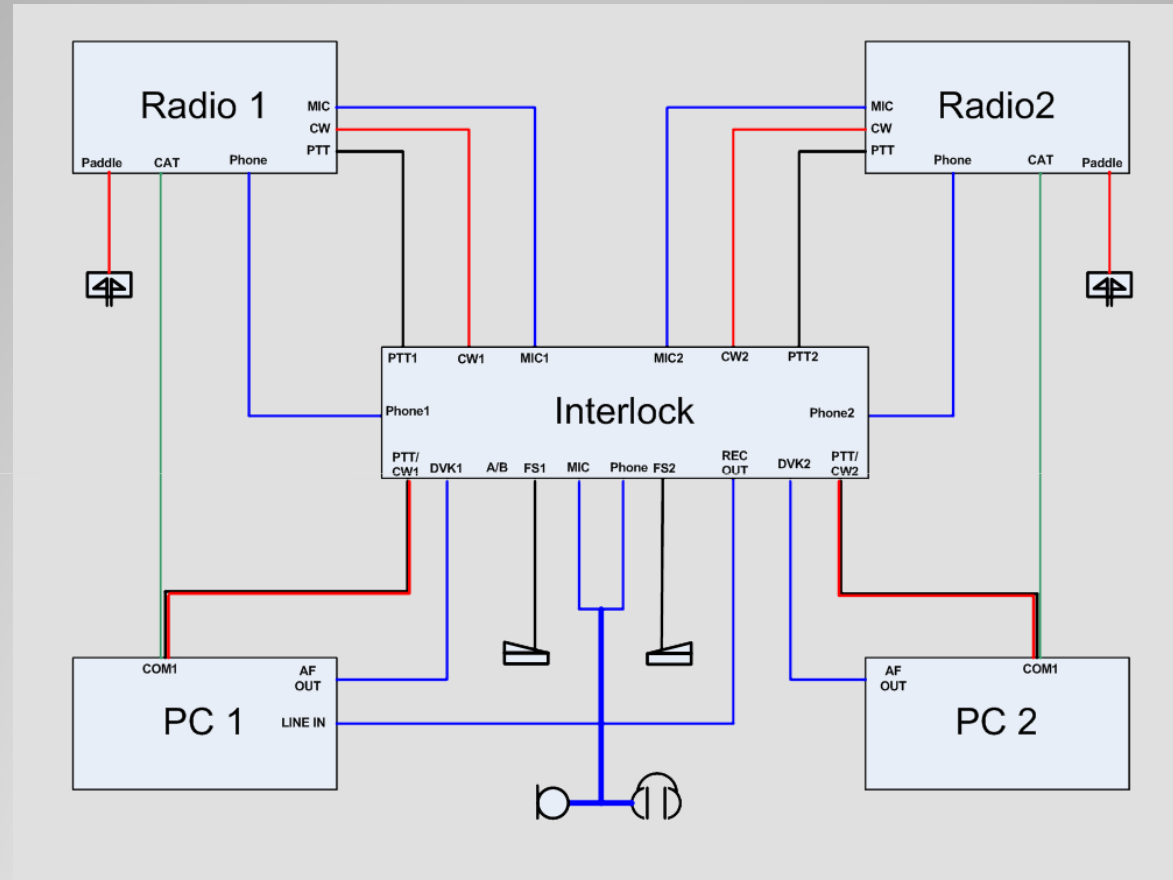
MO with inband Block scheme

Interlocking solutions

- SO2C and multiband inband is conceptionally similar – TX signal routing and handling is the same

- There are several solutions on the market available
  - *4O3A's Lock X*
  - *EA4TX's interlock*

- The commercial units support daisy-chaining and integration into station automation systems of the vendors

- The idea is to present a solution which fulfills the basic requirements and explain the concept

- This unit will be made public domain via BCC web soon

Technical aspects

- Keep grounds seperated – no galvanic conection, no problems

- Foot switches shall override computer transmission

- Small signal relays are cheap and easy to experiment with

- Micorcontrollers and µc prefab boards and devkits offer great opportunities to develop a non-relay based solution at very low intake cost.

Schematic of a simplistic implementation
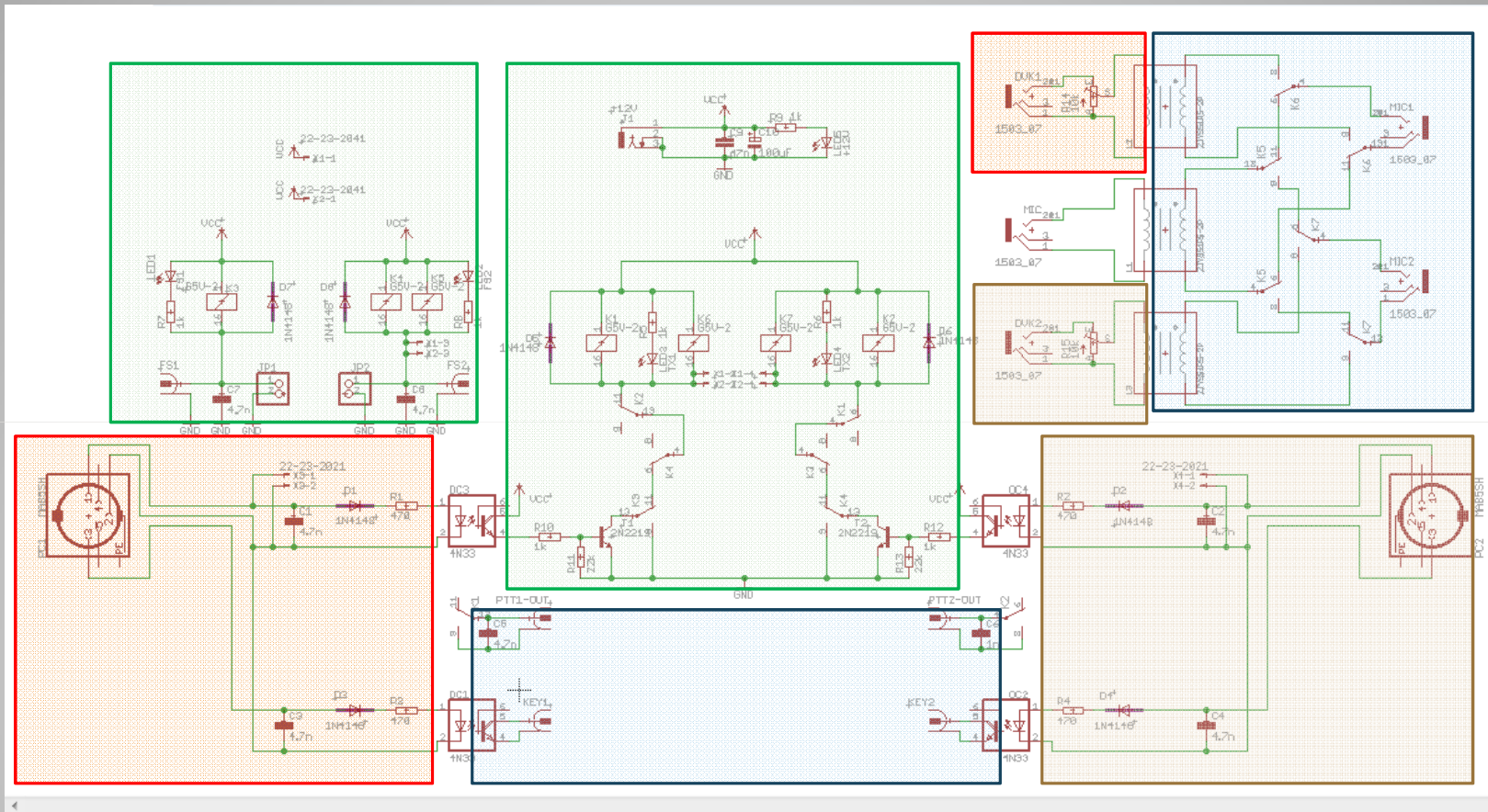
Prototype unit
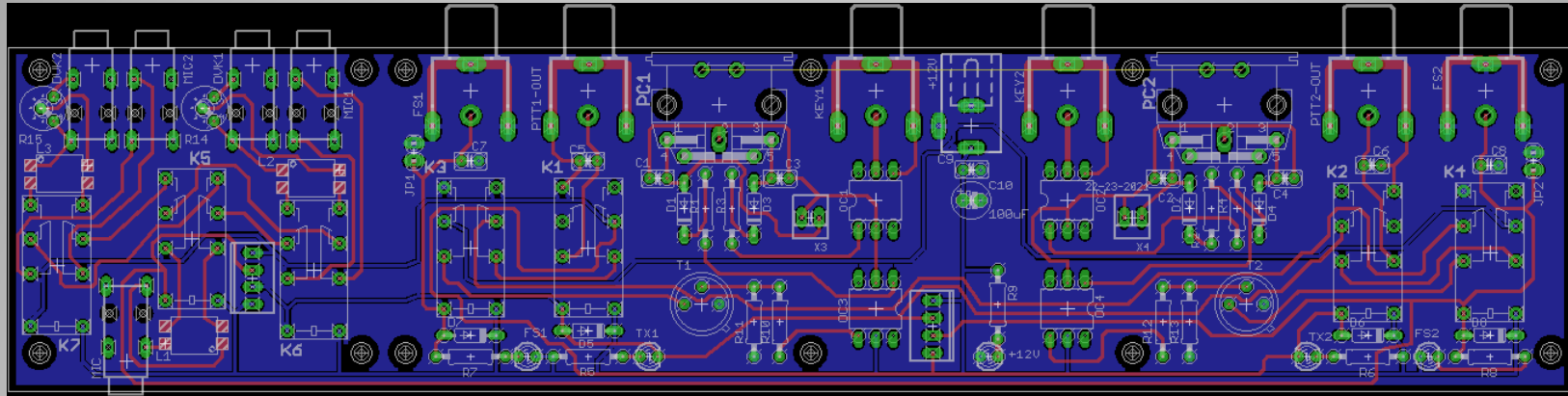
- The entire documentation will be released to public via the Technical Editor of Bavarian Contest Club at free of charge

Commercial solution example

- 4O3A developed his standalone, microcontroller-based lockout device

- It can interlock 3 transceivers and distribute PTT

- Built in sequencer

- Interlock priority implementation (aka God-mode)

References

- *EA4TX's interlock: http://ea4tx.com/ea4tx-interlock/*
- *4O3A's Lock X: http://www.4o3a.com/index.php/products/station-automation/lock-x*

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