Backchannel with Repeaters (Retimer or Redriver)

Walter Katz
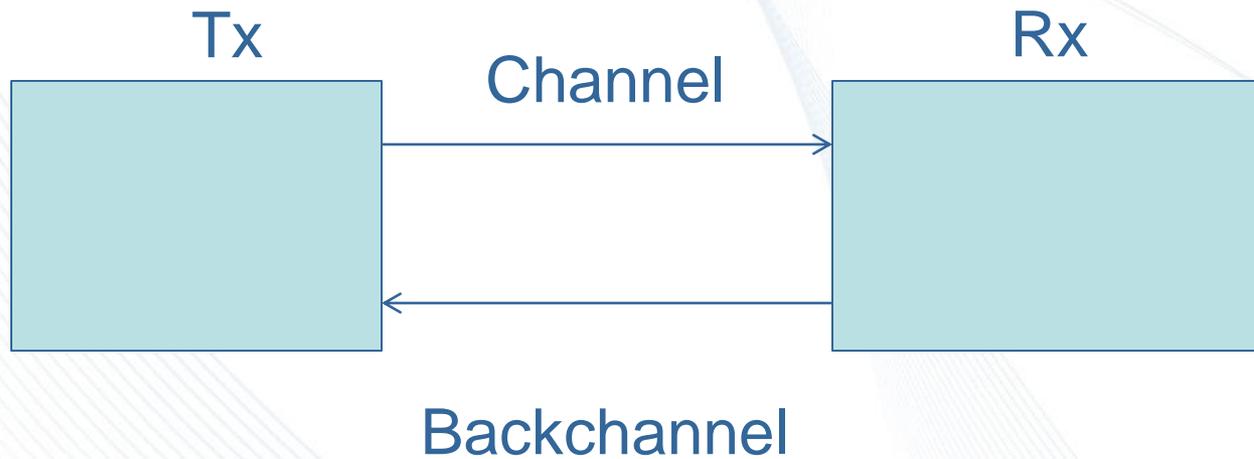
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Overview

- Repeater Types
- Classical Backchannel (Training)
- Redriver Backchannel
- Retimer Backchannel
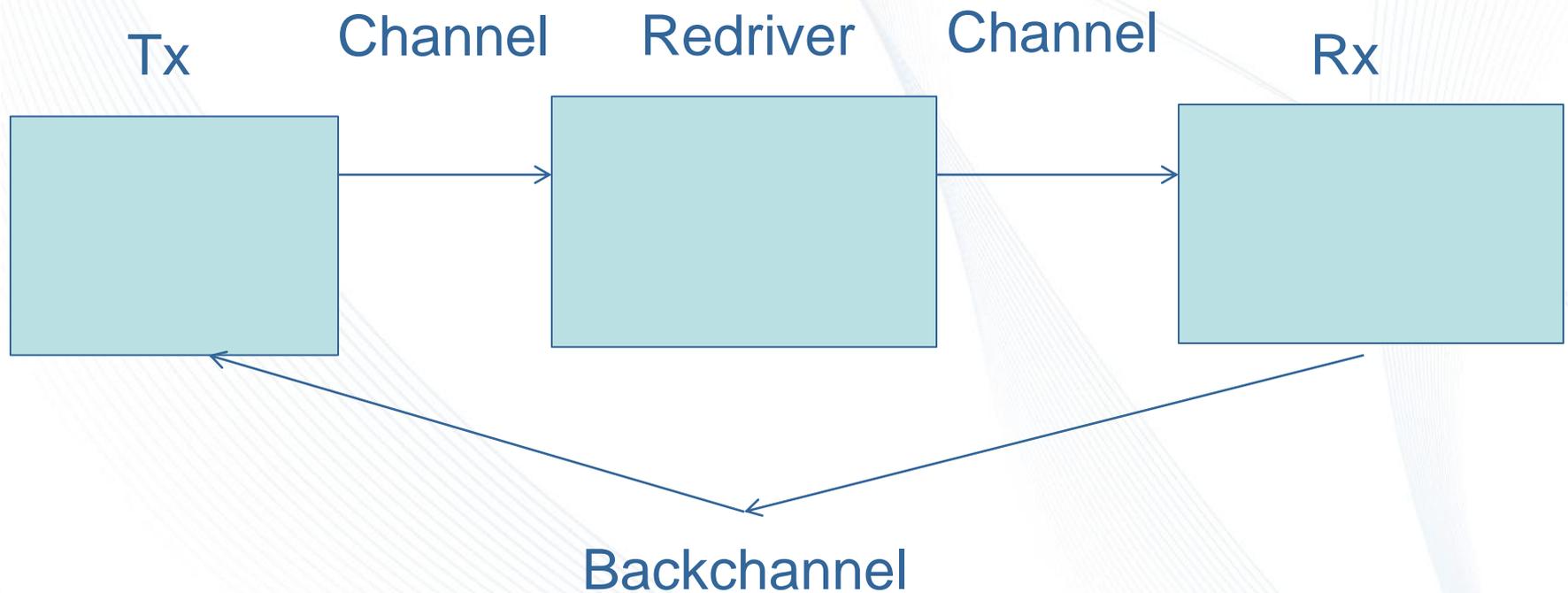- Backchannel Repeater Rule
- Conclusion

Repeater Types

- A repeater is either a redriver or a retimer
  - Redriver
    - Amplifies and shapes a signal
    - Can have peaking filters and FFE
    - Not LTI
  - Retimer
    - Contains a CDR and regenerates a stimulus
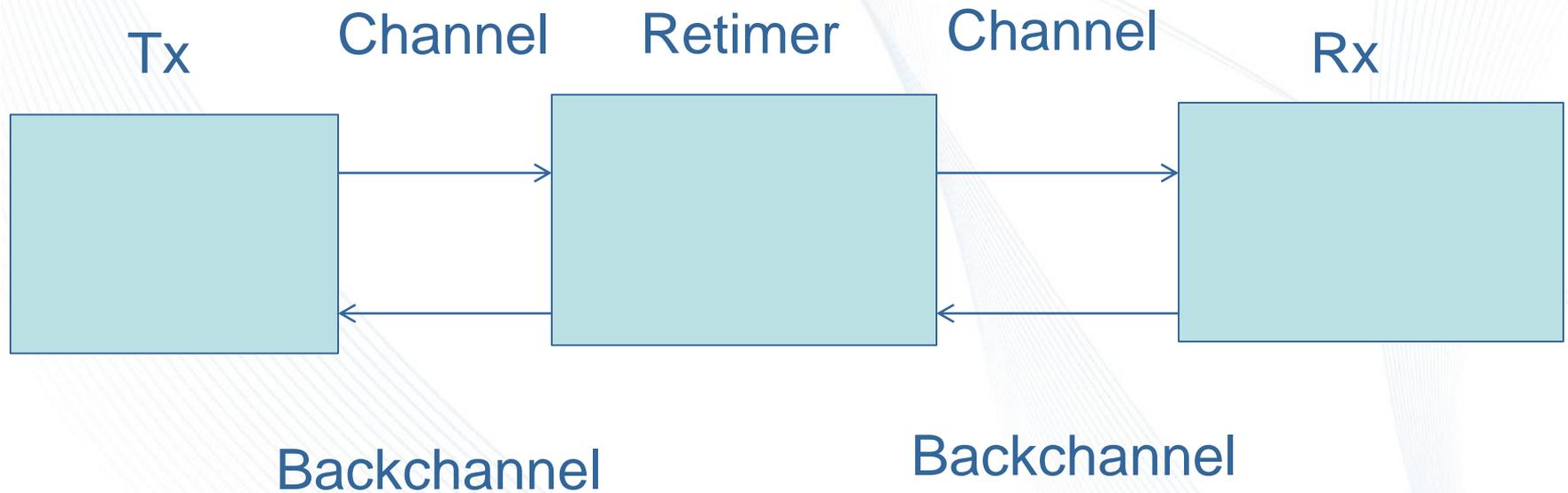   - Rx side can have peaking filters, DFE, …
    - Tx side can have FFE, …

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Classical Backchannel (Training)

Tx

Channel

Rx

Backchannel

Redriver Backchannel

Tx   Channel   Redriver   Channel   Rx

Backchannel

Retimer Backchannel

Tx — Channel — Retimer — Channel — Rx

Backchannel   Backchannel

Backchannel Repeater Rule

- Retimers can be trained
- Redrivers cannot be trained
- Each Rx that has Backchannel capability trains the closest trainable upstream Tx

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Conclusion

All of this makes logical sense, and when one talks to people "in the know" what is described above is how they think it should work.

FAMOUS LAST WORDS