Normative and Informative

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Overview

- Redriver flow problem as an example
- IBIS 6.0 Flow
- BIRD 166 Flow
- Normative and Informative
- IEEE Definitions
- IBIS is both Normative and Informative
- Rethinking BIRD 166 in This Context
- Other Examples
- Conclusions

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Redriver Channel

Upstream Channel Downstream Channel

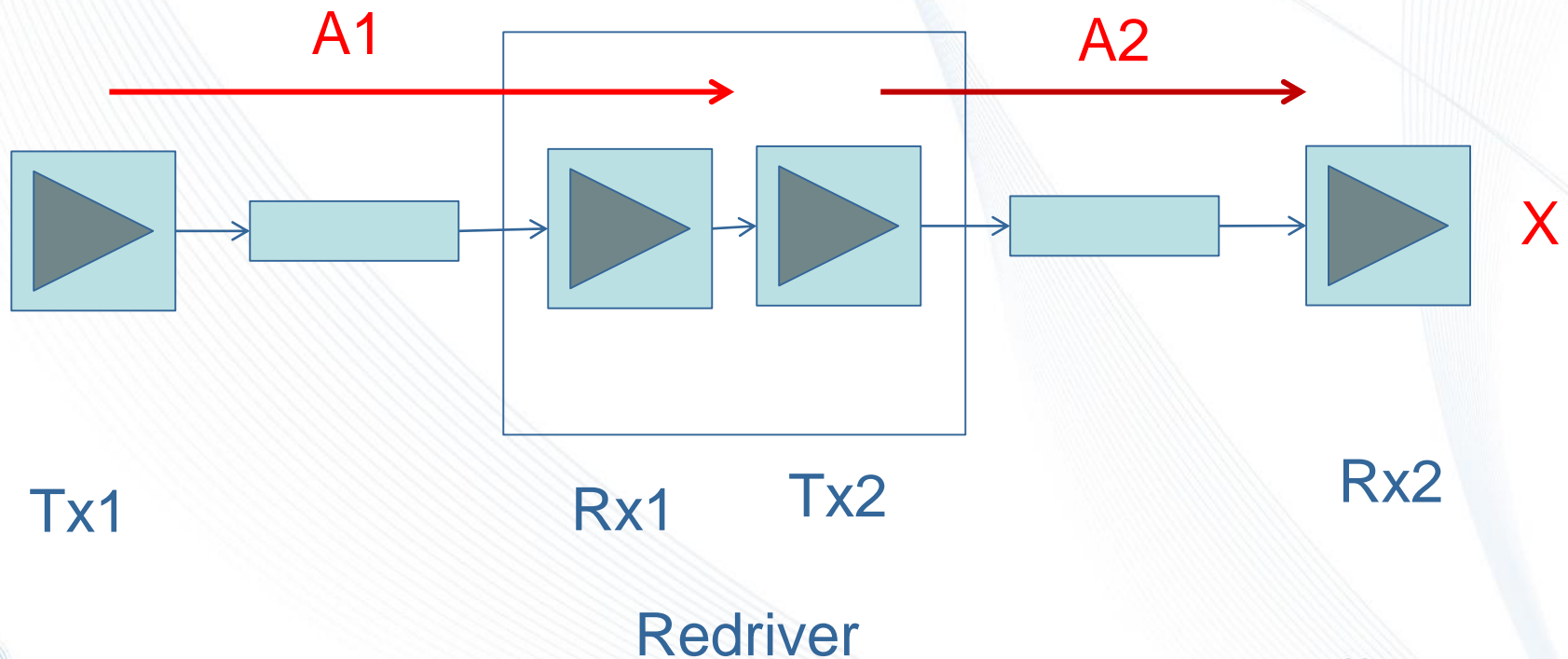Tx1 Rx1 Tx2 Rx2

Redriver

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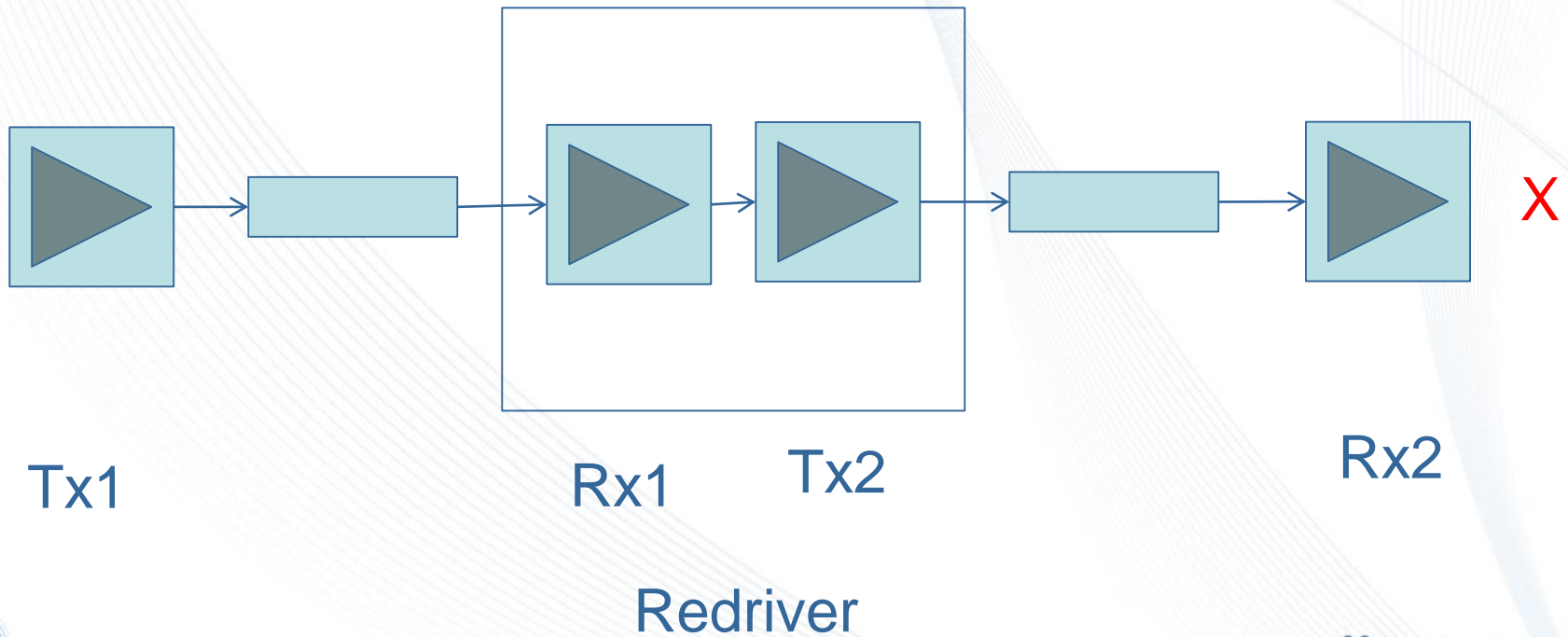
IBIS 6.0 Redriver Statistical Flow
Input to Rx2 is A2
X is Output of Rx2 Convolved with A1

Upstream Channel   Downstream Channel

A1   A2

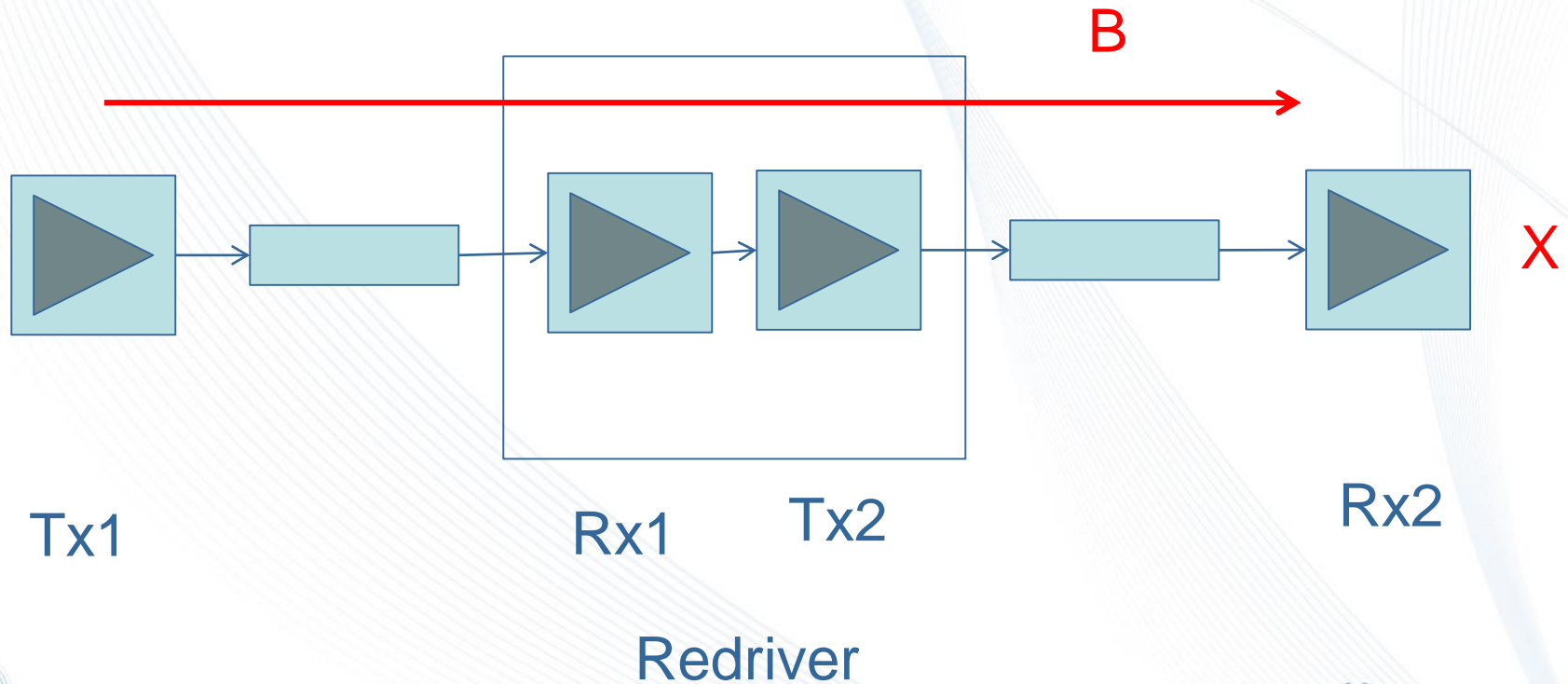Tx1   Rx1   Tx2   Rx2   X

Redriver

If Equalization in Rx2 Depends on It's Input then Input to Rx2 Should Be "B" (BIRD 166)

Upstream Channel   Downstream Channel

B

X

Tx1   Rx1   Tx2   Rx2

Redriver

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Normative and Informative

- **Normative** means relating to an ideal standard of or model, or being based on what is considered to be the normal or correct way of doing something.

- **Informative** is something that contains useful, helpful or relevant information or details.

- If IBIS is a standard that describes how a model operates, then any description or examples of how models are used must be considered "Informative" (not "Normative")

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IEEE Definitions

Subclause 6.4.1 of the *IEEE-SA Standards Board Operations Manual* defines which parts of a standard are normative and which parts of a standard are informative.

Normative text is information that is required to implement the standard and is therefore officially part of the standard. Informative text is provided for information only and is therefore not officially part of the standard.

IEEE standards note each section as being (normative) or (informative)

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Rethinking BIRD 166 in This Context

- One can argue for both of these flows, and it depends on whether the Tx2 AMI_Init changes it's equalization on the impulse response of the downstream channel. BIRD 166 clearly defines the problem with the Redriver flows in IBIS 6.0.

- Should BIRD 166 be changed to not modify or augment the Redriver flows (which are in any case Informative), but limit itself to adding a new reserved parameter Tx_Init_Optimizes that tells the EDA tool (or the DLL) whether is does or can change its equalization based on it's input impulse response.

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Other Examples (My Answers in *Red*)

- Are the reference flows for AMI modeling *Informative* or Normative?

- Are the package model unused termination *Informative* or Normative?

- Are there rules to use which typ/min/max C_comp to use with typ/min/max IV and VT tables to generate K-Table data. And if so are they *Informative* or Normative?

- Are there rules to use which typ/min/max Corner C_comp to use with typ/min/max IV and VT tables to generate K-Table data. And if so are they Informative or *Normative*?

- Must GND be global ground *Informative* or Normative?

Conclusion

- ## What is clearly Normative
    - IBIS ASCII file(s) syntax
    - IBIS ASCII file(s) context
    - AMI executable model inputs and outputs
    - Defined data relationships

- ## What is clearly Informative
    - How to generate models
    - How to use models
    - Examples

- ## Should IBIS in general, and new BIRDs in particular specify what is Normative and what is Informative?

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