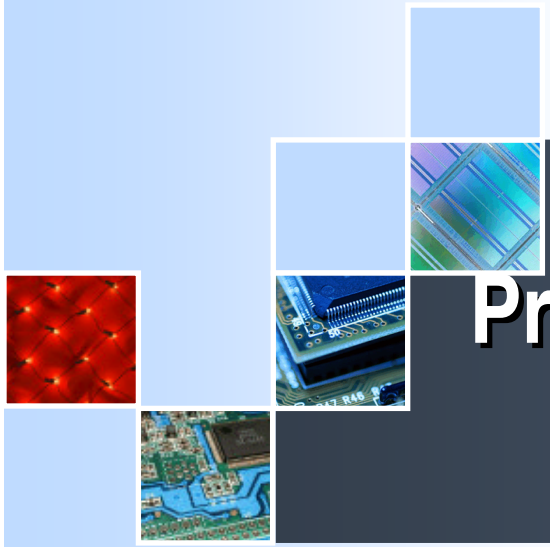


Proposal for AMI Flow "Cases 4 & 7"

July 2010

Ken Willis – Sigrity
Kumar Keshavan – Sigrity
Ambrish Varma – Cadence Design Systems

SIGRITY

Overview

- Problem statement
- Proposed solutions

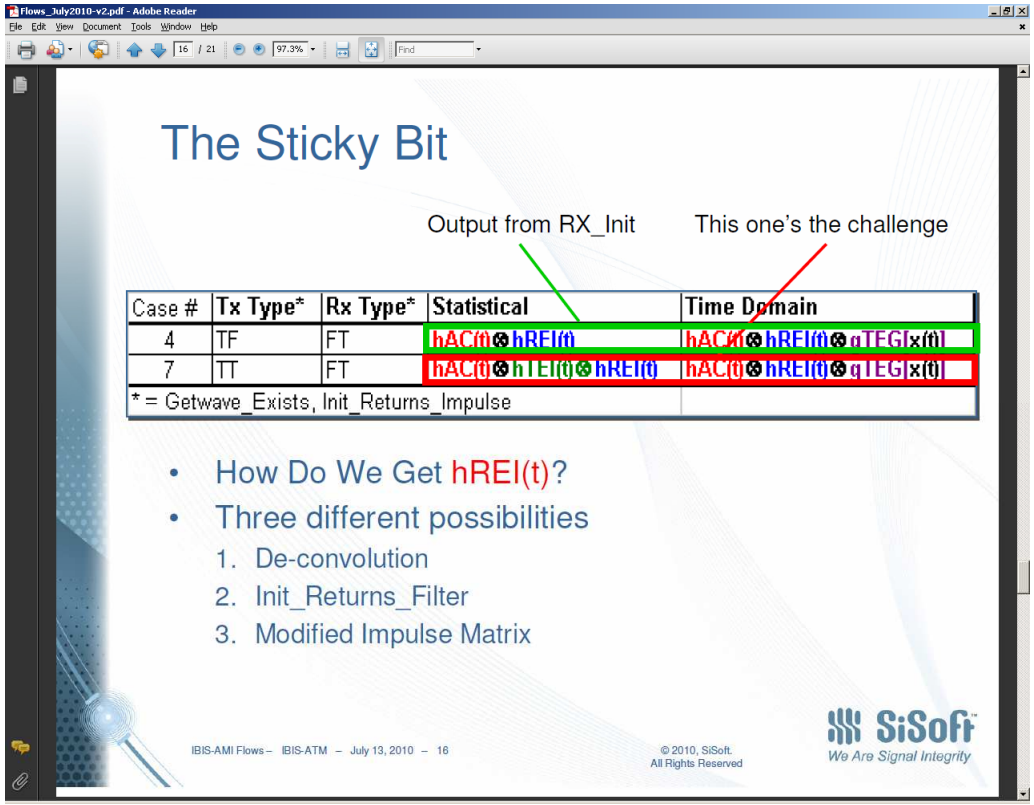
Problem Statement

Problem Statement

- Nine combinations of AMI_GetWave and AMI_Init have been identified for Tx and Rx models, per SISoft's recent presentation
- Four of these contain a "TF" AMI model, and do not support statistical simulation
  - This has been accepted by the IBIS-ATM committee
- Two of the nine combinations involve Tx GetWave to Rx Init, and are troublesome for some time domain simulations
  - Cases 4 and 7

Cases 4 and 7 (from recent SISoft presentation)

- When Tx uses GetWave and Rx uses Init, the impulse response the Rx model gets is just for the raw analog circuit channel
- The Tx equalization effects aren't included in the impulse response passed to the Rx



The Rx AMI model is not provided the right starting point for optimization (if it includes optimization functionality)

When are Cases 4 & 7 an issue?

- Only an issue for time domain simulations
  - Statistical simulation rules out AMI_GetWave
- Tx uses AMI_GetWave
  - Typically for advanced techniques
- Rx AMI model only uses Init
  - Typically a simplified representation
- Rx Init performs automated optimization

Is the added complexity of Init_Returns_Filter worth flow support for "time domain, advanced Tx, simple Rx with optimization" case??

What are the alternatives for Cases 4 & 7?

- From SISoft presentation there were 3:
  - De-convolution
    - Tools can do this now
  - Init_Returns_Filter
    - BIRD is on the table for this one
  - Modified Impulse Matrix
    - Rejected at last week's meeting
- Anything else?

Proposed Solutions

Case 7 Proposal for Tx (TT) to Rx (FT)

- Tx has a “dual” model with both GetWave and Init functionality
- User can simply configure the Tx AMI file to use its “Init” functionality instead
- EDA tool can even notify the user of the troublesome TT > FT combination, so they can change the configuration
  - EDA tool already needs to flag user when they run a statistical analysis and AMI_GetWave is present

- ***There is a clean path for time domain simulation of Case 7 without Init_Returns_Filter***

Case 4 Proposal for Tx (TF) to Rx (FT)

- Init-based AMI models typically allow settings to be input by the user
- Use EDA tool to sweep the Rx settings and determine the optimum ones
- These settings can be applied to the Rx AMI model and full time domain simulations can be run

- ***There is a clean path for time domain simulation of Case 4 without Init_Returns_Filter***

Summary

- Tx_GetWave to Rx_Init is a troublesome combination
- This combination occurs in Cases 4 and 7
- Case 7 (TT > FT) is a non-issue, because the Tx is a “Dual” model, thereby supporting both statistical and time domain simulation
- Case 4 (TF > FT) is rare today, and will become more rare as data rates increase
- Case 4 can be addressed by the EDA tool:
  - De-convolution
  - Sweeping of user-defined Rx settings

- ***The added flow complexity of Init_Returns_Filter is NOT required!***

Thank You!