AMI flow #7 - statistical simulation only
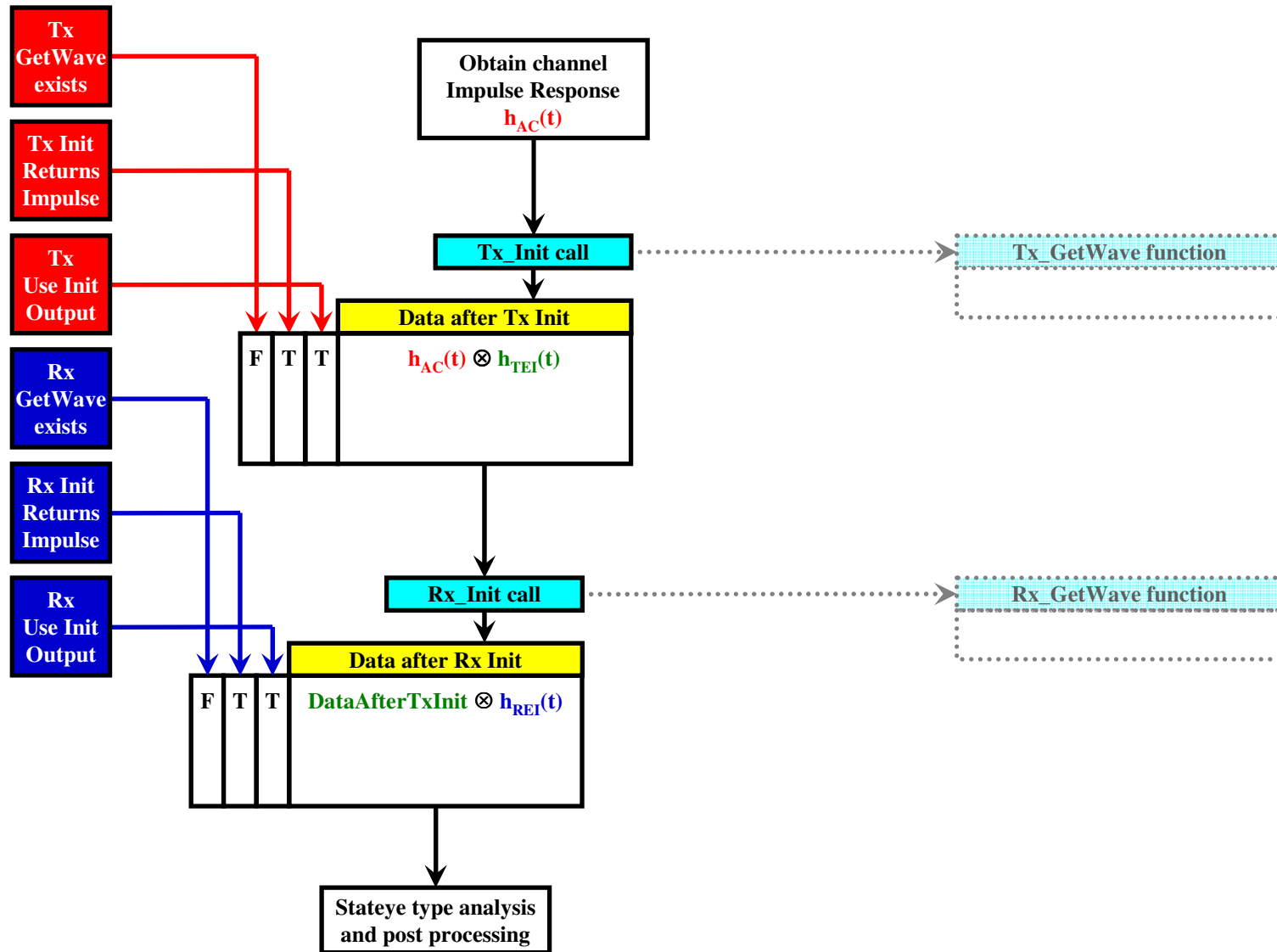
Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response
$h_{AC}(t)$

Tx_Init call ⋯⋯⋯⋯▶ **Tx_GetWave function**

F	T	T	**Data after Tx Init**
			$h_{AC}(t) \otimes h_{TEI}(t)$

Rx_Init call ⋯⋯⋯⋯▶ **Rx_GetWave function**

F	T	T	**Data after Rx Init**
			DataAfterTxInit $\otimes$ $h_{REI}(t)$

Stateye type analysis and post processing

Notes:
1. *When GetWave_Exists = FALSE, both Use_Init_Output and Init_Returns_Impuse must be TRUE*
2. *For statistical simulations both GetWave_Exists are always treated as FALSE, no matter how it is declared in the model*
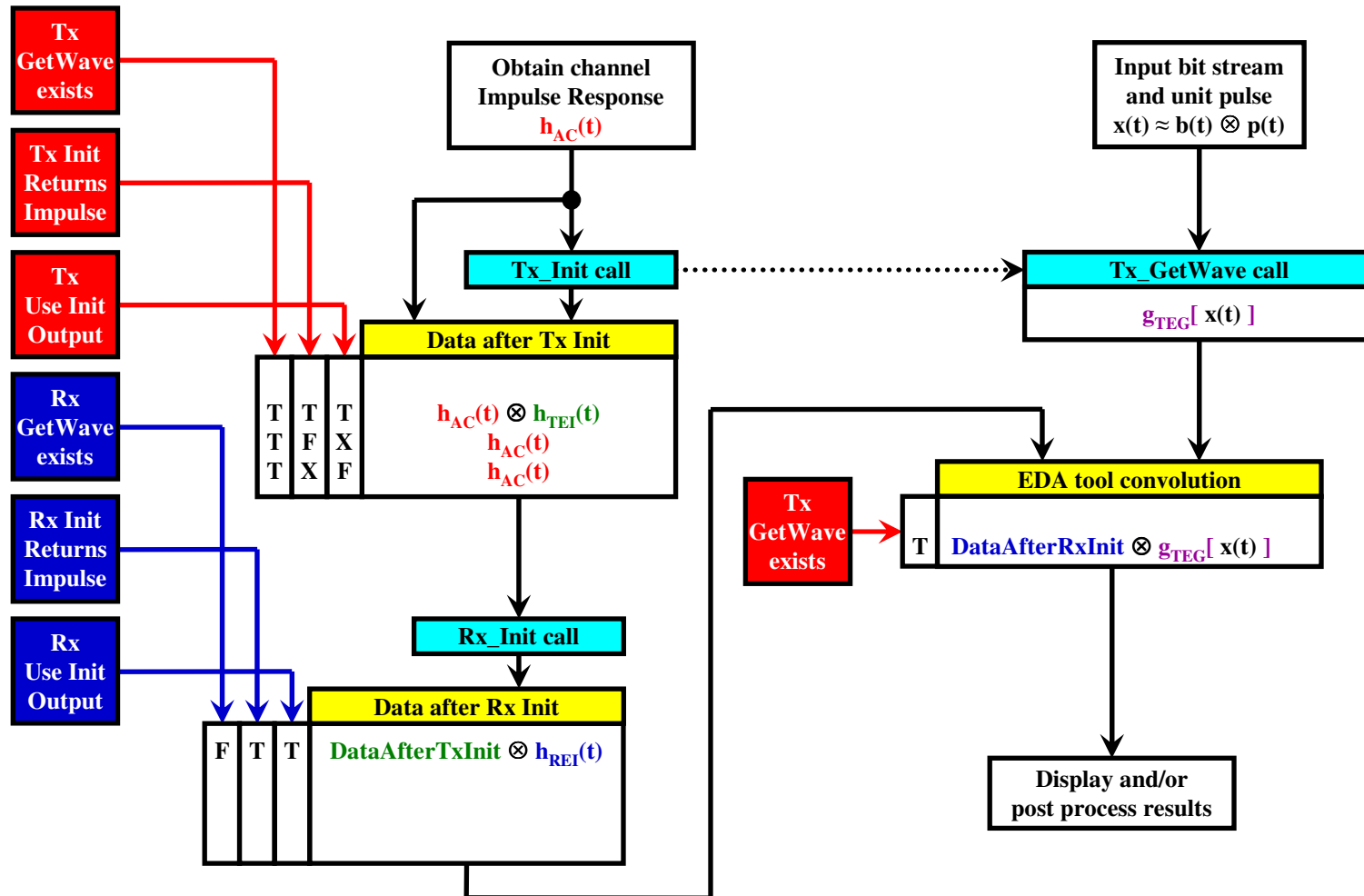3. *Use_Init_Output is optional. If not declared it defaults to TRUE.*

AMI flow #7 - statistical and TD simulations without GetWave
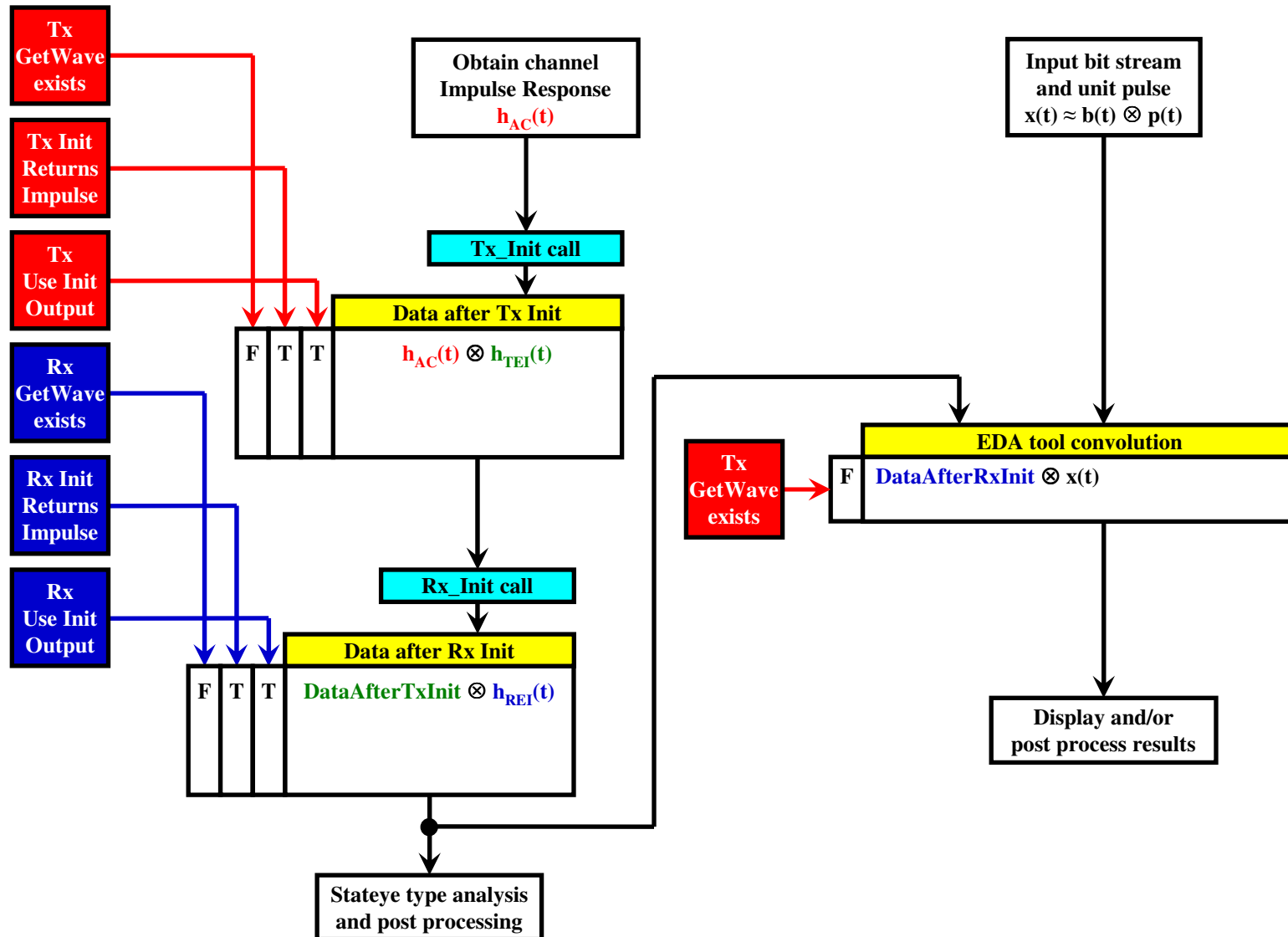
Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response $h_{AC}(t)$

Input bit stream and unit pulse $x(t) \approx b(t) \otimes p(t)$

Tx_Init call

Data after Tx Init

| F | T | T | $h_{AC}(t) \otimes h_{TEI}(t)$ |

Rx_Init call

Data after Rx Init

| F | T | T | **DataAfterTxInit** $\otimes h_{REI}(t)$ |

Tx GetWave exists

EDA tool convolution

| F | **DataAfterRxInit** $\otimes x(t)$ |

Display and/or post process results

Stateye type analysis and post processing

Notes:
1. *When GetWave_Exists = FALSE, both Use_Init_Output and Init_Returns_Impuse must be TRUE*
2. *For statistical simulations both GetWave_Exists are always treated as FALSE, no matter how it is declared in the model*
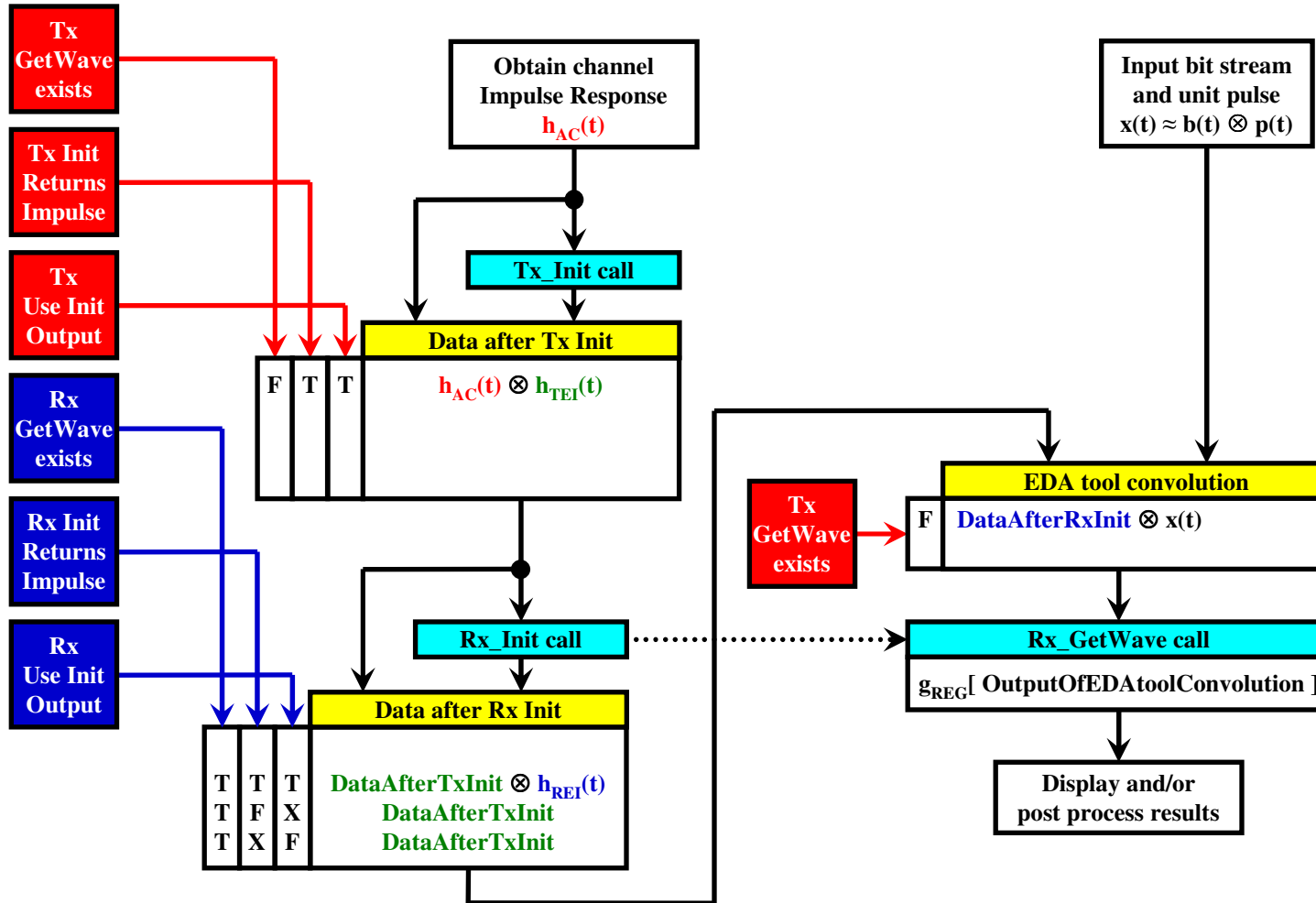3. *Use_Init_Output is optional. If not declared it defaults to TRUE.*

AMI flow #7 - TD simulations with Tx GetWave only

Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response
$h_{AC}(t)$

Input bit stream and unit pulse
$x(t) \approx b(t) \otimes p(t)$

Tx_Init call

Tx_GetWave call
$g_{TEG}[\ x(t)\ ]$

Data after Tx Init

T	T	T
T	F	X
T	X	F

$h_{AC}(t) \otimes h_{TEI}(t)$
$h_{AC}(t)$
$h_{AC}(t)$

Tx GetWave exists

EDA tool convolution

T

$DataAfterRxInit \otimes g_{TEG}[\ x(t)\ ]$

Rx_Init call

Data after Rx Init

F	T	T

$DataAfterTxInit \otimes h_{REI}(t)$

Display and/or post process results

Notes:
1. *When GetWave_Exists = FALSE, both Use_Init_Output and Init_Returns_Impuse must be TRUE*
2. *For statistical simulations both GetWave_Exists are always treated as FALSE, no matter how it is declared in the model*
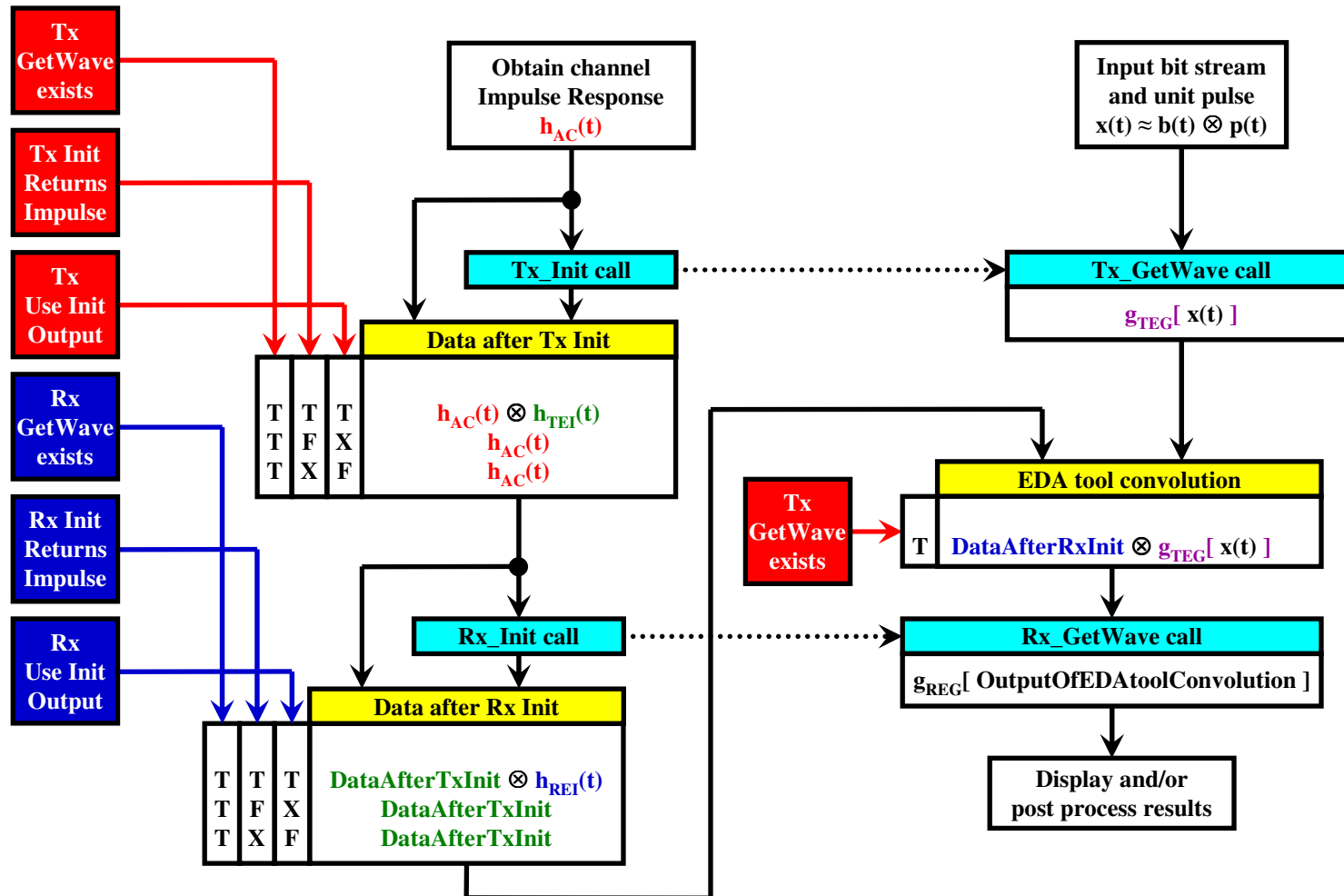3. *Use_Init_Output is optional. If not declared it defaults to TRUE.*

AMI flow #7 - TD simulations with Rx GetWave only

Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response
$h_{AC}(t)$

Input bit stream and unit pulse
$x(t) \approx b(t) \otimes p(t)$

Tx_Init call

F	T	T	**Data after Tx Init**
			$h_{AC}(t) \otimes h_{TEI}(t)$

Tx GetWave exists

F	**EDA tool convolution**
	DataAfterRxInit $\otimes$ **x(t)**

Rx_Init call

Rx_GetWave call
$g_{REG}[$ **OutputOfEDAtoolConvolution** $]$

T T T	T F X	T X F	**Data after Rx Init**
			DataAfterTxInit $\otimes$ $h_{REI}(t)$ **DataAfterTxInit** **DataAfterTxInit**

Display and/or post process results

AMI flow #7 - TD simulations with both GetWaves

Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response
$h_{AC}(t)$

Input bit stream and unit pulse
$x(t) \approx b(t) \otimes p(t)$

Tx_Init call .... **Tx_GetWave call**
$g_{TEG}[\ x(t)\ ]$

Data after Tx Init

T T T	T F X	T X F

$h_{AC}(t) \otimes h_{TEI}(t)$
$h_{AC}(t)$
$h_{AC}(t)$

EDA tool convolution

Tx GetWave exists

T	$DataAfterRxInit \otimes g_{TEG}[\ x(t)\ ]$

Rx_Init call .... **Rx_GetWave call**
$g_{REG}[\ OutputOfEDAtoolConvolution\ ]$

Data after Rx Init

T T T	T F X	T X F

$DataAfterTxInit \otimes h_{REI}(t)$
$DataAfterTxInit$
$DataAfterTxInit$

Display and/or post process results

Notes:
1. *When GetWave_Exists = FALSE, both Use_Init_Output and Init_Returns_Impulse must be TRUE*
2. *For statistical simulations both GetWave_Exists are always treated as FALSE, no matter how it is declared in the model*
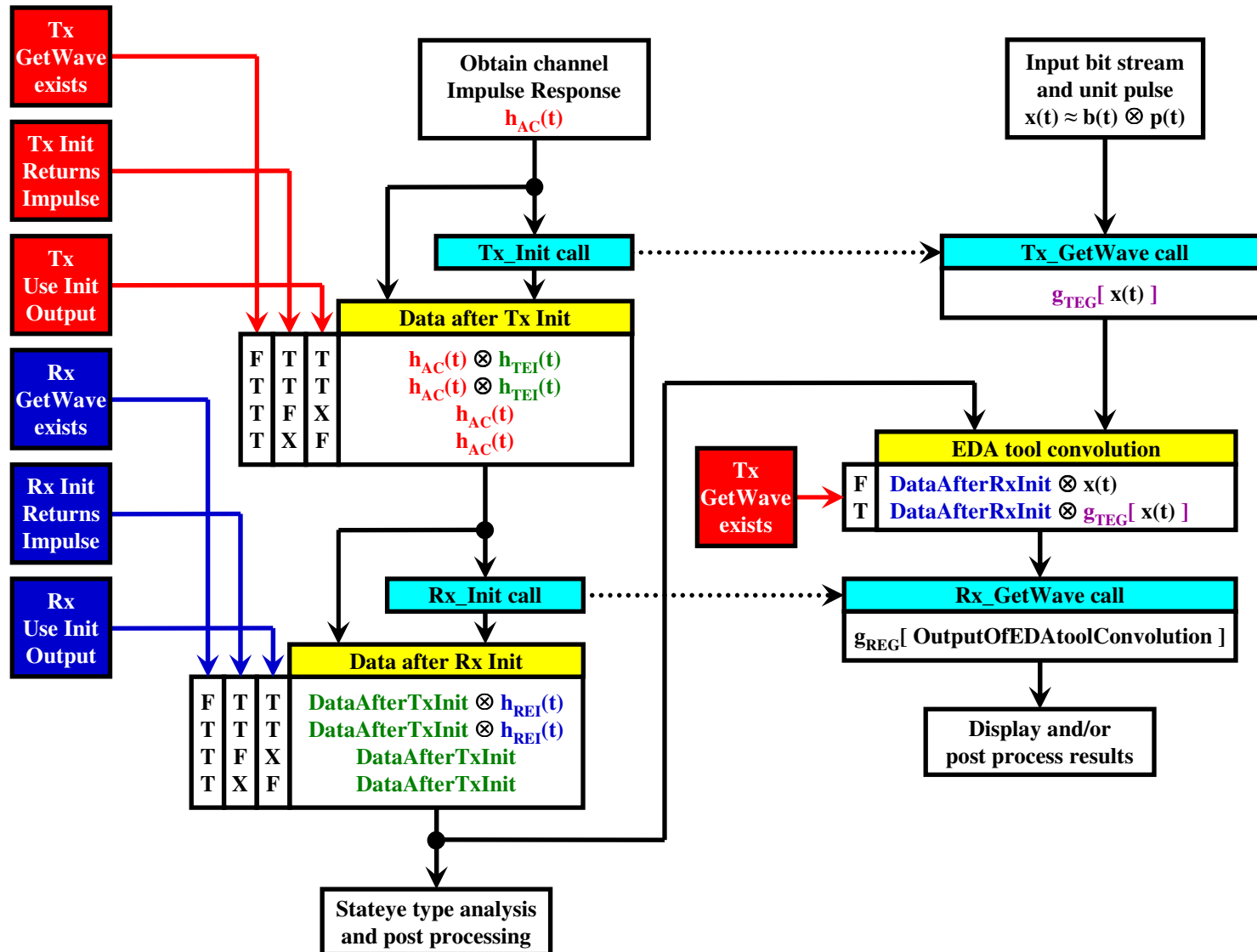3. *Use_Init_Output is optional. If not declared it defaults to TRUE.*

AMI flow #7 - all in one

Tx GetWave exists

Tx Init Returns Impulse

Tx Use Init Output

Rx GetWave exists

Rx Init Returns Impulse

Rx Use Init Output

Obtain channel Impulse Response
$h_{AC}(t)$

Input bit stream and unit pulse
$x(t) \approx b(t) \otimes p(t)$

Tx_Init call · · · · · · · · · · · · · · · · · ·→ **Tx_GetWave call**

$g_{TEG}[\ x(t)\ ]$

Data after Tx Init

F T T T	T T F X	T X F

$h_{AC}(t) \otimes h_{TEI}(t)$
$h_{AC}(t) \otimes h_{TEI}(t)$
$h_{AC}(t)$
$h_{AC}(t)$

Tx GetWave exists

EDA tool convolution

F	DataAfterRxInit $\otimes$ x(t)
T	DataAfterRxInit $\otimes$ $g_{TEG}[\ x(t)\ ]$

Rx_Init call · · · · · · · · · · · · · · · · · ·→ **Rx_GetWave call**

$g_{REG}[\ OutputOfEDAtoolConvolution\ ]$

Data after Rx Init

F T T T	T T F X	T X F

DataAfterTxInit $\otimes$ $h_{REI}(t)$
DataAfterTxInit $\otimes$ $h_{REI}(t)$
DataAfterTxInit
DataAfterTxInit

Display and/or post process results

Stateye type analysis and post processing

Truth table

Tx GetWave Exists	Tx Init Returns Impulse	Tx Use Init Output	Rx GetWave Exists	Rx Init Returns Impulse	Rx Use Init Output	Expected output from the EDA tool convolution box	
F	T	T	F	T	T	$h_{AC}(t) \otimes h_{TEI}(t) \otimes h_{REI}(t) \otimes x(t)$	slide 2
F	T	T	F	T	T	$h_{AC}(t) \otimes h_{TEI}(t) \otimes h_{REI}(t) \otimes x(t)$	slide 4
F	T	T	F	F	X	$h_{AC}(t) \otimes h_{TEI}(t) \otimes x(t)$	slide 4
F	T	T	F	X	F	$h_{AC}(t) \otimes h_{TEI}(t) \otimes x(t)$	slide 4
T	T	T	F	T	T	$h_{AC}(t) \otimes h_{TEI}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 3
T	T	T	T	T	T	$h_{AC}(t) \otimes h_{TEI}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	T	T	T	F	X	$h_{AC}(t) \otimes h_{TEI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	T	T	T	X	F	$h_{AC}(t) \otimes h_{TEI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	F	X	F	T	T	$h_{AC}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 3
T	F	X	T	T	T	$h_{AC}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	F	X	T	F	X	$h_{AC}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	F	X	T	X	F	$h_{AC}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	X	F	F	T	T	$h_{AC}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 3
T	X	F	T	T	T	$h_{AC}(t) \otimes h_{REI}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	X	F	T	F	X	$h_{AC}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5
T	X	F	T	X	F	$h_{AC}(t) \otimes g_{TEG}[\,x(t)\,]$	slide 5