Model: TMRModel

Place Attributes:

Place Names	Initial Markings
BadMajority	0
CCFChannels	0
Channel1	1
Channel2	1
Channel3	1
ErraticChannels	0
NoBadMajority	0
SafeState	0
SilentChannels	0
UnsafeState	0
Voters	2

Timed Activity:	CCF
Distribution Parameters	**Rate** r_ccf
Activation Predicate	(none)
Reactivation Predicate	(none)
Case Distributions	**case 1** p_ccf2of3 **case 2** p_ccf2of3 **case 3** p_ccf2of3 **case 4** 1-3*p_ccf2of3

Timed Activity:	Channel1Failure
Distribution Parameters	**Rate** fr_asilB
Activation Predicate	(none)
Reactivation Predicate	(none)
Case Distributions	**case 1** p_channelsilent **case 2** 1-p_channelsilent

Timed Activity:	Channel2Failure
Distribution Parameters	**Rate** fr_asilB
Activation Predicate	(none)
Reactivation Predicate	(none)
Case Distributions	**case 1** p_channelsilent **case 2** 1-p_channelsilent

Timed Activity:	Channel3Failure
Distribution Parameters	**Rate** fr_asilB
Activation Predicate	(none)
Reactivation Predicate	(none)
Case Distributions	**case 1** p_channelsilent **case 2** 1-p_channelsilent

Timed Activity:	VotersFailure
Distribution Parameters	**Rate** fr_asilD * Voters->Mark()
Activation Predicate	(none)

Reactivation Predicate	(none)

Instantaneous Activity:	ErraticsOutput
Case Distributions	**case 1** p_badmajority **case 2** 1-p_badmajority

Instantaneous Activity:	SimultaneousFailuresType
Case Distributions	**case 1** p_channelsilent **case 2** 1-p_channelsilent

Instantaneous Activity:	prebufferedMRM
Case Distributions	**case 1** 1-p_MRM **case 2** p_MRM

Instantaneous Activities Without Cases:
CatastrophicFailure

Input Gate:	Check2of3Erratics
Predicate	ErraticChannels->Mark()>=2
Function	ErraticChannels->Mark()=0;

Input Gate:	CheckCatastrophicFailure
Predicate	SafeState->Mark()+UnsafeState->Mark()==0 && (BadMajority->Mark()==1 || (SilentChannels->Mark()==2 && ErraticChannels->Mark()==1))
Function	;

Input Gate:	CheckNonCatastrophicFailure
Predicate	SafeState->Mark()+UnsafeState->Mark()==0 && (SilentChannels->Mark()==3 || Voters->Mark()==0 || NoBadMajority->Mark()==1 || (SilentChannels->Mark()==1 && ErraticChannels->Mark()==1))
Function	;

Output Gate:	CCFChannels12

Function	if (Channel1->Mark()+Channel2->Mark()==2)
	{
	Channel1->Mark()=0;
	Channel2->Mark()=0;
	CCFChannels->Mark()=2;
	}

Output Gate:	CCFChannels123

Function	if (Channel1->Mark()+Channel2->Mark()+Channel3->Mark()==3)
	{
	Channel1->Mark()=0;
	Channel2->Mark()=0;
	Channel3->Mark()=0;
	CCFChannels->Mark()=3;
	}

Output Gate:	CCFChannels13

Function	if (Channel1->Mark()+Channel3->Mark()==2)
	{
	Channel1->Mark()=0;
	Channel3->Mark()=0;
	CCFChannels->Mark()=2;
	}

Output Gate:	CCFChannels23

Function	if (Channel3->Mark()+Channel2->Mark()==2)
	{
	Channel3->Mark()=0;
	Channel2->Mark()=0;
	CCFChannels->Mark()=2;
	}

Output Gate:	SimultaneousErratictFailures
Function	ErraticChannels->Mark()+=CCFChannels->Mark(); CCFChannels->Mark()=0;

Output Gate:	SimultaneousSilentFailures
Function	SilentChannels->Mark()+=CCFChannels->Mark(); CCFChannels->Mark()=0;

Set Study: TMRParameter:

Experiment	Variable	Type	Value
Experiment 1	fr_asilB	double	1.0E-7
	fr_asilD	double	1.0E-8
	p_MRM	double	0.95
	p_badmajority	double	0.1
	p_ccf2of3	double	0.3
	p_channelsilent	double	0.5
	r_ccf	double	1.0E-9

Performance Variable Model: TMRReward		
Top Level Model Information	Child Model Name	TMRModel
	Model Type	SAN Model

Performance Variable : p_safestate			
Affecting Models	TMRModel		
Impulse Functions			
Reward Function	*(Reward is over all Available Models)* if (TMRModel->SafeState->Mark()==1) return 1;		
Simulator Statistics	Type	Instant of Time	
	Options	Estimate Mean	
		Include Lower Bound on Interval Estimate	
		Include Upper Bound on Interval Estimate	
		Estimate out of Range Probabilities	
		Confidence Level is Relative	
	Parameters	Start Time	1000.0,2000.0,3000.0,4000.0,5000.0,6000.0,7000.0,8000.0,
	Confidence	Confidence Level	0.95
		Confidence Interval	0.1

Performance Variable : p_unsafestate	
Affecting Models	TMRModel

Impulse Functions			
Reward Function	*(Reward is over all Available Models)* if (TMRModel->UnsafeState->Mark()==1) return 1;		
Simulator Statistics	Type	Instant of Time	
	Options	Estimate Mean	
		Include Lower Bound on Interval Estimate	
		Include Upper Bound on Interval Estimate	
		Estimate out of Range Probabilities	
		Confidence Level is Relative	
	Parameters	Start Time	1000.0,2000.0,3000.0,4000.0,5000.0,6000.0,7000.0,8000.0,
	Confidence	Confidence Level	0.95
		Confidence Interval	0.1

Performance Variable : mttf_safestate			
Affecting Models	TMRModel		
Impulse Functions			
Reward Function	*(Reward is over all Available Models)* if (TMRModel->SafeState->Mark()==0) return 1;		
Simulator Statistics	Type	Interval of Time	
	Options	Estimate Mean	
		Include Lower Bound on Interval Estimate	
		Include Upper Bound on Interval Estimate	
		Estimate out of Range Probabilities	
		Confidence Level is Relative	
	Parameters	Start Time	0,
		Stop Time	1000000000000,
	Confidence	Confidence Level	0.95
		Confidence Interval	0.1

Performance Variable : mttf_unsafestate			
Affecting Models	TMRModel		
Impulse Functions			
Reward Function	*(Reward is over all Available Models)* if (TMRModel->UnsafeState->Mark()==0) return 1;		
Simulator Statistics	Type	Interval of Time	
	Options	Estimate Mean	
		Include Lower Bound on Interval Estimate	
		Include Upper Bound on Interval Estimate	
		Estimate out of Range Probabilities	
		Confidence Level is Relative	
	Parameters	Start Time	0.0,
		Stop Time	1000000000000,
	Confidence	Confidence Level	0.95
		Confidence Interval	0.1