

TTsuite MOST®
Easy handling
of
System Integration Complexities

All Members Meeting of MOST Cooperation, March, 11th 2008

- 1) Introducing RUETZ SYSTEM SOLUTIONS
- 2) Basic concepts of TTsuite MOST
- 3) Example 1:
Best practice for test management
throughout the system integration process
- 4) Example 2:
How to increase test depth
by changing parameter values
- 5) Summary

RUETZ SYSTEM SOLUTIONS is specialised in car infotainment based on **MOST® Technology** with a main focus on:

- MOST Compliance Test House
- Professional Services for MOST
- Test and measurement systems for MOST
- Training and qualification for MOST

-> Reliable since eleven years of MOST Technology <-

Supported Physical Layers:

- MOST25 oPHY
- MOST50 ePHY

Listed MOST Compliance Products (MCPL) (tested at RUETZ SYSTEM SOLUTIONS)

- MOST Profile Compliance: **1 (=100%)**
- MOST Core Compliance: **12 (=100%)**
- MOST Optical Limited Physical Layer: **8 (= 40%)**

Presentations at our booth

TTsuite MOST (Application Testing)

- MOST High and AUXIN testing
- Testing on MOST50 ePHY

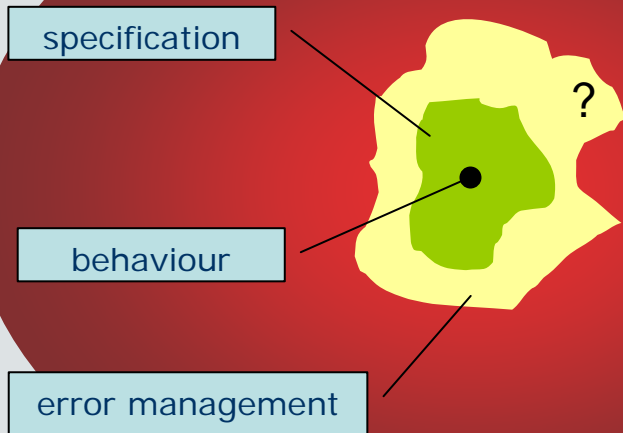
TESTERLYZER (Network Testing)

- Testing on MOST50 ePHY

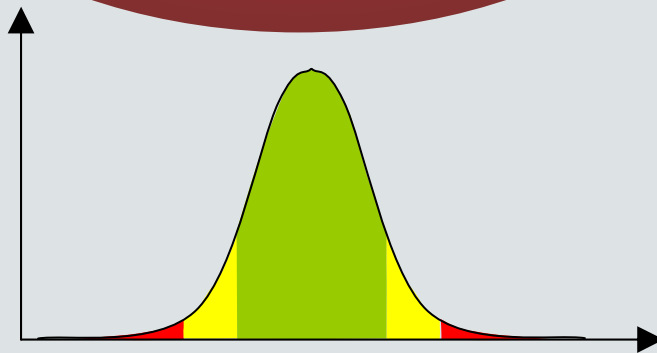


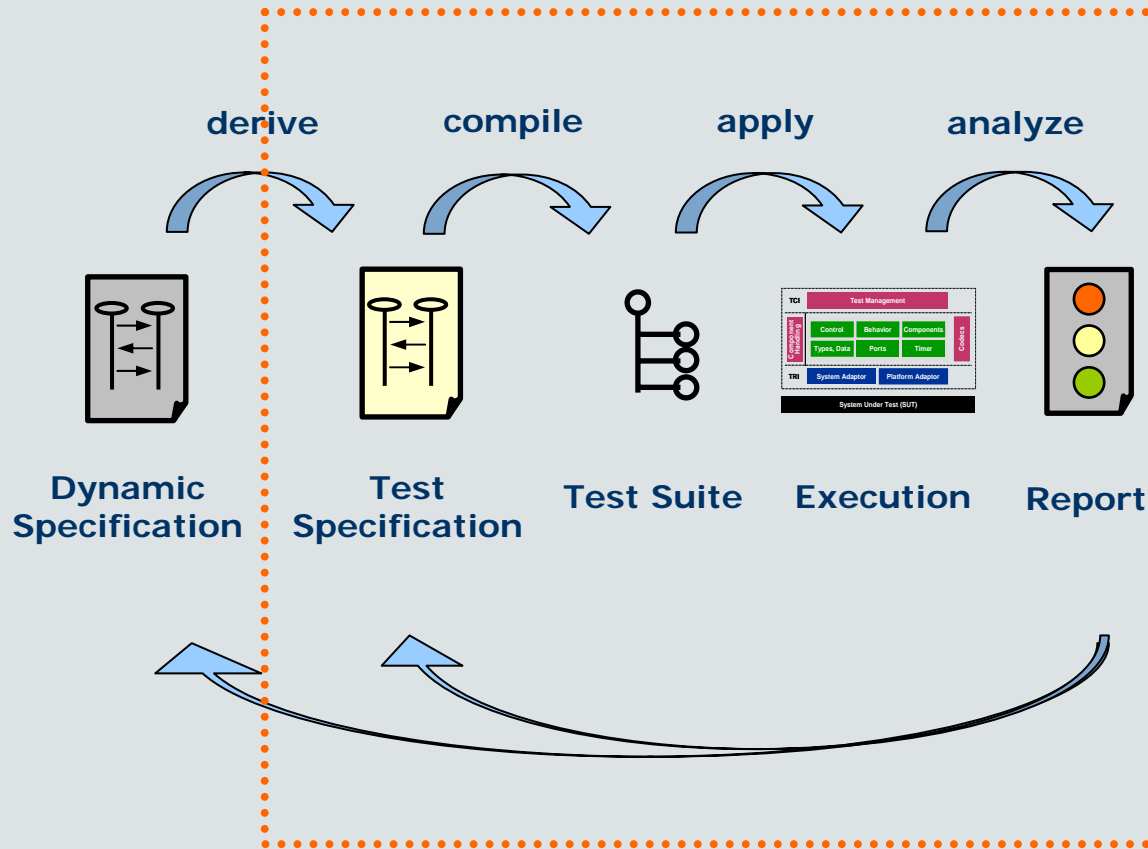
Basic concepts of TTsuite MOST

Skills of testing within System Integration



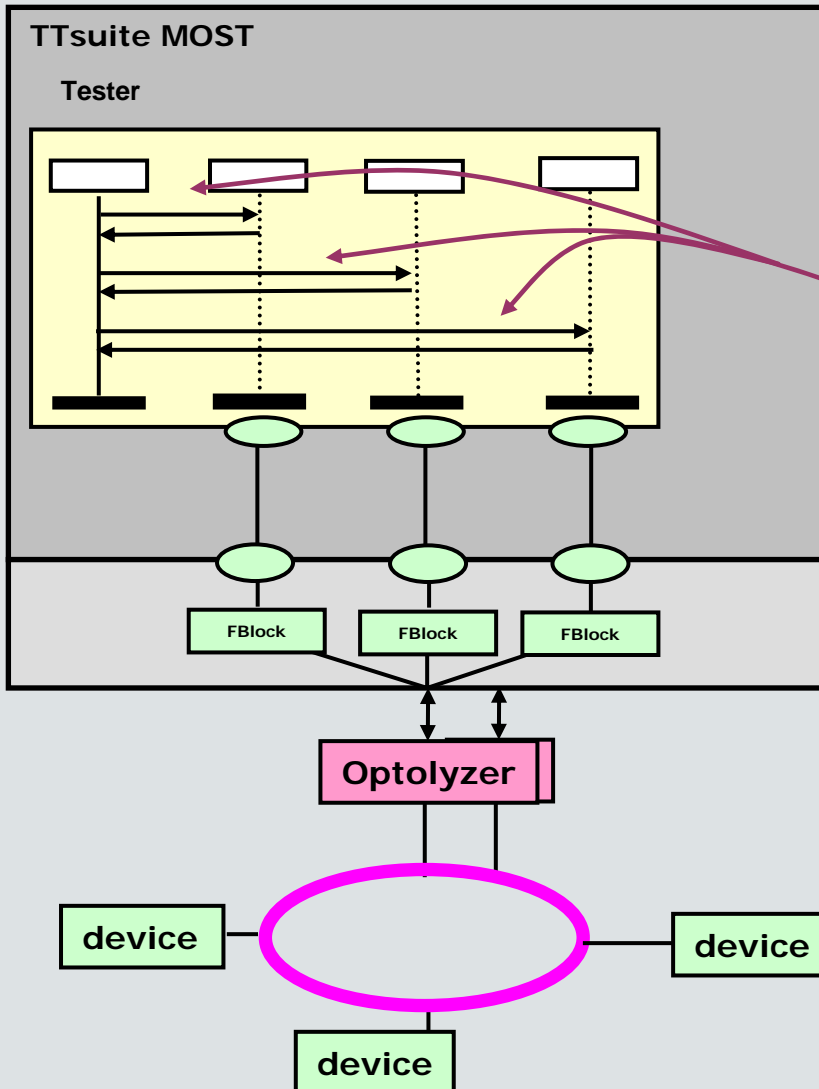
- testing the expected
- trying to push behaviour out of the specification
- reproducing encountered errors
- reusing test scenarios throughout the system integration



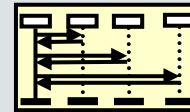


TTsuite MOST
speeds up your
test development cycles!

based on
TTCN-3



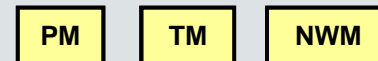
level 1: test sequence definition



level 2: applying the function catalogue



level 3: execution in different scenarios

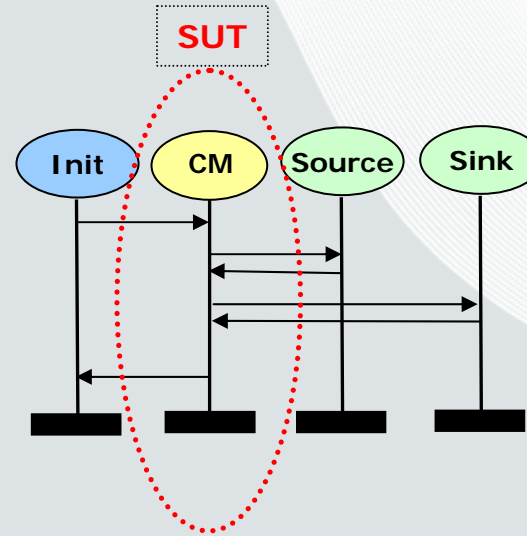
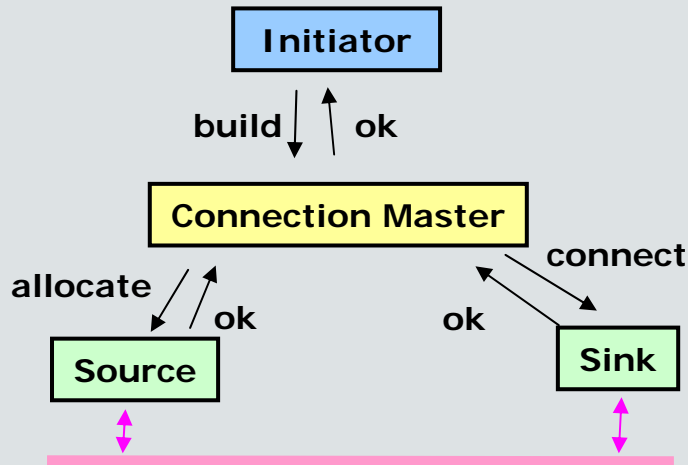


Example 1:

Best practice for test management
throughout the system integration process

Example 1: Test Management

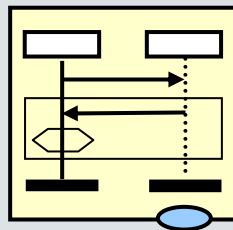
Connection Management



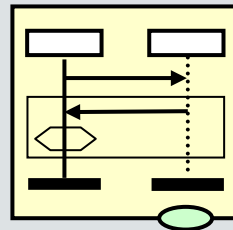
- 1 FBlock addressing job
- 2 FBlock simulation job

➔ 3 test components:

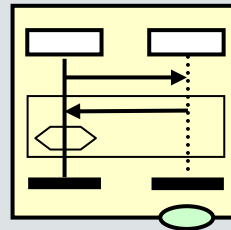
MU simulation



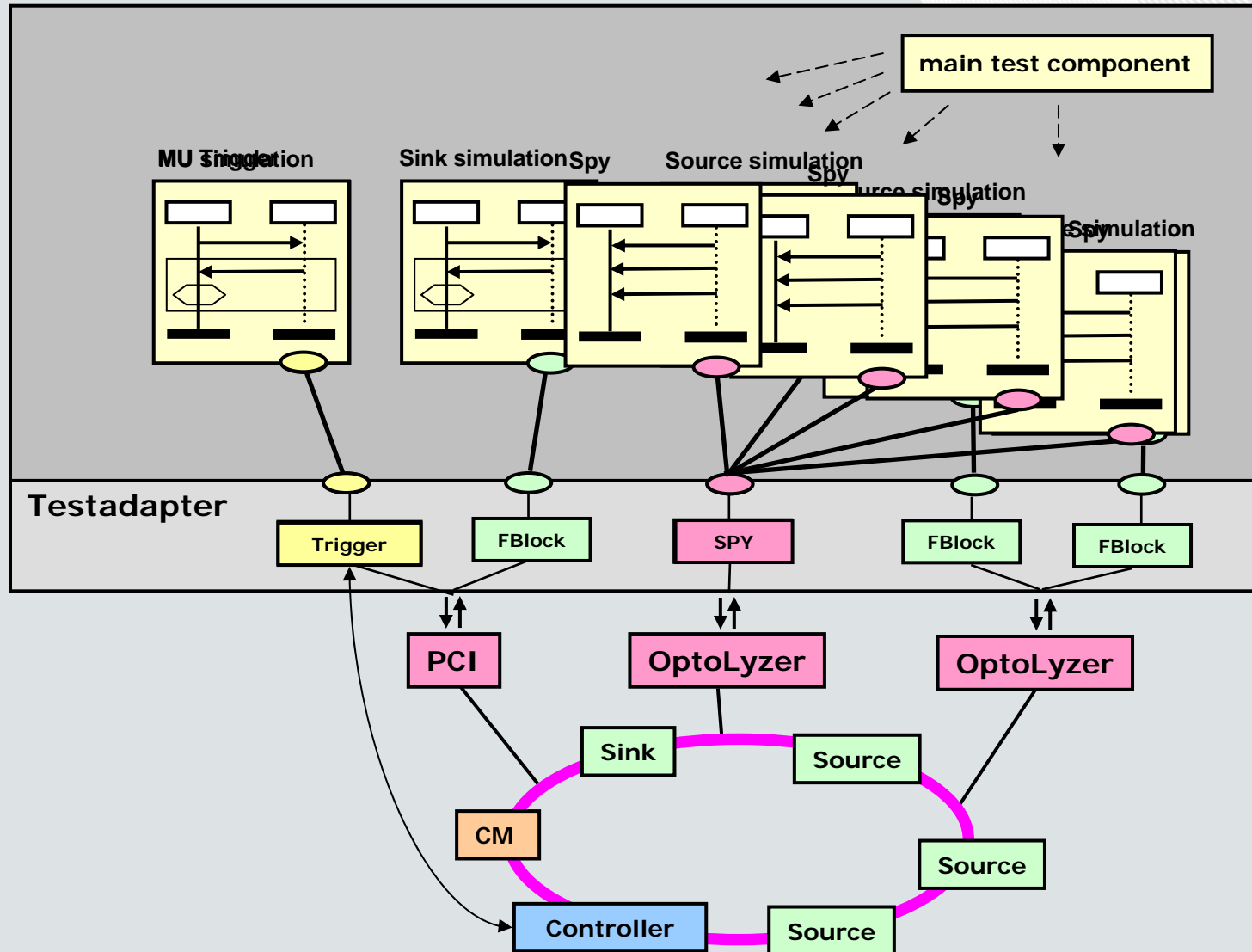
Sink simulation



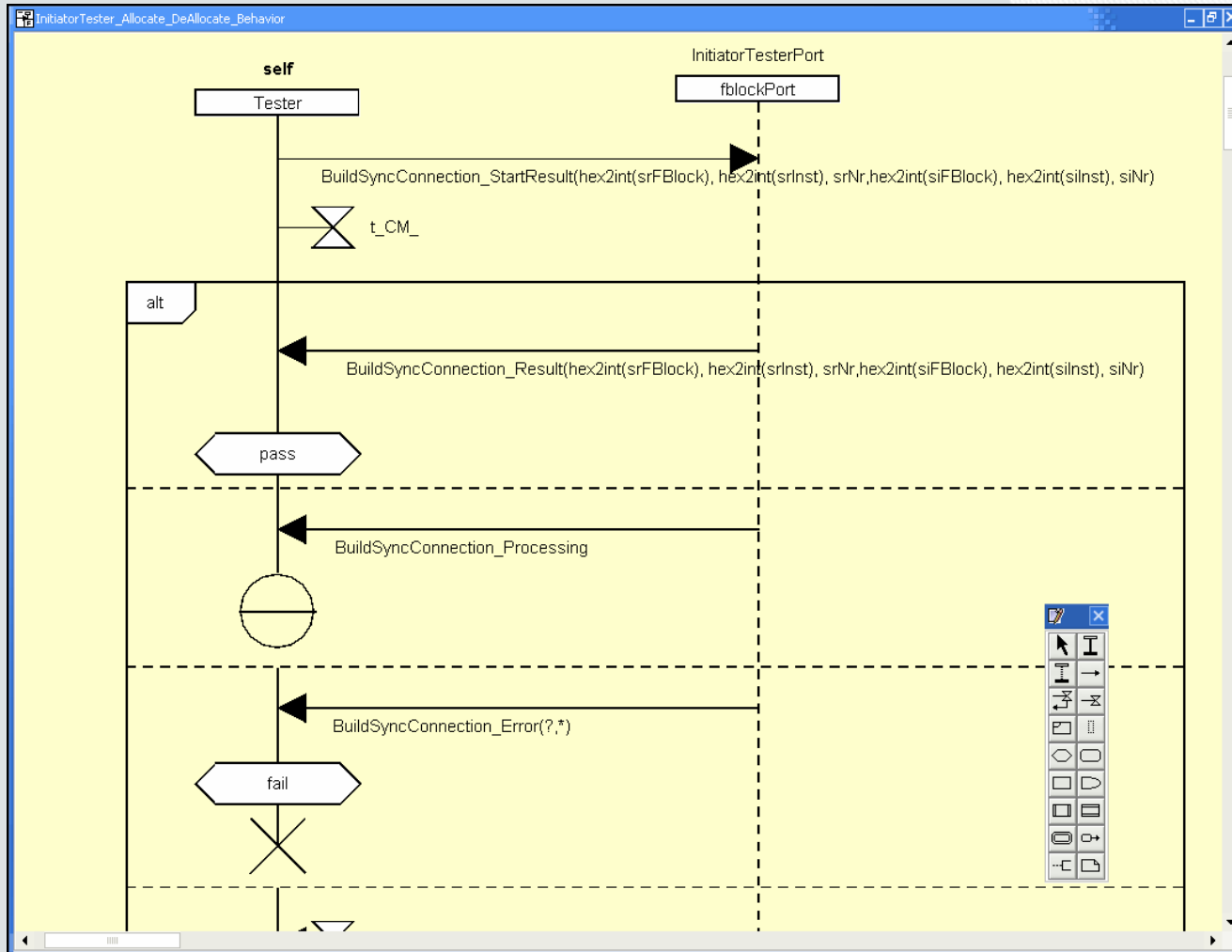
Source simulation



Example 1: Test Management



Test specification



Test protocol

Test Report

Report Number	361
Report Date	2008-03-22
Company Name	RUETZ System Solutions GmbH
Test Lab	RUETZ System Solutions GmbH, Regenerstraße 18-18, München, 80607, Deutschland
System Under Test (SUT)	Trade Unit and Bank #02

Number of Test Cases: 19


Pass: 14

Fail: 4

Inconclusive: 0

Error: 0

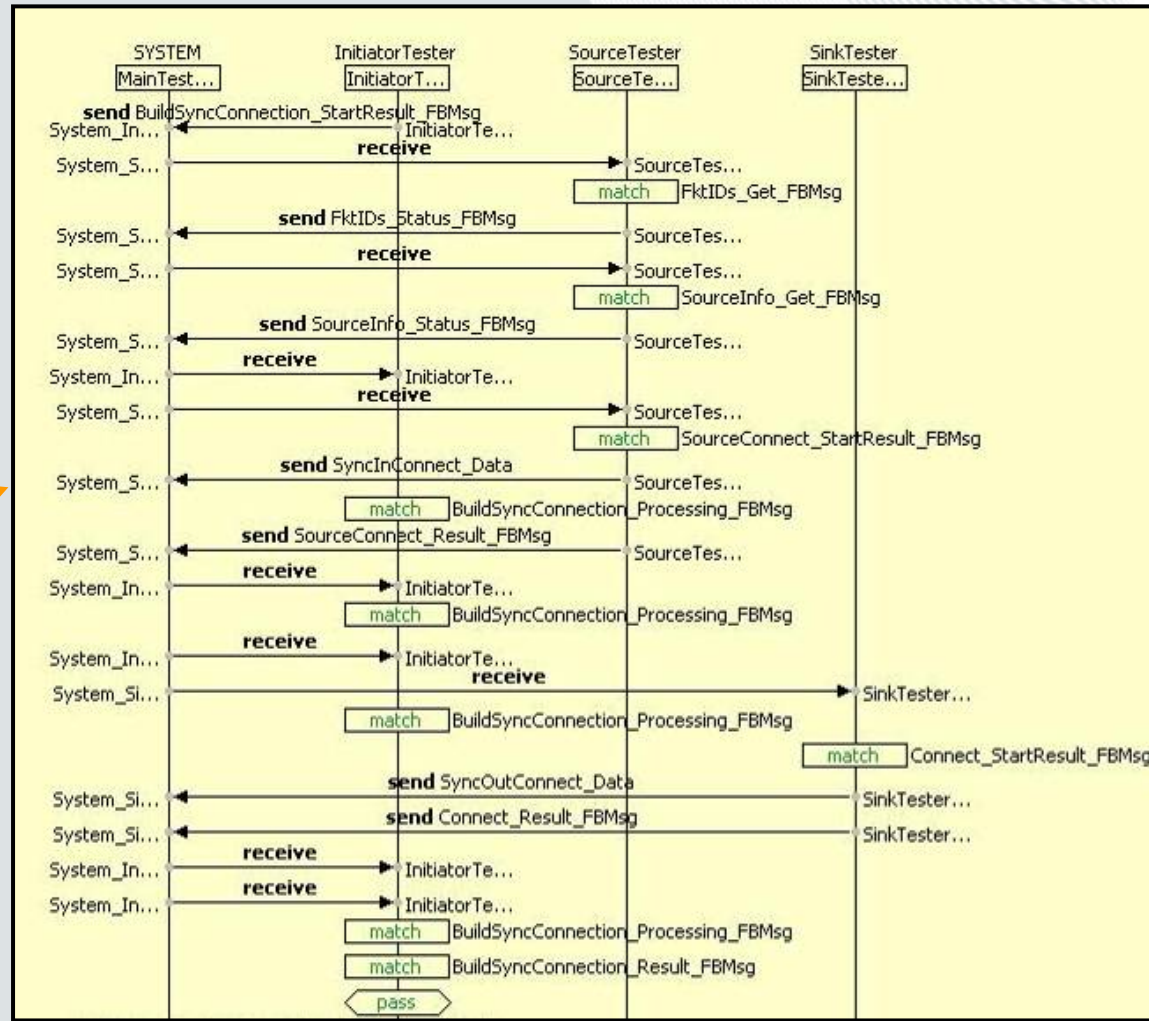
None: 0



Campaign configuration

Campaign Name	TTsuite_WL
Campaign File	TTsuite_WL.tst
Test Protocol	
Class	com.ruetzsystem.solutions.ttsuite.comparison
File Name	TTsuite_WLTestConfig.jar

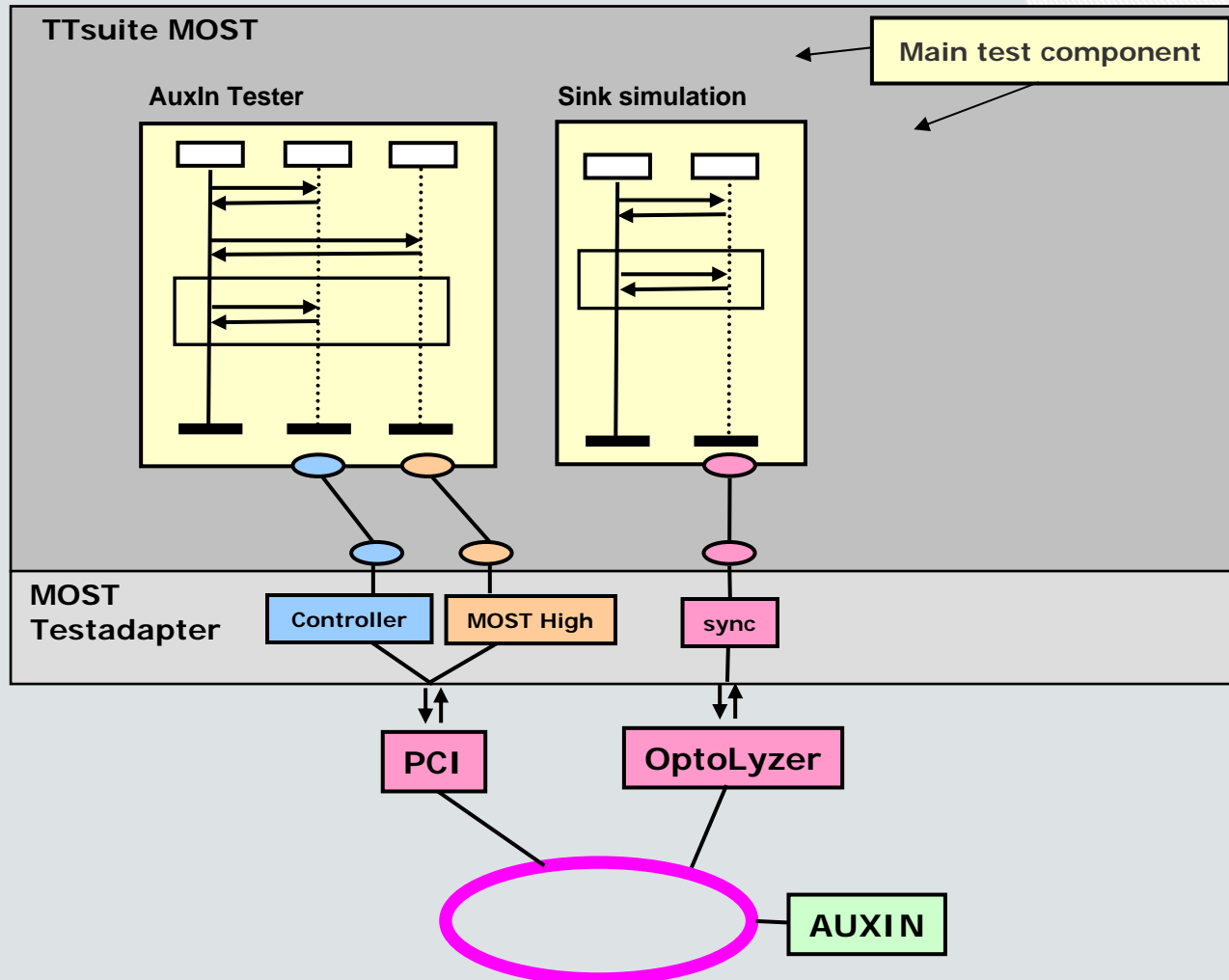
Timestamp	Test Case ID	Description	Status
2008-03-22 13:34:08.772	TestCases_at_TMSyncConnct_0	Tester device responds with expected TMSyncConnct_0 response	pass
2008-03-22 13:34:07.340	TestCases_at_TMSyncConnct_1	Tester device responds with expected TMSyncConnct_1 response	pass
2008-03-22 13:34:07.442	TestCases_at_TMSyncConnct_2	Tester device responds with expected TMSyncConnct_2 response	pass
2008-03-22 13:34:08.036	TestCases_at_TMSyncConnct_3	Tester device responds with expected TMSyncConnct_3 response	pass
2008-03-22 13:34:08.899	TestCases_at_TMSyncConnct_4	Tester device responds with expected TMSyncConnct_4 response	pass
2008-03-22 13:34:09.267	TestCases_at_TMSyncConnct_5	Tester device responds with expected TMSyncConnct_5 response	pass
2008-03-22 13:34:09.429	TestCases_at_SyncOutConnct_0	SyncOutConnct request is accepted	pass
2008-03-22 13:34:07.822	TestCases_at_SyncOutConnct_1	SyncOutConnct request is accepted	pass
2008-03-22 13:34:03.694	TestCases_at_SyncOutConnct_2	SyncOutConnct request is accepted	pass
2008-03-22 13:34:03.698	TestCases_at_SyncOutConnct_3	SyncOutConnct request is accepted	pass
2008-03-22 13:34:03.807	TestCases_at_SyncOutConnct_4	SyncOutConnct request is accepted	pass
2008-03-22 13:34:07.853	TestCases_at_SyncOutConnct_5	SyncOutConnct request is accepted	pass
2008-03-22 13:34:07.312	TestCases_at_SyncOutConnct_6	SyncOutConnct request is accepted	pass
2008-03-22 13:34:02.284	TestCases_at_SyncOutConnct_7	SyncOutConnct request is accepted	pass
2008-03-22 13:34:02.478	TestCases_at_SyncOutConnct_8	SyncOutConnct request is accepted	pass
2008-03-22 13:34:04.867	TestCases_at_SyncOutConnct_9	SyncOutConnct request is accepted	pass
2008-03-22 13:34:05.108	TestCases_at_SyncOutConnct_10	SyncOutConnct request is accepted	pass
2008-03-22 13:34:05.924	TestCases_at_SyncOutConnct_11	SyncOutConnct request is accepted	pass
2008-03-22 13:34:02.778	TestCases_at_SyncOutConnct_12	SyncOutConnct request is accepted	pass
2008-03-22 13:34:02.262	TestCases_at_SyncOutConnct_13	SyncOutConnct request is accepted	pass
2008-03-22 13:34:02.492	TestCases_at_SyncOutConnct_14	SyncOutConnct request is accepted	pass
2008-03-22 13:34:03.311	TestCases_at_SyncOutConnct_15	SyncOutConnct request is accepted	pass
2008-03-22 13:34:04.423	TestCases_at_SyncOutConnct_16	SyncOutConnct request is accepted	pass
2008-03-22 13:34:05.898	TestCases_at_SyncOutConnct_17	SyncOutConnct request is accepted	pass
2008-03-22 13:34:05.812	TestCases_at_SyncOutConnct_18	SyncOutConnct request is accepted	pass
2008-03-22 13:34:07.105	TestCases_at_SyncOutConnct_19	SyncOutConnct request is accepted	pass
2008-03-22 13:34:04.304	TestCases_at_TMSyncConnct_0	Tester device responds with expected TMSyncConnct_0 response	pass
2008-03-22 13:34:05.048	TestCases_at_TMSyncConnct_1	Tester device responds with expected TMSyncConnct_1 response	pass
2008-03-22 13:34:07.826	TestCases_at_SyncOutConnct_0	SyncOutConnct request is accepted	pass
2008-03-22 13:34:05.108	TestCases_at_SyncOutConnct_1	SyncOutConnct request is accepted	pass
2008-03-22 13:34:07.108	TestCases_at_SyncOutConnct_2	SyncOutConnct request is accepted	pass
2008-03-22 13:34:01.226	TestCases_at_SyncOutConnct_3	SyncOutConnct request is accepted	pass
2008-03-22 13:34:03.323	TestCases_at_SyncOutConnct_4	SyncOutConnct request is accepted	pass
2008-03-22 13:34:04.808	TestCases_at_SyncOutConnct_5	SyncOutConnct request is accepted	pass



Example 2:
How to increase test depth by
changing parameter values

Example 2: Parameterisation

Testing AUXIN:



testcases

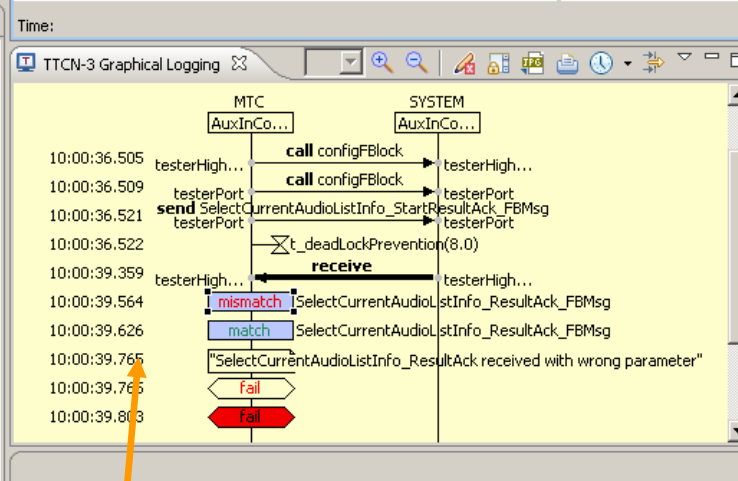
expected data

received data

Test Case	R...	Failure Ac
SelectCurrentAudioListInfo_tc	1	CONTINUE
SelectAudioListInfo_tc	1	CONTINUE
tc_AuxIn_Activation	1	CONTINUE

Name	Value	Name	Value
SelectCurrentAudioListInfo_ResultAck_FBMsg		SelectCurrentAudioListInfo_ResultAck_FBMsg	
FBlockId	omit	FBlockId	omit
InstanceId	omit	InstanceId	omit
FunctionId	'4A4H	FunctionId	'4A4H
OpType	'D'H	OpType	'D'H
Data		Data	
SelectCurrentAudioListInfo_Re		SelectCurrentAudioListInfo_ResultAck_D	
SenderHandle	1	SenderHandle	1
Start	1	Start	1
Offset	0	Offset	0
NumberResults	40	NumberResults	30
ResultData	'00000000000000000000000000000000'	ResultData	'0000000000000000000000000000000011110'
TotalNumberResults	*	TotalNumberResults	30
AudioMediaData	*	AudioMediaData	0

Parameter	Value
AuxInDeviceConfiguration	
SinkConfiguration_Parameters	
SelectAudioListInfo_Parameters	
SelectCurrentAudioListInfo_Parameters	
CSenderHandle	1
CStart	1
COffset	0
CNumberResults	30
CResultDataFieldSelector	
isSpeechModeEnabledC_0	false
isTagEnabledC_1	false
isHeaderInfoTitleEnabledC_2	true
isHeaderInfoArtistEnabledC_3	true
isHeaderInfoAlbumEnabledC_4	false
isHeaderInfoYearEnabledC_5	false
isHeaderInfoGenreEnabledC_6	false



Message
Component MTC sending message
INFO: Calling sendMostMessage
INFO: TxMsg: 0x0100 -> 0x0403 FBlock: 0x24 InstID: 0x01 Fu...
INFO: Data[0E]: 0x0001000000010000002800000001E
Timer MTC.t_deadLockPrevention (8.0) started
INFO: MsgTxStatus: XMIT_SUCCESS
INFO: Incoming MHP message from 0x0103: FBlock: 0x24 In...
INFO: 0x00 0x01 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x1E
INFO: 0x00 0x00 0x00 0x00 0x1E 0x00 0x00 0x00 0x1E 0x10 0x00
INFO: 0x00 0x01 0x00 0x00 0x47 0x00 0x69 0x00 0x72 0x00
INFO: 0x6C 0x00 0x66 0x00 0x72 0x00 0x69 0x00 0x65 0x00
INFO: 0x6E 0x00 0x64 0x00 0x00 0x00 0x41 0x00 0x76
INFO: 0x00 0x72 0x00 0x69 0x00 0x6C 0x00 0x20 0x00 0x4C
INFO: 0x00 0x61 0x00 0x76 0x00 0x69 0x00 0x67 0x00 0x6E
INFO: 0x00 0x65 0x00 0x00 0x00 0x00 0x47 0x00 0x69 0x00

parameter view

graphical logging

textual logging

Example 2: Parameterisation

expected data

received data

Expected TTCN-3 Template		Data	
Name	Value	Name	Value
[-] SelectCurrentAudioListInfo_ResultAck		[-] SelectCurrentAudioListInfo_ResultAck_FBMsg	
[-] FBlockId	omit	[-] FBlockId	omit
[-] InstanceId	omit	[-] InstanceId	omit
[-] FunctionId	'4A4'H	[-] FunctionId	'4A4'H
[-] OpType	'D'H	[-] OpType	'D'H
[-] Data		[-] Data	
[-] SelectCurrentAudioListInfo_R		[-] SelectCurrentAudioListInfo_ResultAck_D	
[-] SenderHandle	1	[-] SenderHandle	1
[-] Start	1	[-] Start	1
[-] Offset	0	[-] Offset	0
[-] NumberResults	40	[-] NumberResults	30
[-] ResultData	'0000000000'	[-] ResultData	'00000000000000000000000000000000'
[-] TotalNumberResults	*	[-] TotalNumberResults	30
[-] AudioMediaData	*	[-] AudioMediaData	
		[-] 0	
		[-] 1	
		[-] 2	
		[-] Tag	268435459
		[-] HeaderInfoTitle	
		[-] code	Unicode, UTF16
		[-] data	Bleeding Love (Radio Edit)
		[-] HeaderInfoArtist	
		[-] code	Unicode, UTF16
		[-] data	Leona Lewis
		[-] HeaderInfoAlbum	
		[-] code	Unicode, UTF16
		[-] data	Bleeding Love
		[-] HeaderInfoYear	omit
		[-] HeaderInfoGenre	omit

- logfiles with high level of details
- 100% FCat integration
- also supported for MOST High data

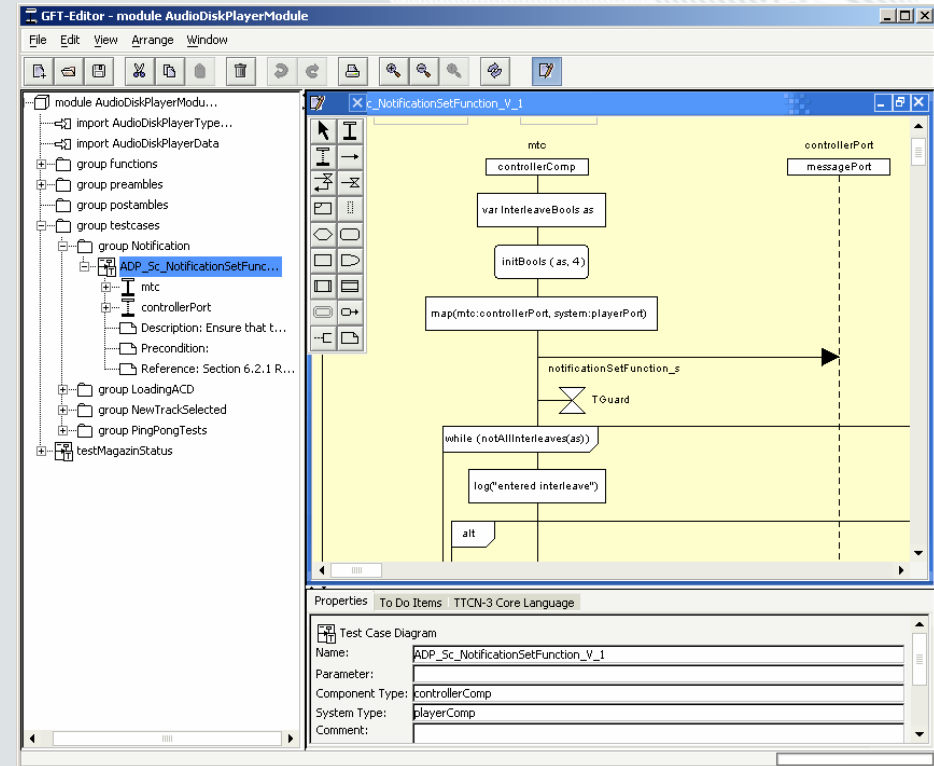
Example 2: Parameterisation

Parameter	Value	Default	Description
+			
+			
-			
CSEnderHandle	1	1	Unique handle to id
CStart	1	1	Start parameter in
COffset	0	0	Offset parameter in
CNumberResults	30	25	NumberResults par
-			
isSpeechModeEnabledC_0	false	false	Speech Mode par
isTagEnabledC_1	true	true	Tag parameter in R
isHeaderInfoTitleEnabledC_2	true	true	HeaderInfoTitle in F
isHeaderInfoArtistEnabledC_3	true	true	HeaderInfoArtist in
isHeaderInfoAlbumEnabledC_4	true	true	HeaderInfoAlbum in
isHeaderInfoYearEnabledC_5	false	false	HeaderInfoYear in
isHeaderInfoGenreEnabledC_6	true	false	HeaderInfoGenre in
isHeaderInfoComposerEnabledC_7	false	false	HeaderInfoCompos
isHeaderInfoGroupingEnabledC_8	false	false	HeaderInfoGroupin
isHeaderInfoTrackNumberEnabledC_9	false	false	HeaderInfoTrackNu
isHeaderInfoPlayTimeEnabledC_10	false	false	HeaderInfoPlayTim
isHeaderInfoMediaFileFormatEnabledC_11	false	false	HeaderInfoMediaFi
isHeaderInfoBitrateEnabledC_12	false	false	HeaderInfoBitrate i
isHeaderInfoSamplerateEnabledC_13	false	false	HeaderInfoSampler
isFilenameEnabledC_14	false	false	Filename in ResultC
isPlaylistNameEnabledC_15	false	false	PlaylistName in Res
isDirectoryNameEnabledC_16	false	false	DirectoryName in R
isMediaTypeEnabledC_17	false	false	MediaType in Resul
+			
+			

- edit predefined parameter values
- no need to recompile test
- save and reuse testcampaign

TTsuite MOST

- makes testing within system integration easy to handle
- is ready for future generations of MOST
- is based on a big user community (e.g. Telecom.)



based on



Thank you for your attention
please visit us at our booth!



Georg Janker Geschäftsführer / CTO

RUETZ
SYSTEM SOLUTIONS

Wolfgang Malek Geschäftsführer / CEO

RUETZ
SYSTEM SOLUTIONS