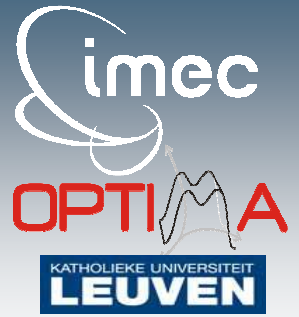




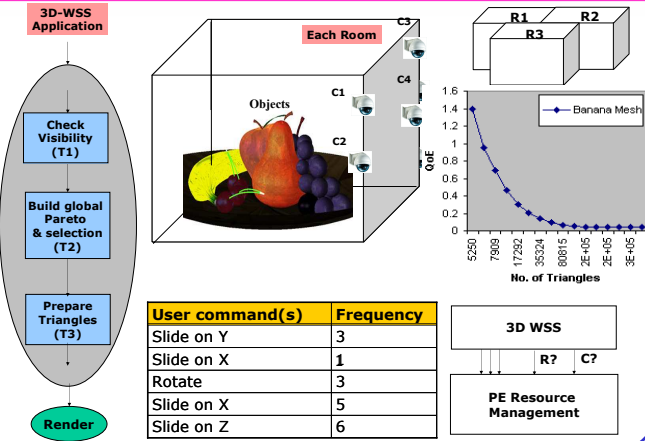
Scenario Based Mapping of Dynamic Applications on MPSoC : A 3D Graphics Case Study



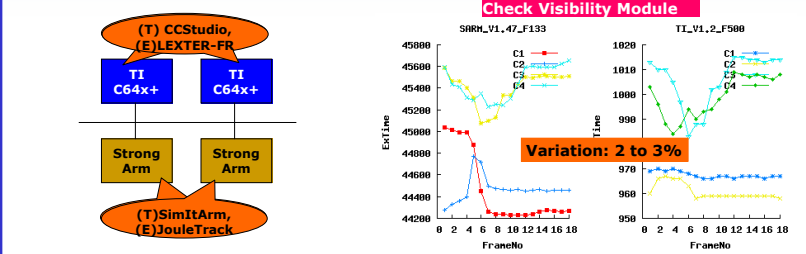
Narasinga Rao Miniskar, Satyakiran Munaga,

Dr. Stylianos Mamagkakis, Dr. Roel Wuyts, Prof. Francky Catthoor

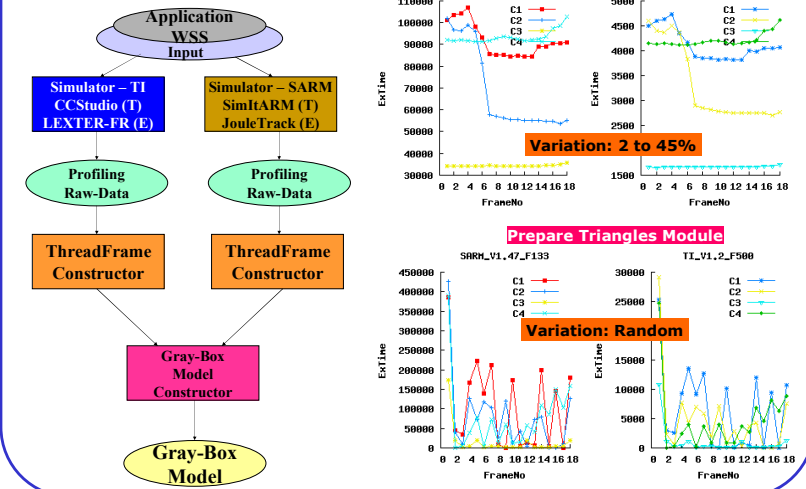
Software Application: WSS



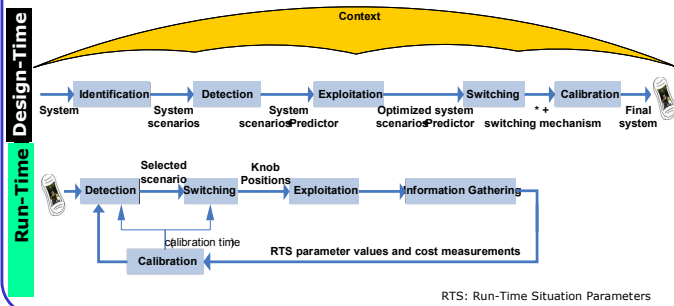
WSS Workload Characterization: Execution Time



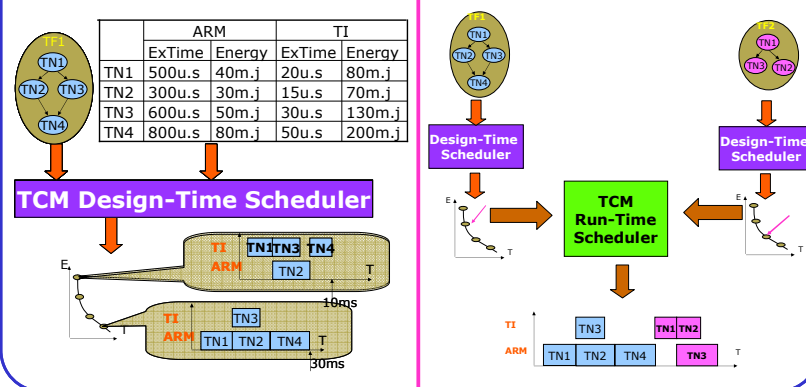
Gray-box-Model Construction



System Scenarios



Task Concurrency Management (TCM)

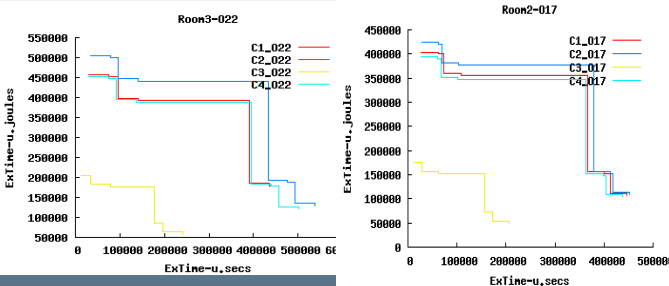


Scenarios Identification

Ri, Ci	CheckVisibility		GlobalParetoBuild		PrepareRender	
	ARM	TI	ARM	TI	ARM	TI
R3-C1	45.036	0.97	106.91	4.72	386.08	25.23
R3-C2	44.772	0.96	101.97	4.6	426.97	29.08
R3-C3	45.587	1.01	35.63	1.72	174.44	10.85
R3-C4	45.656	1.00	102.76	4.62	389.35	24.71
R2-C1	34.832	0.74	79.43	3.49	362.65	23.13
R2-C2	34.626	0.74	73.08	3.31	374.22	25.10
R2-C3	35.198	0.78	30.71	1.45	154.33	9.43
R2-C4	35.266	0.77	73.57	3.32	359.25	22.33
R1-C1	26.624	0.57	52.11	2.31	268.52	17.09
R1-C2	26.509	0.57	50.23	2.27	274.12	18.02
R1-C3	26.892	0.59	18.47	0.88	99.51	5.93
R1-C4	26.905	0.58	45.36	2.07	210.06	14.39

Table 1. Scenario clustering of WCETs(m.secs) for StrongARM & TI

Mapping Solutions for each Scenario



Experimental Results

- Experimental setup
 - ThreadFrames: WSS(p=500ms), TGFF1(30ms), TGFF2(50ms), TGFF3(100ms)
 - Platform with 4 SARM, 2 TI, 1 SARM with FPGA
- Results
 - For the total task instances 150 tasks, No solution found with Greedy heuristic
 - For small instances WSS(8), TGFF1(8), TGFF2(4), TGFF3(2)

	Solution Energy-cons. For with FPGA	Solution Energy-cons. For no FPGA
Greedy (Run-time-approach)	2.214J	2.230J
Gradient Descent + List Scheduling	1.631J	1.647J