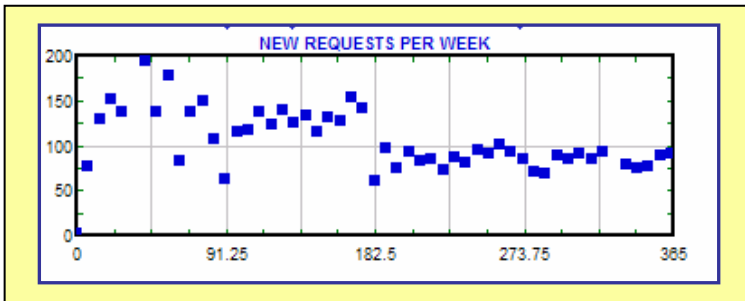


Lean Laboratory Model

Using Simulation Technology to Improve Quality Processes

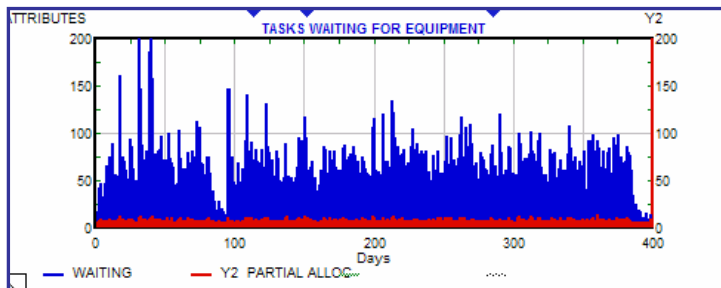
The advances in simulation technology have made it possible to incorporate the complexity of laboratory operations into a configurable model for managers and supervisors. It is now possible to analyze capacity constraints, both people skills and equipment, for all work centers/equipment in the process. The thousands of asynchronous events occurring at a given time may be captured, analyzed and scheduled.

Requests May Be Entered from LIMS History or as Forecasts



The model handles an unlimited volume of requests, with varied types of attribute tests, seasonal & daily patterns for raw materials, in-process tests, lot clearances, stabilities and ad hoc projects.

Statistics on service levels, throughput, test time & variability may be compared to daily or hourly service commitments, in flexible summary formats.



% of Requests Meeting Target	TEST TIMES (days)	
0.704	Mean 7.134	Max 28.1
	StDev 6.979	Min 0.04
TEST REQUESTS SUBMITTED	VALID REQUESTS	REQUESTS COMPLETED
6109	5653	5396
TOTAL INDIVIDUAL TESTS SUBMITTED	IND TESTS COMPLETED	TOTAL TASKS COMPLETED
50624	48114	178946

Detailed Root Cause Information

Parameters related to each request, attribute test, task and resources are available for analysis.

EACH REQUEST COMPLETED							
	Arrival(days)	Priority	Identifier	ID Item Type	ModelTestType	Mod Cycle Tim	
66	9.604168687	1	50013	18	11	5.74548021297	
67	9.6875	14	59	18	11	5.44781038195	
68	10	10	163	19	14	0.59420671297	
69	10	21	136	9	13	2.42343827548	
70	10	21	136	9	13	2.42088159722	
71	10.04168687	1	50068	14	17	0.44168686867	

The scope of the model is flexible enough to incorporate controlled substance labs, GMP release treated work-centers, and links to manufacturing streams using raw material bills of material and in-process flow tests.



