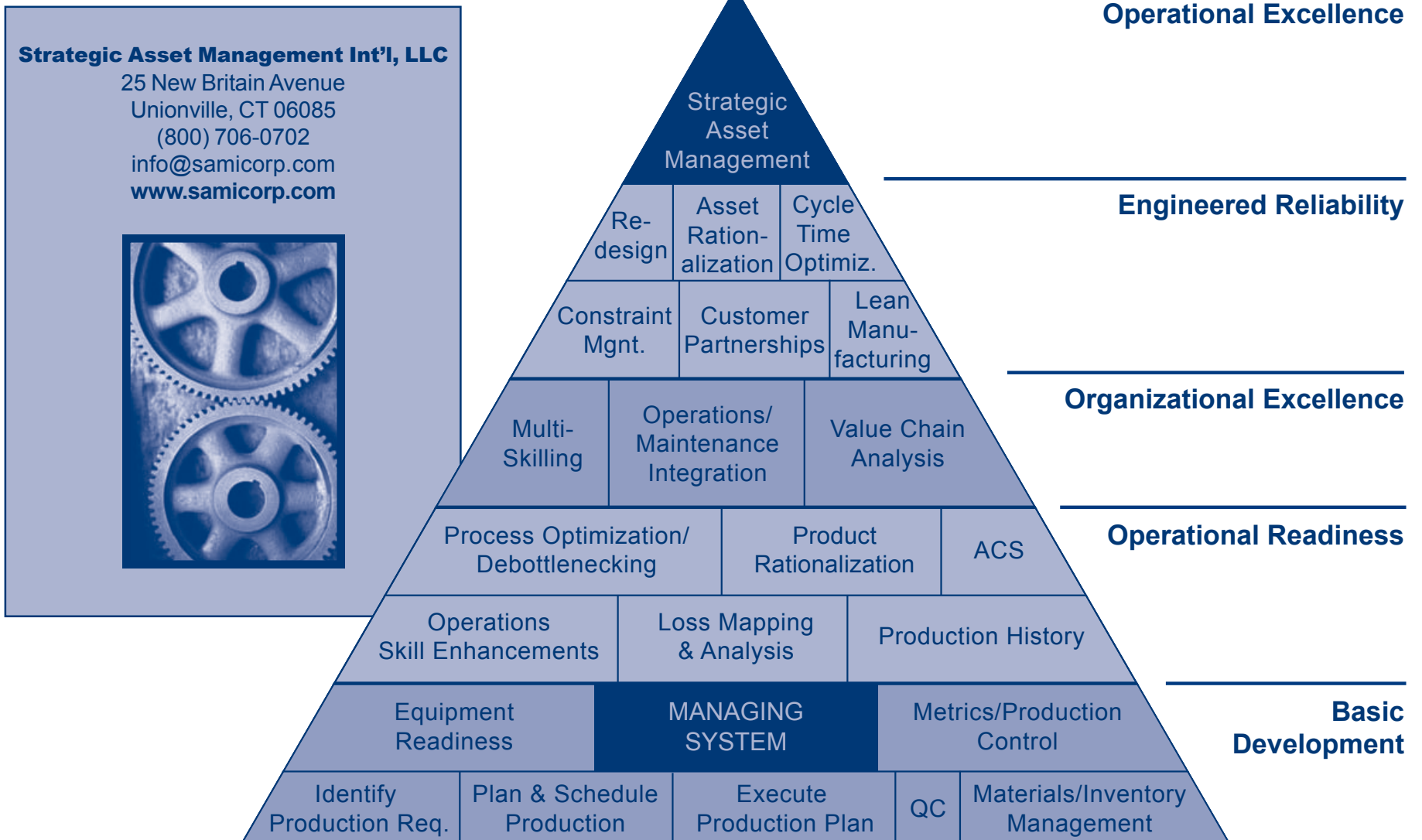


The SAMM Production Triangle



SAMI's Production Maturity Matrix

Class Stage	Low Performing	Competent	High Performing
Planned Production	<ul style="list-style-type: none"> Production Schedule Changes Daily Little coordination between shifts Frequent unplanned production interruptions Raw materials have quality problems Offspec product a way of life No time for preventive maintenance Frequent order expediting Production targets seldom met 	<ul style="list-style-type: none"> Production schedule planned and executed Raw materials available and meet spec Eqpmnt is made available for planned maint. Operators capable normal production needs Downtime and slowdown reasons logged Eqpmnt inspected, defect notifications done Eqpmnt, permits is prepared for maintenance Production targets usually met 	<ul style="list-style-type: none"> Minimum WIP inventory maintained Scheduling is exact for mtls, staff, time Production meets or exceeds Q1 spec Equipment is prepared daily by operator Preventive maintenance is a religion High level of cooperation among functions Operators show equipment ownership Production targets routinely exceeded
Proactive Production	<ul style="list-style-type: none"> Operating spec's undocumented or ignored Operators not trained on equipment/process Production bottlenecks frequent Little or improperly used automation Operators have little process visibility DCS antiquated, unstable, circumvented Equipment not designed/maintained to perform required function 	<ul style="list-style-type: none"> Unplanned events evaluated, corrected Operators educated in process & equipment Production bottlenecks identified and worked Operating specs identified, surveilled DCS upgraded to perform additional functions Quality built into process, not inspection Raw material acquisition quality specified 	<ul style="list-style-type: none"> Asset healthcare program for all equipment Predictive techniques minimize downtime Failure analysis done for 80% of failures Results of RCFA's implemented routinely Condition monitoring based on cost & risk Prevention is a cultural imperative Trades work on designing out failure
Organizational Excellence	<ul style="list-style-type: none"> Training unconnected to real work practice "Team" implementation causes confusion Supervisors lack authority, accountability Unclear roles and responsibilities Skills flexibility in contract, not implemented Operators don't inspect or maintain equipm't No individual performance targets/goals 	<ul style="list-style-type: none"> Supervisors have clear roles & accountability Operators inspect, lube, prep equipment Task teams form, identify solutions, disband Most work is directly by a priority system Natural work teams effective at routine maint. Service contract exists between maint.& ops. Craft multi-skilling and flexibility implemented 	<ul style="list-style-type: none"> Work teams flexible, self-directed Supervisors coach & advise Continuous improvem't embraced, effective Clear priorities established for work Reward/Recognition support best practices Skills predominate over functions All staff systems competent
Engineered Reliability	<ul style="list-style-type: none"> RCM implementation creates confusion, results not implemented Jobs changed on paper, not in reality Stages 1&2 are ignored to "eliminate work" Emphasis on analysis, not implementation Vendor reduction brings lower service levels 	<ul style="list-style-type: none"> Reliability models run for critical systems Component MTBF specifications defined Equipment standards implemented Critical equipment assessed via RCM Projects get input from maintenance, ops Equipment types, models rationalized Purchasing buys by lifecycle cost, not price 	<ul style="list-style-type: none"> Concurrent engineering assures RAMBO Reliability tied to financial results Lifecycle costs are the basis for decisions Vendor contracts pay for function reliability Production targets set by reliability models Equipment failures are a rare occurrence
Asset Management	<ul style="list-style-type: none"> Management unclear re: goals & methods Equipment condition not factored into goals Equipment run parameters changed daily to respond to market pressures Too many priorities prevent focus Poor understanding of plant potential/liabilities 	<ul style="list-style-type: none"> Clear organizational alignment Goals cascaded from plant level to individual Production goals based on plant capability Most work identified and planned prior year Hourly help set unit goals & work improvem'ts Activity-Based Management implemented Prod'n reliability is part of product marketing 	<ul style="list-style-type: none"> Each employee knows & is rewarded for role All decisions based on facts and models 80% of work is preventive or project, & is identified prior to the start of the year Production is 98% predictable Lowest cost producer Plant becomes corporate expansion site