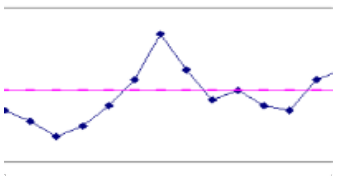
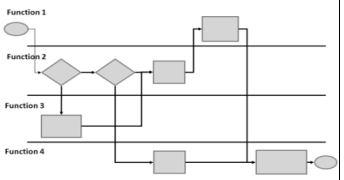
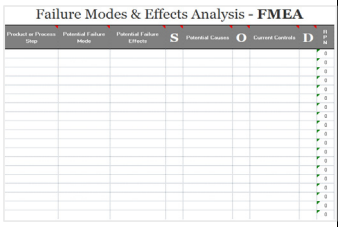
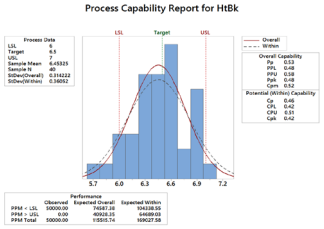
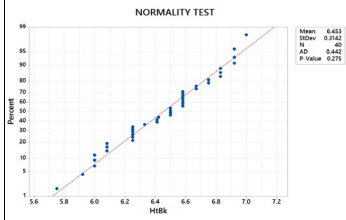
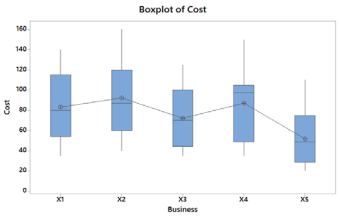
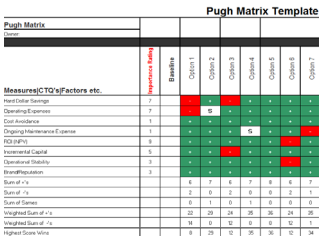
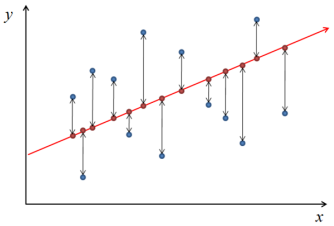
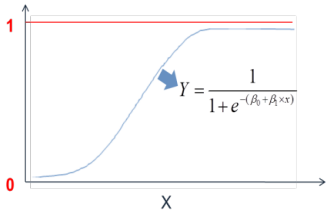
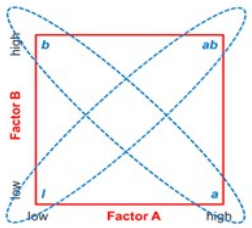
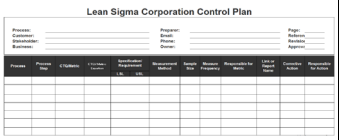
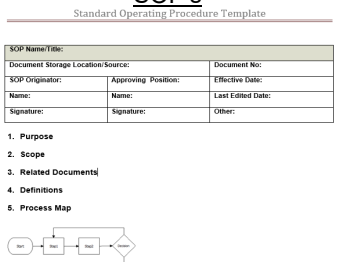
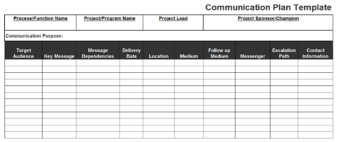
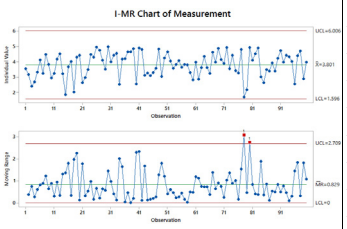
Qualitas

Lean Six Sigma DMAIC Roadmap

	Purpose	Key Tools				Key Outputs
Define	To establish a quantified problem statement, objective and business case that will become the foundation to your Six Sigma project. Conduct stakeholder analysis, select team members and kick-off your project.	Primary Metric 	Process Map 	Project Charter	Project Plan	* Process Map * Gather VOC * Translate VOC to CTQ's * QFD/HOQ * COPQ * Primary & Secondary Metrics * Establish Project Charter * Stakeholder Analysis * Team Selection * Project Plan
Measure	Refine your understanding of the process. Assess process capability relative to customer specifications. Validate measurement systems. Brainstorm potential x's.	C&E	SIPOC	FMEA 	Cpk 	* Early Y=f(x) Hypothesis * Detailed Process Map * SIPOC * Cause & Effect Diagram * Cause & Effect Matrix * FMEA * Basic Statistics * Normality Test * Capability Analysis * Gage R&R
Analyze	Conduct data collection and planned studies in order to eliminate non-critical x's and validate critical x's. Establish a stronger and quantified Y=f(x) equation.	Normality Test 	ANOVA 	2 Sample t-test	Equal Variances	* Narrowed Y=f(x) * 1 & 2 Sample t-tests * 1 & 2 Proportions tests * Equal variance tests * Normality tests * ANOVA * Moods Median * Mann Whitney * Paired t-test * Chi-Squared test
Improve	Design, test and implement your new process or product under live operating conditions. Pilot solutions if feasible before broadly deploying expensive improvements or products.	Pugh Matrix 	Linear Regression 	Binary Logistic Regression 	DOE 	* Refined Y=f(x) * Pugh Matrix * Correlation * Simple Linear Regression * Multiple Linear Regression * Binary Logistic Regression * Full Factorial DOE * Fractional Factorial DOE
Control	Plan, communicate, train and implement your product or process solutions. Ensure control mechanisms are established. Use Poke Yoke, visual controls, SOP's and SPC wherever possible.	Control Plan 	SOP's 	Communication Plan 	SPC 	* Control Plan * Training Plan * Refined FMEA * Communication Plan * Standard Operating Procedures * Five-S Audit * Poke Yoke * Visual Controls * Statistical Process Control