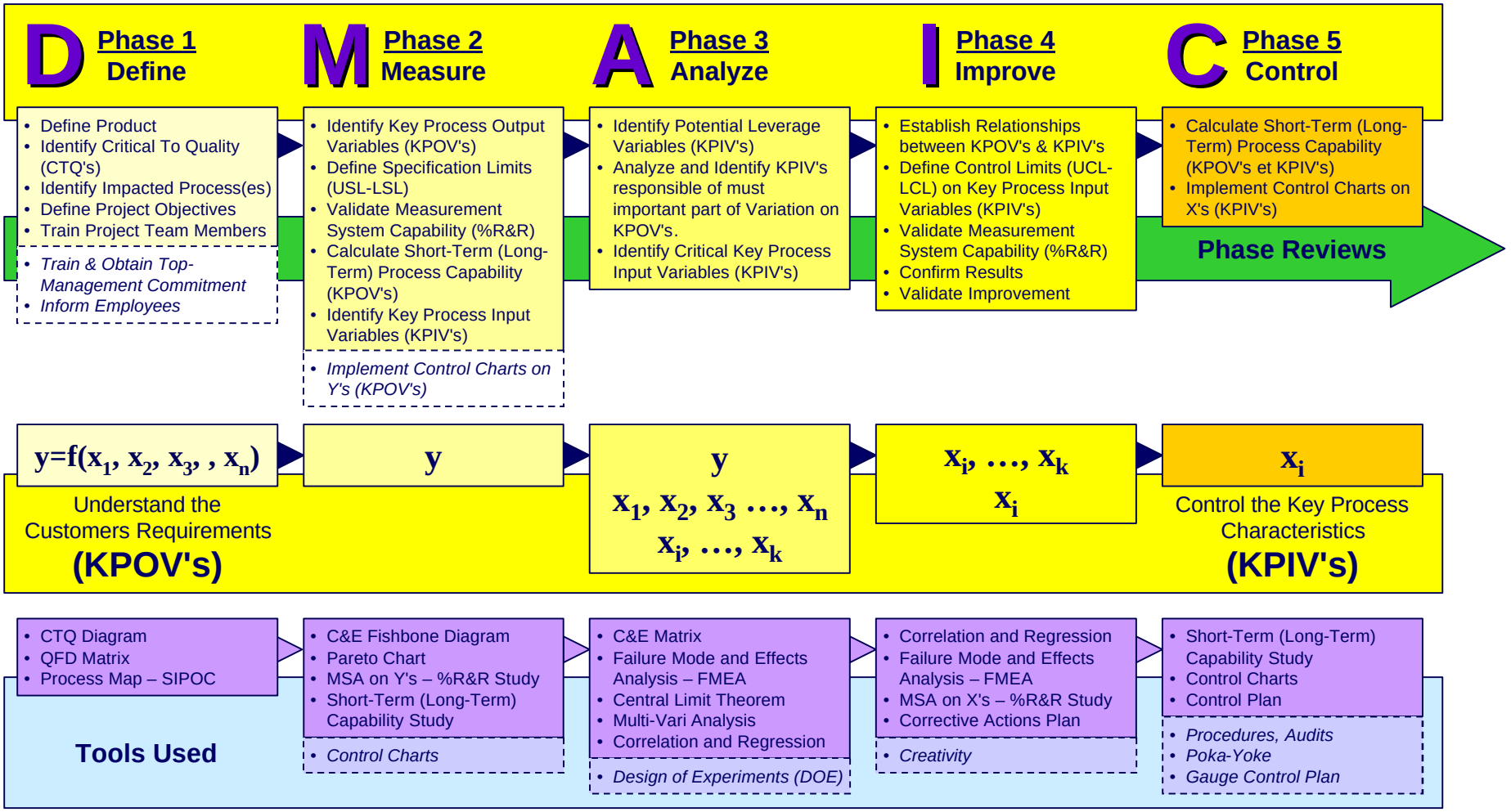
STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP



STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP

Phase 1
Define

Objective :
Define the Project's purpose, scope & obtain background information about process and its Customers

Activities	Tools Used	Outputs / Results
• Define Product • Identify Critical To Quality (CTQ's) • Identify Impacted Process(es) • Define Project Objectives • Train Project Team Members • *Train & Obtain Top-Management Commitment* • *Inform Employees*	• CTQ Diagram • QFD Matrix • Process Map – SIPOC	• Project Charter • Top Level Process Map • Critical To Quality Characteristics (CTQ's) • Milestone & Allocated Resources • Team Members trained to SPC

REVIEW

CTQ : Critical To Quality

STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP

Phase 2
Measure

Objective :
Measure the actual situation by gathering data & understanding how the current process operates

Activities	Tools Used	Outputs / Results
• Identify Key Process Output Variables (KPOV's) • Define Specification Limits (USL-LSL) • Validate Measurement System Capability (%R&R) • Calculate Short-Term (Long-Term) Process Capability (KPOV's) • Identify Key Process Input Variables (KPIV's) • *Implement Control Charts on Y's (KPOV's)*	• C&E Fishbone Diagram • Pareto Chart • MSA on Y's – %R&R Study • Short-Term (Long-Term) Capability Study • *Control Charts*	• Detailed Process Map • Key Process Output Variables (KPOV's) • Measurement System Capability on Y's • Current DPMO & z Value of Process • Baseline Short-Term (Long-Term) Process Capability (KPOV's) • Key Process Input Variables (KPIV's)

REVIEW

KPOV : Key Process Output Variable – KPIV : Key Process Input Variable – USL : Upper Specification Limit
LSL : Lower Specification Limit – %R&R : % Reproducibility & Reproductibility

STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP

Phase 3
Analyze

Objective :
Analyse the potential root causes of Process variations & Confirm them with Statistical data

Activities	Tools Used	Outputs / Results
• Identify Potential Leverage Variables (KPIV's) • Analyze and Identify KPIV's responsible of must important part of Variation on KPOV's. • Identify Critical Key Process Input Variables (KPIV's)	• C&E Matrix • Failure Mode and Effects Analysis – FMEA • Central Limit Theorem • Multi-Vari Analysis • Correlation and Regression • *Design of Experiments (DOE)*	• Relationships between KPOV's & KPIV's • KPIV's Critical to Process Performance • Understanding of Process

REVIEW

KPIV : Key Process Input Variable – KPOV : Key Process Output Variable

STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP

Phase 4
Improve

Objective :
Improve step is to Develop & Implement solutions that address root causes

Activities	Tools Used	Outputs / Results
• Establish Relationships between KPOV's & KPIV's • Define Control Limits (UCL-LCL) on Key Process Input Variables (KPIV's) • Validate Measurement System Capability (%R&R) • Confirm Results • Validate Improvement	• Correlation and Regression • Failure Mode and Effects Analysis – FMEA • MSA on X's – %R&R Study • Corrective Actions Plan • *Creativity*	• Proved Relationships between KPIV's & KPOV's • Control Limits (UCL-LCL) on Key Process Input Variables (KPIV's) • Measurement System Capability on X's • Updated Process Map • Updated AMDEC

REVIEW

KPOV : Key Process Output Variable – KPIV : Key Process Input Variable – UCL : Upper Control Limit
LCL : Lower Control Limit – %R&R : % Reproducibility & Reproductibility

STATISTICAL PROCESS CONTROL IMPLEMENTATION ROADMAP

Phase 5
Control

Objective :
Control to maintain the Gains we have made by monitoring processes & anticipating future improvements

Activities	Tools Used	Outputs / Results
• Calculate Short-Term (Long-Term) Process Capability (KPOV's et KPIV's) • Implement Control Charts on X's (KPIV's)	• Short-Term (Long-Term) Capability Study • Control Charts • Control Plan • *Procedures, Audits* • *Poka-Yoke* • *Gauge Control Plans*	• DPMO & z Value of Process • Short-Term (Long-Term) Process Capability (KPOV's) (KPIV's) • Updated AMDEC (RPN) • Control Charts (KPIV's)

REVIEW

KPOV : Key Process Output Variable – KPIV : Key Process Input Variable