CONCEPT

AI-Assisted Process Analysis: Process Mining and AI for Continuous Improvement

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Technical depth: Practitioner · **Practical mode:** Lab

Introduction

Improvement teams still map processes from workshop memory while their business systems record every step, delay and rework loop. Analysis takes weeks, root causes rest on opinion, and generative AI tools are used informally without checks on accuracy or data confidentiality. This Core Concept course equips improvement leaders to extract event data, analyse processes with process mining, and use machine learning and generative AI inside a disciplined DMAIC approach with proper controls. Participants work hands on with datasets from several sectors and leave with an AI-Assisted Process Improvement Case for a process in their own organisation.

Course Objectives

- Identify where machine learning, process mining and generative AI add value in each DMAIC phase
- Prepare event logs from business systems in IEEE XES or OCEL 2.0 structures for analysis
- Analyse process variants, bottlenecks, rework and conformance using process mining tools
- Use generative AI and machine learning to analyse customer text and surface root cause drivers, with human validation
- Apply AI risk controls drawn from ISO/IEC 42001 and the NIST AI RMF to improvement projects
- Produce an AI-Assisted Process Improvement Case for a process in the participant's own organisation

Target Audience

- Continuous improvement and process excellence managers leading improvement portfolios
- Process owners accountable for end-to-end process performance
- Lean Six Sigma project leads managing DMAIC projects
- Business analysis and operations analytics managers supporting process redesign
- Shared services and operations managers pursuing automation and efficiency gains

Course Outline

Day 1: AI and Continuous Improvement Foundations

- AI Capability Map for Improvement: Machine Learning, Process Mining and Generative AI
- DMAIC Under ISO 13053-1 and AI Use Cases in Each Phase
- Improvement Opportunity Screening with a Value-Feasibility Matrix
- Event Data Readiness Assessment of Core Business Systems
- Current-State Value Stream Map of a Candidate Process

Day 2: Process Mining Methods and Data Standards

- Event Log Structure Under IEEE 1849-2023 XES
- Object-Centric Event Logs with OCEL 2.0
- Process Discovery with Directly-Follows Graphs and the Inductive Miner
- Conformance Checking Against a BPMN 2.0 Reference Model
- Process Mining Platform Landscape: Celonis, SAP Signavio, Disco and PM4Py

Day 3: AI-Assisted Analysis in the Lab

- Event Log Extraction and Cleaning from ERP Tables with PM4Py
- Variant, Bottleneck and Rework Loop Analysis in a Process Mining Tool
- Generative AI Prompt Patterns for Voice of the Customer and Complaint Text Analysis
- Root Cause Driver Analysis with Decision Trees and Feature Importance
- AI-Drafted SIPOC, Process Maps and Standard Work Instructions with Human Review

Day 4: Advanced Techniques, Risk and Governance

- Predictive Process Monitoring for Delay and Service Level Breach Forecasting
- Anomaly Detection Alongside Statistical Process Control Charts
- Task Mining and Automation Candidate Scoring for RPA
- AI Risk Controls Under ISO/IEC 42001:2023 and the NIST AI RMF Generative AI Profile
- Generative AI Output Validation: Hallucination, Bias and Data Confidentiality Checks

Day 5: Lab Project and the Improvement Case

- Purchase-to-Pay Lab: End-to-End Process Mining Analysis
- Hospital Patient Flow Lab: Bottleneck and Waiting-Time Diagnosis
- AI-Assisted Opportunity Analysis for an Own Process Dataset
- AI-Assisted Process Improvement Case Drafting
- Peer Challenge Panel and Case Defence

Skills You Will Gain

- Process Mining Analysis
- Event Data Preparation
- AI-Augmented Root Cause Analysis
- Prompt Design for Process Analysis
- Predictive Process Monitoring
- Automation Opportunity Assessment
- Responsible AI Governance

Why Attend This Course

- Return with an AI-Assisted Process Improvement Case for a real process, built from event data and tested by peers
- See how a process actually runs from system records rather than from workshop recollection
- Use generative AI tools with prompts and review checks that make their output fit for decisions
- Compare approaches with improvement leaders from finance, healthcare, logistics and public service organisations

Conclusion

AI and process mining shorten the path from symptom to evidence, provided the data is sound and the output is checked. This course moves from where AI fits in DMAIC, through event log standards and process mining methods, to hands-on analysis with machine learning and generative AI, and then to predictive monitoring, automation scoring and AI risk controls. The final day applies the toolset to lab datasets and to each participant's own process, producing an AI-Assisted Process Improvement Case ready for sponsor review.