Glossary for MPC Plus

System and Technical Terms

MPC (Machine Performance Check) - A quality assurance (QA) procedure used to verify the calibration and operational accuracy of Varian TrueBeam linear accelerators.

Varian TrueBeam - A radiation therapy system used in oncology clinics for delivering precise radiation doses to patients.

Linear Accelerator (Linac) - A device that accelerates electrons to produce high-energy X-rays used for cancer treatment.

iDrive - The network storage location where Varian systems automatically save calibration and performance check output files.

ETL (Extract, Transform, Load) - A data processing pipeline that extracts data from source files, transforms it into a standard format, and loads it into a database.

.xim / .xml / .csv - File formats generated by Varian machines during calibration — containing raw measurement and performance data.

JSON (.json) - A lightweight data format used to store standardized MPC data after processing.

Dashboard - A visual interface displaying key metrics and performance trends for quick data interpretation.

Baseline - The reference or standard measurement against which machine performance data is compared.

Tolerance - The acceptable range of deviation from a baseline measurement.

Baseline Configuration Panel - The user interface where Admins can view and modify baseline reference values for machine performance checks.

Threshold - The upper and lower limit defining when a data point falls outside acceptable performance parameters.

Threshold Management Interface - A control panel that allows Admins to configure and adjust warning and alert threshold values for machine performance parameters.

Data Ingestion - The process of importing and processing data from multiple sources (e.g., Varian machine output files).

Audit Trail - A record of user actions and system events that supports traceability and regulatory compliance.

Role-Based Access Control (RBAC) - A security model that restricts system access based on user roles (e.g., admin, technician, supervisor).

Sign-Off - The digital confirmation that a user has reviewed and approved calibration results for compliance purposes.

Compliance Report - A document automatically generated to demonstrate adherence to regulatory calibration requirements.

Web Interface - The graphical user interface (GUI) of the application, accessible through a web browser.

Infrastructure & Deployment Terms

Deployment - The process of installing, configuring, and launching the software in the operational environment.

Local Server - On-site server hosting the application.

Server Uptime - The percentage of time a server remains operational and available.

On-Premise - Refers to hosting the software locally on the clinic's servers rather than in the cloud.

VPN (Virtual Private Network) - Secure remote access to the system.

PostgreSQL - Relational database system

Quality Assurance (QA) and Physics Terms

QA (Quality Assurance) - Procedures and systems designed to ensure medical equipment operates safely and accurately.

Chamber Output - The radiation dose output measured by an ionization chamber, used to validate machine calibration.

Absolute Dose - The true radiation dose delivered, measured in physical units rather than relative comparison.

Chamber Output Correction Factor - A multiplier applied to raw dose data to adjust for baseline variations or calibration drift.

Multi-Leaf Collimator (MLC) - A device within a linear accelerator that shapes the radiation beam for precise targeting.

Geometry Checks - Tests verifying the mechanical accuracy and alignment of the linear accelerator's components.

Phantom Device - A physical model that simulates human tissue, used for radiation calibration and QA testing.

DailyQA 3 - A commercial QA device from Sun Nuclear used for daily machine calibration verification.

Business & Compliance Terms

Regulatory Compliance - Adherence to local, state, and federal laws governing radiation equipment calibration and documentation.

State Compliance - Specific state-level requirements for recording and verifying radiation therapy equipment calibration.

Auditability - The system's ability to provide transparent records for compliance inspection.

Clinical Physicist - A healthcare professional responsible for ensuring the safety, accuracy, and quality of radiation equipment.

Radiation Oncologist - A physician specializing in cancer treatment using radiation therapy.

Medical Physicist Assistant / QA Technician - Support staff responsible for performing daily QA checks and maintaining calibration logs.

Department Head - The managerial stakeholder responsible for overseeing QA efficiency, cost, and compliance in the clinic.

ROI (Return on Investment) - A measure of financial benefit from implementing the system, compared to its cost.

Predictive Maintenance - The use of data and machine learning to anticipate and prevent potential equipment failures.

Trending Analysis - The process of tracking and visualizing changes in performance data over time to detect drifts or anomalies.

Anomaly Detection - Identifying data points that fall outside expected patterns, signaling possible calibration issues.