Keeva Automation Life Cycle Audit

Welcome to Keeva's comprehensive Automation Audit, a distinctive tool tailored for every stage of your automation journey, from initial conception to large-scale implementation. The audit's pragmatic approach, inspired by the time-tested Scientific Method, reinforces the fundamental principles necessary for a robust automation strategy.

Structured around the critical twelve phases of Keeva's Automation Lifecycle, this audit provides a scalable framework applicable to individual machines, cell-level projects, entire production lines, or overarching department strategies:

1. Ideation – Conceptualizing your vision.
2. Needs Analysis – Defining your requirements.
3. Design – Architecting your solution.
4. Integration – Merging components for synergy.
5. Construction – Building your concept.
6. Installation – Establishing your system.
7. Commissioning – Validating your setup.
8. Training – Equipping your team.
9. Operations – Managing your output.
10. Maintenance – Preserving your system.
11. Review and Monitoring – Refining your process.
12. Technology Refresh – Updating your technology.

For each phase, we provide four key principles, supplemented by essential insights into Return on Investment and Management. Automation professionals across the spectrum—from engineers to executives—will find value in benchmarking their projects against this audit, ensuring alignment with industry best practices aimed at maximizing returns and reducing inefficiencies.

This audit is more than just a checklist; it's a dynamic evaluation that integrates past experiences with innovative approaches to forge the path ahead. Engage with it as a continuous guide through your automation endeavors for outcomes that are not just successful but sustainable. Join us in embracing the Keeva Automation Lifecycle, where your strategic investments meet their greatest potential.

Ideation: Brainstorming Efficacy

Key Principle:

How effective and inclusive is the brainstorming process?

Definition:

Creative ideation is the cornerstone of problem-solving, encompassing potential, plausible, and essential solutions.

Why this matters:

An expansive array of ideas increases the likelihood of discovering the optimal solution.

Your answer:

A. Infrequent and ineffective brainstorming yields minimal ideas.
B. Idea generation is sporadic and unstructured.
C. Ideas are accepted without a formalized process.
D. Idea collection exists without regular events.
E. A consistent, structured, and inclusive brainstorming process is in place.

Ideation: Departmental Involvement

Key Principle:

To what extent are different departments integrated into the ideation process?

Definition:

Creativity thrives on diverse perspectives, requiring insights from every angle of the organization.

Why this matters:

Comprehensive solutions emerge when every relevant party contributes.

Your answer:

A. A single department drives idea generation.
B. Select departments and stakeholders contribute ideas.
C. Around half the departments and stakeholders are involved.
D. Most departments and stakeholders are active in ideation.
E. Complete departmental and stakeholder involvement in ideation.

Ideation: Observation Quality

Key Principle:

Is there a structured visual assessment of current operations and challenges?

Definition:

True ideation not only sees but observes operations, focusing on nuances that impact both customers and end-users.

Why this matters:

Observation can ignite innovative ideas; it's crucial to differentiate between passive seeing and active observing.

Your answer:

A. There's no dedicated observation of operations; issues are routinely overlooked.
B. Occasional observations of issues are made.
C. Regular exposure to operations occurs without ideation involvement.
D. Active observation is part of the process but needs refinement.
E. Observation is systematically integrated into the process.

Ideation: Stakeholder Engagement

Key Principle:

Does ideation include comprehensive feedback from all stakeholders?

Definition:

Effective ideation requires attentive listening to the diverse inputs, particularly from customers and end-users.

Why this matters:

Listening-beyond just hearing-can unveil innovative insights and solutions.

Your answer:

A. Stakeholder input is consistently overlooked despite awareness of issues.
B. Stakeholder feedback is sporadically considered.
C. Stakeholders are heard but not actively included in ideation.
D. There's a concerted effort to listen, though the approach could be enhanced.
E. The ideation process proactively includes stakeholder feedback.

Needs Analysis: **Core Business Impact**

Key Principle:

To what extent does the needs analysis focus on the core business functions?

Definition:

Prioritizing automation within the core business functions yields significant enhancements in efficiency and revenue generation over peripheral areas.

Why this matters:

Targeting core functions often results in more substantial improvements than peripheral interventions.

Your answer:

A. Minimal consideration of core business aspects in budget allocation.
B. Lower emphasis on core business aspects in budget allocation.
C. Balanced consideration of core business aspects in budget allocation.
D. Higher emphasis on core business aspects in budget allocation.
E. Maximum focus on core business aspects in budget allocation.

Needs Analysis: Identifying Adjacencies

Key Principle:

What role do adjacent opportunities play in the Needs Analysis?

Definition:

Adjacencies offer prospects for growth and innovation and should be evaluated for their potential to enhance business offerings.

Why this matters:

Neglecting adjacencies can result in a myopic analysis, missing out on potential market evolutions.

Your answer:

A. Adjacencies are minimally considered in budget allocation.
B. Adjacencies receive less focus in budget allocation.
C. Adjacencies are adequately considered in budget allocation.
D. Adjacencies receive substantial consideration in budget allocation.
E. Adjacencies are a primary focus in budget allocation.

Needs Analysis: Time Efficiency

Key Principle:

Is time efficiency a prioritized metric in the Needs Analysis?

Definition:

In automation, time efficiency often translates to compounded benefits due to the repetitive nature of processes.

Why this matters:

Incremental time savings can be pivotal, especially in high-volume, low-margin operations.

Your answer:

A. Time is not a prioritized metric in the Needs Analysis.
B. Time is a secondary consideration in the Needs Analysis.
C. Time is an acknowledged factor in the Needs Analysis.
D. Time is a prioritized metric in the Needs Analysis.
E. Time is a critical metric in the Needs Analysis.

Needs Analysis: Causality and Solutions

Key Principle:

How thoroughly does the Needs Analysis explore causality and potential solutions?

Definition:

A comprehensive Needs Analysis goes beyond problem identification to explore underlying causes and possible resolutions.

Why this matters:

Understanding causality is crucial for crafting effective solutions and informing subsequent project phases.

Your answer:

A. Causality and solutions are not considered in the Needs Analysis.
B. Causality and solutions are minor components of the Needs Analysis.
C. Causality and solutions are integral to the Needs Analysis.
D. Causality and solutions are emphasized in the Needs Analysis.
E. Causality and solutions are central to the Needs Analysis.

Design: Hierarchical Structuring

Key Principle:

How is hierarchy integrated into the design?

Definition:

A hierarchical design organizes the solution into distinct layers, each with specific roles, enhancing clarity and function.

Why this matters:

Hierarchy in design simplifies complexity, assigning clear roles and responsibilities within the system.

Your answer:

A. Hierarchy is absent from designs.
B. Hierarchy is infrequently considered in designs.
C. Hierarchy is present in designs.
D. Hierarchy is a common feature in designs.
E. Hierarchy is a fundamental aspect of all designs.

Design: Modularity

Key Principle:

Does the design embrace modularity?

Definition:

Modularity in design allows for parts of the system to be separated and recombined, facilitating flexibility and scalability.

Why this matters:

Modular systems are essential for scalable, maintainable, and upgradable designs.

Your answer:

A. Modularity is not a consideration in designs.
B. Modularity is seldom incorporated in designs.
C. Modularity is evident in designs.
D. Modularity is a usual characteristic in designs.
E. Modularity is intrinsic to the design process.

Design: **Methodological Consistency**

Key Principle:

Is there adherence to a proven design methodology?

Definition:

Employing a structured design methodology ensures consistency, efficiency, and the opportunity for iterative improvements.

Why this matters:

Consistent methodology in design phases reduces errors and enhances the quality of the outcome.

Your answer:

A. The design phase lacks a formalized methodology.
B. The design phase is minimally guided by a formal methodology.
C. The design phase adheres to a formal methodology.
D. The design phase is strongly guided by a formal methodology.
E. The design phase is strictly governed by a formal methodology.

Design: Intrinsic Security

Key Principle:

What is the extent of security integration in the design?

Definition:

Incorporating security into the design protects the system against internal and external threats.

Why this matters:

With rising threats to operational technology, security must be a cornerstone of any automation design.

Your answer:

A. Security considerations are absent from designs.
B. Security is sporadically considered in designs.
C. Security is a component of designs.
D. Security is a regular element in designs.
E. Security is deeply ingrained in every aspect of the design.

Integration: Reusability Focus

Key Principle:

How is reusability incorporated in integration efforts?

Definition:

Reusability in integration implies the efficient use of existing resources and knowledge to streamline the development process and optimize performance.

Why this matters:

Leveraging reusable components accelerates development time, reduces costs, and ensures consistency across systems.

Your answer:

A. There is no emphasis on reusability in integrations.
B. Reusability is infrequently considered in integrations.
C. Reusability is evident in integrations.
D. Reusability is a common practice in integrations.
E. Reusability is a standard approach in all integrations.

Integration: **Horizontal Connectivity**

Key Principle:

Is horizontal integration a consideration in the design of automation solutions?

Definition:

Horizontal integration involves linking together systems or components at the same level in the value chain for seamless operation and communication.

Why this matters:

Horizontal integration facilitates the efficient flow of information across systems, enhancing coordination and operational performance.

Your answer:

A. Horizontal integration is not a consideration in integrations.
B. Horizontal integration is rarely implemented in integrations.
C. Horizontal integration is present in integrations.
D. Horizontal integration is frequently implemented in integrations.
E. Horizontal integration is consistently and fully implemented in integrations.

Integration: Vertical Synchronization

Key Principle:

How is vertical integration achieved within the solution?

Definition:

Vertical integration connects systems or components at different levels in the production hierarchy, ensuring a smooth flow of information up and down the value chain.

Why this matters:

Effective vertical integration enables better decision-making and optimization of processes by leveraging the flow of information across different operational levels.

Your answer:

A. Vertical integration is not considered in integrations.
B. Vertical integration is occasionally considered in integrations.
C. Vertical integration is featured in integrations.
D. Vertical integration is commonly included in integrations.
E. Vertical integration is a fundamental part of every integration.

Integration: **Expertise Utilization**

Key Principle:

To what extent is expert knowledge utilized in the integration process?

Definition:

Integration gains substantial value by tapping into the specialized knowledge and experience of industry professionals, including those from manufacturing, distribution, and representation.

Why this matters:

Harnessing the collective expertise of the value chain enhances the solution's effectiveness, reliability, and innovation potential.

Your answer:

A. Integration seldom benefits from external expertise.
B. Integration occasionally benefits from external expertise.
C. Integration benefits from external expertise.
D. Integration regularly benefits from external expertise.
E. Integration's approach is deeply rooted in leveraging external expertise.

Construction: Reliability

Key Principle:

How is reliability integrated into the construction phase, following design and integration precedents?

Definition:

Reliability during construction ensures that the design's robustness and integration's seamless operation are preserved and manifested in the final build.

Why this matters:

A solution that reliably performs as expected under specified conditions over time reduces downtime and supports continuous operations.

Your answer:

A. Reliability is not factored into the construction of hardware and software.
B. Reliability considerations are minimal during hardware and software construction.
C. Reliability is evident in the construction of hardware and software.
D. Reliability is a regular feature in hardware and software construction.
E. Reliability is at the forefront of every aspect of hardware and software construction.

Construction: **Maintainability**

Key Principle:

Does maintainability inform the construction process as derived from design and integration?

Definition:

Maintainability in construction means the solution is built with a clear understanding that allows for easy support and enhancements over time.

Why this matters:

A maintainable system is one that can evolve and adapt efficiently, ensuring that it continues to meet changing needs and conditions.

Your answer:

A. Maintainability is not a consideration in the construction of hardware and software.
B. Maintainability is seldom a consideration in the construction of hardware and software.
C. Maintainability is an apparent aspect of the construction of hardware and software.
D. Maintainability is commonly incorporated into the construction of hardware and software.
E. Maintainability is systematically and comprehensively integrated into the construction of hardware and software.

Construction: **Repairability**

Key Principle:

Is the concept of repairability carried through into the construction stage from design and integration?

Definition:

Repairability ensures that when failures occur, they can be addressed efficiently and effectively without significant downtime or cost.

Why this matters:

Designing for repairability saves time and resources in the long run by considering potential failure modes and facilitating quick fixes.

Your answer:

A. Repairability is not considered during the construction of hardware and software.
B. Repairability is rarely accounted for during the construction of hardware and software.
C. The construction of hardware and software reflects a degree of repairability.
D. Repairability is usually a consideration in the construction of hardware and software.
E. Repairability is a defining feature of the construction process for hardware and software.

Construction: Documentation

Key Principle:

Is the documentation reflective of the modular and hierarchical design approach?

Definition:

Good documentation captures the essence of the design and integration in a way that is accessible and useful for future reference and modifications.

Why this matters:

Comprehensive documentation underpins the ability to maintain, repair, and upgrade the system, as well as to replicate its success in future projects – this includes: design specifications, code listngs, drawings, manuals, reports, photographs and videos.

Your answer:

A. Documentation is largely absent or inadequate for the hardware and software solution.
B. The hardware and software solution has incomplete or minimal documentation.
C. There is a standard level of documentation for the hardware and software solution.
D. Extensive documentation accompanies the hardware and software solution.
E. The documentation for the hardware and software solution is thorough, enhancing the design's modularity and hierarchy.

Installation: **Infrastructure**

Key Principle:

How well does Installation planning account for the infrastructure needed to support the solution's present and future requirements?

Definition:

Infrastructure planning ensures all necessary support systems and facilities are in place for the current installation and future expansions.

Why this matters:

An installation that does not consider the full scope of infrastructure may limit the solution's effectiveness and potential for scalability.

Your answer:

A. There is a lack of sufficient infrastructure to support the solution adequately.
B. There is some infrastructure in place, but it may not fully meet the solution's needs.
C. The existing infrastructure meets the solution's current needs adequately.
D. There is robust infrastructure in place that can support both current and future demands.
E. The infrastructure is comprehensive and fully anticipates the solution's current and future requirements.

Installation: **Inspection**

Key Principle:

How closely does the Installation Inspection process align with the Design and Construction documentation?

Definition:

An installation inspection ensures the solution is installed as per design specifications and construction quality, safeguarding functionality.

Why this matters:

Aligning inspections with design and construction documentation ensures integrity in the installation process and serves as a quality control measure.

Your answer:

A. The installation inspection process is inconsistently aligned with design and construction documentation.
B. There is occasional alignment between installation inspections and design documentation.
C. Installation inspections generally adhere to the design and construction documentation.
D. There is a strong alignment between installation inspections and the design and construction documentation.
E. Installation inspections are rigorously aligned with and reflective of the design and construction documentation.

Installation: **Sequencing**

Key Principle:

Does the sequence of installation activities prioritize high-value components to ensure their functionality is not dependent on later installations?

Definition:

Effective installation sequencing is strategic and prioritizes the implementation of critical and high-value components to avoid rework or functionality issues.

Why this matters:

Proper sequencing ensures that the most crucial parts of the solution are given priority, reducing the risk of delays and functionality compromises.

Your answer:

A. High-value components are often installed without considering their dependency on later installations.
B. There is some consideration for the installation sequence of high-value components.
C. High-value components are typically installed with consideration to their dependency on subsequent installations.
D. The sequencing often prioritizes high-value components, minimizing their dependency on later installation steps.
E. The installation sequence is meticulously planned to always prioritize high-value components, ensuring their functionality is independent of subsequent installations.

Installation: Monte Carlo

Key Principle:

Is the Installation phase utilizing Monte Carlo methods for enhanced forecasting and feedback incorporation?

Definition:

Monte Carlo methods in project management contribute to a more nuanced and probabilistic approach to forecasting, accounting for variables and uncertainties.

Why this matters:

Incorporating probabilistic forecasting in project management can significantly enhance the accuracy of timelines, cost estimates, and resource allocation.

Your answer:

A. Monte Carlo methods are rarely, if ever, used in the installation management process.
B. There is limited use of Monte Carlo methods in the installation management process.
C. Monte Carlo methods are used in a standard capacity within the installation management process.
D. Monte Carlo methods are regularly incorporated for better forecasting in the installation management process.
E. Monte Carlo methods are systematically leveraged for all aspects of forecasting in the installation management process.

Commissioning: Simulation / Emulation

Key Principle:

How extensively are simulation and emulation integrated into the design and integration process to enhance commissioning effectiveness?

Definition:

Simulation and emulation are techniques used to virtually recreate the solution's operational environment, thereby optimizing commissioning efficiency.

Why this matters:

Leveraging these technologies can significantly streamline commissioning by preempting issues and ensuring design robustness, thereby improving ROI.

Your answer:

A. Simulation and emulation are rarely incorporated into the commissioning process.
B. Simulation and emulation are occasionally used during commissioning.
C. Simulation and emulation are a common part of the commissioning process.
D. Commissioning regularly utilizes simulation and emulation to refine the process.
E. Commissioning invariably involves comprehensive simulation and emulation to ensure effectiveness.

Commissioning: Testing

Key Principle:

What is the scope and extent of testing performed during commissioning?

Definition:

Effective commissioning demands exhaustive testing of all systems and subsystems to confirm adherence to requirements.

Why this matters:

Without complete testing, undiscovered deficiencies may compromise the solution's value and performance as expected by the customer.

Your answer:

A. Commissioning infrequently tests all solution functions and capabilities.
B. Testing of all solution functions and capabilities during commissioning is sporadic.
C. Commissioning generally includes testing of all solution functions and capabilities.
D. There is a high level of comprehensive testing of solution functions and capabilities during commissioning.
E. Commissioning encompasses full-scale testing of all functions and capabilities without exception.

Commissioning: Exceptions

Key Principle:

How are exceptions identified during commissioning handled and resolved?

Definition:

An effective commissioning process includes mechanisms for identifying, reporting, and correcting deviations from specifications.

Why this matters:

Properly managing exceptions ensures the final solution aligns with design intent and specifications, maintaining value and performance.

Your answer:

A. Exceptions during commissioning are seldom communicated to management and corrected.
B. Exceptions are occasionally reported and corrected, but not systematically.
C. Exceptions are normally identified, reported to management, and corrected.
D. There is a consistent practice of reporting exceptions to management and correcting them.
E. All exceptions identified during commissioning are systematically reported to management and corrected.

Commissioning: Training

Key Principle:

Does the commissioning process integrate training for customer/end-user personnel?

Definition:

Training during commissioning involves the proactive engagement of the customer or end-user personnel in the commissioning activities.

Why this matters:

Involving end-users early on fosters familiarity with the technology and promotes accountability, leading to better outcomes and a higher quality solution.

Your answer:

A. There is little to no inclusion of customer/end-user personnel in the commissioning process.
B. Customer/end-user participation in commissioning occurs occasionally.
C. It is usual practice to involve customer/end-user personnel during commissioning.
D. Customer/end-user personnel are frequently engaged in the commissioning process.
E. Training that includes customer/end-user personnel is an integral and consistent part of the commissioning process.

Training: Operator

Key Principle:

What is the effectiveness of operator training in relation to the life cycle of the solution from design to commissioning?

Definition:

Operator training ensures that the individuals responsible for daily operations are proficient with the solution's capabilities.

Why this matters:

Operators must be well-versed in the solution to fully utilize its capabilities and provide meaningful feedback for ongoing improvement.

Your answer:

A. Operator Training infrequently aligns with the full life cycle of Design, Integration, Installation, and Commissioning.
B. Operator Training aligns with the full life cycle on an occasional basis.
C. Operator Training commonly aligns with the full life cycle of Design, Integration, Installation, and Commissioning.
D. Operator Training aligns with the full life cycle most of the time.
E. Operator Training consistently aligns with the full life cycle from Design to Commissioning.

Training: **Supervisor**

Key Principle:

What is the adequacy of supervisor training across the solution's design, integration, installation, and commissioning?

Definition:

Supervisor training equips those overseeing operation and production with the necessary understanding to optimize and improve the solution.

Why this matters:

Without comprehensive knowledge, supervisors cannot effectively leverage the solution or contribute to its evolution.

Your answer:

A. Supervisor Training seldom reflects the full life cycle of Design, Integration, Installation, and Commissioning.
B. Supervisor Training occasionally reflects the full life cycle.
C. Supervisor Training generally reflects the full life cycle of Design, Integration, Installation, and Commissioning.
D. Supervisor Training reflects the full life cycle the majority of the time.
E. Supervisor Training consistently reflects the full life cycle from Design to Commissioning.

Training: Maintenance

Key Principle:

How well does maintenance training integrate with the solution's life cycle stages?

Definition:

Maintenance training is critical for those tasked with the ongoing upkeep and future enhancement of the solution.

Why this matters:

The solution's durability and performance depend on maintenance personnel's deep understanding of its design and function.

Your answer:

A. Maintenance Training rarely incorporates the full life cycle of Design, Integration, Installation, and Commissioning.
B. Maintenance Training sometimes incorporates the full life cycle.
C. Maintenance Training usually incorporates the full life cycle of Design, Integration, Installation, and Commissioning.
D. Maintenance Training often incorporates the full life cycle.
E. Maintenance Training always incorporates the full life cycle from Design to Commissioning.

Training: Management

Key Principle:

How comprehensive is management training concerning the solution's design, integration, installation, and commissioning?

Definition:

Management training ensures leaders understand the solution's business implications and its integration with wider business activities.

Why this matters:

Managers must grasp the solution's potential and data capabilities to align it with business objectives and foster continuous improvement.

Your answer:

A. Management Training rarely takes into account the full life cycle of Design, Integration, Installation, and Commissioning.
B. Management Training occasionally takes into account the full life cycle.
C. Management Training typically takes into account the full life cycle of Design, Integration, Installation, and Commissioning.
D. Management Training often takes into account the full life cycle.
E. Management Training consistently takes into account the full life cycle from Design to Commissioning.

Operations: In control

Key Principle:

How effectively does Operations monitor and ensure that production adheres to established control limits?

Definition:

Control limits are used to maintain the consistency and quality of production processes, ensuring that they perform within set parameters.

Why this matters:

Effective monitoring of production against control limits is vital to maintaining process stability and ensuring optimal output.

Your answer:

A. Operations minimally monitor production against control limits.
B. Operations monitor production against control limits to some extent.
C. Operations adequately monitor production against control limits.
D. Operations significantly monitor production against control limits.
E. Operations thoroughly monitor production against control limits.

Operations: Inefficiencies discovery

Key Principle:

How does Operations identify and address inefficiencies and wastage?

Definition:

Continuous improvement is essential for identifying and eliminating waste, thereby adding value for the end customer.

Why this matters:

Active management of inefficiencies and waste is crucial for maximizing operational effectiveness and customer value.

Your answer:

A. Operations infrequently manage improvements and waste towards resolution.
B. Operations occasionally manage improvements and waste towards resolution.
C. Operations consistently manage improvements and waste towards resolution.
D. Operations primarily manage improvements and waste towards resolution.
E. Operations invariably manage improvements and waste towards resolution.

Operations: Failure Pareto

Key Principle:

How effectively are failures identified, analyzed, and addressed?

Definition:

Pareto analysis helps prioritize actions based on their potential to improve outcomes, essential for effective problem-solving.

Why this matters:

Leveraging data for Pareto analysis is crucial for focusing efforts on the most impactful operational improvements.

Your answer:

A. Operations seldom use information for Pareto analysis.
B. Operations use some information for Pareto analysis.
C. Operations use a moderate amount of information for Pareto analysis.
D. Operations use an above-average amount of information for Pareto analysis.
E. Operations fully utilize information for Pareto analysis.

Operations: Availability

Key Principle:

What is the actual level of operational availability compared to the expected standard?

Definition:

Availability measures the readiness of the solution to perform as intended, crucial for operational reliability.

Why this matters:

High availability is directly correlated with the solution's ability to deliver consistent performance.

Your answer:

A. Operational Availability is rarely aligned with or exceeds expectations.
B. Operational Availability sometimes meets or exceeds expectations.
C. Operational Availability generally meets or exceeds expectations.
D. Operational Availability often meets or exceeds expectations.
E. Operational Availability consistently meets or exceeds expectations.

Maintenance: **Predictive**

Key Principle:

To what extent does the Solution incorporate Predictive Maintenance capabilities based on lifecycle metrics?

Definition:

Predictive Maintenance techniques use data analysis tools and techniques to detect anomalies in operation and potential defects in equipment and processes, so you can fix them before they result in failure.

Why this matters:

Predictive Maintenance can save money and time by preventing unexpected equipment failures, reducing downtime, and managing repair schedules.

Your answer:

A. The Solution has minimal Predictive Maintenance features.
B. The Solution has some Predictive Maintenance features.
C. The Solution has an average array of Predictive Maintenance features.
D. The Solution has many Predictive Maintenance features.
E. The Solution has a comprehensive suite of Predictive Maintenance features.

Maintenance: **Historian**

Key Principle:

Does the Solution feature an integrated Maintenance Historian to capture and analyze maintenance data?

Definition:

A Maintenance Historian collects and uses data on past maintenance events to predict future maintenance needs and optimize maintenance schedules.

Why this matters:

Access to historical maintenance data is critical for continuous improvement in maintenance strategies and plant operations.

Your answer:

A. The Maintenance Historian tracks a minimal number of maintenance elements.
B. The Maintenance Historian tracks some maintenance elements.
C. The Maintenance Historian tracks a standard range of maintenance elements.
D. The Maintenance Historian tracks a wide range of maintenance elements.
E. The Maintenance Historian comprehensively tracks maintenance elements.

Maintenance: Failure times

Key Principle:

How well does the Solution track and utilize failure times relative to expected lifecycle performance?

Definition:

Failure times include metrics like Mean Time Between Failures (MTBF), Mean Time To Failure (MTTF), stands for Mean Time To Repair (MTTR), Mean Time To Restore Service (MTRS) and several others.

Why this matters:

Tracking failure times can provide insights into potential reliability issues, allowing for proactive maintenance and replacements.

Your answer:

A. The Solution tracks failure times for a limited number of elements of the solution.
B. The Solution tracks failure times for some elements of the solution.
C. The Solution tracks failure times for a typical selection of elements of the solution.
D. The Solution tracks failure times for a wide array of elements of the solution.
E. The Solution tracks failure times for nearly all elements of the solution.

Maintenance: Failure processes

Key Principle:

How effectively does the Solution track failure processes for maintenance purposes?

Definition:

Processes followed after failures define the actions by operators, supervisors, maintainers, and management. Effective processes drive resolution and restoration of the system to its pre-failure state.

Why this matters:

Failure processes not only affect production levels but likely influence health, safety, and environmental postures as well. Any one of these considerations may have material impact on the business and its future.

Your answer:

A. The Solution tracks failure processes for very few elements.
B. The Solution tracks failure processes for some elements.
C. The Solution tracks failure processes for a typical range of elements.
D. The Solution tracks failure processes for many elements.
E. The Solution tracks failure processes for the majority of elements.

Monitoring: Continuous improvement

Key Principle:

To what degree are production and maintenance parameters included in a systematic Continuous Improvement cycle?

Definition:

Continuous improvement involves a methodical approach to enhance the efficiency, effectiveness, and flexibility of an operation through incremental changes.

Why this matters:

Ongoing enhancement ensures the longevity and competitiveness of a business in a dynamic market.

Your answer:

A. Continuous improvement is rarely influenced by process monitoring.
B. Continuous improvement is occasionally influenced by process monitoring.
C. Continuous improvement is regularly influenced by process monitoring.
D. Continuous improvement is heavily influenced by process monitoring.
E. Continuous improvement is entirely driven by process monitoring.

Monitoring: Waste

Key Principle:

How effectively does the Solution track and mitigate waste through comparison of actual versus predicted outputs?

Definition:

Effective waste monitoring identifies and rectifies inefficiencies, contributing to lean operations and better resource utilization.

Why this matters:

Minimizing waste is crucial for optimizing cost efficiency and environmental sustainability.

Your answer:

A. Waste monitoring is not effectively integrated into the solution.
B. Waste monitoring is somewhat effectively integrated into the solution.
C. Waste monitoring is effectively integrated into the solution.
D. Waste monitoring is very effectively integrated into the solution.
E. Waste monitoring is exceptionally effectively integrated into the solution.

Monitoring: Novel application

Key Principle:

Is there a strategic process to utilize monitored data in discovering new applications during ideation and design?

Definition:

Harnessing data creatively can lead to breakthrough innovations and applications, adding unforeseen value to solutions.

Why this matters:

Exploratory data use can catalyze novel discoveries, potentially opening new markets or enhancing current offerings.

Your answer:

A. There is minimal effort to find novel applications from monitored data.
B. There is some effort to find novel applications from monitored data.
C. There is a considerable effort to find novel applications from monitored data.
D. There is a strong effort to find novel applications from monitored data.
E. There is a maximized effort to find novel applications from monitored data.

Monitoring: Operations

Key Principle:

Are the monitored parameters analyzed to drive operational improvements?

Definition:

Operational monitoring is the tracking of process parameters to inform and improve the efficiency, safety, and reliability of operations.

Why this matters:

Effective monitoring can pinpoint areas for operational refinement, reducing costs, and improving output quality.

Your answer:

A. Operations monitoring is minimally effective in driving improvements.
B. Operations monitoring is somewhat effective in driving improvements.
C. Operations monitoring is effective in driving improvements.
D. Operations monitoring is very effective in driving improvements.
E. Operations monitoring is extremely effective in driving improvements.

Refresh: **Leverage modularity**

Key Principle:

How effectively does the Solution architecture allow for future updates and refinements?

Definition:

Designing solutions with clear modular components facilitates easier and cost-effective updates, maintenance, and scaling.

Why this matters:

Modular design is critical for ensuring solutions remain current and cost-effective over time, as it allows for incremental updates without complete overhauls.

Your answer:

A. Modularity is not a consideration in refresh planning.
B. Modularity is minimally considered in refresh planning.
C. Modularity is adequately considered in refresh planning.
D. Modularity is strongly considered in refresh planning.
E. Modularity is a central tenet of refresh planning.

Refresh: Hardware

Key Principle:

Are the Solution's hardware components designed for ease of upgrade and scalability?

Definition:

Solutions should have the flexibility to integrate the latest hardware to keep pace with technological advancements.

Why this matters:

Hardware improvements are inevitable, and solutions that can adapt will maintain relevance and functionality over time.

Your answer:

A. There is little consideration for hardware upgradeability in the solution design.
B. There is some consideration for hardware upgradeability in the solution design.
C. There is an average level of consideration for hardware upgradeability in the solution design.
D. There is a high level of consideration for hardware upgradeability in the solution design.
E. Hardware upgradeability is fully integrated into the solution design.

Refresh: Software

Key Principle:

How adaptable are the Solution's software components to future enhancements?

Definition:

The software should be designed with the capacity to be updated or replaced as improvements are developed.

Why this matters:

Software is constantly evolving, and adaptability ensures longevity and enhanced functionality over time.

Your answer:

A. Software adaptability for future improvements is not considered in the solution.
B. Software adaptability for future improvements is minimally considered in the solution.
C. Software adaptability for future improvements is adequately considered in the solution.
D. Software adaptability for future improvements is strongly considered in the solution.
E. Software adaptability for future improvements is fully integrated into the solution design.

Refresh: Processes

Key Principle:

Is the Solution structured to integrate process improvements seamlessly?

Definition:

A solution's design should accommodate ongoing process optimizations, allowing for gradual and continuous enhancements.

Why this matters:

The ability to integrate process improvements easily ensures the solution remains efficient and competitive.

Your answer:

A. The solution's structure heavily resists process improvements.
B. The solution's structure allows for some process improvements.
C. The solution's structure is typical in allowing process improvements.
D. The solution's structure is accommodating to most process improvements.
E. The solution's structure is fully optimized to integrate process improvements readily.

Management: **Involvement**

Key Principle:

Assess the extent of management's involvement in the automation solution lifecycle.

Definition:

Given that automation significantly drives profitability and quality, management's active participation is essential for the enduring success of such initiatives.

Why this matters:

Automation's transformative potential is realized only when it is a core focus of management, rather than a peripheral interest.

Your answer:

A. Management has minimal involvement in the automation solution lifecycle.
B. Management has limited involvement in the automation solution lifecycle.
C. Management is adequately involved in the automation solution lifecycle.
D. Management is highly involved in the automation solution lifecycle.
E. Management is fully committed to the automation solution lifecycle.

Return: ROI / IRR

Key Principle:

Evaluate the timeframe for achieving a positive Return On Investment (ROI) with the implemented Solution.

Definition:

The capital invested in automation solutions should yield a return at a level commensurate with, or superior to, alternative investments, as indicated by Internal Rate of Return (IRR) or ROI metrics.

Why this matters:

A superior ROI from automated solutions not only validates the investment but also accelerates the reinvestment potential, enhancing overall enterprise growth.

Your answer:

A. The solution significantly extends the expected payback period, adversely affecting IRR or ROI.
B. The solution extends the payback period beyond the target, affecting IRR or ROI negatively.
C. The solution achieves the targeted payback period, meeting the expected IRR or ROI.
D. The solution shortens the payback period, positively impacting IRR or ROI.
E. The solution substantially shortens the payback period, optimizing IRR or ROI.