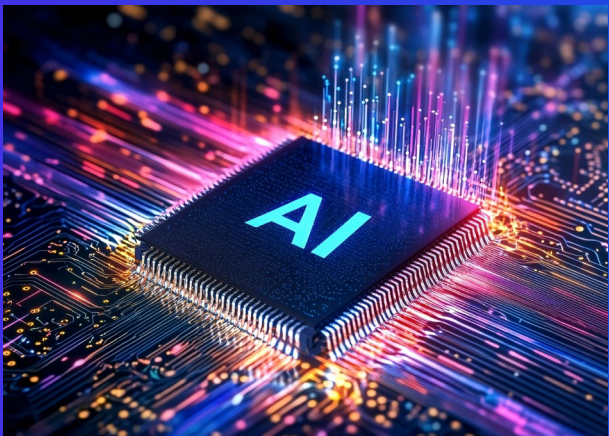




Achieving excellence by effectively integrating explainable AI (XAI) with enterprise Quality management systems

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With the ardent adoption of AI across enterprises, the need to deploy trustworthy AI-led solutions has become paramount. Geography-based regulations are constantly unfolding with stringent guardrails around AI solutions and accelerators. While the excitement continues around the AI outputs, key is to ascertain reliable and dependable results. Similar to humans, AI also needs to make the workings transparent to instill confidence in users. Everyday passes by with the application of AI use cases, probability of undesirable results are multiplying leading to unimaginable impact on the business. Therefore, it is now inevitable to embrace all encompassing framework to demonstrate the Quality of AI solutions.

Explainable AI – An imperative

Explainable AI often represented as XAI is a must to disseminate trust-worthy AI by systematically converting white box into a black box or glass box. AI deployment magnitude can unfold as an exclusive solution or an enabler part of the workflow referred as AI-led accelerators. Throughout the AI implementation, it is very crucial to ensure built-in levers to constantly demonstrate high-quality reliability of AI. Fate of AI depends on its FATE (Fairness, Accountability, Transparency and Explainability). Investments in various noteworthy XAI frameworks can act as a huge saviour to ensure compliance to imperative statutory and regulatory expectations. Carefully orchestrated deployment of XAI frameworks can enable AI development life cycle to embrace built-in quality philosophy and tenets.

Aftermath of non-compliance to regulatory requirements and AI's inability to produce desirable outputs can have devastating impact. Given the heights of AI impact, enterprises need to exercise utmost caution right from the pursuit stage of identifying AI use cases to development to model training to deployment. End-to-end AI life cycle management needs to embrace, granular guardrails and cautionary aspects to ensure the release of fully dependable AI solutions. Many standards and models are released and some more of them underway to nurture extremely cautious applications and use of AI-led solutions. Organisations need to establish explicit governance dimensions covering AI implementation through the lens of Human-in-the-loop, Human-out-of-the-loop, Human-over-the-loop.

Determining the degree of human involvement around the decision-making capability of the AI, it is essential to formulate the 'Harm matrix' covering each of the AI-led solutions. Harm matrix would reflect four quadrants comparing high-low severity and high-low probability of harm AI can cause with and without human in the loop. XAI frameworks such as LIME, SHAP, ELI5, AIX360, Skater can come very handy to imbibe responsible and ethical AI. Enterprises can leverage these frameworks specifically from the aspects of making the AI workings transparent and constantly focus on explaining the back-end logic understandable to humans in simple terms. Points using such frameworks leads to high-quality AI solutions not only catering to a set of applicable guardrails but also building much needed confidence to all types of relevant stakeholders.



Quality management system – A differentiating enabler

For an enterprise to be successful, key aspects include consistency, cohesion, collaboration and comprehensiveness. Systematic and structured methods leads to consistent outcomes. Enterprises need to constantly focus on building holistic capabilities to produce and deliver consistent value to its clients. To ensure stable performance outcomes, it is essential for Organisations to expend concentrated efforts to build high-quality capabilities around their core competency areas. Establishing structured processes and methods results in uniformity in execution and delivery. Focus areas for business enterprise broadly includes engineering and developing solutions, assuring quality of the solutions, service delivery and management, partners and service provider engagement, talent management, enabling business agility and resilience, managing all types of data and security aspects, continual measurement of performance and improvement and finally instilling positive culture driving growth from all perspectives.

Irrespective of type and size of enterprise, the expectations and requirements from clients across the globe are getting complex. Organisations need to constantly explore disruptive ideas to cater to those increasing complexities and work to meet their client expectations while leveraging rapidly growing technologies such as AI, IoT, RPAs. Advanced technological interventions need fundamentally the structured processes/protocols/methods. In the absence of a systematic methods, ambiguity further

intensifies with technological applications. Mid-sized to large enterprises faces scenarios of multi-service line engagements to solve complex business problems for client organisations.

Lack of a cohesive and collaboration execution cum delivery approach can lead to irreparable results. To navigate such dynamic scenarios, enterprise must have well-defined quality management system at an enterprise level driving inclusive quality across. Eventually the quality management system can be benchmarked with various standards and models. However, the ultimate purpose of driving enterprise towards delivering high-quality outcomes consistently satisfying both internal and external stakeholders might continue to be a huge differentiator.

As enterprise evolve to adopt ambidextrous culture working on exploratory and exploitation-based approach to business expansion and market penetration, an innovative quality management system enables the enterprise in the successful transformation to ambidextrous business. Customer centric systems and protocols are extremely crucial in the context of establishing and maintaining quality management system. Quality management system can bring together multiple parts of an enterprise making the organisation eventually a connected, intelligent, insightful and value-driven entity. Companies can leverage Quality management system to devise delivery and execution approach to make their customers successful in their business.



Explainable AI+QMS – A unique compelling combo

While Explainable AI drives AI-led solutions to a space of understandable, interpretable white box paradigm, the Quality management system institutionalises the inclusive quality across the enterprise. The combination can be extremely enriching and value adding. Enterprise Quality management system need to be designed to embrace Explainable AI tenets to promulgate high-quality and reliable AI solutions. While Organisations uses AI as an enabler or a driver for solutionisation, it is critical to apply necessary guardrails to validate the explainability quotient. A blend of Explainable XAI and Quality management system QMS can create a powerful synergy addressing complex challenges of reliable and dependable AI.

As part of enterprise quality management system, the tenets of explainable AI can be included as an AI quality requirement to validate model architecture and

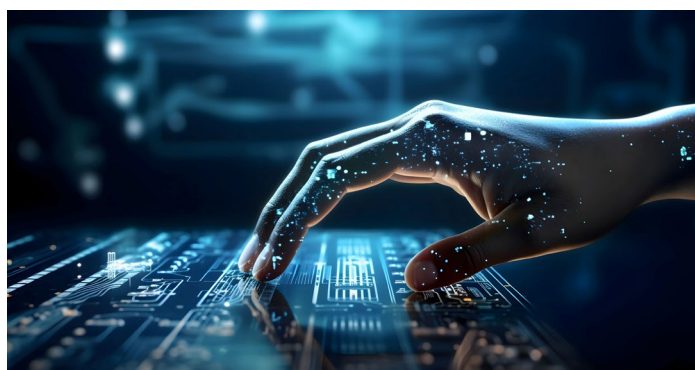
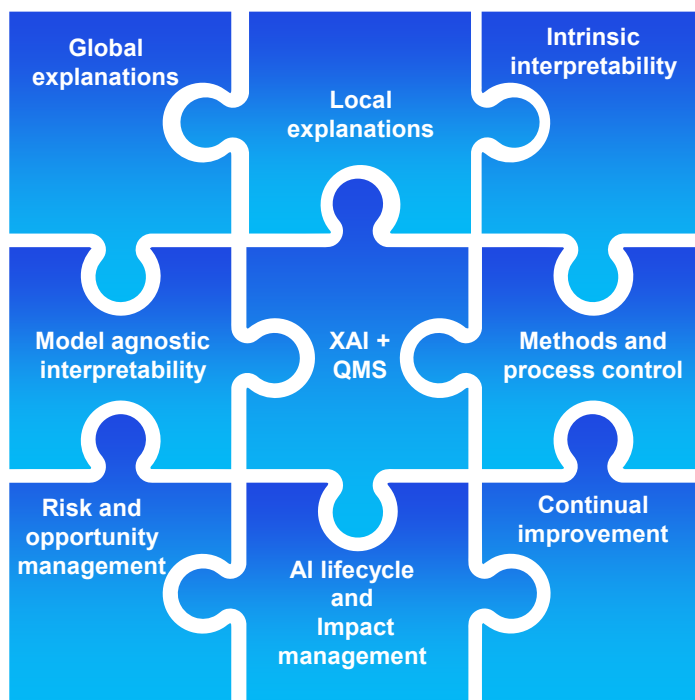
assures transparency right from the inception stage. Data inputs for model training is of paramount essence. QMS can imbibe structured framework for data quality management and ensure mitigation of data bias and data drift making AI model produce dependable outcomes for decision-making. QMS need to include the criteria for evaluating AI output from the perspective of interpretable dimension and provide early warning signals on observing plausible compromises. XAI frameworks can be integrated with QMS evaluation and assessment frameworks to diagnose the AI-based metrics/measurements such as Accuracy, precision, recall, F1 score, True positives, False positives, Mean absolute percentage error, Root mean square error and so on. Such deep evaluation of AI quality metrics can lead to institutionalised method of building high quality and trustworthy AI, thereby mitigating AI associated risks.

Tying the knots

Explainable AI XAI is not merely a desirable add-on to AI systems, it is a fundamental requirement for developing and deploying high-quality AI that is trustworthy, accountable, and beneficial to society. By providing insights into the decision-making processes of AI models, XAI empowers developers to build better reliable models, enables users to understand and trustworthy AI outputs, and facilitates effective human-AI collaboration. As AI continues to permeate various aspects of our lives and business, the principles and techniques of XAI could become increasingly critical for ensuring the responsible and effective use of this powerful technology across the globe

The convergence of XAI and QMS is not merely an option but an essential strategic imperative for organisations aiming to develop and deploy high-quality and reliable AI solutions. By embedding explainability into every stage of the AI lifecycle within a disciplined quality management system, enterprise can enhance trusted adoption, improved accountability, ensure ethical and fair AI, accelerating debugging, regulatory compliance and drive continual innovation

Ultimately, integrating XAI with a robust QMS transforms AI development from a 'black box' pursuit into a transparent, accountable, and continuously improving process leading to 'white/glass box'. Integrated approach is the cornerstone for building the next generation of AI solutions that are not only intelligent, insightful but also genuinely trustworthy and reliable, serving business and community's best interests.



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