

# Radiology AI Council: Development of a Framework to Evaluate Radiology AI Models for Potential Clinical Deployment

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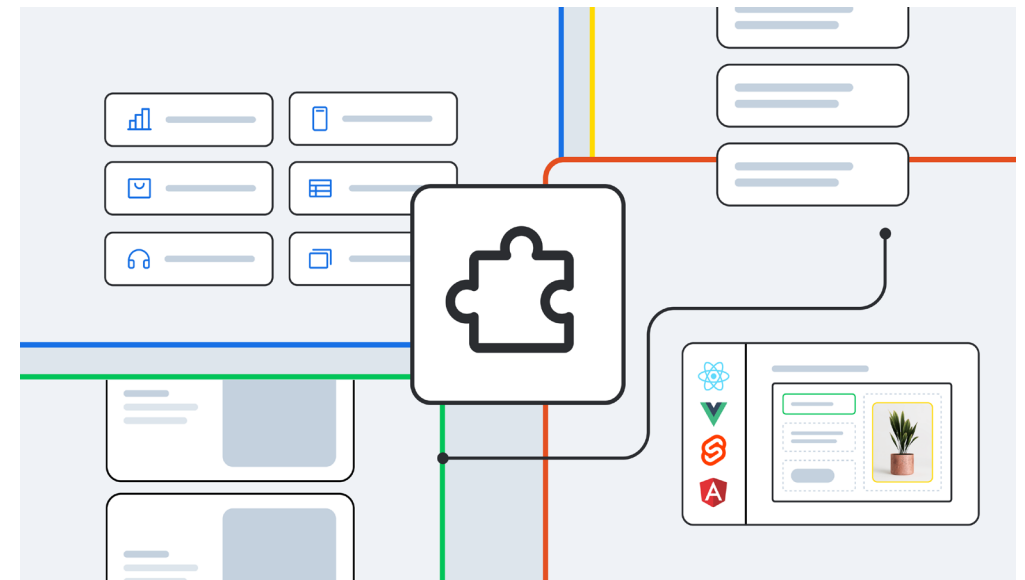
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# Need for Standardized Framework

- An increasing number of AI solutions in radiology requires **evaluation beyond model performance**
- **Ad hoc evaluations** have led to inconsistent deployments, integration issues, and poor user adoption.
- A systematic framework is essential to address **real-world factors** like workflow integration and compliance.
- The **Radiology AI Council @ Emory University** has developed a standardized process to ensure effective evaluation and deployment of AI models.



# Overview of Radiology AI Council

**Mission:** To provide a structured, repeatable framework for evaluating AI solutions in radiology.

- **Representatives** from each clinical division, technical domains (Physics, IT), and business stakeholders.
- Integrate **lessons learned** from past deployments and stakeholder feedback.
- **6-month collaborative process** to refine the evaluation criteria to meet the needs of radiology and other departments requesting imaging models
- **Development of an evaluation framework containing 13 sections with 61 questions**



# Key Components of Evaluation Framework

- 1. General Information:** Identify solution, internal champion, external references.
- 2. Use Case Assessment:** Model purpose, patient type, use type, subspecialty/modality mapping
- 3. Performance Evaluation:** Evidence type, validation scope, performance metrics, relevant publications.
- 4. Competing Solutions:** Existing alternatives
- 5. Technical and Implementation Planning:** Architecture, integration needs, alert management.
- 6. Post-deployment Monitoring:** Plan for ongoing performance tracking with feedback mechanisms
- 7. Financial Considerations:** Cost structure, reimbursement potential, and expected ROI.
- 8. Patient Impact Assessment:** Evaluate volume vs. value impact
- 9. Cross-departmental Effects:** Workflow impacts, result timing, and discrepancy management.
- 10. Legal and Compliance Considerations:** Data sharing, discoverability, and medicolegal risks.
- 11. Impact Analysis:** Analyze financial and patient benefits across different time horizons and internal vs. external effects.
- 12. Decision Framework:** Apply scoring methodology, assess key KPIs, and align with strategic goals.
- 13. Final Recommendation:** Structured conclusion based on analysis, risks, and strategic alignment.

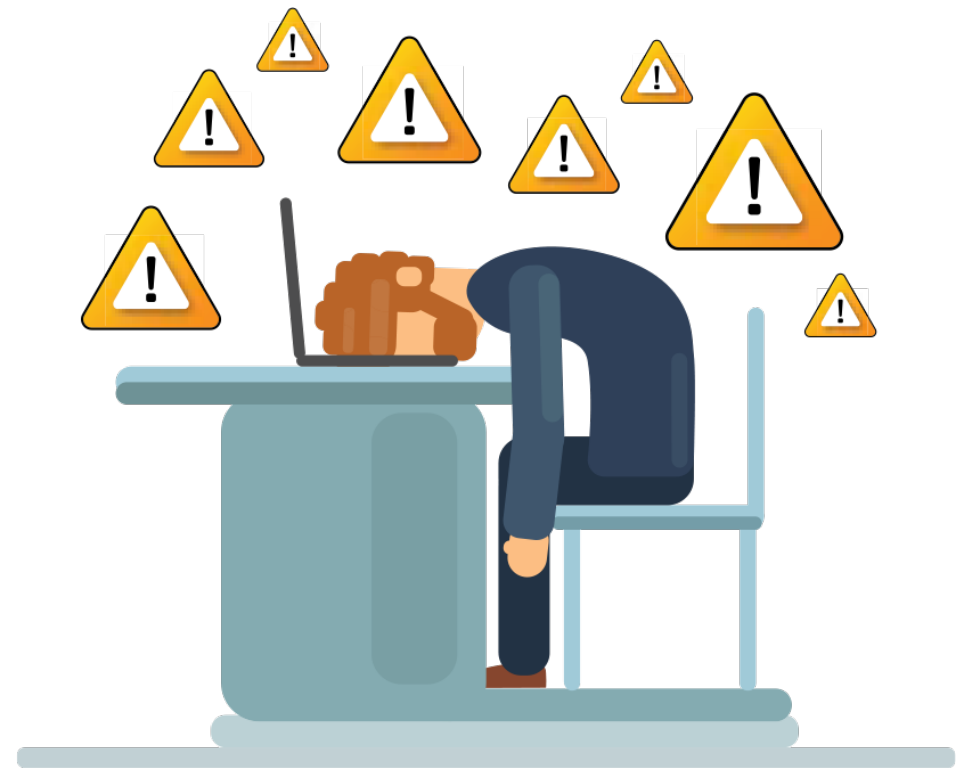
# Deep Dive: Technical and Implementation Planning



- **Integration with Existing Systems:** Technical requirements like infrastructure, compatibility with existing platforms (e.g., PACS, EHR), and resource allocation for smooth implementation.
- **Shadow Deployment Strategy:** Allows the AI model to be tested in a real-world setting without affecting patient care, providing an opportunity to monitor performance and identify issues before full rollout.

# Deep Dive: Technical and Implementation Planning

- **Alert Management Design:** Emphasizes clear alert management strategies to avoid user fatigue, distinguishing between alerts for single recipients and those sent to multiple users, with defined ownership and response protocols.
- **Post-deployment Monitoring Plan:** A plan must be in place for continuous performance tracking using both quantitative (e.g., sensitivity, specificity) and qualitative (e.g., user feedback) measures, ensuring ongoing model evaluation and adjustment as needed.



# Deep Dive: Impact Analysis



- **Cost and ROI Assessment:** Financial impact of the AI model, including direct reimbursement opportunities, potential efficiency gains, referral generation, and overall return on investment (ROI) projections.
- **Patient Impact Evaluation:** Improvements in diagnostic accuracy, patient safety, and quality of care, as well as how the model affects patient throughput and outcomes.

# Deep Dive: Impact Analysis

- **Cross-departmental Effects:** Implications for other departments, including potential changes in result availability timing, workflow approvals, and management of discrepancies between AI predictions and clinical findings.
- **Legal and Compliance Considerations:** Assessment of data sharing policies, result discoverability, vendor agreements, and any medicolegal risks associated with AI deployment in clinical practice.



# Conclusion

- **Evaluation Framework:** We developed a standardized evaluation framework to streamline the selection, implementation, and monitoring of AI models, addressing key gaps in current ad hoc approaches.
- **Enhanced Decision-Making:** By integrating multi-stakeholder input and focusing on real-world deployment factors, the framework supports more informed procurement decisions, reducing implementation risks and improving user satisfaction.
- **Impact on Clinical Practice:** The framework has demonstrated clear near-term benefits, enabling meaningful and systematic proposals and evaluation of AI models with input from all key stakeholders, and holistic considerations of impact



Thank you

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