

# Discussion Scenarios



## Ethical Dilemma: Bias in AI Diagnosis

COMPLEX

Your AI system shows 95% accuracy overall but only 70% for minority populations. The hospital wants to deploy immediately due to staffing shortages.

? What ethical principles guide your decision?

⌚ 20 min



## Regulatory Challenge: Cross-Border Data

MODERATE

Your AI needs training data from EU, US, and Asia. Each region has different privacy laws. How do you ensure compliance?

? Design a compliant data strategy

⌚ 15 min



## Implementation: Resistance to Change

MODERATE

Senior physicians refuse to use the new AI system, citing trust issues. Junior staff are enthusiastic but lack authority.

? Create a change management plan

⌚ 15 min



## Group Exercise: ROI Calculation

COLLABORATIVE

Calculate the 5-year ROI for an AI radiology system. Consider costs, benefits, and risks.

? Teams present business case

⌚ 30 min



## Solution Development: Complete AI Governance Framework

ADVANCED

Design a comprehensive governance framework for a multi-site healthcare system implementing various AI tools. Address ethics committees, audit procedures, liability allocation, training requirements, and continuous improvement processes. Consider stakeholder engagement, regulatory compliance across jurisdictions, and long-term sustainability.

? Develop full implementation roadmap with milestones and success metrics

⌚ 45 min



Navigating the moral complexities of algorithmic fairness in healthcare AI

## Scenario Context

Your healthcare organization has developed an AI diagnostic system that demonstrates impressive overall performance with 95% accuracy across the general patient population. However, deeper analysis reveals a critical disparity: the system's accuracy drops to only 70% when diagnosing patients from minority ethnic backgrounds.

This significant performance gap raises serious ethical concerns about algorithmic bias and health equity. The hospital administration is pushing for immediate deployment due to severe staffing shortages and the potential to reduce diagnostic workload, but rushing deployment could perpetuate healthcare disparities.

## Core Ethical Principles at Stake

- ▶ **Justice and Fairness:** Equal access to accurate healthcare diagnosis regardless of demographic characteristics
- ▶ **Beneficence:** Acting in patients' best interests and "do no harm" principle
- ▶ **Autonomy:** Patients' right to informed consent about AI involvement in their diagnosis
- ▶ **Transparency:** Obligation to disclose known limitations and biases in AI systems
- ▶ **Accountability:** Clear responsibility for diagnostic errors and patient outcomes

### Performance Disparity Visualization

#### AI Diagnostic Accuracy by Population

##### Overall Population



##### Minority Populations



⚠ This disparity represents a critical ethical and clinical risk that must be addressed before deployment

## Key Discussion Points

### Root Cause Analysis

What factors contribute to the bias? Is it training data imbalance, feature selection issues, or algorithmic design flaws?

### Stakeholder Impact

How would deployment affect minority patients? What about staff workload vs. patient safety trade-offs?

### Mitigation Strategies

Should we delay deployment? Implement with warnings? Use only for certain populations? Require human override?



## Regulatory Challenge: Cross-Border Data Compliance

Managing complex international data privacy regulations for AI training

### Multi-Jurisdictional Complexity

Modern healthcare AI systems require diverse, representative training data from multiple geographic regions to ensure accuracy and generalizability. However, each jurisdiction has implemented distinct data protection frameworks with varying requirements, rights, and enforcement mechanisms.

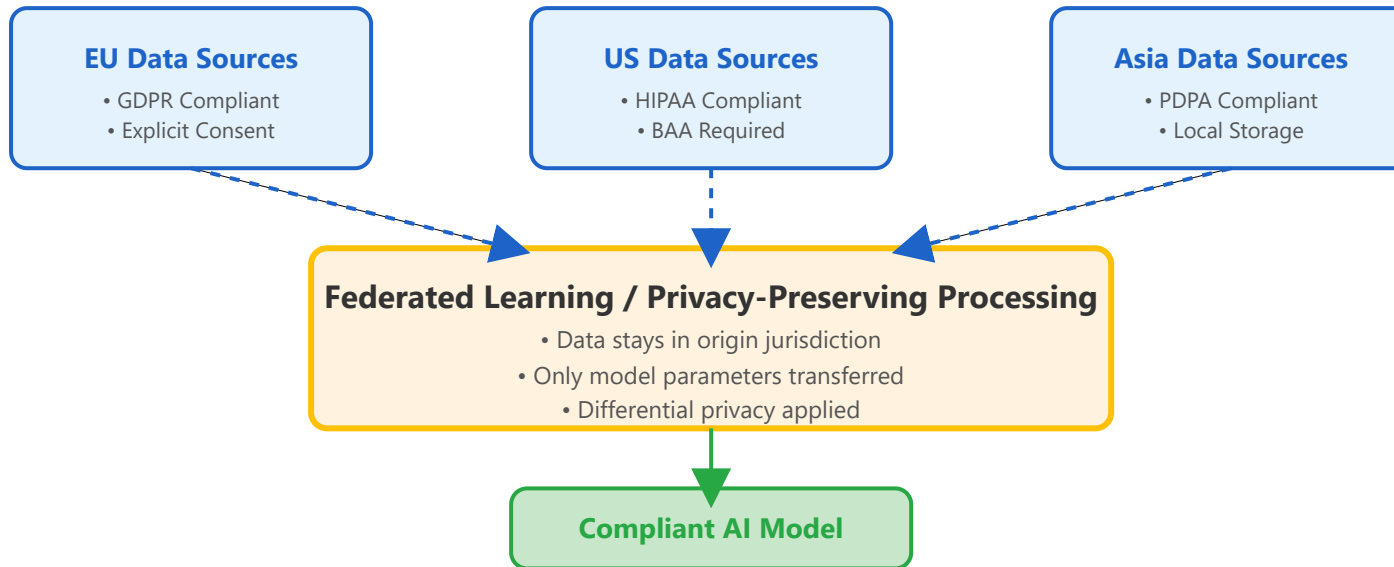
Your organization needs to collect and process patient data from the European Union, United States, and various Asian countries, each with fundamentally different approaches to data privacy, consent, and cross-border data transfers.

### Key Regulatory Frameworks

- ▶ **GDPR (EU):** Strict consent requirements, right to explanation, data minimization, and restricted international transfers
- ▶ **HIPAA (US):** Protected Health Information rules, Business Associate Agreements, and state-specific privacy laws
- ▶ **PDPA (Singapore/Asia):** Consent-based framework with notification requirements and cross-border transfer restrictions
- ▶ **Emerging AI Regulations:** EU AI Act classification requirements and risk assessments

## Cross-Border Data Flow Architecture

### Compliant Data Strategy Framework



## Strategic Compliance Approaches

### Federated Learning

Train models locally in each jurisdiction, only sharing encrypted model updates rather than raw patient data.

### Data Localization

Maintain separate regional data centers with processing infrastructure that complies with local requirements.

### Legal Mechanisms

Implement Standard Contractual Clauses, Binding Corporate Rules, and adequacy assessments for transfers.



# Implementation Challenge: Resistance to Change

Overcoming organizational barriers to AI adoption in healthcare settings

## The Change Resistance Dynamic

Healthcare organizations face unique challenges when implementing AI systems due to deeply ingrained clinical workflows, professional hierarchies, and legitimate concerns about patient safety. Your scenario presents a classic generational and authority divide.

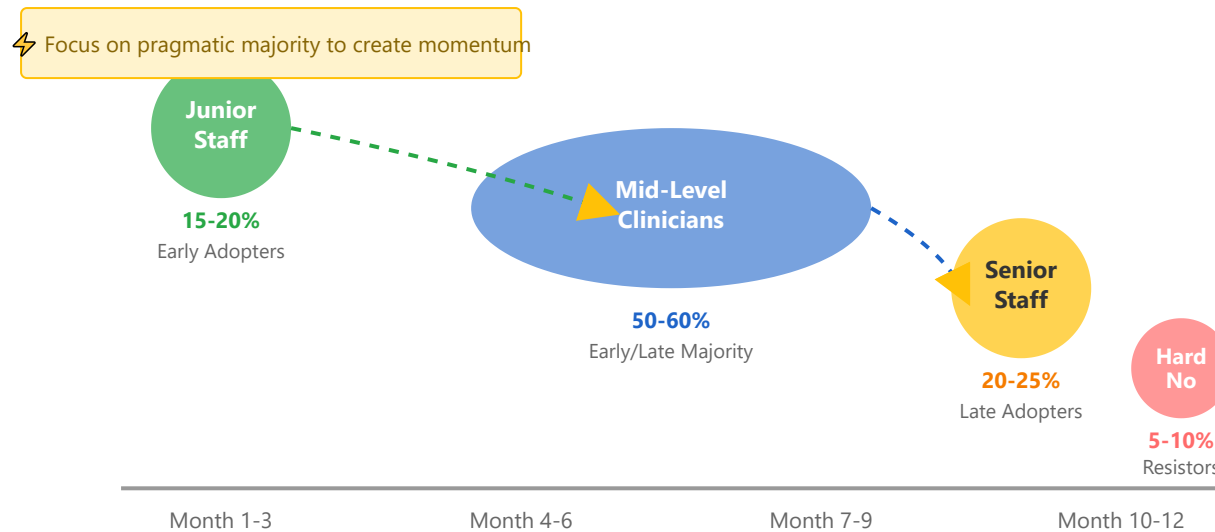
Senior physicians, who have decades of experience and significant clinical authority, express skepticism about AI reliability and worry about de-skilling. Meanwhile, younger staff members are eager to adopt new technology but lack the institutional power to drive change.

## Root Causes of Resistance

- ▶ **Trust Deficit:** Concerns about AI accuracy, "black box" decision-making, and lack of clinical validation
- ▶ **Workflow Disruption:** Fear that new systems will slow down established efficient practices
- ▶ **Professional Identity:** Perception that AI threatens clinical judgment and expertise
- ▶ **Liability Concerns:** Uncertainty about who is responsible when AI-assisted decisions go wrong
- ▶ **Training Gap:** Lack of confidence in using new technology effectively

## Stakeholder Adoption Curve

## AI Adoption Journey: Stakeholder Segments



## Change Management Strategies

### Clinical Champions

Identify respected senior clinicians who are AI-positive to serve as peer advocates and mentors.

### Gradual Integration

Start with low-risk, high-value use cases. Demonstrate quick wins before expanding to complex applications.

### Education & Support

Provide role-specific training, ongoing technical support, and transparent communication about AI limitations.



# Group Exercise: ROI Calculation for AI Radiology

Building a comprehensive business case with quantitative and qualitative analysis

## Exercise Objectives

This collaborative exercise challenges teams to develop a complete financial and strategic analysis for implementing an AI radiology system over a 5-year period. The goal is to practice real-world business case development that balances financial metrics with clinical and operational considerations.

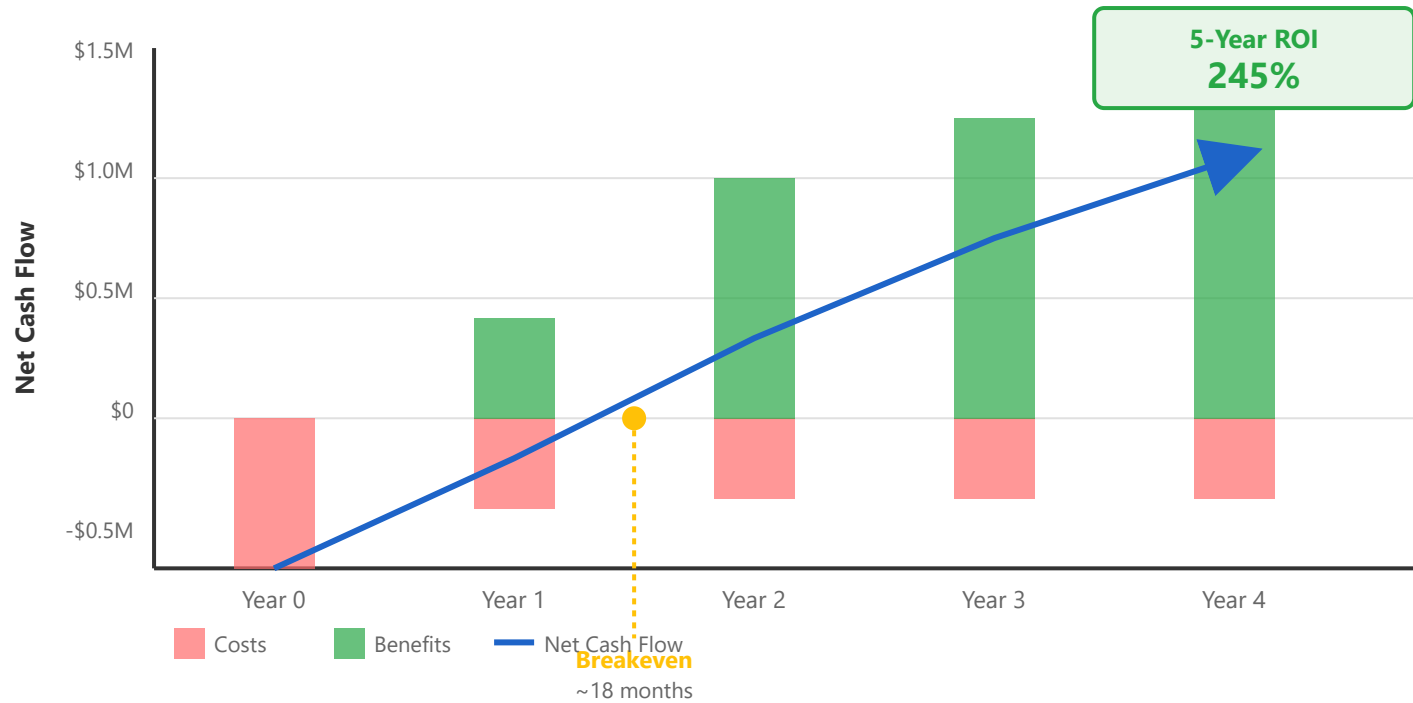
Teams must consider both tangible financial returns and intangible benefits such as improved patient outcomes, reduced radiologist burnout, and competitive positioning in the healthcare market.

## Key Components to Analyze

- ▶ **Initial Investment:** Software licensing, hardware infrastructure, integration costs, training expenses
- ▶ **Ongoing Costs:** Annual maintenance, cloud computing, staff support, system updates
- ▶ **Direct Benefits:** Increased throughput, reduced reading time, fewer missed findings
- ▶ **Indirect Benefits:** Improved patient satisfaction, reduced liability, staff retention
- ▶ **Risk Factors:** Regulatory changes, technology obsolescence, adoption challenges

## Sample ROI Analysis Framework

## 5-Year Financial Projection: AI Radiology System



## Discussion Framework

### Cost Categories

Initial: \$500K (software, hardware, training).  
Ongoing: \$100K/year (maintenance, support, updates)

### Benefit Quantification

30% faster reading times, 15% increase in throughput, 20% reduction in callback rates, improved outcomes

### Risk Assessment

Consider sensitivity analysis for adoption rates, accuracy improvements, and competitive pressures





# Solution Development: AI Governance Framework

Designing comprehensive governance for multi-site healthcare AI implementation

## Governance Framework Scope

A comprehensive AI governance framework must address the entire lifecycle of AI systems across multiple healthcare sites, from initial development and procurement through deployment, monitoring, and eventual decommissioning.

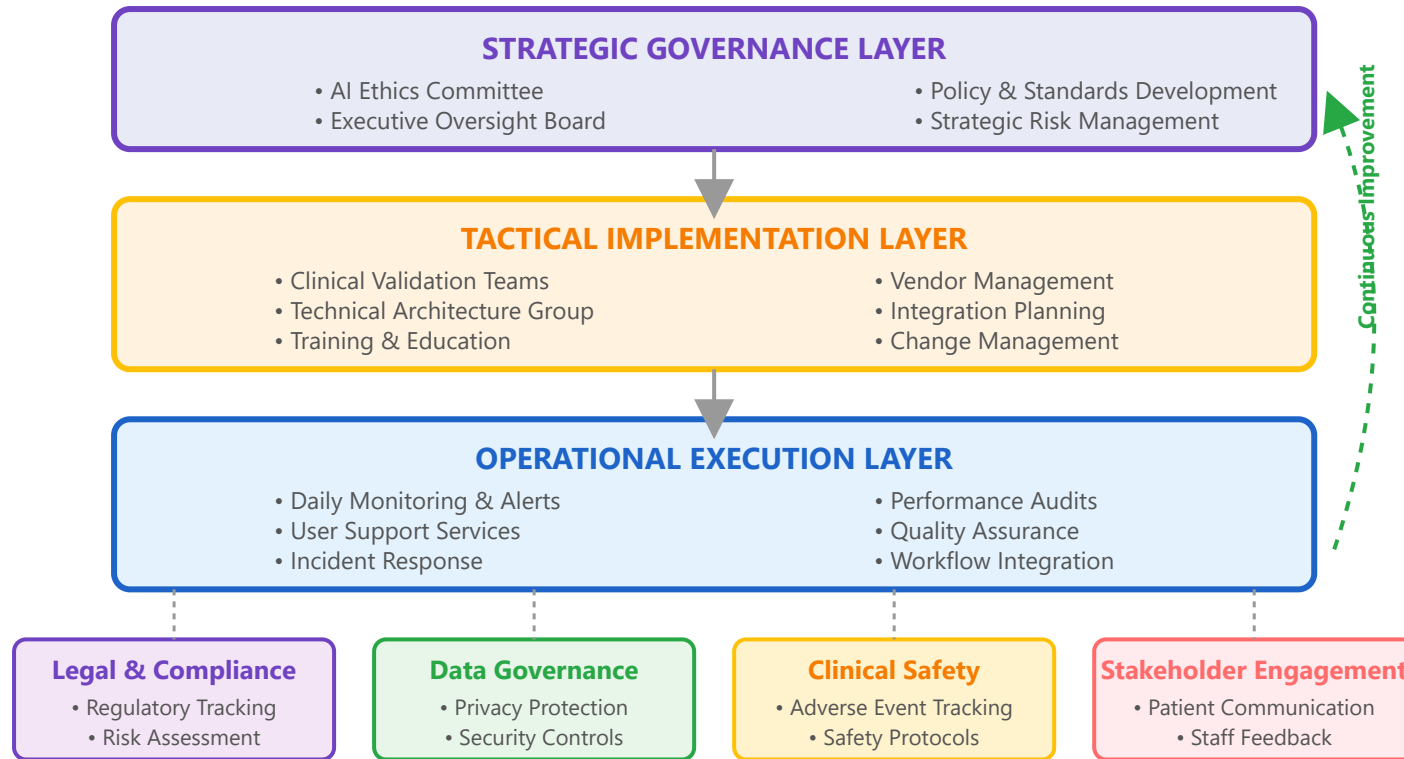
This framework serves as the organizational blueprint for ensuring that AI systems are developed, deployed, and maintained in ways that are ethical, legally compliant, clinically safe, and aligned with institutional values and patient interests.

## Core Governance Components

- ▶ **Ethics Committee:** Multidisciplinary review board for ethical implications of AI use
- ▶ **Clinical Validation:** Protocols for testing AI performance in real-world clinical settings
- ▶ **Audit Procedures:** Regular performance monitoring and bias detection
- ▶ **Liability Framework:** Clear allocation of responsibility across stakeholders
- ▶ **Training Programs:** Role-specific education for all users and administrators
- ▶ **Continuous Improvement:** Feedback loops and version control systems

## Multi-Layer Governance Architecture

# Comprehensive AI Governance Framework



## Implementation Roadmap Elements

### Phase 1: Foundation (Months 1-3)

Establish governance committees, develop policies, conduct stakeholder analysis, define success metrics

### Phase 2: Pilot (Months 4-9)

Test framework at single site, refine procedures, train core teams, document lessons learned

### Phase 3: Scale (Months 10-18)

Roll out to all sites, establish ongoing monitoring, achieve full compliance, measure outcomes

