



CENTER FOR
COMPLEX SYSTEMS
& ENTERPRISES



Learning in Complex Systems

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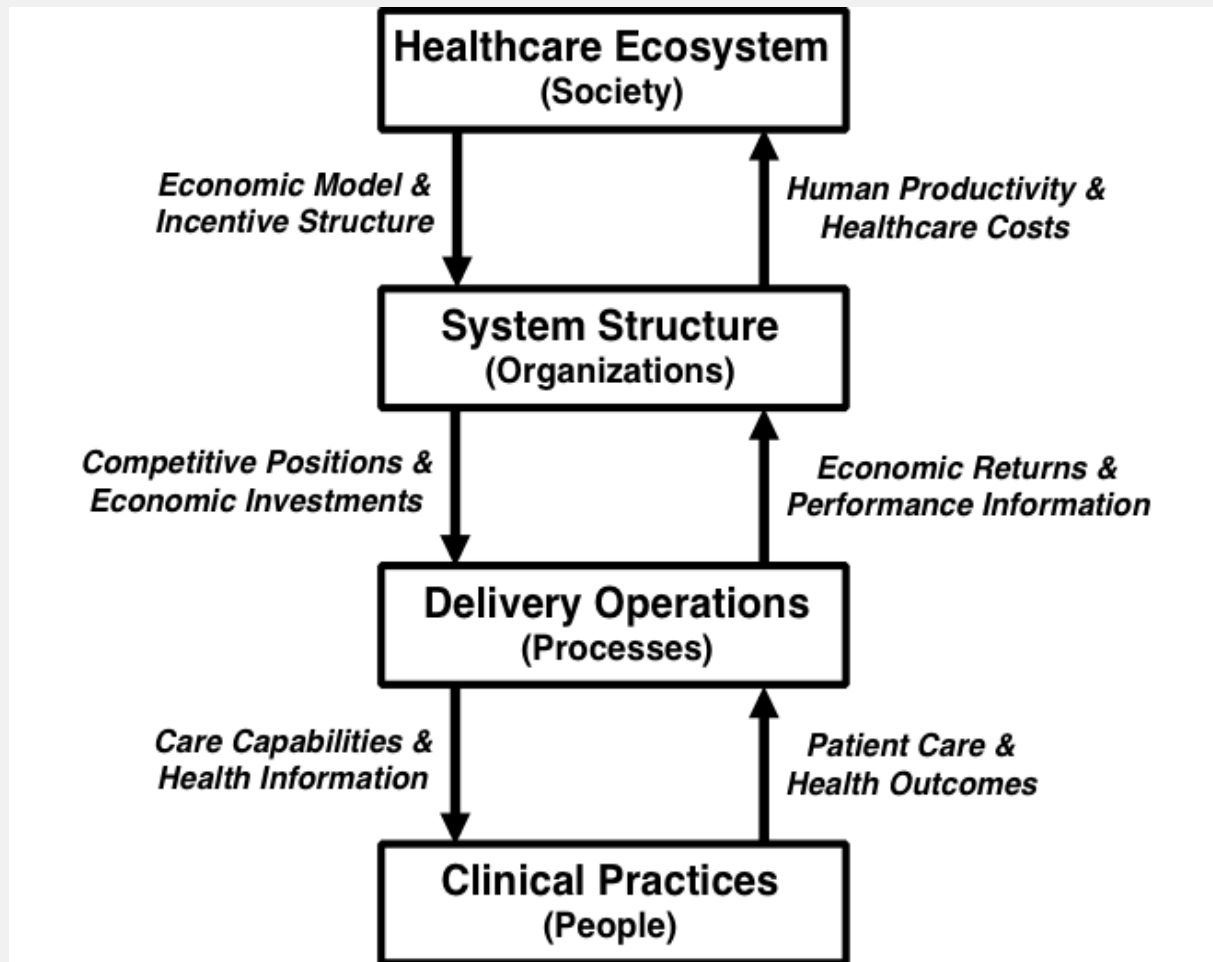
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Overview

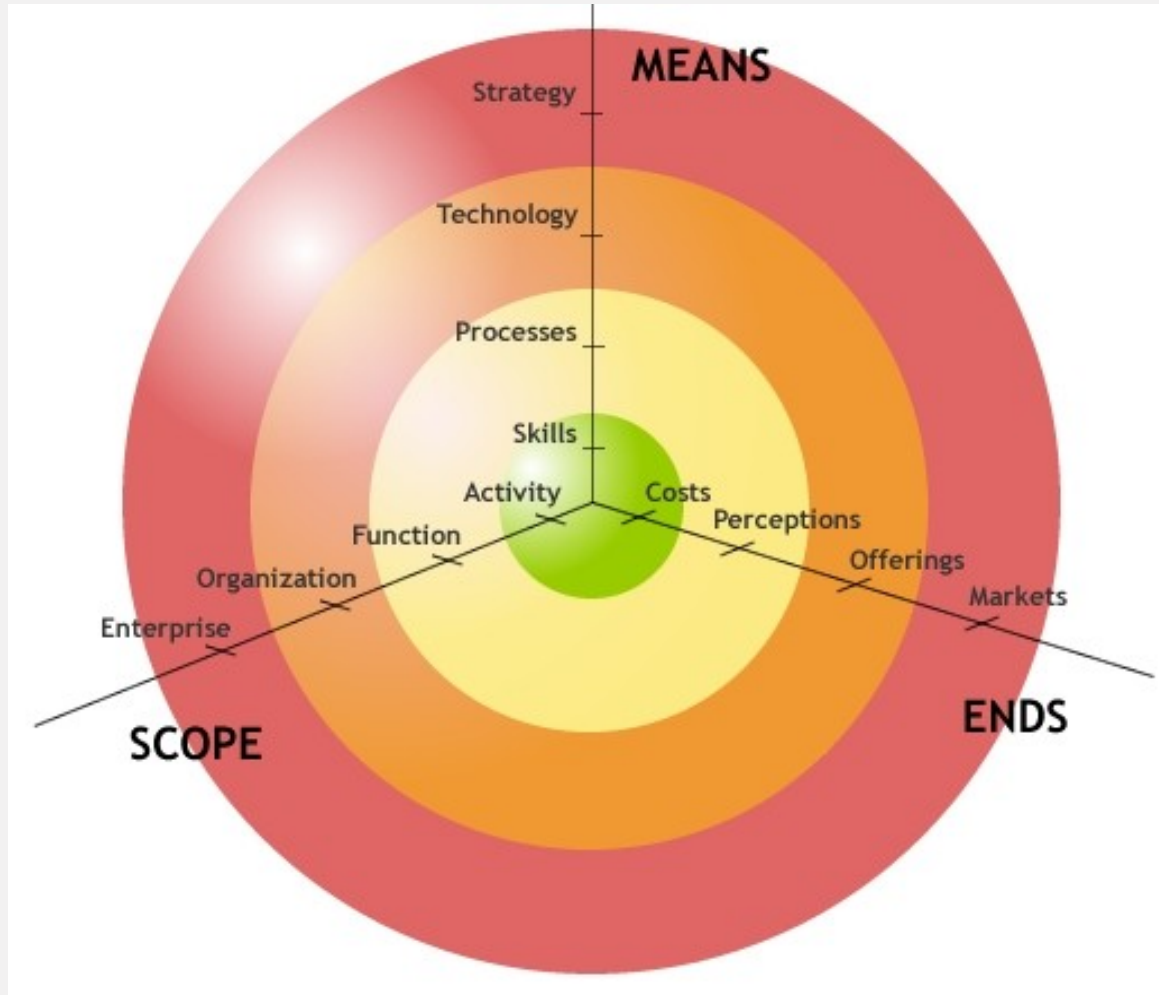
- Healthcare Delivery Enterprise
- Transformation Framework
- Single-Loop & Double-Loop Learning
- Learning in Healthcare
- Three Examples
- Learning Strategies
- Strategies Versus Learning
- Summary



Healthcare Delivery Enterprise



Transformation Framework



Single-Loop vs. Double-Loop Learning

“[A] thermostat that automatically turns on the heat whenever the temperature in a room drops below 68°F is a good example of single-loop learning. A thermostat that could ask, "why am I set to 68°F?" and then explore whether or not some other temperature might more economically achieve the goal of heating the room would be engaged in double-loop learning.” (Argyris, 1991)



Learning in Healthcare

	Single-Loop Learning	Double-Loop Learning
Society	Cost control, e.g., healthcare price controls	Payment for outcomes, i.e., health, education, etc.
Organization	Investment via discounted cash flow, i.e., NPV	Investment via strategic value, $SV = NPV + NOV$
Process	Process improvement, e.g., TQM, Six Sigma	Process reengineering, e.g., BPR
People	Reductionist by disease and organ, i.e., RCTs	Holistic approach to human wellness and health

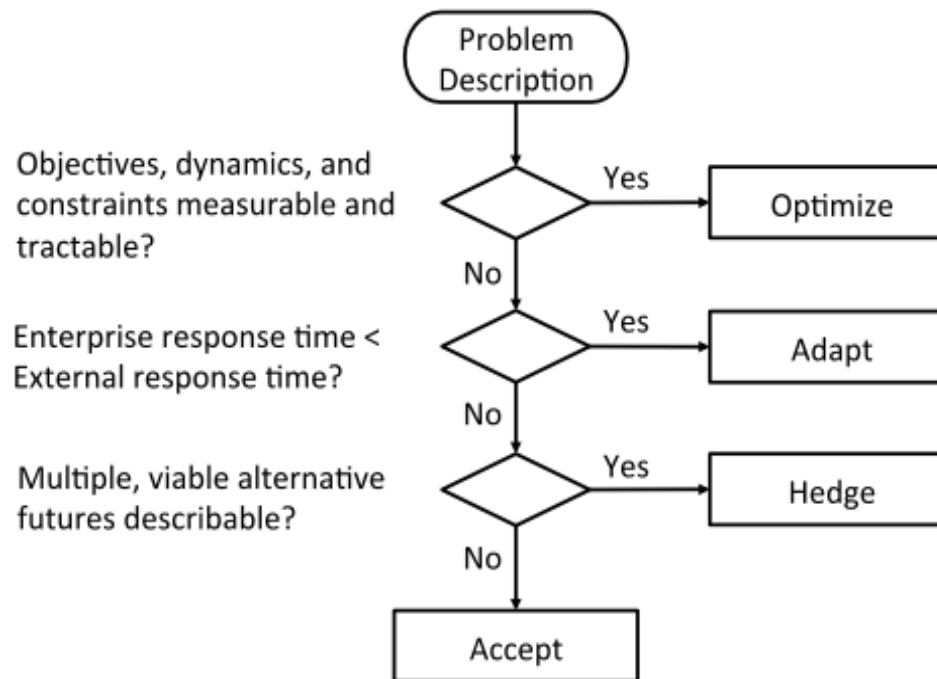


Three Examples

- Cancer Biology & Treatment
- ACOs & Population Health
- Big Data & Health IT



Learning Strategies



Strategies Versus Learning

	Single-Loop Learning	Double-Loop Learning
Optimize		
• OR schedule	Current Processes	Reengineered Processes
• Inventory	Current Processes	Reengineered Processes
• Supply chains	Current Processes	Reengineered Processes
Adapt		
• Demand level	Increase/Decrease Capacities	Create Agile Capacities
• Demand mix	Increase/Decrease Capacities	Create Agile Capacities
• Inflation	Raise Prices If Possible	Increase Process Efficiencies
Hedge		
• Business models	Hedge Most Likely Scenario	Create Portfolio of Hedges
• Payment schemes	Hedge Most Likely Scenario	Create Portfolio of Hedges
• Innovation	Hedge Primary Opportunities	Create Portfolio of Hedges
Accept		
• Population trends	Project Primary Impacts	Develop Causal Model
• Economic trends	Project Primary Impacts	Develop Causal Model
• Social trends	Project Primary Impacts	Develop Causal Model



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