An Enterprise Systems Approach to Healthcare

LAI Annual Meeting, Baltimore, Maryland
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Massachusetts Institute of Technology
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LEAN ADVANCEMENT INITIATIVE ™

Agenda

- Research Motivation
- Cross-Industry Enterprise Challenges
- Boston Provider Case Examples
- LAI Enterprise Healthcare Vision

Research Motivation

Cost

- Over 16% of US GDP spent in healthcare expenses
- Hospital care represents 30.8% of total expenditure
- 49% of expenditure concentrated in only 5% of population
- Individuals over 65 years old expected to increase over 50% by 2020

Quality

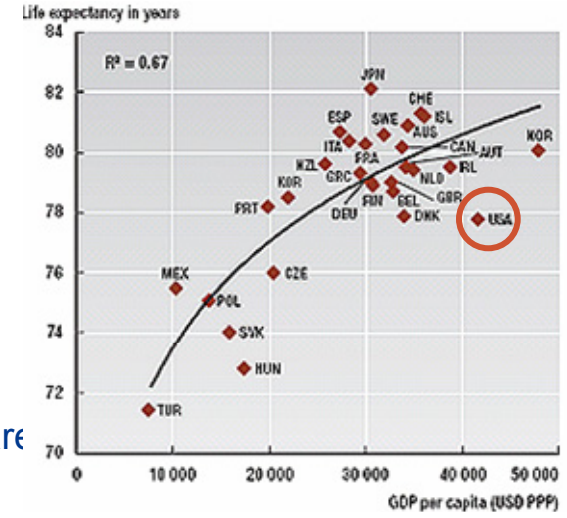
- 98,000 deaths attributed to medical errors
- Adults on average only receive 55% of recommended care
- Emergency Departments are overcrowded nationwide
- Provider fragmentation unable of creating sufficient volume

Access

- 45 million Americans are uninsured
- Fragmented provider network, 75% being small or single practices
- Recent survey indicated 40% of Americans received uncoordinated care
- Fragmented payment systems, health plans, information systems, etc

Life Expectancy at Birth and GDP Per Capita

2005 OECD Data



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Cross Industry Enterprise Challenges

Aerospace

- Overarching commitment to ensure global peace and security
- Incumbent higher, faster, farther mindset
- Declining defense dollars after Cold War (fewer military aircraft programs; industry consolidation)
- Inherently complex industry:
  - Multiple stakeholders with misaligned objectives and numerous constraints
  - Capital Intensive
  - Complex product development
- Uncertain outcome in contract awarding

Healthcare

- Overarching commitment to provide world class medical care
- Incumbent overuse, underuse, and misuse mindset
- Overburdened healthcare expenditure as a % of GDP (proliferation of fragmented disjointed providers)
- Inherently complex industry
  - Multiple stakeholders with misaligned objectives and numerous constraints
  - Capital Intensive
  - Complex service provision
- Uncertain outcome in value sharing

LAI - A Consortium Dedicated To Cross Industry Enterprise Performance

- Enable Enterprises to effectively, efficiently and reliably create value in a complex and dynamic environment
- Enable focused and accelerated transformation of complex enterprises
- Collaborative engagement of all stakeholders in Government, Industry and Academia
- Understand, develop, and institutionalize principles, processes, behaviors and tools

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Boston Provider Case Examples

Case 1

- A **Primary Care Satellite** of a Hospital Provider
- For profit Hospital Provider owns 5 primary care satellites that refer patients to main hospital
- Problem statement:
  - Considerable amount of patient “no shows”
  - Backlog of patients scheduled for appointments
  - Capacity constraints

Case 2

- An **Emergency Department** of a Hospital Provider
- Non profit Hospital Provider contracts with 11 primary care satellites and owns 3 hospitals
- Problem statement:
  - Emergency Department waiting time is considerable
  - Staff low moral leading to churning
  - Patients leaving without being seen

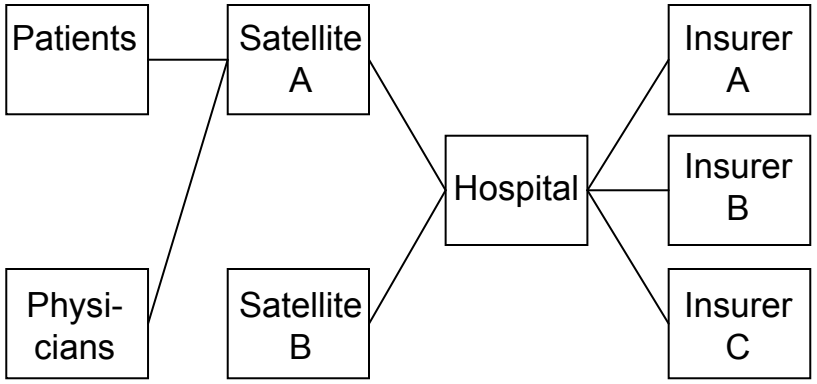
Case 3

- The **New England Veterans Affairs Medical Center**

Case 1: A Primary Care Satellite of a Hospital Provider

Primary Care Satellite
- Owned by main hospital provider
- Refers patients to main hospital services
- Physicians are not salaried

Hospital Provider
- Has patients from multiple insurance companies
- Has multiple referral primary care satellites

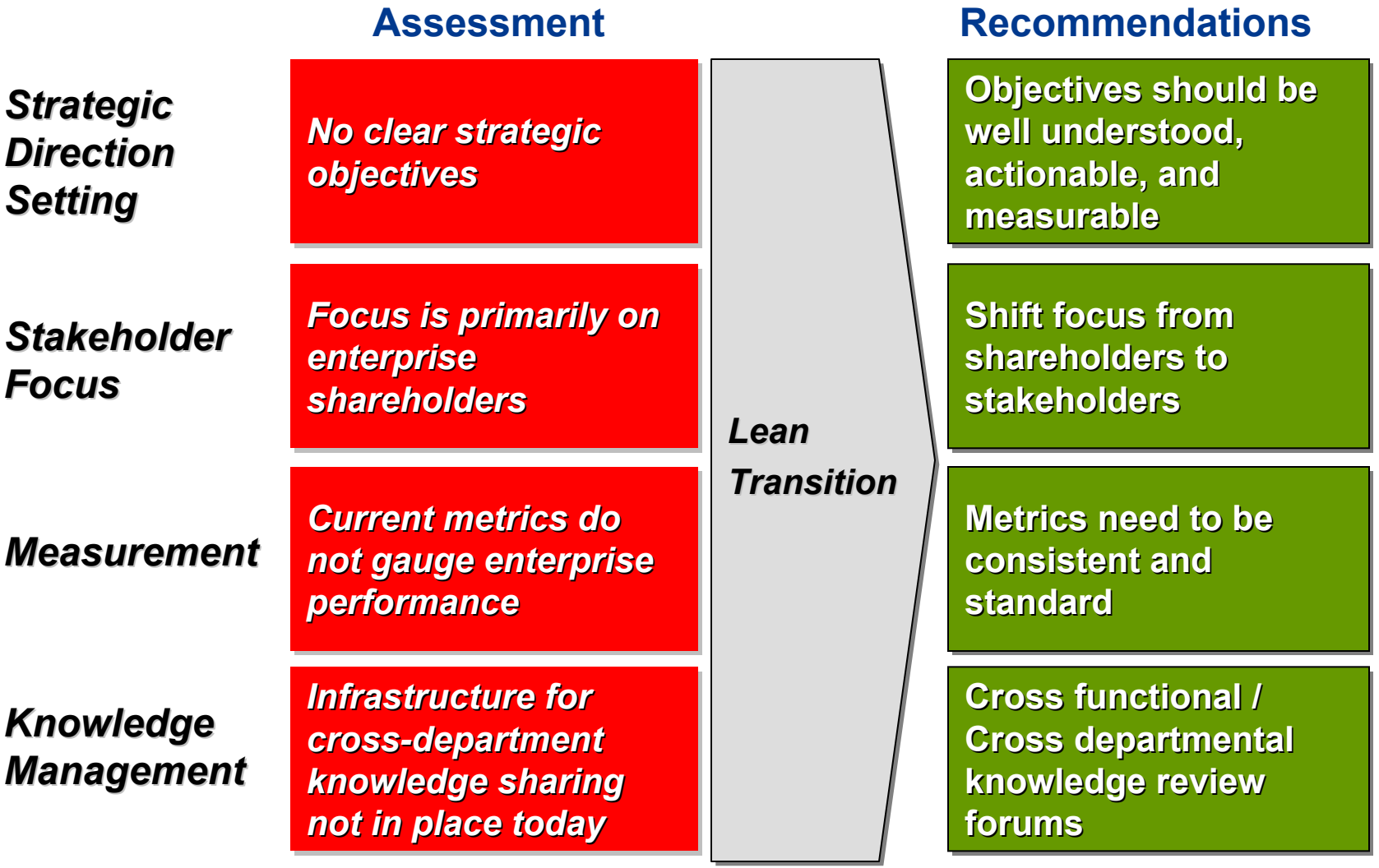


Who is the customer?
- Satellite administration concerned with attracting physicians and patients
- Physicians concerned with patient care
- Hospital concerned with insurers

What are the metrics?
- Insurers focus on different sets of metrics related to costs & preventive care
- Hospital focuses on total patient visits per satellite
- Satellite focuses on total patient waiting time and physician utilization

What are some of the systemic issues?
- Hospital attempts to satisfy different metrics from different insurers
- Hospital sets quality of care at a minimum (i.e. what insurance wants) and foregoes continuous improvement
- Satellite focuses on total throughput and neglects departmental variability
- Patients don't feel the burden of care costs, are unhappy with wait times, and contribute to no show rate

Hospital Satellite as a Lean Enterprise



Case 2: An Emergency Department of a Hospital Provider

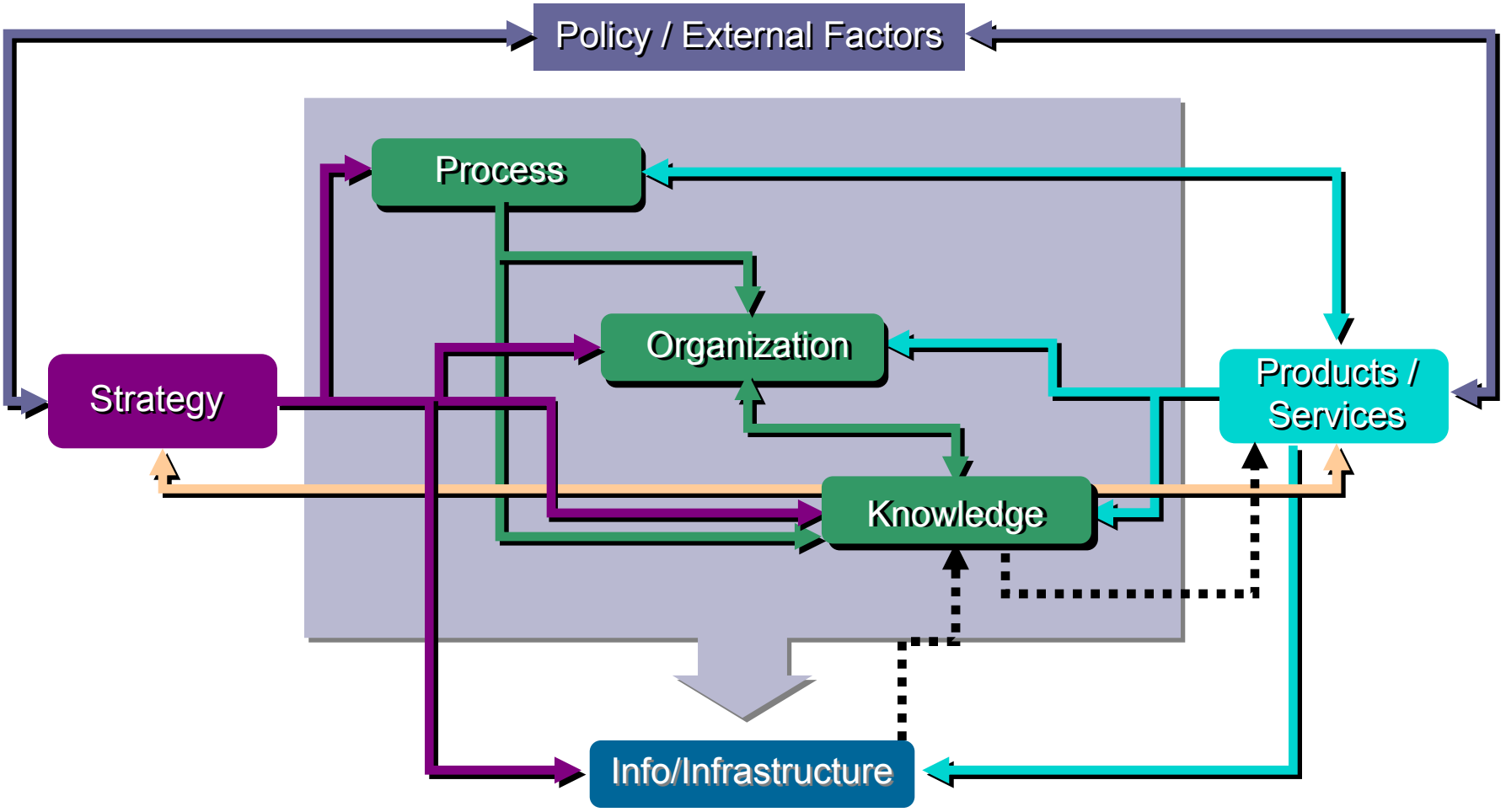
Emergency Department (ED) is struggling to keep up with the demand for its services.

- Waiting room is constantly full with long delays.
- Patients requiring hospital admittance often experience additional delays.
- Some patients leave without being seen.
- The ED is the only safety net for the whole hospital, and lacks one of its own.
- Finger pointing and lack of communication between ED and other units.
- ED Staff are strained to the limit.

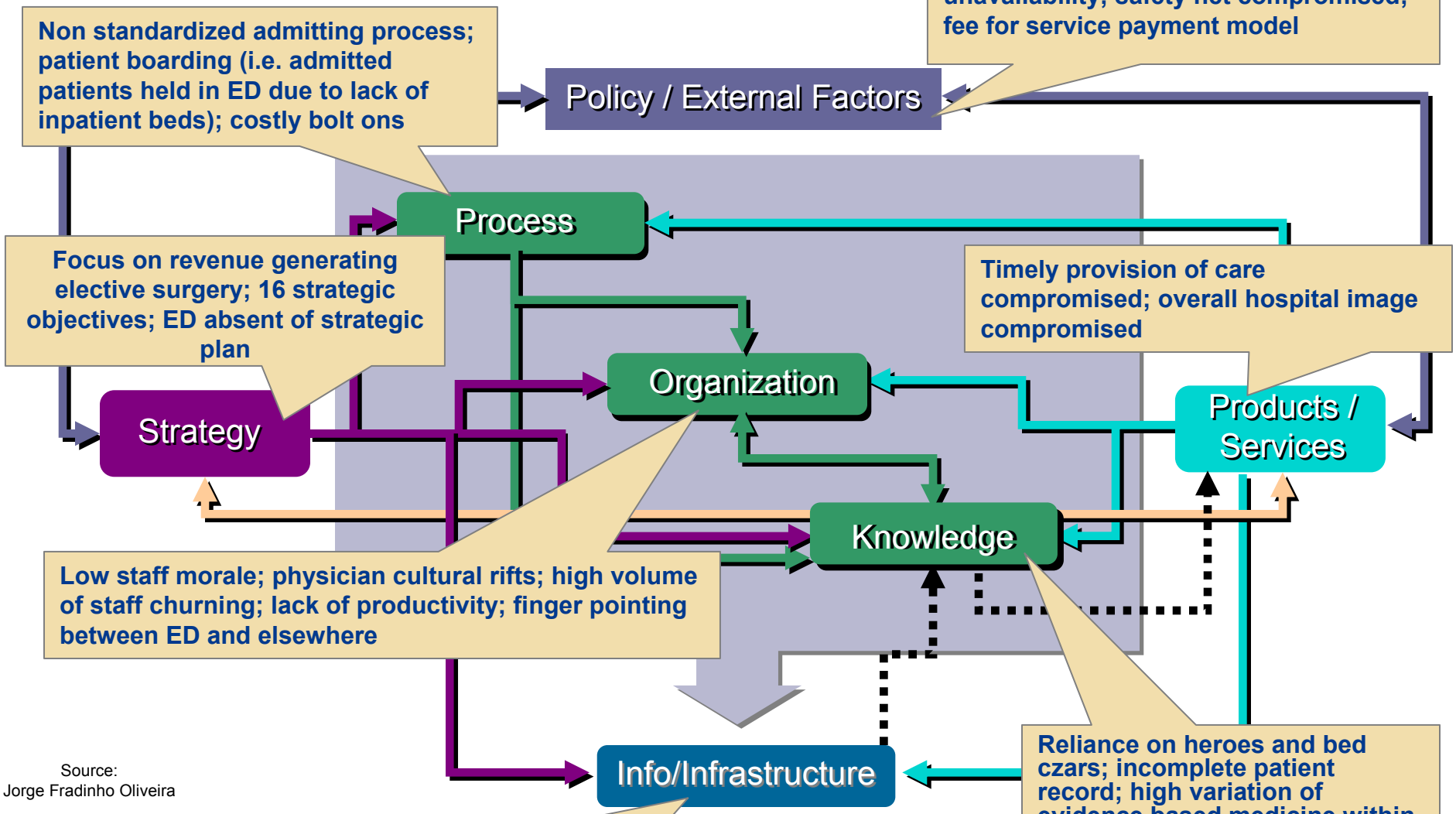
What can be done to speed patient flow in the Emergency Department?

Where should a process improvement initiative focus?

Multi-Attribute Model Provides Framework for Evaluating Emergency Department



Hospital Enterprise Architecture Diagnostic



Source:
Jorge Fradinho Oliveira

Case 3: New England Veterans Affairs Partnership and Preliminary Insights

Evolving recent partnership between LAI and the New England Veterans Administration (VISN 1)

Rationale

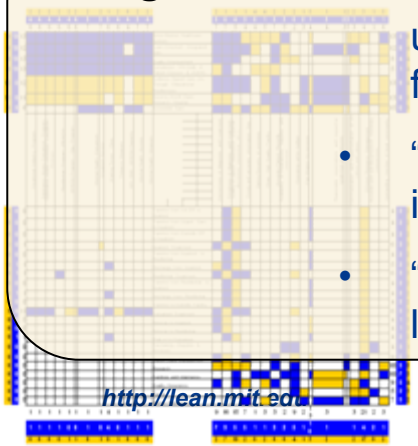
- Richness of VA enterprise dataset which is shared across multiple regions
- Ability to control for potential misaligned behavior induced by traditional commercial and public healthcare payment models

Context

- "It is not impossible to get your head around the processes and activities in health care. Performance, demand, and structure can be modeled and can be used to improve the enterprise."

Insights

- "Even if profit is not a significant factor, it is still worthwhile creating and understanding your strategic goals and using them to drive your enterprise forward."
- "It is not enough just to serve patients as they enter, we must also plan ahead in health care, and work towards being proactive rather than re-active."
- "We must align the enterprise on all levels and empower management on all levels with an understanding of the greater strategic goals."



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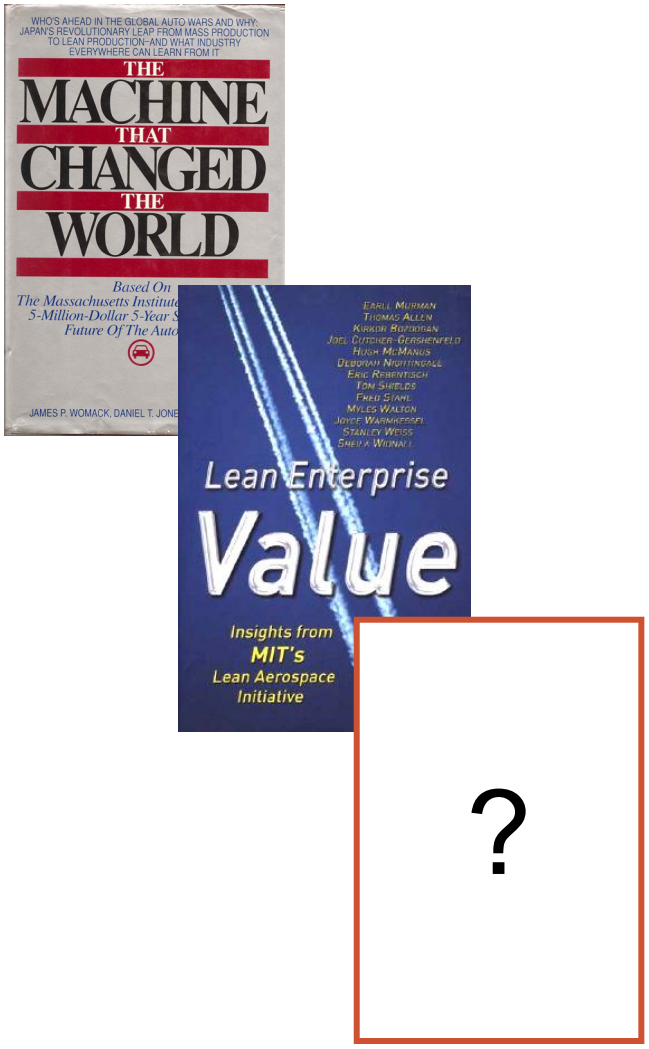

In 1992 US Air Force asked:

Can the concepts, principles and practices of the Toyota Production System (TPS) be applied to the military aircraft industry?

MIT answered: YES!

Over a decade of significant research was conducted well beyond TPS to the Enterprise system level and ultimately delivering superior results for aerospace commercial and governmental sectors

In 2008 the Healthcare Community asks:

Can the concepts, principles and practices of Lean Enterprise Value be applied to the healthcare industry?

Our Research to date says: YES!