Architecting the Healthcare System for Stakeholder Value

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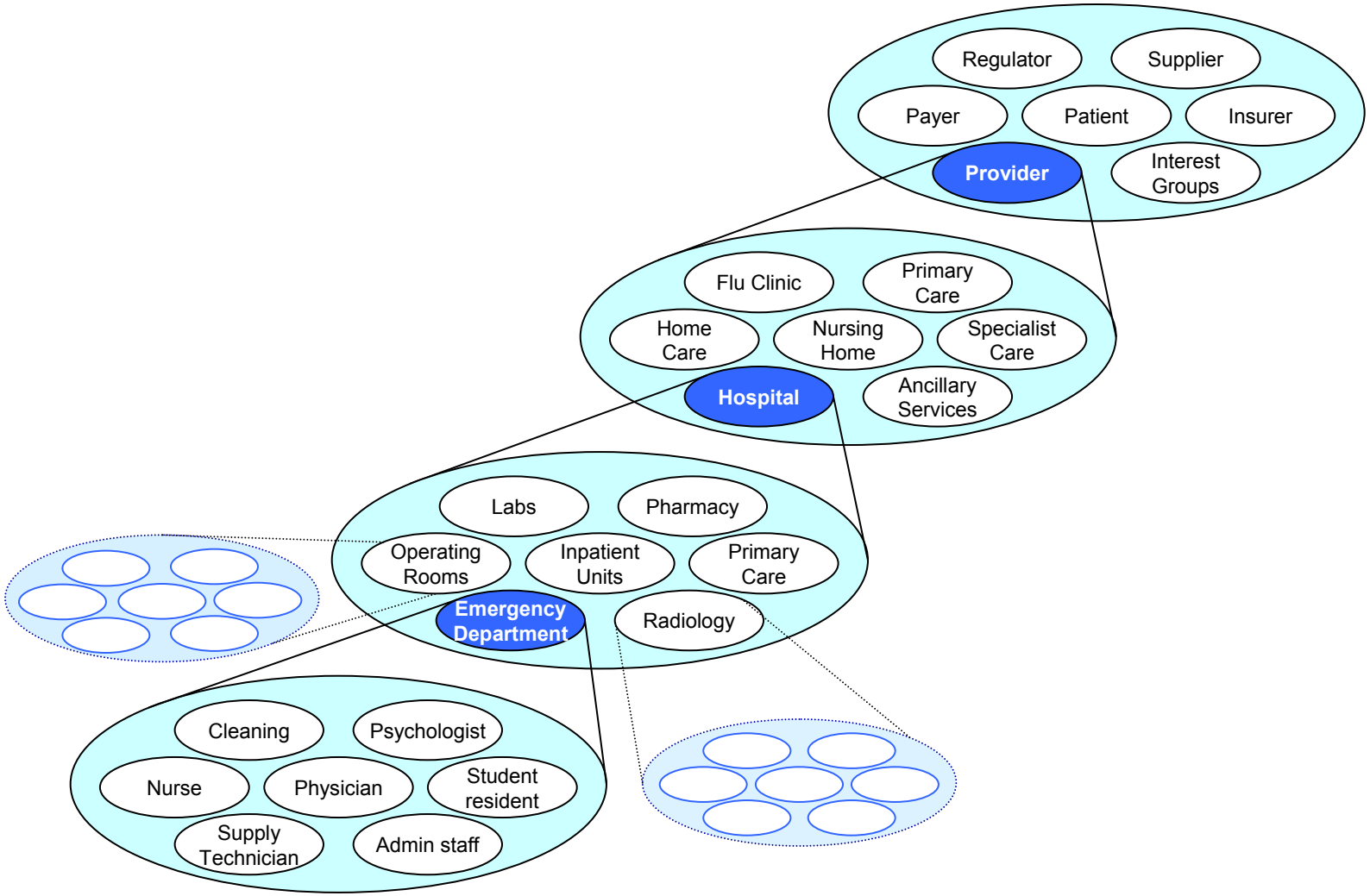
US Health Care Issues

"Simply stated, the US does not have a health care system."
William Brody, President of Johns Hopkins University, 2007

Access	**15%** of US population is uninsured **75%** of care delivery is done by groups of five physicians or less
Quality	**44,000** to **98,000** patient deaths attributed to medical error **55%** of recommended care is administered to adults
Cost	**16%** of GDP spent on health care in 2005 **30.8%** of total health care expenditure is spent on hospitals

"…the strategies [hospitals] develop and implement to compete have a significant effect on costs, quality, and access to care."
(Devers et al. 2003)

Health Care is a Complex Socio-Technical System



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Greater Boston Hospital Case

- **Leading multi specialty physician led group practice with national and international recognition (i.e. neuro, liver, heart & vascular, etc)**

2006 Highlights

- Emergency Visits: 38,631
- Total Beds: 293
- Total Staff: 4263
- Total Income: $679,454,000
- Total Expenses: $628,525,000
- Operating Income: $50,929,000

Problem Statement

- Emergency Department (ED) struggling to keep up with demand
- Long wait times in the ED and patient leaving without being seen
- ED staff blame inpatient staff and vice versa
- ED staff churn levels significant

What can be done to speed patient flow in the ED?
Where should a process improvement initiative focus?

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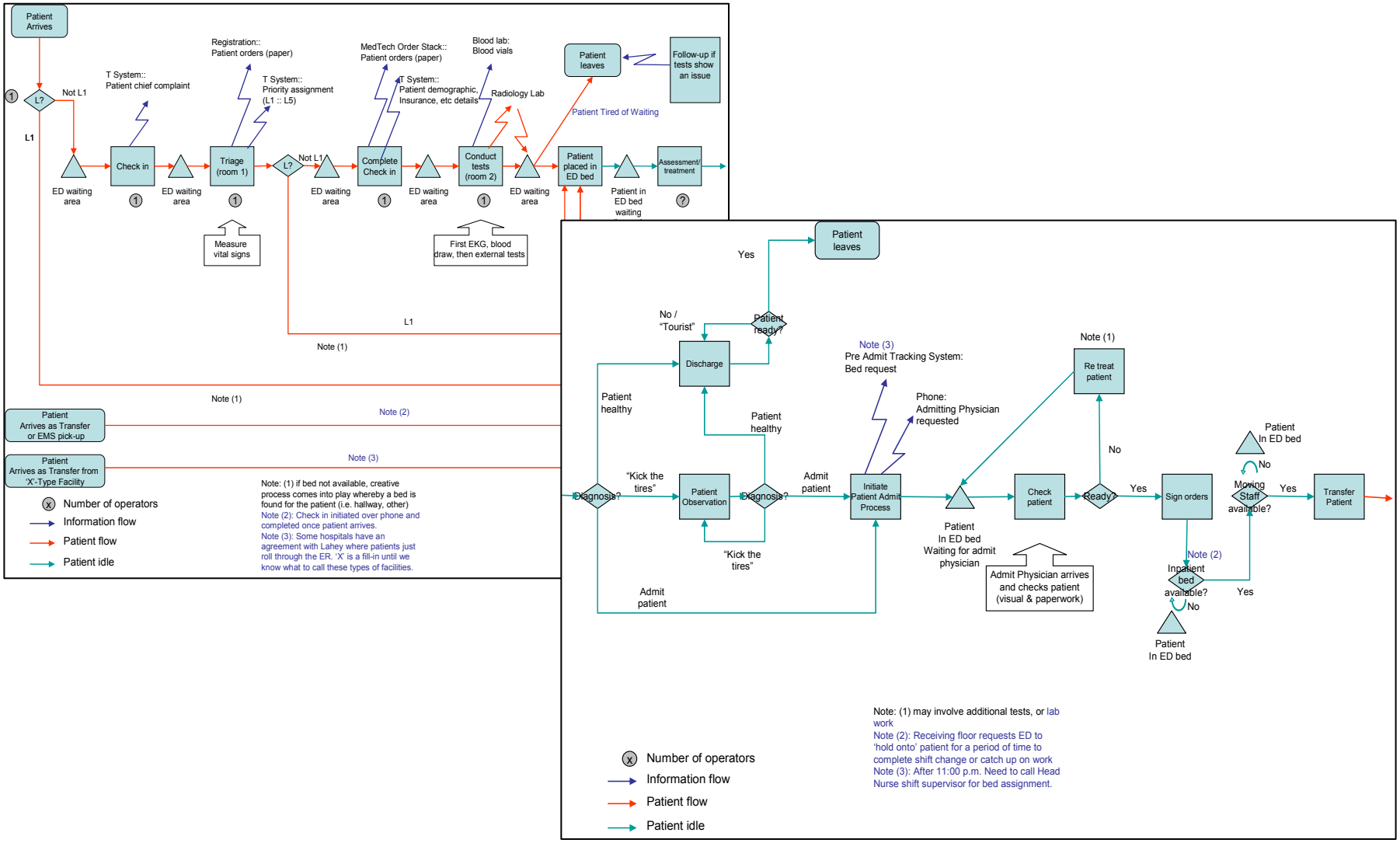
Emergency Department VSM



Emergency Department Analysis

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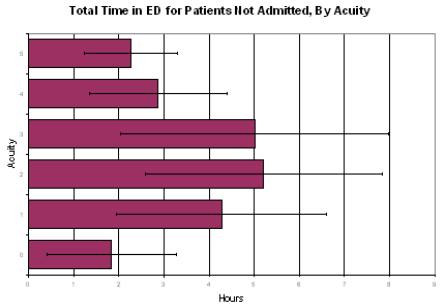
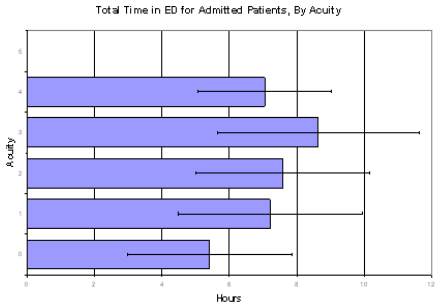
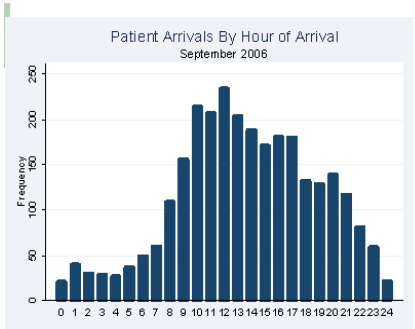
Description of patient time spent in ED

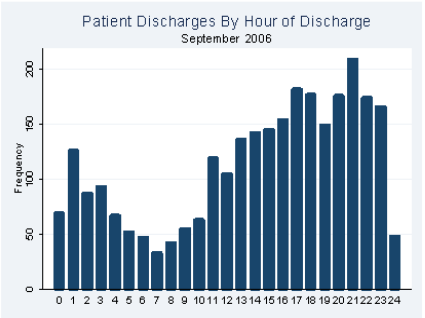
Average Total Time Spent in the ED	
Patients Not Admitted:	4.14 hrs
Patient Admitted:	7.85 hrs

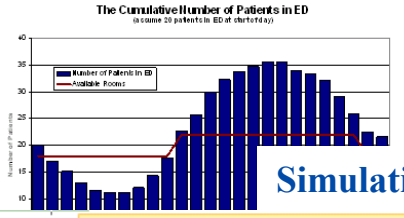


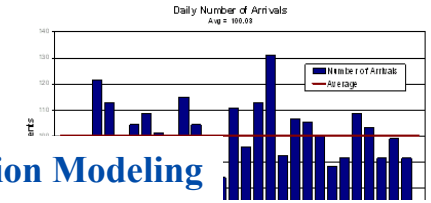


Description of patient arrivals and departures



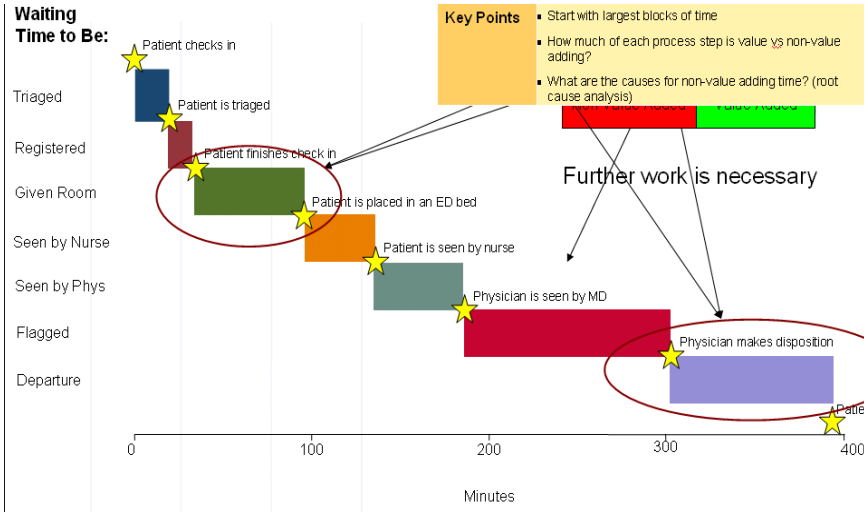




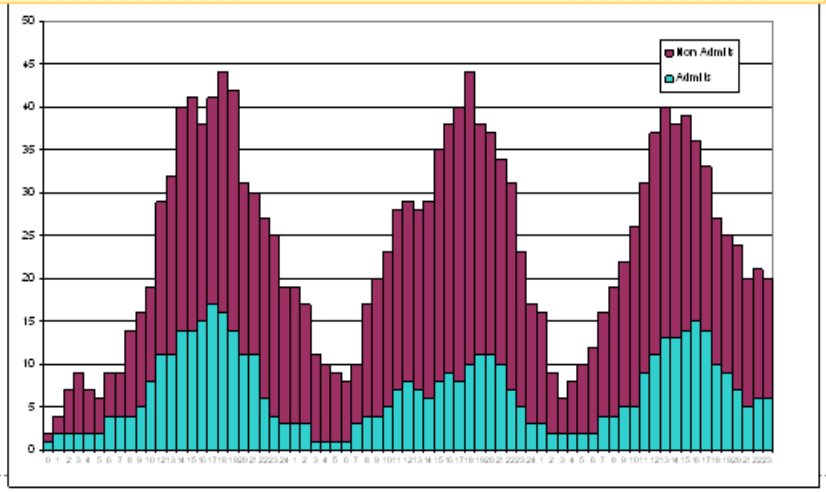


Simulation Modeling

Average time for each step of the patient process



Simulation patient levels in ED over three days



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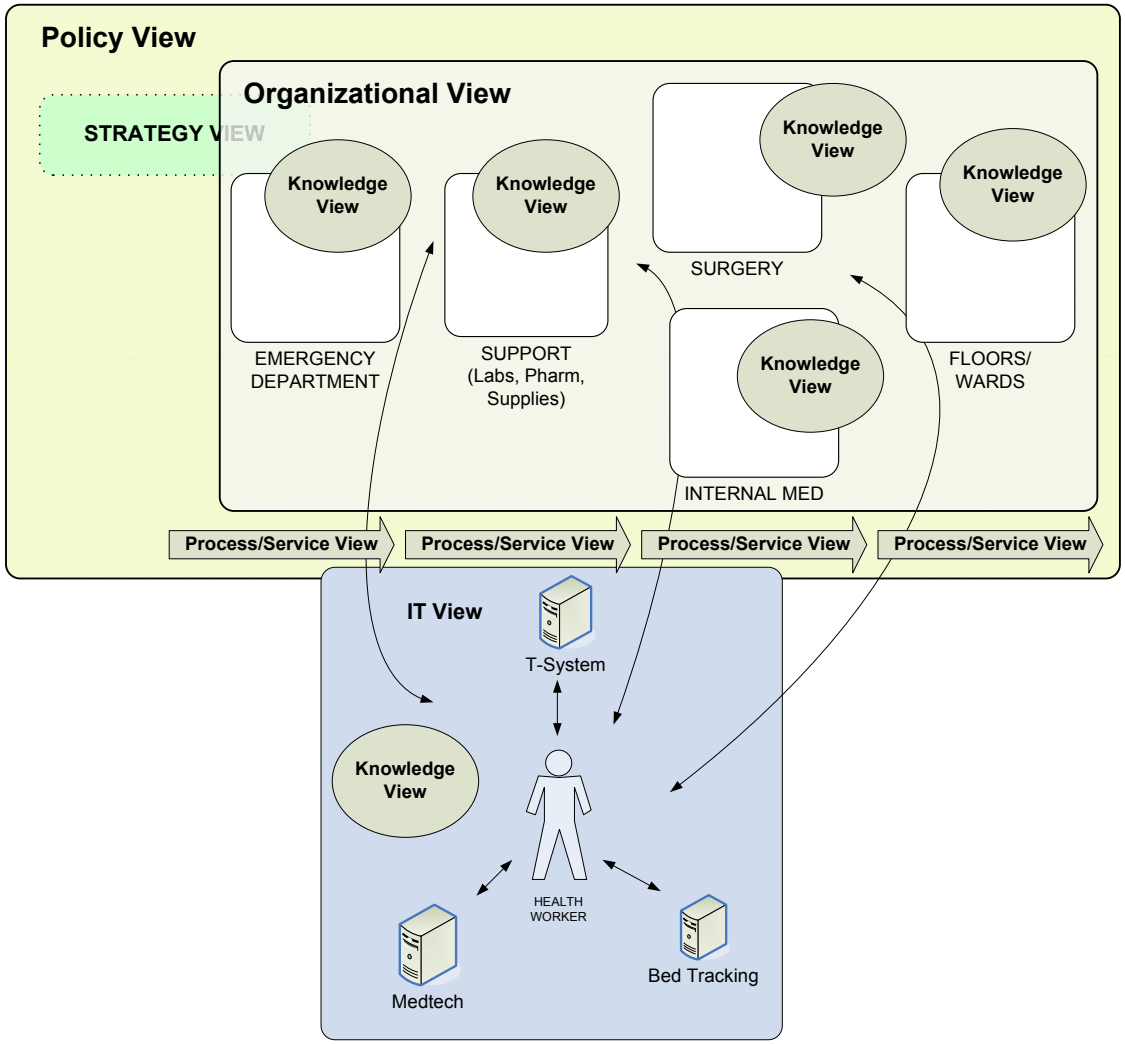
Preliminary Findings

Main Findings	ED average length of stay considered problematic, but non-admitted patients took 4 hours, whereas admitted patients took over 8 hours ED interacted well with some patient wards but not with others ED heroic employee efforts said to be common rather than sporadic ED metrics and strategic goals misaligned with overall hospital (X-Matrix)
Questions For Further Study	Why was the ED managed as a silo rather than end-to-end? Was the varying performance of ED interactions due to the payment model? Could it be that different observed EA configurations were directly related to the different observed performance levels?

"The problem of redesign gets harder and the evidence weaker as one moves from the microsystem to the organization."

Donald Berwick, President of Institute for Healthcare Improvement, 2002

“As Is” Enterprise Architecture



"To Be" Enterprise Architecture