



# Project Production Systems for Delivery of Lean Health Care Facilities and Services

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# Societal “pulls”

- Rapid Advancements in Science and Technology
- Changing Demographics
- Changing Value Systems
  - Culture
  - Sustainability
  - Increasing demands on performance of the built environment

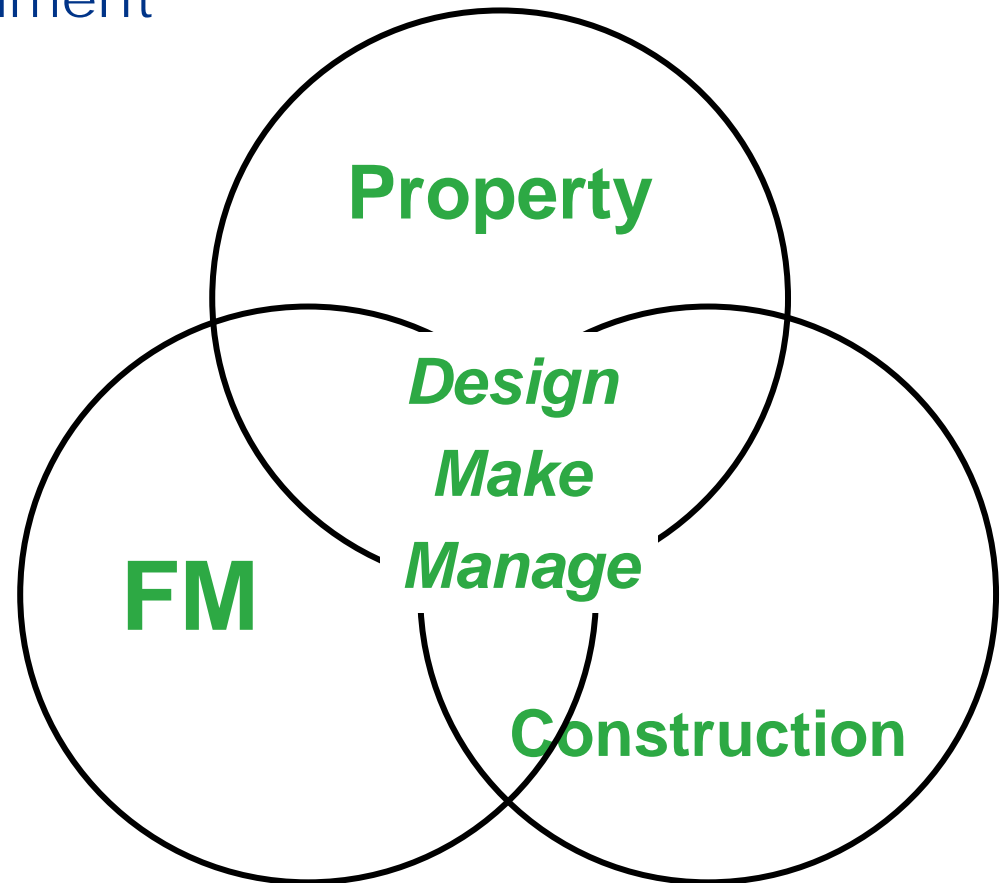
# Do what the customer wants... Who is the customer?

- Society – Built Environment
- Facility owner
- Facility user
- Commissioning
- Construction Workers
- etc...

- Hypothesis (Saxon 2005):

D:C:F:VA

1:10:50:2000



# Technology “Push”

*“highly-distributed, reliable, and secure information systems that can evolve and adapt to radical changes in their environment, delivering information services that adapt to the people and organizations that need them”*

- Design & making & operation & maintenance
- Use and users, e.g.,
  - Health care providers
  - Patients
  - Visitors
  - Society

# Peter Drucker

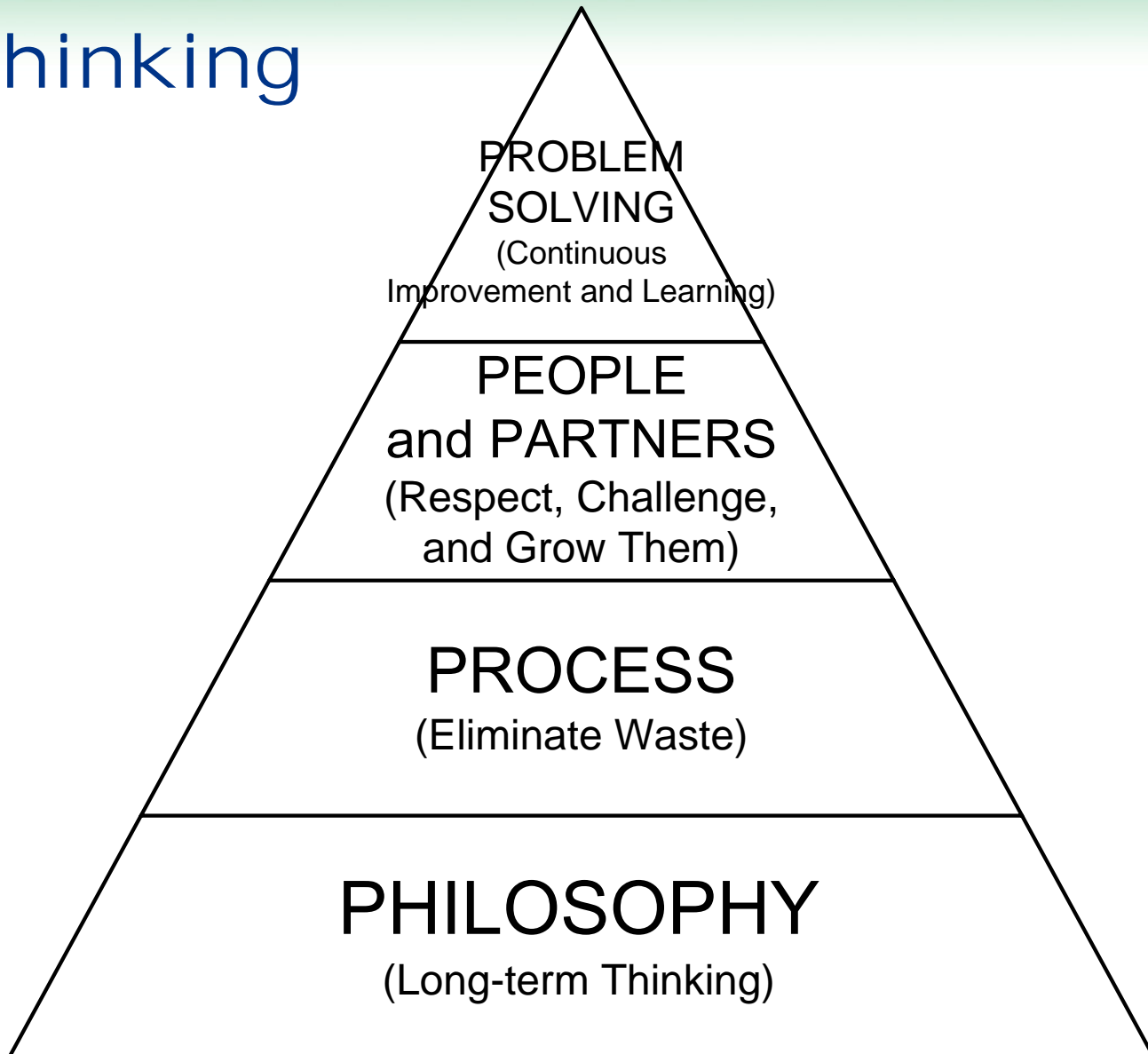
*The Economist*, p. 12, November 3, 2001

What has changed Manufacturing, and sharply pushed up productivity, are new concepts.

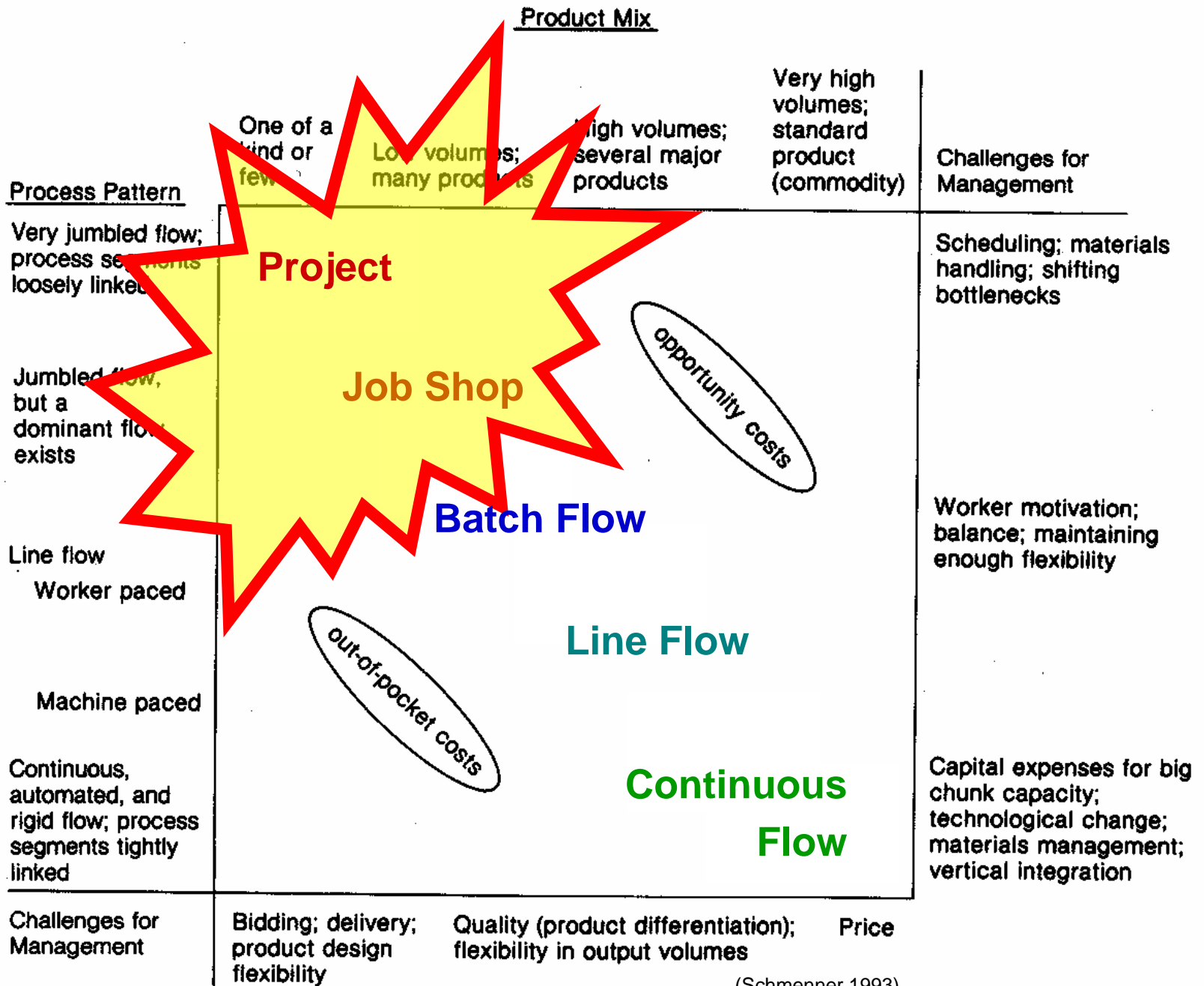
Information and automation are less important than new theories of manufacturing, which are an advance comparable to the arrival of mass production 80 years ago.

Indeed, some of these theories, such as Toyota's "lean manufacturing", do away with robots, computers, and automation.

# Lean Thinking

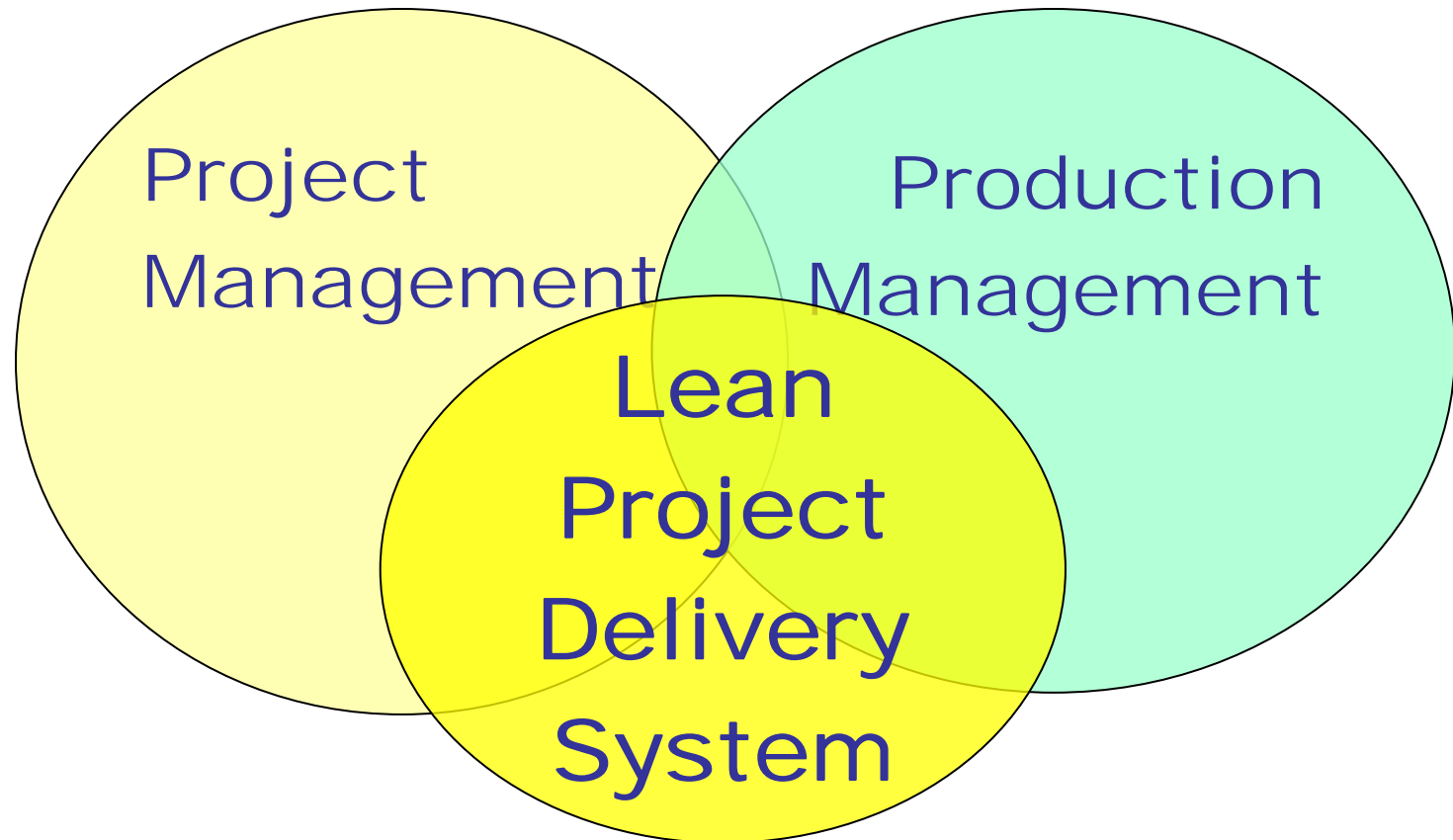


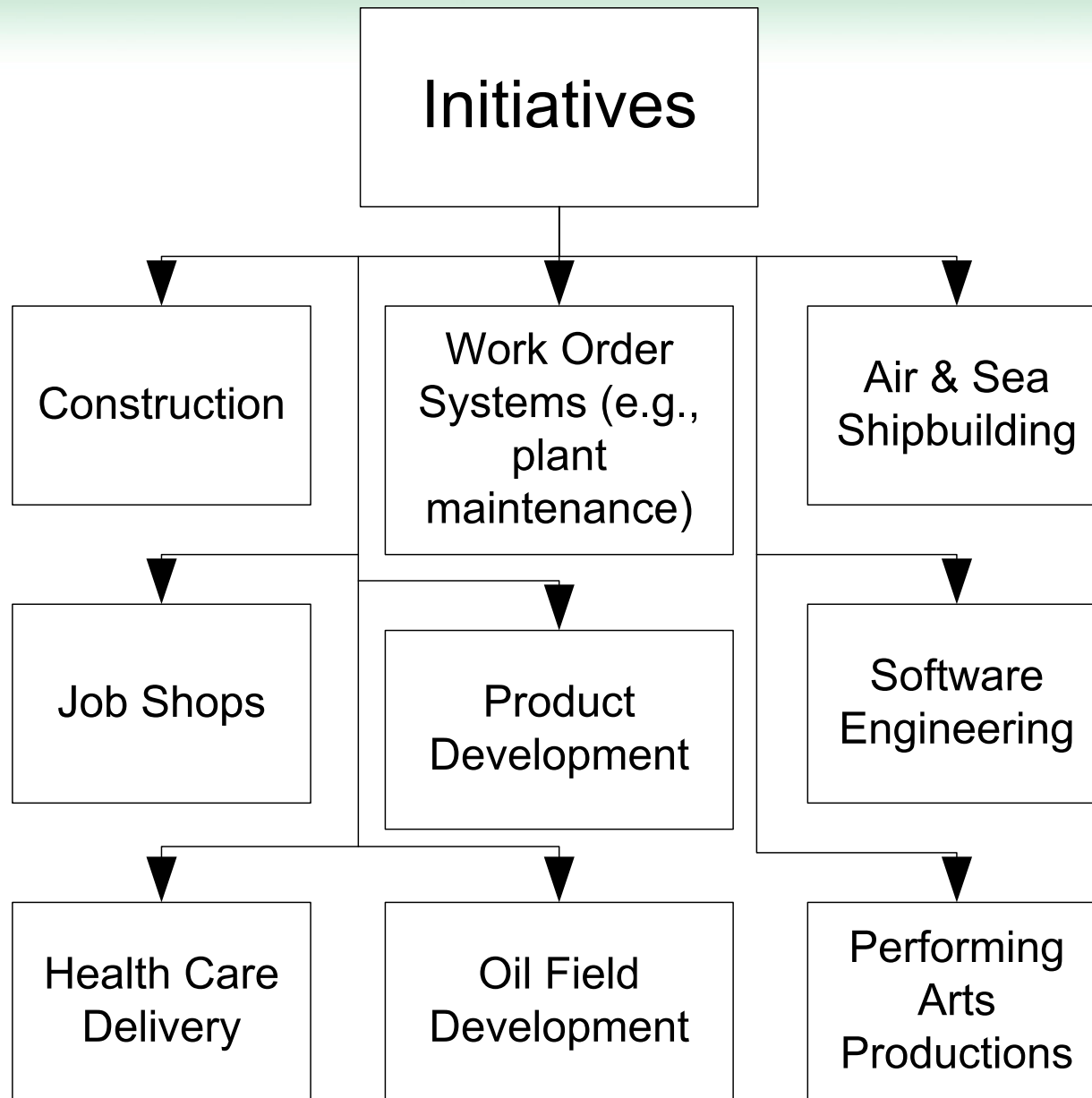
The Toyota Way (Liker 2003) The Toyota Way Fieldbook (Liker and Meier 2006)



(Schmenner 1993)

# Project Production Systems Laboratory P<sup>2</sup>SL - Position

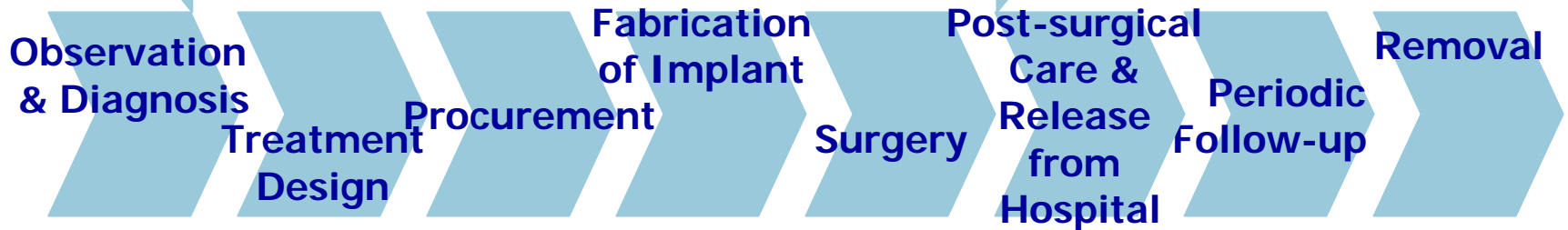




# CONSTRUCTION PROJECT



# MEDICAL PROJECT



# SOFTWARE PROJECT





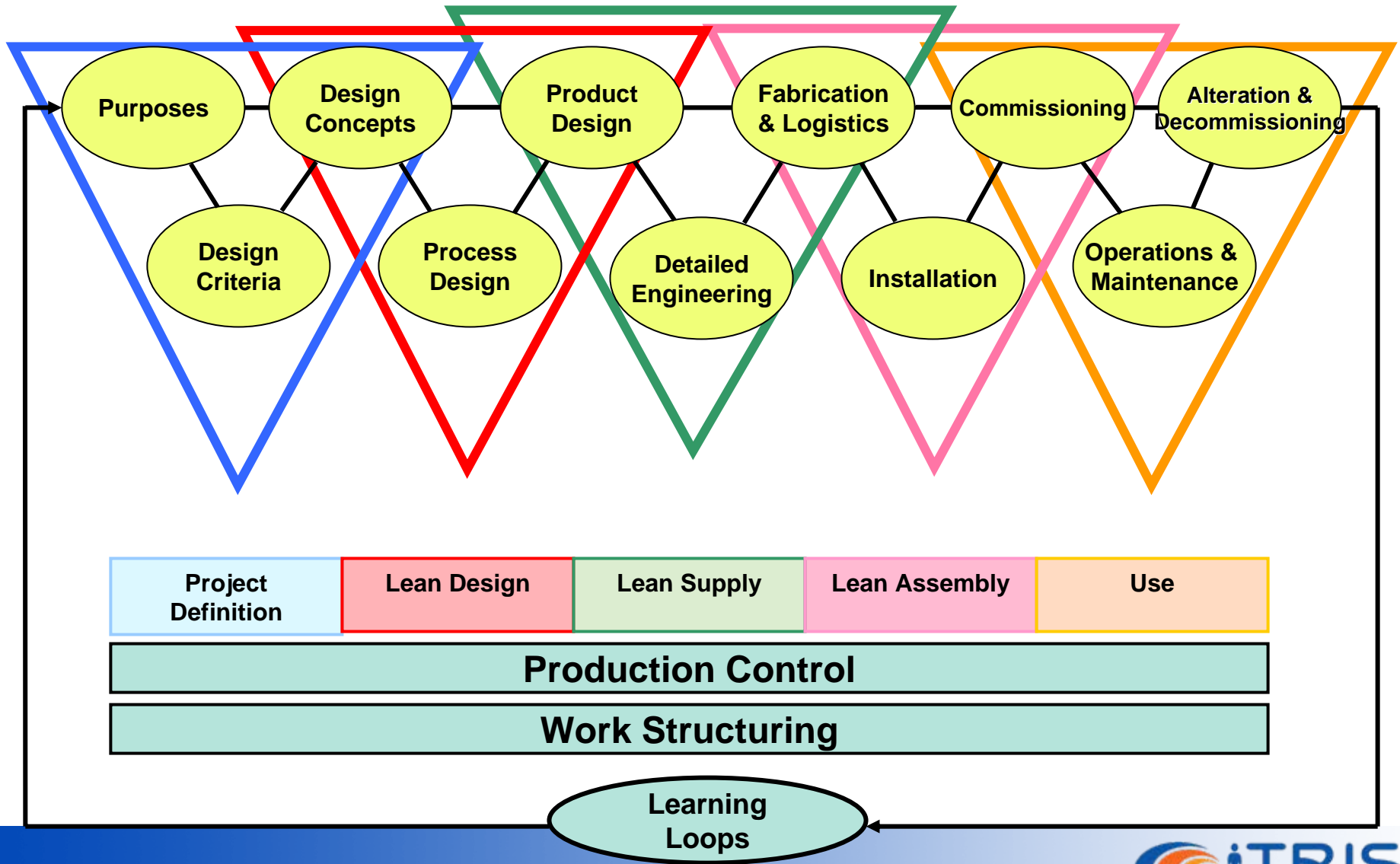
# Sutter Health

Camino Medical Group  
Mountain View Site

DPR Construction



# Lean Project Delivery System™



# IT Tools for Management of Project Production Systems

- Product development
  - n-Dimensional CAD
    - Performance-based Design
      - Set-based Design, Dimensional Tolerances, etc.
    - Cost Modeling
  - Last Planner for Reliable Planning and Collaboration
    - Built-in Quality, etc.
- Process Simulation
  - Project Delivery
  - Operations and Maintenance
- Target Costing / Target Value Design



# Project Impacts

- Health Care Delivery
  - State of California
    - Office of Statewide Health Planning and Development (OSHPD) Mandate: As part of the California Health and Human Services Agency, our vision is to promote Equitable Healthcare Accessibility for California.
    - California state law requires hospitals to evaluate their facilities, develop plans to meet seismic standards and ensure that their buildings are seismically sound.
  - US and Worldwide
- Lean revolution in project-based production industries