



# Engineering Systems Doctoral Seminar

## ESD.84 – Fall 2002

Session 11

November 13, 2002

Chris Magee and Joel Cutcher-Gershenfeld

Guests: Thomas Kochan, James Foster



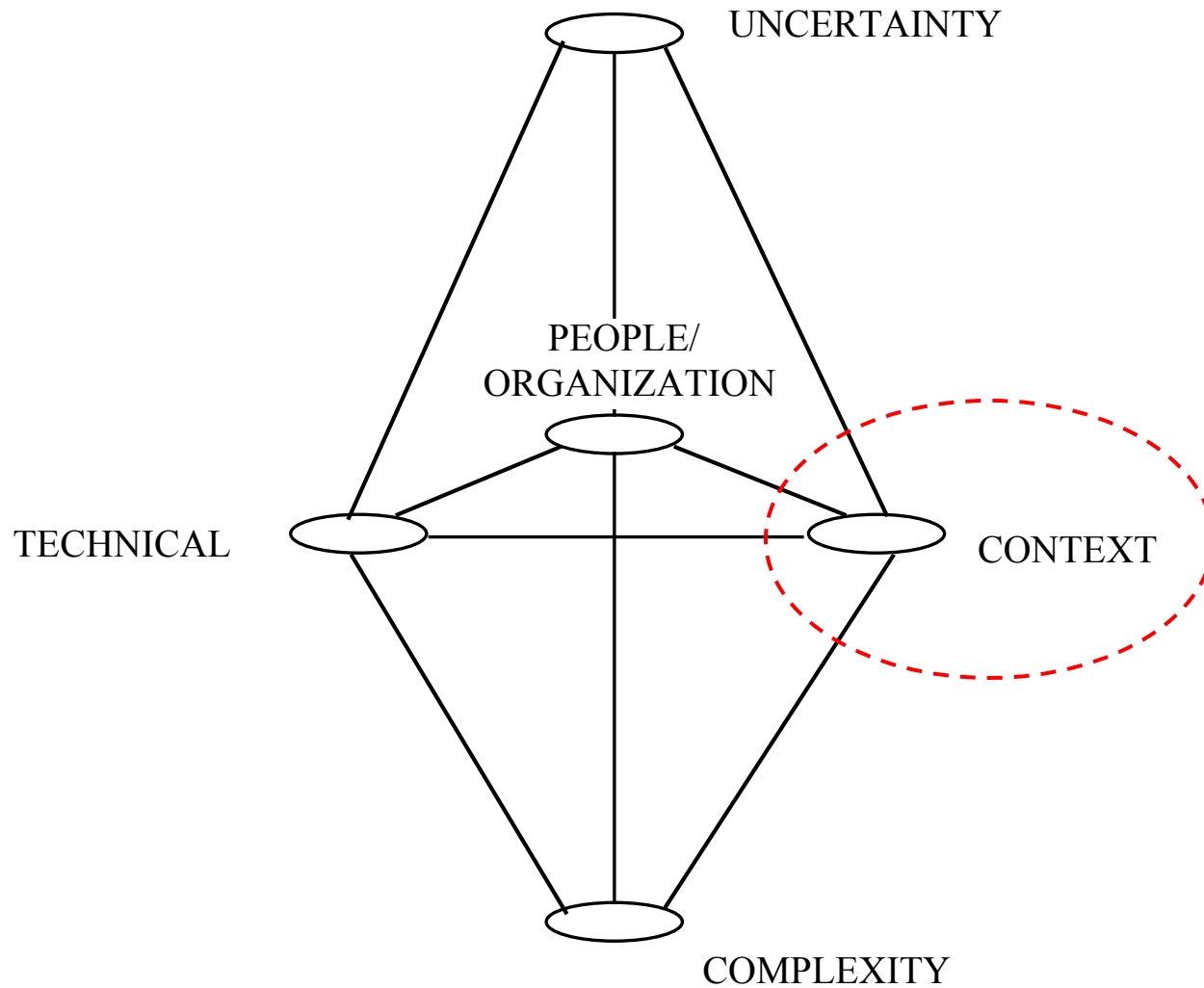


# Session 11: Overview

- Welcome and Overview and Introductions (5-7 min.)
- Initial Identification of Questions from Readings (7-10 min.)
- The Dynamics of Gridlock in Regulatory Systems: Guest Presentation by Thomas Kochan (20-30 min.)
- Discussion (10-15 min.)
- Private/Public Interactions Driving Mutual Gains in Regulatory Systems: Guest Presentation by James Foster (20-30 min.)
- Discussion (10-15 min.)
- Break (10 min.)
- Influence of Government R&D on Economic Development / A Historical Analysis of Government Spending in Science and Technology: Student Presentation by Heidi Davidz (10-15 min.)
- Next Steps (10-15 min.)

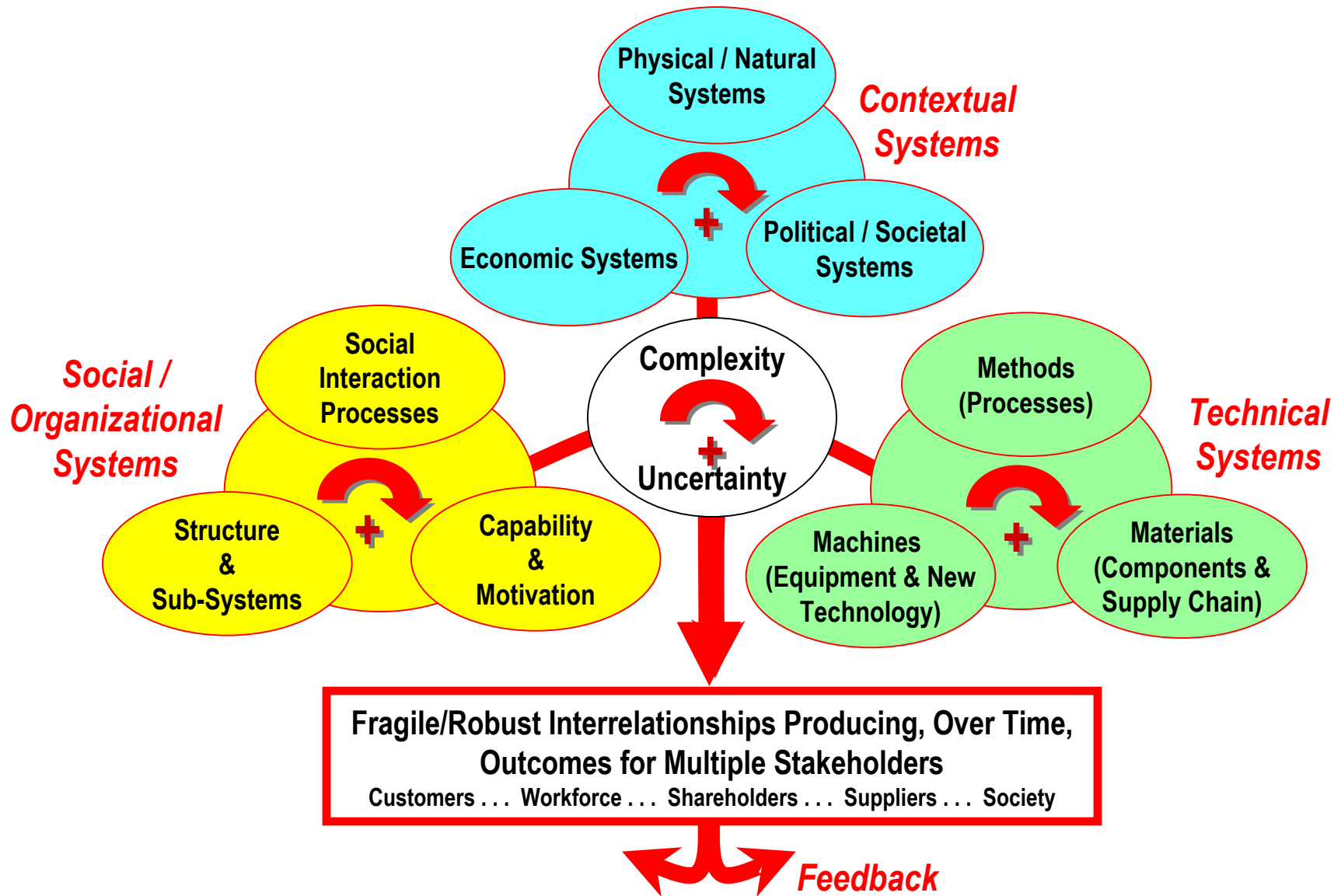


# Locating Regulatory Systems in the Context of Engineering Systems





# Sample Social and Technical Systems Framework

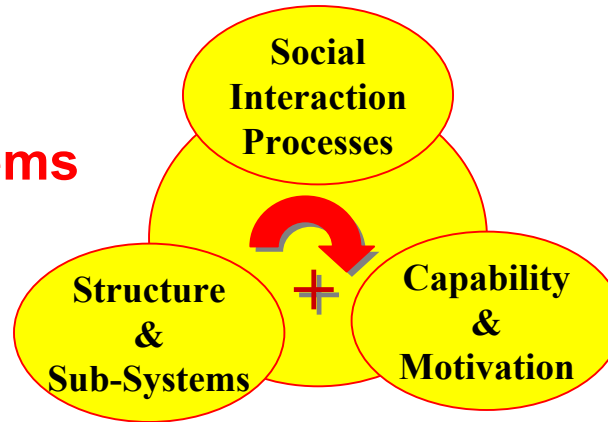




# Focus on Social / Organizational Systems

## Structure & Sub-Systems

- **Structure**
  - Groups
  - Organizations
  - Institutions
- **Sub-Systems**
  - Communications
  - Information
  - Rewards & reinforcement
  - Selection & retention
  - Learning and feedback
  - Conflict resolution



## Social Interaction Processes

- Leadership
- Negotiations
- Problem-solving
- Decision-making
- Partnership

## Capability & Motivation

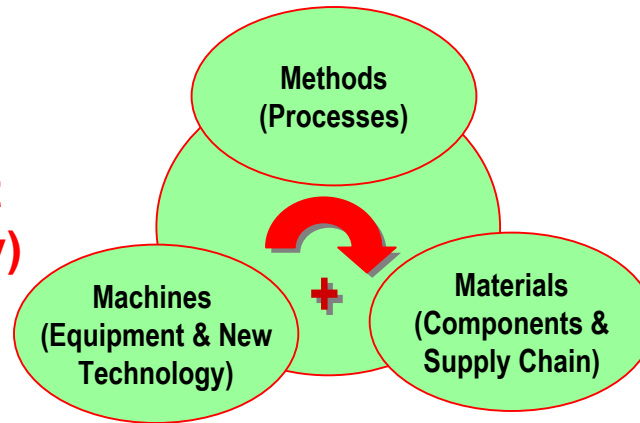
- Individual knowledge, skills & ability
- Group stages of development
- Fear, satisfaction and commitment



# Focus on Technical Systems

## Machines (Equipment & New Technology)

- Equipment and machinery
- Physical infrastructure
- Information technology
- Nano-technology, bio-technology, and other frontiers of science



## Methods (Processes)

- Job design/office design
- Work flow/process mapping methods
- Value stream mapping
- Constraint analysis
- Statistical Process Control (SPC)
- System optimization and decomposition methods

## Materials (Components & Supply Chain)

- Interchangeable parts and mass production systems
- Just-In-Time delivery (JIT) systems
- Synchronous material flow systems
- e-commerce