



*Drivers for Change: An Organizational
Perspective on Sustainable Construction*

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The Challenge

- Wide range of large and –small-scale problems
- Widespread infrastructure deterioration, pollution, and urban sprawl
- Natural resource depletion and degradation, waste generation and accumulation, and environmental impact and degradation
- Overpopulation, disease, and social, economic, and political conflicts.
- Complex interrelationship between the economic development needs and the environmental problems resulting from development efforts

The Response

- **Wide range of stakeholders** are addressing the challenges and the problems:
 - Scientists, engineers, architects, and urban planners
 - Medical and other health professionals
 - Members of the financial community
 - Government, policy-making, and regulatory officials
 - Members of non-governmental organizations and civic groups
- A common goal:
 - Development of **alternatives to the current traditional approaches** to the production, delivery, and use of goods, products, and services

A Viable Solution

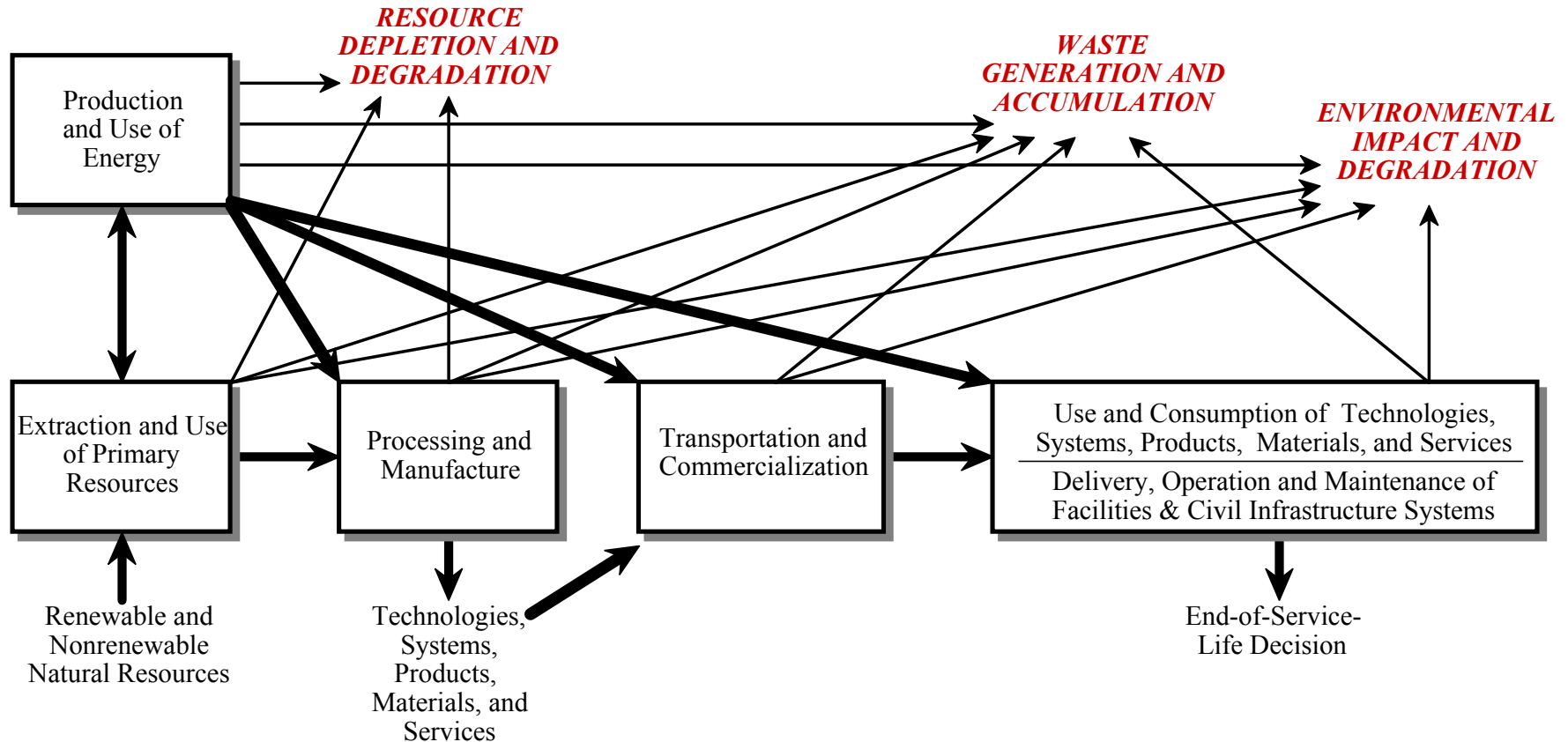
- **Sustainable Development** (SD) has emerged as a viable alternative approach:
 - “...meeting the needs of the present without compromising the ability of future generations to meet their own needs.”
[Brundtland Commission]
- **Sustainability** transcends the concept of SD and cuts across existing disciplines and cultural practices
- For the A/E/C Industry in general, sustainability has **implications** for all stages of the total life cycle of technologies, systems, products, materials, and services .



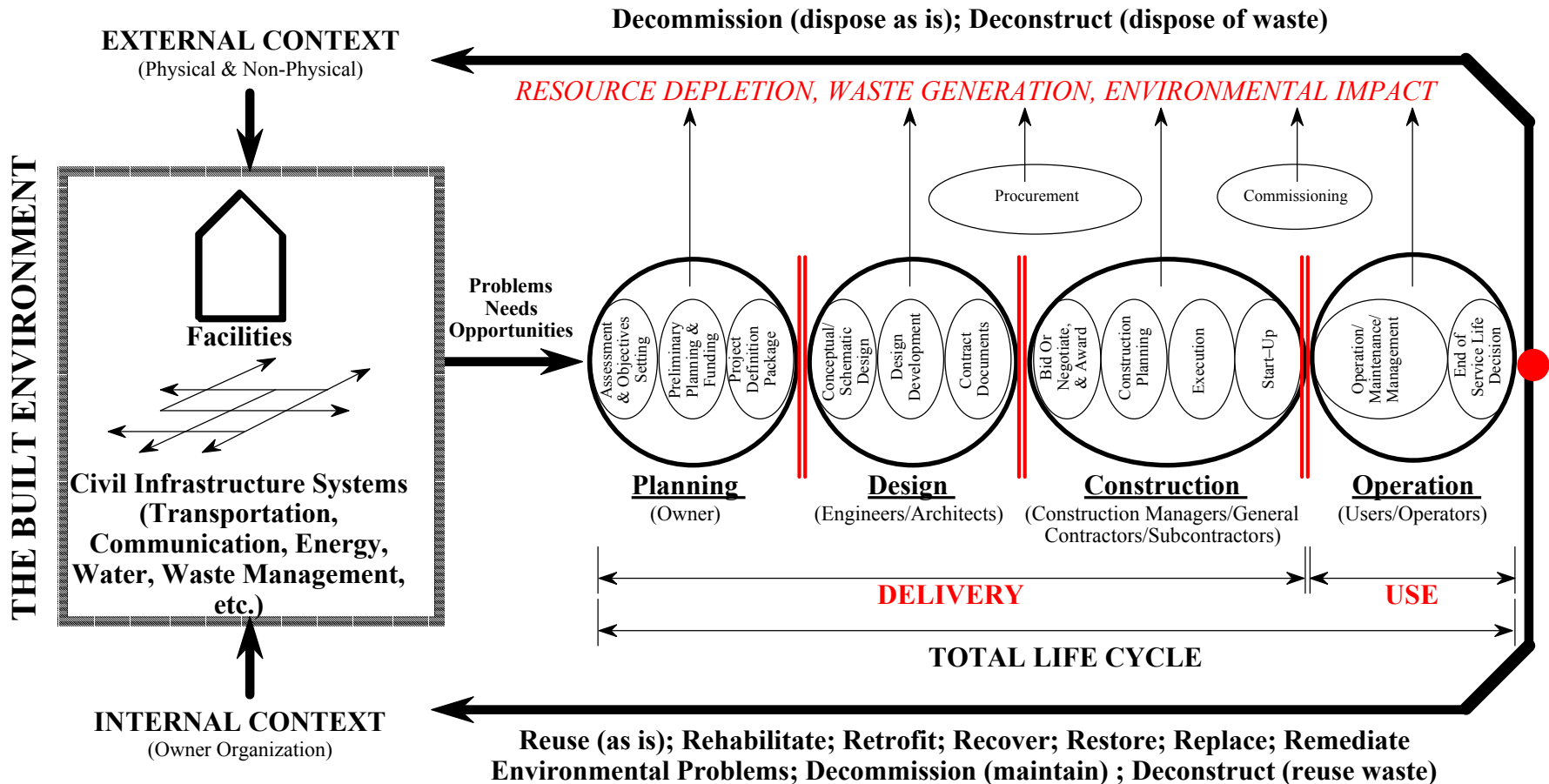
Drivers for Sustainability in the A/E/C Industry

- increasingly restrictive environmental **laws and regulations**, and environmental quality and performance **international standards**
- **demands** for higher levels of effectiveness, efficiency, and productivity, and **expectations** for higher levels of technical and management performance
- **pressures** from civic and private environmental groups
- the **need** to pay more attention to the needs and aspirations of project stakeholders today and tomorrow

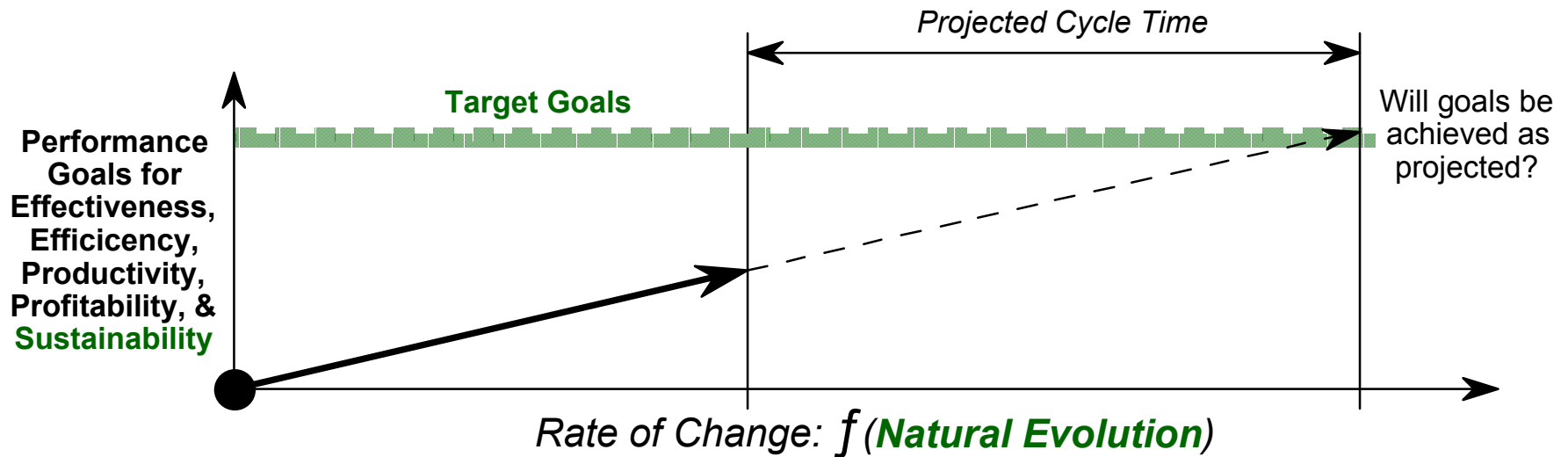
The Problem: A Linear Development Process for the A/E/C Industry



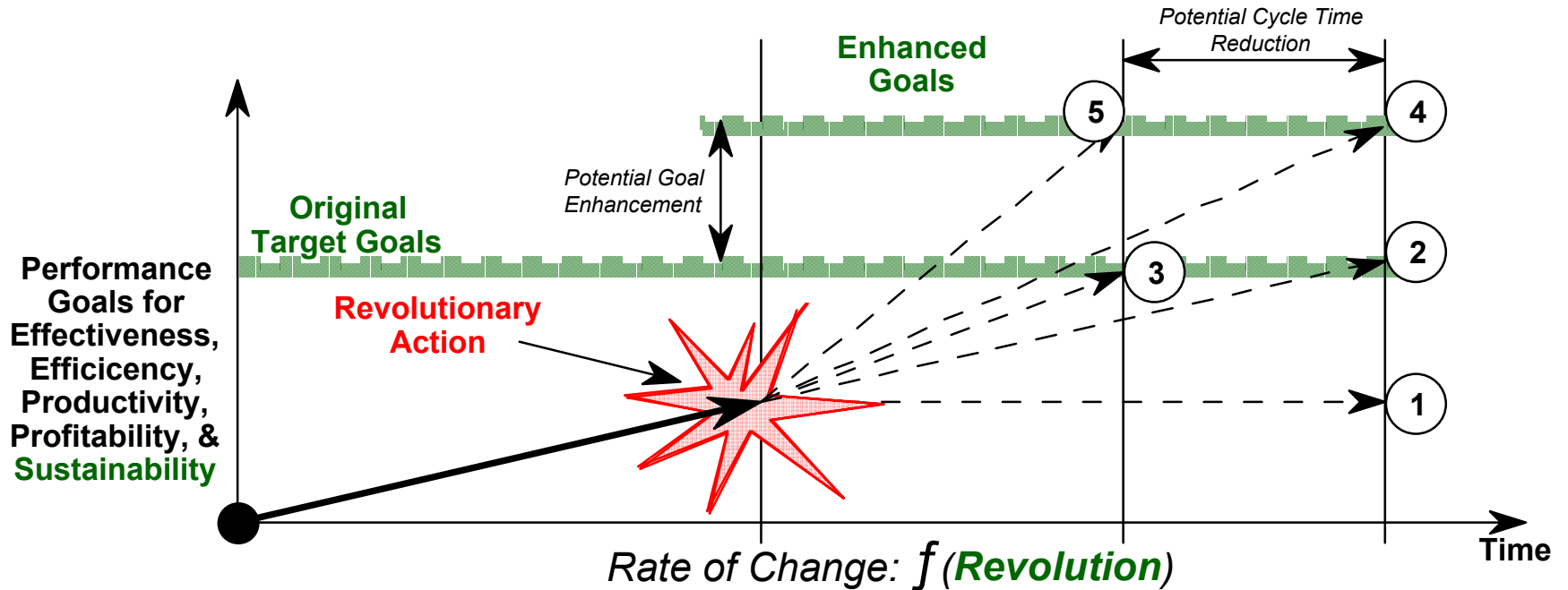
The Problem: A Fragmented Linear Process for A/E/C Projects



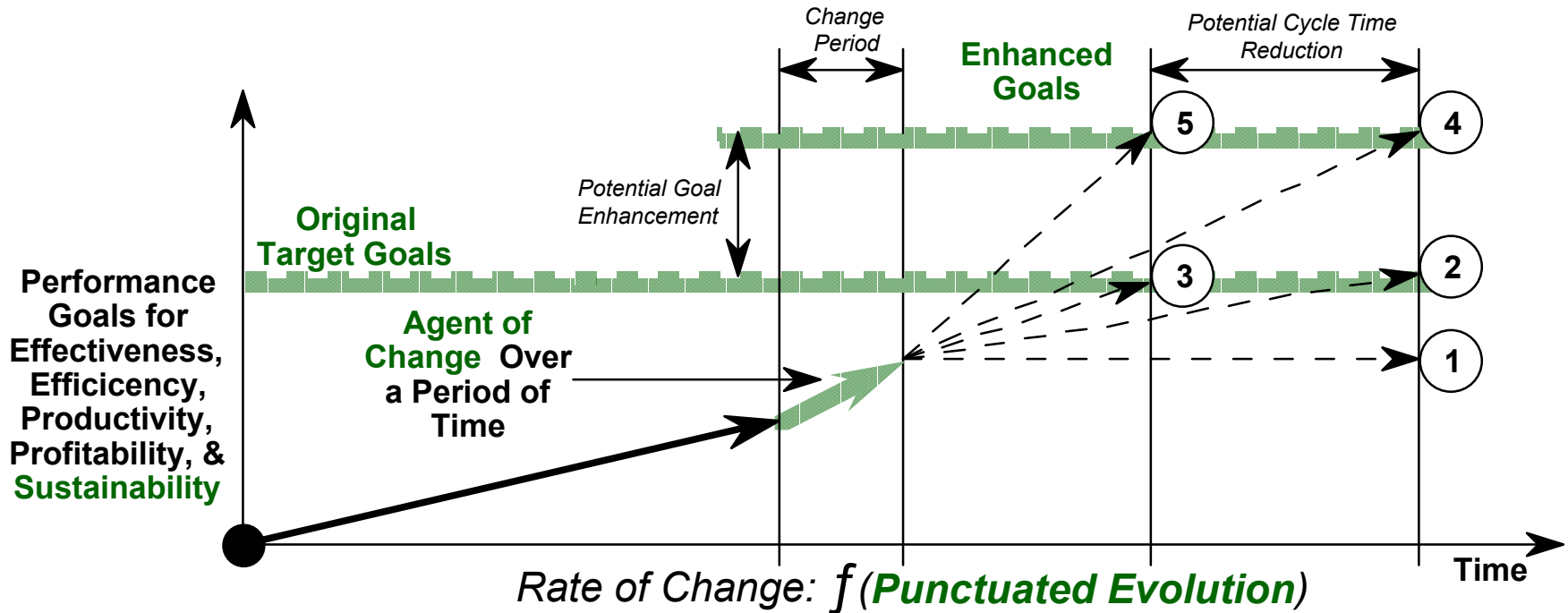
Change: Modes of Change (1)



Change: Modes of Change (2)



Change: Modes of Change (3)



Change: Triggers of Change

		<u>ATTITUDE TOWARD CHANGE</u>	
		Proactive	Reactive
<u>SOURCE OF CHANGE</u>	Internal	FLASH Triggers are changes in: <ul style="list-style-type: none">• Values• Mission• Perceptions	CRASH Triggers are changes of: <ul style="list-style-type: none">• Functional Requirements• Physical Integrity /Function
	External	SPLASH Triggers are changes caused by: <ul style="list-style-type: none">• Market• Benchmarks• Competition	CLASH Triggers are changes in: <ul style="list-style-type: none">• Codes• Regulations• Standards

Triggers of Organizational Change (1)

● **Flash Triggers**

- Changes in the internal values, missions, or perceptions of organizational entities
- Example: Interface's Ray Anderson - top-down change

● **Crash Triggers**

- Change is resisted until a literal breakdown occurs, or until internal functional needs change to a degree such that the organization can no longer meet those needs
- Example: Equipment failure

Triggers of Organizational Change (2)

● **Splash Triggers**

- A “splash” from the competition as it passes you by; external trigger for a proactive organization
- Example: Competition in the carpet industry to increase recycled content

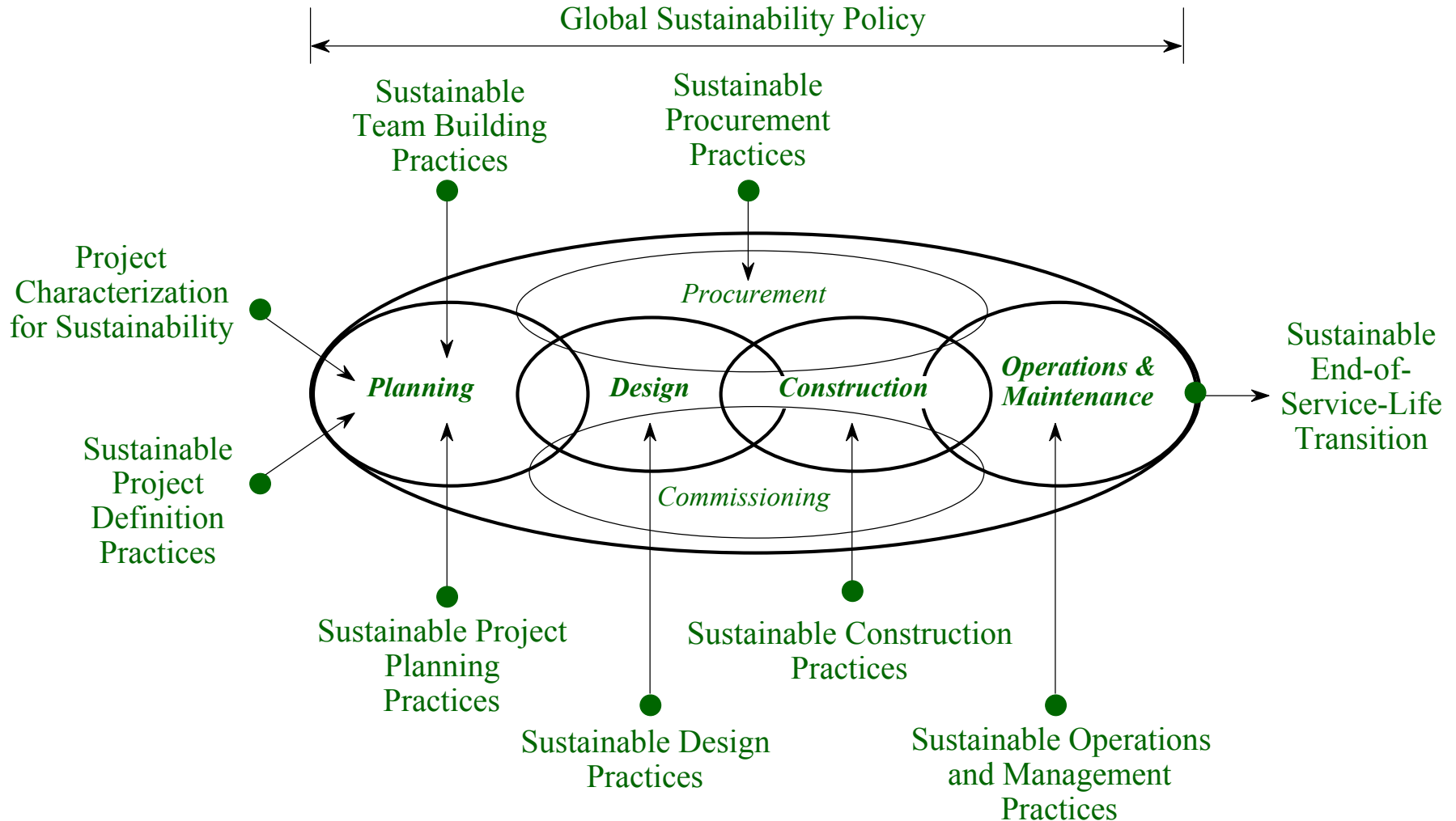
● **Clash Triggers**

- Conflict with external codes, regulations, standards, or other contextual constraints
- Example: Tightening emissions standards for power plants

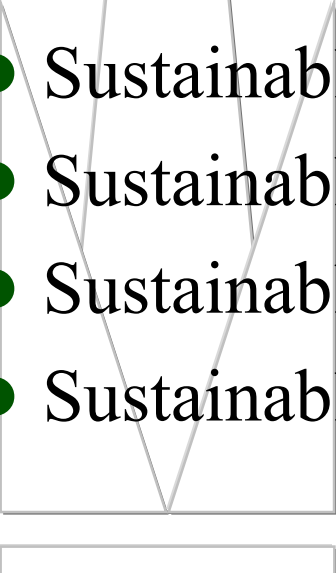
Elements of A/E/C Organizational Change to Sustainability

- **Global policy** that articulates the organization's vision for sustainability
- **Specific strategic objectives** that address each element of the global policy
- **Specific measurable goals** to evaluate progress toward objectives
- A **clear and detailed execution plan** for each goal.

A Solution: Integrated and Sustainable Process for the A/E/C Industry



Components of the Unified Framework for Organizational Sustainability

- Sustainable Project Characterization
 - Sustainable Team Building
 - Sustainable Project Planning and Definition
 - Sustainable Design
 - Sustainable Procurement
 - Sustainable Construction
 - Sustainable Operations and Maintenance
 - Sustainable End-of-Service-Life
- 

Components of an Execution Plan (1)

- **Phased Processes:**

- Parallel development of solutions of all involved disciplines
- Coordination and integration of results among disciplines at the conclusion of each phase

- **Mechanisms to regulate the flow of data and information** from phase to phase and among stakeholder entities:

- Analysis, generation, evaluation, selection, and specification processes
- Conflict resolution
- Decision making

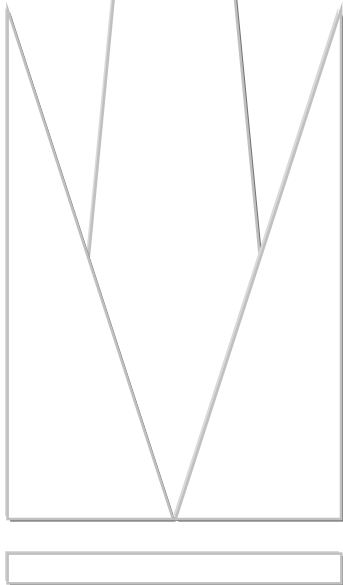
Components of an Execution Plan (2)

- **Provisions** at each phase for performance parameters check:
 - Physical and non-physical contextual compatibility and response
 - Manufacturability, procurability, constructability, operability, usability, and maintainability performance
 - Short- and long-term functional, formal/physical performance, risk, cost/schedule, safety/security, and quality, reliability, and sustainability performance

Components of an Execution Plan (3)

- **Mechanisms** for:

- Formal input of sustainability knowledge and experience, e.g., training, third party reviews, etc.
- Capture of lessons learned to contribute to the sustainability knowledge base



Conclusions

- **Incremental change through strategic change agents** will be the key to implementing sustainability in the A/E/C industry
 - Traditional conservatism
 - Lack of external drivers
 - Proactivity is needed...
- Use **current practices as a point of departure**
 - Incremental enhancement of existing practices
 - Cumulative improvement is equal to or greater than the sum of incremental improvements