

# USDA Forest Service

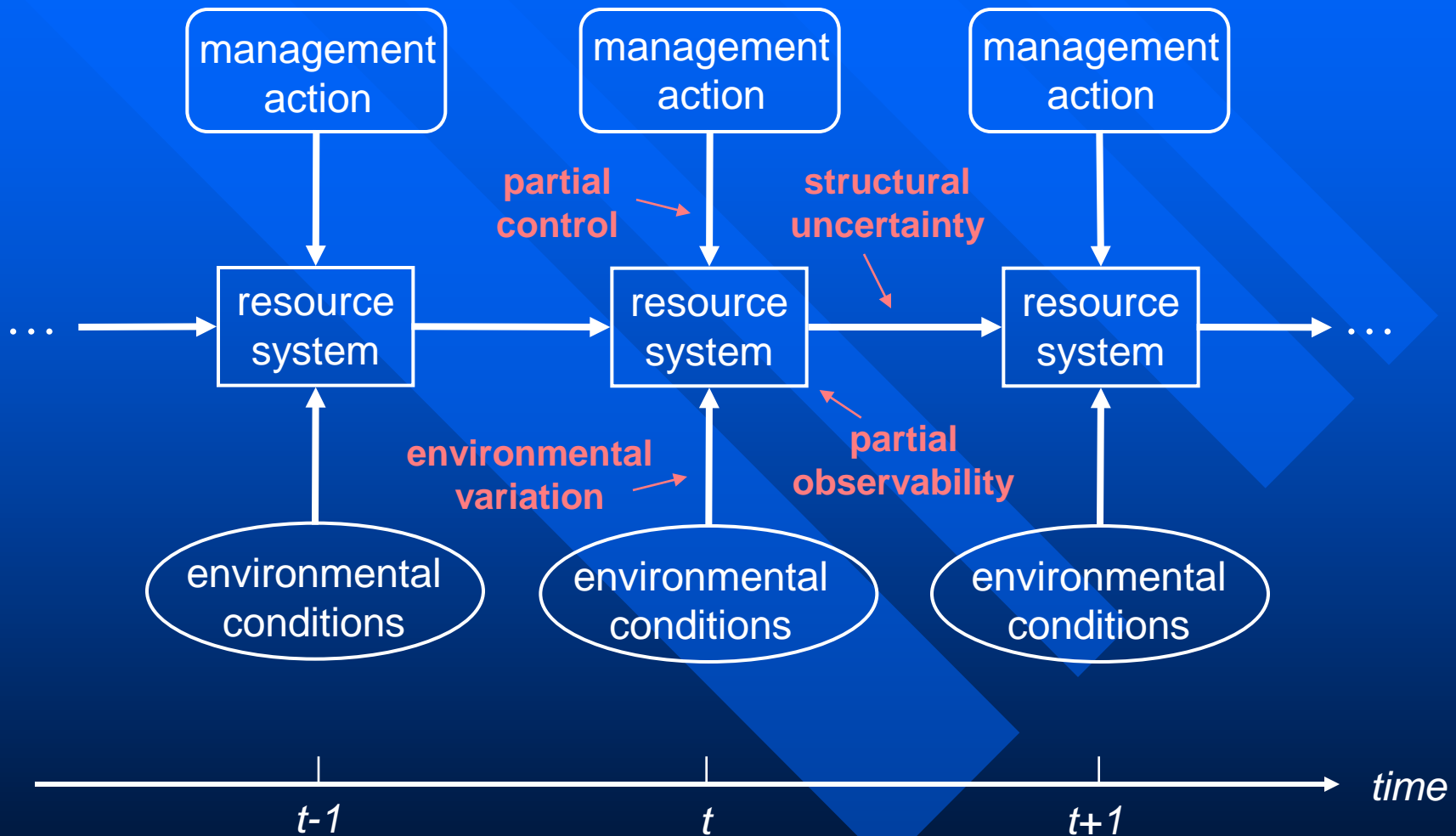
## Science Forum for the Land Management Planning Rule

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# Management Situation

- Complex forest systems operating at multiple scales
- Forest resources influenced by both environmental conditions and management actions
- Decision making required in the near term
- Uncertainty about long term consequences
- Lots of stakeholders with different viewpoints, values, potentially conflicting objectives

# Resource Framework



# DOI Approach to Decision Making in the Face of Uncertainty: AM

Learning through management, and  
adjusting management strategy based on  
what is learned

- focus on reducing uncertainty about the  
influence of management actions, and
- improving management as a result of  
improved understanding

# Common Features of AM Problems

- A management framework
- Uncertainty about management consequences
- Iterative decision making
- The potential for learning through the process of management itself
- Potential improvement of management based on learning

# AM Implementation

- Iterative process of decision making
- Followed by monitoring
- Followed by analysis and assessment
- Followed by learning
- With what's learned incorporated into future decision making

# Adaptive Decision Making



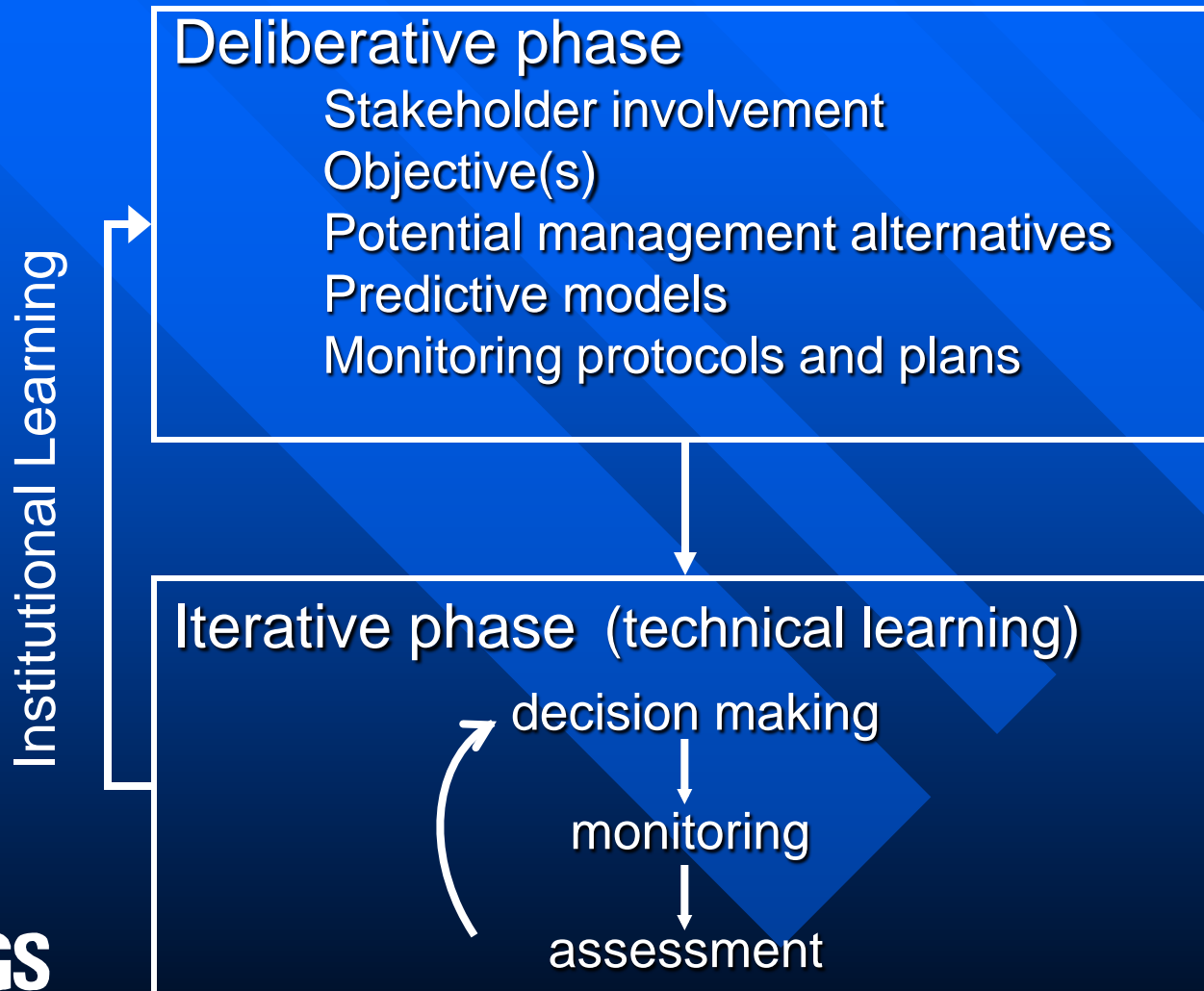
- Decisions are guided by management objectives at each time
- Monitoring is used to track system responses to management
- New information from monitoring is combined with previously collected information to produce improved understanding
- Decisions are adjusted in the next time period based on that improved understanding

# Two Key Outcomes

- Improved understanding over time
- Improved management over time based on that improved understanding



# Management and Learning



# Science and AM

## ■ Science

- Scientific hypotheses
- Experimental treatments
- Data collection
- Analysis (confrontation of data against hypotheses)
- Learning

## ■ AM

- Management hypotheses
- Management interventions
- Monitoring
- Data assessment (confrontation of data against hypotheses)
- Learning
- Feedback into future management

# Forest Planning and AM

- Forests are dynamic systems that are influenced over time by environmental conditions and management strategies
- Planning for the National Forests is mandated to be science-based and stakeholder driven
- Forest planning acknowledges the importance of transparency in framing management objectives, alternatives, and projected consequences
- It acknowledges uncertainty as a key element constraining smart management
- It recognizes the value of management adaptations as conditions change and understanding improves over time
- It should build on experience, data, and understanding as they are expressed through monitoring and assessment over time

# Why Use AM for Forest Planning?

- Because AM is fundamentally science based
- Because every one of the planning attributes just mentioned is a hallmark of adaptive decision making
- Because your planning framework is pre-adapted by its structure to an adaptive approach

# Elements of an Approach

- Characterize system uncertainty to guide both research and management priorities
- Develop scenarios for different resource futures and strategies
- Search for robust near-term actions
- Propagate uncertainties through time
- Periodically adjust strategy based on new information (i.e., use adaptive decision making)

# Institutional and Professional Requirements

- A commitment to learn as you go
- Management flexibility to adapt as you learn
- Expansion of management boundaries and scales as appropriate and needed
- More and better collaboration than in the past
- Recognition of what is feasible and what is not

