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1.040 Project Management  
Spring 2009

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# Project Uncertainty Management

Based on Presentation given by  
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# Project Uncertainty Management

- A gradual change in how we define projects
- From risk management towards uncertainty management
- Towards life cycle management
- Towards a holistic approach
- Focus on value creation

# From risk management towards uncertainty management

- A number of different definitions of risk and uncertainty are currently being used
- The term "Risk" is considered and perceived as a negative outcome and contains elements of fear.

# Project Organization and Contracts

- Uncertainty, (Risk and opportunities)

## Uncertainty

Ability to

predict outcome of parameters

or foresee events that may impact the project. Uncertainties have a defined range of possible outcomes described by functions reflecting the probability for each outcome. Uncertainty functions can describe discrete events or continuous ranges of outcomes.

## Risk

Possible negative outcome expressed by probability multiplied by the consequence.

## Opportunity

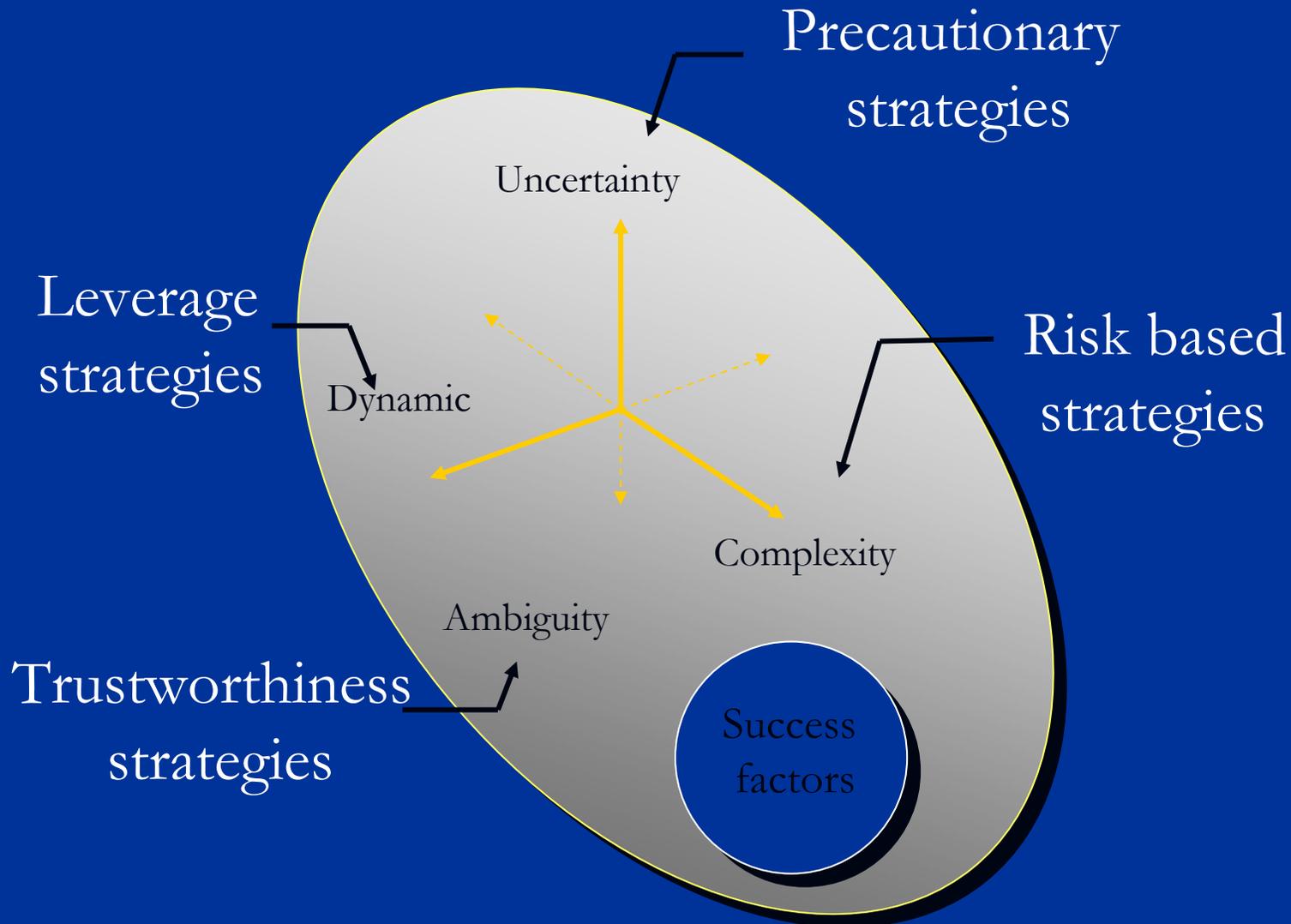
Possible positive outcome expressed by probability multiplied by the consequence.

# From risk management towards uncertainty management

**Chapman and Ward (2002)** [7], defines

- **Uncertainty**, *“lack of certainty, involving variability and ambiguity”*.
- **Variability**, *“uncertainty about the size of parameters which may result from lack of data, lack of detail, lack of definition, lack of experience and so on, which may be quantified if this is useful”*
- **Ambiguity**, *“the aspects of uncertainty not addressed in terms of variability”*
- **Risk**, *“an implication of significant uncertainty which may be upside (welcome) or downside unwelcome”*

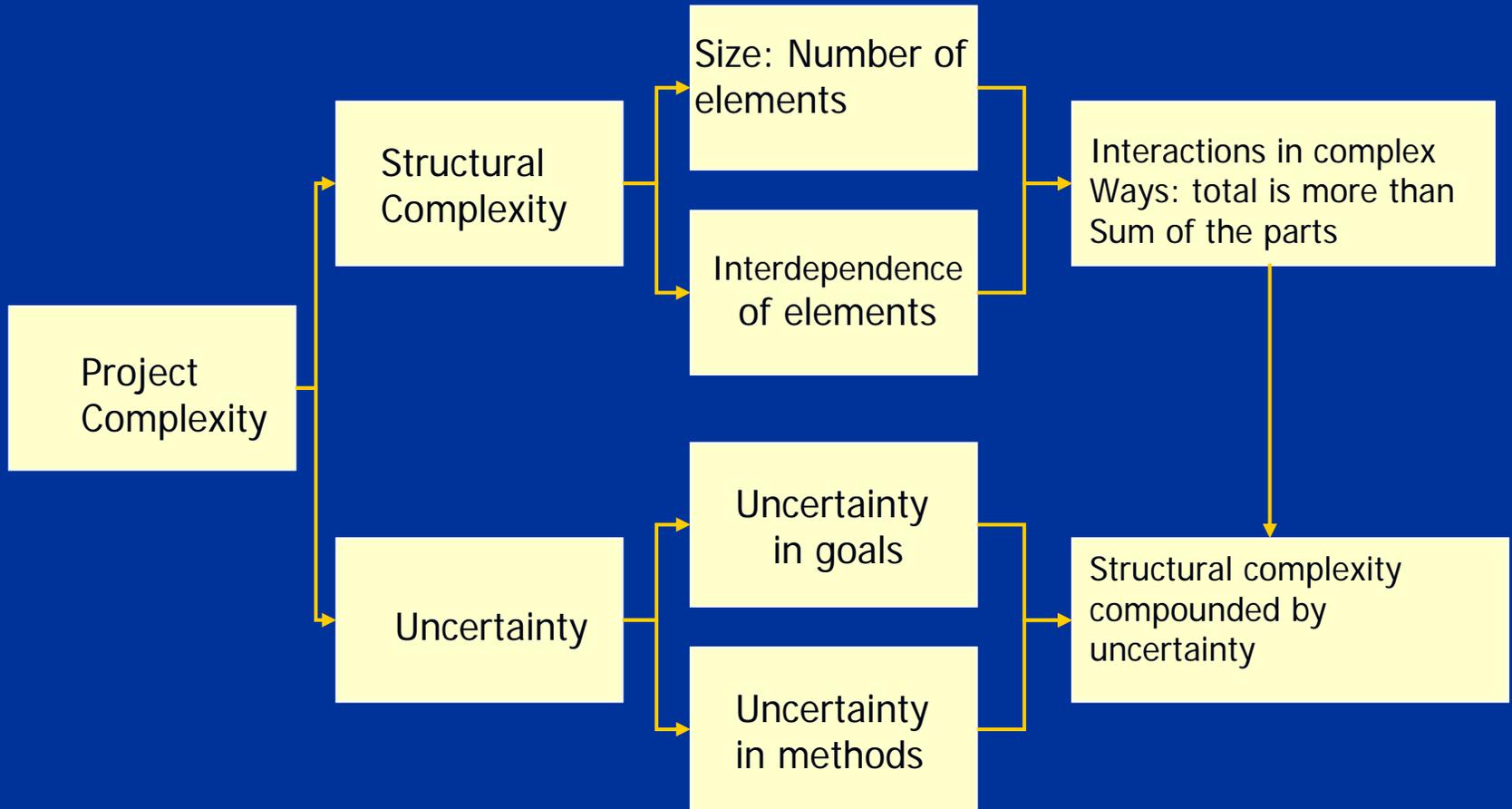
# The Room of Uncertainty



# Uncertainty Management Challenges and corresponding Strategies

Challenge	Objective	Function	Strategies	Instruments
Complexity	Effective, efficient and Adequate protection	Agreement on casual relations	Reducing damage potential, limiting overall risk level	Standards, procedures, comparisons, cost effectiveness, risk-benefit analysis
Dynamic	Sustainability and tolerability, vulnerability	Behavioral over time (BOT), global change, fundamental measures, content and contextual	Leverage, actions of interventions with lasting impact and to reverse adverse trends and breaking vicious cycles	Dynamic modeling, scenario planning and modeling, casual loop modeling
Ambiguity	Socially acceptable development path	Resolving value conflicts and assuring fair treatment of concerns and visions.	Consensus Seeking discourse	Advisory committees, citizen, panels, value tree analysis
Uncertainty	Resilience Efficient and fair distribution of burden(s)	Avoiding irreversibility's and vulnerabilities. Balancing cost of under- protection vs. cost of overprotection facing uncertain outcome	Diversity, flexibility limiting range of effects, Trade off analysis	Containment in time and space, development of substitutes. Negotiated rule making decision analysis

# Dimensions of project complexity



# Project Organization and Contracts

## ■ *Uncertainty management*

- Uncertainty management in projects is a project management knowledge area comprising management and control of risks and opportunities in the project.
- Uncertainty management is divided into risk management and opportunity management.

## ■ *Risk management*

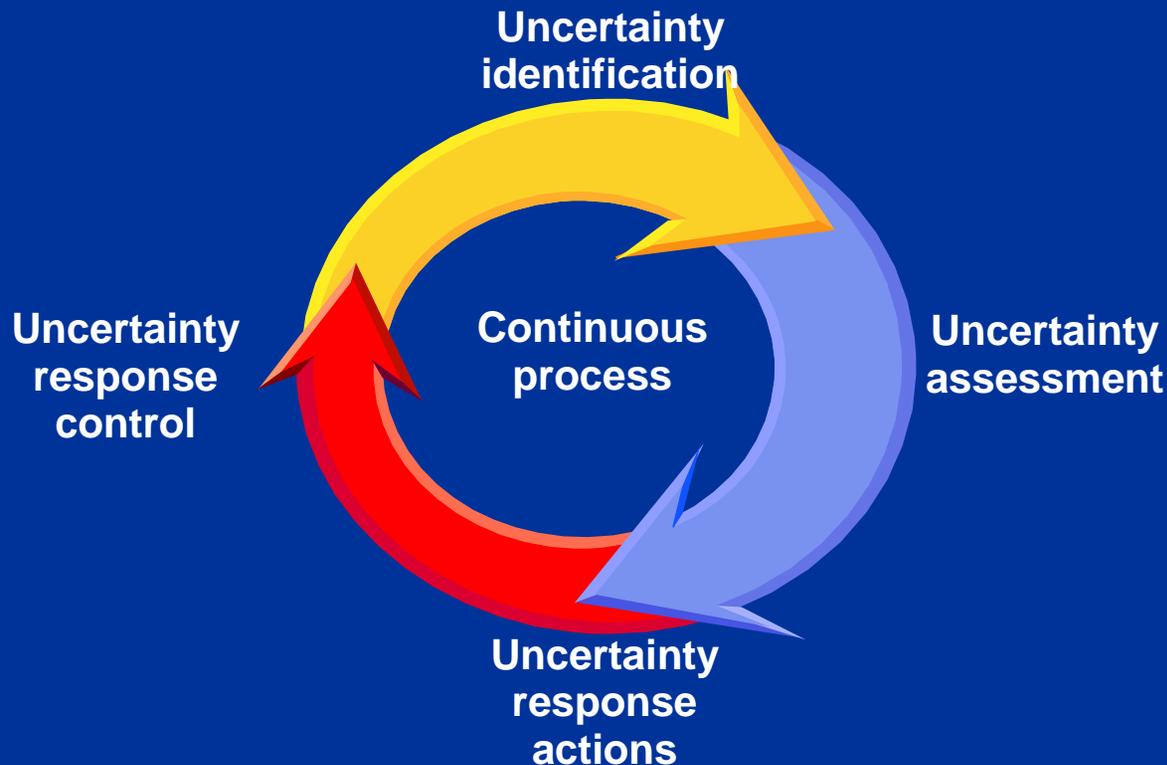
- A continuous process to identify, analyse and follow up uncertainties which can lead to negative impacts on the project by implementing response actions to avoid risks jeopardizing a successful completion of the project.

## ■ *Opportunity management*

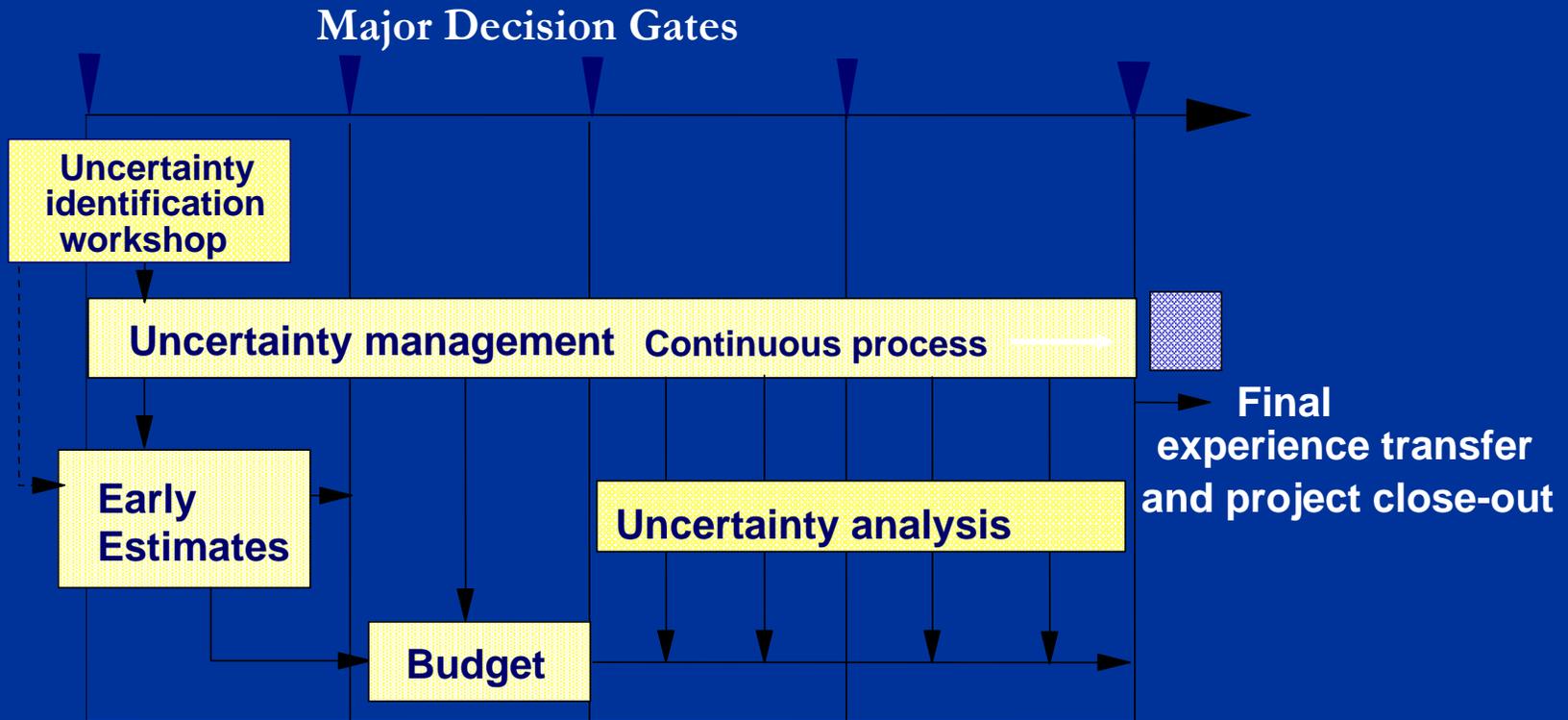
- A continuous process to identify, analyse and follow up uncertainties which can lead to positive impacts on the project by implementing response actions to benefit from the opportunities.

# Project Organization and Contracts

## ■ Uncertainty Management Process



# Project Organization and Contracts



Ad-hoc uncertainty analysis can be initiated within a number of areas throughout the project phases

# The classical project management techniques and uncertainty management

- Unsuitable in complex and dynamic project environments
- Unattended schedule dynamics not adequately attended
- Limited capabilities to interfaces
- Focused on lag instead of lead indicators

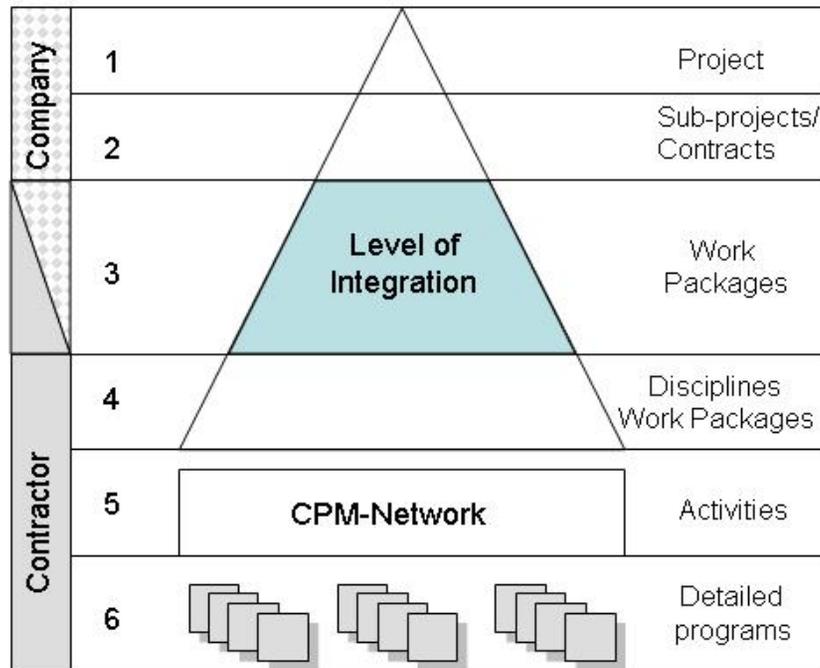
# An alternative approach

(Project uncertainty management)

- A dual approach using conventional techniques and planning abstractions
- Planning windows
- Milestone structures
- Interface management system
- Critical success factors and lead indicators

# Project Organization and Contracts

## Planning and Control Structure

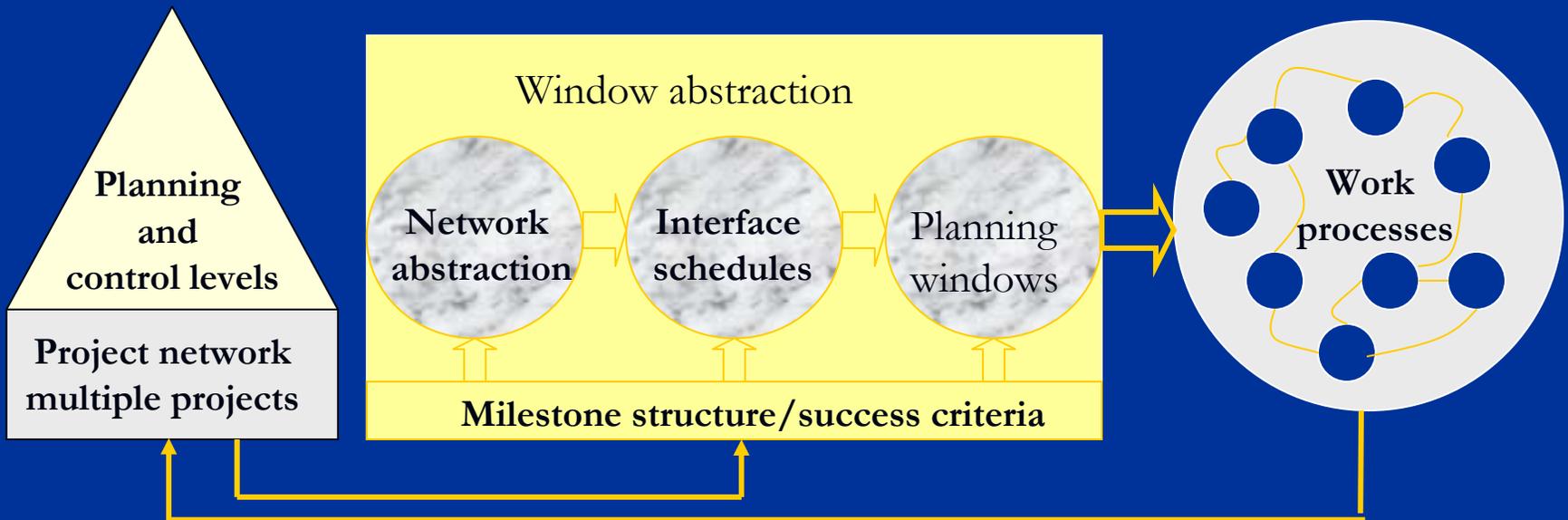


# Window abstraction

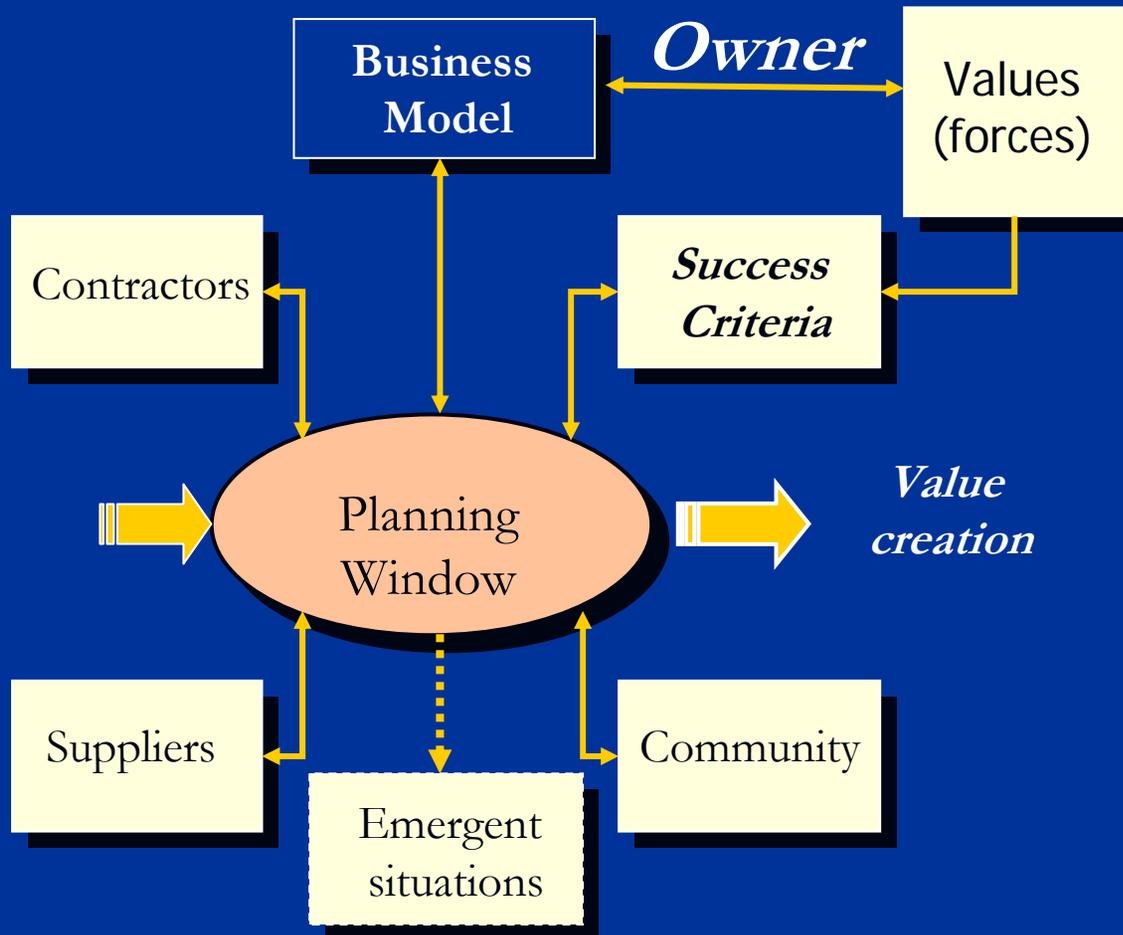
Project Management- Uncertainty management

Performance  
measurement  
and control

Uncertainty  
Management

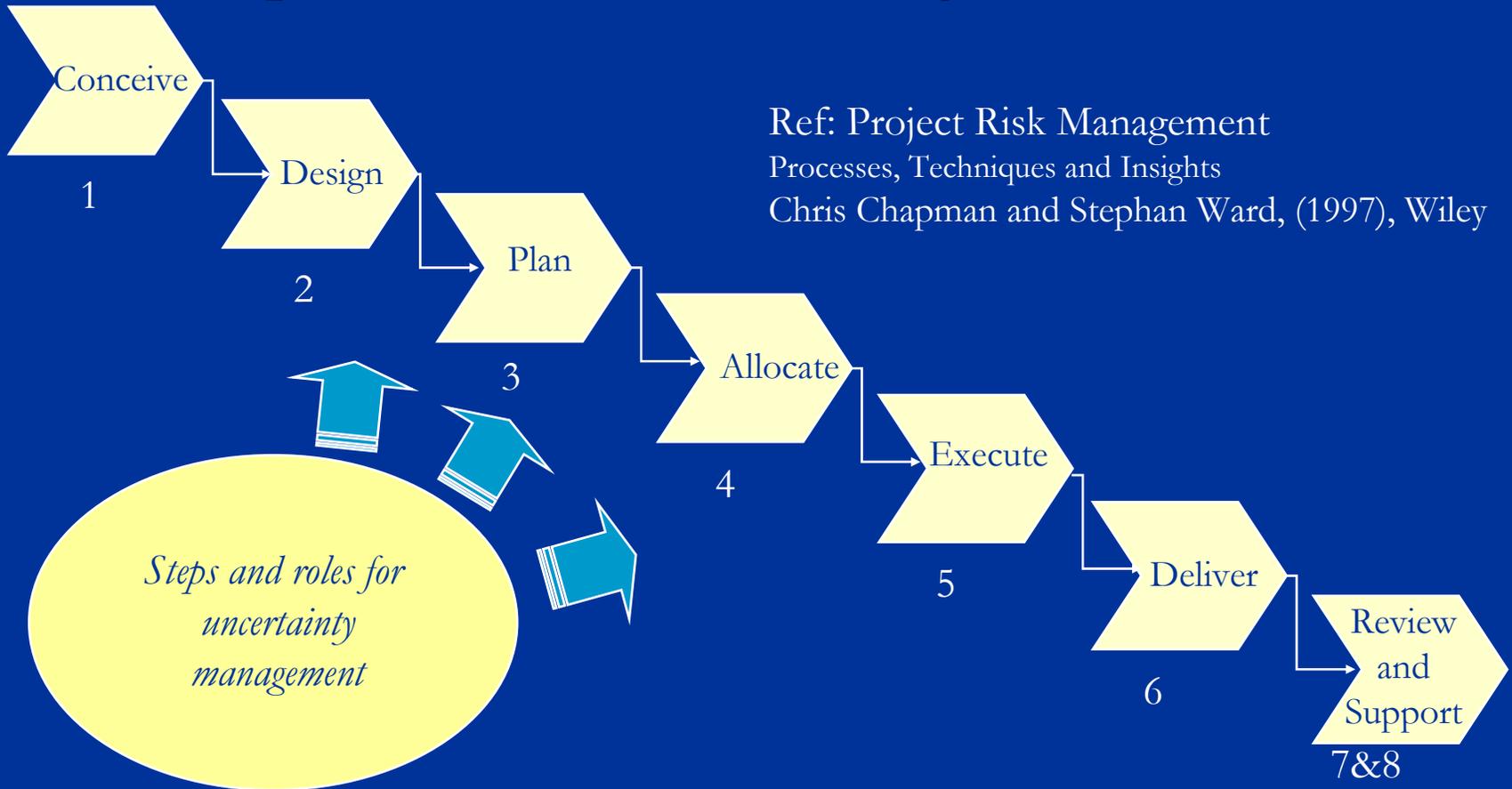


# PLANNING WINDOW



# Project Organization and Contracts

## ■ RPM process (Generic, 8 stages)



# Project Organization and Contracts

- The Six *W*s
- *Some key components of a risk model*

Who, Parties

Why, Motives

What, Design

Which way, Activities

Wherewithal, Resources

When, Timetable

# Project Organization and Contracts

Risk Management Process (RPM)  
(Phased structure comparison)

APM	UK MoD (1991)	CERT (Chapan, 1979)
Define Focus Identify Structure Ownership Estimate Evaluate Plan Manage	Initiation Identification Analysis Planning Management	Scope Structure Parameter Manipulation and interpretation