Risk and Value
Two Sides of the Same Coin

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Introduction

- **John K. Hollmann, PE CCE CEP**
  - **Owner/Consultant, Validation Estimating LLC**
    - I help owner companies improve their **Cost Engineering** practices
    - 30 years experience in engineering, project control, cost estimating, consulting, **benchmarking**
  - **AACE International Roles**:
    - Fellow
    - Technical Board Director of *Recommended Practices*
    - Editor/Lead Author of AACE International's *Total Cost Management (TCM) Framework*
    - Co-Chair of task force to develop a *Decision and Risk Management Professional (DRMP) Certification*

The Challenge of Dealing With Value and Risk

- **Value and Risk jargon is multiplying;**

- **Is there a way to make sense of it all?**

Addressing the Value and Risk Challenge

- **How does your project system address Risks?...Value?....Is it in an integrated way?**
- **This presentation will…**
  - **define basic concepts and terms,**
  - **show parallels between Value and Risk,**
  - **describe some best practices in industry,**
  - **show how to integrate the practices**

    …and ensure a balanced approach

Value
(as defined in AACE's *TCM Framework*)

- **Value**

  ...measure of the worth of a thing in terms of usefulness, desirability, importance, money, etc.

- **Value Management**

  …what an enterprise does to ensure that its assets and projects provide or maintain the usefulness (i.e., value) that the various stakeholders require

Risk
(as defined in AACE's *TCM Framework*)

- **Risk**

  …take your pick:

  < hint: pick this one

  - **same as uncertainty (i.e., threats + opportunities),**
  - **negative impacts of uncertainty (i.e., threats)**
  - **net impact of uncertainty (i.e., threats – opportunities)**

- **Risk Management**

  …a process for addressing uncertainty in project outcomes in a way that increases the probability that a planned outcome will occur without decreasing the value of the asset or project

Value and Risk

…*Attributes of an Asset or Project*

- **Value (worth) is something we try to *increase***

  …without increasing, and possibly decreasing risk

- **Risk (uncertainty) is something we try to *reduce***

  …without decreasing, and possibly increasing value

Value and Risk
…*Both Involve Opportunity and Threat*

- **Value (worth) is something we try to *increase***

  …without increasing, and possibly decreasing risk

- **Risk (uncertainty) is something we try to *reduce***

  …without decreasing, and possibly increasing value

Desirable
Threat
Opportunity
Undesirable
Threat
Opportunity

You cannot manage one without managing the other

Agenda

- Define basic concepts and terms
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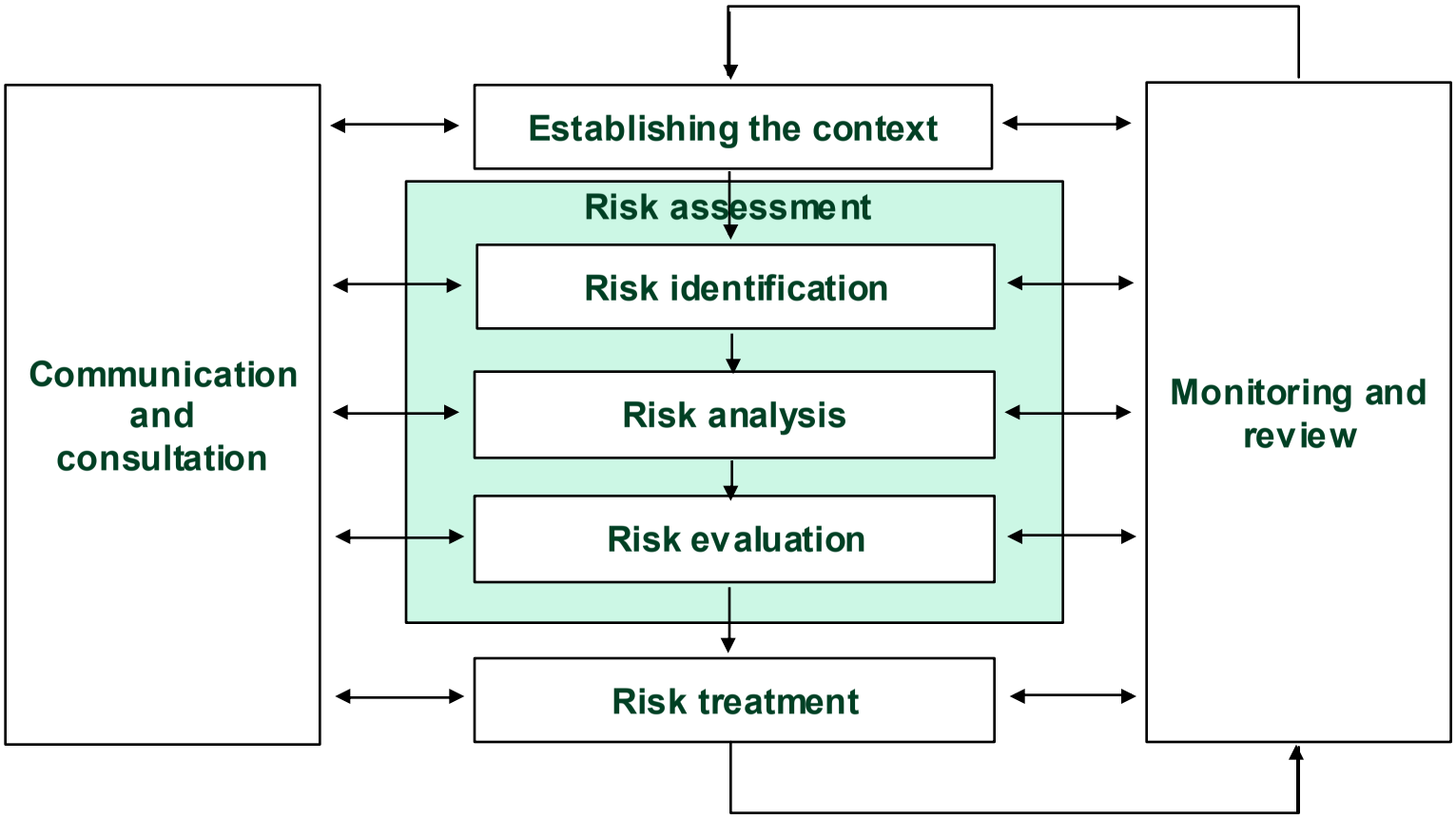
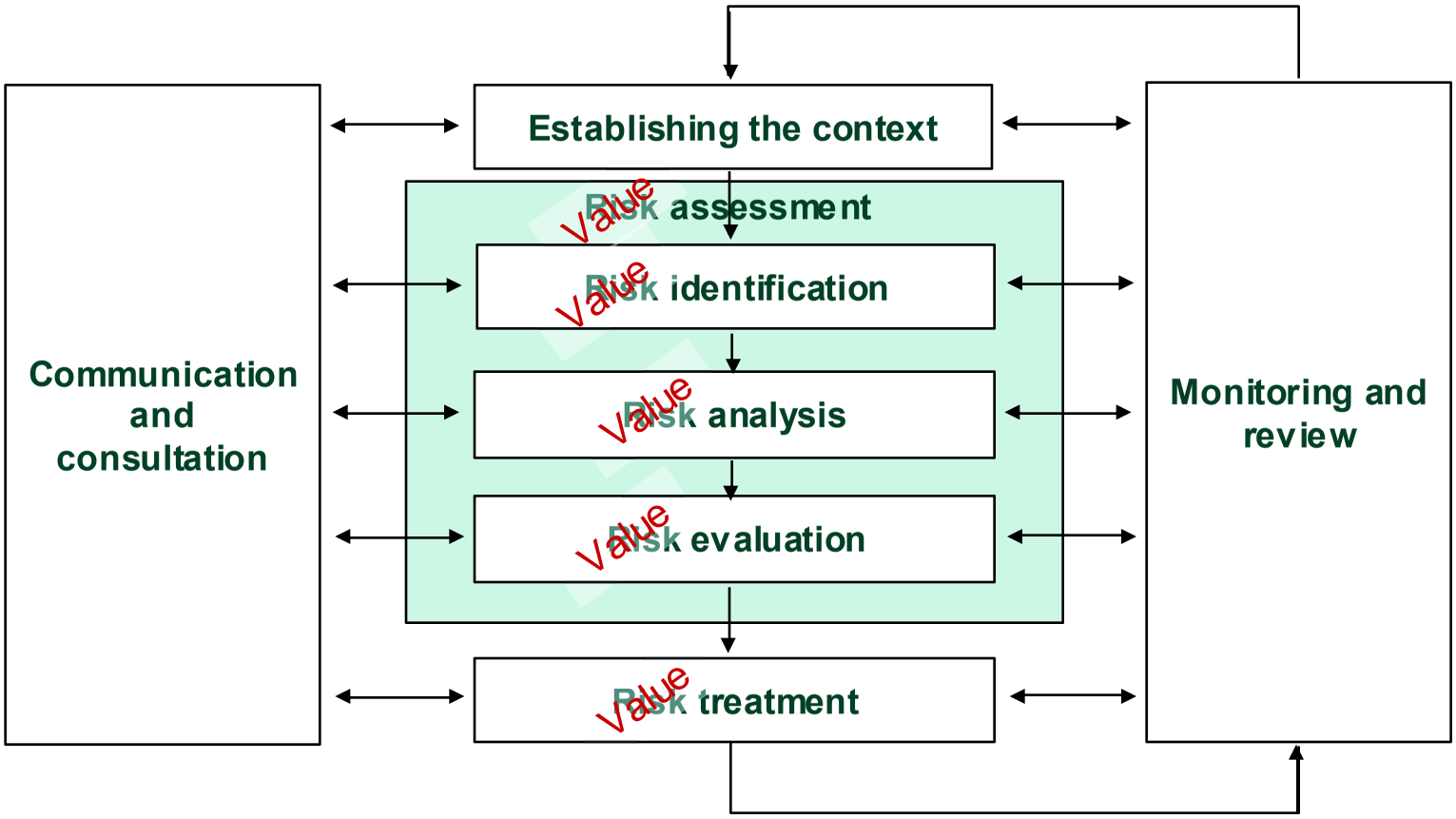
Risk Management Process

Derived from draft of ISO 31000 "Risk Management"

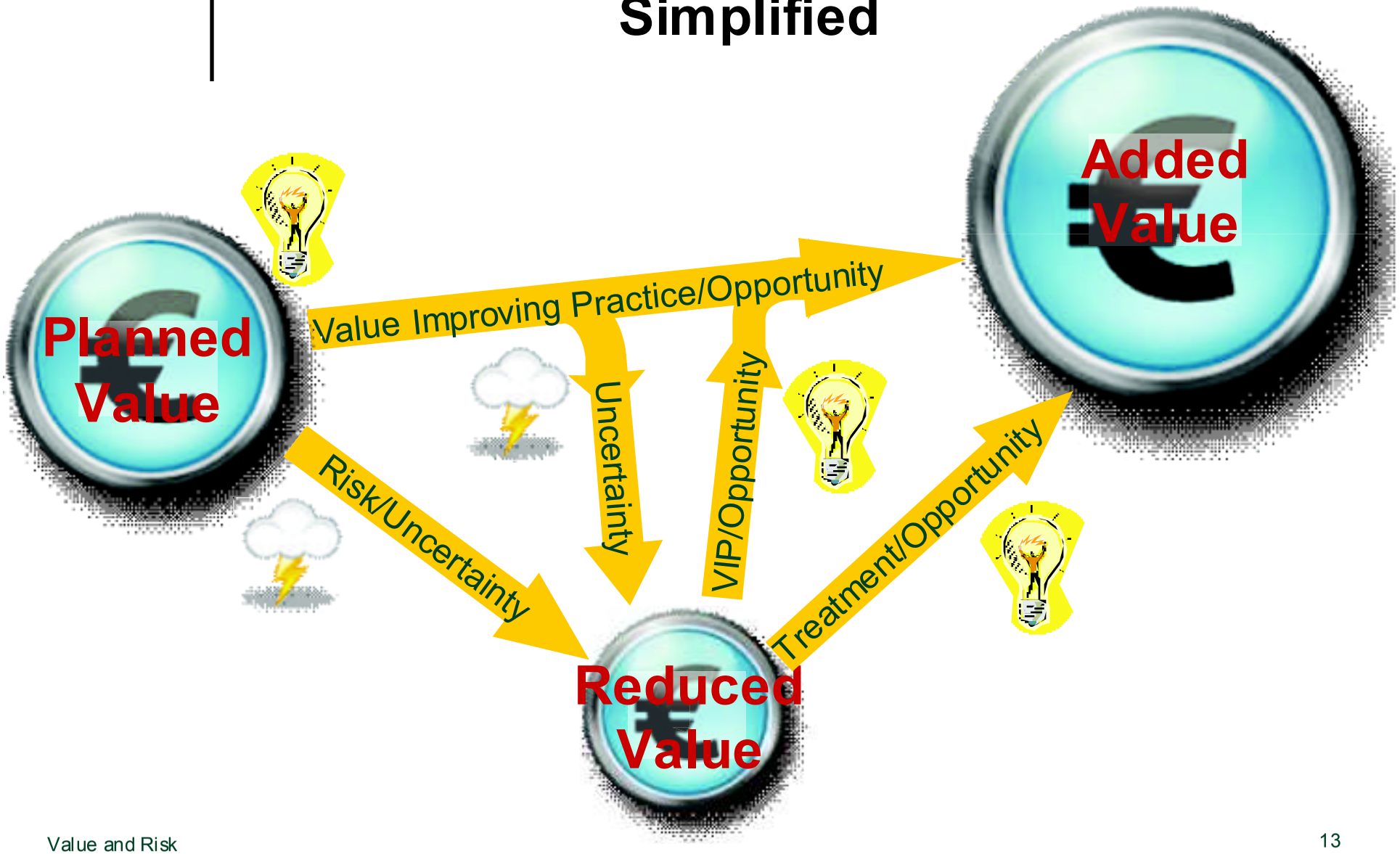


Is This Process Generic to Both Value and Risk?



Value and Risk Management Process Simplified

Value and Risk Management Process Simplified



Understanding How Value and Risk are Related Does Not Mean Practices Should be Combined (But Do Integrate the Processes)

- Use of practices to improve Value have lagged the use of Risk Management practices
- Because Value was being short-changed, some "Risk" practitioners attempt to cram everything into their risk assessment methods
  - My experience is that this generally diminishes the focus on each
- Companies need to…
  - Implement Value Improving Practices
  - Integrate them with the Risk Management Process

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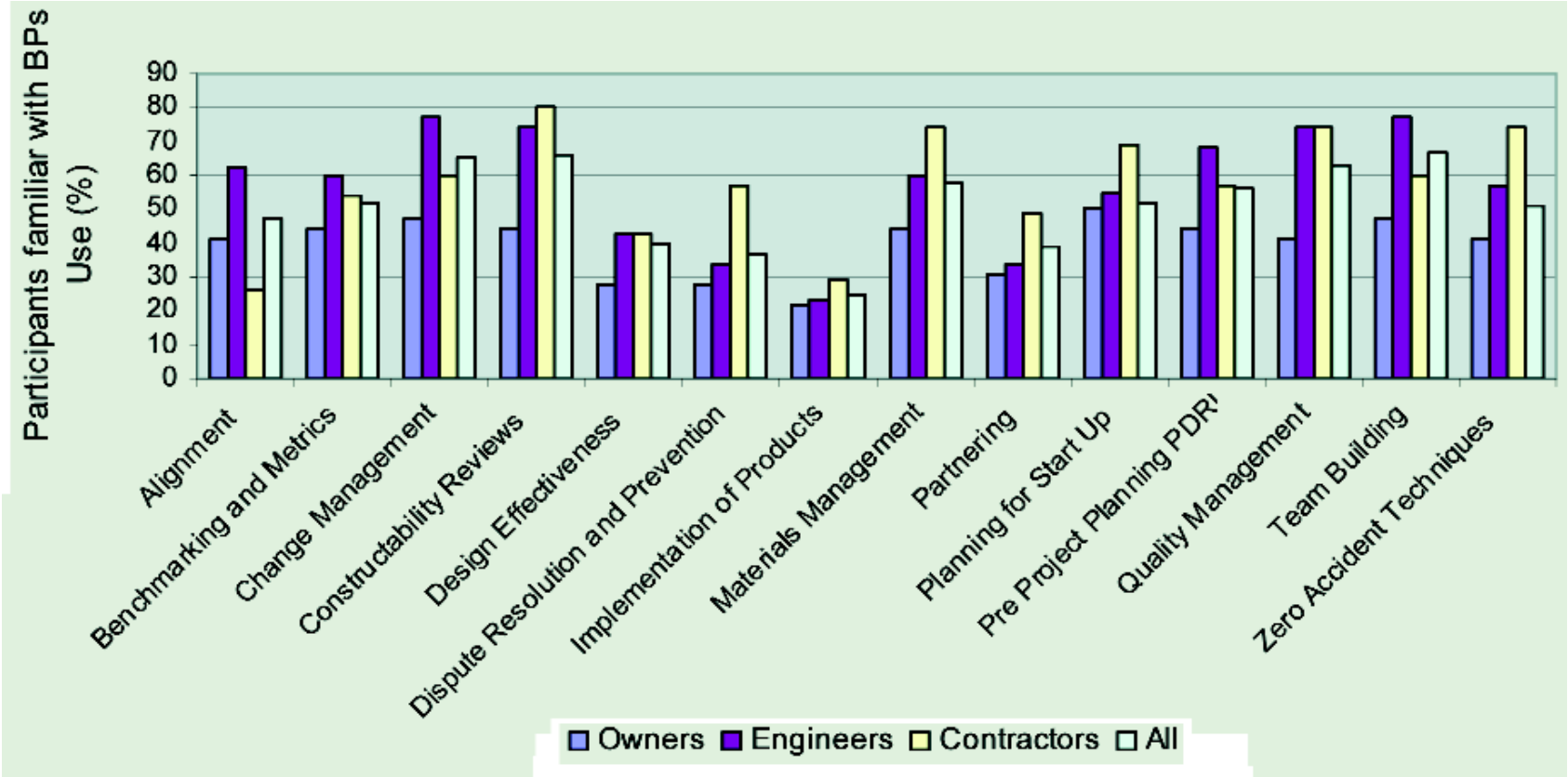
Best or Recommended Practices

- **Construction Industry Institute (CII) defines these as "*practices that can lead to enhanced project performance*"**
  - **i.e., practices that increase value**
- **AACE International uses the term *Recommended Practices* because it is rare that anyone can really say what is "Best"**
- **For a high performing company, "best" practices should be "business as usual"; i.e., part and parcel of their everyday activities**

Example: CII Best Practices



From: The Use and Impact of Value Improving Practices and Best Practices
Jim Lozon, P.Eng. and Dr. George Jergeas, P.Eng.
AACE Cost Engineering Journal, Vol. 50/No. 6 JUNE 2008

Example: AACE Recommended Practices (RPs)

10S-90: Cost Engineering Terminology

11R-88: Required Skills and Knowledge of Cost Engineering

12R-89: Model Master's Degree Program with Emphasis in Cost Engineering

13S-90: Recommended Method for Determining Building Area

14R-90: Responsibility and Required Skills for a Project Planning and Scheduling Professional

15R-81: Profitability Methods

16R-90: Conducting Technical and Economic Evaluations: As Applied for the Process and Utility Industries

17R-97: Cost Estimate Classification System

18R-97: Cost Estimate Classification System: As Applied in Engineering, Procurement, and Construction for the Process Industries

19R-97: Estimate Preparation Costs: As Applied for the Process Industries

20R-98: Project Code of Accounts

21R-98: Project Code of Accounts: As Applied in Engineering, Procurement, and Construction for the Process Industries

From: www.aacei.org/technical

22R-01: Direct Labor Productivity Measurement: As Applied in Construction and Major Maintenance Projects

23R-02: Identification of Activities

24R-03: Developing Activity Logic

25R-03: Estimating Lost Labor Productivity in Construction Claims

28R-03: Developing Location Factors by Factoring: As Applied in Architecture & Engineering, and Engineering, Procurement & Construction

29R-03: Forensic Schedule Analysis

30R-03: Implementing Project Constructability

34R-05: Basis of Estimate

40R-08: Contingency Estimating: General Principles

41R-08: Risk Analysis and Contingency Determination Using Range Estimating

42R-08: Risk Analysis and Contingency Determination Using Parametric Estimating

43R-08: Risk Analysis and Contingency Determination Using Parametric Estimating – Example Models as Applied for the Process Industries

44R-08: Risk Analysis and Contingency Determination Using Expected Value

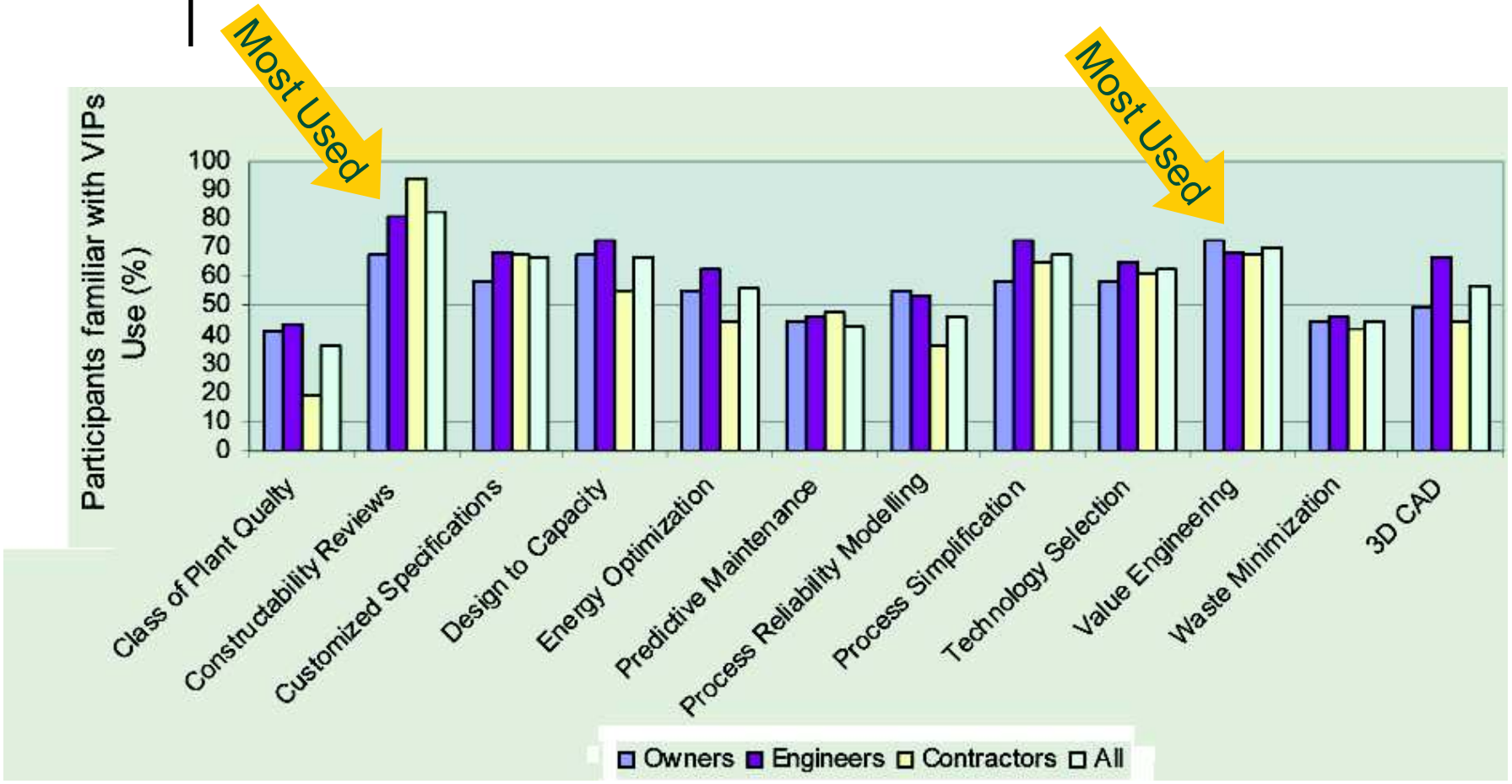
52R-06: Time Impact Analysis: As Applied in Construction

53R-06: Schedule Update Review: As Applied in Engineering, Procurement, and Construction

Value Improving Practices (VIPs)

- **The term "VIP" originated from IPA, Inc. and its clients**
- **VIPs are more than "business as usual". They are:**
  - a formal, planned process with assigned responsibilities
  - facilitated efforts led by an independent experts
  - done in a way that involves all the key stakeholders
  - done in a way that documents, communicates, and follows up on the results
- **Unlike most of what are often labeled "Best Practices", IPA's "VIPs" have been shown by empirical research to actually improve project outcomes**
  - **Big Caveat: VIPs do not "add value" until you have solid "basics" such as good project scope definition, project control, etc., etc.**

Example: IPA VIPs



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Value Analysis and Engineering

- VA/VE is "the systematic application of recognized techniques which identify the functions of the product or service, establish the worth of those functions, and provide the necessary functions to meet the required performance at the lowest overall cost." (per SAVE International)
- Given that functions are attributes of an asset or project that give it a purpose and make it useful or desirable (i.e., anything that provides what a customer wants or needs), VA/VE is arguably the most important VIP; i.e., it is directed straight at the issue of value
- Note: Many mistakenly think Value Engineering is any session where they search for savings of any type

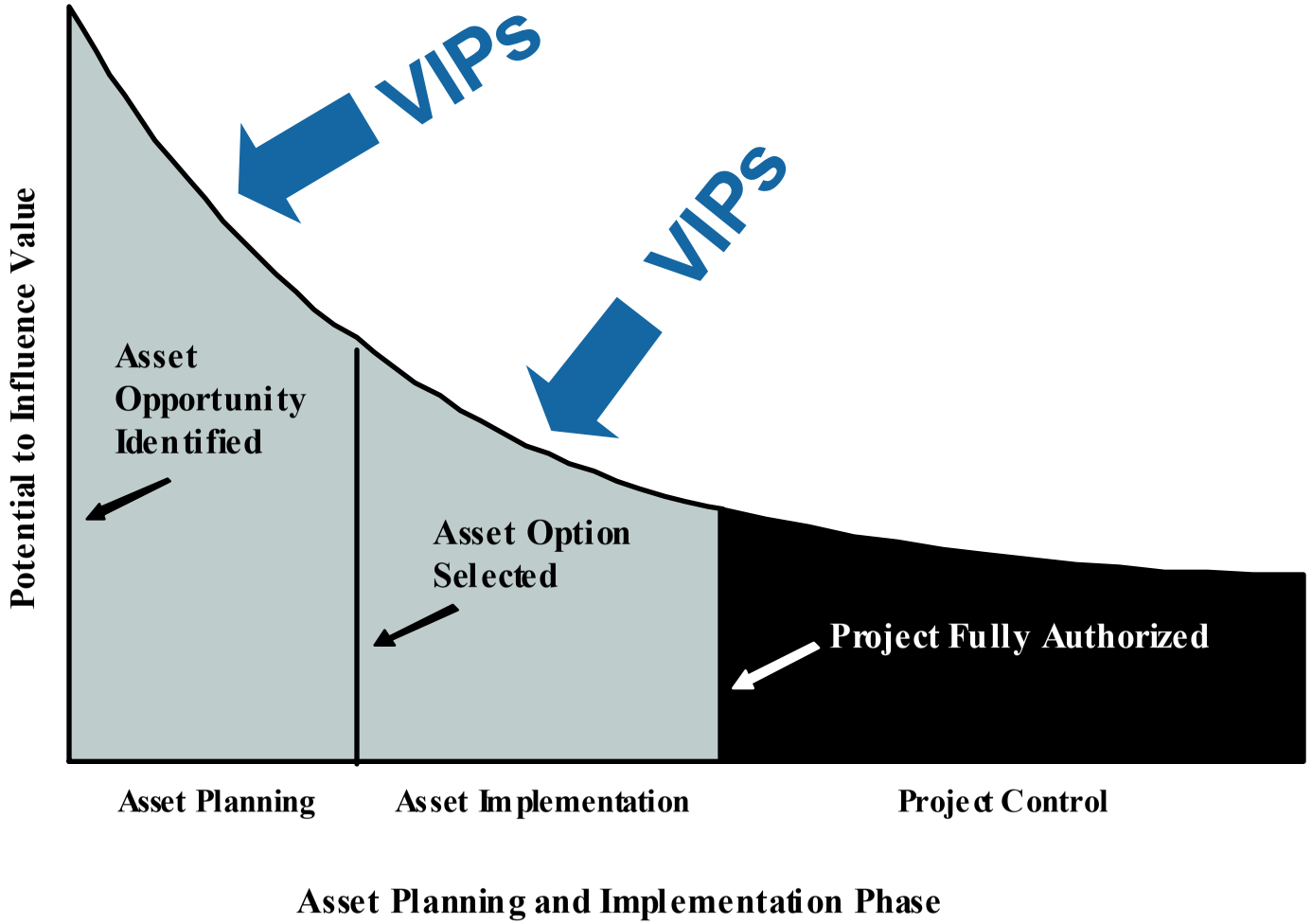
Constructability Reviews

- "The use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives (per CII)
- The purpose of the constructability review is to identify the following five items:
  - Design errors, in either material selection or dimensions
  - Ambiguous specifications
  - Project features that will be difficult or exceedingly costly to construct as designed
  - Project features that exceed the capability of industry to properly build
  - Project features that are difficult to interpret and will be hard to accurately bid
- Project "features" include both physical characteristics and planning attributes

Other VIPs (*abilities)

- There are a group of VIP methodologies that involve analyzing "…abilities,"; i.e., how "executable" a project or work process is and how "operable" or usable the resultant asset, product, or service is
- Common examples include:
  - Constructability; focused on execution
  - Reliability, availability, and maintainability (RAM) which is focused on operations.
- The are many others. Their common goal is to find the best value alternative approach
- They are similar to VA/VE except the focus is on the relation between design and how a process is performed (an ability), rather than functions of the end product or service

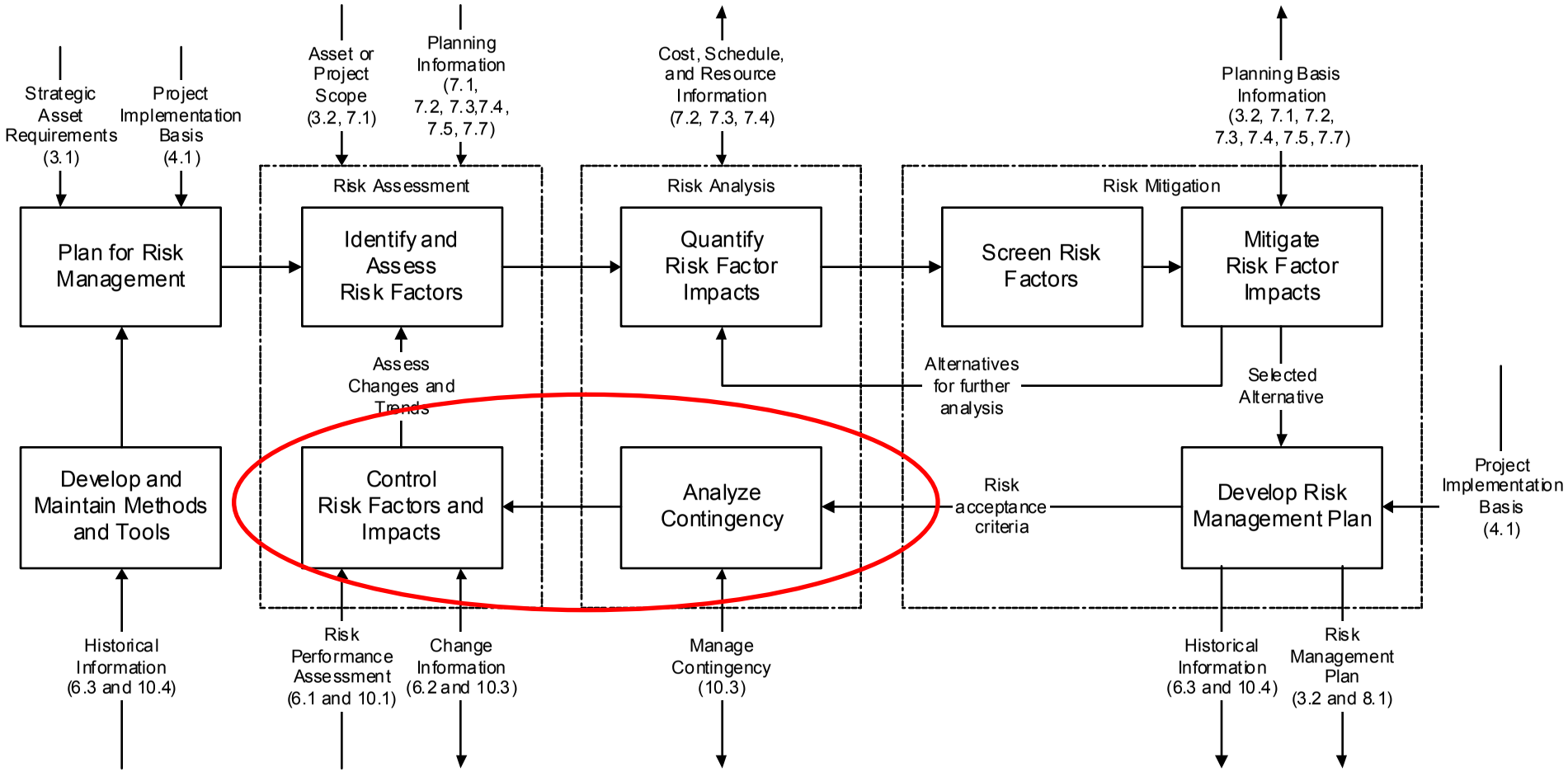
Apply VIPs Early and Often Enough to Influence Design, Planning & Decisions



Risk Management

- Risk Management is is covered by ISO, PMIBOK, AACE's TCM etc.
  - Processes are all pretty much the same
- However, what is lacking in most processes is the step to incorporate risk cost and time into project plans (e.g., contingency)
- AACE's TCM and RPs address these gaps

AACE's TCM
Chapter 7.6 Risk Management



Process takes a "second pass" through assessment

AACE Contingency Recommended Practices

- **AACE is developing Contingency-related RPs in readiness for its *Decision and Risk Management Professional* (DRMP) Certification**
  - 40R-08: Contingency Estimating: General Principles
  - 41R-08: Risk Analysis and Contingency Determination Using Range Estimating
  - 42R-08: Risk Analysis and Contingency Determination Using Parametric Estimating
  - 43R-08: Risk Analysis and Contingency Determination Using Parametric Estimating – Example Models as Applied for the Process Industries
  - 44R-08: Risk Analysis and Contingency Determination Using Expected Value

What is Not An AACE Contingency Recommended Practice?

- The contingency method used by most companies is **not** recommended
- That method is "estimate line-item ranging"
  - i.e., assigning high-most likely-low range to estimate and running Monte-Carlo
- Empirical research has shown that it does not address *systemic* risks (and it violates the principle of linking risks-to-impact)

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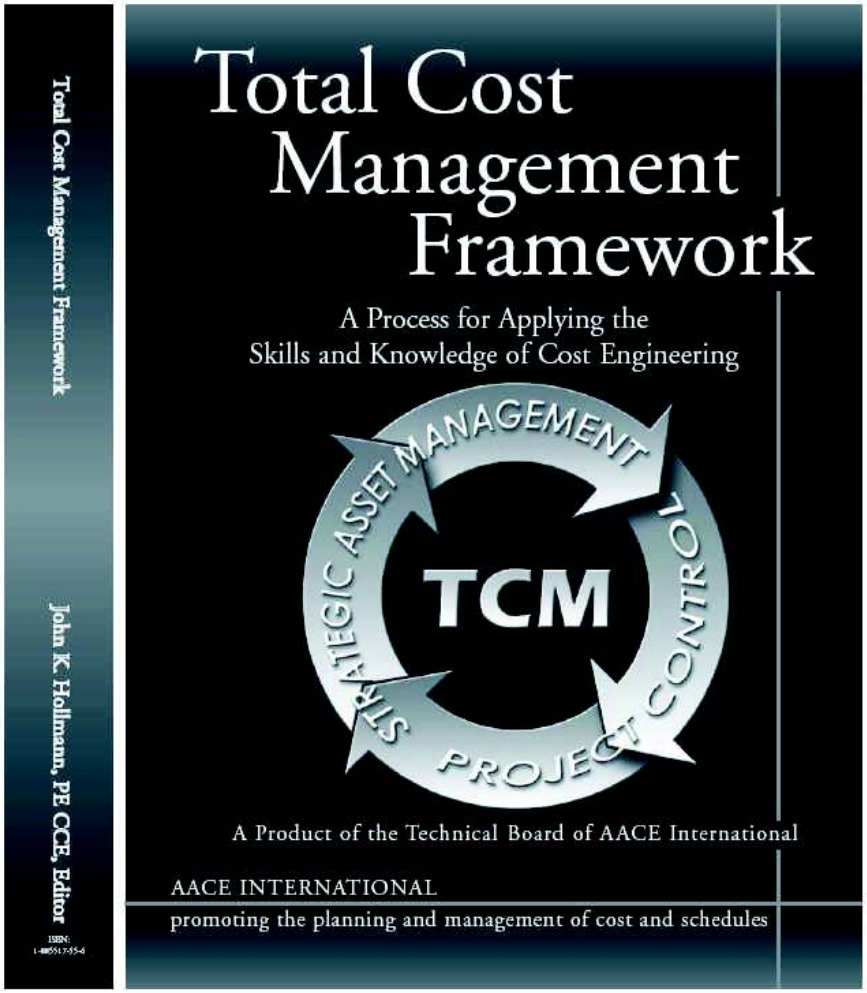
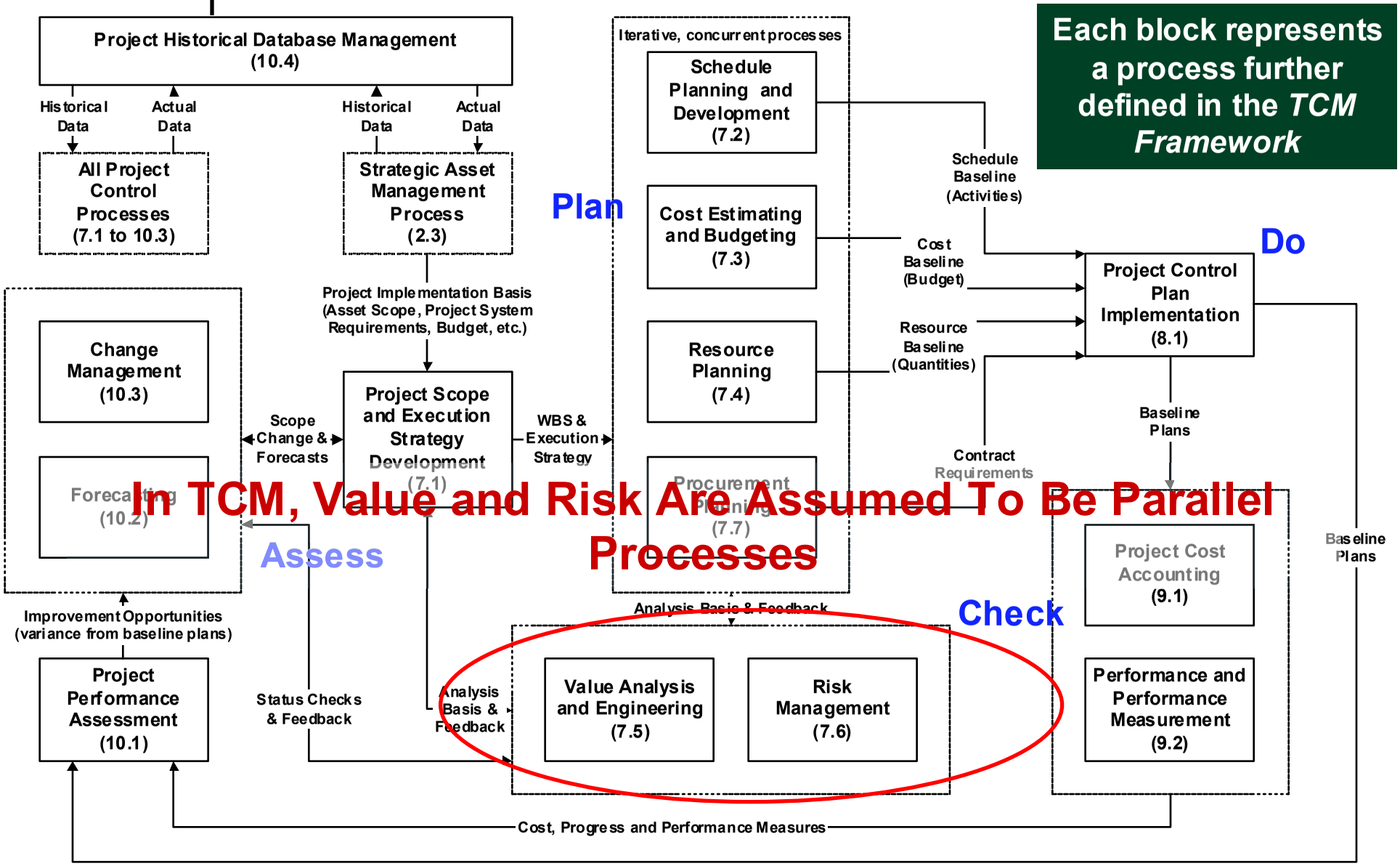
TCM: An Integrated Process for Applying the Skills and Knowledge of Cost Engineering



- **The world's first integrated process for *portfolio, program, and project management* (published 2006)**
- **The foundation for all AACE International technical products**
- **Covers the *entire asset life cycle***

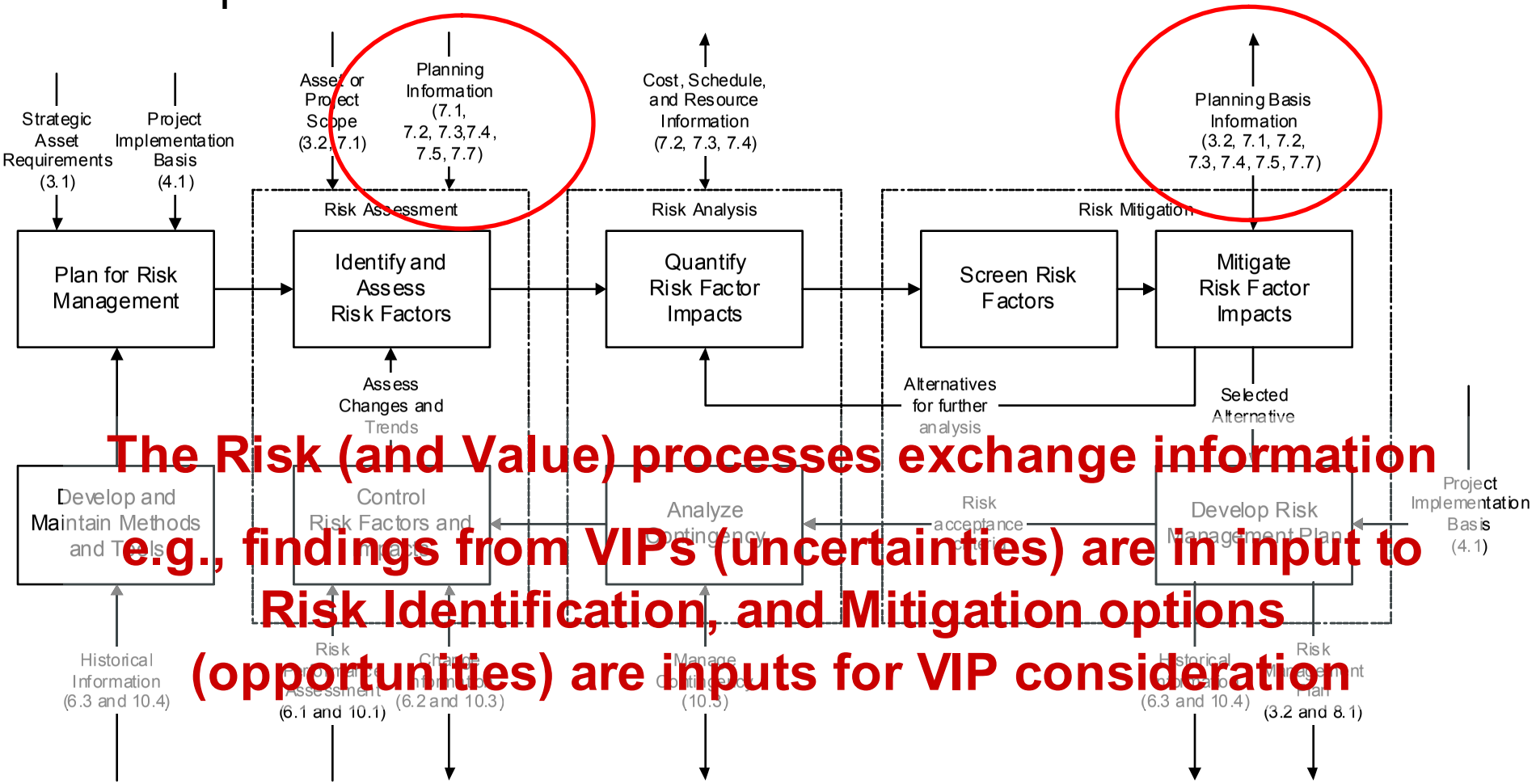
TCM *Project Control* Process



Each block represents a process further defined in the *TCM Framework*

In TCM, Value and Risk Are Assumed To Be Parallel Processes

Integration in AACE's TCM Chapter 7.6 Risk Management

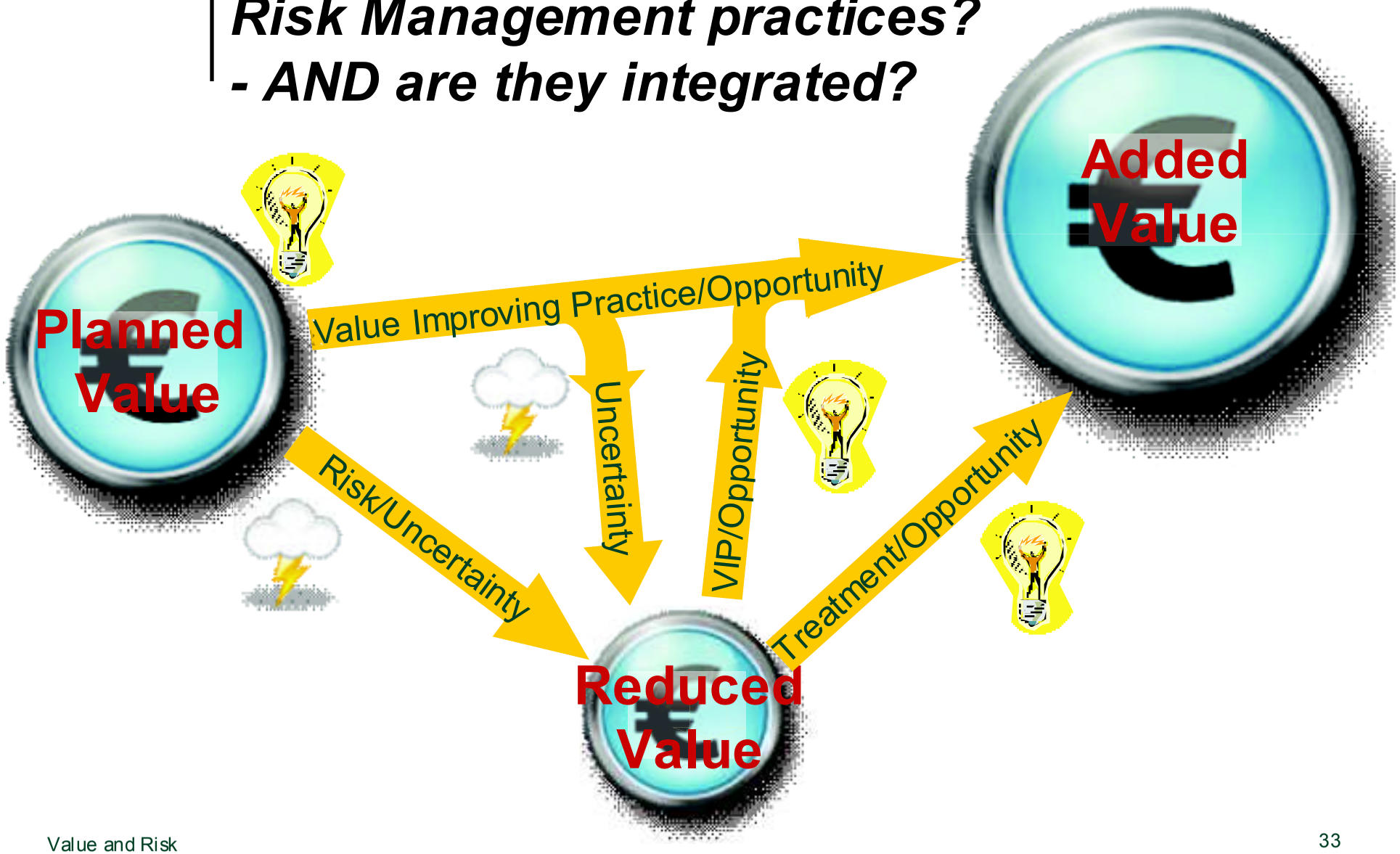


The Risk (and Value) processes exchange information e.g., findings from VIPs (uncertainties) are in input to Risk Identification, and Mitigation options (opportunities) are inputs for VIP consideration

Are you…

- using a robust set of VIPs AND Risk Management practices?

- AND are they integrated?



Questions?

- **Contact:**
  - **John K. Hollmann PE CCE CEP (jhollmann@validest.com) or 1-703-945-5483**
- **Key References:**
  - **TCM and RPs**
    - Free (.pdf format) from AACE at www.aacei.org/technical
  - **VIPs**
    - *AACE Cost Engineering Journal*, Vol. 50/No. 6 JUNE 2008; The Use and Impact of Value Improving Practices and Best Practices, Jim Lozon, P.Eng. and Dr. George Jergeas, P.Eng,