



N o m d u p r é s e n t a t e u r

Getting Big Things

Done Through VALUE

MANAGEMENT

MANAGEMENT DE LA

Réaliser de grandes VALEUR

choses avec le

INTRO TO VALUE MANAGEMENT



Rakesh Shrewastav, P.Eng., ICD.D, VMA

- Metrolinx (7+ years), Ministry of Transportation, Ontario (13+ years)
- VMA – Value Management Associate (17 Years)
- Role in Value Management (18 years)
- Board member: Value Analysis Canada, The Federal Bridge Corporation Limited (FBCL)
- Recognition – Ontario Public Service Amethyst Award

Mike Pearsall, P.Eng., CVS, MoV, FEC

- Ministry of Transportation, Ontario (30+ years)
- CVS – Certified Value Specialist (18 Years)
- Role in Value Management (25+ years)
- Past Board member: Value Analysis Canada
- Immediate Past-President: SAVE International
- Recognition – Ontario Public Service Amethyst Award, Value Analysis Canada Award



- SAVE International® is the premier international society devoted to advancing and promoting the Value Methodology.



- Value Analysis Canada is a non profit society that is helping Canadians stay competitive by improving value in their projects, processes and products through the application of the Value Methodology.



History of Value Engineering

VE Timeline

1940's	Miles develops VE at General Electric
1950's	U.S. Navy adopts VE
1960's	VE spreads in various government and industrial bodies – Military Construction, U.S. Manufacturers, Department of Defence, Europe and Australia
1970's	Japan, Federal Highway Association, GSA, and EPA adopt VE
1980's	Federal laws mandating use
1995	MTO's First VE Study: Hwy 69
1997	MTO's first Module 1 training was hosted in Kingston

National Recognitions



- Advancement of Value Management in Canada
- Award of Merit for Government for advancement and cost avoidance of over \$1B



- Amethyst award to Value Engineering Coordinators committee (VECC) of MTO

Why Value Management?

Value Management is a structured approach to innovation and innovation is key to delivering public services in a fiscally constrained environment.

- Process involves people from a variety of backgrounds
- Six phases or steps
- What it is NOT
- **Value** = Performance / Cost





What is Value?

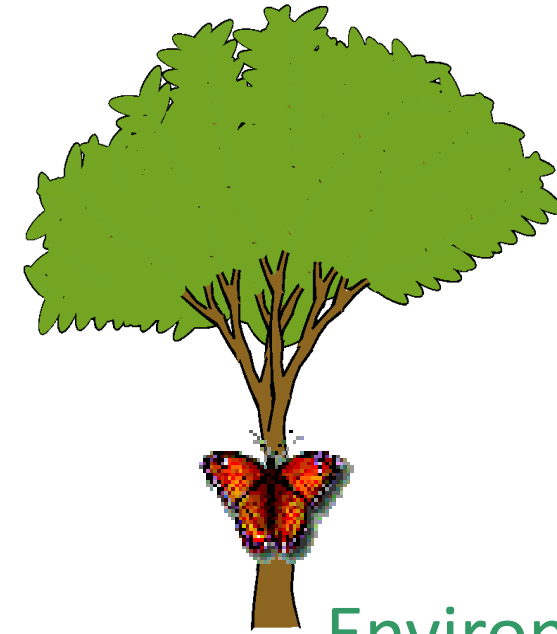


Value comes in more than one form



Freedom

Money



Environment



Family



Time



Value Exercise

What do these cars say about their owner's values?



Smart Car



Subaru Impreza wrx

Value Exercise Cont.



Engine	Forfour black edition 1.1 L, 75 bhp – 3 cylinder petrol Manual 5-speed transmission
Chassis	McPherson front axle with anti roll bar, wishbone
Brakes/ Handling	-electronic stability programme with hydraulic brake assist -anti-lock braking system with electronic brake-force distribution -disk brakes at front and rear
Safety	-tridion safety cell -surround light -crash elements at front and rear -safety steering column -crash sensor -full size driver and passenger airbags -side air bags (front) -drive lock -anti-theft alarm system
Functional Electrical Equipment	-electric power steering, power management -central locking and immobiliser with key control -12 V socket

Value Exercise Cont.



Engine Type	Flat – 4, Turbocharged
Displacement cu in (cc)	150 (2457)
Power bhp (KW) at RPM	300(224)/6000
Torque lb-ft (Nm) at RPM:	300(407)/4000
Brakes F/R	ABS, vented disc/vented disc
Driveline	All wheel drive
Acceleration 0-62 mph	< 5.0
Top Speed mph (km/h)	155 (250)
Fule Econompny EPA city/highway mpg (l/100km)	18/24 (10.2)



Value Exercise Cont.

Owner's Values

Smart Car

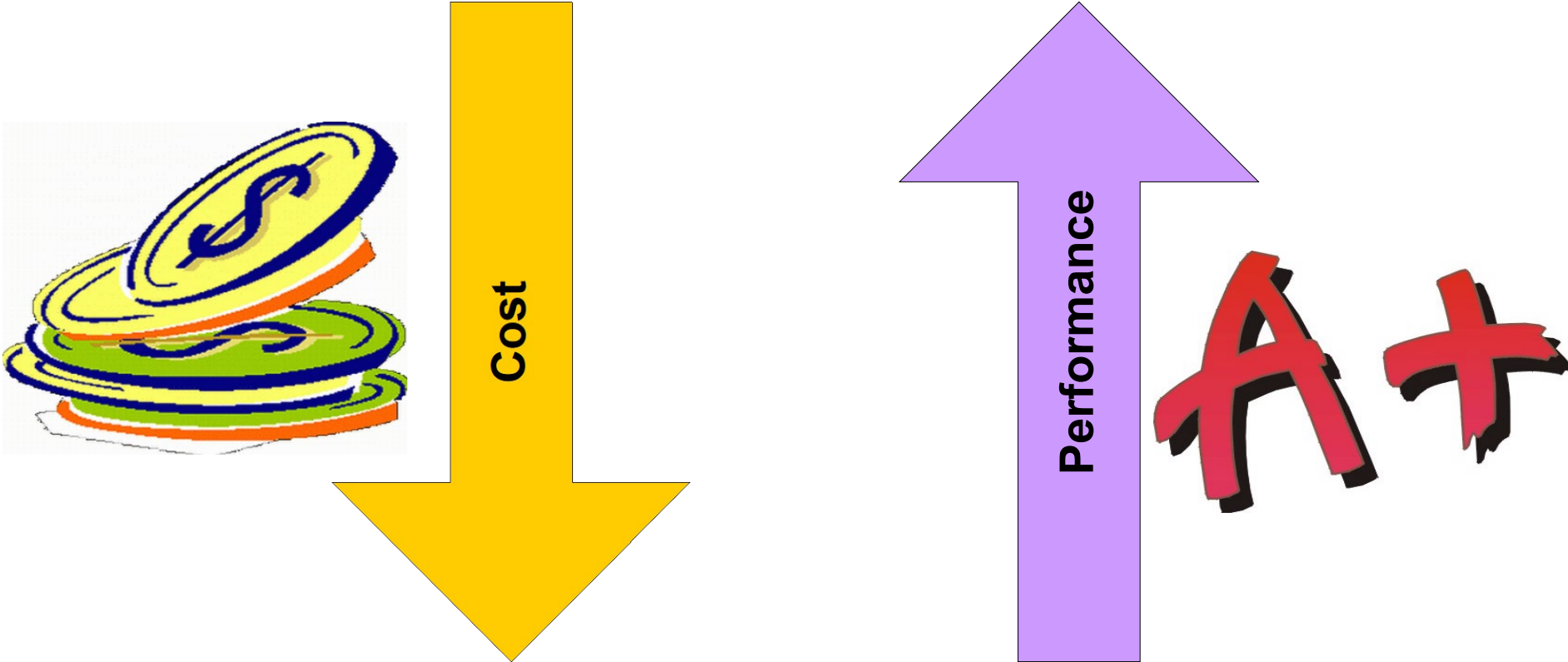
Subaru Impreza wrx

Environmentally Concerned	Not so much
Tight with money	Money is no object
Family oriented	Single
Trendy	Trendy
Drive from point A to point B	Enjoy driving

Value Situations

$$\text{Value} = \text{Performance} / \text{Cost}$$

Excellent Value

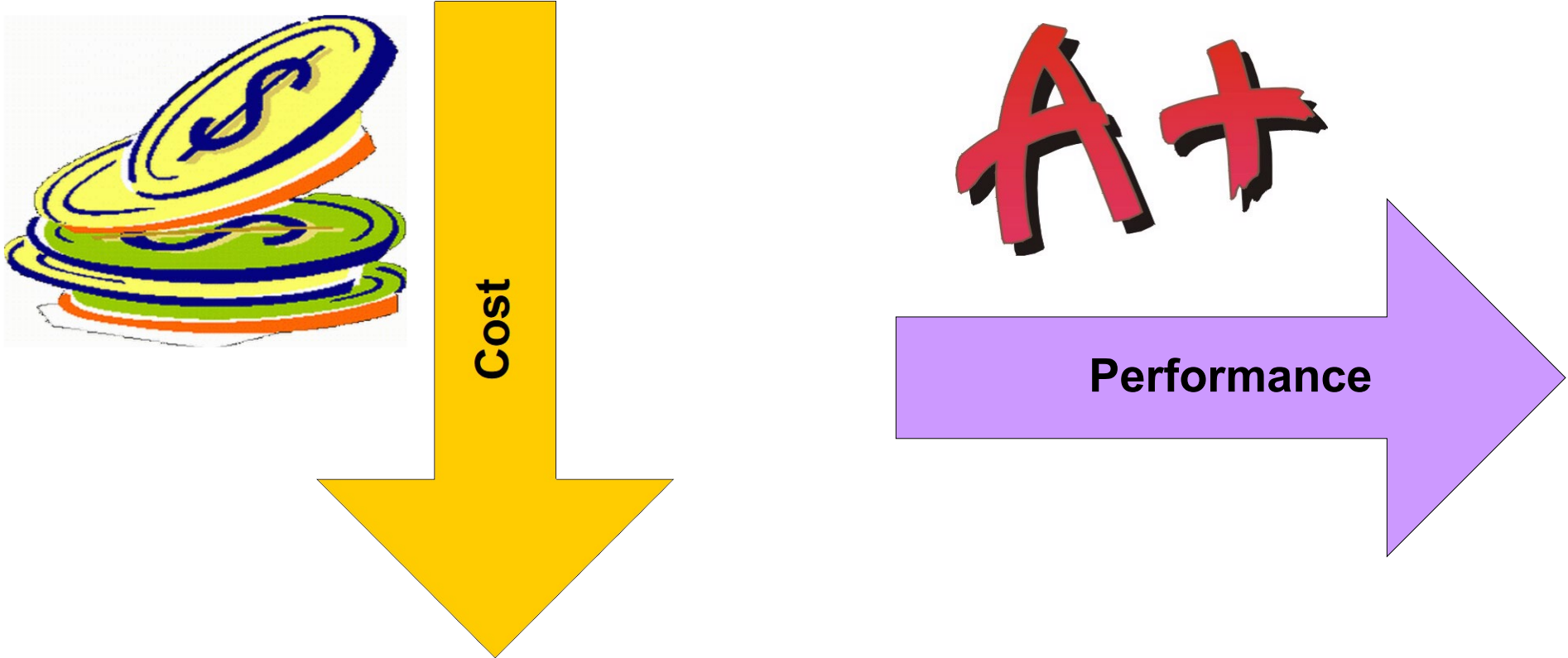


Performance is increased and costs are reduced.

Value Situations

Value = Performance/ Cost

Good Value

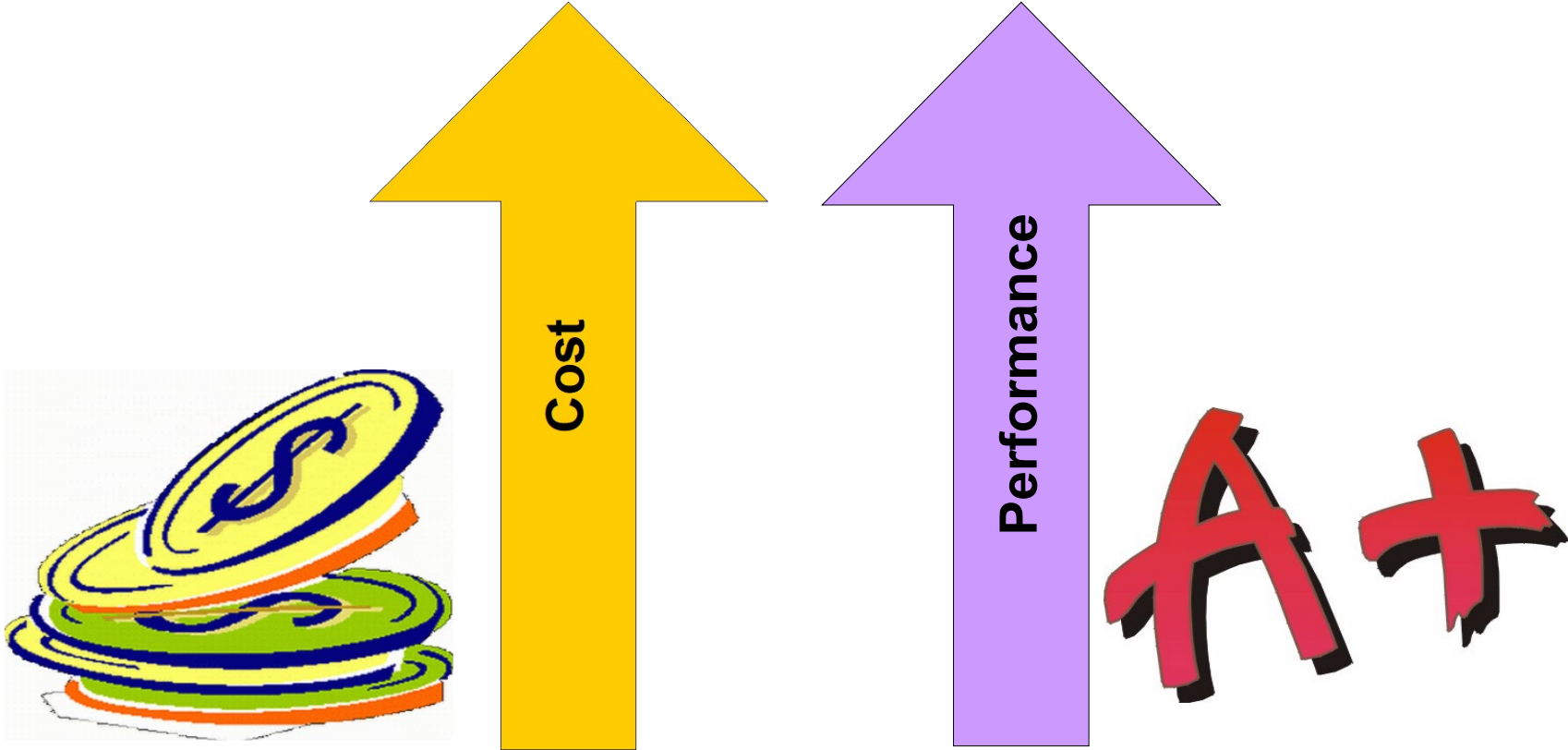


Performance remains the same and costs are reduced.

Value Situations

$$\text{Value} = \text{Performance} / \text{Cost}$$

Good Potential Value

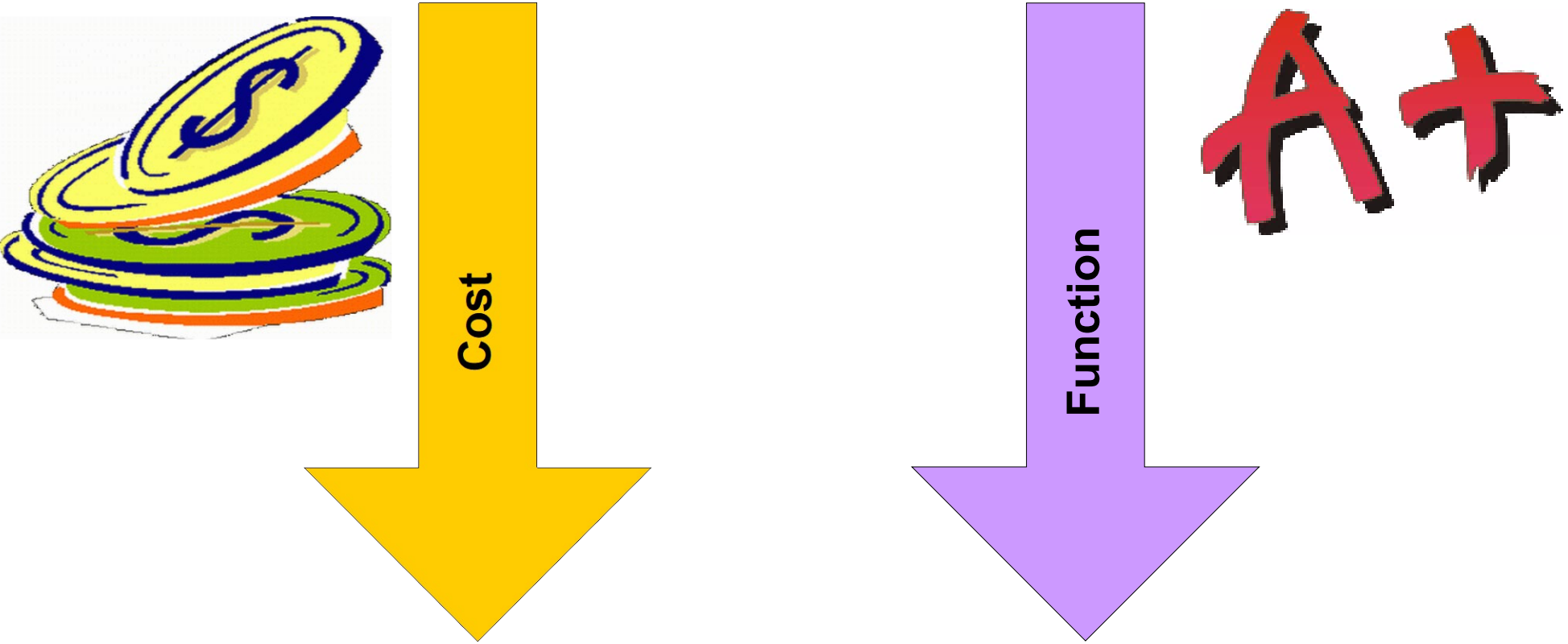


Costs increase as well as the performance.

Value Situations

Value = Performance/ Cost

Both performance and costs are reduced.

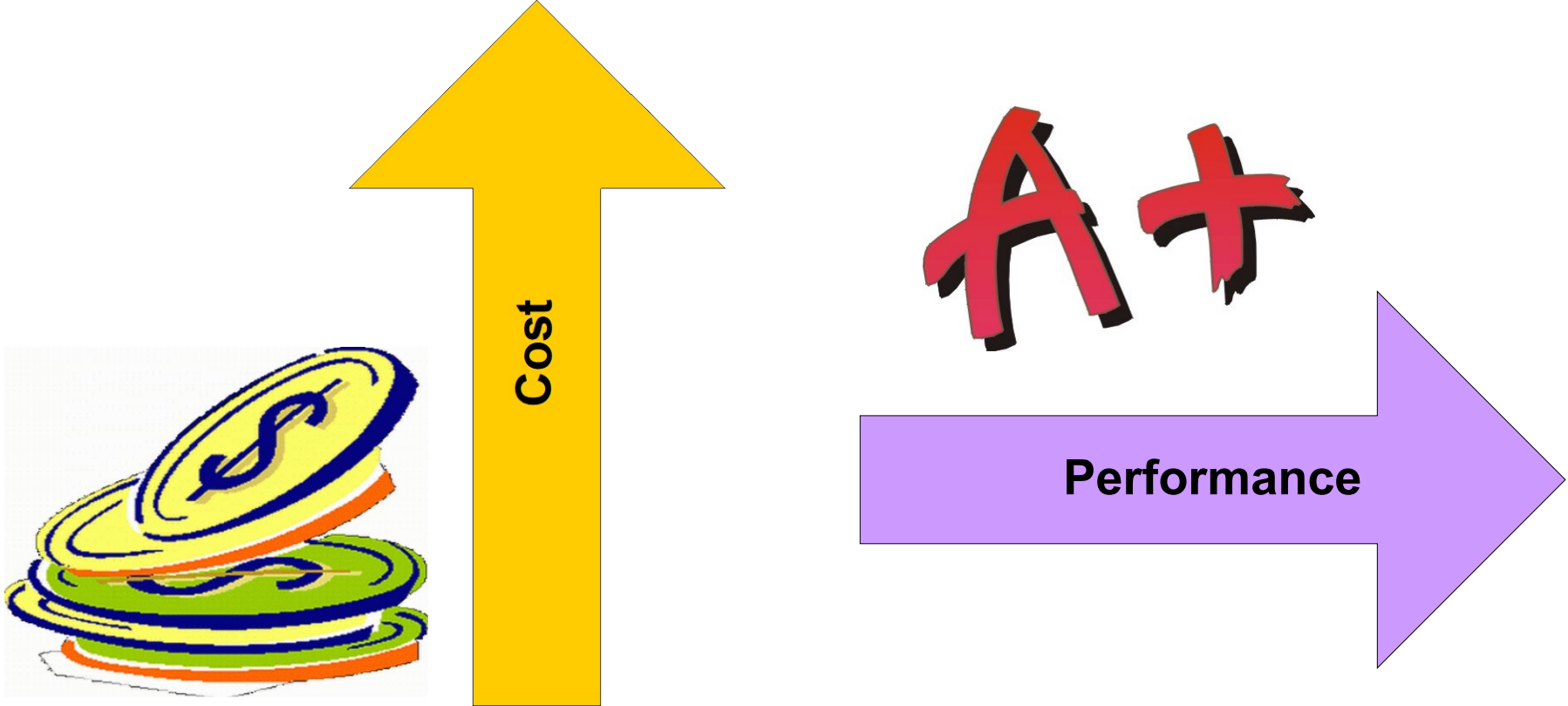


Uncertain Value

Value Situations

Value = Performance/ Cost

Costs are increased while the performance is remain the same.

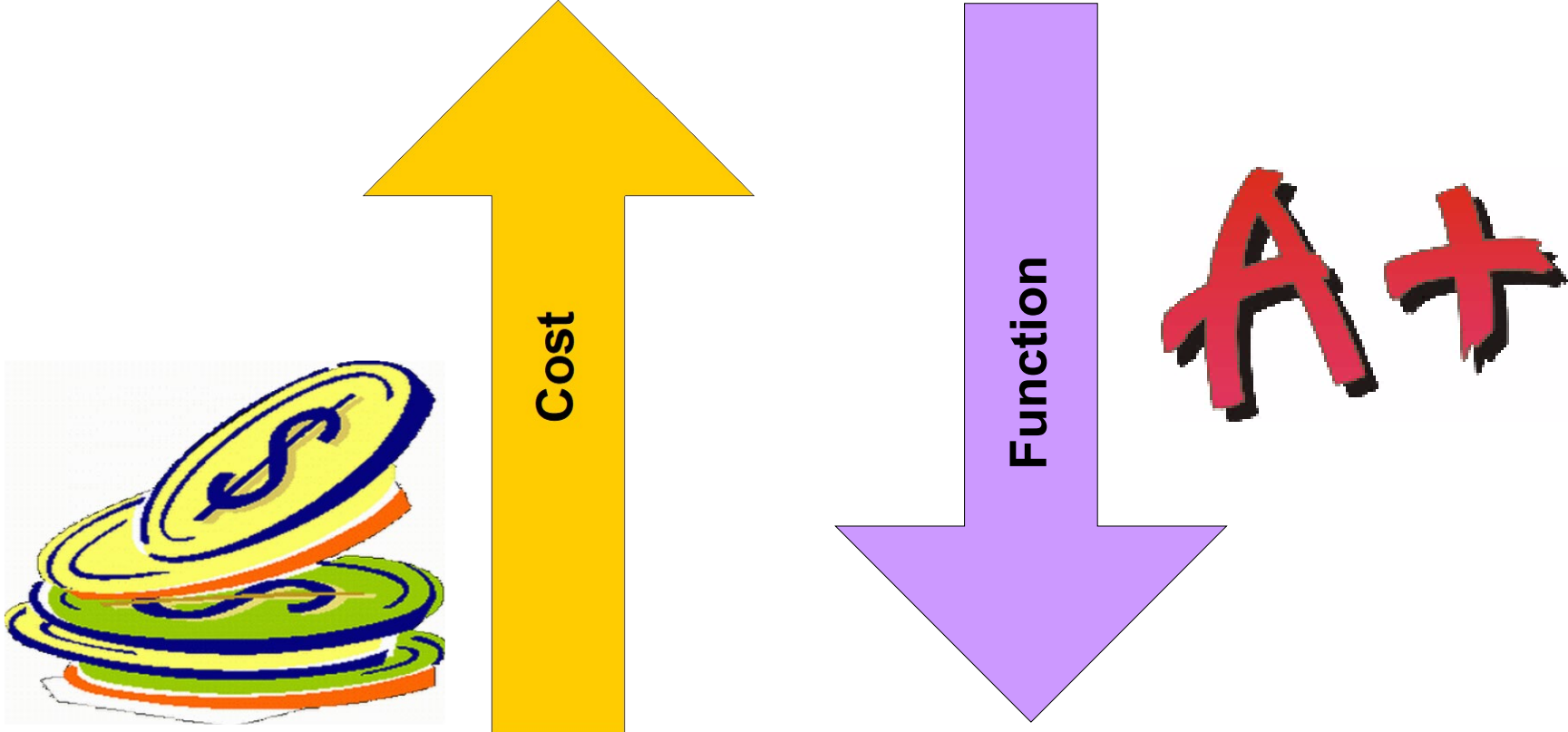


Poor Value

Value Situations

$$\text{Value} = \text{Performance} / \text{Cost}$$

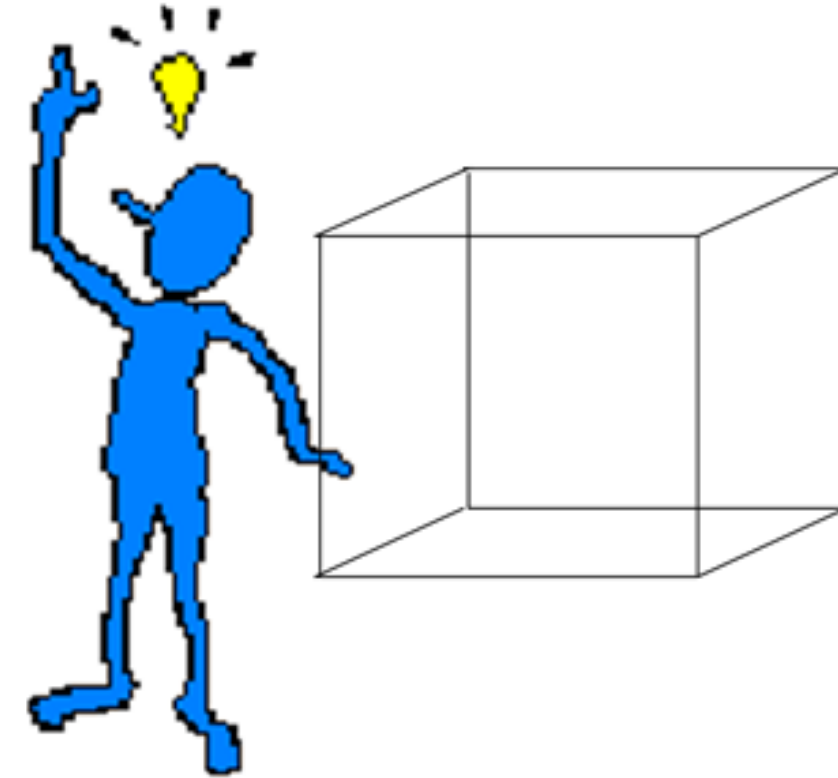
Costs are increased and performance is reduced.



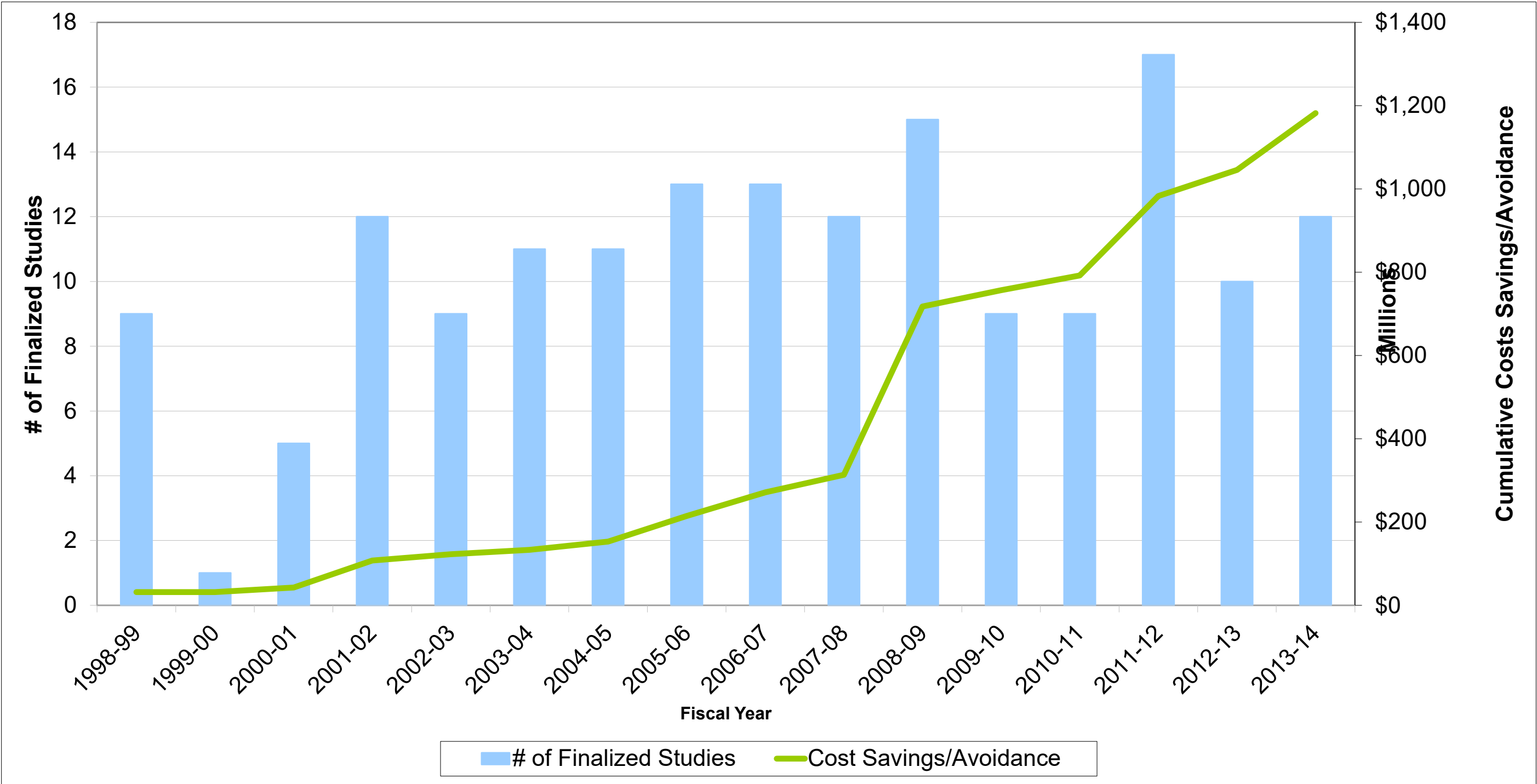
Complete loss of Value

Value Management at MTO

- Reduce Cost
- Return on Investment >60:1 – 100:1
- Stimulate innovation
- Satisfy customers
- Engage stakeholders



Cumulative Cost Avoidance > \$1.4B



Not Just Highways

- Buildings
- Transit
- Water / wastewater
- Environmental mitigation



Not Just Capital Projects...

- Organizational Change, Business Process
- Operation and Maintenance
- I & IT Projects
- Risk

VM Policies in other developed countries:

- Exec office US,
- Management of Value, Cabinet Office UK



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

December 26, 2013

CIRCULAR NO. A-131 (REVISED)

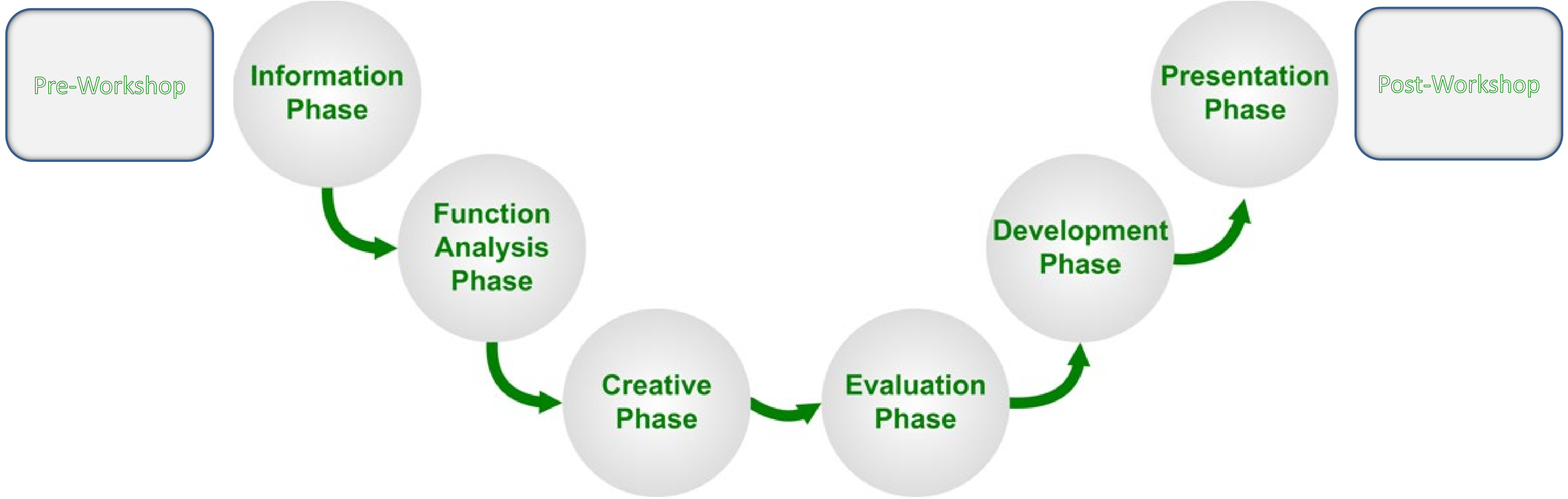
TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

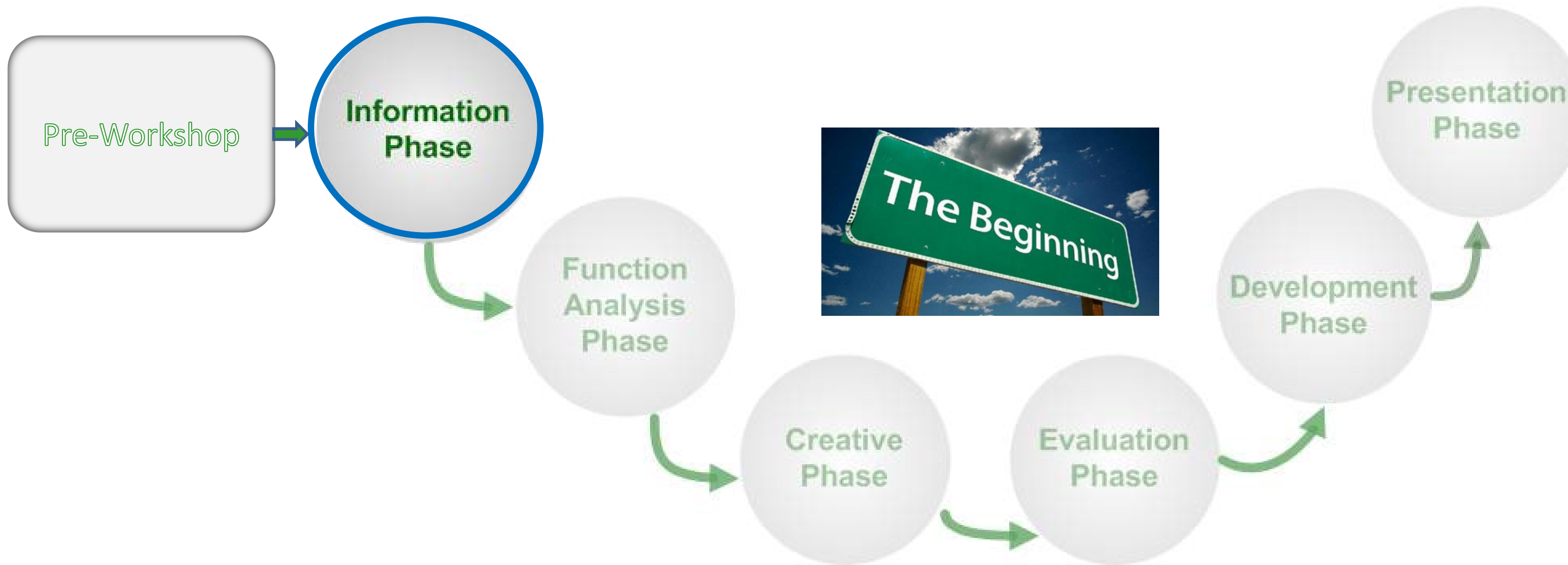
SUBJECT: Value Engineering

1. Purpose. This Circular provides guidance to support the sustained use of value engineering (VE) by Federal Departments and Agencies to reduce program and acquisition costs, improve performance, enhance quality, and foster the use of innovation. Agencies should maintain policies and procedures to ensure VE is considered and integrated, as appropriate, into the planning and development of agency programs, projects, activities, as well as contracts for supplies and services, including performance based, architect-engineering, and construction contracts.

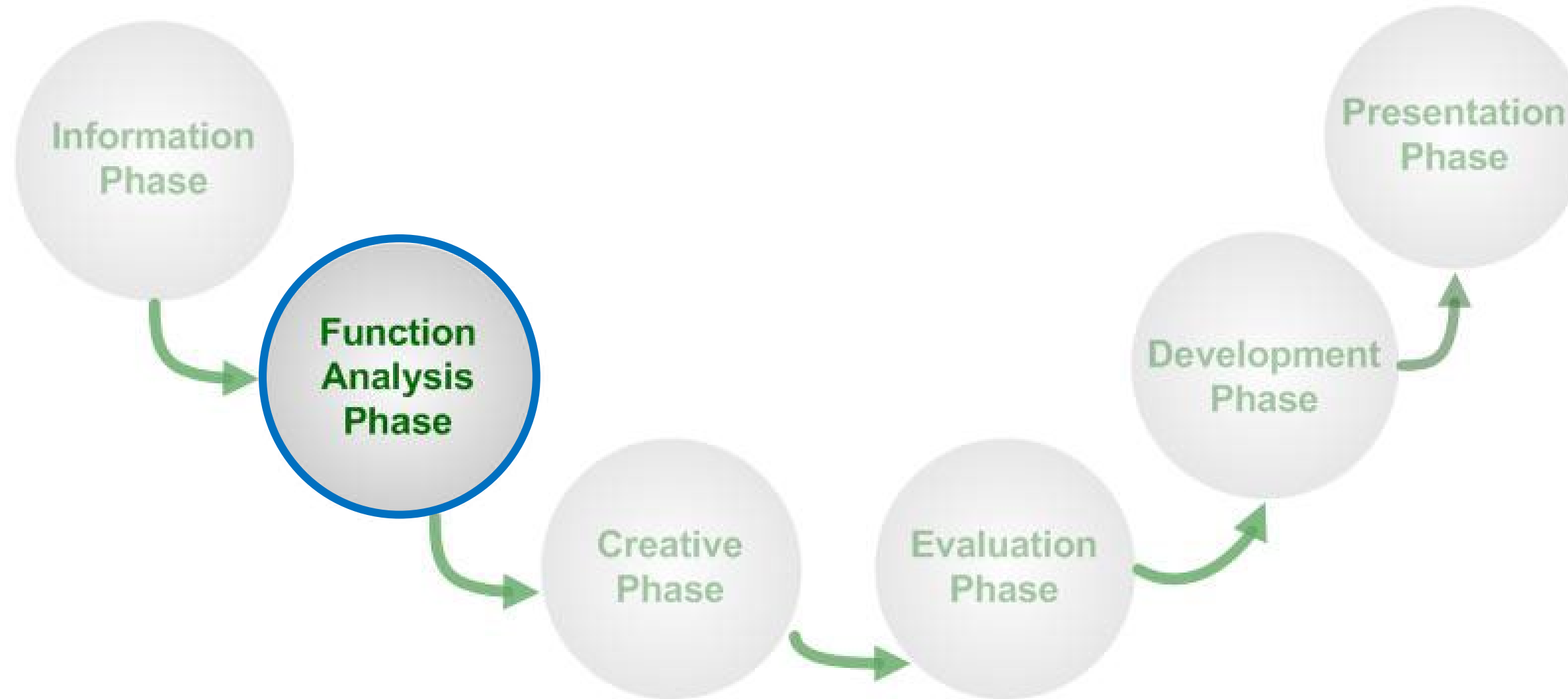


The Value Management Workshop





- Review project information
- Discuss the project
- Ask questions
- Clearly define project objectives
- Establish key constraints

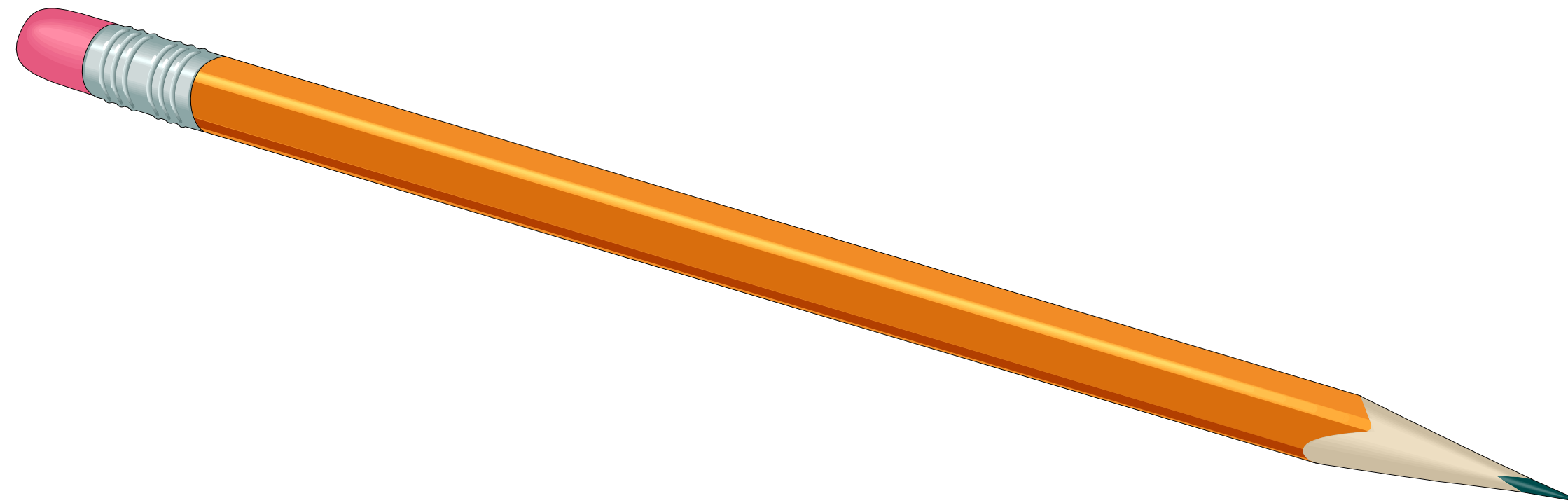


- Key aspect of Value Management
- Answers the question “What must it do?”
- Uses Verb-Noun Pairs
- Functions are examined for their inter-relatedness
- Allows a better exploration of alternatives



Pencil Example

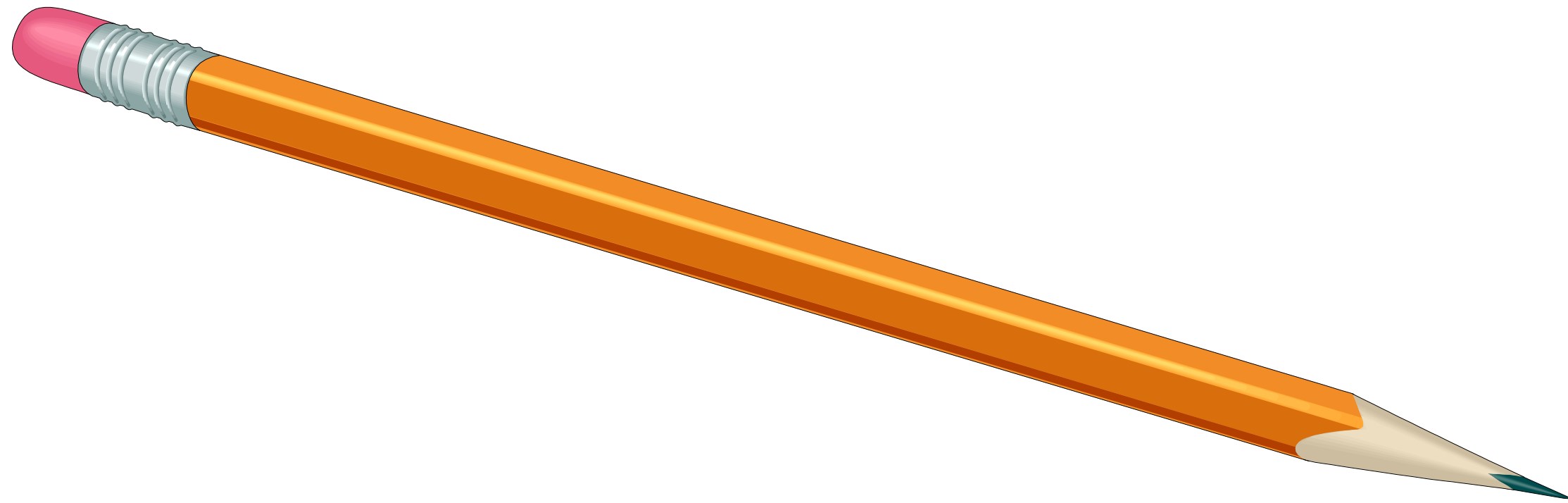
- **What is the function of a pencil?**





Verb Noun Definitions for a Pencil

Pencil: Mark Surface



Verb – Noun: Defining a Need

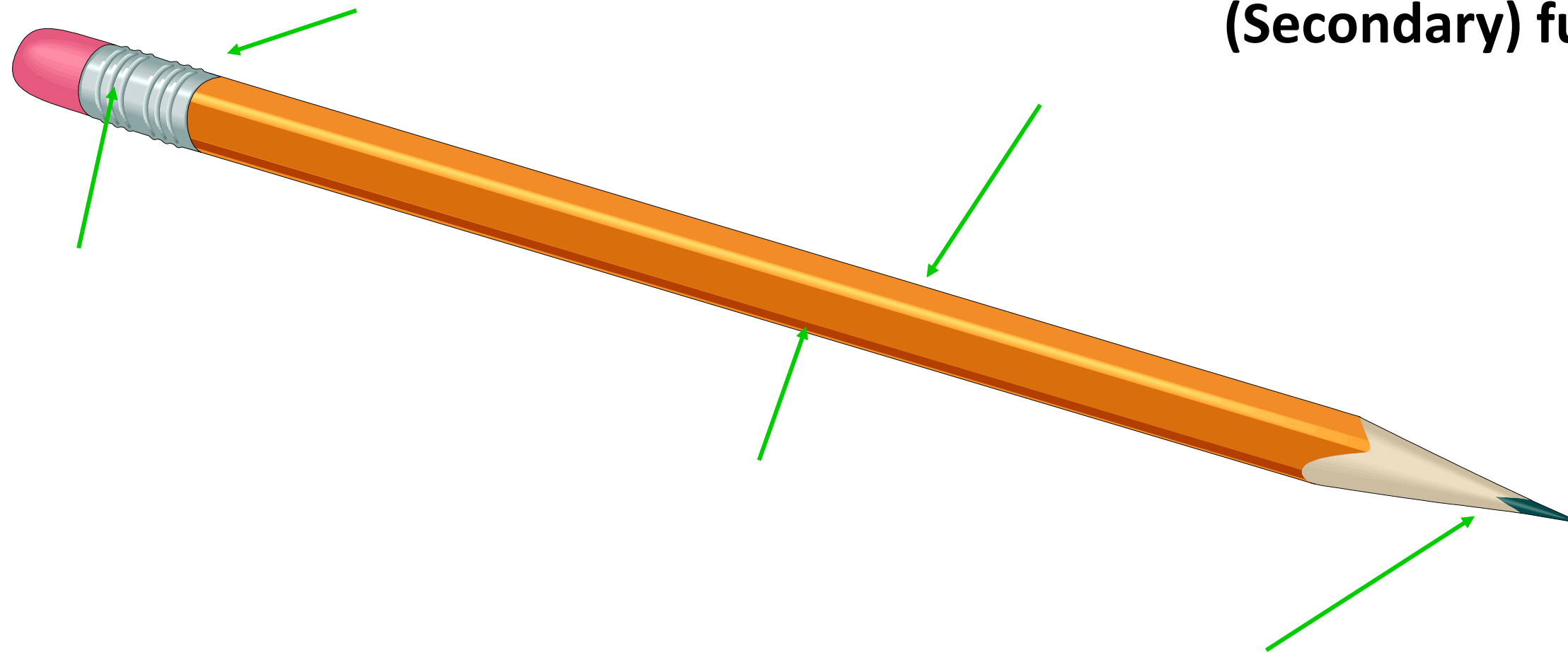
Item	Active Verb	Measurable Noun
Public Meeting		
Traffic Signals		
Drill Bit		

Verb – Noun: Defining a Need

Item	Active Verb	Measurable Noun
Public Meeting	Seek	Input
Traffic Signals	Control Signal	Traffic Movements
Drill Bit	Make Drill	Opening Hole

Verb Noun Definitions for a Pencil

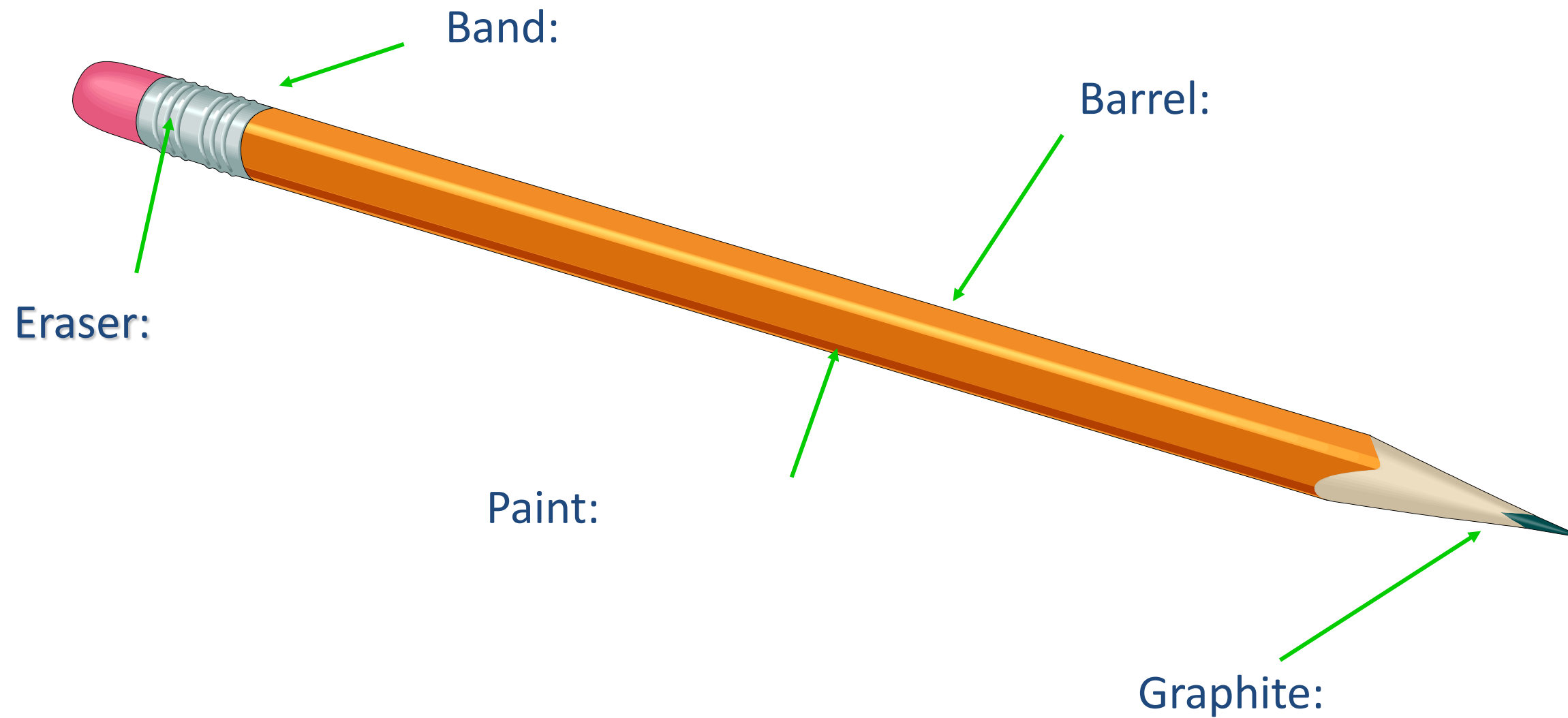
Pencil: Mark Surface (Basic)



**What are the other
(Secondary) functions?**

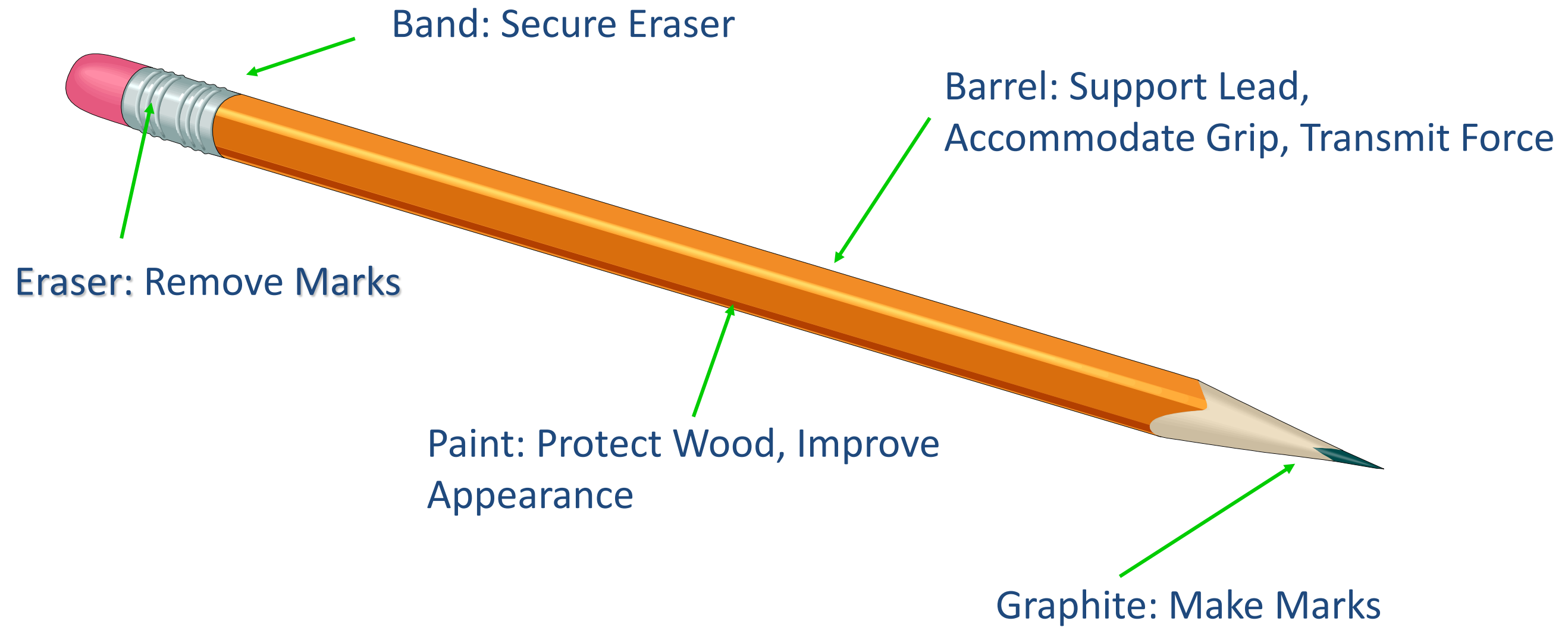
Verb Noun Definitions for a Pencil

Pencil: Mark Surface (Basic)



Verb Noun Definitions for a Pencil

Pencil: Mark Surface



What About a Mouse Trap?



What About a Mouse Trap?

Eliminate Mice



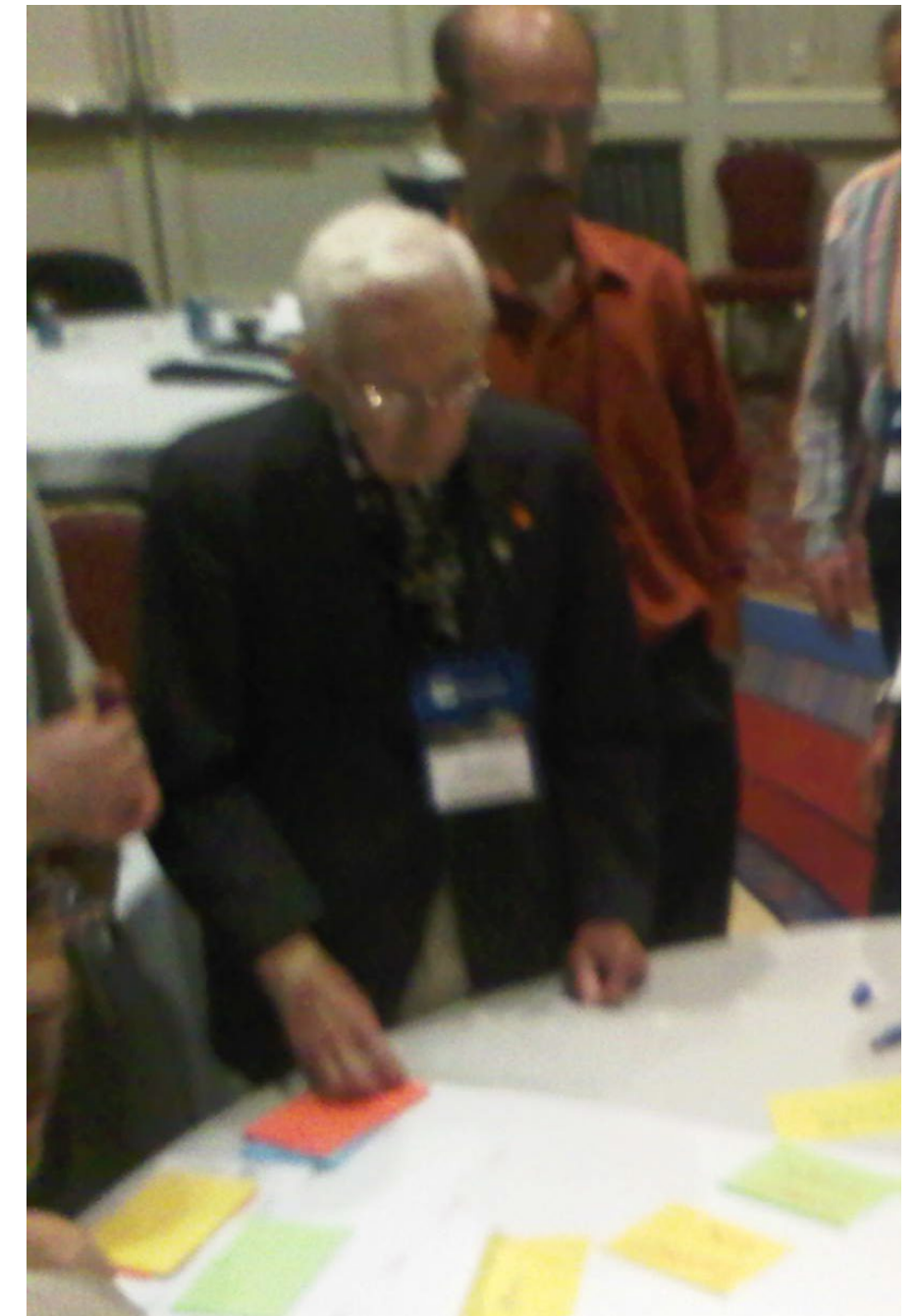
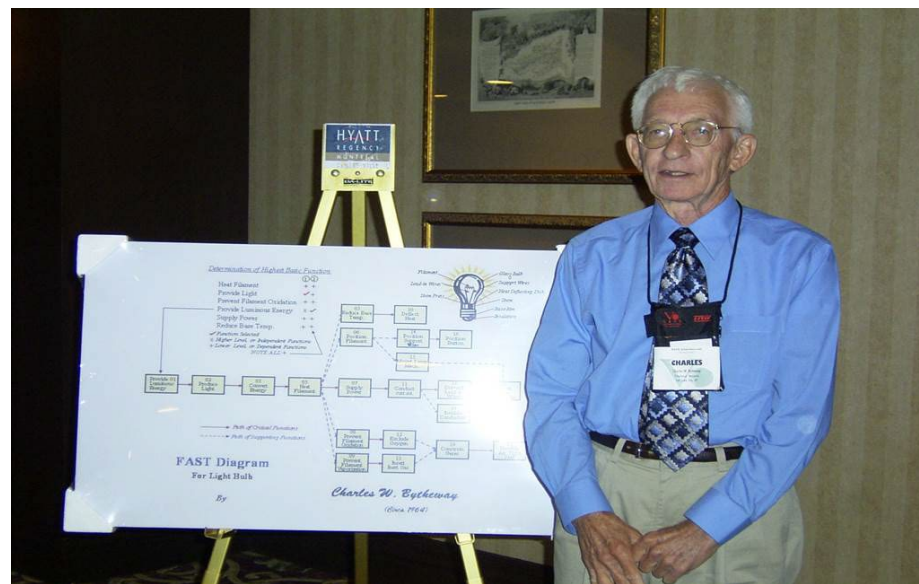
FAST Diagrams

Invented by Charles Bytheway c. 1965

Method of organizing relationships between functions

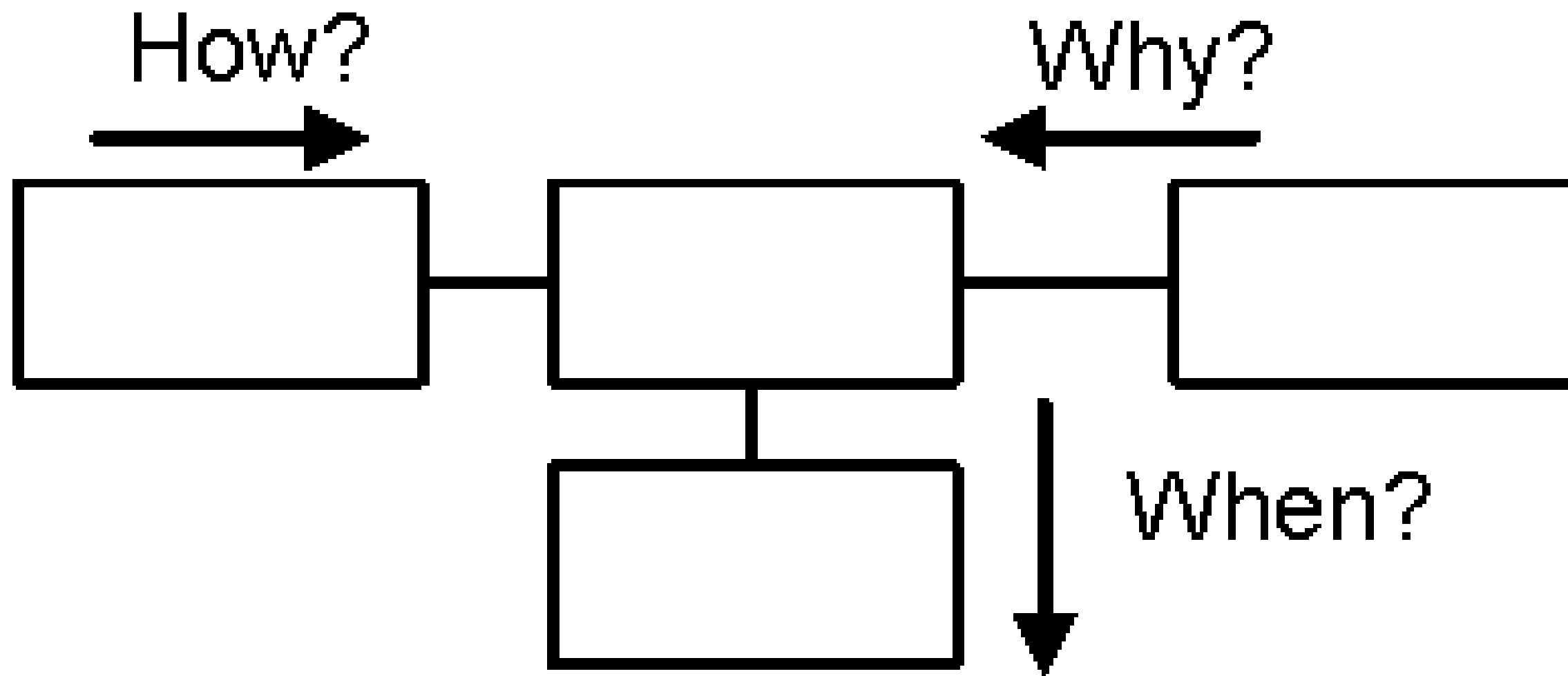
Asks 'how' and 'why' questions about the functions

Debate fosters understanding and creativity



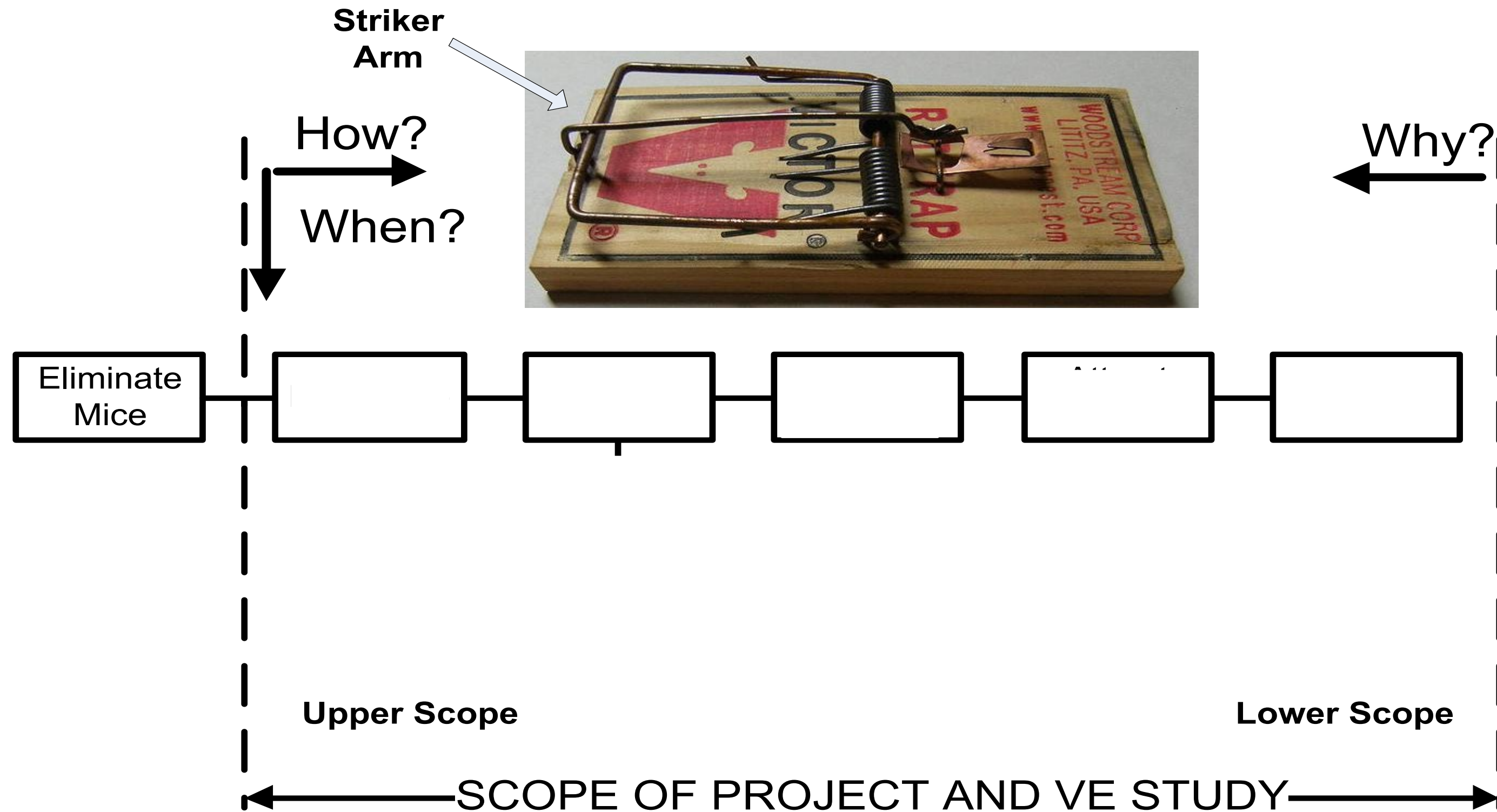


FAST Diagram

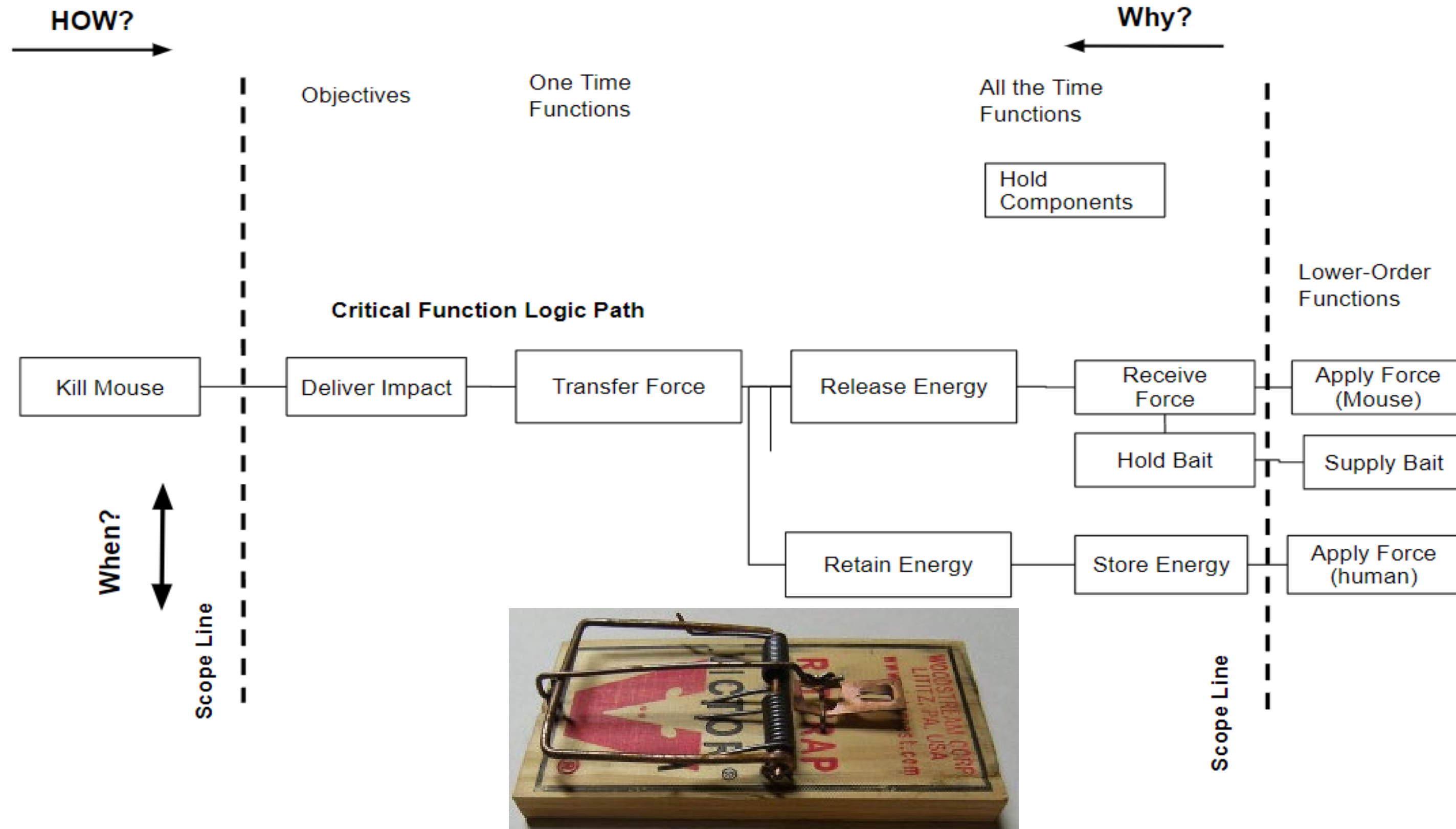




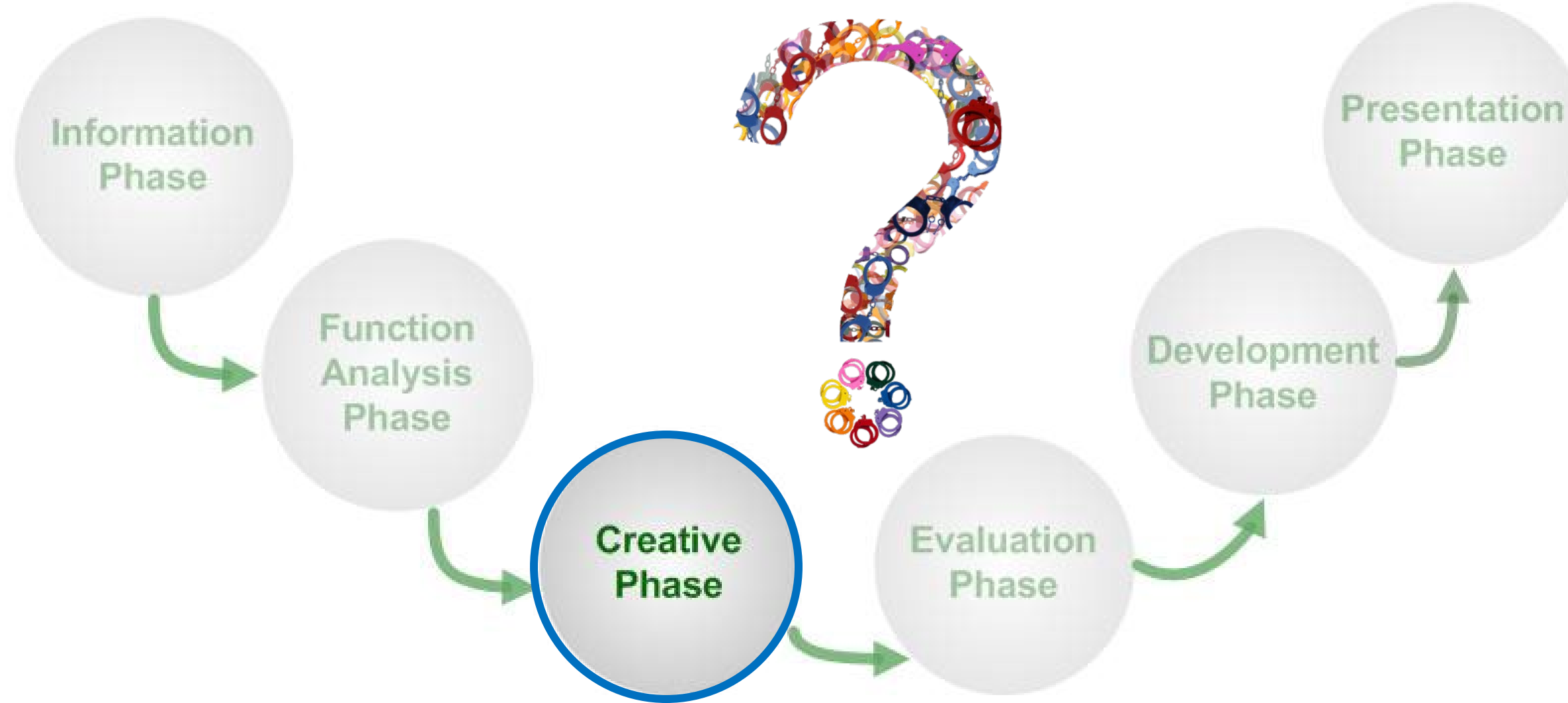
Mouse Trap FAST Example



Mouse Trap FAST Example

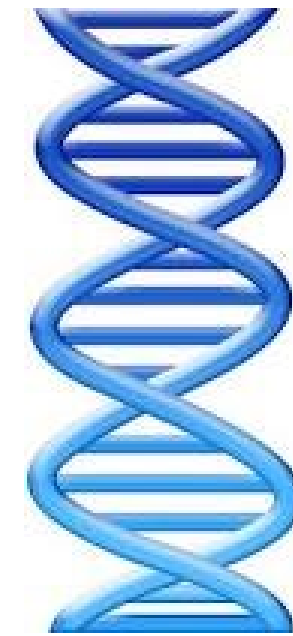


5 Minute Break



- Generates alternate ideas for performing functions
- Function-based brainstorming as one way to generate ideas
- Goal is to create as many ideas as possible

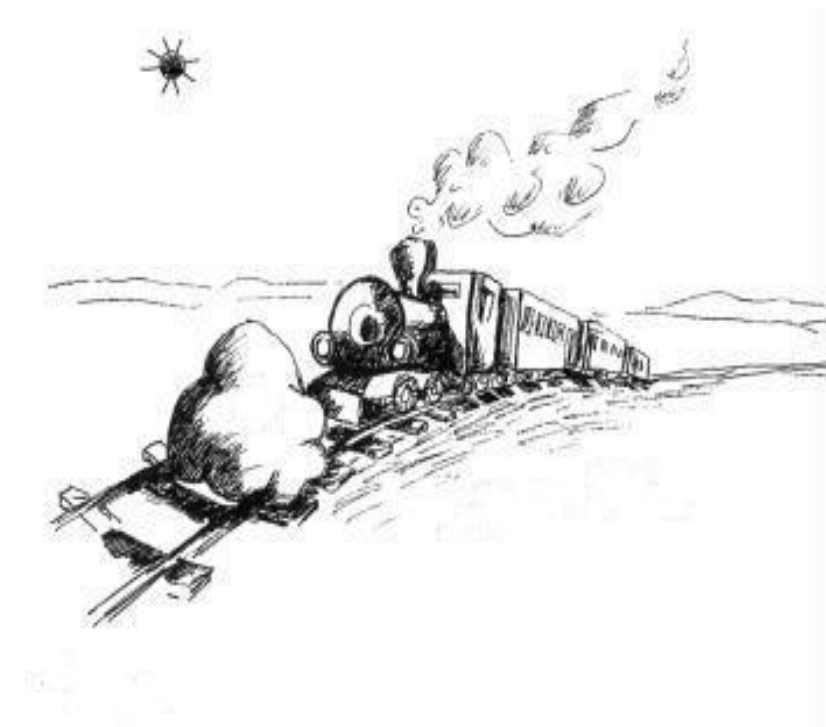
How can you “Store Information”?



Creative Phase

Roadblocks to Creativity

- There's no time
- It's too expensive
- If its not broken, don't fix it.
- Let's wait a little more
- It's physically impossible
- Our superiors will never agree
- We've already considered that
- It's impossible to manage



Creative Phase

The Key to Creativity

Association of Ideas:

- Similarities
- Contrasting
- Contiguity



Creative Phase

Creative Techniques

- Group Brainstorming
 - Everything goes (freewheeling)
 - Turn off judicial mind
 - Turn on creativity
 - Don't hold back
 - Go for quantity not quality
 - Force Ideas
 - Set minimum time
 - Set idea quota
 - Jump on the bandwagon (hitchhike)
 - Modify or expand previous idea



Creative Phase

Creative Techniques

- Openly discuss ideas in a free flow of group thinking.
- Be spontaneous and energetic.
- Collect ideas with a “round robin”.

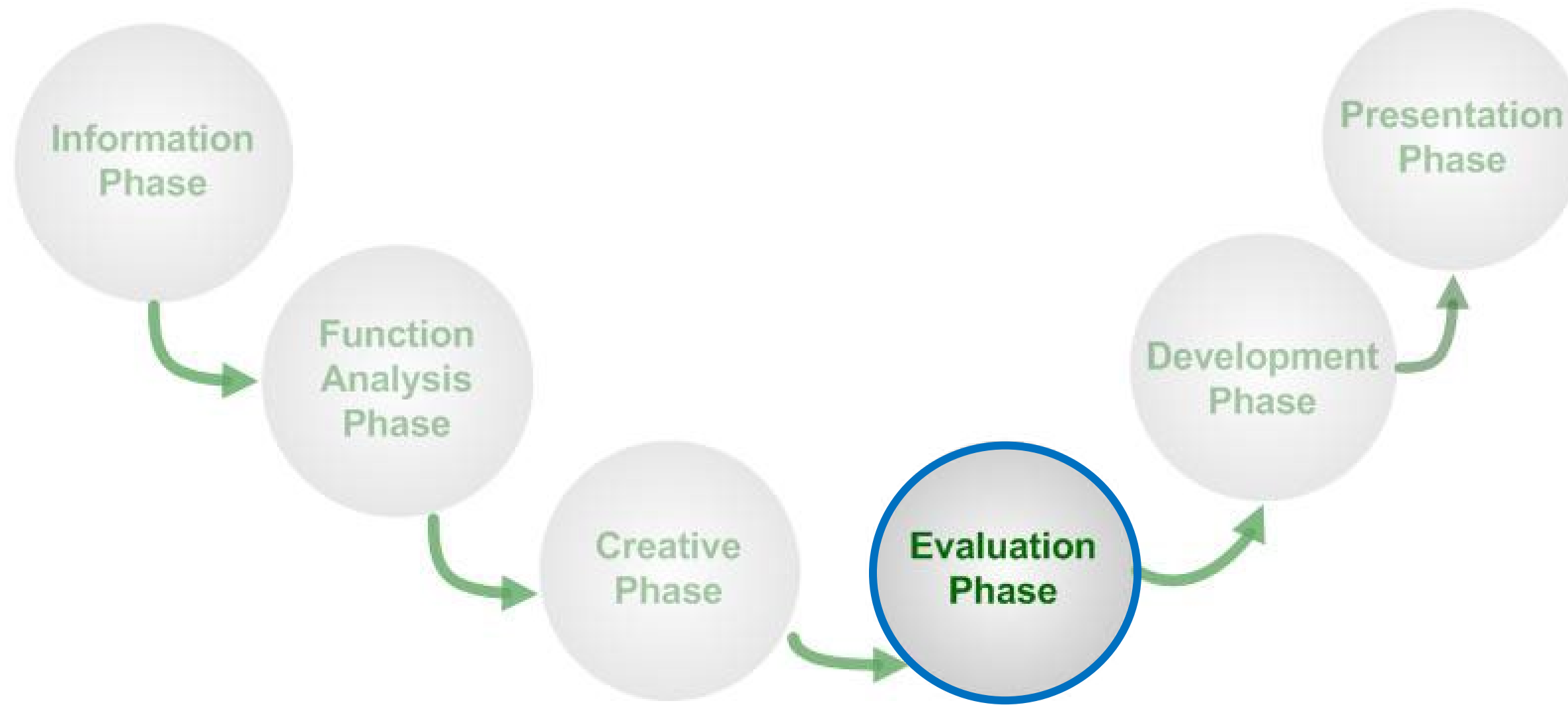




Success of Creative Phase

- Diverse point of view
- Non technical discussions
- Industry expert working together
- Open and curious, willing to challenge
- Active Engagement
- Expert facilitation





- Ideas from the creative phase are evaluated and prioritized for their potential to:
 - Save cost
 - Add value

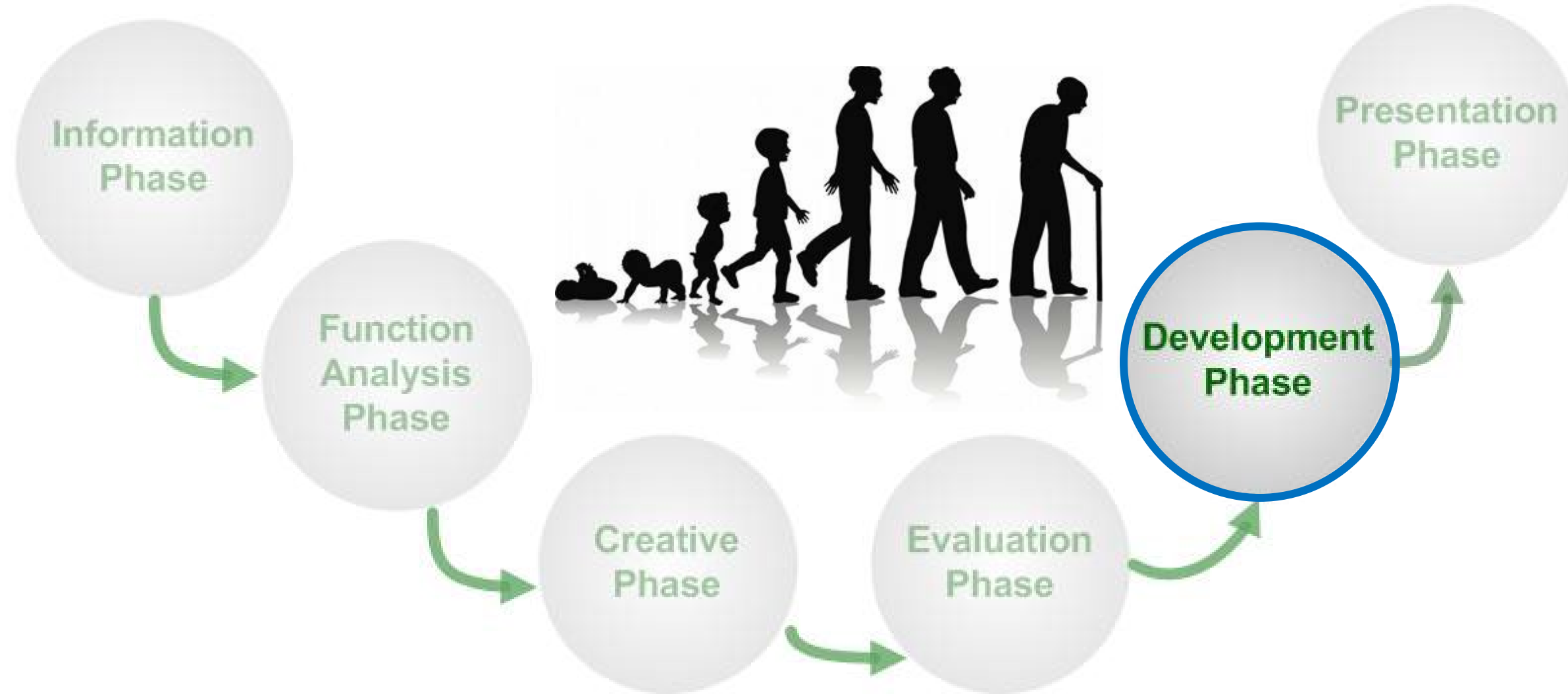




Evaluation Phase

Questions to Consider When Creating Your Evaluation Criteria

- **Is the new idea reliable?**
- **Does it satisfy the function?**
- **Is its cost within the budget? If not is its value worth an increase in cost?**
- **Is there enough time in the construction plan to accomplish it?**
- **Will it affect the aesthetics of the project?**
- **Will it require major redesign of the project?**
- **Is there major improvements compared to the original design?**
- **Has the design been used in the past successfully?**



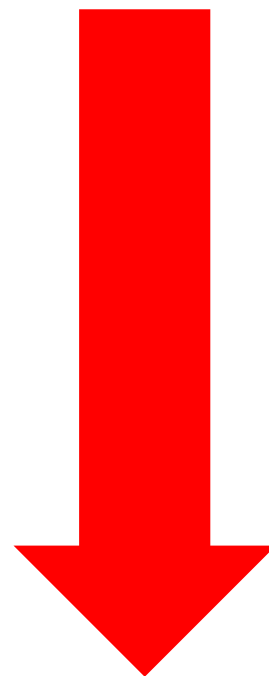
- Explore ideas selected in Evaluation phase
- Obtain data to compare idea to original solution
- Sub-teams explore different alternatives
- Develop ideas into written recommendations



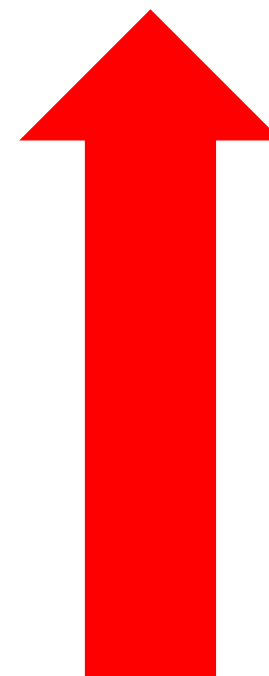
- Present workshop team recommendations
- Demonstrate depth, knowledge and thoroughness
- Inspire confidence in the recommendations

Why implement VM?

- All projects, products, and processes have unnecessary costs
- VM provides a cost effective, timebound and defined process with a proven track record of success



Capital Cost
Life Cycle Cost
Design Time
Decision Time



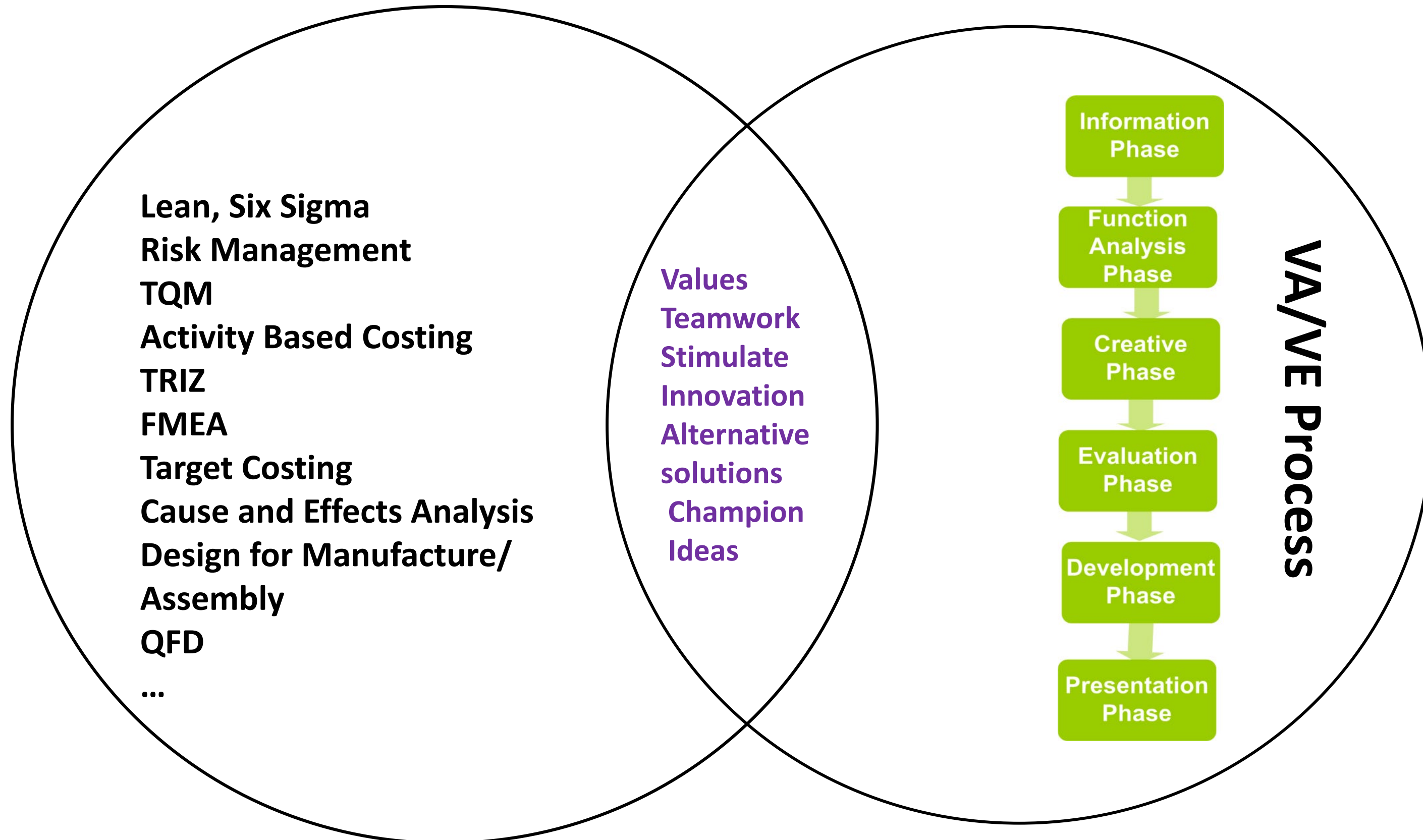
Quality
Value
Engagement
Ideas



Secrets to Success

- More creative ideas are generated by teams than individuals
- The methodical VM job plan produces better results
- A facilitated workshop creates buy in for change
- Executive Support and Resourcing

Related Tools and Techniques



Call For Action

- Embrace Value Management
- Executive Support
- Require Program Leaders to bring opportunities
 - Do I have a project that exceeds my budget?
 - Do I have a project in trouble?
 - Do I have a business process that's not working?
 - Do I have an opportunity to improve efficiency?
 - Do I need to help a client achieve common vision for a service?
- **VM Can Help!**



ACTION



More Information:

SAVE International

<https://www.value-eng.org/>

Value Analysis Canada

<http://www.valueanalysis.ca/>

ENGtalks and Webinar: Value Management in Action

mike.pearsall@outlook.com

rakeshka@hotmail.com

Questions



Questions

