

Improving Sustainability with VA

Sept 25, 2007

**If you know your values,
decisions are easy to make.**



How much Investment in Green?

What do decision makers value?

What is important?



Performance Standards

- “Value engineering can be the **verification engine** for the meeting of environmental performance standards.”
- ~ Gregory S. Knoop, AIA, LEED AP
- LEED is an environmental design standard for new buildings; uses **integrated design process** similar to VE





How?

- How can VE/VA enhance and facilitate sustainability?
The systematic VE/VA methodology can:
- Decrease both monetary and *life-cycle costs*
- Generate *innovative and creative solutions* to improve issues such as energy use, air quality...
- Maximize system efficiency and mitigate consumption of natural resources

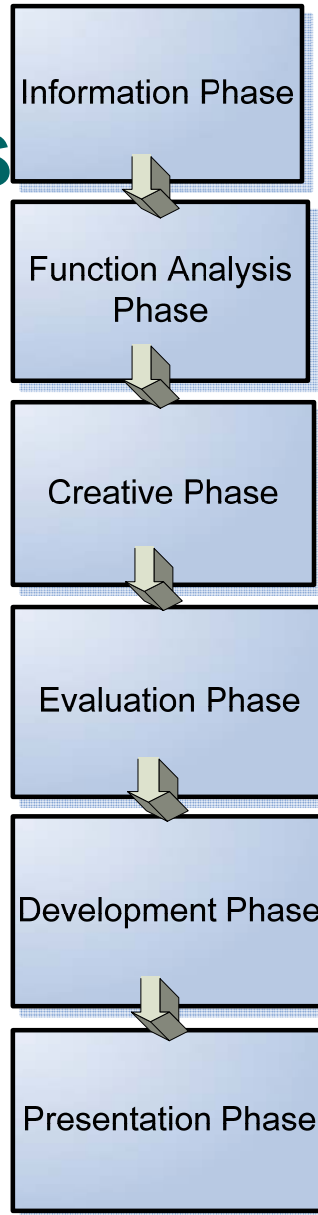
U.S. Dept. of Transportation



- “[VE/VA] can also increase the use of environmentally sound and energy efficient practices and materials. Nationally, state departments of transportation have realized substantial savings by using value engineering.”
- ~ Kurt Hyde, Assistant Inspector General for Surface and Maritime Programs, Department of Transportation



VA / VE Process

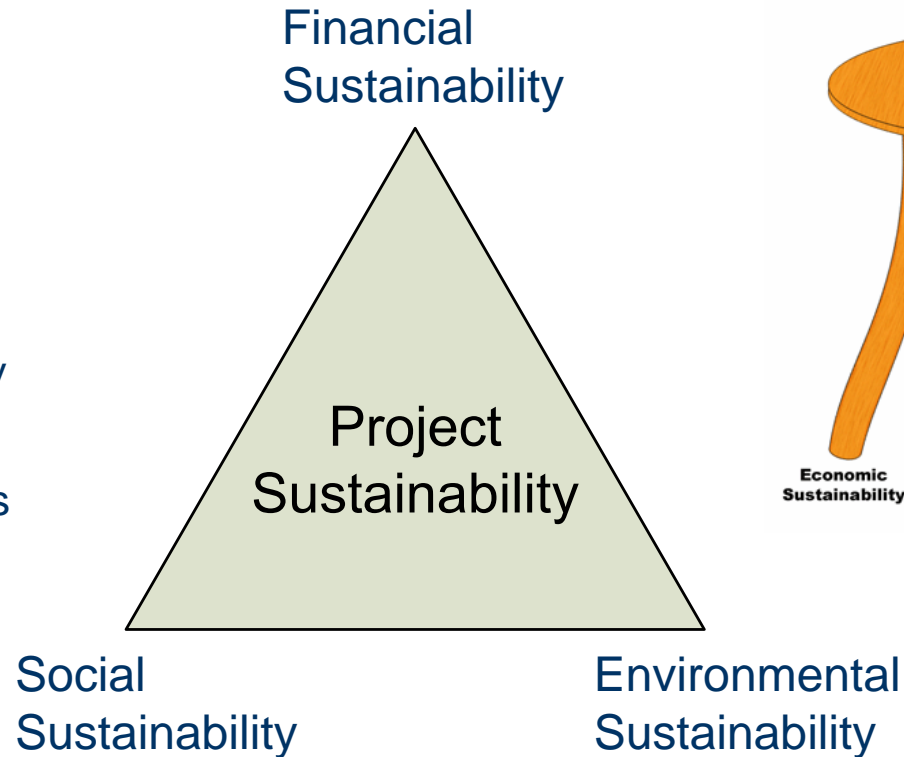


- Values
- Think differently
- Generate alternative solutions
- Teamwork
- Champions
- Multidisciplinary team
- Outside Experts



Sustainability

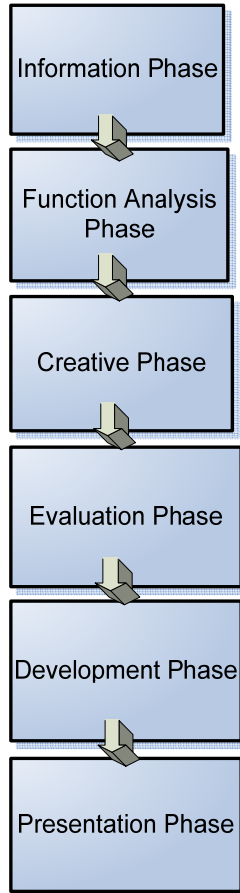
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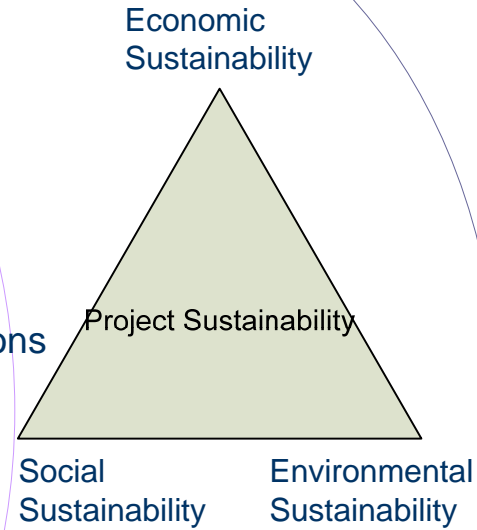


VA / VE

Sustainability



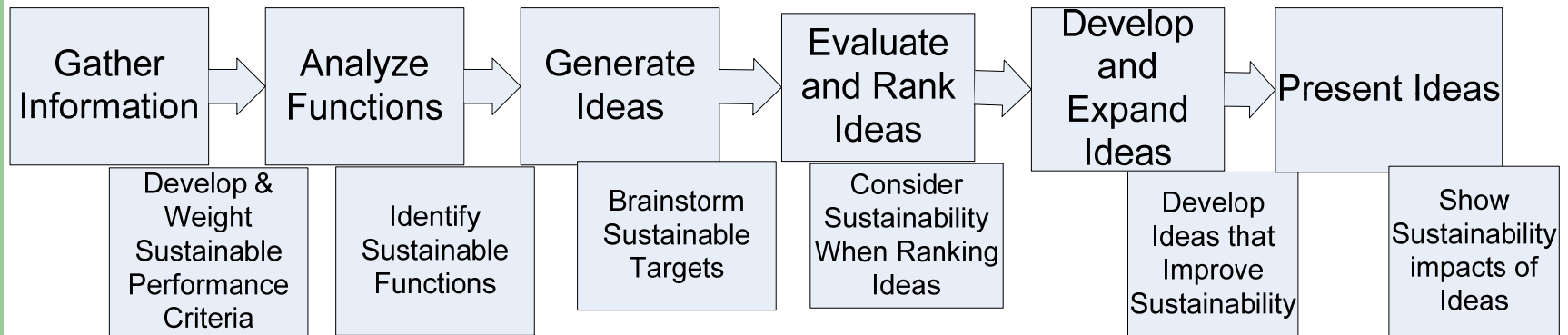
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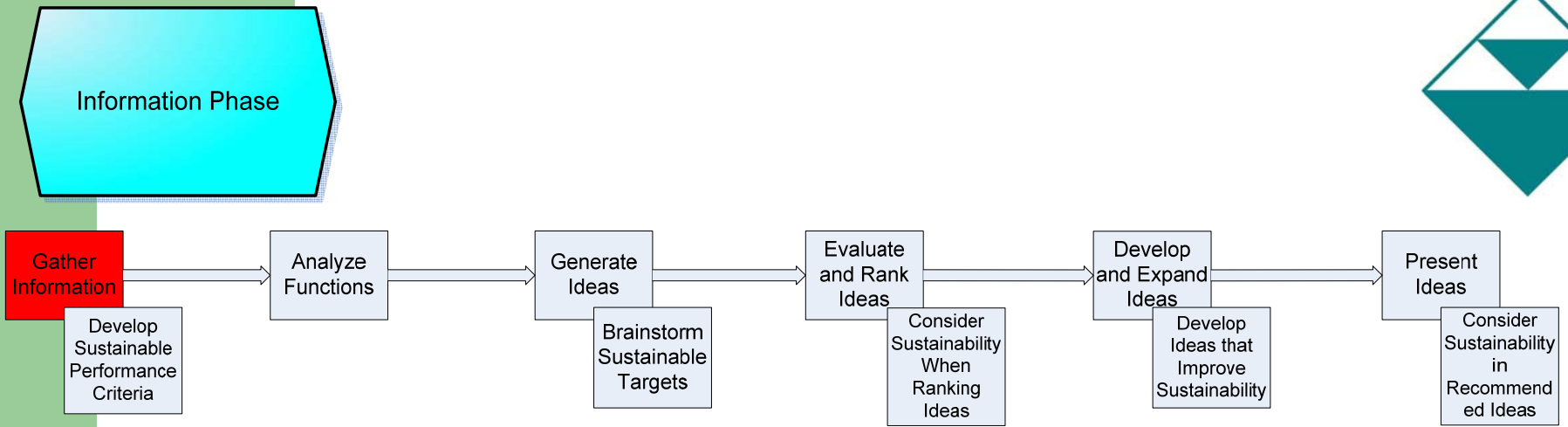


Sustainability

VA / VE
Process

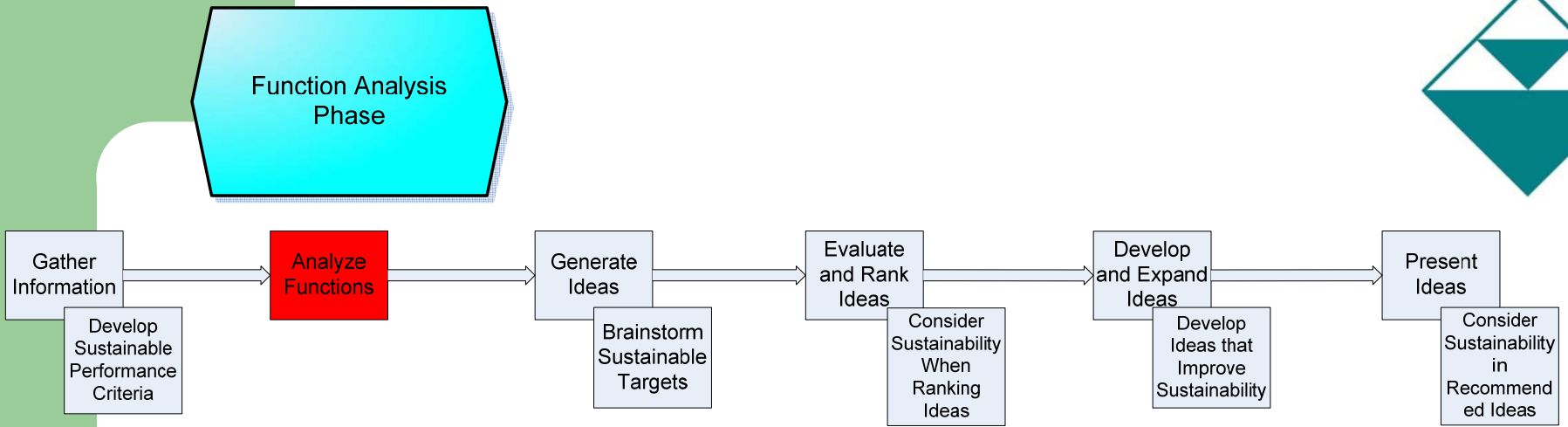
Sustainability in the Job Plan





Gather Information

Develop & weight Sustainable Performance Criteria that reflect environment, social and economic



Analyze Functions

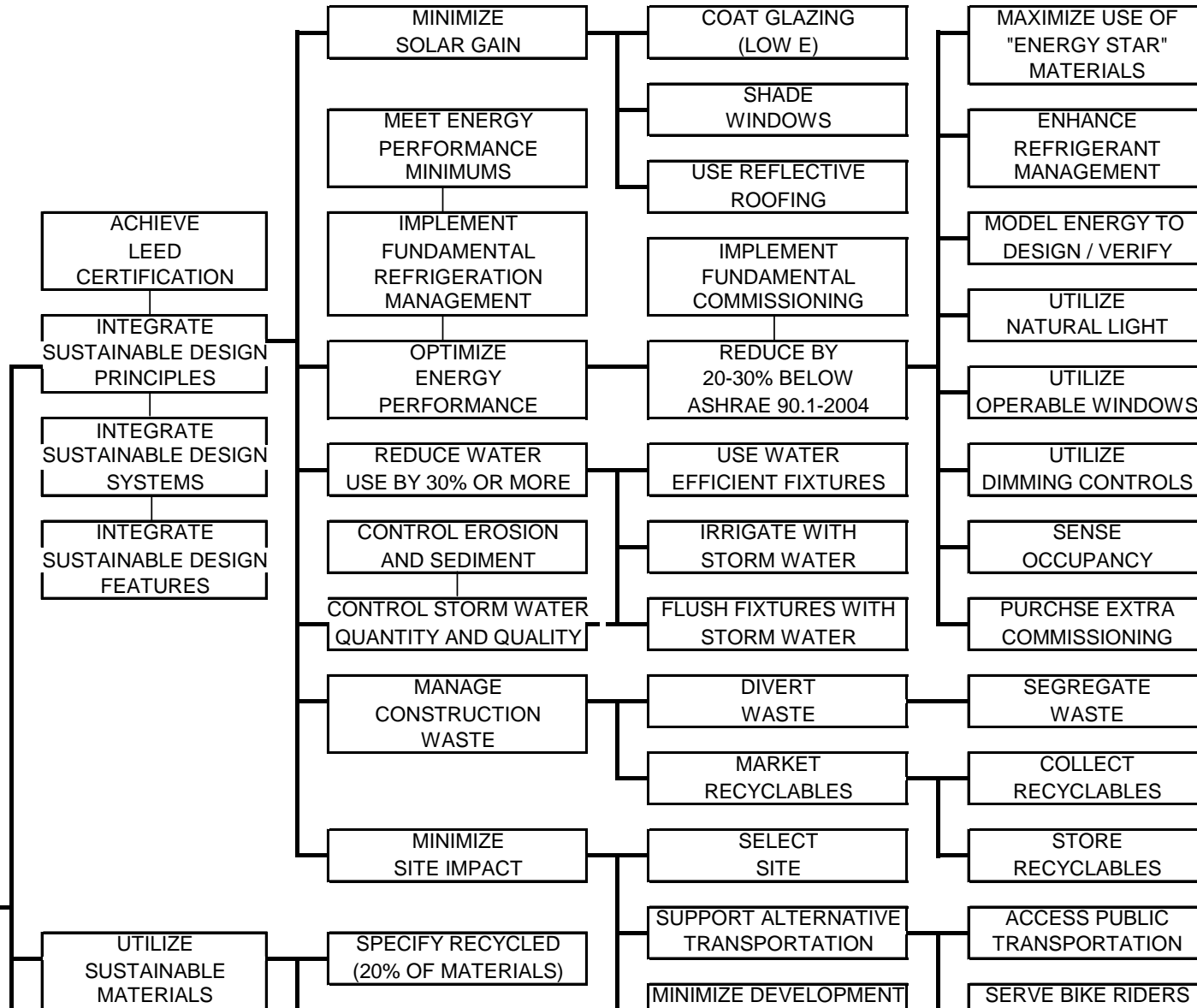
Include Sustainability objectives
in FAST diagram

FAST DIAGRAM

HOWARD HUGHES MEDICAL INSTITUTE HEADQUARTERS EXPANSION SUSTAINABILITY

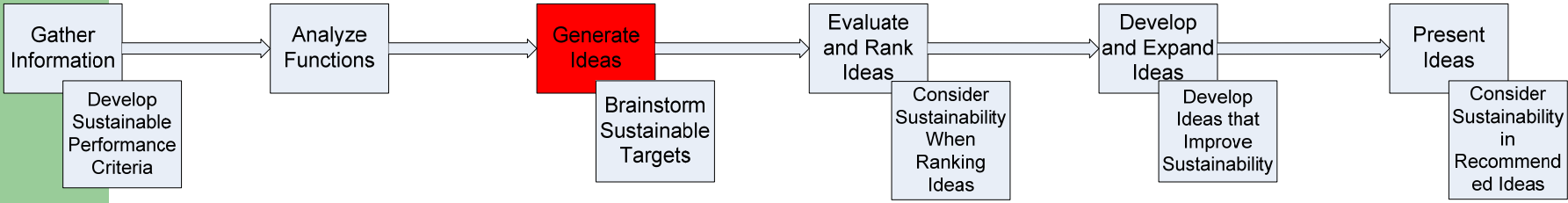


HOW →



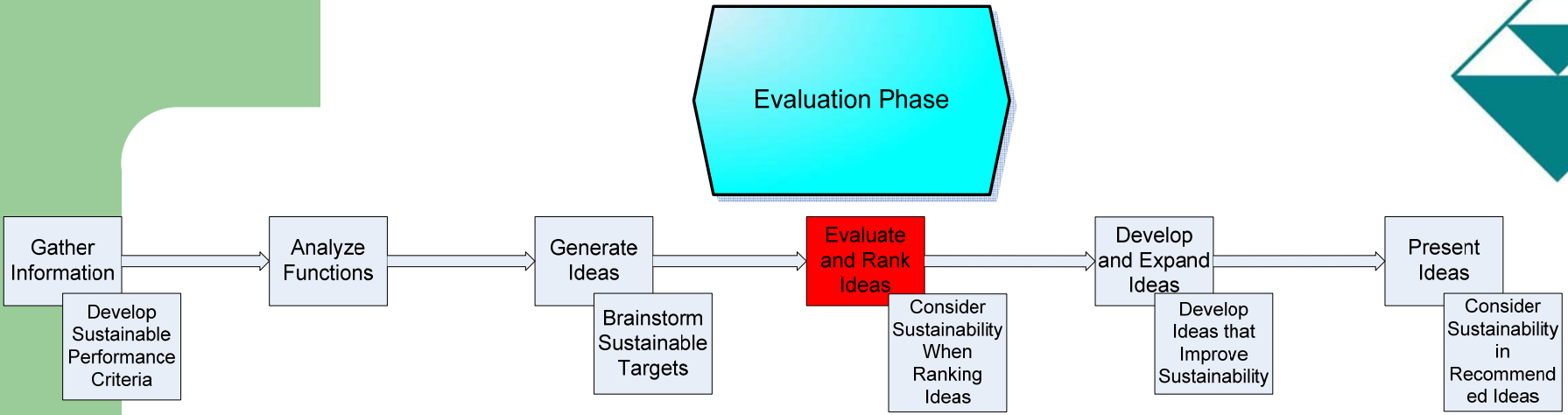


Creative Phase



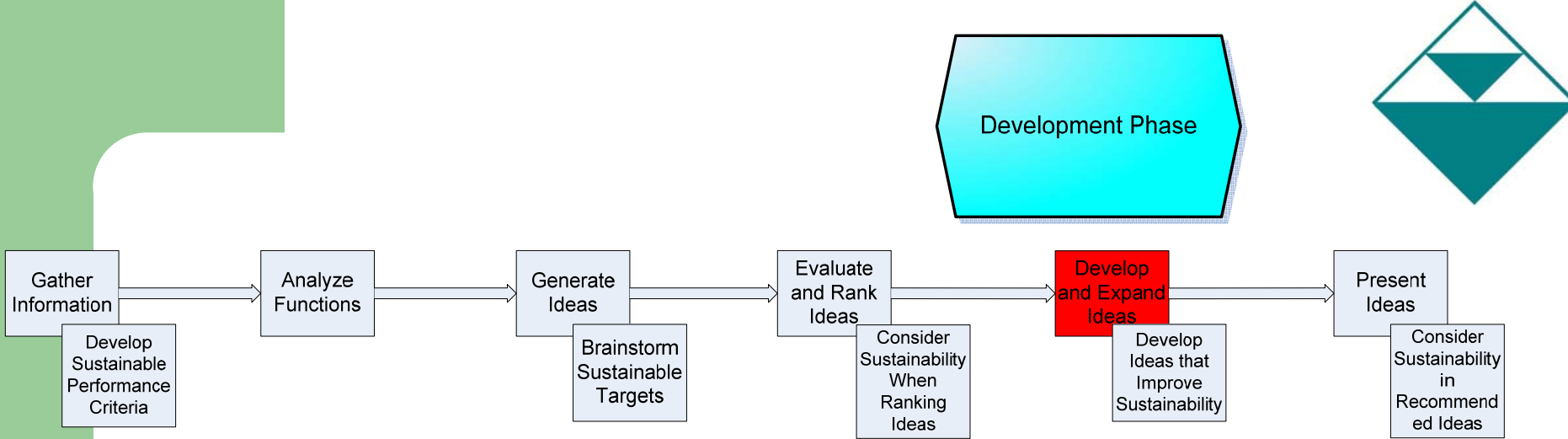
Generate Ideas

Brainstorm Sustainable Targets



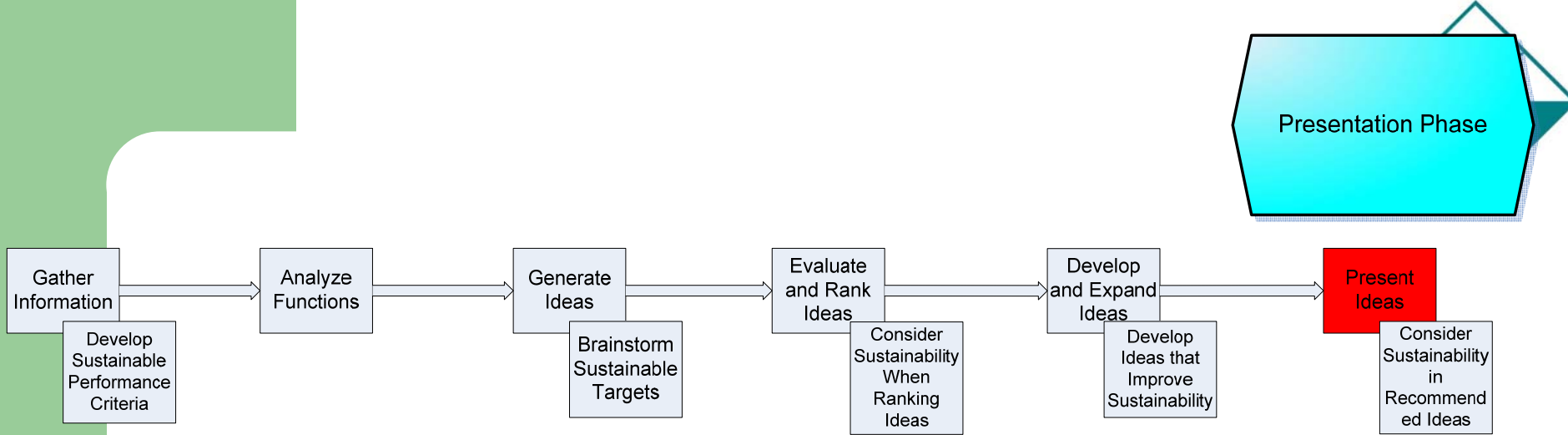
Evaluate and Rank Ideas

Consider Sustainability When Ranking Ideas



Develop and Expand Ideas

Develop Ideas that Improve Sustainability



Present Ideas

Consider Sustainability in Recommended Ideas

Performance Measures



Sustainability focused Performance Measures/
evaluation criteria can include

- New Land Area Paved
- Farm/rural land affected
- Property Impact
- Forest / Vegetative Area Impacted
- Wetland / Water Body Impact
- Storm Water Management
- Alternative Transportation Modes
- Recycling / Reuse of Materials
- Use of Regionally-Available Materials



Secondary Measures

Environmental, Social and Economic Sustainability Issues Are Addressed Within Other Performance Criteria Such As: air quality, noise, access, quality of life, health, business impact, etc.

Sustainability Issue	Performance Criteria	Consideration
Greenhouse Gas Emissions	Traffic Operations	– Avoid queuing
	Maintainability	– Fewer delays and queuing throughout life cycle
Economic Impact	Access	– Access businesses and community
	Traffic Operations	– Move people and goods efficiently

LEED (Leadership in Energy and Environmental Design)



- LEED (Leadership in Energy and Environmental Design) is a tool for rating sustainability in new buildings.
- Four Levels:
 - Certified 26-32 points
 - Silver 33-38 points
 - Gold 39-51 points
 - Platinum 52-70 points

LEED Scoring



Six Performance Categories

- Site
- Water
- Energy
- Materials and Resources
- Indoor Environmental Quality
- Innovation and Design Process



The Cost of Green

- There is a very large variation in costs of buildings, even within the same building program category.
- Cost differences between buildings are due primarily to program type.
- There are low cost and high cost green buildings.
- There are low cost and high cost non-green buildings.

LEED oriented workshop

Sample Results



- *Sustainable Site – 10 of 14 potential points*
 - Currently available showers meet bicycle transportation need.
 - Designated parking for multiple occupancy vehicles (MOV) / Low emission vehicles – set aside 10% (16 spaces) in prime locations. Increase of MOV use should reduce pressure on remaining 90%.
 - Designate Open Space equivalent to building footprint to be protected and/or restored
 - Design storm water system for two year storm in lieu of 1-year storm
 - Relocate storm water management facilities to avoid disturbing the south side of the site and reduce portion of site being disturbed
 - The two story garage design will make accomplishing the above items much more likely.

Sample Results
provided by:

