ADVANCING VALUE METHODOLOGY THROUGH DATA ANALYTICS IMPLEMENTATION

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OUTLINE

1. Value Methodology (VM) Process
2. Challenges in the Evaluation Phase of VM Practice
3. Data Analytics Solutions
4. Case Study & Applications

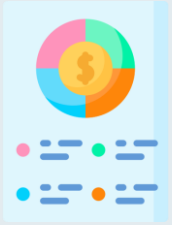
VALUE METHODOLOGY BASICS

What It Is?

A **systematic problem-solving method**

Getting the best function at the lowest life-cycle cost without reducing quality

A **multidisciplinary team approach**



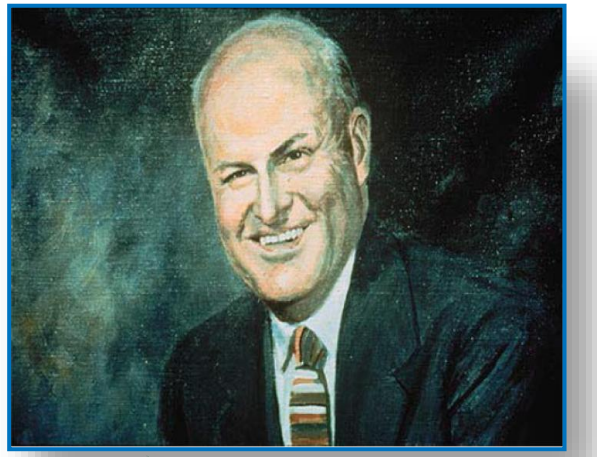
Applied to **capital improvement projects**

Goal: **Save money without compromising function** and **enhance value** within the budget

VALUE METHODOLOGY BASICS

VM Explores Functions by Asking Key Questions

- What is it?
- What does it do?
- What must it do?
- What does it cost?
- What alternatives could achieve the same function?



Lawrence D. Miles

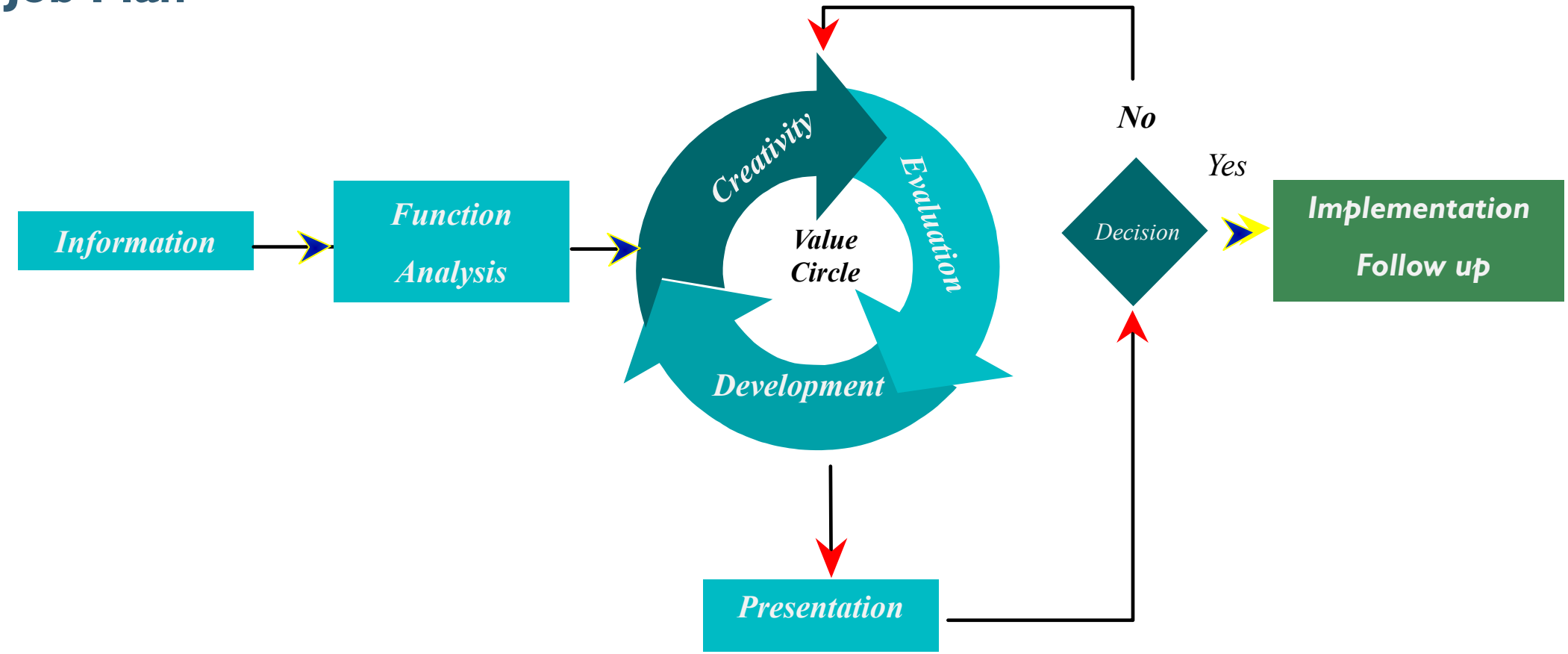
People want functions, not things.

How is a VM Study Conducted ?

VALUE METHODOLOGY

VALUE METHODOLOGY

VM Job Plan

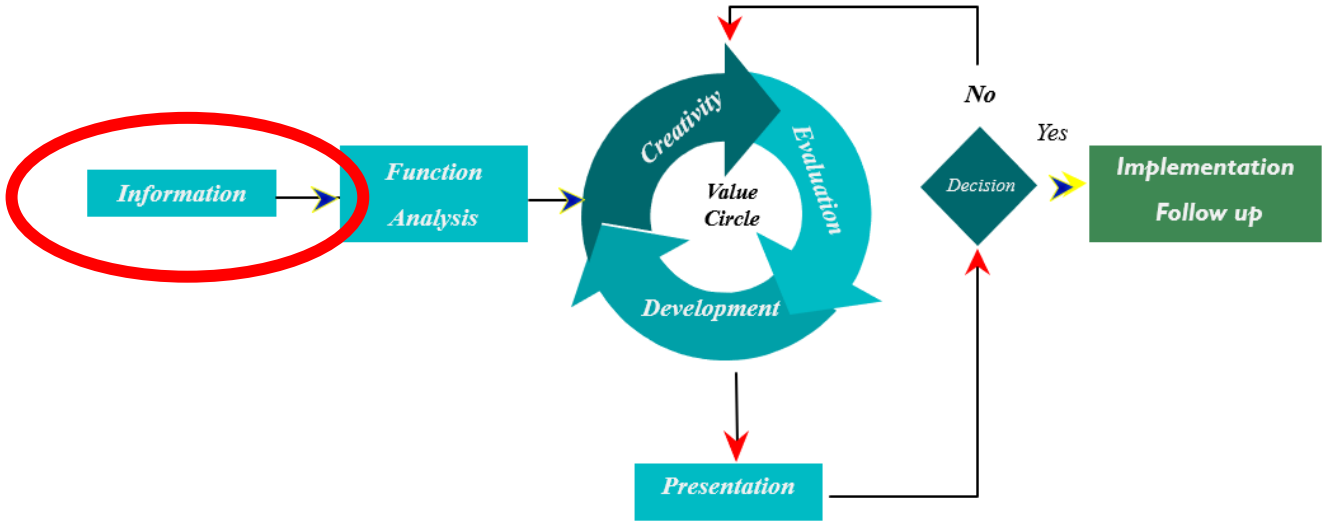


VALUE METHODOLOGY

Information Phase

Purpose: Understand the current state of the project andconstraints that influenced project decisions.

1. Understanding all the provided information
2. Identify workshop information still needed
3. Comprehend the facilitators information expressed in value models or tools
4. Identify potential value improvement opportunities based on the available information



VALUE METHODOLOGY

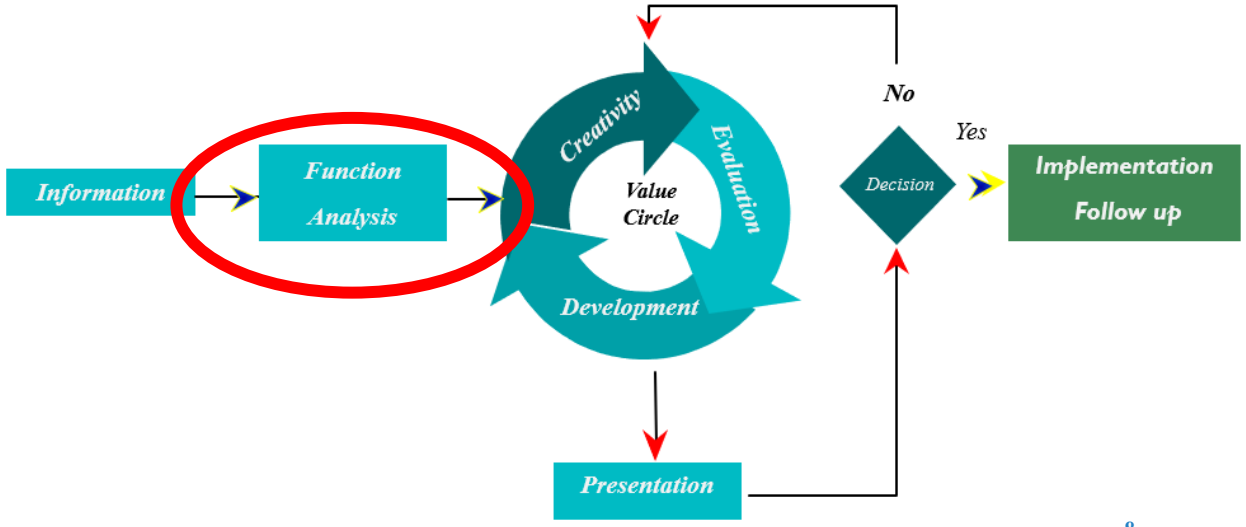
Function Phase

Purpose: Understand the project from a functional perspective; what must the project do, rather than how the project is currently conceived.

Typical Outcome:

Identify the value improvement area.

(Value Target Functions)



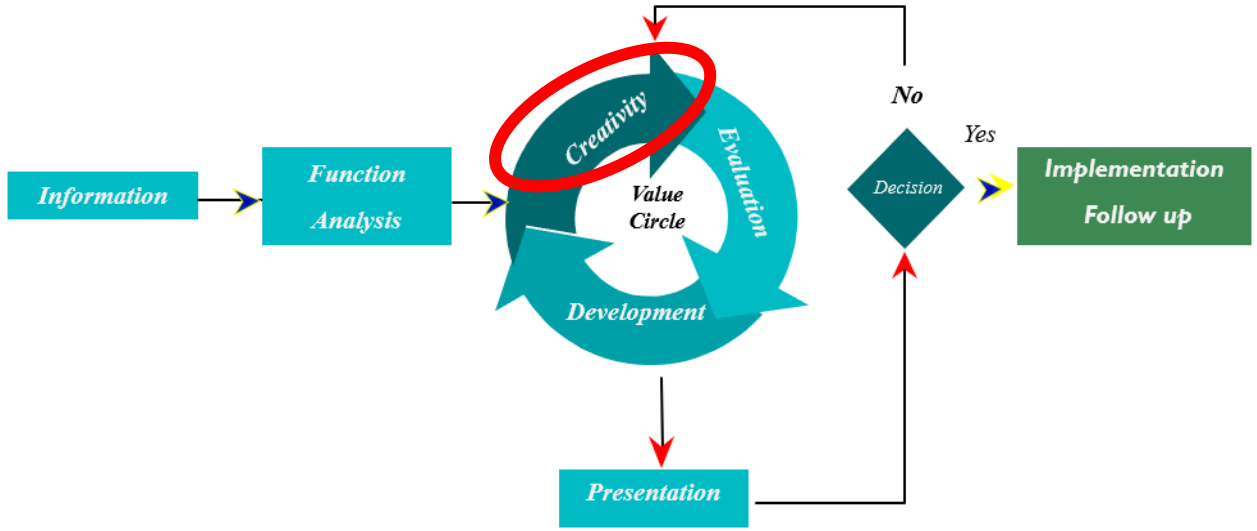
VALUE METHODOLOGY

Creativity Phase

Purpose: Generate a large quantity of ideas or alternatives to accomplish the functions identified in the previous phase.

Typical Outcome:

The team develops a broad array of ideas that provide a wide variety of possible alternative ways to perform the function(s) to improve the value of the project.



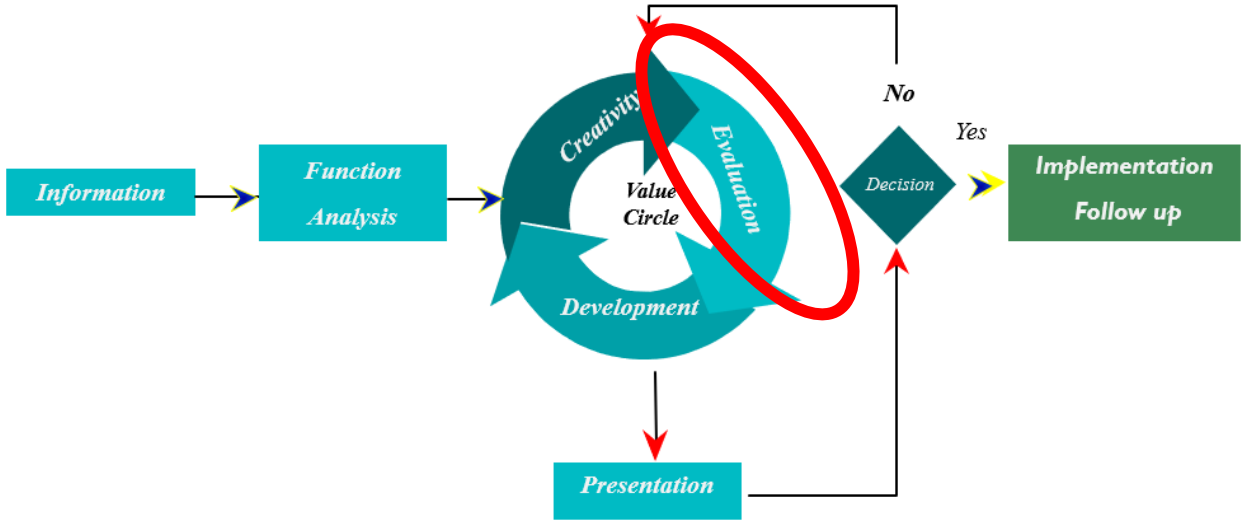
VALUE METHODOLOGY

Evaluation Phase

Purpose: Judge the ideas generated during the creativity phase.

Typical Outcome:

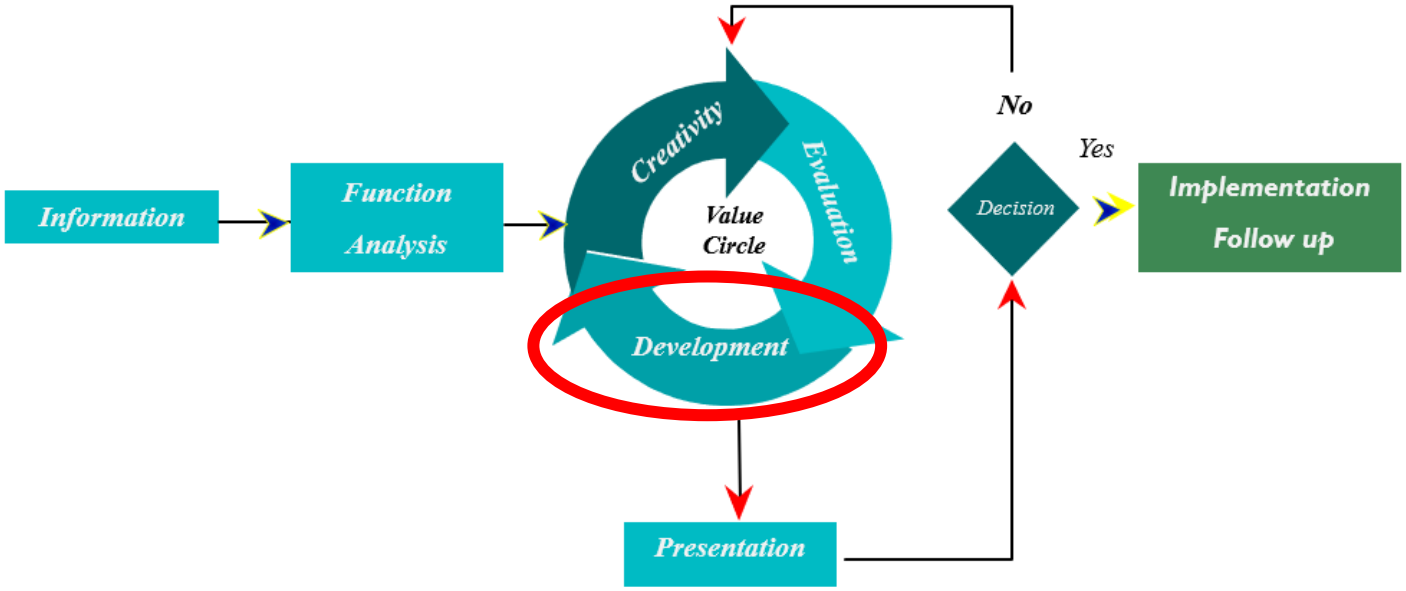
The team produces a focused list of concepts that warrant quality time to develop into value-based solutions that can be implemented into a project or a project feature.



VALUE METHODOLOGY

Develop Phase

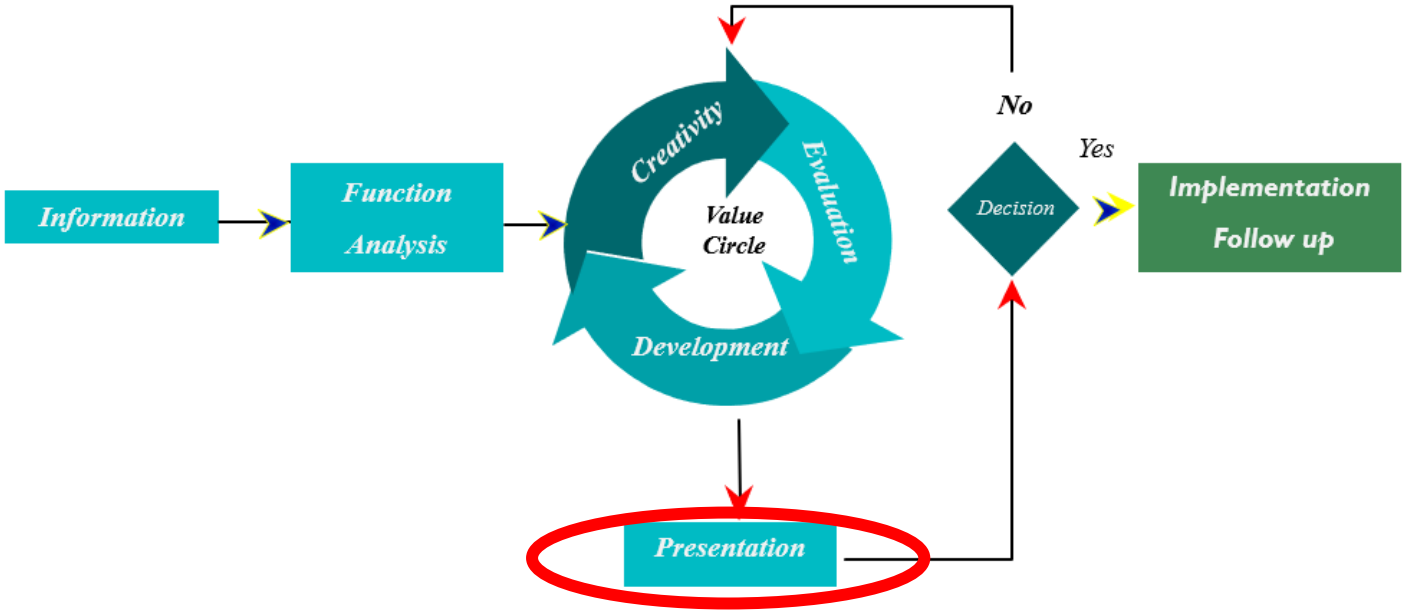
Purpose: Develop the selected ideas into proposals.



VALUE METHODOLOGY

Presentation Phase

Purpose: Present value alternatives to management team and other project stakeholders or decision makers.



PROBLEMS & CHALLENGES IN THE EVALUATION PHASE

Subjectivity in Judgments

- Ideas are typically selected by voting, facilitator judgment, or group consensus.
- Leads to bias, favoritism, or groupthink.

Overload of Ideas

- Workshops generate hundreds of alternatives.
- Hard to systematically screen them within limited time.

Time Pressure

- Evaluation must be done within a 1–5 day workshop.
- Results in quick filtering without deep analysis.

Lack of Analytical Tools

- Decisions rely on intuition, not structured analysis.
- No clustering or prioritization methods are systematically applied.

Difficulty Identifying Relationships

- Ideas may be related or overlapping (e.g., two sustainability ideas that reinforce each other).
- Traditional evaluation doesn't reveal these hidden patterns.

Weak Validation

- Chosen ideas are rarely tested statistically.
- Leads to low confidence in whether selected ideas truly improve value.

Stakeholder Influence

- Stronger voices (clients, senior engineers) dominate the decision.
- Some ideas are pushed through, others silenced.

TURNING CHALLENGES INTO OPPORTUNITIES WITH DATA ANALYTICS

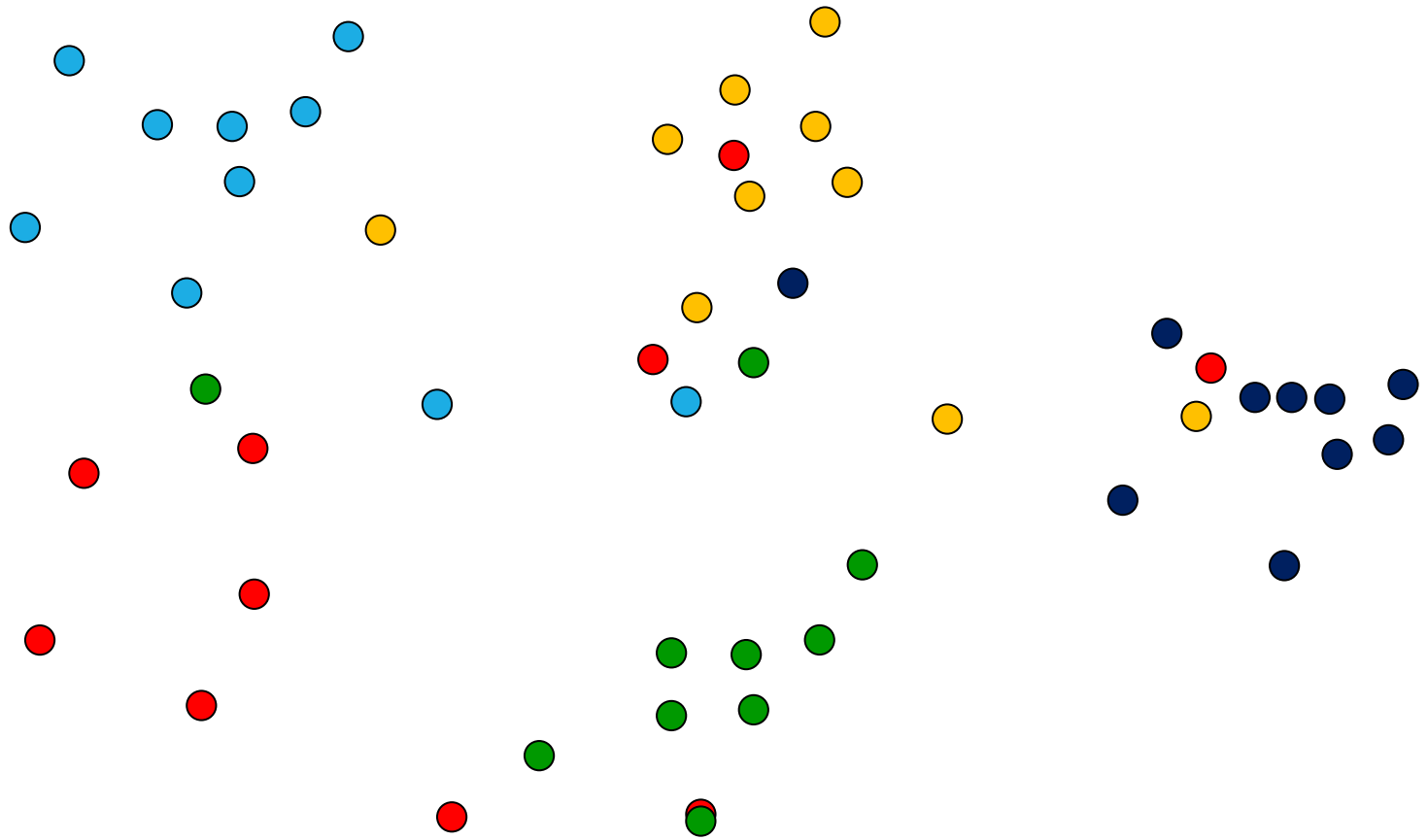
What is Data Analytics?

Data Analytics is defined as the science of examining raw data, removing excess noise, and organizing the data with the purpose of drawing conclusions for decision making

- The intent of Data Analytics is to transform raw data into valuable information.
- Data analytics is used in today's business world by examining the data to generate models for predictions of patterns and trends.

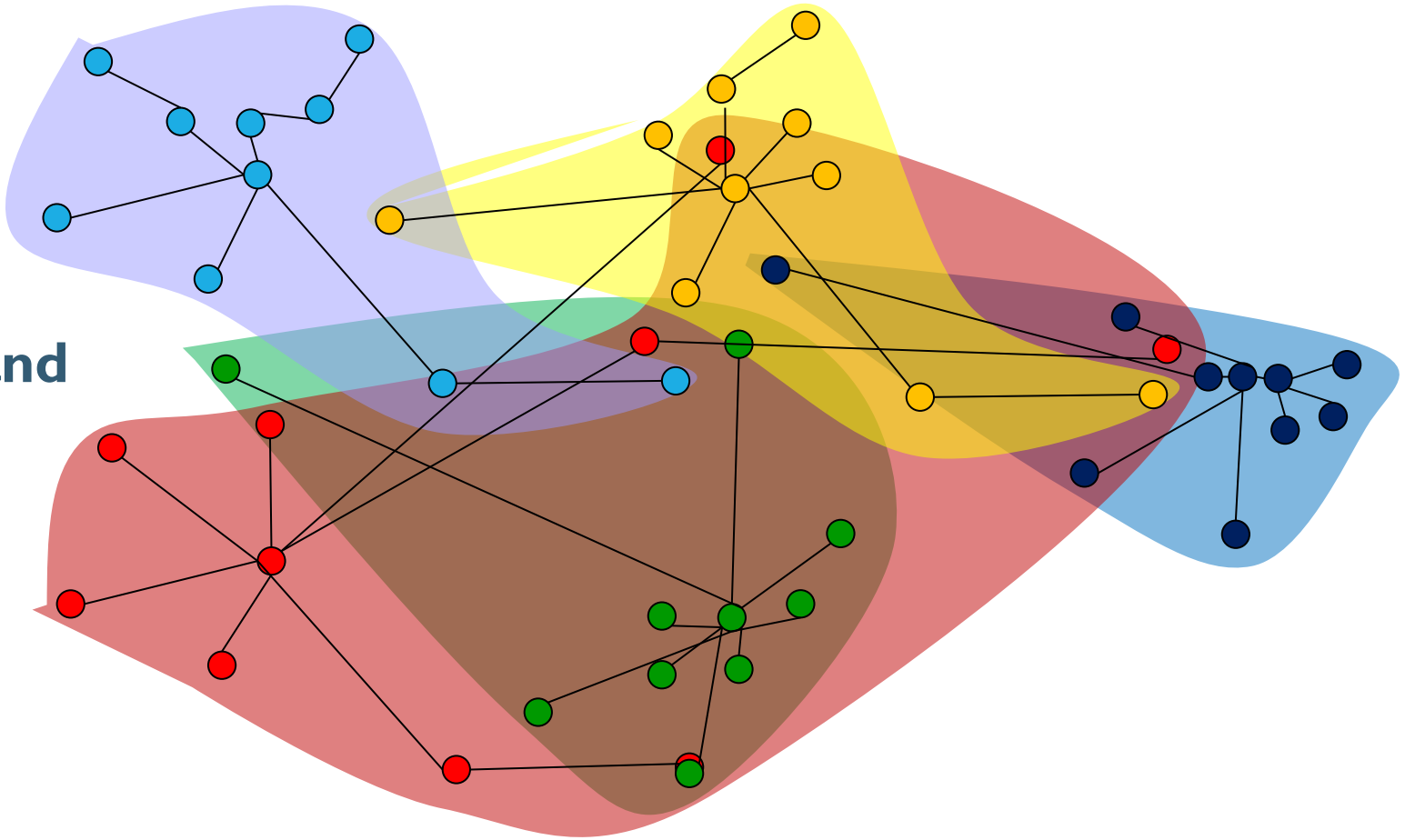
DATA ANALYTICS IN VM

Creativity Ideas



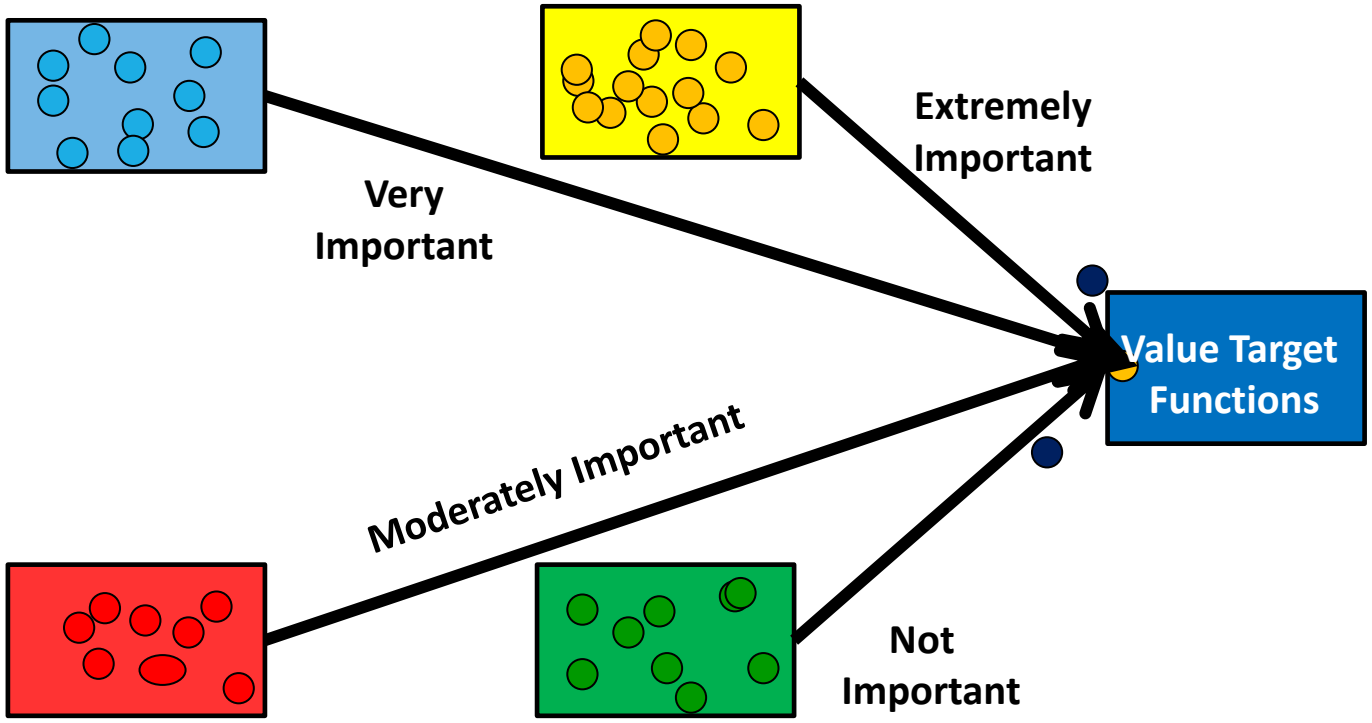
DATA ANALYTICS IN VM

Categorizations and correlations



DATA ANALYTICS IN VM

Impact and prioritization



CASE STUDY

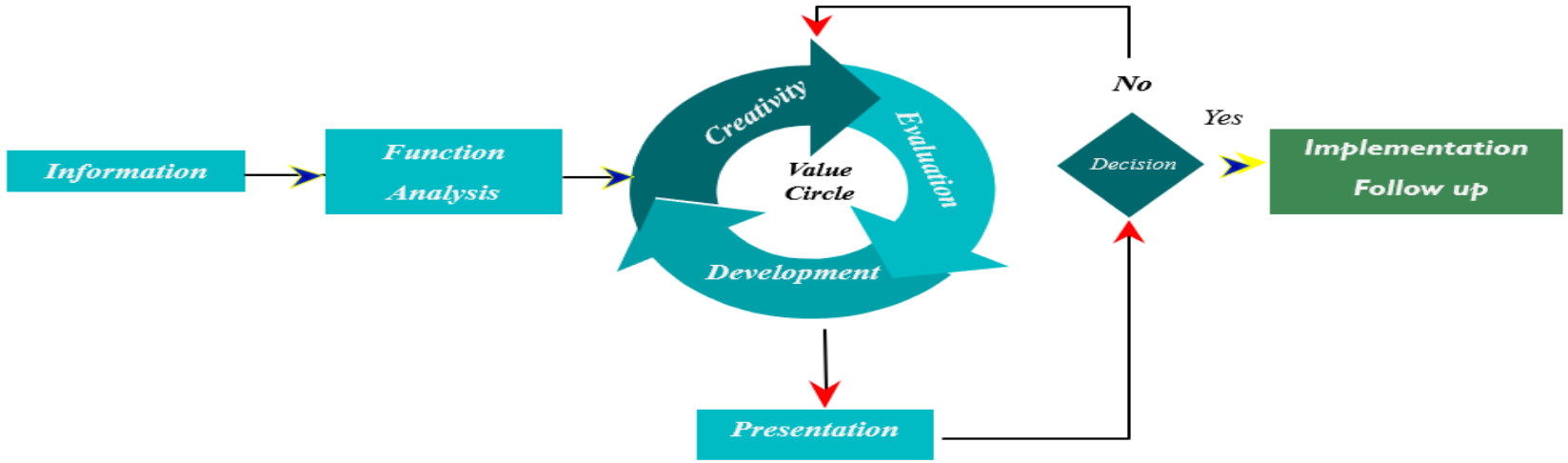
Waste Water Treatment Plant (WWTP)

Value Target Functions

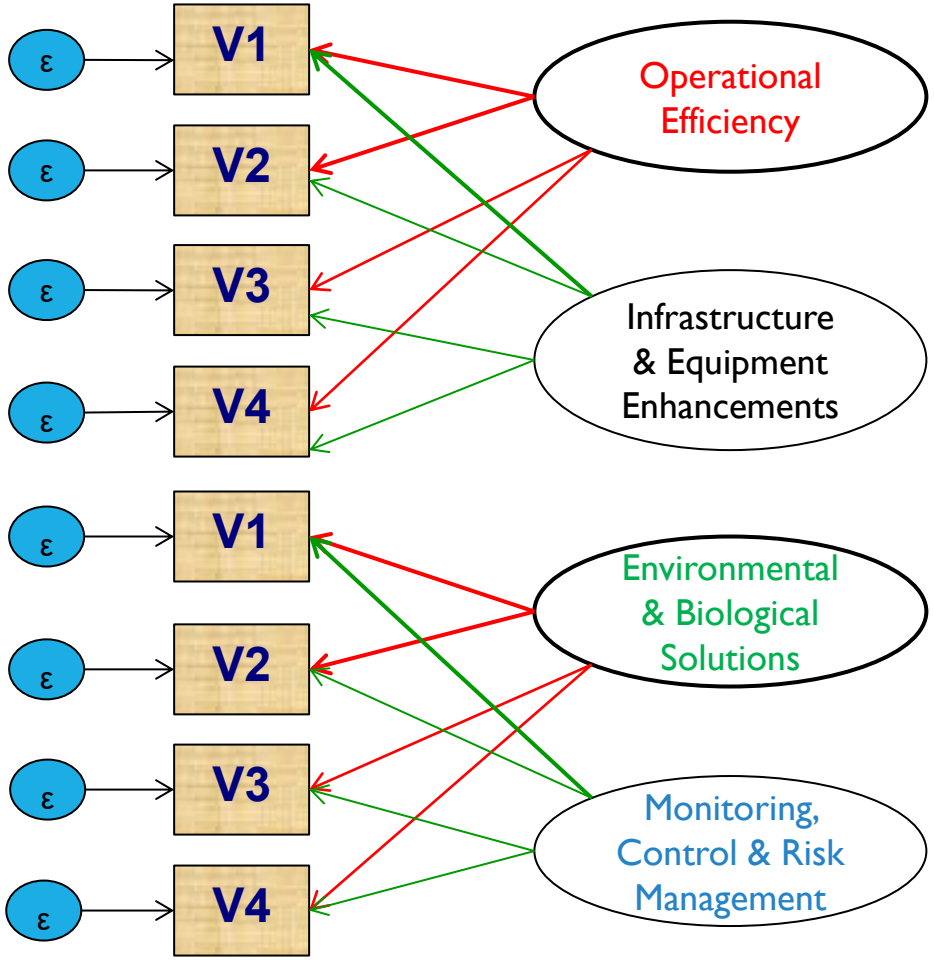
Increase streams

Creativity ideas

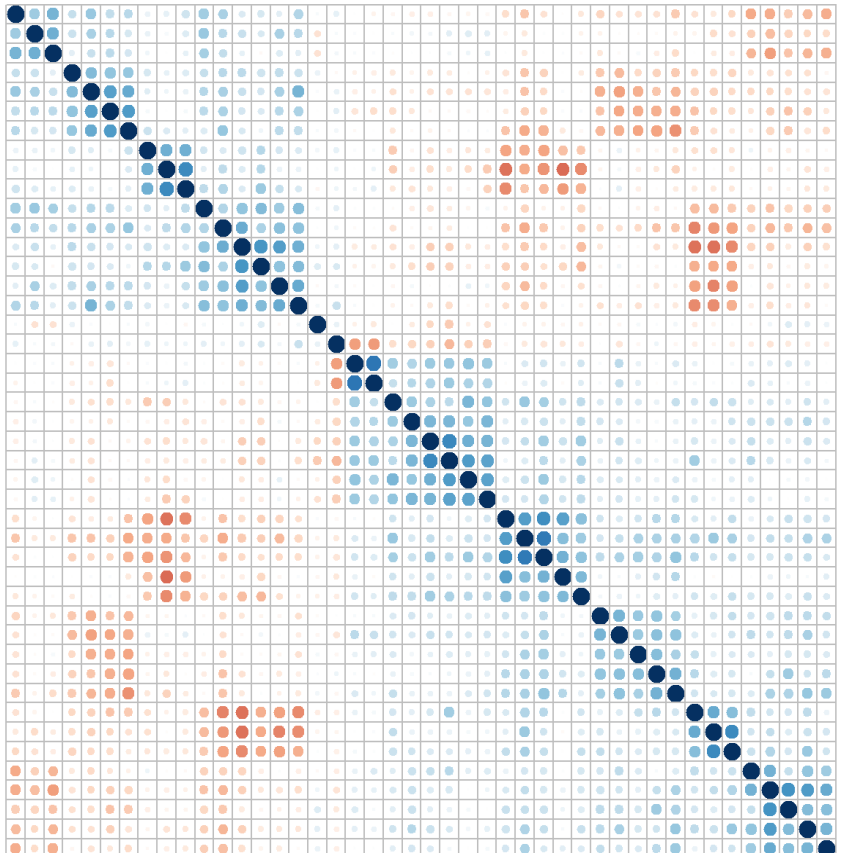
12 Ideas



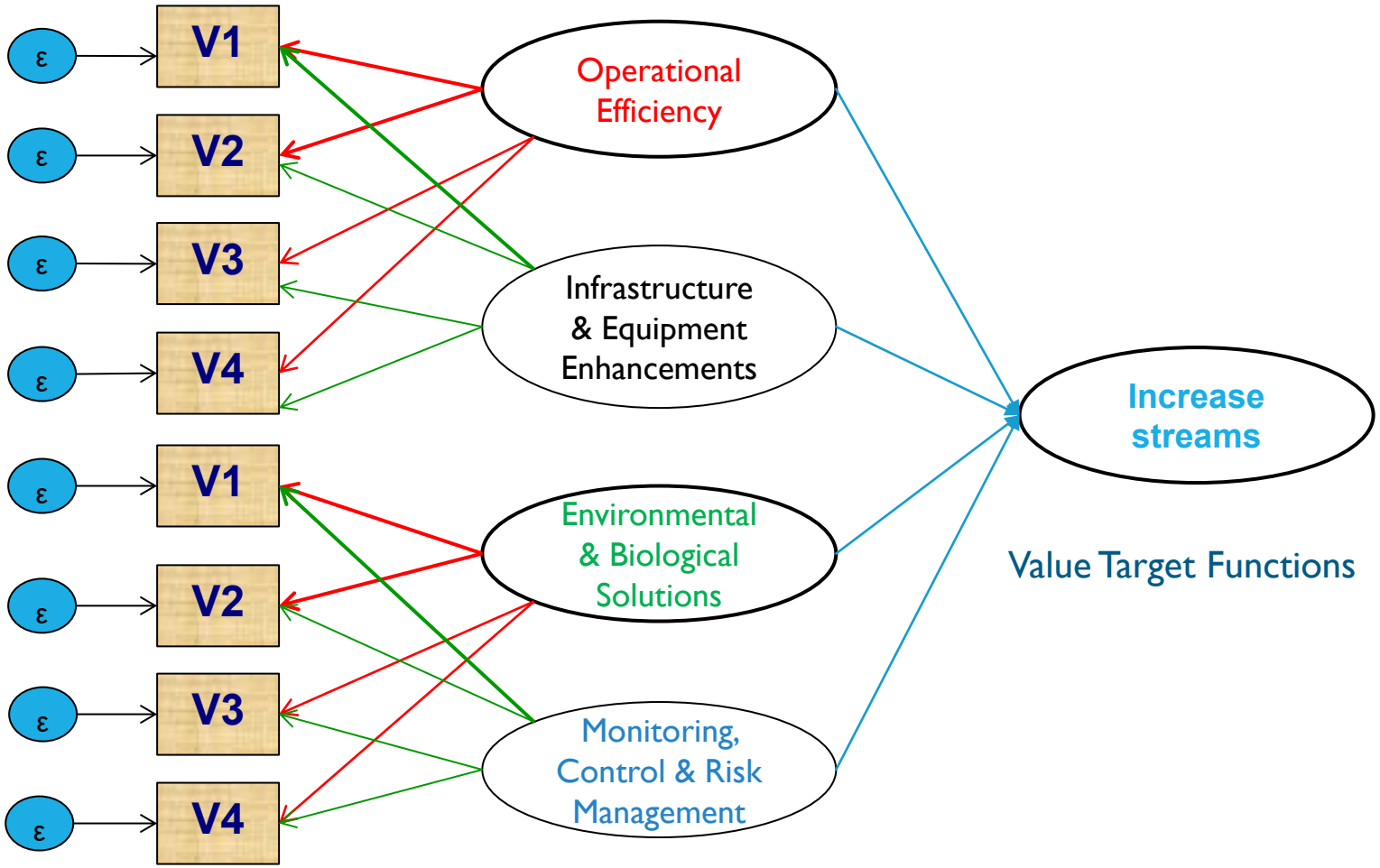
CATEGORIZATIONS AND CORRELATIONS



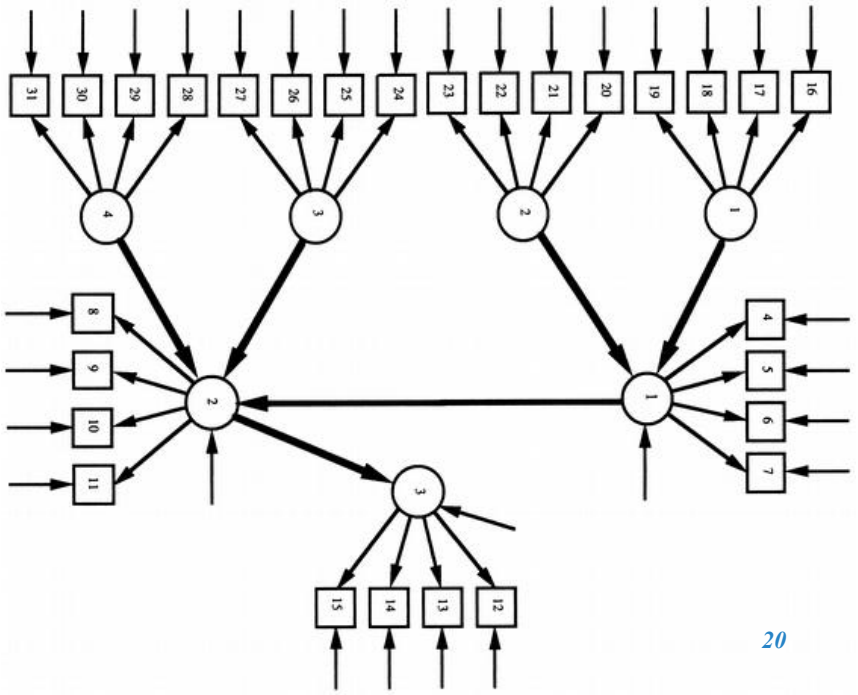
Exploratory Factor Analysis



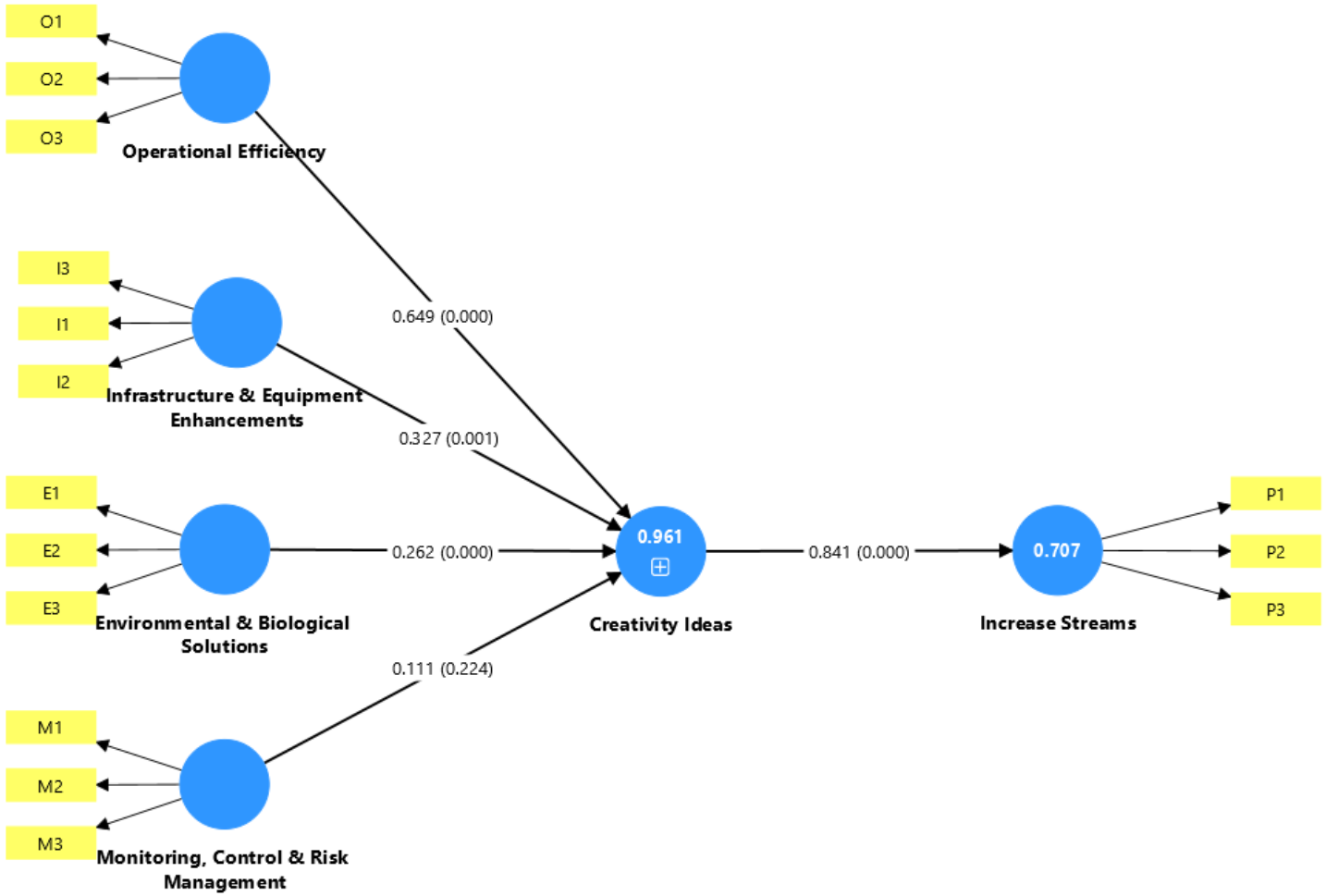
IMPACT AND PRIORITIZATION



Structural Equations Modeling-SEM



EVALUATION PHASE RESULTS



THANK YOU