Unit 5: Network Operations Planning

Module 5-2

Network Operations Planning Process

Austroads

Today's presenter

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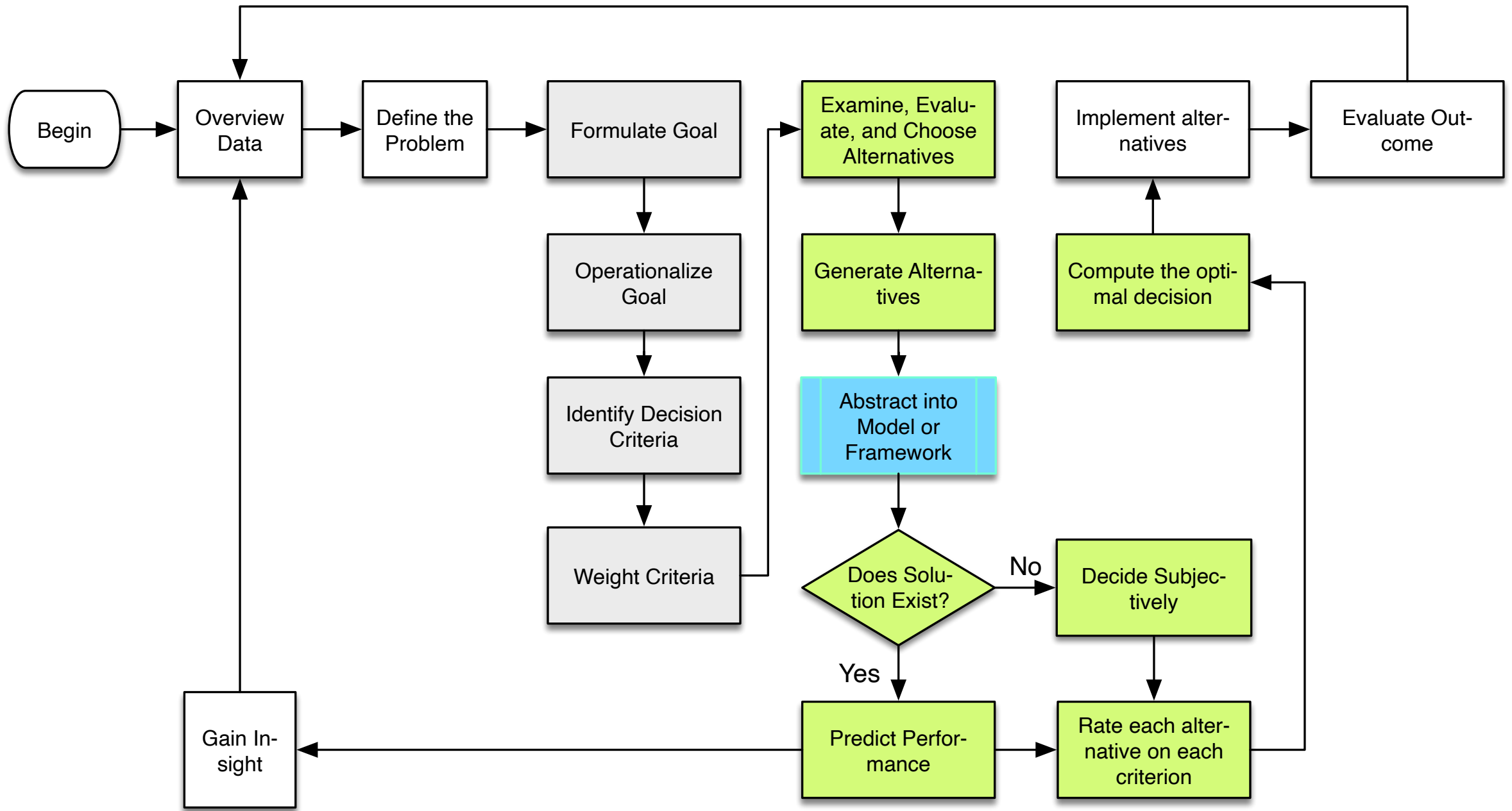
The Rational Planning Process

Begin → Overview Data → Define the Problem → Formulate Goal

Formulate Goal → Operationalize Goal → Identify Decision Criteria → Weight Criteria

Examine, Evaluate, and Choose Alternatives → Generate Alternatives → Abstract into Model or Framework → Does Solution Exist?

Does Solution Exist? — No → Decide Subjectively
Does Solution Exist? — Yes → Predict Performance

Predict Performance → Rate each alternative on each criterion → Compute the optimal decision → Implement alternatives → Evaluate Outcome

Predict Performance → Gain Insight → Overview Data

Evaluate Outcome → Overview Data

Decide Subjectively → Rate each alternative on each criterion

Figure by David Levinson.

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Define the Problem

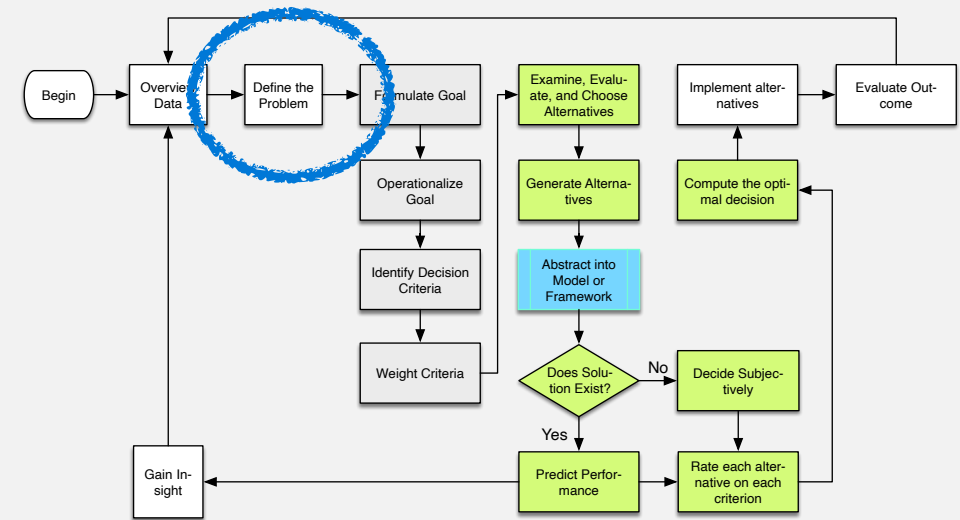Objectives - measures the effectiveness or performance

Environment - things which affect the system but are not [directly] affected by it

Resources - factor inputs to do the work

Components - set of activities or tasks of the system

Management - sets goals, allocates resources and exercises control over components

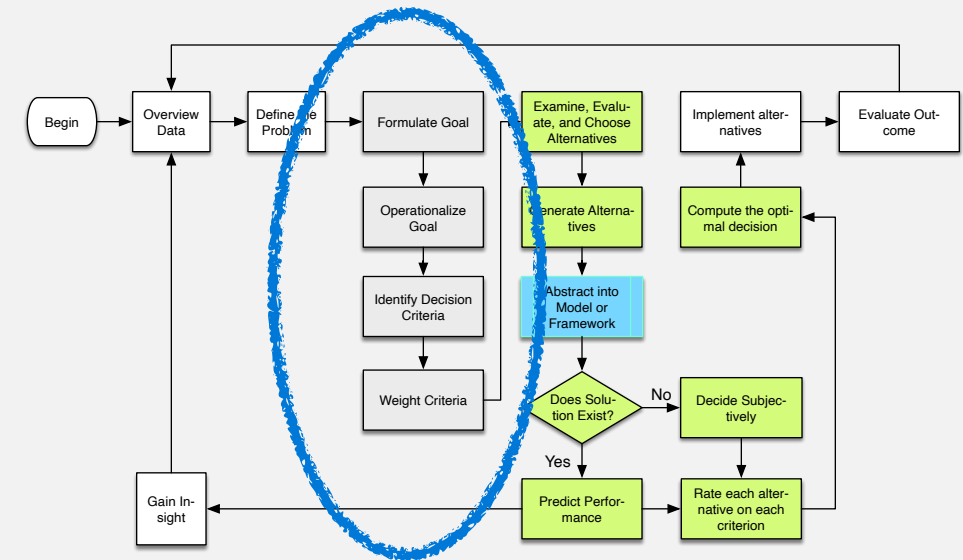model of how variables above relate to each other

Formulate Goal

Operationalise Goal (e.g. Zero Deaths/Safe Mobility, or Improve Accessibility)

Identify Decision Criteria

Weight Criteria

Think about a Problem Your Group at Work is Working On

What is the goal of identified problem?

Generate and assess alternatives available to decision-makers

Algorithms-systematic search over available alternatives

- Analytical
- Exact numerical
- Heuristic numerical
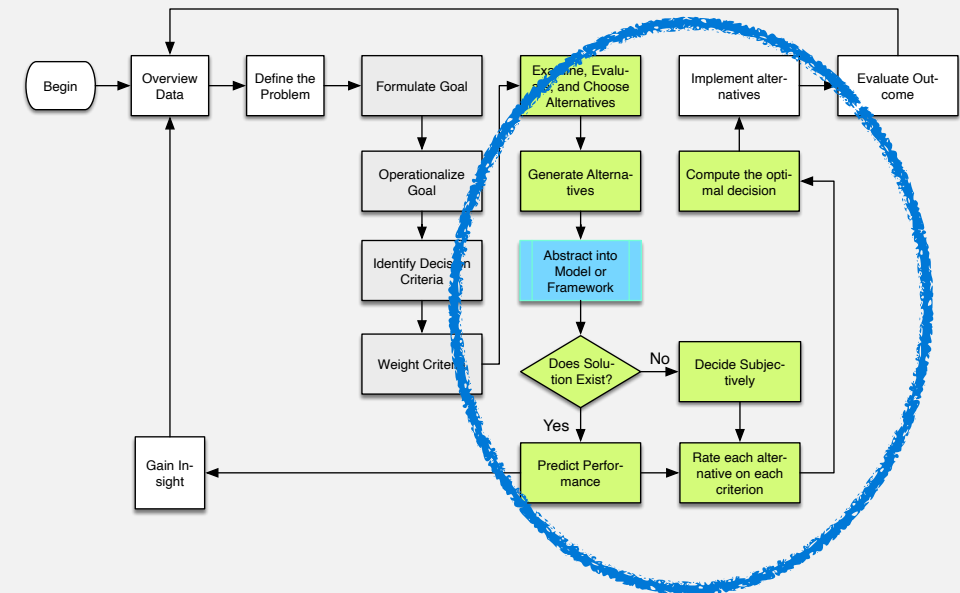
Generate alternatives selectively, evaluate subjectively

- Fatal flaw analysis
- Simple rating schemes
- Delphi exercises

Generate alternatives judgmentally, evaluate scientifically using system model

Need for "stopping rule"

Constraints

What keeps you from achieving your goal?
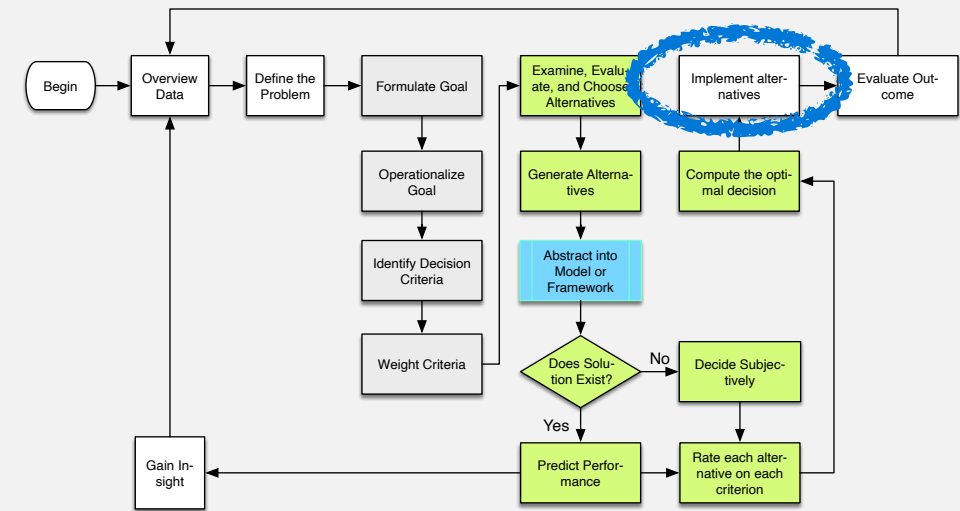
Implement Alternatives

The analyst is generally not the decision-maker.

The actual influence of the results of the analysis in actual decisions will depend on:

determinacy of evaluation

confidence in the results on the part of the decision maker

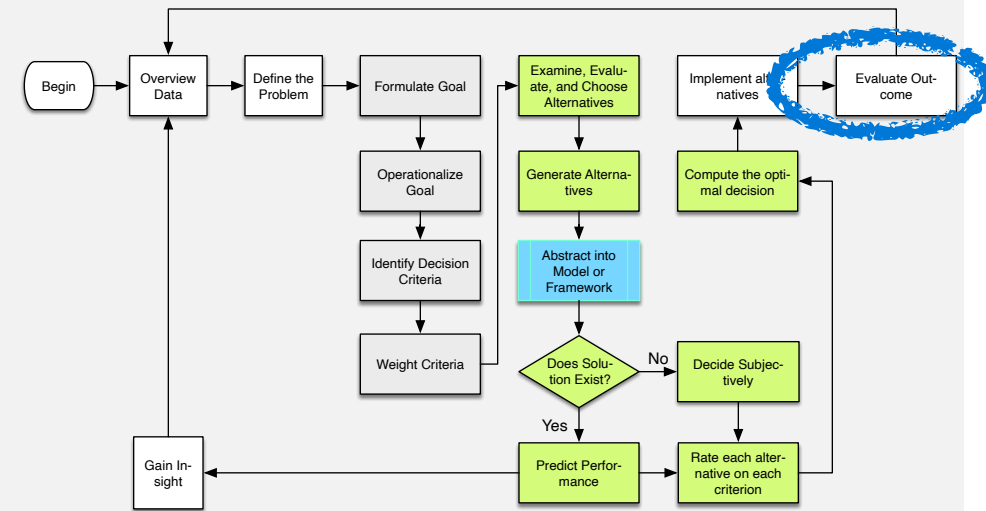consistency of rating among alternatives

Evaluation

Definition: output from a later step in systems analysis used as input to a later step.

Examples.

analysis leads to revisions in systems definition

implementation experience leads to a revision of output system definition or values that underlay that definition.

Issues

Limited Computational or Solution Generating Capacity

Incomplete Information

Cost of Analysis

Conflicting Goals/Evaluation Criteria

Reliance on Experts (What about the People?)

Alternative Planning Decision Making Paradigms. ¿Are They Irrational?

Satisficing

Incrementalist

Organisational Process

Political Bargaining

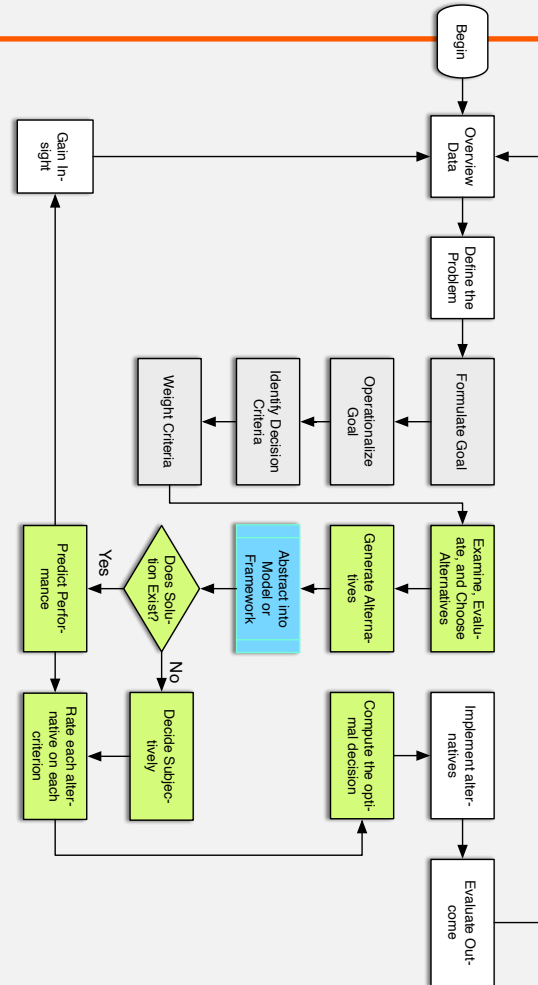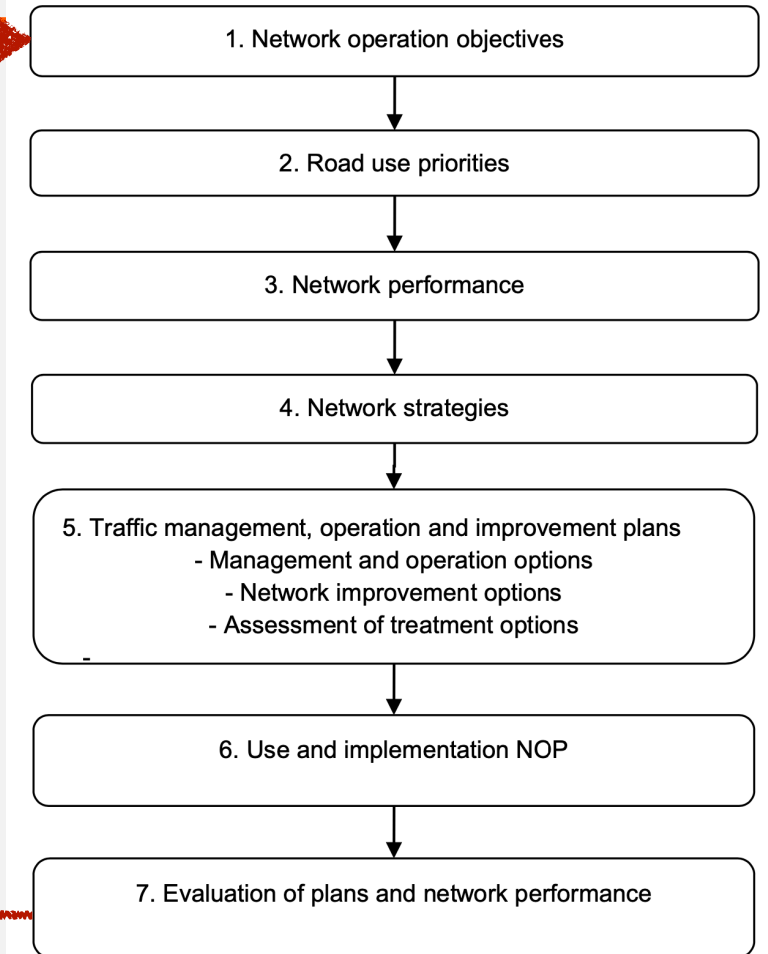Decomposition/ Hierarchical Strategy/ Tactics/ Operations

Planning Process

Figure 4.3: Network operation planning process

Begin

Overview Data

Gain In-sight

Define the Problem

Formulate Goal

Operationalize Goal

Identify Decision Criteria

Weight Criteria

Examine, Evaluate, and Choose Alternatives

Generate Alterna-tives

Abstract into Model or Framework

Does Solu-tion Exist?

Predict Perfor-mance

Yes

No

Decide Subjec-tively

Rate each alter-native on each criterion

Compute the opti-mal decision

Implement alter-natives

Evaluate Out-come

1. Network operation objectives

2. Road use priorities

3. Network performance

4. Network strategies

5. Traffic management, operation and improvement plans
- Management and operation options
- Network improvement options
- Assessment of treatment options
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6. Use and implementation NOP

7. Evaluation of plans and network performance

Source: Based on the proposed NOP planning framework in Austroads (2013b).
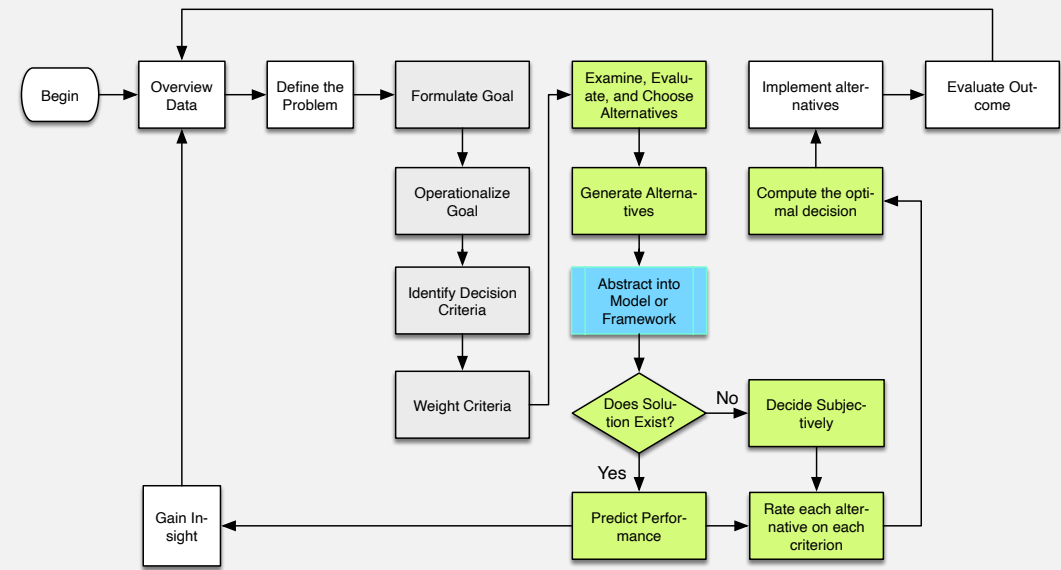
Questions

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- The planning process described by the process wherein the analysts: Overview Data, Define the Problem, Formulate the Goal, Evaluate and Choose Alternatives, Implement Alternatives, and Evaluate Outcomes is referred to as which of the following:
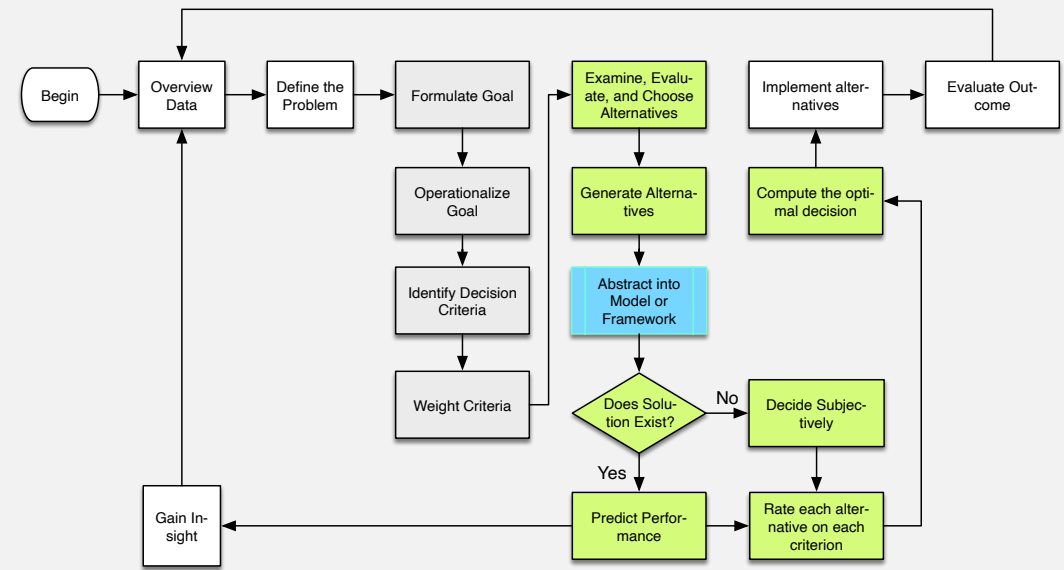
    A. Rational Planning Process

    B. Incrementalist Approach

    C. Satisficing

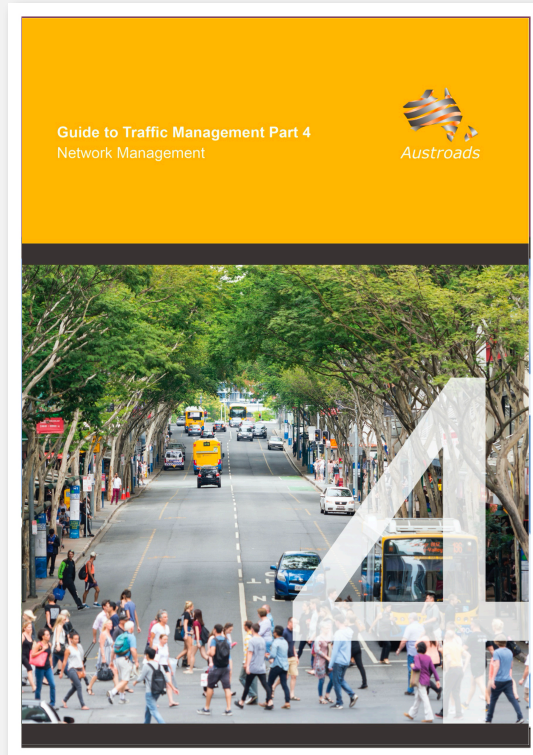   D. Organisational Process

    E. Political Bargaining

Questions

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  A. Rational Planning Process

  B. Incrementalist Approach

  C. Satisficing

  D. Organisational Process

  E. Political Bargaining

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Austroads report

Some of the information from this presentation is conveyed in the Austroads Report: Guide to Traffic Management Part 4: Network Management.

This report can be downloaded from Austroads Website:

https://austroads.com.au/publications/network/ap-r550-17