AI-04580 8 Steps Problem Solving

#problem, #cmp

The 8 PrOACT Steps

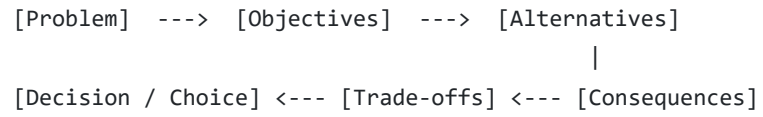
1. **Problem** — Define the decision challenge clearly and question initial constraints.
2. **Objectives** — Specify your core goals, needs, and criteria for success.
3. **Alternatives** — Generate creative, distinct, and feasible options to choose from.
4. **Consequences** — Evaluate how well each alternative meets every objective.
5. **Trade-offs** — Balance competing objectives to eliminate weaker options.
6. **Uncertainties** — Identify future unknowns and assess their impact on outcomes.
7. **Risk Tolerance** — Gauge your willingness to accept potential bad outcomes.
8. **Linked Decisions** — Plan how today's choice affects future decisions.

The framework introduced in ***Smart Choices: A Practical Guide to Making Better Decisions*** (by John S. Hammond, Ralph L. Keeney, and Howard Raiffa) is built on the principle that while you cannot control outcomes, you can control your **decision process**.

The core method for solving complex decision problems is structured around the **PrOACT** architecture.

1. The Core Method: The PrOACT Framework

The core method consists of five foundational steps (PrOACT), supplemented by three elements for complex environments:



Core Steps (PrOACT)

1. **Problem (Pr)**: Frame the decision problem correctly.
    - *Action:* Identify what triggered the decision, question assumed constraints, and define the boundaries of what you are actually trying to decide. Avoid stating the problem as a pre-selected solution.
2. **Objectives (O)**: Specify what you want to accomplish.
    - *Action:* Turn your values, needs, and concerns into explicit criteria. Objectives dictate what information to gather and serve as the yardstick to evaluate your options.
3. **Alternatives (A)**: Create imaginative courses of action.
    - *Action:* Generate distinct, feasible choices. Remember that your ultimate decision can never be better than your best alternative.
4. **Consequences (C)**: Assess how well each alternative meets each objective.
    - *Action:* Build a **Consequences Table** (a matrix with alternatives along one axis and objectives along the other). Describe the expected outcomes frankly using consistent units or clear qualitative scales.
5. **Trade-offs (T)**: Strike a balance among conflicting objectives.
    - *Action:* Identify dominated alternatives (options that are equal to or worse than another option across all criteria) and eliminate them. For remaining options, use structured methods like the **Even Swap** technique to trade off incremental gains in one objective against losses in another.

Supplementary Elements for Complex Decisions

When situations involve unknown future conditions or multi-stage steps, three additional elements refine the process:

- **Uncertainties**: Map out what future events could occur, their likelihoods, and how they impact the consequences.
- **Risk Tolerance**: Evaluate your appetite for bad outcomes versus potential gains.

- **Linked Decisions**: Account for how choices made today condition or restrict choices available tomorrow.

2. Fundamental Concepts

To apply the method effectively, three governing concepts drive the *Smart Choices* philosophy:

A. Value-Focused Thinking

Most people engage in *alternative-focused thinking*—they look at the visible choices in front of them and pick one. *Smart Choices* shifts to **Value-Focused Thinking**:

$$\text{Values/Objectives} \longrightarrow \text{Drive the Creation of} \longrightarrow \text{Custom Alternatives}$$

By articulating objectives *before* picking options, you unlock creative alternatives that directly target what matters most to you.

B. Separation of Process from Outcome

A good process does not guarantee a good outcome, nor does a good outcome imply a good process. External variables and luck play a role. The *Smart Choices* framework optimizes the **process quality** to consistently maximize expected value over time.

C. The Even-Swap Method

When comparing alternatives across multiple non-monetary objectives, the framework converts trade-offs into a systematic, objective currency:

> If Alternative A is better than Alternative B on Objective 1, determine how much performance on Objective 2 you would be willing to surrender on Alternative A to make it equal to Alternative B on Objective 1.

Once an objective has identical values across all remaining alternatives, that objective can be eliminated from the matrix, systematically simplifying the decision.

3. Underlying Mechanism: How a Problem Is Solved

The underlying cognitive and structural mechanisms that allow *Smart Choices* to resolve complex problems operate in three key phases:

Phase	Mechanism	Cognitive Action
1. Deconstruction	**Problem Disaggregation**	Breaks a daunting, high-stakes decision into discrete, modular components (Problem, Objectives, Alternatives, Consequences). This bypasses cognitive overload and reduces reliance on flawed heuristics.
2. Alignment	**Objective-Alternative Matching**	Forces hard quantitative/qualitative projection of outcomes into a matrix format (Consequences Table). This reveals hidden assumptions, gaps in logic, and false constraints.
3. Reintegration	**Systematic Elimination & Synthesis**	Uses logical trade-offs (like the Even Swap) to trim dominated options and equalize variables until the optimal choice emerges naturally.

By forcing subjective values into an explicit structure, the methodology transforms intuitive "gut feelings" into transparent, logically sound actions.