

A Brief Overview of Structured Decision Making

Decisions are the only means you have to change your future life.

--Ronald Howard, Stanford University

We make decisions constantly, from the obvious to the difficult, yet give remarkably little attention to improving our decision making skills. What is a good decision, and how do we get better at making good decisions? To figure this out, we need to know at least two things:

1. What we want. This is primarily values-based. There is no a priori right or wrong answer; figuring this out involves introspection, inquiry, and deliberation.
2. How well different options achieve the various things that matter to us in this decision. This involves primarily analysis, figuring out how to predict the consequences of different courses of action.

Difficult decisions, then, are best approached with a deliberative-analytic processⁱ. Just as the choice and practice of analytic methodology matters for the quality of science used in decision making, the choice and practice of deliberative methodology matters for the quality of the decision overall. Structured decision making (SDM) is a philosophy, framework, and set of tools that embodies the deliberative-analytic approach. It can help individuals and groups make decisions from the simple to the challenging and can build decision making skill at all levels.

The philosophy, the framework, and the tools

Most decisions don't need full, formal decision analysisⁱⁱ. Depending on the complexity of a decision, it may be enough to apply thinking consistent with SDM philosophy and the ProACT framework (more below). For decisions that do need some level of formal analysis, there is a wide variety of decision tools that can help. Thinking through decision making steps in a systematic way can help to identify what tools are needed to move forward.

Core elements of the SDM philosophy

- Approach decisions with an inquiry mindset rather than an advocacy mindset. This applies to individual as well as group decisions. Focus first on insight rather than

answers—without clarity and agreement on what the problem is, it is impossible to evaluate which solution is best!

- Recognize the distinct roles of science and values in decision making. Values define desired goals and objectives, while science helps to predict how well different actions meet those goals and objectives. Science can quantify risk and tradeoffs, but not determine which risks and tradeoffs are worth taking. Trying to resolve values differences with science or vice versa diminishes both.
- Tackle trade-offs, risks, and uncertainty honestly and intelligently. While issues of likelihood and consequences are primarily analytic questions, figuring out what tradeoffs and risks are acceptable is values-driven. Those who are making tradeoffs or being exposed to risks should have the opportunity to see their values explicitly incorporated into the decision making process.
- We all have subconscious biases and mental short-cuts that affect our decision making. Becoming aware of these stumbling blocks and how they can lead us astray can help us to avoid them, improving our decisions.

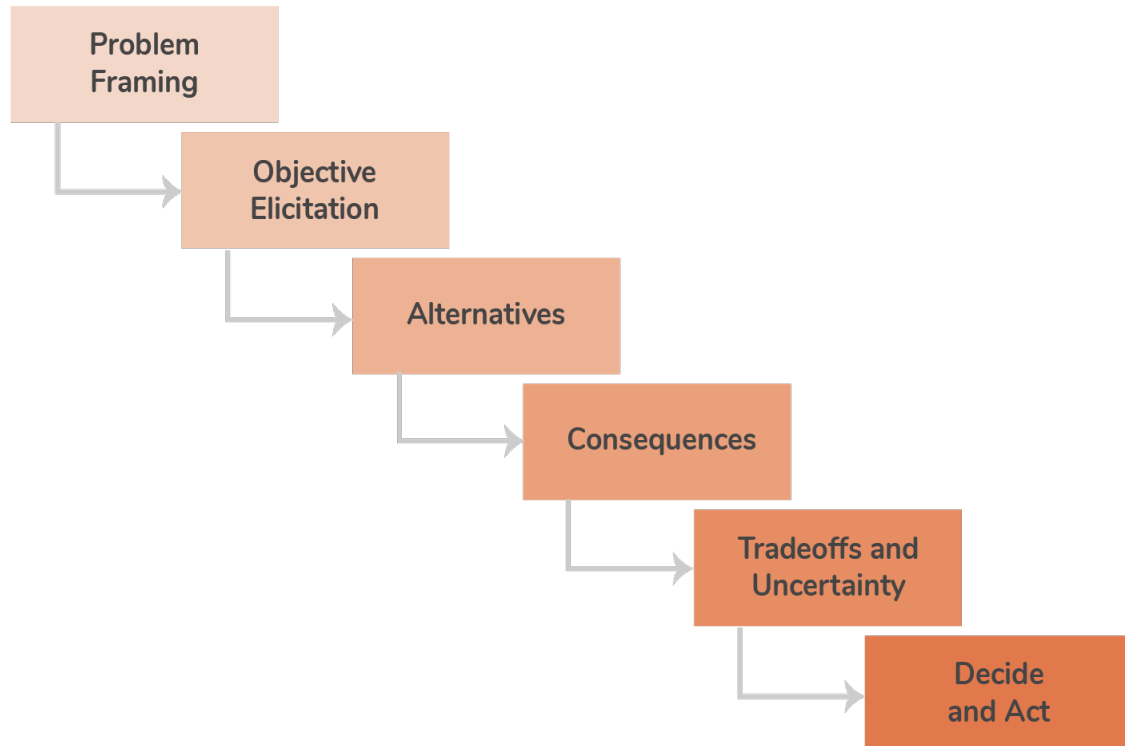
The SDM framework

The framework or structure of SDM is the PrOACT process. Presented by John Hammond, Ralph Keeney, and Howard Raiffa in their book *Smart Choices*ⁱⁱⁱ, the PrOACT process is built on research and insights from decision analysis and behavioral economics. It breaks the problem into component parts, making the decision more manageable and focusing energy and effort where it matters most for making a good decision. Considering each component in turn can help identify what's particularly challenging about the decision, and where and how climate change could and should come into the process.

- **Problem:** Are you solving the right problem? Is everyone who should be involved in framing the problem in the room? Is it clear who is the decision maker? A common mistake at this stage is trying to tackle a problem for which we aren't the decision makers.
- **Objectives:** Have you captured all important values in the form of objectives that can be used to generate and evaluate options? Common mistakes at this stage include focusing on only a subset of values, and not letting people articulate what matters to them.
- **Alternatives:** Do you have a creative set of alternatives from which to choose, and are all objectives addressed in at least some of those alternatives?
- **Consequences:** Do you have a way to predict how well each alternative performs on each objective? This could be verbal, visual, or mathematical descriptions of the relationship between actions and outcomes; it could simply be a table. There may be a

fair amount of uncertainty, but if you can't connect what you're thinking of doing with what you've said matters to you then you might as well flip a coin.

- Trade-offs, uncertainty, risks, and linked decisions: In the context of this decision, have you explored and negotiated trade-offs across different objectives? Identified and assessed uncertainties, risks, and the attitudes of decision makers to those risks? Is this decision linked to other current or future decisions, for example by limiting future options or outcomes?



The SDM toolkit

The SDM toolkit includes tools for every stage of PrOACT, some quantitative and some qualitative^{iv}. For example, stakeholder analysis and problem framing questions are qualitative tools that can help make sure the right people are involved in problem framing and that decision makers are clear on what the problem is. The key skills for these tools are good facilitation and elicitation. In SDM, facilitators are content-neutral but not process neutral: facilitation and elicitation are deployed with a focus on making decisions using the SDM philosophy and framework and applying decision making best practices.

In contrast, tools such as value of information analysis, decision sensitivity analysis, and decision scaling are typically practiced as formal, quantitative processes requiring solid analytic

skills. That said, they can also be useful as qualitative but structured “what-if” questions. In either case, they rely on the existence of a clearly framed decision context, a complete and structured set of objectives, and action alternatives detailed enough that their effectiveness for achieving different objectives can be evaluated.

When to use SDM

Structured decision making processes and tools are useful when:

1. Everyone is coming to the table as an honest broker. That is, people are committed to working through the decision problem together, even if they don't agree on everything
2. Participants are willing to focus on inquiry rather than advocacy
3. Stakeholders and decision makers value transparency
4. A decision maker or group feels stuck and isn't sure why

Structured decision making processes and tools are less useful when:

1. One or more participants want to undermine a process or outcome
2. One or more participants are more focused on advocating for their own position than in understanding the values of others and working together.

Endnotes

ⁱ National Research Council. 1996. *Understanding Risk: Informing Decisions in a Democratic Society*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/5138>

ⁱⁱ Keeney, Ralph L. 2004. Making Better Decision Makers. *Decision Analysis* 1(4): 193–204

ⁱⁱⁱ Hammond et al. 2001. *Smart Choices: A Practical Guide to Making Better Decisions*. Crown Business

^{iv} Two good overview books are 1) Gregory et al. 2012. *Structured Decision Making: A Practical Guide to Environmental Management Choices*. Wiley-Blackwell; 2) Conroy, Michael and Peterson, James. 2015. *Decision Making in Natural Resource Management: A Structured, Adaptive Approach*. Wiley-Blackwell. Compass Resource Management's Structured Decision Making web site (<http://structureddecisionmaking.org/>) also provides good overview information.