DECISION LENS

WHAT IS THE AHP

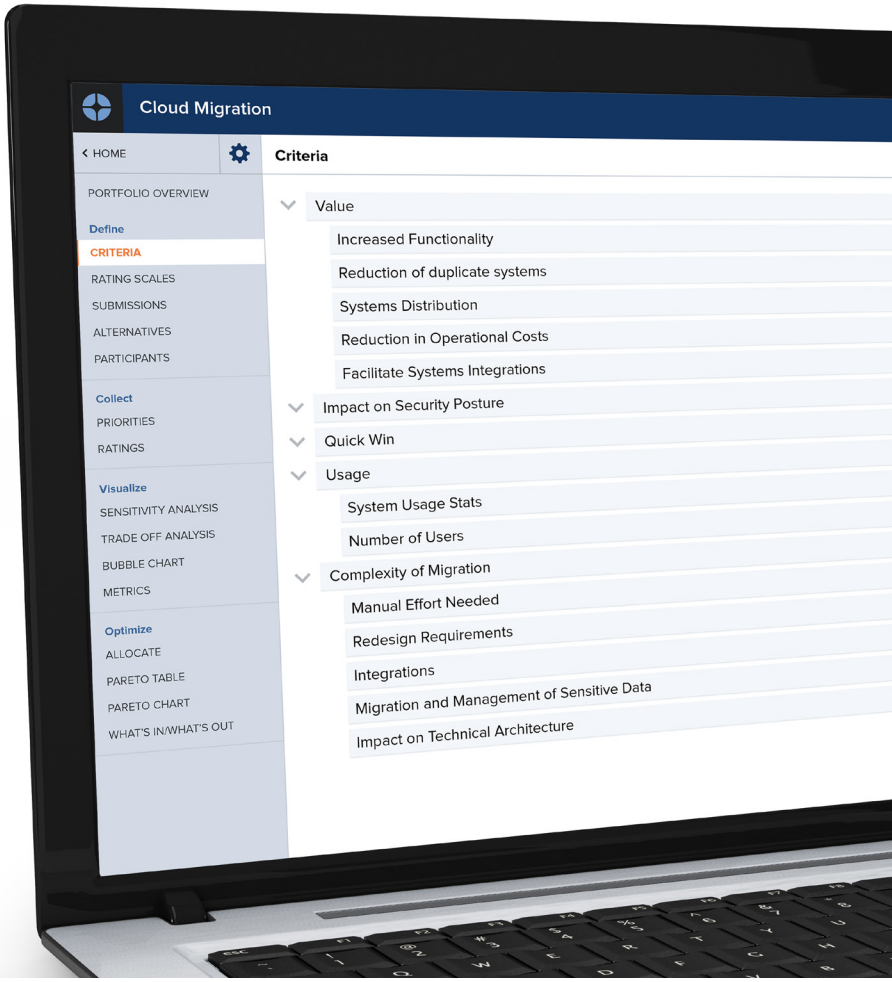
and how it can be used to solve problems

The AHP can be characterized as a multi-criteria decision technique in which qualitative factors are of prime of importance. A model of the problem (team contribution) is developed using a hierarchical representation. At the top of the hierarchy is the overall goal or prime objective one is seeking to fulfill.

> The priorities yielded by the AHP are the basic units used in all types of analysis.

In this project, it is the housing choice among the three cities. The succeeding lower levels then represent the progressive decomposition of the problem. The knowledgeable parties (e.g. individual team members) complete a pair-wise comparison of all entries in each level relative to each of the entries in the next higher level of the hierarchy. The composition of these judgments fixes the relative priority of the entities at the lowest level (e.g. individual team members) relative to achieving the top-most objective.

The AHP addresses complex problems on their own terms of interaction. It allows people to lay out a problem as they see it in its complexity and to refine its definition and structure through iteration. To identify critical problems, to define their structure, and to locate and resolve conflicts, the AHP calls for information and judgments from several participants in the process. Through a mathematical sequence it synthesizes their judgments into an overall estimate of the relative priorities of alternative courses of



An example of a criteria tree hierarchy in Decision Lens.

action. The priorities yielded by the AHP are the basic units used in all types of analysis; for example, they can serve as guidelines for allocating resources or as probabilities in making predictions.

The AHP enables decision makers to represent the simultaneous interaction of many factors in complex, unstructured situations. It helps them to identify and set priorities on the basis of their objectives and their knowledge and experience of each problem. Normally, consumers' feelings and intuitive judgments are probably more representative of their thinking and behavior than are their verbalizations of them.

The AHP determines the priority any alternative has relative to the overall goal of the problem of interest. The analyst/user creates a model of the problem by developing a hierarchical decomposition representation. At the top of the hierarchy is the overall goal or prime objective one is seeking to fulfill.

The succeeding lower levels then represent the progressive decomposition of the problem. The analyst completes a pair-wise comparison of all the elements in each level relative to each of the program elements in the next higher level of the hierarchy. The composition of these elements fixes the relative priority of elements in the lowest level (usually solution alternatives) relative to achieving the top-most objective.

Four steps are used to solve a problem with the AHP methodology:

- **Build a decision hierarchy** by breaking the general problem into individual criteria. (User/Analyst modeling phrase)
- **Gather relational data** for the decision criteria and alternatives and encode using the AHP relational scale. (User/Analyst pairwise comparison input)
- **Estimate** the relative priorities (weights) of the decision criteria and alternatives.
- **Perform a composition of priorities** — for the criteria which gives the rank of the alternatives (usually lowest level of hierarchy) relative to the top-most objective.

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