Definition (Sum of resources). If the poset A is monoidal, then the *sum* of n copies of A is a design problem given by

$$\sum : (A^n)^{\mathrm{op}} \times A \to_{\mathbf{Pos}} \mathbf{Bool}$$

$$\langle a_1^*, \ldots, a_n^*, a_{\text{resource}} \rangle \mapsto (a_1 + \cdots + a_n \leq_A a_{\text{resource}}).$$

Clearly $\sum$ is monotone. Diagrammatically: