

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

$$\begin{aligned} \Sigma &: (A^n)^{\text{op}} \times A \xrightarrow{\text{Pos}} \mathbf{Bool} \\ \langle a_1^*, \dots, a_n^*, a_{\text{resource}} \rangle &\mapsto (a_1 + \dots + a_n \leq_A a_{\text{resource}}). \end{aligned}$$

Clearly Σ is monotone. Diagrammatically:

