

Definition (Sum of resources). If the poset \mathbf{P} is monoidal with monoidal product \otimes , then the “*sum*” of n copies of \mathbf{P} is a design problem given by

$$\Sigma^n : (\mathbf{P}^n)^{\text{op}} \times \mathbf{P} \quad \xrightarrow{\text{Pos}} \quad \mathbf{Bool}$$

$$\langle \langle x_1, \dots, x_n \rangle^*, y \rangle \quad \longmapsto \quad (x_1 \otimes \dots \otimes x_n \leq_{\mathbf{P}} y).$$

Clearly Σ^n is monotone. Diagrammatically:

