Definition (Identity design problem) For any poset **P**, the *identity design problem* $id_{\mathbf{P}}: \mathbf{P} \longrightarrow \mathbf{P}$ is a monotone map

$$id_{\mathbf{P}}: \mathbf{P}^{op} \times \mathbf{P} \rightarrow_{\mathbf{Pos}} \mathbf{Bool},$$

 $\langle p_1^*, p_2 \rangle \mapsto p_1 \leq_{\mathbf{P}} p_2.$