

**Definition** (Identity design problem with implementation). The *identity design problem with implementation*  $\langle \mathbf{I}_{\text{id}_A}, \text{prov}, \text{req} \rangle : A \dashv\dashv A$  is given by implementation set  $\mathbf{I}_{\text{id}_A} = A$  and  $\text{prov} = \text{req}$  being the identity on  $A$ . The profunctor is defined as

$$\begin{aligned} \langle \mathbf{I}_{\text{id}_A}, \text{prov}, \text{req} \rangle : A^{\text{op}} \times A &\rightarrow_{\mathbf{Pos}} \mathcal{P}(A) \\ \langle a^*, a' \rangle &\mapsto (\uparrow a) \cap (\downarrow a') \end{aligned}$$