

Definition (Design problem with implementation). A *design problem with implementation* (DPI) is a tuple

$$\langle \mathbf{F}, \mathbf{R}, \mathbf{I}, \text{prov}, \text{req} \rangle$$

where:

- ▷ \mathbf{F} is a poset, called *functionality space*;
- ▷ \mathbf{R} is a poset, called *requirements space*;
- ▷ \mathbf{I} is a set, called *implementation space*;
- ▷ the map $\text{prov} : \mathbf{I} \rightarrow \mathbf{F}$ maps an implementation to the functionality it provides;
- ▷ the map $\text{req} : \mathbf{I} \rightarrow \mathbf{R}$ maps an implementation to the resources it requires.