

## Definition (par)

The parallel composition of two DPIs  $\mathbf{d}_1 = \langle \mathbf{F}_1, \mathbf{R}_1, \mathbf{I}_1, \text{prov}_1, \text{req}_1 \rangle$  and  $\mathbf{d}_2 = \langle \mathbf{F}_2, \mathbf{R}_2, \mathbf{I}_2, \text{prov}_2, \text{req}_2 \rangle$  is

$$\text{par}(\mathbf{d}_1, \mathbf{d}_2) := \langle \mathbf{F}_1 \times \mathbf{F}_2, \mathbf{R}_1 \times \mathbf{R}_2, \mathbf{I}_1 \times \mathbf{I}_2, \text{prov}, \text{req} \rangle,$$

where:

$$\text{prov} \quad : \quad \langle i_1, i_2 \rangle \mapsto \langle \text{prov}_1(i_1), \text{prov}_2(i_2) \rangle, \quad (0.1)$$

$$\text{req} \quad : \quad \langle i_1, i_2 \rangle \mapsto \langle \text{req}_1(i_1), \text{req}_2(i_2) \rangle.$$