L4 regulative rules semantics

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This is a work in progress.

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Definition 0.1 (Event)**.** $E@t$ denotes a real world event E occurring at time t.

We use $\mathbf{Tr}$ to denote the set of all traces and $\mathbf{Tr}^{\text{fin}}$ to denote the set of finite traces.

Definition 0.2 (Obligation template)**.** An obligation template is a tuple

$$O \stackrel{\text{def}}{=} \langle P, S, n_i, \varphi_{\text{inst}}, \varphi_{\text{sus}}, \varphi_{\text{term}}, \varphi_{\text{res}}, \varphi_{\text{cont}}, \varphi_{\text{bre}}, \varphi_{\text{ful}} \rangle$$

where P is a finite, non-empty set of parties involved in the contract, and the φ_i formulae in some first-order extension of LTL.

Such a template can be dynamically instantiated at runtime to form an automaton $\mathcal{A}_O$ with states given by $S = \{\text{InEffect, Suspended, Expired, Breached, Fulfilled}\}$.

n_i is the number of obligation instances to instantiate