$c \leq d$ equivale a $c \vdash d$

$\Longrightarrow$ versione senza etichette

$$\frac{c \leq d}{\langle ask(d) \to A, c \rangle \longrightarrow \langle A, c \rangle}$$

$$\frac{\langle A, c \otimes d_0 \rangle \longrightarrow \langle B, d_1 \rangle \quad d_0 = d \ominus \exists_x c}{\langle \exists_x^c A, d \rangle \longrightarrow \langle \exists_x^{c_1} B, d_0 \otimes \exists_x c_1 \rangle \quad c_1 = d_1 \ominus d_0} \; x \notin sv(d)$$

[non restrittivo perché prendiamo i termini up-to α-equivalenza
$\exists_x^c A = \exists_y^{c[y/x]} A[y/x]$ se $y \notin sv(c) \cup sv(A)$]

$\Longrightarrow$ versione con etichetta

$$\frac{}{\langle ask(d) \to A, c \rangle \xrightarrow{d \ominus c} \langle A, (d \ominus c) \otimes c \rangle}$$

$$\frac{\langle A, c \otimes d_0 \rangle \xrightarrow{\alpha} \langle B, d_1 \rangle \quad d_0 = d \ominus \exists_x c}{\langle \exists_x^c A, d \rangle \xrightarrow{\alpha} \langle \exists_x^{c_1} B, d_0 \otimes \alpha \otimes \exists_x c_1 \rangle} \; x \notin sv(d) \cup sv(\alpha)$$

$c_1 = d_1 \ominus (d_0 \otimes \alpha)$

[nb: $sv(a \ominus b) \subseteq sv(a) \cup sv(b)$]

primi risultati da provare

sound $\langle A, a\rangle \xrightarrow{c} \langle B, b\rangle$

allora

$\langle A, a\otimes c\rangle \longrightarrow \langle B, b\rangle$

complete $\langle A, a\rangle \longrightarrow \langle B, b\rangle$ con $a \leq c$

allora

$\langle A, c\rangle \xrightarrow{\alpha} \langle B, d\rangle$

con

$c\otimes\alpha\otimes\beta = a$ e $d\otimes\beta = b$ per un qualche β

[ipotesi aggiuntiva:

$a \leq b \Rightarrow (a\ominus b)\otimes b = a$

cioè, invertibilità]

Host: 131.114.3.51:9100

Alcuni risultati utili

Fatto $a \otimes ((a \otimes b) \ominus a) = a \otimes b$

Ora, P è un agente puro se contiene solo operatori $\exists_x^1 Q$

$\mathbb{R}^{\rightarrow}$ gli agenti raggiungibili da uno puro con $(\longrightarrow)^*$

$\mathbb{R}^{\overset{*}{\rightarrow}}$ " con $(\overset{\alpha}{\longrightarrow})^*$

Lemma Se $\langle Q \parallel \exists_x^c P, a \rangle \in \mathbb{R}^{\rightarrow}$,

allora $\exists b.\ a = b \otimes \exists_x c$

Lemma Lo stesso per $\mathbb{R}^{\overset{*}{\rightarrow}}$

Lemma Se $\langle P, a \rangle \in \mathbb{R}^{\overset{*}{\rightarrow}}$ e

$\langle P, a \rangle \xrightarrow{\alpha} \langle Q, b \rangle$,

allora $\exists \beta.\ b = a \otimes \alpha \otimes \beta$