The alpha-algorithm

Let $W$ be a workflow log over $T$. $\alpha(W)$ is defined as follows.

1. $T_W = \{ t \in T \mid \exists \sigma \in W \ t \in \sigma \}$,
2. $T_I = \{ t \in T \mid \exists \sigma \in W \ t = first(\sigma) \}$,
3. $T_O = \{ t \in T \mid \exists \sigma \in W \ t = last(\sigma) \}$,
4. $X_W = \{ (A,B) \mid A \subseteq T_W \land A \neq \emptyset \land B \subseteq T_W \land B \neq \emptyset \land \forall a \in A \forall b \in B \ a \rightarrow_W b \land \forall a_1,a_2 \in A \ a_1 \#_W a_2 \land \forall b_1,b_2 \in B \ b_1 \#_W b_2 \}$,
5. $Y_W = \{ (A,B) \in X \mid \forall (A',B') \in X \ A \subseteq A' \land B \subseteq B' \Rightarrow (A,B) = (A',B') \}$,
6. $P_W = \{ p_{(A,B)} \mid (A,B) \in Y_W \} \cup \{ i_W,o_W \}$,
7. $F_W = \{ (a,p_{(A,B)}) \mid (A,B) \in Y_W \land a \in A \} \cup \{ (p_{(A,B)},b) \mid (A,B) \in Y_W \land b \in B \} \cup \{ (i_W,t) \mid t \in T_I \} \cup \{ (t,o_W) \mid t \in T_O \}$, and
8. $\alpha(W) = (P_W,T_W,F_W)$. 

"Nothing is forever" 1984 – 2018
Developments in Computer Science / Data Science
April 2002: (E)nhanced (Mi)ning (T)ool
1 tool
1 developer

“Nothing is forever” 1984 – 2018
Developments in Computer Science / Data Science
2003 - 2007: The (Pro)cess (M)ining tool (1.0 – 5.2)
> 250 plugins
> 50 developers
Counting my last weeks in the softies group

Preparation for new and exciting week

Plan next “Business trip”

Sign papers all day to feel important

Prepare for new and exciting week

Deal with annoying PhD’s

Do research for which staff is too stupid

Drink coffee all day and say I’m “busy”

Mix coffee machines to “motivate” staff

Hide from work abroad

Finally, a new and exciting nerd-job

(then I become a real nerd)
“Nothing is forever” 1984 – 2018
Developments in Computer Science / Data Science
Unnecessary deviations

Necessary deviations

Interfering deviations

Illegal deviations
“Nothing is forever” 1984 – 2018
Developments in Computer Science / Data Science
2007 onward: The (Pro)cess (M)ining workbench
> 1000 plugins
> 100 developers

“Nothing is forever” 1984 – 2018
Developments in Computer Science / Data Science