CONVERSION OF IDEF0 MODELS INTO UML-DIAGRAMS: THE FORMALIZED STATEMENT OF THE PROBLEM

Khubaev G.N., Shirobokova S.N.[1], Titarenko E.V.[1], Tkachenko Y.V.[1]

Rostov's State Economic University "RINKH", Russia, 344002, Rostov-on-Don, st. B. Sadovaya, 69, tel.:8(863)-237-02-71, E-mail: gnh@donpac.ru;
[1]South-Russian State Technical University (Novocherkassk Polytechnic Institute), Russia, 346428, Rostov region, Novocherkassk, st.Prosvyasheniya 132, tel.(fax): 8(863 52) 5-52-40, E-mail: Shirobokova_SN@mail.ru, little-sun-L@yandex.ru, tamias@narod.ru

Putted forward the conceptual position about possibility of creation and applied usability of the computer-aided converter of IDEF0-diagrams into UML-diagrams, and offered it's general algorithm. Model of IDEF0 standard can be presented as: $BP^{IDEF0} = < Q, L, DC, DD_m >$, where Q – number of diagrams in the model; L – number of decomposition levels; DC – context diagram; DD_m, $m = \overline{2,Q}$ – the detailed diagrams. Converting is possible to present, as: $DD_m \overset{conv}{\Rightarrow} d_m^A$, where d_m^A – UML activity diagram (described in [1]).

Context diagram of the model can be presented as: $DC = < b, qar, AR^{DC} >$, where b – block of the general business-process function; $AR^{DC} = \{ar_k^{DC}\}$, $k = \overline{1,qar}$ – set of arrows, which are connected with the block b. Set of detailed diagrams can be represent as: $DD_m = < name_m, d_m, qb_m, B_m^{DD}, qar_m, AR_m^{DD}, qmech_m, MECH_m^{DD}, POZ_m, WAY_m, LOOP_m, LOBR_m >$, $m = \overline{2,Q}$, where $name_m$ – name of the diagram; d_m – level of decomposition; $B_m^{DD} = \{b_t^m\}$, $t = \overline{1,qb_m}$ – set of blocks; $AR_m^{DD} = \{ar_k^m\}$, $k = \overline{1,qar_m}$ – set of arrows; $MECH_m^{DD} = \{mech_h^m\}, mech_h^m \in AR_m^{DD}$, $h = \overline{1,qmech_m}$ – set of mechanism arrows; POZ_m – matrix of interconnection among blocks and arrows; WAY_m – matrix of possible workflows; $LOOP_m$ – matrix of looped workflows; $LOBR_m$ – array of return-arrows.

Every block is presented as: $b_t^n = < name_t^n, st_t^n >, n = \overline{1,Q}$, where $name_t^n$ – name of the block st_t^n – link to the diagram, which presents this block details. Arrow is presented as $ar_k^n = < name_k^n, sc_k^n, scn_k^n, scf_k^n, scd_k^n, sk_k^n, skn_k^n, skf_k^n, skd_k^n >, n = \overline{1,Q}$, where $name_k^n$ – name of the arrow; sc_k^n – type of arrow (external, internal); scn_k^n – number of left block (for internal); scf_k^n – arrow leaving function; scd_k^n – number, one after another, of arrow leaving block scn_k^n; sk_k^n – arrow enter type; skn_k^n – number of block in which arrow enters (for internal); skf_k^n – arrow enter function (input, mechanism, control); skd_k^n – number, one after another, of arrow entering block skn_k^n.

Literature

1. *Хубаев Г.Н., Широбокова С.Н., Щербаков С.М.* Автоматизированный синтез имитационных моделей деловых процессов// *Известия высших учебных заведений. Северо-Кавказский регион. Технические науки*, номер 4, год 2008. Стр.73-79.