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РОС. НАЦИОНАЛЬНАЯ
БИБЛИОТЕКА
С.Петербург
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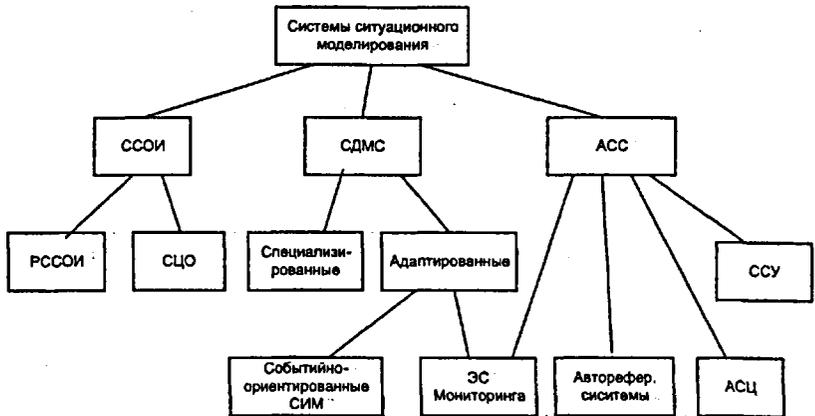


Рис.1. Классификация ситуационных систем.

3.2. () ()

4. ()

4.1. SIE ()

4.2. SIE

(A7?),

$KR_3 : \forall(z_i \in Z) [(\tau_S^{ps} < \tau^{kp}) \& (\omega_S^{ps} > \omega^{kp})] \Rightarrow SIM$

$\forall(z_i \in Z) [(\tau_E^{ps} < \tau^{kp}) \& (\omega_E^{ps} > \omega^{kp})] \Rightarrow ES$

Z_i $Z;$

τ^{kp} ;

ω^{kp} ;

τ_S^{ps}, τ_E^{ps} , ;

$\omega_S^{ps}, \omega_E^{ps}$, ;

SIM — ;

ES

$$\tau_{SE}^{ps} = \sum_{i=1}^n \tau_i^E + \sum_{j=1}^m \tau_j^S + \sum_{k=1}^l \tau_k^{Per}$$

τ_i^E ;

τ_j^S ;

τ_k^{Per} ;

τ_{SE}^{ps} ;

I

$$\tau_{SE}^{P3} = \sum_{i=1}^n \tau_i^E + \sum_{j=1}^m \tau_j^S + \sum_{k=1}^l \tau_k^{Per} \approx n * \tau_{cp}^E + m * \tau_{cp}^S + l * \tau_{cp}^{Per}$$

$$\tau_{cp}^E < \tau_{cp}^S \Rightarrow \min(\tau_{SE}^{P3}) = \begin{cases} \min(m) \\ \max(n) \\ \min(l) \\ \text{Cond.} \end{cases}$$

Cond , , l;

$$\tau_{cp}^E$$

$$\tau_{cp}^S$$

$$\tau_{cp}^{Per}$$

I

$$\tau_{cp}^E + k^{Per} * \tau_{cp}^{Per} < \tau_{cp}^S$$

$$k^{Per} = \frac{l}{\min(n,m)}; \max(k^{Per}) = 2;$$

$$1 \leq l \leq (n+m-1) \Rightarrow k^{Per} \in \left[\frac{1}{\min(n,m)}, \frac{n+m-1}{\min(n,m)} \right] \Rightarrow$$

$$\Rightarrow k^{Per} \in \left[\frac{1}{m}, 1 + \frac{n-1}{m} \right], n > m; k^{Per} \in \left[\frac{1}{n}, 1 + \frac{m-1}{n} \right], n < m.$$

$$k^{Per}$$

$$\tau_{cp}^E$$

$$\tau_{cp}^S$$

$$\tau_k^{Per}$$

(τ^{Per}) , (\quad) $(\tau^{3\pi})$.

$$\tau^{Per} = \tau_{Sim_Sub}^3 + \tau_{ES_Sub}^3 + \tau^{1-1} + \tau^{1-2} + \tau^2$$

$$\tau_{Sim_Sub}^3$$

$$\tau_{ES_Sub}^3$$

$$\tau^{1-1}$$

$$\tau^{1-2}$$

$$\tau^2 = const$$

$$\tau^{3\pi} = \tau^1, \text{ } \partial \partial e \tau^1$$

$$I(\quad)$$

$$\left. \begin{array}{l} \tau^{1-1} \rightarrow 0 \\ \tau^{1-2} \rightarrow 0 \end{array} \right\} \Rightarrow \tau_{1e}^1 \rightarrow 0$$

$$\tau^3 = \tau_{Sim_Sub}^3 + \tau_{ES_Sub}^3 = 2k_a * \tau_{int}^3;$$

$$\tau^{Per} = 2k_a * \tau_{int}^3 + \tau^2; \tau^{3\pi} = 0;$$

$$\tau_{1e}^1$$

$$\tau^3$$

$$k_a$$

$$\tau_{int}^3$$

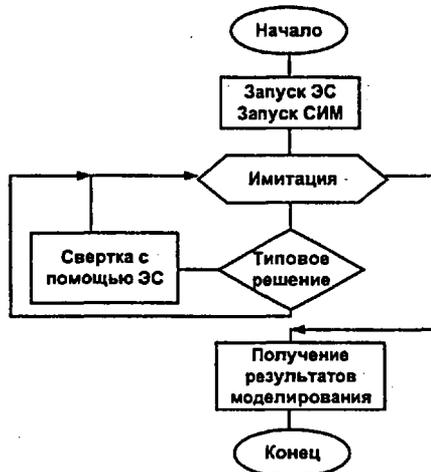


Рис.2. Функция свертки ЭС при интеграции с СИМ

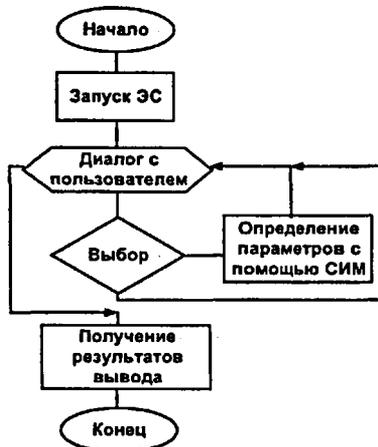


Рис.3. Функция извлечения знаний СИМ при интеграции с ЭС

(.3).

(.2).

$$\begin{aligned}
 T_L^{ES} &= k_{cxc} T_s + \delta = k_{cxc} \left[\frac{T_k - T_o}{n} * (L - k_{np}), \frac{T_k - T_o}{n} * (L + (1 - k_{np})) \right] + \delta = \\
 &= k_{cxc} \left[\frac{Func^3(T_k) - Func^3(T_o)}{n} * (L - k_{np}), \frac{Func^3(T_k) - Func^3(T_o)}{n} * (L + (1 - k_{np})) \right] + \delta \\
 \text{z\delta e } Func^3 &= func(choice) = \begin{cases} F_1(T_s), & npu \text{ choice} = 0; \\ F_2(T_s), & npu \text{ choice} = 1; \end{cases}
 \end{aligned}$$

T_L^{ES} — ;
 T_s ;
 δ " " " " ;
 L , ;

 T_o, T_k ;
 k_{cxc}, k_{np} ;
 $F_1(T_s), F_2(T_s)$ —

SIE ().

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(SIE) SIE

. SEE

SIE

SIE

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SIE

mis = < desc, {a}, {Z^a}, h({a}, {Z^a}) >

desc — ;

{a} ;

Z^a — ;

h({a}, {Z^a}) —

Fr = < A, Me, E, C^{fr}, Id >

—
Me —

() ;

()

—
C^{fr} —

;

—
Id —

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DLL

C++Builder Delphi.

BDE, ODBC.

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$$T_{sim} = T_{io} + T_m * N$$

$$T_{sim} = T_{io} + T_m * N$$

3.

4.

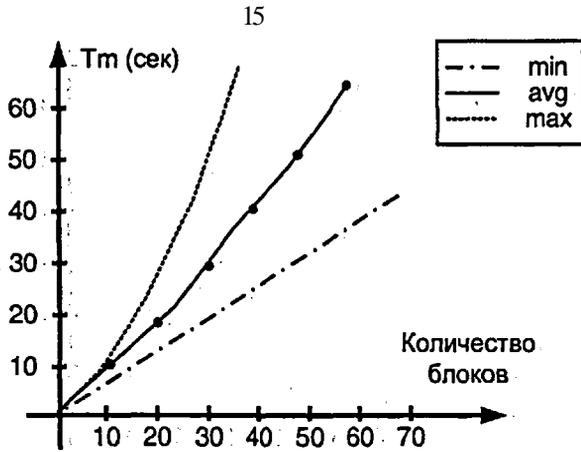


Рис.3. Зависимость времени имитации от количества блоков.

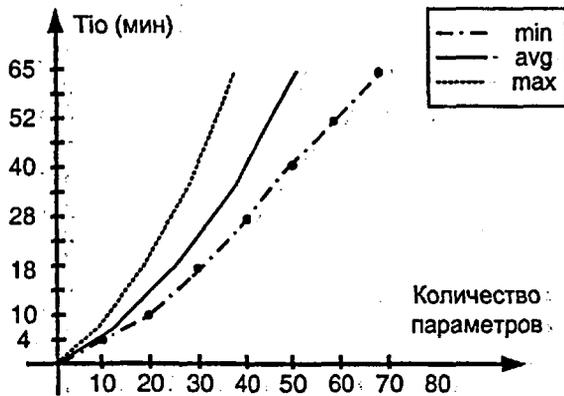


Рис.4. Время ввода данных в СИМ.

$$T_{sim}(10, 10, 150) = 4 + 0.2 * 150 = 34 \text{ мин.}$$

$$T_{sim}(70, 20, 300) = 65 + 0.3 * 300 = 65 + 90 = 155 \text{ мин.}$$

$$T_{sim}(10, 10, 20) = 3.5 + 0.15 * 20 = 6.5 \text{ мин.}$$

$$T_{sim}(70, 20, 50) = 21 + 0.23 * 50 = 21 + 11.5 = 32.5 \text{ мин.}$$

(ES+SIM),

(SIM),

(SIE)

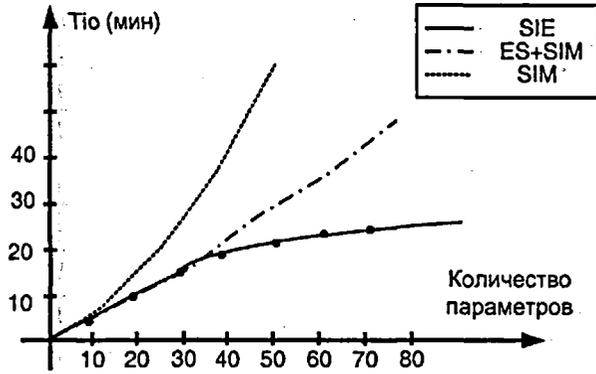


Рис.5. Сравнение времени ввода данных для трех подходов.

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- // . 2002. 3.
- . 41 62.
- 11.
- // . 2002. 3. . 62 75.
- 12.
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- 3. ∴ , 2001. 304 .
- 13.
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- 3. ∴ , 2001. . 46 58.

A. Rey

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