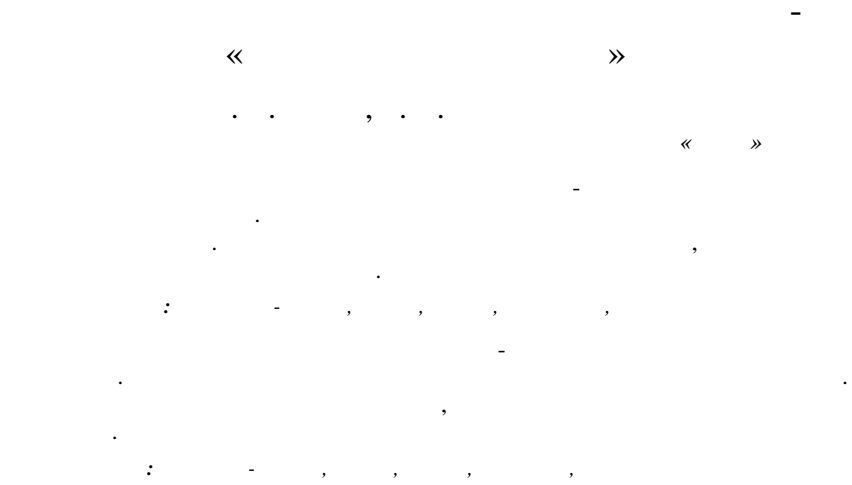


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The article presents the approach for the designing of knowledge Internet-portal in the field of materials strength. The process of portal knowledge representation model designing is described. Portal ontology model is shown, all its components formal description is given.

Key words: *Internet-portal, knowledge, model, ontology, subject area.*

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2.

1. [1,2]



1

2.1

$$O_1 \supset \{O_2, O_3, O_4\}.$$

2.2

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$$O_2 = \{C_{0_2}, A_{0_2}, R_{0_2}, T_{0_2}, F_{0_2}, D_{0_2}\},$$

$$C_{0_2} = \{C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9\},$$

$$A_{0_2} = (A_{C_1}, A_{C_2}, A_{C_3}, A_{C_4}, A_{C_5}, A_{C_6}, A_{C_7}, A_{C_8}, A_{C_9}), D_{0_2} = (D_{C_1}, D_{C_2}, D_{C_3}, D_{C_4}, D_{C_5}, D_{C_6}, D_{C_7}, D_{C_8}, D_{C_9}),$$

$$R_{O_2} = (R_{AS_1}(O_2), \dots, R_{AS_{10}}(O_2), R_{IA_1}(O_2), \dots, R_{IA_6}(O_2), R_{n_1}(O_2), \dots, R_{n_6}(O_2), R_{CD_1}(O_2), \dots, R_{CD_3}(O_2)),$$

$$R_{1}(O_2) = (A_{C_1}, D_{1})$$

$$R_{2}(O_2) = (A_{C_2}, D_{2})$$

$$R_{3}(O_2) = (A_{C_3}, D_{3})$$

$$R_{4}(O_2) = (A_{C_4}, D_{4})$$

$$R_{5}(O_2) = (A_{C_5}, D_{5})$$

$$R_{6}(O_2) = (A_{C_6}, D_{6})$$

$$R_{7}(O_2) = (A_{C_7}, D_{7})$$

$$R_{8}(O_2) = (A_{C_8}, D_{8})$$

, ISO

$$2 \subset C_{2_1} \wedge C_{2_2} \wedge C_{2_3} \wedge C_{2_4} \wedge C_{2_5} \wedge C_{2_6};$$

« - »

$$3 \subset C_{3_1} \wedge C_{3_2} \wedge C_{3_3} \wedge C_{3_4};$$

$$8 \subset C_{8_1} \wedge C_{8_2} \wedge C_{8_3};$$

« - »

$$9 \subset C_{9_1} \wedge C_{9_2} \wedge C_{9_3} \wedge C_{9_4}.$$

$$R_n(O_2) = a_i, r_i | A_{C_m}(O_2) \rightarrow a_i, r_i | A_{C_k}(O_2):$$

$$: A(C_7), R(C_7) \rightarrow A(C_5), R(C_5),$$

$$A(C_7), R(C_7) \rightarrow A(C_8), R(C_8), A(C_7), R(C_7) \rightarrow A(C_9), R(C_9).$$

$$: A(C_1), R(C_1) \rightarrow A(C_{1_1}), R(C_{1_1}),$$

$$A(C_1), R(C_1) \rightarrow A(C_{1_2}), R(C_{1_2}), A(C_1), R(C_1) \rightarrow A(C_{1_3}), R(C_{1_3}).$$

$$: A(C_2), R(C_2) \rightarrow A(C_{2_1}), R(C_{2_1}),$$

$$A(C_2), R(C_2) \rightarrow A(C_{2_2}), R(C_{2_2}), A(C_2), R(C_2) \rightarrow A(C_{2_3}), R(C_{2_3}),$$

$$A(C_2), R(C_2) \rightarrow A(C_{2_4}), R(C_{2_4}).$$

$$: A(C_3), R(C_3) \rightarrow A(C_{3_1}), R(C_{3_1}),$$

$$A(C_3), R(C_3) \rightarrow A(C_{3_2}), R(C_{3_2}), A(C_3), R(C_3) \rightarrow A(C_{3_3}), R(C_{3_3}),$$

$$A(C_3), R(C_3) \rightarrow A(C_{3_4}), R(C_{3_4}).$$

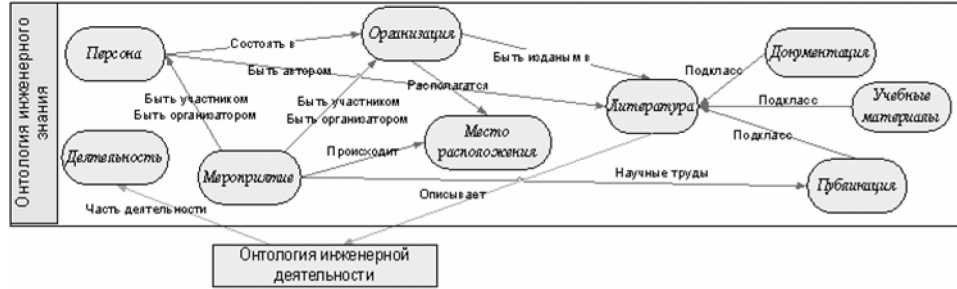
$$: A(C_9), R(C_9) \rightarrow A(C_{9_1}), R(C_{9_1}),$$

$$A(C_9), R(C_9) \rightarrow A(C_{9_2}), R(C_{9_2}), A(C_9), R(C_9) \rightarrow A(C_{9_3}), R(C_{9_3}).$$

$$» R_{CD}(O_2) = C_j(O_2) \subseteq D_i(O_2):$$

« - »

$C_1(O_2) \subseteq D, A_{C_1} \subseteq A_D, C_2(O_2) \subseteq D, A_{C_2} \subseteq A_D,$
 $C_3(O_2) \subseteq D, A_{C_3} \subseteq A_D, C_4(O_2) \subseteq D, A_{C_4} \subseteq A_D, C_5(O_2) \subseteq D, A_{C_5} \subseteq A_D,$
 $C_6(O_2) \subseteq D, A_{C_6} \subseteq A_D, C_7(O_2) \subseteq D, A_{C_7} \subseteq A_D, C_8(O_2) \subseteq D, A_{C_8} \subseteq A_D,$
 $C_9(O_2) \subseteq D, A_{C_9} \subseteq A_D, C_{10}(O_2) \subseteq D, A_{C_{10}} \subseteq A_D.$



2

2.3

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$O_3 = \{ C_{o_3}, A_{o_3}, R_{o_3}, T_{o_3}, F_{o_3}, D_{o_3} \},$
 $C_{o_3} = \{ C_1, C_2, C_3, C_4, C_5 \}, A_{o_3} = (A_{C_1}, A_{C_2}, A_{C_3}, A_{C_4}, A_{C_5}),$
 $R_{o_2} = (R_{AS_1}(O_3), \dots, R_{AS_6}(O_3), R_{IA_1}(O_3), R_{I_1}(O_3), R_{CD_1}(O_3), \dots, R_{CD_5}(O_3)),$
 $D_{o_3} = (D_{C_1}, D_{C_2}, D_{C_3}, D_{C_4}, D_{C_5}).$
 $-_1(O_3).$
 $-_2(O_3).$
 $-_3(O_3).$
 $-_3(O_3) = (A_{C_3}, D_3)$

$$- {}_4(O_3).$$

“ ”

()

$$\cdot {}_4(O_3) = (A_{C_4}, D_4)$$

$$- {}_5(O_3).$$

$${}_5(O_3) = (A_{C_5}, D_5)$$

$$R_{AS}(O_3) = \{C_i(O_3) \times C_j(O_3)\} :$$

« » -

$$\cdot R_{AS_3} = \{ {}_1(O_3) \times C_2(O_3) \} .$$

« » -

$$\cdot R_{AS_4} = \{ ({}_1(O_3) \times C_5(O_3)) \} .$$

« » -

$$R_{AS_5} = \{ {}_4(O_3) \times C_1(O_3) \} .$$

« » -

$$\cdot R_{AS_6} = \{ {}_3(O_3) \times C_5(O_3) \} .$$

« » -

$$\cdot R_{AS_1} = \{ {}_3(O_3) \times C_2(O_3) \} .$$

(« - », « -

$$\rangle) R_{IA}(O_3) = {}_k(O_3) \subset {}_m(O_3) :$$

« - »

$$\cdot {}_5 \subset C_{5_1} \wedge C_{5_2} \wedge C_{5_3} \wedge C_{5_4} .$$

$$R_n(O_3) = a_i, r_i | A_{C_m}(O_3) \rightarrow a_i, r_i | A_{C_k}(O_3) :$$

:

$$A(C_5), R(C_5) \rightarrow A(C_{5_1}), R(C_{5_1}) ,$$

$$A(C_5), R(C_5) \rightarrow A(C_{5_2}), R(C_{5_2}) , A(C_5), R(C_5) \rightarrow A(C_{5_3}), R(C_{5_3}) ,$$

$$A(C_5), R(C_5) \rightarrow A(C_{5_4}), R(C_{5_4}) .$$

« - » $R_{CD}(O_3) = C_j(O_3) \subseteq D_i(O_3)$:
 « - »
 : $C_1(O_3) \subseteq D, A_{C_1} \subseteq A_D, C_2(O_3) \subseteq D, A_{C_2} \subseteq A_D,$
 $C_3(O_3) \subseteq D, A_{C_3} \subseteq A_D, C_4(O_2) \subseteq D, A_{C_4} \subseteq A_D, C_5(O_3) \subseteq D, A_{C_5} \subseteq A_D,$



3

2.4

() ,
 ,
 ,
 : $O_4 =$
 $\{C_{o_4}, A_{o_4}, R_{o_4}, T_{o_4}, F_{o_4}, D_{o_4}\}, C_{o_4} = \{C_1, C_2, C_3, C_4, C_5\},$
 $A_{o_4} = (A_{C_1}, A_{C_2}, A_{C_3}, A_{C_4}, A_{C_5}), D_{o_4} = (D_{C_1}, D_{C_2}, D_{C_3}, D_{C_4}, D_{C_5}),$
 $R_{o_2} = (R_{AS_1}(O_4), \dots, R_{AS_7}(O_4), R_{IA_1}(O_4), R_{n_1}(O_4), R_{CD_1}(O_4), \dots, R_{CD_5}(O_4)),$

($_1, \quad _2, \quad _2$) - $_1(O_4)$.

()
 $_1(O_4) = (A_{C_1}, D_1)$

- $_2(O_4)$.

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$_1(O_4) = (A_{C_2}, D_2)$

- $_3(O_4)$.

$_1(O_4) = (A_{C_3}, D_3)$

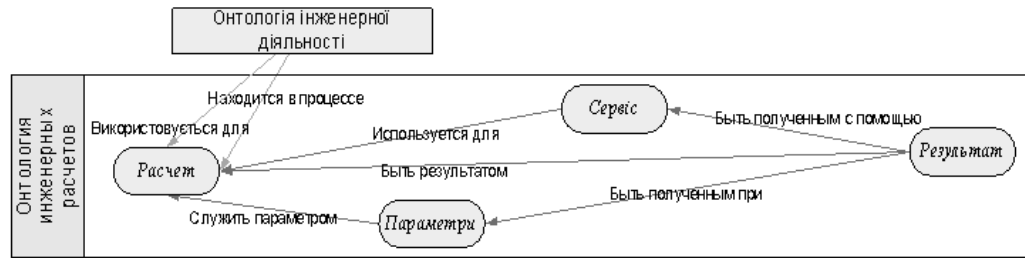
- $_4(O_4)$.

$_1(O_4) = (A_{C_4}, D_4)$

() - $_5(O_4)$. ,
 (, . .).
 ,
 $_1(O_4) = (A_{C_5}, D_{_51})$
 :
 _____ $R_{AS}(O_4) = \{C_i(O_4) \times C_j(O_4)\}$:
 « » - .
 $R_{AS_1} = \{ _3(O_4) \times C_1(O_4) \}$.
 « » - .
 $R_{AS_2} = \{ _2(O_3) \times C_1(O_4) \}$.
 « » - .
 $R_{AS_3} = \{ _2(O_4) \times C_1(O_4) \}$.
 « » - .
 $R_{AS_4} = \{ _2(O_4) \times C_5(O_4) \}$.
 « » - .
 $R_{AS_5} = \{ _5(O_4) \times C_1(O_4) \}$.
 « » - .
 $R_{AS_6} = \{ _2(O_4) \times C_3(O_4) \}$.
 « » - .
 $R_{AS_7} = \{ _1(O_4) \times C_2(O_3) \}$
 _____ (« - », « -
 _____») $R_{IA}(O_4) = _k(O_4) \subset _m(O_4)$:
 « - » $_1$
 (, $_2$ () ,
 $_3$ () . $_1 \subset _1 \wedge _2 \wedge _3$.

 _____ $R_n(O_4) = a_i, r_i | A_{C_m}(O_4) \rightarrow a_i, r_i | A_{C_k}(O_4)$:
 :
 $_2$ ($_1$ () , $_3$ () ,
 $A(C_1), R(C_1) \rightarrow A(C_1), R(C_1)$. $A(C_1), R(C_1) \rightarrow A(C_2), R(C_2)$. $A(C_1), R(C_1) \rightarrow A(C_3), R(C_3)$.
 _____ « - » $R_{CD}(O_4) = C_j(O_4) \subseteq D_i(O_4)$:
 « - »

: $C_1(O_4) \subseteq D, A_{C_1} \subseteq A_D, C_2(O_4) \subseteq D, A_{C_2} \subseteq A_D,$
 $C_3(O_4) \subseteq D, A_{C_3} \subseteq A_D, C_4(O_4) \subseteq D, A_{C_4} \subseteq A_D, C_5(O_5) \subseteq D, A_{C_5} \subseteq A_D.$



4

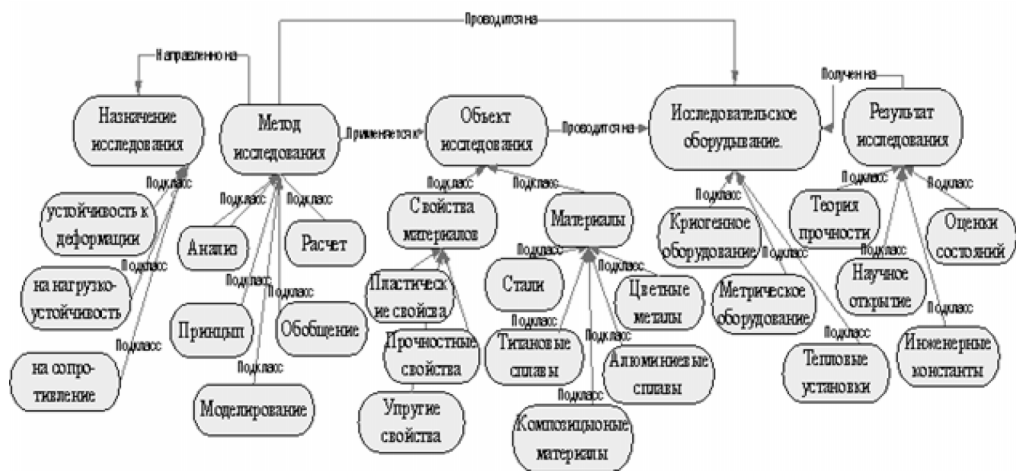
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[5].

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(3),

[4].



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