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2.2.4.	35

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[9, .31], [9, .148],
[9, .076], [9, .038], [9, .019], [9, .009], [9, .004], [9, .002], [9, .001], [9, .0005], [9, .00025], [9, .000125], [9, .0000625], [9, .00003125], [9, .000015625], [9, .0000078125], [9, .00000390625], [9, .000001953125], [9, .0000009765625], [9, .00000048828125], [9, .000000244140625], [9, .0000001220703125], [9, .00000006103515625], [9, .000000030517578125], [9, .0000000152587890625], [9, .00000000762939453125], [9, .000000003814697265625], [9, .0000000019073486328125], [9, .00000000095367431640625], [9, .000000000476837158203125], [9, .0000000002384185791015625], [9, .00000000011920928955078125], [9, .000000000059604644775390625], [9, .0000000000298023223876953125], [9, .00000000001490116119384765625], [9, .000000000007450580596923828125], [9, .0000000000037252902984619140625], [9, .00000000000186264514923095703125], [9, .000000000000931322574615478515625], [9, .0000000000004656612873077392578125], [9, .00000000000023283064365386962890625], [9, .000000000000116415321826934814453125], [9, .0000000000000582076609134674072265625], [9, .00000000000002910383045673370361328125], [9, .000000000000014551915228366851806640625], [9, .0000000000000072759576141834259033203125], [9, .00000000000000363797880709171295166015625], [9, .000000000000001818989403545856475830078125], [9, .0000000000000009094947017729282379150390625], [9, .00000000000000045474735088646411895751953125], [9, .000000000000000227373675443232059478759765625], [9, .0000000000000001136868377216160297393798828125], [9, .00000000000000005684341886080801486968994140625], [9, .000000000000000028421709430404007434844970703125], [9, .0000000000000000142108547152020037174224853515625], [9, .00000000000000000710542735760100185871124267578125], [9, .0000000000000000035527136788005009293556211328125], [9, .00000000000000000177635683940025046467781056640625], [9, .000000000000000000888178419700125232338905283203125], [9, .0000000000000000004440892098500626161694526416015625], [9, .00000000000000000022204460492503130808472632080078125], [9, .000000000000000000111022302462515654042363160400390625], [9, .0000000000000000000555111512312578270211815802001953125], [9, .00000000000000000002775557561562891351059079010009765625], [9, .000000000000000000013877787807814456755295395050048828125], [9, .0000000000000000000069388939039072283776476975250244140625], [9, .00000000000000000000346944695195361418882384876251220703125], [9, .000000000000000000001734723475976807094411924381256103515625], [9, .0000000000000000000008673617379884035472055962156280517578125], [9, .00000000000000000000043368086899420177360279810781402587890625], [9, .000000000000000000000216840434497100886801399053907012939453125], [9, .0000000000000000000001084202172485504434006995269535064697265625], [9, .00000000000000000000005421010862427522170034976347675323486328125], [9, .000000000000000000000027105054312137610850174881738376617431640625], [9, .0000000000000000000000135525271560688054250874408691883087158203125], [9, .00000000000000000000000677626357803440271254372043459415435791015625], [9, .000000000000000000000003388131789017201356271860217297077178955078125], [9, .0000000000000000000000016940658945086006781359301086485385892775390625], [9, .000000000000000000000000847032947254300339067965054324269294638671875], [9, .0000000000000000000000004235164736271501695339825271621346473193359375], [9, .00000000000000000000000021175823681357508476699126358106732365966796875], [9, .000000000000000000000000105879118406787542383495631790533661829833984375], [9, .0000000000000000000000000529395592033937711917478158952668309149169921875], [9, .00000000000000000000000002646977960169688559587390794763341545745849609375], [9, .000000000000000000000000013234889800848442797936953973816707728729248046875], [9, .0000000000000000000000000066174449004242213989684769869083538643646240234375], [9, .00000000000000000000000000330872245021211069948423849345417769323231201171875], [9, .000000000000000000000000001654361225106055349742119246727088846616156005859375], [9, .0000000000000000000000000008271806125530276748710596233635444233080780029296875], [9, .00000000000000000000000000041359030627651383743552981168177221165403900146484375], [9, .000000000000000000000000000206795153138256918717764905840886105827019500732421875], [9, .000000000000000000000000000103397576569128459358882452

[11, . 55] « - — ,

». [11, . 55]

1.1.2. -

- (. [9, c. 148],

[7, . 17], [10]) :

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[14, . 110]

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1.2.

1.2.1.

[16],

и, следовательно, не являются объектами управления. —
[17, . 27],

и, следовательно, не являются объектами управления.
и, следовательно, не являются объектами управления.
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и, следовательно, не являются объектами управления.
[9, . 30 - 31], [17, . 30]

и, следовательно, не являются объектами управления.
[9, . 31] «
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и, следовательно, не являются объектами управления. [17, . 30],
и, следовательно, не являются объектами управления.
и, следовательно, не являются объектами управления.

и, следовательно, не являются объектами управления. [78, . 6]
и, следовательно, не являются объектами управления.
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и, следовательно, не являются объектами управления.
и, следовательно, не являются объектами управления. PMBOK [45, . 8],
и, следовательно, не являются объектами управления.
и, следовательно, не являются объектами управления.

1.2.2.

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1.3.

[17, . 14]

1.3.1.

2006 .

[7, . 27].

[17, . 15],
 — *BPMN* (), *EPC*
 (c).

• , [17, .
 15],
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. SADT (Structured
 Analysis and Design Technique) IDEF (Integration Definition for Functional
 Modeling).

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 [17, . 17] c
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- . -
 UML (Unified Modeling Language).

- • -
 [17, . 18] -
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BPMN (Business Process Model and Notation),
 ARIS (Architecture of Integrated Information Systems), EPC (
).

1.3.2.

• [13]
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, [13, . 15]
 $C = (P, T, I, O)$, 4- :

1. P ;
2. T ;
3. I ;
4. O .

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[13, . 18]
 $G = V, A$,

$v_i \in V$ $a_i \in A$. V
 $P ($)
 $T ($).

1.3.3. -

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BPMN. BPMN - ,

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OMG BPMN.

BPMN

[58, . 26]

: [58, . 30]

1. (flow objects);
2. (data);
3. (connecting objects);
4. (swimlane);
5. (artifacts).

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YAWL *YAWL (Yet Another Workflow Language)*
(Aalst) (Hofstede) 2003
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[77],
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[77, c. 3] :
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YAWL, [77, . 10], -
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YAWL -
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YAWL (. 1.3.2 . 16).

1.4.

1.4.1.

WfMC [29, . 9]

(Workflow)

(workflow engine).

[19, . 31 -- 35], workflow-

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Workflow-
 Workflow,
 [4, . 127],
 Workflow
 Workflow,
 [4],
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 workflow
 Cunningham LLP Zagiel S.A.,
 [25], [20].
 Canningham LLP

Заблудило S.A.

1.4.2.

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BPM- [24]

(, BPMS) «

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»[55]

1.4.3.

PMBOK Guide [45, . 33]

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, [28, .46]

[5, c. 91 - 93]), :

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 — [35], -
 [73], [33],
 [51].

2.1.3.

(agility) - .

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 [35] .
 workflow, .
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 [76]
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 c (. [60], [61])
 workflow -
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 [57],
 [22] —
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 eTOM [74] — SCOR [54]
 — .
 , APQC [21].

2.2.

2.2.1.

Gartner Inc. ([31]) Forrester Research [66]) 2009 – 2013

The Forrester Wave [75], [67], [27], [26],
Gartner Magic Quadrant [46], [47], [48], [49].

Metastorm —

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 .
 : Fujitsu, EMC, Global360, Bosh Software Innovations

2.2.2.

(. 2.2.1 . 31),

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: Appian BPM Suite[30], OpenText MBPM [71], Cordys BPMS [70], Pegasystems BPM [62], Fujitsu Interstage BPM [39], Tibco Active Matrix BPM [72];

: jBPM [50], BonitaBPM [23], Taverna Workflow [56], Activiti BPM [68], Pegasus [64], Intalio BPMS [69].

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2.2.3.

OpenText (Cordys BPMS, MBPM), Appian. Appian (jBPM, Activiti)

2.2.4.

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jBPM	Activiti		,	-
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[79] — ,

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TOGAF. TOGAF 9

[40]

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GERAM [36].		GERAM	
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3.1.2.			-
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Appian	OpenText MBPM,		
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3.1.3.

VERAM [18],

GERAM.

VERAM

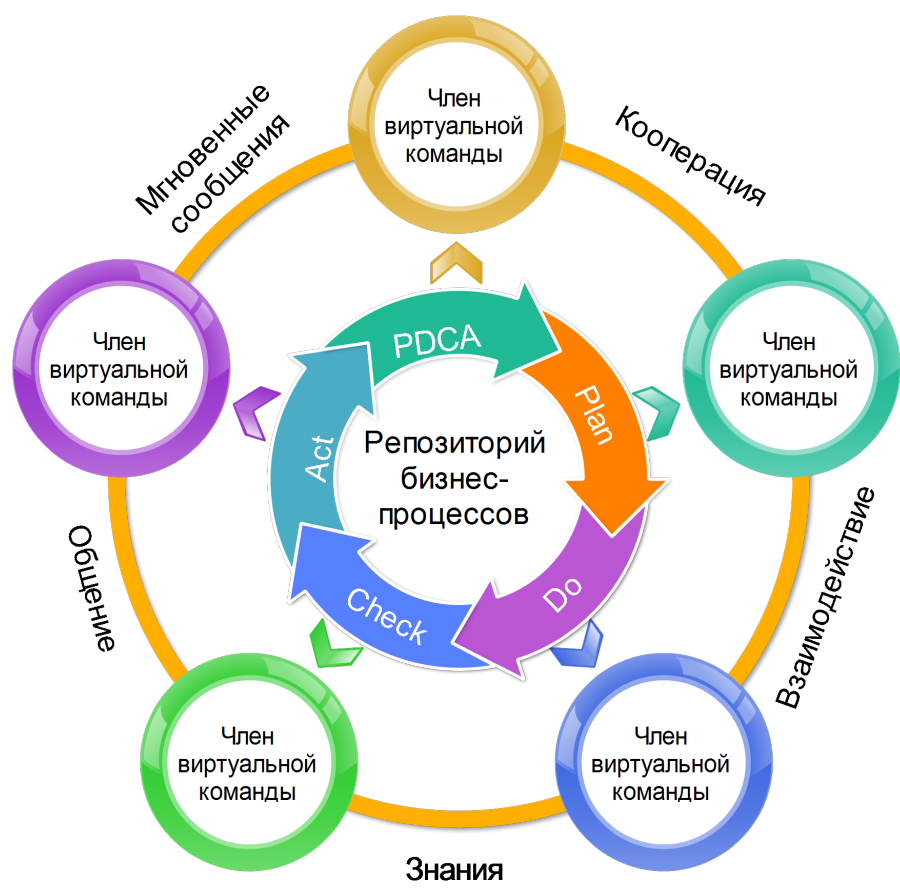
VERAM

3.1.4.

TOGAF.

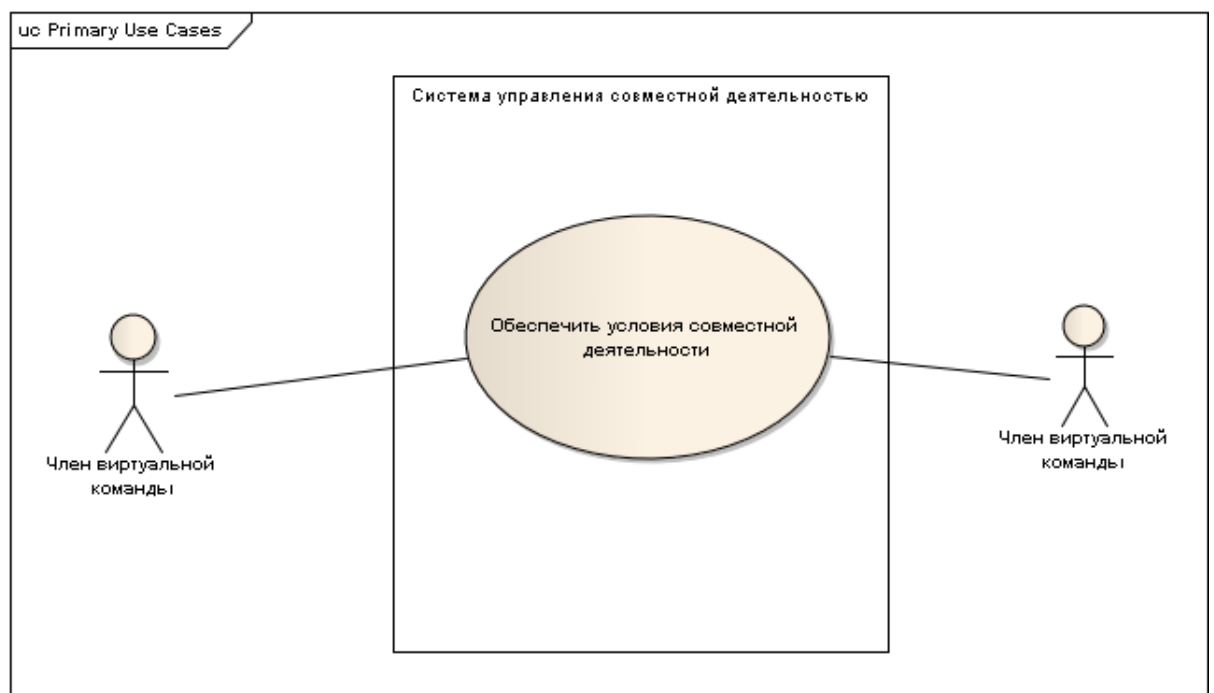
3.2.

3.2.1.



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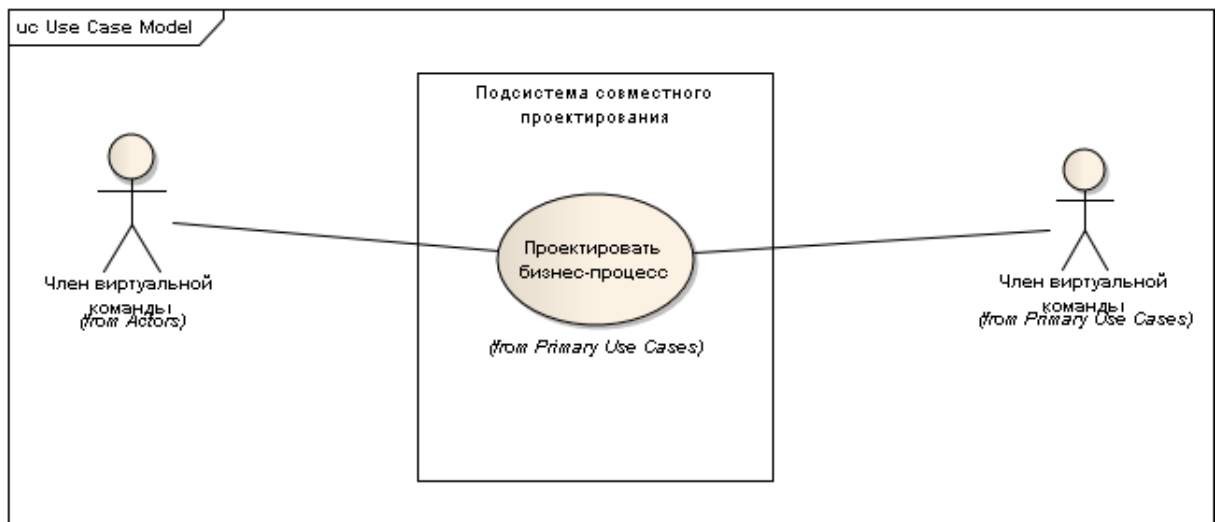
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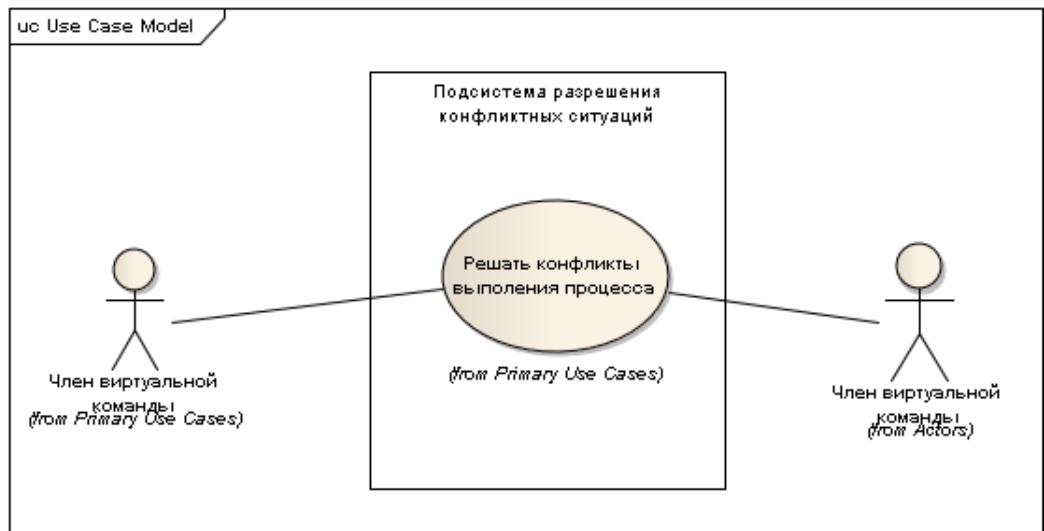
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3.2.2.

jBPM **Activiti.**

(. 2.2.2 . 32)

jBPM Activiti.

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Activiti.

Activiti

(BPMN 2.0 XML),

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jBPM

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jBoss Drools,

XML

jPDL.

Activiti,

[68],

Alfresco [43],

- .

Activiti

Apache, -

, [37],

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Activiti.

Activiti -

-

(Activiti Modeler, Activiti Designer)

- (Activiti Engine). . 3.5

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Activiti.

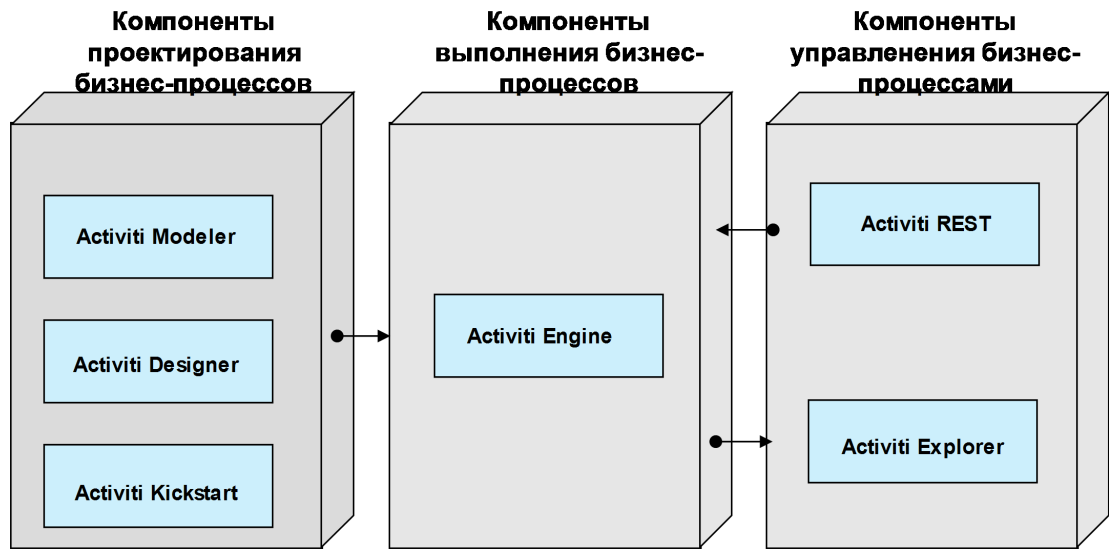
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Eclipse IDE.

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BPMN 2.0 XML.



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Activiti [68]

BPMN XML,

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git.

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[59], [63],

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XMPP.

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XMPP

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Openfire.

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[38],

OpenFire [65].

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LDAP,

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Open Source Apache,

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6. *e* . : , 2007.
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11. : , 2006. 287
12. - : , 2006. 400 .
13. : , 1984. 264
14. : " 2005. 608 .
15. : : - , 2002. 504 .
16. // — : , 1923. - .
17. : - : - , 2013. 118 .
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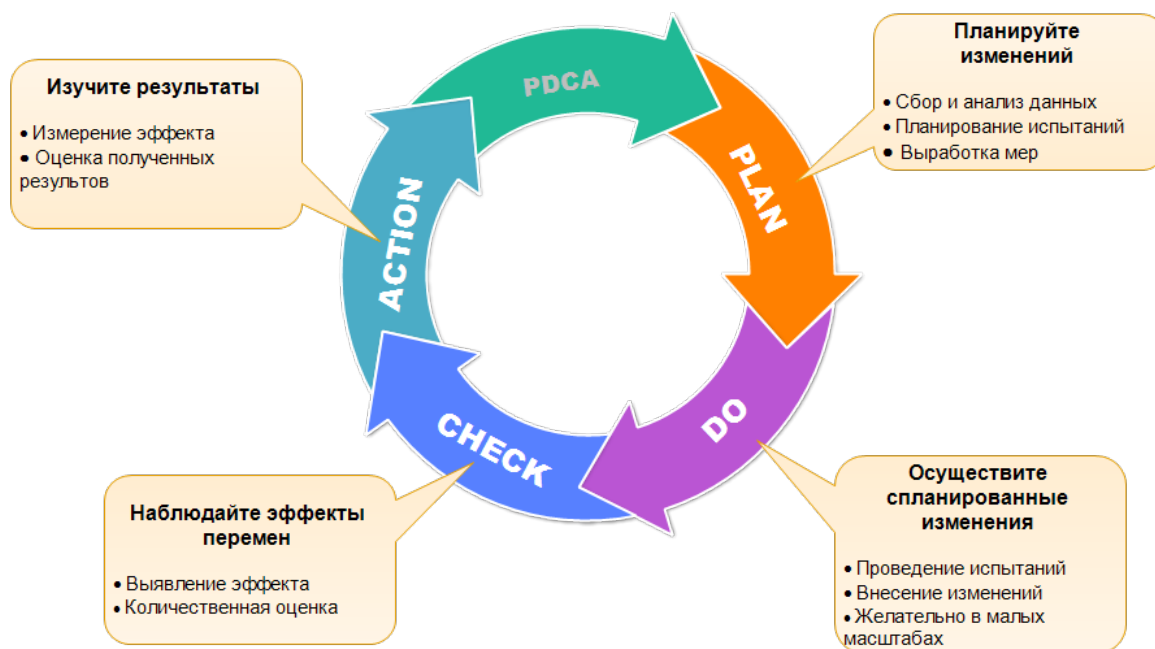
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	Des	Org	Ctrl	Res
Appian BPM Suite	9	8	9	7
OpenText MBPM	8	7	8	10
Cordys BPMS	10	8	6	9
Pegasystems BPM	10	9	10	9
Fujitsu Interstage BPM	7	7	6	5
Tibco Active Matrix BPM	6	10	9	9
jBPM	8	7	8	7
BonitaBPM	8	8	10	7
Taverna Workflow	5	10	6	7
Activiti BPM	7	6	7	5
Pegasus	5	10	8	8
Intalio BPMS	9	6	8	5

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	Des	Org	Ctrl	Res
Appian BPM Suite	8	5	8	6
OpenText MBPM	7	8	6	7
Cordys BPMS	3	10	3	1
Pegasystems BPM	4	10	5	9
Fujitsu Interstage BPM	8	5	8	8
Tibco Active Matrix BPM	0	1	2	0
jBPM	2	6	2	0
BonitaBPM	7	5	3	3
Taverna Workflow	3	2	4	0
Activiti BPM	0	2	0	2
Pegasus	1	0	1	0
Intalio BPMS	1	1	3	1

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