

, << >>

-

Agile

4013 -2

230105 65 -

_____ . .
() _____ . .
_____ . . . , . .

<<_>> _____ 2013 .

_____ . . .

, 2013

1.	-	.....	5
1.1.		.....	5
1.2.	-	. . . . .
		. . . . .	5
1.2.1.	-	. . . . .	5
1.2.2.		-	9
1.2.3.		-	10
1.3.		. . . . .
		-	14
1.3.1.		. . . . .	14
1.3.2.		-	15
1.3.3.		. . . . .	17
1.3.4.		-	
		. . . . .	22
1.3.5.		. . . . .	24
1.3.6.		. . . . .	27
1.4.		. . . . .
		. . . . .	29
1.4.1.		. . . . .	29
1.4.2.		. . . . .
		. . . . .	31
1.4.3.		. . . . .	35
1.4.4.		. . . . .	39
1.4.5.		. . . . .	44

1.5.	.....	46
2.	-	47
2.1.	.....	47
2.2. Workflow.	.....	47
2.2.1.	. -	
	.....	47
2.2.2.	. -	
	.....	52
2.2.3.	workflow	57
2.2.4. Workflow	. -	
	.....	58
2.3.	-	60
2.3.1.	- .	
	.....	60
2.3.2.	- -	
	.....	63
2.4.	.....	65
2.5.	.....	66
3.	.....	67
3.1.	.....	67
3.2.	.....	67
3.2.1.	.....	67
3.2.2.	-	
	.....	68
3.2.3.	.....	69
3.3.	.....	70
3.4.	.....	70

3.5.	.....	70
	.....	71
	.....	76
	.....	80
	.....	81
	.....	82

-

:

-

.

,

,

-

.

-

,

.

.

.

.

-

.

.

1.1.

1.

1.2.

-

.

.

.

1.2.1.

-

.

-

.

.

-

.

,

,

-

.

-

,

,

-

.

[\[1\]](#)

-

,

<<

.

-

.

-

,
 --- >>. ,
 ITIL [2, . 5], ,
 , -
 . - ITIL [2, . 20]
 , --
 , [3, .
 55] << - --- ,
 >>.[3, .
 55]
 - [4, . 17 -- 18], [5]
 :
 - ,
 , .
 , ,
 .
 -
 , -
 , -
 ,
 .
 - , -
 ,
 .
 - , -
 ,
 .

[6, c. 148],

[6, c. 148].

[7, . 110]

- . .
-
-
-
-

()

-

.

:

-
-
-
-

-

--

,

-

[6, . 148]

. ,

,

-

:

Process Classification Framework ---

-

.

International Benchmarking Clearinghouse ---

.

eTOM --- (Enhances Telecom Operational Map),

TMForum.

BEM ---

1.2.2.

- . -
- .
2006 . -
-
[4, . 27].

- , -
- .
[8, . 15], -

:
• c ;
• - ;
• , - .
[8, . 15] -
 , . .
 , .
 .

SADT (Structured Analysis and Design Technique)

IDEF(Integration Definition for Functional Modeling.)

- [8, . 17]
c ,
- - .
- UML (Unified
Modeling Language).

- [8, . 18]
 ,
- ,

ARIS(Architecture of Integrated Information Systems).

[8, .14]

1.2.3.

2006 .):

DFD (Data Flow Diagram) ---

SADT (Structured Analysis and Design Technique) ---

ERD (Entity-Relationship Diagram) ---

STD (State Transition Diagram) ---

- UML (Unified Modelind Language), . , . . .

UML , : [4, . 60]

(use case diagrams) --- -

;

(class diagrams) --- -

;

(statechart diagrams) ---

;

(activity diagrams) ---

;

(interaction diagrams) --- -

(sequence diagrams) -

;

(collaboration diagrams) -

;

(component diagrams) --- -

;

(deployment diagrams) --- -

.

,

UML , -

-

.

2004 . BPMN, BPMN 2.0 Object Management Group (OMG) . [9] 2.0 <<Business Process Model and Notation>> [10] 2011 ., . , , [8, . 71 -- 81] *EPC* (c) *BPMN* (-).

BPMN **BPMN** - - , --- - , - , - . **BPMN** (. . 76). **OMG BPMN.** **BPMN** - : () --- -- . - , , [10, . 26]

.

,

-

.

,

.

,

.

-

,

.

BPMN,

,

,

-

.

,

-

:[10, . 30]

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

(,

.). BPMN

, /

.

,

,

.

-

.

1.3.

•

-

•

•

1.3.1.

•

•

•

-

,

•

-

•

•

,

-

•

,

-

,

•

,

•

,

-

•

•

,

,

,

•

-

•

-

•

-

,

,
 [6, .
 30 -- 31],
 ,
 [6, . 31]
 <<
 () >>.
 , [6, . 31], [6, . 148],
 ,
 ,
 .
 --- ,
 [8, .27],
 .
 ,
 ,
 ,
 ,
 ,
 [8, . 30],
 .
 ,
 .
 -
 ,
 .
 1.3.2. - .
 .
 .

-

- . ---

,

,

.

-

,

9000 [11].

9000 (

9001 [12]), ---

9004 [13], .

[11], [12], -

,

.

,

,

,

.

-

,

,

9000

-

[12, . 7] ,

,

,

.

,

[8, . 63 -- 70]

- :

FAST ---

,

.

.

-

-

.

,

.

,

,

,

-

.

-

,

-

-

.

,

.

,

()

.

,

.

1.3.3.

.

.

-

.

-

-

.

[14, . 95]

-

(.

. 80),

:

,

;

;

,

.

,

,

-

.

,

;

,

.

;

,

-

-

;

.

-

(. : [15, . 4.8])

PDCA (Plan -- Do -- Check -- Action).

— , ; —

— , .

— , —

— —

— . —

— —

— : —

— ; —

— , ; —

— ; —

— , . —

— , —

— ; —

— ; —

— , —

— ; —

—

,

;

,

—

•
;

—

,

—

;

$$\vdots$$

,

—

,

,

,

• • •

,

•
;

— c

,

—

;

●

$$\vdots$$

— — —

,

,

•

,

—

,

.

,

,

•

●

$$\vdots$$

1.3.4.

>>. [3, . 52]

: [3, . 181]

- .

- ,

,

.

,

,

.

,

.

,

.

-

,

-

,

-

,

,

,

.

,

>>,

-

.

,

-

,

.

1.3.5.

.
 .
Kaizen.
 .
 ,
 (continuous
 improvement). [16, . 48 -- 49] ,
 (Continuous Process Improvement)
 ,
 .
 - ITIL [2, . 39] ---
 ,
 ,
 .
 - ,
 , -
 , . ,
 ,
 ,
 --- (*Kaizen*).
 ,
 .
 << : >> [17]
 , ,
 ,
 . [17], --- ,
 ,

(Toyota) [18], Nippon Steel Corp., Honda Motor Corp., Suzuki Motor Corp., Takagi Seiko [19].

[17],

TQC () ---

() ---

TPM (

) ---

(just in time);

, -

;

,

;

,

,

-

;

,

,

-

,

.

-

. [17]

(,) ---

,

.

-

(.

. 81).

1.3.6.

.

.

.

,

[8, . 93 -- 98].

:

,

-

.

-

-

.

-

-

.

-

,

,

.

,

-

: [20, . 13]

,

,

,

.

,

(),

(*ERP*- -

),

(),

- -

. . .

,

-

-

,

•

1

1

—

•

1

•

—

.

•

•

DocFlow Workflow ---

,

;

•

•

•

1.4.

•

•

•

•

1.4.1.

•

•

;

•

•

•

•

,

,

,

•

2

•

[21, . 6]

,

-

,

(

)

,

,

,

,

.

PMBOK Guide [22, . 3],

-

(

)

,

,

.

-

(

),

,

,

,

.

-

[23, . 41],

<<

,

,

;

,

-

,

,

,

>>.

,

[24, . 8],

,

,

-

.

-

,

.

,

,

,

,

.

[23, . 45],

<<

-

,

,

,

>>.

, PMBOK 5 [22],

;

-

;

.

-

,

,

,

, .

,

,

-

.

[6, . 181]

-

,

.

-

,

,

.

1.4.2.

.

.

-

, PMBOK 5 [22, . 309],

:

•

;

•

;

•

;

•

;

- ;
- ;

[25, с. 91 -- 93]:

- , ;
- , ;
- , ;
- ;
- ;

e

-

PMBOK [22]

:

;

;

,

,

;

,

;

.

[26, . 46]

,

:

•

;

•

;

•

;

•

()

.

.

[25, . 34]

:

-

,

;

, . .

,

.

()

,

-

,

-

;

,

-

.

,
 .
 ,
 .
 ,
 ,
 -
 ,
 .
 [27, . 21 -- 23]
 . (-
)
 ,
 -
 ,
 ,
 -
 .
 ,
 ,
 -
 .
 ,
 -
 .

 ,
 ,
 [27], [25].

1.4.3.

， . -
 . .
 .
 . -
 -
，
 . -
 . [28, . 41],
 - << -
， ，
>>. -
 .
51897-2011 [29] << -
>>. -
，
，
 . -
， ， -
 . -
 . ， -
 ()，
[25, . 102].

, -

, [25]

:

(equirisk contour method) --- -

,

.

(probablistic event analysis, PEA) ---

.

,

.

ABC --- ,

,

, .

.

, -

,

.

, << , -

>> [25, . 340].

,

.

[25, .

342 -- 355] :

--- , -

.

.

() --- -

, -

.

.

(critical path method), -

.

,

PERT.

(-

). , [25,

. 355 -- 357],

.

()

() -

.

,

.

,

.

·
(
[25, . 330 -- 336])
:

-
·
(),
·
-
·
·
·

[25, . 357 -- 370]
(milestone plan).
,
·
,
-
(
).
-
,
,
·

1.4.4.

Agile

Agile.

/ 12207-99 [30]

(life cycle model) << ,

,

,

>>.

() ().

(,

),

,

.

,

(. 19.102-77 [31])

(34.601-90 [32]).

- ,

,

.

,

.

,

,

Agile ([33]) () , ; " " ; , . Agile , 2001 17 (K. Beck) . (A. Cockburn). [34] :

1. .
2. .
3. .
4. .

Agile : [34]

1. , .
2. , Agile,

3. , -
4. , .
5. . , -
6. . -
7. , .
8. .
9. , -
10. , .
11. , .
12. . -

() . , -

, -

agile -

, -

, -

() . -

-

Agile. -

[35, . 3], -

: -

(Scrum) --- -

, -

. scrum, -

[36], -

. -

, , -

, -

. -

. -

(Extreme Programming, XP) --- -

, -

, , .

[37], XP

-

,

.

-

.

-

,

.

,

[26, . 110],

agile

:

Extreme Programming (XP) ---

-

,

,

-

,

:

-

,

,

CRC

.

Scrum ---

30-

,

,

.

Crystal methodology ---

,

,

-

,

.

Dynamic System Development Methodology (DSDM) ---

-

,

,

.

Rapid Application Development (RAD) ---

,

-

,

.

Adaptive Software Development ---

,

-

,

.

Lean Development ---

, , .

Feature-driven development ---

, .

1.4.5.

.

PMBOK Guide [24, . 33]

, , -

, , .

, . -

.

-

.

"

"

,

,

.

,

-

,

,

.

-

,

,

.

-

,

-

,

,

.

,

[38, . 57 -- 58]

:

• ,

:

— ;

— ;

— .

• ,

:

— (Work Breakdown
Structure);

— ;

— ;

— ;

— ;

— ;

— ;

— (executive
dashboard).

• , -

,

, :

• , -

, ,

.

• ,

- , , .

• , -

, :

- , -

;

- ;

- ;

- ;

- .

, -

, -

, (e-mail, . .)

-

. ,

,

, (.

[38, . 57 -- 58]).

1.5.

1.

-

: - (). -

- .

. , -

.

. .

.

2.1.

3.

2.2. Workflow.

, ;

(Smith, Fingar "Business process management the third wave").

2.2.1.

.

. *WfMC*. -

.

, ITIL [2, . 84], -

<<

, , , ,

, ()

>>.

[39].

-

-

WfMC

(workflow management system)

-

,

(workflow engine).

-

-

-

[40, . 9].

-

ITIL [2, . 65]

WfMC

e WfMC Reference Model [40].

(workflow)

-

-

.[40, . 8].

-

(Process Definition),

, WfMC - ---
 , - ,
 , -
 [40, . 10]. [41, . 126] workflow
 () , ,
 - . Workflow -
 ,
 - .

[39, . 31 -- 35].

1. workflow- -
 --- (*cases*) ,
 . :

 .
 () --- -
 --- .

 , -
 --- ,
 .

2. (*task*) , -
 , -
 . , -
 - ().
 --

, () .

-

(work item) () ,

(activity)

, .

3. (*process*) , -

-

, .

workflow,

.

4. (*routing*) -

, ,

-

.

.

,

.

Workflow-

-

Workflow, [41,

. 127], , ,

Workflow

.

- ,

.

-

.

Workflow,

[41],

-

:

,

,

,

.

-

,

,

.

,

-

,

-

.

,

,

-

. .

Workflow

-

[41, . 131 -- 133]

:

(build time),

,

,

-

-

.

,

-

.

(run time),

-

,

,

.

-

,

-

2.2.2.

,
 .
 .
 ,
 YAWL, , "
 --- .
 () .
 workflow [42] 20-
 .
 ,
 " -
 " ,
 , -
 [42, . 10 -- 39] :
 (Sequence) --- ,
 .
 (Parallel split) ---
 , .
 (Synchronization) ---

(Exclusive choice) ---

(Simple merge) ---

(Multi-choice) ---

(Synchronizing merge) ---

(Multi-merge) ---

(Disctiminator) ---

(Arbitrary cycles) ---

(Implicit termination) ---

(Multiple instances without
synchronization) ---

	-
.	
,	(Multiple
instances with a priori design time knowledge) ---	-
,	
.	
,	(Multiple instance
with a priori runtime knowledge) ---	-
,	,
.	
,	(Multiple instances without
a priory runtime knowledge) ---	-
,	,
.	
(Deffered choice) ---	-
,	
.	
.	
	(Interleaved parallel routing) ---
,	,
,	
.	
(Milestone) ---	-
,	
.	

(Cancel activity) --- , - .

(Cancel case) ---

, .

,

,

,

-

,

.

,

,

(framework)

.

-

[39]

.

[43]

-

,

-

.

,

,

,

[43, . 15]

$C = (P, T, I, O),$

4-

:

1.

$P;$

2.

$T;$

3.

$I;$

4.

$O;$

, . . .

-

,

, (. : [?
D) , , .

, - .

[43, . 18]
 $G = V, A,$ $v_i \in V$
 $a_i \in A.$ V -
 $P (\quad) \quad T(\quad).$

.
 μ -
 ,

. :
 $\mu : P \rightarrow N,$ $C, \mu.$ -

,
 .
 -
 ,

.

2.2.3.

workflow

WfMC

(workflow)

Workflow Management Coalition

(WFM Coalition).

WfMC

-

,

workflow.

BPMN

YAWL

YAWL (Yet Another Workflow Language)

-

(Aalst)

(Hofstede) 2003

.

[42],

,

YAWL

.

,

,

[42, c. 3]

:

•

-

.

•

,

,

.

•

.

YAWL,

[42, . 10]

-

,

(extended workflow nets, EWF-nets).

-

,

55). (. 2.2.2 .

YAWL

(workflow patterns).

(. ?? . ??).

YAWL

Workflow.

BPEL

XPDL

WF-XML

2.2.4. Workflow

Workflow.

workflow

CA Magazine [44].

[45],

2

‘ , ‘ , ‘

•

•

• •

—

9

AIIM

2

34%

BPM.

—

2

•

(36 %)

, . workflow ,
 , .

2.3. -

. WORKFLOW. WORKFLOW
 , WORKFLOW.

(Smith, Fingar "Business process management the
third wave").

2.3.1. - .

- ,
BPM CBOK <<
 - >> [48], ABPMP (Association
of Business Management Professionals).

ABPMP [48, . 24]

, -
 , , , ,
 - ()
 , -
 .
 - , ABPMP
CBOK [48, . 28], -

:

,

.

--- -

,

- .

--- () -

, . -

, .

, .

--- ,

. -

--- -

,

. -

--- -

,

- .

289 -

,

c- [49], 20 -

- :

(design model, DesM) ---

;

(discover model from event

data, DiscM) --- ;

(select model for collection, SelM) --- -

;

(merge models, MerM) ---
 ;
 (compose models, CompM) --- -
 ;
 (design configurable model, DesCM) --- -
 , ;
 (merge models into configurable model, MerCM)
 --- -
 ;
 (configure configurable model, ConCM) --- -
 ;
 (refine model, RefM) --- -
 ;
 (enact model, EnM) ---
 ;
 (log event data, LogED) ---
 - ;
 (monitor, Mon) --- -
 .
 (adapt while running, AdaWR) ---
 , ;
 (analyze performance based on model,
 PerfM) --- -
 .

(verify model, VerM) ---

-

;

(check conformance using event data, ConfED)

;

(analyze performance using event data, PerfED)

(repair model, RepM) ---

-

;

(extend model, ExtM) ---

-

,

;

(improve model, ImpM) ---

.

,

,

,

.

,

-

,

-

-

.

2.3.2.

-

-

,

-

-

IT

.

Gartner[50], *c*

-

(. Business Process

Management Suite),

 , , ,
 . BPM-
 - (),
 << , ,
 . BPMS
 -
 - ,
 .>>[\[51\]](#)
 ,
 - , << >>
 (Handbook on Business Information Systems) [\[52\]](#)
 ,
 - .
 -
 : [\[52\]](#), . 100 -- 101
 --- ,
 - ;

 - ;
 --- , -
 , ;

 - ;
 --- ,
 - ;

;

;

;

•
;

,

;

: [48]

,

;

;

•
;

;

—

;

• ,

•

•

2.5.

2.

:

.

. ,

.

-

.

.

3.1.

3.

3.2.

,

.

.

3.2.1.

,

-

.

,

,

.

-

[53, . 44]

:

1.

()

;

- 2. () ;
- 3. , ;
- 4. , , , ;
- 5. ;
- 6. .

3.2.2.

, -
 . ,
 [53, . 51 -- 53], ,
 . -
 , -
 () .
 , , -
 .
 .

 , -
 (. 1.4.2 . 31), (.
 Workflow- 2.2.1 . 50) -
 (.
 2.3.1 . 61),

(.

2.2.2 . 52) .

3.2.3.

,

.

,

.

-

,

.

. [54] . [55],

:

• , ;

• ;

• ;

• ;

• -

;

•

.

-

-

,

,

,

.

3.3.

3.4.

3.5.

3.

1. Davenport T. H. Process Innovation: Reengineering Work through Information Technology. Boston, MA, USA: Harvard Business School Press, 1993.
2. itSMF. ITIL. itSMF Russia, 2011. .
 . itSMF Russia.
3. . . :
 . : , 2006. . 287. . . .
 .
4. . . , , -
 - . : , 2006. . 240.
5. . . . - -
 . : : , 1997. . 224. . . .
 .
6. .
 :
 : , 2006. . 528.
7. . . : " 2005. . 608.
8. . . . : . :
 - , 2013. . 118.
9. Group O. M. Business Process Modeling Notation (BPMN) Specification. 2006.
10. Group O. M. Business Process Model and Notation (BPMN) Version 2.0. 2011.
 . <http://www.elma-bpm.ru>.
11. 9000-2001
 . 2001.

12. 9001-2008 2001.
13. 9004-2010 -
 . 2010.
14. e . : , 2007. . 370.
15. J.M. Juran A. G. Juran's Quality Handbook. 5th edition edition. McGraw-Hill, 1999.
16. / , . . .
 . , 2007. . 384.
17. . : .
 . : , 2004. . 274. .
 .
18. Kaizen --- Toyota Production System Guide. URL: www.blog.toyota.co.uk/kaizen-toyota-production-system (: 20.11.2013).
19. A. Brunet S. N. Kaizen in Japan: an emperical study // International Journal of Operations and Production Management. 2003. Vol. 23. P. 1426--1446.
20. . . . - :
 - , 2005. . 319.
21. Wysocki R. K. Effective Project Management. Traditional, Agile, Extreme. 6th edition edition. Indianapolis: John Wiley & Sons, Inc., 2012. P. 710.
22. Institute P. M. A Guide to the Project Management Body of Knowledge (PMBOK Guide) - Fifth Edition. Project Management Institute, 2004. P. 388.
23. - : , 1996. . 610.
24. Institute P. M. A Guide to the Project Management Body of Knowledge (PMBOK Guide) - Third Edition. Project Management Institute, 2004. P. 388.

25. << - >>, 2004. . I. . 400.
26. Charvat J. Project management methodologies: selecting, implementing, and supporting methodologies and processes for projects. Hoboken, New Jersey: John Wiley & Sons, Inc., 2003. P. 264.
27. . . . - : , 2006. . 400.
28. . - . : , 1996. . 183.
29. 73:2009 . .-. . . . 2011.
30. 12207-99 1999.
31. 19.102-77 1977.
32. 34.601-90 1990.
33. Ambler S. Disciplined Agile Software Development: Definition. 2007. URL: <http://agilemodeling.com/essays/agileSoftwareDevelopment.htm>.
34. Beck K., Beedle M., van Bennekum A. et al. Manifesto for Agile Software Development. 2001. URL: <http://www.agilemanifesto.org/iso/ru>.
35. Cobb C. G. Making Sense of Agile Project Management: Balancing Control and Agility. Hoboken, New Jersey: John Wiley and Sons, Inc., 2011. P. 264.
36. Rouse M. What is scrum? 2007. URL: <http://searchsoftwarequality.techtarget.com/definition/Scrum>.
37. Jeffries R. What is Extreme Programming? 2001. URL: <http://xprogramming.com/book/whatisxp>.



38. Hill G. M. The Complete Project Management Office Handbook. Boca Raton, Florida: Auerbach Publications, 2008. P. 685.
39. Wil van der Aalst K. M. v. H. Workflow Management. Massachusetts, London: The MIT Press Cambridge, 2002. P. 363.
40. Coalition W. M. Workflow Management Coalition. Terminology & Glossary. Issue 3.0 edition. Hampshire, United Kingdom: Workflow Management Coalition, 1999. P. 65.
41. , 2007. . 336.
42. W. van der Aalst A. t. H. YAWL: Yet Another Workflow Language (Revised Version). Queensland University of Technology, Brisbane, 2003.
43. : , 1984. . 264.
44. Bragonier D. WORKFLOW IN A NEW AGE // CA Magazine. 2013. Vol. 146, no. 7. P. 30 -- 34.
45. Cunningham LLP's Products and Services Page. URL: <http://www.linkedin.com/company/cunningham-llp/products> (: 01.12.2013).
46. Adams J. A SMOOTHER FLOW OF WORK // Bank Technology News. 2012. Vol. 25, no. 8. P. 22 -- 25.
47. Miles D. BUSINESS PROCESS MANAGEMENT --- WHAT IS THE PAYBACK AND WHAT IS THE ROI? // Infonomics. 2010. Vol. 24, no. 1. P. 24 -- 25.
48. of Business Process Management Professionals A. ABPMP BPM CBOK. Guide to the Business Process Management Common Body of Knowledge. Association of Business Process Management Professionals, 2009. P. 236.

49. van der Aalst W. A Decade of Business Process Management // Business Process Management / Ed. by E. K. A. Barros, A. Gal. Berlin: Springer-Verlag, 2012. P. 350.
50. Gartner IT Glossary. Business Process Management Suites (BPMSs). URL: <http://www.gartner.com/it-glossary/bpms-business-process-management-suite> (: 29.11.13).
51. BPM. BPMS (- ,). URL: <http://abpmp.org.ru/resource/bpm-glossary> (: 29.11.13).
52. M. El-Mekawy N. A., K. Shahzad. Modeling and Managing Business Processes // Handbook on Business Information Systems / Ed. by M. S. A. Gunasekaran. Singapore: World Scientific Publishing Co., 2010. P. 943.
53. John M. Nicholas H. S. Project Management for Business, Engineering, and Technology. 3rd edition edition. New Delhi: Elsevier, 2008. P. 707.
54. . , . : , 1983. . 344.
55. . . . : , 1959. . 430.



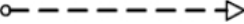

OMG BPMN v. 2.0

.1.

OMG BPMN version 2.0 [10]

(Event)	<p>--- , -</p> <p>- -</p> <p>.</p> <p>- -</p> <p>() (-</p> <p>).</p> <p>,</p> <p>.</p> <p>- , -</p> <p>:</p> <p>(Start), -</p> <p>(Intermediate)</p> <p>(End).</p>	
(Activity)	<p>--- , -</p> <p>,</p> <p>- .</p> <p>,</p> <p>(). -</p> <p>,</p> <p>:</p> <p>(SubProcess) (Task). , -</p> <p>.</p> <p>,</p> <p>,</p> <p>.</p>	



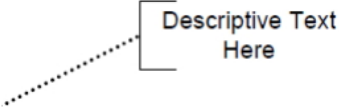
.1 ()

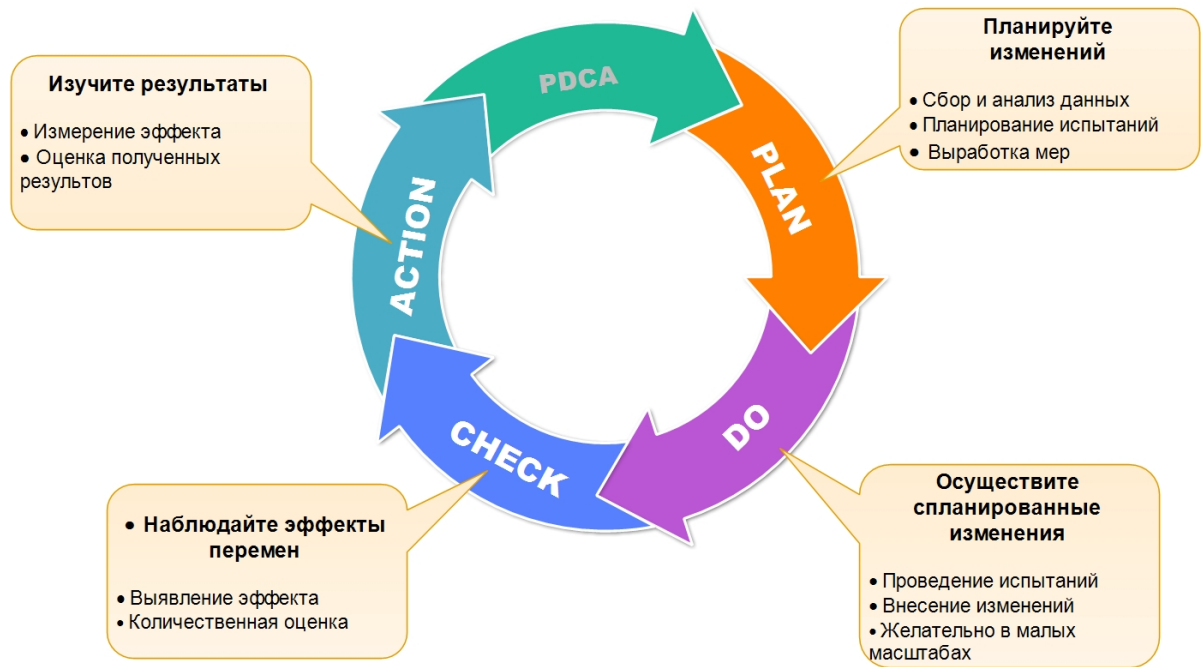
(Gateway)	<p>-</p> <p>,</p> <p>,</p> <p>,</p> <p>,</p> <p>.</p> <p>-</p> <p>.</p>	
(Sequence Flow)	<p>-</p> <p>,</p> <p>.</p>	
(Message Flow)	<p>-</p> <p>,</p> <p>.</p> <p>BPMN</p> <p>(</p> <p>-</p> <p>).</p>	
(Association)	<p>(</p> <p>,</p> <p>)</p> <p>,</p> <p>,</p> <p>(</p> <p>,</p> <p>).</p>	

.1 ()

(Pool)	<div> <div> <div>.</div> <div>,</div> <div><<</div> <div>>> (B2B).</div> </div> <div> <div>.</div> <div>,</div> <div><<</div> <div>>>.</div> </div> </div>	<div> <div>Name</div> <div></div> </div>
(Lane)	<div> <div>,</div> <div>(</div> <div>).</div> </div>	<div> <div>Name</div> <div>Name</div> </div>
(Data object)	<div> <div>,</div> <div>/</div> <div>.</div> </div>	<div> <div></div> </div>

.1 ()

(Message)	<p>business PartnerEntry).</p> <p>PartnerRole business</p>	
(Group)		
(Text Annotation)	BPMN	



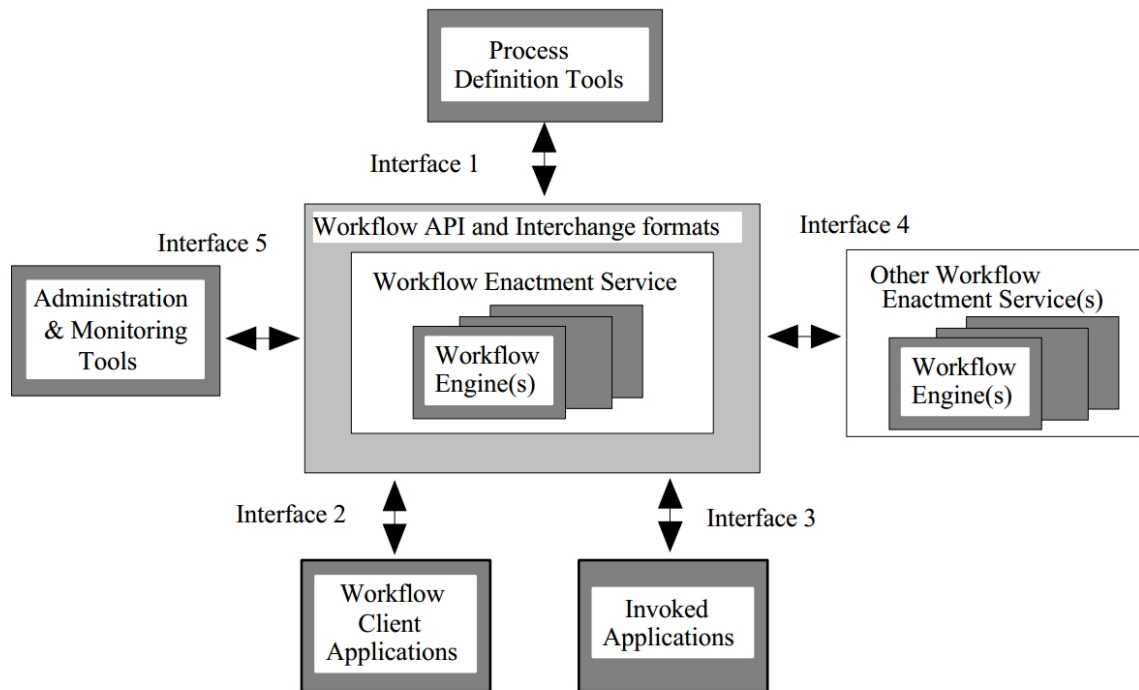
. .1. "

-

[14, . 97]

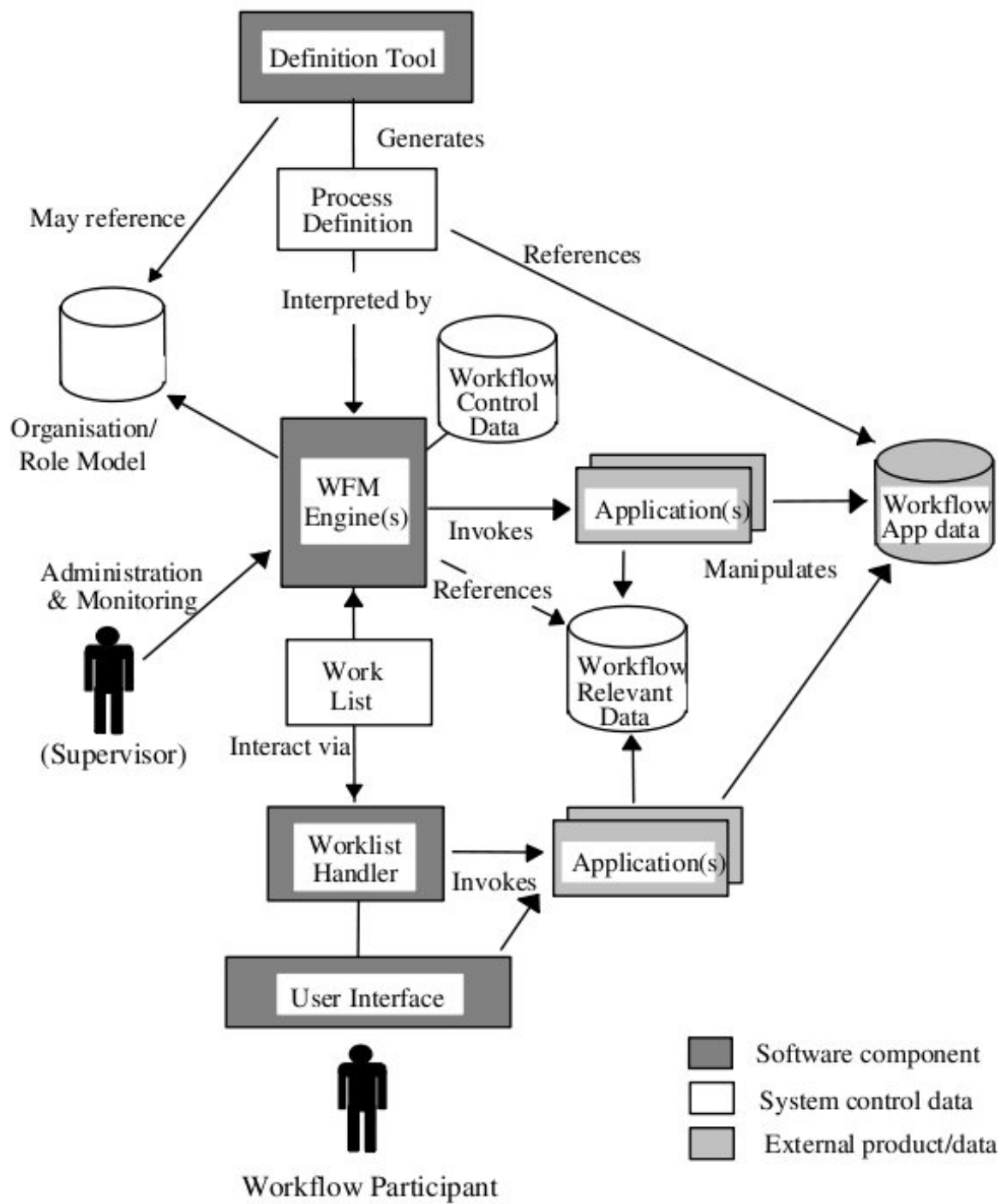
.1. - -
[16, . 228]

-	-
- (). , . .	- (). - . .
: .	: .



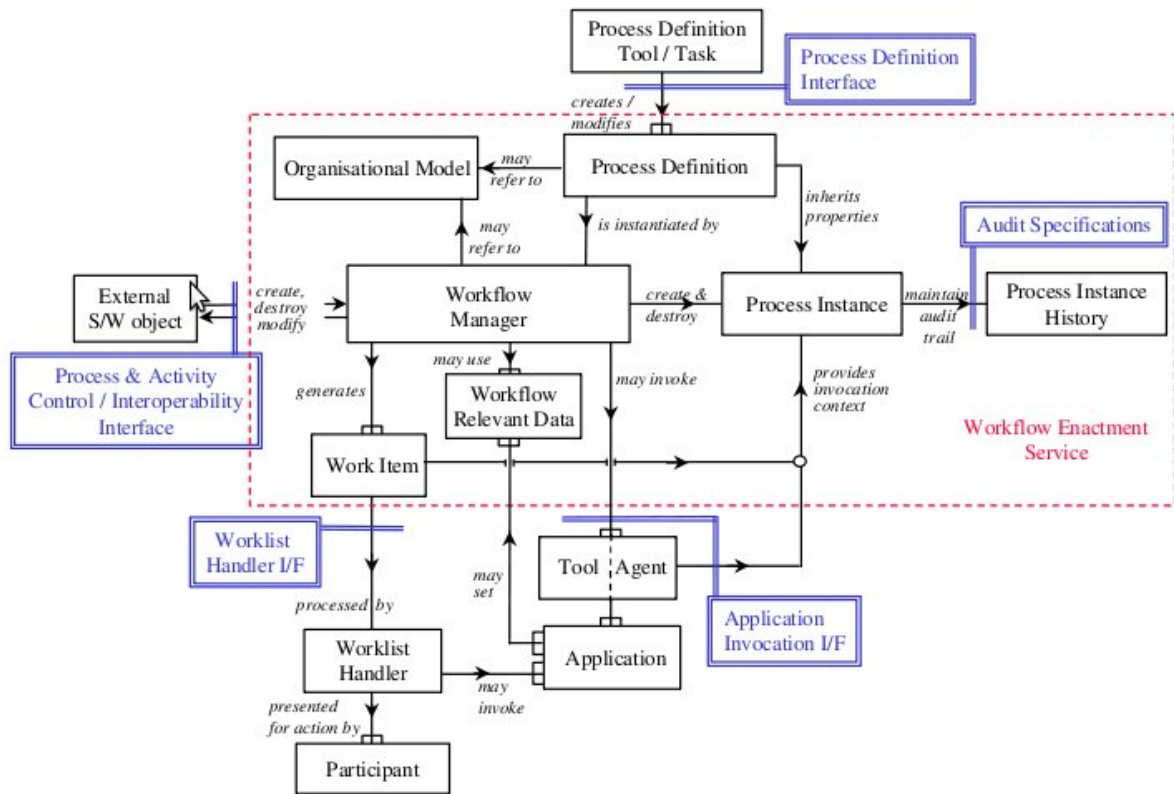
. .1. "

(Workflow Reference Model) [40, . 23]

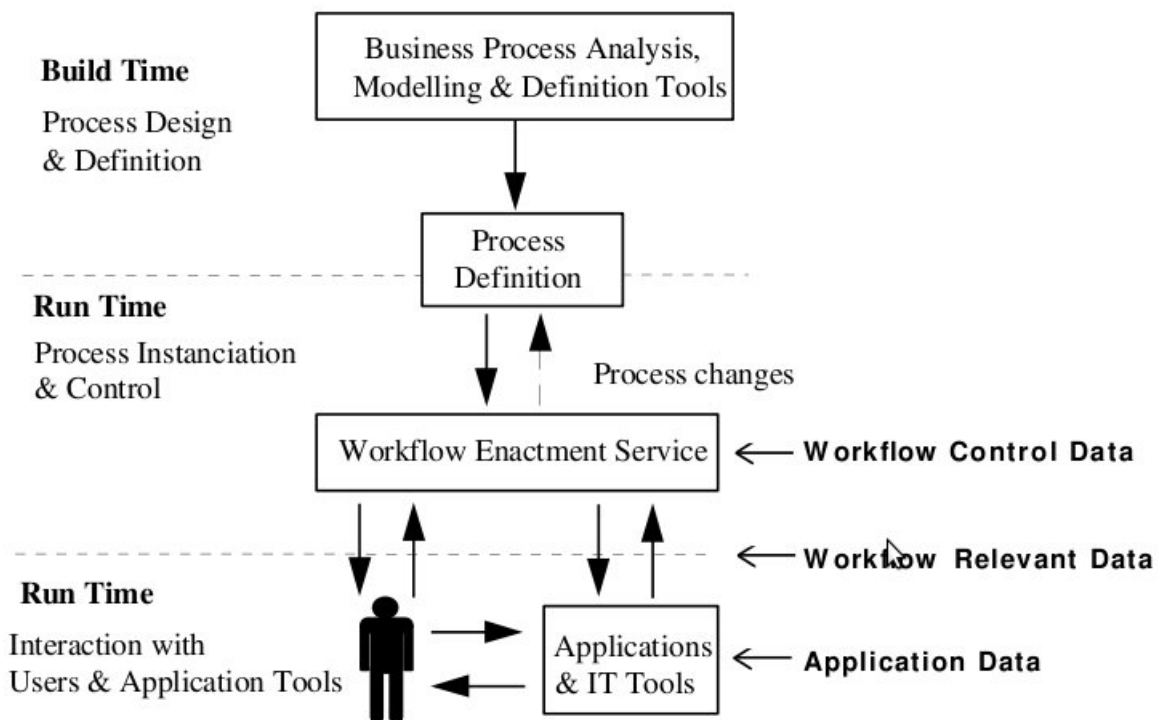


. .2.

(Generic Workflow Product Structure) [40, . 39]



. 3. Workflow
(WFMS Components & Interfaces) [40, . 40]



. 4.
(Types of Data in Workflow Management Systems) [40, . 44]