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Agile

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1.2.1.		9
1.2.2.		11
1.2.3.		15
1.2.4.		22
1.3.	-	25
1.3.1.		25
1.3.2.		27
1.3.3.	-	32
1.3.4.		33
1.3.5.		37
2.	-	38
2.1.		38
2.1.1.	-	38
2.1.2.		-	40
2.1.3.		...	41
2.2.	-	41
2.2.1.		42
2.2.2.	-	45
2.2.3.		- ...	50
2.3.		50

2.3.1.	- .	50
2.3.2.	- -	53
2.3.3.		56
2.4. Workflow.		59
2.4.1.		59
2.4.2.	workflow	63
3.		66
3.1.		66
3.1.1.		66
3.1.2.	-	67
3.1.3.		67
3.2.		68
3.3.		68
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	OMG BPMN v. 2.0	80
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 [1, . 31], [1, . 148],
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[4, . 55]

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ITIL [5, . 5],

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ITIL [5, . 20]

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[6, . 17 -- 18], [7]

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[1, с. 148].

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· [8, . 110]
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[1, . 148]

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Process Classification Framework ---

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International Benchmarking Clearinghouse ---

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eTOM --- (Enhances Telecom Operational Map), TMForum.

BEM --- .

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PMBOK Guide [10, .3], -

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PMBOK [12, .8], -

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PMBOK 5 [10],

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PMBOK [10]

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[14, c. 91 -- 93]:

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[14, . 330 -- 336])

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[14, . 357 -- 370]

(milestone plan).

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Agile

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[16, . 21 -- 23]

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[16], [14].

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(life cycle model) << ,
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 (. 19.102-77 [18]) -
 (34.601-90 [19]). -
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 [20],
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 XP, Scrum, Crystal ., Agile
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 agile ,
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 agile- -
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 , VersionOne
 [21], 2011 -- 2012 . 48%, ,
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2012 . (48%)

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Agile

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[?], *Agile* ()

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Agile

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(K.

Beck) . (A. Cockburn).

Agile [22]

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[22],

Agile

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Agile.

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(Scrum) ---

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(Extreme Programming, XP) ---

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[25], XP

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[13, . 110],

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Extreme Programming (XP) ---

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 CRC .

Scrum ---

30-

Crystal methodology ---**Dynamic System Development Methodology (DSDM) ---****Rapid Application Development (RAD) ---****Adaptive Software Development ---****Lean Development ---****Feature-driven development ---****1.2.4.**

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[26, . 57 -- 58]

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[26, . 57 -- 58]).

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- (. . : [31, . 4.8])

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

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[31].

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[31, . 205 -- 216],

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[4, .52] , ,

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.52]

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: [4, .181]

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1.3.4.

Kaizen.

[32, . 48 -- 49] , -

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. - ITIL [5, . 39] -

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--- (*Kaizen*). -

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(Toyota) [34], Nippon Steel Corp., Honda Motor Corp., Suzuki Motor Corp., Takagi Seiko [35].

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[33],

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TQC () ---

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2.1.1.

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[2, .93 -- 98].

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, BPTrends [37, . 429] :

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[2, . 14]

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2006 . -
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[2, . 15], -
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2004 . BPMN,
BPMN 2.0 Object

Management Group (OMG) . [39]

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 - , [2, . 71 -- 81] -
EPC (c) *BPMN*
 (-).

, [2, . 15]
 , . . . -
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 .
 SADT (Structured Analysis and Design
 Technique) IDEF(Integration Definition for Functional Modeling.)

- -
 [2, . 17] c -
 , - -
 - . -
 UML (Unified Modeling Language).

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 [2, . 18]
 , - ,
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 , - ,
 ARIS(Architecture of Integrated Information Systems).

[40] -
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· · · ,
 , [40, . 15] $C = (P,T,I,O)$,
4- :

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

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[40, . 18]
 $G = V,A,$ $v_i \in V$
 $a_i \in A.$ V -
 $P (\quad) \quad T(\quad).$

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· :

$\mu : P \rightarrow N,$

$C, \mu.$

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[6, . 27],

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(2006 .):

DFD (Data Flow Diagram) ---

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SADT (Structured Analysis and Design Technique) ---

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ERD (Entity-Relationship Diagram) ---

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STD (State Transition Diagram) ---

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UML (Unified

Modelind Language), . , . . .

UML ,

, : [6, . 60]

(use case diagrams) --- -

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(class diagrams) --- -

;

(statechart diagrams) ---

;

(activity diagrams) ---

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(interaction diagrams) --- -

(sequence diagrams) -

; (collaboration diagrams) -

;

(component diagrams) --- -

;

(deployment diagrams) --- -

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BPMN**BPMN**

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BPMN

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. [80](#)).**OMG BPMN.****BPMN**

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[\[41\]](#), . 26]

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BPMN,

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:[41, . 30]

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

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YAWL*YAWL (Yet Another Workflow Language)*

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(Aalst)

(Hofstede) 2003

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[42],

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YAWL

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[42, c. 3]

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YAWL,

[42, . 10]

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(extended workflow nets, EWF-nets).

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43).

YAWL

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(workflow patterns).

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YAWL

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Workflow.

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2.2.3.

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BPEL**XPDL****WF-XML****2.3.**

. WORKFLOW. WORKFLOW
 , WORKFLOW.

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

2.3.1.

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BPM CBOK <<

- >> [43], ABPMP (Association
 of Business Management Professionals).

ABPMP [43, . 24]

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- , ABPMP

CBOK [43, . 28],

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c- [44], 20

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(design model, DesM) ---

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(discover model from event

data, DiscM) ---

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                                (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) --- -

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(extend model, ExtM) --- -

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(improve model, ImpM) ---

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2.3.2. -

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Gartner[45], *c* - (. Business Process Management Suite),

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 . BPMS

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 .>>[46]
 , -
 - , << >>
 (Handbook on Business Information Systems) [47] -

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 : [47, . 100 -- 101]

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 - (SOA)
 :[\[43\]](#)
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2.3.3.

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 YAWL, , "

(workflow [42] 20-

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[42, . 10 -- 39] :

(Sequence) --- ,

.

(Parallel split) ---

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(Synchronization) ---

.

(Exclusive choice) --- ,

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(Simple merge) ---

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(Multi-choice) --- ,

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(Synchronizing merge) ---

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(Multi-merge) ---

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(Disctiminator) ---

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(Arbitrary cycles) ---

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(Implicit termination) ---

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(Multiple instances without

synchronization) ---

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(Multiple

instances with a priori design time knowledge) ---

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	,	(Multiple instances)	
with a priori runtime knowledge) ---		-	
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	,	(Multiple instances without	
a priori runtime knowledge) ---		-	
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	.		
(Deferred choice) ---		,	-
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	.		
		(Interleaved parallel routing) ---	
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(Milestone) ---			-
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	.		
(Cancel activity) ---		,	-
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(Cancel case) ---			
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(Smith, Fingar "Business process management the third

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WfMC

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 [49, . 9]. , -
 , ITIL [5, . 65]
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 WfMC e WfMC Reference Model [49].
 (workflow) -
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 , .[49, . 8].
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 (Process Definition), .
 , WfMC - ---
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 [49, . 10]. [50, . 126] workflow
 () , ,
 - . Workflow -
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 [48, . 31 -- 35].

1. workflow-
 --- (*cases*) ,
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2. (*task*) ,
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 , () .
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 (work item) ()
) ,
 . (activity)
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3. (*process*) ,
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 workflow,

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4. *(routing)* -

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Workflow- -

Workflow, [50,

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Workflow

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Workflow, [50], -

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Workflow

- [50, . 131 -- 133]

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(build time),

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(run time),

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2.4.2.

workflow

Workflow.

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workflow

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Cunningham LLP, Toronto,

CA Magazine [51].

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[52],

Cunningham LLP

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(B2B)

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workflow,

"Bank Technology News" [53], workflow-

Zagiel S.A.,

Infonomics [54].

495

AIIM

2008 -- 2009 . ,

26%

34%

24%

BPM.

64%

(26 %).

(36 %)

workflow

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3.1.

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3.1.1.

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[55, . 44]

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3.1.2.

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[55, . 51 -- 53],
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Workflow- 2.4.1 . 62） -
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2.3.1 . 51），
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2.3.3 . 56） .

3.1.3.

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3.2.

3.3.

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2. . . . : . :
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 . itSMF Russia.
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15. 73:2009 . . .- 2011.
16. - : , 2006.
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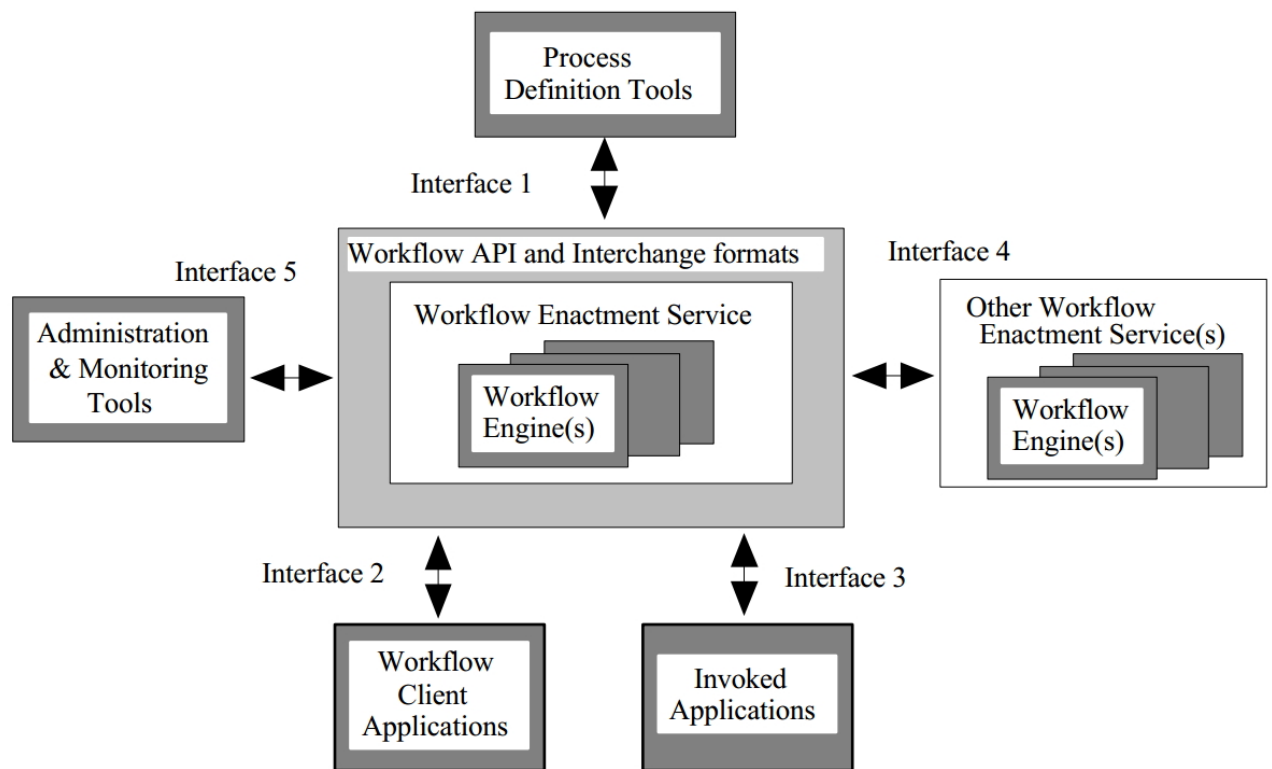
. 1. "

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[30, . 97]

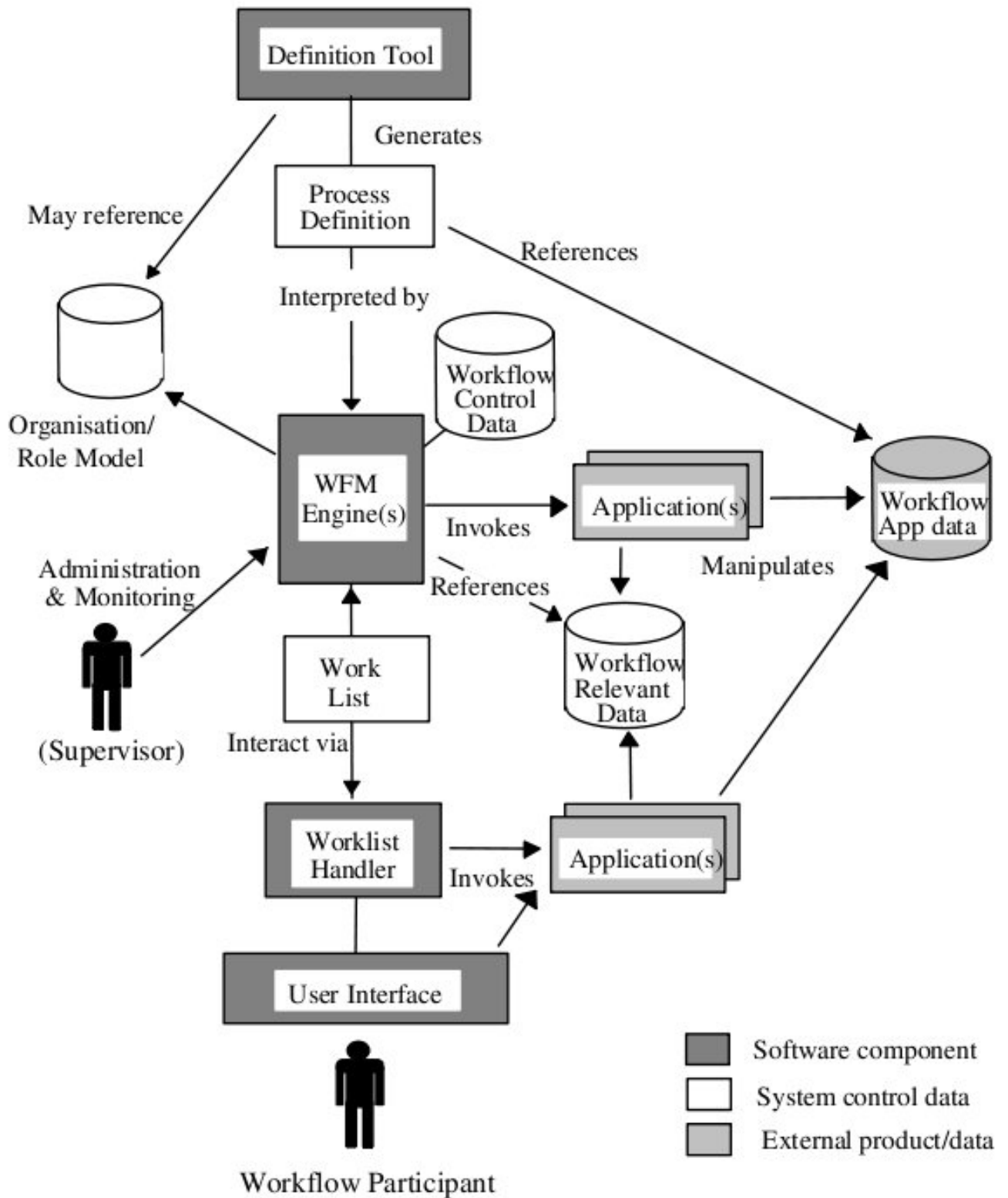
.1. - -
[32, . 228]

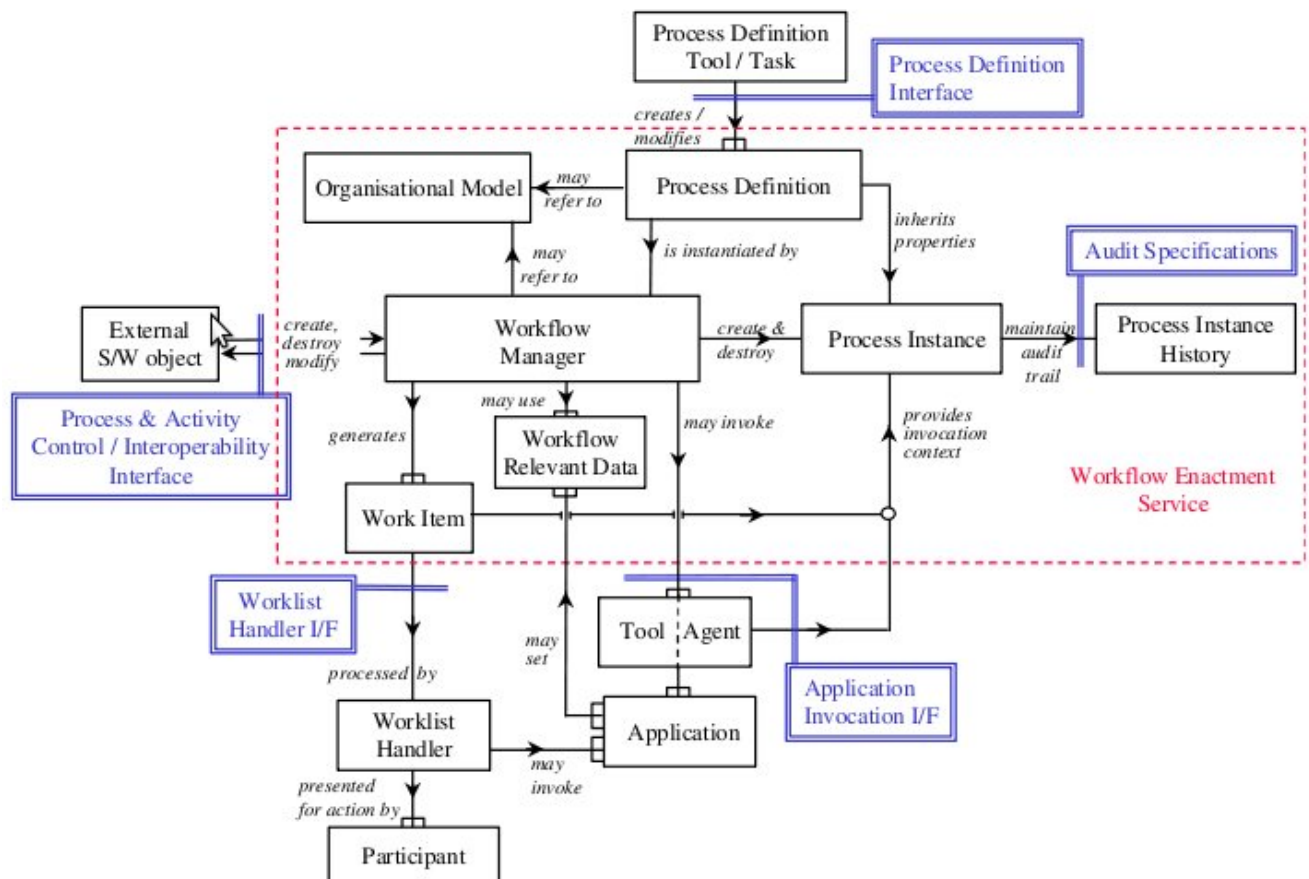
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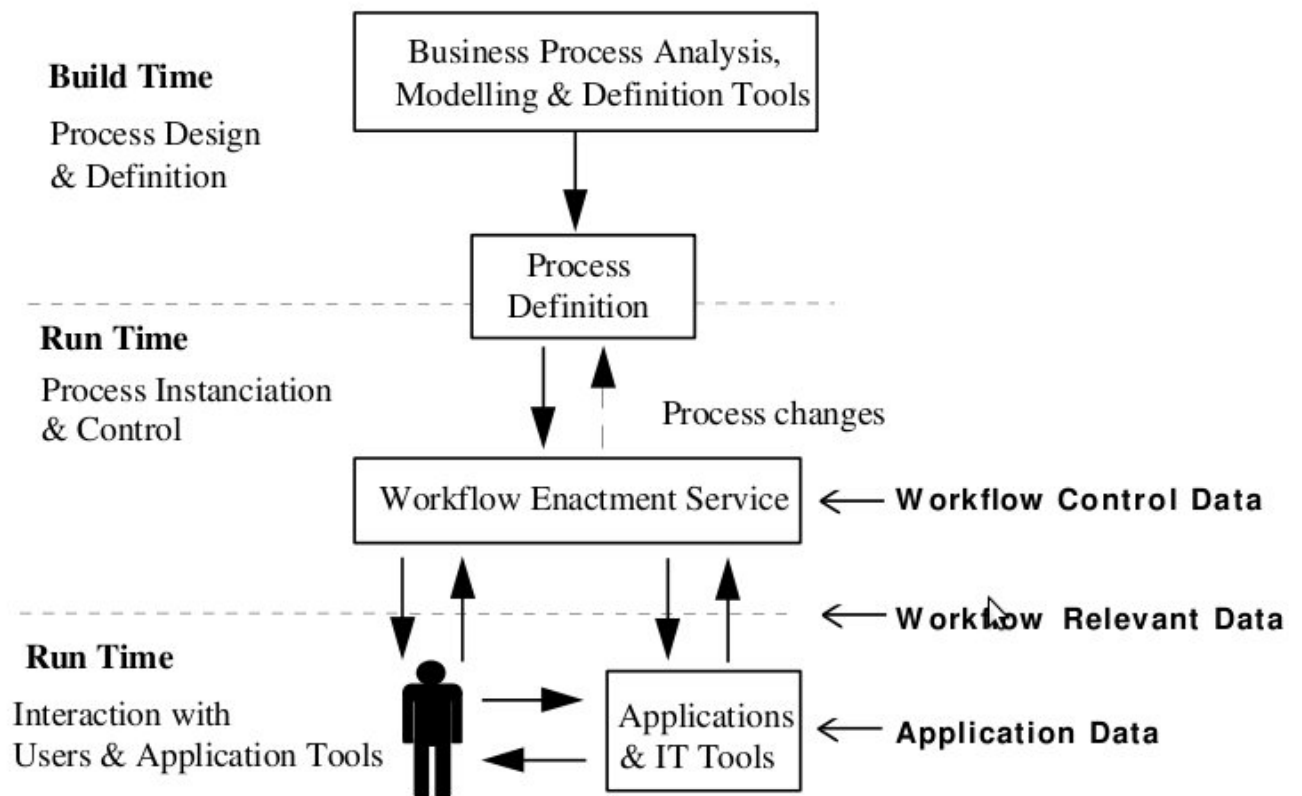


. .1. "

(Workflow Reference Model) [49, . 23]





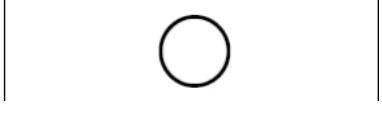



. .4.



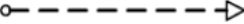
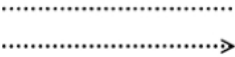
(Types of Data in Workflow Management Systems) [49, . 44]

OMG BPMN v. 2.0


.1. OMG BPMN version 2.0 [41]

(Event)	<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> <p>.</p>	




.1 ()

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

.1 ()

(Pool)	<div style="position: relative; height: 400px;"> - . , << >> (B2B). . , , << >>. </div>	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="float: right; font-size: small;">Name</div> <div style="clear: both;"></div> </div>
(Lane)	<div style="position: relative; height: 200px;"> , (). </div>	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="float: right; font-size: x-small;">Name Name</div> <div style="clear: both;"></div> </div>
(Data object)	<div style="position: relative; height: 200px;"> - , / . , </div>	

.1 ()

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



. 1. "

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[37, . 429]