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Agile

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1.1.1.		..	4
1.1.2.	-	6
1.2.		9
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.		.....	42
2.2.	-	.....	46
2.2.1.		.....	46
2.2.2.	-	.....	49
2.2.3.		-	54
2.3.		. ....	54
2.3.1.		.....	54
2.3.2.		57

2.3.3.	Workflow-	60
2.3.4.	workflow	62
3.		64
3.1.		64
3.1.1.		64
3.1.2.		-	
		65
3.1.3.		65
3.2.		66
3.3.		66
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	OMG BPMN v.2.0	76
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 [1, . 31], [1, . 148],
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[3] - , << -

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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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1.2.1.

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PMBOK Guide [10, .3], -

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[11, .41],

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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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[14, . 34]

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/ 12207-99 [17]

(life cycle model) << ,
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 (. 19.102-77 [18]) -
 (34.601-90 [19]). -
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 [20],
 , ,
 XP, Scrum, Crystal ., 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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(K.

Beck) . (A. Cockburn).

Agile [22]

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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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— (e-mail, . .)

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[26, . 57 -- 58]).

1.3.

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1.3.1.

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9000 [27].

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(9001 [28]),

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1.3.2.

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[30,

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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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TPM (

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2.1.

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BPM CBOK << - >> [36], -

ABPMP (Association of Business Management Professionals).

ABPMP CBOK [36, . 24] -

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- , ABPMP CBOK [36, . 28], -

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[37,

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2.1.2.

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 IT Gartner[39],
 c - (. Business Process Management
 Suite),
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 BPM-
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 . BPMS
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(Handbook on Business Information Systems) [41]

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289 , -

c- [42],

20 - -

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(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) ---

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.

(adapt while running, AdaWR) ---

,

;

(analyze performance based on model,

PerfM) ---

-

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(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) ---

.

и, следовательно, не имеет значения, что в этом случае не выполняется условие $\alpha \in \mathbb{R}$.

В то же время, если $\alpha \in \mathbb{R}$, то $\alpha \in \mathbb{R}$ и $\alpha \in \mathbb{R}$ и $\alpha \in \mathbb{R}$.

2.2. -

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2.2.1.

2006 . - -

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[2, . 15], - -

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 2004 . BPMN,
 BPMN 2.0 Object
 Management Group (OMG) . [43]
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 - , [2, . 71 -- 81] -
EPC (c) *BPMN*
 (-).
 , [2, . 15]
 , . . -
 , , . -
 . -
 . SADT (Structured Analysis and Design
 Technique) IDEF(Integration Definition for Functional Modeling.)
 - -
 [2, . 17] c -
 , - -
 - . -
 UML (Unified Modeling Language).

[2, . 18]

ARIS(Architecture of Integrated Information Systems).

[44]

[44, . 15]

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

4- :

1. $P;$

2. $T;$

3. $I;$

4. $O;$

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(. : [?

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[44, . 18]

$G = V, A,$ $v_i \in V$
 $a_i \in A.$ V -
 $P ($ $)$ $T($ $)$).

μ

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

2.2.2.

[6, . 27], -

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

Modeling Language),

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UML

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: [6, . 60]

(use case diagrams) ---

;

(class diagrams) ---

;

(statechart diagrams) ---

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(activity diagrams) ---

;

(interaction diagrams) --- -

(sequence diagrams) -

; (collaboration diagrams) -

;

(component diagrams) --- -

;

(deployment diagrams) --- -

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BPMN **BPMN** - -

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BPMN

(. . 76).

OMG BPMN. **BPMN**

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[45, . 26]

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BPMN,

:[45, . 30]

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

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 . .). BPMN , /

YAWL	<i>YAWL (Yet Another Workflow Language)</i>	-
(Aalst)	(Hofstede) 2003	
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[46],	,	
	YAWL	
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[46, c. 3]	:	
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	YAWL,	[46, . 10]
	,	-
(extended workflow nets, EWF-nets).		-
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	(.	2.2.1
48).		.
	YAWL	-
(workflow patterns).		
(.	?? . ??).	,
YAWL		

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Workflow.

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2.2.3.

BPEL

XPDL

WF-XML

2.3.

2.3.1.

WfMC

(workflow management system)

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(workflow engine).

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 [47, . 9]. , -
 , ITIL [5, . 65]
 .
 WfMC e WfMC Reference Model [47].
 (workflow) -
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 , .[47, . 8].
 -
 (Process Definition), .
 , WfMC - ---
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 [47, . 10]. [48, . 126] workflow
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 - . Workflow -
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 [49]. -

[49, . 31 -- 35].

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workflow-

(*cases*)

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(*task*)

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(work item)

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· (activity)

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3. (*process*)

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workflow,

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4. (*routing*)

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2.3.2.

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YAWL,

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workflow [\[46\]](#)

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[46, . 10 -- 39]

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(Sequence) ---

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(Parrallel split) ---

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(Sincronization) ---

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(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 instance

with a priori runtime knowledge) ---

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(Multiple instances without

a priory 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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(framework)

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2.3.3.

Workflow-

Workflow,

[48, . 127],

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Workflow

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Workflow,

[48],

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Workflow

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[48, . 131 -- 133]

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(build time),

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(run time),

2.3.4.

workflow

Workflow.

workflow

Cunningham LLP, Toronto,

CA Magazine [\[50\]](#).

[\[51\]](#),

Cunningham LLP

(B2B)

workflow,

"Bank Technology

News" [\[52\]](#), workflow-

Zagiel S.A.,

, Infonomics [\[53\]](#). -
 495 AIIM
 , 2008 -- 2009 . ,
 26%
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 , 24% BPM.
 64%
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 (26 %). , ,
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 workflow
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3.1.

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3.1.1.

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[54, . 44]

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3.1.2.

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[54, . 51 -- 53],
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(. 1.2.2 . 11), (.
Workflow- 2.3.3 . 60) -
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2.1.2 . 44),
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2.3.2 . 57) .

3.1.3.

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3.2.
3.3.

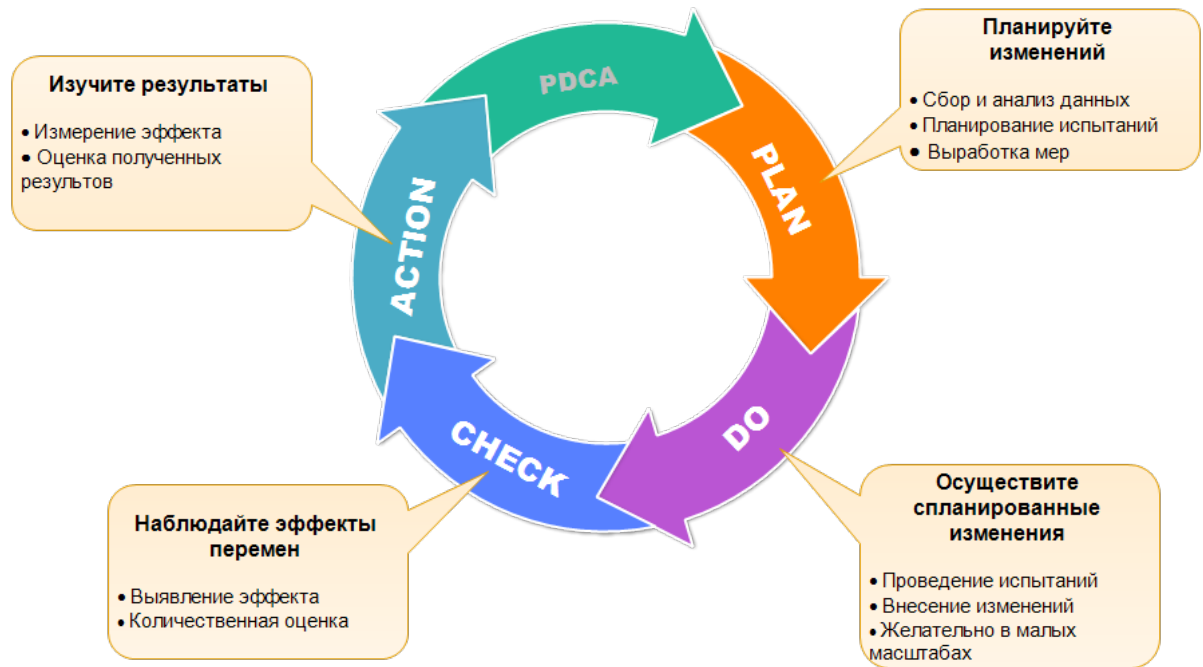
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1977.
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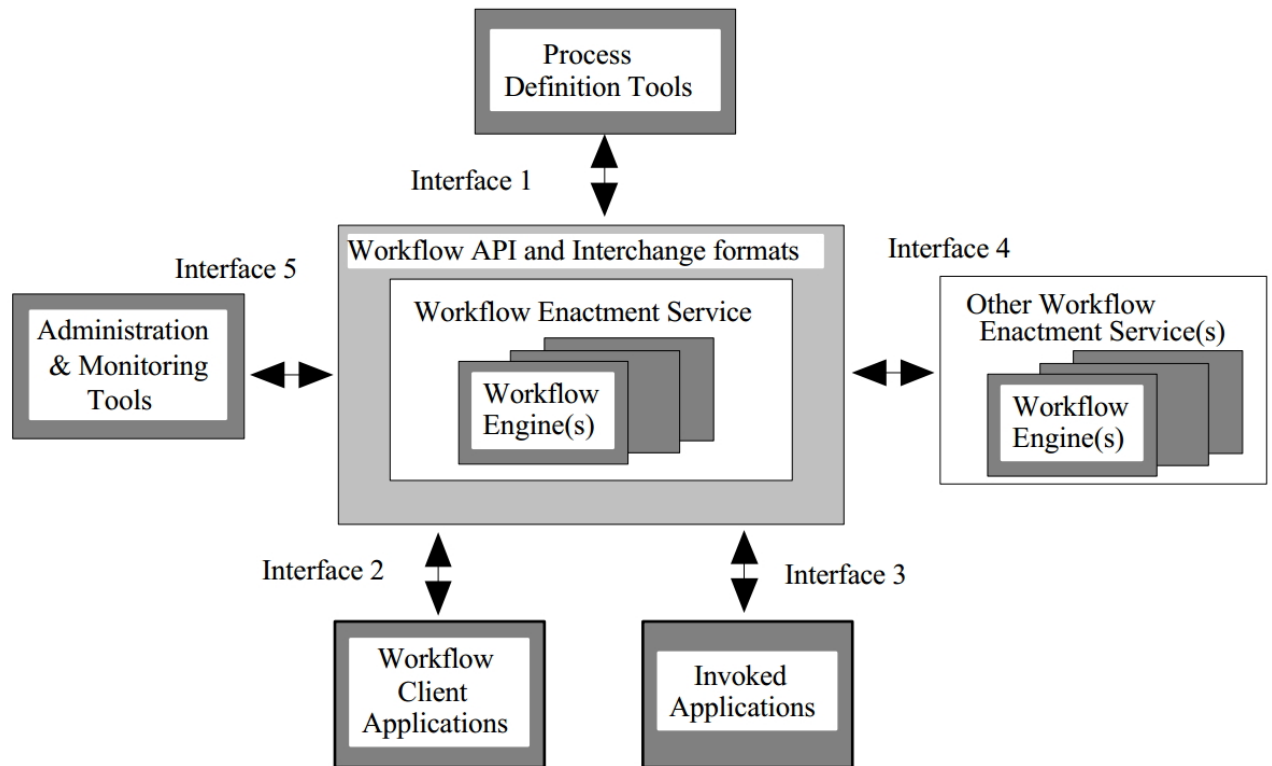
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[30, . 97]

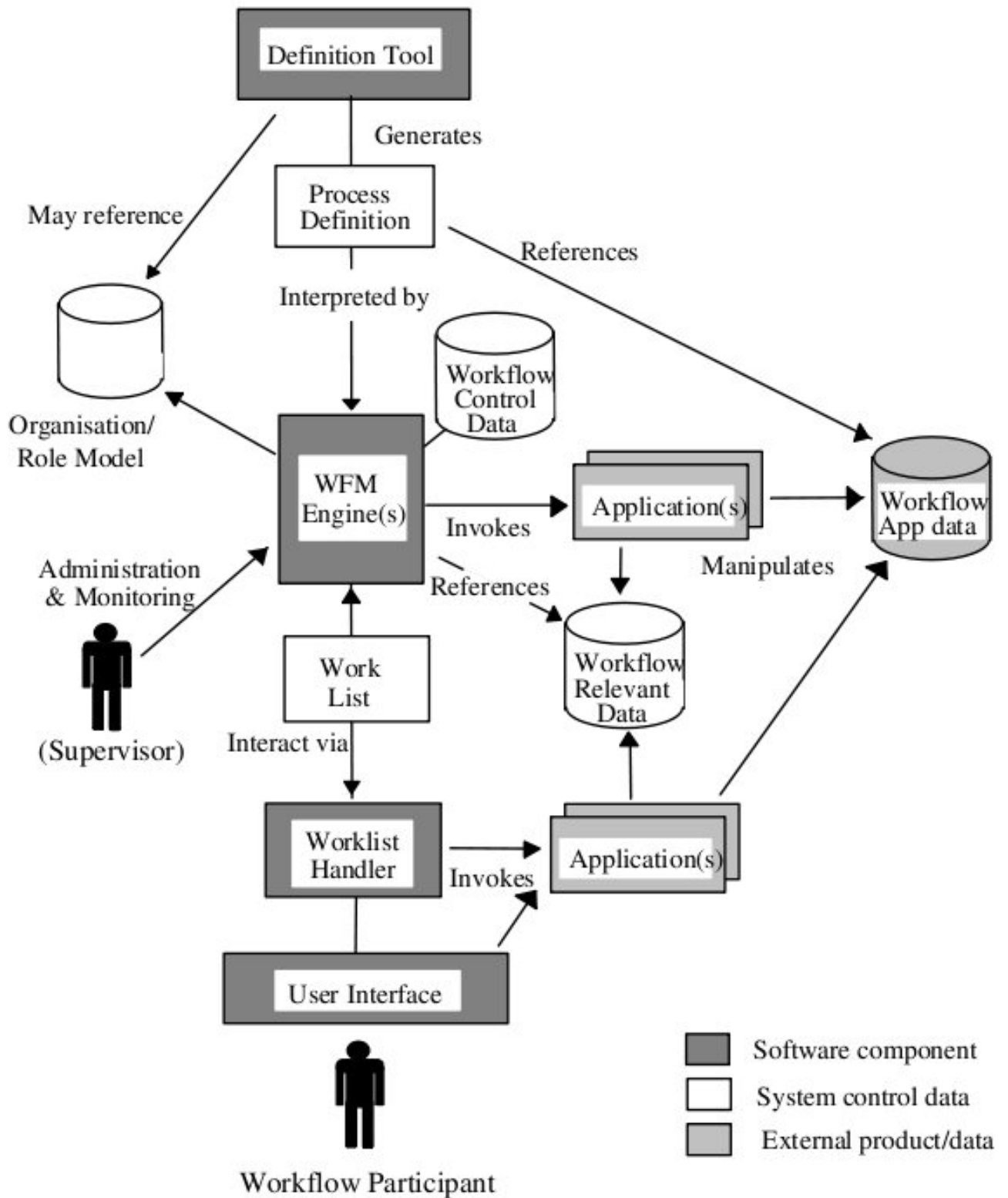
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[32, . 228]

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(Workflow Reference Model) [47, . 23]



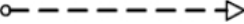



OMG BPMN v. 2.0


.1. OMG BPMN version 2.0 [45]




(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>	

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

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



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[38, . 429]