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1.2.1.	-	5
1.2.2.	-	8
1.2.3.	-	9
1.3.		
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1.3.1.		
		13
1.3.2.	-	14
1.3.3.			17
1.3.4.	-	
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1.3.5.		19
1.3.6.		22
1.4.		
		
		24
1.4.1.		24
1.4.2.		28
1.4.3.		29
1.4.4.		34
1.4.5.		39
1.5.		42

2.	-	43
2.1.		43
2.2.	Workflow.	43
2.2.1.	.	-
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2.2.2.	.	-
		47
2.2.3.	Workflow	-
		48
2.2.4.		49
2.2.5.	Workflow	-
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2.3.	-	51
2.3.1.	-	.
		51
2.3.2.		- -
		54
2.4.		57
2.5.		57
3.	3	58
3.1.		58
3.2.		58
3.3.		58
3.4.		58
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	OMG BPMN v. 2.0	64

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 ITIL [2, . 5], ,
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 55] << - --- ,
 >>.[3, .
 55]
 - [4, . 17 -- 18], [5]
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[6, c. 148],

[6, c. 148].

[6,

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Process Classification Framework ---

International Benchmarking Clearinghouse ---

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

BEM ---

1.2.2. -

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2006 . -

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, [4, . 27].

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[7, . 15], -

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SADT (Structured Analysis and Design Technique) IDEF(Integration Definition for Functional Modeling.)

- [7, . 17]

c ,

- -

- UML (Unified Modeling Language).

- [7, . 18]

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- , ARIS(Architecture of Integrated Information Systems).

[7, . 14] , --

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1.2.3.

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[4, . 27],

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2006 .):

DFD (Data Flow Diagram) -

();

SADT (Structured Analysis and Design Technique) - ;

ERD (Entity-Relationship Diagram) --- " - ";

STD (State Transition Diagram) --- ;

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UML (Unified

Modeling Language) , . ,

UML , -

, : [4, . 60]

(use case diagrams) --

;

(class diagrams) --

;

(statechart diagrams) -- -

;

(activity diagrams) --

;

(interaction diagrams) : -

(sequence diagrams) (collaboration diagrams) --

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(component diagrams) --

;

(deployment diagrams) -- -

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UML , -

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2004 . BPMN, BPMN 2.0 Object Management Group (OMG) . [8] 2.0 <<Business Process Model and Notation>> [9] 2011 . , . , , [7, . 71 -- 81] *EPC* (c) *BPMN* (-). BPMN BPMN - - , --- - , - . BPMN (. . 64). - OMG BPMN. BPMN - : , () --- -- . - , , [9, . 26] -

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BPMN,

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:[9, . 30]

1. (Flow Objects);
2. (Data);
3. (Connecting Objects);
4. (Swimlane);
5. (Artifacts).

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BPMN

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 [6, . 31]
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 [7, .27],
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 [7, . 30],
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[10], [11],

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[7, . 63 -- 70]

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FAST ---

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(,RBP),

[?],

(Kaizen),

[12].

([1.3.4](#) .

[17](#), [1.3.5](#) . [19](#)).

1.3.3.

1.3.4.

>>.[3](#), . 52]

: [3](#), . 181]

1.3.5.

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Kaizen.
 .
 ,
 (continuous
 improvement). [13, . 48 -- 49] ,
 (Continuous Process Improvement)
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 - ITIL [2, . 39] ---
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 ,
 --- (*Kaizen*).
 ,
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 << : >> [12]
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 . [12], --- ,
 ,

(Toyota) [14], Nippon Steel Corp., Honda Motor Corp., Suzuki Motor Corp., Takagi Seiko [15].

[12],

TQC () ---

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 TPM () ---
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 , (just in time);

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1.3.6.

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[? , c/ 93 -- 98].

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(*ERP*-

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DocFlow Workflow ---

ERP- SAP -- 49,9%, 1 -- 29,2%,
Oracle 8%. [17]

1.4.

1.4.1.

[18, . 6]

PMBOK Guide [19, . 3],

[20, . 41],

[21, . 8],

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 >>. [20, . 45]

, PMBOK 5 [19],

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[6, . 181]

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[22, . 34]

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[23, . 21 -- 23]

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 [23], [22].

1.4.2.

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 [24, . 44]
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- 1. () ;
- 2. () ;
- 3. , ;
- 4. , , , ;

5. ;

6. .

51 --53] ([24,

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1.4.3.

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51897-2011 [?]

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PMBOK 5 [19, .

309],

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: [22, с. 91 -- 93]

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[22, . 102].

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[22]

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(equirisk contour method) ---

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(probablistic event analysis, PEA) ---

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ABC

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>> [22, . 340].

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[22, .

342 -- 355]

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(critical path method),

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PERT.

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[22,

. 355 -- 357],

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[22, . 330 - 336])

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[22, . 357 -- 370]

(milestone plan).

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1.4.4.
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Agile . *Agile*.
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/ 12207-99 [26]
(life cycle model) << , ,
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[27, .46]:

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 - () .
- () ().

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 (. 19.102-77 [28]) -
 (34.601-90 [29]). -
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 Agile -
Agile () [30] () -
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 Agile ,
 2001 17
 , (K.
 Beck) . (A. Cockburn). [31]

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1. .
2. .
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4. .

Agile

: [31]

1. -
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2. ,
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agile

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Agile.

(Scrum) ---

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scrum ---

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.[\[33\]](#)

(Extreme Programming, XP) ---

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.[\[34\]](#)

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[\[27\]](#), . 110],

agile

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Extreme Programming (XP) ---

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CRC

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Scrum ---

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Crystal methodology ---

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Dynamic System Development Methodology (DSDM) ---

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Rapid Application Development (RAD) ---

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Adaptive Software Development ---

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Lean Development ---

, , .

Feature-driven development ---

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1.4.5.

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PMBOK Guide [21, .33]

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: [19]

[35, .57 -- 58]

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— (Work Breakdown

Structure);

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— (executive

dashboard).

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[35, . 57 -- 58]).

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2.1.

3.

2.2. Workflow.

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

2.2.1.

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ITIL [2, . 84],

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[36].

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 WfMC
 (workflow management system) , , -
 ,
 (workflow engine).
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 [37, . 9].
 ,
 ITIL [2, . 65]
 .

WfMC e WfMC Reference Model [37].
 (workflow) -
 , , -
 , . [37, . 8]
 -
 (Process Definition),
 , WfMc - --- -
 , - ,

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 .[37, . 10] [38, . 126] workflow (
) , -
 - . Workflow
 ,
 - .

[36, . 31 -- 35].

1. workflow- -
 --- (*cases*) ,
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 () --- -
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2. (*task*) , -
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- (work item) (
-) ,
- (activity)
- .
- ,
3. (*process*) , -
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- ,
- .
- workflow,
- .
4. (*routing*) -
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- .
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- .
- .
- Workflow- -
- Workflow, [38, .
- 127], , ,
- .
- Workflow
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- .
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- .
- Workflow : [38]
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- ,
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- .

2.2.3. Workflow

BPMN

(workflow)

(WFM Coalition).

WfMc

Workflow Management Coalition

workflow.

BPMN

(. 1.2.3 . 11).

YAWL

YAWL (Yet Another Workflow Language)

(Aalst)

(Hofstede) 2003

[39],

YAWL

[39, c. 3]

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>> 2.2.4 . 49.

YAWL

-

(workflow patterns).

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[2.2.2 47](#)).

WSPD

OMG JoinFlow

EFC

WF-XML

SWAP

BPEL

XPDL

2.2.4.

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[\[36\]](#)

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2.2.5. Workflow

workflow --

Cunningham LLP,

Toronto, CA Magazine [40]. ,

[41], Cunnigham LLP

(B2B)

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workflow, ,

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Workflow -

,"Bank Technology News"[42], workflow

, Zagiel S.A.,

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Infonomics [43]. 495

AIIM , 2008 -- 2009 . , -

26%

, 34% -

, 24%

BPM. 64% -

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(26 %), 36 %

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BPM

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2.3.

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WORKFLOW. WORKFLOW

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WORKFLOW.

(Smith, Finger "Business process management the

third wave").

2.3.1.

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BPM CBOK <<

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>> [44],

ABPMP (Association

of Business Management Professionals).

ABPMP [44, . 24]

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ABPMP

CBOK [44, . 28],

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 289 -
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 c- [45], 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) ---

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;

(improve model, ImpM) ---

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2.3.2.

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Gartner[46], *c*

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(. Business Process

Management Suite),

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BPM-

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. BPMS

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.>>[47]

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(Handbook on Business Information Systems) [48]

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: [48, . 100 -- 101]

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(SOA)

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· , BPMS 2 ·
 WORKFLOW. -

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

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3.1.

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3.2.

3.3.

3.4.

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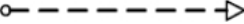
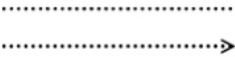
OMG BPMN v. 2.0

.1.

OMG BPMN version 2.0 [9]

(Event)	<p>--- , -</p> <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> <p>-</p>	




.1 ()

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

.1 ()

(Pool)	- . , ,<< .>> (B2B). . , , .<< .>>	- - - - - - - - - - Name <div style="border: 1px solid black; height: 60px;"></div>
(Lane)	, ().	- - Name Name Name Name
(Data object)	- , / . ,	- - - - -

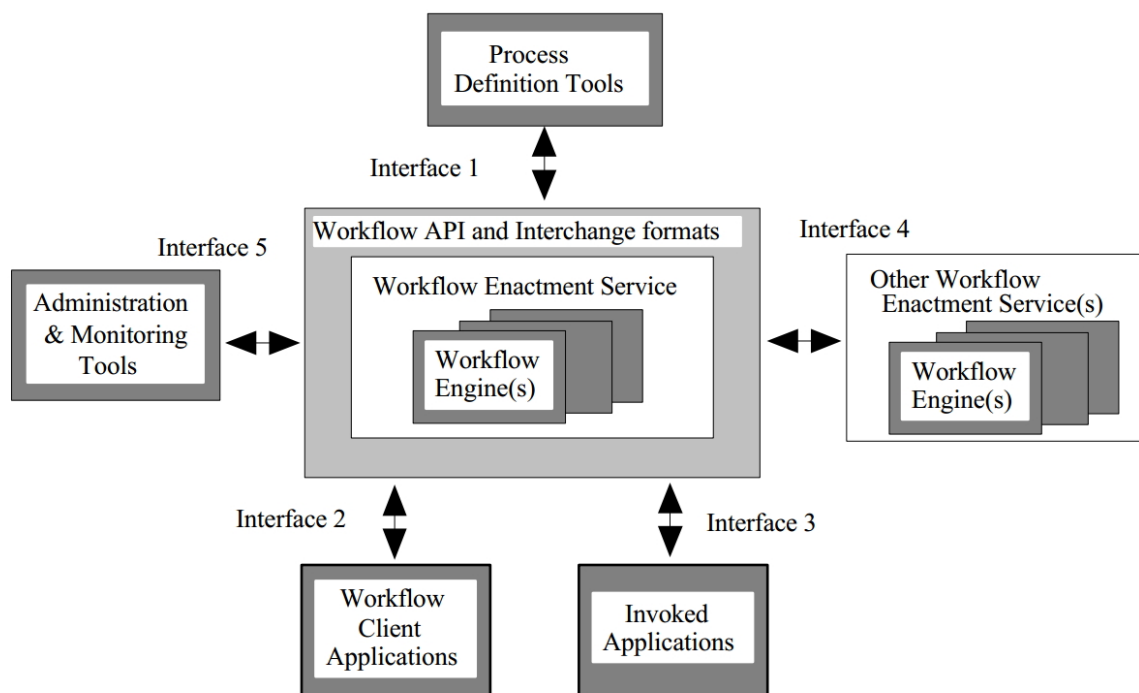
.1 ()

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

.1. - -
[13, . 228]

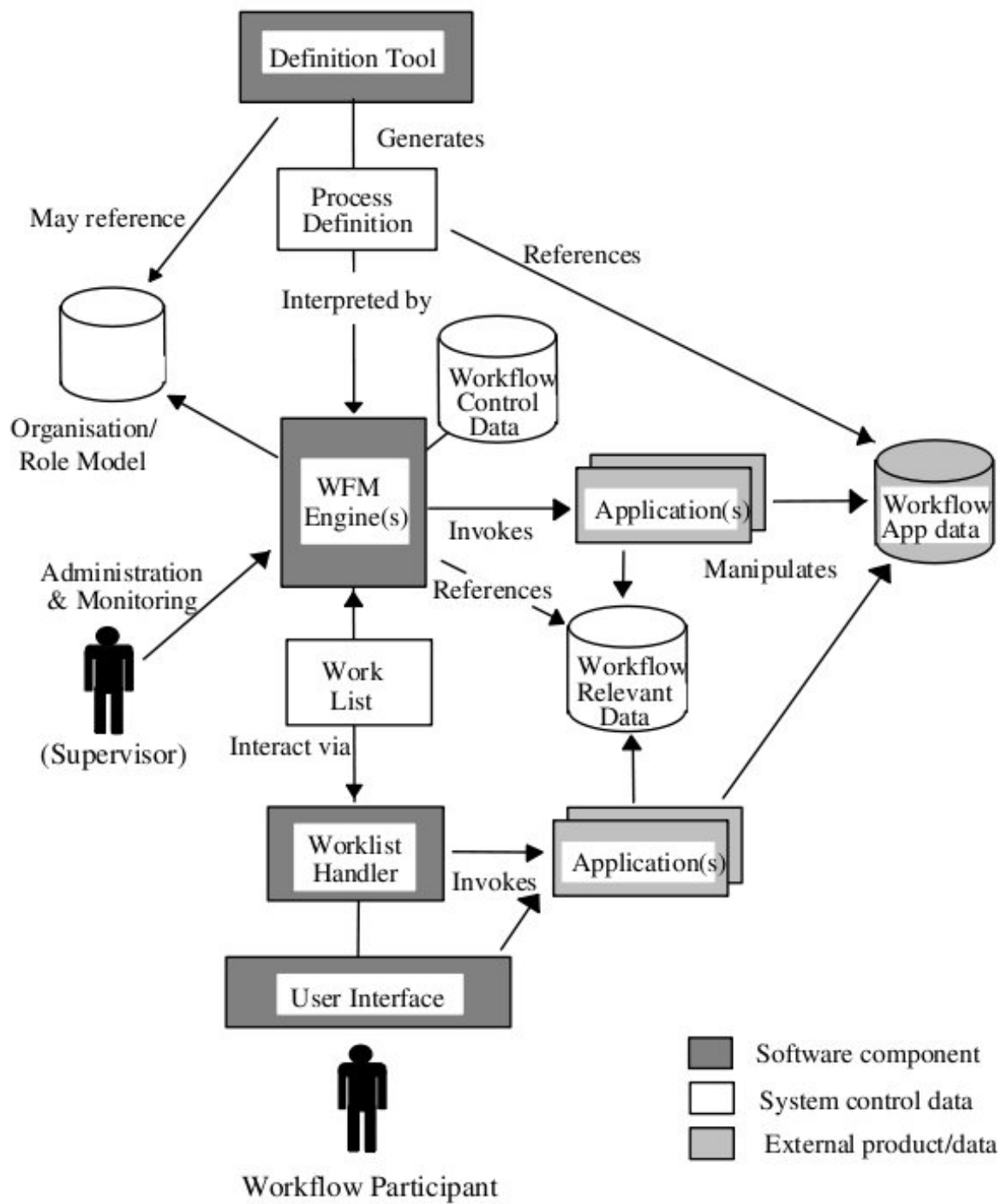
-	-
- . . . () , . .	- () - . .
: .	: .

: WfMS, WfMC, Workflow management system, workflow,
, Workflow. [\[37\]](#)



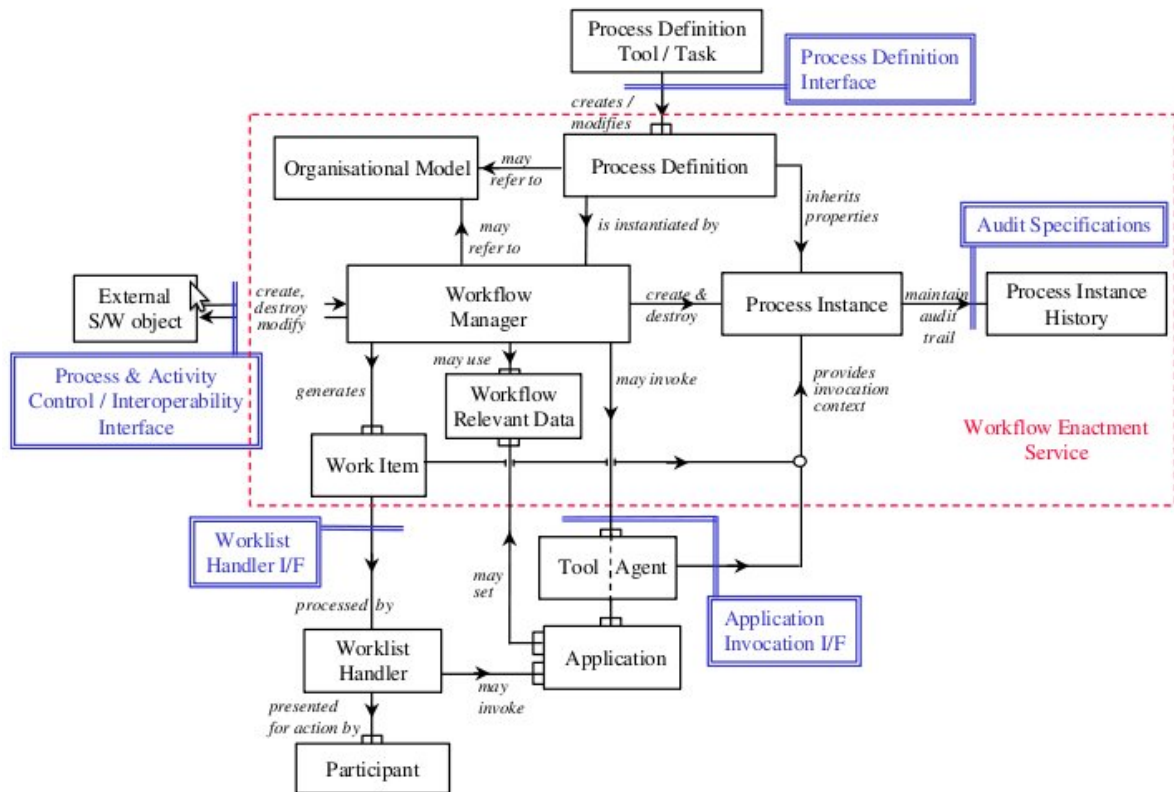
. .1. "

(Workflow Reference Model) [37, . 23]

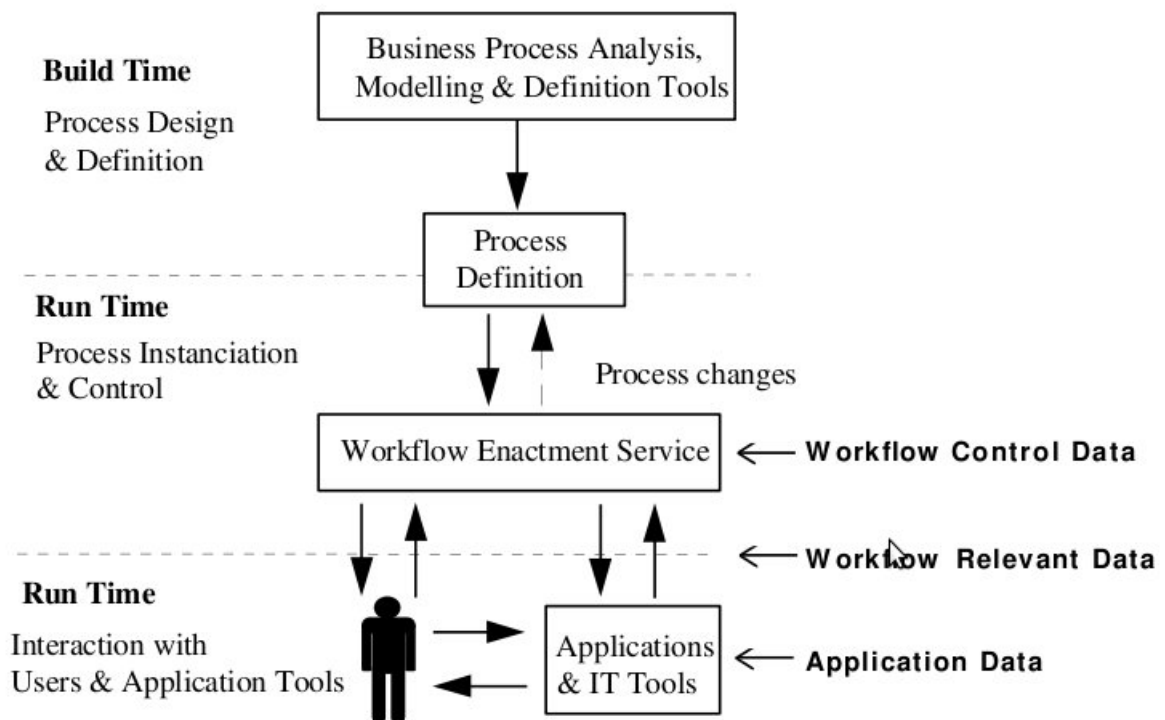


. .2.

(Generic Workflow Product Structure) [37, . 39]



. 3. Workflow
(WFMS Components & Interfaces) [37, . 40]



. 4.
(Types of Data in Workflow Management Systems) [37, . 44]