Papir		Published		Community	Output			Me	thed application:		Input										Med	thed			
												control-flow								data					
General Information:														Rule-based											
(x): characteristic partly observed -: characteristic clearly excluded								ont	v for decisions	during the considers process model for further optimization	x > procedure how event log is mined is described, (x> >			x -> considered (x) -> considered		opnsideres other /		1-RP1 = one 1-RP1 measure (e.g. time for task) compleur multiple RP1 &I behavioral	Individual = each resour- resource is different chang- Pooled = resources sched	rce properties. ge over time / bule given					
[empty] : characteristic not mentioned								opti for	y for decisions of imization, not surrime of evaluation process	a model for further optimization	event log is only mentioned			but inelevant for optimization	User-based	multiple-instances for optimization	Resources (v)	None + only rame or role (R&AC) 1-691 = one 1-691 measure (e.g. time for task) complexe multiple R91 &ij behavioral measured. Can offer for resources even if they are of same role	from one group are equal availab	stality		O = Optimal A = Approximate			
Name As	uthor Ye	Journal / lear Conference	Journal/Conference Name	BPMORNethe	Adressed Life- Cycle Phase	Problem category	Optimization objective	objective comment Sir	nulation Online /	process-model Offine (i)	event-log (i) s	Norkflow natherns (III): sequential	Workflow patterns (III): AND	pattern (iii): XOR	pattern (iii): Deferred XOR	Multi instance (iv)	Resources (v)	Resource Performance Indicators (vi)	Resource Reso Grouping (vii) profile	ource time le (vii) data (ix)	Solu	Optimal / ution method: (x) Approximate (xi)	Solution Method Comment unary/capacity resource profile	resource defines task duration comments:	
		2020 C						recommend next best action x														ural network,			
Next Best Actions et	al.	2020 C	Business Process Management Forum	ВРМ	Enactment	Action recommendation		minimal	Online	×	- x	1	x	x	×					attributes	s LSTI	TM .		na na	
							minimize number of	resources for each department to																	
Resource Optimization in Pe Business Processes at	eters et	2021 C	International Enterprise Distributed Object Computing Conference (EDOC)		Design	Resource planning	minimize number of resources	f not violate constraints -	Offine	×	(x) x		×	×			×	None	pooled -		rho-	guided search O	multiple, unany -		
Benchmarking Answer Set Programming systems for	avur et																								
processes al.		2022 J	Expert Systems With Applications		Enactment	Scheduling	arbitrary		Online	×	. x		x	x			×	1-801	individual + pooled -			pic Programming (P)	multiple, unany -	×	
processes at. Ant-Colony Optimisation for Path Recommendation in Business Process Execution Co.	omuzzi	2019 J	Journal on Data Semantics		Enactment	Process navigation		×	Offine	×			x		×						ant-	-colony imization -colony imization A	implicit availability	na	
Business process optimization using the ant colony system No	g C.Y.	2018 J	Managerial and Decision Economics Managerial and Decision Economics Sh IEEE Informational Conference on Cyber Security and Cloud Computing (CSC)out/2018 4th IEEE Informational Conference on Edge Computing and Scalabile (Good Ebbsecom)		Enactment	Resource allocation, Scheduling	arbitrary	×	Offine	×	- x		x		×	×	×	1-801	individual -		ant- optin	colony imization A	multiple, unary -	x	
			5th IEEE International Conference on Cyber Security and Cloud Computing																						
Enterprise workflow modeling 2h based on priced timed petri nets al.	heng et	2018 C	Conference on Edge Computing and Scalable Cloud (EdgeCom)		Enactment	Process navigation		find most suitable path -	Offine	×			x		×						dyna	samic gramming		na na	
Business process instances scheduling with human resources for based on event priority All determination al.	mali-																								
determination at	-ou et	2018 C			Enactment	Resource allocation	optimal resource matching	×	Online		(x) -			-	-	×	×	complex	individual -	attributes		stering, genetic orithm A	multiple, unany cost, reliability	x	
AB testing for process versions with contextual multi-armed Sa bandt algorithms al.	stysi et	2018 C	International Conference on Advanced Information Systems Engineering		Design	Process model selection			Online												sims.	ulation, linear gramming		na	
tends algorithms at Tuning Concurrency of the Ya Business Process by Dynamic an	eghoubi nd		International Conference on Software and Computer Applications			Resource allocation, Scheduling	maximize resource	schedule instance	Offine										individual -				multiple unary workload	resource performance	
All testing for process versions with cordestatal multi-armed and adjustment and	shedi stysl et	2018 C	Computer Applications Information Systems	(previous: BPM)		Scheduling Process model selection	workload balance	starting times x	Offine	×	(x) x		x	×	(x)	×	×	complex	Individual -		prog sim.	sulation, dynamic gramming sulation, linear gramming	multiple, unary workload	x depends on workload	
Constraint Analysis based on Financial Baseman Analysis for				Januar DM	, Design				Unine																
Constraint Analysis based on Energetic Ressoning Applied to the Problem of Real Time Scheduling of Workflow Management Systems an	edeiros rd Julia		19th International Conference on Enterprise Information Systems																		Simi	rulation, domized	multiple, capacity -		
Management Systems an A hybrid and soulable multi-agent	ed Julia	2017 C				Process navigation		×	Offine	*			x	-	*	-	×	None	individual -		algo Mult	sulation, domized orithm A ills Agent System - micratorial dion A			
A hybrid and scalable multi-agent approach for patient scheduling based on Petri net models Hs	sieh	2017 J	Applied Intelligence		Enactment	Resource allocation, Scheduling			Online	×	- x			-	-	×	×	1-RPI	individual -		Auci	normonal ction A	multiple, unary -		
processes by automatic reallocation of resources using Djy	jedovic		International Conference on Software and			Bearing streation	arhitrary														sime	ulation, genetic orithm A	multiple, unary nesources	task execution enhanced the more resources are alterated to it	
the genetic algorithm et. Resource management for	W	aut C					,		Offine	×	· ×		(X)	(X)			×	reone	pooed x				multiple, unary resources	- allocated to it	
the presence of availability constraints Xs	u et al.	2016 J	ACM Transactions on Management Information Systems		Enactment	Resource allocation, Scheduling	maximize number of schedulable instances	x	Offine	×			×	-		x	×	complex	individual x		brea gene	adth-first search, setic algorithm A	multiple, unary availability periods	x	
based on Pulni rel mobile Cyptimization for Studiesa Cyptimization for Studiesa Cyptimization for Studiesa resilication of second surge Resource surgested Resource surdedings in Location-serves surdedings in Resources surdedings in Studies in Studies in Studies in Studie	a landa	2016 C	Conference on Technologies and		Enactment				~								_	. 000	indicate of		Multi Com	oth-first search, adth-first search, adth-first search, adth-signifirm A ills-Agent System— micratorial ction A	multiple, casecty Locations		
Real-time management of	asen	2016 C	Applications of Antiqual Intelligence		Chactment	schedung	minimize costs		Unine							x	×	1401	navious -		AUC	aon A	Capacity Locations		
systems: Necessity, achievements and further					Enactment	Resource allocation, Scheduling	performance objective												Individual -		Stoc	chastic oximation A	multiple, capacity -		
Resource allocation with dependencies in business	evelots	2016 J	Annual Reviews in Control		Enactment	Scheduling Become aboution	objective		Online	*						×	×	None			apro	chastic cornation A war set gramming corporarrang O	capacity - amount (real number)		
Resource affociation with dependencies in brainesis process management systems. Application of Dynamic Instance Questing to Activity Sequences in Pff Cooperative Business Process Sourarios. Mile Process Sourarios	ivur	2016 C	Business Process Management Forum	врм	Enactment	Scheduling			Offine	×	- x		x	-	×	-	×	1-801	individual + pooled -		logic	c programming O	number)	x	
Queuing to Activity Sequences in Pfl Cooperative Business Process Ri	fug and inderle-		International Journal of Cooperative Information Systems				minimize instance															stering			
Scenarios Ms Process improvement through economically driven routing of instances et	obinger	2016 3			Cractment	batching	minimize instance spanning time maximize the value contribution of the	Decision point	Unine													erch, evolutionary orithm A		na .	
instances et	al.	2015 J	Business Process Management Journal	BPM	Design	Control-flow re-engineering	process.	design - allocate	Offine	×	(x) x		(x)	x	(x)					attributes	s algo	orithm A		na	
Culearning allowithm for teak								resources according to social relations																	
Q-learning algorithm for task allocation based on social relation Lk	u et al.	2015 C	Process-Aware Systems		Enactment	Resource allocation	minimize flow time	between resources -	Online		(x) -					×	×	1-891	individual -	×	q-les	serning A	multiple, unary relationship between resource	duration is affected by previous resources	
Cn-the-Fly Performance-Aware Human Resource Allocation in																									
Human Resource Allocation in the Business Process Management Systems Wi Environment Using Native Bayes et	libisono al.	2015 C	Asia-Pacific Conference on Business Process Management	врм	Enactment	Resource allocation	optimal resource matching		Online							(x)	×	complex	individual -		naiv	ve bayes A	muliple, unary properties		
Evaluating the performance of a batch activity in process models at	ufahl et		International Conference on Business Process Management		Design	Batching														- (only additional values)	4	arch algorithm			
Planning of business process				D-10		Resource allocation, Scharbling			Office		(4)									10000)	Mixe	ad Integer Linear gramming, netic Algorithm A	multimia		
Management environments Ba Trust-based workflow refactoring	ne et al.	2014 J	Information Sciences		Enactment	Scheduling	arbitrary	×	-	×	- x		x		×	×	×	1-891	individual -				capacity -	×	
Trust-based workflow refactoring for concurrent scheduling in www.service-oriented environment al.	lang et	2013 J	Concumency and Computation: Practice and Experience		Design	Control-flow re-engineering	,	parallelize tasks -	Offine	x	- x		(x)	(x)	(x)					Data dependen	ncies brea	tom O(m*2/m) , adth-first search O		na	
Generating multi-objective Jir optimized business process Rs enactment plans et.	menez- amirez al.	2013 C	International Conference on Advanced Information Systems Engineering		Enactment	Resource allocation, Scheduling	multi-objective	generate enactment plans		p		x)	00	00	0x1		×	None	individual -	ConDeo-F	-R Proc	natraint gramming O	multiple, unary ConDec-R -		
User recommendations for the optimized execution of business Ba	arba et		Data and Knowledge Engineering		Enactment						l. Í								individual -			natraint gramming O	ConDec-R - endfigle, unary ConDec-R -		
Automatic generation of colorized husiness process		av13 J								D .	(4)	A.J	14)		(4)		*	read	**2000000 -				ConDec-R - multiple, unany		
service-oriented environment al. Generating mail-objective in optimized business process in authorities process that environmentations for the optimized execution of business processes. Autoresses process models from constraint-based specifications also processed also processed and process models from constraint-based specifications also processed and processe	arba et	2013 J	International Journal of Cooperative Information Systems		Enactment	Resource allocation, Scheduling	arbitrary		Offine	D	(x) (x)	(x)	(x)	(x)	x	×	None	individual -		cons Prog	sstraint gramming O	ConDec-R availabilities		
improvement into resource			Commence and Comments to Comment					annualista.														data (waste			
execution planning Xs On risk management with	u et al.		Concurrency and Computation: Practice and Experience		Design	Control-flow re-engineering	minimize resource costs	tasks - allocate control	Offine	x	- x		x	-			×	1-801	pooled -		sear	uristics (greedy eich algorithm) A	multiple, unary RBAC	x	
On risk management with information flows in business the processes the Xx Xx A performance sinallysis on bask Yx allocation using social context. Ps	al et al.	2013 J	Information Systems Research	OR (Vhb, A+)	Enactment	Resource allocation	minimize expected loss	resources to tasks -	Offine	x	(x) x		x	×			×	1-801	pooled -	×	lines	ar programming O	single, capacity effectiveness	- control resources	
A performance analysis on heek Vi-	u J., uang Z., u Y.		Conference on Cloud and Green Computing																						
allocation using social context Pa	en M.	2012 C	Computing			Resource allocation	maximize number o	of throughput -	Online						-	×	×	complex	individual -	x informatio	on floor	ristics A	- coworkers	x	
On the optimization of His information workflow at.	irach et	2012 C	International Conference on the Dynamics of Information Systems		Enactment	Resource allocation, Scheduling			Offine	×			x	-		(x)	×	1-801	individual -	/ input, ou activities	sulput of mixe prog	ed-integer linear gramming A	multiple, unary -		
An Approach to Recommend Bearings for Business Ya	ann et		International Conference on the Dynamics of Information Systems OTM Confederated International Conferences "On the Move to Meaningful Internat Systems"		Enactment	Resource allocation	Resource matching		Online	×	(x)		x	(x)			×	сотрієх	individual -		Benn	pisian Networks A	multiple, unary arbitrary		
Processes at Multi-attribute auction mechanism for supporting resource afficiation in business process enactment Ph Optimizing Resource Conflicts in Workflow Management Systems at a																									
resource aflocation in business process enactment Pa	in et al.	2012 C	Starting Al Researchers' Symposium IEEE Transactions on Knowledge and Data Engineering		Enactment	Resource allocation	arbitrary		Online					-		x	×	None	individual + pooled -		mult	S-agent auction A	multiple, arbitrary properties		
Workflow Management Systems at. Reinforcement learning barrer!	and et	2011 J	Engineering on Knowledge and Data		Enactment	Resource allocation	minimize resource conflicts		Online	×	- x		x	x		(x)						ar programming station A	multiple, unary -	- 1:1 allocation	
resource aflocation in business Hu process management al.	uang et	2011 J	Data & Knowledge Engineering		Enactment	Resource allocation	arbitrary	x	Online	×	(x) x					x	×	complex	individual -	×	Q-le	earning A	multiple, unary cost, time, arbitrary	x resources affect control-flow	
Woodflow Management Systems Af Reinfoncement learning based resource aflocation in business process management business process optimization using formatized optimization using formatized optimization systems A joint optimization algorithm for depathering basis in agent based to workflow management systems at A common control of the control of the control of the control workflow management systems at	iederma	2011 C	International Conference on Business Information Systems		Design	Control-flow re-engineering		Parallelize tasks, eliminate activities	Offine	×			×	(8)	0x)		×	None	individual -	data dependen orasih	incy	oriatica A	multiple, unany -		
A joint optimization algorithm for dispatching tasks in agent-based. De	elias et		International Conference on Enterprise Information Systems			Resource allocation			Online	Ĩ	ĺ								individual -			air programming station A	multiple unary attributes		
workflow management systems at A semi-automatic approach for workflow staff assignment Liu		2008 C	Information Systems Computers in Industry			Resource allocation	resources optimal resource matching	assign right	Online	*	(x) x		x	-	-		×	None	individual -		relat	station A disjoin tree, naive res, SVM	multiple, unary attributes multiple, unary properties	- 1:1, allocation	
worldlow staff assignment Lix. Real time scheduling of Worldlow Management Systems based on	u et al.	A108 J	Computers in Industry	UR (Vhb, C)	chactment	mesource allocation	matching	resource -	Online		х -												multiple, unary properties		
	dia et	2008 J	Simulation Modelling Practice and Theory		Enactment	Process navigation		x	Offine	×			×	-	x		×	None	pooled -	data flow	sim.	ulation, monte lo A	multiple, capacity -		
Real time scheduling of Workflow Management Systems based on a p-time Petri net model with July hybrid resources al. Adaptive workflow scheduling under resource allocation constraints and network and downloads.	variaes																								
dynamics Fin	wyteg ellers.	2008 J	Proceedings of the VLDB Endowment		Enactment	Resource allocation, Scheduling	arbitrary		Online	×			×			x	×	None	individual -		prog	idering, constraint gramming A	multiple, unary constraints, locations		
HS Ja	A: insen-																								
plus awarm intelligence = Mi dynamic task assignment for Mu	uehlen,						multiple (response	resource allocation for emergency processes x																	
hybrid resources Adaptive sorbible scheduling under resource allocation Adoptive sorbible scheduling under resource allocation Adoptive sorbible sorbible Adaptive sorbible Ad	Z; Appl.	2007	Business Process Management	врм	Enactment	Resource allocation	time, troughput time)	emergency processes x	Online					-			×	complex	individual -		meta (xwx)	ta-hauristics sam algorithms) A	multiple, unary	x	
Improving process models by no	ubrama am et						minimize	move decision points to the earliest possible point											pooled -	data	heur	oristics, search			
Improving process models by risk discovering decision points at Task Scheduling for a Temporal Worldow Management System Effective role resolution in 25 worldow management 2.	ombi	2007 J	Information Systems International Workshop on Temporal Burgasantation and Bassantina		Design	Control-flow re-engineering Resource allocation	arbitrary	point -	Offine	x	(x) x		x	×			*	None					unary, capacity - multiple, unary RBAC, availability		
Violence reacturion in Ze workflow management 29	ang and	2005 J	Representation and Reasoning INFORMS Journal on Computing			Resource allocation	arbitrary		Online							(A)	×	1-891	individual x	- x	heur	ristic A	multiple, unary RBAC, availability multiple, unary -	x	
A p-time hybrid Petri net model Julifor the scheduling problem of De Workflow Minagement Systems Oli	alia and e liveira		IEEE International Conference on Systems, Man and Cohemetics				resource conflict											None	pooled -	Î.		sulation, monte	multiple, amount -		
Workflow Management Systems OI	liveira	2004 C	Man and Cybernetics		tinactment	Process navigation	minimization	×	Offine	×	- ×		×	(x)	(x)		×	None	pooled -		carlo	io A	amount -		

sper		Published		Community	Output				Method application:		Input	control-flow								data	M	lethod							
												J. B. C.								- Cara									
eneral Information: characteristic observed i: characteristic partly observed characteristic clearly excluded									anly for decisio	ins during the considers proces	uses an event-log x> procedure how event log is mixed a is described, (x>>		Rule Date x => 00 =	-based s-based routing considered - considered		nsideres other /		None + only name or role (RBAC) 1-601 + one 1-601 measure (e.g. time for complex - multiple 601 42 phenoissal measured. Con offer for resources even if they are of same tole Resource Performance Indicators (vt)	Individual = each re- resource is different ch Pooled = resources so	esource properties hange over time / chedule given									
npty): characteristic not intioned		Journal /		Research Field BPM/ORNeith	t e Adressed Life-		Optimization	Optimization objective	optimization, not number for evaluation process	of a model for further optimization processa-mode	event log is only mentioned V	Norkflow Work selterns (ii): patter	dlow Wo	relevant for mission User-b rikflow Work tern (iii): patter	flow en (iii): Mu	tiple-instances optimization util instance		measured. Can differ for resources even if they are of same role Resource Performance Indicators	from one group are equal av Resource Ro	valiability besource time		O = Optimal A = Approximate Optimal / Optimal / Approximate (xi)	Solution Method	unary/capacity resour		resource defines			
ne ractical scheduling method ed on workflow management	Author	Year Conference	Journal Conference Name The International Journal of Advanced	r	Cycle Phase	Problem category	arbitrary process performance	comment	Simulation Online	e/Offine (i)		equential AND	жо	R Defer	med XOR (iv) !	Resources (v)	(vi)	Grouping (vii) pr individual +	rofile (viii) data (i	(x) Sc	olution method: (x) Approximate (xi) mulation, local		unarylcapacity resour	ce profile	task duration	comments		
Management for	Banannik	2004 3	IFAC Properties Volumes IFAC.		Linactment	Resource allocation	penormanos	decision support,	x Onlin													ranch-and-bound, itical path A				*	activity x resource prone		
ect-driven manufacturing ingineering knock-out sesses	Z.A. van der Aalst	2003 C 2001 J	PaparsOnline) Decision Support Systems	OR -	Enactment Design	Action recommendation Control-flow re-engineering	g KPIs	reamange activity order	- Office			. x	- (x)			,	x x	1-891	individual x pooled -		cri	tical path A suristics A		multiple, capacity availab multiple, amount -	ildes				
inditions management for ject-driven manufacturing engineering knock-out onsesse man resource allocation or commendation based on multi- ch acessive section of entropy-based clustering entropy-based clustering entropy-based clustering entropy-based clustering entropy sections.	M. Arian	2016 /	European Journal of Industrial Engineering	n Neither	Foortmant	Baseuma allocation	optimal resource matching by performance	on-demand and batch resource eligration	- Onlin									сотрівх	individual x		on he Po	suristics A n-demand: suristic (Best sustain Algorithm) sich: ILP A		Resou unary Resou	rce Performance,	Į.		Resource Performance on tasks	
entropy-based clustering emble method to support ource allocation in business	Zhao W., Liu H., Dai W.,						Resource-task	Allocation at			ĺ								individual x			ntropy based ustering ensemble O		resour	ce peformance, Resource	20		Event Log. Resource	
oss management	Ma J. Artures B.B.P., Marresa	2016 J	Knowledge and Information Systems	Neither	Enactment	Resource allocation	matching	runtme	- Onlin		х -				*	,	×	complex	individual x		du	ustering ensemble O		unary profiles		×	Performance & Behavioral	h Profiles	
olution framework based on	A., Bastos L. S.L.,																												
refe-event simulation to rove queue performance in imergency department	A., Bastos L. S.L., I Marchesi J.F., Harmache r S.	2019 C	Lecture Notes in Business Information Processing	врм	Design	Resource planning	find optimal numbs of resources	minimization of patient waiting times	x Offin		х .				×	,	×	None	pooled x		MI Pr	IP (Mixed Integer rogramming) O		multiple, unary -				Event Log. Simulation	
Evidence-Based Decision port Framework for Clinician	Cho M., Song M., Yoo S., Reijers H.					Resource allocation,	find optimal schedule	minimization of patient waiting	v Office								*				sir	mulation of O					Performance Time is used for simulation. Not modelle specifically but pulled from	d Event Log.	
dical Scheduling	A. López- Pintado O., Dumas	2019 J	IEEE Access Lecture Notes in Computer Science	Neither	Enactment	Scheduling	granularity	minimization of patient waiting times does the differentiation of Resource improve allocation?	x Offin									1-801	individual x					mitiple, unary -			event log Profile includes:	Simulation	
h Differentiated Resources: es it Make a Difference?	Dumas M.	2022 C	Artificial Intelligence and Lecture Notes in Bioinformatics)	Neither	Design	Resource planning	representation for allocation	improve allocation?	x Offin				×			,	×	complex	individual + pooled x		sir (br	mulation, heuristic est resource) - stent Dirichlet		multiple, unary perfor	e profiles with nance and schedule infos	36 X	Profile includes: Performance, Availability, Calendar, etc. Profiles are mined	EPMN for Simulation	
nical pathways analysis of lents in medical institutions aid on hard and fuzzy stering methods	Prokofyev a E.S., Zaytsev R.D.							optimal clustering of patient routes (processes)										None			adi adi no	residation, heuristic east resource) - stent Dirichlet location (LDA), 5ditive guitare							
stering methods ustering and operation analysis assessibly blocks using coses mining in shipbuilding bashy	R.D. Lee D., Park J., Pubhashi I.R., Base H.	2020 j	Business Informatics	Neither	Design	Resource planning			- Offin		ſ								pooled -					capacity -			Trace Clustering	Event Log. Tasks and Workshops are clustered and later compared	
assembly blocks using cess mining in shipbuilding usby mbing metaheuristics and	I.R., Bae H. Knast A.	2017 C	Lecture Notes in Business Information Processing	врм	Design	Control-flow re-engineering	best planning dusters	find best planning clusters	- Offin	. x					x	,	×	None	pooled -			lerarchical gglomerative ustering A		capacity resour	ops (plan clusters) are ces		Trace Clustering		
ustry mbing metaheuristics and coss mining: Improving cobot coment in a combined cobot signment and job shop seduling problem	Kinast A., Doemer K.F., Rinderle- Ma S.	2022 J	Proceda Computer Science	врм	Design	Resource planning	cobot placement	find best places for cobots	x Office		x						×	complex	individual -		Gran	enetic Algorithm ith biased random by encoding A		capacity -		×	costs of cobot, vs current workstation is compared	Outcome of GA is an Event Log which is then mined with PM	
	Senderov ich A., Weidlich						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								1														
	M., Yedidalon L., Gal A., Mandelba um A., Kadah S., Bunnell C.A.																												
informance checking and formance improvement in eduled processes: A sueino-network perspective	um A., Kadish S., Bunnell					Resource allocation,	improve process	process performance through better										complex.	moded .								time, per resource type. Names Resource-driven processes	Event Log and schedule, conformance check of	
sueing-network perspective	C.A. Choueiri	2016 J	Information Systems	вРМ	Enactment	Scheduling	performance	scheduling identify the impact of	- Online									complex	pooled -		dn	seuing network A		multiple, unary schedu	iled	x	processes	schedule	
sendency in manufacturing vironments: A process mining proach	Portela Santos E. A.	2021 J	Journal of Manufacturing Systems	Neither	Design	Resource planning	impact of path decisions on downstream parameters	decisions on downstream parameters	x Offin			. *	×	×		,	×	complex	individual -	path depen data	ndency on sir	mulation -				×	Influence of resources on Path of Process	data on paths	
namic human resource action for business process aptions	A. Lee J., Lee S., Kim J., Choi I. Kurscheid I Netto R. J., de F. R. Loures E., dos Santos E. A.P.	2019 J	Knowledge and Process Management	Neither	Enactment	Resource allocation	Resource-resource	find best substitute in a case of uncertainty	- Onlin							,	×	1-801	individual x		De	egree of distillation		multiple, unary networ	nance and interaction in k (handover matrix)		find fitting substitutes for resources	event log -> accial network	
	Kurscheid 1 Netto R. J., de F.																												
abling the Use of Shop Floor ormation for Multi-criteria cision Making in Maintenance ediction	E., dos Santos E. A.P.	2021 C	Springer Proceedings in Mathematics and Statistics	Neither	Enactment	Action recommendation	optimal schedule for maintenance	optimal time windows for maintenance	- Onlin		х -				*	,	×	complex	individual -	data for mail decision	iom pm sintensince Mi on Mi	luffcriteria Decision lodel		single, unary resour	resource and this ces process (machine)	×	information on machine status is gathered and use for predictive maintenance	d Event Log -> causal net	
	Ruschel E., Santos E. A.P., Loures E. F.R.						optimal schedule for maintenance	find best estimated interval between												degred rate + Data fr	dation process from pm	syvisian Networks, irrulation					information on machine	Event Log	
plication of process mining thriques in manufacturing	Loures E. F.R.	2020 J	Journal of Intelligent Manufacturing	Neither	Enactment	Action recommendation	optimal schedule for maintenance	maintenance inspections	- Onlin		х -				×	,	×	1.601	individual -	for mainspec	sintenance Ba ction Si	ayasian Networks, imulation		single, unary single resour	resource and this ces process (machine)	×	information on machine status is gathered and use for predictive maintenance	d mined for one Machine Bipartite Graph,	
perimental Verification on man-Centric Network-Based	Yeon M S., Lee Y.																											Bipartie Craph, Process-feate Affastion Network (PAN), Process Aware Enterprise Social Network (PESN)	
perimental Verification on man-Centric Network-Based source Allocation Approaches Process-Aware Information eterns			IEEE Acous	Neither	Enactment	Resource allocation	social resource allocation	support future human resource allocation define best	- Online		х -				*	,	×	complex	individual -		Gr	naph theory		multiple, unany resour	ces as parts of network		behavioral measures in human certric network	Enterprise Social Network (PESN)	
tory-aware dynamic process mentation for risk-aware	Havur G., Cabanilla	2010 C	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Professories	0.014	Enactment	Resource allocation,	minimize risk of ba allocation by definition of	ad allocation points to optimize process performance									_	1-891	pooled -	Fragm based	nentation I on Data Lo	ogic Programming USP) O					human certric network n:1 repra:, resource performance has not effect on affociation trimistrance are used to predict activity time How many resource for a task improve processo? The more resources the quicker is a task handed	organizational model, event log -> petri net	
tory-aware dynamic process prentation for risk-aware ource allocation ovative Approach in Modeling siness Processes with a focus improving the allocation of train Resources	Djedovic et al.	WIN C	MARRIA/THECH)	JPW	Linciment	Schooling	minimize waiting time and execution	n resources per	- Onlin									reed	Mass -	Object		inulation, ifferential Evolution loosition	Evolutionary	workin	g costs, amount of		How many resource for a task improve process? The more resources the	log -> petri net stochastic process model	
			Mathematical Problems in Engineering	Neither	Enactment	Resource allocation	cost	sutomatically learn a cp	x Online									None	pooled -				Algorithm	multiple, unary resour	ces		quicker is a task handed	(heuristic miner)	
arning scheduling models from int data	Booth K. E.C., Beck J.C.	2019 C	Proceedings International Conference on Automated Planning and Scheduling, ICAPS	Neither	Enactment	Resource allocation, Scheduling	optimal scheduling	automatically learn a cp model for the basic acheduling problem	- Onlin	. x					×	,	×	1-891	individual -	only tir perspe	ime Pr ective (C	onstraint rogramming Oplex) O	CPLEX	multiple, unany and capacity multipl	e description	×	Resources described in Activity Resource Petri net	Event Log -> timed petri net	
	LI H., LIU C., ZENG Q., HE H., REN							minimize resource usage																					
ning emergency event loos to	C., WANG L., CHENG		IEICE Transactions on Information and				minimum resource	minimize resource usage while ensuring process reliability (deadlock freedom)									×			only tir	SE str de ime ba	ET and LRC nategies, newly ssigned algorithms ssed on Event Log	simple (Based on performance measures), evt. auch limitation?	multple.				Event Log -> petri net, Real	
pport resource allocation	ř	2021 J	Systems	Neither	Design	Resource planning	usage	freedom)	- Offin	* ×	x x	× ×	×			,	×	None	pooled -	perspe	ective an	A seasong benim be	auch limitation?	capacity reusab	le and consumable			Event Log -> patin nat, Read emergency data predictive model + process activity duration + bayesiain network prob. model + causal net obtained through process mining	
ning Shop-Floor Data for	Ruschel E.,																											duration + bayesian network prob.	
ing Shop-Floor Data for ventive Maintenance nagement: Integrating babilistic and Predictive data	Ruschel E., Santos E. A.P., Loures E. D.F.R.	2017 J	Procedia Manufacturing	Neither	Enactment	Action recommendation	maximize resource availability	acrecule maintenance with lowest availability loss	- Onlin	. x			(x)		x	,	×	complex	individual -			predictive models, sichine working, sichine feeding and not stoppace A		availability		×	information on machine status is gathered and use for predictive maintenance	net obtained d through process mining	
olb-product scheduling through cosss mining: bridging timization and machine	Choueiri A.C., Portela Santos E. A.		Journal of Intelligent Manufacturing			Resource allocation	optimal schedule	Mine product tree from event log, allocate machines to tasks										complex			pn ge	roduct tree eneration from petri et, Genetic gorithm search A	GA					Combination of Scheduling and bill of materials, Event Log	
cess intelligence	A	2021 J	Journal of Intelligent Manufacturing	Neiter	Enactment	Scheduling	view	tasks min cost max flow network	- Offin	. x	x x	x x			×	,	×	сотрівх	individual -		40	gorithm search A	GA	multiple, shared machin	nes and processing times	8 X			
ediction-based resource scation using LSTM and nimum cost and maximum flow orithm	r Park G.,	2019 C	Proceedings - 2019 International				optimal online	problem, improvement of online scheduling/alloc													big	partite graph, stwork simplex					problem is called "non- clairvoyant online-over- time" problem	event log, execution times and riskt events are predicted and used in schedule	
optimization of resource cation based on process		2019 C 2015 C	Lonference on Process Mining, ICPM 201 Lecture Notes in Computer Science (Including subseries Lecture Notes in Artificial Intelligence and Lecture Materials	DPM	Enactment	mesource allocation	scheduling cotimal review	ation	- Online		х -				x	,	x	1-881	individual -		alg	gorenn A&O	nework simplex	multiple, unary part of	scredule	×	sme" problem	event log.	
ng process	Wu R.	2015 C	Bioinformatics)	Neither	Enactment	Resource allocation	time processing	aflocation create a plan	- Onlin	•	х -					,	×	complex	individual -		pn	ogramming 0	simple	multiple, unary perform	nance	×		collaboration event log, event graph, resource	
rkflow simulation for mational decision support ng event graph through ness miners	Liu Y., Zhang H., Li C., Jiao R.J.						cotimal resource	which leads to best process performance under														vent graph mining.						event log, information on collaboration event log, event graph, resource performance, resource collaboration, hearmorik performance	
cess mining tomatic Generation of	R.J. Bando T., Nishi T., Alam M. M., Liu Z., Fujiwana	2012 J	Decision Support Systems	Neither	Design	Resource planning	plan	undersamy	x Offin	* ×	× ×	*	*		x	,	×	complex	individual -		***	mutation A		multiple, unany perfor	nance	×			
mization Model using cess Mining and Petri Nets optimal Motion Planning of 6- Manipulators	Alam M. M., Liu Z., Fujiwana T.	2022 C	IEEE International Conference on Intellige Robots and Systems	ert Neither	Enactment	Process navigation	minimization of robot movement	minimize a robots movement / joint angles postures	Onlin	. x				×							G.	raph-search A	Not Described			na		petri net from robot firing sequences	
												-		_															

aper		Published		Community	Output				Method application:	Input	control-flow								data	Method			
											coreol-flow								CHES				
eneral Information: characteristic observed : characteristic partly observe characteristic clearly excludes mptyl : characteristic not										uses an ex-	nting minor		Rule-based Outs-based routi	ng			None = only name or role (RBAC)	Individual a north - manus	ora concedias				
characteristic clearly excludes mptyl : characteristic not	á								only for decisions during the optimization, not surrime of a for evaluation process	uses an ew x> proced, evert tog is notiders process code for further evert tog is mentioned	mined (a)>		x > considered (x) > considered but insigned for		consideres other		None = only name or role (RBAC) 1-991 = one 1-991 measure (e.g. time for task), complexe multiple 691 & behavioral measured. Can other for resources even it trey are of same other.	Pooled + resources sched	ge over time / sule-given	O = Optimal			
entioned		Journal /		Research Field	d: Ne Adressed Life-		Optimization	Optimization objective		ptinization mentioned rocessa-model	Workflow patterns (8)	Workflow	x +> considered (c) +> considered but inelevant for optimization Workflow pattern (iii): XOR	Workflow	tropinizator Multi instano		they are of same role Resource Performance Indicators		ource time	A = Approximati Cotimal /	Solution Method	resource defines	
me	Author Y	Year Conference	Journal/Conference Name	r	Cycle Phase	Problem category	objective	comment	Simulation Online / Offline) event-log	(i) sequential	Workflow patterns (III): AND	XOR	Workflow pattern (iii): Deferred XOR	(iv)	Resources (v)	(vi)	Grouping (vii) profit	de (viii) data (ix)	Solution method: (x) Approximate (xi	i) Comment unarylcapacity resource profile	task duration comments:	
	Cho M., Song M., Moller C., Fernande z P., del- Rio- Ortega A.,																						
	Z P., del-																						
	Ortega A.,							measure SLO															
new framework for defining slistic SLAs: An evidence- issed approach	Resinas M., Ruiz- Cortés A.	2017 /	Lecture Notes in Business Information	Neither	Design	SLAplanning	optimal SLAs	performance to define better SLAs	Office							į.	complex	posteri .	only time perspectiv	Genetic Programming		x complex profile for a r	event log, only performance measures
	F. Chalil							Room planning.															
egrated framework of process ning and simulation— timization for pod structured	Madathii R						minimization of	Unequal Area Facility I servet												Particle Swarm (GA), Probabilistic Deterministic Finite	Comparison of	rooms in clinic, pathw	say hospital patient
nical byout design	Khasaren eh M.T.	2021 J	Expert Systems with Applications	Neither	Design	Resource planning	ender in benefit	Problem (UAFLP)	Offine	ж					×	×	None	pooled -		Automata for PM A	Searches - GA Best capacity rooms	- reduction	flow event log
								bottleneck resources,															
digital bein based framework	Kumbhar M., Ng A. H.C.,							Identify bottleneck resources, show optimization options and															event log to create simulation and
digital twin based framework or detection, diagnosis, and reprovement of throughput offlenecks	Bandaru S.	2023 J	Journal of Manufacturing Systems	Neither	Design	Resource planning	Identify bottleneck resources		x Offine -	x						×	1-801	individual -	blockage a starvation	nd simulation	capacity part of event log	x utilization of resource	
	Low W. Z.,																						
	Z, vanden Broucke S.K.L.M., Wyon M. T, ber Hofstede A.H.M.,							improve process performance measured along devils quadrangle, by improving resource usage and testing different execution options															
	Wyran M. T., ter							measured along devils															
	A.H.M., De							improving resource usage															
avising history for cost-informs	De Weendt J., van					Resource allocation.		and testing different												Genetic Algorithm, Integer Linear Programming, Tabu Search A/O	Comparison of	working hours.	Event Log mined as petri net, used in
rocess improvement	WMP.	2016 J	Computing	Neither	Enactment	Scheduling	cost minimization	options Boom planning	x Online	×	×	×	(x)		×	×	complex	individual x		Search A/O	Searches - GA Best unary, multiple performance	x performance, utilisation	on simulation.
nocess Mining-Based Method f Designing and Optimizing the syouts of Emergency epartments in Hospitals	Rismanch							Room planning, Unequal Area Facility Layout Problem (UAFLP)														rooms as resources,	Event Log. mining clinical pathways of patients
epartments in Hospitals	ian F., Lee Y.H.	2017 J	Health Environments Research and Desig Journal	n Neither	Design	Resource planning	minimization of routes in hospital	(UAFLP)	- Offine -	х										Goal Programming O	7 rooms only locations as "resource	s" - walking time minimiza for patients	
	Van Der Aalst W.																						of event log focus from process model
	Asht W. M.P., Low W.Z.,		December of the 2018 IEEE 10th					lanana and and												comparing multiple		tests are restricted	
hange your history: Learning om event logs to improve	Wynn M. T., Ter Hofstede A.H.M.		Proceedings of the 2015 IEEE 19th International Conference on Computer Supported Cooperative Work in Design, CSCWD 2015	RPM		Resource allocation,	process improvement	Improvement of Event Log by changing variable parts												event log variants by utility and compatibility, Limit by utility		tasks are reallocated resources, optimization through minimization times	to personance, on best variants of icle with best
DOMESIES	AHM Guastata A: Suls,	2015 C	CSCWD 2015	BPM	Enactment	Scheduling	improvement	variable parts	- Offine	*						×	1-801	individual -		by utility	Limit Search Space multiple, unary Performance in Event Log	- times	performance
	E; Aringhieri																						
ORKSHIFT SCHEDULING SING OPTIMIZATION AND	Aringhieri , R; Branchi, S; Di																		rhaha radahi	multi-criteria mixed integer LP (MMIP), d to tabu search to find			Event Log from
ROCESS MINNG ECHNIQUES: AN PPLICATION IN	Francesc ornarino,							improve healthcare worker											different departmen (not really	optimal solution ts between MMP and Process mining.		favorite shift patterns employees are mined combined with shift	hospital. for Process Model f, from employee shift
PPLICATION IN EALTHCARE	C; Ghidini, C	2023 C	2022 WINTER SMULATION CONFERENCE (WSC)	Neither	Enactment	Resource allocation, Scheduling	better roster plans	worker schedules	x Offine	х	×		×		×	×	complex	pooled x	(not really process di		Tabu Search part of shift plan workshifts, workshift patter	combined with shift constraints	shift perspective.
																				learning with Fitted- Q iteration (FQI) and			
asouros Allocation Cotimizatio	Neubauer , TR; da							resource allocation as sequential												Neural fitted q- teration (NFQ),			
Business Processes upported by Reinforcement earning and Process Mining	Fantinato, M; Peres, SM						optimal resource	decision process (markovian)												reinforcement learning with Fibed- Q heration (FQ) and Neural fifted q- theration (MPQ), Resilient Propagation algorithm as regulation shaling A		the higher the worklos	Event Log for ad the markovien
earning and Process Mining	Di	2022 C	INTELLIGENT SYSTEMS, PT I	Neither	Enactment	Resource allocation	aflocation	(markovian)	x Online -	×						×	complex	individual -		regression strategy A	Markov multiple, unary event log	x lower the performano	e decision model
	Cunzolo M.; Guastalla																						
	M.; Custalla A.; Arreghieri R.; Suits E.; Armartes I.A.; Rorsoani M.; Di Francesc cmarino C.; Chidni C.; Fonio p.																						
	E; Amartea																						
	I.A.; Ronzani M.: Di							use knowledge															
	Francesc omerino							of process mining directly in ILP - e.g. if a															
	C; Chidni C; Fonio						select and schedul	patient will be delayed or not. Maximise															
ombining Process Mining of Optimization: A Scheduling oplication in Healthcare	P: Grosso	2023 C	Business Process Management Workshop		Enactment	Resource allocation,	select and schedule patients from the waiting list	e utilisation of Operation								L	None	and and	Date	integer linear Modeling & rocess programming model Solving			TLEX, P.Event Log, created L.P for 4 Rooms, Patients created from event log values and then simulated
ppication in nealthcare	м.	2023 C	Duamess Process Management Workshop	OR EIPM	cnactment	Scheduling	wareng lat	income de a	x Online -	×						×	reanel	розна х	Different F	rocess programming model Solving	rooms, unary event log, rooms, worker of	roups - model solved with CP	N.C.A., P. CWent Log., creased N.P for A rooms, Paperts created from event log values and then simulated
								performance by basing aflocation on															
								Human Bosoumes in a												Allocation based on			
							multiple, waiting time, transfer rate,	Network, Inter Task & Intra												team interaction (no full cotimization			
ulti-level Team Assignment in 1	Song W.;	A122 J	INFORMATION SYSTEMS FRONTIERS	nieither	Enactment	Resource allocation	resource utilization	rask allocation	x Online		×	×	(x)			×	complex	individual -	mainly tim	s pens; algorithm) Modeling	- multiple, unany resource profie, social wor	ner net x resource allocation th	rough c Resources, Network of resources depending on interaction between resources
	Song W.; Chen F.; Jacobsen HA.;						find minimal sequence of													heuristic to limit search space for A*			
ntifying a Minimum Sequence	e oZhang C.	2022 J	IEEE Transactions on Services Computing		Design	Control-flow re-engineers	ng change operations		- Offine s		×	×	×							Search O	Limit Search Space	na no resource allocation	n, optimization of workflow change operations, is this necessarily OR related?