tor	runner specify desc	gs criptors if needed	Primary Task Measures	Secondary Task Measures	Pupil Diameter Variation	Heart Rate Variability	Skin Conductance Response	EEG & Evoked Potentials (P300, N 100)	Nasa-TLX	Bedford Scale	Modified Cooper Harper Scale	SWAT (Subjective Workload Assessment	Technique) Workload Profile Technique	Cognitive Task Load Analysis	GOMS Analysis & Prediction	SA (Information) Requirements A	analysis SAGAT	Online Probing SALSA	Situation Awareness Rating Technique (SART)	ISONorm
ence			Martin (2007)	Martin (2007)	Kahneman (1973)			National Library of Medicine - Medical Subject Headings (2014 MeSH)	Hart & Staveland (1988)	Roscow (1984)	Cooper & Harper 1969	Reid & Nygren (1988)	Tsang & Velazquez (1996)	Neerincx, Doorne & Ruijsendaal (2000)		Endsley (1993)	Endsley (1988)	Hauss, Gauss & Eyferth (2000)	Taylor (1990)	Prümper (1997)
rt Summary / Claim										"The Bedford Scale is a un	-									
			Changes in the way a person performs a	Changes in the way a person performs a behavioural task car reflect the person's internal sta	n ate				The NASA-TLX enables subjective wo assessments on operator(s) working	assessed using a hierarchic decision tree that guides to operator through a ten- rkload point rating scale, each po	is The modified Cooper Harper al is a uni-dimensional measure he uses a decision tree to elicit operator mental workload. I int originally developed as an a	nat	n metric combine the advantages of r "real- secondary task performance ba	oad,	sk Goals, Operators, Methods, and S	generic procedure that uses unstructured interviews with SM Selection goal-directed task analysis, and knowledge; questionnaires in order to detern		developed specifically for ATC; on- questionnaire technique that is administered during simulation 'fi similar to SAGAT; technique also con	reezes',	Questionnaire to gather information on a system's compatibility with the
			behavioural task can reflect the person's internations state (workload). Assumption: Only limited cognitive ressources are available for processing cognitive information. Mandatory experimental	limited cognitive ressources are available for processing cogniti information. Mandatory	e ive Assumption: Pupil dilates with	Assumption: Heart rate variability decreases with	Assumption: Skin Conductance Response as prospective physiological indicator of cognit	The evoked potential can be auditory, somatosensory, visual, or motor, or other modalities that have been reported. Often used ve synonymously to event-related potentials which a	derives an overall workload score bare on a weighted average of ratings on	that level of workload." sed (Published on HP reposito six http://prisme91.euroconto	relationship between the levery, difficulty of aircraft controllarsol. and pilot workload (Casali &	environments. It is a subjective rating te of that uses three levels: (1) low, (2) mediur lity high, for each of three dimensions of tim mental effort load, and psychological str	n, and (3) acceptability and low re load, implementation requirements ess load to intrusiveness) (Rubio, Diaz, Ma	and set classes with specific task-set artin & instances (i.e., activities). (Neerincx,	quantitatively predict  ask- human performance for an interf in addition to serving as a useful qua description of how the user will use a	face design, system.  litative discover the information that an information transfer system must provide to user	task or information-processing theory. S considers situation awareness as rmation internal model that is derived from the environment prior to decision	<ul><li>environment by asking for SME's dynamic</li><li>rating of the simulated situation which</li><li>as a weighting for calculating mean weight</li></ul>	amic quick and easy self-rating SA measurement technic is used originally developed for Military aviation domain; eighted needs a reconception for every application scenario	(ISONorm-S). Developed for the evaluation of
HoliDes V-Model Phase	requirements engineering		set-up: Multi-Task.	experimental set-up: Multi-lasi	k. increasing cognitive workload	increasing workload	load; increases with increasing workload	associated with higher level cognitive processes.	subscales. Note: Weighting is option	ai. int/enp)	Wierwille, 1983).	assess workload (Reid, Potter & Bressler,	1989). Puente, 2004).	2004). X	system to perform a task X	that they can adapt as situations evo	ve making and performance.	reproduction performance	domain	software.
	conceptualisation design system implementation evaluation		×	x	x	x	x	X	x	x	x	x	x	X	x	x	x	X	X	x
H F Issue	deployment usability situational awareness								•		•				X	X	X	X	X	X
	user distraction		X	X	X	X	X	X	X	X	X	X	X	X	X	•				
Measurement Source	objective	actor observer psychophysiological performance	X	x	x	x	x	X	X	X	X	X	X	x	X	X	X	X	X	<b>X</b>
Type of Empirical Method	experiment expert inspection observation interview		X	X	X	X	Х	X						X	х	X X	Х	Х		
Time of Data Collection	questionnaire								X	X	x	X	X			X	X	X	X	x
	real-time retrospective		X	X	X	X	X	X	x	X	x	x	X	X X	x	x	Х	X	x	<b>x</b>
Method Applied by	HF-expert non-expert		x	х	X	х	х	X	x	х	x	Х	x	X	Х	х	V	X	V	x
Interpretation of Outcome  This descriptor is a text field for specifying manda requirements for interpretation of results	atory																X	X	X	
			Some reference value is needed to evaluate if workle is too low, acceptable or too high. Reference values to be obtained by a normative model or by experimental control / test groups.	ad evaluate if workload is too low, an acceptable or too high. Reference	values values can be obtained by a normodel or model or by experimental control of	to evaluate if workload is too acceptable or too high. ative Reference values can be obtain	Some reference value is needed to evaluate if med workload is too low, acceptable or too high.  Reference values can be obtained by baseline	Some reference value is needed to evaluate if workload too low, acceptable or too high. Reference values can be obtained by baseline measurements.		ate if only demonstrated by all ratir gh. falling in the range 1 to 3, but also when mean workload is that range, with some deviations.	t According to Wainwright (1987) "a gs satisfactory workload is not only t demonstrated by all ratings falling n range 1 to 3, but also when mean	the Some reference value is needed to evaluate it too low, acceptable or too high. Reference value obtained by a normative model or by experimental control of the control	ations of are cards into on of ares are used are actual segment. is converted the interval  Some reference value is needed to f workload is evaluate if workload is too low, lues can be acceptable or too high. Reference	are identified. The CASs show the values action times of each person and the odel or interrelationships between the actions:	be d, s and h und	nan agent's				A system with scale means > 4.0 (scale ranges from 1-7) is interpreted as a positive evaluation. ISONorm provides a standardisation for the interpretation of outcome.
Effort (time)	high low		X	X	X	X	X	X	X	X	X	X	X	X	X	X	Х	X	X	X
Costs	high low		X	X	X	X	X	X	X	X	X	X	X	X	X	x	X	X	X	<u>X</u>
<b>Resources</b> This descriptor contains a checklist defining the te and human resources needed to apply the method			x	x	X X X		X X		X	X	X	X	X	X	X	X	x x	X X	X	X
	participants EEG, Video / Audio Recording		X	X	X	X X	X X	X X	X	X	X	X	X			X			X	X

		Heuristic Evaluation		h Heuristic Walkthrough	Contextual Inquiry	Focus Groups	Card Sorting Techniqu	e Workshops	Subject Matter Expert Interviews	Performance-Related Measures	Eye-Gaze Recordings	generic HTA	Theatre technique for acceptance test
Gediga, Hamborg, & Düntsch, (1999)	Rubin (1994)	Nielsen & Molich (1990)	Lewis, Polson, Wharton & (1990); Polson, Lewis, Rie Wharton (1992)	ieman & Sears (1997)	Holtzblatt & Jones(1993)	Kitzinger (1994; 1995); Merton & Kendall (1946)	Nielsen & Sano (1995)	-	-	-	Poole & Ball (2005)	Stanton, Salmon, Walker, Baber (2005)	& Jenkins Botta, Borchers, Curio, Collina, Gardas-Schmidt, Gründl, Guidotti, Herout, Ihme & Käthner (2013)
			vviiditoii (1332)										
				inspection method for evaluating usability. Com	bines								
				aspects of heuristic evalua cogntive walkthrough, ar	tion,								
				pluralistic usability walkthrough; In a first ste									
			inspection methodolog	experts evaluate an interface								A generic Hierarchical Task Analysi	can be used to support the sis (HTA) collection of feedback and expectations
	Usability testing is a ted	echnique non-formal inspection		ty of user provoking" questions during		<b>Group interview with stakehold</b> A group of people is asked about the					Eye-movement recordings can		tion in about a system of the human operator early in the design
	used in user-centered	evaluating usability	HF experts walkthrough process invol		Semi-structured interview re with to obtain information about	method perceptions, opinions, beliefs, and		A workshop consists of a si	nall A conversation between two or more people w	here	provide a dynamic trace of where person's attention is being directed	goals, subgoals, plans,	researcher or human factors expert mimics the
to compare competing	a product by testing it of users. Usability testing	t <b>on</b> whether an interface is		lved in a a set of heuristics to find ad	ditional context of use. Users are fir a set of standard questions	<b>rst asked</b> concept, advertisement, idea, or			orks questions are asked by the interviewer to elicit		in relation to a visual display. The		s behaviour in a wizard-of-Oz-like fashion. This is
versions of a product. Also available as short version	on measuring a human-	<b>n-made</b> and categorizes noncons	istencies then considers each criter	ria and the guided and constrained than	a then observed and question of the they work in their over the they work in the their own their own their own their own the they work in the they work in the their own the their own the they work in the their own the the their own the their own the their own the their own the the	ned interactive group setting where	structure is derived fro	om for a workshop is the goal- to oriented, cooperative and	SME is a person with special knowledge or skil	ls in a (e.g. via distracting tasks), more	placement of specific interface	Furthermore, a HTA aims at	planned functions and interaction concepts are
	intended purpose.	on a scenario.	user's goals and actions.	•	•	group members.		moderated working style.	particular area of endeavor. Interviews are a signar part of qualitative research.	maintain the same level of performa		proposing solutions.	lems and sought to be tested before a working prototype is ready for use.
	Х	Х		X	X	X X	X X	X X	X X			X	X
								X	X				X
X	X	Х	Х	X		X	Х	X	X	X	X	X	X
X	Х	Х	X	Х	X	X	Х	X	X			Х	X
											x	X X	X X
X	X	Х	Х	X	X	Х	Х	X	X	X	X	X X	х х
	x				x	X					x		X
	X X									X X	X		
	x x	х	х	x	x							X	X X
x	X X	x			X	x	X	x	x				
<del> </del>	X	Y	Y	¥	X	х	х	х	Х	x	x		x
X	X			~	X	X		X	X	Y		X	X Y
x	x	*	^	Х	^	x	x	^	^	^	x	^	^
													X
					Following a contextual inquiry f	field							
					Following a contextual inquiry finterview, the method defines interpretation sessions as a waanalyze the data. In an interpre	ay to							
	Setting up a usability test i	involves			analyze the data. In an interprosession, 3-8 team members ga	etation ather to							provides feedback whether or not certain system functions adhere to human-factors-relevant requirements, and if the
	carefully creating a scenari realistic situation, wherein	ario, or			hear the researcher re-tell the the interview in order. As the i	story of							requirements should be changed (extended, refined, abandoned)
	person performs a list of to using the product being tes	tasks			is re-told, the team add individ insights and facts as notes. Th	lual							With the data collected and
	while observers watch and notes. Several other test	nd take			may capture representations of user's activities as work model	f the					To infer useful information from eye- gaze recordings a definition of AOIs,		feedback from the participants, potent ial problems in the adaptation as
	instruments such as scripte	ted	of interface. This mathed leads to sless	The method yields a list of interface problems, classified	in the Contextual design metho	odology).				Some reference value is needed to evalu if user distraction introduced by a system	ate areas of interest, is necessary. AOIs a	re	well as undesired consequences in the interaction can be detected early in
system versions are compared	pre- and post-test question	onnaires problems, classified to v	olate certain problems a user could end	counter violate certain usability princi	oles. affinity diagram. Many teams	use the				acceptable or not. Reference values can	be under evaluation. Eye-gazes that fall		the design process and compared
				Multiple HF- Multiple HF-experts should b used.		-ueptri				obtained by a normative model or by experimental control / test groups.			with the requirements
X	X X	х	х	X	Х	X	х	X	х	X	Х	X	X
X	X X	Х	х	х	х	X	Х	Х	Х	X	X	X	X
X	X X	Х	Х	х	X	X	Х	X	X		x	X	X
	X X									X			X X
X	X				X	X	X	X	X	X	X		
	X									V			X