r	Generals.			Results:		Applicatio	n·		1	l .	1	1	Data/database			Miscellaneous:			1		$\overline{}$
Aspecti criterion	Tool name	Software/ paperwork/ method	short description	outcomes from tool (evaluative/ descriptive/ creative)	description of result presentation/visualisation		applicable within design process – preferred one- indicator-solution	technical assessment	ecological assessment	economic assessment	social assessment	applicable to products and service systems (PSS)	quality of database/data gaps and uncertainties	documentation of data	specific focus on electronic products and industry	comments	pros - cons (e.g. user friendliness, easy-to- understand, intuitive handling, support by producer)	designation	Further information available	price	date of last version
LGA	Galdi 4	Software and DB management	detailed LCA (goalikacope manager, invertiony, impact sassassment and ristraprisation) soo and LCA DB manager, graphical supported LCA modelling, comprehensive functionality and DB	evaluative	quantitative valuas (inventory, impact categories or evaluated categories), in the categories of the categories of the categories of the categories of the categories of the seport function (6.g. to seein)	environmental departments in industry, environmental experts, LCA interested or related	yes (by help of processalplan/global processalplan/global powerwheter and powerwheter (scenario analyst), one indicator solution available	modelling of technical processes prerequial	c.CA, various impact methods, single point indicators	tull integration of economic superits (LCC)	integration of social aspects related to functional unit (Life Cycle Working Time, LCWT)	yes	good quality, transpowert data sets, (documentation), side range of data, relating to various industry and market fields (e.g., automotive, electronics, buildings, reservable resources, restartist (plastic, metals, misessal), energies, End of Litelresycling, transports)	yes, inked hand documentation (soon and based)	estension DS "electronics" svallable	additional features: parameter implementation and parameter expirer, accurate/banativy/moreta- curio analyst, sarkey diagrams, recycling loop modellings, balances view analyst for balance point analyst for balance stable, balance ameripator, external data recording tool	feeble and well-structured DB manager, easy importisipant; ISP/PE consortism supports Call sizes more than 10 years, LCA and sobware training on request, ISP or group is intriput LCA group workholds	PE Europe	http://www.gab- softwana.de/ http://www.lhggabi.uni- sti.ttgart.de/ http://www.pa-europa.com/	professional: 7.500 EURO; Issan 2.500 EURO; addisoral locances: 1.500 EURO auxil. extension dealbases: 200-3.500 EURO	GaBH: Aug. 2006
	Gutti 4 DIX	Software and DB management (additional function for Gath 4 standard)	identical base function as Galbi 4 plus additions:  Hasterial analysis and material tracking through the errites LCA.  ToO, assessment based on variable material analyses - economic - localization assessment of EoL within the LCA model - inclusion of compliance aspects for vehicle directive, WEEE, RoHS and EuP	evaluative	serves at CoB4 f plot dissuantilly procedure - federation - dissuantilly procedure - more relative to the complete - End of Life evaluation - report templates for complete complete - the complete -	environmental departments in industry, environmental experts, LCA interested or related	yes (by help of process) jahn (jobel porameters and porameters and porameters and porameters indicator solution available	modelling of technical processes prerequisit	CCA, various impact methods, single point indicators	hall integration of economic saperds (LCC) and End of Life dosessembly costs	Integration of social aspects related to functional unit (Life Cycle Working Time, LCWT)	yes	good quality, transparent data sets (documentation), wide range of data, relating to various industy and market feelds (e.g., automotive, electronics, buildings, renewable resources, materials (plantic, metals, minerals), energies, End of Litelweycieng, transports)	yes, linked hird documentation (soon and based)	extension DS "electronics" available	the extension for standard GaSI 4 relating to compliance assessment for white dawedow, WEEE, 2005S, SuP, restant and tracelling assessment traceability and End of Lifelincycling assessment	Resible and well-structured DB manager, easy import super, in RPPE conservine supports GaBi seed more than 10 years, and more than 10 years, and request, ISP and PE proop is larguast LCA group worldwide	PE Europe	http://www.gab- software.de/ http://www.lhggabi.uni- sut/gart.de/ http://www.pe-europe.com/	Gadhi 4 DK 15.000. EURO (yeards Gadhi 4 professionsi)	Ga594 + Ga594 DIX: Sept. 2005
	SimsPro 5.1	Solvare	detailed LCA tool; possibility to create Scripts for inexpedenced users	evaluative	LCI results, LCIA profile (apecification- per substances and processes) free (resultzation, process contribution arralysis	LCA expert; Scripts for inexperienced users	one indicator solution available; comparison of comparison of possible but there is no feasible analyst function to support design processes	modelling of assembly, life-cycle and disposal/disassembly/r eures somerios; absence of obliged flow connection between processes makes modelling flexible but increases inscrurscy	LCA	no	no	predefined modelling structure (sasemblylife- cycle/daposal/ dasassemblylie use) makes it difficult	numerous datasets are available of different databases; quality is verying	varying: some data are documented with detailed system description; some have only short comments	no specific focus; some Electronics distincts are available	several LCIA methods available; complex Data Quality Indicator system for process documentation and consistency check; classification of materials in waste fraction for modelling end-of-life scenarios	contineus development; easy application for scenering LCA; complex system modelling is difficult because of predefined structure and absence of prophical support dess transparency and accuracy); more language versions and mail-case version swillable.	PRé Consultants	hitp://www.pra.st/simapno/	commercial users: 3600 (single), 7300 (2 users), 1500 (sech estra-user); Ewrole contact must be menewed each year (1000 exchient) and the menewed each year (1000 exchient) and the menewed each year (1000 exchient) and produced each user, 2500 excellent estatus tare); 4500 (frust), 4500 (frust), educational 1300 (single), 4500 (frust) and exchient 1300 (single), 4500 (frust) estated exchient exchient estated estated exchient estated exchient end can be purchased separately.	Simapro 5.1: 2002
	TEAM 4.0	Software	detailed LCA tool	evaluative	invertory tables, LCIA results with graphical support  1. Qualitative Description; possibility	LCA experts	process/global variables and scenario analyst available; one indicator solution available	yes	LCA	no	no	yes, but system boundary at PSS difficult	good quality	poor documentation (usually short comments and indication of original source)	Electronics data in additional database (DEAM Millenium Kit)	possibility to define Reminder flows; working with statistics: uncertainty, link-, correlation-, min-max- and monte carlo analysis	not flexible DB management beacuse of separate Explorer and System Editor; obtainment of results requires more steps (inventory/snapshots/workb ooks); not flexible asport/import functions Supported by institute for	Ecobilan- Price/Waterhouse/Coopers	http://www.ecobalance.co m/uk_team.php	first licence: 1000 Euro; first licence for universities: 2000 Euro; additional licence: 1000 Euro; Maintenance contract 2000 Euros; additional data: 777	TEAM 4.0: 2003
	umbero 4.1	DB management	A flexible tool and versable tool for LCA & Material Flow Analysis	Descriptive	to represent in a matrix form as to which material is responsible for what servicommental impact. 2. Quantitative Description. 2. inventory Table 4. Graphical Support. 5. Export & Import possibilities to other applications, often the modern data sochange format XML is used.	environmental experts, LCA interested professionals, Eco-designers, research institutions and consultancies	Yes, under restriction of currently available data.	Modeling of screncial	Ecological material properties are used for impact     Assessment systems in Umberto	integration of economic supects (LCC)	insignation of social supects related to functional unit (Life Cycle Working Time, LCWT)	may be problems defining system boundaries	Very good quality, with a wide range of data	141	742	Additional seatures: besides the display of all mass and energy flows in a Sanloy diagram, the material flows involved in creating a good product can be displayed. This allows for tracing back expenses atterming from producing each product.	Environmental Informatics, Hamburg & Institute for Energy and Environmental Science, Heidelberg.	institut für Letriweitinsochtuss	maps, were unscens on english	12200 EURO	2003 (updated till 2005)
	ECO-II:		Computer based LCA tool using ecoindicator databases.	Evaluative	Numerical and graphical representation of impacts of different life cycle stages using LCI data. Glova coveral impact and relative impacts of different life cycle stages. Can also show realive impacts of different materials and components.	Product and packaging designers	one indicator solution given; comperison of scenarios is possible	modelling of materials and assembly, life- cycle and disposal/disassembly fesuse scenarios	LCA using ecoledicator databases	Different parameters such as cost can be included	no	predefined modelling structure (assembly/life- cycle/disposal/ diseasembly/re use) makes it difficult	Good quality Ecolodicator databases used	Yes - also available on-line	no	Additional features: allows editing of datasets and inclusion of new ones.	Relatively aimple to use with good explanation of datasets. Relatively transparent and easy to follow modelling. Lacking in the scope of data included. Modelling of complex systems difficult. Very chesp.	Eco-Indicator Tool for environmentally friendly design - PRé Consultants	http://www.pne.rel/eco- it.html		
			from 1998															sinum Corporate Environmental Management Turtle Bay by TNO	http://www.sinum.com/htdo cs/e_software_ecopro.sht ml		
	ECOScan	software	Numerical and graphical suppresentation of impacts of different life cycle stages using LCL data.	evaluative	Cuantilities values represented or Miliporia (unit to the Eco-indication) (More overall impact and nisistee impacts of different like cycle stages. Car shot show realitive impacts of different resisteral and components. Car shot products in a single graph Pe character of the cycle disparans and many more graphs.		possible but there is no featible analyst function to support design processes. Also the current available data set some restrictions.	modelling of materials and assembly, life- cycle and disposal-disassembly- reuse acercados	ECA using ecolndicator databases	full integration of integration of integration of scoroomic aspects (LCC)	ne	Not inteded for that end. Mainly aimed at product system. Could possibly be used for Sevice systems but system boundaries make it difficult.	data bases.	Good documentation in conjunction with idemat software.	Not specific focus.	Additional features: Uses a control deabless that can be controlled and updated. Available as aneteroric variable for matter variable for matter variable for matter Advers import of data from applications such as Excel.	Easy to use, and clear Machical guiding upto by stop. Good explanation of distants. Relatively: samparent and easy to follow modelling. Modelling at complex systems may become difficult. Realively too prios. Available distants must be pressal, specific companies developed that com- ditabases (Philipp) including detailed data on maleralia and process.		http://www.hurfiebogred	450 ware inhading Eco-indicator 56-59 dishbases	Software: 200 3 Distribuses from 95, 29 & 2002
	BOLCA	software	Ecological calcustions based on economic in- and output tables.	evaluative	Cuartifative volum are presented as included are or as short of contribution from each involved industrial sector	politicans , atrategists		yes on an aggregated level, th- and out put table is divised into sectors of indutrial activity e.g. plastics	selected inventory parameter and impacts	yes	no		Data base is based on economic in- and out put table for the United Staates. Economic results guilling transfered into economic parameters by matrix calculation	Documentation of economic in- and out put tables available as well as the sources for the ecological matrix factors	no	Dahs and used dahs sources are public swallable. Information comes mainly form official governmental agencies. Since in- and output tables intend to be aggregated (rumber of sector describing all industry-wide activities is trained the application for specific products is limited; the application for comparison of similar products is not possible.	Easy to use but not transparent. No specific system boundary setting necessary. Industry-wide effects are covered and can be answered.	Economic Input-Output LCA at Carnegie Mellon University	hitto (Innere etislon red	red convenically available, five access on the web or member ahip at the Green Daign Invisitive	1997
	DEMAT PTI sour	Software & Web	Database containing many materials, components and process descriptions. In conjunction with Ecoscan, it provides the data needed on the LCA tool.	Descriptive	Graphical representation of components, process and materials. Also a written description.	Technicians	Under restriction of currently available data.		yes	yes	no	Not inteded for that end. Possible but system boundaries make it diffucit	Not all the materials and process are there.	Good and clear	Not specific.			Delft University Clean Technology Institute Interduct Environmental Product Development	http://www.io.tudelft.ni/rese arch/dfs/idems/ifndex.htm http://www.sylvatics.com/pt	650 euros	2002
									both Economic and Environment al Impacts of Process Decisions	both Economic and Environment al Impacts of Process Decisions									laser htm		
Tools similar to																					
LCA	MET-Matrix	Method	is a qualitative or semi-qualitative method which serves to obtain a global view of the inputs and outputs in each stage of the product Life-Cycle.	Descriptive	quantitative values in 5°5 matrix (life-	Designers	summary of acro-		yes	yes	yes	it can be applied	no databases used	andy indication	no	This is a qualitative method that rely on the knowledge of the user. It facilitates to have an overall picture of the life-cycle.	easy to use, useful as first step to teach life-cycle concept. Also useful as creativity tool. user-triently interface,	PAPA and PROFE	hilly that yaw	FREEI	no versions
		ROM/softwar e	assessment of environmental performance and improvement options of product file cycles (goal and soops effertilion, invention, checklist, database, marbose, target plotal) informative part containing background knowledge should environmental and methodological issues.	- SARAWA	cycle phasas." environmental concernal; target-plot for comparison of accentrics	the life cycle concept in Small- and Medium-sized Enterprise	design principles is given; improvement analysis is done with the checklist; comparison of acenarios is possible with target- plots	not dissued, secretical system should be adapted to VerdEE life- cycle model structure (predefined inventory and checklist)	quantitative; and qualitative; based on LCIA indicators			precentived inte- cycle phases makes it difficult	non up-seased ans (mainly based on slabboration of Simapro 3 standard distribuse)	ony inscission about original acurce			user-friendly interface, simplified method based on LCA concept, easy-to- undestand visualization of results, adoptation of concrete cases can be difficult beacuse of predefined and general life- cycle model, only in Italian	CONTRACTOR OF THE PROPERTY OF	nepriver casacios area se impressambionals' (see "LCA beri durevoli" - "VendEE")		2000
	grEEEn AUDIT	Software  CD  ROW/softwar	Software tool (prototype) for support in strategic decisions in product design, e.g. related to the selection of materials or definition of the product structure.  Tool for the description and	evaluative	Software can generate three types of results: scoronic profile, environmental profile and legal complance (the latter only when supported by GDA from Microsial). Display of results in tables and graphics.  quantitative values, monetary values,	controller		Handling of database not yet very operational, graphical database only when using the separate database within the software. May be better if commercially implemented. databad technical	quantitative, based on selected LCA indicators	yes (LCC)	no	quite flexible	Database is not at all complete, data quality varies very much high effort needed to	quite extensive  database description	Yes, includes 5 electronic product case studies.	Commercial implementation not sure, prototype status of the software leads to limitations in handling and to unavailability of the software.	If professionally implemented, it might be were useful, aspecially since to includes the legal compliance information. The prototype software and databases are not very operational. complex software solution, high effort needed to use it.	grEEEn project, software developer CBMA ALDIT Gesz, Austria	hito Javes of EEn.3	not yet available on the market (prolotype shatus) depends	09.12.2003
	ESQCV	Mathod	economic and ecological evaluation of material- and substance flows, the substance flows, as a semi-qualitative method which	Descriptive or	sankey disgramms of substance flows, sankey disgramms of monitory flows.	departments, environmental departments, engineering consultancy Designers	Comparison of	detailed technical assessment depending on the level of data analysis, different modules for industrial process steps available	pand qualitative	according to level of data analysis up to sub- systems of whatever level	no	structure can be defined by user	high effort needed to analyse and collect data, often additional primary data genesis needed	pescription	no	This method provides an	Internation of the method	Evaluation Simplifile et	Norms ISO AFNOR FDX	PREE	no version
			serves to obtain a global view of the inputs and outputs in each stage of the product Life-Cycle. It use Expert Knowledge and matrix to express impacts	evaluative	matrix or an evaluation obtained from a check list.		different scenarios of environmental load or Re design						method but the expert can used data base of LCA software			overall picture of the life- cycle product. It can be use easily by industrials. But its intenset depends of the knowledge of the expert	must be support by consultant. It's user friendliness.	Qualitative du Cycle de Vie	30-310 (Jully 98)		