11 Annex B - Tables

Table 1 Industry versus Business Functions - Current STEP/SC4 AP Matrix (1/3)

	Business Functions / Design / Engineering Breakdown / *Output of Design / Engineering*	Cross Industry Common APs	Industry and/or Product: Process Industry		Parts / Component Mfg. Industry			Large Scale Assembly Industry					
						Component Mfg. Ind.							
			Raw Material Process Industry	Chemical Industry	Parts Mfg. Industry	Machinery	Electric/ Electronic Devices	Automobile	Aircraft & Space Craft	Ship	Building & Construction	Process Plant	Electric/ Communicat'n Systems
2	Configuration Management												
2.1	Change Management	208	x	x	x	208	X	X	208	215-218,226	x	221,227,231	212
2.2	Requirements Management	X	x	x	x	X	X	X	X	x	x	x	X
2.3	Product Structure & Configuration Item Control	X	x	x	x	203CC1	212,210,220	214CC8,9,10	203-1	215-218,226	230	221,227,231	212
3	Design & Engineering												
3.0	Product Data Management & Documentation												
3.0.1	Product Data Management	232	232	232	232	232	212	214CC6,7	232	232	232	232	212
3.0.2	Documentation	SGML	=	=	=	=	=	=	=	=	=	=	=
3.0.3	Draughting	201,202	201,202	201,202	201,202	201,202	212	214CC3,4	201,202	201,202	201,202	201,202	212
3.1	Conceptual Design & Systems Engineering												
3.1.1	Requirements Definition	X	x	x	x	x	x	X	X	X	x	X	X
3.1.2	Systems Engineering Model Definition	233	=	=	=	=	=	=	=	=	=	=	=
3.1.3	Systems Specification Definition	X	x	x	x	x	x	X	X	X	x	X	X
3.2	Performance & Functional Design												
3.2.1	External Surface Design												
3.2.1.1	*Fluid Dynamic Surface*	X				203CCn		214CC5	203CCn	216			
3.2.1.2	*Arbitrary Free Form Surface*	X		x		203CCn	203CCn	214CC1	203CCn	216	x		203CCn
3.2.1.3	*Others*	X	203CCn	x	203CCn	203CCn	203CCn	214CC1		216	225	203CCn	203CCn
3.2.2	Spatial Arrangements	X	x	x				214CC2	X	215	225	227	203CCn
3.2.3	Schematics Design												
3.2.3.1	*Process Plant System*	X	x	x								221,231	
3.2.3.2	*Mechanical System*	X	x	x		x		x	x	227,226	x	221,231	
3.2.3.3	*HVAC System*	X	x	x				x	x	x	228	221	
3.2.3.4	*Electro-Technical System*	212	x	x	x			212	212	212	212	221,212	212
3.2.3.5	*Instrumentation & Control System*	212	x	x	x	212	212	212	212	212	212	221,231,212	212
3.2.4	Component Specification Definition												
3.2.4.1	*Machinery*	X	x	x	x	X		X	X	X	x	X	
3.2.4.2	*Electro-Technical Equipment*	212	x	x	x	212	212	212	212	212	212	212	212
3.3	Engineering Analysis												
3.3.0.1	*Systems Engineering Analysis*	233	=	=	=	=	=	=	=	=	=	=	=
3.3.0.2	*Heat & Mass Balance*	X	x	x		X				X	x	231	
3.3.0.3	*Computational Fluid Dynamics*	X	x	x		X		X	X,203	X,216	x	x	x
3.3.0.4	*Naval Architects*									215, 216			
3.3.0.5	*Aircraft Architects*								X				
3.3.0.6	*Structure Analysis*	209	x	x	x	209	x	X	209	X,218	230	230	x
3.3.0.7	*Thermal Analysis*	X	x	x	X	X	X	X	X,203	x	x	x	
3.3.0.8	*Kinematics*	X	x	x		X	x	214CC16	X	x			
3.3.0.9	*State Transition Analysis*	X	x	x	X	x	X	x	x	x	x	x	x
3.3.0.10	*Logic Analysis*	X			X		X						
3.3.0.11	*FMECA*	X	x	x	x	X	X	X	X	x	x	X	X
3.3.0.12	*FTA*	X	x	x	x	X	X	X	X	x	x	X	X

Legend : # : Part #, 203CCn : Part203 Conformance Class n, x / X : Candidate AP, = : ditto to the left cell,
PLIB : Parts Library, MLIB : Material Library, MCM : Multi-Chip Module, SGML : SGML Family of Standards

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Table 1 Industry versus Business Functions - Current STEP/SC4 AP Matrix (2/3)

	Business Functions / Design / Engineering Breakdown / *Output of Design / Engineering*	Cross Industry Common APs	Industry and/or Product: Process Industry		Parts / Component Mfg. Industry			Large Scale Assembly Industry					
						Component Mfg. Ind.							
			Raw Material Process Industry	Chemical Industry	Parts Mfg. Industry	Machinery	Electric/ Electronic Devices	Automobile	Aircraft & Space Craft	Ship	Building & Construction	Process Plant	Electric/ Communicat'n Systems
3	Design & Engineering <Continued>												
3.4	Production Engineering												
3.4.1	Mechanical Assembly / Parts Design for Manufacturing												
3.4.1.1	Mechanical Parts												
3.4.1.1.1	*Shape*	203CCn			203CCn	203CCn	203CCn	214CC1,2	203CCn				
3.4.1.1.2	*Design Form Features*	X			x	X	x	214CC14,15	x				
3.4.1.1.3	*Tolerances*	219			219	219	x	214CC12	219				
3.4.1.1.4	*Mechanical Product Definition for Process Planning*	224			224	224		214CCn	224				
3.4.1.1.5	*NC Process Planning & NC Data Preparation*	213			213	213		214CC11,12	213				
3.4.1.2	Design & Mfg. for Cast Parts	223			223	223		214CCn	223				
3.4.1.3	Design & Mfg. for Forged Parts	229			229	229		214CCn	229				
3.4.1.4	Sheet Metals Manufacturing	X			x	X	x	214CCn	207				
3.4.1.5	Welding	X			x	X	x	214CCn					
3.4.1.6	Process Planning of Assembly	X				X	x	214CC13	X	x	x	x	x
3.4.1.7	Dimensional Inspection	219			x	219	x	X	219	x	x	x	x
3.4.1.8	Measured Data	X			x	X	x	214CC17	X	x	x	x	x
3.4.2	Electro-Mechanical Assembly / Components Design for Manufacturing	210,212			210,212		210,212						
3.4.3	Printed Circuit Board Design for Manufacturing (incl. MCM)	210,220			210,220		210,220						
3.4.4	Foundations Design & Construction Engineering	X	x	x							X	x	x
3.4.5	Structure Design, & Fabrication & Construction Engineering												
3.4.5.1	*External Surface Structure*												
3.4.5.1.1	*Monocoque Structure*	X						214CC5,1	203CCn,222				
3.4.5.1.2	*Others*	X	x	x		203CCn	203CCn			218	x		
3.4.5.2	*Inner Structure*												
3.4.5.2.1	*Plate / Shell Structure*	X	x	x		203CCn	203CCn	214CC1,2	203CCn	218	230	227	203CCn
3.4.5.2.2	*Frame / Beam Structure*	X	x	x		203CCn	203CCn	214CC1,2	203CCn	218	230	227	203CCn
3.4.5.2.3	*Others*	X	x	x		203CCn		214CC1,2	203CCn				203CCn
3.4.5.3	*Cable Suspension Structure*	X								x	X	x	203CCn
3.4.6	Equipment Installation Design & Engineering	X	x	x				X	X	227	X	227	x
3.4.7	Piping / Ducting / Cabling / Racks & Supports Layout Design, Fabrication & Construction Engineering												
3.4.7.1	*Piping / Tubing*												
3.4.7.1.1	*Piping on de-Cartesian Coordinate Space*	X	x	x						227	x	227	x
3.4.7.1.2	*Tubing*	X				X		214CCn	X				
3.4.7.2	*Ducting (HVACS)*	X	x	x		x	x	x	X	x	X	X	x
3.4.7.3	*Cabling / Wiring*												
3.4.7.3.1	*Cable Rack & Cable Installation*	212	x	x						212	212	212	212
3.4.7.3.2	*Wire Harness*	212				212	212	212	212				
3.4.7.4	*Racks & Supports*	X	x	x					x	227	x	227	x

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Table 1 Industry versus Business Functions - Current STEP/SC4 AP Matrix (3/3)

	Business Functions / Design / Engineering Breakdown / *Output of Design / Engineering*	Cross Industry Common APs	Industry and/or Product: Process Industry		Parts / Component Mfg. Industry			Large Scale Assembly Industry					
						Component Mfg. Ind.							
			Raw Material Process Industry	Chemical Industry	Parts Mfg. Industry	Machinery	Electric/ Electronic Devices	Automobile	Aircraft & Space Craft	Ship	Building & Construction	Process Plant	Electric/ Communicat'n Systems
3.5	Support Engineering								X				
3.5.0.1	*Operations Manual*	X				X	X	X	X	x	x	x	x
3.5.0.2	*Repair & Overhaul Manual*	X				X	X	X	X	x	x	x	x
3.5.0.3	*Condition Monitoring & Diagnostics*					x	x		x	x	x	x	x
3.6	Recycle / Disposal Engineering												
3.6.0.1	*Recycle / Disposal Manual*	X	x	x	x	X	X	X	X	x	x	x	x
5	Production Control												
5.1	Long Term & Short Term Productions Planning	X	x	x	x	x	x	x	x	x	x	x	x
5.2	Facility Planning & Sourceing Plan	X	x	x	x	x	x	x	x	x	x	x	x
5.3	Material Requirements Planning	X	x	x	x	x	x	x	x				x
5.4	Production / Procurements Order Release	X	x	x	x	x	x	x	x	x	x	x	x
5.5	Parts Manufacturing Shop Control & Operation	X			X	X	x	x	x	x			
5.6	Assembly Shop Control & Operation	X				X	X	X	X	X			
5.7	Site Construction	X									X	X	X
5.8	Commissioning	X				x	x	x	x	x	x	x	x
5.9	Inventory Control	X	x	x	x	x	x	x	x	x	x	x	x
6	Operations <Customer>					x	x	x	x	234	x	x	x
7	Product Support	X	x	x		x	x	x	x	234	x	x	x
8	Recycle / Disposal	X	x	x	x	X	X	X	X	x	x	x	x

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