Figure 1. Functional Divison of Telecommunications Services

A. Network C		Subscribers	Access routes	ations oct vices	Access Nodes	Trunk Routes	Trunk Nodes	Control Nodes	Contents Supply
(H	Horizontal Components)		One-way (Broadcas	t) Two-way (Communica	ation) (Subscribers Switch,				Nodes
B. Layers Components (Vertical					Broadcasting Station)				
Components)						Short-distance,	Long-distance	•	
			Wireless Wired	Fixed Mobile		Wired Wireless	Wired	Wireless	
Services	Customer Services	Platform							
	(Agent)		One-stop-shopping s	ervices					
	Information	WWW sites							WWW sites
	Production/Supply								Production of Programs
	Transmission		"Broadcasting"	Telephone Services (Poin	t-Point Connection) , Private Se	ervices, Conference Ser	vices (Multi-p	oint Connection)	
			Cable TV	Internet Services (E-mail,	WWW)				
Network	Network Administration			Subscribers' Numbers	IP Address Administration		Traffic A	Administration, Co	ontrol Signaling
	and Operations		Channel Administrat	tion Roaming			"Multipl	exing"	
				Voice Transmission	Video Transmission,				
			Bit Stream Transmis	sion	Transmission of Packets, Fram	nes, and Cells			
Equipment		Customers' Pre	mise Equipment		Subscribers' Switch, Rooters		Trunk S	Switches, Rooters	
and Infra-	Equipment	TV and Radio			Wireless Communi	ications Equipment	Multi	plexers	
structure		Personal Comp	outers, Headend					Studios ar	nd Broadcast Equipment
			Antennas, Transpone	Terrestrial B	Terrestrial Broadcasting Equipment				
	Transmission Media		Radio Spectrum 0	Coaxial Cables Copper Cable	Radio Spectrum				
			Optical fibers	Optical Fiber	Optical Fibers				
Infrastructures			Satellites	Communication Poles	(Pole Attachment Spaces)	Conduit (Unde	erground/seabed) Satellites	
						Tunnels			
	Common Spaces		Orbital Spaces			Orbital Space	s		
				On Ground/Undergrou	Underground/S	Underground/Seabed Space			

Figure 2. Functional Division of DSB-related Services

Components	Subscriber	Access route	Access Nodes	Trunk Roots	Trunk Nodes	Control Nodes	Contents Supply
(Horizontal Components)		One-way (Broadcast)	(Broadcasting)				Nodes
B. Layers Components (Vertical		Wireless		Wireless			
Components)							
Customer Services	Platform A						
(Agent)			-				
Information							Producing Programs
Production/Supply							
Transmission		"Broadcasting"					
		Video Transmission					
Network	Platform B	(Channel Administratio	on)				
Administration and							
Operations							
		Bit Stream Transmission	on				
	TV and Radi	io					Studios and Broadcast Equipment
	Platform C	STB Supply and mainten	nance				
Equipment			Antennas, Transpor	nders	Terrestrial Equi	pment	
Transmission Media		Spectrums					
Infrastructures		Satellites			Satellites		
Common Spaces		Orbital Spaces			Orbital Spaces		
	izontal Components) omponents (Vertical o) Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations Equipment Transmission Media	izontal Components) omponents (Vertical o) Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations TV and Rad Platform C Equipment Infrastructures	omponents (Vertical Wireless Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations TV and Radio Platform C STB Supply and mainter Equipment Transmission Media Spectrums Infrastructures Satellites	izontal Components) omponents (Vertical omponents)) Transmission	izontal Components) Ome-way (Broadcast) (Broadcasting) Omponents (Vertical Wireless Wireless Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations Bit Stream Transmission TV and Radio Platform C STB Supply and maintenance Equipment Transmission Media Spectrums Spectrums Spectrums Spectrums Spectrums Spectrums	izontal Components) One-way (Broadcast) (Broadcasting) Omponents (Vertical Wireless Wireless Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations Bit Stream Transmission TV and Radio Platform C STB Supply and maintenance Equipment Transmission Media Spectrums Spectrums Satellites Satellites Satellites	One-way (Broadcast) (Broadcasting) Customer Services (Agent) Information Production/Supply Transmission Network Administration and Operations Bit Stream Transmission Ty and Radio Platform C STB Supply and maintenance Equipment Antennas, Transponders Transmission Media Spectrums Satellites One-way (Broadcasting) Wireless Wireless Wireless Wireless Wireless Wireless Wireless Wireless Transmission Flatform A (ppc and ppv Administration, Billing) Flatform B (Channel Administration) The Administration and Operations Flatform C STB Supply and maintenance Equipment Antennas, Transponders Terrestrial Equipment Transmission Media Spectrums Satellites Satellites

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[&]quot;A New Regulatory Framework for the Telecommunications Industry in the Age of Convergence", An outline presented at Faculty Seminar, Osaka-Gakuin University, June 10, 1999.,4pp.