（２）日本の電気通信事情

OUTLOOK OF THE TELECOMMUNICATIONS IN JAPAN

by Mr. Katsumi Kobayashi

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Training Institute of Telecommunication Administration

Ministry of Posts and Telecommunications

Table Historical Background

Year	Incident	Carrier of domestic telecom.	Carrier of International telecom.
1868	Start of telecommunications services	Ministry of Communications (Monopoly)	
1952	NTT Public Corporation was established.	NTT Public Corporation (Monopoly)	
1953	KDD Co., Ltd. was established.	NTT Public Corporation (Monopoly)	KDD Co., Ltd. (Monopoly)
1979	Two major targets of NTT (to catch up with the growing demands for telephone sets, and to establish the nationwide automatic exchanges) were attained.		
1985	Telecommunications market was liberalized domestically and internationally NTT Public Corporation was privatized. Nippon Telegraph and Telephone Corporation (NTT) was established.	NTT and many carriers (see P29~)	KDD, ITJ, IDC and 24 International VAN Providers (see P31~)

The following can be considered as the leading factors of these past developments.

(a) NTT Public Corp. was granted a monopoly and made into a public corporation in order to ensure rational and efficient management.

(b) Advanced foreign technologies for telecommunications were actively introduced and gradually shifted over to domestic production. In addition, NTT Public Corp. developed its own technologies.

(c) Specialized training organizations were established to develop personnel resources and to retrain employees.

(d) NTT Public Corp. succeeded in management rationalization projects. When conversion was made to automatic exchange, NTT Public Corp. shifted manual-exchange operators to other positions.

(e) To ensure sufficient funds for the expanding telecommunications facilities and equipments, NTT Public Corp. applied fiscal investment and loans, and established a subscriber telecommunications bond system based on the "Law Concerning Provisional Measures for Expanding Telecommunications Facilities." (This law was abolished on March 31, 1983 on the grounds that a system had been put in place in order to meet the demands for telephones.)

(f) In addition to the factors peculiar to Japan's telegraph and telephone business, there have been strong effects of the steady growth of the Japanese economy.

As a result, the number of telephone subscribers increased to 57.60 million by March 1993, which was 46.5 subscribers per 100 Japanese.

Table Outline of the New System

Type of Business / Item	Type I Telecommunications Business	Type II Telecommunications Business	
		Special Type II	General Type II
Definition	Business that provides telecommunications services by establishing its own telecommunications circuits and facilities.	Telecommunications business other than that described as Type I telecommunications business.	
		① Type II telecommunications business that provides telecommunications facilities for an unspecified number of general subscribers, and having a scale of facilities that exceeds the minimum standard prescribed by Administrative Ordinance (500 circuits for 1,200 bps conversion). ② Type II telecommunications business that provides telecommunications facilities for communications with locations outside Japan using other companies' communications facilities.	Type II telecommunications business other than that described as Special Type II telecommunications business.
Condition for Entry	Permission	Registration	Notification

	(Major Stipulations)
Telecommunications Fundamental Laws	
• Wire Telecommunications Law (1/8/53)	Standards for the setting up and operation of wire telecommunications facilities
• Radio Law (1/6/50)	Standards for the setting up and operation of radio telecommunications facilities
Telecommunications Business Operation Laws	
• Telecommunications Business Law (1/4/85)	Conditions related to the offering of telecommunications services by telecommunications operators
• Law Concerning Wire Broadcasting Telephone Business (1/8/57)	Conditions related to the offering of wire broadcasting telephone business
• Broadcast Law (1/6/50)	Conditions related to the offering of broadcasting services
• Cable Television Broadcast Law (1/1/73)	Conditions related to the offering of cable television services
• Law to Regulate Operation of the Cable Sound Broadcasting Service (10/4/51)	Conditions related to the offering of cable sound broadcasting services
Telecommunications Industrial Organizations Laws	
• NTT Corporation Law (1/4/85)	Objectives, etc., for NTT
• KDD Co., Ltd. Law (10/9/52)	Objectives, etc., for KDD
• Broadcast Law (1/6/50)	Objectives, organization, etc., for NHK
• University of the Air Foundation Law (11/6/81)	Objectives, organization, etc., for the University of the Air Foundation
• Telecommunications Satellite Corporation Law (1/7/79)	Objectives, organization, etc., for TSCJ
• National Space Development Agency Law (23/6/69)	Objectives, organization, etc. for the National Space Development Agency
Telecommunications Administration System Laws	
• MPT Foundation Law (1/6/49)	Duties, power and organization of the Ministry of Posts and Telecommunications
Telecommunications-Related Treaties	
• International Telecommunication Convention (17/6/75)	Objectives, organization, etc., for ITU
• Constitution of the Asia-Pacific Telecommunity (25/2/79)	Objectives, organization, etc., for APT
• Agreement Relating to the International Telecommunications Satellite Organization (INTELSAT)	Objectives, organization, etc., for INTELSAT
• Convention on the International Maritime Satellite Organization (INMARSAT)	Objectives, organization, etc., for INMARSAT

(Note) Dates in parentheses indicate date of enactment, or effective date in Japan. (date/month/year)

Fig. Laws Governing Japan's Telecommunications System

Table Principal Communications Carriers

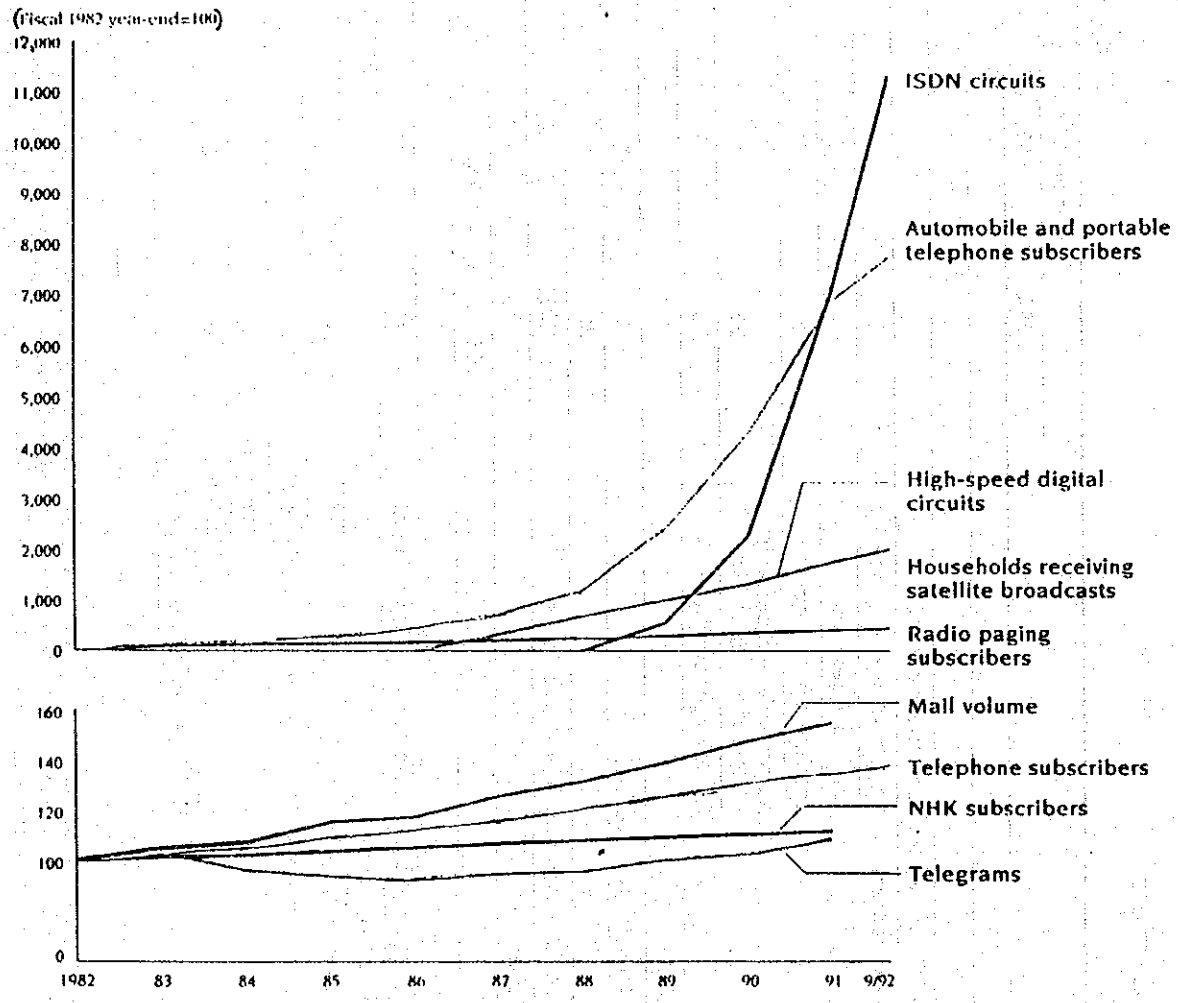
(Fiscal year-end)

Categories				Number of carriers 1992	1991	Change
Telecommunications carriers						
	Domestic Type I	NTT		1	1	–
		NTT mobile communications network		1	0	+1
		New carriers	Long-distance relay operators	3	3	–
			Regional operators	8	7	+1
			Satellite systems operators	3	3	–
			Automobile and portable telephone operators	25	17	+8
			Radio pager operators	36	36	–
	International Type I	KDD		1	1	–
		New carriers (NCCs)		2	2	–
	Total			80	70	+10
	Type II	Special (international VAN providers)		36 (25)	36 (25)	– (–)
		General		1,143	1,000	+143
	Total			1,179(1,166)	1,036(1,023)	+143 (+143)
Broadcasters	Terrestrial broadcasting	NHK		1	1	–
		Commercial broadcasters, University of the Air		181	177	+4
	Satellite broadcasting (excluding NHK)					
		BS broadcasters		2	2	–
		CS broadcasters	Program supplying broadcasters			
			Television	6	6	–
			Sound	6	6	–
			Facility supplying broadcasters	2	1	+1
Postal services				1	1	–

Source: MPT

Note: The total number of Type II carriers does not reflect the sum of special and general carriers because some carriers are counted as both general and special Type II carriers. Such carriers are currently designated special carriers because they provide international VAN services; they are also in the process of applying for general Type I status, and so are counted as such even though they have not met the legal requirements for this designation. Values in parentheses eliminate the overlap that results from counting certain carriers twice.

Figure Domestic Communications Trends

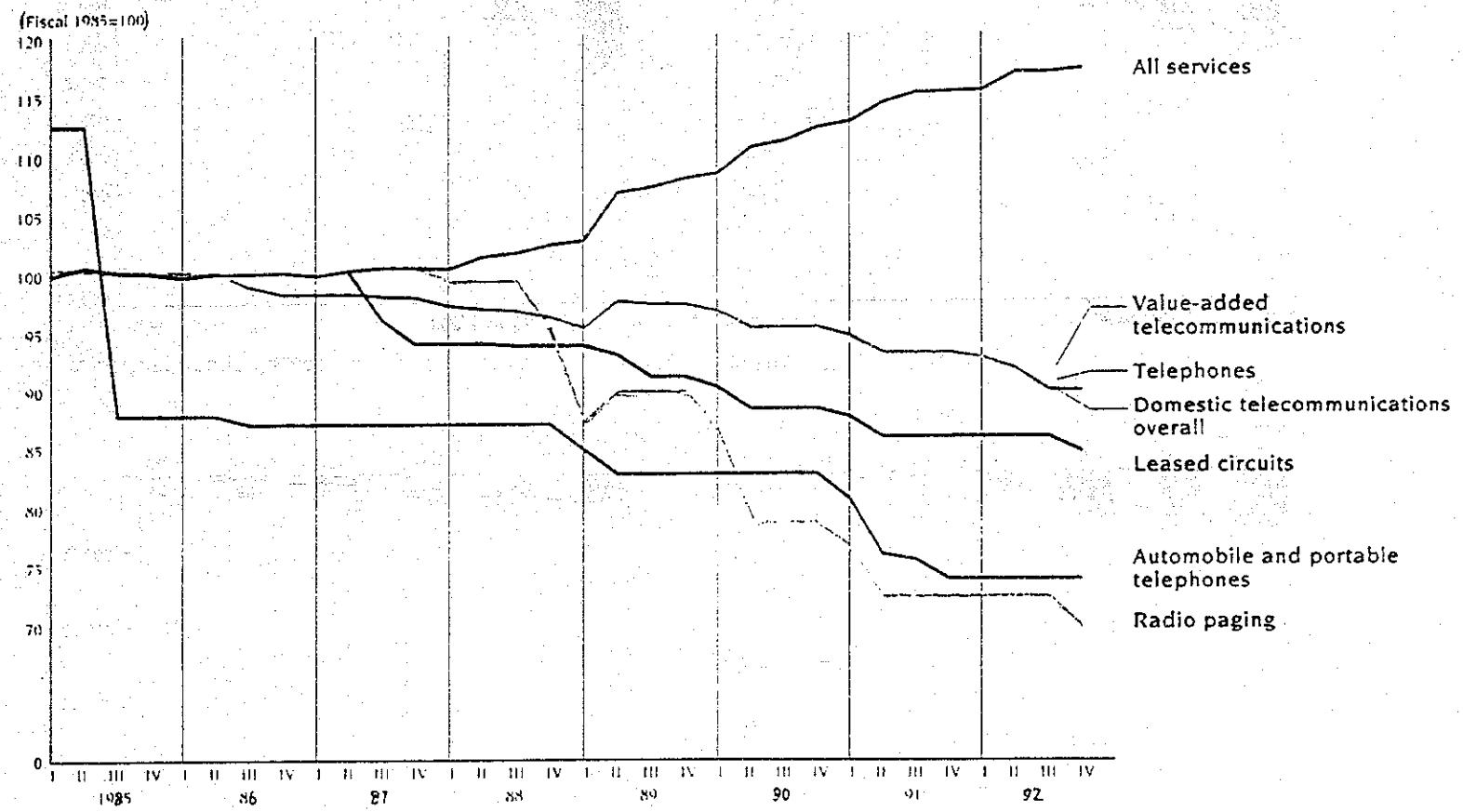


Source: MPT

Notes: 1. The reference base of 100 is assigned to the following fiscal year-ends for the following services: number of high-speed digital circuits, 1985; number of households receiving satellite broadcasts, 1987; number of ISDN circuits, 1988.

2. The number of ISDN circuits is that of basic interface (INS Net 64) subscribers.

Figure Price Indexes of Domestic Communications Services Provided to Corporations



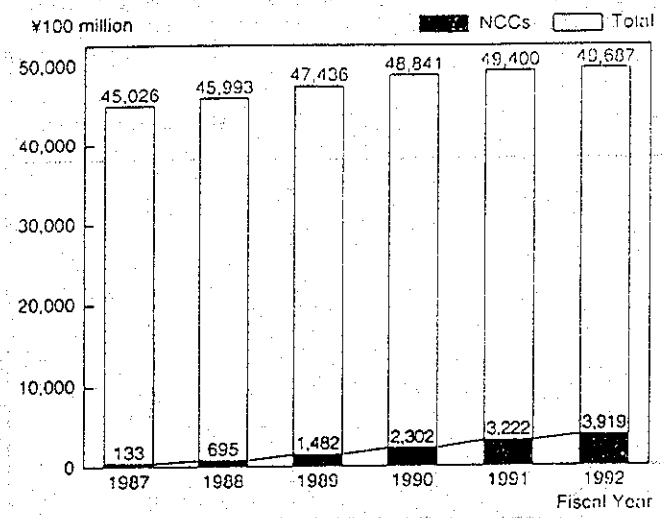
Source: Bank of Japan

Notes: 1. The Roman numerals I, II, III, and IV indicate January-March, April-June, July-September, and October-December, respectively.

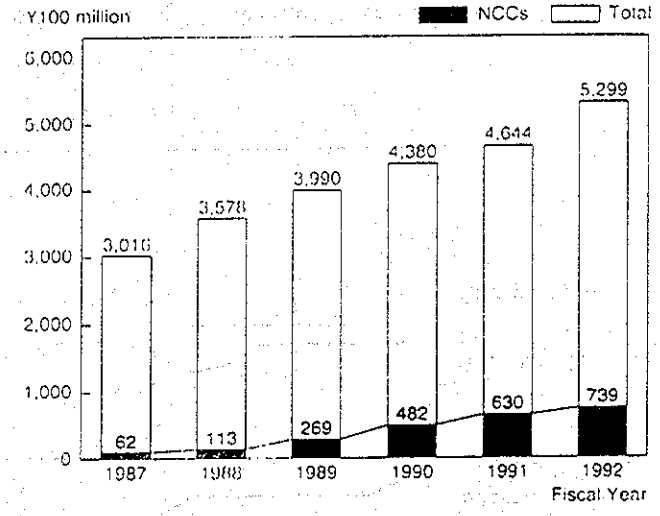
2. Value-added services include packet switching, circuit resale, electronic mail, and facsimile communications.

◆Fig. Changes in Shares of NTT and NCCs in Domestic Telecommunications Markets

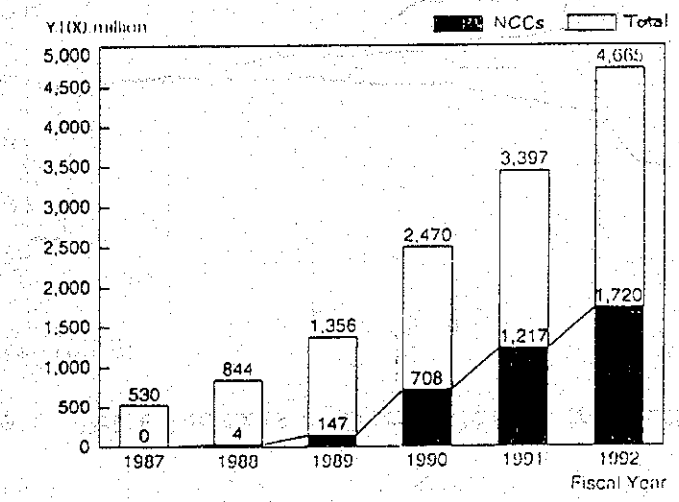
a) Telephone Service



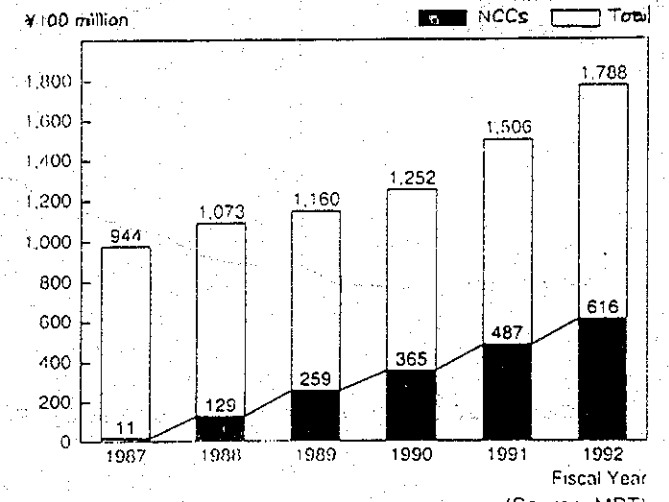
b) Leased-circuit Service



c) Cellular Phone Service

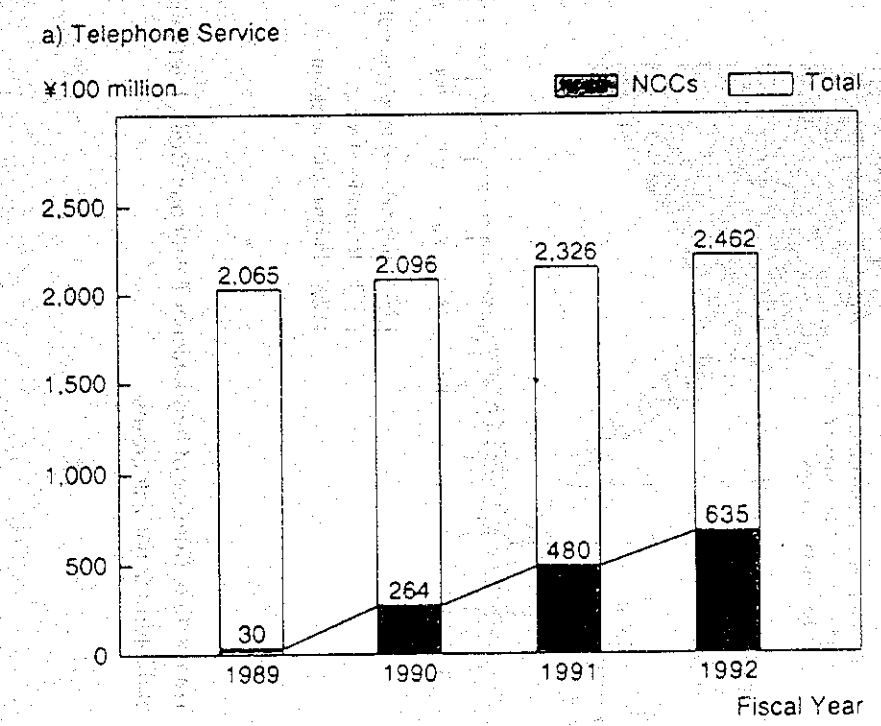


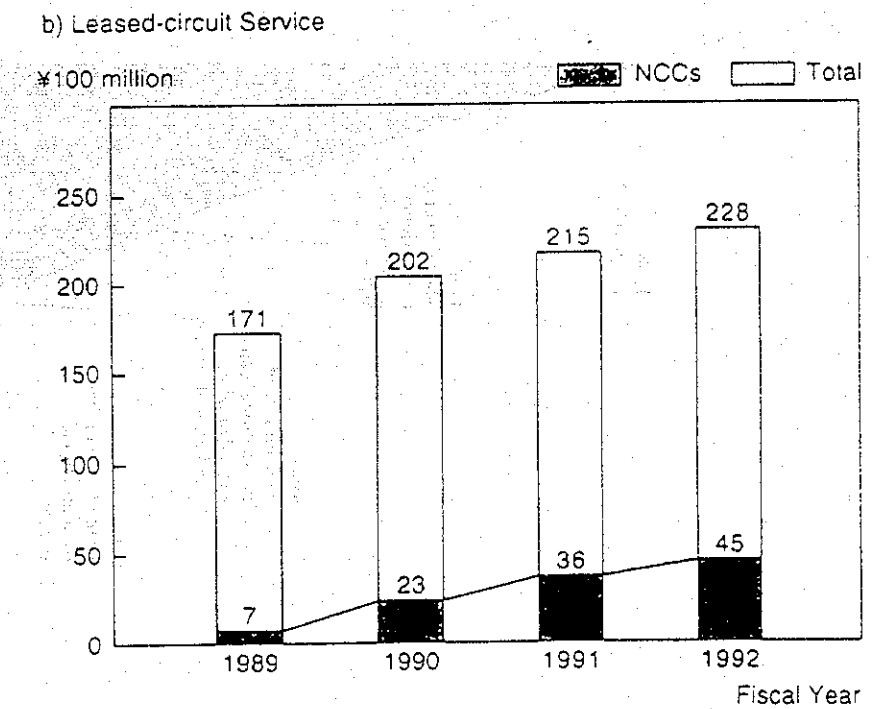
d) Radio Paging Service



(Source: MPT)

◆Fig. Changes in Shares of KDD and NCCs in International Telecommunications Markets





(Source: MPT)

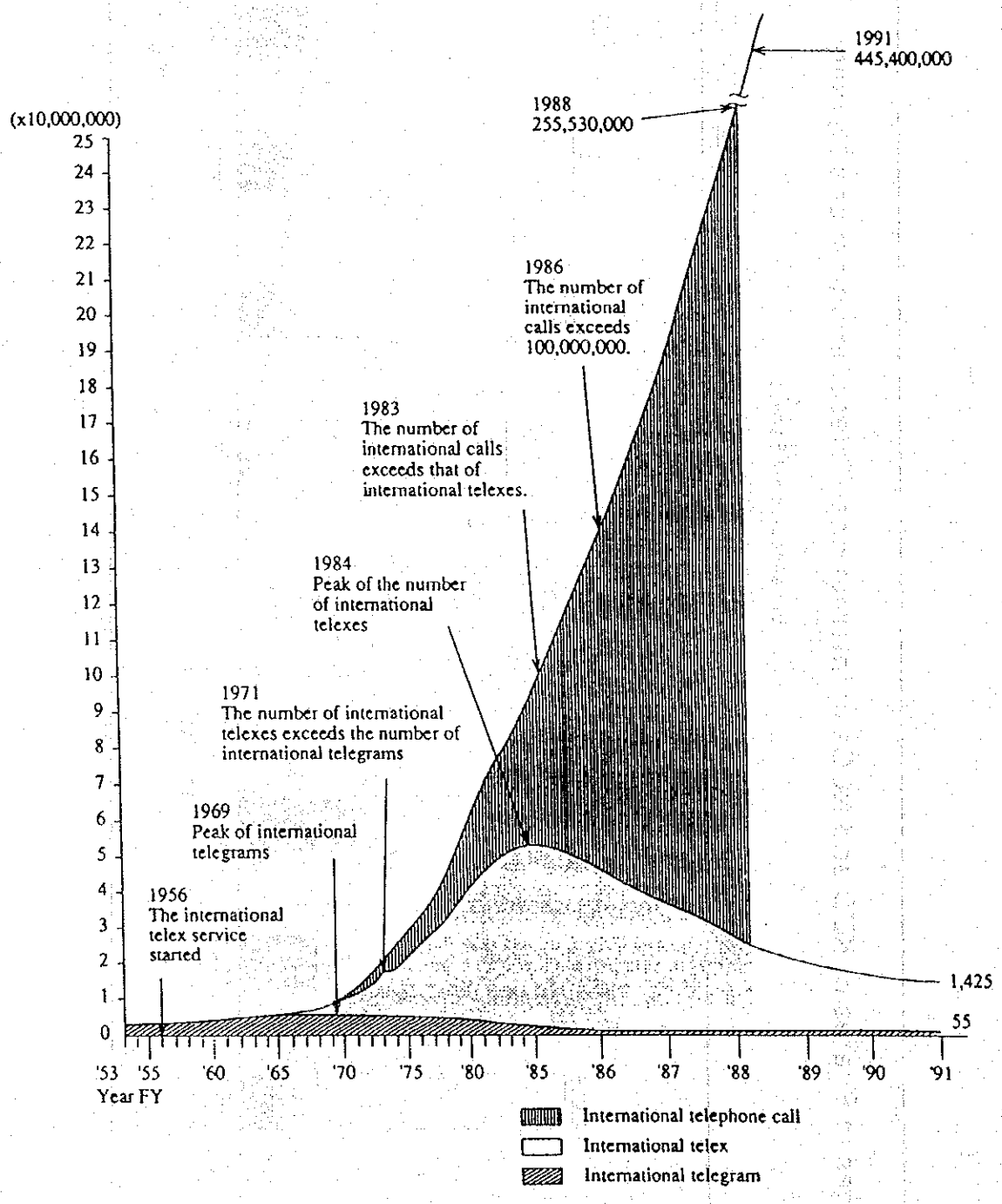


Fig. Transition of Number of International Telephone Calls, International Telex, and International Telegrams

◆Table Outline of Governmental Measures

Governmental Measures on NTT's Status, and the Situation Regarding Implementation of the Measures

1. Promotion of Fair and Effective Competition

a) Thorough Implementation of an Independent Division System
b) Facilitation of Interconnection
c) Securing Openness in Networks
d) Prevention of Cross-subsidization
e) Prevention of Information Abuse
f) Positive Disclosure of Information
g) Dissemination of R&D Results
h) Fostering Mobile Communications Business
i) Promoting Sales of Terminal Equipment
j) Advancing Satellite Communications Business
k) Earlier Completion of Digitization
l) Refining the Numbering Plan
m) Preparing Policies on Reviewing Message Areas (MAs)
n) Introduction of Discount Rates Applicable to Telecommunications Carriers

2. Improvement of NTT Management

a) Announcement of Rationalization plan
b) Rationalization of Repair and Maintenance Sections
c) Return of Profits to Stockholders
d) Furthering Deregulation

3. The Status of NTT in the Future regarding the Promotion of Fair and Effective Competition and the Improvement of Management Efficiency

Taking into account the results of the measures to be taken according to items 2. and 3. above, the government shall review the status of NTT and draw a conclusion in FY 1995.

4. Promotion of R&D

5. Implementation of Security and Reliability of Telecommunications

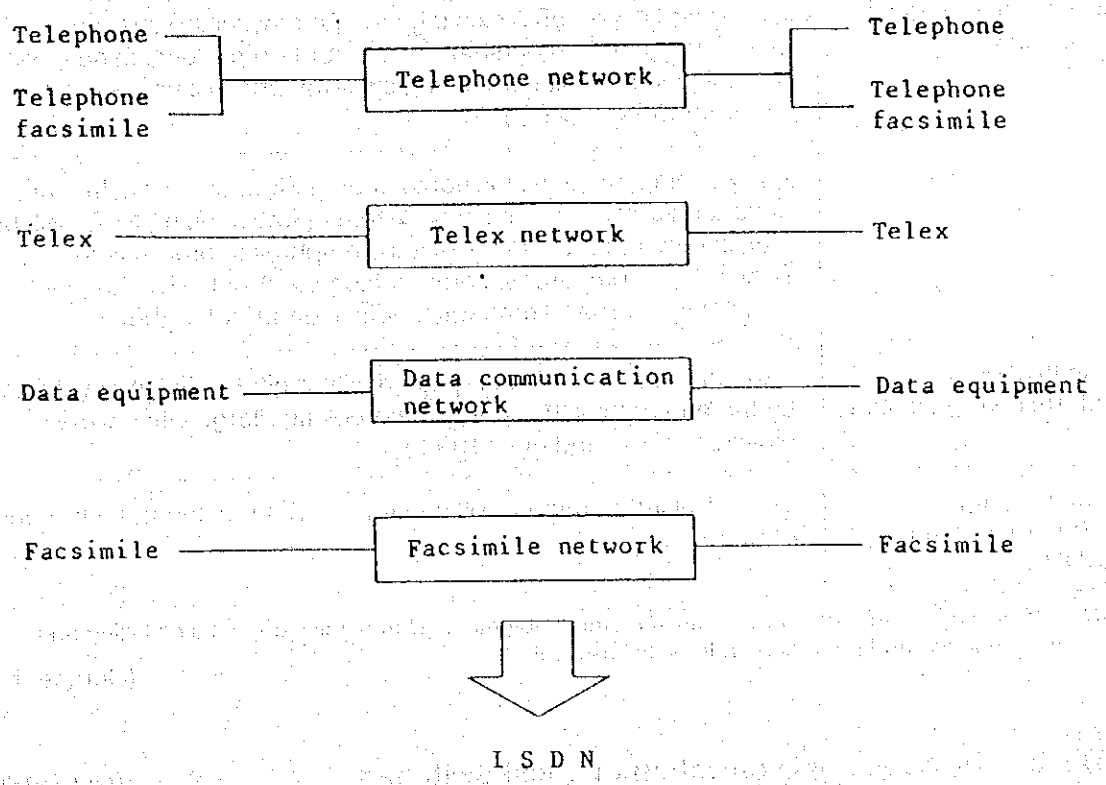
6. Steady Implementation of Measures

(Source: MPT)

Table Communications Satellites of Japan

ITEM	CS-3	JCSAT	SUPERBIRD	N-STAR
Operator	NTT etc.	JCSAT	S C C	N T T
Launch Dates	1988.2.19 (CS-3a) 1988.9.16 (CS-3b)	1989.3.7 (JCSAT-1) 1990.1.1 (JCSAT-2)	1992. 12.2 (SUPERBIRD-A) 1992.2.27 (SUPERBIRD-B)	1995 (*) (N-STAR a) 1995 (*) (N-STAR b)
Weights	Approx. 550 kg	Approx. 1340 kg	Approx. 1660 kg (A) 1550 kg (B)	Approx. 2000 kg
Lifetime	7 years	10 years	13 years (A) 10 years (B)	10 years
Transponders per Satellites	Ka band : 10 C band : 2	Ku band : 32	Ka band : 3 Ku band : 23	Ka band : 11 Ku band : 8 C band : 6 S band : 1
Users	NTT etc.	• Broadcasting companies • Circuits-Resale companies • Distributors of CATV programs etc.		N T T
Purposes	• For domestic public communications system • For communications when emergency disasters occur • For communications with solitary islands etc.	• Satellite news gathering • T.V. conference • Study and internal training by video • Broadcasting events • Distribution of CATV programs • Transmmission of voice and data etc.		•To succeed the service of the CS-3 •For mobile satellite communications etc.

(*) scheduled



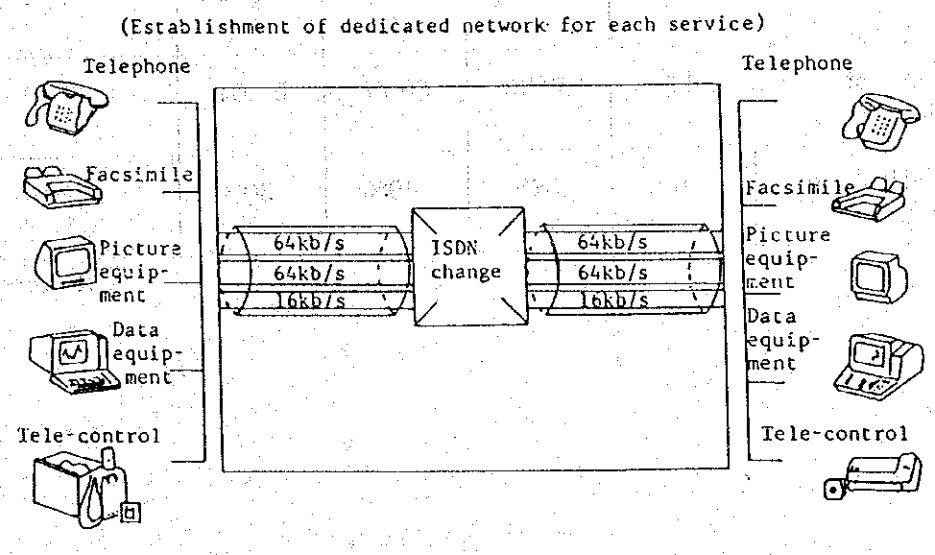


Fig. Comparison of ISDN with Current Type of Telecommunications Networks

◆Table NTT's Digitization Program

Activity	Digitization Project
Digitization of local switches	By the end of FY 1994, existing crossbar switching systems, including those in mountain villages and on remote islands, will be replaced by digital switching systems and will use Stored Program Control (SPC).
	All switching systems, including analog electronic switches and advanced crossbar switching systems (AXSs) using SPC, will be digitized by the end of FY 1997. To emphasize progress in services in urban areas, some analog electronic switches remaining in urban areas will be digitized prior to others.
Digitization of interexchange circuits	Tandem switches will be replaced with digital switching systems by the end of FY 1995. (Circuits connecting large cities were digitized by the end of FY 1992.)
Establishing infrastructure for ISDN	The ISDN infrastructure will cover the whole of Japan by the end of FY 1995.

Note: A switching system using SPC can implement automatic ID transmission, detailed billing and maintenance and operation under software control.

(Source: NTT)

◆Table Progress of Digitization of Local Switches (Unit: million)

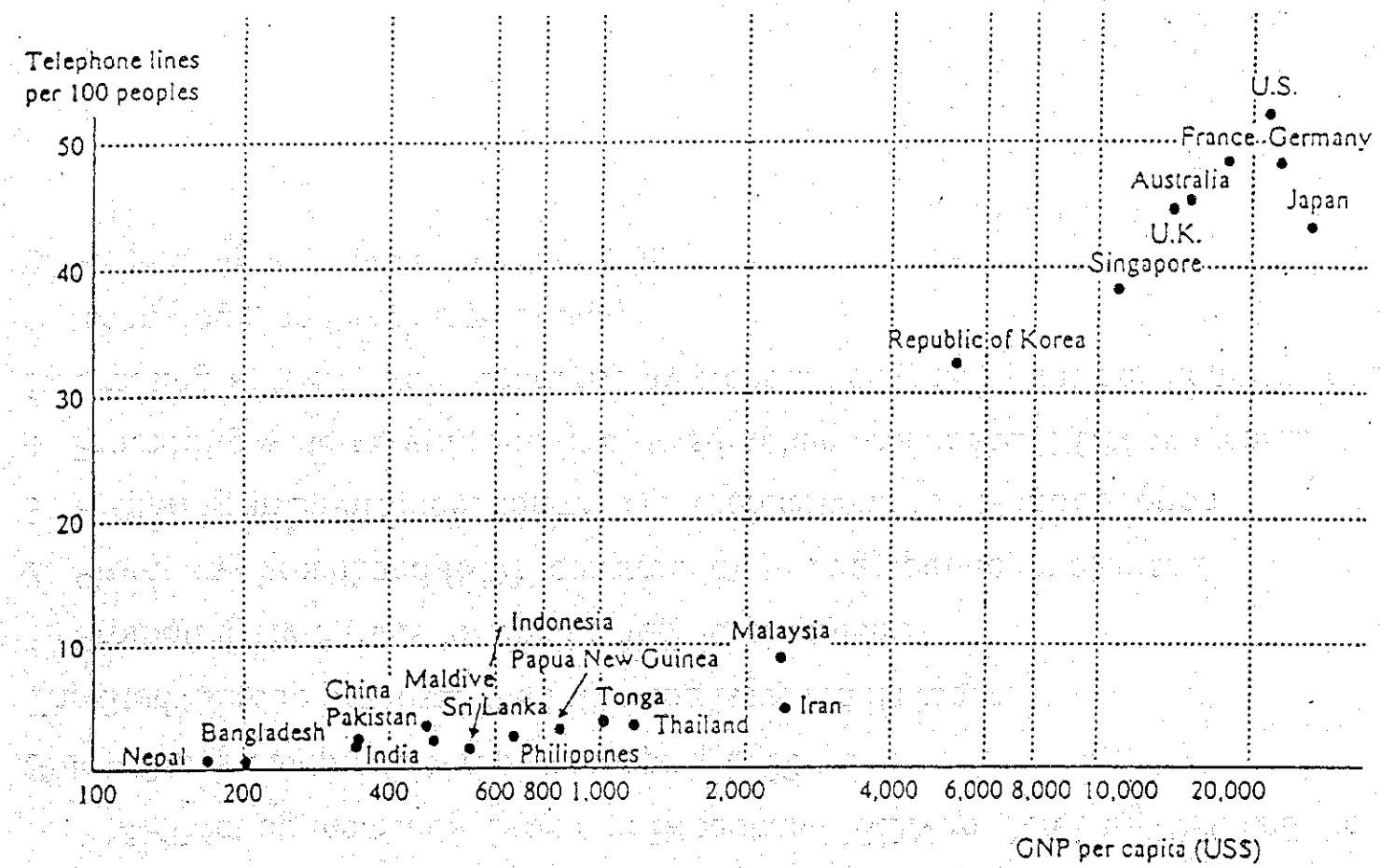
Fiscal Year	1990	1991	1992	1993	1994 (planned)
Number of digital terminals	15.74	22.82	29.52	36.96	44.60
Total number of terminals	58.93	58.93	60.77	62.01	62.70
Ratio of digitization	28%	39%	49%	60%	71%

(Source: NTT)

MPT set up the Study Group on Broadband ISDN in October, 1990 and the Study Group compiled its report in April, 1992.

The Study Group proposed the following issues in its report.

1. Promoting field trials for application development.
2. Promoting broadband ISDN construction through public investment.
3. Preparing an enviroment conductive to broadband ISDN introduction.
4. Promoting wide-ranging activities to stimulate broadband ISDN awareness.
5. Creating a "field" for generating awareness activities, joint development of technology, and exchange of data.
6. Promoting international cooperation.



Source: PECC Triple-T Integration Research, Fukuoka International Conference, July 1992.
However, the sources for countries and statistical data above originate from the Study Committee.

Figure Relationship between the density of telephone lines and per capita GNP in countries

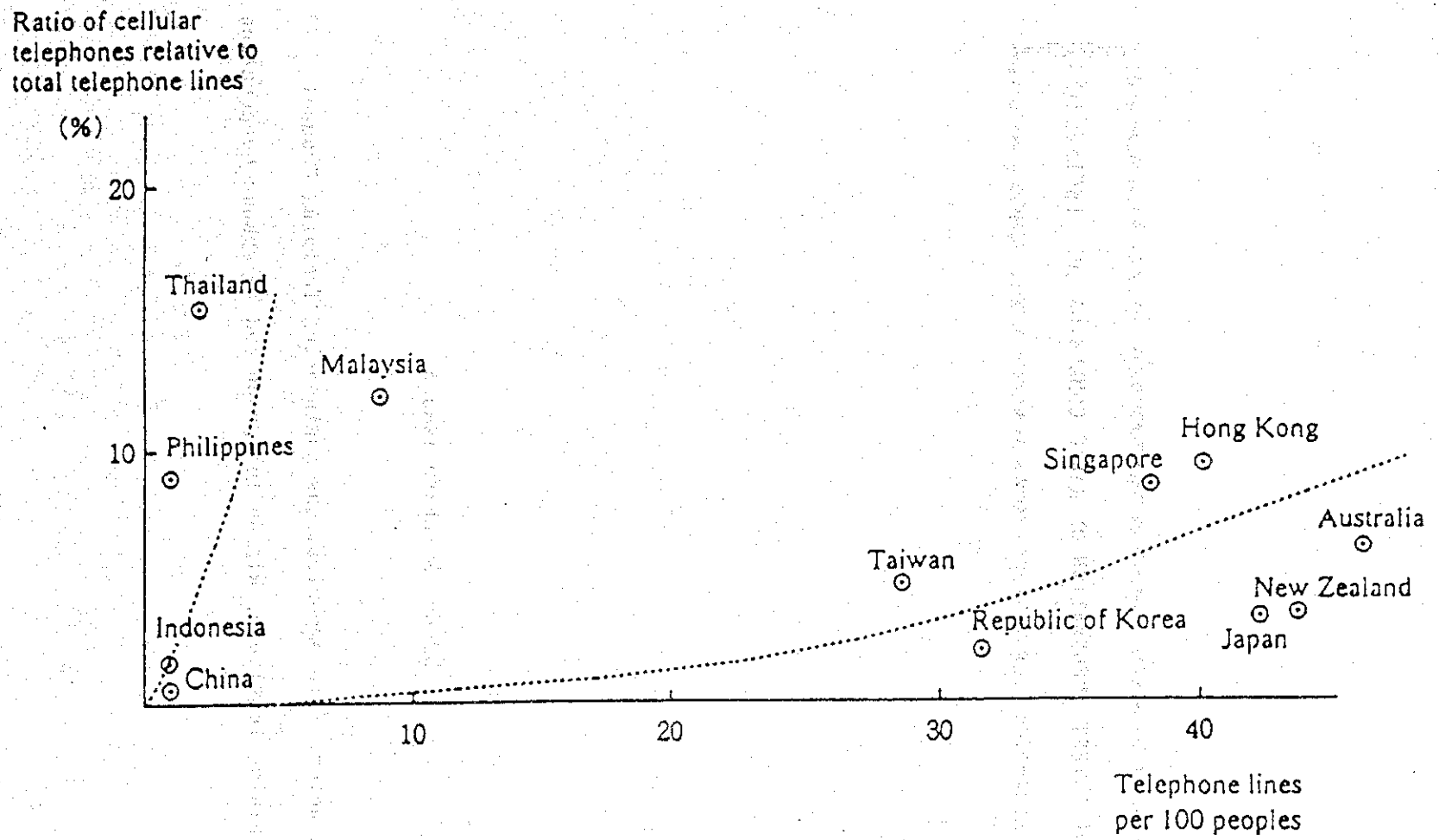


Figure Density of cellular telephones in Asia and Pacific area countries

（３）無線通信技術最新情報

THE LATEST INFORMATION ON RADIO COMMUNICATION ENGINEERING

by Mr. Masaharu Tamura

Instructor, Telecommunications Engineering Training Group-1

Suzuka Training Institute, Nippon Telegraph and Telephone Corporation

NTT's Telecommunications Services

Telephon Services

- Telephone subscriber service
- Public telephone service
- Mobile Services
- PHS Services

Leased Circuit Services

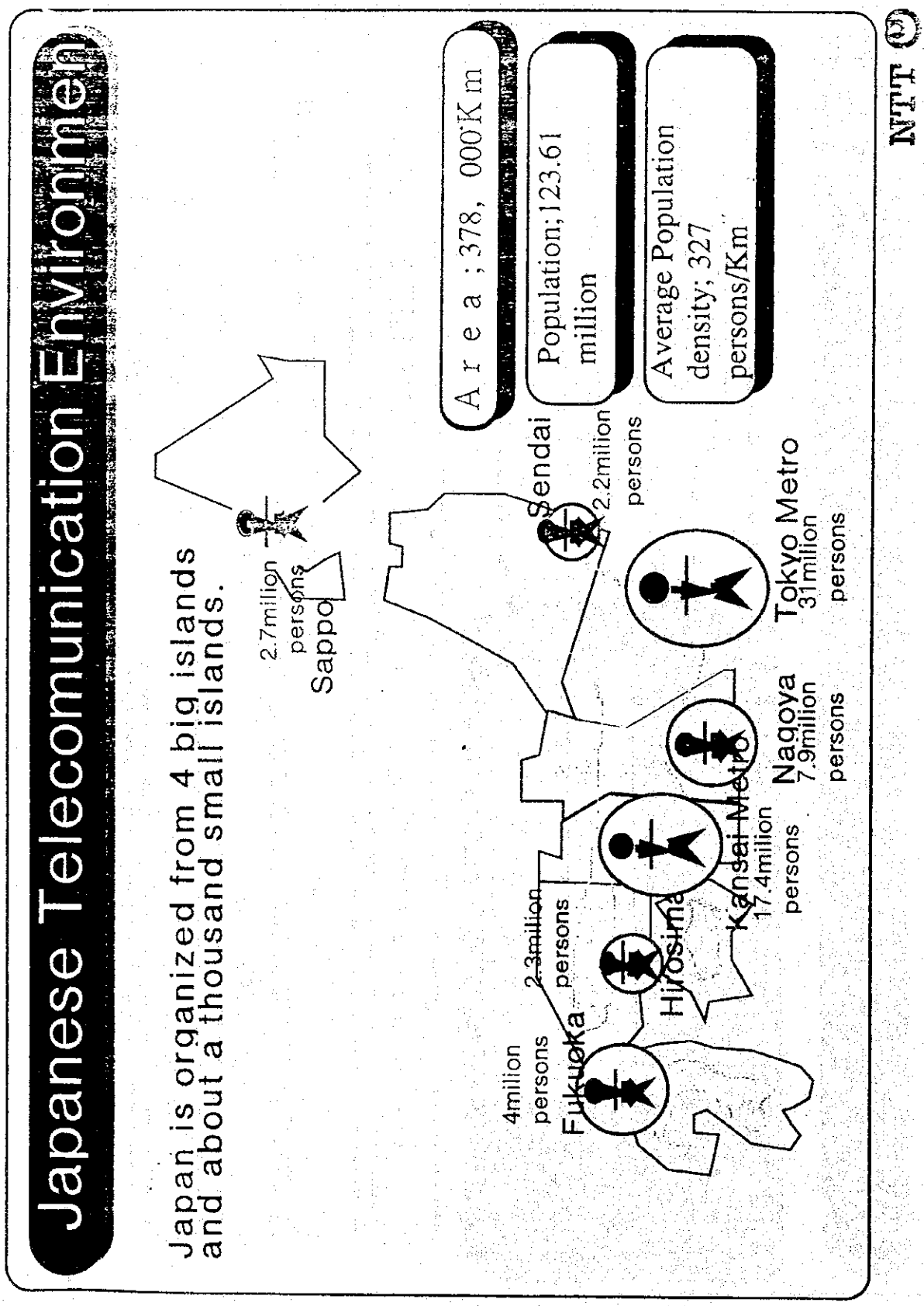
- Conventional services
- High speed digital services
- Video transmission services
- Satellite communiation services

- Digital data exchange Services
- Pocket Pager Services
- Telex Services
- Telegram Services
- Data Communications Services

- ISDN (INS NET64,1500)
- Visual Communication Services

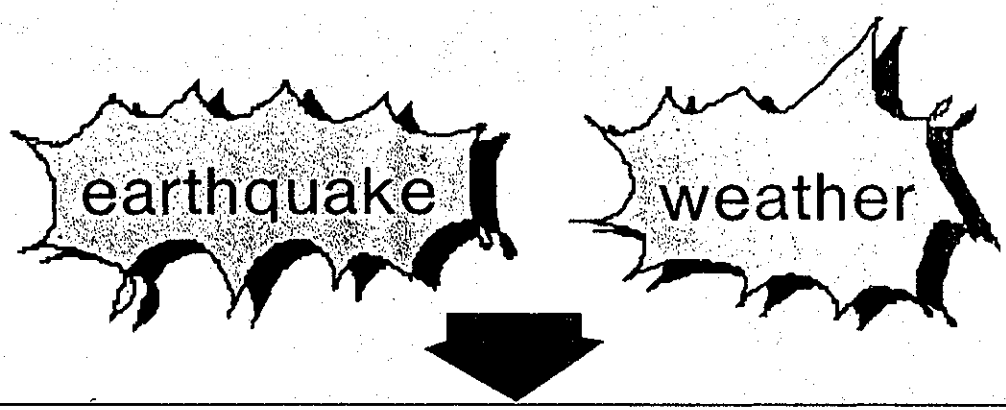
Net work Services

NTT


Japanese Telecomunication Environment
Japan is organized from 4 big islands and about a thousand small islands.
Area ; 378, 000Km
Population;123.61 million
Average Population density; 327 persons/Km
2.7milion persons
Sappo
Sendai
2.2milion persons
Tokyo Metro
31milion persons
Nagoya
7.9milion persons
Kansai Metro
17.4milion persons
Hiroshima
2.3milion persons
Fukuoka
4milion persons
NTT

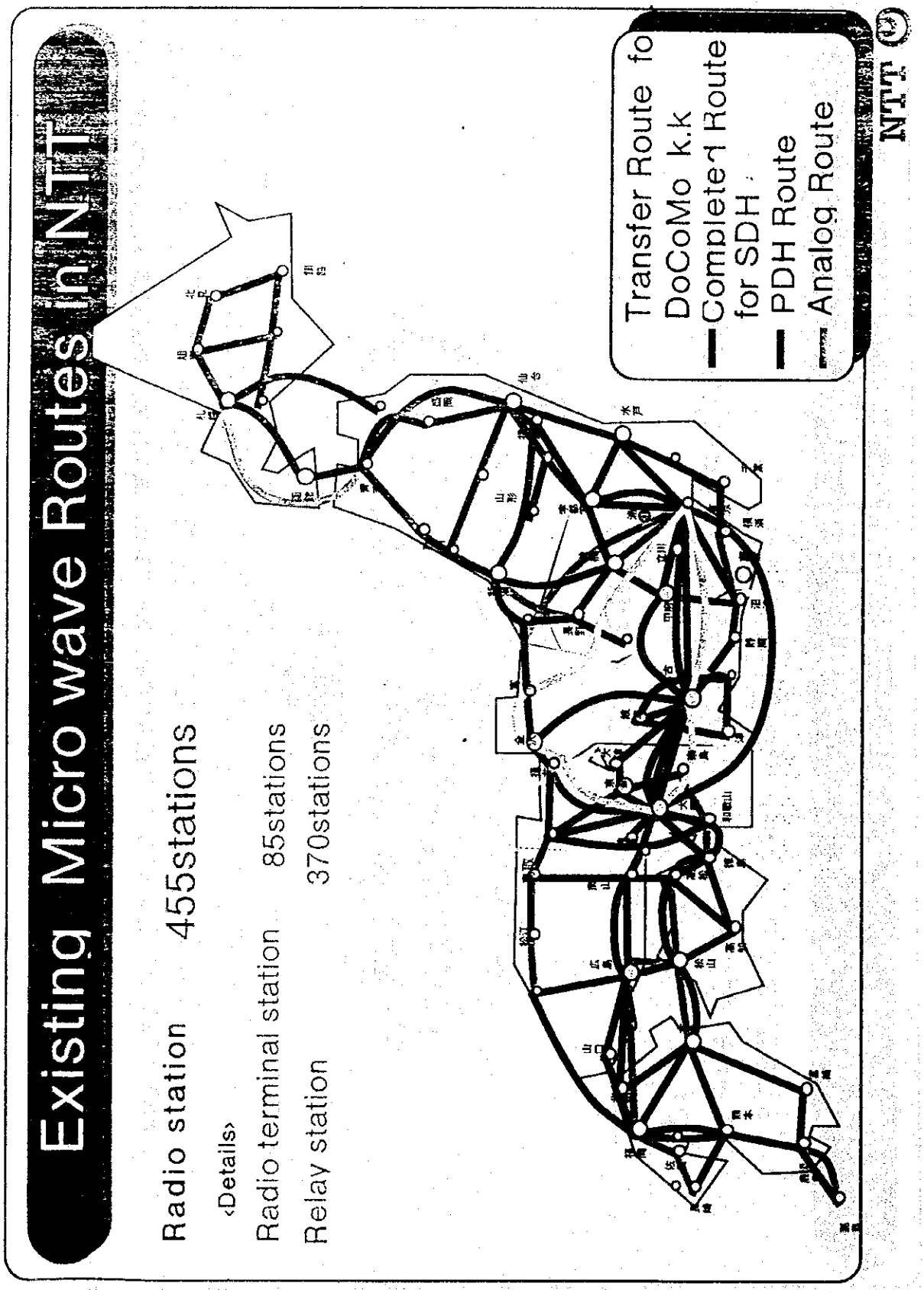
Japanese Telecomunication Environment(2)

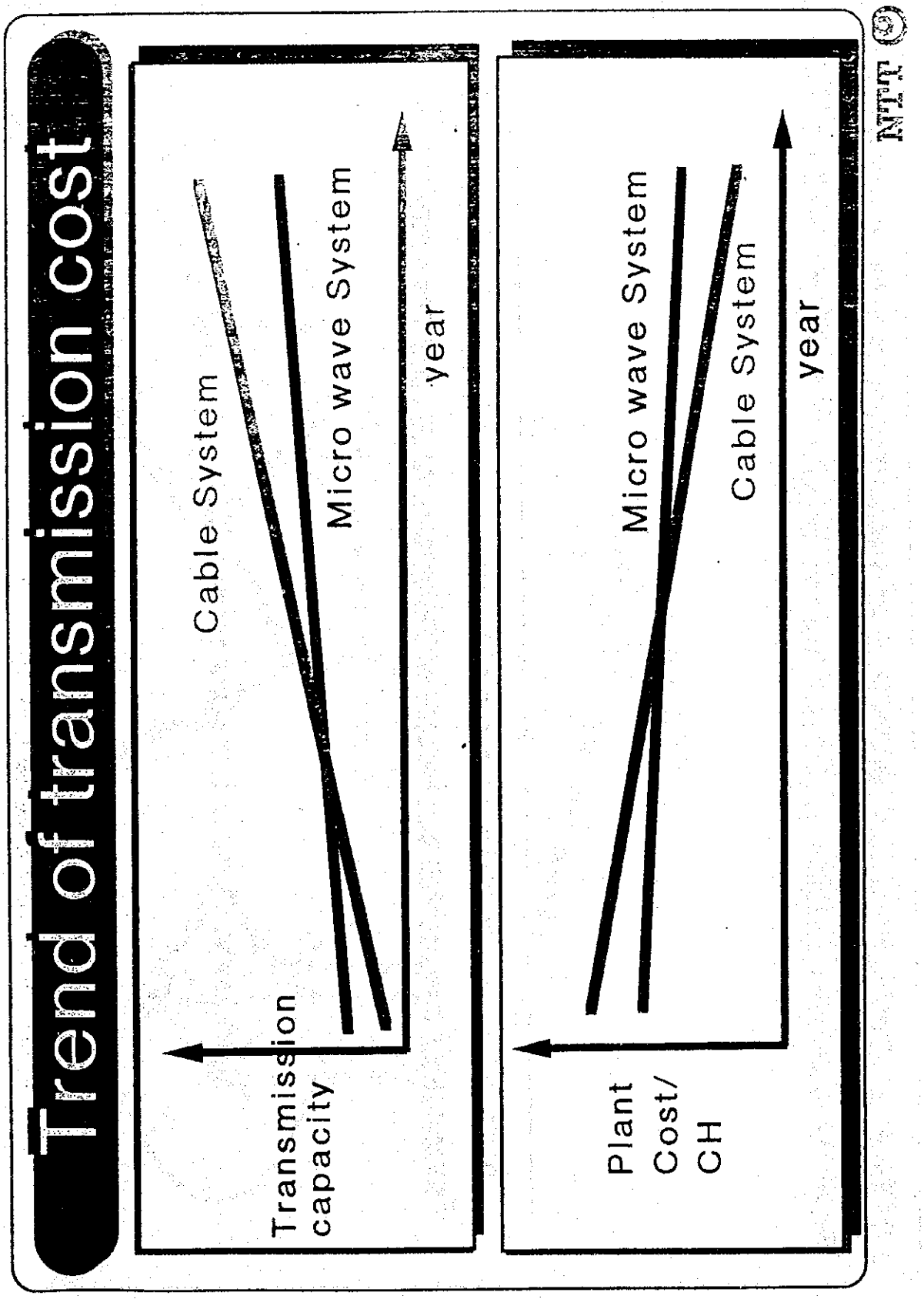
- Japan is on a continental plate.
  There are many volcanoes,and earthquakes occur frequently.
- Japan is on the typhoon route.

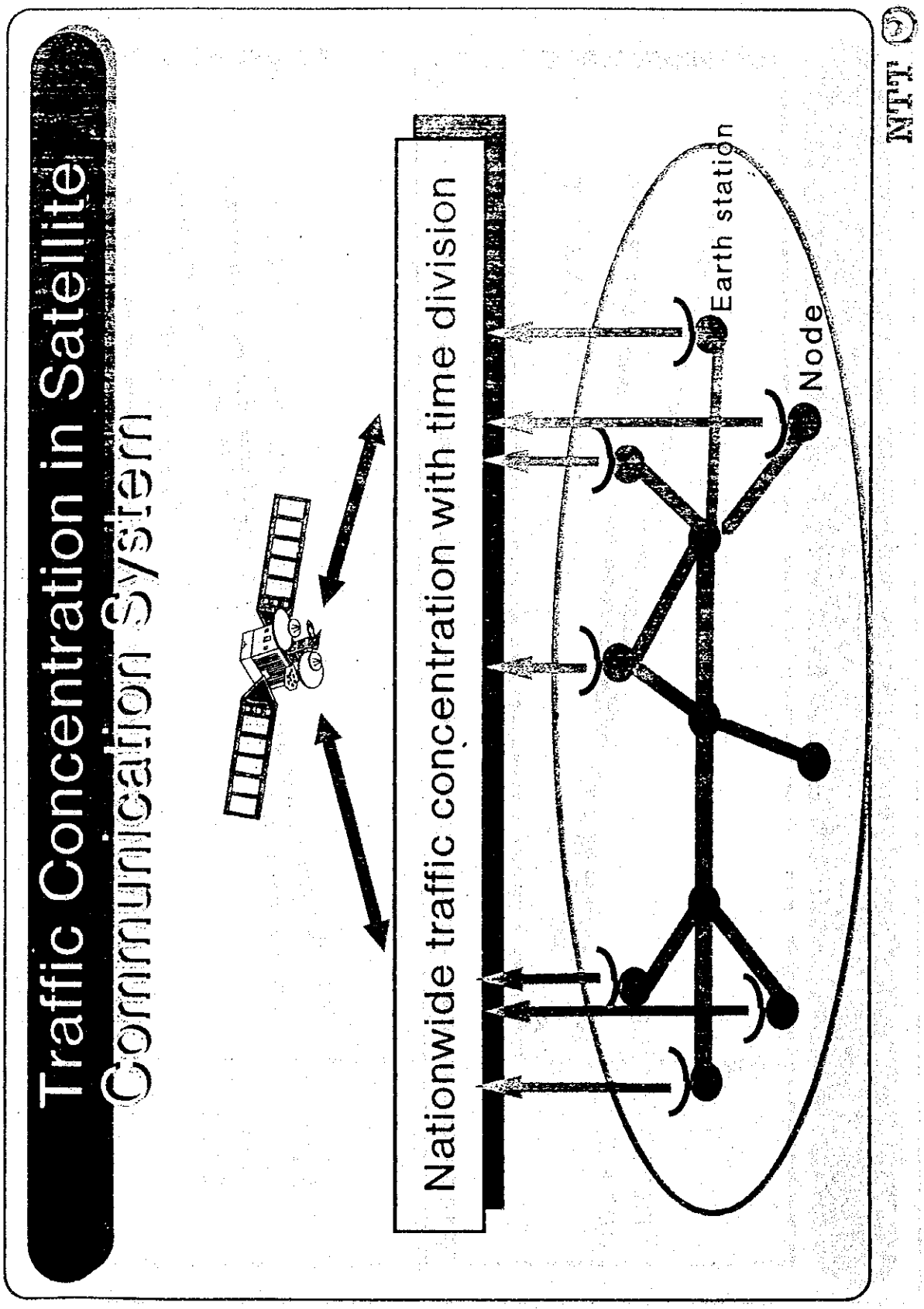


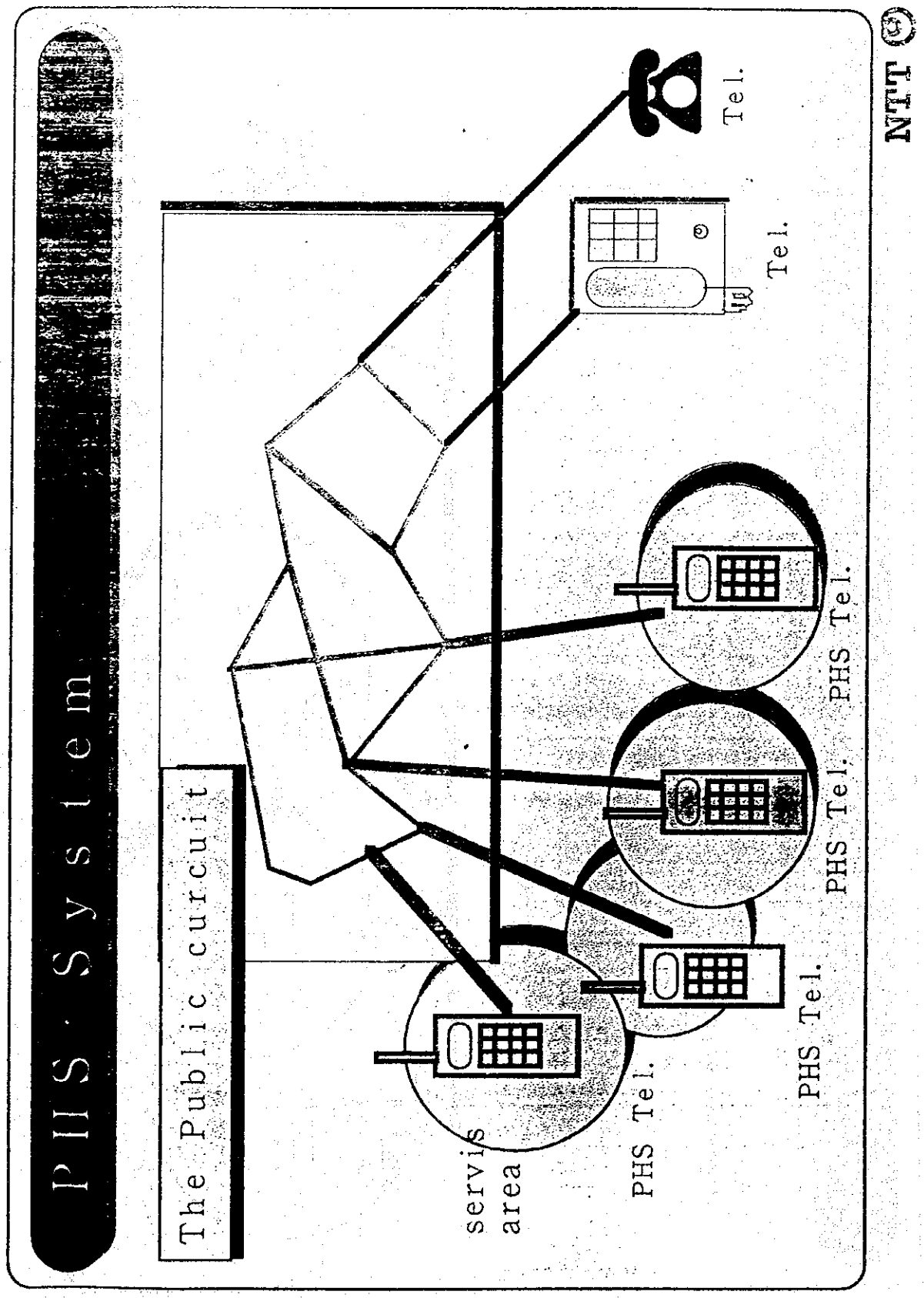
- All cables are accomodated to Conduit line
- Maintaining of reliability by microwave and satelite

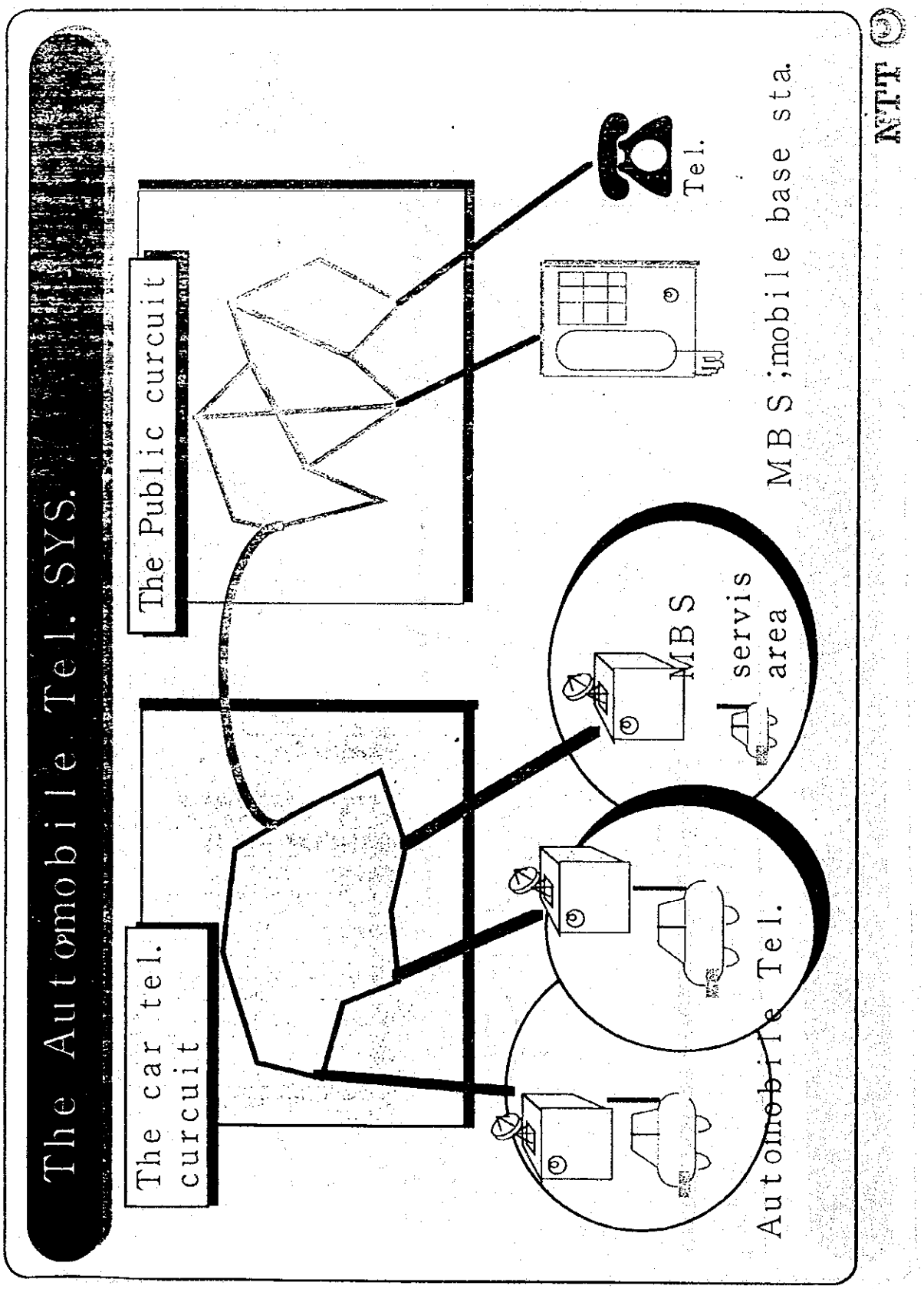
NTT ©


Existing Micro wave Routes in NTT
Radio station 455stations
‹Details›
Radio terminal station 85stations
Relay station 370stations
Transfer Route fo
DoCoMo k.k
Completed Route
for SDH
PDH Route
Analog Route
NTT


Trend of transmission cost
Transmission capacity
Cable System
Micro wave System
year
Plant Cost/ CH
Micro wave System
Cable System
year
NTT


Traffic Concentration in Satellite
Communication System
Nationwide traffic concentration with time division
Earth station
Node
NTT

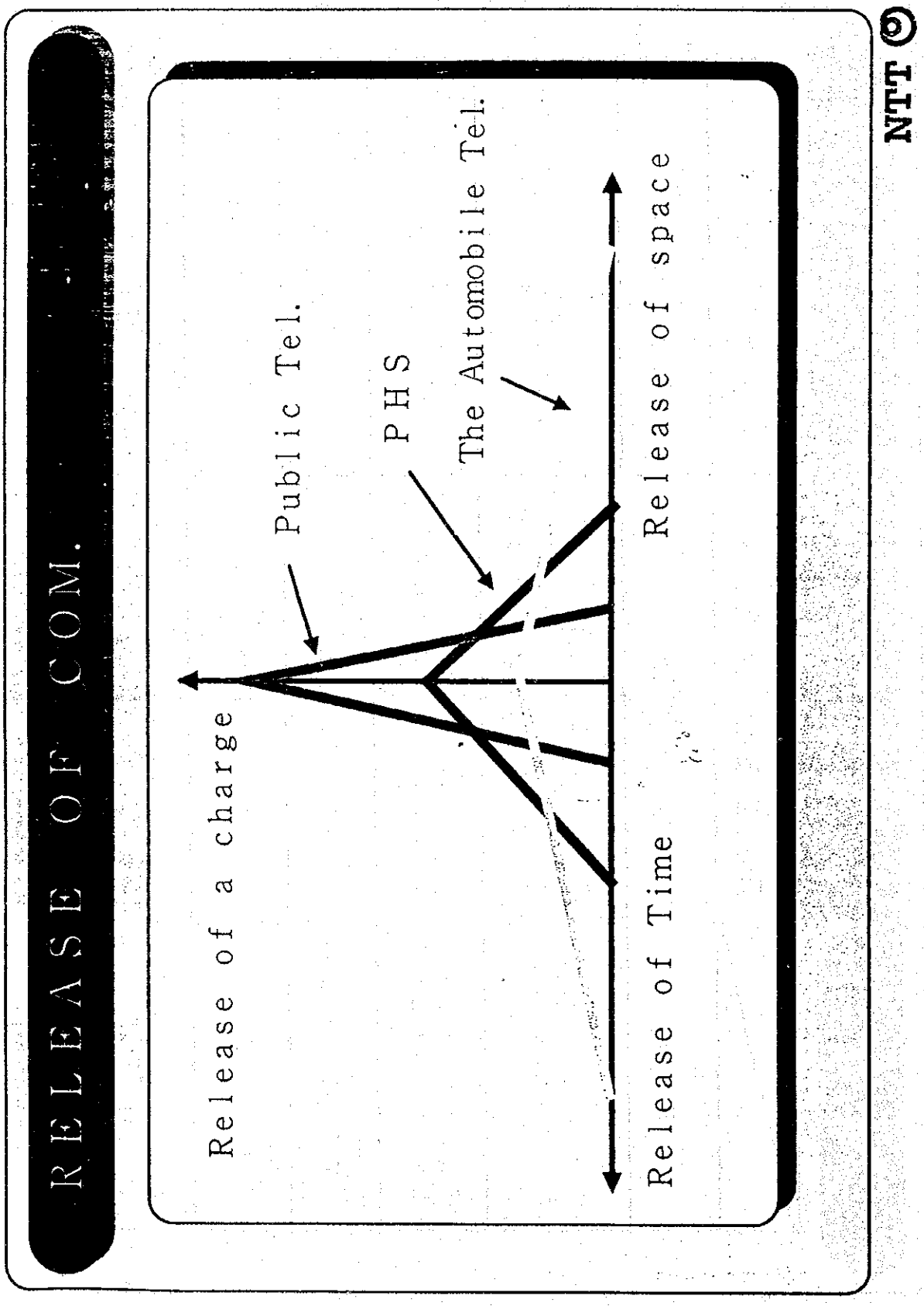

PHS System
The Public curcuit
Tel.
Tel.
PHS Tel.
PHS Tel.
PHS Tel.
PHS Tel.
servis area
NTT

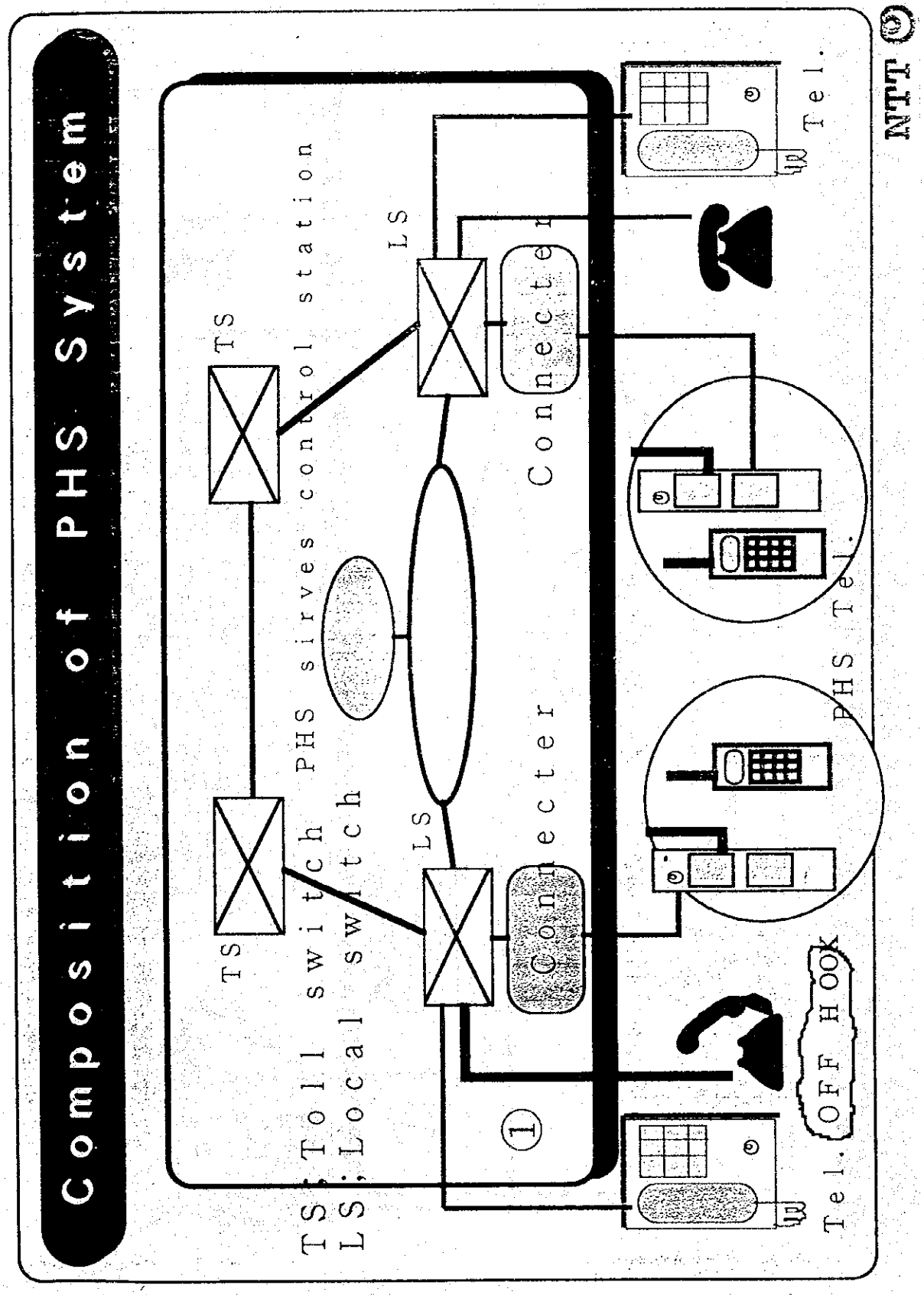

The Automobile Tel. SYS.
The Public curcuit
The car tel. curcuit
Tel.
MBS ;mobile base sta.
MBS
servis area
Automobile Tel.
NTT

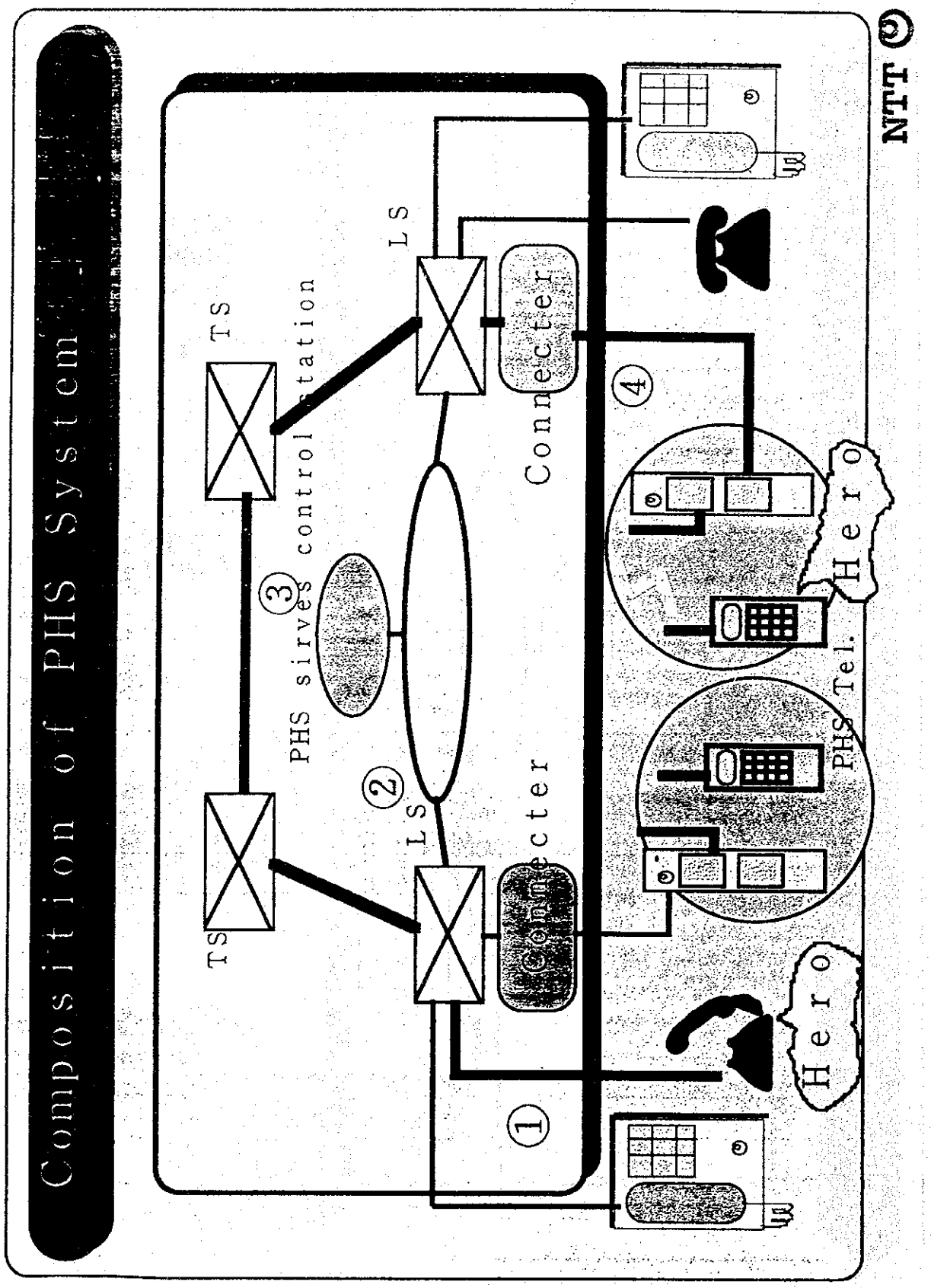
The difference

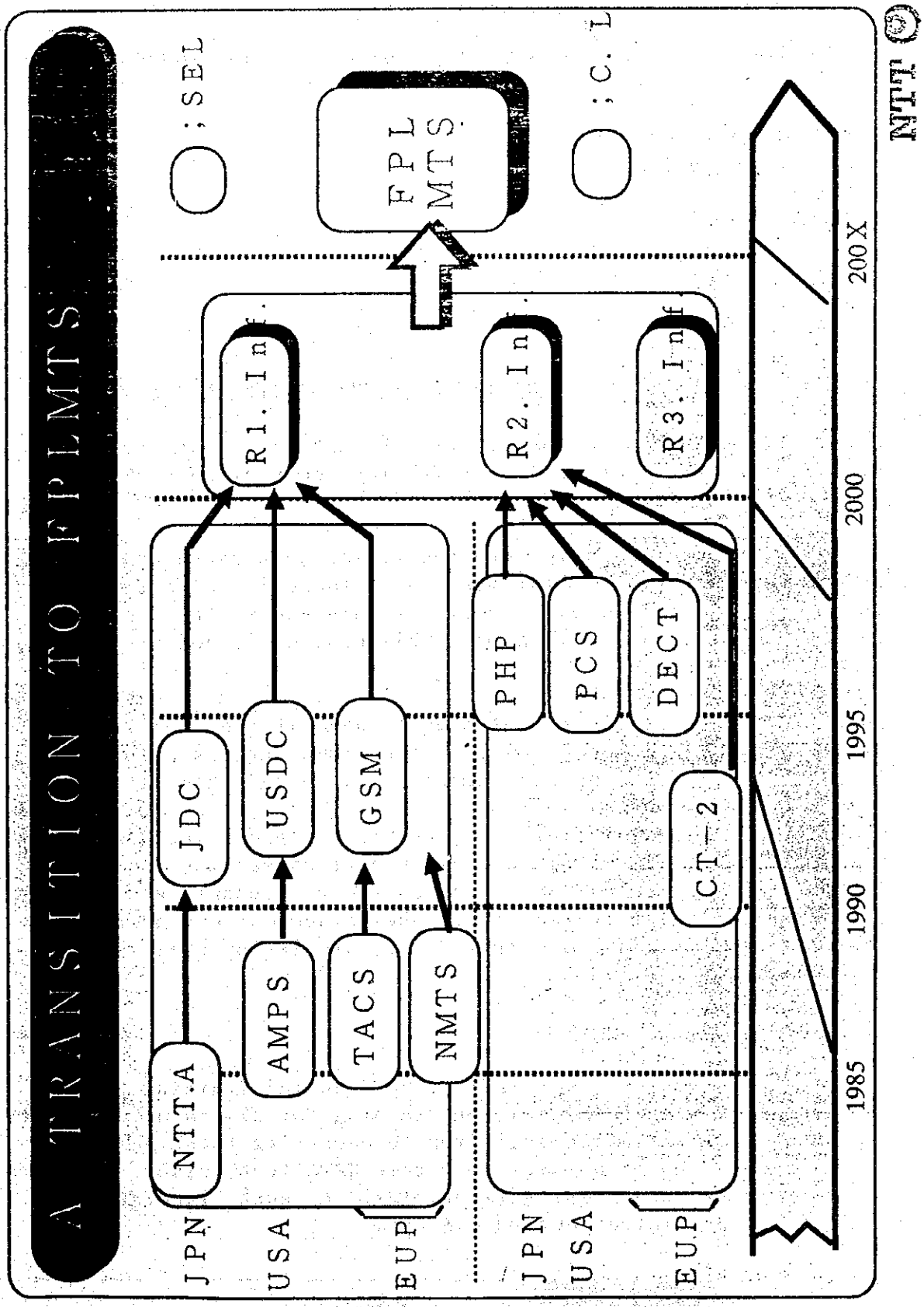
	The Automobile Tel. SYS	PHS SYS.
Area	1.5～3 Km	100～200m
Composition of curcuit	City of all and other area	Inside a city
Speed of hand over	100Km/h orver	About 10Km/h
Frequency	800MHz, 1.5GHz	1.9GHz
Power	About 100mW～5W	10mW～500mW
MBS Capa.	1800 l	10 l

NTT


RELEASE OF COM.
Release of a charge
Public Tel.
PHS
The Automobile Tel.
Release of Time
Release of space
NTT


Composition of PHS System
NTT
TS
TS
LS
LS
PHS sirves control station
Connecter
Connecter
Tel.
PHS Tel.
Tel.
OFF HOOK
TS:Toll switch
LS:Local switch


Composition of PHS System
NTT
TS
TS
LS
LS
PHS sirves control station
Connecter
Connecter
①
②
③
④
Hero
Hero
PHS Tel.


A TRANSITION TO FPLMTS
NTT
JPN
USA
EUP
NTT.A
AMPS
TACS
NMTS
JDC
USDC
GSM
R1. Inf.
FPL
MTS
:SEL
JPN
USA
EUP
CT-2
DECT
PCS
PHP
R2. In
R3. Inf
:C. L
1985
1990
1995
2000
200X

KCCT
KENYA COLLEGE OF COMMUNICATIONS TECHNOLOGY

3．持ち帰り資料

（1）ケニア郵電公社・ケニア通信技術大学からの要望書　　6th October, 1994.

Resident Representative
JICA (Kenya Office)
P O Box 50572
NAIROBI

Dear Sir,

PROPOSAL FOR TECHNICAL ASSISTANCE BY THE GOVERNMENT OF JAPAN

Currently the Japanese Government, through JICA, has undertaken a project to enable the college establish Computer Based Training (CBT) for the courses offered.

So far two lecturers have received training in Japan and more are expected to undergo similar training. In addition to training, the project entails provision of hardware and software necessary for implementation of the same. This project is now at the commissioning stage.

Further, the College has continued to benefit from the regular JICA group training programme in telecommunications. The College is most grateful to the Government of Japan for this assistance.

However, as a young College responsible for providing quality training and education to telecommunications service providers (KP & TC and registered vendors), engineers, technicians and fresh high school leavers, we list below some of our needs in order of priority and hope that due consideration shall be given to proposals.

1. LABORATORY EQUIPMENT

Our predecessor the former KPTC's Central Training School (CTS) laid much emphasis on training for skills development. Much less attention was given to educating fresh school leavers, who were later to become KPTC technicians, on basic electrical engineering principles. As such, laboratories were non-existent during CTS days.

a Loreshe
P.O. Box 42408
Nairobi, Kenya.
Tel: 562404

The College, however, having recognized the importance of a solid background in the theory and practice of electrical engineering to the future telecommunications technician, embarked on work to establish the said laboratories. At the moment, construction of four laboratories is in progress. These are expected to be ready towards the end of November, 1994.

In addition in February/March 1993, we carried out a study on the required laboratory equipment and contacted several suppliers for quotations. Appendix I shows a list of the equipment that are needed. The Appendix also gives the requirements according to priority. The costs given were valid in February/March 1993 and were derived from quotations received from American, Italian, South African, Japanese and British suppliers.

2. EXTENSION FOR CBT PROJECT

The CBT project mentioned earlier provides for one file server, twenty one (21) stations, associated computer projection equipment and accessories. This shall be sufficient for one classroom. Considering that the College conducts about two hundred courses every year and that KPTC's demand for training far-exceeds our current facilities and resources, we plan to introduce comprehensive computer based training and distant learning methods.

We therefore propose that JICA extends the current CBT project to include at least two additional classrooms. Appendix II shows equipment required for two additional classrooms. These details are derived from those in the current project.

3. FIBRE OPTIC TRANSMISSION SYSTEM AND CARRIER TERMINAL

Fibre optic transmission is steadily being introduced within KPTC and large organizations with heavy telecommunications traffic requirements within their networks. Though the college has one JICA - trained lecturer in fibre optics transmission, we are not able to conduct any course due to lack of training equipment. We propose that JICA extends its assistance in this important technology. The costs of providing the necessary training equipment is shown in Appendix III and are based on quotations provided by NEC (of Japan) to the college in the late 1992.

4. DOMESTIC SATELLITE SYSTEM

We conduct two training courses every year on satellite communications. However, most of the training is theoretical as we do not have training equipment for practicals. As we expect our trainees to work on live equipment without too much guidance upon graduating, we consider our courses as incomplete. Trainees are usually attached to Longonot Earth Station mostly for observation rather than practical training.

This is because actual and beneficial practicals cannot be carried out on equipment carrying live traffic.

It is in view of this that the College would greatly appreciate assistance in provision for a Domestic Satellite System as detailed in Appendix IV. Again the costs given are derived from a proposal by NEC in late 1992.

5. LIBRARY SERVICES

The library has a stock of 6,000 books out of which 594 comprise the reference collection. Most of the books are old and contain information that has been superceded by technology. This is especially true for books on telecommunications and electrical engineering.

In order for the college to offer quality training in the area of telecommunications, deliberate efforts have to be made to re-stock the library with text books that reflect current technology. Further, subscription to authoritative technical journals is necessary to keep lecturers in pace with current technology.

Other areas that the library services is in dire need of is reference training aids in the form of audio/visual cassettes, computer diskettes, electronic indexes and a microfiche facility.

JICA assistance in these areas would be most welcome.

6 STAFF DEVELOPMENT

As given in the opening statements KCCT has benefitted from regular JICA group training programmes. We however feel it is appropriate to mention areas where our lecturers need further training. Such areas include training on external line plant, network planning, postal services and new telecommunications techniques like ATM, optical fibre transmission, mobile radio communications, satellite communications and data communication networks.

Further, JICA could explore the possibility of assisting the college in academic courses for our lecturers. Most of our lecturers never attained university education and are more adept in skill-development programmes.

In order to raise the standard of the college in terms of manpower, the lecturers need academic upgrading in order to understand and teach the new telecommunication techniques outlined above.

In this respect we would welcome assistance enabling our lecturers attain university education either in Japanese institutions or elsewhere.

This proposal is submitted with humility and much appreciation of your efforts to assist us in the field of human resource development in the communications sector of Kenya.

We thank you very much for your continued support and assistance.

Yours faithfully,

J.T. Rotich
DIRECTOR/KCCT

APPENDIX 1

TELECOMMUNICATIONS, ELECTRONICS AND POWER SYSTEMS LABORATORY EQUIPMENT

PRIORITY I.

ITEM	DESCRIPTION	QTY	EACH	COST (US $) TOTAL
1.	Analog Multimeter	30	100	3000
2.	Oscilloscope	30	903	27100
3.	Function Generator	30	500	15000
4.	RF Signal Generator	30	310	9300
5.	D.C. Power Supply (Variable)	30	406	12200
6.	D.C. Power Supply (Stabilised)	30	116	3480
7.	Frequency Counter	15	880	13200
8.	Analog Circuits	30	396	11880
9.	Digital Circuits	30	561	16830
	Sub-Total (FoB)			111,990
	Add 10% Contingencies			11,199
	Add 10% Insurance & Freight			11,199
	Plus Rounding			612
	TOTAL			135,000

PRIORITY 2

ITEM	DESCRIPTION	QTY	EACH	COST (US $) TOTAL
1.	Digital Multimeter	30	149	4470
2.	Avometer	10	580	5800
3.	Curve Tracer	30	213	6400
4.	Digital Techniques (Trainer)	30	780	23400
5.	Analog Communications (Trainer)	15	1380	20700
6.	Transmission Line (Trainer)	15	1455	21825
7.	Heavy Current Lab.	10	9900	99000
8.	Opto Electronics Kit	30	630	18900
	Sub-Total(FoB)			200495
	Add 10% Contingencies			220050
	Add 10% Insurance & Freight			20050
	Plus Rounding			405
	TOTAL			241000

PRIORITY 3

ITEM	DESCRIPTION	QTY	EACH	COST (US $) TOTAL
1.	Microprocessor Trainer	15	486	7290
2.	Digital Communications Trainer	15	3155	47325
3.	Fiber optic Trainer	3	45216	135650
4.	Telephony System Trainer	15	3740	56100
5.	Microwave communications	15	5350	80250
6.	Antenna Systems Trainer	15	6920	34600
7.	Heavy Current Modular Lab.	3	55049	165147
	Sub-Total (FoB)			526362
	Add 10% Contingencies			52637
	Add 10% Insurance & Freight			52637
	Plus Rounding			364
	TOTAL			632000

APPENDIX 2

LIST OF EQUIPMENT, SOFTWARE AND ACCESSORIES FOR CBT EXTENSION.

		UNITS
1.	File Server	2
2.	Workstation	42
3.	1.25MB, 5.25" External FOD	4
4.	Image Colour Scanner	2
5.	Mouse	4
6.	Local Area Network Accessories	2 Lots
7.	Network Operating System	2
8.	UPS	44
9.	Applications software & Utilities	1 Lot
10.	Classroom Fittings	2 Lots
11.	Peripheral Equipment	2 Lots
12.	CBT Software	1 lot
13.	CBT Courseware	1 lot

APPENDIX 3

FIBER OPTICS TRANSMISSION SYSTEM AND CARRIER TERMINAL (MUX).

ITEM	EQUIPMENT NAME	QTY
1.	MUX Digital Converter Bay	1
2.	PCM 2M MUX Converter	1
3.	2/8/34M Digital MUX Converter	1
4.	140M Digital MUX Converter	1
5.	Light Communication Terminal	1
	(1) E/O Converter	
	(2) O/E Converter	
6.	Supervisory and Control Sub-station	1
	(1) Supervisory and Control Bay	
7.	Supervisory and Control for Local Station	1
	(1) Supervisory and Control Bay	
8.	Light Distribution Frame	1
	(1) Bay	
	(2) Optical Fiber Connection Panel	
	(3) Patch Cord (Connection)	
9.	Digital Distribution Frame	1
	(1) Distribution Panel	
10.	Maintenance Tools	1
11.	Spare Panels	1
	(1) Sub-Central Supervisory and Control Bay	1
	(2) Local Station Supervisory and Control Bay	
12.	System Manuals	1
13.	MUX Terminal for Radio	1
	(1) Slim Rack	
	(2) 2M PCM MUX	
	(3) 8M Digital MUX	
	(4) 34M Digital MUX	
	(5) Digital Distribution Frame	
	(6) Accessories	
	(7) Maintenance Tools	
	Cost (FoB) (US Dollars)	490,000
	Add 10% Contingencies	49,000
	Add 10% insurance to Freight	49,000
	TOTAL COST (US DOLLARS)	588,000

APPENDIX 4

DOMESTIC SATELLITE SYSTEM

ITEM	EQUIPMENT NAME	QTY
1.	Antenna System 4.5m - Antenna C-BAND Dual Feed Antenna Control Unit Motor Drive Control Unit	1
2.	Dehydrator Unit	1
3.	FET LNA Unit (4GHz, 55K FET LNA)	1
4.	FET PA Unit (6GHz,400W KLY HAP)	1
5.	RF Divider Unit	1
6.	FM-SCPC Equipment	1
7.	TV Receive Equipment	1
	Cost (FoB) (US DOLLARS)	660,000
	Add 10% contingencies	66,000
	Add 10% Insurance & Freight	66,000
	Total Cost (US DOLLARS)	792,000

3rd January, 1994

The Permanent Secretary,
Ministry of Transport & Communications,
P.O. Box 52692,
NAIROBI.

Att: Mr. S.W. Githaiga

RE: PROPOSAL FOR TECHNICAL ASSISTANCE BY THE GOVERNMENT OF JAPAN

Your letter Ref. No. MTC/B/17.17 Vol.IV (81) dated 22nd December, 1993 refers.

Currently the Japanese Government, through JICA, has undertaken a project to enable the College establish Computer Based Training (CBT) for the courses offered.

So far two lecturers have received training in Japan and more are expected to undergo similar training. In addition to training, the project entails provision of hardware and software necessary for implementation of the same.

Further, the College has continued to benefit from the regular JICA group training programme in telecommunications. The College is most grateful to the Government of Japan for this assistance.

However, as a young College responsible for providing quality training and education to telecommunications service providers (KP & TC and registered vendors), engineers, technicians and fresh high school leavers, we list below some of these needs in order of priority and hope that due consideration shall be given in your meeting with the delegation from Japan.

1. LABORATORY EQUIPMENT

Our predecessor the former KPTC's Central Training School (CTS) laid much emphasis on training for skills development. Much less attention was given to educating fresh school leavers, who were later to become KPTC technicians, on basic electrical engineering principles. As such, laboratories were non-existent during C.T.S. days.

The College, however, having recognized the importance of a solid background in the theory and practice of electrical engineering to the future telecommunications technician, embarked on work to establish the said laboratories. At the moment, construction of four laboratories is in progress.

These are expected to be ready towards the end of January 1994.

In addition, in February/March 1993, we carried out a study on the required laboratory equipment and contacted several suppliers for quotations. Appendix 1 shows a list of the equipment that are needed. The appendix also gives the requirements according to priority. The costs given were valid in February/March 1993 and were derived from quotations received from American, Italian, South African, Japanese and British suppliers.

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We therefore propose that JICA extends the current CBT project to include at least two additional classrooms. Appendix 2 shows equipment required for two additional classrooms. These details are derived from those in the current project. The estimated costs are available from JICA, Kenya office.

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Fiber optic transmission is steadily being introduced within KPTC and large organisations with heavy telecommunications traffic requirements within their networks. Though the College has one JICA - trained lecturer in fiber optics transmission, we are not able to conduct any course due to lack of training equipment. We propose that JICA extends its assistance in this important technology. The costs of providing the necessary training equipment is shown in Appendix 3 and are based on quotations provided by NEC (of Japan) to the College in the late 1992.

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This is because actual and beneficial practicals cannot be carried out on equipment carrying live traffic.

It is in view of this that the College would greatly appreciate assistance in provision for a Domestic Satellite System as detailed in Appendix 4. Again the costs given are derived from a proposal by NEC in late 1992.

As mentioned earlier, the four items listed form only a part of our many requirements which include library books, training aids and staff development.

For the time being, we shall welcome any assistance in the areas listed above.

D.N. KIGO
FOR: DIRECTOR

c.c. Director

c.c DD/AA

c.c. DD/F&A.