平成元年度

帰国研修員フォローアップチーム報告書

―公開技術セミナー―

(データ通信技術分野)

平成2年1月

国際協力事業団
東京国際研修センター

平 成 元 年 度

帰国研修員フォローアップチーム報告書

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序　　文

本報告書は、帰国研修員フォローアップ事業の一環として、メキシコおよびブラジルで開催したデータ通信技術分野公開技術セミナーに派遣された専門家団の帰国報告書である。

帰国研修員に対する巡回指導は、従来特定集団研修コースの帰国研修員を主として対象に実施してきたが、昭和６１年度からこれに加え、指導領域を特定分野に限定せず、これを関連分野にまで広げ、また、対象者も帰国研修員の所属先および関連機関の関係者まで含めることにより、より大きな指導効果を上げることを目的としている。

電気通信分野の公開技術セミナーは初年度の開催として、昭和６１年１２月にメキシコおよびブラジルで実施されたが、今回のセミナーではデータ通信技術分野に重点を置くこととした。

この報告書により、関係各位のさらに深いご理解をいただき、本セミナーの今後の向上改善に資することが出来れば幸いである。

最後に、本セミナー開催にあたり、多大のご協力とご尽力をいただいた外務省、郵政省、ＮＴＴ、ＮＴＴデータ、在外公館、ＪＩＣＡ帰国研修員同窓会、ＪＩＣＡ派遣専門家ならびに各国の関係機関各位に深い感謝の意を表する次第である。

平成２年１月

東京国際研修センター
所長　杉　山　亭　造

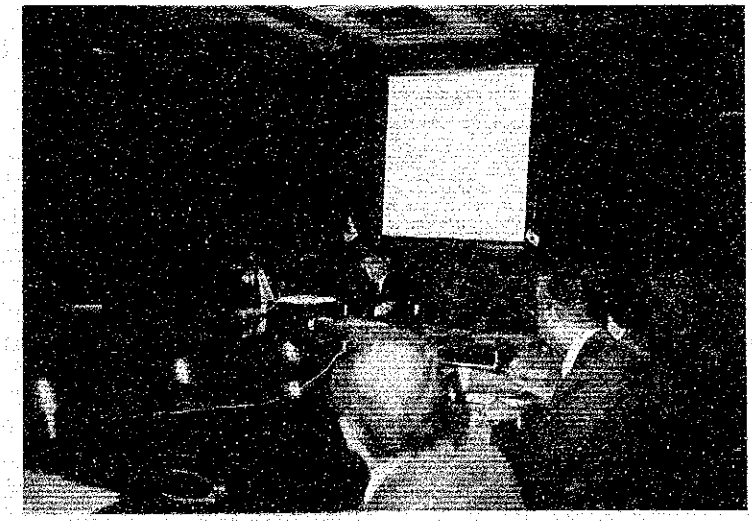
〈 メ キ シ コ 〉

―― 電気通信学園訪問 ――

向かって右から

- 大高団長
- 森谷専門家
- Mr. Rodrigo Romos Placencia 学長
- 瀬戸団員
- 野上団員

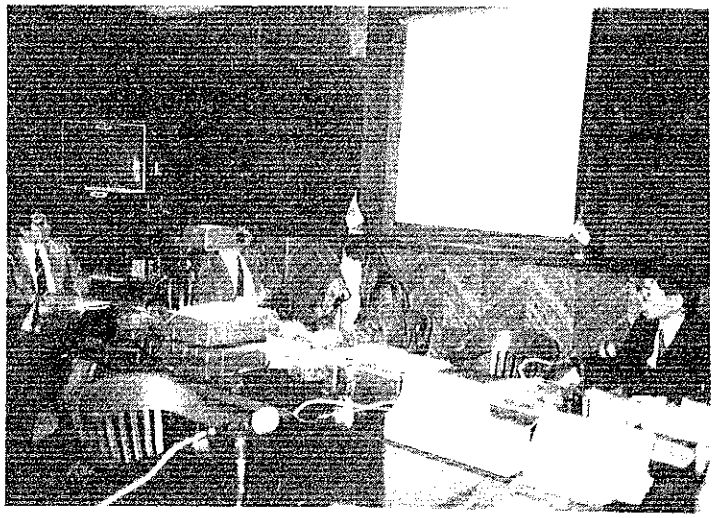
―「ＪＩＣＡの対メキシコ協力概要」の説明を行う金城メキシコ事務所員 ―



―― 大高団長講義風景 ――

―― 野上団員講義風景 ――

―― 瀬戸団員講義風景 ――



―― 安藤団員講義風景 ――

セミナー開講式

- Mr. Rodrigo Ramos Placencia
- JICA
- Mr. Ernesto Valencia Martinez
JICA
- Mr. Francisco J. Vasquez
- Mr. Jose Luis Lopez Chavira
- 阿由葉講師

── INFONETの施設見学 ──

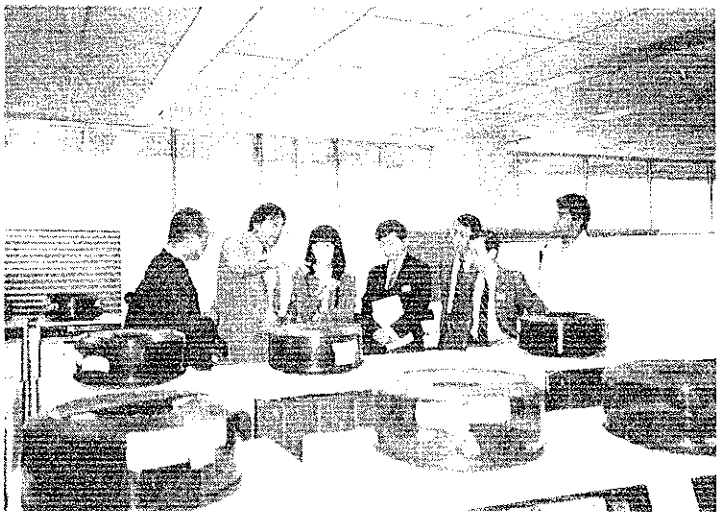
向かって右から３番目：

中野理英

右から２番目：

Mr. Constantino Davila

INFONET 担当者



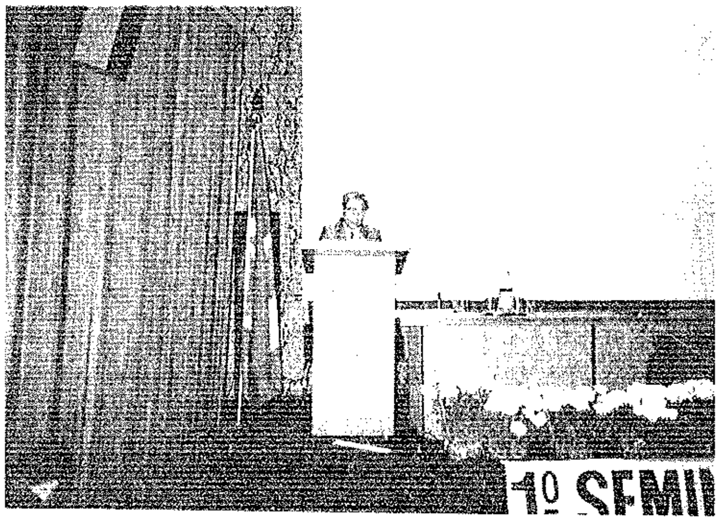
── 「メキシコの通信運輸史」の贈呈を受ける大高団長 ──

向かって右から：

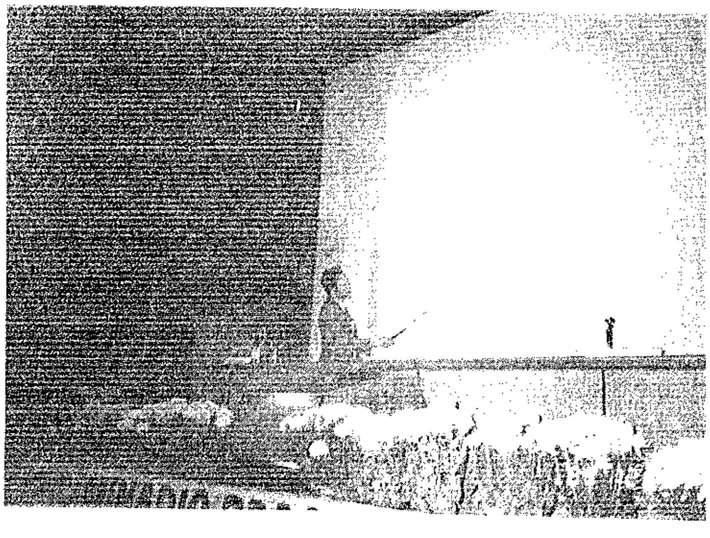
- Mr. Fernando Aguilar
- Mr. Jose Luis Lopez Chavira

〈サン・パウロ〉

－特別科学技術局情報技術センター視察－
ＪＩＣＡ帰国研修員を含むメンバー及び
技術センタースタッフ



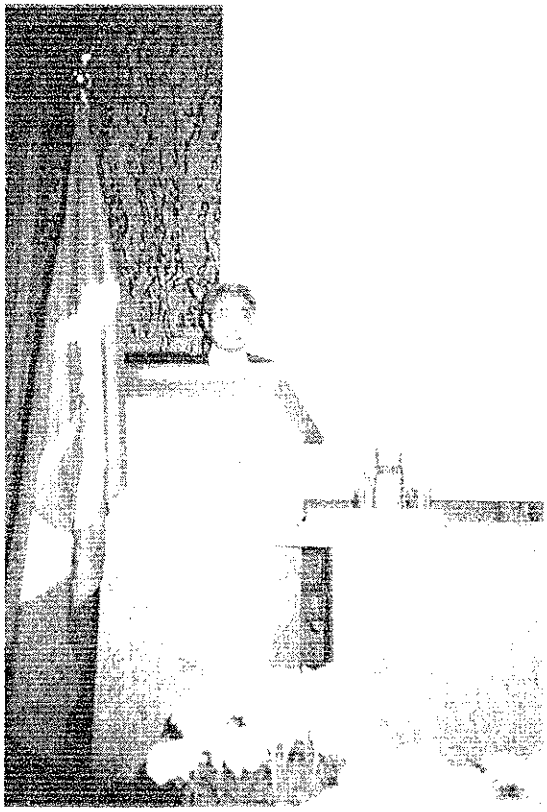
－「ＪＩＣＡの対ブラジル協力概要」の
説明を行う北村サン・パウロ事務所長－



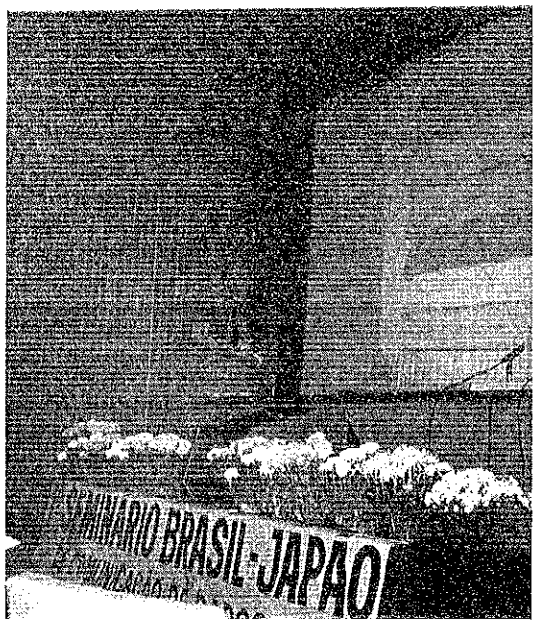
－野上団員講義風景－

第十一会場

―― 瀬戸団員講義風景 ――

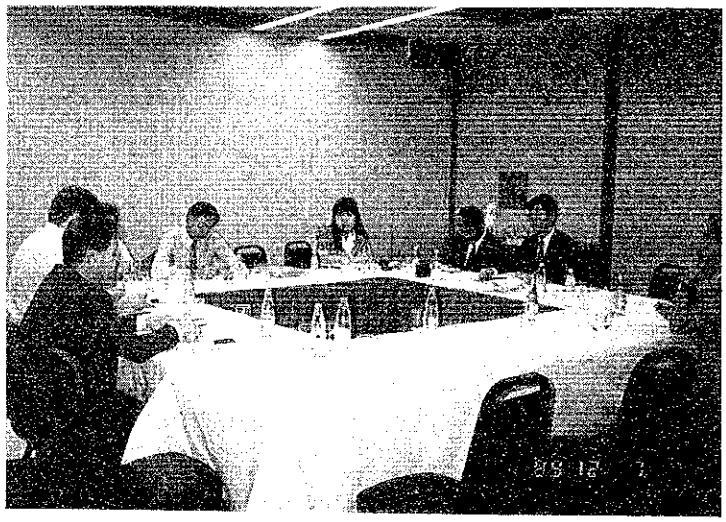


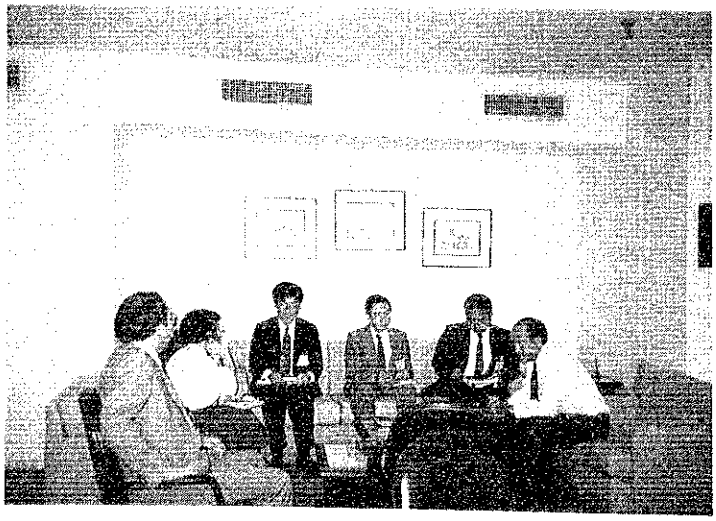
―― 大高団長講義風景 ――



―安藤団員講義風景―

―帰国研修員との意見交換会―





〈リオ・デ・ジャネイロ〉

― EMBRATEL 表敬訪問 ―

向かって右：

Mr. Neuson Gomez Cordeiro

EMBRATEL 技術開発局長

左：本間 NTT BRAS 社長

目　　次

Ⅰ　セミナー実施概要

1. 派遣目的

従来フォローアップチームは、帰国研修員に対するフォローアップ事業の一環として、主として現在継続して実施している集団研修コースおよび第三国研修に参加した帰国研修員の所属機関及び関係機関を訪問し、現地での技術指導を行なうとともに、当該分野に係る当該国の技術的問題点及びニーズを把握することを主目的に派遣されていた。これに加え、指導領域を特定分野に限定せず、これに隣接する関連分野まで拡大し、かつ対象者も帰国研修員だけでなく所属先・関連機関のものまで含めより大きな指導効果をあげることを目的として、昭和６１年度より「公開技術セミナー」を実施することとなった。

電気通信分野については、過去に２回公開技術セミナーのフォローアップの実績があり、昭和６１年度にメキシコ・ブラジル、そして昭和６２年度には中国・フィリピンへチームを派遣している。したがってメキシコ・ブラジルにおいては、既に電気通信分野全般に係るセミナーを開催しているため、今回の指導領域は特にデータ通信技術を中心とするものとし、通信政策・人材育成方法・ペーパレスシステムのそれぞれについて日本の現状ならびに最新技術の紹介を行ない、合わせてＪＩＣＡ事業紹介・日本の当該国に対するデータ通信技術分野の協力状況把握を行なうことを目的とした。

2. 分野、セミナー開催地、チーム派遣期間

分　　野：電気通信（データ通信技術）

開 催 地：メキシコシティ（メキシコ）、サン・パウロ（ブラジル）

派遣期間：平成元年１１月２５日～１２月１１日

3. チーム構成

団長　　郵政省　通信政策局　国際協力課　第一国際協力係　係長
　　大高光三（総括、通信政策）

団員　　日本電信電話株式会社（ＮＴＴ）国際部　開発協力部門　担当課長
　　野上好昭（データ通信）

団員　　ＮＴＴデータ通信株式会社　公共システム事業本部　第一公共システム事業部
　　特許庁担当課長
　　瀬戸由郎（データ通信）

団員　　国際協力事業団　東京国際研修センター業務課
　　安藤洋子（業務調整）

4. 日　　程

〈　〉：便名

日数	月　日（　）	午　　前	午　　後	宿　泊　先
1	11月25日(土)	〈JL−062〉　　〈DL−1744〉 17:35 東京発 ⟶ 10:00 着ロス・アンゼルス 12:10 発 ⟶ 17:40 メキシコ・シティ着		メキシコ・シティ "ホテル日航 MEXICO" ☎208−4020
2	26日(日)	資　料　整　理		
3	27日(月)	JICA事務所、日本大使館、表敬訪問 JICA事務所との打ち合わせ	通訳との打ち合わせ	
4	28日(火)	通信運輸省電気通信総局（DGT）表敬訪問　会場設営、打合せ	電気通信学園表敬訪問・見学 配布資料準備、事前打合せ等	
5	29日(水)	セミナー開催（詳細別添）	同左	
6	30日(木)	セミナー開催	同左　　メキシコ事務所長主催夕食会	
7	12月　1日(金)	TELEPAC、INFONET 施設見学	JICA事務所、日本大使館報告	
8	2日(土)	資料整理	16:30メキシコ・シティ発−〈RG−871〉⟶	機　中　泊
9	3日(日)	⟶ 09:30 サン・パウロ着	通訳、TELESP関係者との打合せ	サン・パウロ "Hotel Nikkey Palace" Rua Galvao Bueno No.425 Liverdade Sao Paulo ☎(011)270−8511
10	4日(月)	JICA事務所、表敬訪問 打合せ 配布資料準備	TELESP表敬訪問 会場設営、事前打合せ等 総領事館表敬訪問 サン・パウロ事務所長主催夕食会	
11	5日(火)	特別科学技術局情報技術センター視察	TELEBRAS研究・開発センター視察	
12	6日(水)	セミナー開催（詳細別添）	同左	
13	7日(木)	帰国研修員との意見交換会	JICA事務所、総領事館報告	
14	8日(金)	〈TF−404〉 10:30　　11:45 サン・パウロ ⟶ リオ・デ・ジャネイロ	JICA事務所表敬打ち合わせ EMBRATEL表敬訪問 JICA事務所及び総領事館報告 団長主催夕食会	リオ・デ・ジャネイロ "LEME PALACE" Av. Atlantica No.656, Leme, Rio De Janeiro ☎(021)275−8080
15	9日(土)	資　料　整　理	NTTBRAS主催夕食会	
16	10日(日)	00:45 リオ・デ・ジャネイロ発 ——〈RG−880〉——⟶		機　中　泊
17	11日(月)	⟶ 13:30 東京着		——

5. 主要面会者

(1) メキシコ

メキシコ側：

通信運輸省　電気通信総局

Mr. Jose Luis Lopez Chavira 広報部長

Mr. Francisco J. Vasquez Hornandez デジタル網副部部長

Mr. Rodrigo Ramos Placencia 電気通信学園学長

ＪＩＣＡ帰国研修員同窓会

Mr. Ernesto Valencia Martinez 会長

日本側：

在メキシコ日本大使館

若菜　哲　二等書記官

ＪＩＣＡ事務所

望月　久　所長

金城誠一　所員

ＪＩＣＡ派遣専門家

森谷和夫　（電気通信技術開発訓練指導）

平　正毅　（データ通信）

甲斐　格　（パナマ電気通信訓練センター国内委員会委員）

通　訳

阿由葉恵利子

(2) サン・パウロ

ブラジル側：

サン・パウロ州電気通信公社

Mr. Mario de Oliviera Martinho 技術担当理事

Mr. Levi Kaufman元副総裁

Mr. Luiz Lisboa Monteiro システム担当課長

ＥＭＢＲＡＴＥＬ

Mr. Jorge Matsuda データ通信担当技師

サン・パウロ州ＪＩＣＡ帰国研修員同窓会

冨田アルベルト　会長

立花敏市　副会長

加藤ミゲル

Mrs. Norma Shibazaki de Almeida

日本側：

在サン・パウロ日本総領事館

丸山俊二　総領事

南野　肇　領事

ＪＩＣＡサン・パウロ事務所

北村　孝　所長

土生幹夫　室長

佐々木弘一　所員

通　訳

上野義昭・伴子　夫妻

(3)　リオ・デ・ジャネイロ

ブラジル側：

ＥＭＢＲＡＴＥＬ

Mr. Neuson Gomez Cordeiro 技術開発局長

日本側：

在リオ・デ・ジャネイロ日本総領事館

田川順一　領事

ＮＴＴＢＲＡＳ

本間良紀　社長

石黒和紀　副社長

ＪＩＣＡリオ・デ・ジャネイロ事務所

津浦悦夫　所長

メ キ シ コ

① セミナー　日時：11月29日(水)～30日(木)

29日

8:30－ 9:20 セミナー参加者受付
9:20－ 9:40 開講式
9:40－10:25 JICA事業概要説明（安藤団員）
10:25－10:40 JICAの対メキシコ協力概要（『メ』金城職員）
10:40－11:10 休憩
11:10－13:30 日本における通信政策の最近の動向について
（大高団長）
The Recent Situation of the Telecommunication Policy in Japan
13:30－13:35 質疑応答
13:35－13:50 休憩
13:50－15:00 データ通信の現状、将来動向と人材の育成方法
（野上団員）
The Present and Trends of Data Processing and the Training for Engineers
15:00－15:15 質疑応答

30日

9:00－ 9:30 受付
9:30－11:45 日本国特許庁ペーパレスシステムの概要（瀬戸団員）
Outline of Japan Patent Office Paperless System
11:45－12:00 質疑応答
12:00－12:30 休憩
12:30－12:50 メキシコにおけるデータ通信を中心とする電気通信事業紹介
（Mr. Francisco J. Vasquez　DGTデジタル網副部部長）
12:50－13:05 質疑応答
13:30－14:00 閉会式及びCERTIFICATE授与
14:15－15:30 団長主催カクテル

ブ ラ ジ ル

① セミナー　日時：12月6日(水)～7日(木)

6日

8:00－ 8:45 セミナー参加者受付
8:45－ 9:00 開講式
9:00－ 9:30 JICA事業概要説明（安藤団員）
9:30－ 9:50 JICAの対ブラジル協力概要（『サ』事務所北村所長）
9:50－10:45 ブラジルの通信事情
（Mr. Jorge Matsuda　EMBRATELデータ通信担当技師）
10:45－11:05 休憩
11:05－12:30 日本における通信政策の最近の動向について
（大高団長）
The Recent Situation of the Telecommunication Policy in Japan
12:30－14:20 昼食
14:20－15:45 データ通信の現状、将来動向と人材の育成方法
（野上団員）
The Present and Trends of Data Processing and the Training for Engineers
15:45－16:00 休憩
16:00－18:30 日本国特許庁ペーパレスシステムの概要（瀬戸団員）
Outline of Japan Patent Office Paperless System
18:30－18:40 セミナー閉会挨拶
19:30－21:30 団長主催レセプション

7日

9:30－12:00 帰国研修員との意見交換会

6. セミナー内容　（両開催地共通）

(1) ＪＩＣＡ事業紹介

(2) 日本における通信政策の最近の動向について

(3) データ通信の現状、将来動向と人材の育成方法

(4) 日本国特許庁ペーパーレスシステムの概要

7. セミナー結果

(1) メキシコ

1) 開催期間　　平成元年１１月２９日～１１月３０日（２日間）

2) 開催場所　　＊旧メキシコ政府通信運輸省電気通信総局（ＤＧＴ）会議室

"JUAN DE LA GRANJA"

＊メキシコ政府通信運輸省電気通信総局（ＤＧＴ）は1989年１１月に国内電報公社（ＴＥＬＥＮＡＬＥＳ）と統合され、電気通信社が（ＴＥＩＣＯＭ）発足しているがオフィシャルには組織等1990年１月に決定される予定である。

3) 共催機関　　旧メキシコ政府通信運輸省電気通信総局（ＤＧＴ）

ＪＩＣＡ帰国研修員同窓会

4) 参加人数

第１日目　４４名
第２日目　４０名　内帰国研修員１９名

5) セミナー日程

別紙のとおり

6) セミナー実施状況

会場設営、参加者動員、運営において旧ＤＧＴ、ＪＩＣＡ派遣専門家及びＪＩＣＡ帰国研修員同窓会の多大な協力により、セミナーが開催された。

旧ＤＧＴについては、組織改定の過渡期の忙中であったにもかかわらず、共催を得ることができ、良い結果となった。

民間からの参加者も多数あったが、システム設計及び政策面での展望を与えた本セミナーの内容はデータ通信の将来動向についての深い関心を持つ参加者に高く評価された。

(2) ブラジル

1) 開催期間　平成元年１２月６日（１日間）

2) 開催場所　サン・パウロ州電気通信公社（ＴＥＬＥＳＰ）講堂

3) 共催機関　サン・パウロ州電気通信公社（ＴＥＬＥＳＰ）

サン・パウロ州ＪＩＣＡ帰国研修員同窓会

4) 参加人数　１６７名（関係者含む）　内帰国研修員１４名

5) セミナー日程

別紙のとおり

6) セミナー実施状況

開催は１日間のみであったが予想以上の参加者があり、盛況であった。

特にＪＩＣＡ帰国研修員同窓会が本セミナー開催に当たり、非常に大きな役割を果たし、成功に大きく貢献した。

ＴＥＬＥＳＰの職員が参加者の大半であり、本セミナーでの日本の事例は参考になったという意見が大変多かった。又、ＪＩＣＡの事業について関心を示し、研修を受けたいという要望が多数出た。

Ⅱ　公開技術セミナーの実施報告

1. ＪＩＣＡ事業紹介

(1) メキシコ

1) 講義内容

- ＯＨＰを用いての技術協力事業、青年海外協力隊事業、開発協力事業、海外移住事業、人材の養成確保事業、国際緊急援助事業等の概要紹介

  安藤団員（２５分）

- ビデオ「ＪＩＣＡ２４時間」（西語版）の上映　（２０分）

2) 配布資料

「ＪＩＣＡのしおり」（西語版）

3) ＪＩＣＡの対メキシコ協力概要

ＪＩＣＡメキシコ事務所　金城誠一職員　（１５分）

(2) ブラジル

1) 講義内容

- ＯＨＰを用いての技術協力事業、青年海外協力隊事業、開発協力事業、海外移住事業、人材の養成確保事業、国際緊急援助事業等の概要紹介

  安藤団員（３０分）

2) 配布資料

「ＪＩＣＡのしおり」（西語版）

3) ＪＩＣＡの対ブラジル協力概要

ＪＩＣＡサン・パウロ事務所　北村　孝所長　（２０分）

2. 「日本における通信政策の最近の動向について」（大高団長）

1. 日本の電気通信事業の歴史と現状
   (1) 歴　　史
   (2) 国内電気通信事業
   (3) 国際電気通信事業
2. 電気通信事業の自由化政策
   (1) 電気通信制度改革の背景
   (2) 電気通信制度の概要
   (3) 電気通信事業法の枠組み
   (4) 日本電信電話株式会社法の枠組み

3. 自由化の影響

(1) 新規参入の動向

(2) 料金の低廉化

(3) 内需拡大及び産業構造転換への貢献

(4) データ通信網構築の促進

(5) 電気通信機器製造業の展開

4. 自由化に関する今後の課題

(1) 公正かつ有効な競争基盤の整備

(2) 今後の電気通信産業の在り方について ― ＮＴＴの在り方を中心に ―

※ 詳細は５１ページ以下のセミナー配布レジュメを参照

本講義で出た質問は以下のとおり

問 ＮＣＣのユーザーに一定の傾向はあるのか。

答 専用回線サービスについては、当初のユーザーはＮＣＣに対する出資者あるいはその関係者が中心であったが、次第に関係者以外にユーザーに拡大してきている。

電話サービスについては、経済原理を別とすれば、一般的な傾向は見いだすのは困難である。

問 日本の郵便局が取り扱っている電子郵便とは何か。

答 現在、日本の郵便局が取り扱っているのは、郵便物の内容の伝達を引受局から配達局までの間、ファクシミリ通信を使用するものであり、配達局での受信後は郵便配達人によって配達される。いわゆる、電子メールとは別のものである。

3. 「データ通信の現状・将来動向と人材の育成方法」（野上団員）

セミナー概要

コンピュータの発達は目覚ましく、コンピュータと端末を回線で結んだデータ通信システムは、近年巨大化し、ネットワークも広域化・複雑化してきており、また端末も高機能化、多機種化してきている。

データ通信システムの発展に伴い、産業・経済活動や日常の生活にも深く浸透してきている。

しかし、システムの開発には、長期の開発期間と多くの技術者が必要になってきており、しかも限られた期間に、経済的に、かつ品質の良いシステムを作り上げるには、それに携わる技術者の技術力によるところが非常に大きい。

データ通信システムの開発に携わる技術者の育成について、データ通信の現状と動向を踏まえ、その育成方法とＮＴＴにおける訓練の状況を説明した。

1. データ通信システムの発展過程と動向

データ通信システムの発展形態を簡単に説明し、具体的なシステム例として、銀行のシステム（全国銀行協会システム、共同利用型信用金庫システム）、消防局のシステム、ＮＴＴの社内のシステムを説明。

これらの例により、企業間のシステム、企業内のシステム、公共的なシステム等コンピュータ、ネットワークが大規模化し、かつ個々のシステムがネットワークで結ばれた分散処理化が進んできていることを説明。

2. データ通信をとりまく環境の変化

企業においても、日常生活においてもコンピュータ、データ通信システムと直接、間接的に関わる機会が増えてきており、データ通信システムを使う側とシステムを作る側から見て、どのように環境が変化してきているかを説明。

使う（利用する）側から見ると、日常生活において非常に身近なものとなってきており、企業活動等においては、合理化、効率化といった使い方から企業活動、企業間競争を行っていく上で、非常に重要な位置を占めるようになってきている。

また、システムを作る側にとっては、必要な技術知識が増加（特に通信、新技術についての知識）し、ソフトウェアの生産性向上が強く求められていることを説明。

3. ソフトウェア技術者に求められる技術・知識

規模の大きいシステムを開発する場合、工程毎に作業を進め、ドキュメントの作成、テストを確実に行う必要がある。

これらが、いいかげんにされていると、ソフトウェアの品質、維持管理、将来の機能追加・改善に大きな支障をもたらす。

また現在、これらの工程毎に設計・製造技術が確立されつつあり、システム開発の各工程を示し、プログラマー、システム・エンジニア、プロジェクト・マネージャーに必要な技術を説明。

4. 技術者の育成と訓練の状況

ＮＴＴの教育訓練体系を説明し、ソフトウェア技術者の育成の過程、キャリア・パスの例を説明。

5. 訓練カリキュラムの例

技術者の育成においては、ＯＪＴ（On The Job Training）が重要視されてきているが、集合訓練とＯＪＴがうまく組み合わさって行われなければ、効果は上がらない。

ＮＴＴの例をもとに、具体的な訓練コースの実施状況を説明。

研修センター等で行う集合訓練の需要なポイントとしては、

① 訓練の必要な人に、必要な時期に、必要な訓練を受けさせる。

② 訓練の内容が、すぐに職場で使うことができるように社内でも標準化された技法を十分

身につけさせる。

であると考える。

以上、日本、特にＮＴＴの例をもとに説明し、技術者の育成、訓練方法・内容について説明。

セミナー実施状況

「データ通信の現状・将来動向と人材の育成方法」

(1) セミナー内容

- データ通信システムの発展過程と動向
- データ通信システムをとりまく環境の変化

  データ通信システムを使う側／システムを作る側から見た環境の変化を説明。
- ソフトウェア技術者に求められる技術・知識
- 技術者の育成と訓練の状況

  キャリアパスの考えとＮＴＴの訓練体系について説明。
- 訓練カリキュラムの例

(2) セミナー資料　※139頁以降参照

- 「Current Status and Future Trend in Data Communications and Personnel Training for Software Engineers」（英文：２１頁）
- ＯＨＰ（英文：２０枚）

(3) セミナー実施状況と成果

① メキシコ

- 現地のＪＩＣＡ専門家からデータ通信システムの開発、ソフトウェアの開発については、メキシコ国内ではほとんど行われていないとのことから、ソフトウェア技術者の訓練・育成について、技術者に必要な技術の詳細については省略し、訓練体系、コースの設定例等参考になると考えられるところを説明した。
- データ通信システム、パケット交換サービスも行われていることから内容はよく理解されたと思われる。

  また、プログラム言語の訓練コース、技術者の昇格と技術力の評価について質問があり関心も示した。
- 事前に同時通訳を行う旨連絡を受けていたため、通訳用の原稿も準備し行った。

  このため比較的スムーズに通訳され、よく理解していただけたものと思われる。

② ブラジル

- ブラジルにおいても同時通訳を行うこととなり、また、時間的にも十分な余裕が与えられたため一通り説明した。（通訳用原稿はメキシコで使用したものを用いた）

・ソフトウェア・ハウスも既にあるとのことで、内容的には問題なく理解されたと思われる。

(4) 質問等

(Q) プログラム言語の訓練コースについて、ＢＡＳＩＣ言語はやさしい言語であり、また第四世代言語などのコースは設けられていないが、訓練の状況はどうか？

(A) ＢＡＳＩＣは簡単な言語で、個人で習得も容易なのでコースの数も少ない、また第四世代言語や訓練生の多くない特殊な言語のコースは研究所やメーカの訓練コース、職場での訓練で実施している。

(Q) 訓練と関連し技術者の昇格、技術者の技術力の評価はどのように行われているか？

(A) 訓練とは特に関係しないが、本人の自己申告と複数上司の評価で評価し、昇格や技術力の評価を行っている。また、技術力については、現在、技術者の各ランクに応じ具体的にどのような技術を持っている必要があるかを調べている。

今後は、これを基準に技術者のランクとそのために必要な技術力が明確にされる。

4. 「日本国特許庁ペーパーレスシステムの概要」（瀬戸団員）

Ⅰ セミナーのテーマと概要

〔内容〕

ＮＴＴデータ通信株式会社が現在開発を進めている、新規構築システムの中で最も代表的な特許庁ペーパレスシステムの開発事例について紹介する。

特許庁ペーパレスシステムは、１９８４年から１０年計画で開発を進めているもので、初期の３年間は特許庁自らがシステムインテグレータとしてメーカを使い開発して来た。１９８７年にはＮＴＴデータ通信株式会社にシステムの開発依頼があり、システムインテグラーとしてシステムの構築に参画している。

特許庁ペーパレスシステムは、ハードウェア設備及びソフトウェア開発規模が極めて大規模で、且つ技術的にも最新技術を駆使したシステムである。

また通信規約は国際標準、国内標準等を最大限適用し実現したシステムで、日本国内でも最も先導的なシステムの１つである。

1. ペーパレスシステムの必要性

工業所有権制度は、技術開発を支える産業発展の基盤的制度であり、特許庁は「迅速かつ的確な権利の付与」をその使命としている。

しかしながら、近年の産業技術の発展はめざましいものがあり、技術開発の進展と競争の激化に伴い、出願件数が増加すると共に、出願内容が高度化、複雑化している。

これをこのまま書面による方法で処理していると以下の問題点があり、今後更に累積され

ることとなる。

(1) 審査期間の長期化

(2) 資料（紙ベースの書面、文献等）増加に伴うスペースの狭隘

(3) 資料管理、稼働要員の増加

(4) 情報サービスの特許庁外部への提供要請

(5) 申請人からの電子出願要請

これらの課題を克服するため、特許出願・特許情報関連の資料を電子化すると共に、データベース化し出願から審査・登録に至るまでの特許事務処理と民間等への情報提供をコンピュータにより効率的に処理するペーパレスシステムの構築が必要となった。

2. ペーパシステムの特徴

(1) マルチベータシステムの適用

① 全体を５つのホスト（サブシステム）に分割

- 受付システム（M－６８０D×２：日立）
- 事務処理システム（ＡＣＯＳ１５１０×１：日電）
- 全体管理システム（M－６８０H×１：日立）
- サーチ総合データベースシステム（M－６８２H×１：日立）
- 既存事務処理システム（M－６８０D×１：日立）

② ＬＡＮ

ホスト－ホスト間：トークンパッシングリング方式（ＬＯＯＰ６７７０Ｈ：日電）

ホスト－庁内端末間：スロッテッドリング方式（Ｆ２８９５：富士通）

トークンパッシングリング方式（ＲＩＮＧ－４００Ｍ：東芝）

ネットワーク管理装置（M－７３０／４×１：富士通）

③ 端　末

２００ｄｐｉの高精細ディスプレイ２台を接続した高速イメージデータの処理機能を持つ、高性能ワークステーション（日立、東芝、リコー）

(2) 国際標準、国内標準等の採用

① 通信プロトコルにはＯＳＩ（開放型システム間結合）を適用した。

- オンライン電子出願
- ホスト間接続
- ホスト－庁内端末（ワークステーション）

② 電子出願時に使用するフロッピーディスクの電子化フォーマットは、国内標準を採用した。

③ 電子出願時の書類の電子化フォーマットは特許庁標準フォーマットの規格作成を進め

ている。

(3) ミクストモード処理の採用

電子出願受付開始後（１９９０年１０月以降）のデータはＴ.７３適用のミクストモードデータ処理を採用する。

(4) 長大データの効率的伝送の実現

① イメージデータの圧縮・伸長

イメージデータのＭＭＲ方式による圧縮・伸長を庁内端末（高性能ワークステーション）のイメージ専用プロセッサのＬＳＩチップで実現。

② 通信出願情報のデータ長は、平均 120 ＫＢ／電文（特許）であるため効率的な伝送手段の確保が必要。

庁外通信：ＩＳＤＮ（６４ＫＢ／Ｓ）の採用

庁内通信：高速ＬＡＮの採用

ホスト－ホスト間：１００ＭＢ／Ｓ

ホスト－端末間：４００ＭＢ／Ｓ

(5) 大容量電子化データの蓄積

大容量光ディスクの実用化により、特許庁の過去の累積データを含めた資料、文献の電子化が可能となった。

メキシコ、ブラジルとも同一内容で講演した。

Ⅱ セミナー用資料

(1) テキスト：「日本国特許庁ペーパレスシステムの概要」（Ａ４版、３８ページ、英文）

※ 162 頁以降参照

(2) セミナー実施においてはＯＨＰ２８枚を作成し、ＯＨＰを主体に講演した。（使用したＯＨＰ枚数２８枚、英語版）

(3) ビデオ「特許庁ペーパレスシステム」（英語版）約１８分

Ⅲ 実施状況と成果

(1) 日本におけるシステムインテグレータに期待される、ユーザニーズと動向について照会した。

(2) システム化の必要性とシステム化構築イメージの基本的考え方について照会した。

(3) システム構築に採用した技術、標準化等、使用したシステムの特徴について、できるだけ具体的な説明を加え照会し、ブラジルでは２時間半の予定時間を約２０分超過した。

(4) メキシコでのセミナー終了後、カクテルパーティの中でビデオに対する内容及び、使用しているデータベース名等について、セミナー聴講者から積極的な問い合わせがあった。

(5) ブラジルでは、最終の講演者のため終了時間が６時２０分となったが、セミナー聴講者は５時１５分までの勤務時間にも拘わらず、殆ど帰らず熱心に聴講してくれた。

Ⅳ　質　　疑

＜Q＞　特許権取得には最低どの位の時間がかかるか、又、最高どの位の時間がかかるか。

＜A＞　特許庁の業務内容は詳しくありませんが、個人の大まかな記憶では早いもので１年程度、長いものは異議申立て裁判等あり、最終的に７年～１０年以上かかるものもあるようです。

＜Q＞　標準化の中でＪＩＳと言う規準が出て来たが、これはどの様な規準か。

＜A＞　日本工業標準で通産省の工業技術院で定めている日本の国内標準です。

Ⅲ　当該分野の国別状況

1. メキシコ（瀬戸団員）

①　見学内容

(1)　国立電気通信学園見学

- １００人程度収容可能なりっぱな講堂があり、ＯＨＰ、ビデオ、スライド設備があった。我々は翌日のセミナー会場へＯＨＰとビデオ設備を借用した。
- 搬送無線の実習室に、ＮＥＣ製のＰＣＭ方式ＮＥ５５２０ＡＡ（８Ｍ－－ＭＵＸ）、ＭＥ５５３０Ａ（３４Ｍ－ＭＵＸ）、ＮＥ５５４０Ａ（１４０Ｍ－ＭＵＸ）の搬端装置と４０００Ｍの無線装置の送受信機を直結した実習セットがあり無線送受信機は導波管で折り返してあった。入口には、ＪＡＰＯＮからの寄贈を印した通信運輸省（ＳＣＴ）の看板がある。
- ＩＣ等を使って大学院生が回路の組立を行っていた。
- 近くにモレーロス衛星通信の地上局を外から見る事が出来た。

(2)　ＩＮＦＯＮＥＴ施設見学（Information Network の略）

- システムのサービス内容は、タイムシュアリング、電子メールサービスが主体で、基本的には、ハード設備とユーザが通信するための環境を提供している。
- ハード設備は、ユニバック１１８０型（5.2Mips）２台で、１台は電子メール、１台はメキシコ石油公社で使っており、故障時はフォールバック運転となり、応答時間がかなり長くなる。コントローラはレイテム、ＤＩＳＫは5.2ＧＢ／台のＩＢＭの装置、集線装置はＮＣＲと種々のメーカーのものを使っている。
  システム構成図を要求したが、７年前のものしかないとの事であった。
- インフォーネットは世界ネットワークでアメリカのインフォーネットと協定を結んでいて各国の利用者はそれぞれの国のインフォーネットと契約すれば、自動的に全世界のインフォーネットのネットワークが利用可能となる。日本の国内網はビーナスと接続されている。
- インフォーネットの元はアメリカだが、加入している各国に対しかなり独自性が保たれており、資金力等による戦略、マーケッティング等は各国の事情に任されており、アメリカからの拘束はない。
- 回線速度　３００～９６００ｂ／ｓ
- 電源は無停電無瞬断電源設備を使用している。
- センター全体の保守要員２２人とソフト３名。
- オペレーションシステムはコンピュータサイエンステレプロセシングシステム。
- プログラムは全てユーザ作成で、ユーザ独自で開発出来ない場合インフォーネットのプログラマが支援する。（プログラマ６名）

・インフォーネット会社からユーザに提供するライブラリーは無い。
保有しているのは、環境管理するためだけのものである。
・メキシコの契約数は２０００契約で、最大ユーザのメキシコ石油公社は１契約で４００の利用者がいる。
・利用者クラスは３つに分けられる。
(1) ＰＥＭＥＸ（特別の企業）：１企業
(2) メキシコ資本の企業：２０００
(3) 多国籍企業（親会社が他国で子会社がメキシコにある）：１８５
・現在の課題は、人材確保、資金不足である。
・利用者の料金は、回線の接続時間、ファイルの使用料、リソースの使用料から算定される。

(3) ＴＥＬＥＰＡＣ施設見学
・ＴＥＬＥＰＡＣはパケット交換網で1982年にアメリカのものをそのまま輸入し、運用を開始した。
・プロトコルは国際標準にのっとったものを使っており、ＣＣＩＴＴのＸ.２５、Ｘ.２８、Ｘ.２９を対象としている。
・網は今年アメリカ合衆国から最も新しい高速交換機とソフトウェアを導入し、これにより網は今年末には全国の５５の主要都市が含まれると共にＩＢＭの大体のプロトコルは、コンバージョン可能となる。
・網のアクセス方法は次の２つがある。
(1) 電話交換網を用いたもので、速度が３００～１２００ｂ/ｓ
(2) Ｘ.２５のプロトコルを使ったもので、速度が２４００～９６００ｂ/ｓ
・年中無休２４時間の運用・保守体制をとっている。
・世界の４０ケ国の網と接続されている。

② メキシコのデータ通信事情
(1) データ通信及びパケット交換の分野では、まだまだ外国の技術に依存している様に感じられる。
(2) 設備拡張計画も、予算要求で承認されても実行予算では税収の減収等により減額され、計画を予定通りに実行されない事がある。
(3) 回線の品質、保守管理体制が遅れているようでデータ端末等のサービスを開始しても時々回線が切れる事があり、回復に時間がかかる。
特に中継ケ所の多い回線及びＴＥＬＥＰＡＣ（ＤＧＴのネットワーク）のサービスエリア外は、ＴＥＬＥＭＥＸ（民間会社の電話網）と相互接続しており、この場合に多いようだ。

2. ブラジル（野上団員）

① 現地の電気通信の状況

ＥＭＢＲＡＴＥＬの説明によると、ブラジルの電気通信設備については、

- 第一段階：外国からの製品、技術の導入
- 第二段階：それをもとに研究所での研究開発
- 第三段階：製造もブラジル企業で行い設備建設

を基本方針としており、事実、パケット交換網も当初はフランスからＣＥＳＡの交換機を導入し、網を構成したが、現在はブラジルで開発、製造したものにより網の拡大を実施している。

このほか、通信設備、コンピュータにおいても順次国産化が行われており、コンピュータも大型機は輸入しているが、中型・小型機以下は国産化が行われている。

また、ソフトウェアの方面でもソフトウェア・ハウスもすでに幾つかできており、南米においては、通信、情報処理の面で先進的、指導的立場にある。

ただ、広い国土と経済力との関連で発展している南部（特にリオ、サンパウロ周辺）と遅れている北部・内陸部では電気通信だけでなく格差が大きい。

② 見学、訪問場所等

(1) 特別情報局情報技術センター（ＣＴＩ） カンピーナス（12/5：ＡＭ）

1983年創立で、情報関係の研究開発を行っている。

ＣＴＩ
- オートメーション関連（ＦＡ、ミニＭＡＰ、工場用ＬＡＮ、etc）
- コンピュータ（ミニコン・レベルの開発、ソフトウェア技術）
- 設備、機器開発
- マイクロ・エレクトロニクス（ＬＳＩの開発・製造技術、液晶etc）

産業界、大学と組んだ研究開発が活発に行われており、実用化段階は主に企業サイドで行われている。

従って、実用化に至るまでと企業との研究開発、研究の場の提供面で大きく貢献している。

このため、資金の一部は民間からも出されている。

コンピュータ関連の開発については、

① ソフトウェア・エンジニアリング

生産性、信頼性、ソフト開発言語、ソフト開発環境について研究を行っている。

② コンピュータ

ブラジル石油会社のハード、ソフトの開発を行っている。

ハード：3名、ソフト：7名が担当し、メインのコンピュータを開発している。

また、油田探索の携帯用コンピュータの研究開発も行っている。

現場とホスト間のデータ伝送についても研究を行っている。

海外からの技術導入については、購入時は100％であっても、５年後には国産化比率を３０％以上にするよう義務づけられている。

(2) ＴＥＬＥＢＲＡＳ研究開発センター　　カンピーナス（１２/５：ＰＭ）

ショールームにおいて開発実用化の全体像について説明があり、研究開発状況について説明を受けた。

電子交換機、光通信、ディジタル通信、パケット交換機、衛星通信、部品・ＬＳＩ等通信全般について研究開発を行っている。

ここでも産業界、大学との共同研究が行われており、実用化・製造は企業で行われている。

また、ＬＳＩについては、ＣＴＩとも共同で行っているものもある。

ショールームは非常にこったものであり、解説者、演出効果共に非常によく、工夫されていた。

(3) ＥＭＢＲＡＴＥＬ　　リオ・デ・ジャネイロ（１２/８：ＰＭ）

市外電話網、データ網、国際通信等を担当し、パケット網、衛星通信、データ伝送、メッセージ交換、テレマティーク・サービスなども実施している。

当社の事業概要、将来計画及び需要予測について説明を受けた。

非電話系の需要については直線的に大きな需要を見込んでおり、根拠については説明はなかったが、比較的強気の需要を見込んでいた。

パケット網（ＲＥＮＰＡＣ）は、前述のとおりＣＥＳＡと国産設備からなり、パケット交換機直接収容、テレックス回線経由、電話網経由で端末との接続を行っている。

通信網のディジタル化、ＩＳＤＮ、衛星についても積極的な取り組みを見せていた。

Ⅳ　研修コース（カリキュラム等）改善への具体的提言

1. 将来の研修コースに対する要望

―メキシコ―

- 技術開発、イメージデータ圧縮、レーザーディスク、光ファイバー、ファクシミリ伝送、ＯＳＩ手順（高度なレベルのもの）のような新技術関連のコースがあれば興味深い。〔１９８４年度国際データ通信技術コースに参加〕
- コースを増加させてほしい。年に２回程度。〔１９８５年度データ通信技術コースに参加〕
- 同じコースを年２回以上に増加させてほしい。より多くの人が参加できるように。〔１９８７年度ディジタル交換技術（応用）〕
- 衛星通信およびデータ伝送のコースを望む。〔１９７９年度マイクロ波通信技術コースに参加〕
- 理論的な面ではなく、実務面に重点をおいてほしい。〔１９８９年度通信網計画設計コースに参加〕
- 研修員選考に際して、英語力、及びその他の分野における経験について十分注意した上で行うべきである。〔１９８１年度国際通信業務管理コース〕
- 実習を増やしてほしい。課題を出し、それを解いていくようなケーススタディをしたい。〔１９８５年度ディジタル交換技術コースに参加〕

―ブラジル―

- さらに専門的なコースを望む。〔１９８４年度データ通信技術コースに参加〕
- 研修は、もう少し時宜を得たものに拡張したらよいのではないか。たとえば、日本におけるデータ通信サービス、データ通信網、データ通信の商業的側面、データ通信技術などである。というのは、わが社は、法律によりデータ通信サービスを認められたからである。データ通信網の計画部門にいる我々は、多くの経験を必要としている。〔１９８８年度データ通信技術コースに参加〕
- データ通信（ディジタル化）及びＩＳＤＮに関する研修コースを推進してほしい。〔１９７３年度通信網計画設計コースに参加〕
- 帰国研修員について、２、３のさらに詳細な特定のコースに参加させることによって、新技術に関して時代遅れにならないようにして、かれらを再び生かすべきである。〔１９８５年度データ通信技術コースに参加〕

2. 研修コース改善への具体的提言（大高団長）

メキシコ及びブラジルの両国は開発途上国の範疇に入っているが、中進国であり、電気通信分野においても、かなり高いレベルにある。今回のアンケート結果及び研修員からのヒアリングにも、それが現れている。要望等は、次の４つに大きく分類されると考える。

1. より専門的な高度な分野における研修を
2. より実務的研修を
3. より多くのコース、あるいは、より多くの受入れを
4. 帰国研修員について、技術面でのフォローアップを

これらの要望を踏まえ、今後のコース策定上、以下のことを考慮すべきであると考える。

1. コースの内容を一層専門化する

メキシコやブラジル等の技術水準の高い国を考慮し、技術レベルによるコース分け、あるいは研修期間を伸ばして専門分野の研修にあてる。

2. 理論と実務のバランスを

理論面での研修も重要であるが、研修員のほとんどが実務者であることを改めて留意する必要がある。講義の方法として、ケース・メソッドの提案が出されているが、手法にまで細心の注意を払うべきであろう。

3. 受入れの増加を

種々の制約があるとは言え、研修員の受入れの増加も不可欠と考える。関係機関との連携をとりつつ、推進すべきである。

4. 再研修の実施及び最新技術情報の提供を

我が国で行った研修の結果を高めるため、フォローアップの一環として専門家を現地に派遣して、１か国１か月程度の長期研修を行い、技術指導を行う。また、先端技術情報を含め、実務に結びつく情報については、ほとんどの帰国研修員が希望しており、継続的にかつ確実に届くように配慮すべきである。

V　総　　括

総　括　（大高団長）

―メキシコ―

昨年１２月 Salinas 大統領の就任に伴い、新政権は基本的目標の一つとして、「経済の回復・安定」を掲げ、様々な改革を引き続き進めているが、それは電気通信分野にも及んでいる。

メキシコの電気通信業務は、通信運輸省の下部組織である電気通信総局（ＤＧＴ）が国際電報、テレックス、ＴＶ伝送、国際電報為替、国際・国内衛星通信、データ伝送、ルーラル電話の建設、海上無線等のサービスを提供し、国内電報総局（ＤＧＴＮ）が国内電報サービスを提供していたが、政府の"Decentralización"政策（官営事業は公社化、公社事業は民営化するなどの独立採算化政策）により、国内電報総局は国内電報公社（ＴＥＬＥＮＡＬＥＳ）として1986年9月に発足した。

さらに、本年１１月に、ＤＧＴが、ＴＥＬＥＮＡＬＥＳと統合され、電気通信公社（ＴＥＬＣＯＭ）が発足している（＊ＴＥＬＣＯＭの業務範囲、組織、人事は、現在、検討中であり、１９９０年１月に決定される予定。）。

一方、電話業務は、メキシコ電話会社（ＴＥＬＥＭＥＸ）が国内・国際電話サービスを提供しているが、Salinas 大統領は ＴＥＬＥＭＥＸの施設改善を、民間資本の大幅導入により進めようとしているところである。

このような電気通信事業の再編成の時期に、データ通信技術分野公開技術セミナーを、１１月２９日及び３０日の２日にわたり開催したが、旧ＤＧＴ及び帰国研修員同窓会、日本からの派遣専門家の協力もあり、延べ約８０人の参加を得た。参加者は、政府関係者に加えて、大学関係者、コンピューターメーカー関係者、銀行関係者、百貨店関係者に及び、データ通信分野の広がりを感じさせるものであった。各発表ごとに質疑がなされたが、時間の制約もあり、セミナー終了後等に個別に質疑もあった。セミナーについての帰国研修員の反応は、「メキシコの電気通信、特にデータ通信は変革期にあるが、今後の動向を予想するために参考になると考えて参加した。日本の例は参考になった。」というのが、最大公約数的なものであった。

また、今回の滞在中には、旧ＤＧＴの下部組織の国立電気通信学園（ＥＮＴＥＬ：1976年度から第三国研修を実施）、ＴＥＬＥＰＡＣ（＊公衆データ通信網）部門及びＩＮＦＯＮＥＴ（＊国際ＶＡＮサービス）部門を視察したが、帰国研修員の活躍が随所で見られた。

―ブラジル―

ブラジルの電気通信は、通信省の監督の下に、ＴＥＬＥＢＲＡＳ（ブラジル電気通信管理会社）系の通信会社と独立系の会社及びＥＣＴ（ブラジル郵便電信公社）によって運営されており、全国の９９％以上の電話は、ＴＥＬＥＢＲＡＳ系の会社によってカバーされ、データ通信、州際通

信及び国際通信はＥＭＢＲＡＴＥＬ（ブラジル電気通信会社）がほぼ独占的に提供している。

今回のブラジルにおけるデータ通信技術分野公開技術セミナーは、１２月６日にＴＥＬＥＳＰ（サンパウロ電気通信会社：ＴＥＬＥＢＲＡＳ系のサンパウロ州をエリアとしている、最有力の州電話会社である。）において、ＴＥＬＥＳＰおよび帰国研修員同窓会の協力の下に開催され、約170人の参加があった。各方面からの参加者があり、特にＴＥＬＥＳＰ関係者が多かったのは、近年、データ通信サービスについて、ＥＭＢＲＡＴＥＬ以外の州電話会社に認められたことも無関係ではない。時間的制約から、質疑応答はできなかったが、アンケート調査結果及びパーティ等における参加者との懇談から得た反応では、セミナーはおおむね好評であったと考える。

また、本セミナー開催に当たっては、ＴＥＬＥＳＰの技術担当重役の Martinho 氏を表敬訪問している。

セミナー翌日、データ通信関係の帰国研修員と意見交換会を行ったが、５人の参加を得た。各人、日本での研修の結果が自分のキャリア開発に役だった旨の発言があり、「より高度な分野について、再研修を望む。」というのが集約された意見であった。意見交換会の中で、「ブラジルでは、高い技術レベルにある人が、職場において、その他の人に技術移転することは、本人の失業に結びつく可能性があることから、社会的に困難な傾向にある。」との技術移転の難しさを指摘する意見があったのは示唆に富むものであった。

なお、滞在中は、サンパウロにおいて、科学技術省特別科学技術局情報技術センター及びＴＥＬＥＢＲＡＳ研究・開発センターの視察を、リオ・デ・ジャネイロにおいてＥＭＢＲＡＴＥＬの開発担当重役 Gomes 氏に対して表敬訪問を行ったが、前者においてはそれぞれブラジル政府の国内機器製造業振興に注ぐ熱意が、後者においてはＥＭＢＲＡＴＥＬのデータ通信の普及に注ぐ熱意が窺えた。

Ⅵ 添 付 資 料

Ⅵ－1　セミナー案内プログラム
（メキシコ）

LA SECRETARIA DE COMUNICACIONES Y TRANSPORTES
LA AGENCIA DE COOPERACION INTERNACIONAL DEL JAPON
Y LA
ASOCIACION DE EXBECARIOS DE MEXICO EN JAPON, A.C.

Se complacen en invitar a usted al Seminario Internacional de Telecomunicaciones orientado hacia la comunicación de datos que se llevará a cabo los días 29 y 30 de Noviembre del presente de las 9:00 a.m. a las 15:00 p.m., en la Sala de Plenarias "Juan de la Granja", 15o. Piso de la Torre Central de Telecomunicaciones (Eje Central Lázaro Cárdenas No. 567).

México, D. F., Noviembre de 1989.

INSCRIPCIONES

ESCUELA NACIONAL DE TELECOMUNICACIONES
(ENTEL)

Av. de la Telecomunicaciones s/n
CONTEL, Col. Guadalupe del Moral
Iztapalapa, D.F.

Horario de atención

De 9:00 a 15:00hrs.

De Lunes a Viernes

Mayores Informes a los Telefonos:

691 37 87
692 07 25
692 10 48
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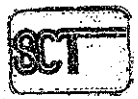

MEXICO - JAPON

S E M I N A R I O
I N T E R N A C I O N A L
DE
TELECOMUNICACIONES
ORIENTADO HACIA LA
COMUNICACION DE
DATOS

Fecha: 29 y 30 de Noviembre de 1989.

Horario: de 9 a 15 Hrs.

Lugar: Sala de Plenarias "JUAN DE LA GRANJA" 15° Piso de la Torre Central de Telecomunicaciones Eje Central Lázaro Cárdenas 567.

O B J E T I V O : Dar seguimiento a los Exbecarios de JICA que han participado en cursos colectivos en el Japón e Intercambiar conocimientos y experiencias con profesionales en el ramo, en cuanto al uso y desarrollo de las Telecomunicaciones, orientado hacia la Comunicación de Datos.

DIRIGIDO A : Exbecarios de JICA, Ingenieros y Técnicos de la Dirección Gral. de Telecomunicaciones y demás interesados en conocer el uso y desarrollo de las Telecomunicaciones de México y del Japón, orientado hacia la Comunicación de Datos.

IDIOMA : JAPONES - ESPAÑOL
Traducción simultánea.

T E M A R I O

DIA 29:

8:30-9:00 Registro de Participantes

9:00-9:30 Ceremonia de Inauguración

9:30-10:15 Srita. Yoko Ando
Oficina de entrenamiento
División de Operaciones de la Agencia de Cooperación Internacional del Japón (JICA)

Tema: Organización y programas de Trabajo de JICA a nivel Mundial

10:15-10:45 Lic. Hisashi Mochizuki
Representante de JICA en México

Tema: Organización y Programas de Trabajo de JICA en México

10:45-11:00 Preguntas y Respuestas

11:00-11:30 Café

11:30-13:15 Sr. Kozo Otaka
Subdirector
División de Cooperación Internacional, Políticas de las Comunicaciones
Ministro de Telecomunicaciones y Correos.

Tema: Situación Actual de la Política de las Telecomunicaciones en Japón.

13:15-13:30 Preguntas y Respuestas

13:30-14:45 Sr. Yoshiaki Nokami
Gerente
Cooperación Técnica en Ultramar
Grupo de Planeación Internacional, Departamento de Asuntos Internacionales de la Corporación Japonesa de Telefonos y Telegrafos (NTT).
Desarrollo Actual y Futuro de procesamiento y comunicación de Datos en Japón y su Capacitación de Ingenieros.

14:45-15:00 Preguntas y Respuestas

DIA 30:

9:00-11:15 Sr. Yoshiro Seto
Gerente
Sub-Grupo de la Oficina de Patentes en Japón
División de Sistemas de la Administración Pública
Corporación de Sistemas de Comunicación de Datos de la (NTT)

Tema: Simplificación del Procedimiento de Registro en la Oficina de Patentes en Japón

11:15-11:30 Preguntas y Respuestas

11:30-12:00 Café

12:00-13:15 Ing. Francisco J. Vázquez H.
Jefe del Depto. de Transmisión de Datos.

Tema: Introducción de las Telecomunicaciones en México, sobre la Transmisión de Datos

13:15-13:30 Preguntas y Respuestas

13:30-14:00 Conclusiones

14:00-14:15 Ceremonia de Clausura

14:15 Coctel

（ブラジル）

ABJICA ASSOCIAÇÃO DOS BOLSISTAS JICA – SP

JAPAN INTERNATIONAL COOPERATION AGENCY

São Paulo, de novembro de 1989.

Ilmo. Sr.

Prezado Senhor,

Dentro do plano de intercâmbio de cooperação técnica que a ABJICA - Associação dos Bolsistas da JICA - São Paulo coordena junto com a JICA - Japan International Cooperation Agency, estaremos realizando no dia 06 de Dezembro p.f., o I Seminário de Comunicação de Dados Brasil-Japão, de acordo com a programação anexa.

Para tanto, convidamos V.Sa., bem como profissionais desta Empresa/Entidade, a participarem deste expressivo evento, onde serão apresentados e discutidos os mais diversos aspectos políticos e tecnológicos afetos à área de engenharia de comunicação de dados.

Pedimos a atenção para que as inscrições sejam realizadas o mais breve possível, tendo em vista limitação do número de vagas disponíveis.

Atenciosamente

LUIZ LISBOA MONTEIRO
Coordenador do Evento

LEVY KAUFMAN
Presidente da Comissão Organizadora

ABJICA - Associação dos Bolsistas da JICA - São Paulo
Rua São Joaquim nº 381, 6º andar - Liberdade - CEP 01508 - São Paulo - SP - Telefone: (011) 279-6577

I SEMINARIO INTERNACIONAL DE COMUNICACAO DE DADOS

B R A S I L - J A P A O

(06 de Dezembro de 1989)

ORGANIZACAO: - ABJICA - Associacao dos Bolsistas JICA Sao Paulo
PATROCINIO : - JICA - Japan International Cooperation Agency
APOIO : - TELESP - Telecomunicacoes de Sao Paulo S/A

INTRODUCAO

Sob o patrocinio da Japan International Cooperation Agency - JICA, a Associacao dos Bolsistas da JICA Sao Paulo - ABJICA, e com o apoio da TELESP - Telecomunicacoes de Sao Paulo S/A, fara realizar o I SEMINARIO INTERNACIONAL DE COMUNICACAO DE DADOS BRASIL-JAPAO.

OBJETIVOS

Promover o intercambio de conhecimentos tecnico-cientificos, entre profissionais e entidades na area de Comunicacao de Dados.

D A T A

06 de Dezembro de 1989

L O C A L

TELESP - Telecomunicacoes de Sao Paulo S/A
Rua Martiniano de Carvalho, 851 , SE / Auditorio
Paraiso - Sao Paulo
Sao Paulo

PROGRAMACAO

08:30 horas - ABERTURA

08:45 horas - ATIVIDADES DA JICA NO BRASIL
Mr. Takashi KITAMURA
Representante da JICA no Brasil

09:00 horas - ATIVIDADES INTERNACIONAL DA JICA
Miss. Yoko ANDO
Operation Division
Tokyo International Centre
JICA - Japan International Cooperation Agency

09:30 horas - COMUNICACAO DE DADOS NO BRASIL
Eng. Luiz Teixeira de MATTOS
Chefe do Departamento de Planejamento
TELEBRAS - Telecomunicacoes Brasileiras S/A

10:30 horas - Intervalo

10:45 horas - POLITICAS DE COMUNICACAO DE DADOS NO JAPAO
Mr. Kozo OTAKA
Assistant Director
International Cooperation Division
Communication Policy Bureau
Ministry of Post & Telecommunications

12:15 horas - ALMOCO

14:00 horas - TECNICAS DE COMUNICACAO DE DADOS & FORMACAO DE RECURSOS HUMANOS PARA COMUNICACAO DE DADOS
Mr. Yoshiaki NOKAMI
Manager
Overseas Technical Cooperation
International Cooperation and Planning Group
International Affairs Department
NTT - Nippon Telegraph & Telephone Corporation

16:00 horas - INTERVALO

16:30 horas - DESENVOLVIMENTO TECNOLOGICO PARA COMUNICACAO DE DADOS
Mr. Yoshiro SETO
Japan Patent Office Sub-Group
First Public Administration Systems Division
Public Administration Systems Corporation
Data Communication Systems Corporation
NTT - Nippon Telegraph & Telephone Corporation

18:30 horas - ENCERRAMENTO

IDIOMAS

As palestras serao proferidas em japones ou ingles (com traducao simultanea) e em portugues.

INSCRICOES

As inscricoes deverao ser realizadas previamente junto a :
ABJICA - Associacao dos Bolsistas JICA Sao Paulo
Rua Sao Joaquim, 381 - 6o. andar
A/C Sr. Yutaka
Ate 04/12/89
Havera limitacao de vagas.

CERTIFICADOS

Serao entregues certificados de participacao

INFORMACOES ADCIONAIS

ABJICA - Associacao dos Bolsistas JICA Sao Paulo
Rua Sao Joaquim, 381 , 6o. andar
CEP 01508 - Sao Paulo - SP
Tel (011) 279-65-77 com Sr.Yutaka

COMISSAO ORGANIZADORA

Presidente	: Dr. Levy Kaufmann	- ABJICA
Coordenacao	: Luiz Lisboa Monteiro	- TELESP
Equipe de Apoio	: Toshi-Ichi Tatchibana	- Vice Presidente da ABJICA
	Sussumo Niyama	- Diretor Tecnico da ABJICA
	Norma S. Almeida	- Diretora Social da ABJICA

ASOCIACION DE EXBECARIOS DE MEXICO EN JAPON, A. C.

EXBECARIOS PARTICIPANTES EN EL SEMINARIO INTERNACIONAL DE TELECOMUNICACIONES, ORIENTADO HACIA LA COMUNICACION EN DATOS. TORRE DE TELECOMUNICACIONES

29 y 30 de Noviembre de 1989.　(研修員)

1.- AGUILAR LOPEZ ANGEL　　S.C.T.　　5-34-79-83
Curso:
Año:

2.- AGUILAR MARQUEZ ROBERTO　　ENTEL　　5-34-79-83
Curso:
Año:

3.- ARANA MIRAVAL MIGUEL　　ITSA　　5-49-31-51
Curso: Ingeniería de Comunicación en Datos
Año: 1985-1986 - NTT.

4.- ARREOLA SANTANDER MARIO　　TELEVISA　　5-40-32-20
Curso: Engeneering of Software
Año: 1980.

5.- CARRO ROMERO JULIO CESAR　　ENTEL　　6-92-00-77 Ext. 174
Curso: Ingeniería de Comunicación por Satélite
Año: 1982. - KDD.

6.- CASTRO SANSUR MIGUEL ANGEL　　S.C.T.　　6-92-07-25
Curso: Transmisión Digital
Año: 1989. NTT.

7.- FLORES HEREDIA JAVIER　　J.F.E.　　6-83-23-23
Curso:
Año:

8.- LEON RAMIREZ ALEJANDRA EDITH　　CONACYT　　655-74-88
Curso: Switching Engineering
Año: 1985. NTT.

9.- MANDUJANO MOYA ENRIQUE　　TELMEX　　591-05-90
Curso:
Año:

EXBECARIOS PARTICIPANTES EN EL SEMINARIO INTERNACIONAL DE TELECOMUNICACIONES, 29 y 30 DE NOVIEMBRE DE 1989.

10.- MARTINEZ GONZALEZ FRANCISCO • • 653-23-81

Curso: Curso Internacional de Ingeniería de Transmisión de Datos.
Año: 1 9 8 6 .

11.- MATAMOROS MARTINEZ AGEO R. • • TELMEX 222-1658

Curso: Telefonía Digital e Ingeniería de Telecomunicaciones
Año: 1 9 7 4 - 1 9 7 5

12.- MARTINEZ CORCHADO GERARDO • UTEC 789-85-00 Ext. 40

Curso:
Año:

13.- ROSAS CID PEDRO • • S.C.T. 7o.P.A.N. 575-86-48

Curso: Diseño y Planeación de Redes de Telecomunicación
Año: 1 9 8 8 . NTT.

14.- RAMOS PLASCENCIA RODRIGO • • ENTEL 691-37-87

Curso: Administración de Capacitación en Telecomunicaciones
año: 1982 . NTT.

15.- TAVERA FERNANDO • • TELECOMUNICACIONES 538-57-30

Curso: Ingeniería en Transmisión Digital Avanzado II
Año: 1987 NTT

16.- VALENCIA MARTINEZ ERNESTO • • PRESIDENTE DE ASEMEJA 574-53-74

17.- Castellanos Mendez Manuel PENTAMEX 2-54-70-66
Curso: International Data Communication
Año: 1983

18.- Chora Nava Luis • Banca Cremi 5-66-98-33
Curso: Ingeniería de Comunicaciones
Año: 1979 . NTT

19.- Jimenez Valencia Carlos • TELMEX 2-22-55-34
Curso: Telecomunicaciones
Año: 1977 78 NTT
Curso: Tráfico Internacional
Año: 1981 . KDD.

（一般参加者）

ASOCIACION DE EXBECARIOS DE MEXICO EN JAPON, A. C.

ASISTENTES AL SEMINARIO INTERNACIONAL DE TELECOMUNICACIONES, ORIENTADO HACIA LA COMUNICACION EN DATOS.

29 y 30 de Noviembre de 1989.

1.-	ACOSTA BLANCAS JUAN RAMON	•	•	Universidad Pedagógica Nacional	6-52-20-06
2.-	ALANIS MARTINEZ ALEJANDRO	•	•	S.C.T.	5-34-79-83
3.-	ALVAREZ MARTINEZ RAUL	•		Mexicana de Aviación	7-02-34-22
4.-	BELTRAN MEDINA ROBERTO	•	•	ENTEL	6-92-00-77 Ext. 174
5.-	BOBADILLA CASTRO LUIS M.	•	•	TELECOMUNICACIONES	5-19-59-81
6.-	CATALAN EDUARDO	•		Grupo R.F.	5-33-27-84
7.-	CASANOVA RAMIREZ RAUL	•	•	TELECOMUNICACIONES	5-38-81-18
8.-	CORTES ISABEL	•	•	TELECOMUNICACIONES	6-92-10-31
9.-	CRUZ LOPEZ BERTIN	•	•	SEARS	5-74-18-00
10.-	DAVE LESLIE	•	•	Digital Equipment de México	6-60-44-26
11.-	DELGADO ANDRADE HECTOR	•	•	UNAM / CICH	5-48-02-03
12.-	DURAN ARELLANO CRUZ	•	•	Transmisión de Datos S.C.T.	5-30-86-00
13.-	GARCIA POIRE JORGE A.	•	•	Transmisioón Digital S.C.T.	5-30-30-60 Ext. 2345
14.-	GOMEZ TOLEDO JOSE JAIME	•	•	Universidad Pedagógica Nacional	6-52-20-06
15.-	HERNANDEZ REYES ESTEBAN G.	•	•	TELEPAC	5-30-30-60 Ext. 2345
16.-	LOPEZ CHAVIRA JOSE LUIS	•	•	TELECOMUNICACIONES	5-19-80-39
17.-	LOPEZ REYNA CRISOFORO	•	•	S.E.P.	5-52-47-15
18.-	LOPEZ SALAZAR PEDRO	•		SEARS	5-74-18-00
19.-	NIETO CORTES MARIO ALBERTO	•	•	TELEPAC	5-30-30-60 Ext. 2345

ASOCIACION DE EXBECARIOS DE MEXICO EN JAPON, A. C.

ASISTENTES AL SEMINARIO INTERNACIONAL DE TELECOMUNICACIONES
29 y 30 de Noviembre de 1989.

20.-	PADILLA CASTAÑEDA HUMBERTO	•	•	DIREC. DE FOMENTO S.C.T.	6-79-71-20
21.-	PEREDO HUERTA JORGE	•	•	SECRETARIA DE HACIENDA	6-84-31-77
22.-	RAMIREZ FACUNDO	•		ENTEL	6-91-98-67
23.-	ROMERO RODRIGUEZ NOE	•	•	SECRETARIA DE COMERCIO	2-86-08-17
24.-	TODD DELGADO ELIZABETH	•	•	BCO. DEL ATLANTICO	3-95-85-22
25.-	TURRENT DIAZ RAFAEL	•		S.C.T.	5-34-53-46
26.-	VALENCIA GUTIERREZ RICARDO	•	•	BCO. DEL ATLANTICO	3-95-94-17
27.-	VAZQUEZ H. FRANCISCO JAVIER	•	•	Transmisión Digital S.C.T.	
28.-	WEITZNER JORGE	•		Grupo R.F.	5-33-27-84
29.-	Sánchez Alamos Marina		•	Telecomunicaciones	5-19-59-81
30.-	Peña Contreras Arturo		•	S.C.T	
31.-	Matamoros Martínez Antonio		•	TELMEX	
32.-	Zavala Fernández René		•	TELMEX	

（ブラジル）

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
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I SEMINARIO INTERNACIONAL DE COMUNICAÇÃO DE DADOS BRASIL - JAPÃO

LISTA DE PRESENÇA

1. Mr. Takashi Kitamura	- Diretor Geral JICA em São Paulo
2. Mr. Alberto Tomita	- Presidente ABJICA
3. Mr. Levy Kaufman	- 1º Vice-Presidente ABJICA
4. Miss Yoko Andō	- Operation Division JICA em Tokyo
5. Mr. Luiz Teixeira de Mattos	- Chefe do Depto de Planejamento TELEBRAS - Telecomunicaçoẽs de SP
6. Mr. Kozo Otaka	- Assistent Director Ministry of Post & Telecomunications
7. Mr. Yoshiaki Nokami	- Manager NTT-Nippon Telegraph & Telephone Co.
8. Mr. Yoshiro Seto	- Japan Patent Office Group NTT-Nippon Telegraph & Telephone Co.
9. Mr. Toshi-ichi Tachibana	- 2º Vice-Presidente ABJICA
10. Mr. Sussumu Niyama	- Diretor Técnico ABJICA
11. Mr. Mikio Habu	- Chefe de Cooperação Tecnica JICA em São Paulo
12. Mr. Hirokazu Sasaki	- Assessor Especial JICA em São Paulo
13. Mr. Luiz Lisboa Monteiro	- Analista de Sistemas TELESP-Telecomunicaçoẽs de São Paulo
14. Mrs. Norma Shibazaki de Almeida	- Diretora Social ABJICA
15. Mr. Yoshiaki Ueno	- Interpreter
16. Mrs. Tomoko Ueno	- Interpreter

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
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Tel. 279-6577 - São Paulo - SP

LISTA DE PRESENÇA

17.	Mr. Ademir Marcondes de Castro	- Assistente Cia Telefonica Borda do Campo
18.	Mr. Afonso Emilio Silva Tore	- Representante Técnico CPM - Informatica SA
19.	Mr. Alberto Yassuta Kobashi	- Engenheiro Cia Telefonica Borda do Campo
20.	Mr. Alexandre Yudenitsch	- Analista de Sistemas TELESP
21.	Mr. Alipio Nery de Lima Sobrinho	- Engenheiro Cia Telefonica Borda do Campo
22.	Mr. Almiro Roberto Dalla Rosa	- Engenheiro Cia Telefonica Borda do Campo
23.	Mr. Amauri Pedroso Catropa	- Administrador TELESP
24.	Mr. Antonio Fernandez	- Administrador ATS TELESP
25.	Mr. Antonio Fisher de Toledo	- Engenheiro TELESP
26.	Mr. Antonio Marcos Ferraz de Campos	- Engenheiro TELESP
27.	Mr. Arnaldo Francisco Viera	- Engenheiro TELESP
28.	Mr. Augusto Koji Kogure	- Engenheiro TELESP
29.	Mr. Benedito Benes Souza	- Tecnico Planejamento II Cia Telefonica Borda do Campo
30.	Mr. Caetano Vasto Nero	- Chefe de Seção PTI01 TELESP
31.	Mr. Carlos Alberto Ramos	- Engenheiro TELESP
32.	Mr. Carlos Augusto Melo de Faria	- Engenheiro TELESP

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
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Tel. 279-6877 - São Paulo - SP

LISTA DE PRESENÇA

33.	Mr. Carlos Dawton Pizzoli	- Analista de Sistemas TELESP
34.	Mr. Carlos Roberto Pereira Mendes	- Analista de Sistemas TELESP
35.	Mr. Carlos Theodoro Pranke	- Engenheiro TELESP
36.	Mr. Carlos Yuji Minetoma	- Tecnico em Telecomunicaçoẽs III Cia Telefonica Borda do Campo
37.	Mr. Claudio Rezende da Silva	- Administrador TELESP
38.	Mr. Clementino Faloppa	- Engenheiro TELESP
39.	Mrs. Conceição Aparecida Tomaz Gamboa	- Assistente Tecnico de RH TELESP
40.	Mr. Coriolano Silveira da Mota	- Engenheiro TELESP
41.	Mr. Cosmos V. Pavoni Jr.	- Analista de Sistemas TELESP
42.	Mr. Edgard Norberto Homen	- Engenheiro Cia Telefonica Borda do Campo
43.	Mr. Edivaldo Ribeiro dos Santos	- Engenheiro TELESP
44.	Mr. Edson Jose de Vito Junior	- Consultor Junior Promon Engenharia Ltda
45.	Mrs. Edna Polvani	- Assistente Mercado II Cia Telefonica Borda do Campo
46.	Miss Eiko Tsukide	- Chefe de Seção Cia Telefonica Borda do Campo
47.	Mrs. Eliane Valente	- Instrutor TELESP
48.	Mr. Elieser Carlos de Souza	- Chefe de Divisão Cia Telefonica Borda do Campo

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
Rua São Joaquim, 381 - 6.º Andar - CEP 01508
Tel. 270-6677 - São Paulo - SP

LISTA DE PRESENÇA

49.	Mrs. Elisa Mayumi Okada	- Analista Software TP PROCEDA S/A Serviços Administrativos
50.	Mr. Epitacio Luiz Santana	- Chefe de Seção Cia Telefonica Borda do Campo
51.	Mr. Esley Vitor Massaini	- Chefe de Divisão Cia Telefonica Borda do Campo
52.	Mr. Euclides Bento de Oliveira Junior	- Auditor TELESP
53.	Mr. Everaldo Tadeu Baron	- Engenheiro de Desenvolvimento EMBRACOM ELETRONICA S/A
54.	Mr. Fabio Gonçalves Dias Filho	- Engenheiro TELESP
55.	Mr. Flavio Jose Alves Junior	- Auditor TELESP
56.	Miss Florisbela Yasuko Muroka	- Assistente Tecnico RH TELESP
57.	Mr. Francinelson Rodrigues Soares	- Instrutor TELESP
58.	Mr. Gilberto Ganhito	- Engenheiro TRACECOM Telecomunicaçoẽs informatica
59.	Mr. Gilberto Gomes Greco	- Administrador TELESP
60.	Mr. Giovanni Carrino	- Engenheiro TELESP
61.	Mr. Gustavo Eduardo A. da Silveira	- Coordenador Suporte Tecnico RHEDE TECNOLOGIA S/A
62.	Mr. Gustavo Rodolpho Moraes Jardim	- Engenheiro TELEGOIAS
63.	Mr. Hamilton Fernandes	- Chefe de Seção TELESP

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
Rua São Joaquim, 381 - 6.º Andar - CEP 01508
Tel. 279-6577 - São Paulo - SP

LISTA DE PRESENÇA

64. Mr. Helcio Vilela de Moura Leite - Engenheiro TELESP
65. Mr. Helio Massagardi - Pedagogo TELESP
66. Mrs. Helena Harada - Engenheira TELESP
67. Mr. Helvio Marques de Lima - Engenheiro TELESP
68. Mr. Henri Stenberg - Consultor Cia Telefonica Borda do Campo
69. Mr. Henrique Januario de Souza - Consultor TELEBRAS - CPQD
70. Mr. Hitoshi Shimizu - Engenheiro Chefe de Divisão
71. Mr. Ignacio de Loiola Sacae Sano - Administrador TELESP
72. Mr. Itaici Pirolla Macieira - Chefe de Seção TELESP
73. Mr. João Alvarino Gabriel - Engenheiro ELEBRA TELECOM LTDA
74. Mr. João Antonio Rodrigues - Engenheiro TELESP
75. Mr. João Batista Serroni de Oliva - Engenheiro TELESP
76. Mr. João José Silveira - Engenheiro NEC DO BRASIL S/A
77. Mr. João Luis Calderon Tortosa - Analista de Sistemas TELESP
78. Mr. João M. Borsato - Engenheiro TELESP

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
Rua São Joaquim, 381 - 6.º Andar - CEP 01508
Tel. 279-6577 - São Paulo - SP

LISTA DE PRESENÇA

79.	Mr. João Manoel Fernandes	- Engenheiro Cia Telefonica Borda do Campo
80.	Mr. Jorge Cristian Paraski-Gounaris	- Gerente de Mercado AMP DO BRASIL
81.	Mr. Jorge Minoru Matsuda	- Engenheiro EMBRATEL
82.	Mr. Jose Dantas de Mello Filho	- Engenheiro Cia Telefonica Borda do Campo
83.	Mr. Jose Galvão Aguiar	- Engenheiro TELESP
84.	Mr. Jose Mauricio Gonçalves de Abreu	- Chefe de Divisão TELESP
85.	Mr. José Renato Kitahara	- Lider de Projetos Banco America do Sul
86.	Mr. Jose Ricardo Benazzi	- Engenheiro Telecomunicaçoẽs do Parana
87.	Mr. Jose Victorino da Silva Netto	- Engenheiro TELESP
88.	Mr. Jose Salum Neto	- Engenheiro TELESP
89.	Mr. Lauro Kazutoshi Uemura	- Engenheiro Cia Telefonica Borda do Campo
90.	Mr. Liu Fat Yam	- Analista de Sistemas TELESP
91.	Mr. Luiz Carlos de Barros Moncau	- Engenheiro TELESP
92.	Mr. Luiz Carlos Marques Ricardo	- Chefe de Divisão Tecnica TELESP
93.	Mr. Luiz Carlos Perico	- Analista de Sistemas TELESP

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
Rua São Joaquim, 381 - 6.º Andar - CEP 01508
Tel. 279-0577 - São Paulo - SP

LISTA DE PRESENÇA

94.	Mr. Luis Carlos Schorr Silveira	- Engenheiro TELESP
95.	Mr. Luis Carlos Souza Padilha	- Tecnico Telecomunicaçoẽs TELESP
96.	Mr. Marcio Dandrea	- Analista de Sistemas TELESP
97.	Mr. Marcio França Rangel	- Chefe de Divisão TELESP
98.	Mrs. Maria do Carmo Palma	- Analista de Sistemas TELESP
99.	Miss. Maria Cecilia Araujo da Silva	- Chefe de Divisão TELESP
100.	Mrs. Maria Lucia Durão Fragoso	- Vice Presidente ACTBJ Telecomunicaçoẽs do Rio de Janeiro
101.	Mr. Mario Luis Silva	- Chefe de Seção TELESP
102.	Mr. Marcio Yasumasa Uema	- Engenheiro Cia Telefonica Borda do Campo
103.	Mr. Mauro Rac	- Analista de Sistemas TELESP
104.	Mr. Mihail Pronin	- Engenheiro TELESP
105.	Mr. Milton Minoru Toda	- Auditor TELESP
106.	Mr. Milton Urizar Cosenti	- Chefe de Seção Cia Telefonica Borda do Campo
107.	Mrs. Mylhi Elizabeth Schilittler	- Chefe de Divisão TELESP
108.	Mr. Nelson Claudiney Navarro	- Chefe de Divisão TELESP

ESCRITÓRIO ANEXO DO CONSULADO GERAL DO JAPÃO
EM SÃO PAULO
Rua São Joaquim, 381 - 6.º Andar - CEP 01508
Tel. 279-6577 - São Paulo - SP

LISTA DE PRESENÇA

109.	Mr. Nelson Schultz Filho	- Assistente Tecnico Sistema TELESP
110.	Mr. Nelson Falcão	- Coordenador TELESP
111.	Mr. Nelson Zaragoza Junior	- Engenheiro TELESP
112.	Mrs. Nely Marcegaglia da Cunha Pirillo	- Engenheira TELESP
113.	Miss Nana Homma	- Secretária JICA em São Paulo
114.	Mr. Odmar Jose Guerreira	- Chefe de Seção TELESP
115.	Mr. Paulo Fernando Pasquino	- Analista de Sistemas TELESP
116.	Mr. Paulo Hiroshi Okubo	- Cehfe de Departamento TELESP
117.	Mr. Paulo Motta Silveira Correa	- Administrador IBM DO BRASIL
118.	Mr. Paulo Pinho	- Diretor de Vendas Transmissão SESA RIN TELECOMUNICAÇOÊS
119.	Mr. Pascoal Aita Neto	- Programador TELESP
120.	Mr. Paulo Roberto Grimone	- Analista de Sistemas TELESP
121.	Mr. Paulo Taizo Nisiyama	- Engenheiro Cia Telefonica Borda do Campo
122.	Mr. Paulo Taniwaki	- Engenheiro BANCO ITAÚ S/A
123.	Mr. Pedro Hisashi Yano	- Gerente EMBAATOS

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125.	Mr. Ricardo Enbank Pacheco	- Engenheiro TELESP
126.	Mr. Rinaldo di Shiavi	- Administrador TELESP
127.	Mrs. Rita de Cassia S. Soares da Silva	- Engenheira TELESP
128.	Mr. Roberto Alves de Oliveira	- Chefe de Seção
129.	Mr. Roberto Fumikazu Yokoyama	- Chefe de Departamento Manutenção Cia Processamento de Dados de SP
130.	Mr. Roberto Massatoshi Aoki	- Analista Software UNIBANCO S/A
131.	Mr. Roberto Rodrigues	- Assessor de Diretor TELESP
132.	Mr. Roberto Yoshihiro Nakamura	- Pesquisador TELEBRAS
133.	Mr. Rodolfo Tsunio Masuko	- Analista de Sistemas TELESP
134.	Mr. Sergio Coelho Junior	- Chefe de Seção TELESP
135.	Mr. Sidney Dalla Torre	- Analista de Sistemas TELESP
136.	Mr. Silvio dos Reis	- Analista de Sistemas TELESP
137.	Mr. Silvio de Souza Dias	- Chefe de Seção Cia Telefonica Borda do Campo
138.	Mr. Takashi Tanaka	- Chefe de Divisão TELESP

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140.	Mr. Tirso Camargo Terra	- Chefe de Divisão TELESP
141.	Mr. Toshiharo Saito	- Gerente Banco America do Sul S/A
142.	Mr. Totumu Otaga	- Analista de Sistemas TELESP
143.	Mr. Toshiya Katsuda	- Secretario Executivo Conselho Estadual de Telecomunicação
144.	Mr. Tuyossi Kitamura	- Chefe de Divisão TELESP
145.	Mr. Valdir Ramos Belleti	- Engenheiro TELESP
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148.	Mr. Wander Rodrigues Fernandes	- Chefe de Divisão Cia Telefonica Borda do Campo
149.	Mr. Washington Shoji Maeyama	- Analista de Sistemas TELESP
150.	Mr. Wilson Yassumassa Sato	- Chefe de Seção TELESP
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152.	Mr. Noboru Wakayama	- Chefe de Seção JICA em São Paulo
153.	Miss Vanderleia Shibazaki de Almeida	- Secretaria Faculdade de Tecnologia de São Paulo

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155.	Mr. Yoshihiko Nishikata	- Vice Tesoureiro JICA em São Paulo
156.	Mr. Hiroshi Hara	- Secretario JICA em São Paulo
157.	Mr. Reiji Kawakami	- Chefe de Seção JICA em São Paulo
158.	Mr. Tsutomu Omine	- Secretario JICA em São Paulo
159.	Mrs. Toshie Oichi	- Secretaria JICA em São Paulo
160.	Miss Hiroko Meyra	- Secretaria JICA em São Paulo
161.	Mrs. Setsuko Kato	- Secretaria JICA em São Paulo
162.	Mrs. Hiro Lia Okayama	- Secretaria Consulado Geral do Japão
163.	Mr. Hajime Nohno	- Consul Consulado Geral do Japão
164.	Mr. Jose Ignacio Siqueira de Almeida	- Consultor ABJICA
165.	Mr. Jose Taniguti	- Engenheiro SABESP - ABJICA
166.	Mr. Hiroyuki Takeda	- Assessor JICA em São Paulo
167.	Mr. Tomoyuki Sasaki	- Assessor JICA me São Paulo

LA SECRETARIA DE COMUNICACIONES Y TRANSPORTES

LA AGENCIA DE COOPERACION INTERNACIONAL DEL JAPON JICA

Y LA

ASOCIACION DE EX BECARIOS DE MEXICO EN JAPON A. C.

OTORGAN EL PRESENTE

DIPLOMA

A: Leslie Dawe

Por su participación en el Seminario Internacional de Telecomunicaciones Orientado hacia la Comunicación de Datos, realizado en la Torre Central de Telecomunicaciones los días 29 y 30 de Noviembre de 1989.

México, D. F. Noviembre de 1989.

EL DIRECTOR GENERAL DE TELECOMUNICACIONES

ING. MIGUEL E. SANCHEZ RUIZ

REPRESENTANTE DE JICA EN MEXICO

LIC. HISASHI MOCHIZUKI

EL PRESIDENTE DE LA ASOCIACION DE EXBECARIOS DE MEXICO EN JAPON, A. C.

LIC. ERNESTO VALENCIA MARTINEZ

VI — 8 修了証書（メキシコ）

ABJICA

ASSOCIAÇÃO DOS BOLSISTAS JICA – SP

JAPAN INTERNATIONAL COOPERATION AGENCY

CERTIFICADO

Conferido a

por sua participação no I SEMINÁRIO INTERNACIONAL DE COMUNICAÇÃO DE DADOS BRASIL-JAPÃO

São Paulo, 06 de dezembro de 1989.

Alberto Tomita	Kozo Otaka	Luiz Lisboa Monteiro
Presidente da ABJICA-SP	Representante da JICA	Coordenador do Evento

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1. Name :

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2. Date of Birth : _____ / _____ / _____

Month Day Year

3. Home Address : _____

_____

4. Name and Address of your organization :

Name : _____

Address : _____

Telephone No. : _____

5. Your present post in your organization and brief description of your duties and activities :

Post _____

Your duties and activities _____

_____

_____

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6. Questions on this seminar :

1) Is the seminar useful for you ? (Please circle a or b)

a. Yes. b. No.

Please state the reason.

2) Please state your request concerning follow-up activities by JICA besides the seminar.

3) Any other comments in general.

Muchas Gracias

* * * * * * *

★ For those who are the ex-participants:
Kindly give answers wo the following questions in block letters.

A. Name of the course you participated: (Please circle a or b)
   a. Group training
   b. Individual training _____

B. The year of your participation: _____

C. Position and name of the organization you belonged prior to the participation in the Course:
   Position Organization
   _____ _____

D. In what specific area are you making use of the results of the training course in Japan?
   _____
   _____
   _____
   _____

E. Please give us any comments which you may consider useful in organizing the future course
   _____
   _____
   _____
   _____

Thank you very much

The Recent Situation of the Telecommunication Policy in Japan

By

Kozo Otaka

Ministry of Posts and Telecommunications

Japan International Cooperation Agency

CONTENTS

4. NEW DEVELOPMENTS IN TELECOMMUNICATIONS ADMINISTRATION

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1. THE HISTORY AND CURRENT SITUATION OF THE TELECOMMUNICATIONS BUSINESS IN JAPAN

(1) History

Telecommunications began in Japan as part of the modernization efforts following the Meiji Restoration of 1868. Public telecommunications service started with the opening of telegraph service between Tokyo and Yokohama in 1870.

Telecommunications services had since been run by the government and spread as the monopolized services of the Ministry of Communications. Approximately a half of Japan's telecommunications facilities were lost during World War II and the number of telephone subscribers dropped to 540,000.

In 1952, in a bid to efficiently promote the restoration and expansion of public telecommunications facilities and equipment - especially telephones - Nippon Telegraph and Telephone Public Corp. (NTT) was established. In 1953, Kokusai Denshin Denwa Co., Ltd. (KDD) was established to expand international public communications. Since then, the telecommunications business in Japan - which had long been monopolized by the government - became the monopoly of NTT domestically, and that of KDD internationally.

With today's steadily increasing role of information, telecommunications are expected to play a larger part in establishing an advanced information society. It was against to his backdrop that the Telecommunications Business Law and the Nippon Telegraph and Telephone Corporation Law went into force, effective April 1, 1985. These laws spelled the end of the telecommunications monopoly in Japan, which existed for more than 100 years. The nation's telecommunications business then entered an era of free competition based on the dynamism of the private sector.

Table 1-1 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 and 736 carriers (As of April 1 1989)	KDD, ITJ, IDC and 15 carriers (As of July 1 1989)

(2) The Domestic Telecommunications Business

Under the supervision and protection of the Japanese Government, NTT endeavored to promote the use of telecommunications through six five-year projects from fiscal 1953 to 1982.

During this period, the two foremost goals were to catch up with the growing demand for telephone sets and to establish nationwide automatic exchanges. Both of these objectives were successfully attained by March 1979.

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

(a) NTT 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 developed its own technologies.

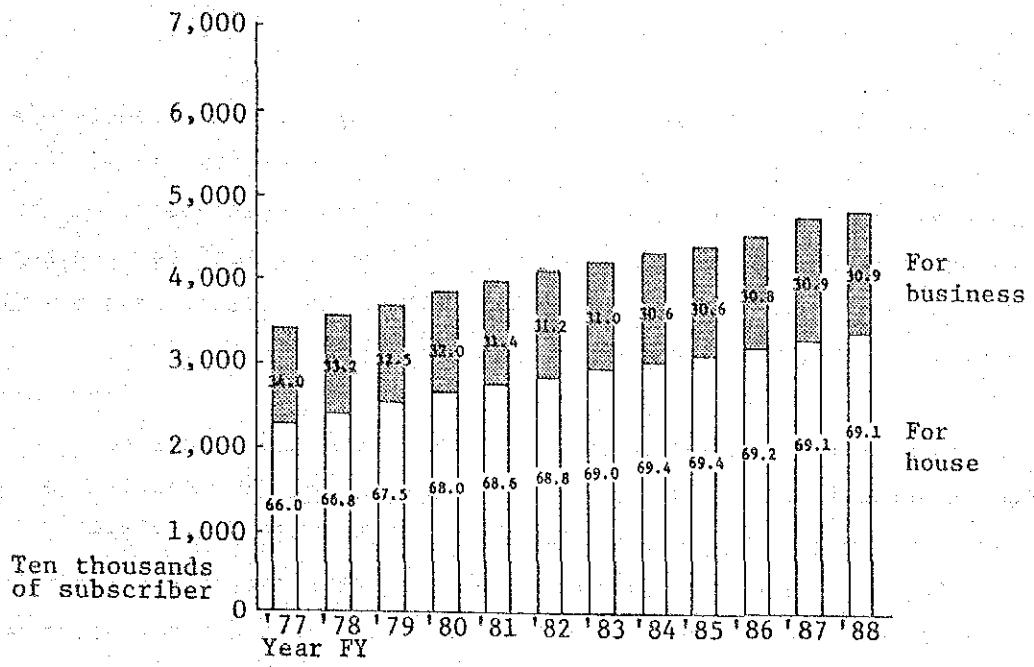
(c) Specialized training organizations were established to develop personnel resources and to retrain employees.

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

(e) To ensure sufficient funds for the expanding telecommunications facilities and equipments, NTT 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.)

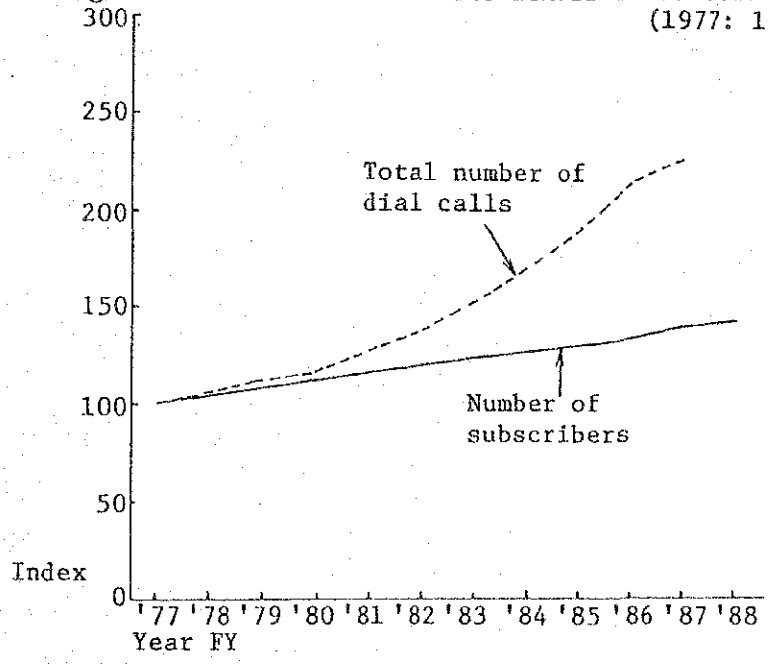
(f) In addition to the factors peculiar to Japan's telegraph and telephone business, there have been strong effects of the steady growth of the Japanese economy.

As a result, the number of telephone subscribers increased to 49.52 million by September 1988, which was 41.3 subscribers per 100 Japanese.



Prepared based on NTT data
(Note) Value in each year indicates the configuration ratio

Fig. 1-2-1 Transition of the Number of Subscribers



Prepared based on NTT data
(Note) The total number of dial calls is an estimated value by special investigation.

Fig. 1-2-2 Transition of the Increase Rates of Subscribers and D

(3) The International Telecommunications Business

To establish a system with which to manage Japan's transborder telecommunications independently and dynamically - and with the minimum government regulation - KDD was established and began operations as a Joint-stock company in 1953. Since the, Japan's demand for overseas telecommunications skyrocketed thanks to the development of submarine cables and satellite communications technology.

The international telephone system has become a major tool of international communications with the continuous globalization of the Japanese economy. As a result of heavy increase in demand for international calls by corporations and ordinary citizens alike - and also demands for expanded use of facsimile and data transmissions on an international and networked basis - the number of calls handled by KDD has drastically increased. The number of Japan's international calls stood at 252.04 million in fiscal 1988. This marked an increase of 33.8 percent over the 188.28 million calls handled in the previous fiscal year.

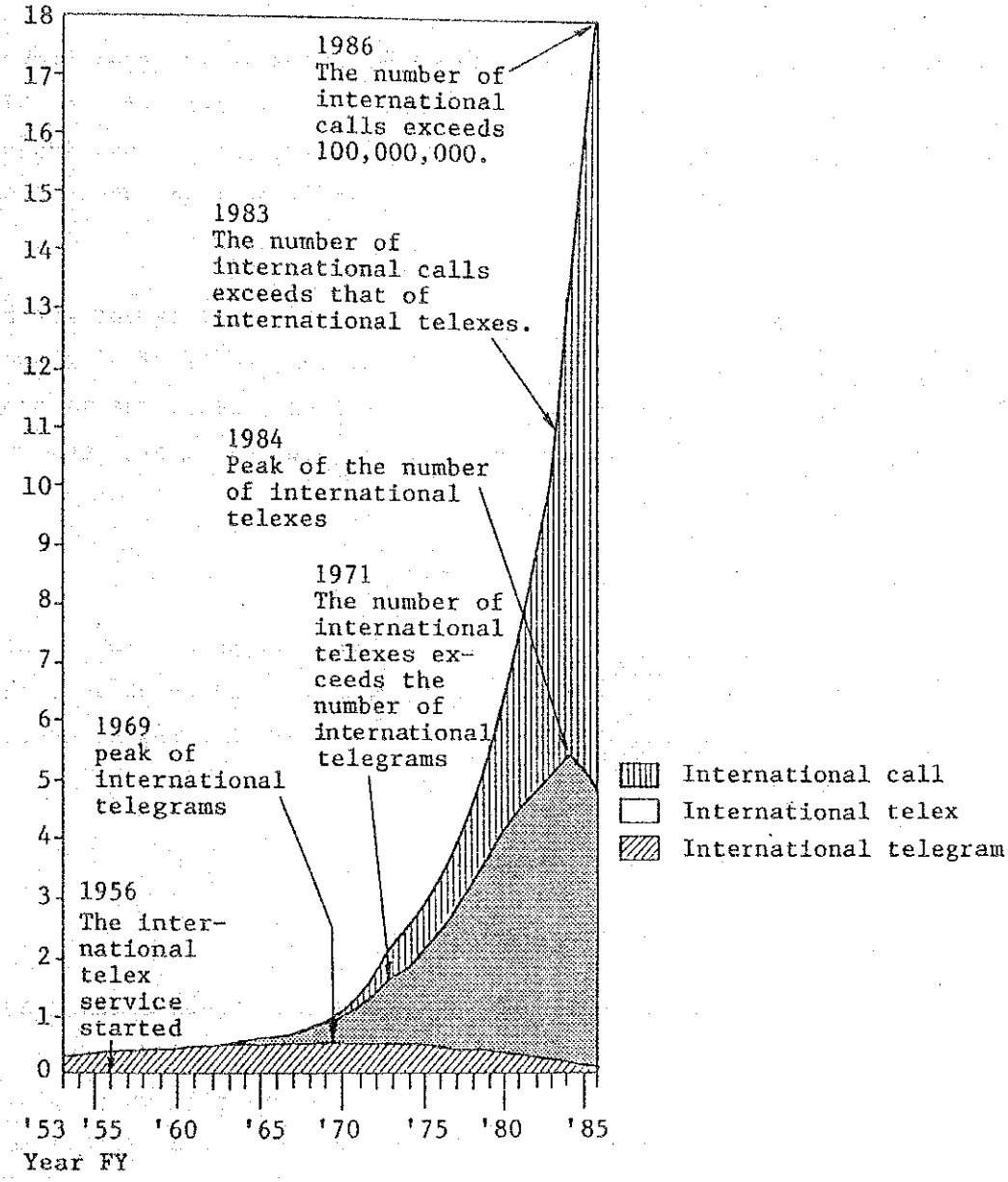


Fig. 1-3 Transition of Number of International Calls, International Telex, and International Telegrams

(4) Outline of Japan's Telecommunications Market

① Market Scale

a. Communications equipment market

Production of telecommunications equipment in Japan amounted to 2,114 billion yen in FY 1987, with exports totaling 676.3 billion yen and imports of 49.6 billion yen. Thus, Japan's telecommunications market scale for FY 1987 was about 1,487.2 billion yen.

Further, production of telecommunications equipment for FY 1992 is expected to be 2,779.0 billion yen (according to the Communications Industry Association of Japan), and is projected to grow at a steady rate of 5.6% per year. (Refer to Table 1-4.)

b. Telecommunications service market

The telecommunications service market is one field in which high growth is expected due to technical progress in recent years, and because of advances and globalization of social and economic activities.

(a) Domestic telecommunications

(i) Telephone, Telegraph

The number of subscriber telephones reached 49.52 million at the end of September, 1988. This means that there are 41.4 telephones per 100 people, which is about double the rate of as little as ten years ago. From now on, the demand for more convenient telephones having higher-level functions is expected to increase.

A total of 41.04 million telegrams were sent in FY 1987. While the number of ordinary telegrams decreased, those of a congratulatory or condolence nature increased. The total number of telephone calls dialed in FY 1987 reached 75.9 billion, a 5.7% increase over the total for the previous year. The average number of telephone calls per person is about twice what it was ten years ago.

(ii) Mobile communications service

1. Cellular telephones

Currently, there are service areas in cities throughout Japan, including Tokyo, Osaka and Nagoya, and there were approximately 150,000 subscribers as of the end of FY 1987.

2. Pocket pagers

At present, the pocket-pager service is provided in 67 areas throughout the country. At the end of FY 1987, there were about 2,950,000 subscribers.

Table 1-4-1 Comparison of Communications Tariffs for Japan, the U.S. and the EC

	Japan		USA	EC
	Until Dec.31, 1985	From Jan.1, 1986		
Wire communications equipment				
Telephone sets	4.2%	0%	8.5%	7.5%
Telegraph equipment	3.6	0	5.3	7.5
Switching equipment				
Electronic switching equipment	5.7	0	8.5	7.5
Other types of switching equipment	4.2	0	5.3	7.5
Carrier equipment	3.6	0	5.3	5.1
Radio communications equipment				
Airborne equipment	4.0	0	0-6.0	0-14.0
Other	5.1	0	6.0	5.4-14.0

(Sources) Japan: Customs Tariff Schedules of Japan
U.S.A.: Tariff Schedule of the United States Annotated (1985)
EC : Official Journal of the European Communities (10.12.1984)

Table 1-4-2

(Unit: 100 million yen)

Equipment \ Fiscal Year	1986	1987	Percent Change from previous Year(%)	1992 (Predicted)	Average Annual Rate of Increase, 1987 - 1992(%)
Communications equipment	17,970	21,139	17.6	27,790	5.6
Wire communications equipment	14,270	16,805	17.8	21,575	5.1
Telephone sets	1,017	1,178	15.8	1,755	7.0
Telephone application equipment	2,356	1,887	19.9	1,949	0.6
Telegraphy/ imaging equipment	3,271	3,996	22.2	6,954	11.7
Switching equipment	3,515	4,087	16.3	4,546	2.2
Carrier equipment	3,596	5,088	41.5	5,667	2.2
Parts	515	568	10.4	704	4.4
Radio communications equipment	3,700	4,334	17.1	6,215	7.5
Fixed stations	2,118	2,230	5.3	3,025	6.3
Mobile stations	1,582	2,103	32.9	3,190	10.3

(Notes) 1. Radio communications equipment does not include citizens-band transceivers or amateur-radio communications equipment.
2. Broadcasting equipment and radio application equipment are not included.

(Source) Communications Industry Association of Japan

(iii) VAN market

The Network Promotion Council of the Ministry of Posts and Telecommunications estimated Japan's VAN market size (including the revenue of all Type II enterprises and the sales of information processing) in 1987 to be about 783 billion yen. Market size in 1991 is expected to reach approximately 2,800 billion yen, which is an expected growth rate of about 30% per year.

The actual status of VAN business is that most companies are small when looked at from the capital, sales or network size viewpoint, with about 80% of them having less than 1 billion yen in VAN sales. However, there are a few large companies with sales of more than several 10 billions of yen, so there are significant differences in business size.

In addition, more than half of the VANs are specialized VANs (more than 50% of their sales come from one kind of business user), which means that the majority of VANs are closely related to specific businesses.

(b) International telecommunications

Japan's demand for international communications services, which reflect the country's further internationalization and development of an information-oriented society in such fields as government, economy and culture in recent years, has shown increases in both quality and quantity. (Refer to Table 1-5.)

In particular, the recent increase in use of the telephone is remarkable, and should continue to increase favorably, with a market size estimated to be approximately 220 billion yen.

Table 1-4-3

(Units: 10,000 international calls and telexs, 10,000 international telegrams)

Service \ Fiscal Year	1983	1984	1985	1986	1987
Telephone	4,974	6,890	9,563	13,461	18,830
Telex	4,962	5,210	5,017	4,379	3,473
Telegram	215	185	152	120	97

(Note) Total represents sending, receiving and relay transmission (single count).

2. LIBERALIZATION OF THE TELECOMMUNICATIONS BUSINESS

(1) Background of the Reform of the Telecommunications System

The privatization of telecommunications took place on April 1, 1985. This should be to regarded as a revolutionary reform in the history of Japan's telecommunications.

The two leading objectives - to catch up with the heavy demand for telephones and the establishment of a nationwide automatic exchange system - were attained by March 1979. This made Japan one of the most advanced countries in telecommunications. In this respect, we can say that Japanese telecommunications based on a public monopoly has functioned effectively for the well-being of the Japanese public.

In parallel, however, with the rapid development of information and telecommunications technologies in recent years, and the constant development and implementation of the so-called "New-Media" products, requests for telecommunications services have become sophisticated and diversified. It is believed that in order to respond effectively to these new demands, services through competition by a number of enterprises, rather than a single monopolistic power, would certainly bring more benefit to users. This competition and privatization has largely transformed the environment for the telecommunications business and market in Japan, making it possible for private companies to use their technical and financial strengths in telecommunications services and at the same time, giving a stimulus to NTT to increase the efficiency and dynamism of its management.

Meanwhile, Japan is transforming itself from a mere industrial society into a highly advanced information society. In this transition, telecommunications are expected to play a key and fundamental role. Under these social and economic settings, it became imperative for Japan - a country which has attained major telecommunications objectives to establish a revolutionary telecommunications policy in a bid to achieve the advanced information society plateau of the twenty-first century.

Under these circumstances, it was urgent to actively utilize the private sector's creative ideas, and then to make the nation's telecommunications business more dynamic and more efficient, introducing competition to the field.

(2) Telecommunications Legislation

① Introduction

At present, Japanese laws related to telecommunications administration consist of the MPT Foundation Law which is one of the administration structure laws; the telecommunications fundamental law, which includes the Wire Telecommunications Law (for wire communications); and the Radio Law (for wireless communications); the service operation law which includes the Telecommunications Business Law, the Broadcast Law, etc.; and the industrial organization law which includes the Nippon Telegraph and Telephone Corporation Law, the KDD Co., Ltd. Law, etc.

Of these laws, the Telecommunications Business Law and the NTT Corporation Law newly enacted in April, 1985 to revise Japan's telecommunications system. At that time, certain other laws, such as the Wire Telecommunications Law and the Radio Law, were revised as necessary to conform with the new system. The following provides an outline of Japan's major telecommunications laws.

a. The Radio Law

Radio Law is the legal standard related to radio communications. The objective of this law is to promote public welfare by securing fair and efficient use of radio waves.

In accordance with the revision of telecommunications policy in April, 1985, the restrictions on operation of radio stations aimed at promoting the public communications operations of the former NTT Public Corporation and KDD were eliminated, in principle.

b. The Telecommunications Business Law

This law was enacted in April, 1985, with the objective of applying private-sector vitality to achieve activation of and improved efficiency in telecommunications operations, to assure the public of the best performance that telecommunications can provide, to promote the return of profits and benefits to the nation's citizens (who are the ultimate users), and to assure the public welfare.

The law's framework recognizes new entries to the telecommunications field (which had been operated as a monopoly by NTT and KDD), division of telecommunications businesses by type of operation and the necessity of providing the minimun amount of business regulation, as well as assuring public conditions for performance and effective and fair competition.

There are Ordinances for Enforcement of the Telecommunications Business Law and Regulations for Enforcement of the Telecommunications Business Law that are lower-ranking laws and regulations under the Telecommunications Business Law.

c. The Nippon Telegraph and Telephone Corporation Law

The objective of this law is establishment of NTT as a private enterprise by abrogating the Nippon Telegraph and Telephone Public Corporation Law and providing the new, privatized NTT Corporation with a management formation suitable for a competitive system.

Fig. 2-2 gives a systematic classification of these laws, other related ordinances and related treaties. In addition to these laws, there are other ordinances designed to promote various types of telecommunications.

	(Major Stipulations)
Telecommunications Fundamental Laws	
• Wire Telecommunications Law (78/8/1)	Standards for the setting up and operation of wire telecommunications facilities
• Radio Law (75/6/1)	*Standards for the setting up and operation of radio telecommunications facilities*
Telecommunications Business Operation Laws	
• Telecommunications Business Law (85/4/1)	Conditions related to the offering of telecommunications services by telecommunications operators
• Law Concerning Wire Broadcasting Telephone Business (82/2/1)	Conditions related to the offering of wire broadcasting telephone business
• Broadcast Law (75/6/1)	Conditions related to the offering of broadcasting services
• Cable Television Broadcast Law (73/1/1)	Conditions related to the offering of cable television services
• Law to Regulate Operation of the Cable Sound Broadcasting Service (76/4/10)	Conditions related to the offering of cable sound broadcasting services
Telecommunications Industrial Organizations Laws	
• NTT Corporation Law (85/4/1)	Objectives, etc., for NTT
• KDD Co., Ltd. Law (77/9/10)	Objectives, etc., for KDD
• Broadcast Law (75/6/1)	Objectives, organization, etc., for NHK
• University of the Air Foundation Law — (81/6/11)	Objectives, organization, etc., for the University of the Air Foundation
• Telecommunications Satellite Corporation (79/7/1)	Objectives, organization, etc., for TSC}
• National Space Development Agency Law (69/6/23)	Objectives, organization, etc. for the National Space Development Agency
Telecommunications Administration System Laws	
• MPT Foundation Law (48/12/15)	Duties, power and organization of the Ministry of Posts and Telecommunications
Telecommunications-Related Treaties	
• International Telecommunication Convention (75/6/17)	Objectives, organization, etc., for ITU
• Constitution of the Asia-Pacific Telecommunity (79/2/25)	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.

Fig. 2~2 Laws Governing Japan's Telecommunications System

(3) Outline of the Telecommunications System

The new telecommunications system, based on the free competition was initiated on April 1, 1985. At that time the Telecommunications Business Law and the Nippon Telegraph and Telephone Corporation Law became effective.

There are two major points that should be mentioned about this telecommunications system reform.

The first point is, of course, the introduction of competition. The doors were thrown open to the public sector in the telecommunications business.

Up until then, companies other than the Nippon Telegraph and Telephone Public Corporation (NTT) and Kokusai Denshin Denwa Company (KDD) were not permitted in the telecommunications business. The main objectives of the telecommunications policy are the protection and promotion of benefits to users, and the establishment of a healthy base for business. In 1985, the policies shifted from a system based on a monopoly to a system based on competition. Then, so that users could freely choose the optimal product from a wide variety and source of services, competition was introduced in the telecommunications field at large.

The other point is that the Nippon Telegraph and Telephone Public Corporation was privatized to become the Nippon Telegraph and Telephone Corporation - a joint-stock company. After the reorganization became effective on April 1, 1985, NTT is still the backbone of Japan's telecommunications business. With a capitalization of ¥78 billion and a work force of 320,000 it is the largest business entity in this country. From that time on, the new NTT has tried to fulfill its responsibilities to society as a whole, strive to operate dynamically, and meet users' demands by providing services of high quality at low rates.

(4) Framework of the Nippon Telegraph and Telephone Corporation (NTT) Law

The Nippon Telegraph and Telephone Corporation (NTT) Law became effective when Telecommunications reform took place in April 1985.

This law, based on the public nature of NTT as a public entity, reorganized NTT as a joint-stock corporation for the purpose of making its operations more efficient and dynamic. The new NTT, under the law, offers domestic telephone service as its leading business. But it also carries out "incidental business activities" and "business activities necessary to achieve the company's purpose." With regard to public responsibilities, the new NTT Law calls for efforts to (a) achieve adequate and efficient management, (b) provide stable and constant telephone service throughout the country, and (c) promote basic research on and applications of telecommunications technologies - and to disseminate the fruits of such research.

The new NTT started out as a firm with the Japanese Government holding all of its stock. In fact, the NTT law stipulates that the government must hold at least one-third of the shares. In order, however, to streamline the privatization move, government shares are to be sold gradually to private firms and individuals. Individuals and corporations have become owners of 25 percent of NTT's shares. Also, NTT's budget required the approval of the Japanese Diet but under the new law, no such approval is necessary, and government intervention in the corporation has been minimized. NTT has been reorganized into an environment which allows it to make the best of its creativity.

(5) Framework of the Telecommunications Businesses Law

Within telecommunications, businesses that establish telecommunications circuit facilities, such as transmission route facility, must generally invest huge amount of money, and these facilities are the base for the offering of telecommunications service. Thus the stability and reliability of such telecommunications businesses must be assured to prevent the capacity of such facilities from being considerably exceeded. At the same time, because such a service has a

highly public nature, it is necessary to ensure that the charges and the offered conditions are reasonable, the same as for any other public utility.

On the other hand, telecommunications businesses that do not provide their own telecommunications circuit facilities, but operate just using computers etc., can be entered easily and in many cases interchangeably. Therefore, the system governing them should actively foster the use of original ideas, rather than be concerned primarily with the offering of stable service.

Therefore, the Telecommunications Business Law classifies the former type of business as a Type I telecommunications business, and the latter as a Type II telecommunications business, and provides the most suitable system corresponding to the characteristics of each to plan for healthy and varied development of the entire telecommunications market.

Classification as a Type I or Type II telecommunications business is based on the type of facilities used to offer telecommunications services, not on the services provided. This means that a Type I telecommunications carrier can offer all the types of communications services, such as telephone, facsimile, telex and VAN services that a Type II telecommunications carrier can. A Type II telecommunications carrier, however, does not provide its own circuit facilities. It utilizes the circuit facilities of a Type I telecommunications carrier in order to offer its services to customers.

① Type I Telecommunications Businesses

Type I telecommunications business, as described above, is a service that is indispensable to the nation's daily life, and its industrial and economic activities, as well as providing facilities of an industrial nature that require a huge amount of investment, and its provision of service is dependent on the condition of its facilities. Therefore, the starting of this type of business requires the permission of the Ministry of Posts and

Telecommunications, which must assure the stability and reliability of that business. Also, foreign affiliated companies can only provide up to one-third of the capital for the business. From enactment of the Telecommunications Business Law in April, 1985 up to the end of 1988, the business operators listed in Table 3-1-3 have obtained permission to operate Type I telecommunications businesses.

Type I telecommunications carrier must establish a tariff which sets the charges and any other terms relating telecommunications service under which it will offer its services to users, and it must obtain authorization of that tariff from the Ministry of Posts and Telecommunications. Any intended change or update of such tariff also requires authorization from the Ministry of Posts and Telecommunications. The objective of these requirements is to ensure that the contents of the tariff are rational, that the user's rights are justly assured, and to prevent the setting of unjust charges or unjust restrictions on the user.

② Type II Telecommunications Businesses

Type II telecommunications businesses are further classified as General Type II telecommunications businesses and Special Type II telecommunications businesses, with a different set of regulations governing each. A Type II telecommunications business that does not provide telecommunications services which intermediate communications of others (for example, a company engaged in on-line information processing) does not require both registration and notification. Regardless of whether business entry requires registration or not, in order to secure confidentiality of communications, every enterprise operating a telecommunications business is responsible for devising adequate protection for its users.

Since there is no restriction on foreign capital investment in either General Type II or Special Type II telecommunications businesses, many foreign companies have already entered this type of business.

a. Special Type II telecommunications business

Special Type II telecommunications business is a business which meets one of the following conditions:

1. Provide telecommunications facilities for the use of communications of many and unspecific persons, with facilities having a capacity that exceeds the specified minimum scale (500 circuits for telecommunications circuits with conversion to 1,200 bps) stipulated in the Ordinances for Enforcement of the Telecommunications Business Law (Government Ordinance).

2. Provide telecommunications facilities designed for communications between Japan and foreign points for the use of communications of others.

The phrase "telecommunications facilities designed for communications between Japan and foreign points" means facilities that connect Japanese and overseas nodes by like as leased circuit, not just the performance of international communications. Thus, a facility that provides telecommunications service using VENUS-P or international telex circuits offered by KDD to carry another party's communications is not a proper facility.

Persons who intend to operate a Special Type II telecommunications business must obtain registration from the Ministry of Posts and Telecommunications. Applications for such registration must follow the procedure prescribed in the Regulations for Enforcement of the Telecommunications Business Law (Ministerial Ordinances).

The number of the companies that have obtained registration from the Ministry of Posts and Telecommunications as Special Type II telecommunications businesses as of 1 July 1989 are listed in Table 3-1-4.

b. General Type II telecommunications business

All other Type II telecommunications businesses are General type II telecommunications businesses. In the case that company does not provide telecommunications facilities designed for communications between Japan and foreign points, if the capacity of that company's facilities is less than the standard minimum scale defined in the Government Ordinances, then, even if that company provides telecommunications services to many and unspecific users, it is classified as a General Type II telecommunications business. In the same case, a service provided to specific users is a General Type II telecommunications business, regardless of how big or small the facility is.

Since there is no restriction on foreign capital investment, companies with 100% foreign capital, such as IBM Japan and Bytel Japan have already started business as General Type II telecommunications businesses.

Persons desiring to operate a General Type II telecommunications business should notify the Ministry of Posts and Telecommunications following the procedure prescribed in the Regulations for Enforcement of the Telecommunications Business Law (Ministerial Ordinance).

As 1 August 1989, 731 companies have already notified for starting General Type II telecommunications businesses. The services they provide are listed in Table 3-1-7.

③ Submission of Applications/Notifications

Applications for permission and authorization to operate a Type I telecommunications business and registrations of Special Type II telecommunications businesses are also accepted at the headquarters of the Ministry of Posts and Telecommunications etc. However, notifications of intention to operate a General Type II

telecommunications business are only accepted at any of the 10 Regional Bureaus of Telecommunications located throughout Japan, except for Okinawa which has its own Office of Posts and Telecommunications. Therefore, a company should contact the proper office for its business address, such as the Kanto Regional Bureau of Telecommunications for businesses in the Kanto area.

Table 2-5-1 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 for Special Type II telecommunications business.
Condition for Entry	Permission	Registration	Notification

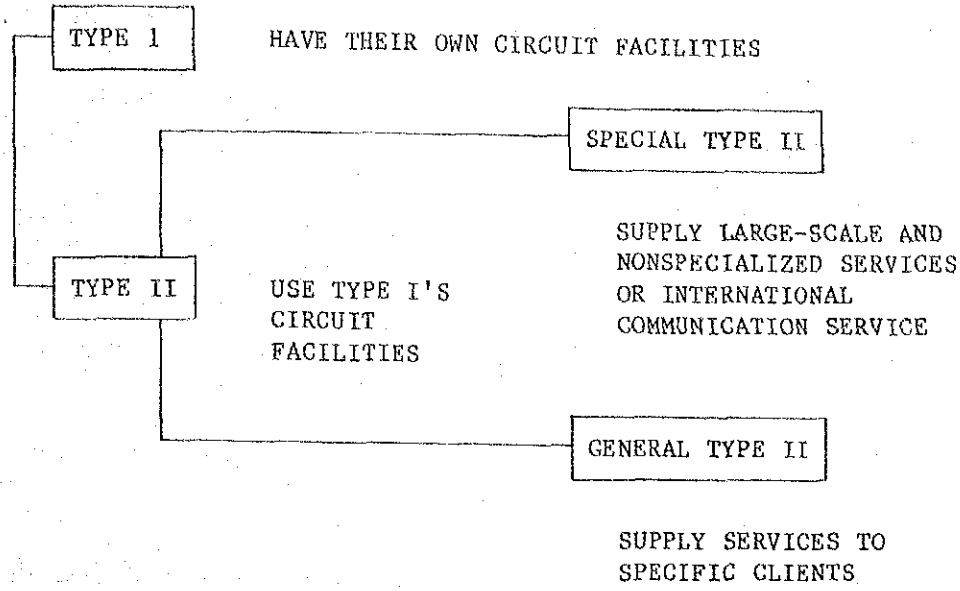
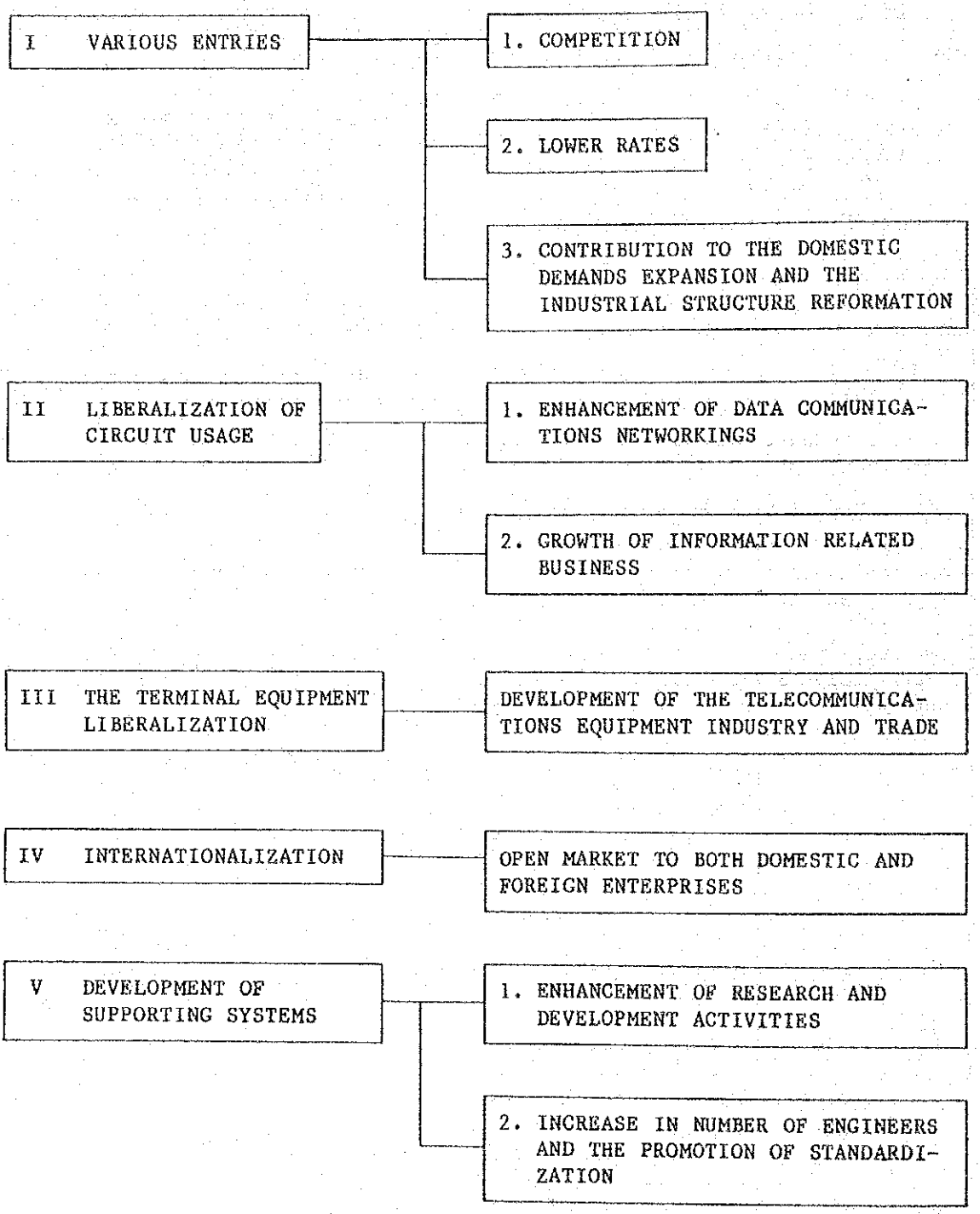


Fig. 2-5-1 Structure of Telecommunications Common Carriers

3. ACHIEVEMENTS OF TELECOMMUNICATIONS LIBERALIZATION



(1) Various Entries

As U.S.A., Japan has provided the most liberalized telecommunications market in the world.

[State of new entries]

Since the new telecommunications system was initiated, 50 Type I telecommunications businesses and 758 Type II telecommunications businesses have started their telecommunications businesses.

Type I telecommunications business

New Companies have been established in various fields such as long-distance telecommunications, regional telecommunications, satellite telecommunications, mobil telecommunications, and international telecommunications.

Type II telecommunications business

Various new companies have been established throughout the country and contributed to creation of business networks in finance, manufacturing, distribution, and transport industries, etc.

Table 3-1-1 Number of New Companies

	85/4/1	86/4/1	87/4/1	88/4/1	89/4/1	89/8/1
TYPE I	0	5	11	35	43	50
GENERAL TYPE II	85	200	346	512	668	731
SPECIAL TYPE II	0	9	10	18	25	27
TYPE II	85	209	356	530	693	758
TOTAL	85	214	367	565	736	808

Number of type I Carriers

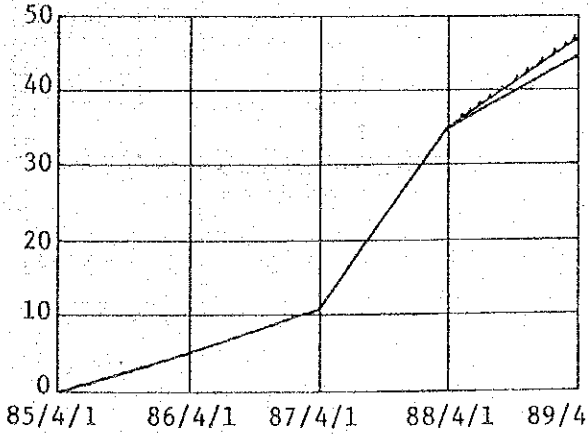


Fig. 3-1-1

Number of Type II Carriers

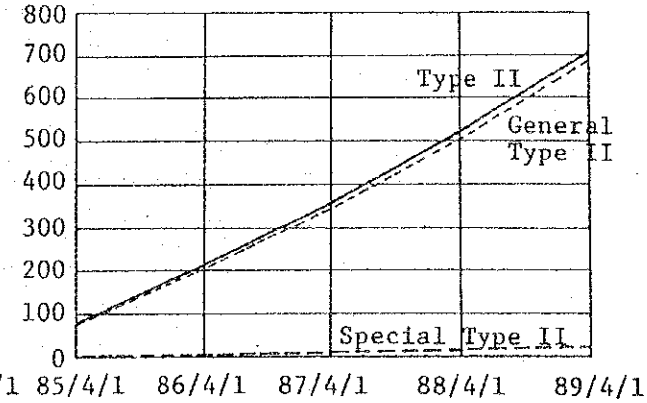


Fig. 3-1-2

Table 3-1-2 1 Market Share for Type I Telecommunications Carriers

Revenue

(Unit: 100 million yen)

	FY 1988			FY 1987		
	N T T	N C C	Total	N T T	N C C	Total
Leased Circuit Service	3,465 (96.8%)	114 (3.2%) [Long-Distance Carriers 74 (2.1%) Regional Carriers 39 (1.1%)]	3,579 (100.0%) [118.7%]	2,954 (98.0%)	62 (2.0%) [Long-Distance Carriers 49 (1.6%) Regional Carriers 13 (0.4%)]	3,016 (100.0%)
Telephone Service	45,297 (98.5%)	696 (1.5%)	45,993 (100.0%) [102.1%]	44,893 (99.7%)	133 (0.3%)	45,026 (100.0%)
Pocket Pager Service	945 (88.0%)	129 (12.0%)	1,074 (100.0%) [113.8%]	933 (98.9%)	11 (1.1%)	944 (100.0%)
Car & Portable Telephone Service	841 (99.5%)	4 (0.5%)	845 (100.0%) [194.3%]	435 (100.0%)	-	435 (100.0%)
Ship Telephone Service	116 (100.0%)	0.4 (0.0%)	116 (100.0%) [101.8%]	114 (100.0%)	-	114 (100.0%)

* [ ] = Comparison with the revenue previous year

Table 3-1-3 Outlook of New Type I Carriers

As of July 8, 1989

	Company	Type of Service	Service Area	Start of Service
Long-Distance Carriers	DDI Corp.	Telephone, Leased Circuit	Tokyo, Aichi, Osaka, Hiroshima, Fukuoka, Miyagi and their neighboring Prefectures	9/4/1987 10/24/1986
	Japan Telecom Co., Ltd.	Telephone, Leased Circuit	Along the Tokaido, Sanyo, Tohoku, Joetsu Bullet Train Routes and 44 prefectures excluding Nara, Saga, Okinawa	9/4/1987 8/1/1986 JR; 4/16/1987
	Teleway Japan Corp.	Telephone, Leased Circuit	Along the Tomei and Meishin Highways	9/4/1987 11/11/1986
Satellite Carriers	Japan Communications Satellite Co., Inc.	Leased Circuit	Nationwide	4/16/1989
	Space Communications Corp.	Leased Circuit	Nationwide	7/8/1989
Regional Carriers	Tokyo Telecommunication Network Co., Inc.	Telephone, Leased Circuit	All prefectures in the Kanto Region	11/1/1986 5/1/1988
	Chubu Telecommunications Co., Inc.	Leased Circuit	Aichi, Gifu, Mie, Shizuoka prefectures	6/1/1988
	Osaka Media Port Corp.	Leased Circuit	Osaka, Kyoto, Hyogo, Shiga, Nara, Wakayama prefectures	3/1/1987
	Sikoku Information and Telecommunication Network Co., Inc.	Leased Circuit Data-Communications	Kagawa, Tokushima, Kouchi, Ehime prefectures	10/2/1989
	Lakecity Cablevision Co., Ltd.	Leased Circuit	7 cities and towns, including Suwa city, Okaya city	10/1/1987
International Telecommunications Carriers	International Telecom Japan, Inc.	Telephone, Leased Circuit	Nationwide	10/1/1989 4/1/1989
	International Digital Communications Inc.	Telephone, Leased Circuit	Nationwide	10/1/1989 5/1/1989
Car Telephone, etc.	Nippon Idotsushin Corp	Telephone, (Car, Portable)	Tokyo, Kanagawa, Saitama, Chiba, Ibaragi, Aichi, Mie, Gifu prefectures	12/15/1989 23 wards of Tokyo
	Kansai Cellular Telephone Inc.	Telephone (Car, Portable)	Osaka, Kyoto, Hyogo, Shiga, Nara, Wakayama prefectures	7/14/1989
	Kyushu Cellular Telephone Co.	Telephone (Car, Portable)	Fukuoka, Saga, Kumamoto prefectures	2/1/1990
	Chugoku Cellular Telephone Co.	Telephone (Car, Portable)	Hiroshima, Okayama, Yamaguchi prefectures	2/1/1990
	Tokyo Bay Marinet Telecommunication Co., Ltd.	Telephone (Ship, Portable)	Tokyo Bay and the surrounding coast	9/1/1988
	Kansai Marinet Telecommunication Co., Ltd.	Telephone (Ship, Portable)	Osaka Bay, the Sea of Harima and the surrounding coast of Osaka and Hyogo	12/1/1989
Radio Paging	29 Companies, including Tokyo Telemessage Inc. (24 of which have already started operation)			

Table 3-1-4 Special Type II Telecommunications Carriers
(27 Companies as of July 1st 1989
including 15 IVAN Providers)

Name	Type of Service	S.A
Intec Inc.	Voice, Image, Data	Japan
Fujitsu Ltd.	Data	Japan
United Net Corp.	Voice, Image, Data, Complex	Japan
Oki Network Service Co., Ltd.	Voice, Image, Data	Japan
Internetwork Inc.	Data	Japan
Nippon Information and Communication	Voice, Image, Data	Japan
Toyo Information Systems Co., Ltd.	Data	Japan
Ines Corporation	Data	Japan
NTT Data Communication Systems Corp.	Data, Complex	Japan
Mitsubishi Electronic Information Network Corp.	Voice, Image, Data, Complex	Japan
Recruit Co., Ltd.	Voice, Image, Data, Complex	Japan
Toshiba Corp.	Data, Complex	Japan
Japan Information Service Ltd.	Data	Japan,U.S
NEC Corp.	Voice, Image, Data, Complex	Japan,U.S
Hitachi Information Network Ltd.	Voice, Data	Japan,U.S
Japan ENS Corp.	Voice, Data	Japan,U.S
Network Information Service Co., Ltd.	Voice, Image, Data	Japan,U.S, U.K
Global VAN Japan Inc.	Voice, Data	Japan,U.S, U.K
NRI&NCC Co., Ltd.	Data	Japan,U.S

Name	Type of Service	S.A
Mitui Knowledge Industry Co., Ltd.	Data	Japan,U.S
IBM Japan Ltd.	Data	Japan,U.S
Nihon Keizai Shinbun Inc.	Image, Data	Japan,U.S
NI+C International Corporation	Data	Japan,U.S
Information Services International Dentsu Ltd.	Data	Japan,U.S
K-Network International Inc.	Data	Japan,U.S, U.K
Vitel Japan Ltd.	Data	Japan,U.S
Telenet Japan Inc.	Data	Japan,U.S

Table 3-1-5 Location of Head Office of General Type II Carriers (723 Companies as of July 1st 1989)

Hokkaido Area	38	Tokai	68	Shikoku	19
Tohoku	31	Hokuriku	30	Kyushu	50
Kanto	304	Kinki	107	Okinawa	8
Shinetsu	29	Chugoku	39		

Table 3-1-6 Kind of Business of General Type II Carriers

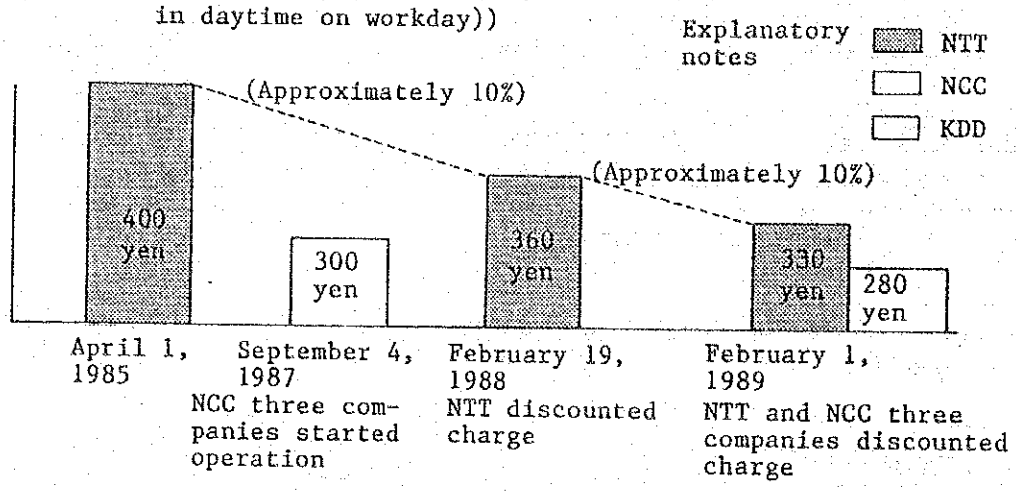
On-line information processing service	294	Manufacturer	88
Wholesale business	60	Trading companies	10
Transport	14	Others	245
Publishing Advertising	13		

Table 3-1-7 Type of Service of General type II Carriers

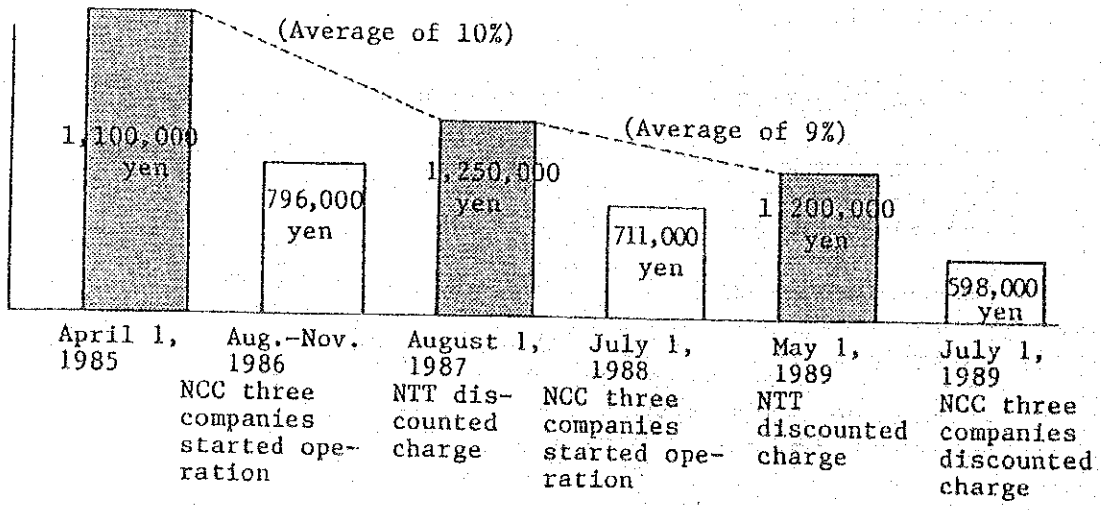
Voice	Image	Data	Complex
227	116	476	94

(2) Lower Rates
- Rates decreases of major telecommunication services

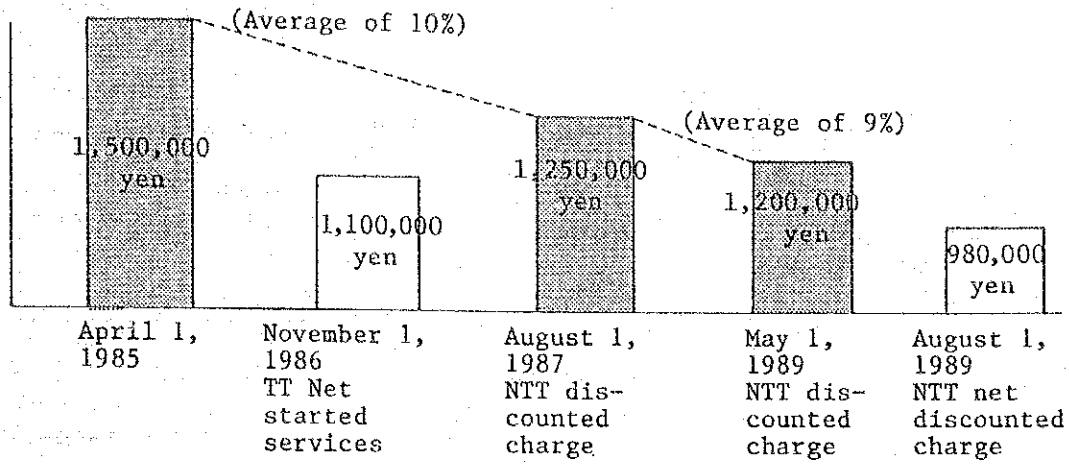
1. Telephone (Between Tokyo and Osaka (for three minutes in daytime on workday))



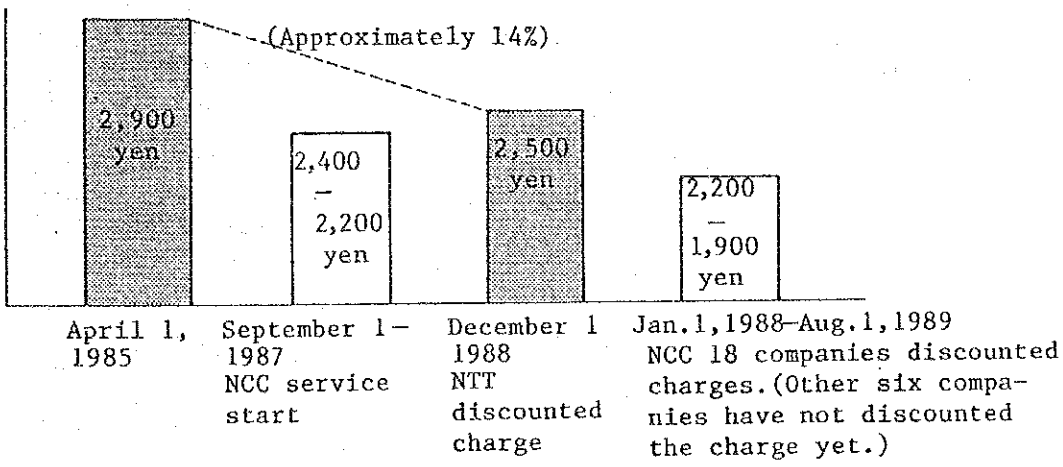
2. Leased circuit (Part 1) (Between Tokyo and Osaka (64 Kbps))



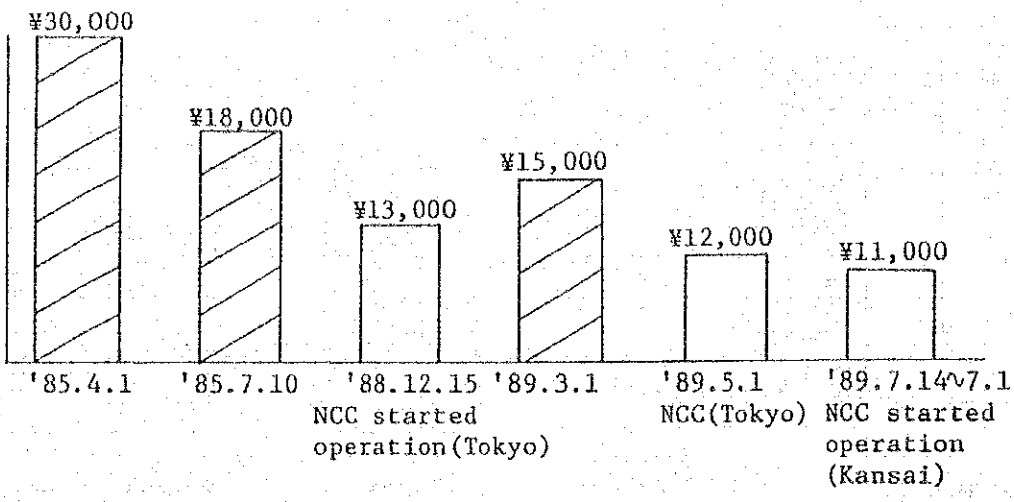
3. Leased circuit (Part 2) (Between Tokyo and Mito (768 Kbs))



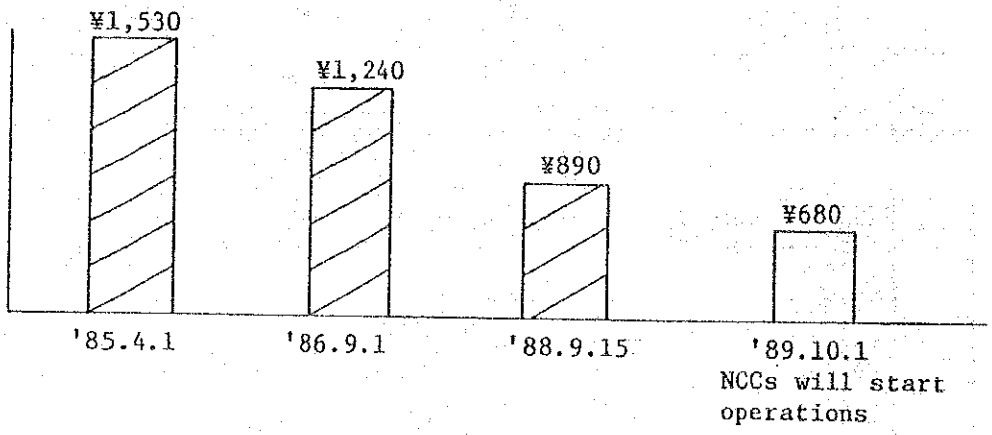
4. Paging service (In the case of call exclusive type)



5. Cellular Telephone Service (Basic Fee)



6. International (telephone) (Japan-USA (3 minutes, daytime))



Since the new telecommunications system was initiated in 1985, NTT and KDD have sharply reduced the charge, and new telecommunications companies provide various services at low rates.

It is expected that NTT and KDD will make further efforts for management and the results will be restored to the users. In addition, it is also expected that the new telecommunications companies will have massive efforts for management, competing with NTT.

(3) Contribution to the Expansion of Domestic Demand and the Change of Industrial Structure

Many new telecommunications companies have been established since initiation of the telecommunications system in 1985, and they have made active investment (of 1,240,000,000,000 yen for four years, from 1985 to 1988) and newly employed (approximately 60,000 persons). That is, these new companies have largely contributed to the movement for increasing internal demand in the country and reconversion of industrial structure.

Table 3-3-1 Contribution to the Expansion of Domestic Demand and the Charge of Industrial Structure

(FY 1988 end)

	Number of Companies	Number of Employees	Investment '85 - '88 (100 million yen)	Sales '88 (100 million yen)
New Type I Carriers	42	4,698	4,763	1,106
(Items)				
· Long-Distance Carrier	3	2,048	1,509	767
· Regional Carriers	3	580	951	42
· Satellite Carriers	2	234	1,330	-
· Mobile Carriers	31	862	585	134
· International Carriers	2	428	313	-
· Miscellaneous Others	1	546	75	163
Type II Carriers	693	54,400	7,640	8,470
(Items)				
· Special Type II	25	14,300	1,420	3,870
· General Type II	668	40,100	6,220	4,600
Total	735	59,098	12,403	9,576

(Reference)

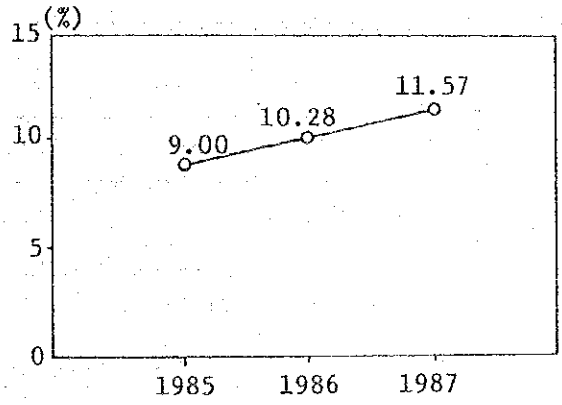
	Number of Companies	Number of Employees	Investment '85 - '88 (100 million yen)	Sales '88 (100 million yen)
Existing				
· NTT	1	276,650	17,128	57,056
· KDD	1	6,602	569	2,583

(4) Enhancement of Data Communications Networkings

When the economic circumstances change and the Japanese economy enters into a new stage, companies tend to take countermeasure for rationalization, utility, diversification and extensions to overseas market. The network becomes indispensable as a means to smoothly accomplish such countermeasure.

Networkings cause the company activities and industrial structure to be qualitatively and quantatively changed. Besides, networkings accelerate such movement as business state change, activation of combination and competition between different businesses, and expansion of market.

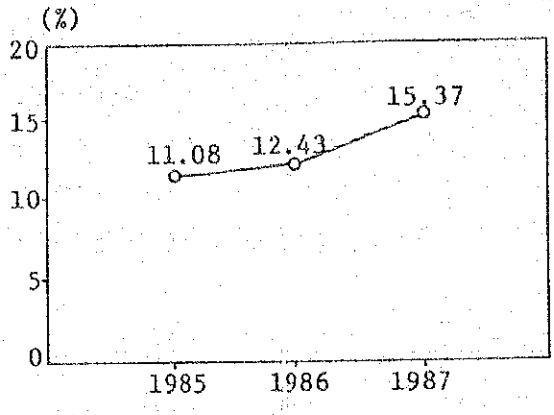
Networking Indicators



① Diffusion Ratio is the ratio of offices using networks for business.

② Grown by 12.5% in 1987 FY in comparison with 1986 FY.

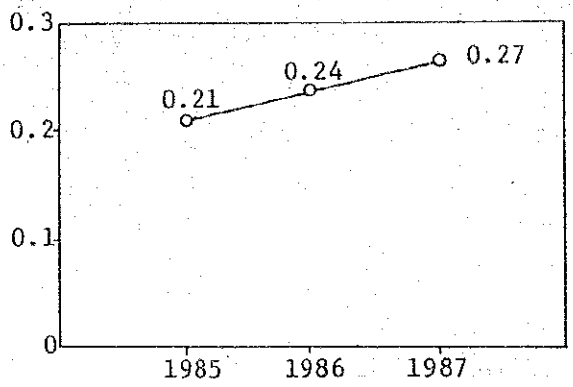
Fig. 3-4-1 Diffusion Ratio



① Business Transaction Ratio is the ratio of business transacted through network.

② Grown by 23.7% in 1987 FY in comparison with 1986 FY.

Fig. 3-4-2 Business Transaction Ratio



① Terminal Equipped Ratio is the number of terminals per employee.

② Grown by 12.5% in 1987FY in comparison with 1986FY

Fig. 3-4-3 Terminal Egipped Ratio

(5) Growth of Information Related Businesses

Table 3-5-1 Sales of Information Related Businesses (by Category of Businesses)

(Unit: 100 million yen)

	1984	1985	1986	1987
Software House	5,308 (100)	6,605 (124)	8,755 (165)	N.A.
Information Equipment Lessor	18,797 (100)	20,156 (107)	24,472 (130)	N.A.
Information Processor	6,707 (100)	6,920 (103)	8,230 (123)	N.A.
Information Provider	950 (100)	980 (103)	1,075 (113)	N.A.
Other Information Related Businesses	894 (100)	1,114 (125)	1,098 (123)	N.A.
Total	32,656 (100)	35,775 (110)	43,630 (134)	51,620 (158)

Source: Fact-finding Report on Service Industry Index : 1984 = 100

(6) Development of the Telecommunications Equipment Industry and Trade

① Legislation of Telecommunications Equipment

Enactment of the Telecommunications Business Law also liberalized the connection of terminal equipment. That is, it enables the user to connect terminal equipment freely, as long as the terminal equipment conforms to Technical Standards stipulated in the ordinances of the MPT or Technical Requirements that Type I telecommunications businesses establish with the authorization of MPT.

Although Technical Standards for connection of terminal equipment are basically defined by ordinance of MPT, Type I telecommunications businesses can be authorized by MPT to establish Technical Requirements for connection of equipment that has not yet fully developed technically, or equipment that has become quite diversified. The purpose of the above is that such technical regulations will not block technological advancement or the technology revolution for telecommunications, and they should avoid bringing disadvantage to specific device manufacturers.

At present, Technical Standards for terminal equipment connected to analog networks are stipulated in the ordinances of MPT. (Safety Standards are also stipulated for all terminal equipment.)

The procedure for approval of terminal equipment for compliance with Technical Standards is shown in Fig. 3-6-1.

To ease entry into the terminal equipment market, the number of items in the Technical Standards was decreased from 53 to 21 in April, 1987. Items for both Technical Standards and Technical

Requirements are limited to the minimum, such as those for (1) prevention of damage to or functional failure of telecommunications circuit facilities, (2) prevention of trouble to other users, and (3) establishment of clear-cut lines of responsibility.

A system for granting Technical Standards and Technical Requirements Compliance Approval has been established, and approved terminal equipment can be connected to the facilities of a Type I telecommunications carrier without inspection by the carrier. At present, such compliance approval is granted by the Japan Approvals Institute for Telecommunications Equipment (JATE), the agency designated by MPT.

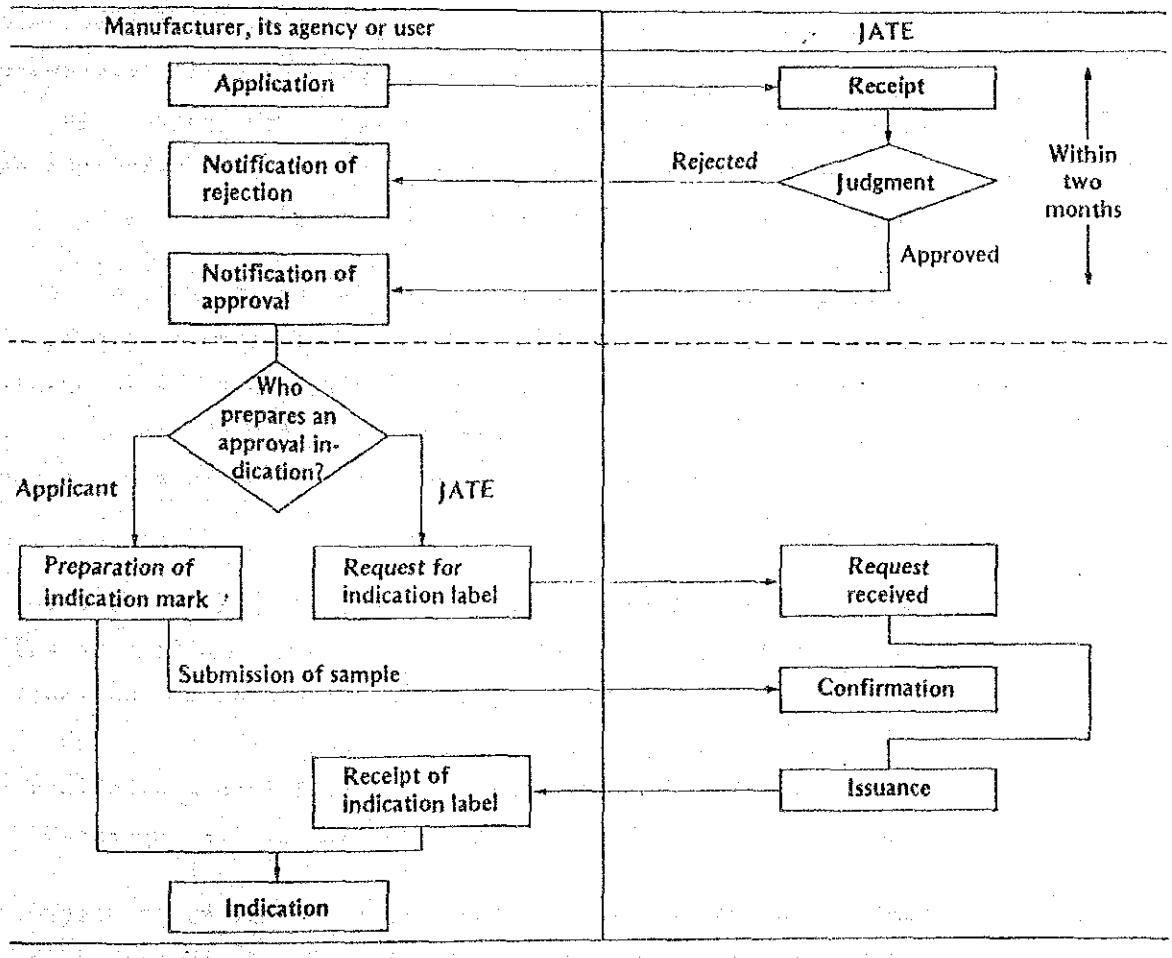


Fig. 3-6-1 Flowchart for Terminal Equipment Approval

② Legislation of Radio Communications Equipment and Services

1. Procedure for Establishment a Radio Station

With development of the advanced information society and advances in radio-wave application technology, demand for radio communications is expanding remarkably. The number of radio stations has also increased rapidly, with a total of approximately 4.7 million radio stations, at the end of September, 1988.

Application of radio waves is also expanding to telecommunications businesses, public organizations, transportation providers and manufacturers, as well as various industries, private homes, etc. The form of application is also becoming more diversified, such as fixed communications for microwave relay, mobile communications for automobiles, vessels and aircraft, and radio location determination that makes use of broadcasting, satellite communications and radar.

According to the Radio Law, any person who desires to establish a radio station must obtain a license from MPT, except for devices that use extremely low-power radio waves. Figure 3-6-2 shows the general procedure for obtaining a license for a radio station, from application to the start of operations.

To apply for a license, the applicant must present to the Ministry of Posts and Telecommunications an application and the necessary attached documents as stipulated by the applicable ordinance from MPT. These documents should be submitted to the proper Regional Bureau of Telecommunications for the location where the radio station will be operated.

Establishment of a general radio station must be in accordance with the procedure shown in Fig. 3-6-2, in principle.

However, a Type Approval Test and Technical Standards Conformity Certification has been developed to decrease the load on applicants applying for license, or for reliability of emergency radio facilities.

In principle, licenses are not granted to persons who are not Japanese citizens, or to foreign governments or foreign corporations, etc. However, as shown in Table 3-6-1, this is being negotiated between Japan and other countries based on reciprocity.

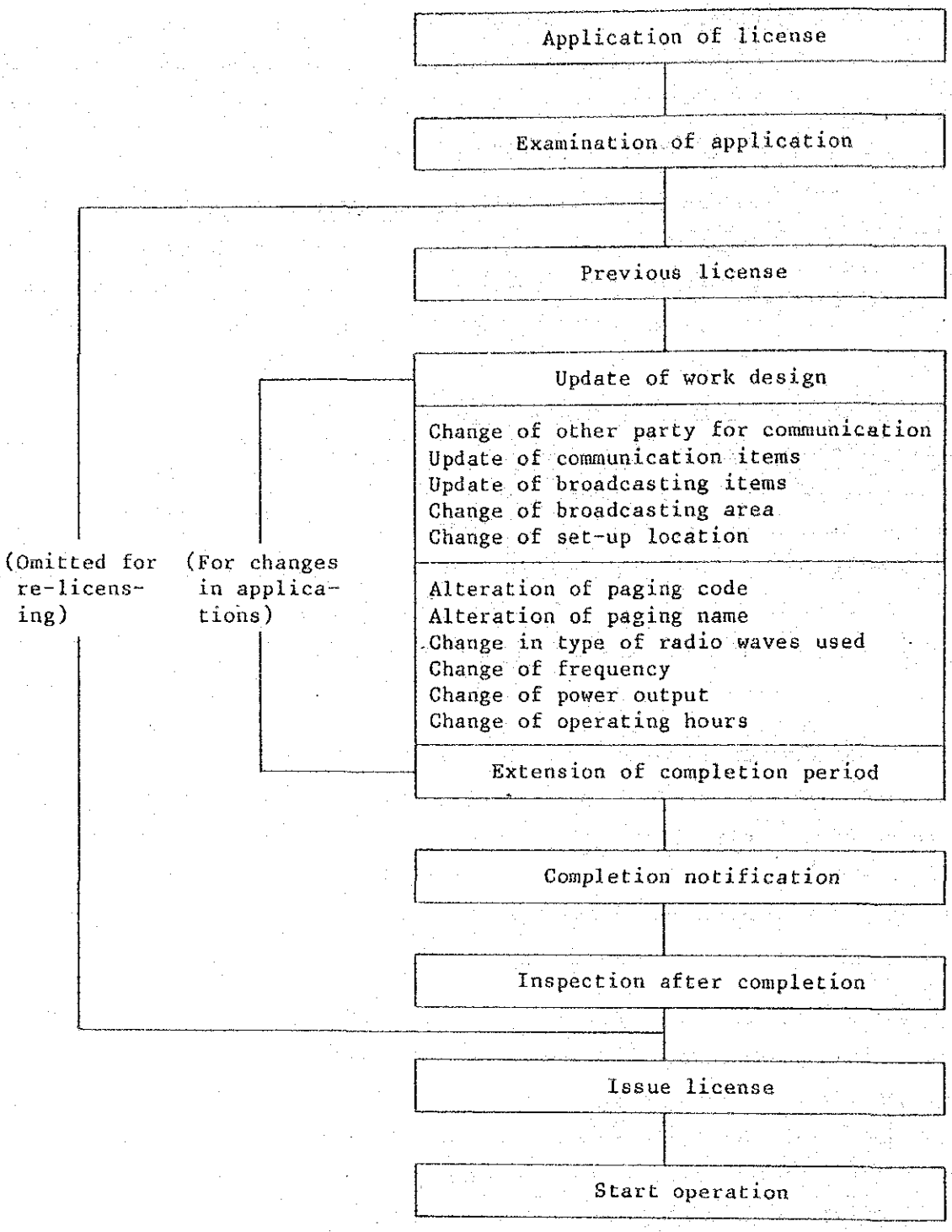


Fig. 3-6-2 General Procedure for Establishment of Radio Station

Table 3-6-1 Conditions for Opening of a Radio Station by Foreign Corporations, etc.

Classification / Country Name	Base Station	Land Mobile Station	Land Mobile Relay Station	Portable Base Station	Portable Station	Radio Paging Station	Radio Navigation Mobile Station	Radio Location Mobile Station	Simple Radio Station	Premises Radio Station
Switzerland	●	●	○	●	●	○	○	○	●	○
Holland	●	●		●	●				●	○
Luxemburg	○	○		○	○	○	○	○	○	○
Denmark	○	○	○	○	○	○	○	○	○	○
Belgium	○	○		○	○				○	○
West Germany	●	●	○	●	●	○	○	○	●	○
U.S.A.	●	●	○	●	●				●	
Turkey	○	○	○	○	○				○	○
Thailand	○	○	○	○	○				○	○
Singapore	○	○	○	○	○	○		○	○	○
Malaysia						○				
Iran	○	○	○	○	○	○	○	○	○	○
New Zealand	○	○	○	○	○				○	○

(Note) Open circles indicate newly opened in January, 1988. Closed circles indicate permitted since 1984.

(Reference)

Base Station ..... Radio station set up at a work site to communicate with trucks, etc.
Land Mobile Station ..... Radio station set up on a vehicle, such as a truck, to communicate with a base station and between vehicles.
Land Mobile Relay Station ..... Radio station for relay between land mobile stations and a base station, or to relay internal communications between land mobile stations.
Portable Base Station .... Portable radio station set up on the ground to communicate with a helicopter, etc. for collection of news.
Portable Station ..... Portable radio station used in a helicopter, etc. for collection of news, etc.
Radio Paging Station ..... Radio station that transmits to a pager to indicate a call.
Radio Navigation Mobile Station ..... Crash prevention radar, etc. installed in a car.
Radio Location Mobile Station ..... Speed gun, etc., such as that used to measure the speed of ball at a baseball game.
Simple Radio Station ..... Radio station used for simple work.
Premises Radio Station ... Radio station set in a plant or building.

③ Type Approval Test and Technical Standards Conformity Certification for Radio Equipment

The approval system for radio equipment utilizes Type Approval Test and Technical Standards Conformity Certification. The following outlines this system.

a. Type Approval Test

The Type Approval Test system provides one test (Compulsory Test) to ensure that the type of radio equipment has been approved based on the Radio Law. This test is required when radio equipment must be highly accurate and reliable to protect life and property, and when necessary to maintain order for the radio waves.

Another test (Voluntary Test) is provided when the manufacturer request it for improvement of equipment functions. These test procedures have been established for the purpose of simplifying and rationalizing the procedures for licensing of applicants, and the official works of the appropriate administrative agencies.

Type certification is executed on one unit of each type of equipment. If that equipment meets the qualifying conditions stipulated by the Radio Equipment Type Approval Test Regulations, the Minister of Posts and Telecommunications issues an approval to the applicant. (The actual work is performed by MPT's Communications Research Laboratory.)

Test results supplied with Voluntary Test prepared by a MKK designated by the Ministry of Posts and Telecommunications are normally accepted. Also, to plan for adjustment with international approval systems, test results prepared by the applicants themselves for equipment that satisfies items set by MPT, whether tested inside or outside of Japan, will be accepted without submitting that equipment.

b. Technical Standards Conformity Certification

This certification system was established to simplify and rationalize administration work and reduce charges paid by applicants. It is aimed at radio equipment used for small radio stations and as stipulated by ordinance of MPT.

If all the equipment used in a radio station are granted Technical Standards Conformity Certification, the procedure for licensing or updating is greatly simplified. At that case, the previous license and inspection after completion are deleted from the application procedure shown in Fig. 3-6-2.

In addition, anybody can use a citizensband radio or cordless telephone without a license, as long as the equipment has been qualified by Technical Standards Conformity Certification.

If the Ministry of Posts and Telecommunications designates a certification organization to take over the work of certifying Technical Standards Conformity for a type of equipment, the appropriate section in the designated organization takes over the certification task from MPT. At present, however, MKK with designation of the Ministry of Posts and Telecommunications, performs all certification work on subject equipment.

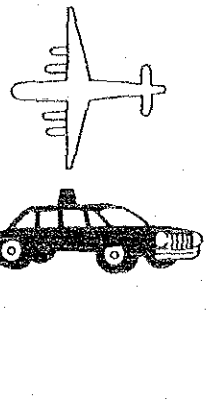
c. Allocation of Frequencies

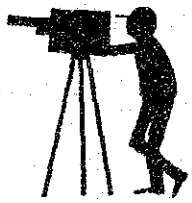
The allocation of frequencies in Japan is shown in Table 3-6-2.

Table 3-6-2 Frequency Allocation

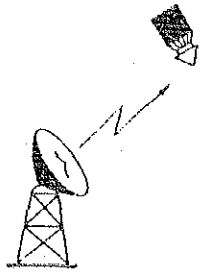
9KHz		10.2 ▶	
		11.05 ▶	
	VLF	11.3 ▶	Omega
		12.8 ▶	
		13.6 ▶	
30KHz		40 ▶	Standard radio wave
	LF	70 ▮	
		129 ▮	Decca
300KHz		500 ▶	Telecommunication for wrecked vessel (telegraph)
		526.5 ▮	
			Medium wave broadcasting
		1606.5 ▮	
	MF	1910 ■	Amateur
		2091 ▶	Telecommunication for wrecked vessel (telegraph)
		2182 ▶	Telecommunication for wrecked vessel (telephone)
3000KHz		2500 ▶	Standard radio wave
3MHz		3.5 ■	Amateur
		3.8 ▶	Amateur
		5 ▶	Standard radio wave
	HF	7 ■	Amateur
		8 ▶	Standard radio wave
		8364 ▶	Telecommunication for wrecked vessel and aircraft (telegraph)
		10 ▶	Standard radio wave
		10.125 ▶	Amateur
		13 ▶	Industry, Science, Medicine
		14 ■	Amateur
		15 ▶	Standard radio wave
		21 ■	Amateur
		26 ■	Fishery
		27 ■	Industry, Science, Medicine, Citizen's radio
		28 ■	Amateur
30MHz		40 ■	Industry, Science, Medicine, Wireless microphone
	VHF		
		52 ■	Amateur

300MHz	VHF	76 90	F.M. broadcasting (channel 1-3)
		90 108	T.V. broadcasting (channel 1-3)
		121.5	Emergency radio wave for aircraft
		137	Space telemetory
		145	Amateur
		148	Space telecommand
		154	Simple radio telecommunication
		156.8	Telecommunication for wrecked vessel (telephone)
		170 222	T.V. broadcasting (channel 4-12)
		243	Emergency radio wave for aircraft
		254 255	Cordless telephones
		275 285	Radio paging
	UHF	380 381	Cordless telephones
		350 400	Security, Public benefit, Administrative telecommunication Meteorological robot, Radiosonde, Small scale multiplex communication Space telemetory, Meteorological satellite
		435	Amateur
		465	Simple radio telecommunication
		470	T.V. broadcasting (channel 13-62)
		822 832	Aircraft radio telephones
		850 860	Land MCA systems
		860 885	Car radio telephones
		885 887	Aircraft radio telephones
		903 905	Personal radios
		905 915	Land MCA systems
		915 940	Car radio telephones
		1280	Amateur Aviation radar, Meteorological satellite, Radio astronomy, Disaster prevention administration, Aeronautical maritime mobile satellite, Meteorological aids

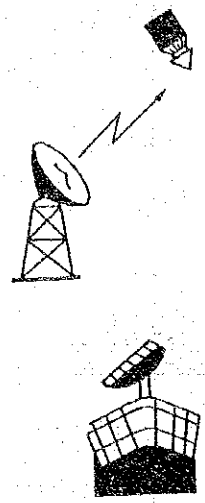


3000MHz 3GHz	UHF 1850 2290 2425 2450	Security, Public benefit, Administrative telecommunication Telecommunications business, Meteorological satellite, Space research Amateur Industry, Science, Medicine Meteorological radar Aviation radar 
	SHF 3 4 5 6 7 8 9	Radio location T.V. program relay, Space telecommunication Telecommunications business Aircraft radio altimeter Telecommunications business, Space communications, Radio astronomy Airport landing aid Meteorological radar, Radar beacon, Maritime transponder Amateur, Amateur satellite, Industry, Science, Medicine T.V. program relay Telecommunications business, Space telecommunication Security, Public benefit, Administrative telecommunication, Space telecommunication Defense Earth exploration satellite Earth investigation satellite Radio location, Radio navigation Aviation control radar, Maritime transponder Maritime radar, Radar beacon, Airport meteorological radar, Shore monitoring radar 

		10	Amateur, Distance meter
			T.V. program relay
			Amateur, Amateur satellite
			Speed meter, Entry detector
			T.V. program relay
		11	Radio astronomy, Space research
			Space communications
		12	Broadcasting satellite, T.V. broadcasting (channel 63~80)
		13	Security, Public benefit, Administrative communication, Space telecommunication
			T.V. program relay
			Doppler navigator, Port radar, Space research
		14	Telecommunications business, Space communication, Security, Public benefit, Administrative telecommunication
		15	Space research, Space communication, Radio astronomy
		16	Radars, Earth exploration-satellite, Space research
		17	
	SHF		Telecommunications business, Space communication
		21	
		22	Short distance telecommunication, Radio astronomy, Space research
			High definition T.V., Broadcasting satellite, Inter-satellite communication, Radio astronomy
			Amateur, Amateur satellite
		24	Speed meter
		25	Industry, Science, Medicine Airport face monitoring radar
		26	Radio communication for subscribers of telecommunications business, Inter-satellite communication
		27	Space communication, Inter-satellite communication
30GHz		30	



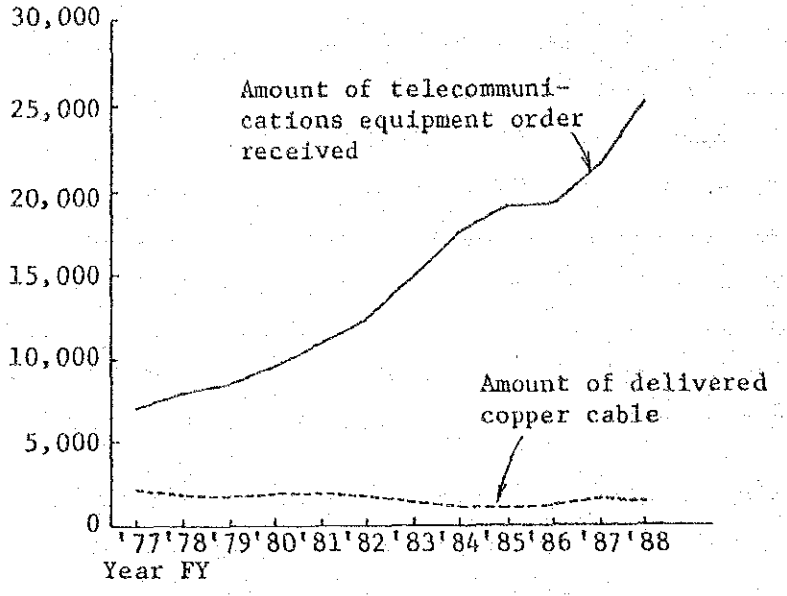
		31	■	Radio astronomy, Earth exploration satellite, Space research
		32	▮	Radio navigation Inter-satellite communication
		33	▮	Space research
		34	▮	Radio location, Sea wave radar
		35	■	Obstacle detector of railroad crossing
		36	▮	Short distance telecommunication
		40	▮	Space communication
		41	▮	Broadcasting satellite
	EHF	47	▮	Space communication, Radio astronomy
			▶	Amateur, Amateur satellite
			▮	Space communication,
		50	▮	Radio astronomy
		51	▮	Short distance telecommunication, Simple radio communication
300GHz		115	▶	Radio astronomy
		400	▶	Maximum allocation level



④ Development of the Telecommunication Equipment Industry

Because the Telecommunications Business Law was enforced in 1985, telecommunications equipment has also been liberalized in the market. Under this Law, any telecommunications equipment must be approved by the technical standards which certifies that the equipment satisfies the technical standards determined from a view point of prevention against damage of network, as in the case of U.S.A. However, this approval system is a simple one, i.e., the equipment is investigated by data submitted, and equipment manufactured in any country can be indiscriminately handled.

Since 1986, Japan has carried out the market liberalization policy by which the custom duties of all telecommunication equipment are free. As mentioned, Japan provides the most liberalized telecommunications equipment market all over the world. Owing to the liberalization of telecommunications, the telecommunications equipment in the country is also activated, the amount of telecommunications equipment order received in 1988 increases by 16.9% to that of the last year, i.e., 2,461,300,000,000 yen. (See Fig. 3-6-3.) Classified into the machine types, wire telecommunications equipment amounts to 1,941,700,000,000 yen (increases 12.0% to that of the previous year), while radio telecommunications equipment amounts to 519,500,000,000 yen (increases by 39.6% to that of the previous year).



Prepared based on data of Communication Industries Association of Japan and The Japanese Electric wire and cable Makers' Association.

(Note) For values for 1988, the amount of telecommunications equipment order received indicates the amount of order received in 1988, and the value of amount of delivered copper cable indicates the amount of delivered copper cable in December 1988.

Fig. 3-6-3 Trends of Industries Related to Telecommunications Industry

(2) Telecommunicatins cable manufacturing industry

According to the data of Japanese Electric Wire Industrial Association, the amount of copper cable delivered as of December in 1988 was 130,900,000,000 yen, i.e., increased by 13.2% compared with that of the previous year.

According to the "Resource Statistic Monthly Report" by Ministry of International Trade and Industry, the production of electric wire and optical fiber products for cable was 868,000 kilometers core, i.e, decreased by 3.5% compared with that of the previous year. However, the production of optical fiber cable was 411,000 kilometers core, i.e., increased by 15.5% compared with that of the previous year.

Table 3-6-3 Shipping of the Telecommunication Equipment

(Unit: 100 million yen)

Fiscal Year	1984	1985	1986	1987	1988
Total	17,302 (100)	18,812 (109)	18,815 (109)	22,008 (127)	24,941 (144)
Facsimile	2,758 (100)	3,412 (124)	3,360 (122)	4,502 (163)	5,433 (196)
Exchange Machine	3,281 (100)	3,312 (101)	3,674 (112)	3,842 (117)	4,541 (138)
Transmission Equipment	2,745 (100)	3,464 (126)	3,919 (143)	4,874 (178)	4,421 (161)

Source: Communications Industry Association of Japan
Index : 1984 FY = 100

Table 3-6-4 Shipping of Cable and Wire

(Unit: 100 million yen)

Fiscal Year	1984	1985	1986	1987	1988
Total	10,625 (100)	10,661 (100)	10,416 (98)	11,574 (109)	12,925 (121)
For Telecommunication	1,027 (100)	969 (94)	1,177 (115)	1,356 (132)	1,339 (130)
Optical Fiber	-	-	667	830	768

Index: 1984 FY = 100

Table 3-6-5 Number of Items Granted Approval for Technical Standards Requirements Compliance

Fiscal Year	1985	1986	1987	1988
Number of Items Approved	1,151 (100)	1,716 (149)	1,774 (154)	1,847 (227)

Index: 1985 FY = 100

⑤ Import Promotion Plan

a. Import promotion tax system

Various tax measures have been taken to promote import of communications equipment. At present, there is an investment promotion tax system (Mechatronics Tax System) for small- and medium-sized enterprises engaged in development of new technology. For domestic products, the special depreciation rate is 30% and the tax deduction rate is 7%. If the subject facility is imported communications equipment, then both rates are set at 20%.

The targets of this tax system include digital switching systems, concentrators, satellite communications equipment, centralized control equipment for telecommunications equipment, dedicated telecommunications coding equipment, mobile radio relay circuit control equipment and mobile radio communications equipment with automatic channel selection.

Table 3-6-6 Communications Equipment Trade - by Area

(Unit: 100 million yen)

Area \ Fiscal Year	Exports					Imports				
	1985	1986	Rate of Change from Previous Year (%)	1987	Rate of Change from Previous Year (%)	1985	1986	Rate of Change from Previous Year (%)	1987	Rate of Change from Previous Year (%)
Total	6,031	5,539	▲ 8.2	6,763	22.1	598	699	16.9	763	9.2
Asia	915	712	▲ 22.2	933	31.0	34	39	14.7	100	156.4
Middle East	225	266	18.2	218	▲ 18.0	0.12	0.07	▲ 41.7	0.2	185.7
Europe	791	1,117	41.2	1,712	53.3	21	35	66.7	37	5.7
EC portion	557	823	47.8	1,415	71.9	18	30	66.7	33	10.0
North America	2,952	2,478	▲ 16.1	2,825	14.0	538	620	15.2	619	▲ 0.2
U.S portion	2,816	2,342	▲ 16.8	2,590	10.6	533	616	15.6	614	▲ 0.3
Central/ South America	304	262	▲ 14.0	360	37.4	4	2	▲ 50.0	0.07	▲ 96.5
Africa	146	149	1.8	133	▲ 10.7	0.03	0	-	0.02	-
Oceania	517	374	▲ 27.6	333	▲ 11.0	0.24	0.2	▲ 16.7	4.7	-
Communist Countries	180	181	0.6	249	37.6	0.98	1.71	74.5	2.7	57.9

⑥ Market Entry by Foreign Enterprises

Due to various efforts by the Japanese government, including the market-opening measures such as the import-promotion measures, a large number of foreign enterprises have invested capital in the Japanese telecommunications market, and have been increasing their exports to that market.

(1) Equipment

a. Terminal equipment

Enactment of the Telecommunications Business Law eliminated the obstacles to participation in Japan's terminal equipment market by foreign enterprises. That market is now on a level with its U.S. counterpart, and is expanding rapidly. Many European and American enterprises (including Japan Motorola, Fuji Xerox and Japan Paradine) are active in this market, and have been enlarging their market shares after being granted approval by the Japan Approvals Institute for Telecommunications Equipment (JATE).

b. Network equipment

Many new participants have appeared in Japan's telecommunications service market since its operation was placed under the principle of free competition. Consequently, the market for network equipment has enlarged dramatically, with supply contracts from Type I telecommunications businesses being awarded to such foreign enterprises as Hughes, Ford and DSC Communications.

c. Radio Equipment

Several companies are participating in Japan's radio equipment market, and nearly all radio equipment for Japan's aircraft are supplied by foreign enterprises.

⑦ Trend of Telecommunication Equipment Trade

Table 3-6-7

(Unit: 100 million yen)

	1984	1985	1986	1987	1988 (88/1-9)
Export	5,652 (100)	6,113 (108)	5,485 (97)	6,397 (113)	5,954 [129]
to US	3,224 (100)	3,062 (95)	2,286 (71)	2,544 (79)	2,247 [118]
Import	331 (100)	355 (107)	355 (107)	439 (133)	419 [135]
		[476] (144)	[710] (215)	[738] (223)	
from US	274 (100)	298 (109)	277 (101)	307 (112)	285 [112]
		[419] (153)	[632] (231)	[606] (221)	

Index: 1984 = 100
( ) including the payments for communication satellites
[ ] comparison with the same period previous year (%)

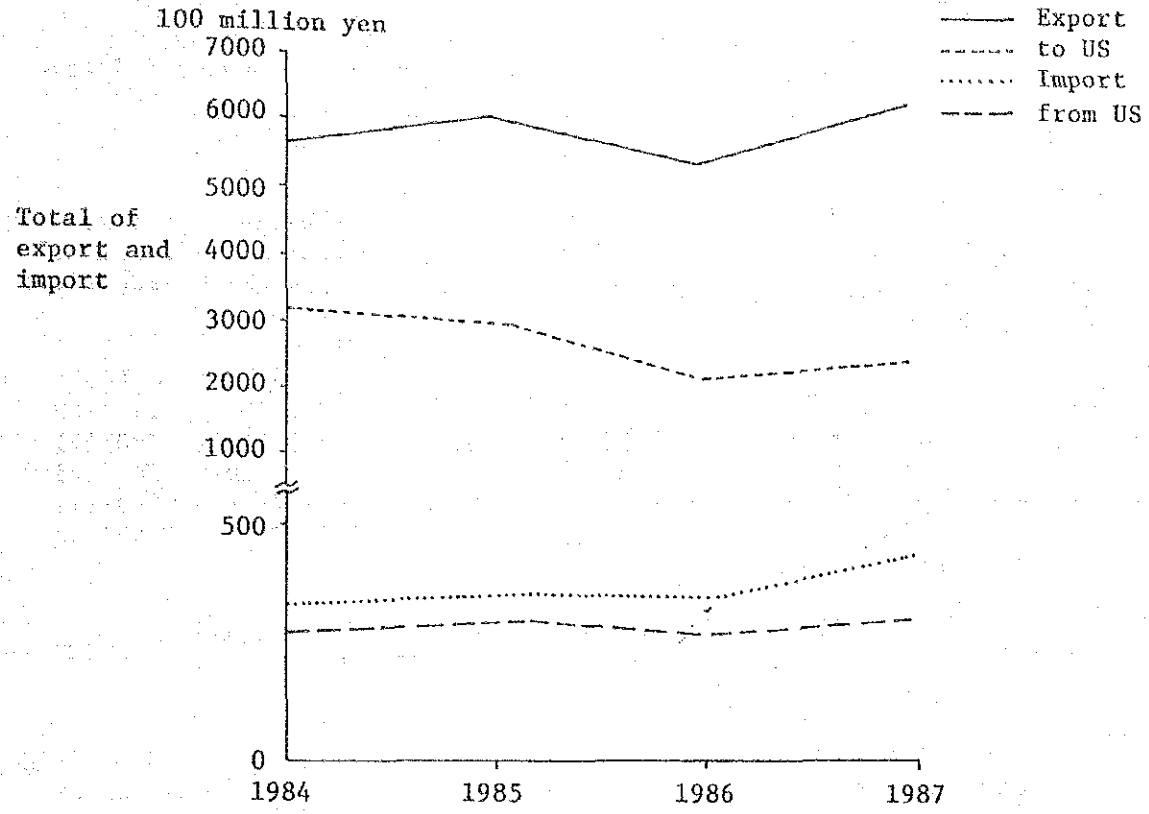

100 million yen
7000
6000
5000
4000
3000
2000
1000
500
0
Total of export and import
1984
1985
1986
1987
Export to US
Import from US

Fig. 3-6-4

(7) Developments of Supporting Systems

① Enhancement of Research and Development Activities

a. Communications and electronics industry occupies a larger share in the industries expenditure towards R&D.

F.Y.	Communication and Electronics Industry (A)	Automobile Industry (B)	Electric Machinery Industry (C)	Chemical and Chemical Fiber Industry (D)	Pharmaceutical Industry (E)
1982	790/100	570/100	390/100	270/100	240/100
1983	960/122	610/107	460/118	300/111	290/121
1984	1100/139	690/121	540/138	350/130	300/125
1985	1320/167	800/140	620/159	380/141	340/142
1986	1360/172	840/147	620/159	410/152	340/142
	billion yen/index				

Index: 1982 = 100 Source: Reports of Science and Technology Agency

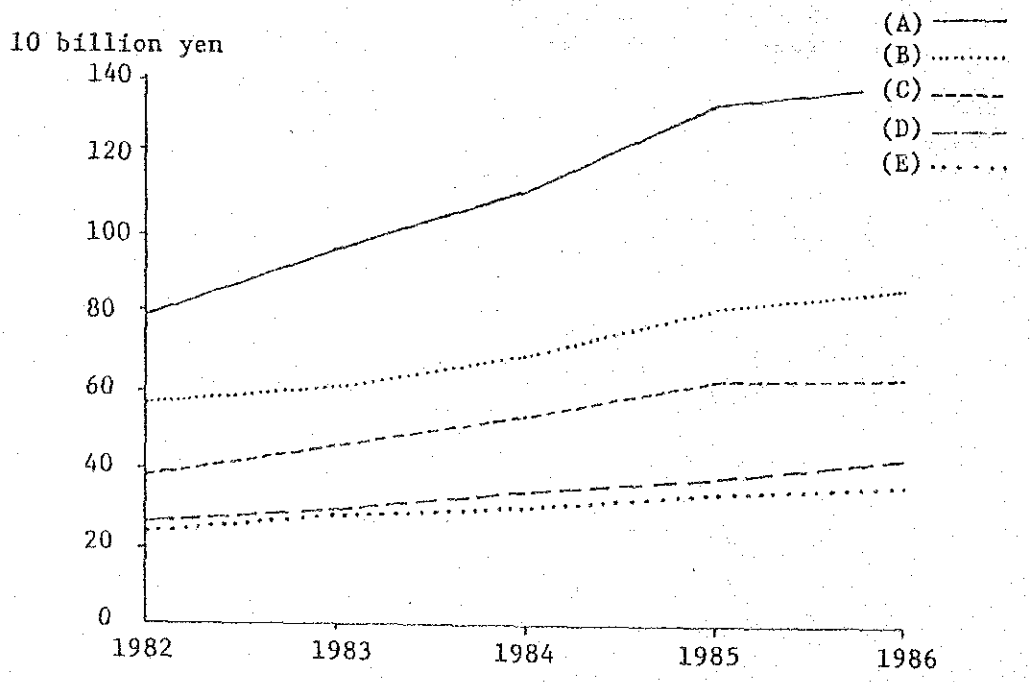


Fig. 3-6-5 The Expenditure of the Industries to R&D

② Increase in Number of Engineers and the Promotion of Standardization

a. Increase in Number of Telecommunication Engineers

	1985	1986	1987	to August 1988
Type I Chief Transmission and Switching Engineer	3,864	9,418	14,224	15,803
Type II Chief Transmission and Switching Engineer	767	1,639	2,165	2,308
Chief Line Engineer	1,187	3,492	5,534	6,272
Total	5,812	14,549	21,923	24,455

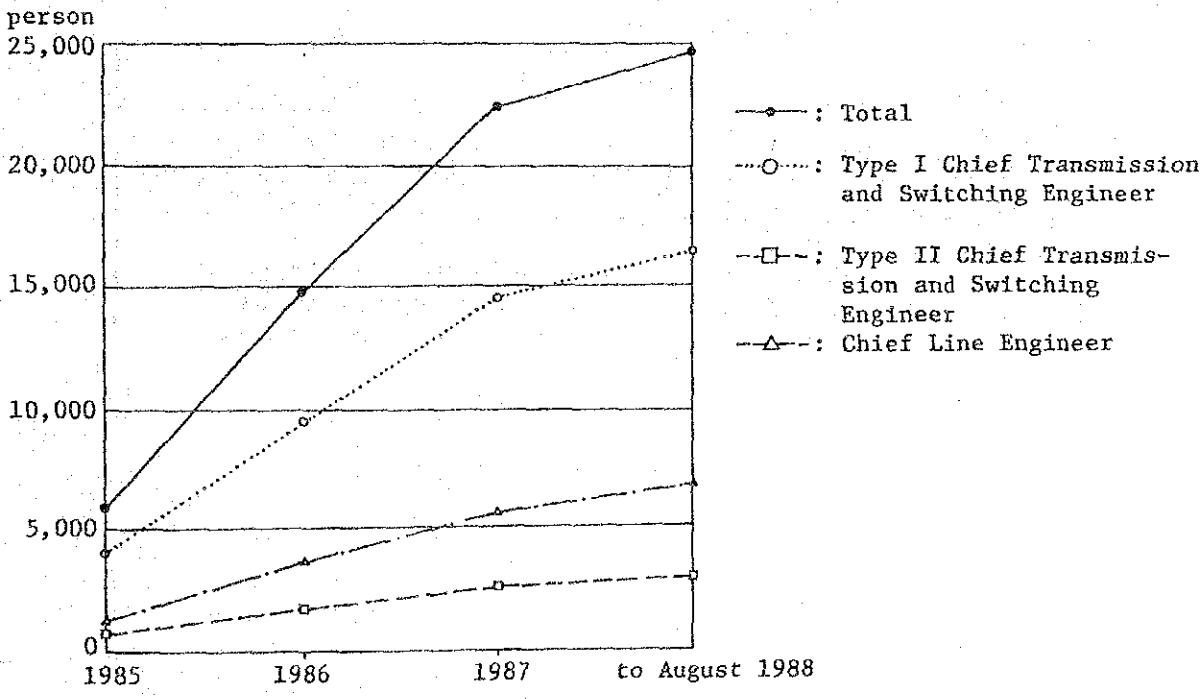


Fig. 3-6-6 Number of Persons qualified as Chief Telecommunications Engineers

b. Promotion of Standardization Activities

In Oct. 1985 The Telecommunication Technology Committee (TTC) was established.

By Dec. 1988 TTC has established 65 standards.

Examples of TTC Standards

o ISDN User-Network Interface
Telecommunication Services Supported by ISDN Bearer Service Supported by ISDN Tele Service Supported by ISDN
o Interface Related to PBX
Digital Interface between PBX and TDM (Channel Associated Signaling) - Outline, Electrical and Physical Condition, Signaling Specification
o Protocol Related to Telematics
Protocol Related to Message Handling Systems (MHS) Still Video Communication Over an Analog Telephone Network Terminal Characteristics and Protocol for Telematic Service by ISDN Terminal Characteristics for Group 4 Facsimile Apparatus Protocol Profile to Offer OSI Network Service on LAN

(8) Future Policy Matters

1. To Promote Fair and Effective Competition

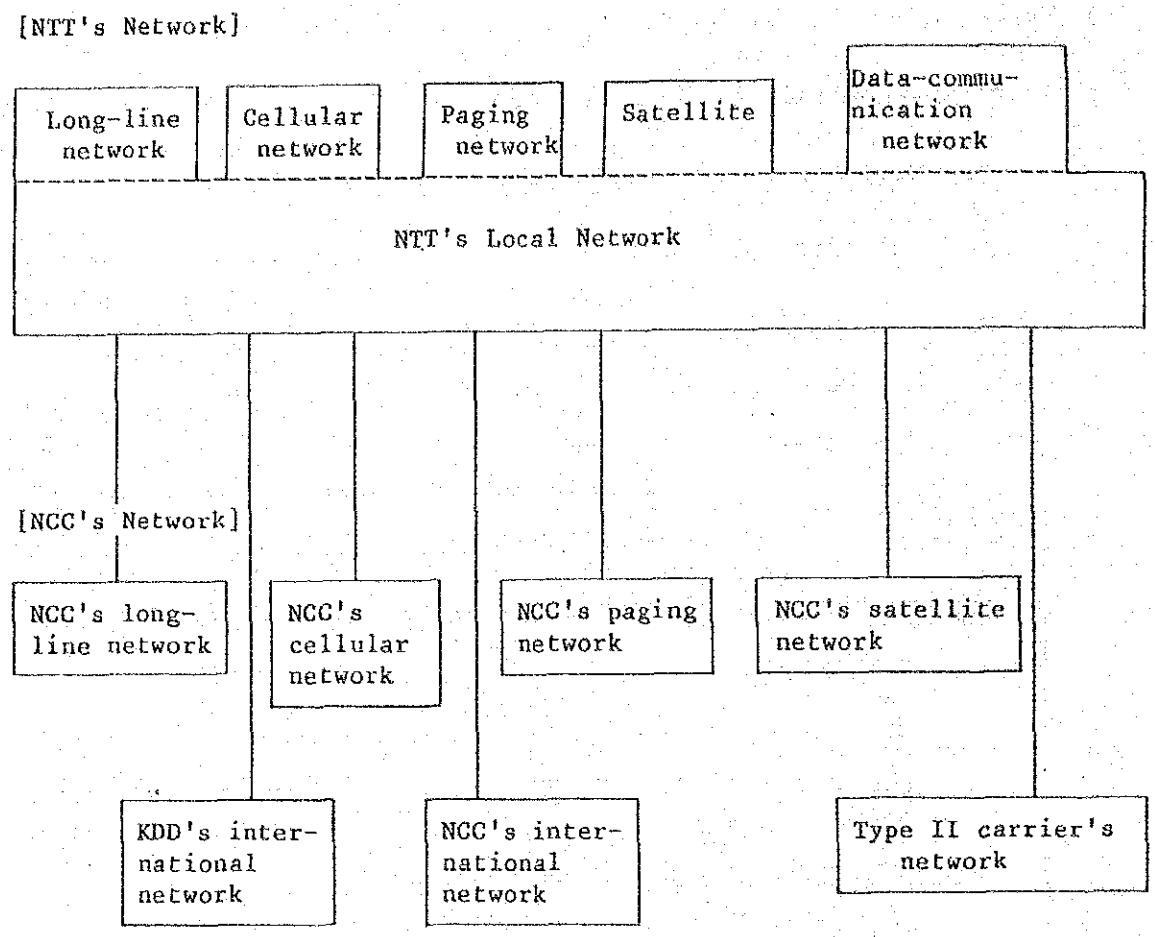
(1) Peculiar Structure of Competition

① NTT ..... NTT succeeded all stocks, network, technology etc. of Nippon telegraph & Telephone Public Corporation formed under legal monopoly.
NCCs .... NCCs have to construct network from scratch.

② NCCs .... NCCs have to connect to local network of NTT. (In USA long-line-network and local-network are separated).

(2) Provision of the Foundation for Fair and Effective Competition

① Smoothing of the interconnecting between NCCs and NTT.
② Promotion of the upgrading of NTT's analog switches.
③ Expedition of the public disclosure of data concerning NTT's technology and network.
④ Prohibition of cross-subsidization among NTT' services.
⑤ Direction of NTT's fair practices in selling terminal equipments.


[NTT's Network]
Long-line network
Cellular network
Paging network
Satellite
Data-communication network
NTT's Local Network
[NCC's Network]
NCC's long-line network
NCC's cellular network
NCC's paging network
NCC's satellite network
KDD's international network
NCC's international network
Type II carrier's network

2. Future Telecommunication Industry

(1) On March 18, 1988, the Ministry of Posts & Telecommunications consulted the Telecommunications Council about [the nature of telecommunications industry of the future].

(2) The object is to make clear the role of the telecommunications industry leading an advanced information society of the future and the nature of the suitable constitution, by considering the following subjects from various aspects:

> ① The nature of the structure of telecommunications market, based on the trend of Japanese society and economy of the future.
>
> ② The nature of services and rate structure, based on development of ISDN.
>
> ③ The nature of NTT as the key telecommunications carrier in Japan.

(3) These subjects were considered by three subcommittees in the Telecommunicatios Council for about one and half a year .

On October 2, this year, the telecommunicatios Council submitted an interim report about each subject . As it is volumnous, I introduce the main points of the report about the third subject here.

The third subject was analyzed from three points of view:

① The management

② The realization of fair and effective competition

③ The R & D , regional development , etc.

・From the first point of view , while admitting that NTT has promoted its reorganization , effective works and the reduction of the personnel, they concluded ,

" It is difficult to say that since the privatization , NTT has been desirable in the achievement of the effective management and in the reduction of burdens of users , because there has been much room for improvement.".

・From the second point of view , they concluded ,

" The fair and effective competition has not realized , and there has been many problems in spite of the Telecommunications Reform , which was to enable users to enjoy the lower rates as a result of the sufficient competition.".

・From the third point of view , while admitting that NTT has made efforts to maintain and reinforce the ability of R & D, and has built the telecommunication system, which attains world-wide level in the reliability and the quality of communication, they concluded,

" There are many problems to point out, for example, NTT has not been willing to diffuse its results of the R & D since the privatization...".

(4) In the interim report, the Telecommunication Council submitted the followings as a means of settling:

① Improve the management systems, leaving the present organization as it is

② Reorganize NTT

③ separate some businesses from NTT.

(5) At present, the Telecommunication Council continues its deberations about "the nature of NTT". After receiving the final report, MPT is to decide the further policy concerning NTT".

4. NEW DEVELOPMENT OF TELECOMMUNICATIONS ADMINISTRATION

(1) Outline

Highly advanced and diversified telecommunications services have been required. The telecommunications has entered into the era of qualitative expansion after that of quantative expansion. The highly advanced and diversified telecommunications are supported by rapid development of telecommunications technologies including the electronics technologies of LSI, computer, etc., and large-scale transmission technologies of optical fiber. In addition, the telecommunications industries belong to the area of highly advanced technologies as well as the area of growing industry with high value added type for save resources and save energy. The telecommunications in the country can be said to come into a turning point from quantative expansion of telephone to qualitative expansion. The administration of telecommunications therefore is required to take appropriate measures for coping with a lot of tasks i.e., to set up a long term and totalized future development vision taking into account overall telecommunication fields in the 21st century and make a concrete plan for establishing the foundation of advanced information and communication.

(2) Promotion of Digitalization

The telecommunications in future tend to gradually integrate voice communication, data communication, picture communication, etc. It is therefore necessary to make rapid progress for enhancing the capabilities of transmission, exchange and processing that the current networks provide and establish the networks as an infrastructure of advanced information society.

The digitization is a prerequisite of ISDN (Integrated Services Digital Network) which will be a high trunk communication network in the 21st century.

Each country has been making strategic and intensive efforts toward realization of ISDN, and Japan must carry out the prospective arrangement plan.

The government directs NTT to accomplish the plan ahead and complete the digitization in 1990's. NTT is currently making medium and long term plans.

The Ministry of Posts and Telecommunications intends to continuously support in terms of tax administrations etc.

Table 4-2-1 Rate of Digitization (Number of Digital Terminals in the Subscriber Exchange)

(Unit: 10,000 terminals)

Year FY	1986	1987	1988	1989
Total number of digital terminals	320	742	1,270	1,800
Total number of terminals	4,910	5,045	5,170	5,320
Rate of digitization (%)	6	15	25	34

Table 4-2-2 State of Digitization in Foreign Countries (in 1987)

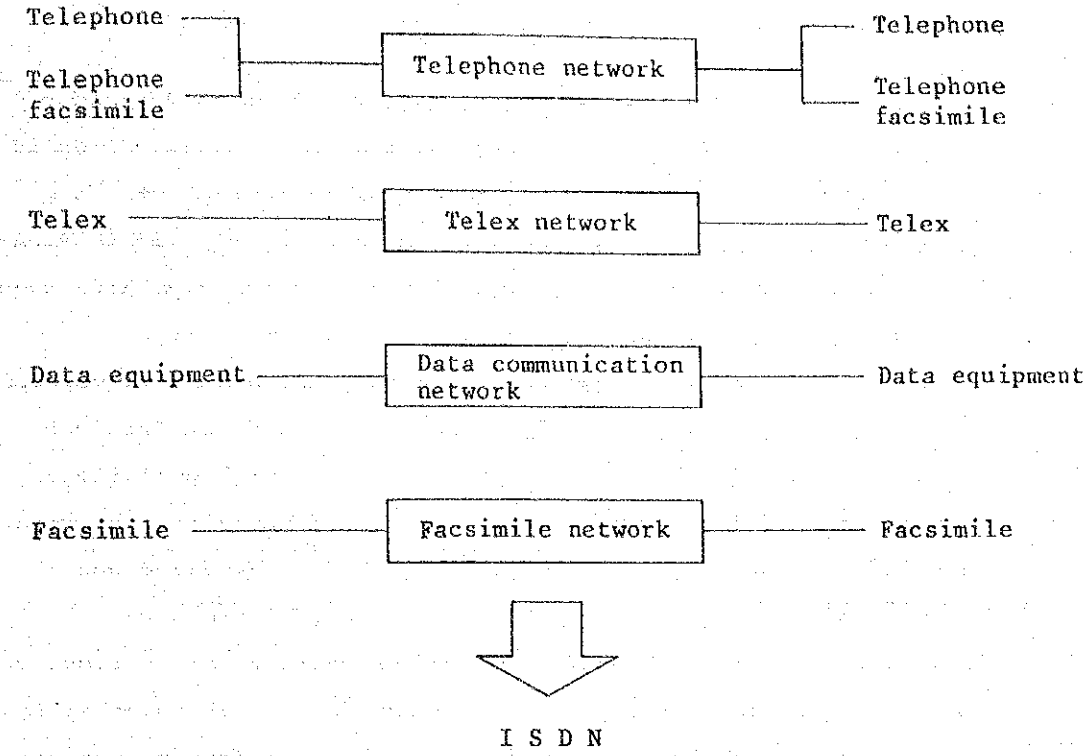
Japan	U. S. A.	France	United Kingdom
15%	26%	55%	17%

Note: 1. Rate of number of digital terminals in subscriber exchange (The value in the United Kingdom indicates the number of units.)
2. The value in the U.S.A. is given by Bell South.

(3) Promotion of ISDN

① Domestic promotion of ISDN

The communication network thus digitized is called ISDN (Integrated Services Digital Network), so that voice, data, and picture information can be sent via one subscriber line at high speed and high quality. In Japan, basic ISDN service (2B+D) started in Tokyo, Osaka and Nagoya last April. In june of this year, KDD started the international ISDN services with U.S.A. and United Kingdom, and NTT started large-volume ISDN services at high speed (INS net 1500). Rapid expansion of ISDN to various areas is one of the most important tasks to facilitate the information-oriented society and economy. To realize ISDN at an early stage, the Ministry of Post and Telecommunications Promotes to build the ISDN network, develop terminals, and study and develop the technology for using ISDN and promote the standardization. In addition, the Ministry provides favorable treatment in respect of finance and tax.



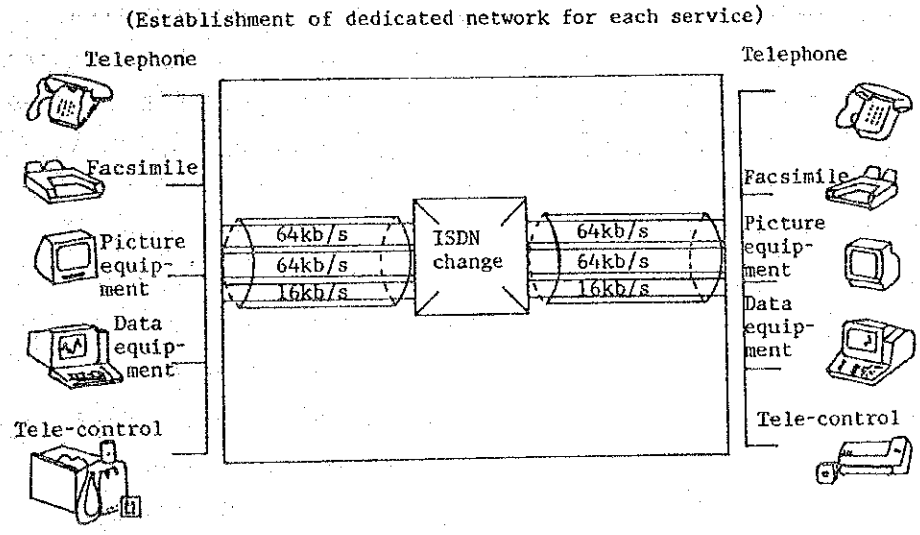


Fig. 4-3-1 Comparison of ISDN with Current Type of Telecommunications Networks

② Wide band ISDN

Recently, the information-oriented society has made a rapid progress because diversification and advancement of information is required. In many areas, diversification and advancement of communication functions are more and more expected, and telecommunications are given expectation of high performance, high speed, and large-volume transmission.
In such situations, the telecommunications networks will develop from narrow band ISDN, in which various types of services are integrated by digitization, to the network of high performance, high speed and large-volume transmission. Especially, the broad-band ISDN is appropriately matched with highly advnaced and diversified needs, e.g., high speed and large scale data transmission, video communication, multi-media communication, etc. The wide band ISDN is expected to be constructed at an early stage as an infrastructure of the coming advanced information society.

The broad-band ISDN Promotion Conference has started in this September, which scholars, telecommunications companies, manufacturers, users, etc. will take part in. The conference is to totally investigate the broad-band ISDN in terms of services, standardization, policy for promoting introduction, etc.

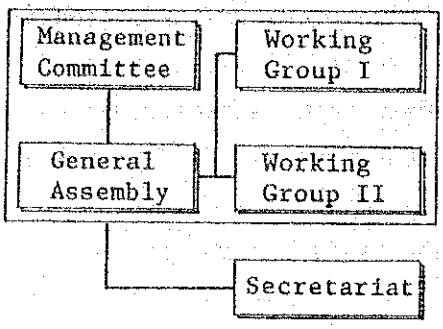
③ Structure of International ISDN

In Asian countries, development especially in the industrial area has attracted international attention. However, the development is hindered because they are behind in arrangement of telecommunication services. Since the telecommunication technology in Japan is ranked at the top level, Asian countries have approached Japan for international cooperation, so that they can arrange highly advanced telecommunications services for ISDN etc. matched at international standard.

In response to such request, Asian ISDN Council was established in April 1988 with participation of Korea, Philippines, and Singapore, and the first Asian ISDN Council was held in Tokyo. Afterwards, the Asian ISDN Council was held in Singapore, Manila, and Seoul, and six countries of Japan, Indonesia, Korea, Philippines, Singapore and Thailand currently take part in the Asian ISDN Council. In addition, Malaysia and China participate in the council as an observer and are given appeal for joining in the council.

The council currently cooperates in studying subjects including plans of telecommunications advancement, use of ISDN services, ISDN technologies, test and operation, standardization, etc. In future, the council is to prepare guidebooks and hold seminars. Through these activities, the council intends to promote mutual understanding about advancement of telecommunications, implementations of advanced telecommunications technologies, study and interchange, development of manpowers, contribution to the international standardization, and standardization based on the international recommendations.

·Organization of the Asian ISDN Council



Member countries	Particiating entities
Japan	Governments
Philippines	Telecommunications entities
Singapore	
South Kored	Communications equipment manu-factures
Thailand	
Indonesia	Universities
	Research institutes
	Telecommunication users

Fig. 4-3-2

(4) Satellite Communications

For the purpose of holding capability to carry out extensive and various space development activities steadily and freely, the development of satellite technology has been pushed forward with the communications satellite series (CS to CS-3), the broadcasting satellite series (BS to BS-3), the engineering test satellite series (ETS to ETS-VI), etc.

As for communications and broadcasting satellites in Japan, in addition to Communications Satellites 3-a and 3-b (CS-3a, CS-3b) and Broadcasting Satellite 2-b (BS-2b), five American-made communications and broadcasting satellites are scheduled to be launched in 1989. In all, eight satellites (five American-made and three Japanese) will be available for service, so that various use of satellites is expected.

Table 4-4-1 Communications Satellites of Japan

ITEM	CS-3	JCSAT (*)	SUPERBIRD (*)
Operator	NTT etc.	JCSAT	SCC
Launch Dates	1988.2.19 (CS-3a) 1988.9.16 (CS-3b)	1989.3.7 (JCSAT-1) 1989.11 (JCSAT-2)	1989.6.6 (SUPERBIRD-A) 1989.12 (SUPERBIRD-B)
Weights	Approx. 550 kg	Approx. 1340 kg	Approx. 1500 kg
Lifetime	7 years	10 years	10 years
Transponders per Satellites	K a band : 10 C band : 2	K u band : 32	K a band : 10 K u band : 19
Users	NTT etc.	·Broadcasting companies ·Circuits-Resale companies ·Distributors of CATV programs etc.	
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 ·Transmission of voice and data etc.	

(* American-made satellites)

Table 4-4-2 Broadcasting Satellites of Japan

ITEM	BS-2b	BS-2X (*)	BS-3
Launch Dates	1986.2.12	1989.12	Summer of 1990 (BS-3a) Summer of 1991 (BS-3b)
Rockets	N-II	Ariane 4 (ESA)	H-I
Weights	350 kg	720 kg	550 kg
Lifetime	4- 5 years	8 years	7 years
Transponders per Satellite	2	3	3
Users	NHK	NHK	NHK 2 channels JSB (Japan Satellite Broadcasting) 1 channel TSCJ (Telecommunications Satellite Corporation of Japan) 1 channel
Purposes	To telecast to solve the problem of blurred images and unarticulate sound etc.	To be a spare satellite of the BS-2b	To succeed the service of the BS-2 and to provide new services

(* American-made satellite)

Table 4-4-3 Engineering Test Satellites of Japan

ITEM	ETS-V	ETS-VI
Launch Dates	1987.8.27	Summer of 1993
Rockets	H-I	H-II
Weights	Approx. 550 kg	Approx. 2 t
Lifetime	1.5 years	10 years
Users	ENRI (Electronic Navigation Research Institute etc.	NASDA (National Space Development Agency of Japan) CRL (Communications Research Laboratory) NTT
Purposes	・For confirmation of launch performance of H-I rocket (3-stage) ・For mobile satellite communication experiments etc.	・For confirmation of launch performance of H-II rocket ・For mobile satellite communication experiments ・For communication experiments between satellites etc.

(5) Promotion of Telecommunications Technologies

① Japan Key Technology Center

Realization of advanced information society largely depends on the study and development of telecommunications technologies. Compared with U.S.A. and European countries, however, Japan has not massive efforts for studies and development of the key and frontier technology fields. The country itself must actively study these fields, support research and development activities in private companies, and arrange conditions of the circumstances to give full scope of the activities.

The Ministry of Posts and Telecommunications established Japan Key Technology Center in October 1985 jointly with the Ministry of International Trade and Industry and have promoted the research and development activities for key technology in the private companies through investment and loan businesses. In the telecommunications field, 17 research companies have been established by the investment business. Of the companies, Advanced Telecommunications Research Institute International (ATR) has carried out basic research for automatic translation telephone, light wave communication, intelligent communication system and audio visual structure, and is realizing the anticipated result. In addition, more than 70 fields including radio, satellite communication, transmission, video communication and networks have started in cooperation of loaning business.

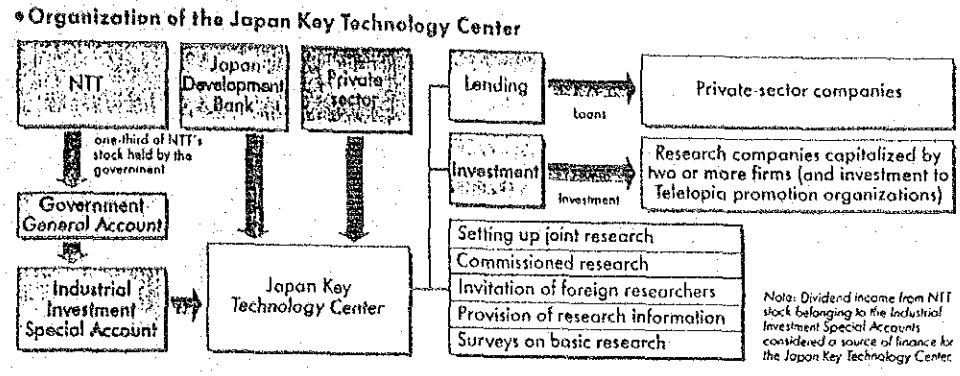


Fig. 4-5-1

Japan Key Technology Center has facilitated various R&D projects, such as the establishment of Advanced Telecommunications Research Institute International.

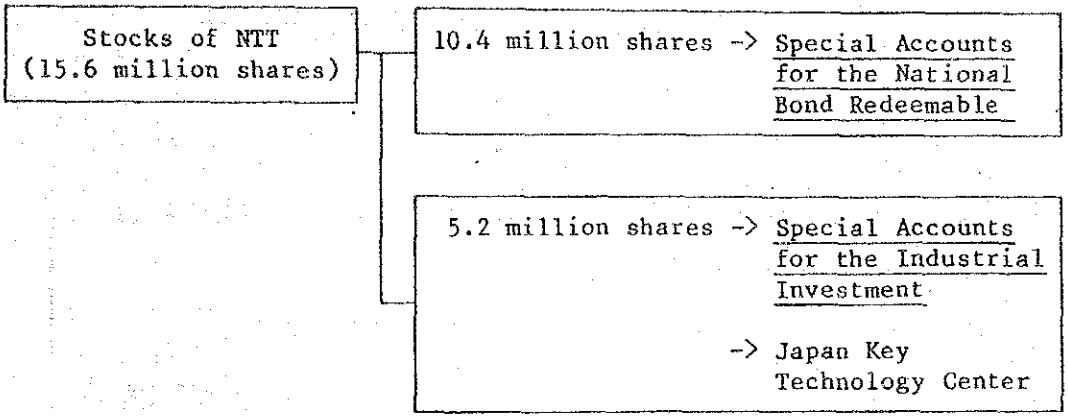


Fig. 4-5-2 Funds Flow

・Flow of Funds Among the ATR Companies

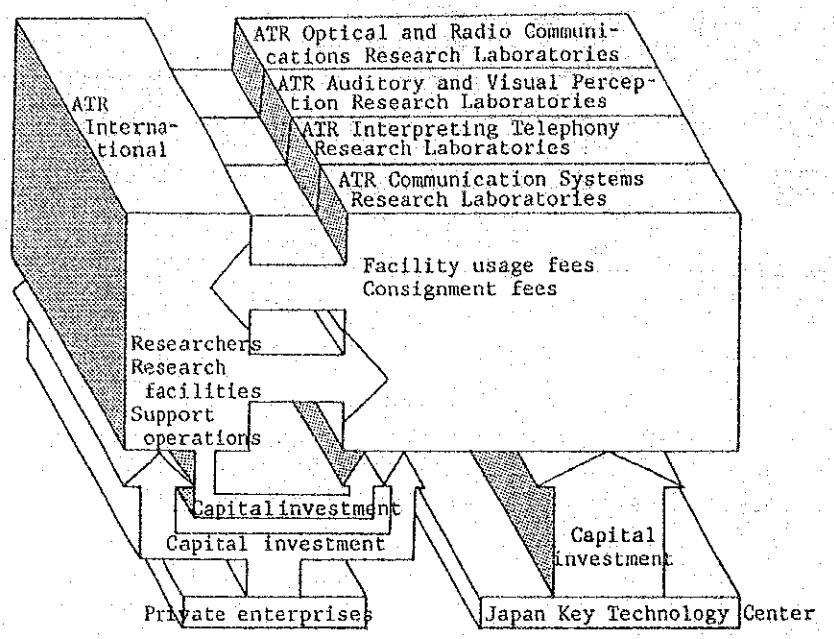


Fig. 4-5-3

Financial Support from Japan Key Technology Center

Investment

The number of cases			The amount of money	
F.Y.	Applied	Approved	New investments	Total investments
1985	36	25	2.00	2.0
1986	36	22	2.50	12.5
1987	28	15	1.04	17.3
1988	18	8	0.70	8.0

(billion yen)

Loan

The number of cases			The amount of money	
F.Y.	Applied	Approved	New loans	Total loans
1985	95	60	2.00	2.0
1986	60	30	1.25	5.7
1987	53	29	0.75	7.7
1988	58	22	0.50	5.5

(billion yen)

Fig. 4-5-4

Projects in which Japan Key Technology Center has invested

- o Basic Research of the Automatic Translation Telephone System
- o Basic Research of Intelligence Communication
- o Research and Development of Stationary-Platform-Type Communication & Broadcasting Satellite Technology
- o Research and Development of Computer Languages for the Development of Communication Application System between Computers with different Operating Systems
- o Research and Development of the Technology for the Establishment of Joint Back-up Network System
- o Research and Development of the High-Speed Processing Architecture for Digital Transmission System for Animation

Fig. 4-5-5

② Frontier Research in Telecommunications

Because technology is remarkably innovated in the telecommunications field, development of key and frontier technology must be actively promoted. Research and development of innovative and creative technology (telecommunications frontier technology) beyond current frame of technology is necessary to make rapid progress in the telecommunications in the 21st century. The telecommunications must be therefore linked with interdisciplinary activity. Search and development in fields, such as super high speed communication tehcnology, biological/ intelligent communication technology, and high performance network technology, started in 1988 in research cooperations among industry, universities and government. Besides international cooperative research has been pormoted. To make further progress in the international cooperative research, the telecommunications frontier international forum will be held in this November, where research personnel and personnel in charge of key and frontier

research in telecommunications in U.S.A., European countries and Japan will make public the latest research results. In addition, the country intends to invite foreign research personnel to the Communications Research Laboratory.

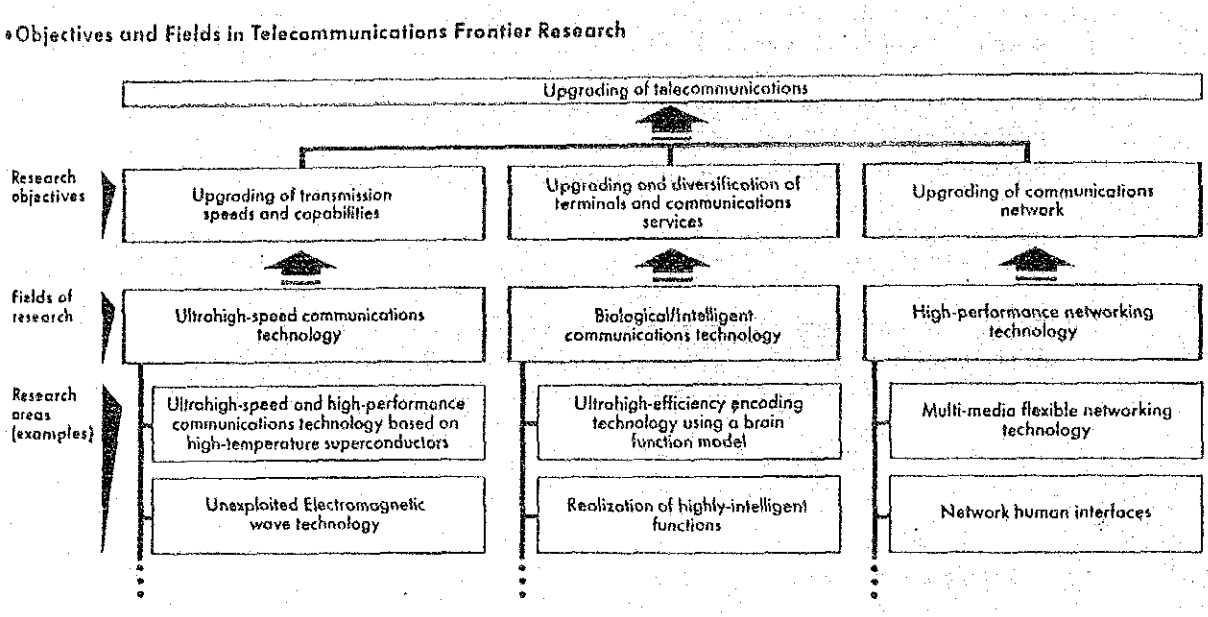


Fig. 4-5-6

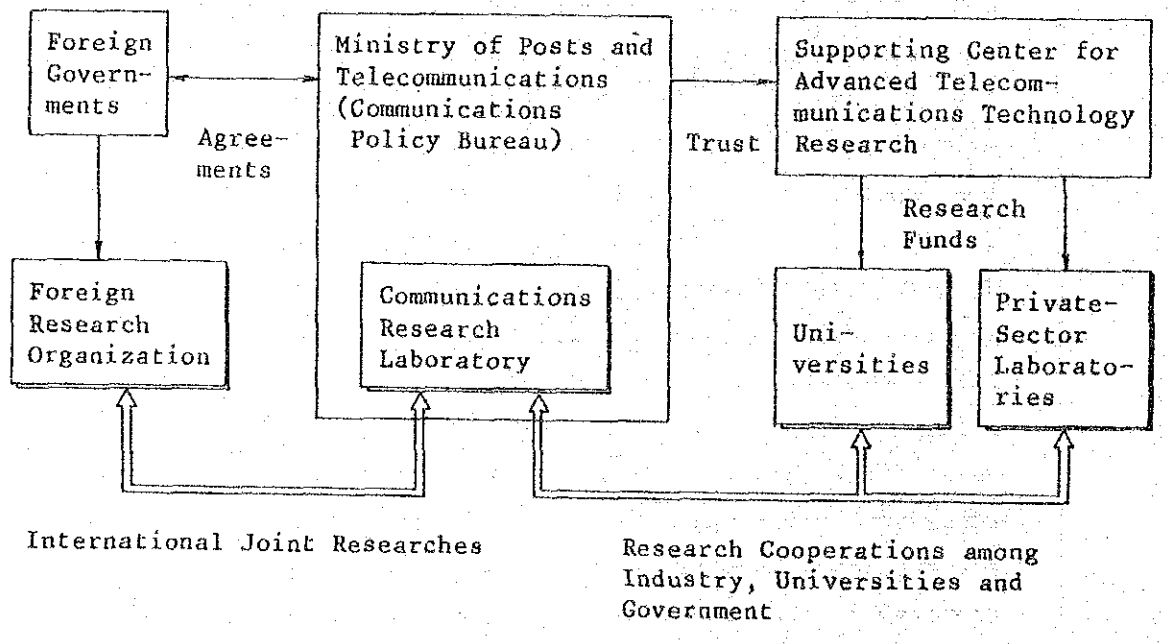


Fig. 4-5-7 International and Domestic Cooperations Scheme

③ Towards UICN

In 21st century, the telecommunications networks are considered to develop into the Universal and Intelligent Communications Network (UICA) having advanced intelligent communications processing functions via ISDN and broad-band ISDN. That is, the networks will grow into communication networks that can be flexibly coped with advanced request by the users, including automatic translation telephone etc. As such networks make progress, the highly advanced telecommunications technology with AI technology introduced is considered to be required. A concrete policy of support measure etc. related to introduction of AI technology has been therefore investigated according to the AI technology report submitted by the Telecommunications Technology Council in June 1988.

• Development of Telecommunications Technology

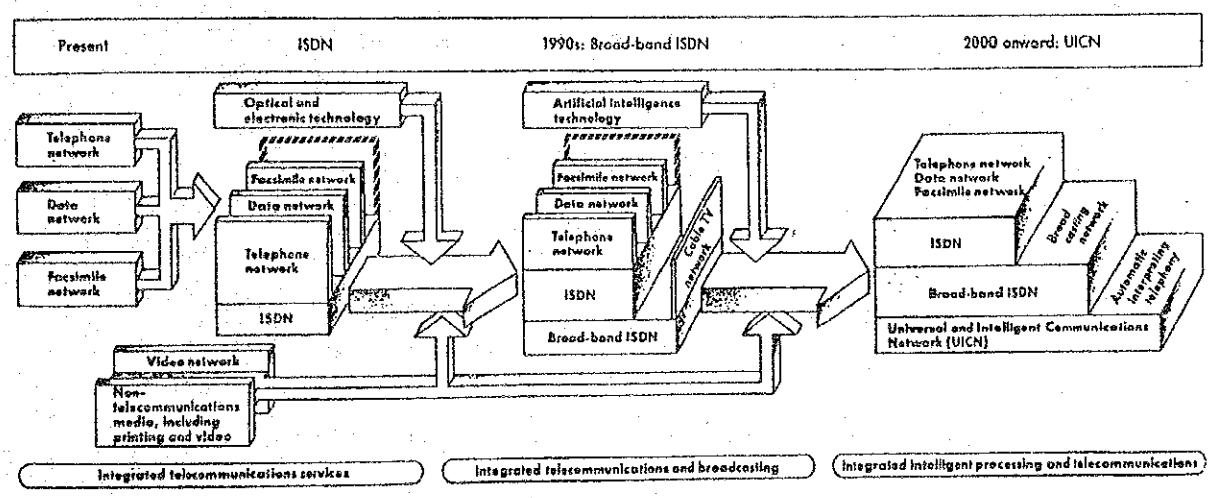


Fig. 4-5-8

(6) Promotion of Standardization

As the social and economic internationalization makes progress, the country intends to investigate international communication system for ISDN and international common protocols which assure communication between computers, e.g., Open System Interconnection (OSI), and contribute to the work of the international standardization in the International Telecommunications Union (ITU) etc., so that smooth communication can be assured between countries and the global network assuring mutual reliability at an internationa level can be established.

The country intends to positively support activities of The Telecommunication Technology Committee (TTC), a private policy making organization in standardization.

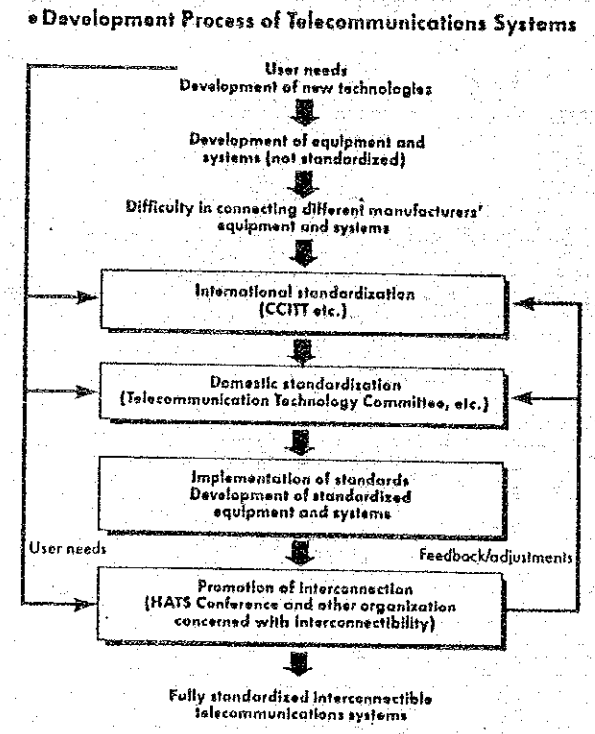


Fig. 4-6

(7) Problems in Preservation of the Earth Environment

When the earth environment becomes worse, all living creatures including human beings are exposed to danger, and the countermeasure for such problems must be taken at once. Preservation of the earth environment requires accurate understanding of actual environmental state and the transition in future, and appropriate countermeasure is necessary. When global environment is observed and supervised, the remote sensing using satellite is considered to be an effective measure.

The Ministry of Post and Telecommunications, mainly by the Communication Research Laboratory has supported to promote research and development of the remote sensing using radio wave. The Ministry has positively promoted various types of research and development for earth environment observation by using the experiences and results.

The TRMM (Tropical Rain Measuring Mission), joint project between Japan and U.S.A., researches and develops rain radar t be mounted in the satellite.

Rain in the tropical area amounts to approximately 2/3 of total rain in the earth and causes disasters by heavy rain, flood, etc. In addition, rain in the tropical area causes climate variation, which continues for several years, represented by El Nino, and efficient grasp of the climate variation in global size will greatly contribute to solution of the mechanism in the earth environmental problems.

In future, the country intends to exchange earth environmental information observed in countries throughout the world and investigate the construction of international environmental information network to efficiently collect and provide the information. The cuontry also intends to positively promote global cooperation with other cuntries including developing countries for environmental observation on the earth.

(8) Promotion of Radio Wave Usage

Since the radio wave is a kind of natural resources, the country provides the radio wave management system under the responsibility of the government. Observing this rule, the country promotes the radio wave usage and takes the following concrete measures for contribution to social and economic development:

- The government intends to approve new companies as many as possible that will enter into the Type I telecommunications business, so that the user can receive various services.
- The government intends to promote the radio wave usage for activating the reas and for improving people's life in the area.
- The government intends to develop and put to practical use advanced communication systems using the radio wave for movable data communication system, etc.
- The frequency resources must be developed as a necessary condition for promoting the radio wave usage. That is, the development of the frequency resources is to develop the technology of effective usage and the technology of using high frequency band that has not been used yet.
- Another condition that must be arranged for promoting the radio wave usage is to maintain the order in the radio wave usage. To key the radio wave usage in order, the government monitors the usage of radio wave and arranges the monitoring facilities.

CURRENT STATUS AND FUTURE TRENDS IN DATA COMMUNICATIONS AND PERSONNEL TRAINING FOR SOFTWARE ENGINEERS

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(N T T)

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Current Status and Future Trends in Data Communications and Personnel Training for Software Engineers

Recent years have seen remarkable developments in computers and the substantial growth in scale of data communications systems connecting computers and terminals via circuit. In addition, networks are spreading over wide areas and becoming more complex along with the advanced functions and diversification in terminals. These developments in data communications systems are deeply penetrating all industrial and economic activities as well as our daily lives.

As a long development period and many software engineers (system engineers/programmers) are necessary for systems development, a great deal depends on the technical skills of the engineers involved in developing high-quality systems within a limited period and at reasonable costs.

This section outlines the training methods for system engineers/programmers and the training situation at NTT, based on the current status and trends in data communications.

1. Development Process and Trends in Data Communications Systems

(1) Development Process of Data Communications Systems

(a) Early-Stage Systems

A form that connects the computer to terminals by circuit.

(b) Computer Network and (c) Compound Network

In recent systems, large-scale systems that have vertical-type function distribution + horizontal-type function distribution are increasing, and this tendency will grow in the future.

(2) System Examples

Following are three examples:

(1) Banking System Example — Figures 1 and 2.
(2) Firehouse System Example — Figure 3.
(3) NTT System Example — Figure 4.

Features:

- Large-scale system;
- Networking;
- Connections between various kinds of computers, terminals and equipment;
- Advanced-function terminals and terminal diversification;
- Distributed processing.

(3) Trends

The features mentioned above will be upgraded more and more. Especially, each system that is now independent will be connected by network.

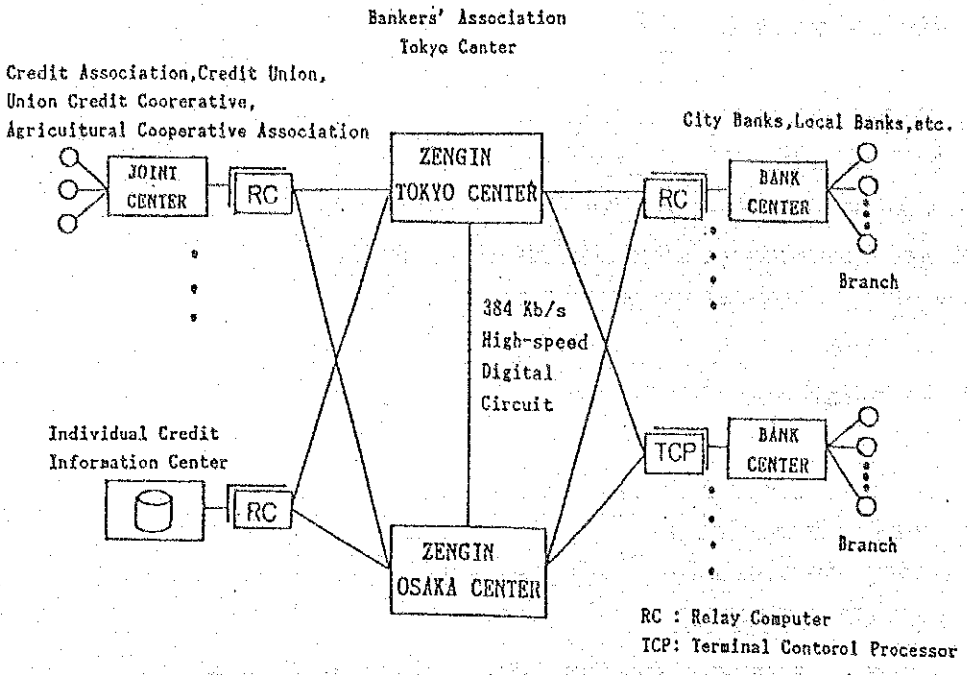


Figure 1: Network Configuration of Japan Bankers' Association System (Zengin System)

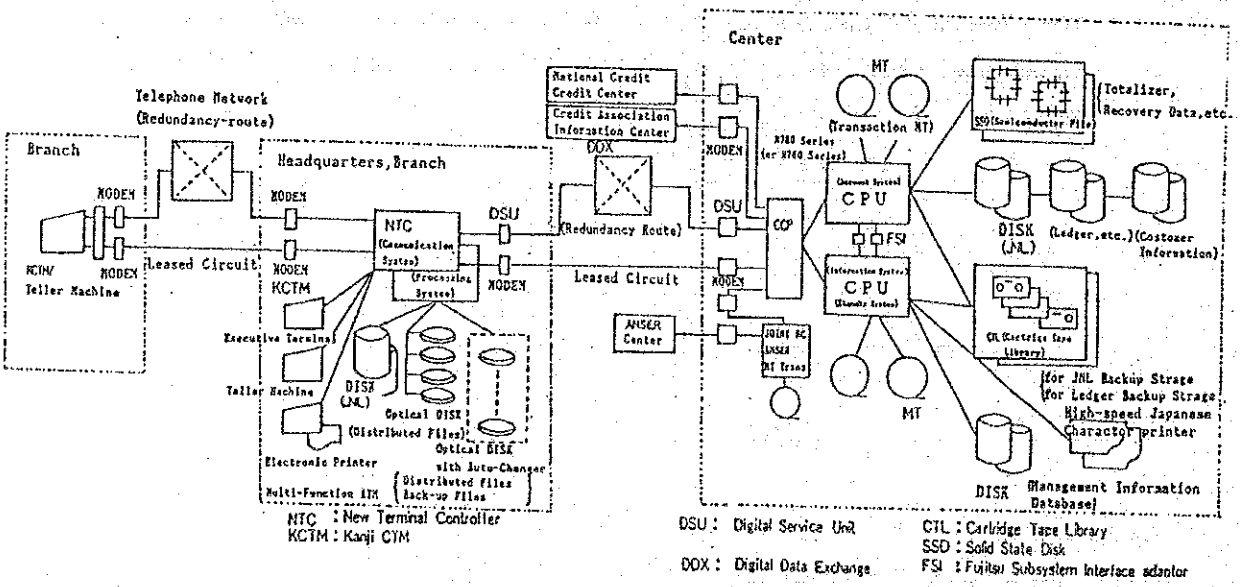


Figure 2: Configuration of Credit Association's Third-Generation Online System

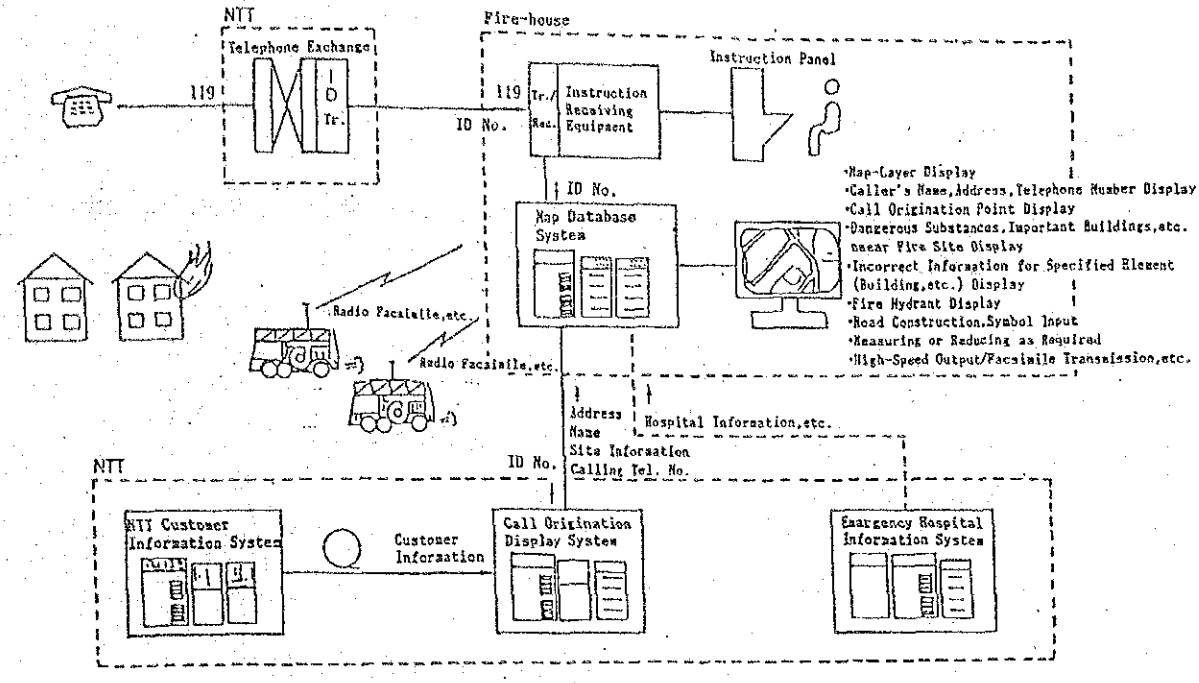


Figure 3: Firehouse System

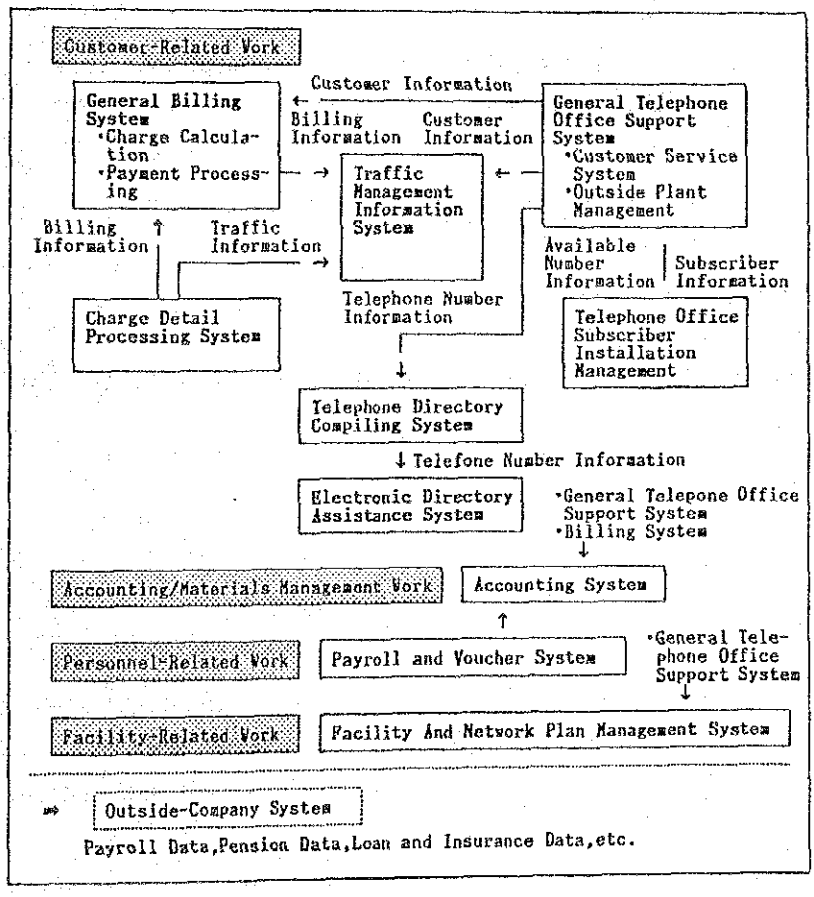


Figure 4: Outline of NTT Internal Information System Configuration

2. Changes in Environment Surrounding Data Communications

[Data Communications from Aspects of Business and Daily Life]

(1) Data communications systems have penetrated into industrial and economic activities and daily life.

(2) Opportunities to handle computers in daily life have increased.

- Spread of personal computers (offices, homes).
- School education:

  Colleges, vocational schools . . .

  (Data processing courses; liberal arts)

  High schools . . .

  (Data processing courses; liberal arts)

  Junior high and elementary schools . . .

  (Personal computer application to classwork)

(3) Personal computers and word processors were used on stand-alone basis before, but now are increasingly being connected to networks.

- Personal computer communications.
- LAN (Local Area Network)
- Home banking.
- Family-computer communications.

  (Such as stock price information via game-use home computers)

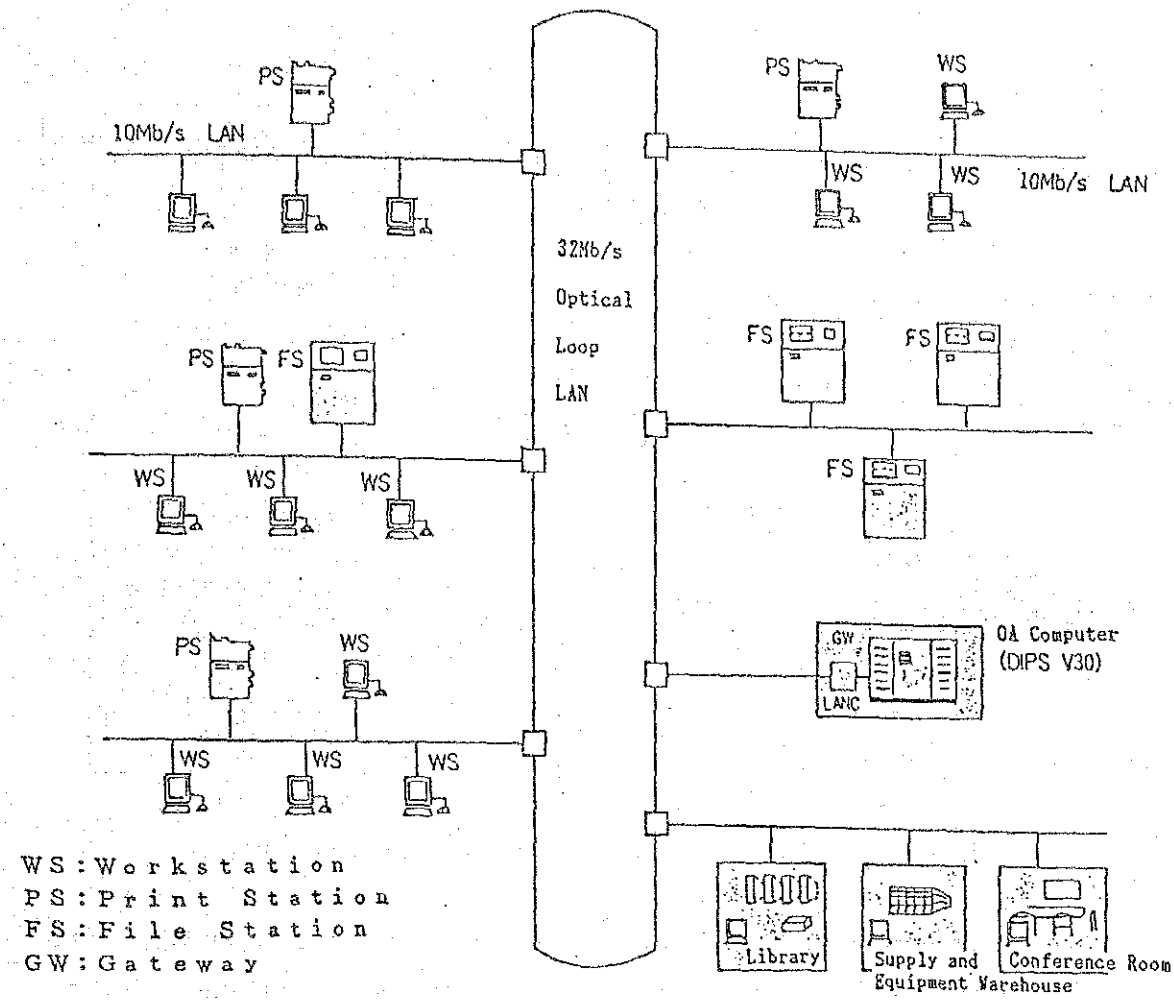


Figure 5: OA System Configuration at NTT Shinagawa Building

(4) Computerization and networking have become necessary to efficiently carry out corporate activities, to improve customer services and to survive competition with other companies.

(Factory Example)

FMS (Flexible Manufacturing System): Automation of Manufacturing

—> CIM (Computer Integrated Manufacturing): Integrated Manufacturing System

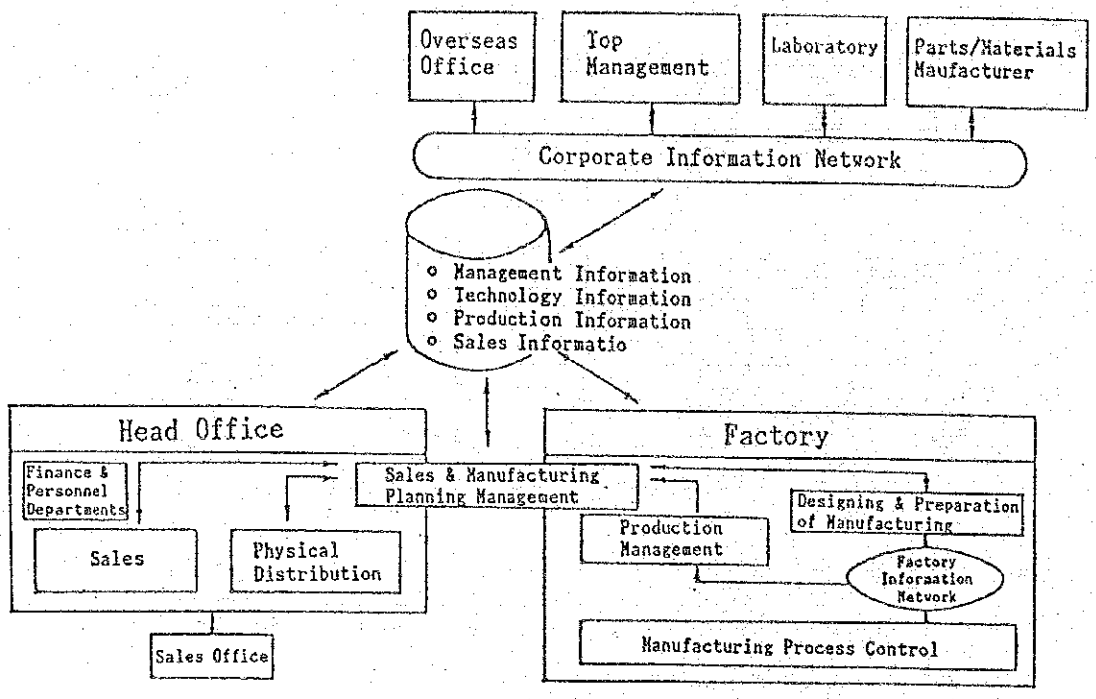


Figure 6: CIM (Computer Integrated Manufacturing System)

(5) The impact on society of online system troubles has become large, and crimes using computers and online systems have been occurring.

If considered from this situation,

computers and data communications systems are shifting from the specialized to the generalized in terms utilization, knowledge and technology.

[Data Communications Systems from the Views of Manufacturers (Software Engineers)]

(1) Hardware (Computer)

- Improved cost performance.
- Improved reliability (Increase in electronic components; high-reliability devices; fail-safe design technology).
- Simplified routine maintenance (fault diagnosis functions; maintenance free).

(2) Software

- Development of larger-scale software.
- Large-scale systems development is long-term undertaking, but with periods where severe time constraints required for software engineers.
- Strong demand for reliability and quality in software.
- Increase of technology and knowledge necessary in terms of technical specialists for host computers, networks and terminals, as well as advancement of knowledge for customer service operations.

(3) Networks and Terminals

- Advanced functions of terminals and increase in terminal types.
- Increase in circuit types, and increasing complexity in transmission procedures and communications protocol (software for terminals and communications also increasing).

(4) Compared with the quantity of software to be developed in the future, a shortage of software engineers is expected.

Under these circumstances,

improvement of software productivity has become important, thereby calling for the following:

—> (1) Development and improvement of software development tools;

(2) Improvement in technological abilities of software engineers.

3. Technology and Knowledge Required for Software Engineers

(1) Systems Development Process

The standard process flow in systems development is shown in Figure 7.

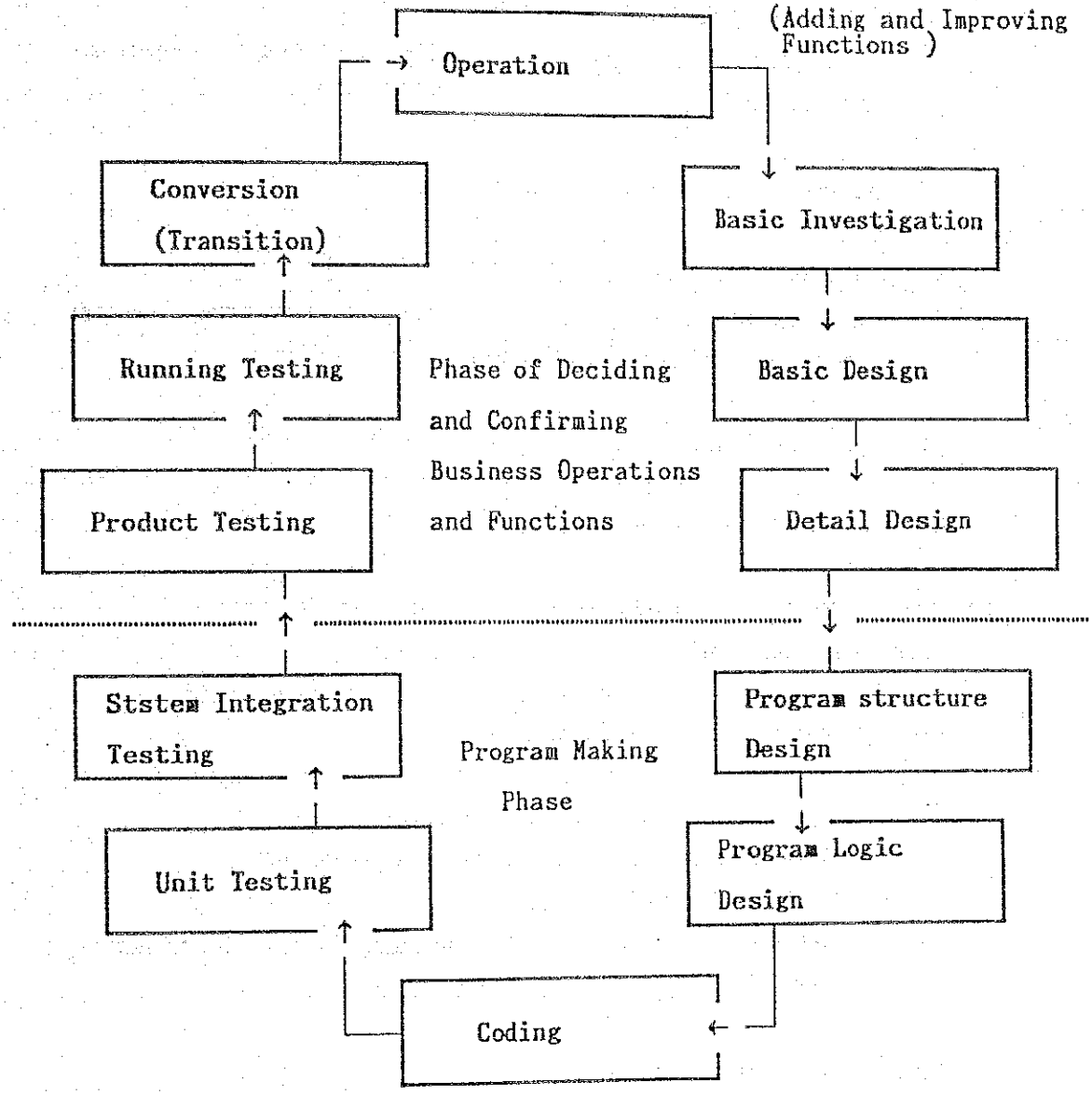


Figure 7: Standard Process of Systems Development

(2) Programming Technology (Technology Necessary for Programmers)

1) Program Design Techniques
Structured design techniques, structured chart.

2) Programming Techniques
Programming languages, programming techniques, structured programming.

3) Database Manipulation Languages

4) Program Testing Techniques
Test planning, test techniques, (single-unit testing, system integration testing, product testing).

5) Operating System (OS)

6) Program-Development Support Tools

(3) Systems Engineering Techniques
(Techniques Necessary for Systems Engineers)

1) Systems Development Techniques

- System Analysis (Requirements Definition)
- Basic investigation Techniques for Systemization
- Systems Design Techniques
- Resource Design, Reliability Design, System Performance Evaluation

2) Database Techniques

Database design, management and using.

3) Data Communications Techniques

- Transmission Control Procedures, Communications Circuits Types and Services
- Network Architecture, OSI (Open Systems Interconnection)

4) Trends in Latest Technology

- OS, OSI, ISDN, AI, Etc.

5) Documentation Techniques

6) Systems Development Support Tools

7) Management

- Software Quality Control
- Project Management
- Systems Operation Management

8) Trends in Customer Operations and Industry

(4) Project Management Technology
(Technology Necessary for Project Managers)

1) Project Planning

2) Progress Control and Cost Management

3) Formation of Development Teams, Personnel Management

4) Project Evaluation

5) Trends in Industry and Latest Technology

The number of Japanese companies who adopt the idea of a "career path" in training software engineers is increasing. Under this system, new employees first accumulate training and experience as programmers, then experience as systems engineers, and then are developed as managers or specialists.

An example of this system at NTT is shown in Figure 8.

4. System of Developing and Training Engineers

NTT's educational and training system is shown in Figure 9.

Each training course shown here is conducted at the company's training centers, through correspondence education and outside seminars and at colleges.

As practical ability is developed through actual work, experience and self-study, however, great attention is paid to OJT (On-the-Job-Training) in developing engineers.

5. Example of Training Curriculum

While OJT (On-the-Job-Training) receives great attention in developing engineers, the results are not fully effective unless it is carried out in combination with training at training centers.

Training courses for software engineers conducted at training centers are indicated below:

(1) Training for New Employees

First-Term Group Training	About 1 Month	Education as corporate staff members; basic education in data communications; programming.
OJT	About 1 Year	Practice through actual work.
Second-Term Group Training	About 1 Month	Basics of systems design.

Many other companies adopt this form of training schedule.

(2) Training Programmers and Systems Engineers

A few years ago, basic and applied courses were designed to last for three to four months. Currently, however, such courses are divided into shorter training sessions for periods of about two to three days or up to ten days for the following reasons:

1) Heightened Training Effect

- Employees needing required courses take them at the appropriate time.

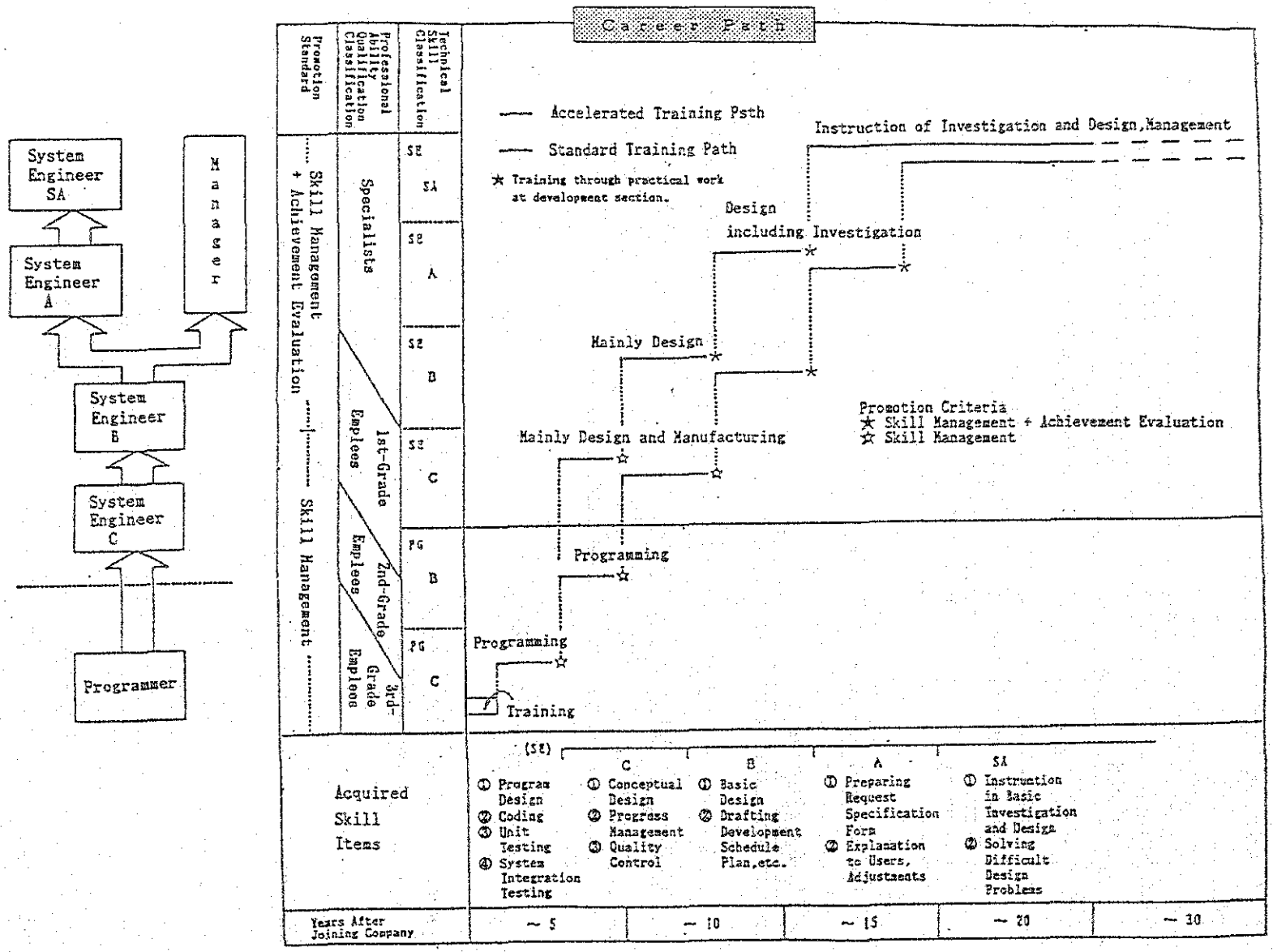


Figure 8: Career Path Example for Software Technical Specialists

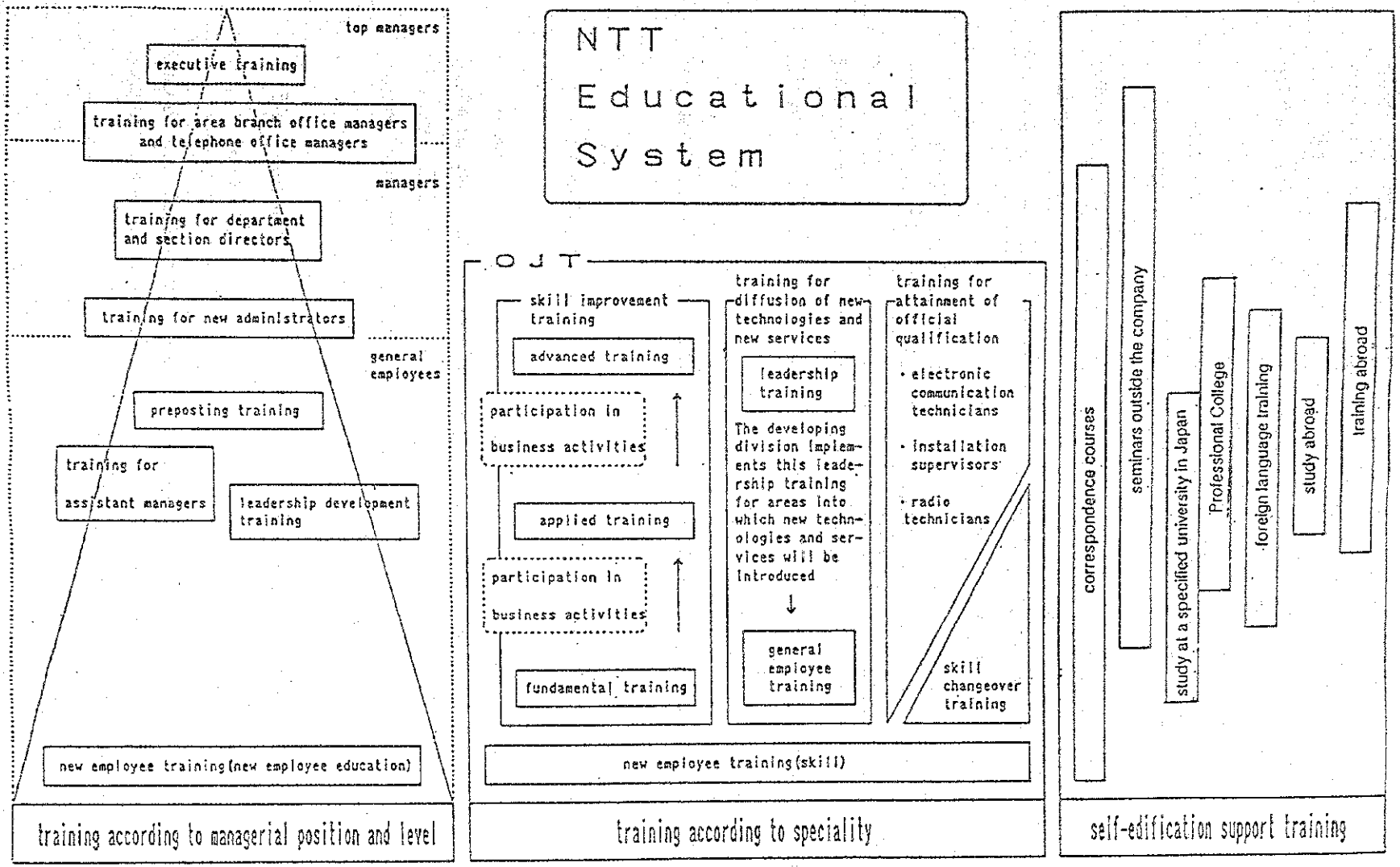


Figure 9: NTT Educational System

Generally, systems development is a long-term process, thus making it possible for employees to take the necessary training as it is required for the development process. For this reason, they can utilize the contents of the training they received on an OJT basis.

2) More Convenient for Both Work Sites and Trainees

- Dispatching employees to a long-term training program affects the progress of systems development. If the impact is substantial, there are cases where it is not possible to dispatch employees as trainees.

- Engineers undergoing training find it difficult to interrupt their own work for a long period of time. Moreover, the effects of training are not satisfactory if so much training is offered at once that trainees forget some of the contents.

- Making it possible to take only the part of the training that is necessary.

3) Training Center Can Carry Out Efficient Training Programs

- Possible to schedule training courses according to need. As training courses are set by each subject, it is easy to adjust the number of courses according to need. This leads to high efficiency compared to conducting long-term courses several times.

- Easy to add training courses in new technology and to recruit trainees.

In the event of extremely limited enrollment or highly specialized courses, such training can be carried out in offices or outside seminars/training courses.

(3) Systems Development Standards and Training

In order to improve the productivity of systems development, NTT has adopted STEAD (Standard Techniques for Advanced Systems Development), which standardizes the work procedure and development knowhow in developing, maintaining and managing systems.

This standardizes each operations procedure and documentation format in systems development and systems maintenance and management.

Each training course is designed to acquaint trainees with the techniques of STEAD.

Sample of Training Course at Training Center

NO.	COURSE NAME	TRAINING DAYS
Basics		
1	Introduction to Data Communications - I	5
2	Introduction to Data Communications - II	7
3	Design Documentation	3
Language		
4	COBOL	5
5	BASIC	4
6	ASSEMBLY LANGUAGE	5
7	SYSL (System Description Language)	5
8	C	5
Programming Techniques		
9	Program Design Techniques	4
10	Program Testing Techniques	3
Basic Software		
11	OS Practice	10
12	OS	7
13	Communications Processing	7
14	Systems Generation	4
15	RTP (Real-Time Package)	4
16	Small-Scale DIPS Techniques	3
Databases		
17	CODASYL-Type Database	6
18	Multi-Media-Type Database	6
Systems Design		
19	Introduction to Systems Design	4
20	Center Resource Design	3
21	Reliability Design	3
22	Performance Evaluation	3
23	System Analysis	3
24	Investigation for Systematizing	3
Management		
25	Software Quality Control	3
26	Project Management	3
27	Systems Operations Management	2
28	Systems Audit	2

Terminals		
29	UNIX	4
Networks		
30	Network Design	4
31	Digital Communications and Data Transmission	3
32	VAN	3
33	Computer Network Architecture	4
34	Distributed Processing	6
AI		
35	EXPERT System - I	5
Maintenance		
36	Small-Scale DIPS	9
37	Data Terminal Equipment	9
38	Circuits	9

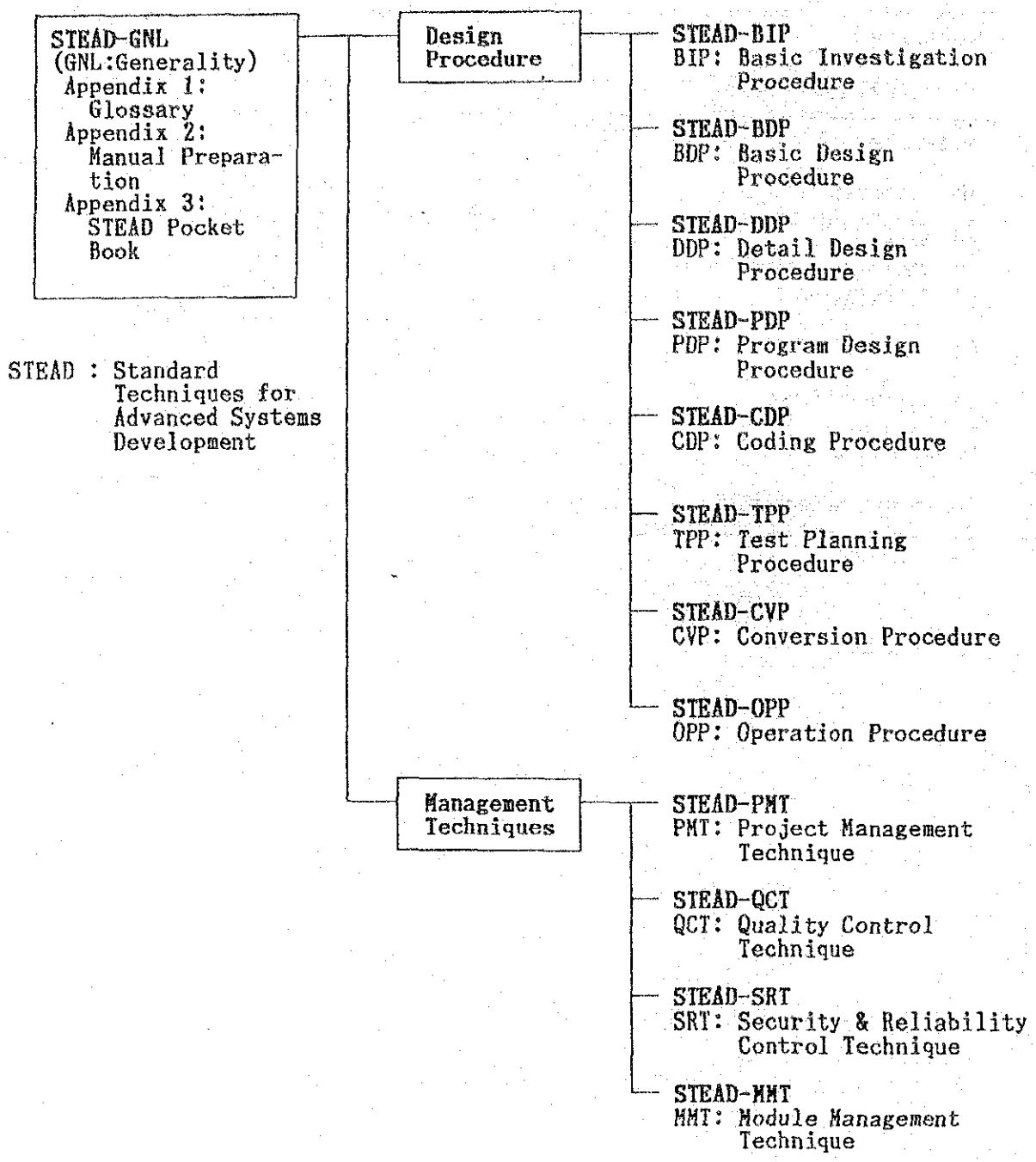


Figure 10: Outline of NTT's STEAD (Standard Techniques for Advanced Systems Development)

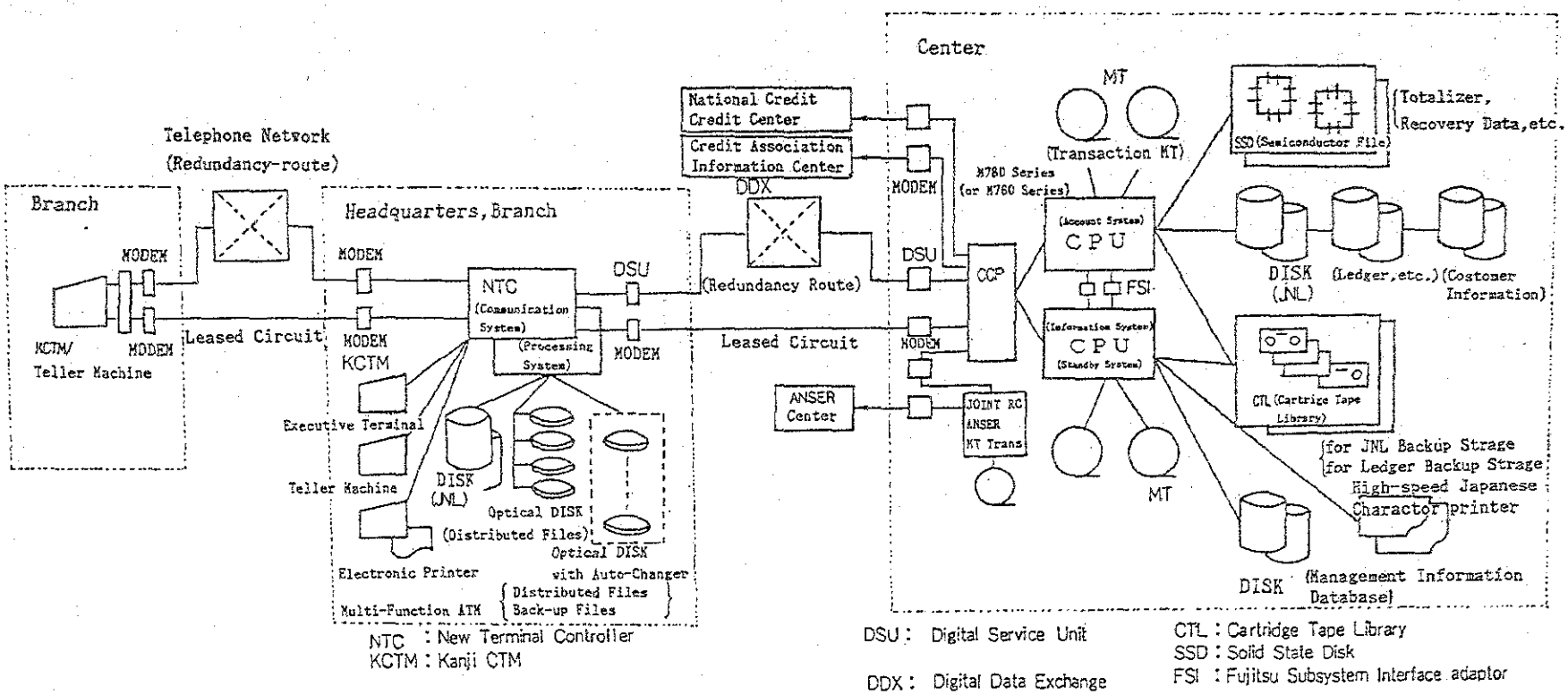


Fig.2 Configuration of Credit Association Online Banking System

OUTLINE OF JAPAN PATENT OFFICE PAPERLESS SYSTEM

YOSHIRO SETO
NTT DATA COMMUNICATION SYSTEMS CORPORATION

Japan International Cooperation Agency

OUTLINE OF JPO PAPERLESS SYSTEM

1. Outline of the Company

(1) NTT Data Communications Systems Corporation was established shortly after Nippon Telegraph and Telephone Public Corporation (Denden Kosha), a public utility providing a full range of the telecommunications services (telegraph, telephone, carrier transmission, radio and data communications services), was privatized in 1985 and became Nippon Telegraph and Telephone Corporation (NTT). In July 1988, NTT's Data Communications Sector was spun off to become NTT Data Communications Systems Corporation, a subsidiary company fully capitalized by NTT.

(2) NTT has been dealing with the computer systems development business since 1967 when it was still a public corporation. As a systems integrator, the company has more than 20 years of experience, during which it has developed more than 100 systems.

(3) NTT Data is the largest systems integrator in the world without its own manufacturing plant. Because of this, the company is able to construct the most suitable system for each business without relying on a single hardware maker. In particular, this means that users with diversified businesses can expect the best results.

1) Capital $69 Million

2) Employees About 6,600

3) Sales About $1.6 Billion

4) Major Systems Developed:

- Public Sector —

Automated Meteorological Data Acquisition System (AMEDAS)

In Japan, AMEDAS comes to mind when one thinks of weather forecasting. Every hour, data on precipitation levels, wind direction, wind velocity, temperature, sunlight, and snow depth are collected by 1,300 observation stations located in every

corner of the country. This information, which serves as the basic data for making weather forecasts, is relayed to the Meteorological Agency and to weather stations throughout Japan.

AMEDAS provides service 24 hours a day throughout the year.

■ Financial Sector — ANSER System

The banking system "ANSER" is one of the representative systems of our company.

This system is outstanding in the following characteristics.

(a) Large system capable of joint-use by a number of users.

(b) Hetero-hardware connecting system.

Banks which are using the hardware of different makers are connected and users can access every bank through the network.

(c) Varieties of services as follows:
   a) Information: bank balances;
   b) Information: dates and amounts of latest remittances and credits;
   c) Enables users to send and receive cash.

(d) Communications equipment usable with system includes:
   a) Dial phone;
   b) Touch-tone phone;
   c) PC
   d) Video-tex terminal;
   e) Facsimile.

— This system is used by about 96% of Japanese banks and financial institutions.

(4) NTT Data adopts a broad approach to systems integration. In constructing a system, the company accurately comprehends the client's tasks under present conditions and suggests the most suitable hardware, software and network configuration.

Moreover, the company handles all operations — from systems planning based on management strategies, design and construction, to maintenance and operations — and carefully observes its responsibilities to provide good service.

NTT Data calls this "Professional Service."

2. Trend towards Systems Integrators

Recent systems have continued to become ever larger in scale and more complicated as user needs grow more advanced and diversified, creating many demands for systems integration service from the standpoints of scale and operations.

(1) The Situation Until Recently

Until recently, systems construction has generally followed a distributed development pattern, whereby users have taken a leading role in placing orders under their own responsibility with suppliers at all stages of systems planning, design, manufacture, testing, training, operations and maintenance.

(2) Problems Under the Present System

1) As systems become larger and more advanced, limits are being reached on the effective construction, operation and maintenance of systems solely through the user's own leadership and technology.

2) As applications software is often developed on an individualized basis, progress is slow in making this fit general-purpose applications.

3) The user's freedom in selecting a hardware maker is so limited that it is impossible to choose the optimal machine model.

4) As software houses occupy a passive position, they lack incentives to open markets by themselves. As a result, it is difficult to accumulate technology.

(3) Needs Accompanying Changing Social Conditions

1) Shifts in demand from information systems designed to handle a single task to total systems capable of handling multiple tasks within the same company, as well as networking capability connecting several companies and different types of business.

2) Accompanying the rapid growth in the number of data-processing users, increasing demand for user-friendly systems with easy-to-handle equipment and software.

3) Demand for capacity to construct the optimal information system that can meet high standards of user needs.

4) Demand for expansion and maintenance capability in hardware and software to meet need for more complex applications and business growth.

(4) Future Course

Systems integration service for the future basically involves providing all activities, from systems planning to operations and maintenance, that are currently carried out by users under distributed systems development, and ensuring systems development that the users can fully rely on. To meet these goals, the company assumes the following functions as a systems integrator:

1) Information Function

Providing information ranging from advice on management strategies in systems construction to technical information on sophisticated software programs.

2) Supply Function

Comprehensively carrying out systems construction with a focus on system designs easily handled by users; selecting the most appropriate hardware from among products of various makers; providing for the most effective and economical system construction through the judicious usage of general-purpose software programming; and completing the construction of systems by a set target date.

3) Maintenance Function

Assuming responsibility for system maintenance to ensure high operating reliability.

3. JPO Paperless System Program from Integrator's Standpoint

(1) Problems Faced in Administering Industrial Property Rights

An example of the clerical work flow for a JPO patent application is as follows:

Patent Application —> Acceptance —> Formality Examination —> Public Disclosure —> Substantive Examination (Appeal Examinations where appropriate) —> Public Disclosure of Application —> Patent Registration.

The number of applications is increasing year by year and the contents are becoming more and more complex. As all application documents must be original sheets, the JPO is reaching the limits of its operations.

[Situation Before the Systemization Plan]

1) All application documents processed on paper.

2) Sharp increase in number of patent applications accompanying rapid progress in technological innovation.

3) Greater complexity of contents.

4) Decrease in number of inspectors due to strict adherence to administrative and fiscal reforms.

5) Insufficiency of information disseminated to JPO local agencies, general public and other countries.

6) Recent progress in office automaton led to increase in number of applicants using word processors and requests to permit filing via floppy disk or online basis.
(Increasing burden of document preparation.)

[Problems]

1) Prolonged examination period.

2) Space limitations.

3) Increase in personnel to control and handle materials.

4) Response to domestic and overseas demands for opening patent information.

5) Response to applicant demands to accept electronic submittals.

[Measures for Improvement]

Possible for many users to submit and retrieve information online if contents of all applications in and out of agency are stored on electronic media.
(Verification with investment and budget plans)

(Paperless Plan)

(2) Subjects for Paperless System

(Status Quo)

An automatic retrieval system for public materials was developed before other systems to support inspection operations in patent applications.

Development System

1) Developed by JPO and three equipment manufacturers.

2) Host computers provided by single maker; no SI involvement.

(Problems)

1) Since JPO has few systems engineers in its employ, it lacks the capacity to smoothly carry forward future development plans while maintaining the existing system.

   a) Draft of long-term systemization plan.

   b) Determination of long-term budget plan.

   c) Broad study of technological trends.

   d) Coordination with multiple makers, etc.

      - Work Specifications
      - Sharing Functions
      - Interface between Systems
      - Total Response

   e) Dealing with applicants.

2) Concerns over technology and efficiency in systems development as host computers are limited to products of one manufacturer.

(3) Proposals as a Systems Integrator

A systems analysis and survey of technological trends was conducted to study the subjects covered by the JPO Paperless System construction. As a result, the following proposals for systemization were made:

1) Application of Multi-Vendor System

Rather than relying exclusively on any specific makers, the proposal instead calls for positively introducing superior technology and products from many manufacturers to secure the most appropriate equipment to construct an integrated system.

(Hardware: Eight Companies)

Host Computer	Two Companies (HITACHI, NEC)
Peripheral Equipment	Four Companies (HITACHI, NEC, FUJITSU, FUJI XEROX)
Terminal Units	Four Companies (HITACHI, TOSHIBA, OKI, RICOH)
LAN	Three Companies (NEC, FUJITSU, TOSHIBA)
Others	One Company (GUNTHER)

(Software: 19 Companies)

PP	Nine Companies (HITACHI, NEC, FUJITSU, OKI, TOSHIBA SOFTWARE AG, etc.)
Development	15 Companies (HITACHI, NEC, FUJITSU, OKI, TOSHIBA, NIPPON TIME-SHARE, JOINT SYSTEM DEVELOPMENT, etc.)

2) Conforming to International and Domestic Standards, such as adoption of OSI

As the Paperless System is a system open to the general public, it is necessary to transfer information accurately and effectively online between JPO and applicants.

Within JPO, multiple host computers and terminal units are connected by LAN, thus making it necessary to establish online interfaces without relying on any specific maker.

For these purposes, the following standardization measures were taken:

- OSI, an international standard, was adopted for the communications procedures between applicant terminal units and the host computers, between host computers, and between host computers and JPO terminal units.

- Domestic standards were adopted for the media and recording format of floppy disks used for electronic applications.

- A committee was established under the supervision of JPO consisting of specialists experienced in communications standardization to study the format for electronic application documentation.

  The committee decided on a standardized format for online, FD and paper applications, and has already announced part of its conclusions to manufacturers of online applicant terminal units, word processors, etc., prior to opening the system to the general public. The committee is now carrying forward procedures to establish the relevant regulations.

3) Adoption of Mixed-Mode Processing

As characters, figures and numerical formulas are intermingled in the application documentation, the CCITT T. 73 (Recommendations) Protocol was adopted.

4) Effective Transmission of Lengthy and Large-Volume Data

As the length of a patent application is approximately 120Kb/transmission, it is important to secure an effective means of transmission.

For this purpose, the following communications means were adopted:

Outside-Agency Communications — ISDN (64Kb/s)

Inside-Agency Communications — High-Speed LAN
(Between HOST and HOST): 100Mb/s
(Between HOST and TERMINAL): 400Mb/s

5) Adoption of Image Data Compression and Expansion Technology (MMR)

As the length and volume of application data is enormous, it is essential to adopt high density compression and expansion technology.

6) Introduction of Large-Capacity Laser Disks

As the practical use of large-capacity laser disks for peripheral equipment was in sight, their usage was adopted for original file applications.

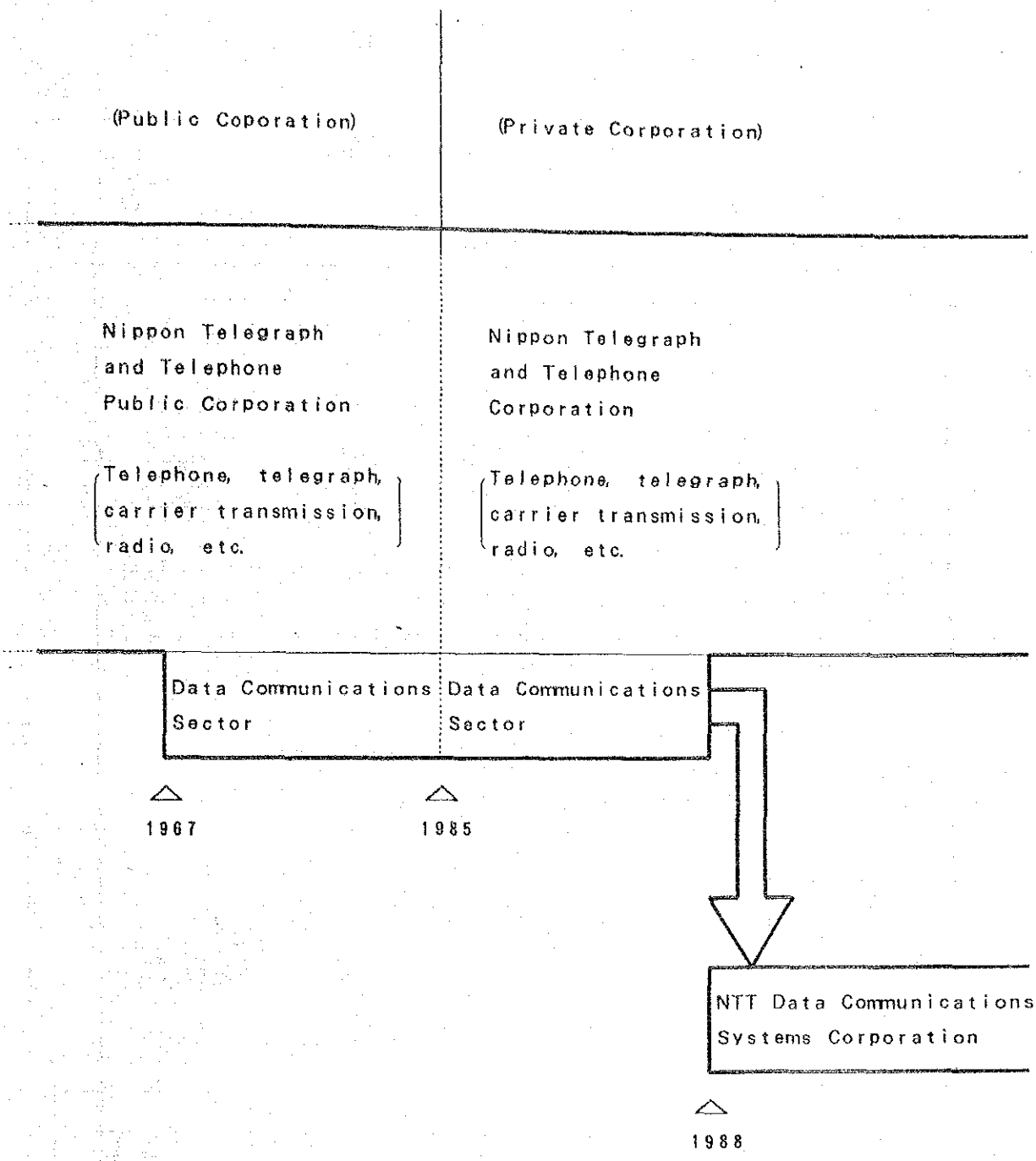


Fig. 1 Corporate History

(1) Name	NTT Data Communications Systems Corporation
(2) Capital	Authorized capital $276 Million; Paid-in capital $69 Million (100% investment by NTT at establishment).
(3) Employees	About 6,600 (End of March 1989)
(4) Sales	About $1.6 Billion (July 1988 through March 1989)
(5) Business Outline	① Providing telecommunications services as Type-II Telecommunications Carrier. ② Accepting orders for customized data communications systems development and maintenance; sales and leasing of same. ③ Accepting orders for development and maintenance of customized software and equipment related to data communications systems; sales and leasing of same. ④ Carrying out studies, research, training and consulting related to above. ⑤ All business affairs related to above.

Fig. 2 Corporate Overview

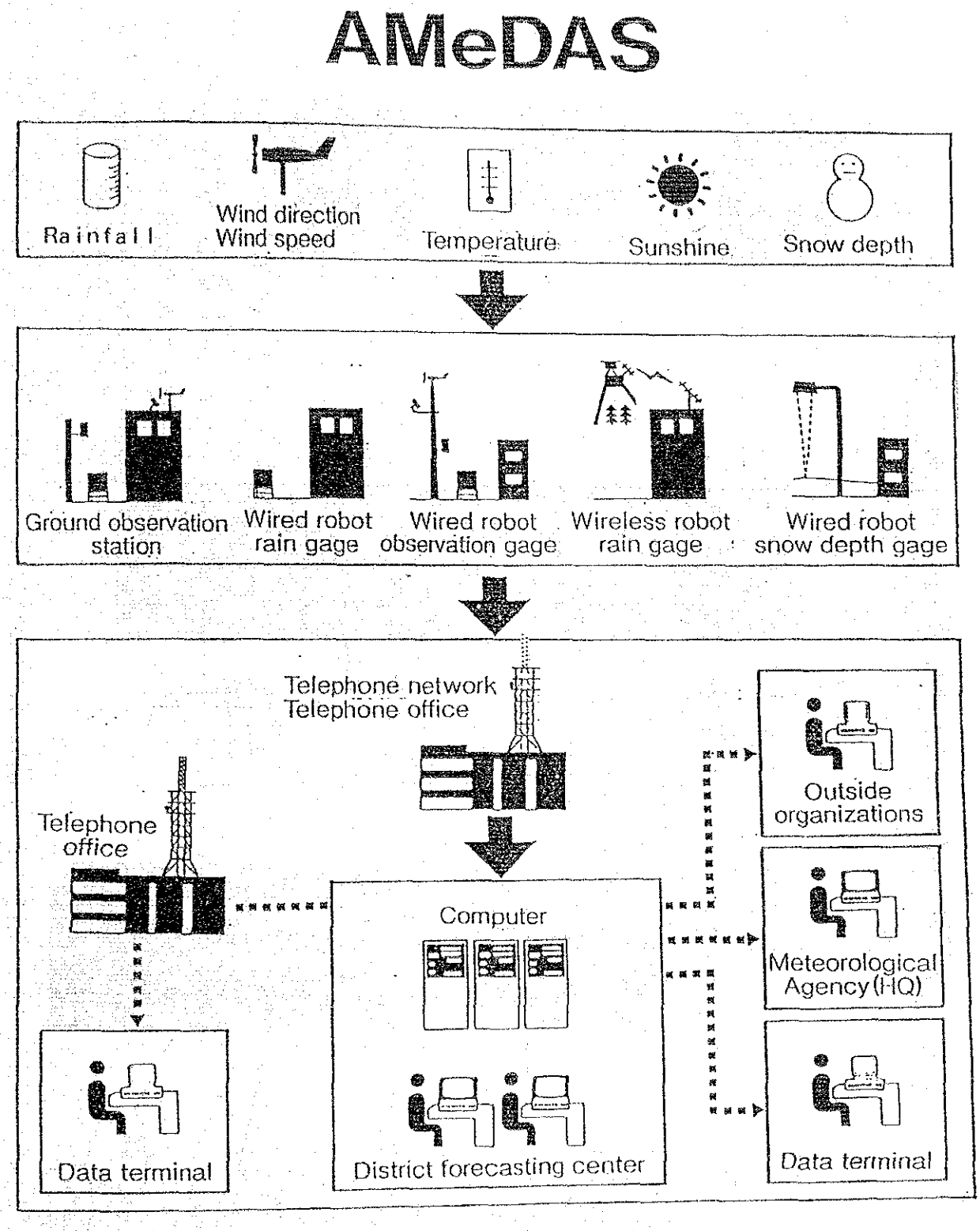


Fig. 3 Automated Meteorological Data Acquisition System (AMEDAS)

ANSER : System Configuration

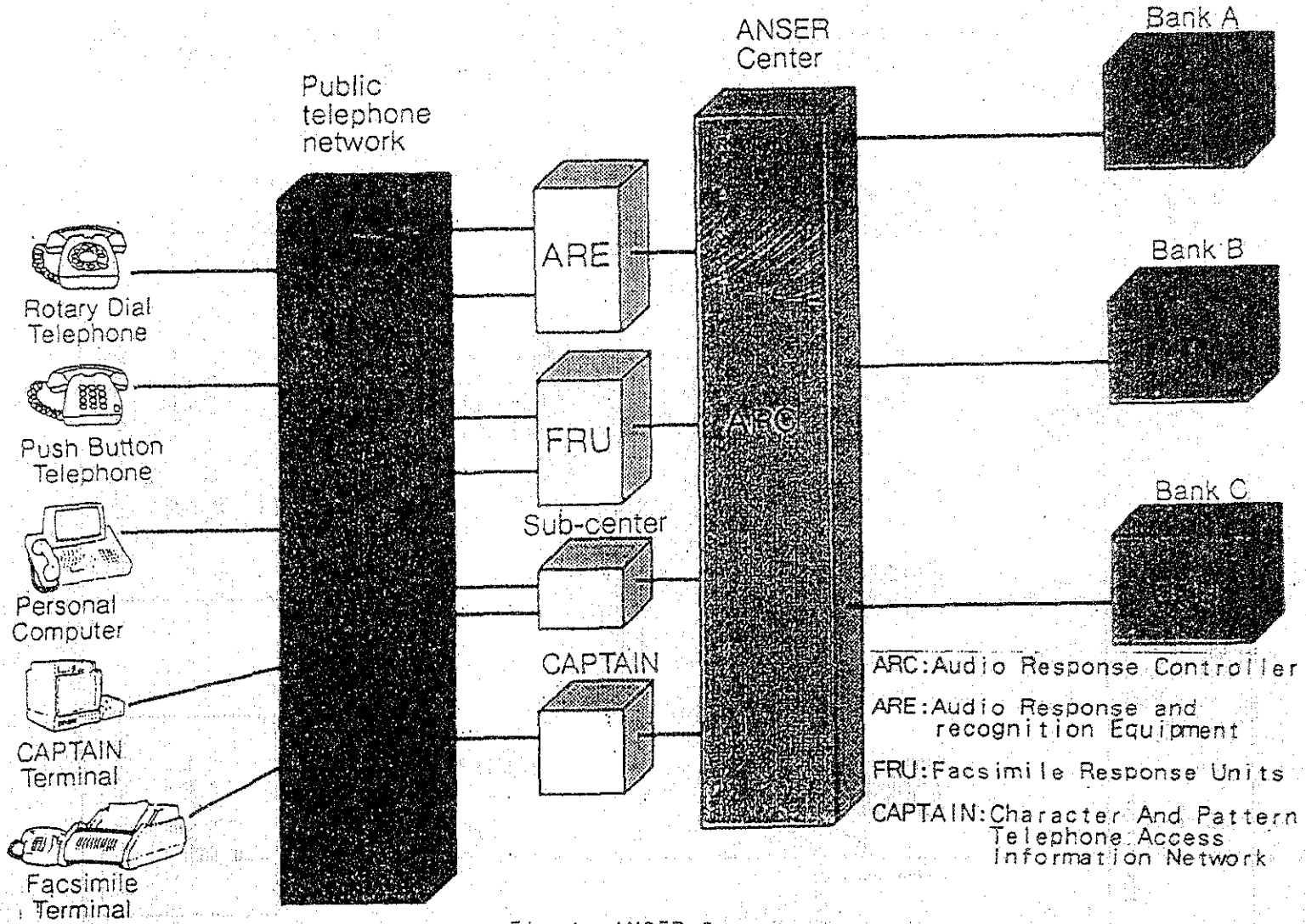


Fig. 4 ANSER System

Professional Service

Professional service
is the type of service
that enables our society
to use information
systems strategically
and produces new values.

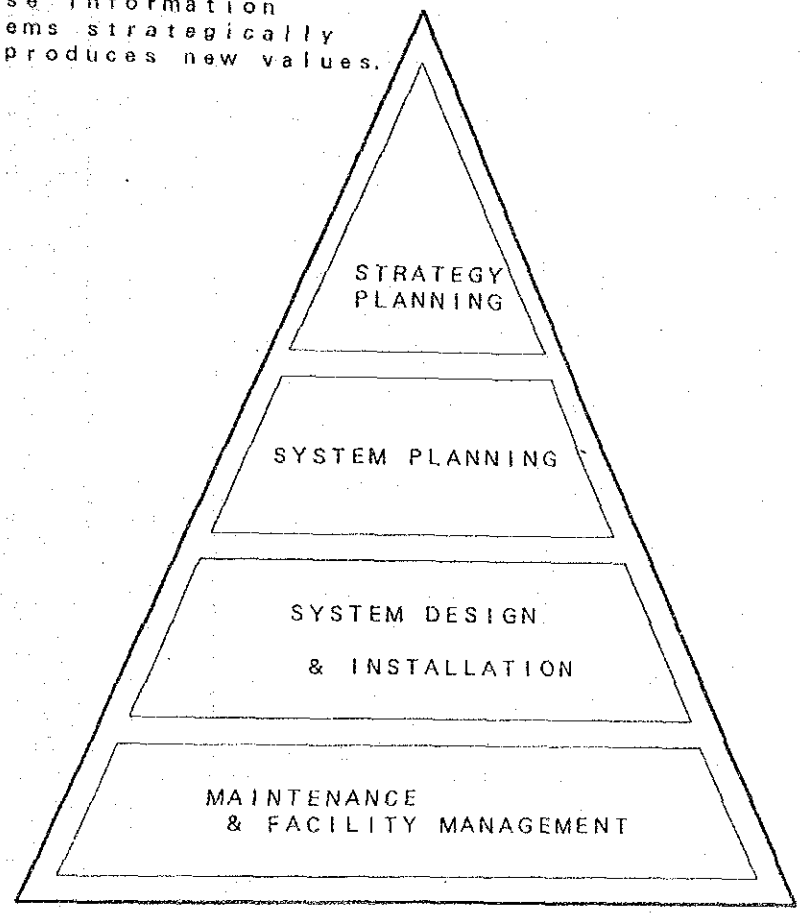


Fig. 5 Professional Service

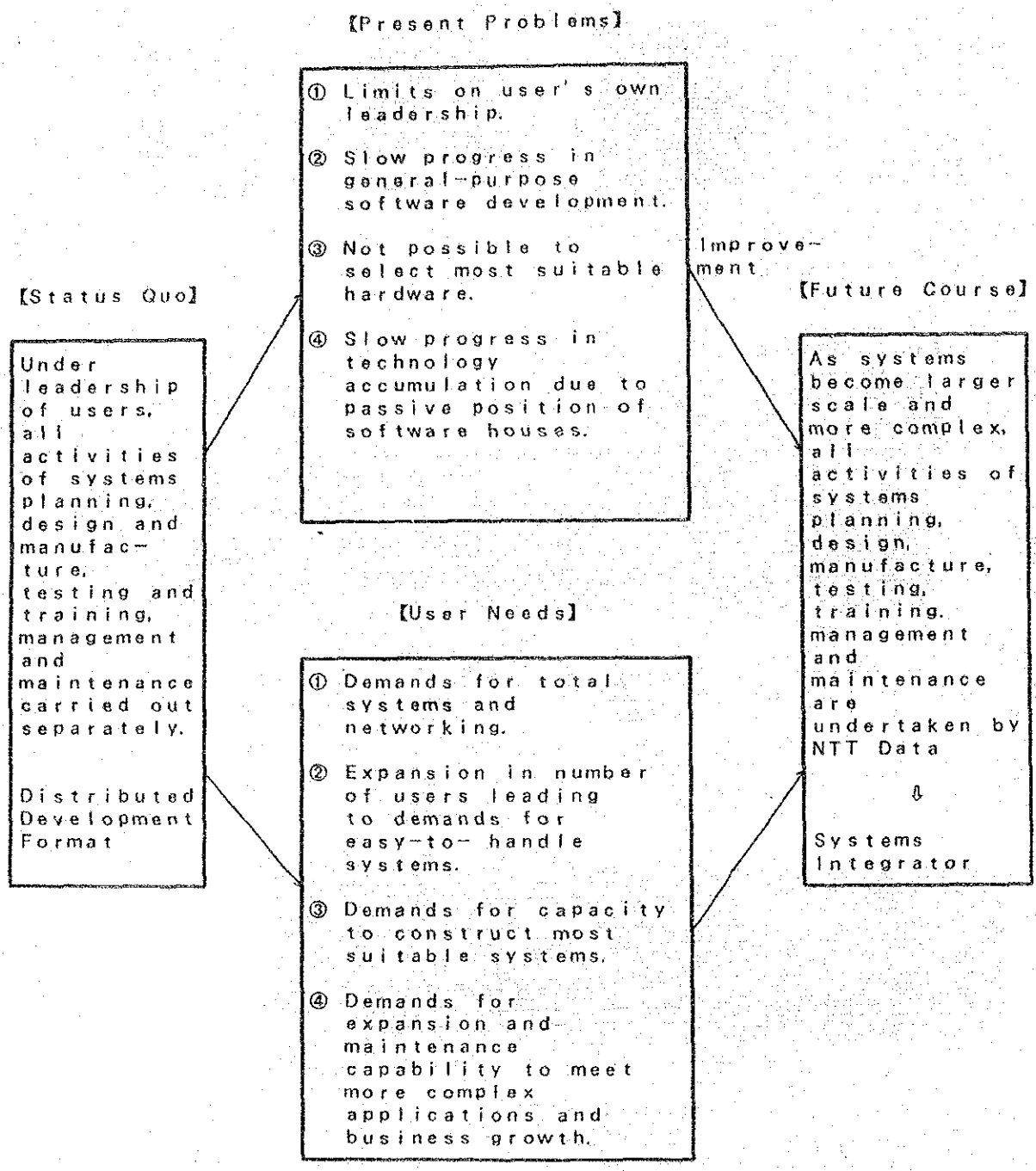


Fig. 6 Trend of Systems Integrator

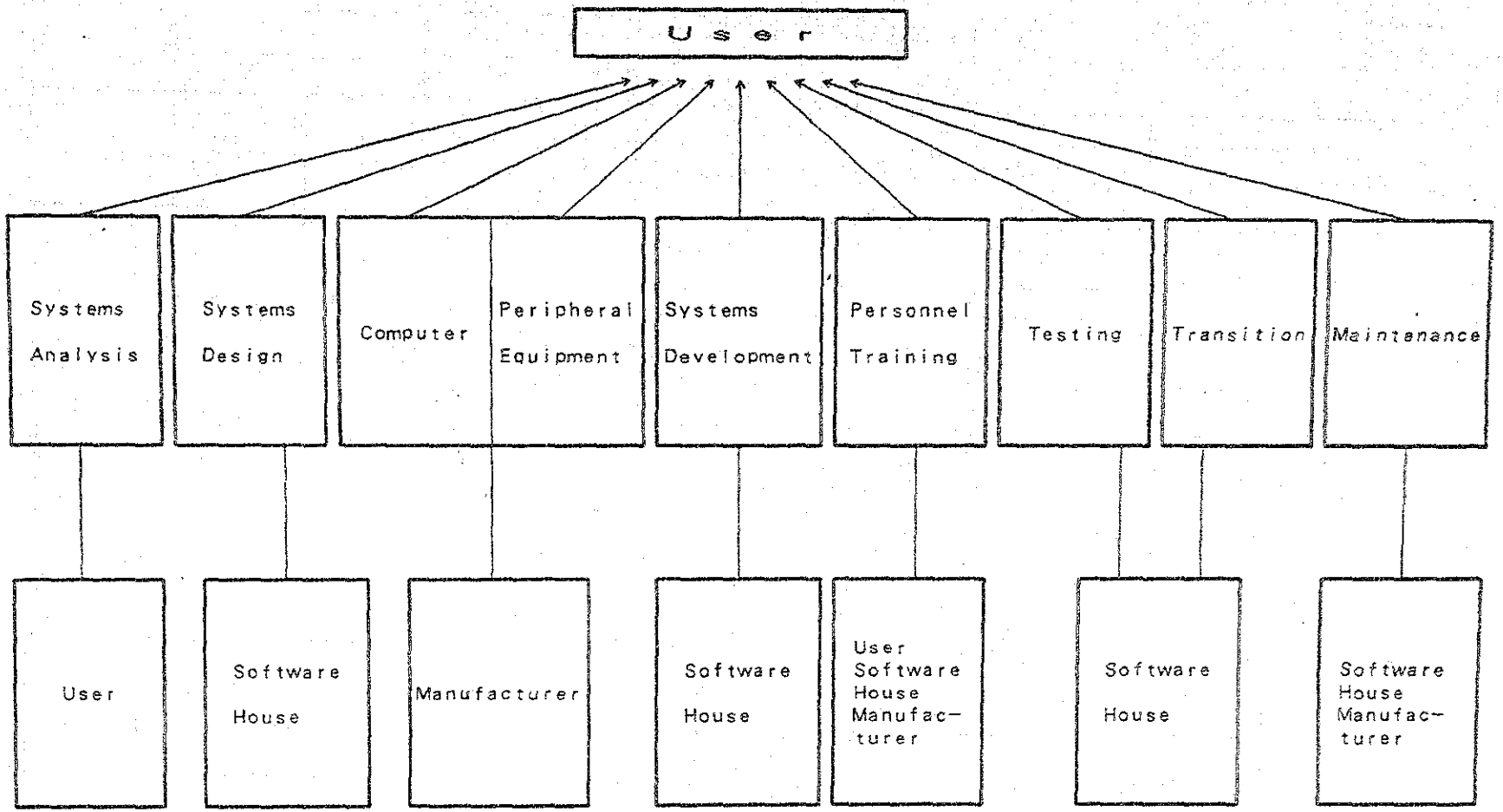


Fig. 7 Systems Integration Service (Present)

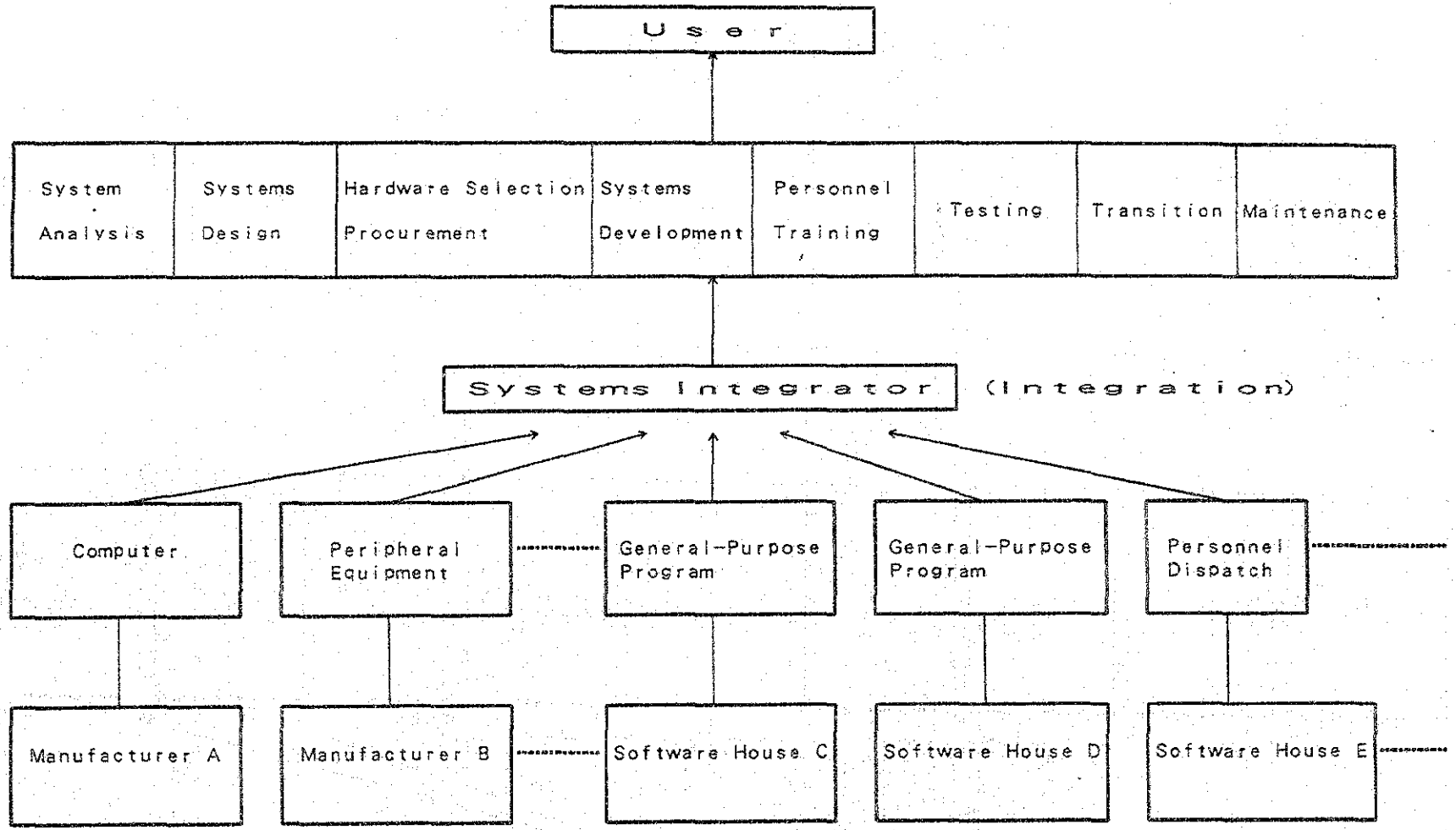


Fig. 8 Systems Integration Service (Future)

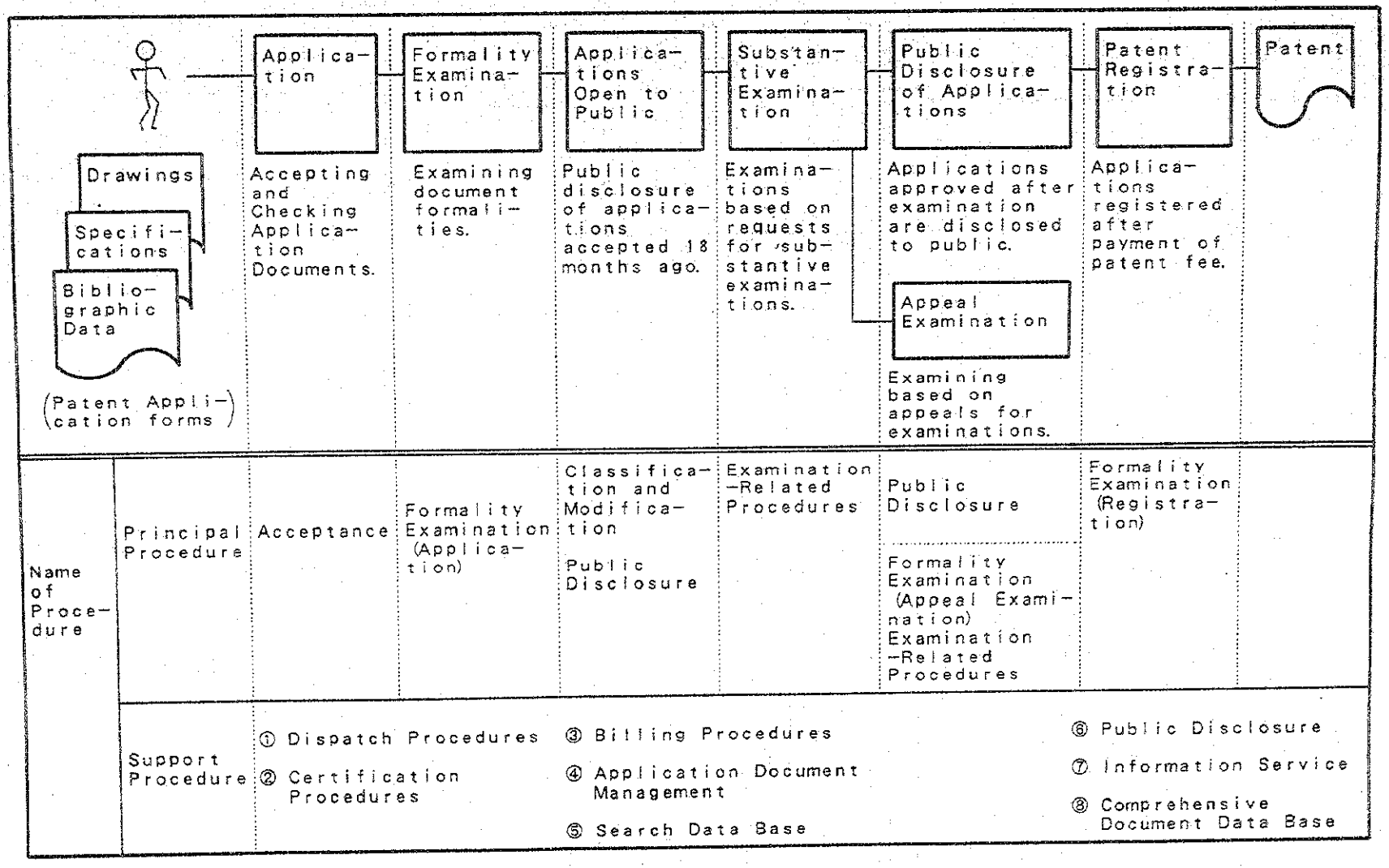


Fig. 9 Clerical Work Flow Chart (Patent)

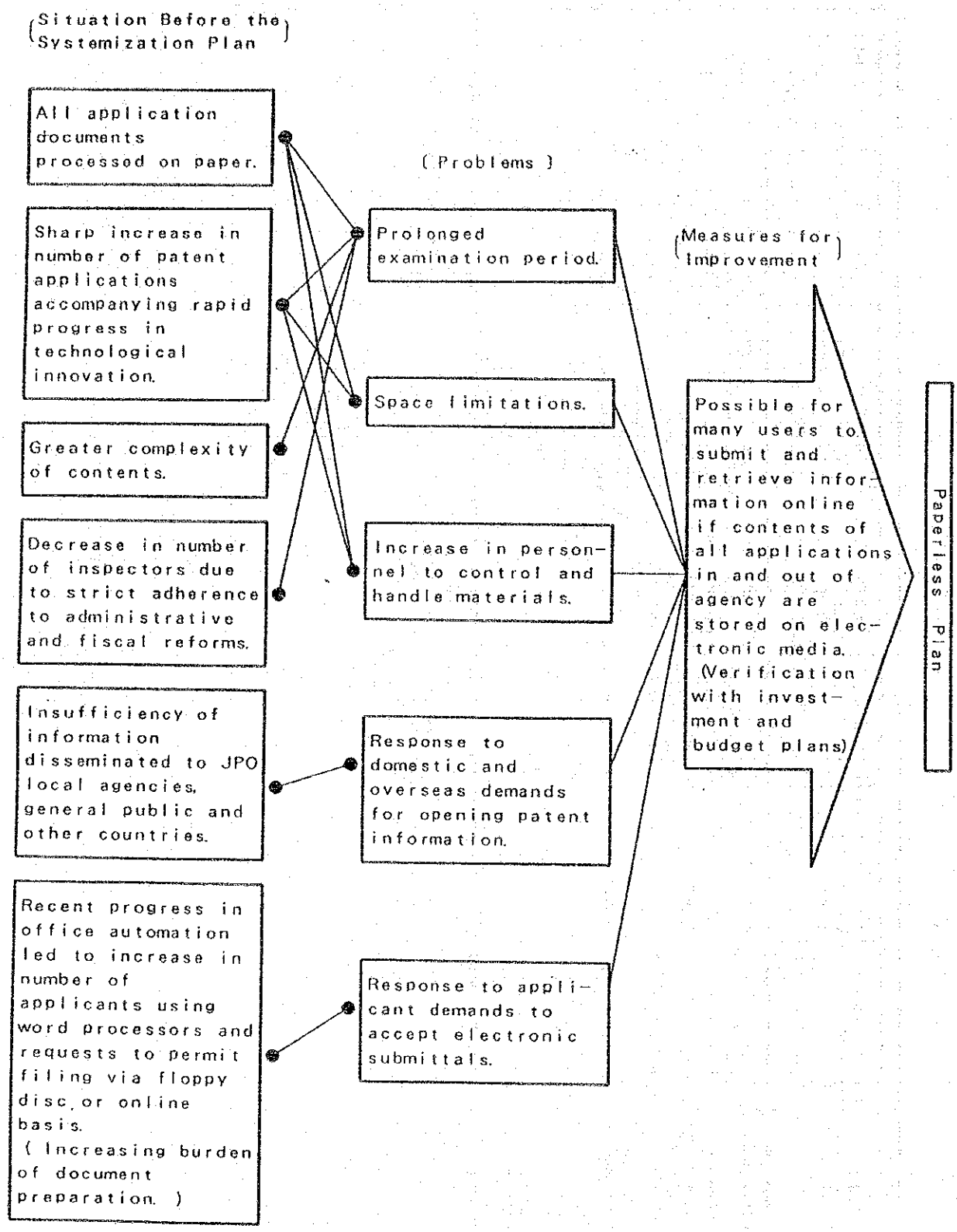


Fig. 10 Necessity for paperless System Plan

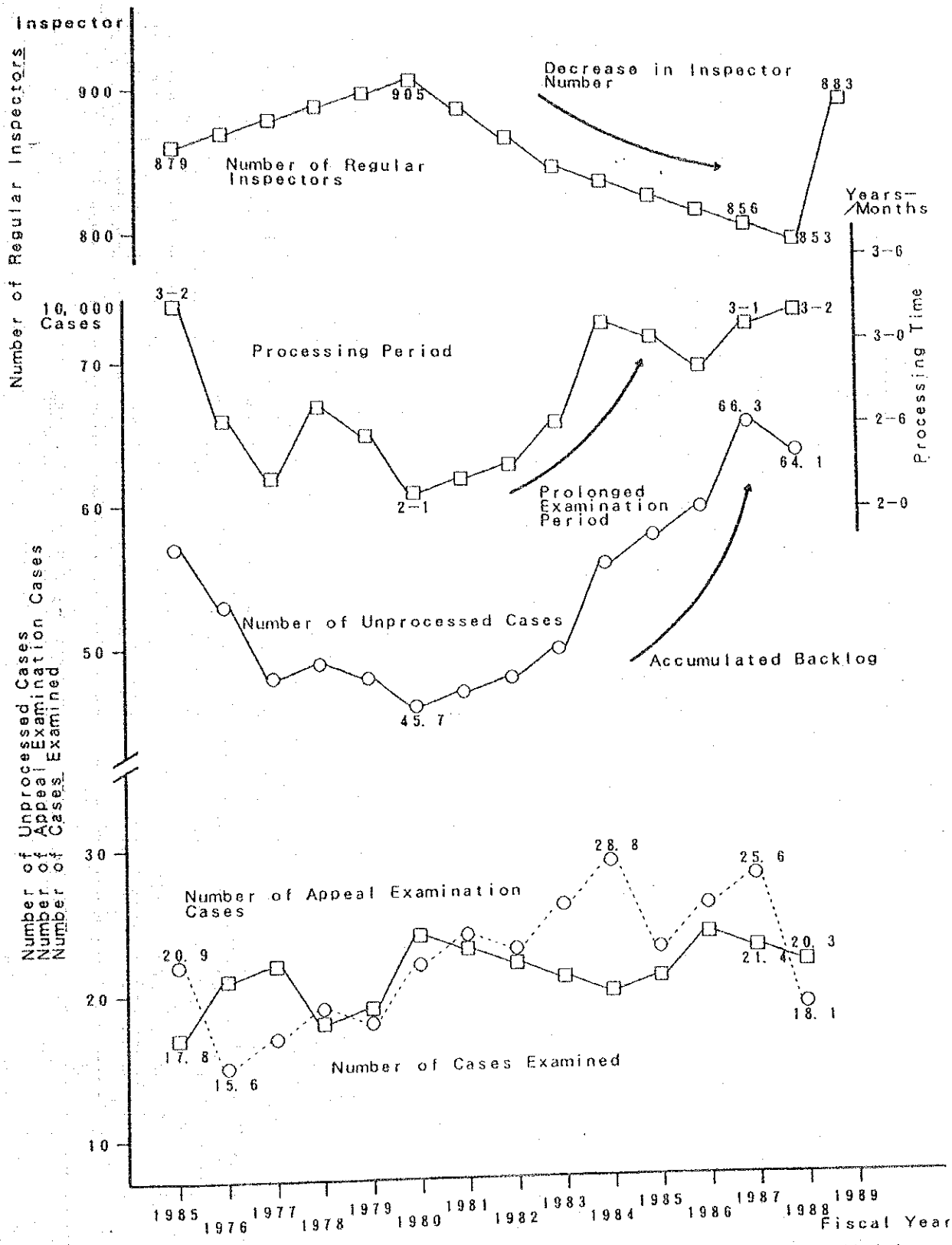


Fig. 11 Change in Examination Processing of Patents and Utility Models

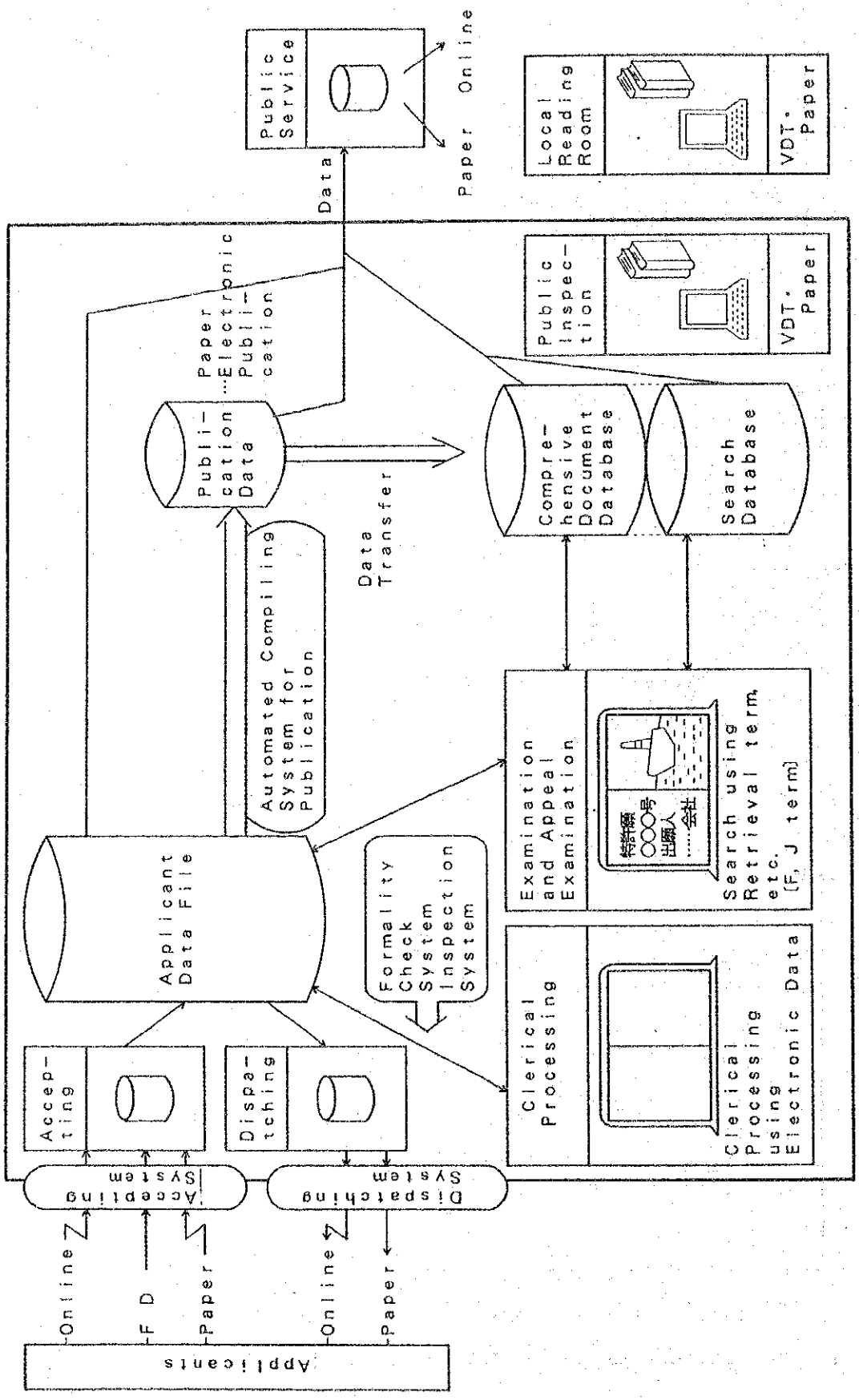
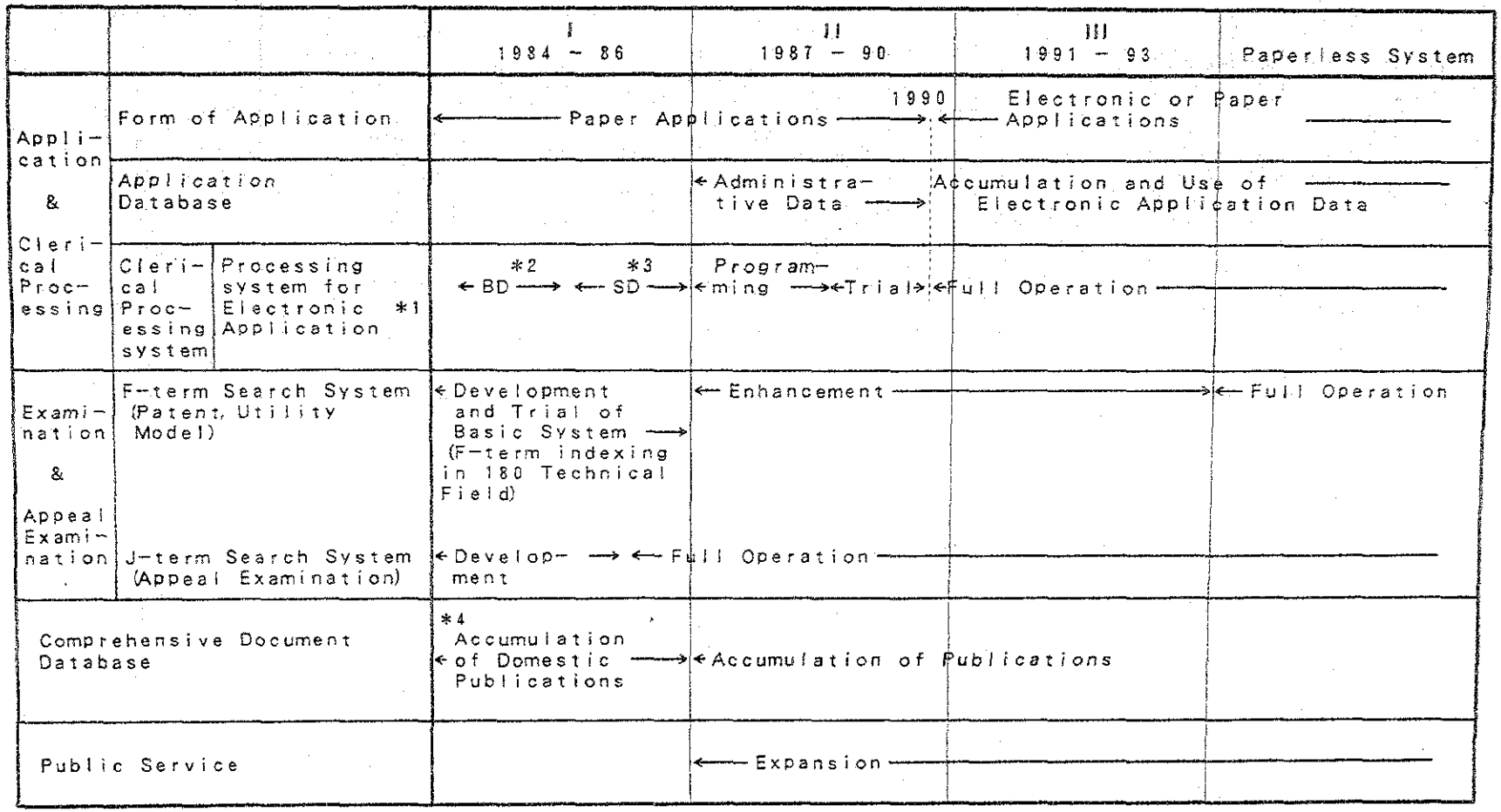


Fig. 12 OUTLINE OF PAPERLESS SYSTEM



*1 Including Accepting System and Formality Check System
*2 Basic System Design
*3 System Design
*4 About 14 million Patent and Utility Model documents in image data

Fig. 13 STEPS TO PAPERLESS SYSTEM

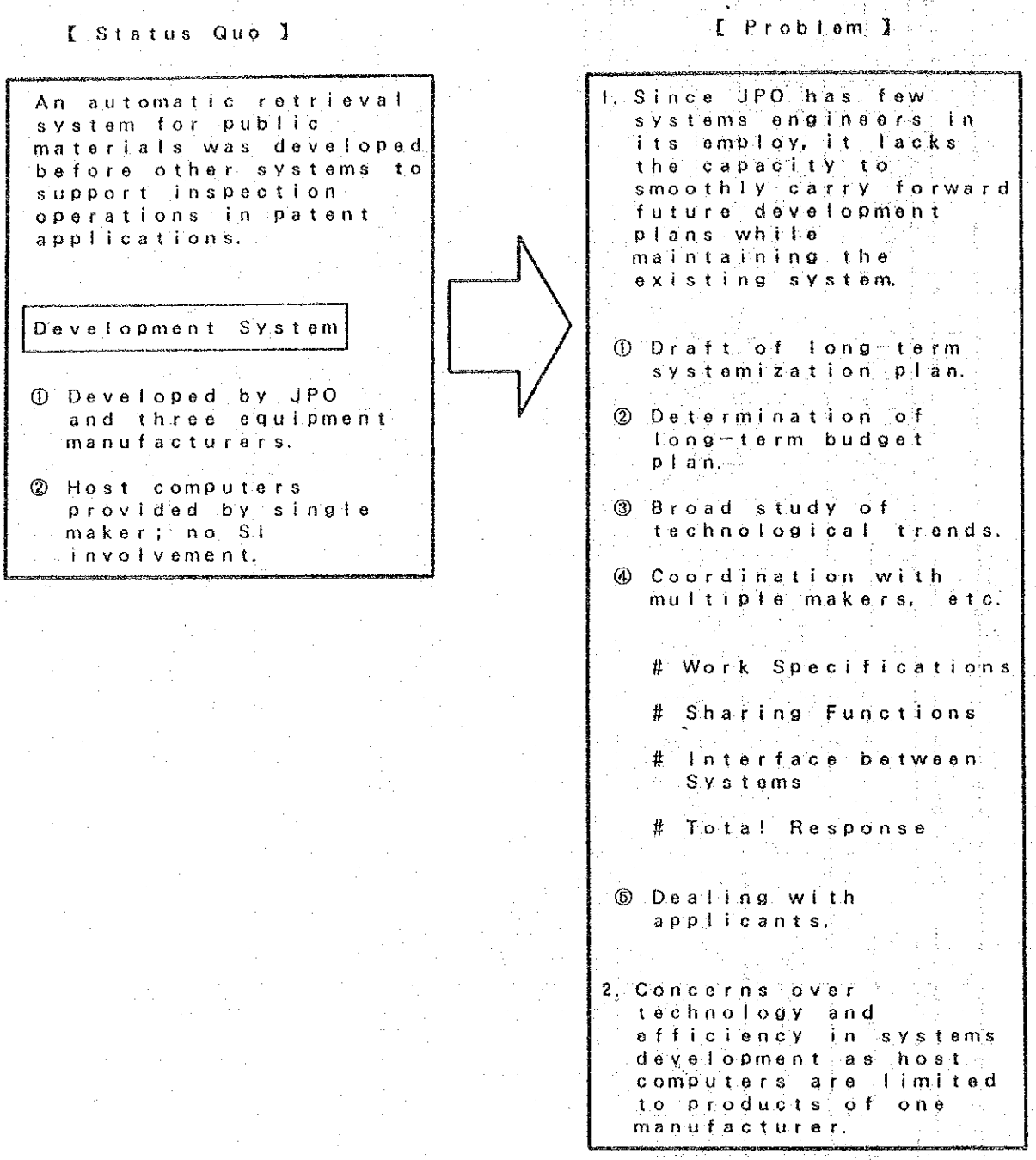


Fig. 14 Subjects for System Development

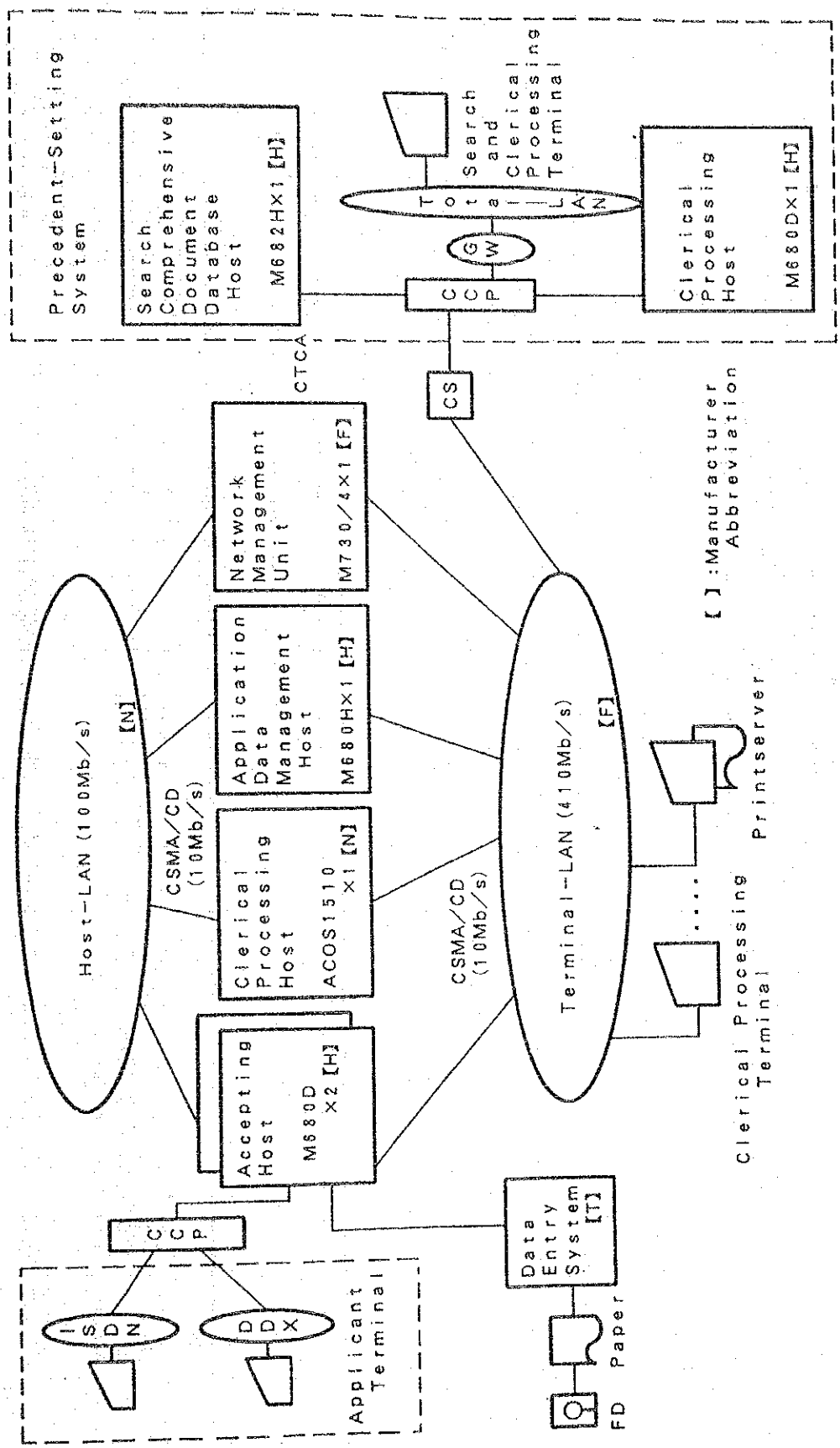


Fig. 15 System Configuration

<table>
<tr><td rowspan="2">Layer</td><td colspan="3">In-office-terminal</td><td colspan="3">Applicant Terminal</td></tr>
<tr><td colspan="2">HOST-TERMINAL</td><td>HOST-HOST</td><td colspan="3">HOST-TERMINAL</td></tr>
<tr><td rowspan="2">7</td><td colspan="2">Pp (Note 1)</td><td>IS 8571 (Note 2)</td><td colspan="3">Pp (Note 1)</td></tr>
<tr><td>ISO 8650 (Note 3)</td><td>ISO 9072 (Note 4)</td><td>ISO 8650 (Note 3)</td><td colspan="2">IS 8650 (Note 3)</td><td>IS 9072 (Note 4)</td></tr>
<tr><td>6</td><td colspan="3">ISO 8823
8824
8825</td><td colspan="3">ISO 8823
8824
8825</td></tr>
<tr><td>5</td><td colspan="3">ISO 8327
(kernel, full duplex)</td><td colspan="3">ISO 8327
(kernel, full duplex)</td></tr>
<tr><td>4</td><td colspan="3">ISO 8073</td><td colspan="3">ISO 8073</td></tr>
<tr><td>3</td><td colspan="3">ISO 8473 , 9542</td><td>I. 451</td><td>ISO 8208 (X25 L3)</td><td>ISO 8208 (X25 L3)</td></tr>
<tr><td rowspan="2">2</td><td colspan="3">ISO 8802-2</td><td></td><td></td><td></td></tr>
<tr><td colspan="3">ISO 8802-3 (CSMA-CD)</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td colspan="3">ISO 8802-3</td><td colspan="2">I. 430</td><td>X. 21
X. 21bis.</td></tr>
<tr><td>Applicable network</td><td colspan="3">LAN</td><td colspan="2">D channel / B channel
ISDN</td><td>DDX-P</td></tr>
</table>

(Note 1) Pp; Paperless system particular protocol
(Note 2) FTAM; File Transfer Access and Management
(Note 3) ACSE; Association Control Service Element
(Note 4) ROS; Remote Operation Service

Fig. 16 COMMUNICATIONS PROTOCOL

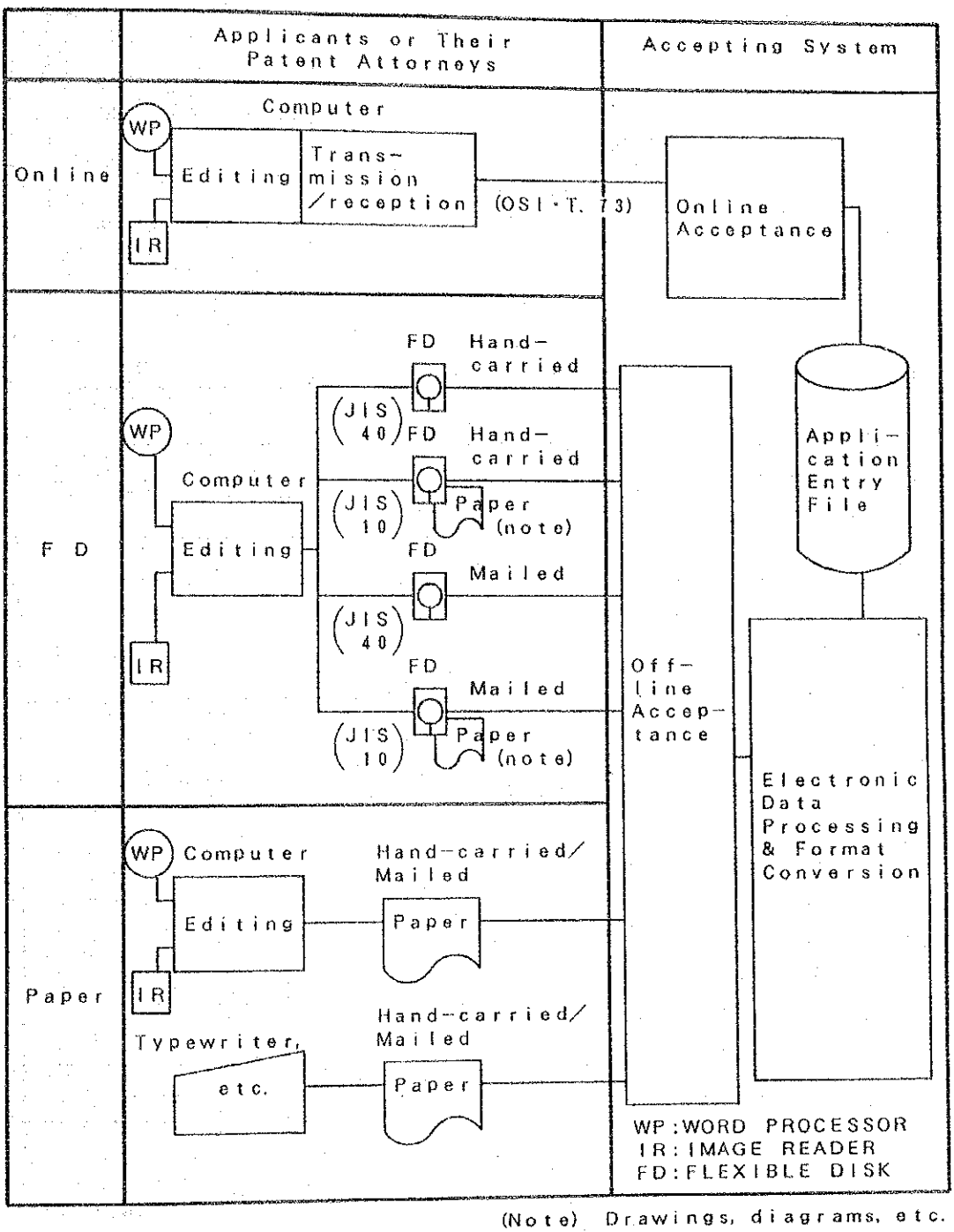


Fig. 17 Application Accepting Method (1990)

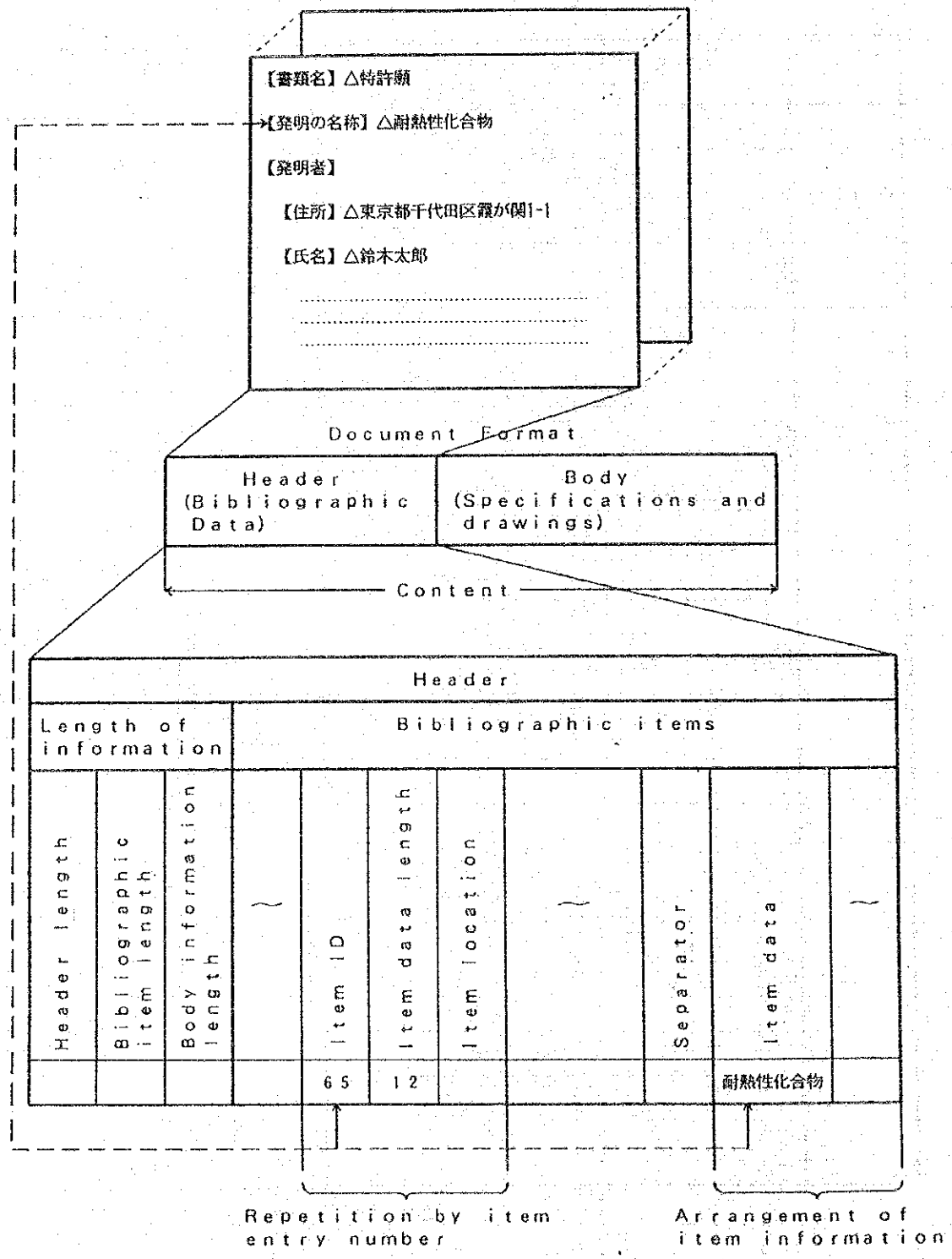


Fig. 18 Bibliographic Format

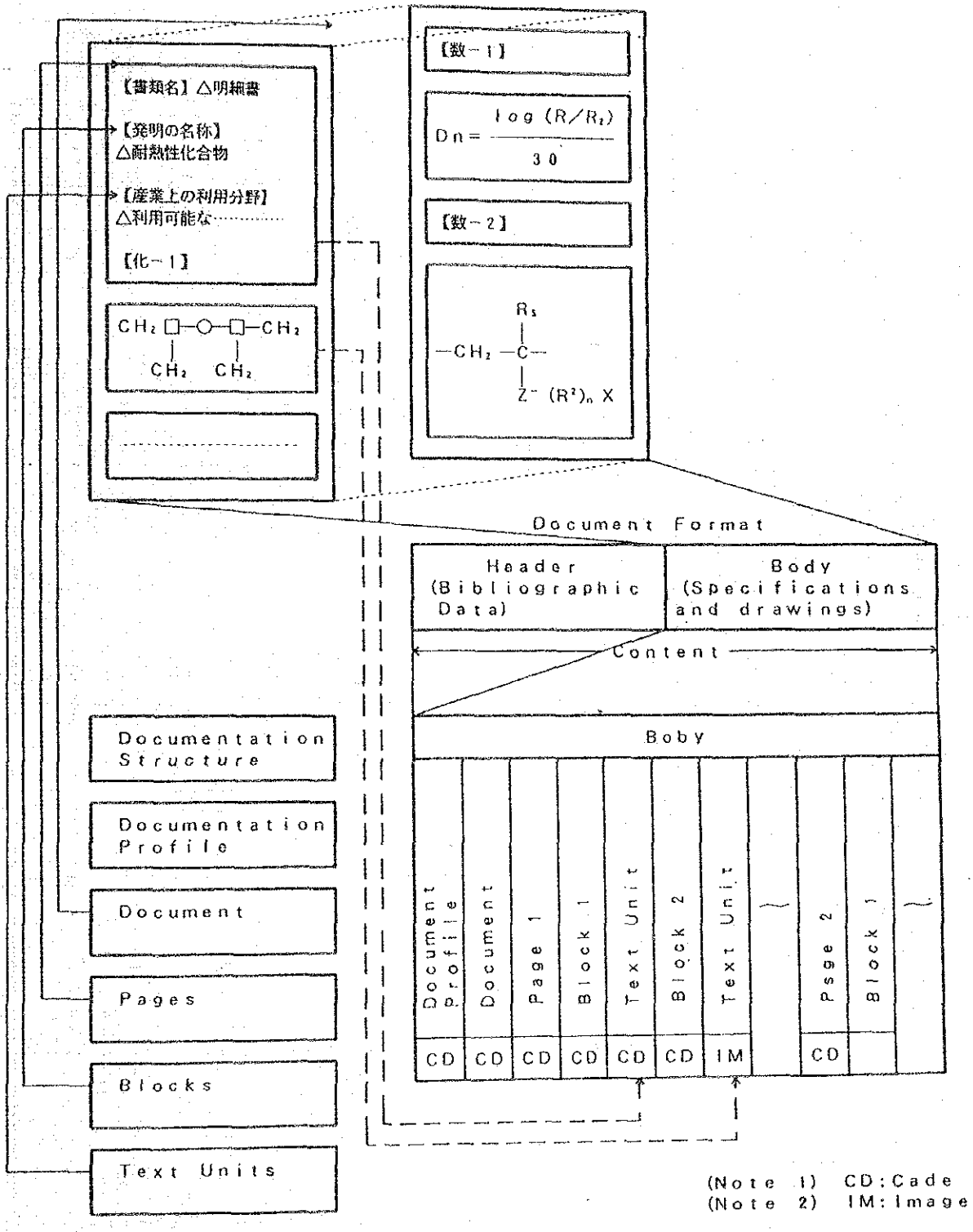


Fig. 19 Example of T.73 Specifications

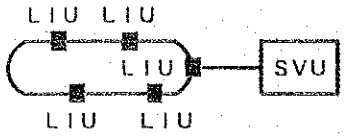
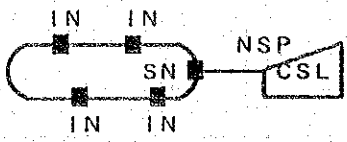
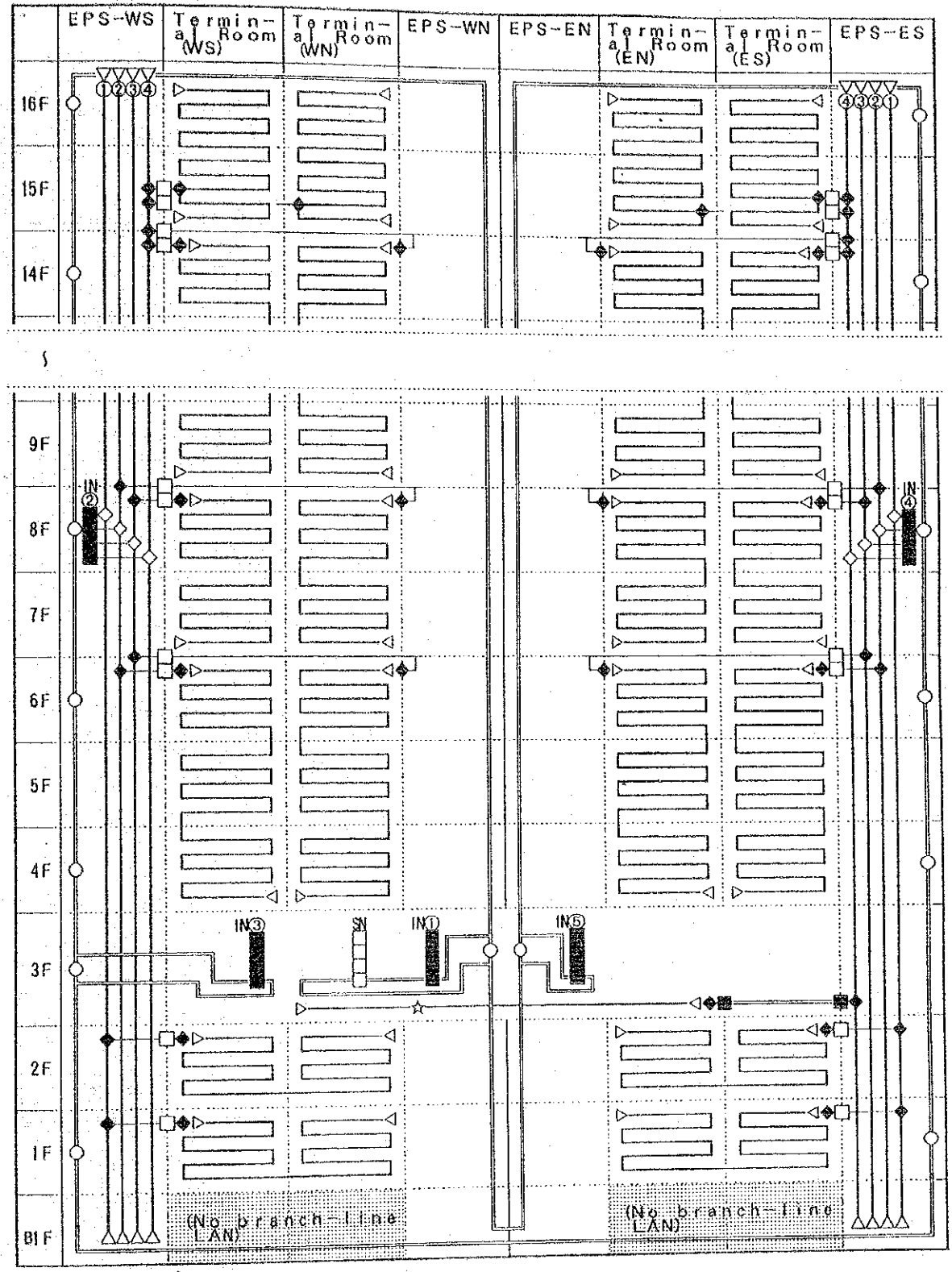
	Usage	HOST – HOST	HOST – TERMINAL
Main-Line Side	Access Form	Token-Passing Ring	Slotted Ring
	Basic Configuration	 LIU:Loop Interface Unit SVU:Supervisor Unit	 IN :Interface Node SN :Supervisor Node NSP:Network Service Processor CSL:Console
	Type of Network	Doubled Optical Loop	
	Transmission Speed	100MB/S	410MB/S
	Transmission Packet Length	1.5KB/Packet	
Branch-Line Side	Access Form	CSMA/CD	
	Media	Coaxial Cable	
	Transmission Speed	10MB/S	
	Transmission Block Length	1.5KB/Packet	

Fig. 20 LAN Specifications



(Remarks)

F-2895 Transmission Line (Optical Cable)

○ : CNB

Branch-Line LAN Transmission Line (Coaxial Cable)

▷◁ : Terminating Resister

□/■ : Repeater

◇/◆ : Transceiver

Fig 21. LAN Wiring Diagram at JPO

CLASSIFICATION	PERFORMANCE – SCALE	NOTES
Optical Disc Unit	① Average Seek Time: 200ms ② Average Latency Time: 50ms ③ Maximum Memory Capacity: 2.6Gb/Disc (Both Sides) ④ Number of Drives: 4 Drives/Unit ⑤ Maximum Memory Capacity per Unit: 5.2Gb/4 Drives	Patents: 20,000 Documents/Disc (120Kb/Document) 29 Discs/Hour (1,500 Documents/Day) Utility Model: 30,000 Documents/Disc (80Kb/Document) 12 Discs/Year (1,000 Documents/Day)
Optical Disc Library Unit	① Mount Time: 9s ② Dismount Time: 7.5s ③ Turn-Over Time: 12s ④ Average Seek Time: 50ms ⑤ Latency Time: 50ms ⑥ Maximum Disc-Installation Capacity: 32 Discs/Unit ⑦ Number of Drives: 2 Drives/Unit ⑧ Number of Handlers 1/Unit ⑨ Maximum Memory Capacity per Unit: 83.9Gb/Unit	Optical Disc Units with 5.2Gb per disc (double density) scheduled to be put into practical operation in 1991

Fig. 22 Optical Disc Performance

" LA TRANSMISION DE DATOS EN MEXICO "

El tema a desarrollar, en esta oportunidad, tiene como título la Transmisión de Datos en México, sin embargo, bajo el riesgo de dejar la impresión de no haber cubierto el tema a profundidad, espero que en extensión los deje satisfechos, y al decir en extensión es porque el carácter global de las Telecomunicaciones, así como su regionalización no se debe, no se puede circunscribir en un tipo de comunicación, ni en un país; las Telecomunicaciones son evidentemente de carácter - internacional, multidisciplinario y sus efectos son multisectoriales. No hay un concepto monolítico de Telecomunicaciones.

Iniciaremos mediante un vistaso desde donde el lenguaje fue escencial para los primeros grupos humanos constituyéndose en la forma de comunicación que establecía una gran brecha con el mundo animal y que permitió ser un factor determinante en su evolución y en su actuación conjunta en propósitos comunes. La escritura fue la base para el regis tro de las crónicas y la transmisión del conocimiento, la imprenta for mó parte de los cimientos que ayudarían a la edificación y consolidación de la sociedad industrializada permitiendo el alfabetismo generali zado, así como los principios de la educación masiva y sin más preámbu los entramos en las Telecomunicaciones con la aparición de la telegrafía y poco después de la telefonía, dando inicio a la recien hoy forma da Sociedad Informatizada y todo ésto gracias a las comunicaciones - modernas.

Las comunicaciones modernas tienen una triple función: función de "Transferencia", es decir, la rápida entrega de información sin errores; como lo es la transmisión de datos; que ha sido también una de las fun ciones de las Telecomunicaciones convencionales; una función de "Genera ción" de información de modo fácil de comprender, en la que se utilizan los computadores; y función de "Memoria" que consiste en almacenar y cotejar información para su ulterior entrega a un receptor.

Los adelantos tecnológicos han conducido a un mayor uso y aplica-- ción de la información en la computadora y a la aparición de nuevas - formas de manejo de esa información. En las comunicaciones modernas tanto las computadoras como las telecomunicaciones han llegado a su - convergencia en una nueva actitud.

¿ PERO QUE ES ESA INFORMACION ?

La información es ya un recurso crítico para el desenvolvimiento de la sociedad.

La información es un requisito previo para identificar opciones, - reducir la incertidumbre sobre sus consecuencias y facilitar su puesta en práctica. Sin ambargo, no debemos perder de vista que la informa- ción no es la realidad, sino una imagen de la realidad. Los datos - que muestra las aceleraciones registradas durante un sismo o el salario de una persona, no son las aceleraciones o el salario, son una represen tación, un modelo de esas realidades.

Para que estas imágenes sean eso, imágenes y no espejismos que pro picien quimeras y lleven decisiones erroneas, es necesario que la in- formación sea exacta, precisa y oportuna.

Así pues, el creterio de efectividad de la transmisión de datos como en cualquier otro sistema de Telecomunicaciones no debe ser únicamente la cantidad de computadoras o líneas de comunicacion instaladas, ni el número de registros almacenados o de mensajes enviados. La efectividad debe también evaluarse en términos del valor y el uso que se dé a la - información que se maneje y este valor estará dado por la importancia que la información tenga para mejorar cuantitativa y cualitativamente- la calidad de vida de la sociedad y de la manera en como se distribuya en ella.

Estas consideraciones imponen cuestiones de muy difícil solución; ¿Cómo puede evaluarse la información? ¿Qué importancia se le dará a la determinación de cómo y quién usa la información? ¿Cuáles son los alcances de la Sociedad Informatizada? ¿Se vislumbra un proceso indefinido en donde, tal vez, en la mano de un niño queda una terminal de función múltiple con posibilidades de accesar prácticamente cualquier servicio y la información en cualquier parte del mundo?

Con el enfoque global de las comunicaciones modernas, los distintos medio de información proporcionados por las instraestructuras que habrán de responder a las necesidades de la era de la Sociedad Informatizada no solo responderá a los soportes Físicos como la infraestructura de Telecomunicaciones, sino también como los componentes de soporte Lógico.

Las estructuras tradicionales desaparecen en la liberalización de servicios y la de regularización, se crean unidades organizacionales sobre las que recaen la posibilidad total del servicio desde su contratación hasta su explotación y conservación.

El panorama se complica al vislumbrar adecuaciones en la legislación vigente, compatibilidades en redes y terminales, tarificación, gestión de red y de recursos humanos, competencia, intentos de reducción de los riesgos al mínimo debidos al cambio, restructuración de la demanda, transparencia, servicios integrados, modelarización del soporte Lógico, Infraestructura Vs. Costos, Redes Vs. Terminales Vs. Servicios... y al fin de todo, los factores económicos y sociales que dan las principales decisiones.

Habiendo pasado, pues de una situación en la cual los obstáculos técnicos limitaban el progreso hacia objetivos claramente definidos, a otra en que esos obstáculos han desaparecido, pero que los objetivos ya no pueden definirse con claridad, el dilema actual mas bien se refiere al modo de optar con acierto entre la enorme variedad de oportunidades técnicas.

Más allá de lo trascendente que resulta la virtual desaparición de los límites de desarrollo de las Telecomunicaciones, lo que ocurre en la actualidad en México, es un claro ejemplo de los vertiginosos cam-- bios que se dan en el mundo y que probablemente marquen el inicio de - una lucha por los mercados, tecnologías, servicios, infraestructura y usuarios; en donde se exigirá imaginación para dar soluciones con resul tados concretos.

La indispensable modernización y expansión de las redes existentes para transmisión de datos, se verán beneficiados por las nuevas inver- siones en el cambio tecnológico, mismo que permitirá el desarrollo de los servicios de transmisión conmutada de datos, de teleinformática, - telefonía celular y otros, dando así a los consumidores sistemas con altos índices de calidad, en sí, es el inicio de una etapa en la que - seguramente habrá una mayor interdependencia en todos los órdenes y - para lo cual debemos estar preparados. De ahí que nuestro esfuerzo como profesionales de las comunicaciones, tendrá que encaminarse a responder a los nuevos retos en lo interno y en lo externo.

Todo indica, como ya apuntamos, que nos dirigimos a una etapa de - imaginación con resultados, lo que exige una combinación eficaz del conocimiento de nuestros problemas con las fórmulas adecuadas para - resolverlos, de una manera práctica y que tenga como finalidad primera la garantía de accesar cualquier servicio en cualquier lugar con las me jores condiciones de calidad.

Gracias.

講師：フランシスコ・バスケス

メキシコにおけるデータ通信

今回お話するテーマは、メキシコにおけるデータ通信についてですが、この機会だけでは十分に論じきれない印象を与える恐れがあるので、それについては後日補足されるのを待ちたいと思います。後日と申し上げましたのは、情報通信の総合的な性格が、地域性に起因するのではないのと同様に、電気通信の一般的性質によって限定することは出来ないし、また一国内の問題として限定する訳にもいかないからです。つまり、情報通信というのは明らかに、国際的、多種・多様な分野の集積であり、また、その効果は多岐にわたるものだということです。こうした面から情報通信に関しては、単一の概念などというものはなく、詳しく話す事は膨大な時間が必要であり、今回は残念ながら時間がございませんのでここではかいつまんでその内容についてお話します。

まず、言語が最初の人類にとってコミュニケーションの源であり、この事が人類と動物との間の境をなしており、人類の発展と共通の目的を持つ集団行動に決定的な要素となりました。言語の"文字化"は歴史の記録や知識の伝達を意味しました。印刷は文字の一般化と大衆教育をうながし産業化社会を構築した。そして電報の出現、及びその後の電話の出現により、今日の情報通信社会の時代となりました。これが今日のコミュニケーションへとつながっているのです。

現在のコミュニケーションは3つの機能を持っている。第1は伝送機能、即ち誤りなくミスなしでデータを短時間に伝送する事、これは従来の電気通信の機能であります。

第2は情報を創生する機能、ここではコンピュータが使用されます。

第3は情報のストックと情報の照会に利用されるメモリー機能です。

技術の進歩はコンピュータに伝える情報の使用と、その応用並びに情報の新しい取り扱い方の出現をうながしました。現在のコミュニケーションにおいて、コンピュータ及び電気通信も新しい形に収練して来ています。

情報とは何でしょうか。情報は社会が発展するのに非常に重要な資産である。情報は選択決定結果の不確実性を減少する事、また実行に移す場合の前もっての必要条件であります。

しかし、情報は現実ではなくて現実の1つの像である事を忘れてはなりません。例えば地震のゆれの記録、ある人の給与のデータについて示してくれますが、地震あるいは給与そのものではありません。現実の1つのモデルであります。

この像が像であって、誤った決定をさせる様なシンキロとならないために、情報は正確で的確で適切、且つ時期を得たものでなければなりません。

即ちデータ伝送の有効性は他の電気通信システムの様にコンピュータ通信網の量、データストック、伝送量だけではなく情報の価値とその活用によって計れるべきであります。

その価値と言うのは社会生活の質の量的質的改善に情報がどれだけ質しているかと言う事によって計られるべきであるし、且つそれが社会にどの様に配分されているかによって決定されるでありましょう。

この考え方は非常に解決するのが難しい問題を提供しています。それは情報をどの様に評価するのか、誰が情報を利用するのか。

例えば子供が多機能端末を使って、どこの場所からでも世界中のどの情報にもアクセス可能か？現代のコミュニケーションに注目すると、様々の情報メディアは情報通信のインフラストラクチャの様に、物理的媒体に対応しているだけではなく、論理的基盤を持つ要素にも対応している。

従来の構造はサービスの自由化と標準化の過程で消失し、契約利用運用及び保全までの業務を一括して行う組織が作られます。

この様な展望は、現行法規の改程、網と端末の共用性、トラヒック、網と人材の動向、競争変化に依る危険の最小化、需要の再編成、統合サービス、ロジックサポート、インフラストラクチャ対コスト、網対端末対サービスなど経済的社会的要素を考えると、非常に複雑なものとなっている。

明確な目的に向けての進歩を技術的問題が妨げていた時代は過ぎ去り、技術的障害はなくなりましたが目的を明確にたてられない時代になりました。

現在のジレンマは膨大な技術からどれを的確に選択するかにあります。電気通信の発展の制限がなくなると言う事以前に現在メキシコで起こっている事は、世界で起こっている変格の明確な1つの例であり、おそらく市場、技術、サービス、インフラストラクチャ、そしてユーザを求めての戦いの始まりでありましょう。

そこでは、具体的結果を得るためのイマジネーションが必要になります。

データ通信のための既存の網を近代化し拡張する事は不可欠であり、これは技術変革の中での新しい流れにより実現されるでしょう。

この事はデータ交換伝送、データ通信、セルラ電話、その他諸々のサービスの開発を可能とし、質の良いシステムを消費者に提供する事となります。そして、その時点ですべての面において、相互依存が深まり我々はそのために備えておかなければなりません。

通信のプロとしての我々の独力は、国内外の新しい課題に対して向けられるべきであります。

この様な事は、イマジネーションの時代に向かっている事を示しております。

我々も問題についての知識と、解決策というものを有効に、そして実際的に組合せなければいけません。

そして最終目的は、どの様なサービスでも、どの場所からも受けられる事を確保する事であります。

ここに参加している多くの人々はデータ伝送に高い関心を持っている事と思うし、また皆さま方が気が付いていると思いますが、メキシコにおいてこのデータ通信に大きな変革が起こっています。

つまりそれは東方（アジア）、ヨーロッパ、北米等から新しい技術がどんどん入って来ており、またその技術は非常に高度なものであります。

そして、現在のメキシコにおいては技術の利用についてどちらの方向に向かっていると言う様な明確な傾向はない。ただ多くの場所についてはすでにＬＡＮが使用されているし、またパケット交換網も使用されている。

これらのものをテレパックと言う公衆網と継ぐ事によって、さまざまなサービスが開始できると思います。

現在メキシコ政府は開放政策を取っており、さまざまなサービスがだんだん民間に渡されていくであろうと考えられていますが、どの様にしてそれが行われるかについては決まっていません。ただいずれにせよこの様な民営化への傾向というものはユーザのためと言う事を考えて行われます。

ただ確実に言える事は、今後かなり質の良いサービスが提供されるであろうと言う事です。と言うのはその事業を始める企業が幾つか出て来てその企業の間で競争が行われると思われるからであります。

それから新サービスと言うのも色々と始まると思います。それは例えば未来のオフィスと言うものへ向けての新サービスであり、すでに多くの場所でも開始されているが、電子メールサービス、マルチプレクスを用いてのビデオテックスサービスと言うようなものが開始されると言う展望があります。

＜質　疑＞

(Q) メキシコにおける電気通信事業の民営化の方向は。

(A) セルラ電話はすでに開放されています。どの分野についてと言う事についてはわかりませんが、いずれにせよ外国からの投資を導入する事も考えている。そして通信運輸省の大臣の意見としては現在、電気通信事業は主に国営企業としてやっているが、これはだんだん民営化されて行くであろう。私の個人的な意見としても、民営化はそんなに遠い将来でなく、近く実現が可能と考えています。