sita communications

112 AVENUE CHARLES DE GAULLE - 92522 NEUILLY SUR SEINE (FRANCE)

VOL. 1 - Nº. 1 JANUARY 1976

A message

FROM: S.I.T.A. GENERAL MANAGER
TO: MEMBER AIRLINE COMPANIES

THE GROWING COMPLEXITY OF THE S.I.T.A. NETWORK AND ITS SERVICES TO AIR TRANSPORTATION HAS RESULTED IN AN EVER-INCREASING NUMBER OF INDIVIDUALS WHO ARE CONFRONTED EVERY DAY BY THE BEHAVIOUR OF THIS SYSTEM AND ITS INHERENT PROBLEMS. ONLY A RELATIVELY SMALL GROUP OF MEMBER AIRLINES PARTICIPATE-THROUGH THEIR MEMBERSHIP IN ONE OR ANOTHER COMMITTEE OF THIS ORGANIZATION-IN THE DEVELOPMENT OF S.I.T.A., WHILE THE MAJORITY SEEMS TO BE LEFT IN THE DARK, ALTHOUGH THEY RECEIVE SOME DOCUMENTATION, WHICH, HOWEVER, BY DEFINITION, IS NORMALLY WRITTEN FOR EXPERTS ONLY.

THE CHANGE OF THE S.I.T.A. STATUTES, WHICH TOOK PLACE IN 1975 AND WHICH ENLARGES THE NUMBER OF DIRECTLY DELEGATED BOARD MEMBERS, WAS A SIGNIFICANT STEP TOWARDS A WIDENING OF INTEREST IN OUR COMMON UNDERTAKING, AND HAS INDICATED A GROWING DEMAND FOR INSIDE INFORMATION. THUS, IT WAS THE WISH OF THE BOARD OF DIRECTORS THAT S.I.T.A. SHOULD ISSUE, ON A REGULAR BASIS, USER-ORIENTED INFORMATION WHICH WOULD ENABLE THE COMMUNITY TO BETTER UNDERSTAND CURRENT PERFORMANCES AND PROBLEMS, AS WELL AS FORTHCOMING DEVELOPMENTS.

"S.I.T.A. COMMUNICATIONS," WHICH WILL BE PUBLISHED ON A MONTHLY BASIS, IS SUPPOSED TO FORWARD ALL RELEVENT INFORMATION NECESSARY FOR THE USER TO UNDERSTAND HIS TOOL. OUR AIM IN S.I.T.A. MANAGEMENT WAS TO PRODUCE SUCH A PUBLICATION THROUGH OUR OWN EXISTING MEANS (THAT IS, AT ALMOST NO ADDITIONAL COST), BUT ON THE OTHER HAND, IN THE BEST POSSIBLE WAY, THAT IS: CLEAR, COMPREHENSIVE AND PRACTICAL. IT IS UP TO THE READER TO JUDGE WHETHER WE HAVE REACHED THIS GOAL, ALTHOUGH I INVITE HIM TO BE PATIENT, SINCE NO SERIAL PUBLICATION CAN BE JUDGED FROM ITS FIRST ISSUE. AS GENERAL MANAGER OF S.I.T.A. SINCE ITS CREATION IN 1949, I VERY MUCH WELCOME THE POSSIBILITY FOR CLOSER PARTICIPATION OF OUR USERS, AND I WISH "S.I.T.A COMMUNICATIONS" FULL SUCCESS.

WITH SEASONAL GREETINGS.

G. A. MONNIOT

1st JANUARY, 1976

Georges A. Monniot, General Manager of SITA for 27 years, will be 65 this year, thus reaching the age of retirement. "sita communications", according to him, should help to provide continuity with respect to the forthcoming change in management.

Editorial

There are three categories of people: those who make things happen, those who watch things happen, and those who just wonder what is happening. The dissemination of information should help to diminish the third category by creating a better understanding of the environment. This is why we send the kids to school, why we read journals and books, and why we have human communications. For the same reason, we have chosen the title "sita communications" for this new publication, indicating that it intends to be more than a monthly report or "newsletter".

The General Manager, in his above message, has already pointed out the need of the users of the SITA network for regular and comprehensive information about the SITA "machinery", as well as about trends and projects. There is indeed only a very limited group of member airlines who closely follow the various activities, while the majority receives only the Annual Report.

"sita communications", for reasons of mailing costs, to be forwarded as a single copy per member airline, will hopefully be reproduced inside the companies at their own wish, in order to reach all departments who use the SITA network. Thus the contents are, right from the beginning, destined for the network user.

One of the main problems in starting a publication of this kind is how to "phase in". Certainly nobody wants to be bothered with historical facts (although some of them play a role in today's operations). On the other hand, it would be of little use to only report on the current situation without indicating the trends and future development of the SITA services. But having decided to start this publication at a given point in time, one has to make up one's mind and present at least something - even if it comes out of the blue sky for some readers. We can assure our readers that after a few months time, we will be at cruising altitude.

D.K.

Problem areas

Stand alone satellite processors

By the end of 1975, the SITA network connected 36 "satellite processors". For those who are not quite familiar with the infrastructure of the automatic part of the network, a short excursion into history might be useful.

A telecommunications network that aims to serve the offices of its users, which in the case of SITA are scattered all over the world, requires a network hierarchy. Based on the pattern of traffic flow (that is, "traffic sources" and "traffic sinks", and the correlation between the two), the present SITA network was gradually equipped with switching computers of two categories: "high level" switching centres, and "satellite processors". In this article, we are concerned with the latter.

A satellite processor in SITA terminology was conceived to be a single, small-size computer which would serve as a connecting point for airline seat reservation terminals ("agent sets") and teleprinters in a given area, and which itself would be connected to one of the high level centres of the automatic network through one communications circuit. This concept looks very simple at first glance but it turned out to be of a very difficult nature.

The major problems can be listed as follows:

a) linking such a satellite processor to a high level centre through one circuit is a risky affair due to possible deficiencies of the circuit itself or the associated modems;

b) the single processor (i.e. a stand alone machine) does not only depend on the perfect functioning of both its components and its environment, but also is extremely sensitive as regards maintenance intervention - especially for the performance of a 24 hours service;

c) in order to serve several users and their individual systems requirements, a satellite processor within the SITA network has to contain a set of different program handlers.

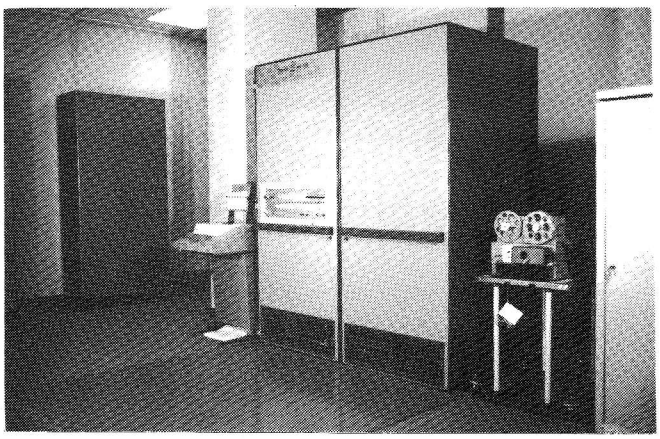
The implementation of the satellite processor project thus had to cover such contradictory aspects as:

the complexity of the tasks to be performed (by serving a variety of users), and

the utmost economy to be achieved (bearing in mind the relatively large number of machines required).

The outcome was a compromise. And since about one year, during which SITA connected more than double the number of agent sets of its various users (which created in itself problems of connecting capacity and throughput capacity), it has turned out that the concept of stand alone machines for this purpose might have to be revised. The Network Security Working Group have defined the overall monthly up time for a satellite processor to be 99.70% which means a maximum permissible outage of 130 minutes per month. Experience, especially during 1975, has shown that this goal was not achieved for various reasons. One of these reasons lies clearly in the fact of the hardware maintenance to be performed in a real time environment. Depending on the various sites of the satellite processor installations, and also depending on the number of terminals connected and the corresponding traffic volume, we observed periods of outages much longer than the permissible 130 minutes per month.

At present, SITA is establishing a program for the duplication of certain satellite processors and the Technical Committee is closely studying the resulting aspects. In one of the following issues we will come back to this problem area.



Typical Satellite Processor Installation

Projects and development

New site for SITA Frankfurt

The present high level switching centre in Frankfurt was inaugurated in 1966. This was the first switching computer installed in the SITA network, and although it underwent several expansions, it is understandable that this is the first system which has reached utmost capacity and thus requires a replacement.

During the course of 1974, SITA management formed a small working group, consisting of airline experts in the fields of technology and finance, who investigated possible solutions for this replacement. It was clear from the beginning that Frankfurt required not only a larger and faster switching computer, but would also need to move into a new site, since the present installation had not one square metre left and could not be extended any more.

While both hardware and software aspects, as well as economic considerations and the timing, led to the conclusion that the future equipment should consist of a double Philips DS 714 Mark III, we were lucky to find, after several investigations, an ideal site to house the new centre. This site is located at Frankfurt-Niederrad - somewhere halfway between Frankfurt city and airport. The building has recently been constructed for computer installations by Nixdorf, one

of the leading German computer manufacturers and SITA was successful in renting enough floor space for all its installations. All necessary negotiations have been finalized, and site preparations according to SITA specifications have been started. It is expected that the switching computers will be installed during the summer season of this year, and we are planning the cut-over to the new centre early in 1977.

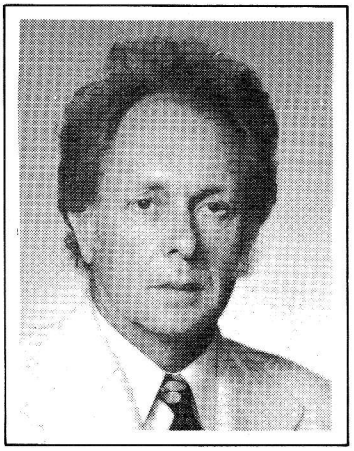
Artist's view of the new Nixdorf Building in Frankfurt-Main-Niederrad. SITA will be located on the fifth floor.

Throughout the organisation

General managers delegate in Beirut

"Dear Sir - Allow me to convey to you my sincere thanks for the continuous service you have rendered during the last eventful weeks. I have noted that at times when it was impossible to circulate in town and offices could not be reached, your office without failing was in operation..."

The above quotation is taken from a letter dated October 17th, 1975, written by the Regional General Manager for the Middle East of a well-known airline. This letter was addressed to the Delegate of SITA's General Manager in Beirut, Michel Barbot. The feelings expressed in the letter do not only prove the reliability and devotion of the SITA personnel at this spot during a period of severe difficulties, but also shed light on the courageous and determined character of Michel Barbot himself, who has served SITA for more than 22 years.



M. Barbot came from Air France and started his career with SITA in 1953 as the Regional Manager for Egypt, where he stayed until 1956. After a short period in Head Office, he lived in Athens until 1961, and became responsible for the Middle East and Mediterranean part of the SITA network. From 1962 to 1968 he operated from Rome, where he was also responsible for the realization of a high level switching computer. Since 1968, he lives in Beirut, and a great deal of his efforts were dedicated to the development of the network in the Middle East, and to the building up of the youngest of SITA's high level centres, that in Beirut - which was a task involving special difficulties in this area.

The Beirut centre, equipped with a double UNIVAC 418 II and a satellite processor, was officially inaugurated early in April, 1975, only a few days before the political troubles began. As evidenced in the above-mentioned letter, SITA succeeded in surviving throughout the whole period, maintaining full operation, and without damage to its new centre.

Latest news

■ A SITA meeting was organized on the 28th November, 1975, in Colombo, for an exchange of information with nine airlines operating mainly in this area. Technical and operational experts from SITA Head Office presented an outline of services available as well as some of the developments SITA foresees for the future. The general information provided was very much appreciated by the airline representatives present. The meeting proved clearly what was stated on the cover page of this issue of "sita communications", that there is a growing need for information exchange throughout the community.

■ Just a few days before Christmas, a new exhibition hall was opened at the Museum of Science and Technology at Kensington in London. Almost four years of work was dedicated to modernizing the presentation of one of the finest collections of mathematical machines in the world, containing parts of the original Babbage calculating units as well as other rarities. Quite a number of new exhibits were added to the collection in order to demonstrate modern means of data processing such as time sharing, teleprocessing, etc. One display shows a simplified version of the SITA high level network to familiarize the visitors (the majority of whom are youngsters) as to how a message originated by a remote computer terminal travels through a network and initiates a response from a reservations processor. Thus the SITA system serves already as a tool for education.

■ The "Gabriel" system, which is a shared seat reservation system based on a UNIVAC 494 located in Atlanta, Georgia, U.S.A., and which was obtained by SITA from Control Data Corporation, was recently extended to some of SITA's Eastern European members. In a relatively short time span during November, 1975, the following airlines were cut over: Polskie Linie Lotnicze (Warsaw, Poland), Balkan Bulgarian Airways (Sofia, Bulgaria), Ceskoslovenske Aerolinie (Prague, Czechoslovakia), Malev, Hungarian Airlines (Budapest, Hungary).

The monthly topic

A + B = ?

The main characteristic of the SITA network lies in the fact that it has historically developed and therefore presents special problems. Originally this network served airline offices equipped with teleprinters making use of international standards and a commonly agreed telegram format. Whenever an "interface" function had to be performed between this network and others, such as the public telex, this was done by human operators. The traffic transmitted over this network consisted mainly of telegrams in relation to passenger seat reservations.

As years passed by, two major changes had to be faced: a rapid increase in traffic volume and the development of automatic seat reservations systems. The first phenomenon required the use of automatic switching devices, while the second one demanded a given "flexibility" of these devices due to the variety of seat reservations systems to be introduced. In order to cover these two requirements it was decided to use computers as switching devices.

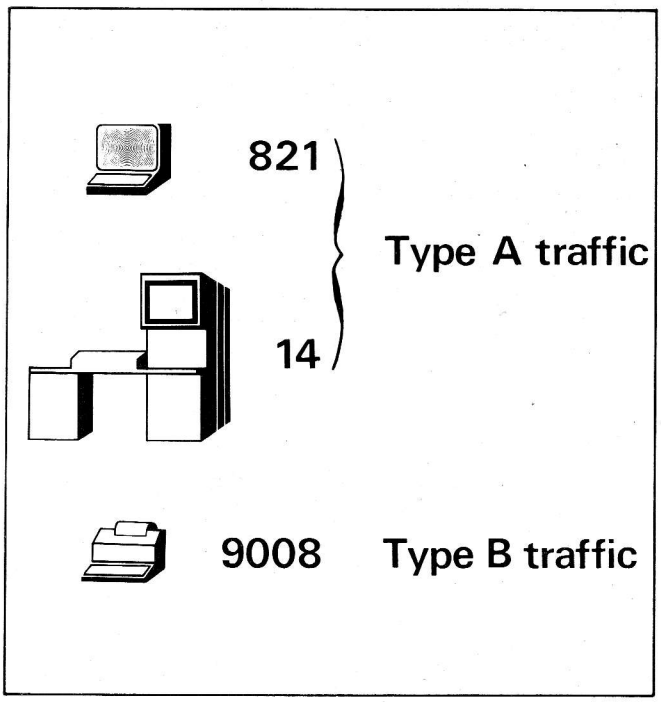
To put it in other words, the fundamental idea (which is still valid today and which distinguishes the SITA network from other data networks) was to accept, on top of the existing teleprinter traffic, the connection of a number of different terminal devices and reservations processors, and to transmit the resulting mixture of traffic over the same circuits and through the same switching centres. "Interactive" traffic exchanged between remote terminals and reservations processors was called TYPE A, and traffic exchanged between teleprinters was called TYPE B.

It is not the intention here to describe, or even to list, all the consequences which had to be encountered during the realization of this basic idea of mixing the two types. Some of them will be discussed elsewhere in this issue and in following ones. However, it is very essential to understand that this idea was a matter of policy, and mainly of economic considerations. Some of the deficiencies the network user observes today are due to this fundamental decision and therefore must be considered as "system-inherent" - at least at this point in time.

One example may illustrate this. If one wants to transport a given percentage of traffic faster than the rest, one can use a priority scheme. However, such a scheme would only work as long as the given percentage is relatively small compared with the rest. Ambulances, fire engines and police cars, which are given priority over all other vehicles by the way they are painted and the noise they make, indeed reach their destinations in a shorter time than other cars would do, but this system will fail if there are more ambulances and similar vehicles than ordinary cars on the roads.

Back in 1971, when the first clusters of computer terminals (agent sets) were connected in Italy and started to transmit their query messages through the SITA network to the London reservations processor of British European Airways (now British Airways), everything was relatively easy. The traffic generated (type A), which was given priority over all other traffic on the network (type B), did not create any problem, and the response messages from London were back in Italy in a few seconds, as it should be. But compare this to the present situation. As indicated in the sketch, the SITA network served, by the end of 1975, more than 800 agent sets and about 9 000 teleprinters all over the world. The resulting mixture of type A and type B traffic has indeed created (if only in given locations and at given points in time) congestion problems which require an early solution.

It is to be well understood that a telecommunications network could handle at one time the message traffic generated by 10 000 computer terminals and teleprinters, and some such networks are in existence today. The problem for SITA, however, is the transition period from the point in time at which it had only a small minority of type A messages compared to the huge amount of type B. If one observes the increase of both types over the past two years only, and the respective extrapolations, one could flatly state that type B traffic increases by about 8% per year, while type A (depending on the region) may increase by about 50%. The necessary steps to be taken will be discussed in another article in the near future.



Numbers of agent sets, reservations processors and teleprinters served by the SITA network (31.12.1975)

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Editorial

Even a four page leaflet such as "sita communications" requires preparation time, for both the compilation and the production. This is why one has to close the editor's office some time before the publication of an issue, which in turn explains why occasionally certain items may have changed in the meantime. The reader will understand that this is especially true within an environment such as SITA, where changes occur practically every day.

For the same reason, it is premature - in this second issue - to report on the general response to our first issue, with one exception: some remarks were made about publishing in the English language only. There are of course regions in this world of ours where people would prefer to read in French or in Spanish or in any other of the nine or ten major languages in use. However, the additional work load for the translation as well as for the production of separate issues and consequently the selective distribution, would be prohibitive (at least at the present time) since it was decided to publish "sita communications" at no extra cost. The fact that English is not only the language of aviation but also of worldwide telecommunications may help to explain why we have restricted ourselves to this language.

On the other hand - because of writing for the users of the SITA network who are not supposed to be experts - it is our aim to use a kind of English which is free from the technical jargon used by engineers, programmers and operators.

For example: "This can be avoided by requiring from the receiver to change its state from Idle to Active only after the detection of a complete flag rather than after the detection of a single ZERO."

We definitely intend to avoid this sort of English.

D.K.

Problem areas

Multi block messages

One of the problems under discussion in the Technical Committee of SITA is related to inadmissibly long response times for type A traffic in cases where the computer reply to a remote terminal query consists of several blocks. Although this item is a tricky one, we will try to explain it in plain language.

The problem is indeed a serious one since not everybody waiting long seconds for a computer reply would be as relaxed and gay as the young lady on the right.

First, one must remember that all categories of messages travelling over the SITA network are sent as blocks with variable but limited length, which is set at 256 characters (i.e. approximately 2 000 bits). This was done for error detection purposes on the one hand, and for priority reasons on the other hand. Messages longer than a limited block length, therefore, are sent in two or more blocks. In addition, the SITA high level network was designed in such a way that blocks belonging to one and the same message could be transmitted through the network over different routes in case of link failures occurring during transmission. Messages formed of several blocks were reassembled in each of the switching computers which they had to pass through. The reassembly of multi block messages, of course, takes some time if one of the blocks arrives late - either because it took a different route or because it was received mutilated and had to be repeated. This procedure has proved to be very useful in the case of type B traffic where the transmission delay of a message between two points is not very critical.

However, for type A traffic, this procedure turned out to be unacceptable. The Technical Committee carried out a study with the users of automatic seat reservations systems, and found that about 20% of computer responses to agent set queries are rather long messages which fill whole screens, and thus consist of multiple blocks. Under given conditions, the response time for these messages was 10 seconds or a bit more, and SITA had to find an improvement.

It was decided - and the necessary preparations are under way - to

discard the reassembly of a multi block message for type A traffic in each switching computer. Instead, such a message would be reassembled only in the satellite processor which sits at the end of a given route and which will send the reassembled information to its final destination. In addition, one could envisage the voluntary holding back of blocks of type B messages within a switching computer, and offering them to an outgoing link only at set time intervals. This would reduce the probability that such blocks are refused by a switching centre which they intend to transit, in case this centre is fully occupied with handling type A traffic. Practical experience has already shown that such a procedure does not increase the overall transmission time for type B blocks (although at first glance one would think it would), but improves the smooth operation of the network as a whole, because it avoids retransmission of dropped blocks and thus unnecessary traffic loads. In one of the forthcoming issues, more space will be devoted to this problem, which, of course, has more facets than one can treat in a short article.

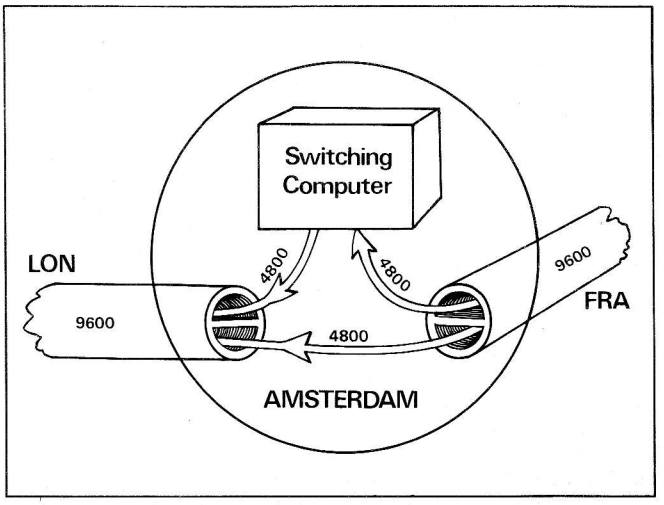
Projects and development

9600 bits per second

When the SITA high level network became operational towards the end of the '60's, telephone circuits were used to link the various switching computers at the transmission speed of 2 400 bits per second (bps). This speed, which was called "medium" in order to distinguish it from the telegraph or "low" speed, was quite sufficient at that time, since SITA was only concerned with the volume of type B traffic and had no immediate requirements for type A. In principle, a telephone circuit (sometimes also called a "voice-grade" circuit or an "AVD" circuit, which stands for "Alternate Voice Data", and which is defined by a bandwidth of 3 kilohertz or 3 000 cycles per second) can carrry more bits per second than 2 400 - depending on the appropriate modulation equipment (modems).

After a few years of operation of the high level network, both the increase in volume of type B traffic and the appearance of type A traffic, with its inherent requirement for short response times, led to the upgrading of the transmission speed to 4 800 bps. Since then, all circuits forming the high level network apply this speed.

Today, the rapid increase in volume of type A traffic makes it necessary to double once more the transmission speed, thus arriving at 9 600 bps. However, some of the switching computers installed at present are too highly loaded to receive this bit rate straight away since they would react too sensitively to mutilated characters. Nevertheless, SITA will install the necessary modem equipment (in AMS, FRA, LON and PAR to begin with) and operate the five telephone circuits between these centres at 9 600 bps. As shown in our sketch, which takes AMS as an example, these circuits will be split in half so that the switching computer will receive only 4 800 bps while the other 4 800 bps "half channel" will be fed directly into the associated half of the outgoing channel. Thus, traffic from FRA destined for LON (as in our example) will not charge the AMS computer. This "channel splitting" method would make use of the full transmission speed in order to transport the increased traffic volume, and at the same time would not charge the switching computers unnecessarily.



Simplified representation of splitting 9 600 bps into twice 4 800 bps. Modems and return channels are not shown

At a later time, when the obstacles in the switching computers have been overcome, the full bit rate can be fed into the computer for that portion of traffic destined for it, which in turn would further improve the overall network response time for type A traffic.

It should be mentioned that the operation of a telephone circuit at 9 600 bps is only possible over "conditioned" circuits, which, at present, can be provided by only a few administrations.

Further geographical expansion?

In the last few years, one could observe not only a growing density of the flight networks of both scheduled and non-scheduled carriers, but also a rapid development of "third level" commuter companies. The large airlines, who could not possibly serve locations not considered to be profitable to them, find themselves now benefitting from the services rendered by the third level carriers, who operate - on a regular basis - small aircraft, which thus link little airfields to the large airports.

In one of SITA's annual reports, it was mentioned that the geographical expansion of the network (that is, the installation of new SITA centres) has slowed down and may have reached the point where the network serves almost all locations of interest to air transportation activities. However, the development of telecommunications techniques such as time division multiplex (TDM), multi drop circuits etc, may revise the above statement, since there are still quite a number of locations served by air transport which have bad or no telecommunications facilities at all.

This fact can be illustrated by the comments made by the station manager of a given air-

line who welcomed the recent inauguration of a new SITA centre:

"Before you opened your SITA facilities here", he said, " I used to receive no replies to my reservations queries, I had no idea about the true arrival time of an aircraft until it was parked in front of the hangar, and I had to face sometimes impossible problems of where to put waiting passengers and what to tell them. Not to speak of maintenance problems where a plane might be grounded for days while I was totally left in the dark as to whether my management had received requests for spare parts or technicians."

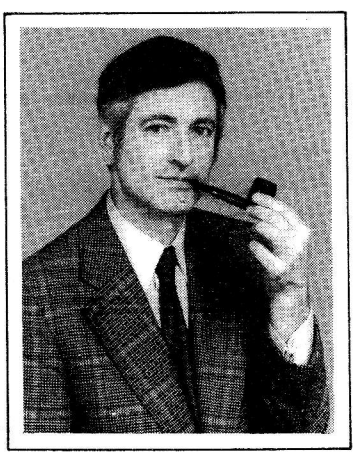
"Since you have opened a SITA centre here, I receive replies from our reservations processor within minutes, schedule changes in due time, and the whole operation is far more pleasant for all parties involved."

Naturally there is no point in opening manually-operated SITA centres at every spot where a 15 ton aircraft can land. The operating costs would be prohibitive, even if there were a large improvement in the passenger services and associated activities. However, as was said before, the implementation of telecommunications facilities, such as are available today, could help in many cases to connect many more locations to the present SITA network, thus opening up further possibilities for expansion.

Throughout the organisation

General managers delegate in Zurich

As was mentioned in the first issue of "sita communications", the reservations facilities of four SITA member airlines in the Eastern European region were successfully connected towards the end of 1975 to the GABRIEL system (see also page 4 of this issue). In connection with this news, a few words may be said about this part of the SITA network, which covers not only 8 countries in Eastern Europe, but also Austria and Switzerland. SITA-operated centres exist in Budapest, Geneva, Moscow, Sofia, Vienna and Zurich, while the centres in the remaining cities (i.e. Belgrade, Berlin-Schoenefeld, Bucharest, Prague, Warsaw and Zagreb) are operated by the respective member companies. The General Manager's Delegate in this region is Heinz Gerber, a former radar specialist, who joined SITA in 1957, and became the representative for Switzerland in 1959. Since 1971, SITA has formed its Eastern European region following the rapid development of this area and the resulting growth in telecommunications traffic. Heinz Gerber - like most of his colleagues in SITA's regional management - had to undergo a lot of travelling in order to negotiate with the various partners in this region, and to build up a reliable operation of the SITA network, which includes such challenges as the linking of reservations sets in Budapest, Prague, Sofia and Warsaw, through satellite processors to the SITA high level network, and so to the GABRIEL reservation system.



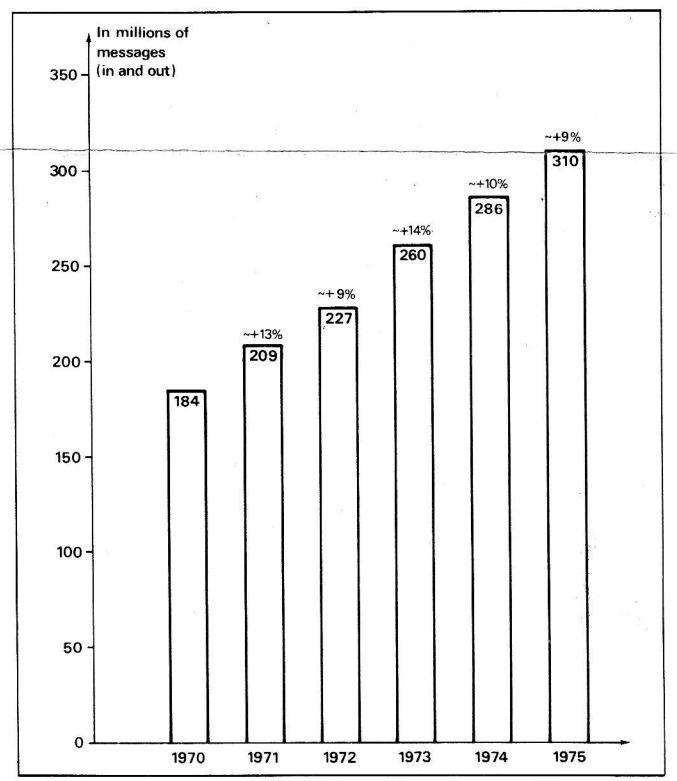
Membership

SITA membership, which has steadily grown from the original 11 airlines who founded SITA in 1949, reached 192 members at the end of last year. Since then, the following companies have been accepted as new members during January 1976:

Alaska International Air (U.S.A.),
Kibris Turk Hava Yollari (Cyprus),
LADECO (Chile),
SAHSA (Honduras), and
Aloha Airlines Inc. (Hawaii).

Eastern Air Lines has changed its status from a full member to observer.

Teleprinter traffic



Increments given in percent refer to the preceding year and are slightly rounded

Just before going to press, the total number of type B messages offered to and delivered by the SITA network in 1975 became available and shows an increase of 8.7%. The graph indicates the development for this type of traffic over the past five years. It is difficult to derive a trend from these figures, but one can assume that an almost constant increase of, say, 8-9% annually, is a good figure for planning purposes.

The increase in type A traffic (which in certain regions is by far higher than type B) will be discussed at a later date.

The monthly topic

GABRIEL acquired by SITA

On the 1st January 1976, the "SOLAR" passenger reservation system based in Atlanta, Georgia, and built up by Control Data, was acquired by SITA. Thus, SITA's airline reservations and management information system, "GABRIEL", as of that date, is under full SITA control.

This event marks a milestone in the development of SITA because the range of its services now includes passenger seat reservation together with the traditional telecommunications services this organization has always provided for the air transportation industry.

This date is a turning point not only for SITA, but also for the 39 former Control Data employees who now change their affiliation and become part of the SITA family. A wholehearted welcome is extended to them all; we have no doubt that they will make an effort as significant as that of SITA itself in order to achieve smooth integration of the operation at all levels, which joint effort must result in improvements in the quality of the overall GABRIEL service.

These services are currently used by twelve airlines, namely: AEROCONDOR (Colombia), AVIATECA (Guatemala), BALKAN (Bulgaria), CSA (Czechoslovakia), LACSA (Costa Rica), LOFTLEIDIR (Iceland), LOT (Poland), MALEV (Hungary), SAS (Scandinavia), TACA (El Salvador), TAN (Honduras), VARIG (Brazil). Other companies are currently considering proposals.

The total number of passengers expected to be boarded by the system in 1976 is some six million. The transactions generated for assuring these boardings will be carried out by close to 700 terminals of different types, connected directly or via the SITA automatic network to the dual UNIVAC 494 computer systems in Atlanta.

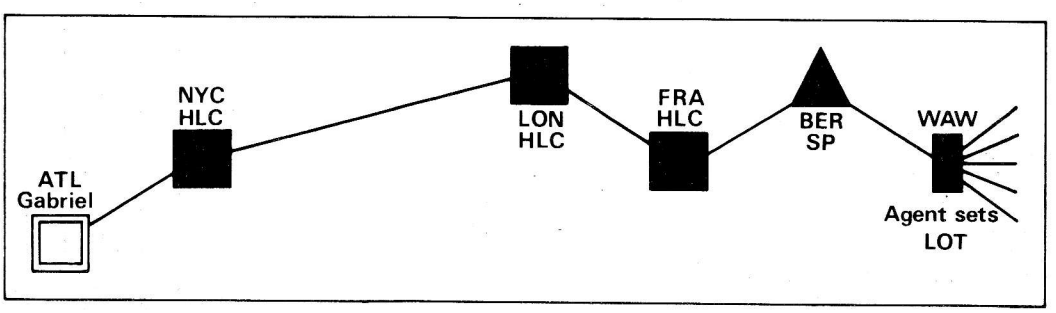
GABRIEL, being purely airline-user oriented, offers a high degree of reliability and flexibility, thus representing the ideal solution for SITA members with an immediate requirement for computerised passenger reservations and related management information.

The basic technique employed to produce system flexibility is to define specific agent set modes. This technique, combined with a comprehensive seat inventory control scheme, allows the optimum balance between the advantages of automated information processing and the necessity for decisive action.

The salient points of the GABRIEL service can be summarized as follows:

- no investments in pre-implementation and/or development costs.
- fully segment-oriented, which allows management of seat inventory on a segment basis, covering such items as limit-sales, airport operating restrictions, no carriage rights, etc.
- provides for "on-line" loading and schedule changes without any interruptions in service during the period of such activity.
- management report programs provide users with the most comprehensive and flexible management report systems yet developed.
- provides absolute protection against unauthorised access to the system. The confidentiality of individual airline information, such as Passenger Name Records and other private data, is securely safeguarded by means of a key which is known only to the system.
- GABRIEL, as in the case of all other SITA facilities, will provide to all users the same priority and equality of service; all improvements, new applications, etc, will be offered equally to all subscribers to the service.

Therefore, GABRIEL, coupled with the successful TERMS (Terminal Equipment Rental and Maintenance Service) and type A service, places SITA in a position to provide a total reservations package including communications and terminals.



One of the new GABRIEL links, showing the connection of Warsaw to Atlanta, Georgia

In conclusion, SITA wish to state their appreciation of this further expression of confidence by the community of users, by means of which this very important step could be realised. It goes without saying that SITA is pledged to do all possible to justfiy this confidence.

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