Telecommunications Heritage Journal

Issue number 78 Spring 2012 ISSN 1353-0097

In this issue

Carbon Telephone Transmitters – 5: The Solid Back Transmitter (1892)

Theodore Gary and his Companies

A History of ATEA 1892-1999

The Automatic Telephone

thg.org.uk

Telecommunications Heritage Journal

Published four times a year by the Telecommunications Heritage Group, an independent, non-profit making group run by enthusiasts for enthusiasts. The views and opinions expressed in the TH Journal are not necessarily those of the Editor, Group Officers or Official Group Policy.

© THG and Contributors 2012

Telecommunications Heritage Journal editorial address:

THG, Dalton House, 60 Windsor Avenue, London. SW19 2RR

E-mail journal@thg.org.uk

Telephone 0330 321 1844

Annual Subscription Rate	
UK	**£20**
Europe	**£23**
Rest of World	**£30**
Electronic Membership *	**£ 8**

* We offer an alternative rate for those outside the UK. You will have full access to the THG Discussion Group online and an electronic copy of the journal. This is not available to members with a UK Postcode.

New members may join online and existing members may check their status and renew at thgmembership.org.uk

If you have internet access, but do not know your login for the membership system, you may e-mail the membership secretary (membership@thg.org.uk) who will enable your account and send you details.

Members without internet access may continue to send renewal payments directly to the THG address when their renewal becomes due. One reminder will be sent by post at the appropriate time. Your expiry date for membershIp is always shown on your journal address label along with your membership and database references.

Journal Copy Deadlines

Telecommunications Heritage Journal will be published quarterly in February, May, August and November. In order that we can deliver the Journal to members in good time, all material should be submitted by the 15th of the month prior to publication. So for your next issue (Summer 2012) please make sure that we have your contributions by 15th April.

Contacting Other THG Members

In accordance with members' wishes, we do not publish names and addresses or telephone numbers. If you wish to get in touch with another member please put your letter in a stamped envelope marked with the destinee's name and send this in another envelope to:

THG
Dalton House
60 Windsor Avenue
LONDON
SW19 2RR

Front Cover: ATEA System 600

We welcome your articles and letters (please mark clearly if they are not intended for publication). We prefer that material for publication is submitted either by e-mail (to journal@thg.org.uk) or on computer disc to the address above. Please make sure files are plain text with separate pictures where necessary. Pictures should be TIFF files if possible. We are more than happy to receive typewritten or handwritten articles if you don't have a computer! We can also scan your photographs or drawings. If you expect a reply or the return of your material please remember to include a stamped, self-addressed envelope.

Please indicate on submission of your material if you wish to place any restrictions on its use by the THG (particularly if third-party copyright is involved: that is, you have used words or pictures that were written or created by someone else). You might consider using a free, simple Creative Commons licence (see creativecommons.org) to indicate your requirements. You will always retain copyright but by submitting to the THG's Journal team you grant us permission to publish your material in the Journal and on the THG web site. Please do not submit articles, drawings or photographs if you do not agree with these terms. For more information about copyright see www.legislation.gov.uk/ukpga/1988/48/contents

If you do not want your name, address or other contact details published in the Journal please make this clear when you submit material. You may use the THG address (above) if it's necessary for other members to contact you.

Contributors should bear in mind that copies of the Journal, although provided to THG members on a subscription basis, are also provided to non-members by the committee (to encourage fellow enthusiasts to join our group) and old copies may be sold, donated or otherwise disposed of by any THG member.

The Start of Telephony in the 19th Century.

Figure 1: BTMC logo 1882

Alexander Graham Bell filed his patent for telephony in 1876. Western Electric was a company which commercialized Graham Bell's invention. They wanted to expand business in Europe. Ultimately they chose Belgium since the Belgian government offered them the best conditions. The contract with the Belgian Government also required that the equipment be built in Belgium.

The establishment of **Bell Telephone Manufacturing Company** took place in 1882, and the offices and factory were located in Antwerp, Belgium.

Their objectives were *"the production, sale, purchase and leasing of equipment for telephony and telegraphy and everything directly or indirectly related to electricity".*

The founders included :

- **Francis Welles**, delegate of the *American Western Electric Company*,
- **Louis De Groof**, representative of the *International Bell Telephone Company*, and
- A number of local dignitaries.

In 1890, *Western Electric* decided to buy out International Bell Telephone, so their representatives in the board of directors had to leave, among them *Louis De Groof*, and his brother *Jean-Corneille.*

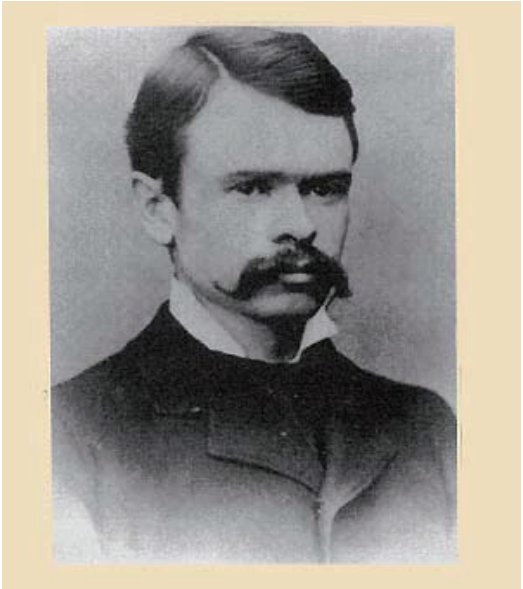


Figure 2: Francis Wellens

A New Company was Founded

The brothers De Groof convinced a local director of the Bell Operating Company (called *"la Compagnie Belge du Téléphone Bell"*) to join them in starting a new telephony business.

In April 1892, a new company named **"Antwerp Telephone and Electrical Works"** was created by these 3 people along with 5 local agents providing some of the venture capital. They started their business in Berchem, a suburb of Antwerp.

The mission of the company was manufacturing, purchase, sales and rent of equipment concerning telephony, telegraphy and electricity.

Figure 3: Preserved Phone 1892

Figure 4: UK Agent 1911

They delivered, among other items, manual exchanges and telephones all over Europe. Besides Belgium and the Netherlands, customers were found in a lot of places, even before World War I. A few examples:

Country	Location	Remarks
Russia	Saint-Petersburg, Moscow, Kiev, Riga, Odessa	It' s still the time before the Russian Revolution of 1917!
Italy	Rome, Milan, Turin, Bologna, Como, Piacenza, Venice, Naples, Palermo-Sicily	
United Kingdom	Canterbury, Moorgate, Glasgow	
Poland	Warsaw , Lodz	
Germany	Bielefeld	
Mexico	Vera Cruz	

Figure 5: ATEA customers before World War I

Figure 6: ATEA factory C.1900

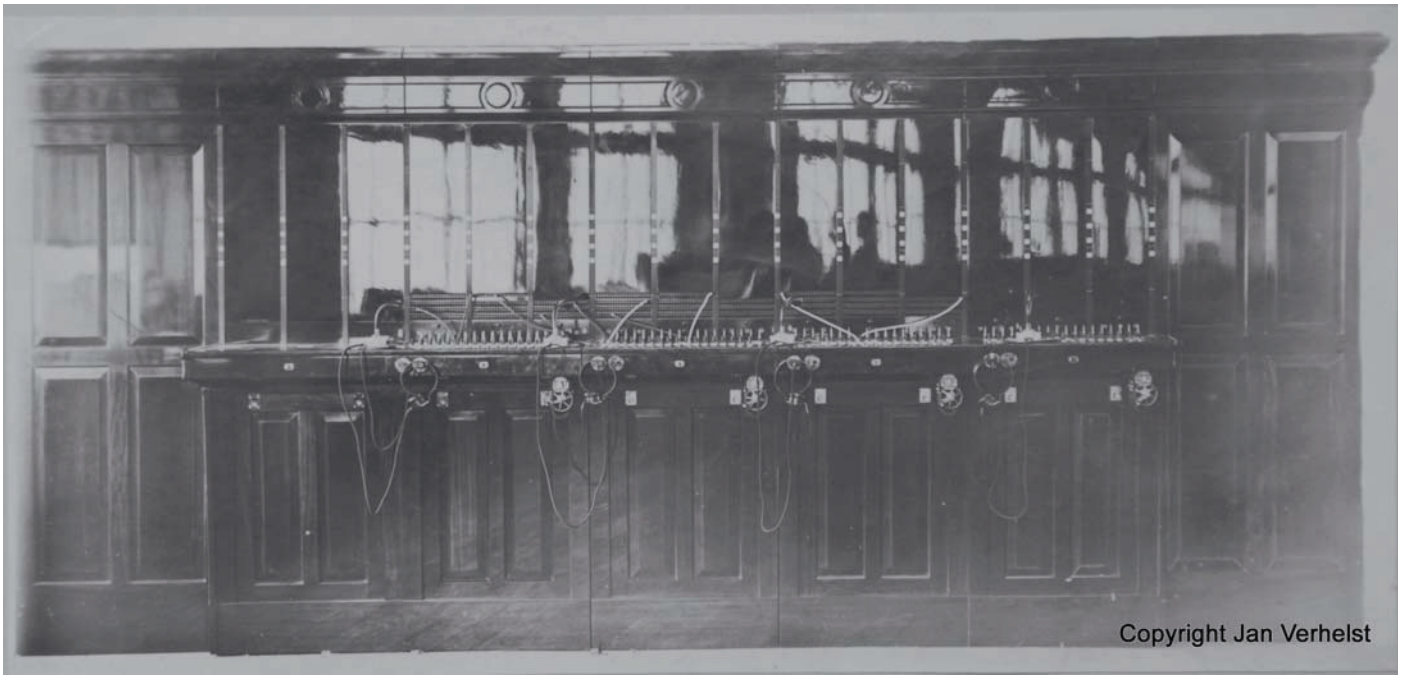


Figure 7: Warsaw, Poland 1902

Figure 8: Namur Telephone Exchange Belgium

If we look at the catalogues of the phones, we see a lot of resemblance with phones of other suppliers. The late Bob Estreich told me the following about this: *"Many phone companies of this period used parts from Siemens and Ericsson until they could build their own. The companies doing this included BTMC in Belgium, Sterling and Peel Conner in Britain, Elektrisk Bureau in Norway, Mollers in Denmark, and many of the smaller French companies. Many of these companies were using just about all brought-in parts except woodwork, then gradually started introducing their own metalwork, as the company grew."*

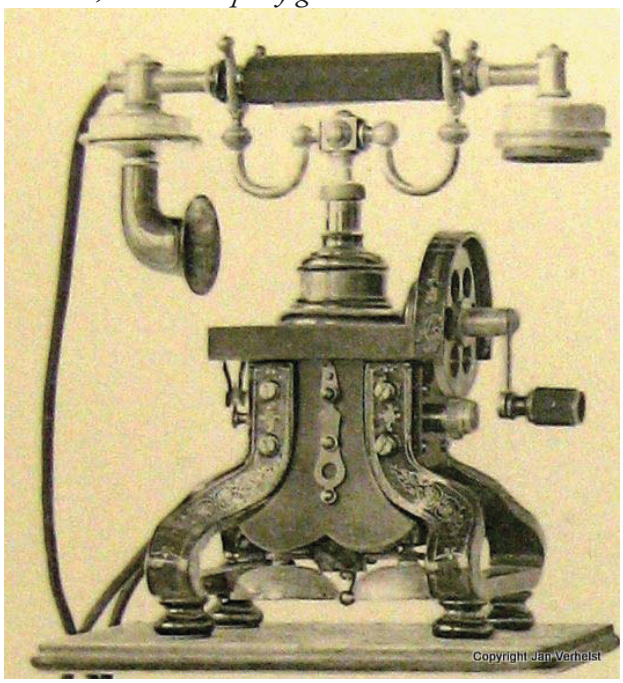


Figure 9: ATEA skeleton on the left Ericsson skeleton on the right.

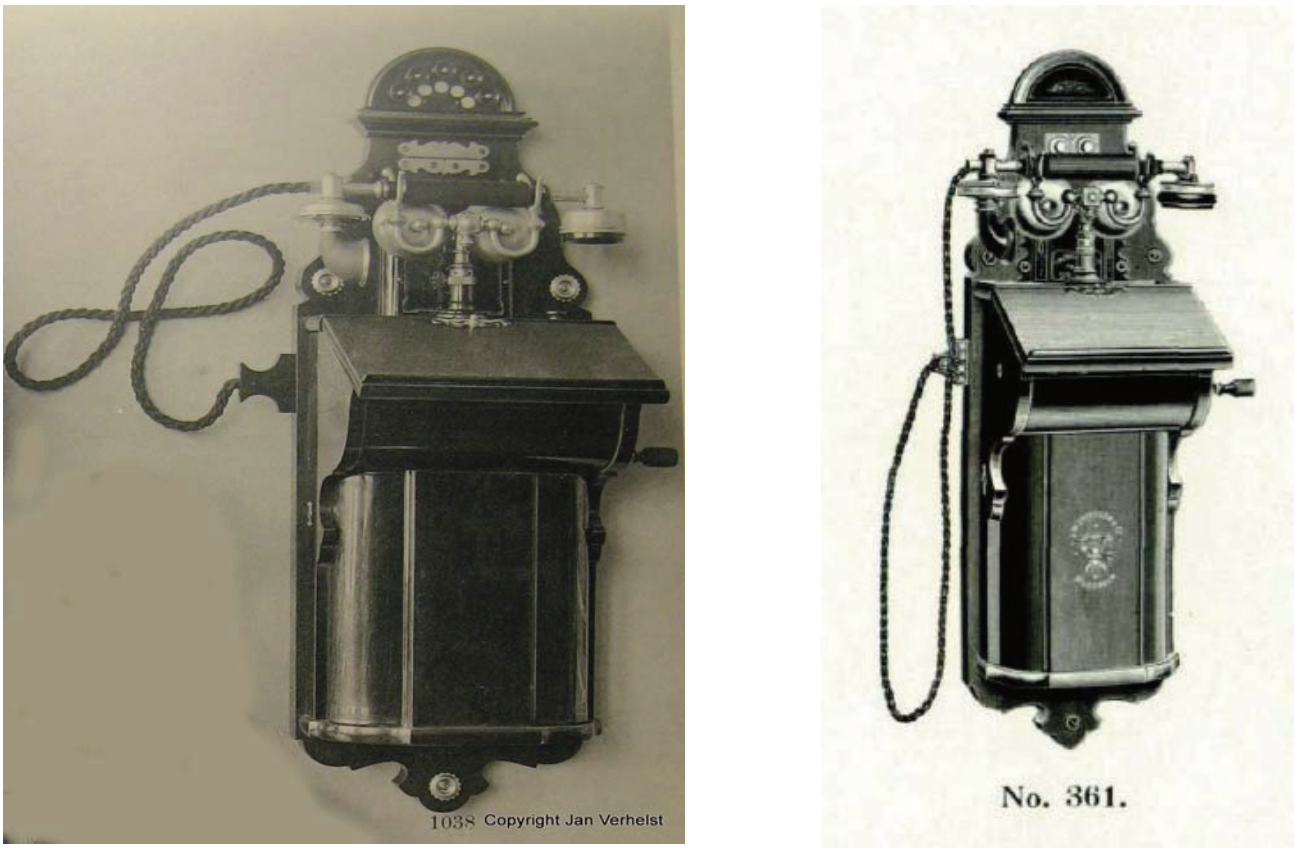


Figure 10: ATEA 1038 on the left and Ericsson 361 on the right

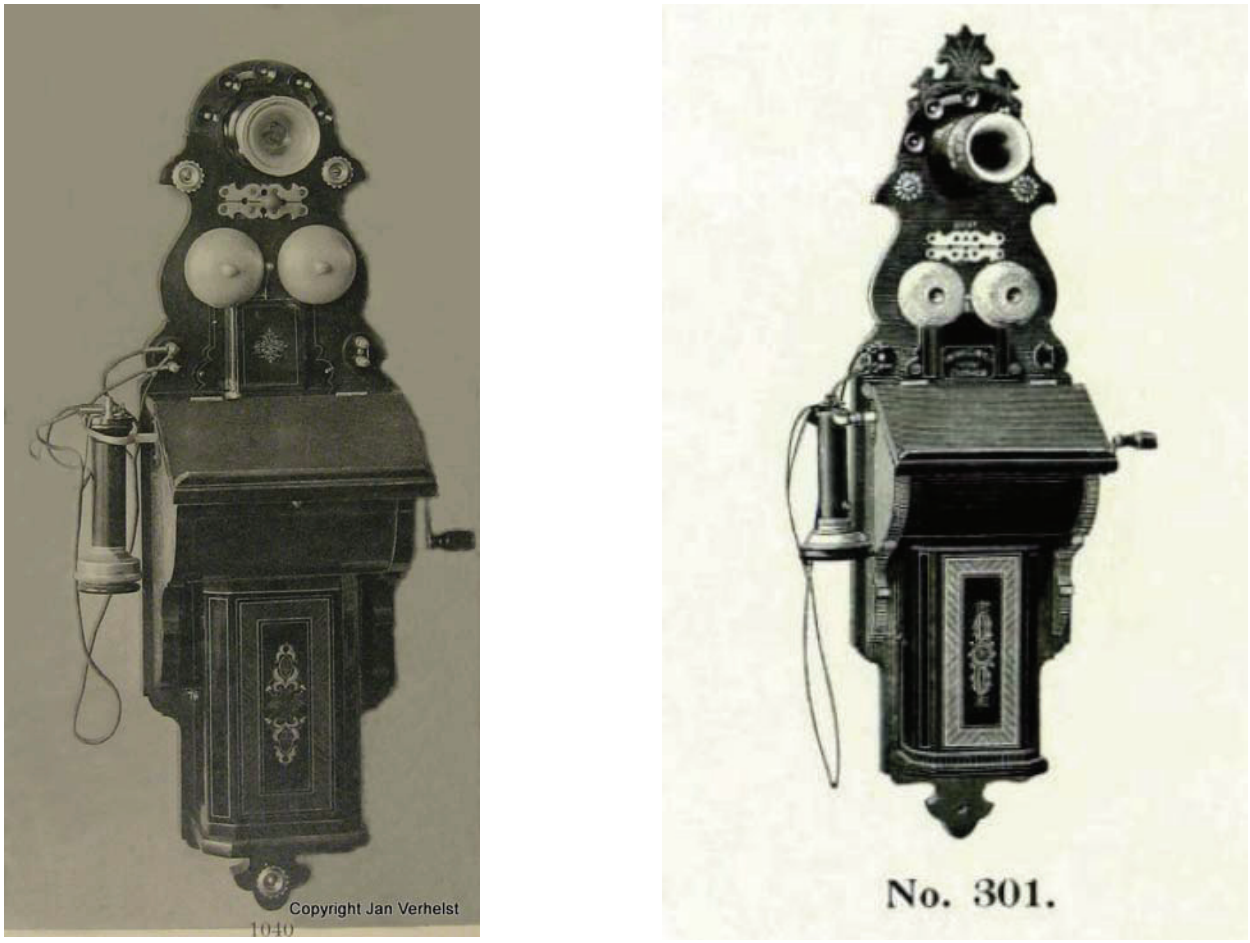


Figure 11: ATEA 1040 on the left and Ericsson Model 301 on the right

Despite numerous company name changes, the products always retained the ATEA brand name, Figure 12 gives you an overview to avoid confusion.

Year	Company Name	Brand Name
1892	The Antwerp Telephone and Electrical Works	ATEA
1919	The New Antwerp Telephone and Electrical Works	ATEA
1931	Automatique Electrique de Belgique	ATEA
1939	Automatique Electrique	ATEA
1962	Automatic Electric	ATEA
1970	ATEA	ATEA
1971	GTE ATEA	ATEA
1986	ATEA	ATEA
1995	Siemens ATEA	ATEA

Figure 12: Relation Company Name - Brand Name ATEA

ATEA stands for *"Ateliers de Téléphone et Electricité Anversoise"*, a French acronym for "Antwerp Telephone and Electrical Works", the first company name.

Figure 13: Staff at the ATEA factory, c.1910
One can see very clearly the difference between "blue collar" and "white collar" workers.

A New Start After World War One

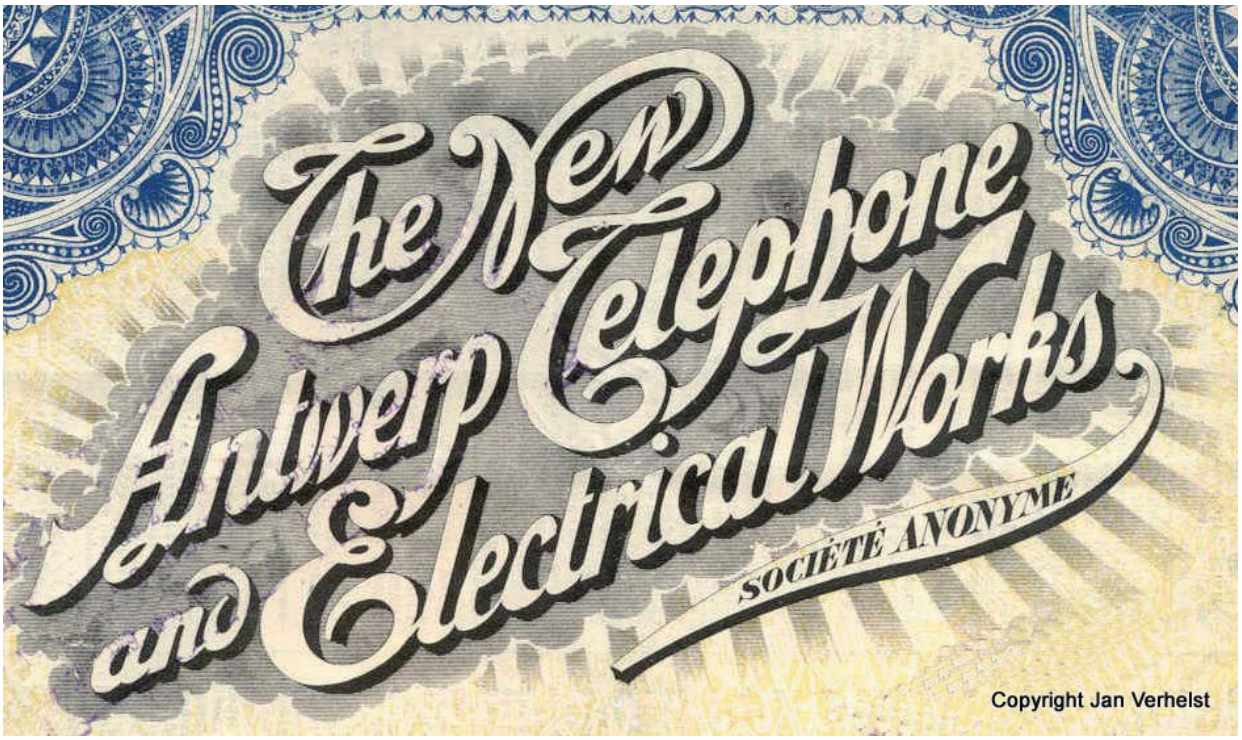


Figure 14: ATEA Share Issue 1919

Business went slow during World War I, and the company virtually went broke. In 1919, a new and reborn company was founded. **"The New Antwerp Telephone and Electrical Works".** The business was restarted, with the following shareholders:

- The "Banque d'Outremer" representing a group *(I have not been able to figure who or what this group represented)* bringing in new venture capital,
- The former "Antwerp Telephone and Electrical Works", *(represented by a lawyer)* bringing in the real estate, tools, machinery and know-how of the former company.
- The members of the board were also minority stockholders.

Widening the product range with measuring equipment.

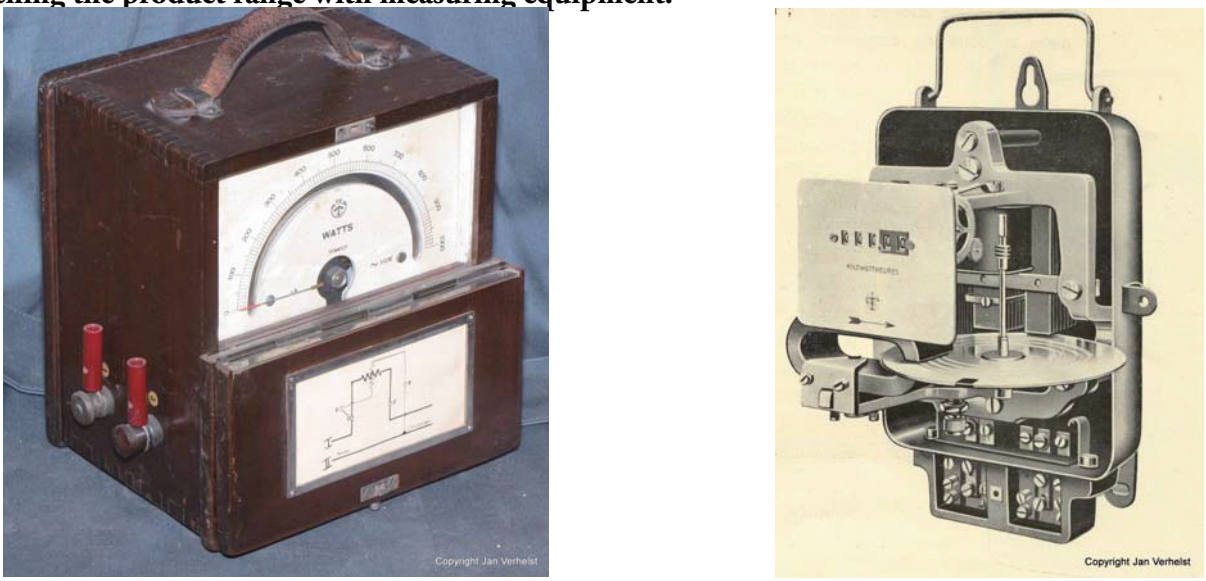


Figure 15: ATEA watt meter (1925) on the left and Kilowatthour Meter late 1920's on the right

The product range was widened by starting up a division on **measuring equipment** *(watt meters, voltmeters, etc)*. They delivered measuring equipment as OEM products for *Power plants, mines, ships…* ATEA was famous for customization of the meters. Kilowatt-hour meters were also a very popular product, with many of them purchased by the local power company. This product line was successful until the 1960s and early 1970s.

Telephony

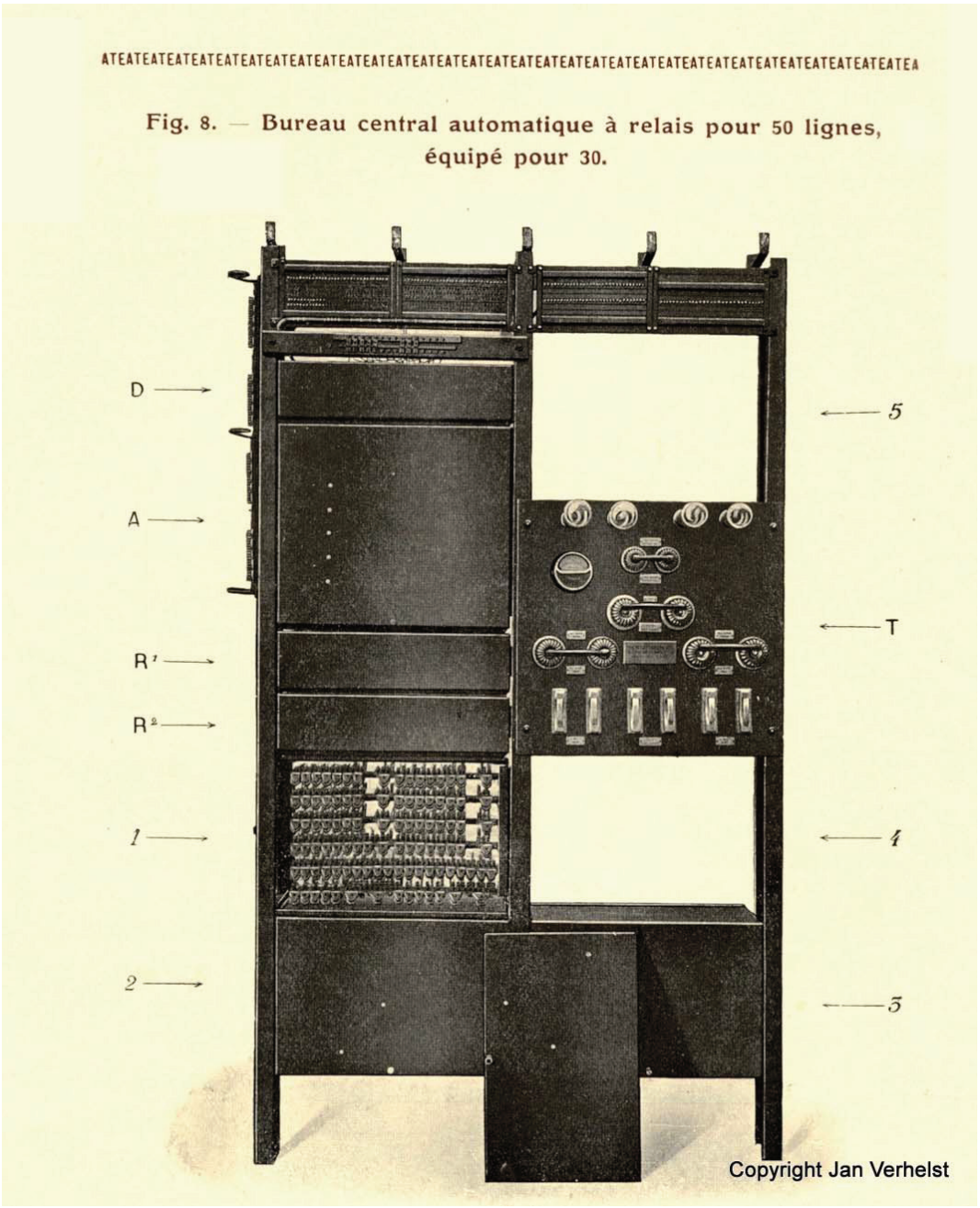


Figure 16: ATEA/RAT automatic exchange 50 lines (early 1920s)

After World War I, telephony automation became popular. The company got in touch with the **Relay Automatic Telephony Company** (RAT) of London, and obtained a license for their automatic switch for the Benelux *(Belgium, the Netherlands and Luxemburg)* and Spain.

In 1926, they signed a contract with Greece, to automate their National telephone network, and they took a franchise on the Greek network.

The RAT technology, developed by Betulander was technically good but expensive, especially for bigger installations.

The "New Antwerp Telephone and Electrical Works" had to look for cost effective solutions. So they got in touch with **Automatic Electric** in Chicago to obtain a license in Strowger technology.

Figure 17: ATEA Version of the Strowger switch

Associated Telephone and Telegraph, who owned Automatic Electric, took a "major interest" in the company. Through this relationship ATEA got access to the Strowger technology in 1926 and was supported by **Automatic Telephone Manufacturing Company** (ATM) of Liverpool. ATM already had expertise in Strowger technology before World War I; they delivered their first switch to British Post Office in 1912.

The local Belgian Operating Company was also interested in Strowger equipment, and deliveries of adapted switches started at the end of the 1920s.

The association with ATM had some side benefit; ATEA started to build and deliver **Traffic Light Controllers**, with some versions even containing Strowger technology. This product was very popular, especially in Belgium, where ATEA was market leader until the 1980s. Another product well known during these years were **Front Door Intercom Systems**.

Front Door Intercom Systems

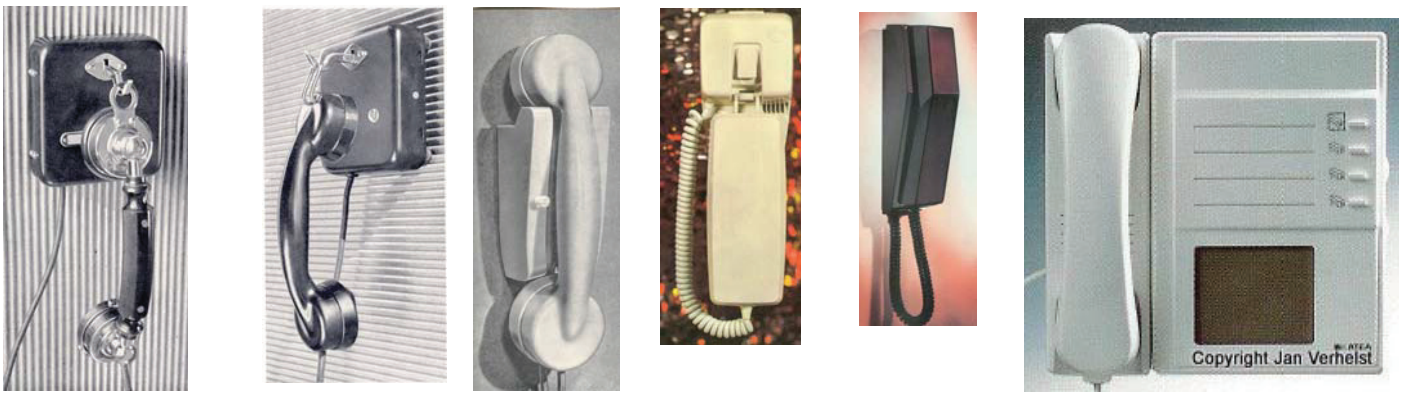


Figure 18 ATEA Intercoms from left to right 1930'2 to Video Intercom of 1990

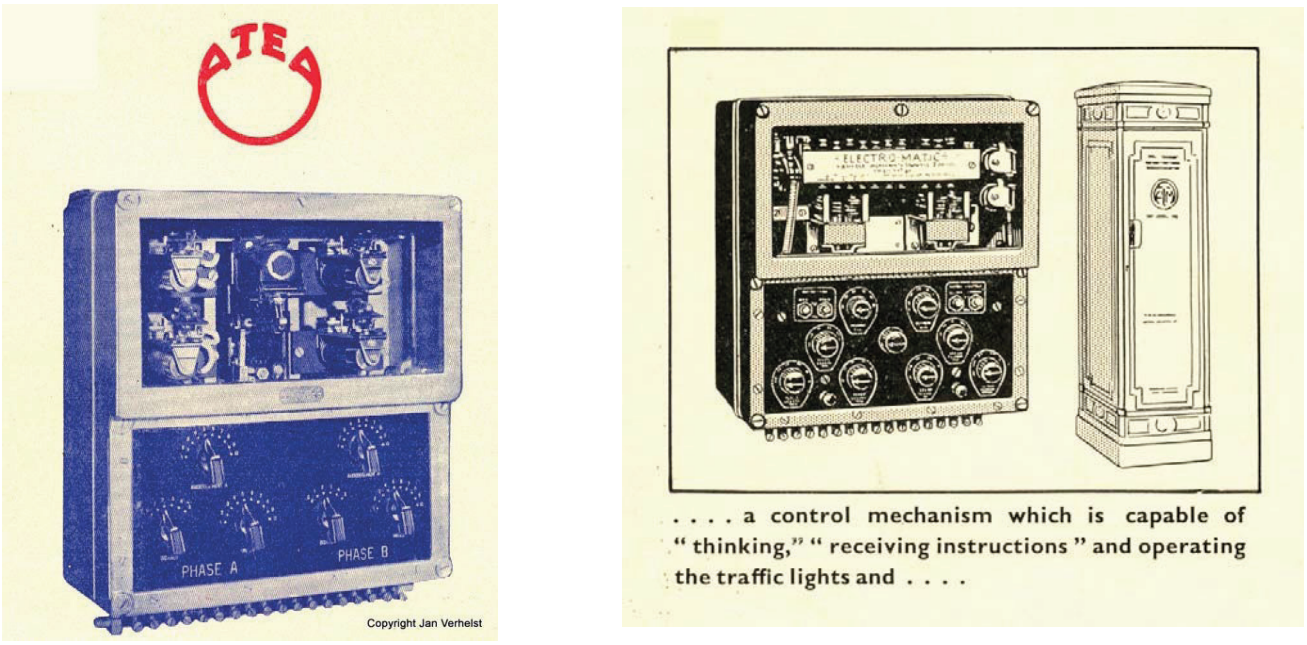


Figure 19: ATEA Traffic Controller on the left and ATM Traffic Controller on the right.

ATEA 1065	*ATEA 28*	*ATEA 1078*	*ATEA 38*
Wood Early 1920's	*Steel 19228*	*Bakelite C.1931*	*Zinc Alloy 1938*

Figure 20: ATEA phones from 1920-1940

Here we see an evolution from and "artisanal" company in the early 1920's to an industrial company in the 1930's

The alliance with Automatic Electric was an important step in the company's evolution, initiating a long period of stability. There were economic ups and downs, caused by external factors *(such as the 1930's crisis, world war II, etc)*, but ATEA continued to grow since it was owned by Automatic Electric of Chicago.

Phone assembling was a very labour intensive task in the first quarter of the twentieth century. Around 1930 this started to be industrialized. After first using wood and ebonite, metal and bakelite were later introduced in the 1930s. The styling was also influenced by the time when the phone was built; we see an important evolution in phone styling over the years. See illustration 20 for an overview at a glance.

Figure 21: Evolution of the ATEA Phone

Private switching and Telephone Key Systems

An important product line was the **PAX and PABX business**, not only for the local market, but also for export. Important customers were also found overseas i.e. in the former Belgian Congo. Some equipment such as phones and meters were adapted for survival in a tropical environment.

The Railway Company and the Army were big customers, and ATEA started to build up expertise in private networking.

ATEA had a big business in "Key Telephone Systems", especially after World War II. System 600 was very popular in the 1950s and 1960s, followed by the success of the System 800, which was very advanced for the time it was developed. Both phones and systems show up regularly on websites of online telephone museums and second hand shops such as EBay.

Figure 22: ATEA tropical phone (late 1920's)

Figure 23: ATEA 600 Key system	*ATEA 800 Key system*

The 800 system was especially widespread in *Europe, Latin America, the Middle East and Asia*. After the end of its lifecycle *(with more than 2 million phones installed)* a production facility has been setup in Brazil.

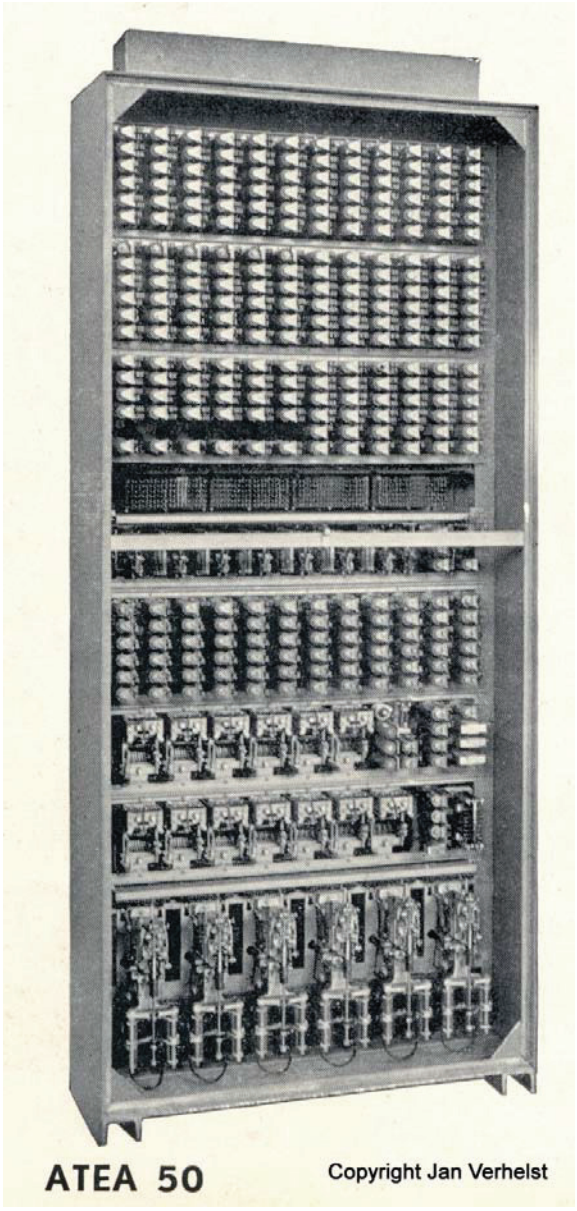
Technological Evolution since 1960

The transistor was invented in 1948, but it was not until 1960 that electronic industrial applications showed up. An early semi-electronic switch, the EAX-A1 was installed in 1967 in Hasselt, Belgium. The intelligence was done with wired logic on discrete components and a reed relay switching network. The basic technology was transferred from Automatic Electric, but the full design was done in Belgium.

The private network business also developed a similar system called PREX.

On request of the Telephone Operating Company RTT, the design of a *stored program controlled* switch was started, the A2PT system. The first switch of this generation was delivered to the customer in 1974.

The evolution of the technology increased rapidly, and ATEA's parent company Automatic Electric joined with GTE (General Telephone & Electronics) in 1955. ATEA became one of the many companies in the group in 1962, and was renamed to GTE ATEA in 1971. The company could benefit from being a part of GTE.
The central office system N2EAX, a Stored Program Control system with a huge central processor, was designed by Automatic Electric for the domestic market in the 1970s. It was an *electronic switch, but with a reed relay controlled switching network*. ATEA was, in cooperation with a sister company in Milan, Italy, responsible for the international version.



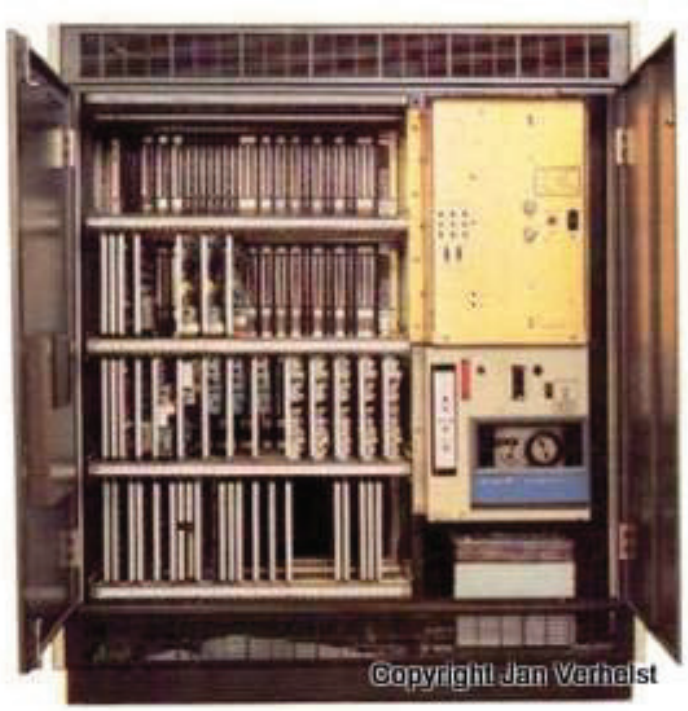


Figure 24: Electromechanical PABX (1930s) for 50 lines. SPC Electronic PABX 1990's for 120 lines
In private switching, the technology of the Automatic Electric's digital PABX GTD-120 and GTD-1000 was transferred to ATEA and adapted to international requirements. ATEA had the first digital PABX in Europe in 1978. The market *(very much expanded through GTE International)* was very fragmented, with many different customer requirements. A software controlled system using a set of 8080 microprocessors offered a good flexibility.
Systems were sold mainly in *Belgium, Denmark, Italy, the United Kingdom, South Africa*, but also in exotic countries such as Malaysia.
In some countries, such as the UK, joint ventures have been setup to facilitate business. Other countries such as China, India and the former unified Yugoslavia required local production through joint venture companies.

Soon the GTD had a successor, the OMNI-S *(same architecture, newer technology)* and later on the cost reduced OMNI 200 family. The main advantage of the European version of these PABX's was their *flexible signalization*, either on public or on private networks. A universal (table driven) Trunk program allowed easy adaptation to any network signaling system. Setting up a new signalization scheme was done in a couple of hours.

At the end of the 1970s a new style of telephone was very well received on the market. (see illustration 24) .

Figure 25: ATEA style of telephones since 1976

Figure 26: Electronic Key System 8000

Software Controlled JKey System 8800

Electronic Key systems such as 8000 and 8800 followed the same styling. These were sold in the UK as the "Rhapsody".

In the beginning of the 1980's Ferranti GTE was founded, but distribution in the mid 1980's was through a company called Norton, which was later taken over by Siemens.

Figure 27: DATEA 2000: Credit card verification and Electronic Fund Transfer (1980s)

The DATEA 2000, a telephone with *credit card verification capabilities* (and EFT, Electronic Fund Transfer), was a first step towards data communication and the internet.
In public switching, the N2EAX was soon followed by the GTD5 system, a fully digital central office, and again ATEA was involved in development of the system for international use.

There was a *technological evolution* from electro-mechanical to electronic switching in the 1960s and 1970s. This was followed soon by a *second wave* with the shift from hardware to software control. R&D investments, especially in software, increased dramatically, and GTE decided to move out of R&D and production of telephone equipment.

In 1986 ATEA was sold to Siemens. A *dual product policy* was worked out for PABXs. The Siemens ISDN PABX (HICOM) was sold where possible, but in some particular cases and special networks, the OMNI with its flexible signalization was still offered, until the phase out at the end of its lifecycle sometime in the 1990s.

The public exchange GTD5 was replaced by the Siemens EWSD, and adapted to Belgian requirements by ATEA. ATEA engineers joined Siemens people in designing mobile communication networks required for the mobile network boom of the 1990s. Siemens also assigned ATEA responsibility for markets in Africa and the Middle East. ATEA became active in mobile communication in 17 African countries.

OTN a remarkable optical transmission system, with a wide variety of inter-faces, was conceived by ATEA, and is used any place where "distance" is involved. Typical customers are mines, subways, military applications, pipelines, etc. This product family, which is sold worldwide, was fully designed, manufactured and supported by an ATEA team. On October 1st, 1999, after 107 years of existence, ATEA became fully integrated in the Siemens organization.

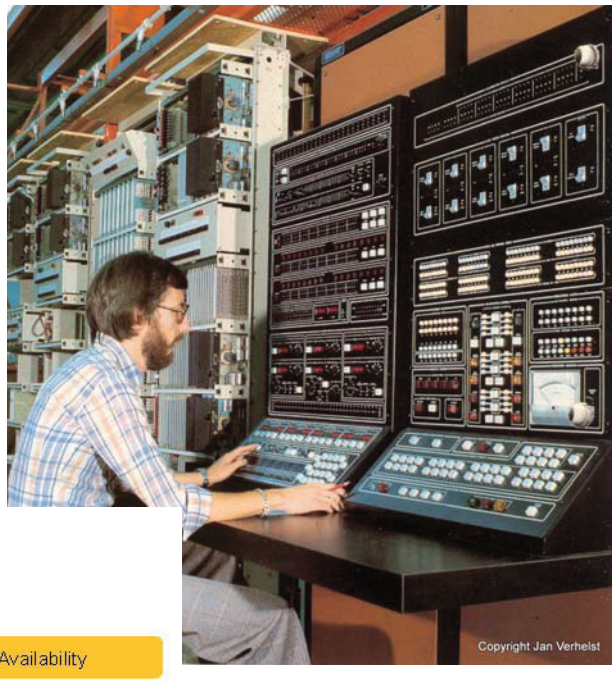


Figure 28: GTE N2 EAX factory test

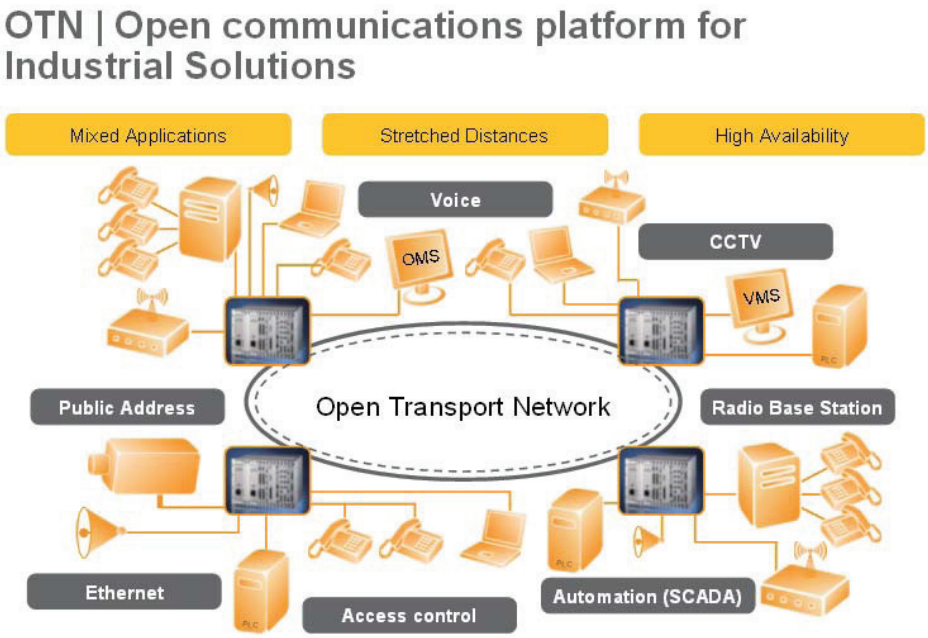
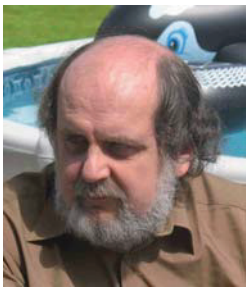
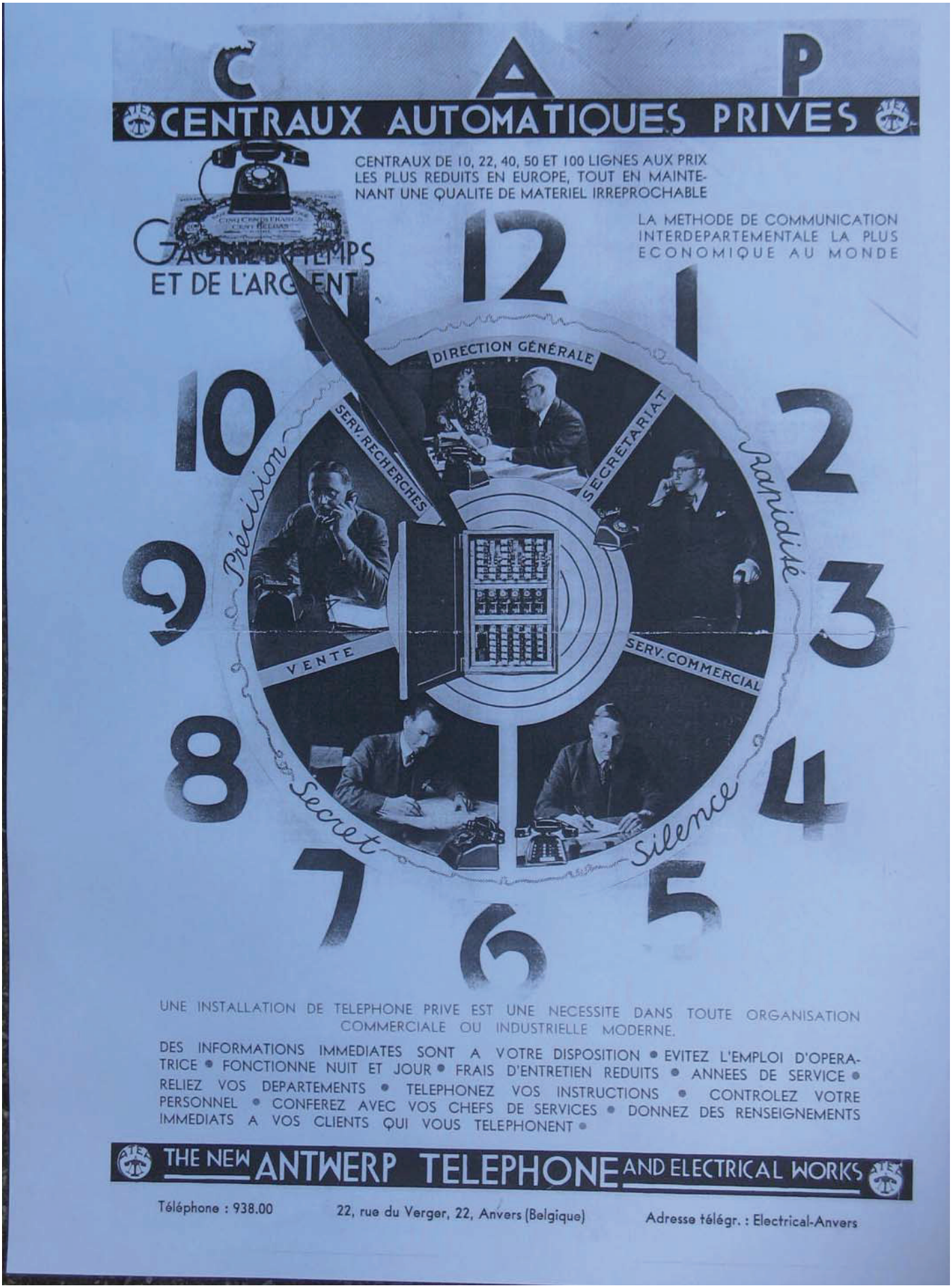


Figure 29: OTN : ATEA's Optical Transport Network



Jan Verhelst worked for ATEA from 1977 until 2004 . Most of his carreer he was involved in the design and conversion of digital PABXs to European standards. When ATEA became a part of Siemens, they decided that the R&D man power in Western-Europe had to be reduced, as a result Jan had to take early retirement in 2004. During this time ATEA became involved in a series of restructurations, joint ventures etc. When Jan discovered that the ATEA heritage (phones, exchanges, documentation) was in danger of being destroyed, he started "The Friends of the ATEA Museum"together with some other former collegues. This group were able to convince the Siemens Belgium management to transfer the ATEA heritage to a museum in Antwerp, Belgium. While they were saving all the artifacts, Jan became fascinated by the amount of information on ATEA's past in the archives, and started to document ATEA's history in a 325 page book , with over 400 illustrations in Dutch. He made contact with Bob Estreich of Australia, who encouraged him to write an English summary, which was the basis for this article. He assisted Bob in writing articles on BTMC Antwerp and on Automatic Electric of Chicago, which were published on Bob's website www.bobsoldphones.net With the presence of BTMC and ATEA, Antwerp has been the biggest Belgian telecom city over 100 years. “The Friends of the ATEA Museum" will be involved in a telecom exhibition in a museum in Antwerp, Belgium in 2014-2015.


C A P
CENTRAUX AUTOMATIQUES PRIVES
CENTRAUX DE 10, 22, 40, 50 ET 100 LIGNES AUX PRIX LES PLUS REDUITS EN EUROPE, TOUT EN MAINTENANT UNE QUALITE DE MATERIEL IRREPROCHABLE
LA METHODE DE COMMUNICATION INTERDEPARTEMENTALE LA PLUS ECONOMIQUE AU MONDE
GAGNEZ DU TEMPS ET DE L'ARGENT
DIRECTION GÉNÉRALE
SECRETARIAT
SERV. COMMERCIAL
VENTE
SERV. RECHERCHES
Précision
Rapidité
Secret
Silence
UNE INSTALLATION DE TELEPHONE PRIVE EST UNE NECESSITE DANS TOUTE ORGANISATION COMMERCIALE OU INDUSTRIELLE MODERNE.
DES INFORMATIONS IMMEDIATES SONT A VOTRE DISPOSITION • EVITEZ L'EMPLOI D'OPERATRICE • FONCTIONNE NUIT ET JOUR • FRAIS D'ENTRETIEN REDUITS • ANNEES DE SERVICE • RELIEZ VOS DEPARTEMENTS • TELEPHONEZ VOS INSTRUCTIONS • CONTROLEZ VOTRE PERSONNEL • CONFEREZ AVEC VOS CHEFS DE SERVICES • DONNEZ DES RENSEIGNEMENTS IMMEDIATS A VOS CLIENTS QUI VOUS TELEPHONENT •
THE NEW ANTWERP TELEPHONE AND ELECTRICAL WORKS
Téléphone : 938.00
22, rue du Verger, 22, Anvers (Belgique)
Adresse télégr. : Electrical-Anvers

COMMUTATEURS
AUTOMATIQUES

PABX

AUTOMATEN

AUTOMATIQUE ELECTRIQUE DE BELGIQUE S.A.

RUE DU VERGER_ANVERS