

Booklet N° 16 of the C.I.R.B.



A network for the Brussels-Capital Region

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The **C.I.R.B.**, Centre of Information Technology for the **R**egion of **B**russels, is a public body created by the Act of 21 August 1987, amended by the Order of 20 May 1999, whose main objective is to digitalize the public authorities of Brussels-Capital Region. Its role is to organise, promote and disseminate the use of computer and communications techniques among local authorities and the various departments of Brussels-Capital Region.

The **C.I.R.B.** has been developed as a service centre able to demonstrate the feasibility of telematics applications for public departments and between public departments and the people.

Today, 90 computer scientists and programmers work at the Centre and provide services and ready-to-use applications for the various regional departments, in particular in the framework of projects of the European Union and the Federal Departments of Scientific, Technical and Cultural Affairs.

The **C.I.R.B.** has also been mandated by the Regional Government to develop, promote and distribute the “Brussels UrbIS®©” Regional Digital Map. This administrative map, developed on the basis of GIS (Geographical Information System) technologies is the regional standard and is used by more than 50 public departments and private companies.

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Foreword

The 21st century will mark the advent of the information society : the result of the convergence of telecommunications, information and audiovisual technology.

Accelerating technical progress is pushing aside the traditional frontiers between the different sectors of our society, such that nobody can look at his future without taking into account these technologies.

The emergence of such a phenomenon will thus have a definite impact on the operation and positioning of the Brussels-Capital Region and the issues that our region is facing.

In this context, information and communication technologies constitute a complex, continual high-growth strategic sector which requires specific skills and is becoming more specialised every day.

The local and regional departments have not escaped these developments and must use these new technologies in all their own departments for their own needs, not just to modernise their information systems, but above all to improve the services they provide to the people.

The opening up of the people of Brussels to the virtual territories of the information society, as well as instant and personalised communications, will cause new expectations of public administrative departments to emerge.

The undertaking of the Brussels-Capital Region Government, on the initiative of the Minister-President, for the Brussels-Capital Region to be a fully fledged player in the information society, has resulted in the conclusion of a framework agreement with the joint venture France-Télécom / Telindus, aimed at the provision of telecommunications services to the administrative entities established on the territory of the Brussels-Capital Region.

The IRISnet network, the management and supervision of which the Government has given to the C.I.R.B., will be the engine behind the regional and local departments disseminating a range of on-line services and access to public information by the people, from digital administrative forms to tele-procedures.

The development of portals such as www.brussels.irisnet.be constitutes a good example of the realisation of this.

The Government of the Brussels-Capital Region has given itself the resources to open up our Region to the great hopes of the 21st century while safeguarding its diversity.

Robert HERZEELE
Administration Director

Hervé FEUILLIEN
Managing Director

IRISnet is the name of the high speed telecommunications network of the Brussels-Capital Region, designed to simplify telecommunications between the different departments of the Region. Why is it called IRISnet ?

IRISnet is trilingual, it combines the emblem of Brussels and “net” from the English word network. Already famous from the Region’s Internet domain name, “irisnet.be”, it is also used for naming pilot telematics applications. IRISnet has not come about by chance, but forms part of a continuous development.

This broadband¹ network uses advanced technology and enables the simultaneous transfer of voice, images and data. Each site has a single entry point, with a single contact person and a single on-line help service for all users.

IRISnet is composed of a complex telecommunications infrastructure using optical fibre cables and switching nodes between local and regional administrative buildings of the Region. The technical aspects of the network are detailed further on in this booklet.

1.1. The setting

The reason of such an infrastructure is part of a general reflection based on an observation : for some years there has been a real revolution going on in the telecommunications sector on a regulatory, economic and technical level. These changes, which are inescapable, are going to profoundly change our society and our way of life.

The regional authorities have decided to be players in this development, to use it to benefit of their own objectives rather than to give it free reign to economic and technological forces.

The main ideas of this thinking can be summarised as follows:

- To increase the effectiveness of our social and economic organisation through investment in the information society. The recent Lisbon summit in March and the G8 summit in Okinawa in July showed the way. But there is the risk that this development will reinforce exclusion. That is why the Brussels-Capital Region must be attentive to what everyone can access through new technologies and to an evolving service progressing towards equitable conditions.
- Improving the operation of public departments is an important objective. The introduction of new technologies in these departments, in particular high communication capacities at low or zero cost, will favour considerable acceleration in the development of administrative telematics which will mean:
 - Improvements in the effectiveness of administration.
 - Improvements in the services to people and the creation of new services accessible to all, and at all times.

¹ An explanation of what a broadband network is can be found in the glossary at the end of this booklet.

- The image of the Brussels-Capital Region is also an important objective. The other Regions are developing active telecommunications and telematics policies. If we do nothing we will miss out on the opportunity to enhance a dynamism and a modernism worthy of the capital of Europe.
- Finally, a number of studies done indicate that the availability of a regional telecommunications infrastructure is of a nature to enable substantial savings to be made, and even profits if this infrastructure is put to a wider use.

The network also forms a preferred basis for the implementation of many projects that the C.I.R.B. is undertaking.

The Brussels-Capital Region has had the desire to master new technologies for some years now. In fact, it is in this fast developing context that various projects have seen the light of day.

1.2. The regional actions

The IRISnet network is not an objective in itself, but rather a means of achieving the regional objectives.

But this resource is not enough: in order to obtain the desired effect, an active support and promotion programme for the development of applications using telecommunications has to be conducted in parallel. Such a programme constitutes the extension of the campaign to modernise the local authorities, financed by the Region since 1989.

The network is thus a tool which complements other initiatives taken by the regional authorities over the last few years regarding the introduction of new technologies. It involves implementing pilot projects and various measures on regulatory and institutional levels which are all aimed at achieving the objectives outlined above.

1.2.1. The projects

- Pilot projects financed by European and federal funds

The **MIRTO** project (**M**ultimedia **I**nteraction with **R**egional and **T**ransnational **O**rganisations) has been cofinanced by DGXIII of the European Commission in the framework of the “Telematics for Administrations” programme. The cities involved in the project are Rome, Madrid, Marseilles and the Brussels Region, in partnership with the Olivetti and Alcatel companies.

With the main objective being to bring public departments closer to the people, MIRTO aims to make user-friendly, high added-value public departments available to people, companies and other public bodies through telematics.

Access to the services will be either from a computer connected to the Internet, or from one of the information terminals installed within the Region.

The **CITIES** project (Cities Telecommunications & IntEgrated Services) has also been approved by the European Union in the framework of its research and incentive programme in telematics for public departments. This project, introduced by the CIRB and Alcatel for the Brussels-Capital Region, is being done in collaboration with the cities of Madrid, Rome and Marseilles.

CITIES consists of deploying a wide range of public teleservices intended for the people in general and/or target groups, using new information and data communications technologies. The aim of the project is to improve the effectiveness of the release of information and to reduce the cumbersome nature and complexity attached to a bureaucratic organisation. The services provided in Brussels are intended to make administrative data and information accessible to the final users, through user-friendly interfaces and easy access terminals.

The IRISnet project was created to develop some telematics applications in order to be supported by the regional network IRISnet. And the IRISweb programme was done to realise web modules, with the aim to give information about the possibilities of Internet.

- The role of Regional Internet Service Provider and the connection of schools to the “irisnet.be” domain

Since 1997, the C.I.R.B. has been the Internet access provider for the public bodies of the Brussels-Capital Region. This means the ministerial offices, the Ministry of Brussels-Capital Region, pararegional public interest bodies, the local councils, the C.P.A.S. and general interest associations.²

The available services are access to the World Wide Web and e-mail. Security and filtering mechanisms have of course been put in place.

To bring this network connection assignment to a successful conclusion, the Centre is the manager of the domain name *irisnet.be* and has been accredited as the Local Internet Registry, which enables it to distribute IP addresses.³

But that is not all, in the framework of a multimedia plan for the primary and secondary education establishments of the Region, schools have also been given access to the Web, a coherent information infrastructure, and educational guidance in new technologies. After having implemented this computerisation programme for schools, the C.I.R.B. take care of its maintenance and the helpdesk (on-line help service).

- A support programme in the development of applications using telecommunications has been launched

It is a programme of proposals for telematics and telecommunications projects for regional cofinancing, in which phase 1 was launched in July 1998 and phase 2 was launched in May 2000. The aim of this call for proposals is to develop new telematics projects using the IRISnet network. Improving communications among the public and regional players is important. Making large amounts of administrative documents available to people and to companies, in digital form, will also become important. The projects of the departments for the second phase were submitted to the C.I.R.B. by 31/08/2000.

² Government Order of 25/09/1997.

³ See glossary.

1.2.2. Other measures

The outcome of policy thinking on the technological skills to be acquired and developed has given rise to other measures being taken.

- Order of 20 May 1999 granting authority to the C.I.R.B. for telematics and telecommunications

The Centre of Information Technology for the Region of Brussels is a public interest organisation which, for the territory of Brussels-Capital Region, is responsible for all information technology, telematics, cartographic and telecommunications development and assistance assignments.

- Ministerial Circular of 22 January 1998 on the use of e-mail and the publication of announcements on the Internet.

The departments of the Ministry of the Brussels-Capital Region, pararegional bodies, the Offices of the Ministers and Secretaries of State of the Government now have an electronic address under the domain name *irisnet.be*. This must feature in the letterheads of the departments and on the business cards of employees. The electronic address must also be shown on all publications. Recourse to the use of this type of mail is vigorously encouraged, and this for several reasons.

In fact the Government would like to present an orderly and coherent image to the people of the regional implementation of information technologies. They should facilitate electronic communications between the people and public departments, and also between the departments themselves.

In order to optimise communications even further, the Brussels-Capital Region has a portal site containing all information relating to the Region:

<http://www.bruxelles.irisnet.be>

which contains all the decisions of the Regional Cabinet, all the publications, the press releases and a number of links to other regional sites. But above all, the visitor can find practical information on economic, social and cultural life in the Brussels-Capital Region, and this is given in the three national languages and in the language of Shakespeare.

1.3. History of the regional telecommunications network

In its 1995 White Paper, the Centre of Information Technology already reported the potential of our Region regarding telecommunications infrastructure. The Government of the Brussels-Capital Region then asked Téléport Bruxelles to do an initial feasibility study on the implementation of a broadband urban network. At the same time, a Telecommunications Working Group was created comprising the Region, Belgacom and the cable-distributors.

On 21 March 1996, the Government assigned the C.I.R.B and the **SRIB** (*Société Régionale d'Investissement de Bruxelles – Regional Investment Company of Brussels*) with the task of a technical and economic feasibility study for a high speed telecommunications network. The technical part of this study was done with the collaboration of the SEMA Group Belgium.

In 1997, it emerged from this study that the economic development of such a network was possible because of the existing infrastructure in the Region. In particular, the metro tunnels of the **STIB** (*Société des Transports Intercommunaux Bruxellois – Brussels Public Transport Company*) and the existing optical fibres constitute a major asset in the economic realisation of the project.

The study also emphasised the importance of utilising the savings generated by the network as a means of financing a programme to encourage the development of network user applications.

In early 1998, the Government then took a series of important decisions, including:

- The decision to organise a wide consultation to find an operator able to implement the regional network. The SRIB is responsible for this task.
- The development of a three year programme for preparing the public bodies for the optimum usage of the future network. The CIRB has been mandated for the implementation and monitoring here.
- The allocation of the savings and profits made as a result of the network and the telecommunications policy of the Region.

At the end of 1998, the Government accepted the Special Schedule of Requirements and entrusted the management of the development of the broadband telecommunications network for the Brussels public departments to the Minister-President and the Minister of the Civil Service. A Monitoring Committee and a user Committee were created by order of the Government of the Brussels-Capital Region⁴.

In March 1999, the Government examined the tender submitted by the France Telecom / Telindus joint venture. Long negotiations followed, and it in March 2000 the contract was awarded and the framework agreement signed. The France Telecom/Telindus association also work with Mobistar, and is here called the consortium IRISnet.

In May 1999, the CIRB, in its White Paper, drew the attention of the next Government to the potential of a high speed network.

On 27 April 2000, the Government assigned the CIRB with the role of observation, incentives and authority for telecommunications, and also with a management and supervision role for the framework agreement with the France Télécom/Telindus joint venture.

Today, IRISnet is operational. Its history is in the process of being written.

⁴ Order of 17/12/1998 on the Monitoring Committee for broadband telecommunications services of the Brussels-Capital Region. Order of 17/12/1998 on the Telecommunications Services Users Committee.

1.4. Network security

The transfer of information over a network clearly presents the problem of information security. It is a case of having a basic understanding of how to secure a system and the authentication of the various players on the network. But, and this is fundamental with regard to security, the most sophisticated technical tools are only worthwhile if specific administrative procedures have been put in place and are scrupulously respected while ensuring continuity of service to users.

Various methods are used on the IRISnet network.

1.4.1. The physical security of the network

The network is made secure by its physical configuration which provides redundancy. Each node from the backbone is connected to two other nodes. If one of them fails, the other can still make the link. That is the principle of redundancy. The telephone exchange is also doubled up. It is in fact connected to the outside world by two independent paths on two different exchanges. This redundancy guarantees uninterrupted operation.

Active and permanent monitoring (or surveillance) of the network is in place, in order to analyse the use of the bandwidth, but also in order to be immediately alerted to the slightest fault or breakdown of a point anywhere on the network.

Finally, security measures have been taken in and around the premises containing the exchanges, the nodes and the fibre cables, using a policy of access rights and security badges.

1.4.2. The security of the network applications

The electronic signature

Communication implies that it is necessary to establish with certainty the identity of the transmitter and the recipient of an electronic message, in particular with regard to certain administrative documents. In the same way, the integrity of the message and the date, and perhaps the time, of it being sent and received must be guaranteed.

In our case, we will use the electronic signature, which is based on an individual chip card issued to the person with the power or authority of signature.

The electronic signature by chip card is carried by an electronic mail system based on the X.400⁵ standard and on an RSA algorithm⁶.

1.4.3. Confidentiality

The confidentiality of information transiting the network is guaranteed. The equipment is only accessible to authorised persons and is located in electronically protected rooms. In addition, as the transfer is done by optical fibre it is not technically possible to intercept the messages: there is no electromagnetic field radiating out from the information carriers.

⁵ X.400 is an electronic mail standard defined by the International Telecommunications Union.

⁶ RSA, from the name of its inventores Rivest, Shamir and Adleman, is a very powerful encryption algorithm.

The arrival of IRISnet first of all means a simplification in telecommunications. Each site will be connected to the network by a single connection, will have a single point of contact and will call on a single on-line service (“help desk”) for all the services.

- Currently, the majority of institutions manage telephony and data transmission separately. With IRISnet, whether it is the implementation of new fixed or mobile telephone lines, connections to the Internet, to PubliLink⁷ or leased lines between different sites, there is only one single connection to the network (technical simplicity) and a single point of contact (administrative simplicity) for the billing and on-line help services.
- The relationship between the users and the consortium IRISnet will be completely different: as all of the regional users are consolidated, it represents a considerable burden. The users, who will be represented on a users committee, will be able to have their needs heard. Finally, certain provisions of the framework agreement require the operator to respect a certain quality level in the services.
- The framework agreement also imposes lower prices than the average market prices. Two factors are at play to make such an infrastructure possible and profitable. The consolidation of the regional bodies is a key factor which makes the Region an important customer, able to fully benefit from the competition on the telecommunications market. This factor has a particular effect in the interzonal and the international charges. Moreover, the Region provides a not insignificant infrastructure to the consortium IRISnet in the form of optical fibres in the tunnels of the metro, rights of way, and equipment rooms. This factor in particular has an effect on the inter-site communications and local communications. Finally, the interconnection between the IRISnet network and the Mobistar infrastructure enables competitive prices to be offered for fixed-mobile communications.
- On a technical level, each connected site will be pre-equipped to enable a very high speed. In practice, this means that a site that wants to increase the capacity of its telecommunications will be able to do so in a minimum of time, of the order of a few hours.
- On a telecommunications services level : electronic directory, bandwidth on request, help desk, website to obtain the bandwidth, services of the “centrex”⁸ type and “IP-Phone”⁹ in telephony also complement the range of services.

The availability of such an infrastructure, in addition to the advantages given above, must enable the development of new applications and new services such as loading backups

⁷ PubliLink is a telecommunications network for the exclusive use of public departments and is managed by Dexia Banque. In addition to access to banking services, this network provides access to data servers and electronic communications.

⁸ Centrex: instead of buying a private telephone exchange, the user can connect to a network box, which is directly connected to the general exchange.

⁹ IP-Phone : telephony connected to the information network. There is no telephone exchange, but a server instead.

remotely, the provision of reliable and powerful telematics terminals, video conferencing, or the transfer of high definition images between hospital sites.

The consolidation of regional users will also enable advantageous conditions to be envisaged for other services such as access to the Publilink services, the National Register or the Banque Carrefour.

The highly performant infrastructure will offer a portfolio of services such important that IRISnet will become an essential part of regional management.

Chapter 3.

The operating method

3.1. The principle of the framework agreement

The Government has opted to implement the IRISnet project by selecting a “strategic operator” under a public contract.

The role of the consortium IRISnet is to finance, construct and improve the regional network for ten years. In return it will be given a monopoly on the regional traffic during this period.

In order to minimise costs, it has been agreed that the Region will give the consortium the useful infrastructure it has : optical fibre cables (STIB and AED¹⁰ in the metro tunnels), reserve ducts and rights of way, equipment rooms in the regional infrastructure, etc.

At the start of the year 2000, the Government announced the award of the contract to the joint venture formed by the France-Telecom and Telindus companies. The framework agreement between the Region and the joint venture was signed on 28 April 2000. Telindus make the integration of the network, and the telephony services go through the national network of Mobistar, and the international network of France Telecom.

It is clear that the procedure involves very strict control mechanisms. In particular, the granting of a monopoly for ten years must be accompanied by competition mechanisms within the framework agreement.

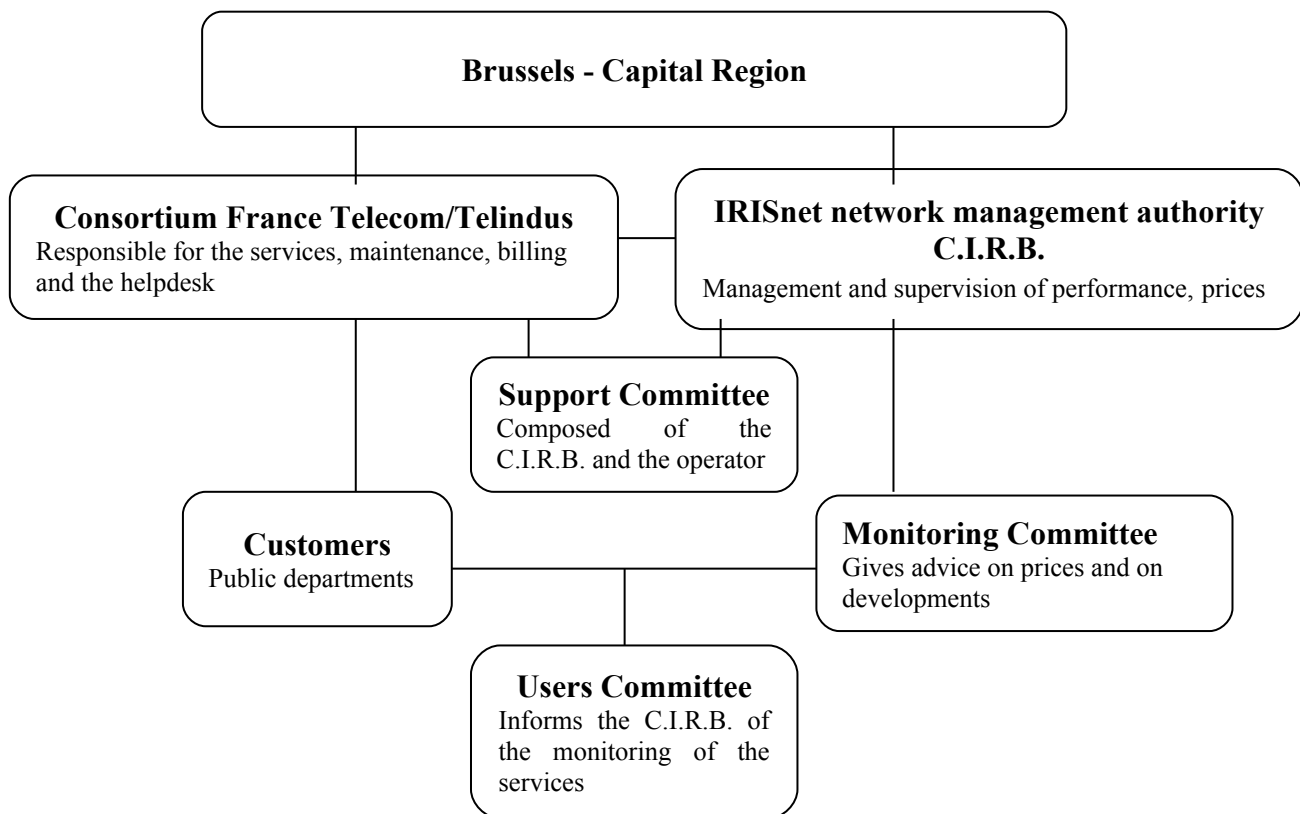
¹⁰ Administration de l'Équipement et des Déplacements (*Department of Amenities and Travel*)

The measures taken are as follows:

- "Price benchmarking"¹¹ accompanied by a mechanism for adjusting the price according to market levels has been provided, in order to guarantee users a price below the market.
- "Quality benchmarking " will also be implemented in order to supervise the "Service Level Agreement" (SLA)¹² required by the schedule of requirements.
- Finally, "technological benchmarking" should be organised in good time. It is wise to ensure that the network develops and will still be at the forefront of technology at the end of the 10 years, when the infrastructure becomes regional property.

As the Government has given the management of the entire project to the C.I.R.B., it is the one that will implement these different control measures.

3.2. Project organisation



¹¹ "Benchmarking" means that a comparative evaluation is regularly done to guarantee a certain price/quality ratio.

¹² See glossary

The C.I.R.B. is responsible for the overall management of the project. This telecommunications role has been given to the Centre of Information Technology by virtue of the authority granted to it by the Organic Order of 20 May 1999.

The main objectives of the framework agreement are:

- To enable the Brussels-Capital Region to have a telecommunications network for all of its inter-site communications which satisfy current and future needs at the lowest price.
- To provide the financing of an incentive programme for the development of regional telematics.

The management, guidance, supervision and monitoring of the implementation of the services have been given to the C.I.R.B., who will work together with a Monitoring Committee and a Support Committee. The C.I.R.B. may supervise the preparation and/or the implementation of the works, supplies and services in all locations.

The Support Committee consist of the C.I.R.B. and the consortium. Its purpose is to enable the parties to regularly meet in order to discuss the progress of the services, the identification of problems and their solutions. This collaboration is done in particular by a continual evaluation of the implementation of the services, and priority is given to the prevention and repair of incidents.

The role of the Monitoring Committee of the broadband telecommunications services is to advise the Government on a scale of charges for the services delivered and the validation of the investments required. In addition, it informs the Users Committee of all the decisions taken and takes into consideration the advice that the Users Committee brings to its attention.

The Users Committee represents the groups of regional entities and its role is to defend the interests of all users. This Committee gives advice on all issues relating to the performance of the framework agreement with the operator. This advice is sent to the Monitoring Committee.

The consortium IRISnet is responsible for the contacts with the customers of the network. The consortium manages the contracts with the users, the helpdesk and the billing. An Internet site will be available where the customers can consult their consumption and their updated bills “on-line”, in addition to the general information.

The users of the network are regional bodies (the Government, the Ministry and type A pararegional bodies), as well as public bodies located in the territory of the Brussels-Capital Region who have decided to use it, through a mandate entrusting the management of their telecommunications to the Government, as well as the local authorities (borough councils and CPAS).

The regional parliament, the community assemblies, the type B pararegional bodies, the “Sui Generis” regional bodies and hospitals are also users.

Ministerial Offices

Minister President
Employment and the Economy
Public Works and Transport
Environment
Finance and Budget
Regional planning
Civil Service
Housing

Pararegional Bodies

SIAMU
CIRB
IBGE
Bruxelles Propreté

Other Bodies

STIB
SDRB
SRIB
SLRB
Port of Brussels
ORBEM

PubliLink

Hospital Centre

Baron Lambert
Etterbeek/Ixelles
AZ VUB
Erasme
Bracops
Brugmann
Saint-Luc
Molière-Longchamps
Bordet
Saint-Pierre

Administrations of Ministries

Departments of the General Secretary
Administration of Local Authorities
Finance and Budget
Regional Planning
Economy and Employment
Amenities and Travel

Parliament

Community Assemblies

CoCoF – CCC - VGC

Borough councils and CPAS

Anderlecht
Auderghem
Berchem-Sainte-Agathe
Brussels City
Etterbeek
Evere
Forest
Ganshoren
Ixelles
Jette
Koekelberg
Molenbeek-St-Jean
Schaerbeek
Saint-Gilles
Saint-Josse-ten-Node
Uccle
Watermael-Boitsfort
Woluwé-St-Lambert
Woluwé-St-Pierre

5.1. Connection to IRISnet

How is it done ? Very easily. The user ends his contract with his existing operator and signs a new contract with the consortium IRISnet. Each institution is responsible for ending its own contracts.

On a practical level:

- Depending on the geographic location of the customer, the connection to the nearest point of the network will be determined. Each building must be connected by two independent links. And then in the building itself, the cabling has to be checked and installed, the telephone exchange has to be located, the processing centre and the network equipment has to be installed.
- The existing fixed telephone numbers are kept thanks to the portability of the numbers which is compulsory in Belgium. In this field it is the **Institut Belge des services Postaux et de Telecommunications (IBPT – Belgian Institute of Postal and Telecommunications Services)** who acts as the regulatory body. Created in 1991, its importance has grown with the gradual opening up to competition. The Institute is responsible for strategic assignments (authority for advice on the policy conducted in relation to telephones and telecommunications), regulations (development of Belgian regulations and transposition of European directives into Belgian law), operations (management of licences, approvals and frequencies), reconciliation (between operators) and supervision. The IBPT has general authority for advice regarding the policy conducted by the federal authorities in the sectors it is concerned with. It has a general monitoring and supervisory role on these markets. It also deals with the transposition of European directives, and in the area of telecommunications, the publication of standards, technical specifications, and European and international standards.
- Continuity of service: there is no interruption when switching from the old operator to the new one. The routing procedure from the old lines to the new IRISnet lines will be done in complete security. The old line will be kept while the new one is not yet operational. There is no installation charge for those who already have a telephone line, and no double billing.
- Change of GSM numbers: here, the operation does not present any problems either, except with regard to the numbers. The users will have to end their contracts in time, and inform their contacts of the changes to their mobile phones. For mobile telephony: in principle, an immediate switch over is possible but there will be an offer of interim prices for IRISnet members awaiting connection.
- Before coming into service, each user will sign a contract with the consortium IRISnet, then the bills will be sent directly.

5.2. Schedule

In October 2000, the phase 1 sites will be connected to the IRISnet network. In fact, it's about 25 places near the network's backbone. Then in November 2000, the phase 2 sites should also be there (the borough councils and hospitals).

And finally, the Region evaluates that the majority of the public players in Brussels will be connected during year 2001, in order to form a physical and logical entity, to one of the most powerful and original telecommunications networks.

Chapter 6.

Prices and service levels

6.1. Prices

The conditions of the contract stipulate that for these 10 years, the Region will enjoy reduced rates and clearly superior quality service levels to those available on the market.

The provision of a regional infrastructure (optical fibre in the metro tunnels, routes through reserve ducts, availability of suitable premises) is a deciding factor in determining the prices. Another important factor is the consolidation of all of the regional customers.

These prices will be revised regularly on the basis of a mechanism to adjust the prices to those of the market. In order to do this, an average price for the telecommunication operators in Brussels will be regularly calculated for each service.

The prices mentioned are those of the consortium sales prices. However, the Government has decided to allocate any gains from the IRISnet network to the telecommunications policy.

Two rates will apply:

1/ The IRISnet rate applied to the majority of regional users, ie. bodies not subject to the direct authority of the Brussels-Capital Region (type B pararegional bodies and hospitals) as well as the local authorities and the CPAS.

2/ A market rate (corresponding to the average market price) that the Government will decide to apply to bodies that belong directly to it, ie. the MRBC and the type A pararegional bodies.

This reasoning is based on the fact that the network is not an objective in itself, but the means of achieving regional objectives through the use of new technologies. The gains from the network for the bodies belonging directly to the Government will then finance the development of applications for using on the network.

6.2. The services

The quality of the service is of special importance. The negotiation of the framework agreement ended up in the realisation of the **SLA (Service Level Agreement)**. A certain level of service must be achieved, and penalties will be applied if this is not the case. The C.I.R.B. is responsible for implementing a series of control procedures.

The services specified in the schedule of requirements are in essence: the fixed telephony, mobile telephony and data transfer traffic.

The fixed telephony is done over PSTN lines (analogue line), ISDN BA (digital line enabling two communications simultaneously) or ISDN PRA (digital line enabling thirty communications simultaneously). Voice over IP and television over IP are also available.

The data transfer can be done via:

- Point-to-Point
- Frame relay (LAN to LAN)
- ATM (eg: videoconferencing)

The basic idea of the network is that it will be able to grow and develop technically. The infrastructure and technology used will enable this. The ATM¹³ provides a clearly superior transmission quality to other types of transfer. It is thus a very flexible system.

6.3. Examples

Fixed telephony services

There are various possibilities : PSTN type access (analogue), ISDN BA (digital in Basic Access, enables two communications simultaneously) and ISDN PRA (Primary Access, thirty communications simultaneously). A distinction is made between “intra-departmental” calls and calls to outside subscribers in Belgium and abroad or calls to mobiles phones. The charging is done by the second. There is an incompressible minimum of 3 minutes for the intra-departmental traffic and for the zonal traffic, and an incompressible minimum of 1 minute for the other types of traffic. The peak hours are from Monday to Friday, 08:00 to 18:00.

A service corresponds to each type of access, ie. a Basic, Premium or Gold service. The prices vary according to the chosen service. In the classical order of events, there is first of all the installation price, the monthly fee and the call charges.

If the deadline for providing a new connection is exceeded, there is a penalty mechanism:

- Basic service: free monthly fee for two months
- Premium service: free monthly fee for three months
- Gold service: free monthly fee for four months

¹³ See glossary

The Government will decide on the proposal of the CIRB, a price scale which will be communicated to the users and which will be subject to continual negotiation in relation to changes in market prices.

Mobile telephony service

This service of course supports calls to other mobile phones, calls to fixed phones and international calls.

In addition the following services are available:

- integrated voice mail
- call transfer if no reply
- call transfer if engaged
- option to have two SIM cards for a single number
- sending of short messages
- data transfer to portable PC
- fixed/mobile convergence
- the WAP¹⁴

And in time, the GPRS¹⁵ and UMTS¹⁶.

Charging is by the second with an incompressible minimum of one minute. The peak times are from Monday to Friday from 07:00 to 19:00. Calls to voice boxes are free. Here too, there is a guaranteed service level with penalties attached.

Data transfer service

Point-to-point connections

For these services, the user will have to contact the consortium IRISnet in order to have the right service for the right need. At the same time that the Basic, Premium and Gold services are associated with penalties.

Frame Relay

The same, with a small comment on the reliability and availability. These service qualities are calculated for each access and priority.

The ATM

Two types of connection: **CBR** (Constant Bit Rate) and **VBR** (Variable Bit Rate). The consortium must take the changes in the ATM standards into account.

¹⁴ Idem

¹⁵ See glossary

¹⁶ Universal Mobile Telecommunication Service is the third generation of mobile telecommunication.

7.1. Topology

In general, a network consists of a backbone, an access network, equipments for users and of nodes (or switches). The nodes are linked together by cables which form the backbone of the network. Users are connected to the closest node by cables which form the access network.

The network backbone is made up of optical fibres going through the STIB tunnels and are interconnected by ATM CISCO 8540 switches. IRISnet provides fixed telephony (voice over ATM, voice over IP, IP-Phone), mobile telephony, data (ATM, F/R, LL) and new multimedia technologies (IP/VC, IPTV) services. At the CIRB, the Tele Centre service continually monitors the network.

The robust architecture provides networking and automatic re-routing in the event of the failure of an active or passive component of the network.

The physical configuration of IRISnet enables any technological developments to be supported. All possibilities are allowed.

The next page shows the network topology and the equipment used. The fibre, the nodes and the main equipment of the network are represented there.

7.2. Equipment

The network uses voice, image (fixed or moving, for example in the form of video-conferencing or medical imaging) and data transfer technologies with dynamic management of the bandwidth in **Asynchronous Transfer Mode**.

Given the very rapid development of telematics and its applications, IRISnet has been equipped in relation to the following technological **options**:

- **Open**: respect of the standards defined by the international bodies and by the regulatory bodies such as the IBPT with regard to the interconnection standards.
- **Flexible**: in order to be able to systematically provide the service that corresponds precisely to needs.
- **Progressive**: in order to accommodate demands with regard to telecommunications needs and geographic cover.

Everyday, new technologies are further penetrating all spheres of economic and social life. The introduction and above all the control of these technologies are aspects that go hand in hand.

In Belgium, and particularly in Brussels, schools now have computer rooms, thus providing everyone with the opportunity to use a computer, to understand its operation and to connect to the information highways.

The regional Brussels departments have been fully equipped with computer equipment, as too have the local departments and the other players of the Region.

Today, Brussels has its own telecommunications network, and a new page is being written in a new chapter of its administrative history. Brussels is resolutely modern and oriented towards the future, and it provides itself with the means to be so, in particular by simplifying its means of communication. Simplification which, here, rhymes with optimisation.

The Capital of Europe is a player in its own future, quite deliberately so, and aims to provide its people with the best at the lowest price.

The European summit of the Heads of State and Governments in Lisbon on 24 March 2000 decided to start up a great project: to transform the old European continent into a leader of knowledge.

It is thus a new strategic objective for the Union with the aim of strengthening employment, economic reform and social cohesion in the framework of an economy based on knowledge. Europe wants *to become the most competitive and most dynamic knowledge economy in the world, capable of sustainable economic growth accompanied by a quantitative and qualitative improvement in employment and in greater social cohesion*¹⁷.

Objectives have been set and deadlines selected both for the transition to the digital economy and for the integration of information technology into education. The bet is that the new economy will be the engine of European development.

In terms of networks, it is planned to create a high speed transeuropean network by the end of 2001 linking research institutions, universities, scientific centres and, gradually, schools. The CIRB is anxious to be an integral part of this project for Brussels.

With regard to school establishments, we will have anticipated the European wishes as our multimedia plan will be completely deployed by the end of the year 2000.

The public departments at all levels must actually endeavour to profit from new technologies in order to enable as wide as possible access to information.

In addition, the Fifteen are betting on continuing training, mobility and the introduction of the idea of a European curriculum vitae. Education is an essential part of the revolution of the

¹⁷ Conclusions of the Presidency of the European Council of Lisbon, 23 and 24 March 2000.

Internet where it is a case of acquiring new basic skills in information technologies, foreign languages and technological (even digital) cultures.

The very rapid development of technology requires continuous information for the network players and reflection on the new possibilities resulting from it for the users. That is the idea of monitoring technological developments, which is also a role of the C.I.R.B.

Tomorrow, who knows what the information society will have in store for us?

The Centre of Information Technology intends maintaining its competence in mastering technologies linked to information technology, both technically and legally. It is in fact a great adventure which starts with the IRISnet network, among other realisations, but which has been thought out and marked out overall. What can happen then can only be positive and in relation to a certain quality of life.

The enlargement of the membership of the network is a question that has already been raised. Then, in ten years time – ten years is a long time in this field ! -, the Region will have its own infrastructure, the operation of which it can contract out, or it can operate it on its own behalf.

Chapter 9.

Conclusion

By giving the Centre of Information Technology for the Region of Brussels the management and supervision of the IRISnet network, the Government of the Brussels-Capital Region has given itself the means to verify the good performance of the framework agreement for the regional telecommunications network with the France-Télécom/Telindus joint venture.

The embodiment of the role of the C.I.R.B., confirmed by the Government decision of 27 April 2000 which was translated into a ministerial circular of the Minister-President of 9 May 2000, will enable the Centre to provide the administrative and financial management of the framework agreement, to guarantee supervision of the implementation of the service covered by this agreement, to be the interface between the users and the consortium IRISnet, to establish a proposed pricing scale that the Government will have to approve, and to supervise and validate the level of investment realised by the consortium.

In addition, the C.I.R.B. has three strategic roles:

- An authority and direction role which allows the Centre to make recommendations for encouraging the development of the working methods of the public bodies and providers of these technologies.
- A promotion role which enables the Centre to be, on behalf of the Government, a promoter and shop window for new information and communication technologies.
- An observation role for the foundation of these first two roles, which require the Centre to have a profound knowledge and to continually observe technical, socio-economic and legal developments in this respect, including comparisons with other Regions and member states of the European Union.

Finally, in this respect the Government has also given the Centre the role of filtering the addresses to ensure the operation of the proxy servers¹⁸ and, more generally, the management of firewalls¹⁹. The Centre of Information Technology has taken on responsibilities linked to the recognition at a regional level of the electronic signature and, with regard to the federal law, it accredits the general and local civil servants who have an electronic signature.

All this will enable the legitimate requirements of people to be met with regard to simplifying access to public departments and having better access to public information and greater transparency in the actions of public departments. In fact, the new technologies, and in particular the implementation of the IRISnet network, are not only new technical tools, but they will induce real change in the way public departments operate.

These technologies, which are based on transverse contacts and networks, may have the effect of destabilising the traditional administrative model, as such technologies appear to be out of step with a too tightly strung organisational relationship or with too much partitioning of departments and directorates. But they can also be a lever for renovating the way the department acts by working on its reactivity and transparency.

However, information technologies can only be fully utilised, and be a vector of modernisation instead of a seed of destabilisation, if the changes of standards that they imply are adopted to their fullest extent.

Public administration by networks is not just an extension of the computerisation initiatives led by the Government of Brussels-Capital Region since 1989, both at a local level and a regional level. It must be a strategic project that can only succeed if it has the means to do so by revising both service organisations and management methods.

It is the responsibility of the general civil servants of the local and regional departments to propose that their policy bodies set public service objectives and show how the information and communication technologies can help modernise the operation of the public service. The C.I.R.B. can help them.

There also has to be thinking on the social consequences of the developments in progress, such as teleworking, the emergence of which is going to overturn the idea of contracts of employment.

It is also the awareness of the need to enter into a world market for knowledge, where more and more activities are done by means of electronic transmission. By adopting this logic, the Brussels-Capital Region will enter the new network economy as a winner.

¹⁸ See glossary

¹⁹ Idem

GLOSSARY

- ATM

ATM (Asynchronous Transfer Mode) is a communications technique enabling both voice and data to be transferred. Used in the IRISnet, it enables voice data and image transmission on a single physical medium. It is a true multimedia technique oriented towards the future.

The main characteristic of ATM is to transfer data at a fixed or variable rate, which sometimes can be very high. The speed selected for the IRISnet is 622 Mbits/sec in the links between the nodes, and 155 Mbits/sec to the user. While this speed can be technically achieved, IRISnet only provides the rate required by the user so that the costs are not burdened with pointless resources.

In order to achieve such speeds, two technologies are used: fibre optics and switches. Transmission is over optical fibres linking high speed switches. These switches have been designed to rapidly “direct” short messages called cells.

Asynchronous Transfer Mode is a connection technology that arranges digital data into 53 byte cells, and transmits them over a physical medium by using digital signal technology. Individually, a cell is processed asynchronously and is put in a holding queue before being multiplexed over the transmission path.

ATM enables much higher data processing and transmission speeds because it can be more easily implemented on hardware.

- Backbone

The backbone is the spinal column of a network, to which are attached the sides and various limbs of the body formed by the network. If one of the sides fails, the others do not suffer the consequences.

In practice, the backbone of the IRISnet network is made up of optical fibres through the tunnels of the STIB and are interconnected by ATM CISCO 8540 switches.

- Broadband network

Simplified in the extreme, a broadband network provides the possibility to use bandwidth on request. It is comparing a narrow country road full of potholes to a wide and flat motorway. The undoubted beauty of the country road is indeed pleasant, but you have to drive slowly, avoid the holes, and lorries are difficult to get past. The benefit of the motorway is clear: those who have to go from one point to another quickly can use it, and the widest and heaviest lorries do not disrupt the rest of the traffic, as the road is wide. However, a motorway costs more to build than a country road.

In the broadband network of Brussels, the motorway already exists, the surface is excellent, and so is the lighting. All its lacks are the road signs (the “nodes”) and some fittings for a telecommunications network. In addition, one specific important aspect means that each motorway user only pays for the bandwidth he actually uses. This is the network card. The prices differ according to the vehicle used : a scooter (eg: a telephone), a car (eg: data) a lorry (eg: video-conferencing) will only pay for their portion of bandwidth and only while occupying the said band.

And to close, the right of way only actually concerns the use of the band, as the price has already been deducted from the depreciation and costs of the construction of the motorway.

- **CPE**

Customer Premise Equipment is the equipment which acts as the interface between the customer and the network. It is physically located on the customer's premises.

This equipment enables the connection of telephony, the transmission of data and possibly other features.

- **Firewall**

A firewall is a package of programmes, generally located on a server, which protects the resources of an internal network with respect to the users of another network. This also implies an internal security policy, used in combination with the firewall. This firewall also protects what comes into an internal network (an intranet) and what goes out of it, by filtering the packets before having them monitored. In general, the firewall is installed on a machine separate from the network.

- **Frame Relay**

The frame relay is a means of telecommunications designed for data transmission on a local network (LAN) and enters the points of a wider network (WAN). The frame relay places the data into a unit called a frame and sends them to their destination.

- **GPRS (General Packet Radio Service)**

This service forms part of the development of data transmission services in the mobile domain. GPRS supports IP and X25 protocols and is the first implementation of packet transmission under the GSM standard.

- **IP**

The Internet Protocol (IP) is the method or protocol used for sending data from one computer to another on the Internet. The Internet Protocol divides the information to be sent into packets. A header, containing information relating to the address, is attached to each packet. Each packet is then "routed" separately to its destination.

To recover it in the world wide web, each machine has a unique address to identify it. In view of the growing size and number of Internet subscribers, IP addresses are starting to become rare. It is thus in the concern for economy that it is possible to allocate a single IP address to a company with 200 employees. Within the company, on the intranet, each employee connects with "false" IP addresses, and goes through the gateway of the company to "come out" onto the Internet. They all then get the IP of the company. This has its advantages: it is more secure with respect to everything that goes out and comes in, and filters can be installed. And that also provides more tracability on the Internet.

- **Leased line**

This is a line that is permanently available to the user.

- **Proxy server**

In a company that has access to the Internet, a proxy server is a server that acts as an intermediary between the computer and an Internet user, such that the company can ensure the security and administrative supervision of what goes on the Web. A proxy server is often associated with a gateway (exit door) and/or a firewall which protects the company network from any outside intrusion. In parallel to this, a proxy also saves on the bandwidth used by the company. In fact, if one or more users regularly visit the same website, the proxy keeps the pages of that site in its cache memory and thus takes less time to load them. This avoids the machine having to send requests on the world network, and also reduces traffic. In addition, if a user wants to go to an unknown site, thus one that is not in the cache, the proxy will execute the request itself, with its own IP address, and send the user the reply received. Thus in actual fact it is not the user who goes on the Internet, but the proxy.

- **PVC**

A **Permanent Virtual Circuit** is a piece of software that enables a logical connection in a Frame Relay network. An essential aspect is that the network manager can define logical connections and request bandwidths between different points, thus leaving the Frame Relay network technology to deal with the physical management of the band and the traffic. It is a similar concept to a leased line in an ATM network.

- **SVC**

This is the abbreviation for **Switched Virtual Channel**, which is a similar concept to the switched line in an ATM network.

- **Switch**

A telecommunications network is a connected network, ie. specific entities transmit the messages from point to point. These entities are called nodes or switches.

In telecommunications, a switch is a network device that selects a path or circuit for sending a unit of data to a destination. A switch can also act as a router, which is a device for determining a route, and in particular the place after the network that the data have to be sent to. In general, a switch is simpler and faster than a router.

Referring to the **OSI (Open Systems Interconnection)** communications model, a switch is associated with layer 2, the layer of the data links. However, certain recent switches are also able to use layer 3, that of the network, which has routing functions.

The nodes are linked together by different paths, always guaranteeing a route, even if one of these paths fail.

- **Switched line**

This is a line that is established on request by dialling a number. Switched technology, or packet switching, only uses the network when there are data to be sent, instead of sending a continuous flow of data over a permanent link.

- **Voice over IP**

The majority of voice signals are usually transported by switched media. The use of the Internet Protocol divides the voice into packets where each packet is sent separately. Advantage: the total bandwidth can be reduced as no signal is sent when the user is not speaking.

- **WAP (Wireless Application Protocol)**

The WAP specification enables the user of a mobile telephone to more easily access information and interactive services instantaneously, but on condition that the mobile has the WAP module. Nokia and Ericsson developed this global standard. In order to enable users to connect in with mobile phones fitted with the WAP module, the mobile networks have to be connected to the Internet.

List of earlier booklets

- Booklet n° 1 Information notice on the use of the BULLETIN BOARD SYSTEM of the Centre of Information Technology for the Region of Brussels.
- Booklet n° 2 The processing of data of a personal nature and the protection of private life by the Act of 8 December 1992.
- Booklet n° 3 Telematics and Multimedia Activities.
- Booklet n° 4 Digital cartography - Brussels UrbIS®©.
- Booklet n° 5 Information notice on the dissemination of the Internet by the C.I.R.B. in the local and regional public departments.
- Booklet n° 6 Catalogue of users of Brussels UrbIS®©.
- Booklet n° 7 Administrative Telematics Services for citizens in the Brussels-Capital Region.
- Booklet n° 8 Implementation of the Multi-year Information Technology Plan.
- Booklet n° 9 Development of the Three Year Plan for the realisation of the incentive programme for the optimum use of the wideband network among the public bodies of the Brussels-Capital Region.
- Booklet n° 10 Multimedia Plan for the secondary establishments of the Brussels-Capital Region
- Booklet n° 11 The Services available from the Centre of Telematics Services of the C.I.R.B. for the Internet or dedicated networks.
- Booklet n° 12 Catalogue of Brussels UrbIS products
- Booklet n° 13 Multimedia Plan for the primary establishments of the Region of Brussels – Capital
- Booklet n° 14 The practical guide to Linux for decision makers
- Booklet n° 15 Development of the Three Year Plan for the realisation of the incentive programme for the optimum use of the IRISnet network among the public bodies of the Brussels-Capital Region

These booklets are also available from the C.I.R.B. site.

<http://www.cirb.irisnet.be>