PARITÀ DI ACCESSO

Organo di Vigilanza

2013 Annual Report

2012 ACTIVITIES AND RESULTS

TELECOM ITALIA

Contents

This Report has been prepared in accordance with the provisions of Undertakings Group No. 7, proposed by Telecom Italia S.p.A. and approved with AGCom Resolution no. 718/08/CONS of the National Regulatory Authority for Communications (AGCom). The assessments made in this Report take into account information and data received by the Supervisory Board by 31 January 2012, in accordance with AGCom Resolution no. 718/08/CONS.

1 Executive Summary

In 2012, the Supervisory Board focused in particular on equality of treatment and transparency of information. More generally, auditing focused on various priority issues, as determined on the basis of feedback received from other licensed Operators and the experience gained in the field.

This work resulted in a number of investigations and examinations of some of the more delicate and complex aspects of the Telecom Italia Undertakings, which are summarized here and detailed later on in this report.

As concerns the New Delivery Process, a much broader time horizon will be needed to appreciate the effective improvements it will bring to the overall efficiency of the system. Nonetheless, the Supervisory Board audited the performance of the single queue mechanism in the management systems developed by Telecom Italia, through field inspections and also by requesting information from other licensed Operators.

An assessment of the Telecom Italia management incentive system and its alignment with the specific contents of the Undertakings enabled changes and corrections to be made to some of the original objectives assigned to management. This initiative illustrates the good working relationship and constructive collaboration that exists between the Supervisory Board and Telecom Italia.

Checks confirmed the continued delivery of training to Telecom Italia staff on the issues addressed by the Undertakings and, more generally, on the equality of treatment policy.

The Supervisory Board also monitored the reorganization of Open Access and the Wholesale department, aimed at strengthening guarantees of equality of treatment between external and internal entities.

Developments in the content of technical plans for the quality of the fixed access network continued to be monitored.

Specifically, the Supervisory Board focused its attention on multi-year and quarterly technical plans for the development of the next generation fixed access network, following Telecom Italia's decision to adopt a fibre-to-the-cabinet (FTTCab) architecture, as announced in the 2012-2014 Multi-Year Technical Plan.

The Supervisory Board invited Telecom Italia to reconsider the planning process for these network development activities and provide additional details to the information provided in the NGAN-FTTCab technical plans examined, to be disclosed to the market when quarterly plans are prepared. Telecom Italia was also asked to release new data, over and above what is already available to other licensed Operators and the Telecom Italia Retail department. The requests were made with a view to facilitating development of the market as much as possible and ensuring the greatest transparency of information.

Investigations into the complaint received from Welcome Italia *"S01/12 - Welcome Italia/Report of serious disruption due to general failures and poor quality of bitstream services - Implementation of Undertakings Group No. 5 relating to the guarantees of transparency of technical plans for the quality of the fixed access network"* found that Telecom

Italia had not breached its Undertakings. Nonetheless, the opportunity was taken to verify the quality levels of Telecom Italia services in practice, particularly with regard to the transparency of information provided to other licensed Operators, with a view to ensuring that the objectives of Undertakings Group No. 5 are met.

During the year, the Supervisory Board met regularly with the National Regulatory Authority for Communications (AGCom) to identify issues for joint development. Of note, in particular, was the hearing held on 19 September 2012, at which the Supervisory Board informed the AGCom Board that the term of office of its members was due to end on 30 September 2012.

In August 2012, the Supervisory Board was summoned to testify before the Italian Competition Authority (AGCM) in relation to Antitrust Case A428, brought against Telecom Italia in 2010, concerning refusals to process work orders ("KOs"). At the hearing, the Supervisory Board provided the information and clarification required, in relation to its own investigation of the matter.

Regular meetings continued to be held with Telecom Italia to discuss issues connected with the various Undertakings Groups, and with other licensed Operators, in addition to the exchange of correspondence in connection with investigations underway.

As specifically concerns the dealings with other licensed Operators, the new Supervisory Board, in its inaugural address on 4 December 2012, underlined its belief in the benefits of working with OLOs in order to fulfil its responsibility to act more effectively and decisively in the general interest. Accordingly, it will be planning a series of meetings with OLOs to hear and receive their complaints, assessments and suggestions on the implementation of Undertakings.

2 Network governance and the work of the Supervisory Board

The Supervisory Board was established on 1 April 2009 in accordance with the Undertakings submitted by Telecom Italia pursuant to Law 248/06 and approved by the National Regulatory Authority for Communications (AGCom) through Resolution No. 718/08/Cons.
The new Board - composed of the Chair Prof. Antonio Sassano and the Members Prof. Marco Lamandini and Prof. Michele Polo - took office on 1 December 2012.

Antonio Sassano
Full Professor of Operations Research at the University of Rome "La Sapienza", Antonio Sassano has carried out research in the areas of combinatorial optimization and network design. He has served as chairman of the Italian Interuniversity Center for Operations Research (CIRO) and as editor of the journal "Mathematical Programming". He has been a consultant to the Italian National Regulatory Authority for Communications (AGCom), the Italian Competition Authority and the Italian Ministry for the Economy and Finance, on matters relating to electromagnetic spectrum planning. Previously he was General Director of the "Ugo Bordoni" Foundation and a member of the Board of the Italian Space Agency (ASI). He was one of the Italian Government's advisors on auction procedures for GSM and UMTS licenses and is a member of the Advisory Board of the Florence School of Regulation (European University Institute).

Marco Lamandini
Marco Lamandini has been Full Professor of Commercial Law at the University of Bologna's Faculty of Economics since 2001. He has written extensively on corporate, banking and antitrust law and on financial markets. He is co-editor of the "RDS-Rivista di Diritto Societario Interno, Internazionale, Comunitario e Comparato" and the "European Company Law Review". He is also on the editorial board of "Giurisprudenza Commerciale", "Banca, Borsa e Titoli di Credito" and "Il diritto industriale". Since 2002 he has served as a High-Level Expert for the European Parliament on European Securities, Banking and Company Law. He has consulted for Argentina's Ministry for the Economy under an international cooperation programme funded by the Italian Ministry for Foreign Affairs. He acted as legal advisor to the Monitoring Trustee of Alitalia, appointed by the European Commission. Since December 2012 he has served on the appeal boards of the three European financial supervisory authorities. Since 1992 he has been a qualified lawyer specializing in corporate, banking, securities and antitrust law.

Michele Polo
Michele Polo is Full Professor in Political Economy and ENI Chair in Energy Markets at Università Bocconi. He gained his undergraduate degree from Università Bocconi before undertaking postgraduate study at the London School of Economics and at Bocconi. His research interests are focused on industrial organization, antitrust and regulation, energy economics, and network industries. He has published numerous books and articles in international journals. He was a member of the Economic Advisory Group on Competition Policy at the DG Competition of the European Commission. He is the director of the Centre for Research on Energy and Environmental Economics and Policy (IEFE) at Università Bocconi.

General Secretary of the Supervisory Board

The General Secretary of the Supervisory Board is Fabrizio Dalle Nogare, appointed by Telecom Italia with the approval of AGCom. The General Secretary supports and coordinates the activities of the Supervisory Board, helping to plan its operations and providing assistance to the Chairman. He ensures that the Supervisory Board is kept informed of all relevant information and liaises with the Supervisory Office in carrying out his role.

The Supervisory Office

The Supervisory Office, headed by Luca Regoli, supports the Supervisory Board in fulfilling its role; it provides operating support, and, where requested or instructed by the Board, carries out preparatory and collateral tasks for dealing with reports and complaints. The Supervisory Office is made up of: Marco De Grandis (responsible for technical issues); Alessandro Mauro (responsible for economic issues); Mario Volpari (responsible for legal issues); and Diana Stefani (secretary).

The Supervisory Board

The Supervisory Board acts with full autonomy and independence and is tasked with overseeing the correct implementation of the Undertakings. Acting on its own initiative or following reports from third parties, it verifies whether the Undertakings have been breached. It then reports its findings to the National Regulatory Authority for Communications (AGCom) and Telecom Italia's Board of Directors in accordance with the procedures and time frames set forth in its Internal Regulation, gathering the required information and data from all Telecom Italia departments involved in the process.

Members of the Supervisory Board remain in office for three years. In 2012 the term of office of the previous Board, chaired by Prof. Giulio Napolitano, came to an end and on 1 December 2012 the new three-member Board took office.
The Chair of the Board is Prof. Antonio Sassano, who was appointed by the Board of Directors of Telecom Italia together with the other members of the Board: Prof. Marco Lamandini (selected by AGCom) and Prof. Michele Polo (selected by Telecom Italia).
The Board meets at least once a month and is required to send AGCom and Telecom Italia a quarterly report on its activities. This report must focus in particular on irregularities reported and deficiencies found, any inquiries opened, and cases of activation of unrequested services. The Board also submits an annual report on its activities and results to AGCom and Telecom Italia.

The Supervisory Board is supported in its work by the General Secretary (Fabrizio Dalle Nogare) and the Supervisory Office. It has its own annual budget, within the limits set by Telecom Italia in accordance with the minimum threshold established in Resolution No. 718/08/CONS.
The Supervisory Board verifies the correct implementation of the Undertakings and, in the course of its activities, adopts Resolutions and Recommendations designed to promote greater compliance by Telecom Italia with those Undertakings.

It also receives complaints from Operators regarding alleged breaches by Telecom Italia. If Telecom Italia fails to remedy any confirmed breaches in accordance with the deadlines and procedures established, the Supervisory Board reports this to AGCom and the Board of Directors of Telecom Italia.

In accordance with the transparency requirements set forth in Article 21 of its Internal Regulation, a specific Supervisory Board website (http://organodivigilanza.telecomitalia.it/eng/index.shtml) has been created to give all interested parties access to information regarding: i) the Board's role and mandate; ii) the composition of the Board; iii) the procedures and methods for reporting and handling complaints; and iv) the content of Resolutions and Recommendations.

In addition to the information described above, the site also contains press releases summarizing the decisions taken by the Supervisory Board, which help to make the work of the Board accessible to the market and all other interested parties.

THE GOVERNANCE OF THE SUPERVISORY BOARD

OPEN ACCESS

In February 2008, Telecom Italia reorganised its management structures, creating within the Technology & Operations Department a new Department of Open Access, whose purpose is to deal with the following issues with the emphasis on efficiency, quality and equality of treatment:

- all development and maintenance of the technological infrastructures for the access network;
- the supply of access services for the customers both of Telecom Italia and of the other Operators and the relevant technical assistance.

The creation of Open Access and the consequent internal reorganisation represent the foundation that formed the basis of the negotiation with AGCom, which concluded with the approval of the Undertakings.

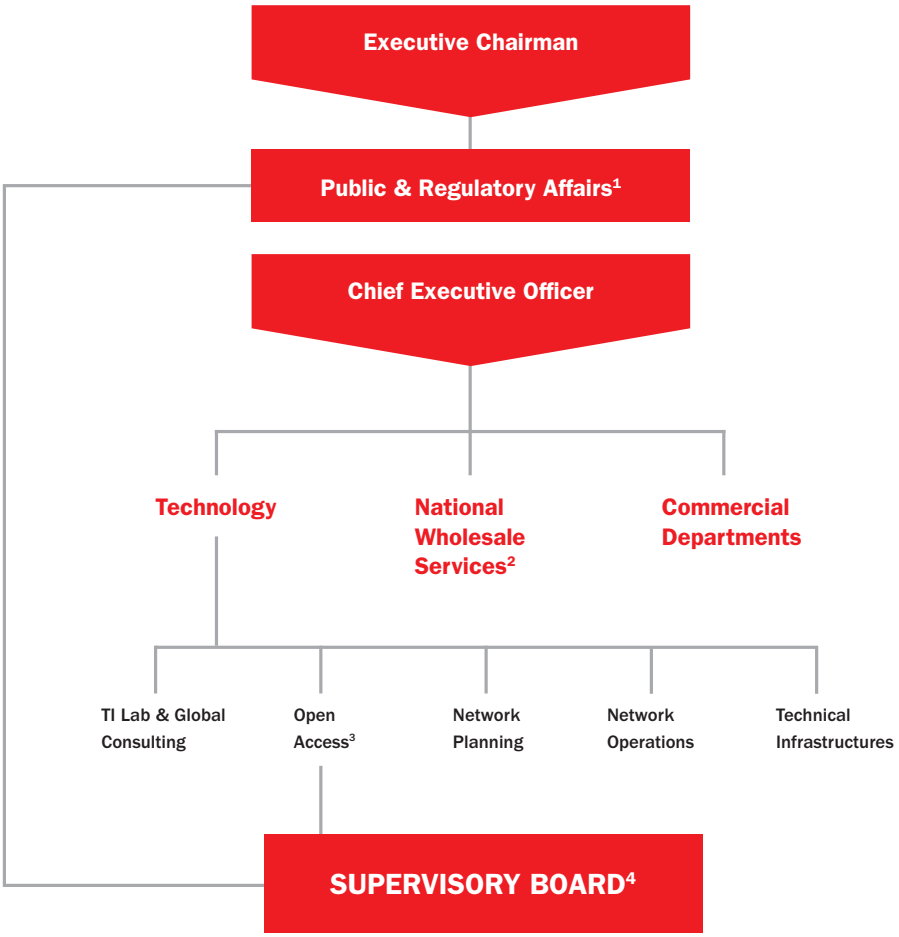
Open Access provides its access services to the Retail Sales department of Telecom Italia and to the other licensed Operators through the National Wholesale Services department, which is the main reference point for Operators for dealing with commercial and technical requirements (from the offer, to planning, sales, technical assistance and billing) relating both to access services provided by Open Access and to other wholesale services.

The Open Access model is characterised by the supply of services in terms of “Equivalence of Outputs” (EOO), on the basis of which the services offered to the commercial departments of Telecom Italia and to the other licensed Operators respect the principle of equality of treatment, but are not necessarily identical.

The solution adopted was to specify that Telecom Italia’s Retail department deals directly with Open Access, while the OLOs deal with TI Wholesale. In this regard, it should be noted that in April 2012, on the occasion of a broader corporate reorganization, the Service Management departments (including Delivery and Assurance Operations) of the National Wholesale Services were transferred to Open Access.

The activities of Open Access and National Wholesale Services, for the production of access services, are separate from the other commercial departments of Telecom Italia and managed independently. Telecom Italia is organised according to the diagram shown below, which shows a direct hierarchical structure whereby the managers in charge of Technology & National Wholesale Services report directly to the CEO and the manager in charge of Public and Regulatory Affairs report directly to the Executive Chairman. Open Access reports directly to the director of Technology; the department of Technology also includes the TI Lab & Global Consulting, Network Planning, Network Operations and Technical Infrastructures departments.

THE GOVERNANCE OF TELECOM ITALIA



1 The manager of the Public & Regulatory Affairs Department reports to the Executive Chairman of the Telecom Italia Group

2 The manager of the National Wholesale Services Department reports to the Chief Executive Officer of the Telecom Italia Group

3 The manager of Open Access reports to the manager of the Technology Department

4 In case of reports and complaints, the Supervisory Board can gather information from Open Access and interact with the Public & Regulatory Affairs Department

3 Developments in the national regulatory framework

NATIONAL REGULATORY FRAMEWORK

This chapter provides an overview of legislative reforms and key regulatory developments concerning electronic communications introduced in 2012.

Legislative reforms were introduced by Legislative Decree No. 70 of 28 May 2012, amending the Electronic Communications Code (Legislative Decree No. 259 of 1 August 2003) in implementation of EU Directive 2009/140/EC on electronic communications networks and services, and EU Directive 2009/136/EC concerning the processing of personal data and the protection of privacy.

The main reforms introduced are summarized below:

- In general, the European Commission, aided by the Body of European Regulators for Electronic Communications (BEREC), will have the power of veto in procedures for the identification and definition of relevant nationwide markets and the designation of an Operator as having "significant market power". The Commission will also play a larger role in the identification of the remedies that can be applied by the regulatory Authorities of individual member states;

- As concerns radio spectrum management, the principle of service neutrality has been introduced. Alongside the principle of technology neutrality, already enshrined in legislation, the principle of service neutrality permits licensed spectrum users to use any technology and offer any service they wish, in conformity with spectrum allocation plans at national level and in accordance with the principles of efficient spectrum use and compatibility with existing technologies and services;

- The security and integrity of publicly available electronic communications networks are to be strengthened and protected through appropriate technical and organizational measures and the exercise of effective powers of control;

- A new remedy has been introduced (functional separation of the access network), which the regulatory Authority can impose as an exceptional measure, if traditional remedies fail to achieve effective market competition;

- As regards universal service, the obligation to provide a public subscriber directory has been removed and location requirements for public pay phones have been overhauled. For access and voice services, the new regulations provide for the possibility of separating the obligation to provide physical network connection from the obligation to provide "commercial" access and voice services;

- To optimize service quality, traffic management measures, designed to prevent network saturation, may be applied, on condition that customers are duly informed in advance;

- With regard to in-building wiring, regulatory Authorities may impose symmetrical obligations requiring facilities located in buildings to be shared.

Turning to the regulatory activities of the National Regulatory Authority for Communications (AGCom), on 11 January 2012, Resolution No. 1/12/CONS was adopted, approving final provisions governing access services to next generation networks (NGN).
The new rules conclude the procedures initiated under Resolution No. 731/09/CONS, Resolution No. 1/11/CONS and Resolution No. 301/11/CONS, and in general introduce the requirements detailed below.

Within two months of the entry into force of the Resolution, Telecom Italia is required to submit a Reference Offer for passive services, such as the "end-to-end service" (unbundled access to compatible fibre with the current network architecture of the incumbent), its individual building blocks and access to civil works (such as cable ducting), and for active services, such as fibre bitstream, offered at various network levels, as well as the innovative virtual unbundled local access (VULA) service supplied directly in the exchange.

At the same time, the Resolution provides for the start of procedures needed to establish regulations for advanced VDSL technologies (vectoring and bonding), determine whether symmetrical obligations for access to infrastructure are required, set the risk premium, and, more generally, price these services.

The new rules applicable to services and next generation networks affect the current terms of the Telecom Italia Undertakings, whose scope includes intermediate access services provided over next generation networks; AGCom has designated Telecom Italia as the Operator with significant market power (SMP) with regard to NGNs, in accordance with point 9.4 of the Undertakings.

Accordingly, given that the matters addressed by point 9.4 fall within the scope of the provisions of Resolution No. 1/12/CONS, on 18 January 2012 the Supervisory Board adopted its own Resolution No. 3/2012 launching an initial analysis and assessment of the issue. In July 2012, Telecom Italia submitted a proposal to AGCom outlining a new equivalence model for the next generation access network (NGAN), which considers Undertakings Groups Nos. 1, 2, 3, 4, 5, 6, 7 and 8 to be fully applicable.

Focusing on the rules governing next generation networks, and along the lines set forth in Resolution No. 1/12/CONS, in January 2012 AGCom launched the following procedures:

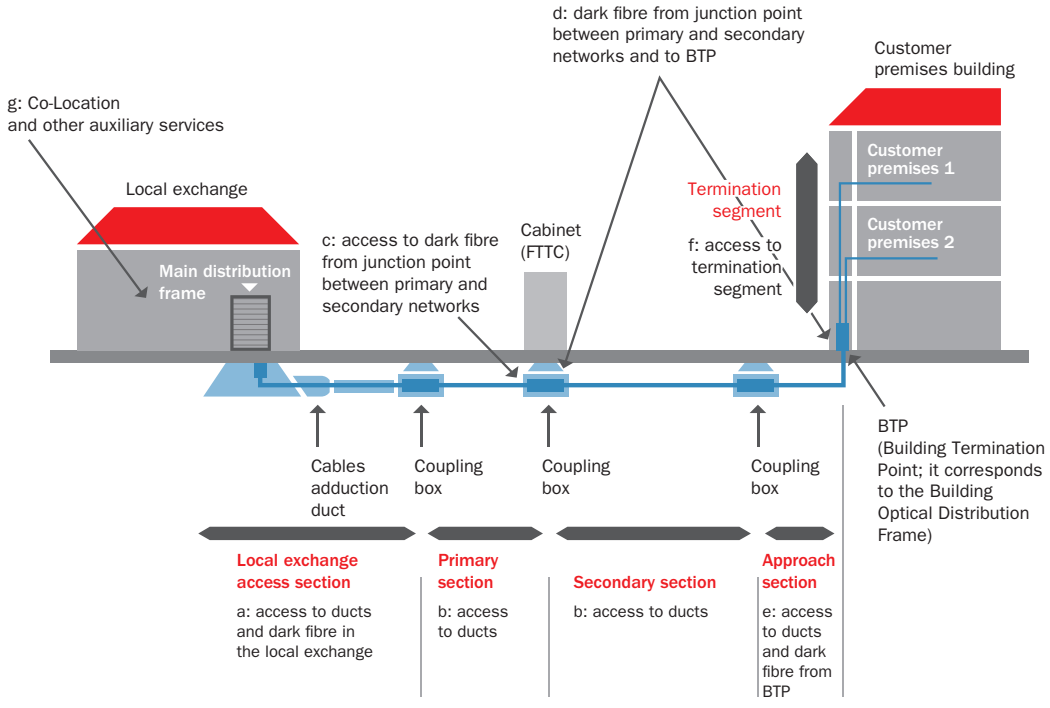
i. Procedure for the identification of a cost model for pricing wholesale access services for the Telecom Italia fibre network - Resolution No. 41/12/CONS;
ii. Procedure for assessing the regulatory impact of the introduction of new transmission techniques, such as vectoring, in the development of next generation networks - Resolution No. 42/12/CONS;
iii. Procedure for assessing whether conditions exist for the introduction of symmetrical obligations on access to physical network infrastructure - Resolution No. 43/12/CONS.

In October and November 2012, AGCom initiated three public consultations through Resolutions No. 95/12/CIR, No. 105/12/CIR, and No. 114/12/CIR on the Reference Offer released by Telecom Italia in March 2012, in accordance with the provisions of Resolution No. 1/12/CONS.

The three consultations concern:

i. The 2012 Reference Offer for NGA bitstream services, the VULA service and related accessory services;
ii. The 2012 Reference Offer for NGAN access services (cabling infrastructure, approach sections, primary and secondary optic fibre, and optic fibre termination segments);
iii. The 2012 Reference Offer for the end-to-end NGAN access service.

The NGAN infrastructure model, as defined in Resolution No. 1/12/CONS, is illustrated in detail in the diagram below.



NGAN infrastructure model, as defined in Resolution No. 1/12/CONS

With regard to services offered on the copper network, AGCom adopted the following provisions:

i. Resolution No. 67/12/CONS, setting universal service quality objectives for 2012;
ii. Resolution No. 37/12/CONS, approving prices for services subject to network caps, quoted in the Telecom Italia 2012 Reference Offer for bitstream services;
iii. Resolution No. 36/11/CONS, approving prices for services subject to network caps, quoted in the Telecom Italia 2012 Reference Offer for wholesale unbundled access services to metallic loops and sub-loops;
iv. Resolution No. 51/12/CONS, approving the Telecom Italia 2012 Reference Offer for dedicated-capacity transmission services (terminating circuits, interconnection flows and exchange connections);
v. Resolution No. 390/12/CONS, initiating a procedure for the identification and analysis of fixed network access service markets (markets 1, 4 and 5 of Commission Recommendation 2007/879/EC);
vi. Resolution No. 476/12/CONS, instructing Telecom Italia to apply, on a provisional basis from 1 January 2013 until the conclusion of the market analysis procedure initiated by Resolution No. 390/12/CONS, the financial conditions in the approved 2012 Reference Offers for wholesale access services for the copper network (unbundled access, bitstream access and wholesale line rental services) subject to network caps, unless otherwise instructed on the basis of provisions adopted once the public consultations launched on 11 January 2013 by Resolution No. 642/12/CONS and Resolution No. 141/12/CIR have closed;
vii. Resolution No. 92/12/CIR, approving the Telecom Italia 2012 Reference Offer for call origination, termination and transit services over the fixed public telephone network, and setting the financial conditions for fixed network number portability;
viii. Resolution No. 93/12/CONS, approving prices for services subject to cost orientation, quoted in the Telecom Italia 2012 Reference Offer for wholesale unbundled access services for metallic loops and sub-loops and collocation services;
ix. Resolution No. 94/12/CONS, approving prices for services subject to cost orientation, quoted in the Telecom Italia 2012 Reference Offer for bitstream services; this Resolution also contains provisions for governing the end of sale of ATM technology.

On 20 December 2012, AGCom's Board adopted a number of important decisions affecting wholesale prices for fixed network services relating to access and telephone traffic.
With regard to telephone traffic, prices were set for origination, termination and transit services using IP technology. For services using "traditional" TDM technology, on the other hand, AGCom decided to continue ex-ante regulation of the market throughout 2013, and on 23 January 2013 adopted Resolution No. 12/13/CONS launching a specific public consultation on the matter.

For wholesale access services for the fixed network, AGCom approved the WLR monthly subscription charge for 2012, and on 11 January 2013 approved Resolution No. 642/12/CONS and Resolution No. 141/12/CIR launching two public consultations on the technical and financial conditions of WLR and bitstream prices for 2013.

Finally, we recall that towards the end of 2011 AGCom adopted Resolution No. 600/11/CONS, assessing supervisory

checks on the implementation of Telecom Italia Undertakings, approved by Resolution No. 718/08/CONS, and ordering the dismissal of sanctions against Telecom Italia, taken in proceedings Nos. 4/07/DIR, 63/07/DIR, 1/08/DIR, 2/08/DIR, 2/08/DIT, 3/08/DIT and 7/08/DIT, suspended by Resolution No. 718/08/CONS; 48/09/DIT, suspended by Resolution No. 134/10/CONS; 74/09/DIT, suspended by Resolution No. 189/10/CONS; and 79/09/DIT, suspended by Resolution No. 239/10/CONS.

In particular, AGCom ordered:

i. The dismissal of the aforementioned sanctions, following implementation by Telecom Italia of Undertakings Groups Nos. 11, 12, 13 and 14;
ii. The termination of monitoring activities regarding Undertakings Groups Nos. 2, 7, 8, 9 and 10;
iii. The continued monitoring of the effectiveness of measures adopted, until at least the second half of 2012, with regard to Undertakings Groups Nos. 1, 3, 4, 5 and 6.

Finally, we report on Antitrust Cases A428 and A426, brought by the Italian Competition Authority (AGCM) in 2010 against Telecom for alleged anti-competitive conduct.

The conduct of the Company under examination by the AGCM includes: a) an alleged sales strategy focused on deliberately delaying and hindering activations of wholesale services requested by other licensed Operators, with unjustified reasons or technical pretexts, or by not being sufficiently diligent in managing its wholesale service supply processes; and b) the alleged absence of provision of wholesale services and information to other licensed Operators that might potentially be necessary to formulate offers to non-residential customers.

In 2011, the Supervisory Board conducted its own investigation into the allegations brought against Telecom Italia, requesting the Company to provide access to the case file and other relevant documentary evidence. The purpose of the investigation was to assess whether Telecom Italia had duly implemented its Undertakings with regard to refusals to process work orders placed by other licensed Operators ("KOs"), and whether there was any asymmetry between the information available to the Company's sales functions, to their advantage, and the information available to OLOs, in public tenders for the supply and management of electronic communications services.

The summoning of the Supervisory Board to testify before the Italian Competition Authority in the proceeding concerning the KOs, and provide information and clarification on its own investigation into the matter, demonstrates the importance of its investigation activities and the contribution the Supervisory Board can make on issues addressed by both the National Regulatory Authority for Communications and the Italian Competition Authority.

The experience highlights as strongly as ever the need for Authorities to share and exchange information, in order to coordinate and optimize their work in supervising and ensuring equality of access to the network, and to prevent potentially useful evidence from being excluded in the formulation of individual proceedings under their respective remits.

4 International comparison of fixed access network separation models

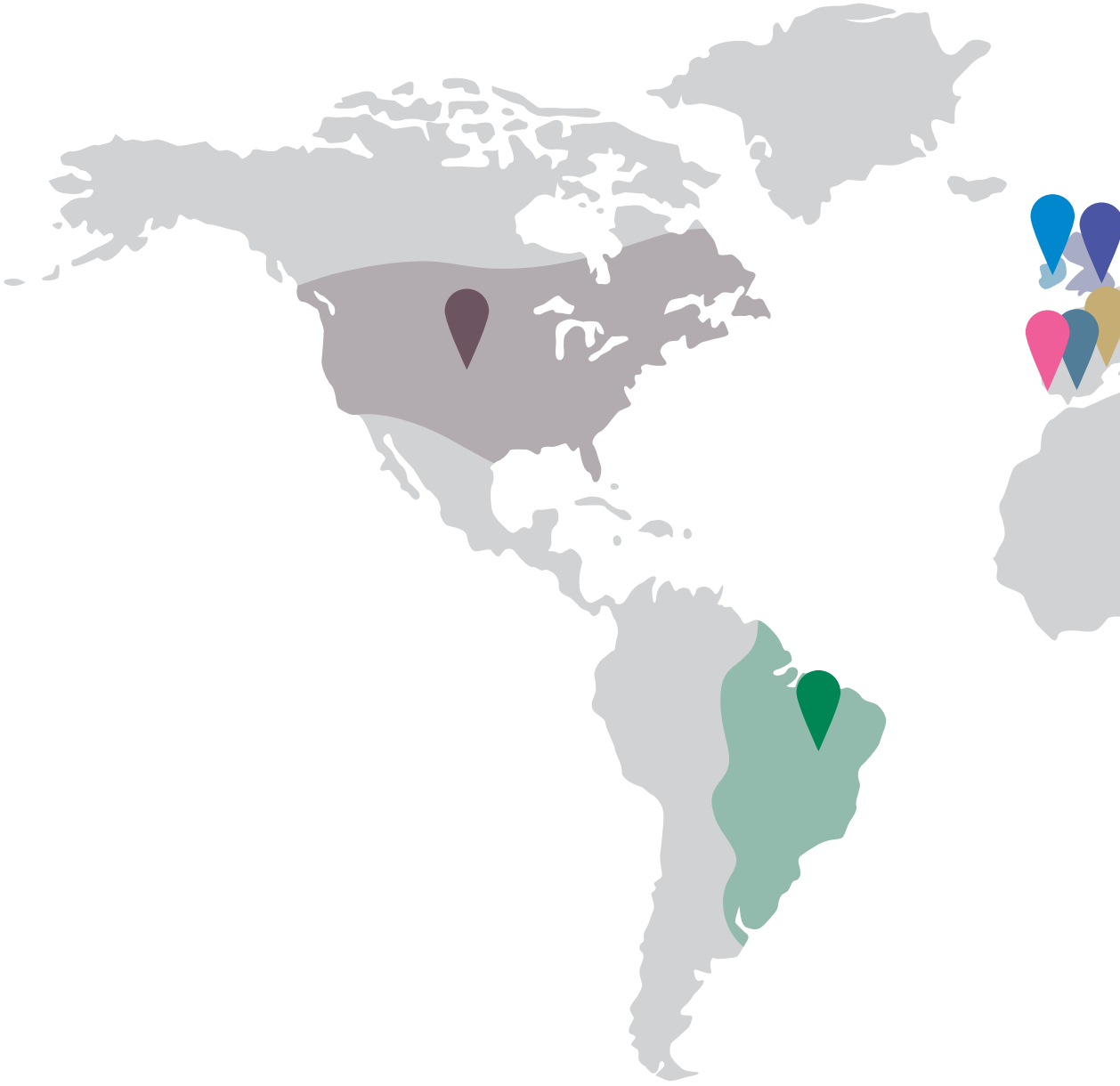
4.1 - INTERNATIONAL MODELS OF FIXED ACCESS NETWORK SEPARATION

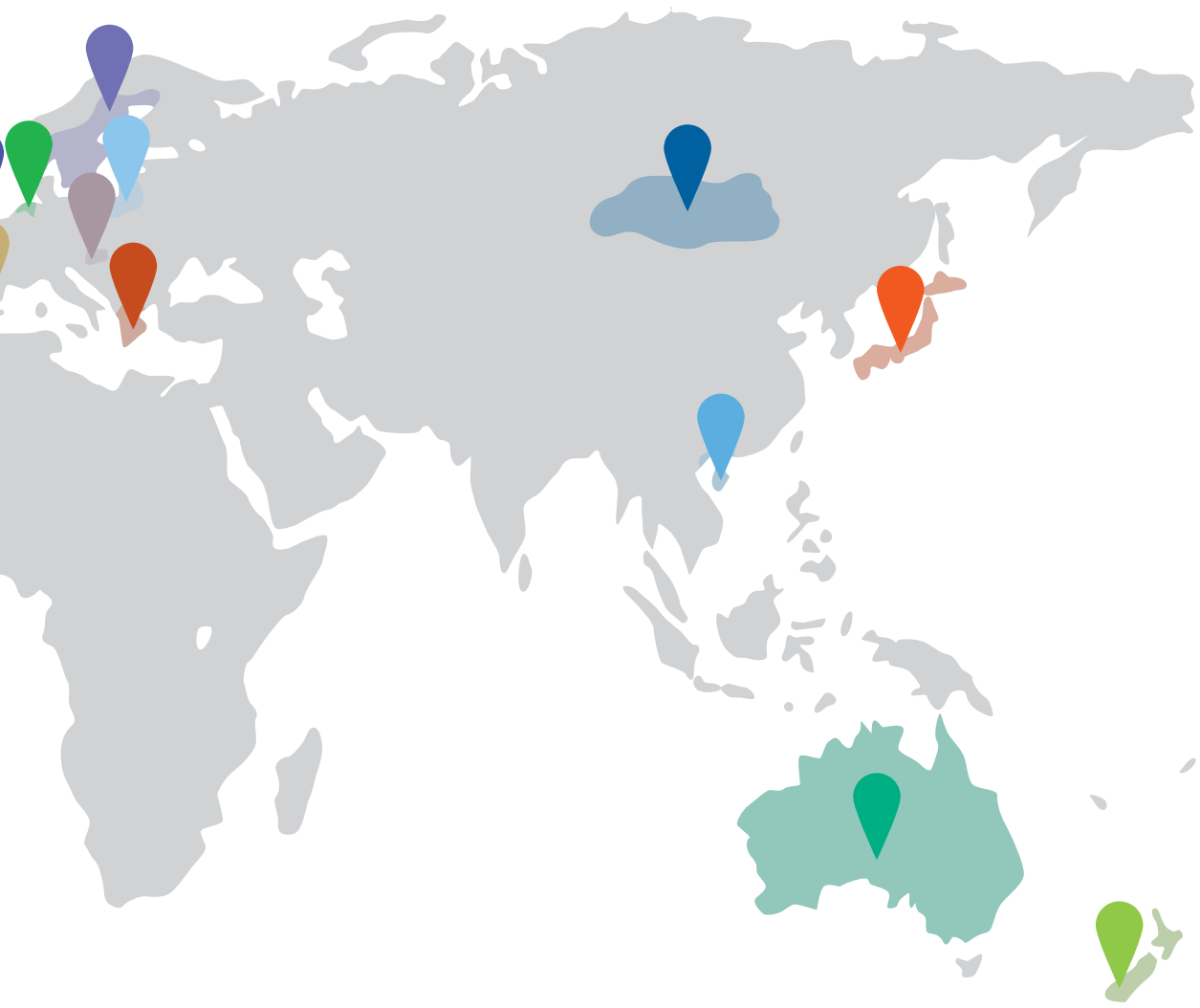
In several countries the issues of the separation of the fixed access network of the incumbent Operators and the observance of the equality of access principle are in the daily agenda of NRAs and government, especially where the market share and the power of the incumbent is still important.

According to the new European regulatory framework, there are two different kinds of separation of the access network:

- A separation imposed by the NRA as an exceptional measure (Access Directive, art. 13a)
- A voluntary separation proposed by the vertically integrated undertaking (Access Directive, art. 13b)

In some countries different models of network separation have already been introduced, while in others a lively debate is still underway. The state of the art of the most significant national experiences is described below.





AUSTRALIA

In 2006 a form of functional separation was introduced in Australia: within the incumbent Operator Telstra, a separate wholesale department responsible for the selling of wholesale services to the other licensed Operators was set up. Nevertheless, the results obtained in terms of an improvement of the competitive conditions in the market were not in line with the expectations. For several months talks continued between the government and Telstra about the possible separation of the incumbent's access network, but no common position was reached.

In May 2010 the Australian government released a study prepared by McKinsey and KPMG regarding the implementation of the National Broadband Network (NBN), containing recommendations on technology, financing, ownership and market structures for the NBN. According to the report, the involvement of Telstra was not necessary to build the new network. The report also recommended the government to maintain the ownership of the new network.

Following the release of the report, a public consultation on this issue took place, after which the government took some important decisions, which led in June 2010 to the definition of an agreement with the incumbent.
The main points of the agreement were the following:

1. Migration of Telstra customers to the new public fiber network NBN (National Broadband Network);
2. Disposal of the old copper network;
3. A government contribution to Telstra of € 7.5 billion as a compensation for the opening of its access network and the migration of its customer base to the new one.

The "historical" transition from a copper network to a fiber network began: after a year of difficult negotiations, Telstra signed an agreement with the government to implement the new 100 megabits per second network (for a cost of € 30 billion) that will reach even the most remote locations in the country.

In February 2012 the final agreement for the structural separation of Telstra copper access network was reached; Telstra receive a state payment of about 11 billion Australian dollars as a compensation for the access granted to its pipelines and the progressive migration of its customer base to the new NGAN. NBN Co, a company founded in 2009 by the government, is in charge of the roll-out of the new network. It also committed itself with the Special Access Undertakings for the technical aspects related to the implementation of the new network and the supply of services to Operators.

Telstra will rent the NGAN services under the same terms and conditions of the alternative Operators. Over the last few months agreements between NBN Co. and various Operators for the use of the NGAN network are being finalized. Details of the agreement are contained in the Telstra Structural Separation Undertaking and Migration Plan. An Independent Telecommunications Adjudicator (ITA) in charge of ensuring a quick resolution of disputes that arise between Operators was also set up.

One of the main consequences of the changed Australian regulatory framework is the end of the Universal Service obligations upon Telstra.

BRASIL

In Brazil there is a strong focus on the problem of low uptake of broadband and there is a growing state intervention in the national economy. In May 2010, the Government launched the National Program Banda Larga (PNBL) providing for the reactivation of TeleBras, which will play a key role in the PNBL, managing a network backbone and offering wholesale access services.

In October 2008, Anatel has adopted the PGR (Plano Geral de Atualização by Regulamentações no Brasil), which lays down measures for the next 10 years, needed to update the sector regulation, including the "implementation of studies of regulatory and market impact " inherent advantages and disadvantages of adopting mechanisms of functional and structural separation as regards the provision of different services of the same economic Group is concerned.

The 2012 General Plan for Competition Goals (PGMC) introduces actions for the identification of those Operators with Significant Market Power (SMP) in the relevant markets and eventually the imposition of asymmetrical measures. Among these measures, the accounting, functional or structural separations are explicitly mentioned.

FRANCE

In 2007 the France NRA ARCEP published a special edition of its newsletter in which pros and cons of the access network functional separation were illustrated; the negative effects resulting from the adoption of such a model were however particularly highlighted. To date no network separation model of the incumbent have been adopted.

The Authority stressed on several occasions the negative effects that the adoption of such a model might entail:

- The costs of realization are considerable; they would stem from the reorganization of the structure of the incumbent, which would also mean a duplication of the organizational structures;
- This measure would also be too costly if compared to the problems to be solved; the same result could be achieved even through a deeper regulatory framework;
- The separation process is not reversible: the usual remedies imposed on the incumbent following a market analysis may be withdrawn if the market conditions change, while the functional separation of the network could not turn back;
- This may also have a disincentive effect on the Operators investment decisions;
- Finally, ARCEP notes as functional separation would not eliminate the need for regulation of prices and quality services, and at the same time would not eliminate the problem of the control over the monopolist which manage the network.

In December 2009 ARCEP defined the regulatory framework for the development of the fiber network (FTTH) and settled the deadline of February 2010 for the publication by France Telecom, SFR and Free of the guidelines for the access to their network.

In June 2010 the Operators launched a project that should lead to the birth of a company specific for the roll out of the fiber network: according to the project, a co-investment should connect within one year 800 thousand homes located in 84 municipalities, identified between 148 located in densely populated areas.

In July 2010 ARCEP launched a public consultation on NGN implementation and network sharing. The Authority already defined the regulatory framework for the development of the new network in densely populated areas, while the current consultation concluded the definition of the framework by the regulation of the less densely populated areas (which include 80% of the population). Due to the extreme diversification of these areas, it is appropriate to adopt a flexible regulatory framework, covering also the joint action of the Operators and local administrative authorities. Particular importance is given by the Authority to the sharing of the existing infrastructure, in order to reduce the investment required for the roll out of the network.

GREECE

In 2007 the National Regulatory Authority EETT imposed on the Greece incumbent OTE the set up of a “Chinese wall” between the retail and the wholesale department; in particular, the retail department could not have any privilege in the access to the network respect to the wholesale department.

The Authority also required OTE the implementation of measures aimed at ensuring the compliance with the principle of equal treatment from a technical and an economical point of view.

In 2008 the EETT issued a document containing the strategies for 2008-2011 and an analysis of the behaviour of the incumbent; it also called for a public consultation which could lead to the imposition of the separation of the network from the commercial departments. At the moment no positions have been expressed, and the debate on the possible separation of the network of the incumbent is still ongoing.

“The Functional Separation remedy has been included in the proposed amendment of the regulatory framework. The proposal lays down procedures that the Regulators must follow in order to impose functional separation, but also procedures for voluntary functional or structural separation. This part of the proposal has been agreed among the Commission, the Parliament and the Council.”

Prof. N. Alexandridis, EETT President, June 2009

HUNGARY

In Hungary the debate around the possible imposition of functional separation of the incumbent Operator Magyar Telekom fixed access network is always actual: OLOs want the adoption of similar remedies, to increase the level of competition in the market, while the regulatory Authority has so far emphasised the possible negative impacts of such a solution: excessive costs, non reversibility, etc.

Measures have been imposed so far by the NRA to guarantee the respect of the equality of treatment principle: for instance, the adoption of a basket of KPIs to monitor the performance of the incumbent in the process of supplying unbundling services and wholesale bitstream access, and limitations on the flow of information between the various departments of the incumbent Operator.

IRELAND

The talks about the possible separation of the network of the incumbent Eircom was initiated by the owner itself of the Operator, the Australian Babcock & Brown, who thus sought to monetize its investment in the Irish market.

In 2007 Babcock & Brown submitted a formal proposal in this sense to the Ministry of Communications and to the NRA, the Commission for Communications Regulation (ComReg).

In 2008 talks were suspended due to the turmoil in the financial markets and the debate on the future of the telecommunication industry in Ireland taking place in the Irish Government.

Following the 2010 ECTA ECTA *Regulatory Scorecard,* according to which the Irish telecommunications market is not sufficiently competitive, the other licensed Operators of the Republic of Ireland have jointly made the request for a structural separation of Eircom's network. In particular, such a request was formulated by the *Irish Trade Group ALTO* (Alternative Operators in the Communications Market): ALTO emphasized that the *remedies* adopted by the Government and the Authority did not produced the desired effect: the separation of Eircom into a retail and a wholesale division would therefore be necessary. The ALTO Chairman Ronan Lupton recently declared: *"We are urging that the new communications framework be transposed into EU law immediately and that ComReg uses the power it grants to functionally separate Eircom".*

The alternative Operators repeated their request also in occasion of the recent public consultation on the next generation network.
In the response to this public consultation, published in July 2010, the Authority reaffirmed that the new regulatory framework that will start in 2011 will contemplate as a remedy of last resort the adoption of models of network functional separation for those Operators who have a significant market power (SMP) for which the measures undertaken did not eliminate the discriminatory conduct.

"The new regulatory framework which will be transposed during 2011 provides for a remedy of functional separation for an Operator with significant market power (SMP). This is framed as a remedy of last resort, to be considered in cases where existing forms of regulation can be shown to have failed in preventing discriminatory behavior from a vertically integrated Operator (and as a result there is persistent market failure)."
From "Response to Consultation on Draft Strategy Statement 2010 - 2012", Commission for Communications Regulation, July, 1st 2010.

However, the Authority also highlighted the possible costs associated with a functional separation:

- is such a measure actually necessary and proportionate?
- would it be possible to identify different and more appropriate/efficient solutions?
- what impact a "forced" functional separation might have?

The NRA observed that as the experience of other Member States demonstrates, better results are achieved when functional separation is proposed and voluntarily adopted by the incumbent.

The Authority launched a public consultation in 2012 with the aim of identify the most appropriate remedies to be imposed on the incumbent Operator as far as the NGAN services are concerned.

JAPAN

In Japan, Nippon Telegraph and Telephone (NTT) is the dominant player in the optical fibre market with over 70% of market share, while in the DSL market it reaches around 35% of the market.

The Japanese government were then considering the possibility of separating the NTT access network to allow other Operators to compete on the infrastructure. The hypothesis on the table were many, ranging from creating a division within NTT up to create a completely separate company.

In October 2009 a task force to start discussions on new ICT policies was launched. In particular, the so called Hikari-no Michi vision was launched, aimed at realizing a society where "broadband services are adopted in every household by sometimes around 2015".

In November 2010 a government panel, which is working on an initiative to make fibre-optic broadband available to all households, declared that NTT will not be forced to spin off its fibre unit. Nevertheless, the Operator must open up its network to the competitors; the panel has also chosen to set up a 'firewall' between NTT's fibre-optic operations and the other operations.

In particular, the adoption of a "Functional separation" model has been considered the most realistic, compared to capital or structural separation. However, as far as the functional separation is concerned, a document of the ICT Policy Taskforce explains how it would be appropriate to take into consideration the issue of the physical separation of the access network and the retail division, the restricted access to the information systems and the implementation of an effective monitoring system.

Should the competition level in the market will be considered not sufficient by 2015, the decision may be revised. According to the government plan, all households will be FTTH connected by 2015.

In Japan the debate around which kind of approach would be most appropriate (that is to say service-based or facility-based, with a competition developed between the NTT NGAN, the cable or the wireless networks) is very actual.

The subscription of the NGAN services is quite low compared with the coverage reached. This is also due to the competition of LTE services; for this reason, in 2012 NTT reduced the prices of NGAN services.

MONGOLIA

In 1995, the Government of Mongolia decided to partially privatize the state owned telecommunications assets: it then set up Mongolian Communications Asset Company by separating the ownership of the state owned communications backbone network assets from its operations and maintenance.

In order to provide open and non discriminatory access to the communications backbone network to all communications service providers and to public and private stakeholders using the network, the Mongolian Government implemented a structural separation by separating the ownership and operation of the network from services and setting up the new state owned Information Communication Network Company (ICNC) in 2007: it is the owner of national backbone and access network of Mongolia including international, long distance, rural and local transmission networks and local loops.

ICNC made the national backbone and access network open and accessible to any interested player on equal basis: it deals with its customers (all communications providers in the information communication sector, ISP providers, public and private entities that want to access our networks) on an equal basis.

The structural separation of the network was realized to avoid a duplication of the network seen as inefficient, and to reduce the cost of new entrants increasing in this way the competition level.

NEW ZEALAND

A general review of the situation of the telecommunications market was carried out in 2006; it revealed a substantial lack of real competition among Operators, with consistent barriers to the entrance to the access network. Consequently, the government has imposed on the incumbent Operator Telecom New Zealand (TNZ) a reorganization of the company, and has indicated that functional separation of the network is the most suitable tool to contribute to an improvement of the competitive conditions in the market.

TNZ has therefore adopted a series of undertakings inspired by the British model, which were accepted and ratified by the government of New Zealand in March of 2008, requiring separation of the company into three divisions: Network, Retail and Wholesale. The primary scope of the Undertakings was to ensure the respect for the principle of non-discrimination in the access of the other licensed Operators to wholesale services offered by the incumbent.

The Undertakings also provide for the establishment of a supervisory board, the Independent Oversight Group (IOG), which occurred on April 1st, 2008, tasked with duties similar to those of the Equality of Access Board in Britain and the Supervisory Board in Italy: it carried on a constant monitoring activity about the actual compliance by TNZ of the terms of the Undertakings, for example with reference to the systems separation process and the achievement of agreed standards on certain products within fixed deadlines in order to guarantee the respect of the principle of equal treatment.

Meanwhile in New Zealand the works for the implementation of the new fiber network started: Fibre Crown Holdings is the public body that will handle 1.5 billion NZ dollars earmarked for the new network, which will reach 75% of the population in an area classified in 33 different areas.

Many Operators expressed interest to participate in events: 15 Operators or consortia formed by several Operators have expressed their intention to participate in an investment project that will last a decade.

TNZ is one of these: the incumbent had to make a decision between two options:
1. Participate in the auction, but in this case it was explicitly asked to carry out a structural separation, which would go beyond the current functional separation already adopted.
2. Not participate in the auction, becoming in fact a competitor of the government.

Telecom decided to participate, and has recently announced that it intend to separate (“de-merger”) of the wholesale division - requirement for participation - by the third quarter of 2011.
The government declared it wants to analyze the regulatory implications of TNZ proposal.

In October 2010, then, TNZ released a presentation showing shareholders how structural separation could work. In the presentation, Telecom NZ is split into two companies nominally called Servco and Chorus2.
Chorus2 would provide nationwide open access and be forbidden from moving downstream into retail telecommunications. Servco would be a retail telecommunications company buying services from Chrous2 on the same basis with any other Operator. The two companies would each have their own board, CEO, management team and employees. Each would be listed separately on the stock exchange.

In November 2010, TNZ submitted together with Vodafone a joint bid to develop New Zealand’s rural broadband network using a combination of fibre and mobile broadband. In particular, TNZ will be responsible for building fibre to schools and hospitals, cell sites and rural exchanges and cabinets.

In December 2011 the government adopted a measure intended to ensure that the construction of the new network is done in a way that respects the principle of equal access and the necessary transparency in the management of the infrastructure.

Fibre Crown Holdings has gradually selected Operators responsible for the implementation of the new network, both for the project Ultra Fast Broadband (UFB) and for the Rural Broadband Initiative (RBI), which is the plan intended to cover the rural areas. In particular, for the latter TNZ and Vodafone submitted a joint bid to the government.
Following the selection of TNZ, the former incumbent had better defined the process of structural separation, and made some changes to the Undertakings.

POLAND

In 2007 the Polish NRA UKE launched a public consultation about the opportunity of a functional separation of the network of the incumbent Operator Telekomunikacja Polska SA (TP SA).

During 2008, the Authority began working on a project aimed at breaking up the dominant Operator Telekomunikacja Polska S.A. (TP SA) into a retail and a wholesale department. In order to prevent this from happening, the incumbent Operator proposed a so called "Charter of Equivalence", meaning a list of voluntarily adopted measures, aimed at eliminating discriminatory situations against alternative Operators in accessing its network.

The contents of the "Charter of Equivalence" resemble those of Telecom Italia Undertakings: TP is required, for example, to ensure the "Equivalence of Output" (the wholesale products offered to OLOs and their prices must be sufficiently comparable to those offered to the incumbent commercial departments, and not necessarily identical), and not the "Equivalence of Input" as required by the Openreach model.

Main contents of the "Charter of Equivalence"

- *TP will create a separate wholesale division, with independent objectives, management and employee incentives.*
- *The director of the wholesale division will also be a member of the board of directors of TP group; he will responsible for the timely and proper implementation of the non-discrimination principles.*
- *TP will adopt a code of conduct for all of its employees in order to ensure that no discriminatory behaviour will be performed. An extensive training programme wil also be set up for the employees.*
- *The wholesale department IT systems will be fully separated from the systems used by other divisions of TP. Other divisions and subsidiaries of TP will not have access to wholesale information. OLOs and TP retail departments will have access to the same information.*
- *A set of key performance indicators (KPI), agreed upon the OLOs and the NRA, will be published monthly and audited by an independent auditor, in order to monitor TP's compliance with the non-discrimination principles.*
- *Any wholesale product will be tested with the "price squeeze test". The NRA, in cooperation with TP and the OLOs, will define the methodology and the parameters to be applied.*

Consequently, in October of 2009 the UKE suspended the separation process underway and reached an agreement with TP SA; the Authority's commitment is not to modify access tariffs established by the operator to the OLOs. In exchange, the incumbent Operator must carry out investments in order to improve the quality of the network.

The European Commission, moreover, looks very carefully at what is going on in the Polish market: in March 2010 it accused the incumbent of abusing its dominant position, as the latter did not formulate adequate offers for its wholesale broadband services. On April, 17th 2009, the Commission already started a process as a result of certain complaints according to which TP was abusing its dominant position in the wholesale broadband market. The alternative Operators were forced to a long and costly process for the access to the network of the Polish historical Operator, which put in place delaying tactics and unreasonable conditions.

In 2012, the Polish Authority considered the possibility of raising the obligation of cost orientation for the incumbent NGAN bitstream services as a measure to stimulate investments in new generation optical networks. However, the Commission recommended UKE (Commission Recommendation C (2012) 5913 of 27/08/2012) not to raise the identified remedies, including the cost orientation obligation, "unless functional separation or other forms of separation have proved effectively to guarantee equivalence of access". In particular, according to the Commission, "the model which exists in Poland is characterised by the acceptance of voluntary commitments without establishing by way of direct regulatory intervention, a separate business unit that would supply access products also to the incumbent itself, therefore it might not qualify as functional separation. These arrangements appear to aim at enhancing the compliance with SMP obligations by way of commitments without imposing the rather intrusive remedy of functional separation".

The BEREC opinion is in line with the Commission position: it stressed that the agreement signed between TP and UKE expires in 2013, while a measure of functional separation is be permanent.

PORTUGAL

In February 2009 the Authority ANACOM published the results of a public consultation on NGA network. On that occasion it stated that the functional separation of the incumbent network Operator Portugal Telecom is not among the *remedies* provided for under the Portuguese regulatory framework, and that the issue deserved further investigation.

Then, in July of that year, the Authority commissioned to Oxera a study on the opportunities and risks arising from the application of functional separation in the Portuguese market.

SINGAPORE

In Singapore the government adopted a model that introduce a three layer system:

- There is a company that owns the passive infrastructure (called Netco or Network Society); following a public auction, the choice fell on OpenNet, a joint venture founded in 2008 by the merger of four Operators with the mission of building and managing the new fiber network; it provides pipes, ducts and dark fiber to a set price;
- A wholesale Operator manages the active infrastructures including the central offices and the transmission equipment (it is called OpCo or Operating Company); in March 2009 the company StarHub, which operates through Nucleus Connect, was chosen;
- Finally, a number of providers of retail services (Retail Service Providers, RSPs) act in competition with each other.

The structural separation for NetCo and the operational separation for OpCo was made mandatory in order to ensure to the system low barriers to entry for RSPs.

Singapore's Next Generation Nationwide Broadband Network was officially launched in September 2010. Five RSPs - LGA, M1, SingTel, StarHub, and SuperInternet - signed up to Nucleus Connect master interconnection offer. With the exception of LGA, these RSPs already launched services on its network, which already covers 40% of Singapore "homes and buildings".

SPAIN

In 2008, the Authority (CMT) published the results of the public consultation on NGA; the conclusion reached was that, prior to proceed in implementing a functional separation of the access network, the impacts on the competitive framework and on the Operators investment decisions should be thoroughly analyzed; it would be anyway a measure "extreme and exceptional."

During the previous year, however, the Authority had imposed to Telefonica to communicate to the CMT itself and to the competitors a series of KPIs on the level of service quality offered both internally and externally, in order to verify potential discriminatory situations to the detriment of alternative Operators.

In 2012 the new 2009 "Telecom Package" rules on functional separation were transposed into Spanish national legislation: as far as the mandatory separation is concerned, first the CMT has to conclude that the existing remedies are not sufficient to avoid market failures; then, the government officially propose the measure to the Commission.

SWEDEN

2006/2007, the NRA Swedish Post and Telecom Agency (PTS) conducted a market analysis that led to the following conclusions:
- A significant number of Swedish citizens had no access to broadband services, and about half of the population had no opportunity to choose a service provider, as in some areas the incumbent, Telia Sonera, was the only Operator present;
- Telia Sonera imposed its commercial conditions to the other licensed Operators which wanted to buy wholesale services.

Following this analysis, the Authority in 2007 proposed a legislative amendment that would give the NRA the power to impose to the incumbent the adoption of a model of functional separation, also due to the high level of conflict between the incumbent and the alternative Operators; nevertheless, the market share of Telia Sonera was equal to 57% on DSL connections and only 36% in total.

PTS concluded that the main cause of "bias" of the market stemmed from the natural incentive of the incumbent in discriminating the other licensed Operators given the vertical integration of Telia Sonera, and the possibility of doing so, since the Operator was in possession of a network structure not replicable.

The PTS proposal was granted by the Swedish Parliament; the Parliament introduced a legislative amendment with effect from July 2008: PTS thus acquired the power to impose to the incumbent the functional separation of its network, subject to the approval of the European Commission.

The Authority did not imposed the functional separation, but expressed its intention to conduct a market analysis aimed at deciding whether to proceed in this direction during 2009.

Note that the law referred to the copper network only; the NRA wishes to extend its power of influence to the NGN too.

Skanova Access

Even before this legislative change, Telia Sonera launched on January 1st, 2008 its new access network department Skanova Access, tasked with providing access to the network - on an equal treatment basis - to its own retail department and to other licensed Operators. A model of functional separation was therefore adopted voluntarily, although not imposed by the Authority. Skanova offers access services, both on copper and fiber network, to the OLOs and the commercial departments of Telia Sonera.

Skanova is a legally separate division of Telia Sonera, with separate systems and subject to financial auditing requirements, although still 100% owned by the incumbent. The personnel of Skanova Access must abide by a specific Code of Conduct containing measures intended to ensure that the principles of equal treatment and non-discriminatory practices are respected.

Under the new rules adopted for the functional separation, any proposal advanced by the incumbent must be submitted for approval to the Authority; PTS has not expressed any evaluation on this matter so far, except an intervention (dated November 2009) which highlighted that the introduction of Skanova had not resulted in significant improvements in terms of real transparency.

The Equality of Access Board

To control Skanova Access a special body was set up, the Equality of Access Board: the Board must monitor the proper respect of the principle of equal treatment by the network department.

The Equality of Access Board is composed of a Chairman, who is in charge of the internal audit of Telia Sonera, and two independent members appointed by the Operator. No members appointed by the Authority are foreseen.

The Board, which must report every four months to the CEO of Telia Sonera, carries out activities of monitoring compliance with the undertakings adopted by the incumbent Operator.

The supervision activities is based primarily on the analysis of the performances of a number of indicators (KPIs) set and monitored by external auditors.

THE NETHERLANDS

In 2007, the Dutch regulatory Authority (OPTA) published a report concerning the possible adoption of the British model in the Netherlands: according to the report, the functional separation of the incumbent KPN access network seemed an excessive measure, and it might entail side effects on the market.

In particular, OPTA stressed the following points:
- In the current Dutch regulatory environment, the functional separation does not fall within the framework of the possible *"remedies";*
- Except for the case of investigation on merger operations, neither OPTA nor the Antitrust Authority has the power, unlike in Britain, to impose structural separation.

Furthermore, the level of competitiveness in the Dutch cable market is considered sufficient.
The Authority, however, declared it was ready to reconsider its position in case the European regulatory framework would change and introduce measures which specifically contemplate the functional separation of the network.
In 2012 the Netherlands, transposing into its national legislation the "Telecoms Package", amended the Telecommunications Law to include a provision that provides for the possibility by OPTA to impose the functional separation of the incumbent Operator fixed network access.

The city of Amsterdam has adopted the following model:
- a partnership formed by different companies which holds the control of the passive network; the majority stake is held by Reggefiber, owned by KPN;
- an Operator that manages the active network;
- several competitors providing retail services.

UNITED KINGDOM

The Undertakings
In September 2005 the British regulatory Authority (Ofcom), at the outcome of the Strategic Review of Telecommunications, decided to intervene on the so called "bottleneck" represented by the access network of British Telecom (BT). This, in fact, represented a barrier to the OLOs free access to the market. After several months of talks, an agreement was found between BT and Ofcom: BT bound itself to comply with a number of Undertakings assumed with the NRA, which established new rules for the supply of products and services to OLOs and their commercial departments, in order to guarantee equality of access at conditions that did not discriminate against the competitors of the incumbent.
Furthermore, BT took the commitment to guarantee the so called Equivalence of Inputs (EOI) and a functional separation, that is to say a systems separation to allow a wholesale offer "on an EOI basis", i.e. based upon which:

a) an offer made to its commercial network and to OLOs is the same in terms of price, commercial conditions, SLAs, time schedules, etc. and
b) systems, processes and commercial information communicated were the same.

In 2010 Ofcom approved an updated version of the Undertakings which contains new deadlines for the BT systems separation process.

Openreach
The creation of Openreach in 2006 is part of the new course started with the Undertakings. Openreach, which is in charge of the fixed access network ("the first mile"), even if it is part of the British Telecom Group, it is configured as a functionally separated entity, with its own head office and independent systems.
Openreach has it own commercial brand and its CEO reports directly to the CEO of British Telecom Group PLC. Both BT Retail and OLOs have a direct relationship with Openreach.

The Equality of Access Board
The Undertakings provided for the establishment of a special body (the Equality of Access Board), at that time the first one in the international regulatory framework, tasked with monitoring the compliance with the undertakings adopted.
The Equality of Access Board (EAB), established in November 2005, is part of the British Telecom Group PLC.
Board Committee and is chaired by a non-executive director of BT; the four other members are a senior manager of the incumbent operator and three independent members, chosen after a consultation with Ofcom. The EAB is supported by the EAB Secretariat, which looks after primarily

organisation of board meetings, and is assisted by the Equality of Access Office (EAO), whose director reports hierarchically to the head of BT Public Affairs department, which monitors the correct implementation of the Undertakings by BT, and gives its opinion with regards to the complaints received. In particular, the EAO conducts periodic verifications on a number of criteria established vs the correct implementation by BT of the Undertakings, as well as the respect of the Code of Practice, and reports monthly the results to the EAB.

The works in progress

Ofcom published in September 2009 a variation to the Undertakings that contains an extension of the deadline for BT with reference to the Openreach systems separation obligations and the supply of certain products "on an Equivalence of Inputs basis". Following these changes, the EAB was tasked with a monitoring activity with respect to the effective compliance of the incumbent with its systems obligations.
During the period 2009/10, BT reported to the EAB 13 cases of non-compliance with the Undertakings:

1. 11 of these were considered by the Board non-trivial cases (including 5 cases of non-compliance with the deadlines and 6 cases of failure to respect the principle of equal treatment);
2. 2 were classified as trivial.

With regard to the complaints received from BT, they are constantly decreasing (7 in 2009/10, 19 in 2008/09, 40 in 2007/08). This year the EAB received no OLOs' complaints.
At the same time, there have been a strong increase in the number of reports sent informally by the OLOs to the Board: a signal that there are still issues that deserve a constant monitoring.

The analysis of the KPI carried out during the year showed that the principle of equal treatment has been respected for what concerns the supply of products such as WLR (especially WLR3, which is the last version), the LLU and Ethernet. As far as the WLR3 is concerned, BT did not meet the deadline of June 30th, 2009 for the migration of 70% of its customer base to the new product; the EAB considered it as a "non-trivial Breach. "

USA

The competent Authorities in the United States have proceeded in the past imposing mandatory structural separations to the incumbent Operators, with the aim of obtaining more competitive conditions in the telecommunications markets.

The best known case dates back to 1984 and led to the separation of AT&T into a long distance carrier and seven Regional Bell Operating Companies. Different models have been adopted, with different degrees of incisiveness and success in providing more competitive conditions in the markets in which they have been applied.

It is interesting to note that in USA, while the approach has always been focused on reducing the "regulatory burden" seen like an obstacle to investments in the sector, the competition - according to many stakeholders - should not be played within one technology, like the fibre network, but among all the available technologies (fibre, wireless, cable, satellite,…). That is to say, the NRA should not restrain the incumbent on a technology, but promote the development of new and different technologies which can definitely bring more benefits to the final customer.

The negotiations between the Federal Communications Commission (FCC), the U.S. NRA, and the Operators on the definition of the regulatory framework has always been very animated; according to AT&T, for example, *"the FCC should avoid asking for extreme forms of regulation that could damage, if not destroy, the investments needed to achieve these goals"*.

The FCC Chairman Julius Genachowski has recently assured that he will not impose heavy obligations, such as sharing the networks among the competitors; nevertheless, he believes that a new regulatory framework is necessary in order to enable the Authority to carry on the National Broadband Plan project.

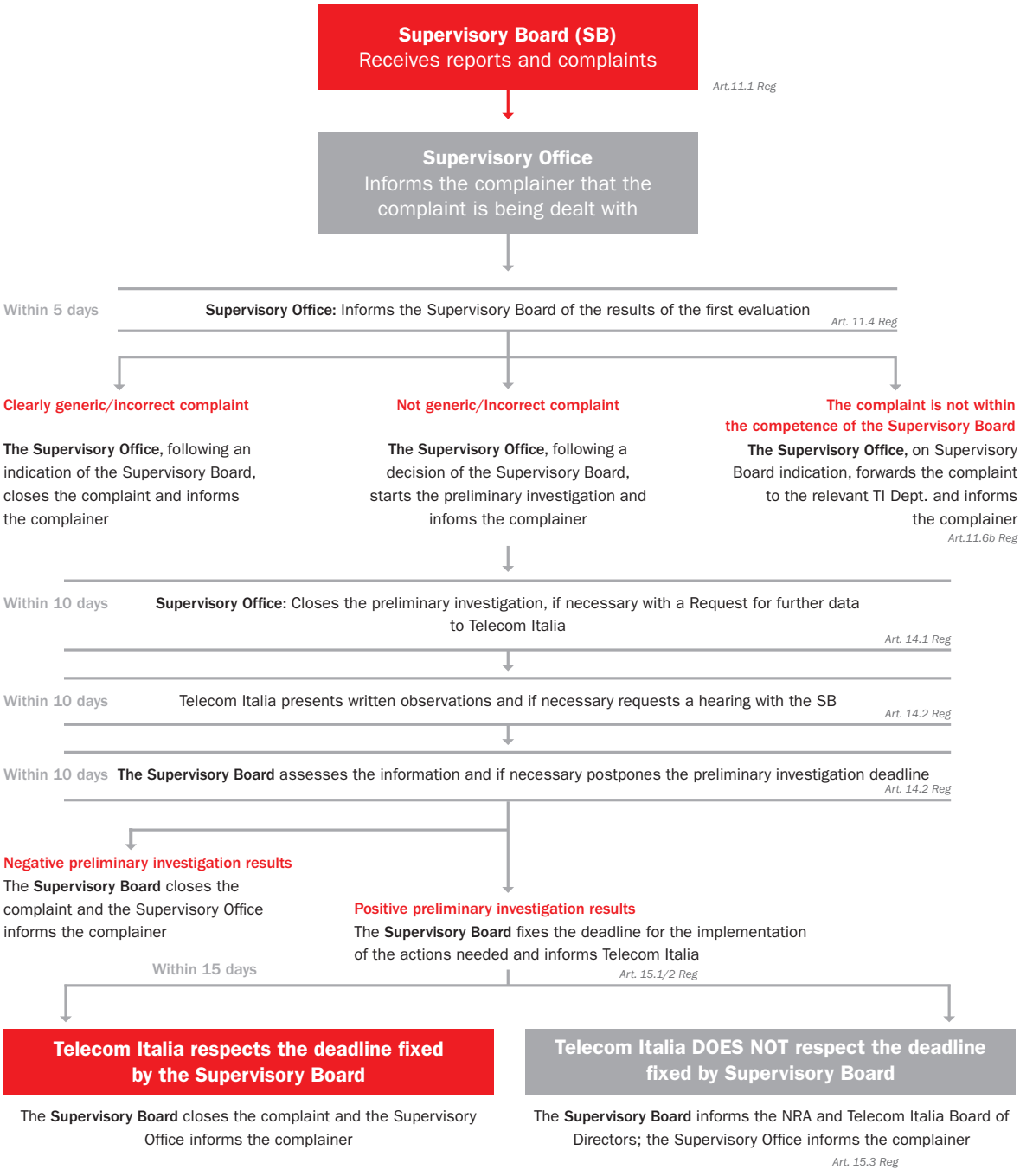
In this context, an important sentence was upheld in April 2010: the largest U.S. cable company, the Comcast, scored a victory in the long confrontation with the FCC: the Court of Appeals for the District of Columbia questioned the FCC's power to impose rules on the management of the network owned by an operator. The Comcast has been claiming for years the right to manage its network without regulatory constraints, given the significant investments realized on the network itself.

5 Complaints

Other Licensed Operators can send the Supervisory Board complaints relating to alleged breaches of the Undertakings by Telecom Italia using the form provided for this purpose. If an alleged breach by Telecom Italia is confirmed and the Company fails to remedy it in accordance with the established deadlines and procedures, the Supervisory Board must report this to AGCom and the Board of Directors of Telecom Italia.

Complaints sent to the Supervisory Board are managed according to a procedure described in the Board's Internal Regulation and detailed in Supervisory Board Resolution No. 2/2009, which provides for an initial assessment of the admissibility of the complaint and the subsequent opening of an investigation. After the investigation has been concluded, the Supervisory Board takes a decision based on the facts of the matter. The various steps of the procedure are illustrated in the diagram below.

MANAGEMENT FLOW OF REPORTS AND COMPLAINTS



COMPLAINTS RECEIVED IN 2012

During 2012, the Supervisory Board closed the complaint file *"S02/11 - Fastweb/Assessment of the clauses of contracts signed between Telecom Italia and contractors - respect of the principle of equality of treatment pursuant to Undertakings Group No. 2"* which had been opened in October 2011. It also opened a new investigation into the complaint by Welcome Italia concerning general failures and poor quality of Telecom Italia's bitstream services.

Further details about these complaints are provided below.

Complaint by the Operator Fastweb S.p.A. "S02/11- Fastweb/Assessment of the clauses of contracts signed between Telecom Italia and contractors - respect of the principle of equality of treatment pursuant to Undertakings Group No. 2"

In October 2011, the Operator Fastweb S.p.A. requested certain information held by Telecom Italia's Wholesale department for the purposes of legal proceedings and judicial protection, pursuant to the relevant procedure created by the Company in accordance with Resolutions No. 21/2009 and No. 4/2010 of the Supervisory Board.

Fastweb explained to the Supervisory Board that the complaint mainly related to contracts between Telecom Italia and its contractors for activating unbundling services for the OLOs and for activating services for its own retail customers. Fastweb said that it suspected a breach of the principle of equality of treatment arising due to the possible existence of contractual clauses that would be incompatible with assuring equal conditions, both from a technical and financial perspective.

On 27 October 2011, Fastweb requested certain information held by Telecom Italia's Wholesale department concerning legal proceedings and judicial protection. This triggered the relevant procedure created by the Company in accordance with Resolutions No. 21/2009 and No. 4/2010 of the Supervisory Board.

Specifically, the Operator's request concerned the following information:

1. the contracts entered into between Telecom Italia and certain suppliers used to activate unbundling services for Fastweb and to activate services for its own retail customers during 2008, 2009, 2010 and the first half of 2011;
2. the total annual consideration paid by Telecom Italia for all activities performed;
3. the certified extract from Telecom Italia's Work Force Management (WFM) system containing data relating to 31,817 work orders sent by Fastweb, for which a "KO" was given.

In a letter dated 10 November 2011, Telecom Italia filed a refusal to provide the information under the aforementioned points 1 and 2, considering it to be outside the scope of the procedure triggered by Fastweb. Whereas, in relation to the information described under point 3, Telecom Italia declared itself willing to provide the information requested and any necessary additions, while also noting that the information was already available to Fastweb, given that the Company had disclosed this data in the arbitration proceedings brought by the other licensed Operator on 24 January 2011.

The Supervisory Board interviewed Fastweb and Telecom Italia in two separate hearings (held on 16 and 25 November 2011, respectively) and assessed the OLO's replies to the reasons underlying the refusal filed by Telecom Italia. On 2 December 2011 the Supervisory Board adopted Resolution No. 23/2011, requiring Telecom Italia to provide the Board with preliminary information regarding the matter in dispute, in order to carry out spot and other checks on compliance with the principle of internal - external equality of treatment within the contractual conditions set by the Company with suppliers used to activate services for other licensed Operators and for retail customers.

Having established that Fastweb's claims warranted checks on Telecom Italia's compliance with the principle of equality of treatment as set forth, in particular, in its own Recommendations issued on this subject, the Supervisory Board adopted Resolution No. 27/2011 on 19 December 2011, ordering an investigation into the substance of the allegations made pursuant to Article 11.3 of its Internal Regulation.

The Supervisory Board subsequently extended the period allowed for concluding the investigation through Resolution No. 2/2012 of 18 January 2012. Once all controls had been completed - and, specifically, once the content of the standard contracts governing relations between Telecom Italia and the contractors the Company uses to activate services at the premises of its own customers and customers of other licensed Operators had been verified - the Supervisory Board decided, through Resolution No. 6/2012 of 8 February 2012, to close the investigation in accordance with Article 15 of its Internal Regulation.

The Supervisory Board did not find any breach of the Undertakings; however, based on the findings of the assessment of the contracts between Telecom Italia and its contractors, the Supervisory Board urged the Company to advise other licensed Operators that it would be wise to use instruments to survey customer satisfaction with the quality of the service provided by the contractor, in order to assess its performance.

Complaint by the Operator Welcome Italia "S01/12 - Welcome Italia/Report of serious disruption due to general failures and poor quality of bitstream services - Implementation of Undertakings Group No. 5 relating to the guarantees of transparency of technical plans for the quality of the fixed access network"

In June 2012, the Operator Welcome Italia complained about the general failures and poor quality of bitstream services.

Welcome Italia subsequently notified the Supervisory Board of its claims, in the belief that these issues: i) constituted a breach of Undertakings Group No. 5, consisting, in this particular case, of the lack of transparency of Telecom Italia's technical plans regarding the quality of the fixed access network; ii) arose as a result of alleged inequality of treatment in the management and resolution of faults by Telecom.

On 5 June 2012, the Supervisory Board received a report from Welcome Italia (supplemented by letter dated 12 June 2012) complaining of general failures and poor quality of bitstream services, which allegedly caused significant economic harm to the business customers of Welcome Italia, which was unable to provide the required service reliability.

In particular, Welcome Italia S.p.A. reported:

1. An increase in Assurance cases due to "general failures" often caused by backbone network equipment malfunctions (routers, switches) or DSLAM network malfunctions affecting various areas (Milan, Bergamo, Bolzano, Verona, Siena, Catania, Palermo). Some of the reported cases relate to possible deterioration.
2. A number of technical bitstream problems in the Bari bitstream area due to low ADSL connection speeds, which do not exceed 2 Mbit/s against a theoretical band speed of 4 Mbit/s. The letter from Welcome Italia noted two fault reports relating to two connections to two different customers which, at that date, were still unresolved.

The Supervisory Office prepared a technical report and submitted it to the Supervisory Board in accordance with Article 3.2 of Resolution No. 2/2009.

The Supervisory Board determined that the reported fault was not "generic" or manifestly unfounded and was within its remit. Accordingly, on 18 June 2012 it adopted Resolution No. 13/2012 ordering checks to be carried out pursuant to Article 11.3 of its Internal Regulation and engaging the Supervisory Office (under Article 3.5 of the aforesaid Resolution No. 2/2009) to take the necessary action to fulfil all the obligations.

In particular, the Supervisory Board asked Telecom Italia to provide information and data regarding the claims of Welcome Italia by no later than 10 July 2012 and called the Company to a hearing on the matter to be held on 2 July 2012.

The information provided by Telecom Italia and the related documentation revealed that:

i. the twelve cases of general failure reported by Welcome Italia and brought to the attention of the Supervisory Board almost all consisted of faults in the transport network or transmission equipment and also affected other Operators;
ii. the data provided by Telecom Italia did not show an increase in the fault rate, defined as the number of faults in the reporting period (first 5 months of 2012 compared to the first 5 months of 2011);
iii. all the faults were resolved within the time frames agreed in the Service Level Agreements;
iv. in response to Welcome Italia's further query as to whether other disruptions reported to the Supervisory Board after the initial report were caused by planned maintenance, Telecom Italia clarified that only one of the failures reported could potentially have been caused by planned maintenance and that Operators were, in any case, informed of this by email.

In light of these findings and having established that the subject of Welcome Italia's complaint did not constitute a case of detrimentally unfair treatment in the management and resolution of faults by Telecom Italia, on 1 August 2012 the Supervisory Board adopted the aforesaid Resolution No. 16/2012, closing the investigation and associated proceedings.

6 Actions carried out and main results obtained

6.A - PROGRESS REPORT ON THE TRANSITION TOWARDS THE NEW DELIVERY PROCESS

6.a.1 - General consideration

Undertakings Group No. 1 requires Telecom Italia to set up a New Delivery Process (NDP) in order to offer additional efficiency and transparency in the equality of treatment of OLO and retail customers.

Specifically, the new process allows for identical operating procedures in the treatment of retail and wholesale customers in cases where services cannot be activated due to a lack of required network resources.

In accordance with the Undertakings plan, on 1 December 2009 Telecom Italia finalized the management software system for the new asymmetrical bitstream service delivery platform, while the extension to LLU and WLR services became available from April 2010. The new system consolidated the procedures for activating installations in cases of insufficient network resources: Work Orders are queued strictly by time of arrival, regardless of the Operator sending them and, following the development work to remedy the infrastructural deficiencies, the orders are completed according to their position in the queue.

As of 31 December 2012, a total of 90 Operators had joined the NDP system: 46 for the ATM bitstream service; 11 for Ethernet bitstream; 1 for Easy IP; 12 for WLR; 3 for Shared Access (SHA); and 17 for LLU services. The list of other licensed Operators, subdivided by service type, that have signed up to the NDP as of 31 December 2012 is shown below (source: Telecom Italia).

ATM Bitstream Service (46 Operators):

OPERATOR	JOINING DATE	OPERATOR	JOINING DATE
INTERNET ONE S.r.l.	01/12/2009	TWT S.p.A.	22/11/2010
Interactive Network S.r.l.	09/12/2009	IFINET S.r.l.	01/12/2010
Omninetwork S.r.l.	15/12/2009	ACTIVE NETWORK S.p.A.	03/01/2011
Raiffeisen Online Scarl	15/12/2009	SPIN	01/02/2011
CONVERGENZE S.p.A.	16/12/2009	Eutelia	01/04/2011
Raising Unified Network S.p.A.	21/12/2009	FASTWEB	23/05/2011
CDLAN S.r.l.	04/01/2010	SISTEMI UNO S.r.l.	26/05/2011
UTILITY LINE	04/01/2010	AEMNET S.p.A.	30/06/2011
Terralink S.r.l.	04/01/2010	ALIDA S.r.l.	01/07/2011
Consorzio METROLINK	05/01/2010	COLT TECN. SERVICES S.p.A.	01/07/2011
Infracom NA	11/01/2010	IT.GATE S.p.A.	18/07/2011
Interplanet S.r.l.	20/01/2010	MNET S.r.l..	16/09/ 2011
Abilene	15/02/2010	INTERCOM S.r.l..	19/10/2011
Telemedia.net	22/02/2010	BT ITALIA S.p.A.	10/01/2012
Easynet Italia S.p.A.	22/03/2010	WIND TELECOMUNICAZIONI S.p.A.	16/01/2012
Skywebtv	06/04/2010	VODAFONE OMNITEL N.V.	06/02/2012
Fontel	12/04/2010	MULTIWIRE S.r.l.	07/02/2012
EHINET	12/04/2010	KPNQWEST ITALIA S.p.A.	15/03/2012
ITELSI'	11/06/2010	ENTER S.r.l.	27/03/2012
Trivenet S.p.A.	19/07/2010	WELCOME ITALIA S.p.A.	10/05/2012
UNO COMMUNICATION	06/08/2010	AMT SERVICES S.r.l.	12/06/2012
TISCALI Italia S.p.A.	30/09/2010	UNIDATA S.p.A.	18/07/2012
S.PE. S.a.s.	02/11/2010	PHONEX INFORMATICA BANCARIA S.p.A.	10/12/2012

Ethernet Bitstream Service (11 Operators):

OPERATOR	JOINING DATE	OPERATOR	JOINING DATE
CONVERGENZE S.p.A.	01/02/2011	UNIDATA S.p.A.	18/07/2012
Interactive Network S.r.l.	29/08/2011	Raiffeisen Online Scarl	05/09/2012
MNET S.r.l.	16/09/2011	T.W.T.	10/10/2012
VODAFONE OMNITEL N.V.	06/02/2012	PHONEX INFORMATICA BANCARIA S.p.A.	10/12/2012
ENTER S.r.l.	27/03/2012	KLEOS Società Consortile S.r.l.	21/12/2012
AMBROGIO S.r.l.	15/06/2012		

EASY IP Service (1 Operator):

OPERATOR	JOINING DATE
AMBROGIO S.r.l.	14/06/2012

LLU Service (17 Operators)

OPERATOR	JOINING DATE	OPERATOR	JOINING DATE
CONVERGENZE S.p.A.	17/05/2010	UNO COMMUNICATIONS S.p.A.	30/03/2012
Eutelia	04/04/2011	MC LINK S.PA.	22/05/2012
SIX COMM S.r.l.	01/06/2011	INTRED TELECOMUNICAZIONI S.p.A.	15/06/2012
AMT SERVICES	30/06/2011	VODAFONE OMNITEL N.V.	09/07/2012
MNET S.r.l.	18/07/2011	TELETU S.p.A.	23/07/2012
Skywebtv	02/11/2011	FASTWEB	23/07/2012
BT ITALIA S.p.A.	10/01/2012	INFRACOM ITALIA S.p.A.	09/10/2012
PANSERVICE S.A.S. DI CUSEO F. & C.	20/02/2012	WELCOME ITALIA S.p.A.	26/11/2012
COLT TECNOLOGY SERVICES S.p.A.	28/03/2012		

WLR Service (12 Operators):

OPERATOR	JOINING DATE	OPERATOR	JOINING DATE
T.W.T.	17/05/2010	SIPORTAL S.r.l.	14/06/2012
Eutelia	10/08/2010	AMBROGIO S.r.l.	15/06/2012
CONVERGENZE S.p.A.	15/11/2010	INTRED TELECOMUNICAZIONI S.p.A.	15/06/2012
BELLNET INTERNATIONAL S.r.l.	14/02/2012	TELETU S.p.A.	23/07/2012
FONTEL S.p.A.	01/03/2012	FASTWEB	23/07/2012
QCOM S.p.A.	09/05/2012	INFRACOM ITALIA S.p.A.	09/10/2012

SHA Service (3 Operators):

OPERATOR	JOINING DATE
AMT SERVICES S.r.l.	30/06/2011
MNET S.r.l.	18/07/2011
Skywebtv	02/11/2011

The graphs below show the percentage of orders received in December 2012 managed through the NDP out of the total number of OLO orders received in that month for each regulated service (LLU-WLR-SHA-Virtual LLU) and for asymmetrical bitstream services.

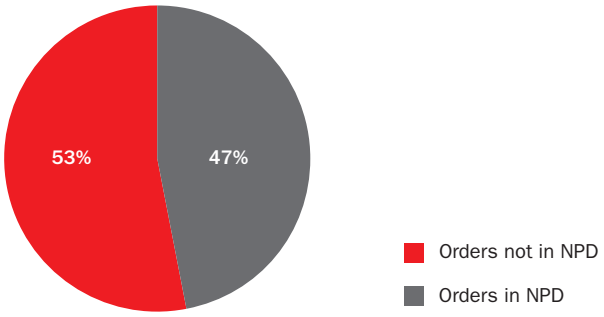


Figure 1 - Percentage of NDP orders for regulated services (LLU-WLR-SHA-Virtual LLU)

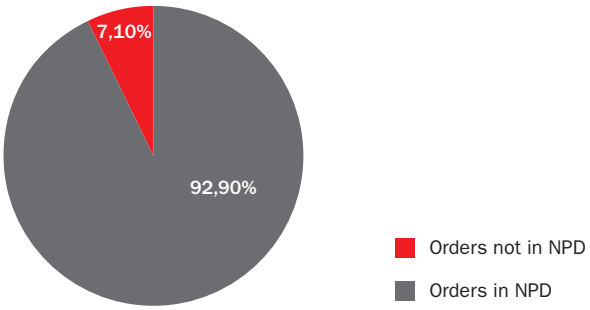


Figure 2 - Percentage of NDP orders for asymmetrical bitstream services

6.a.2 - The “Single Queue” in the New Delivery Process (NDP)

The New Delivery Process (NDP) has been designed so that all new installation requests - when there are not enough network resources available to activate them - are processed by Open Access exclusively by time of receipt, based on a First In First Out (FIFO) *Single Queue* system: the first Work Order received is the first to be processed, regardless of the Operator making the request. The queuing order is locked by an IT system that does not allow any intervention to change the order of the queued requests; indeed, there is no profile in the system that allows for changes to the priority order of the requests. The strict FIFO system implemented in all steps of the procedure also ensures that the system functions effectively, since Open Access technical staff cannot make discretionary decisions.

The procedure (see the figure below) is based on a clear separation of Open Access tasks and responsibilities between the operational functions responsible for managing the delivery process and the operational functions responsible for developing the network.

If network resources are not available when a new installation request comes in, the Order is tagged “No Network” and added automatically to the Single Queue.

This can happen, for example, in cases of complete lack of network (newly-built areas or areas being allotted, etc.) or where there is a network but it is saturated because there are no free pairs (the delivery request is tagged “No Network due to Network Saturation”).

Once the saturated network element has been identified, the subsequent Work Orders relating to that element are tagged as “No Network” prior to on-field assignment.

The main objective of Open Access functions responsible for developing the network is to provide network resources (available pairs) to allow the orders waiting in the queue to be delivered. A single intervention request for the planning and development of the network is generated for each problem situation, thereby consolidating all new resource requirements. Technical staff have access to a table with the queued orders, the dashboard (number of orders in the queue and the number of pairs needed) and the scheduled date of resolution. If Open Access, during this step, receives a new request with the same address or network element as a saturated element, the system automatically tags it as “No Network” and adds it to the queue as described above.

Once the network has been expanded, the system detects the new pairs available in the database and automatically releases the orders, assigning the necessary resources to each order on a FIFO basis and making them available for subsequent delivery activities.

The system also automatically releases the orders when pairs become available due to terminations. However, the system can only begin this process after the “refresh” procedure has been launched. This is an overnight batch procedure that checks the availability of network resources against the requests in the queue, according to the established priorities.

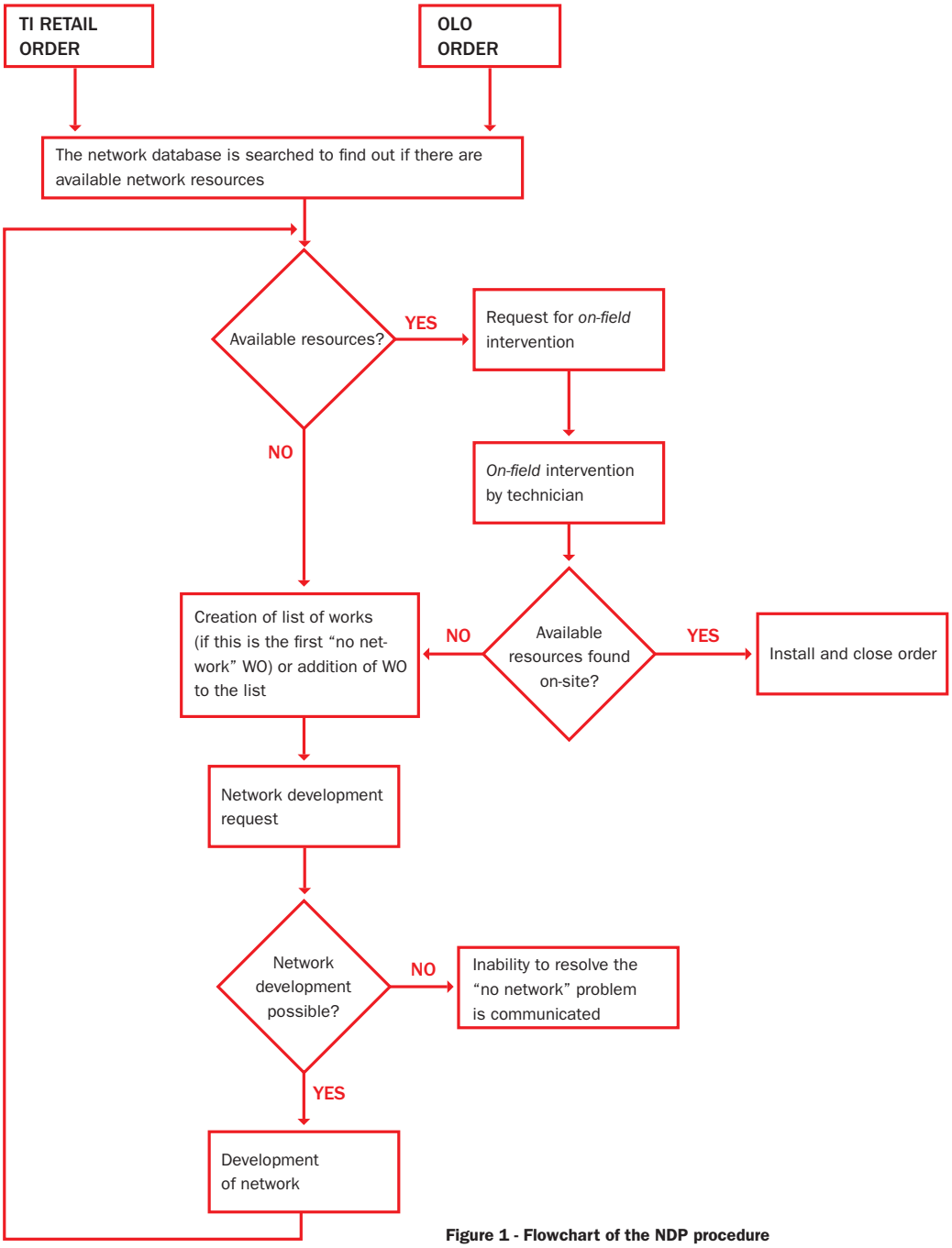


Figure 1 - Flowchart of the NDP procedure

Once the order has been released by the system, the Open Access functions responsible for activating the installation will automatically be notified and will manage the meeting with the customer to activate the required service.

It is important to highlight that other licensed Operators can monitor the status of their orders online. In particular, they can see the position of their order in the queue, the number of queued orders, their resolution dates or changes to those dates.

With Resolutions No. 8/2011 of 8 February 2011 and No. 12/2012 of 24 May 2012, the Supervisory Board began carrying out checks to obtain information on the procedures for implementing the New Delivery Process and assessing its effectiveness, and to ensure correct management of the Work Order queuing system. The section below provides a brief summary of the results obtained at the end of this process.

6.a.3 - Checks carried out

During 2011, several checks for the purpose of gathering information - including on-site visits - were carried out on the procedures for handling Work Orders held in the "Single Queue" waiting lists used when no fixed access network resources are available, and to ensure that these procedures are in line with the provisions of point 1.5 of Undertakings Group No. 1 ("providing additional guarantees of efficiency and transparency to improve internal/external equality of treatment in the production and provision of SMP Services"). The on-site visits took place over the course of two days. The first meeting was held in October 2011 at Telecom Italia's General Headquarters and aimed to map out the operating procedures of the New Delivery Process and the differences compared to the previous process. The second meeting took place in the same month at the Lazio South regional offices, in Latina, to examine the correct functioning of the new platform out of a sample of randomly selected delivery orders. In particular, the goal was to check how the system worked in different saturation situations. In all the cases examined, it was found that Work Orders were handled according to the Single Queue system adopted by the New Delivery Process, as described in point 1.5 of Undertakings Group No. 1.

During 2012, the Supervisory Board carried out more checks to ensure that the local Open Access operations units were managing the New Delivery Process correctly. In order to have the greatest possible input to this activity, larger other licensed Operators were sent letters in order to collect any reports of cases that had not been managed in accordance with the new process. Since no affirmative replies where received, the analysis focused on the workings of the Open Access operating units. The inspections - which took place in June-July 2012 - were carried out in the Geographic Areas of Rome South, Friuli Venezia Giulia, Naples West and Lombardy Central. They looked at all wholesale Work Orders issued in these four areas since the start of 2012 and managed through the "Single Queue" for no network (a total of 23 orders). Of these, 7 had been handled at Rome South, 5 in Friuli Venezia Giulia, 5 in Naples West and 6 in Lombardy Central. The inspections of each local area began with an in-depth analysis of the data extracted from the computer system on the processing of various Work Orders.

Subsequently, site visits were made to the installations corresponding to these orders, so that on-site photographs could be taken. Out of the 23 orders, 21 installations were analysed, which can be grouped into 6 different types, based on the solution to the lack of network that was used:

- 9 instances of installing new network terminations to serve new buildings;
- 6 instances of installing new network terminations in parallel to saturated elements;
- 3 instances of activation following the release of pairs on existing network elements;
- 1 instance of malfunctioning pairs upon activation;
- 1 instance of activation following the redistribution of pairs among existing network elements;
- 1 instance of activation from a nearby network element.

The checks were carried out following an analysis process consisting of the following steps for each network element where changes were made:

1. calculation of the period in which the Single Queue system had been used for the saturated element (start and end date);
2. identification of the area of influence of the saturated network (street and street numbers);
3. inspection of all changes in the status of orders in this area of influence to check if there were any orders closed during the period when the Single Queue system was in operation;
4. photography at the installations to capture any anomalies that could not be detected through the system.

Following these checks, no orders were found to have been closed anomalously during the time in which the Single Queue system was in operation for any of the 21 interventions examined, confirming the correct management of the procedure in terms of the principles underpinning the New Delivery Process.

6.a.4 - Conclusions

The checks carried out on the implementation and management of Telecom Italia's New Delivery Process, as conducted by the Supervisory Office in accordance with Resolutions No. 8/2011 and No. 12/2012 of the Supervisory Board, had two goals:

1. to check the correct functioning of the procedure in terms of the management of the "Single Queue" system used by Telecom Italia and to assess its conformity to the provisions of Undertakings Group No. 1 regarding the equality of treatment between OLO and retail customers;
2. to verify the correct management and application of procedures by the local Open Access operations units.

The outcome of these checks was positive, since no problems were found that could compromise equality of treatment in the processing of Work Orders. Accordingly, the Supervisory Board brought the analyses and checks to an end with Resolution No. 17/2012.

6.B - MONITORING OF THE MANAGERIAL INCENTIVES SYSTEM, THE CODE OF CONDUCT AND THE PROFESSIONAL TRAINING SYSTEM

The following is a short summary of Telecom Italia's main activities in relation to the subjects covered by Undertakings Group No. 2, which the Supervisory Board has monitored and assessed in the usual manner.

6.b.1 - Staff training

Open Access

The Supervisory Board has confirmed that during 2012 Telecom Italia continued to provide training on AGCom Resolutions No. 152/02/CONS and No. 718/08/CONS on equality of treatment and Undertakings, by organising courses and seminars for new Open Access staff. Specifically, this involved staff members who were converted to the role of on-field Technician and staff in the National Wholesale Services department: for the latter (191 staff members), courses began in June 2012 and were divided into 14 editions held across Italy.
The Board also examined various targeted projects that had been launched the previous year, as detailed below:

i. In the first six months of 2012, 7 editions of the project *"Effective management of relationships with OLOs and their customers"* were delivered, attended by 100 staff members. This initiative aims to improve knowledge of the context in which Open Access operates in terms of dealing with OLO requests, in order to spread knowledge of the rules and principles underlying the applicable regulations and the Undertakings. From September 2012 onwards, 11 training sessions were organized in Italy (for 161 staff members) on aspects of conduct and customer relations, in order to provide the best possible tools for effective relationships with OLOs;
ii. The *"Handbook"* on equality of treatment was published on the Open Access portal and made available to all in (laminated) hard-copy. In September 2012, the Supervisory Board was shown a training video on the issues addressed in the Handbook in order to aid understanding of the concept of equality and its practical implications. An "Equality of Treatment" section was also created in the Open Access portal within the section dedicated to the technicians (also available in a mobile version). The new section is designed to provide general information (e.g. regulatory references and service offers) and to facilitate dialogue and discussion through a "community";
iii. The *"ConTatto"* project was set up, providing for "on-field" technicians to work alongside call centre staff so that they can gain awareness of issues relating to front-end and back office activities, as well as specialist support and processing of service disruption reports from the OLOs. In addition, the *"ASA in Panda"* project was set up, providing training for online technicians at work sites (public networks and customer premises), so that remote personnel can gain awareness of on-field technical work during disruptions and the provision of services to Telecom Italia's retail customers and the OLOs' Wholesale customers.

National Wholesale Services

In line with past activities, during 2012, the Supervisory Board checked Telecom Italia's implementation of the following main initiatives:

i. *"Sales Project"*: in light of the need to set up a training programme to develop sales abilities, this project focuses on the latest and best aspects of the overall sales process and is designed to develop the ability to manage business-to-business sales. The training course is geared towards gaining a good understanding of the process of marketing to customers and the ability to handle clear, transparent and ethically compliant negotiations; 2 sessions were held, involving a total of 18 staff members.
ii. *"Course on AGCom Resolutions No. 152/02/CONS and No. 718/08/CONS"*: the 2012 training plan was completed for all staff members, and for new recruits in particular. A subsequent check on what was learned - in view of a possible increase in staff numbers - has also been planned.
iii. *"Training/Interactive communication with the internal-external customer"*: online seminars were organised for the delivery of training activities, in view of their flexibility and benefits in terms of reducing the time and cost of organising and managing of educational initiatives.
iv. *"New Delivery Process - NDP"*: a meeting open to all affected OLOs was held in May 2012 to illustrate the computerised procedures for managing Orders under the "New Delivery Process for access services" and consequent interactions between Telecom Italia departments and the OLOs. A number of more in-depth meetings were held in June with those OLOs that requested them. In addition to reiterating the process and looking at possible interactions and their outcomes, these meetings also included tests of the procedures for using the OLOs' proprietary environments to access the New Delivery Process functions, available through Telecom Italia's Wholesale portal. A description was also provided of the preparatory activities that would need to be carried out in the OLOs' IT environments to manage the New Delivery Process during the migration from the old platform; further meetings to examine the matter were also planned.

6.b.2 - Managerial incentive system

On 3 May 2012 a meeting was held on this subject between Telecom Italia and the Supervisory Board, during which the Company announced the final results of the 2011 MBO and presented the results for 2012, noting the differences.

At the end of the presentation, the Supervisory Board asked for several clarifications:

i. The Board first asked for information on the reasons for the differences found when comparing the weightings of objectives relating to the Undertakings assigned in 2012 through Open Access to department heads compared to the year before.
ii. With regard to the objective *"OLO Customer Satisfaction"*, the Supervisory Board asked for further information about the new methodology used to assess OLO satisfaction levels, as mentioned by Telecom Italia during the meeting.
iii. With regard to the objective *"Quality of the Fixed Access Network and Related Services"*, since the current mechanism only looks at data from the start and end of the year, the Supervisory Board asked Telecom Italia to look into the possible benefits of examining performance during the intervening periods in order to ensure more consistent performance assessments.
iv. With regard to the objective *"DSLAM ATM and IP Desaturation"*, the Supervisory Board suggested that Telecom Italia should make a distinction between DSLAM ATM and IP, since taking them together would not allow for precise assessment of performance, bearing in mind the problems connected to the transition from ATM technology to Ethernet technology.

On 18 June 2012, a second meeting was held with Telecom Italia on these matters in order to provide clarifications and responses on the Supervisory Board comments and requests outlined above.
With reference to the comparison between the 2012 MBO and 2011 MBO, Telecom Italia noted that the lower "weighting" of the MBO linked to the achievement of Undertakings in 2012 was due to the decision to give Open Access managers other, additional objectives, and that, in any case, this did not affect the overall correlation of the objectives to the Undertakings.

Regarding the *"OLO Customer Satisfaction"* objective, Telecom Italia outlined the main changes that would be made to the process of evaluating satisfaction levels:

- the OLO survey would be conducted with Operators with which Telecom Italia is not currently in dispute;
- the survey would also involve OLOs that buy non-SMP services from Telecom Italia;
- the *"Overall Process Satisfaction"* indicator would be determined by weighting the interviews carried out, assigning different weights according to revenue band;
- the OLO survey would be conducted during two periods in 2012;
- the OLO questionnaire would be supplemented with new questions.

Despite appreciating the quality and level of detail of the information received, the Supervisory Board identified a number of aspects of the new methodology described above which could be problematic in terms of equality of treatment.

The Board noted, in particular, that it would have been helpful to get the views of Operators currently in dispute with Telecom Italia, since that would provide a wider range of comments and observations to use as a basis to improve company procedures.

Regarding the definition of the indicator *"Overall Process Satisfaction",* the Supervisory Board remarked that it would be inadvisable to weight OLO interviews according to revenue band, because that could potentially lead Telecom Italia staff, covered by the managerial incentive scheme, to treat minor OLOs less favourably. While recognising that the Company's decision on the new methodology is at its own discretion, the Supervisory Board believes that all OLO interviews ought to hold equal weight and be evaluated in the same way, for the sole purpose of adequately safeguarding the principle of equality of treatment. As such, the Supervisory Board has urged Telecom Italia to consider interview results on this basis.

With regard to the objective *"Quality of the Fixed Access Network and Related Services"* - for which the Supervisory Board asked Telecom Italia to look into the possible benefits of examining the performance achieved during the intervening periods in order to ensure more consistent performance assessments - the Company noted that in 2012 it was not possible to make these changes due to time constraints, but that the suggestion would be taken into due consideration in 2013.
Lastly, Telecom Italia announced that it had accepted the Supervisory Board's suggestion to reformulate the objective *"DSLAM ATM and IP Desaturation"* to provide greater transparency and clarity. Specifically, the objective will refer solely to DSLAM ATM, and when the Technical Plans for the quality of the fixed access network are updated the data for DSLAM ATM and IP will be shown separately.

The figures below show an overview of the Undertakings-linked objectives for 2012 and the results for 2011

FUNCTIONS INVOLVED	HEADS OF DEPARTMENT			OTHER MANAGEMENT		
	WEIGHTING OF AVAILABLE OBJECTIVES	OBJECTIVES ON UNDERTAKINGS TO AGCOM	WEIGHTING	WEIGHTING OF AVAILABLE OBJECTIVES	OBJECTIVES ON UNDERTAKINGS TO AGCOM	WEIGHTING
Open Access	40%	Customer Satisfaction (Assurance; Delivery + OLO with business focus) Equality of Treatment	10%	40%	Customer Satisfaction (Assurance; Delivery + OLO with business focus)	10%
					Equality of treatment	10%
		Quality of the universal access network · Fault Rate · SLA · Percent 80% · Percent 90%	10%		**Fixed access network quality and related services (Undertaking n°5)** · On-going project (including on-going extended) · Cabinet repair project · Poles project · Pressurisers project · Network KOs project	10%
					Quality of the universal access network · Fault Rate · SLA · Percent 80% · Percent 90%	10%
					End-to-end quality- spm services · SLA on asymmetrical bitstream delivery · SLA on symmetrical bitstream delivery · SLA on asymmetrical bitstream assurance · SLA on symmetrical bitstream assurance	10%
		Open access EBITDA minus capex from access threshold: OA EBITDA	10%		Open access EBITDA minus capex from access threshold: OA EBITDA	10%
Network	40%	DSLAM ATM and IP desaturation	10%	40%	DSLAM ATM and IP desaturation	10%
		Opex minus provisioning minus revenues access threshold: TECH EBITDA	10%		Opex minus provisioning minus revenues access threshold: TECH EBITDA	10%
National Wholesale Services	50%	**Undertakings to AGcom** · Equality of treatment · Customer satisfaction olo	10%	50%	**Undertakings to AGcom** · Equality of treatment · Customer satisfaction olo	10% 15%
		EBITDA NWS responsibility	10%		EBITDA NWS responsibility	10%
Regulatory Affairs	30%			30%	Objectives relating to the Undertakings Group submitted to AGCom	10%

Figure 1 - Summary of Undertakings-linked objectives 2012

	OBJECTIVES SUBJECT TO INCENTIVES	DEPARTMENTS INVOLVED	TARGET	GOAL WEIGHTING	NO. INCENTIVISED
	SPECIFIC OBJECTIVES ON UNDERTAKINGS SUBMITTED TO AGcom				
1	Equality of treatment Retail/OLO customers	Open Access National Wholesale	160%	10%	179
2	OLO Customer satisfaction	Open Access National Wholesale	80%	10% - 15%	36
3	**DECISION 578** Fault rate Wholesale Network KO Network improvement plan_THRESHOLD	Open Access Resp. Technology	160% 160% 160% THRESHOLD ON	10%	154
4	**End-to-end quality - SLA Provisioning & Assurance** LLU provisioning (amended DAC) WLR provisioning (amended DAC) Asymmetrical bitstream provisioning (net of Mig274) Symmetrical bitstream assurance	National Wholesale/ Service Management	160%	15% - 20%	4
5	**DECISION 578** Network improvement plan (Adjustment of the capacity of the local transmission network - DSLAM)	Network Planning	160%	5% - 20%	79
6	Objectives in line with undertakings made to the Authority and SB	Public & Regulatory Affairs	150% - 160%	10% - 15%	8
	OTHER OBJECTIVES RELATING TO THE UNDERTAKINGS SUBMITTED TO AGcom				
1	Open Access: Ebitda - Capex - CdL OA	Open Access	160%	10%	121
2	Technology: Ebitda - Capex - CdL OA	Technology	125%	10% - 20%	288
3	NWS Ebitda	National Wholesale	148%	10% - 20%	43

Figure 2 - 2011 Results

6.b.3 - Measuring OLO satisfaction

Following the request made by the Supervisory Board in June 2012 on the advisability of changing the new methodology to be used by Telecom Italia in measuring OLO satisfaction for 2012, the Company announced that the incorporation of these suggestions had led to a longer period for the OLO interviews, the results of which, however, will be made available and presented in early 2013.

6.C - VALIDATION OF PERFORMANCE INDICATORS FOR EQUALITY OF TREATMENT

The objective of Undertakings Group No. 3 is to establish a system for monitoring the performance of Open Access in supplying SMP services both to OLOs and to the Retail division of Telecom Italia. This makes it possible to compare the levels of performance provided to the first segment against those provided to the second segment. It thus offers a way to verify real-world compliance with the principle of internal-external equality of treatment in terms of provision of SMP services by Open Access.

6.c.1 - Basket of performance indicators

The process of creating the basket of indicators involved a number of steps: Telecom Italia initially proposed a combination of KPIs; this combination was later supplemented by other indicators agreed with other licensed Operators following the technical meetings in 2009 and 2010. The OLOs subsequently requested the addition of further KPIs to measure end-to-end changeover times, which therefore also included activities carried out by Telecom Italia's Wholesale department.
In 2011 meetings were held between Telecom Italia, the OLOs and the Undertakings Monitoring Group of AGCom (GMI) with a view to simplifying and streamlining the basket of indicators. The proposals made so far have been subject to requests for amendments and, as a result, a basket of indicators agreed by all the Operators has yet to be identified. Once the new KPIs are approved by AGCom, the Supervisory Board will also verify them in accordance with the Undertakings.

The basket of indicators is shown below:

KPI		RETAIL	WHOLESALE
KPI 1	POTS Lines Delivery	Retail percentage of on-time appointment	Wholesale percentage of on-time appointment
		Percentage of lines activated within 20 calendar days	Percentage of lines activated within 20 calendar days
		Average Open Access working time in calendar days	Average Open Access working time in calendar days
	Asymmetric Broadband Delivery	Percentage of lines activated within 10 days without a technician visit	Percentage of lines activated within 10 days without a technician visit
		Percentage of lines activated within 20 days with a technician visit	Percentage of lines activated within 20 days with a technician visit
		Percentage of lines activated within 30 days with a technician visit	Percentage of lines activated within 30 days with a technician visit
		Average Open Access working time in calendar days	Average Open Access working time in calendar days
	Symmetric Broadband Delivery	Average Business connection working time	Average Business connection working time
	New Delivery Process Indicators: Network KO/Single Queue	Percentage of work orders in single queue solved	Percentage of work orders in single queue solved
		Aging in Single Queue	*Aging* in Single Queue
		Percentage of work orders closed on time	Percentage of work orders closed on time
		Percentage of network KO work orders out of total work orders	Percentage of network KO work orders out of total work orders
KPI 2	POTS Lines Assurance	Average repair times for POTS line plants expressed in working hours	Average repair times for POTS line plants expressed in working hours
		Percentage of faults resolved within two working days of the report	Percentage of faults resolved within two working days of the report
		Percentage of POTS faults recurring within 30 days	Percentage of POTS faults recurring within 30 days
		Percentage of claimants circuits	Percentage of claimants circuits
	Asymmetric Broadband Assurance	Average Broadband ADSL repairing times in working hours	Average Broadband ADSL repairing times in working hours
		Percentage of ADSL faults repaired within two working days	Percentage of ADSL faults repaired within two working days
		Percentage of ADSL faults recurring within 30 days	Percentage of ADSL faults recurring within 30 days
		Percentage of ADSL faults opened within 14 days	Percentage of ADSL faults opened within 14 days
	Symmetric Broadband Assurance	Average symmetric bitstream/SHDSL broadband reparing times in working hours	Average symmetric bitstream/SHDSL broadband reparing times in working hours
		Percentage of symmetric bitstream/SHDSL faults repaired within two working days	Percentage of symmetric bitstream/SHDSL faults repaired within two working days
		Percentage of symmetric bitstream/SHDSL faults recurring within 30 days	Percentage of symmetric bitstream/SHDSL faults recurring within 30 days
		Percentage of symmetric bitstream/SHDSL faults opened within 14 days	Percentage of symmetric bitstream/SHDSL faults opened within 14 days
KPI 3	Services availability	- POTS Lines Services - ADSL Services - Symmetric Bitstream Services	
KPI 4	Wholesale systems unavailability	- POTS Lines / Broadband Delivery - POTS Lines / Broadband Assurance	
		- Interface systems	

6.c.2 - Validation of basic data used to calculate KPIs

In order to provide all OLOs with adequate assurances on the reliability of the figures from the indicators, Telecom Italia launched a project, under the instruction and supervision of the Supervisory Board, to validate the Key Performance Indicators, their calculation methods and the method for extracting basic data from Telecom Italia database, which is certified by Catania University.

Specifically, a "secure" database was created which assures the integrity and unalterable nature of the figures used to calculate performance indicators through an access control system. In addition, a data sampling model was created that enables checks to be made, as required, on whether the data supplied by Telecom Italia matches the data extracted from the system.

Both the first group of indicators (initially proposed by Telecom Italia) and the second group (including the KPIs from the technical meetings in 2010 between Telecom Italia and the OLOs) were validated in 2011 and 2012. The validation methodology can also be used again for the indicators in the new basket currently being devised, in order to ensure the same level of confidence achieved with the current KPIs.

6.c.3 - Checks carried out by the Supervisory Office

In 2011, The Supervisory Office was empowered under Resolution No. 4/2011[1] to carry out spot-checks on the correct functioning of the system for validating the basic data. The controls were carried out monthly, throughout the calendar year 2011; each monthly extract examined a sample of 386 Work Orders for the Delivery process (KPI 1) and 947 Trouble Tickets for the assurance process (KPI 2), amounting to a total of 1,333 items. The data was periodically extracted from the databases in the presence of Open Access and Supervisory Office staff, following the procedure agreed with Catania University. The checks did not reveal any problem issues.

NOTE

(1) http://organodivigilanza.telecomitalia.it/pdf/Determinazione_n4_2011_Certificazione_dati.pdf

One of the fields in the files extracted from the system presented some apparent anomalies. In order to investigate the system's behaviour, the Supervisory Office conducted on-site tests at the relevant Open Access local offices. The anomalies were found to be due to the late alignment of auxiliary data systems, which do not compromise the use of the KPI calculation formulas.

In its meeting of 8 February 2012, the Supervisory Board adopted Resolution No. 4/2012[2] containing the Supervisory Office's final report on the analysis conducted by it.

The report, which describes the monitoring work carried out and the conclusions drawn from the analyses, confirmed the effectiveness of the validation system used by Telecom Italia and consequently the reliability of the data employed to calculate the KPIs currently used for Undertakings Group No. 4.

The Supervisory Office also carried out the aforementioned checks on the 2012 data: 4,632 basic Delivery statistics (386 Work Orders per month) and 11,364 basic Assurance statistics (947 Trouble Tickets per month) were analysed, for a total of 15,996 items.
The analyses did not reveal any problems that could compromise the accuracy of the data shown: there were no significant differences between the data extracted from the systems and the corresponding data from the operating databases used to calculate the KPIs set out in Undertakings Group No. 4.
Once again this year a field failed to populate due to delays in aligning systems for auxiliary data; these gaps were later filled following periodic re-alignments. The issue did not, moreover, compromise the results of the analysis since it only affected a very small number of items. In addition, these figures are not used to calculate KPIs for Undertakings Group No. 4 and did not, therefore, have an impact on the calculation of performance indicators.

The Office subsequently drew up a final report on the 2012 figures, as in 2011, which was sent to the Supervisory Board for approval in February 2013.

NOTE

(2) http://organodivigilanza.telecomitalia.it/pdf/Determinazione_n.4.2012_Chiusura_vigilanza_certificazione_Relazione_conclusiva-Light.pdf

6.D - ANALYSIS OF EQUALITY OF TREATMENT KPIs

Open Access performance indicators are monitored in the supply of SMP services to both other licensed Operators (OLOs) and the Telecom Italia Retail division. The monitoring system was introduced in fulfilment of Undertakings Groups Nos. 3 and 4, with the objective of permitting comparative analysis and an assessment of the effective internal-external equality of treatment. The aim of the system is not so much to assess compliance with SLA standards or to identify Open Access performance levels in absolute terms, but to provide a reliable tool to compare performance levels in the provision by Open Access of SMP services to OLOs and comparable services to Telecom Italia's Retail segment. Since its establishment in 2009, the Supervisory Board has placed special importance on the use of key performance indicators (KPIs), which are regularly reported to the Supervisory Board, as well as AGCom and OLOs.

In 2012, Telecom Italia submitted regular monthly KPI progress reports to the Supervisory Board. In this section we report the results of the KPI basket measured in 2012, which includes additional indicators that have been added by Telecom Italia to the original set of KPIs at the suggestion of OLOs.

KPI Outcomes for 2012: An Overview

KPI 1 - VOICE AND BROADBAND DELIVERY

KPI 1 - DELIVERY

Fig.	POTS services
1	% appointment compliance / DAC [1]
2	% lines activated within 20 days[1]
3	average connection time (days) [1]
	Broadband
4	% lines activated within 10 days without a technician visit
5	% lines activated within 20 days with a technician visit [1]
6	% lines activated within 30 days with a technician visit [1]
7	Average working time (days) [1]
8	Average business connection working time (days) [2]

Service levels in the OLO segment higher than or equal to the Retail segment

Service levels higher for the Retail segment than the OLO segment, but the situation is not critical since the gap is extremely small or can be justified by technical reasons

Service levels higher for the Retail segment compared to the OLO segment, with possible critical issues to be investigated

NOTES

[1] Performance differential between the segments is small and/or justified by the different process structure.

[2] Indicator for which further information was requested with Resolution No. 16/2011

As illustrated in the table, for **KPI 1 - Voice and Broadband Delivery** the vast majority of indicators show that the Retail segment enjoyed comparatively better services in 2012. For some KPIs, however, the difference was extremely slight, while for others, technical reasons can account for the difference. This is the case, for example, for the indicator measuring the level of compliance with voice delivery appointments. For customers of OLOs, the Open Access department receives an "expected delivery date" (the so called DAC, Data di Attesa Consegna), which is the date by which the system must be activated, whereas for Telecom Italia customers it is an actual appointment date. The only critical indicator in 2012, continuing the trend of previous years, related to *average business connection working time* (in red), which was much more favourable for the Retail segment than for Wholesale. In 2011, the Supervisory Board conducted an investigation to determine the underlying reasons for this gap in performance. With Resolution No. 16/2011 of 5 July 2011, the Supervisory Board requested information from Telecom Italia, which it duly provided in the months that followed. The information provided showed that the performance gap was connected with a process change adopted during the year, involving the introduction of an experimental order management model. Once adjusted for the change, the performance gap between the two segments was reduced considerably.

Accordingly, on 8 February 2012 the Supervisory Board adopted Resolution No. 5/2012[1] , which closed the investigation, finding that the performance levels measured, once adjusted for the effects of the process change introduced, showed that equality of treatment had been satisfied. The Resolution also included the Supervisory Office's final technical report, which found that the adjusted KPI values satisfied the equality of treatment requirement, and which reserved the right to conduct additional audits in the event that anomalies were found in future KPI values.

NOTE

[1] http://organodivigilanza.telecomitalia.it/pdf/Determinazione_n.5.2012_Chiusura_vigilanza_KPI_Relazione_conclusiva-Light.pdf

KPI 2 - ASSURANCE FONIA E BROADBAND

Fig.	KPI 2 - ASSURANCE
	POTS services
9	average POTS line repair time (working hours)
10	% faults resolved within 2 working days from the fault report
11	% POTS line faults recurring within 30 days
12	% claimant circuits
	Asymmetrical broadband
13	Average ADSL broadband repair time in working hours
14	% ADSL faults repaired within 2 working days
15	% ADSL faults recurring within 30 days [1]
16	% faults opened within 14 days of activation[2]
	Symmetrical broadband
17	average symmetrical bitstream broadband repair times in hours
18	% symmetrical bitstream broadband faults repaired within 2 working days
19	% symmetrical broadband faults recurring within 30 days
20	% faults opened within 14 days of activation [3]

Service levels in the OLO segment higher than or equal to the Retail segment

Service levels higher for the Retail segment than the OLO segment, but the situation is not critical since the gap is extremely small or can be justified by technical reasons

Service levels higher for the Retail segment compared to the OLO segment, with possible critical issues to be investigated

NOTES

[1] Indicator for which further information was requested with Resolution No. 16/2011.

[2] Performance differential justified by the construction of the indicator's formula.

[3] KPI that cannot be compared due to the low volumes in the retail component.

The scenario for **KPI 2 - Voice and Broadband Assurance** is very different to KPI 1: here the majority of indicators show services to be more favourable for the Wholesale segment. However, the performance gap between the two segments was again minimal for most of the indicators, as was the case with delivery indicators.
Exceptions arose in asymmetrical broadband services, concerning the *percentage of ADSL faults recurring within 30 days of service activation* (in red) *and the percentage of faults within 14 days of activation* (in grey).
With regard to the first of these two indicators, the Supervisory Board had requested information on the matter via Resolution No. 16/2011. In its reply, Telecom Italia stressed that the Open Access performance indicators were heavily affected by the different percentage of naked lines between the two segments. For the Retail segment, the percentage is negligible, whereas it is very high for the Wholesale segment. Naked lines are used exclusively for data services only, whereas shared lines are used for both data and voice services.

Faults occurring on a shared line can be attributed by the end user to either the voice or ADSL service, whereas on naked lines, faults are always attributed to ADSL services, even where they are connected to voice services. This results in a markedly higher rate of recurring faults on naked lines.
Another factor raising the fault recurrence rate for OLOs is connected with SLA standards, which impose different resolution times. For Retail SLAs, the standard resolution time for faults is two working days from the fault report; for Wholesale SLAs (as required by the Reference Offer), trouble tickets (TTs) must be resolved within 24 hours of the fault report, resulting in shorter working times, work performed at inconvenient hours, when customers cannot always be contacted and logistic and environmental conditions are not optimal, and, ultimately, in a greater likelihood of faults recurring.

The investigation into the matter was closed by the Supervisory Board by Resolution No. 5/2012.
The KPI values for the *percentage of faults within 14 days of activation* (see Fig. 16) can instead be accounted for by looking at the way the calculation formula is constructed. The indicator is defined as the number of TTs opened within 14 days of activation as a proportion of total TTs for the reference period. Since the total number of TTs in the Retail segment is much higher than the total number of TTs for other licensed Operators, the resulting rate is necessarily higher for OLOs.

The Supervisory Board therefore asked Telecom Italia to reformulate this indicator, recalculating it to include the total number of lines activated in the period in the denominator. When the 2011 values were recalculated using the method considered to be correct (taking into account the number of activations during the period, by segment, as the denominator, instead of the total number of trouble tickets in the period), there is a difference of 0.8 percentage points to the advantage of the Wholesale segment (7.6% for Retail compared to 6.8% for Wholesale), which overturns the 12.9 percentage point difference to the advantage of the Retail segment (2.8% for Retail compared to 15.7% for Wholesale) that was initially reported.

For symmetrical broadband services, the KPI values for the percentage of faults opened within 14 days of activation are negligible due to the very low volumes involved, which does not allow for a valid comparison.
In the first quarter of 2012, *average ADSL fault repair time* (see Fig. 13) was higher for OLOs. However, the situation returned to normal over the following months, and as of September, figures show that repair times were progressively faster for the customers of other licensed Operators. In any event, all values over the year satisfied SLA standards.

KPI 3 - SERVICE AVAILABILITY AND KPI 4 - UNAVAILABILITY OF WHOLESALE SYSTEMS

For the **KPI 3** measuring the **availability of IT systems** and **KPI 4** measuring the **percentage of unavailability in wholesale systems** no critical issues were identified in 2012. Service levels were consistently high over the year.

KPI Outcomes for 2012: Breakdown of Individual KPIs

KPI 1 - VOICE DELIVERY

Compliance with RETAIL vs. WHOLESALE appointments

In 2012, service levels proved to be higher in the Retail segment compared to Wholesale, with 98.2% of Retail appointments kept versus 97.4% for the Wholesale segment. A gap that was substantially stable at around one percentage point from April onwards.

The performance results were also influenced by process differences between the two segments. For the customers of OLOs, Open Access receives an "Expected Delivery Date", which is the date by which the system must be activated, whereas for Telecom Italia customers, the department receives an actual appointment date.

NOTE: IN THE FOLLOWING CHARTS, VALUES ARE SHOWN:

- in RED for the TELECOM ITALIA RETAIL segment
- in GREY for the WHOLESALE segment

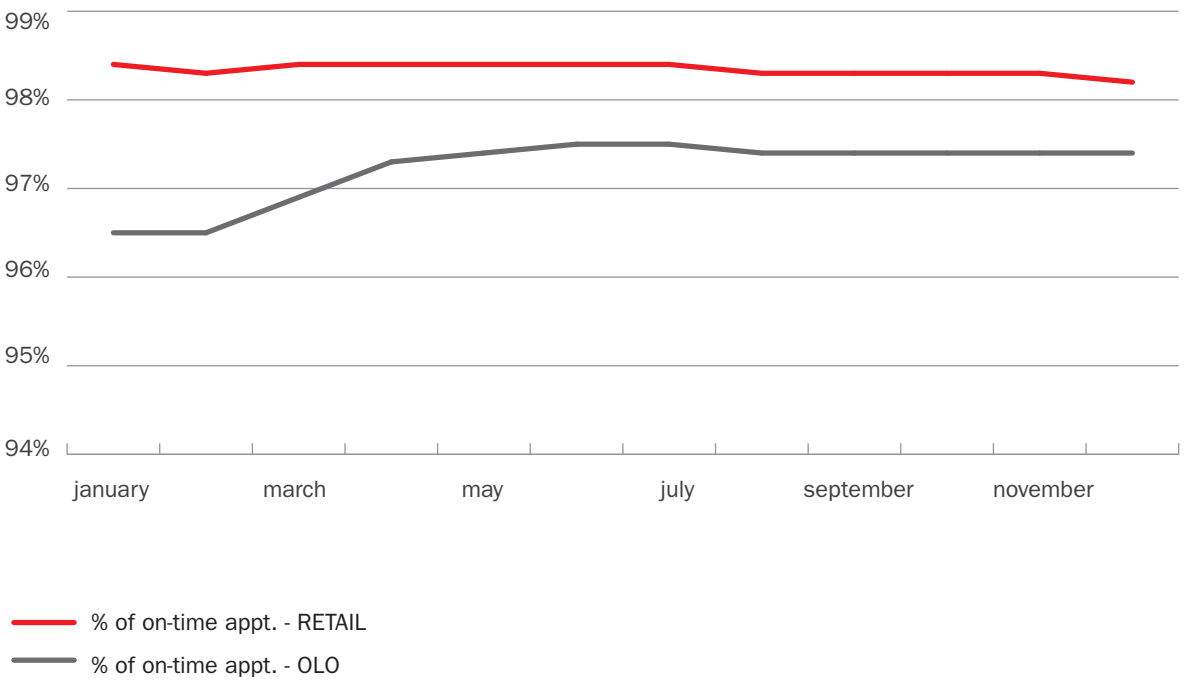


Figure 1 - Percentage of on-time appointments - progressive data

Percentage of lines activated within 20 calendar days

The percentage of lines activated by Open Access within 20 calendar days in December was higher for the Retail segment (96.1% versus 95.9% for Wholesale), though the opposite was true for the majority of the year, when the percentage was higher for the Wholesale segment.

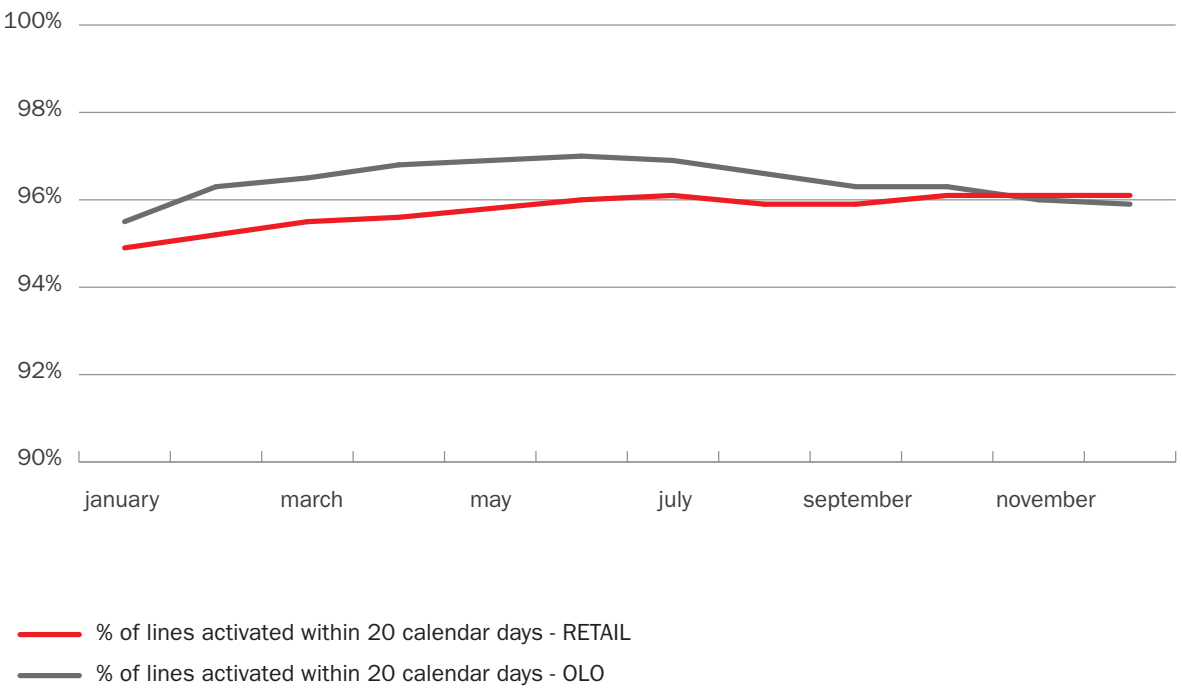


Figure 2 - Percentage of lines activated within 20 calendar days - progressive data

Average Open Access working time (calendar days)

Average delivery performance varied over the twelve months considered, with higher delivery times for the Retail segment alternating with periods when the average was substantially the same for both segments, and when the average was higher for the Wholesale segment, as in the final quarter of the year. At the end of the year, voice delivery times averaged 7.8 calendar days for the Wholesale segment, versus 7.4 days for Retail.

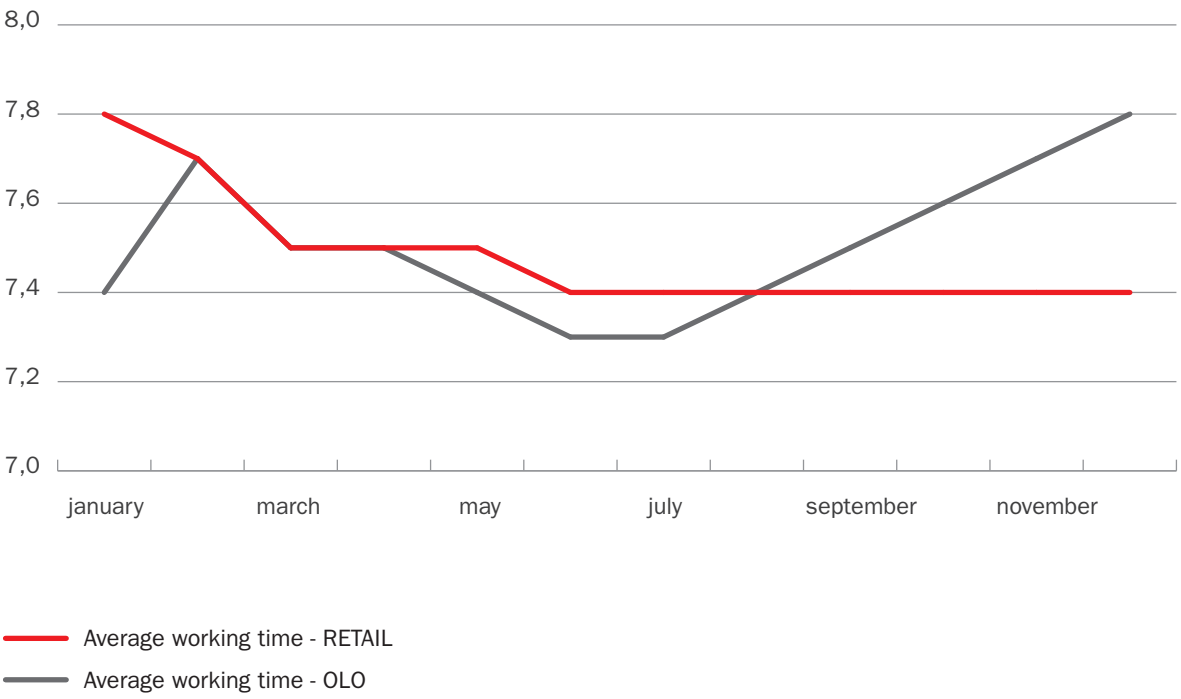


Figure 3 - Average working time in calendar days

KPI 1 - BROADBAND DELIVERY

Lines activated within 10 calendar days - without a technician visit

The percentage of broadband lines activated within 10 calendar days without a technician being sent to the customer's home (Alice packages for Telecom Italia customers and asymmetrical bitstream packages for OLO customers) was consistently higher for other licensed Operators throughout 2012, except for January (96.3% for Retail versus 96.8% for Wholesale).

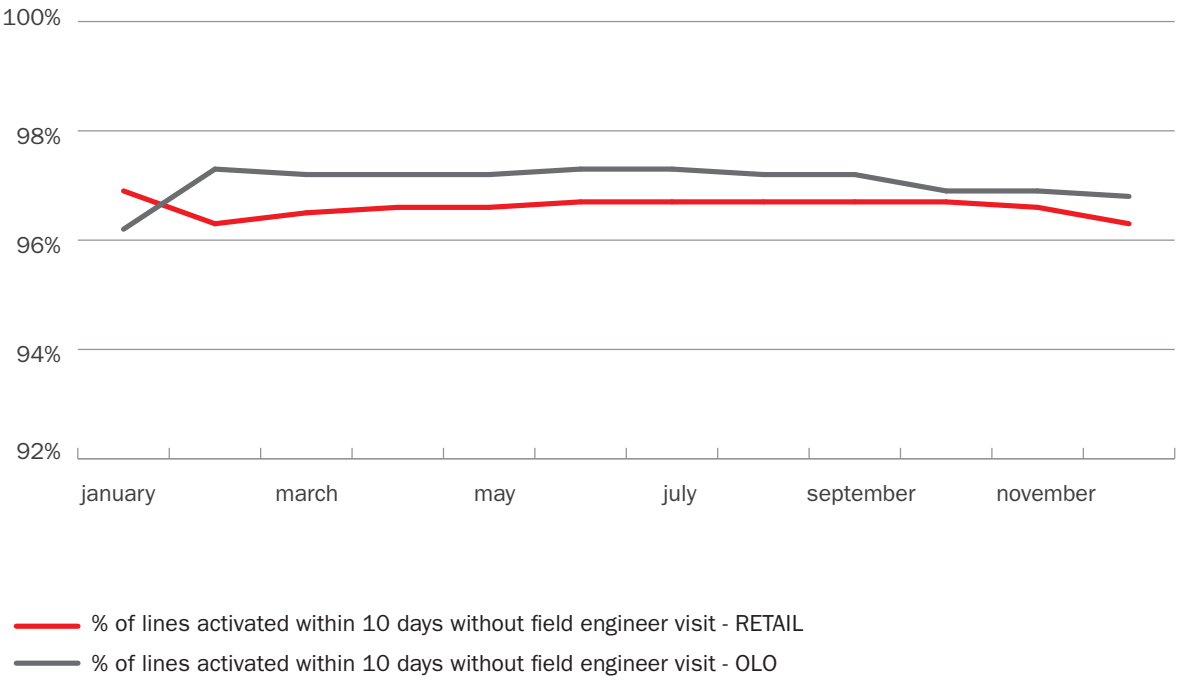


Figure 4 - Percentage of lines activated within 10 days without a field engineer visit

Lines activated within 20 calendar days - with a technician visit

The percentage of lines activated within 20 days with the intervention of a technician at customer premises was very high (consistently over 92%) for both Telecom Italia Retail customers and OLO customers. The figure was slightly higher for the Retail segment, with the Wholesale figure dropping slightly in the final months of the year.

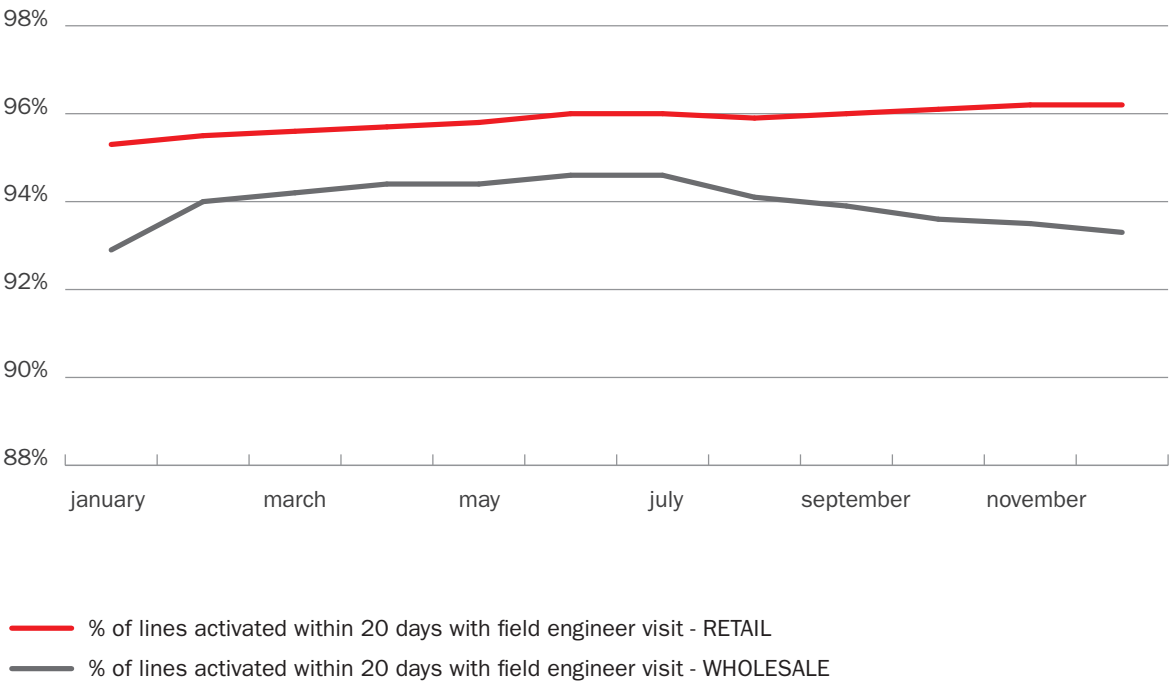


Figure 5 - Percentage of lines activated within 20 days with a field engineer visit

Lines activated within 30 calendar days - with a technician visit

Measurements of this indicator were virtually identical for both segments over the most part of the 2012, with a slight, but progressive difference in favour of the Retail segment from September. The progressive figure for December was 98.2% for the Retail segment, versus 97.6% for Wholesale.

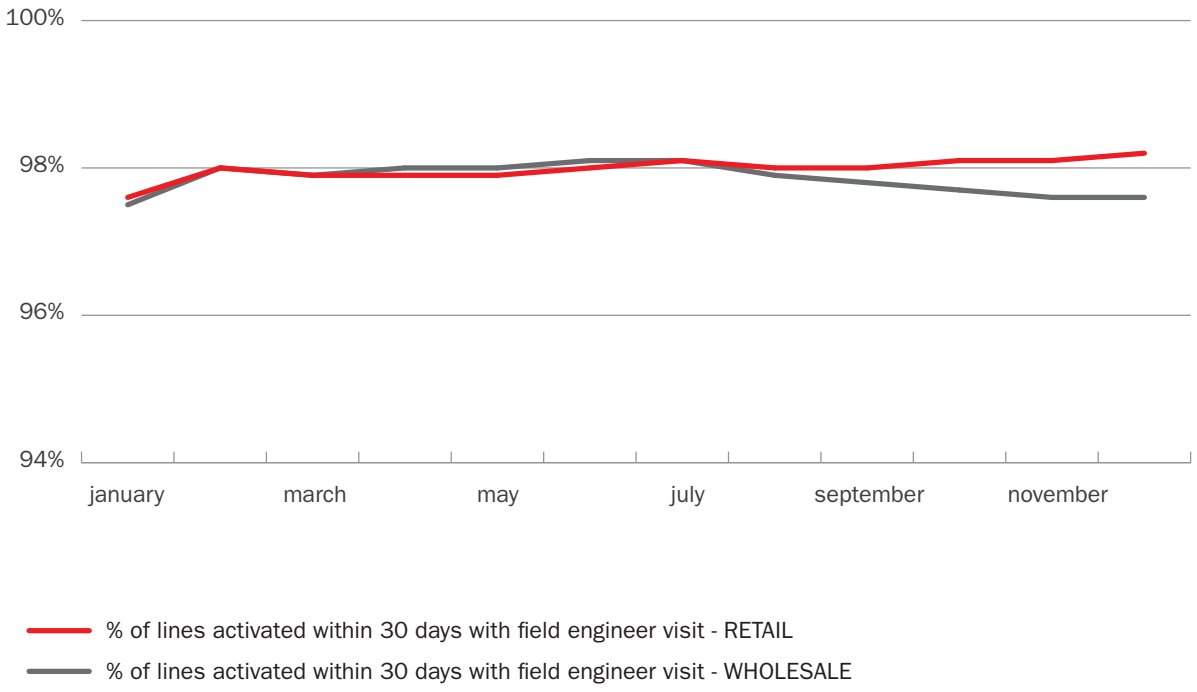


Figure 6 - Percentage of lines activated within 30 days with a field engineer visit

Average Open Access working time (calendar days)

After a January figure, which was markedly lower for the Retail segment (5.8 calendar days versus 6.4 for Wholesale), average working time recorded was almost identical for the two segments in the following months until August, when the figures diverged slightly again in favour of the Retail segment. In December, Open Access working time averaged 5.9 calendar days for the Retail segment and 6.2 days for Wholesale.

It should be noted that the vast majority of OLO work orders involved house calls to customers, resulting in higher average working times.

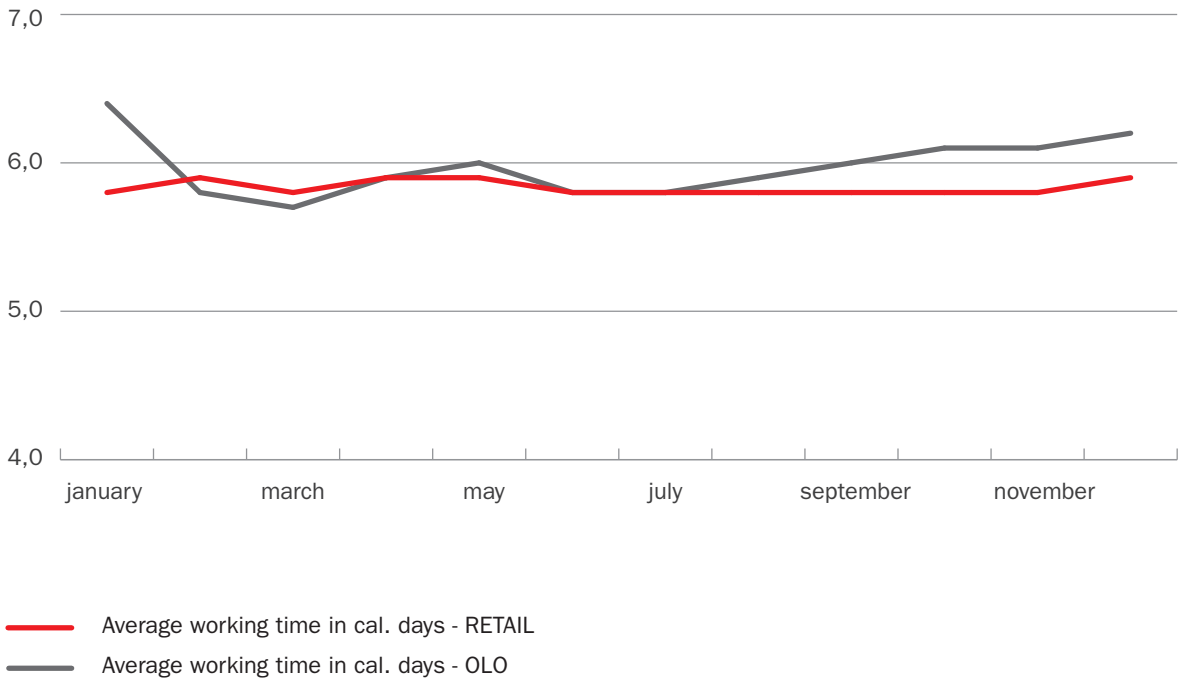


Figure 7 - Average Open Access working time

Average business connection working time

Average working time for business connections was 23.0 calendar days for the Wholesale segment, compared to 17.6 days for Retail. Figures remained firmly in favour of the Retail segment over the year, with an average gap between the two segments of around 5 calendar days.

The Supervisory Board conducted an investigation into the matter via Resolution No. 16/2011. The investigation was closed by Resolution No. 5/2012, finding that the performance levels measured, once adjusted for the effects of a process change introduced in 2011, showed that equality of treatment had been satisfied *(for details see the previous section "KPI Outcomes for 2012: An Overview").*

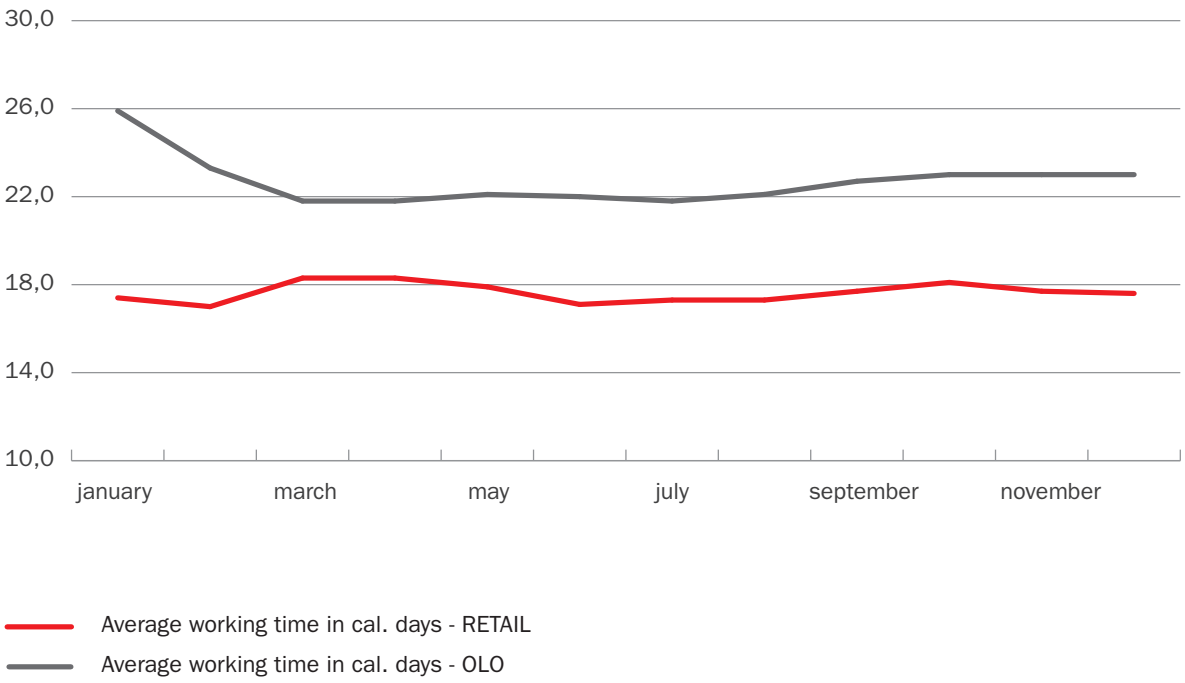


Figure 8 - Average Business connection working time

KPI 1 - NEW DELIVERY PROCESS

Given the low volumes involved, NDP performance indicators (% Single Queue WOs resolved; % WOs completed by appointment date; % WOs in the KO Network; Single Queue waiting times) are still not significant.

Figures for these indicators will be reported once the number of operators joining the system and the volume of work orders placed are sufficient to produce adequate data.

KPI 2 - VOICE ASSURANCE

In order to enable comparison on a uniform basis, all faults resolved directly upon reporting to a call centre (187 and 191 for Telecom Italia or other customer service numbers for the OLOs) have been excluded from measurements.

Average POTS line repair time (working hours)

Voice assurance indicators show that average repair times for Telecom Italia Retail lines were slightly, but constantly higher than the line repair times for OLO customers, continuing the trend seen in 2011. In December, average repair time was 15.0 working hours for the Retail segment, versus 13.9 for Wholesale, which was substantially in line with previous months.

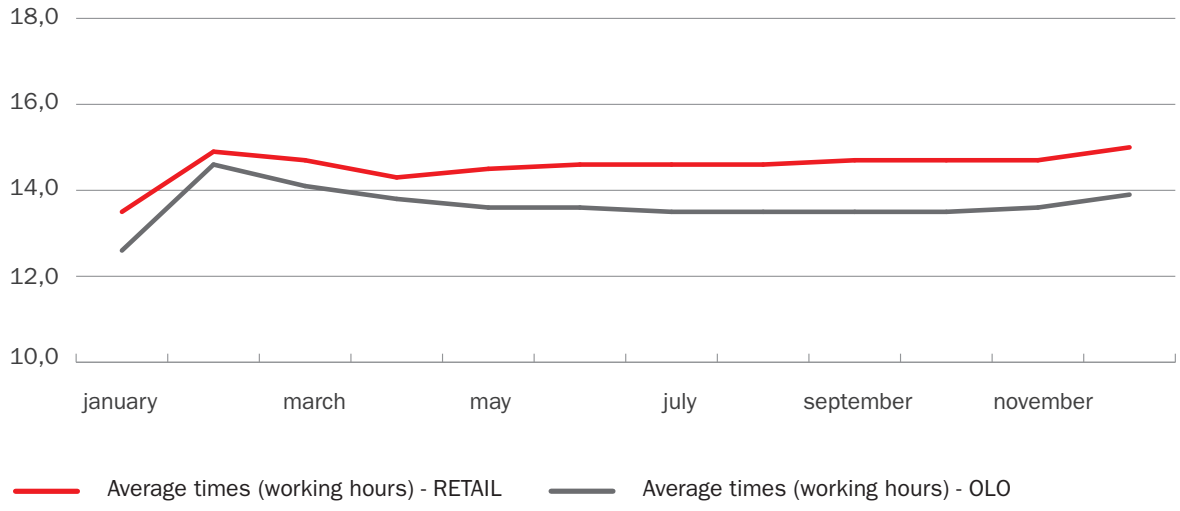


Figure 9 - Average POTS line repair time (working hours)

Percentage of faults resolved within two working days from the fault report

Due to contractual differences in service level agreements with OLOs, compared to those applicable to the Retail segment, service levels were higher for OLOs consistently over the year. At year end, the figure for the wholesale segment was 96.0%, versus 91.1% for Retail, showing a 4.9 percentage-point gap.

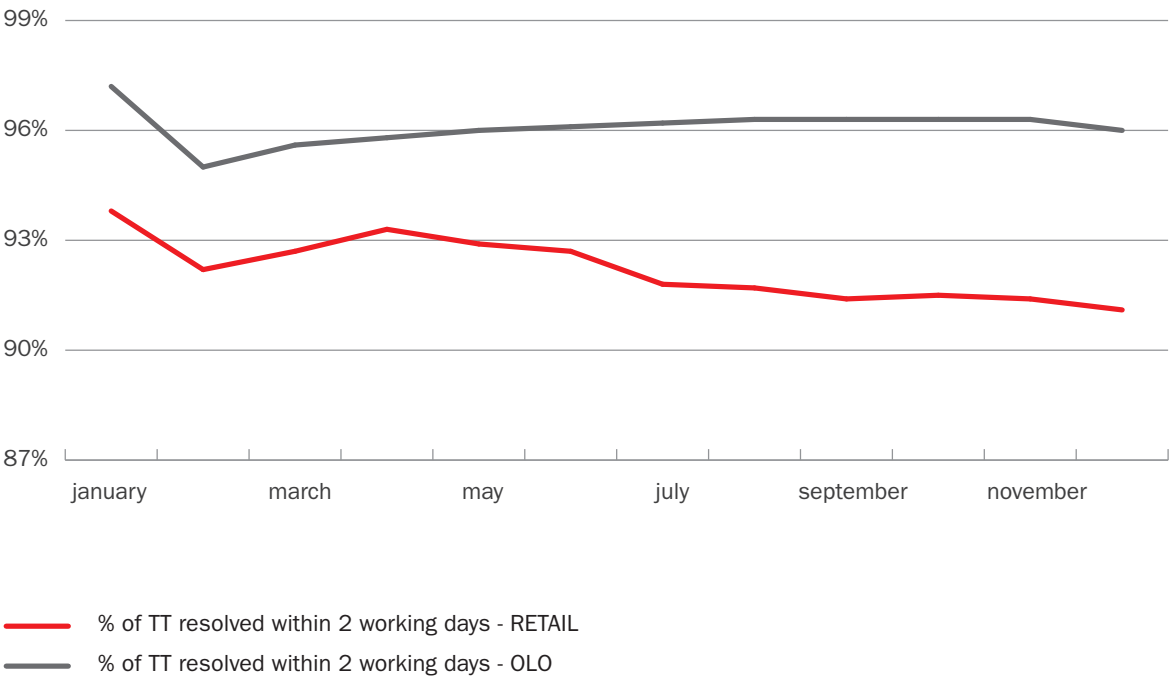


Figure 10 - Percentage of faults resolved within two working days of the report

Percentage of POTS line faults recurring within 30 days

The percentage of faults recurring within 30 days was lower for OLOs, though the gap narrowed progressively over the year to 0.5 of a percentage point at the end of 2012 (11.2% for Retail versus 10.7% for Wholesale).

Performance levels have progressively improved for this indicator, especially in the Retail segment, building on a similar trend seen in 2011.

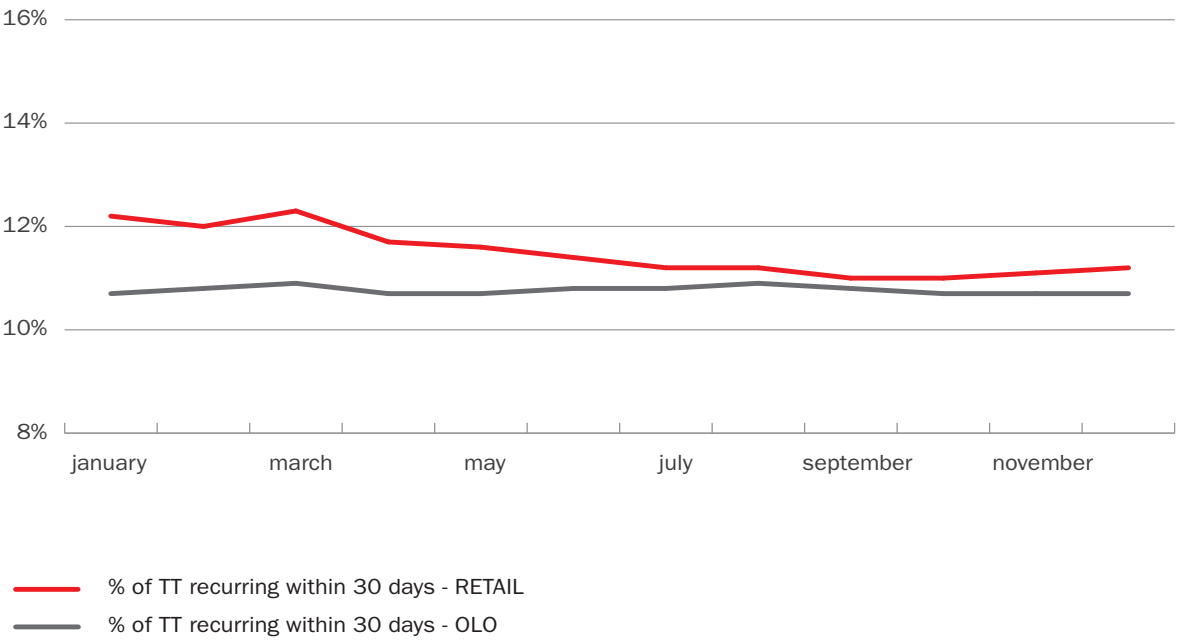


Figure 11 - Percentage of POTS faults recurring within 30 days

Percentage of claimants circuits

The indicator shows that the percentage of claimant circuits was markedly higher for the Retail segment (16.5% versus 10.2% for Wholesale), with service levels consistent throughout the year.

The figure is calculated by taking the total number of TTs closed in a month, including faults managed and closed by Open Access back offices, as a percentage of the total number of active lines.

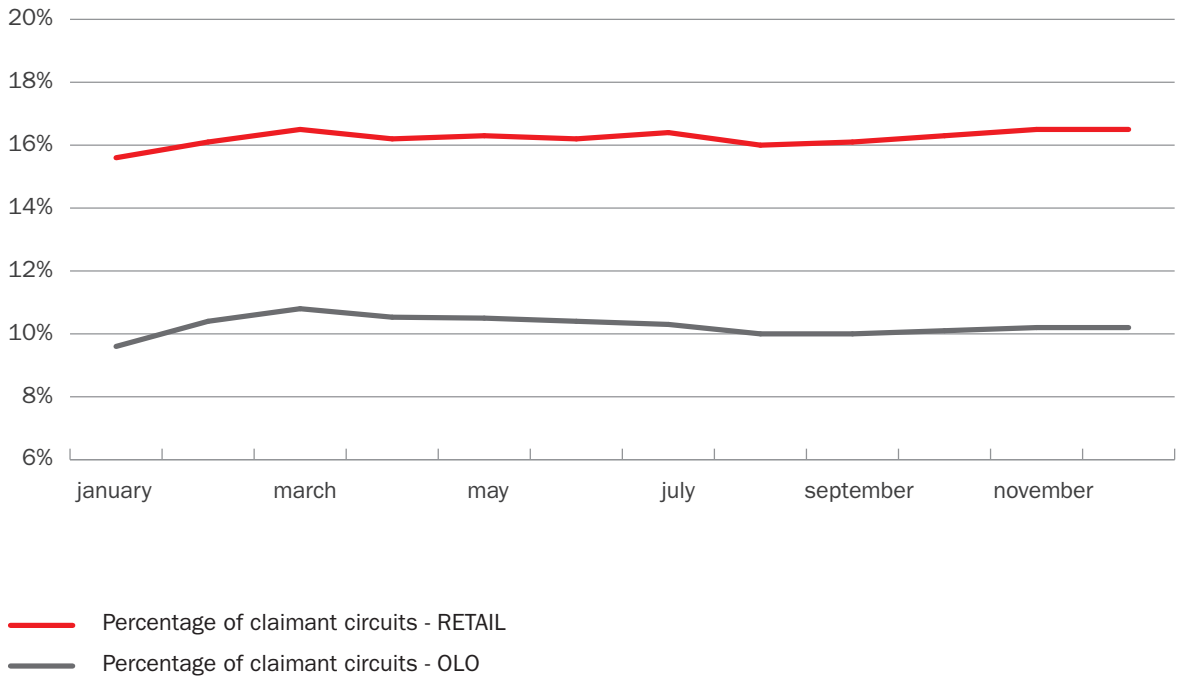


Figure 12 - Percentage of claimant circuits

KPI 2 - BROADBAND ASSURANCE

Average ADSL broadband repair time (working hours)

Average repair times for ADSL broadband faults were lower for the Retail segment than for Wholesale.

The chart shows the progressive values for the year starting from January. Service levels in the first quarter of the year were much more favourable for Telecom Italia Retail customers, though the gap quickly narrowed, with average repair times in May already shorter for customers of OLOs. The trend then reversed again, starting from September. At year end, average repair time for the Retail segment was 9.0 working hours, versus 8.4 for Wholesale.

The values measured over the year all satisfy SLA standards, which are more stringent for the Wholesale segment.

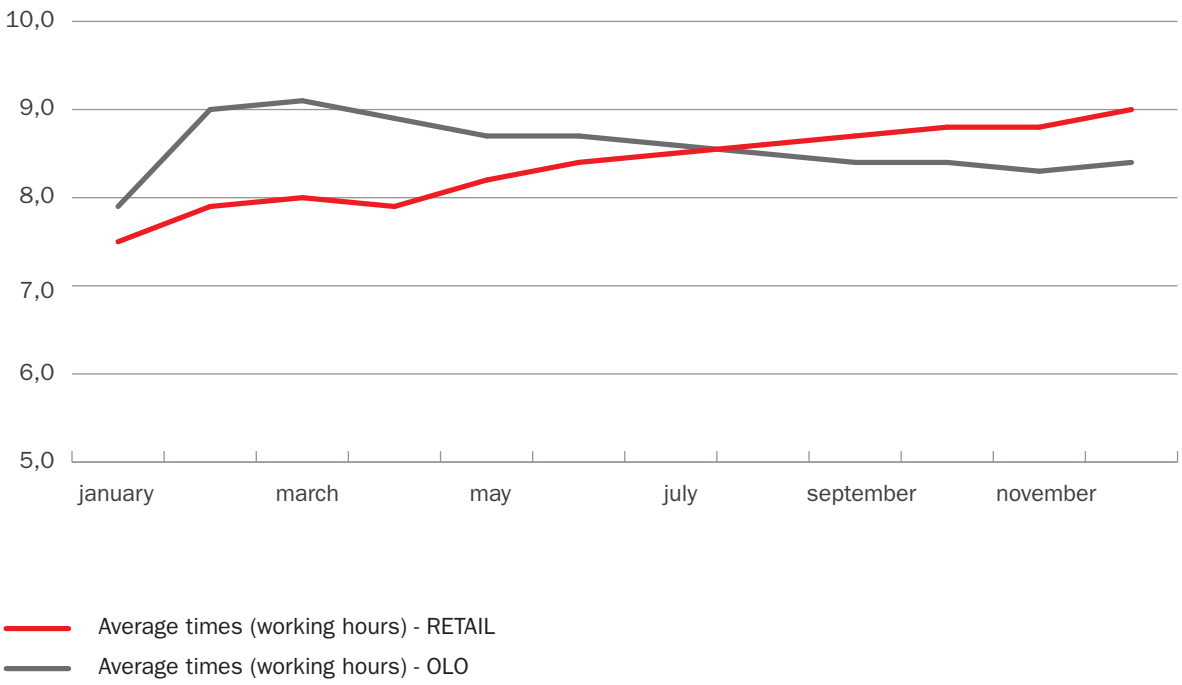


Figure 13 - Average broadband ADSL repair times in hours

Percentage of ADSL faults repaired within two working days

The percentage of ADSL faults repaired within two working days was much higher for the Wholesale segment in 2012, continuing the trend seen in previous years.

The gap between the segments rose in December to 3.8 percentage points, up on previous months. Notably, the figure has progressively fallen for the Retail segment.

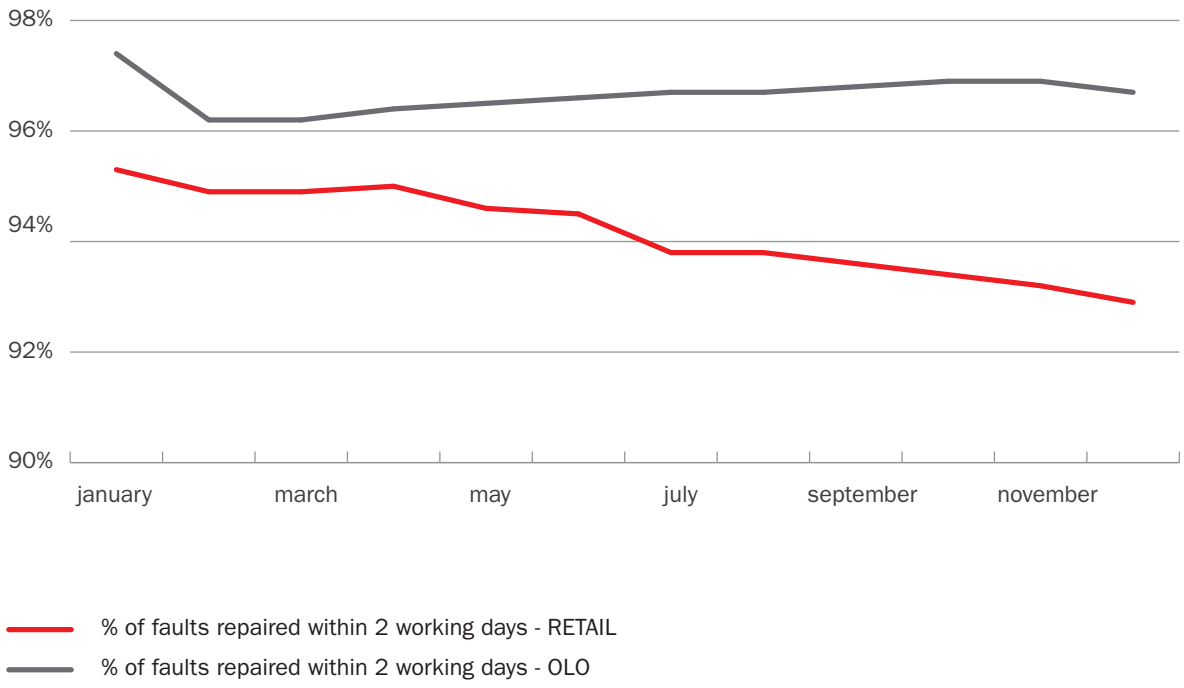


Figure 14 - Percentage of ADSL faults repaired within 2 working days

Percentage of ADSL faults recurring within 30 days

The percentage of ADSL faults recurring within 30 days was considerably higher for the Wholesale segment, with a gap at year end of 5.0 percentage points (20.1% for Wholesale versus 15.1% for Retail).

The Supervisory Board conducted an investigation into this indicator, together with the KPI for average business connection working times, via Resolution No. 16/2011, which requested information from Telecom Italia on the underlying causes of the performance gap. By Resolution No. 5/2012, the Supervisory Board closed the investigation, finding that an analysis of the KPI results showed that equality of treatment had been satisfied *(for details see the previous section "KPI Outcomes for 2012: An Overview")*.

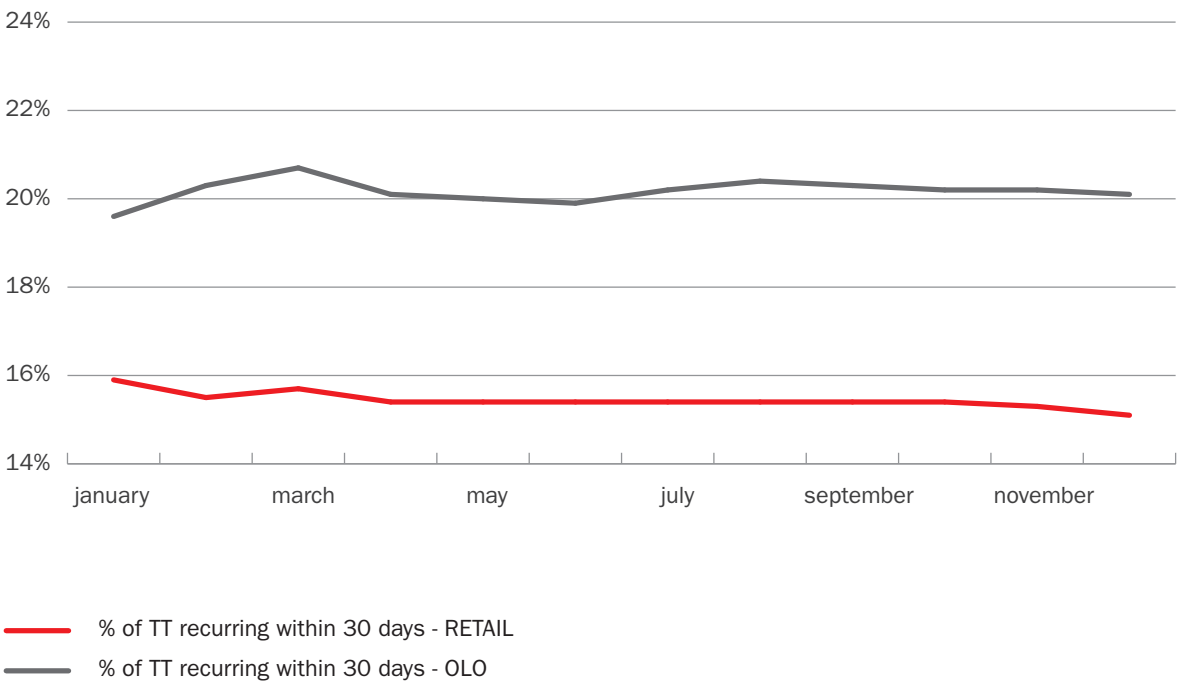


Figure 15 - Percentage of ADSL faults recurring within 30 days

Percentage of ADSL faults opened within 14 days of activation

At the end of 2012, the percentage of trouble tickets (TTs) opened within 14 days of service activation was 2.4% for the Retail segment, versus 10.6% for Wholesale. The figure was consistently higher for the Wholesale segment throughout the year, with the gap growing sharply in the fourth quarter.

This indicator is defined as the number of TTs opened within 14 days of activation as a proportion of total TTs for the reference period.

Since the total number of TTs in the Retail segment is much higher than the total number of TTs for OLOs, the resulting percentage is necessarily higher for OLOs, distorting the comparison. A new indicator that takes as its denominator the number of activations for the period, broken down by segment, would be more appropriate.

The Supervisory Board conducted an investigation into this indicator, which was closed by Resolution No. 5/2012. It found that when the 2011 values are recalculated using the method considered to be correct (taking into account the number of activations during the period by segment as denominator, instead of the total number of TTs in the period), there is a difference of 0.8 percentage points to the advantage of the Wholesale segment (7.6% for Retail versus 6.8% for Wholesale), which overturns the figures favouring the Retail segment that were initially reported.

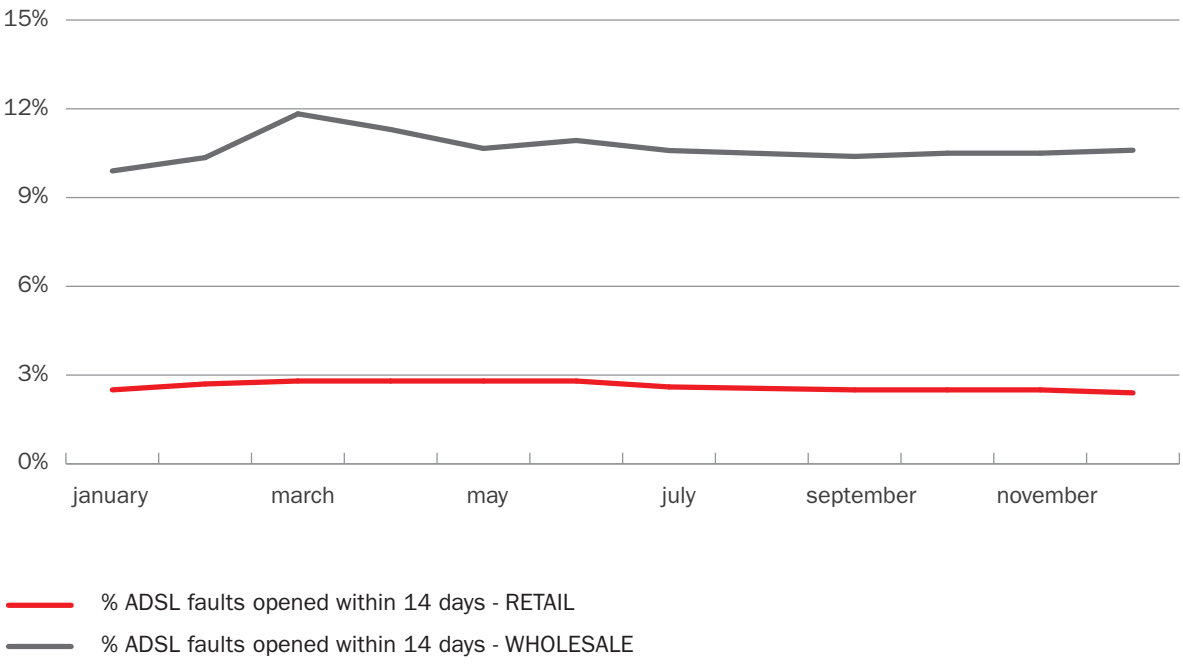


Figure 16 - Percentage of ADSL faults opened within 14 days

Average SHDSL / symmetrical bitstream broadband repair times (working hours)

Average repair times for SHDSL and symmetrical bitstream broadband services were consistently higher for the Retail segment in 2012 than for Wholesale.

In December, the average for the Retail segment was 6.3 working hours, versus 5.0 working hours for Wholesale.

Figures for 2012 were in line with those for 2011, when an average of 6.4 working hours was recorded for the Retail segment, versus 4.9 hours for Wholesale.

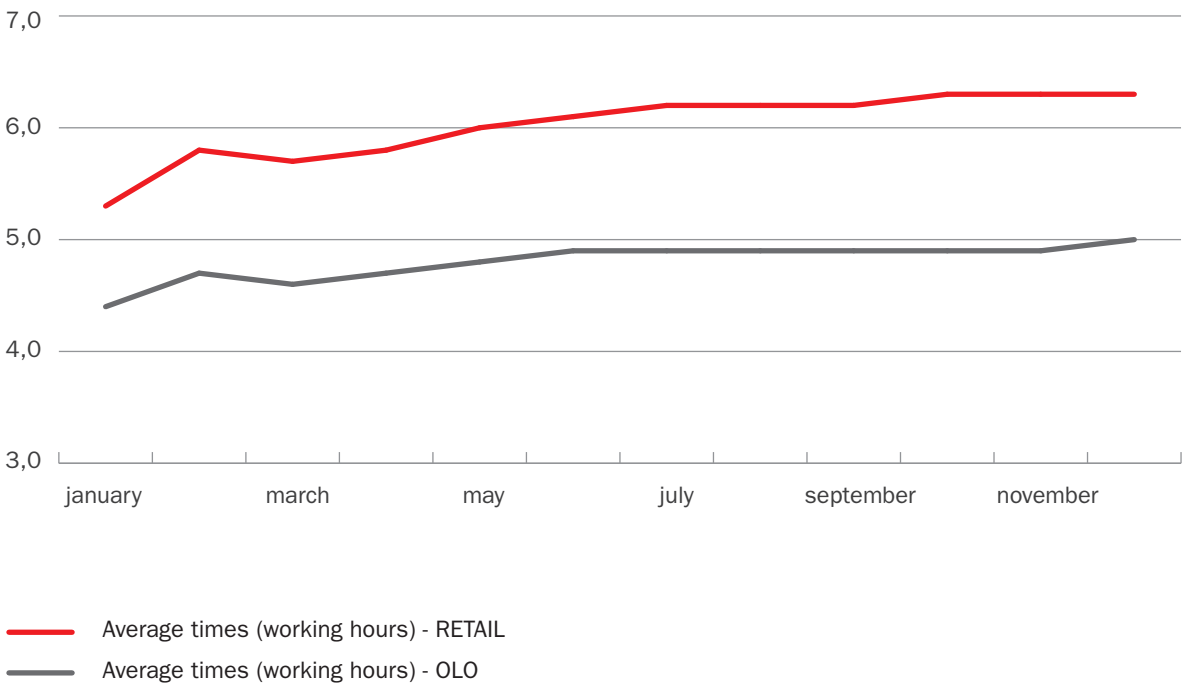


Figure 17 - Average symmetric bitstream / SHDSL broadband repair times in hours

Percentage of SHDSL / symmetrical bitstream broadband faults repaired within two working days from the fault report

The percentage of broadband faults for SHDSL symmetrical bitstream connections repaired within two working days was very high for the Wholesale segment, at around 99% (98.8% for December).

For the Retail segment, the percentage fell slightly to 95.2% at year end, from 96.8% in January 2012, after the January 2011 peak of 97.7%.

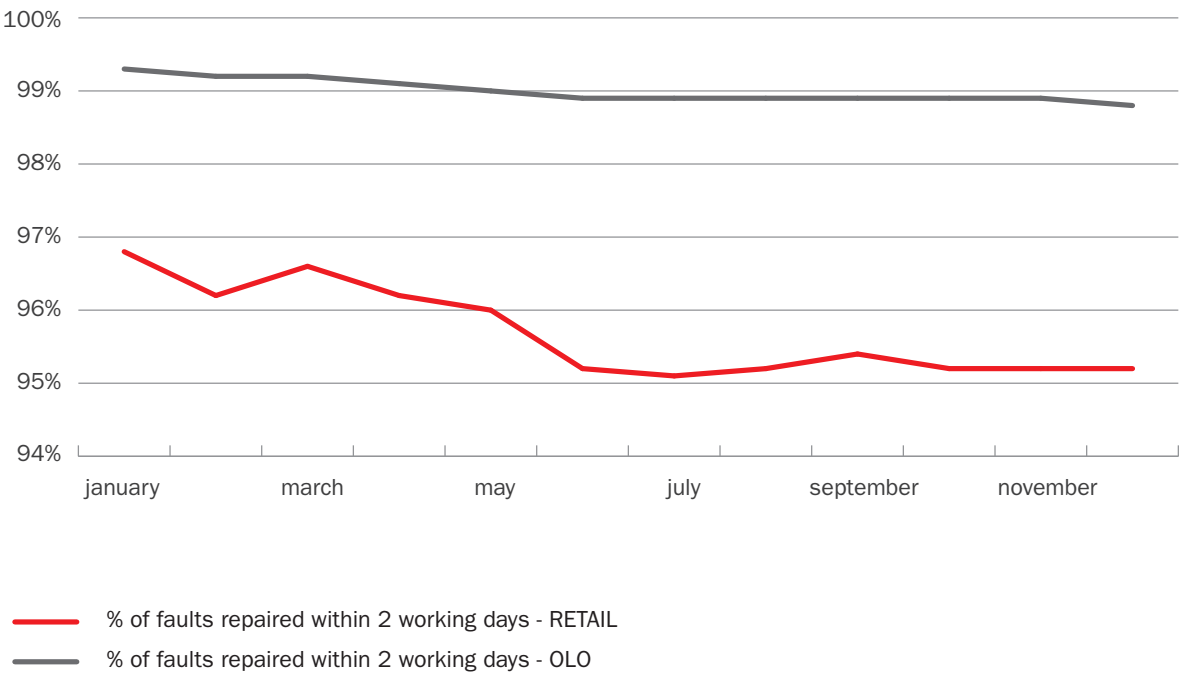


Figure 18 - Percentage of symmetric bitstream / SHDSL faults repaired within 2 working days

Percentage of SHDSL / symmetrical bitstream broadband faults recurring within 30 days

The percentage of SHDSL symmetrical bitstream faults recurring within 30 days was consistently lower for the Wholesale segment in 2012, compared to Retail. December figures showed a recurrence rate of 28.2% for the Retail segment, versus 23.8% for Wholesale, confirming the annual trend.

After a progressive widening, the gap between the segments narrowed in the last two months of the year, bringing the year-end gap down to 4.4 percentage points.

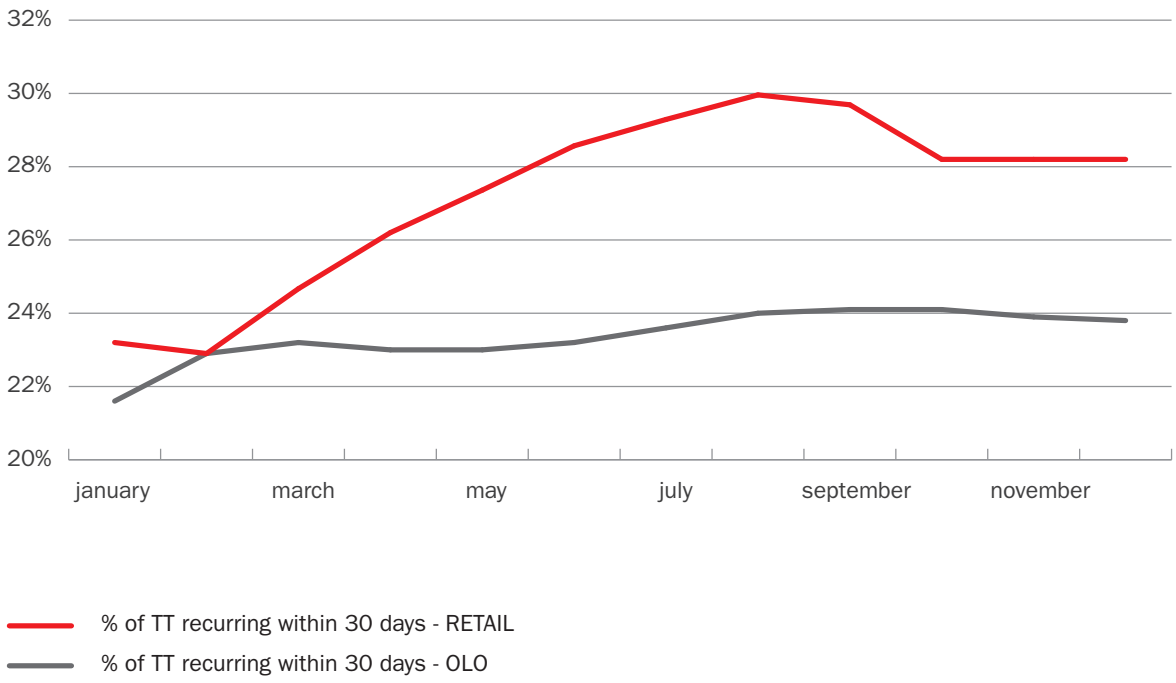


Figure 19 - Percentage of symmetric bitstream S/HDSL faults recurring within 30 days

Percentage of SHDSL / symmetrical bitstream faults opened within 14 days of activation

Faults occurring within 14 days of activation are not reported for the Retail segment because the absolute values are negligible and so a comparison cannot be made.

For customers of OLOs, the December figure of 4.1% showed no change on the previous three months, but was sharply up on the percentages recorded in the first eight months of the year.

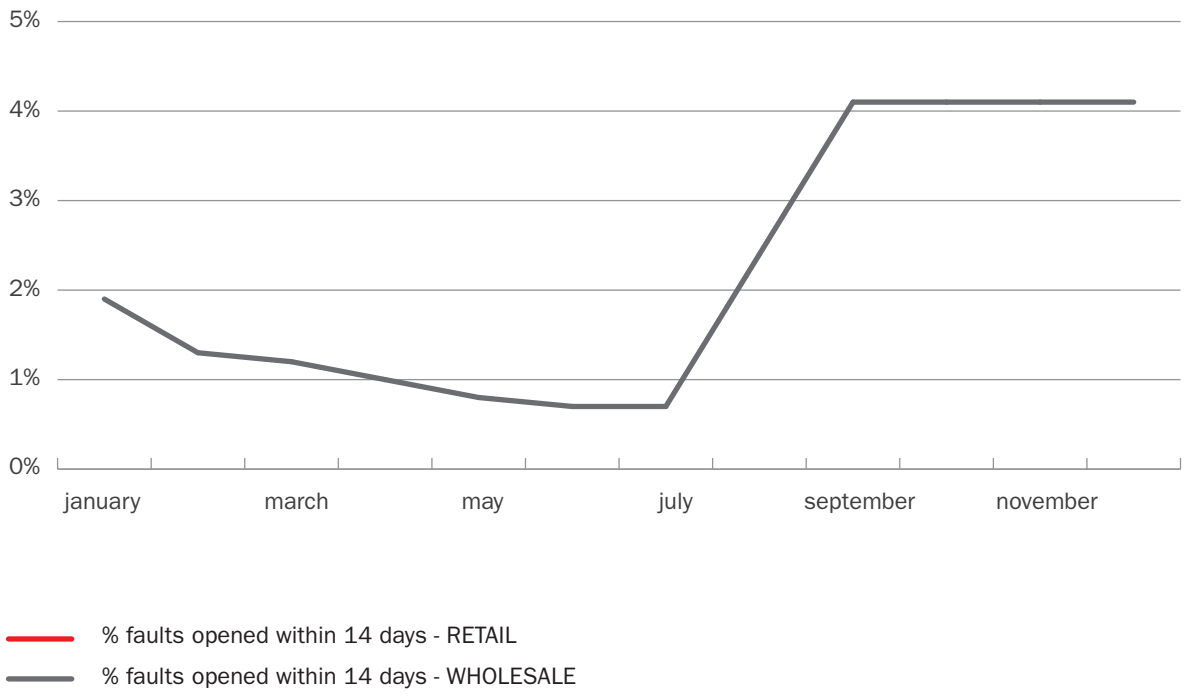


Figure 20 - Percentage of faults opened within 14 days

KPI 3 - SERVICE AVAILABILITY

This set of KPIs measures service availability over time, calculated as a ratio of the actual time services are operating to the theoretical time services should ideally be operating. The indicators are constructed on the following basis:

$$\text{Percentage of Service Availability over time} = \frac{\text{Effective Time}}{\text{Theoretical Time}} * 100$$

Where:
Effective Time is the theoretical time less average downtime for the user base experiencing downtime;
Theoretical Time is the observation period multiplied by the average active user base for the same period.

Extremely high levels of system availability were recorded in 2012 for all services examined.
The systems through which services (LLU, Shared Access and WLR) are provided to OLOs in the Wholesale segment outperformed Retail Voice systems.

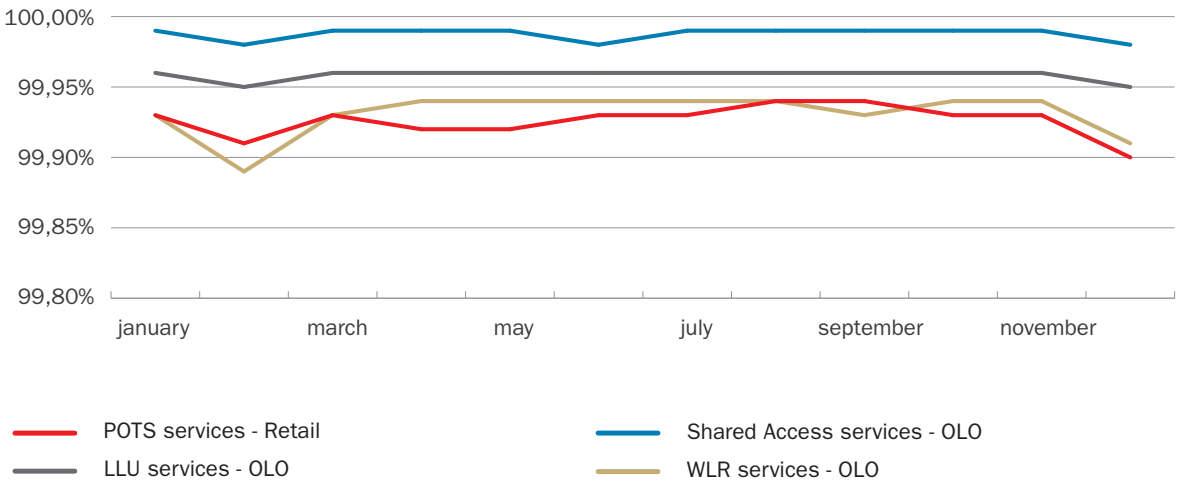


Figure 21 - POTS service availability, by month

For ADSL connections, Alice ADSL performed at 99.90% in December, compared to the 99.97% availability for Wholesale services.

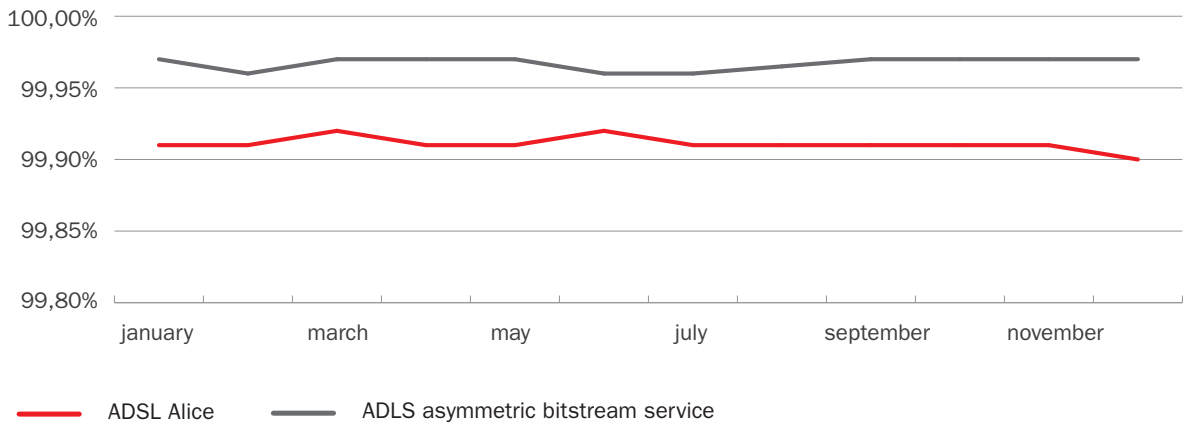


Figure 22 - Availability of ADSL services

The availability of symmetrical bitstream services was also consistently high throughout the year, measured at 99.97% at year end for the Business Nx2 Mbps S/HDSL service, and at 99.96% for the Business symmetrical bitstream service.

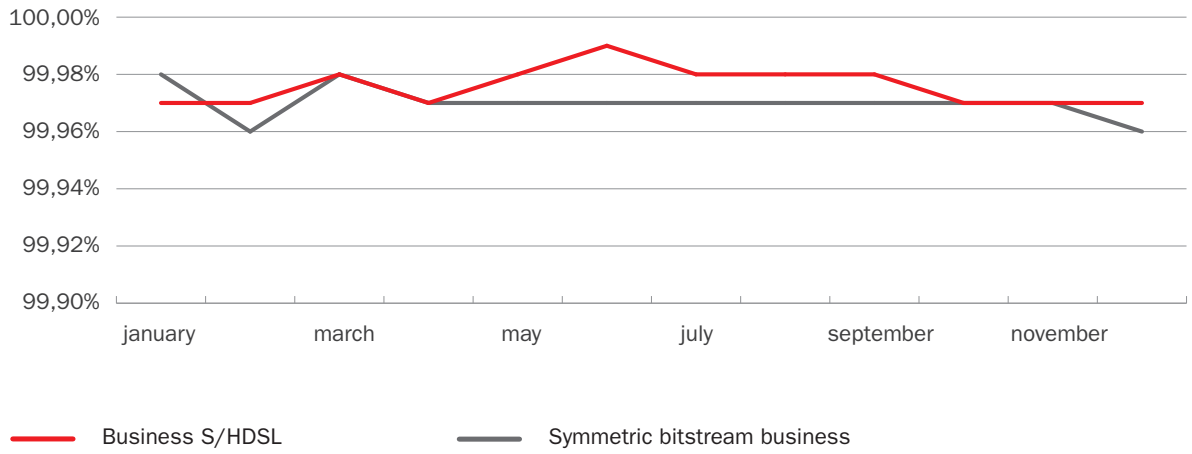


Figure 23 - Availability of symmetric bitstream services

KPI 4 - UNAVAILABILITY OF WHOLESALE SYSTEMS

This indicator measures the percentage unavailability of IT systems supporting assurance and delivery processes. Data are aggregated for each service in order to highlight any effects on the related process indicators. The indicators are constructed on the following basis:

$$\text{Percentage of Service Availability over time} = \frac{\text{Effective Time}}{\text{Theoretical Time}} * 100$$

Where:
Effective Time is the time that service support systems are actually operating (theoretical time less downtime);
Theoretical Time is the time that the system should be operating (agreed operating time).

The percentage unavailability and percentage availability are complements equalling 100.
The results take into account the optimized architecture of the systems, and so a system breakdown will not necessarily result in an interruption of assurance or delivery activities.

Delivery systems

The percentage of system unavailability on delivery management systems fell sharply between January and February 2012, remaining very low from March onwards, and, in some cases, unavailability was zero.

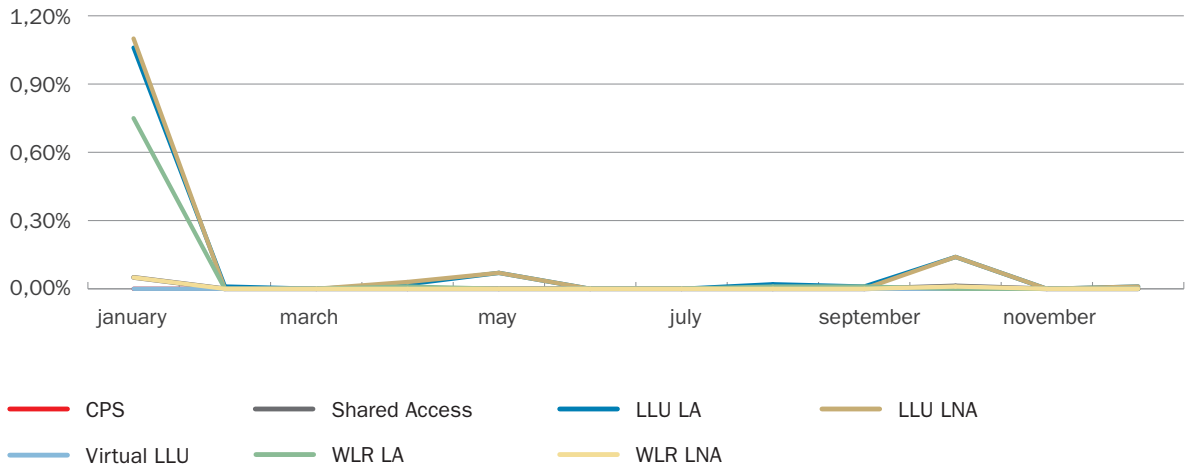


Figure 24 - Percentage unavailability of IT systems to manage Delivery activities for POTS/voice services

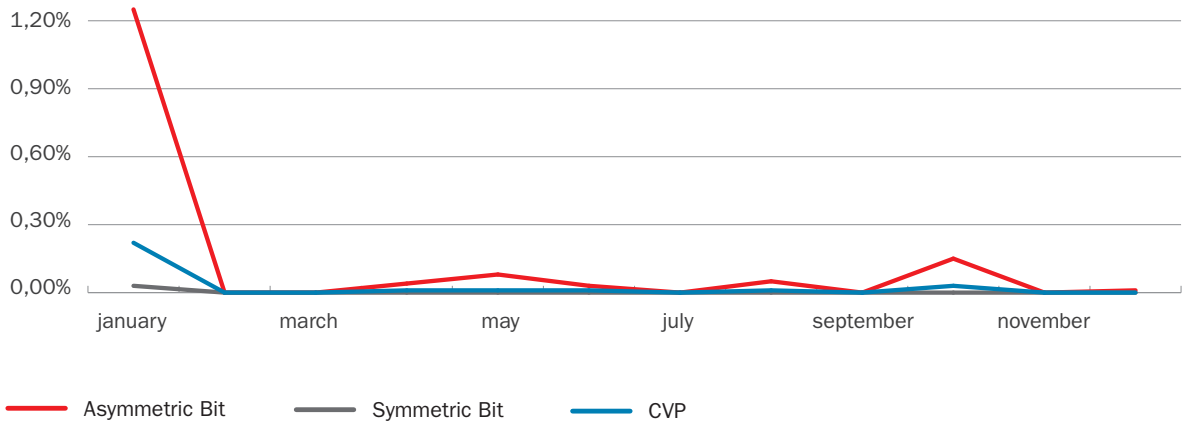


Figure 25 - Percentage unavailability of IT systems to manage Delivery activities for Broadband services

Assurance systems

The percentage of system unavailability on assurance systems peaked in May and November for both voice and broadband services, especially for LLU and asymmetrical bitstream services.

Overall, however, percentage unavailability was extremely low, and often equal to zero. December saw a correction of the November figure, which came back in line with the general annual trend.

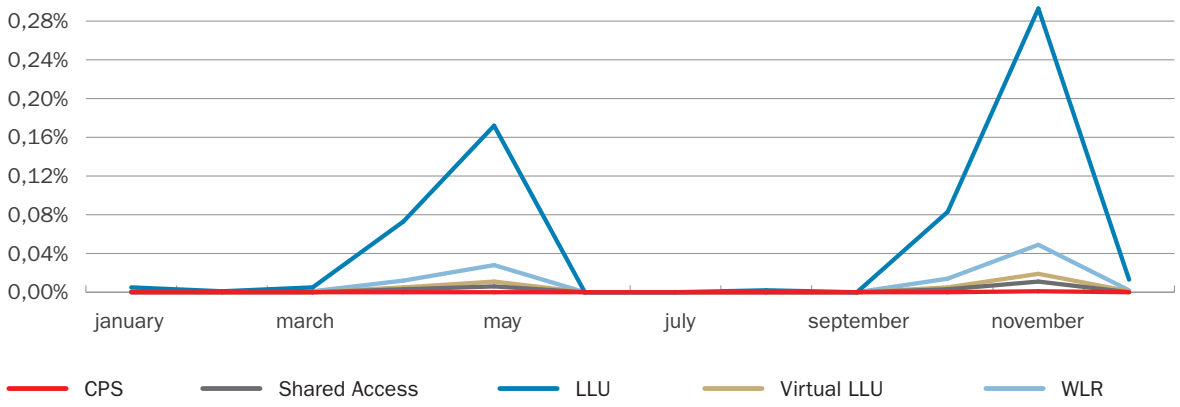


Figure 26 - Percentage unavailability of IT systems to manage Assurance activities for POTS services

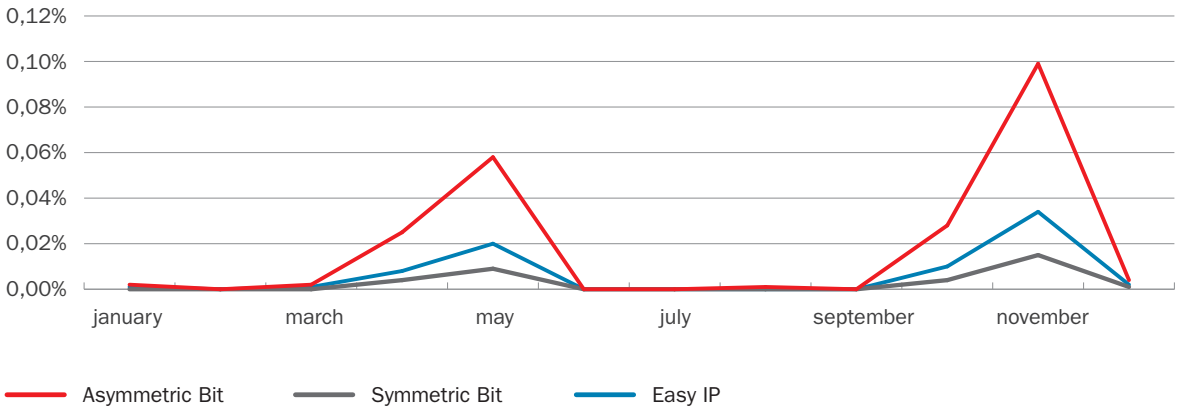


Figure 27 - Percentage unavailability of IT systems to manage Assurance activities for Broadband services

Delivery interface management applications

Availability remained consistently high throughout the year at around 100% for all systems examined, except in June when performance levels dropped, particularly for the Regulatory CRM WS system.

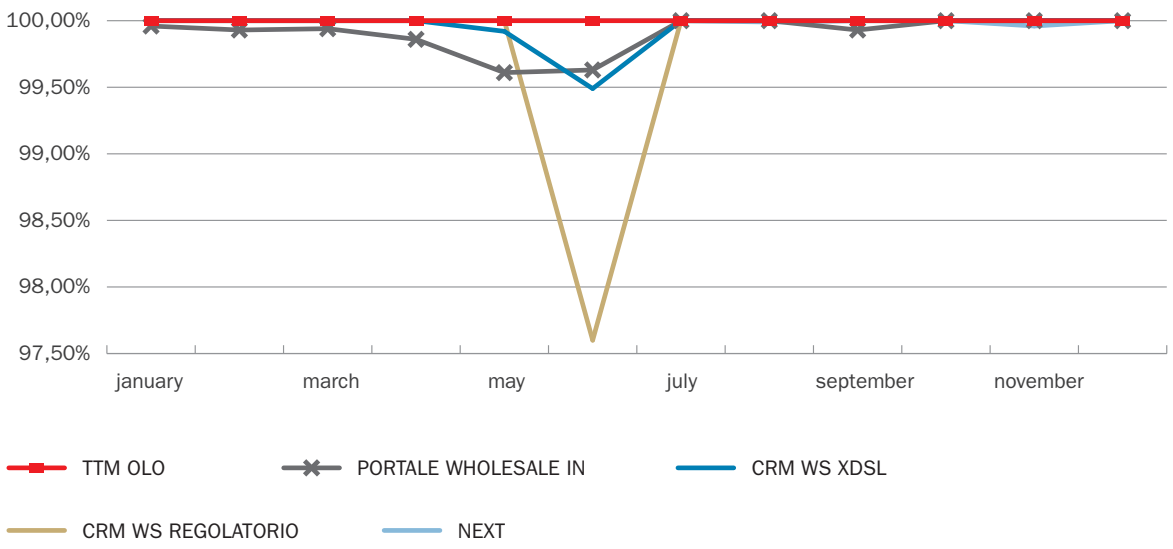


Figure 28 - Percentage availability of IT systems to manage Delivery interface services

6.E - BITSTREAM SERVICES AND SATURATION OF THE LOCAL TRANSMISSION NETWORK

6.e.1 - General aspects

Of the issues addressed by Undertakings Group No. 5, an ongoing problem of particular importance in 2012 was the saturation of Digital Subscriber Line Access Multiplexers (DSLAMs). The Supervisory Office has continued weekly monitoring of progress made in the desaturation of ADSL exchanges and the management of the "amber light" pre-warning system. The purpose of monitoring is to ensure that the objectives set by Telecom Italia in its quarterly plans are met and to assess the effectiveness of the pre-warning system.

Monitoring makes use of a special database created by the Supervisory Office, which is updated on a weekly basis by direct extraction of data from the Telecom Italia Wholesale portal. The monitoring results showed that almost all the exchanges served by 7 Mbit/s ATM DSLAMs that became saturated in 2012 had been signalled by an amber light (470 exchanges out of 474), demonstrating the greater transparency of information. Monitoring also highlighted a marked increase in the number of saturated ATM exchanges, as well as an increase in those signalled by the pre-warning system. The saturation problem, which has reached major proportions since June, is connected with the impossibility of sourcing new ATM DSLAM ports (with the result that equipment can reach geometric saturation), due to suppliers having ceased production of ATM technology some time ago. Given the obsolescence of ATM technology, Telecom Italia has been working intensively on the ADSL bitstream network in an effort to extend the new Ethernet IP platform as far as possible, in order to provide a valid technological alternative in exchanges where ATM DSLAMs cannot be expanded.

From January 2012, the Supervisory Office extended monitoring to include exchanges served by Ethernet IP DSLAMs, in order to identify exchanges that are effectively saturated - i.e. where ATM DSLAMs cannot be expanded and an alternative Ethernet IP DSLAM is not available. A breakdown of the data shows that the number of effectively saturated exchanges was extremely low, falling from 55 exchanges at 1 January 2012 to 51 at 31 December 2012. A similar trend was seen in exchanges on amber light status that have no Ethernet IP alternative, which dropped by 51.4% in number. The breakdown also revealed a marked increase in the number of saturated miniDSLAMs (+13%), whereas the saturation rate for symmetrical bitstream service exchanges was stable.

In this case, next to no change was seen over the year in the percentage of exchanges that were saturated or in the percentage of customers served by saturated exchanges. In its Resolution No. 94/12/CIR of 4 October 2012, with reference to the "end of sale" of ATM technology, AGCom took the position that "the transition from ATM bitstream to Ethernet is a key element in ensuring an adequate competitive structure and in guaranteeing adequate service quality to the end user. It is therefore in AGCom's interest to incentivize the transition to Ethernet."

Accordingly, AGCom has instructed Telecom Italia to pass on a series of financial incentives to the OLOs for the duration of the migration period, and imposed a reduction in prices for bitstream services provided on the Ethernet platform. AGCom has also asked Telecom Italia, as a condition for the recognition of the end of sale of ATM technology, to make available certain functional elements relating to: the process of service acquisition and provisioning; the adaptation of protocols to make OLO modems compatible; and the link analysis tools on sections relating to the delivery kits (for OLOs). Telecom Italia must notify AGCom and OLOs as soon as the functional elements listed above are available. End of sale conditions can be implemented no earlier than one month after that notification, and in any event no earlier than the end of February 2013. In the following sections, the Supervisory Board's monitoring outcomes for 2012 are reported in detail, concerning the desaturation plans for bitstream service exchanges.

6.e.2 - Asymmetrical bitstream services

Monitoring conducted by the Supervisory Board in 2012 highlighted a continued, sharp increase in the number of exchanges served by ATM DSLAMs and miniDSLAMs that are out of service. The table below compares year-end service figures for 2011 and 2012 showing the number of asymmetrical bitstream service exchanges that were saturated. Compared to the sharp rise in the number of saturated exchanges served by ATM DSLAMs (from 71 to 501), only a minimal number of exchanges (51) were effectively out of service due to the lack of an Ethernet IP DSLAM alternative.

	FINAL FIGURES AT 31/12/2011			FINAL FIGURES AT 31/12/2012		
	Exchanges in service (active + saturated)	of which saturated exchanges	% telephone customers served by saturated exchanges	Exchanges in service (active + saturated)	Saturated exchanges	% telephone customers served by saturated exchanges
Total	9,044	1,070	3.7%	9,213	1,632	7.3%
miniDSLAMs	2,357	999	2.70%	2,357	1,131	2.2%
7 and 20 Mbit/s DSLAMs (ATM + IP)	6,687	55	0.40%	6,856	51	0.5%
7 Mbit/s ATM DSLAMs(*)	6,281	71	1.00%	6,281	501(*)	5.1%
of which saturated ATM DSLAMs without Ethernet		55	0.40%		47	0.3%
of which saturated ATM DSLAMs with Ethernet		0	0.00%		4	0.1%

Table 1 - Saturated asymmetrical bitstream service exchanges: December 2011 vs. December 2012

NOTE

(*) on 450 out of 501 the sale of services over DSLAM Ethernet is available

In compliance with Supervisory Board instructions, Telecom Italia has introduced a pre-warning mechanism to signal exchanges nearing saturation point. The amber light pre-warning system is up and running on the Telecom Italia Wholesale portal and signals which exchanges could become saturated within an estimated period of three months, if expansion action is not taken. Figure 1 shows changes in the number of 7 Mbit/s ADSL service exchanges served by ATM DSLAMs signalled by an amber light over 2012. Exchange areas served by ATM DSLAMs at risk of saturation are shown in *red;* the number of exchanges in the area for which an alternative Ethernet IP DSLAM is not available is shown in grey.

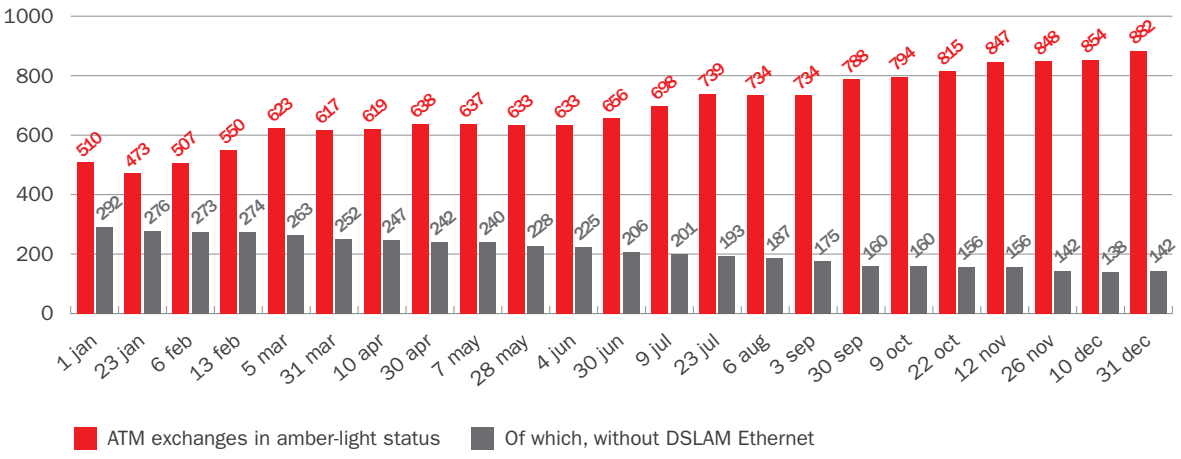


Figure 1 - Trend in the number of exchanges signalled by an amber light (7 Mbit/s ATM DSLAMs)

The number of exchanges signalled by an amber light continued to increase over the year, reaching 882 at 31 December 2012. The rise amounted to a 73% increase for the year in the number of exchanges signalled by an amber light as nearing saturation. Interestingly, of the 882 exchanges signalled, those lacking an Ethernet IP DSLAM alternative amounted to 142, accounting for just 16% of the total; if we consider these exchanges on their own, the number of exchanges signalled by an amber light was down sharply on the 1 January 2012 figure (-51.4%).

Figure 2 shows the trend in the number of 7 Mbit/s ADSL service exchanges served by ATM DSLAMs that reached saturation point over 2012. Exchange areas served by saturated ATM DSLAMs are shown in red; the number of exchanges in the area for which an alternative Ethernet IP DSLAM is not available is shown in grey.

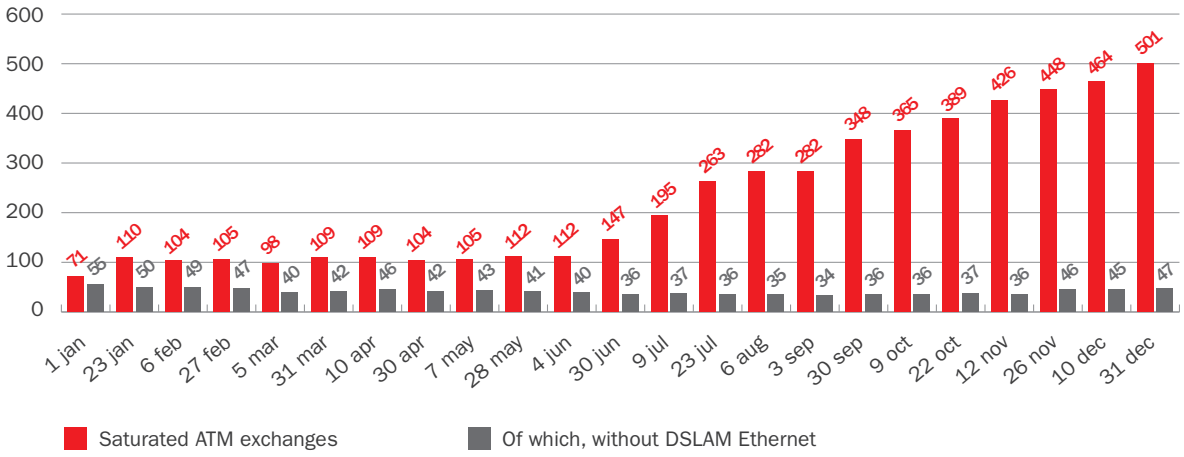


Figure 2 - Trend in the number of saturated exchanges (7 Mbit/s ATM DSLAMs)

The chart shows that the number of saturated exchanges rose significantly over the year (+606%), jumping from 71 exchanges at 31 December 2011 to 501 recorded at 31 December 2012. Of these, a remarkably high proportion (approx. 90.6%) were saturated in their ATM sections, but nevertheless in service thanks to the availability of an Ethernet IP DSLAM. As a result, including the four exchanges that were saturated in both their ATM and Ethernet sections, the total number of exchanges that were out of service for asymmetrical bitstream services at 31 December 2012 was a mere 51 out of 501 (10.1%). The trend in the change of status of 7 Mbit/s ATM DSLAMs over the year is also revealing (Figures 3 and 4).

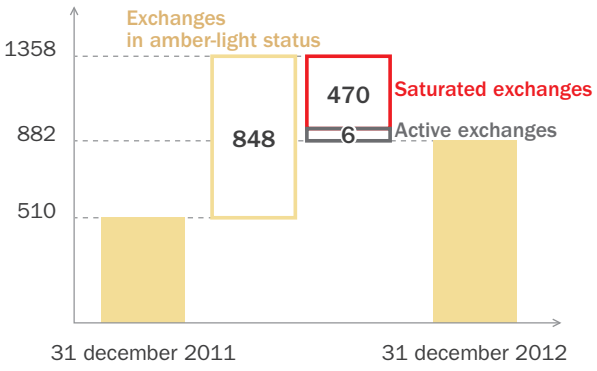


Figure 3 - Change in amber light status (signalled/not signalled) of exchanges served by 7 Mbit/s ATM DSLAMs: 31 December 2011 vs. 31 December 2012

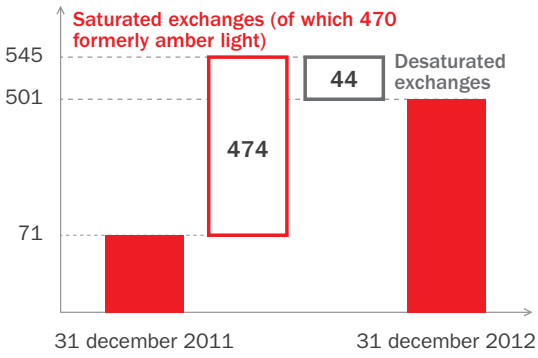


Figure 4 - Change in the red light status (saturated/not saturated) of exchanges served by 7 Mbit/s ATM DSLAMs: 31 December 2011 vs. 31 December 2012

Figure 3 shows that 848 exchanges were placed on amber light status over the year, while 476 exchanges were removed. Of these, 6 (1.3% of those removed from amber light status in the half year) were expanded and became no longer critical, while 470 (98.7%) went on to become saturated. A comparison with the data shown in Figure 4 reveals that almost all the 474 exchanges that became saturated over the year had been signalled by an amber light, demonstrating the effectiveness of the pre-warning system. Figure 4, which illustrates the change in status of already critical areas, also shows a sharp increase in the number of saturated exchanges served by 7 Mbit/s ATM DSLAMs (+606%).

An analysis of the data reported in Table 1 also reveals an increase in the number of saturated miniDSLAMs (+13%), reflecting Telecom Italia's decision not to prepare a desaturation plan for systems of this type which, for the most part, cover areas of little market interest. In this regard, in its Resolution No. 12/2011, the Supervisory Board recommended that Telecom Italia should publish any miniDSLAM expansion plans that may be introduced as a result of specific agreements concluded with local government authorities.

6.e.3 - Symmetrical bitstream services

Once again in 2012, Telecom Italia decided that desaturation plans for symmetrical bitstream services would only be introduced for exchanges of significant Retail or Wholesale market interest. The policy decision meant that no action plan could be prepared at the end of 2011. Instead, work was planned over the course of 2012 in response to market interest. The table below compares year-end service figures for 2011 and 2012.

	FINAL FIGURES AT 31/12/2011			FINAL FIGURES AT 31/12/2012		
	Exchanges in service (active + saturated)	of which saturated exchanges	% telephone customers served by saturated exchanges	Exchanges in service (active + saturated	Saturated exchanges	% telephone customers served by saturated exchanges
Total	9,123	1,545	2.6%	9,160	1,350	2.0%

Table 2 - Saturated symmetrical bitstream service exchanges: December 2011 vs. December 2012

Figure 5 shows the progressive desaturation action taken over 2012 for symmetrical bitstream service exchanges. Figure 6 instead shows the geographical breakdown of the 546 desaturation measures implemented over 2012. Changes in the percentage of saturated exchanges and the percentage of customers served by saturated exchanges are shown in Figure 7. A comparison of the charts shows next to no change over the year in the percentage of symmetrical bitstream service exchanges that were saturated or in the percentage of customers served by saturated exchanges.

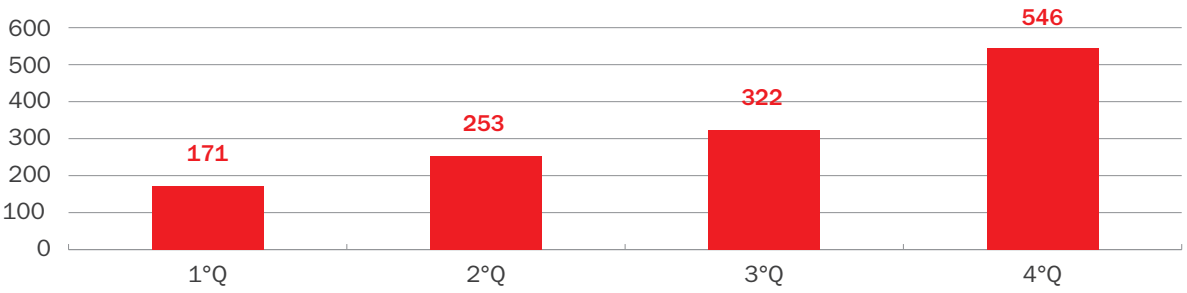


Figure 5 - Symmetrical bitstream services: Progressive desaturation action taken over 2012

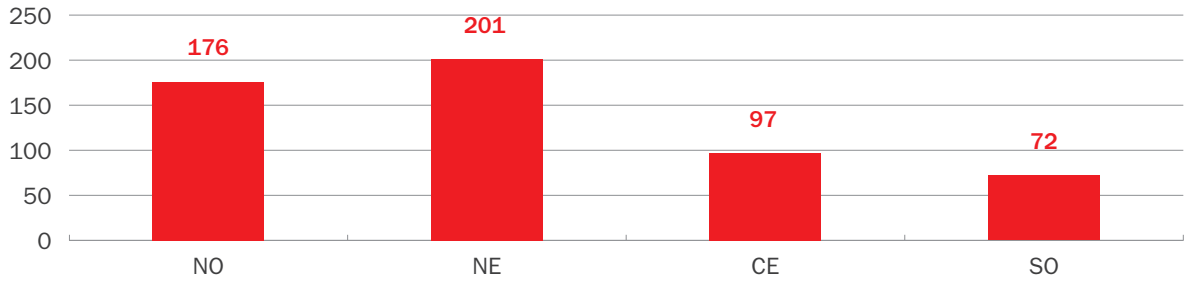


Figure 6 - Symmetrical bitstream services: Geographical breakdown of desaturation action taken over 2012

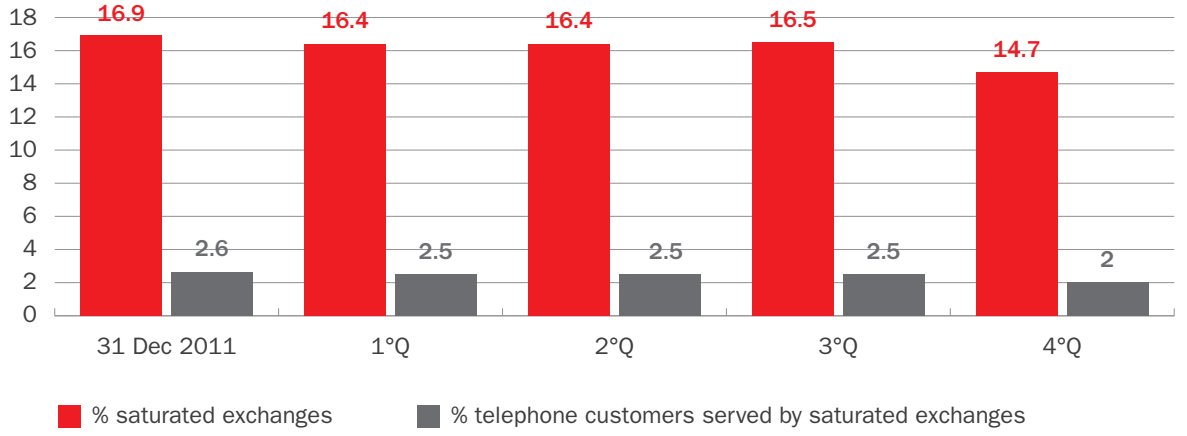


Figure 7 - Symmetrical bitstream services: % saturated exchanges and % telephone customers served by saturated exchanges

6.F - QUALITY OF THE FIXED ACCESS NETWORK

6.f.1 - General considerations

Undertakings Group No. 5 *(Guarantees of Transparency of the Technical Plans for the Quality of the Fixed Access Network)* sets out a series of obligations for Telecom Italia which are designed to ensure that structural changes to the fixed access network that fall outside the scope of ordinary maintenance are made public and transparent. To that end, Open Access has prepared a number of detailed operational plans which provide information about each intervention, clearly illustrating the impact on the overall quality of the access network.

The quality goals that Telecom Italia aims to achieve through the Technical Plans for the Quality of the Fixed Access Network essentially fall into two areas:

- ensuring ready network availability in case of a growth in demand among Retail and/or Wholesale customers, thus avoiding temporary network saturation;
- ensuring service continuity for existing customers by resolving the causes of higher fault rates, making changes to the most critical parts of the network and, in some cases, acting pre-emptively.

In order to achieve these goals, a number of action plans have been devised - also for 2012 - involving delivery processes and assurance processes.

In terms of assurance processes, the plans to ensure service continuity have aimed to resolve recurring problems along single access lines (the “On-Going” project) and to carry out preventive maintenance on the main network elements, particularly switching cabinets and poles. In line with the work carried out in 2011, special maintenance work has also been planned on pressurisers and renovations of entire sections of copper network access cabling.

Regarding delivery processes, two branches of activities have been identified: a fixed access network desaturation plan, which will cut the number of unresolved service requests arising from a lack of available copper pairs on the access network (“no network” reports); and a plan to upgrade the capacity of the local transmission network, designed to cut the number of exchanges not available for service due to DSLAM saturation (for a detailed discussion of this subject see section 6E: “Bitstream services and the saturation of the local transmission network”).

During 2012 the Supervisory Board continued the previous year’s analysis of the service quality offered by the network. As a benchmark for network quality control, the Supervisory Board continued to use the summary indicator continued, which provides an analysis of the number of exchange areas each quarter than do not achieve the target fault rate for the current year (set for 2012 at 11.2% for POTS services and 18% for ADSL services). The analysis also showed that there are still significant differences between regions in terms of network quality, despite the overall improvement in quality levels compared to 2011 in all the local areas.

In order to check consistency with Telecom Italia’s Technical Plans, the Supervisory Board also analysed periodic progress reports on projects to improve the quality of the fixed access network.

Specifically, in terms of assurance processes, it was found that work during 2012 on "Switching cabinets" project and pressurisers repairs, had largely proceeded in line with the stated goals. The replacement of obsolete pressurisers and special maintenance work on the copper network were running behind the Technical Plans, while the "On-Going" project and pole regular monitoring and replacement work were ahead of expectations. Lastly, in terms of delivery processes, the end results of the access network desaturation plan exceeded expectations. The following sections provide detailed results of the Supervisory Board's analysis of the Technical Plans during 2012.

6.f.2 - Assurance Process

6.f.2a - The "On-Going" improvement project

The goal of the "On-Going" improvement project is to increase customer quality perception and to limit repeated repairs on the same part of the system by carrying out improvement works designed to definitively resolve service disruptions.

The "On-Going" programme for 2012 called for repairs on 30,727 lines. Figure 1 shows the progress of the planned works, comparing the scheduled works against those actually carried out, from the start of the year until the end of each quarter. It shows that delays suffered in the preceding months were more than made up for, resulting in 15.6% more lines being improved than had been expected.

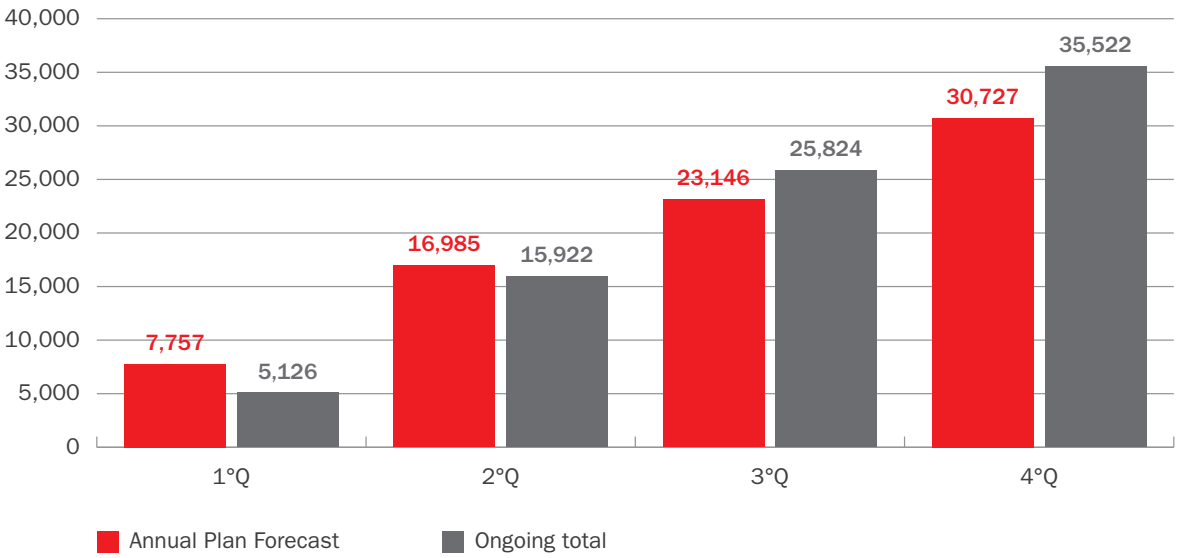


Figure 1 - "On-Going" project progress

6.f.2b - Switching Cabinets Project

The switching cabinets project has three branches: annual installation review (regular review), repair of deteriorating parts, and improvement of mechanical structures. The periodic review involved checking the cabinet against current Telecom Italia regulations, including checks on the state of the mechanical structure (especially surrounds, hinges and locks) and any issues relating to electrical connections. Upon inspection, a report was compiled for each cabinet, including the results of the checks and any problems found. The repairs were carried out on the basis of the results of the periodic review. Open Access offices also used the information in the reports to schedule their technicians' work, indicating what needed to be done. The improvement and development of the infrastructure was designed to improve reliability and security standards by fully or partially replacing existing mechanical parts. Specifically, this year also saw the continuation of the programme to replace the four resin boxes in older cabinets with one steel box, which offers greater protection and safety ("single box upgrades"). Where deemed necessary, the entire external cladding of the cabinet was replaced ("entire cladding upgrade").

Figures 2 (periodic review), 3 (repair), 4 (single box replacement) and 5 (replacement of entire cladding) show the progress made on these works, comparing the scheduled works against those actually carried out, from the start of the year until the end of each quarter. For the periodic review, the single box replacement project and the entire cladding upgrade project, the year-end results were in line with planned targets, while the repair of the cabinets was slightly below target (-7.4%). For the last two categories, there was also improved performance in the latter quarters of the year, making up for the significant early-year delays caused, according to Telecom Italia, by initial problems of materials supply.

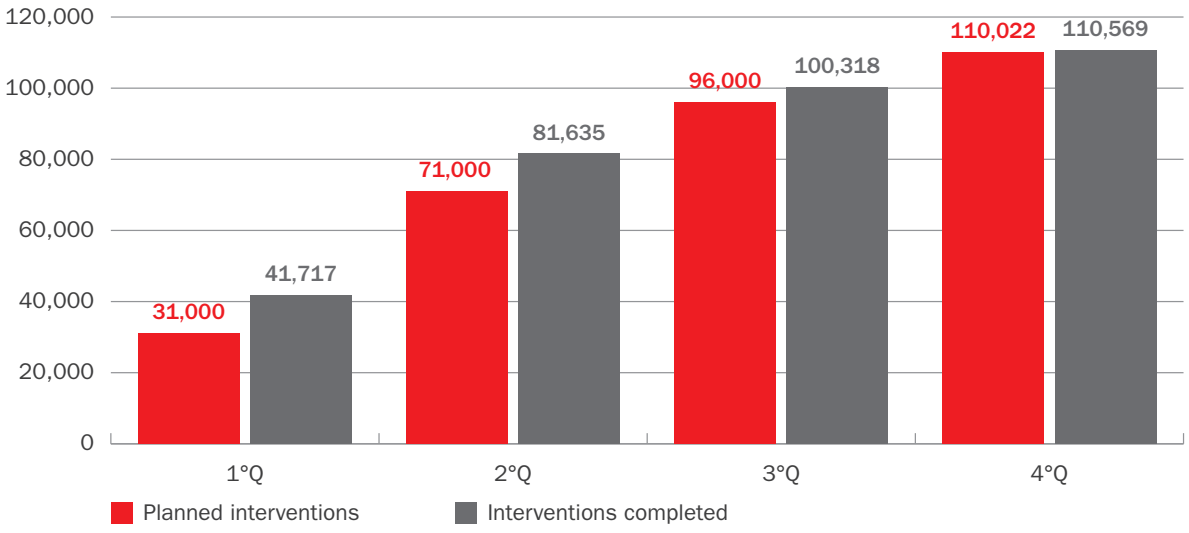


Figure 2 - Progress made on the plan for the periodic review of switching cabinets

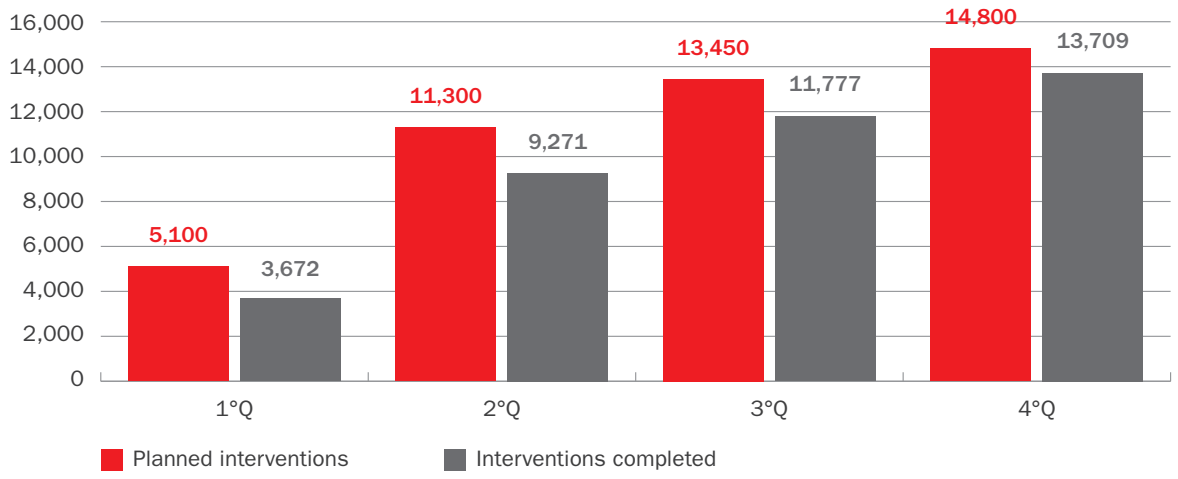


Figure 3 - Progress made on repairs of switching cabinets

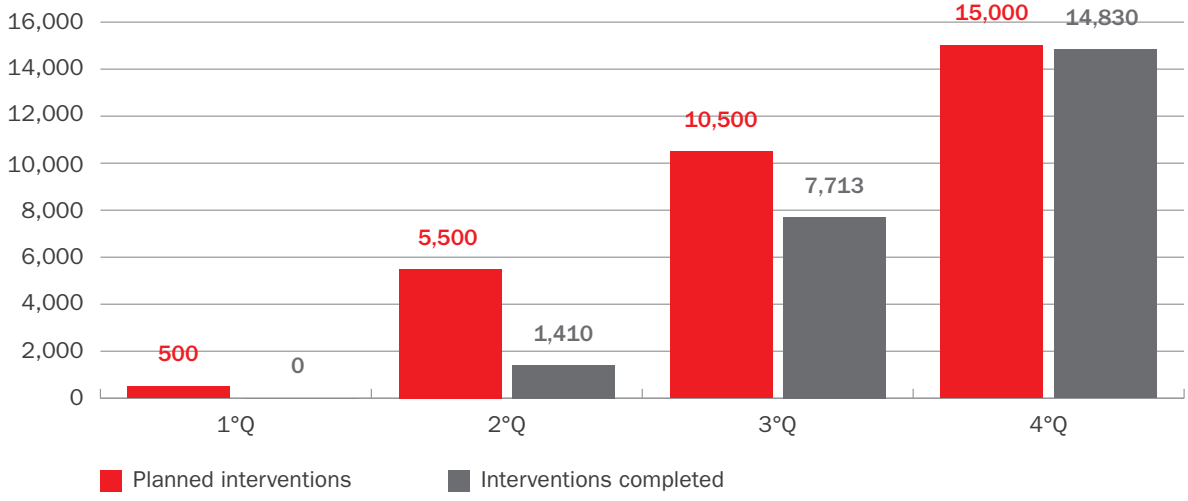


Figure 4 - Progress made on the plan for single box replacements

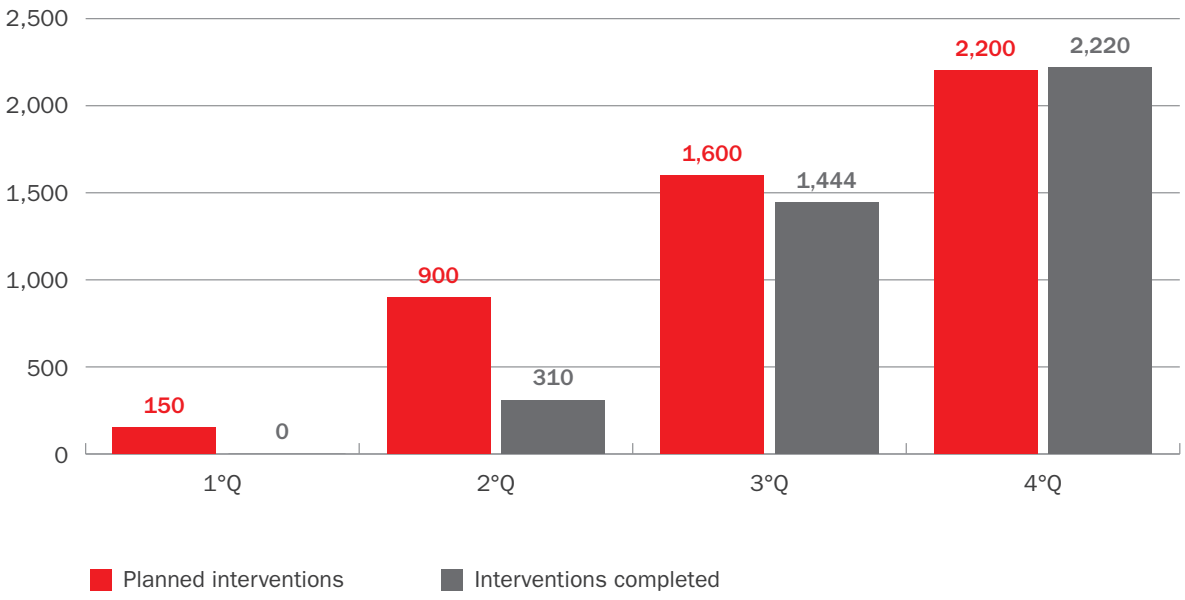


Figure 5 - Progress made on the plan for entire cladding replacements

6.f.2c - Pole Replacement Project

A significant number of cable systems (both copper and fibre-optic) use poles as supports. The regular preventive maintenance programme for these poles continued in 2012, in accordance the number of such installations currently in use. The plan for 2012 - whose first version was issued in late 2011 and called for the regular review of 1,064,100 poles - was scaled back to a target of 851,863 poles to check within the year. The change was necessary due to major delays caused by problems that emerged in the field with the use of a new tool (called X-Poles) which makes it possible to objectively measure the decay of the poles. Figure 6 shows the progress made on the planned works, showing the total periodic reviews carried out from the start of the year until the end of each quarter. The chart shows that the work carried out over the year was well above the forecast set out in the second version of the plan (+27.2%).

The pole replacement programme also continued into 2012, with the necessary maintenance work carried out at the relevant aerial cable supports. The goal was to ensure the stability of the poles and service continuity, avoiding individual cases of decay compromising the stability of entire sections. The plan for 2012 called for 130,000 poles to be replaced. The progress made is shown in figure 7. The chart shows that the number of poles replaced in 2012 was significantly higher than the target set in the technical plans (+33.3%).

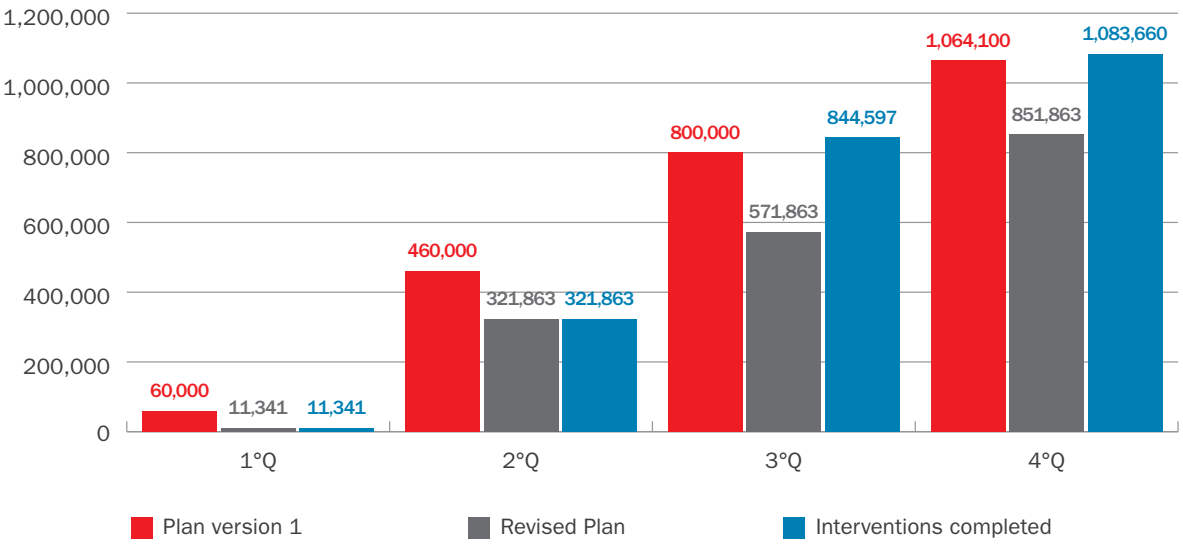


Figure 6 - Progress made on the planned periodic reviews of the poles

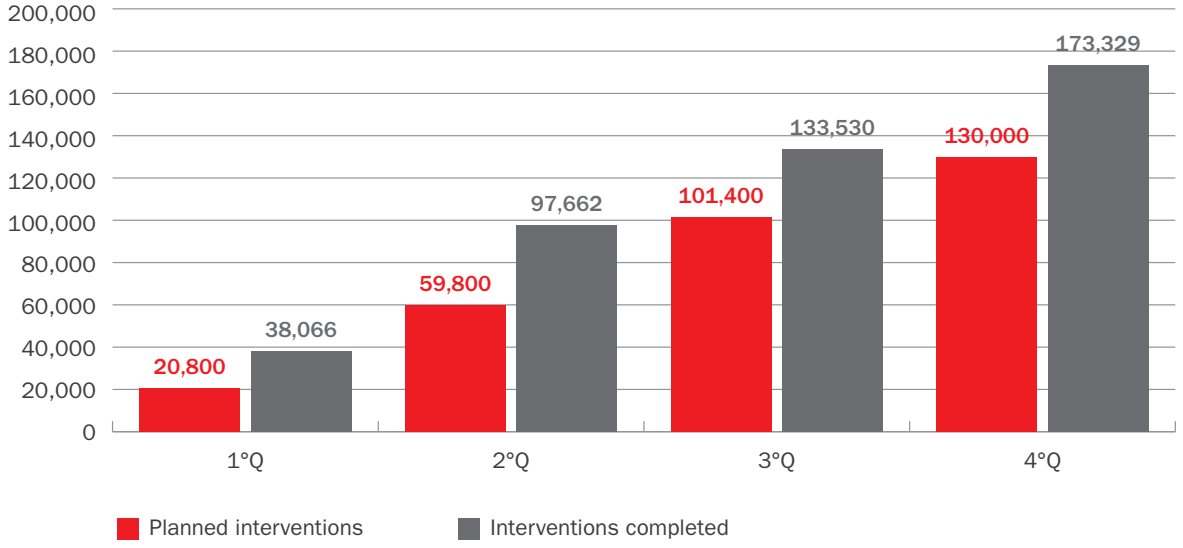


Figure 7 - Progress made on the pole-replacement plan

6.f.2d - Pressurisers Project

This project involved upgrading and carrying out special maintenance work at a selection of exchanges and cable areas on the pressurisers that ensure the correct electrical and transmission characteristics of the copper primary access network. The goals of the work to renovate the pressurisation network were to:

- restore pneumatic seals;
- restore correct remote management;
- obtain accurate identification details and capacity information for company databases;
- upgrade obsolete machinery.

The work took place at three levels:

1. Replacement of obsolete pressurisers in exchanges;
2. Execution of all work necessary to restore the pneumatic and electric network pressurisation machinery in the installation to the "normal" standards;
3. Repairs to the external network (usually the main section of cable areas) and restoration of operating conditions by locating and repairing pneumatic leaks.

Figures 8 (replacement of obsolete pressurisers) and 9 (work to bring stations up to standard) show the progress made on the planned works, comparing the scheduled works against those actually carried out from the start of the year until the end of each quarter. The progress made on replacing pressurisers is significantly (-19.1%) behind schedule, due to a delay in the agreement of material supply contracts. The work to bring pressurisation stations up to standard was in line with targets in the Technical Plans.

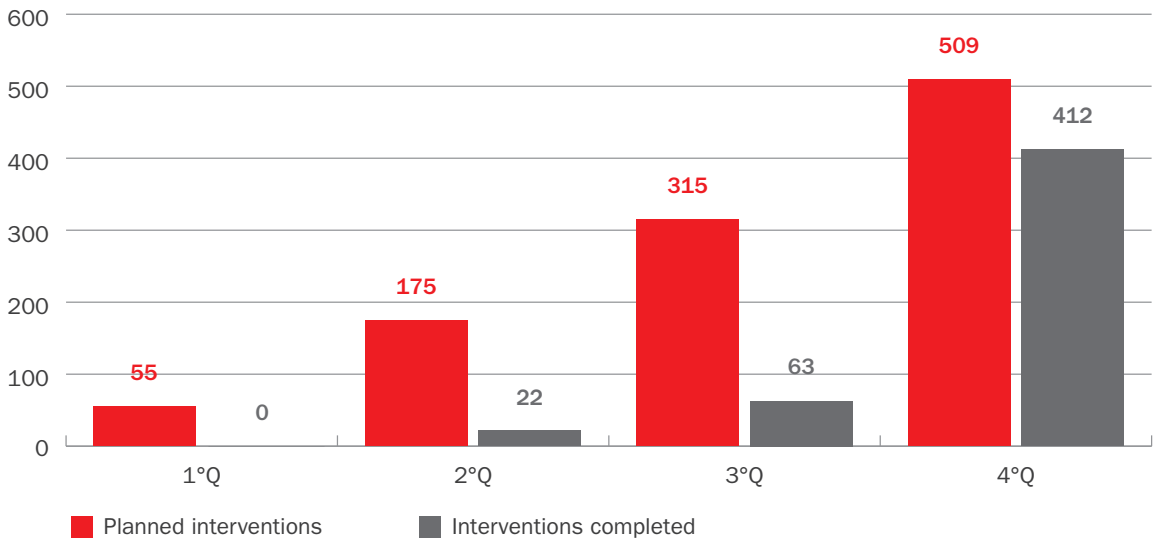


Figure 8 - Progress made on replacement of obsolete pressurisers

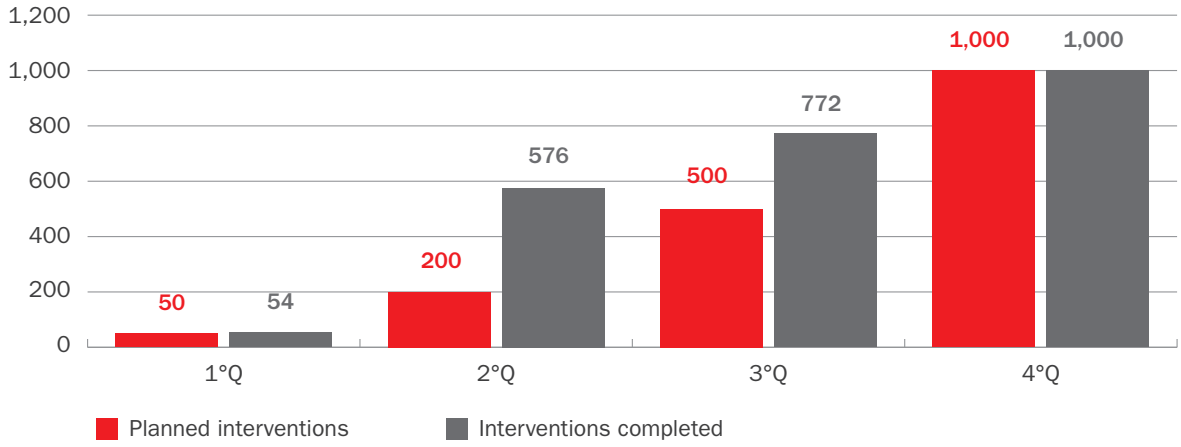


Figure 9 - Progress made on the plan to bring pressurisers stations up to standard

6.f.2e - Special maintenance work on the copper access network

Based on the analysis of the obsolescence of the copper access network, renovation work was scheduled and carried out over the year by replacing sections of network cabling.
The plan called for the renovation of 41,379 km-pair of the copper access network during 2012. Figure 10 shows the progress made, in km-pair, on the planned works, comparing the scheduled works against those actually carried out, from the start of the year until the end of each quarter. The delay in the start-up phase due to administrative problems (obtaining and renewing digging permits from the relevant authorities) also had an impact - albeit more limited - in the subsequent quarters.

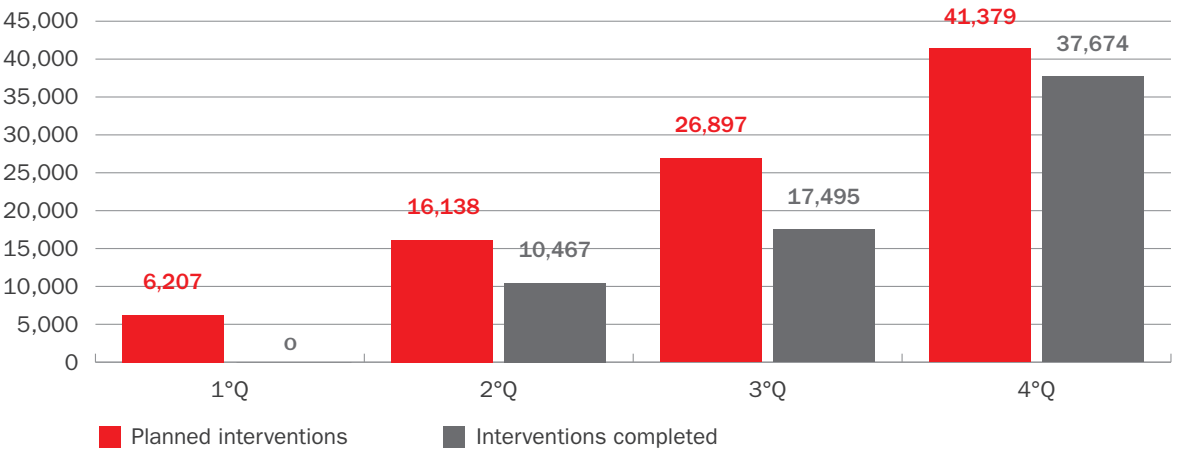


Figure 10 - Progress made on the planned special maintenance work on the copper network (in km-pair)

6.f.3 - Delivery process - Desaturation of the fixed access network

Service requests (GTN, ISDN, ADSL, transmission flows) that cannot be met due to the lack of available copper pairs in the access network are managed on a continuous basis by the relevant Open Access departments. The shortage of network copper pairs is basically due to two reasons: i) the network needs to be extended, since it is not currently present in the area (typically the case for new buildings); ii) the network is present, but is saturated. Under the normal procedure, once it has been confirmed that a service request cannot be met due to the lack of distribution network availability, it is sent to the local offices which then use qualified external companies to work out an extension plan. Once this has been completed, the service is activated as requested.

During 2012, special attention was paid to the following indicators:

- Number of "no network" cases resolved;
- Percentage of "no network" cases remaining unresolved for 80 days or more.

Regarding the second indicator, the number of "no network" cases remaining unresolved for at least 80 days was supposed to below 30% of the total number. The chart in figure 11, which shows performance over time for this metric, shows that it remained well under the maximum target value of 30% throughout the year.

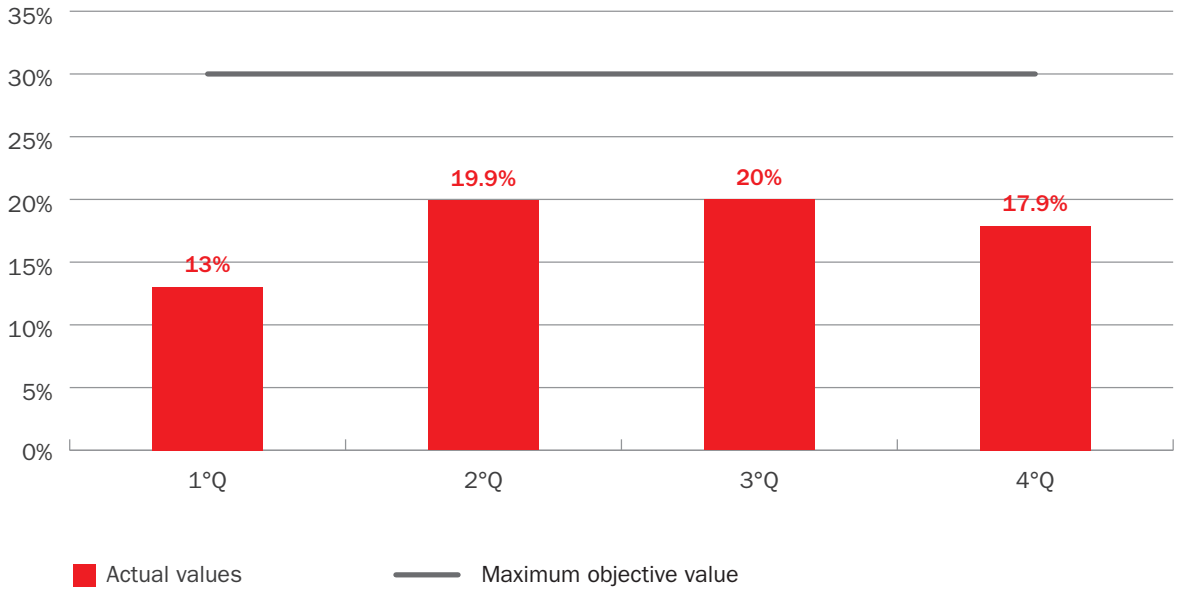


Figure 11 - Percentage of "no network" cases remaining unresolved for 80 days or more

Figure 12 shows the progress made on the planned works to resolve “no network” cases, comparing the scheduled works against those actually carried out, from the start of the year until the end of each quarter. It shows that the number of “no network” cases resolved was in line with the target set in the Technical Plans.

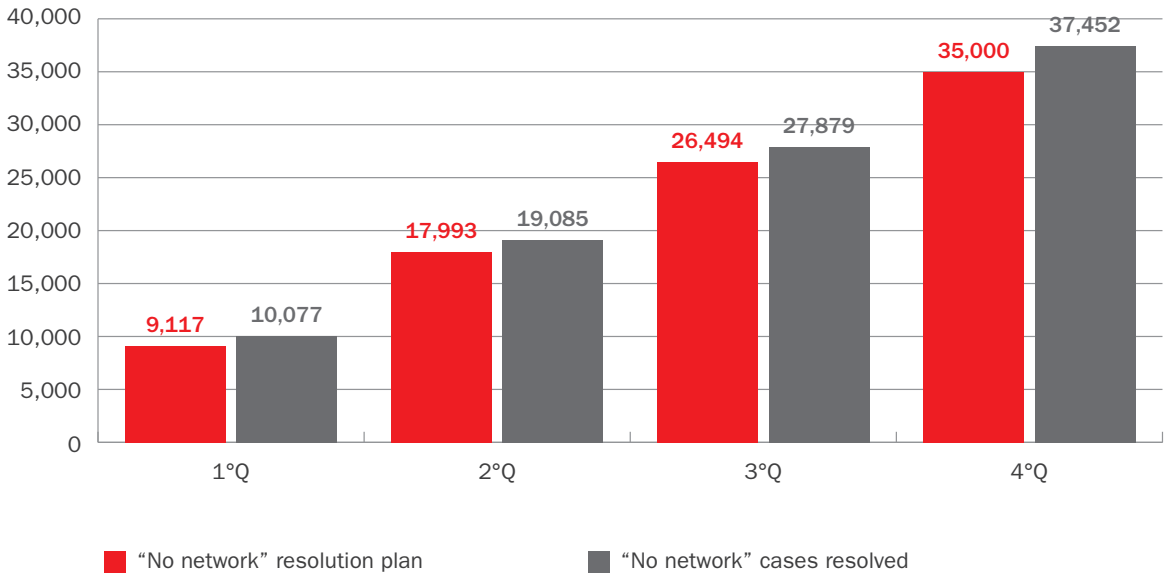


Figure 12 - Number of “no network” cases resolved

6.f.4 - Quality control criteria adopted by the Supervisory Board

As a benchmark for network quality control, in 2012 the Supervisory Board continued to use an indicator based on the number of exchange areas each quarter that do not achieve the target fault rate for the current year. Moreover, in order to provide a meaningful indication of the quality of the network in terms of its geographic coverage and customer distribution, the Supervisory Board has introduced a specific indicator based on the percentage of customers served by exchanges with a fault rate in excess of the target. For each geographic area, the indicator is obtained by calculating the percentage ratio of the total number of customers served by exchanges with a high fault rate against the total number of customers in the area.

Table 1 shows the summary data for exchanges failing to meet fault-rate targets for 2012 POTS services (2012 target rate: 11.2%) and compares the corresponding figures for December 2011, at both national and regional level. Telecom Italia's figures show that, out of all voice-only exchanges, the number with a fault rate in excess of the target fell from 1,053 (end of 2011) to 1,028 in December 2012, with an average drop of 2.4%. The percentage of customers served by exchanges with fault rates in excess of the target fell from 25.1% in December 2011 to 24.3% in December 2012 (-0.8%). Analysing the data by geographical area shows that there are still significant differences between regions. In particular, the South and the Centre have the highest percentages of customers served by exchanges with a high telephone services fault rate (57.6% and 24.3%, respectively), while the percentages in the North East and the North-West are both below 7%.

REGIONAL AREA	NUMBER OF EXCHANGES FAILING TO MEET FAULT-RATE TARGETS - DEC. 2011	NUMBER OF EXCHANGES FAILING TO MEET FAULT-RATE TARGETS - DEC. 2012	% DIFFERENCE IN NUMBER OF EXCHANGES DEC. 2012-DEC. 2011	% CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2011	% CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2012	CHANGE IN % CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2012-DEC. 2011
NW	93	75	- 19.3%	7.30%	6.3%	- 1%
NE	86	93	+8.1%	5.60%	5.7%	+0.1%
CE	314	329	+4.8%	29.10%	30.5%	+1.4%
SO	560	531	- 5.2%	61.00%	57.6%	- 3.4%
ITALY	1,053	1,028	- 2.4%	25.10%	24.3%	- 0.8%

Table 1 - Exchanges failing to meet fault-rate targets for POTS services

With regard to the exchanges with ADSL installations, there was no major improvement on the existing good quality standards achieved in 2011 (see table 2). The number of exchanges outside the target fault rate (set at 18% for 2012) fell slightly to around 1,028. The percentage of customers served by exchanges with fault rates in excess of the target fell from 0.30% in December 2011 to 0.2% in December 2012. Quality levels were good in all areas, with the less than 0.3% of customers served by exchanges exceeding the fault rate.

REGIONAL AREA	NUMBER OF EXCHANGES FAILING TO MEET FAULT-RATE TARGETS - DEC. 2011	NUMBER OF EXCHANGES FAILING TO MEET FAULT-RATE TARGETS - DEC. 2012	% CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2011	% CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2012	CHANGE IN % CUSTOMERS SERVED BY EXCHANGES FAILING TO MEET FAULT-RATE TARGET - DEC. 2012-DEC. 2011
NW	1	3	0.1%	0.1%	0
NE	0	2	0	0.04%	+0.04%
CE	13	6	0.5%	0.24%	- 0.26%
SO	13	12	0.5%	0.42%	- 0.08%
ITALY	27	23	0.3%	0.2%	- 0.1%

Table 2 - Exchanges failing to meet fault-rate targets for ADSL services

6.G - PROGRESS REPORT ON THE DEVELOPMENT OF THE FIXED ACCESS NETWORK

6.g.1 - General considerations

Undertakings Group No. 6 *(Guarantees of Transparency of Technical Plans for the Development of the Fixed Access Network)* requires Telecom Italia to publicise the "Technical Plans for the Development of the Fixed Access Network" by regularly publishing a series of long-term planning documents (known as "Multi-Year Plans") and medium-term planning documents relating to each quarter of the current year. The work of the Supervisory Board was not limited to analysing the periodic progress reports sent by Telecom Italia, but also involved a number of investigations to verify that the Technical Plans were in line with the transparency standards and rules on equality of treatment between wholesale and retail customers.

Development of the next generation broadband access network (NGAN) in 2012 reflected a change in strategic direction by Telecom Italia, which amended its technical plans to significantly cut the number of exchange areas to be fitted with Fibre To The Home (FTTH) network architecture, restricting it to the municipality of Milan and instead bringing in widespread use of FTTCab (Fibre To The Cabinet) network architecture in all the other 29 cities involved in the works during 2012. The change in strategy has also had repercussions on the documentation that Telecom Italia provides to publicly disclose the Technical Plans on the Development of the Fixed Access Network, and as a result the Supervisory Board has needed to analyse the adequacy of the information supplied by the network operator within the new strategic framework.

Specifically, it was found that the information in the quarterly plans for the development of the NGAN – which only referred to the property units potentially reacheable (fibre optic connected to the cabinet, i.e. primary network connection) – was not sufficient to provide Operators with meaningful information about the potential customers that could have accessed broadband services in a given exchange area served by the FTTCab access network. Therefore, with Resolution No. 15/2012 of 1 August 2012, the Supervisory Board urged Telecom Italia to reformulate the process for planning Next Generation Access Network development by adding further detail to the information in the Technical Plans concerning the opening of availability of service of cabinet areas, also through specific communications to be made during the quarterly planning process. Moreover, Telecom Italia was invited to ensure that the database accessible to the Operators and to Telecom Italia Retail provides information on the association between cabinet areas and street addresses. In acknowledgement of the Supervisory Board's recommendations, Telecom Italia announced its intention to make the requested additions and published the following documents in the Wholesale portal in July and August 2012:

- the list of exchange areas scheduled to have FTTCab access to Bitstream NGA and VULA services that would have active cabinet areas by the end of the year;
- the list of active exchanges, i.e. the exchanges for which Telecom Italia has made provision for FTTCab access to services.

In addition, on 5 November 2012 Telecom Italia published the following on the Wholesale portal:

- the list of active and planned cabinet areas within the above-mentioned exchange areas;
- the association between switching cabinets and the street addresses they serve.

With reference to the analysis carried out in 2012 on the periodic progress reports on the Technical Plans for the development of the fixed access network, the following findings are reported: the Multi-Year Technical Plan for the development of the NGAN, as issued by Telecom Italia in February 2012, called for an increase during the year of 1,039,000 Property Units connected in primary and 34,450 Property Units connected in secondary, in order to reach 2014 with 6,092,917 Property Units in primary, of which 647,558 would also be connected in secondary, across 556 exchange areas in 100 municipalities.

Specifically, Telecom Italia's Technical Plan for 2012 called for the development of a further 123 areas in 21 new municipalities (Palermo, Florence, Verona, Padua, Ancona, Bergamo, Brescia, Brindisi, Como, Catanzaro, Forlì, Monza, Perugia, Pisa, Prato, Reggio Emilia, Taranto, Treviso, Udine, Varese, and Vicenza). The work completed in 2012 was above the national targets set by the annual programme, both in terms of Property Units connected in secondary and, by a greater margin, of Property Units connected in primary.

The broadband development plan designed to reduce the digital divide called for 113 new municipalities to be covered by 113 new open exchanges. Note that a municipality is deemed to have service coverage when the gross coverage is equal to or greater than 70%. The year-end results showed a slight shortfall against the Technical Plan, both in terms of the number of new exchanges opened and the number of new municipalities covered.

Lastly, the copper network development plan for new allotments ended 2012 with 73,788 new housing units connected across Italy - exceeding the targets set in the plan (+2.5%). The sections below provide detailed results of the analysis of the Technical Plans for the development of the access network conducted by the Supervisory Board in 2012.

6.g.2 - Development of the copper network

In order to define the planning criteria for the development of the traditional copper access network, it is necessary to distinguish between two types of installation:

- areas with an existing and functioning – but saturated – access network; depending on demand trends, this could result in infrastructural crises which, if not resolved in time, risk preventing the provision of services in line with existing SLAs. Accordingly, developing this part of the access network is seen as a way to ensure service quality and is handled under a specific project for this purpose (see chapter 6.F "Quality of the Fixed Access Network");
- areas with no access network; this covers new buildings in previously uninhabited areas, mainly made up of new allotments. In view of the not insignificant number of individual works projects linked to this problem, the decision was taken to monitor development plans through a specific "Allotments Project".

The network planning process for new allotments is, in some ways, similar to the development of saturated networks, but also requires various adjustments to ensure proper network coverage when the new housing units are inhabited. We therefore have to deal with volume planning mechanisms that will change significantly over time depending on various external factors, including the speed of construction of the housing units and how long it takes for the units to be inhabited, etc.

Since the completion of the access network to serve a new allotment is subject to the actual completion of the buildings, it is impossible to know, in advance, what the date for the conclusion of technical works will be.

Development plans are usually laid out over a number of years, despite the obvious uncertainties due to external factors such as real estate market fluctuations and macroeconomic factors.

Telecom Italia's Multi-Year Plan for 2012-2014 calls for 216,000 new property units (P.U.) to be cabled-in according the following schedule:

	INCREASE 2012	INCREASE 2013	INCREASE 2014	TOTAL INCREASE 2012-2014
No. of planned P.U.	72,000	72,000	72,000	216,000

The table below shows the number of Property Units to be connected by Regional Area, according to the forecasts in the annual plan and the corresponding results achieved at the end of 2012.

REGIONAL AREA	P.U. SCHEDULED FOR 2012	P.U. CONNECTED AT END OF 2012	VARIANCE
NW	25,500	18,483	- 27.52%
NE	18,500	18,064	- 2.36%
CE	17,000	24,500	+44.12%
SO	11,000	12,741	+15.83%
ITALY	72,000	73,788	+2.5%

Table 1 - Distribution of connected P.U. by regional area

Figure 1 shows the progress made on the development plan for 2012, both in terms of Property Units scheduled for connection and in terms of Property Units actually connected at year-end, from the start of the year to the end of each quarter of 2012. The chart shows that, in Italy, the results at the end of 2012 were slightly above the target set in the annual plan (+2.5%).

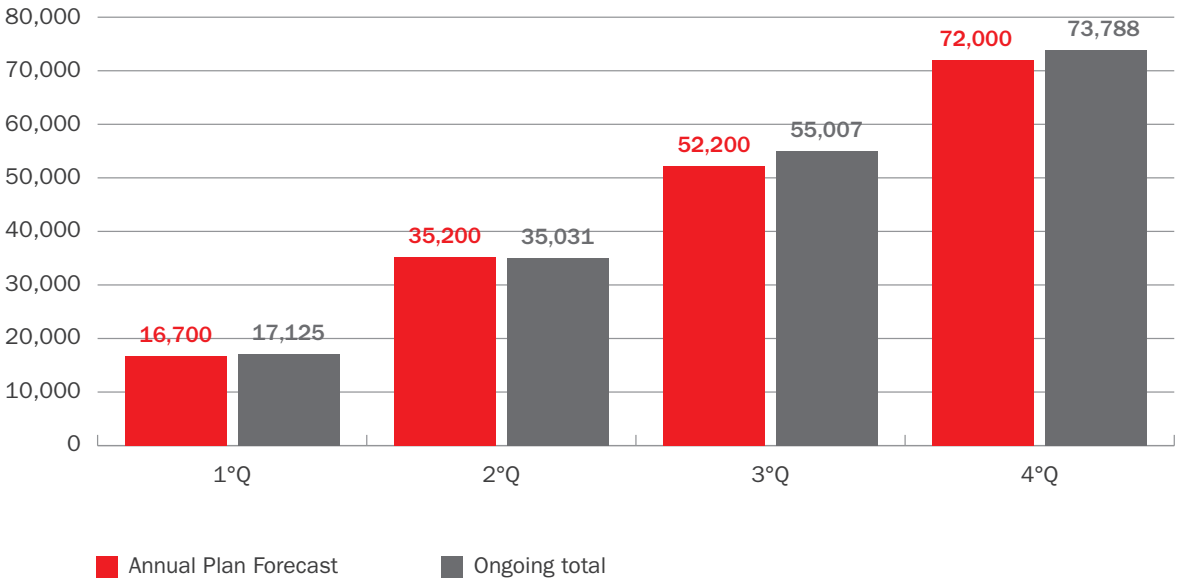


Figure 1 - Allotments Progress made in connected P.U. during 2012

6.g.3 - Development of the broadband access network

The 2012 development plan for the broadband network called for 113 new and active exchanges and for 113 new municipalities to be covered for ADSL services of up to 20 Mbit/s. Note that a municipality is deemed to have service coverage when the gross coverage is equal to or greater than 70%.

Figure 2 shows the progress made on the development plan for 2012, both in terms of exchange areas to be served according to the plan and in terms of new exchange areas actually covered at the end of each quarter. Figure 3 shows progress against the 2012 development plan in terms of new municipalities covered.

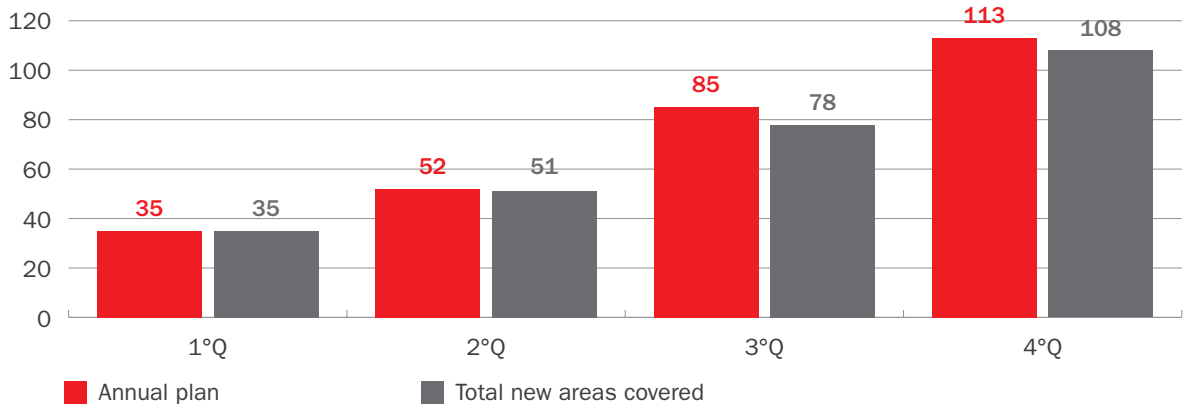


Figure 2 - Progress on the coverage plan for services of up to 20 Mbit/s: exchange areas

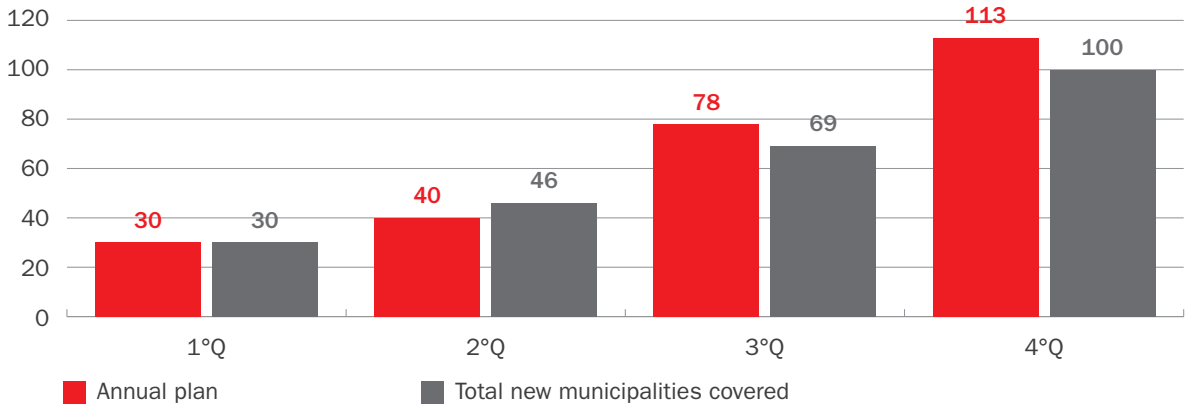


Figure 3 - Progress on the coverage plan for services of up to 20 Mbit/s: new municipalities

The table below shows the geographical distribution of interventions to provide coverage for services of up to 20 Mbit/s.

REGIONAL AREA	NO. OF EXCHANGE AREAS TO BE COVERED UNDER THE 2012 PLAN	NO. OF EXCHANGE AREAS COVERED AT END-2012	OVERALL PERCENTAGE DIFFERENCE IN EXCHANGE AREAS (TOTAL-PLAN)	NO. OF NEW MUNICIPALITIES TO BE COVERED UNDER THE 2012 PLAN	NO. OF NEW MUNICIPALITIES COVERED AT END-2012	OVERALL PERCENTAGE DIFFERENCE IN EXCHANGE AREAS (TOTAL-PLAN)
NW	47	42	- 10.6%	65	57	- 12.31%
NE	47	44	- 6.4%	41	32	- 21.95%
CE	19	21	10.5%	7	10	42.86%
SO	0	1		0	1	
ITALY	113	108	- 4.4%	113	100	- 11.50%

Table 2 - Geographical distribution of interventions to provide coverage for services of up to 20 Mbit/s

The final results for Italy as a whole were slightly below target in terms of the number of new exchange areas served (-4.4%) and the number of new municipalities covered (-11.5%).
In regional area terms, the delays in the North East and the North West were partially offset by the above-target results in the Centre and the South.

6.g.4 - Development of the next generation broadband network (NGAN)

The Next Generation Access Network (NGAN) requires the deployment of fibre-optic cabling in the access network, in order to ensure significant bandwidth availability for data transmission, which provides an infrastructure capable of supporting new and next-generation IP services. Based on the technical and economic assessments made during the first phase of NGAN development – which was limited to major metropolitan areas – Telecom Italia decided to use the following architectures:

- Fibre To The Home (FTTH): optic fibres extend to the end user's premises;
- Fibre To The Cabinet (FTTCab): based on the use of miniDSLAM VDSL2, placed near to current switching cabinets for the copper access network.
- Fibre To The Premises (FTTP): a network configuration with dedicated optic fibres extending to the customer's premises and used to connect mid-to-high level "business" customers and for HSPA mobile radio base stations.

Given the type of customer served, FTTP architecture uses a "point-to-point" configuration with dedicated fibres and Gigabit Ethernet transmission technology.
FTTH network architecture uses Gigabit PON (GPON) technology with shared fibres in a "point-to-multipoint" configuration, in order to cut costs. Figure 4 shows the architectural layout for the FTTH network configuration used by Telecom Italia.

In general, GPON systems use a centrally-placed Optical Line Termination (OLT) which is connected to the customer-side network terminations, known as Optical Network Terminations (ONT), through an Optical Distribution Network (ODN). The ODN is completely passive (i.e. it does not require any electrical input) and is made up of optic fibres and passive optic splitters which allow the incoming signal to be divided into a number of outgoing signals and vice-versa. Under the current configuration, the splitting factor allows 64 ONTs to be connected to one OLT. Theoretically, every optic fibre served by the local exchange and corresponding to a PON branch can serve 64 property units, but in practice the modular nature of the splitters and the distribution of property units within buildings mean that the splitters cannot always be used to their full capacity. Consequently, a splitting factor of 1:64 serves an average of 50 customers (approx. 80% fulfilment). Each optic fibre, relative to each PON, is linked in the exchange to a passive Optical Distribution Frame (ODF) and connected from this to the OLT transmission system. The FTTH architecture chosen by Telecom Italia uses two kinds of optical splitting: an initial optical splitter (splitting factor: 1:16; 1:8; 1:4), located in a box inside a manhole, and a second splitter (splitting factor: 1:4; 1:8; 1:16), at the base of the building, inside a cabinet known as an Optical Termination Box (OTB). From the OTB, all the optic fibres lead, point-to-point, to the Property Units and the ONTs installed in the customer's premises, thus completing the customer's connection.

In order to minimise the use of optic fibres, GPON systems share a single fibre for both transmission directions, using the two optical transmission windows of 1260-1360 nanometres from the customer to the exchange (upstream) and 1480-1500 nanometres from the exchange to the customer premises (downstream). Line speed is 2.488 Gbit/s

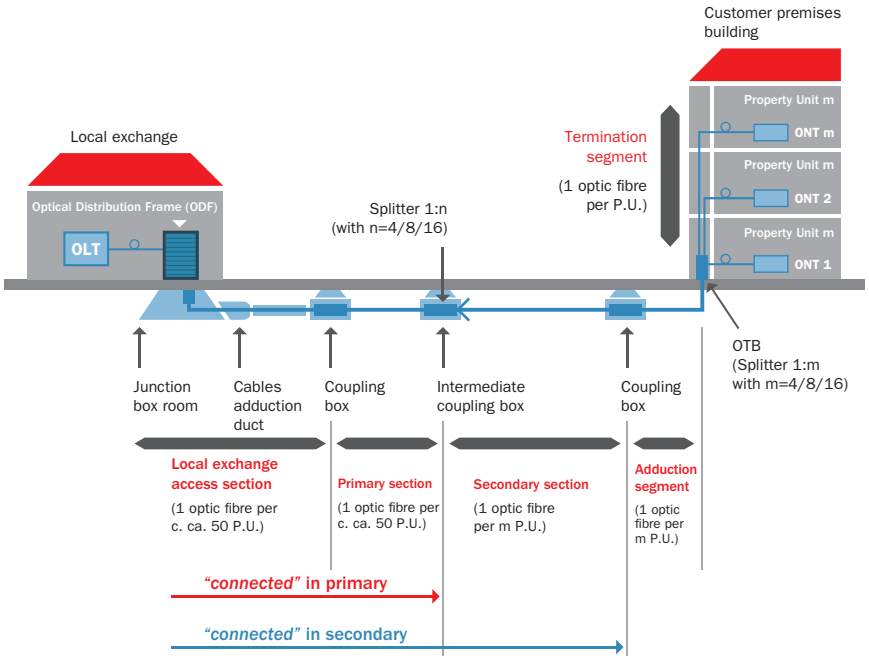


Figure 4 - NGAN network: Architectural layout of Telecom Italia's FTTH configuration

downstream and 1.244 Gbit/s upstream. The bandwidth is shared, dynamically, between the customers connected to a PON, making it possible to instantly offer the customer the entire available capacity (e.g. 1 Gbit/s symmetric) and also to provide minimum guaranteed speeds (even above 100 Mbit/s).

The VDSL2 technology used in the FTTCab architecture (see figure 5) makes it possible to send digital signals asymmetrically over symmetrical copper pairs at high speeds, at the same time as GTN analogue POTS services. In order to avoid disruption to the traditional telephone service, VDSL low-pass filters must be used in the customer home in every phone socket that a telephone is connected to.

The equipment series in the FTTCab network access architecture is:

- A customer-side VDSL2 modem and cabinet-side VDSL2 modem (Optical Network Unit – ONU); this makes it possible to carry two channels: one for data and one for traditional telephone services.
- A customer-side splitter in case of switchboards, radio-alarms, burglar alarms, etc.;
- The copper wire line;
- The copper wire line collection cabinet. The phone pair is terminated with a filter which separates the data channel from the voice channel; the first terminates at the ONU, which is connected by optic fibres to the served OLT using a GbE interface and the second is channelled towards to the telephone exchange using the primary copper network.

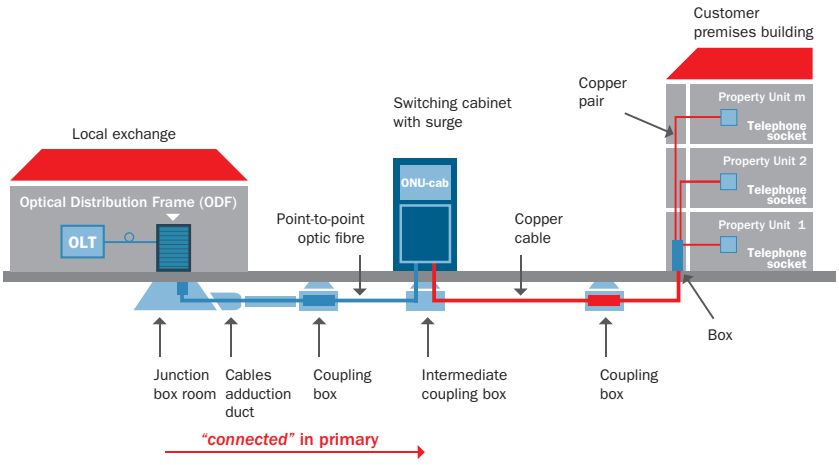


Figure 5 - NGAN: Architectural layout of Telecom Italia's FTTCab configuration

There are two VDSL2 line profiles with the following net speeds:
1st profile Downstream: 1 - 30 Mbit/s Upstream: 300 Kbit/s - 3 Mbit/s;
2nd profile Downstream: 15 -30 Mbit/s Upstream:1 - 3 Mbit/s;
The activation of these profiles depends on the characteristics of the line and the number and type of interfering systems connected to the cable.

The development plan for the NGAN distinguishes between Property Units (P.U.) connected in primary and those connected in secondary, depending on the progress made in completing the fibre-optic network (see figure 4). More specifically, a Property Unit is considered to be "connected in primary" when the development of the optical network only covers the initial distribution section, i.e. the part of the network between the ODF in the exchange and the primary optical splitter (in FTTH architecture) and the part of the network between the ODF and the distribution cabinet (in FTTCab architecture). A Property Unit is considered to be "connected in secondary" when the development of the optical network also covers the second distribution section, i.e. the whole of the network between the ODF in the exchange and the manhole by the building for the FTTCab architecture.

Thus, saying that a Property Unit is "connected in primary" with FTTCab architecture means that the development of the network has reached a stage where the optic fibre between the exchange and the distribution cabinet for that building has been laid, but that the cabinet does not yet have the ONU. The Multi-Year Technical Plan for the development of the NGAN, as approved by Telecom Italia in February 2012, called for 6,092,917 Property Units to be connected in primary in 2014, of which 647,558 would also connected in secondary, across 556 exchange areas in 100 municipalities. The table below shows the planned work for 2012–2014 under the latest version of the Multi-Year Technical Plan (version February 2012).

	TOTAL 2011	INCREASE 2012	INCREASE 2013	INCREASE 2014	TOTAL 2014
No. of municipalities	10	21	31	38	100
No. of exchange areas	40	123	143	250	556
No. of P.U. connected in primary	853,917	1,039,000	2,100,000	2,100,000	6,092,917
of which also connected in secondary	544,208	34,450	34,450	34,450	647,558

Table 3 - Planned totals and increases in P.U. to be achieved in the period 2011-2014

The Technical Plan 2012 called, in particular, for the development of the network in a further 123 exchange areas in 21 new municipalities (Palermo, Florence, Verona, Padua, Ancona, Bergamo, Brescia, Brindisi, Como, Catanzaro, Forlì, Monza, Perugia, Pisa, Prato, Reggio Emilia, Taranto, Treviso, Udine, Varese, and Vicenza). FTTH was only to be used in the Milan area, while in all other areas only the FTTCab architecture would be used.

Figure 6 shows the progress made on developing the NGAN, both in terms of Property Units connected in primary according to the plan and actually connected at the end of the period from the start of the year to the end of each quarter in 2012. Figure 7 shows the same information for Property Units connected in secondary.

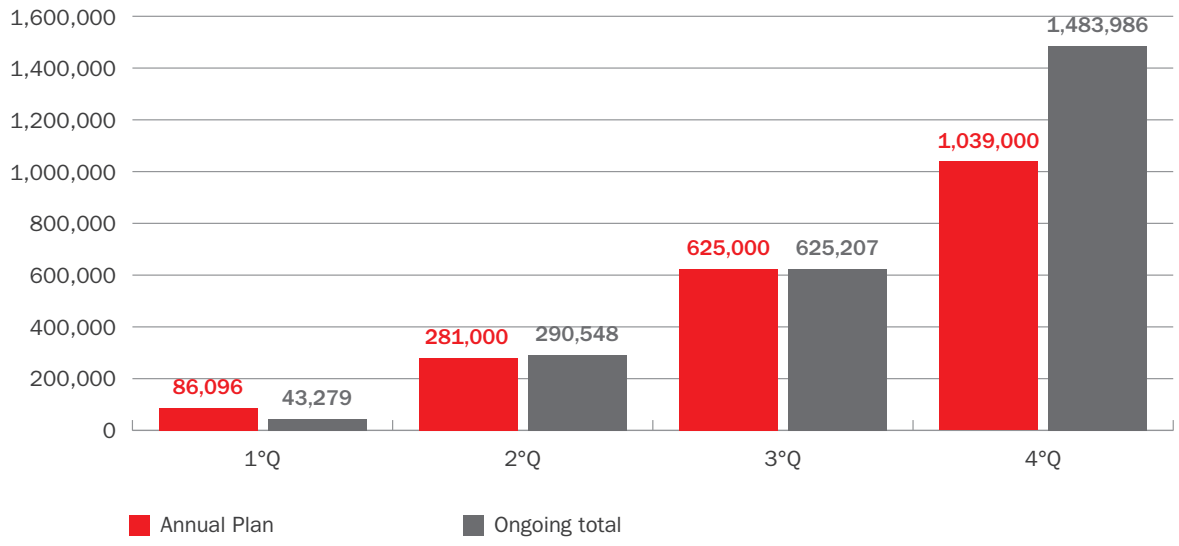


Figure 6 - Progress made on development of the NGAN (P.U. connected in primary)

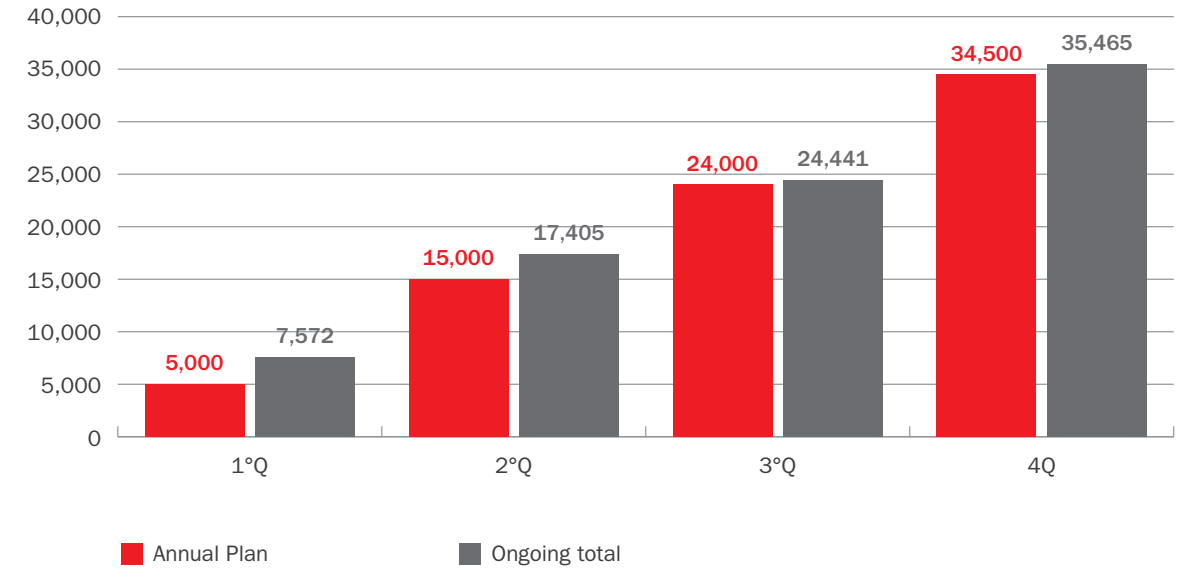


Figure 7 - Progress made on development of the NGAN (P.U. connected in secondary)

The chart in figure 8 shows the progress made in developing the NGAN from the start of 2012, in terms of thousands of P.U. connected in primary in all municipalities covered by the project. The restrictions put in place by local authorities caused progress to differ compared to the plans in individual municipalities, although they remained in line with overall targets. For example, with the exception of lower than expected results in Venice, Milan and Bergamo, the results in almost all other municipalities were above forecast.

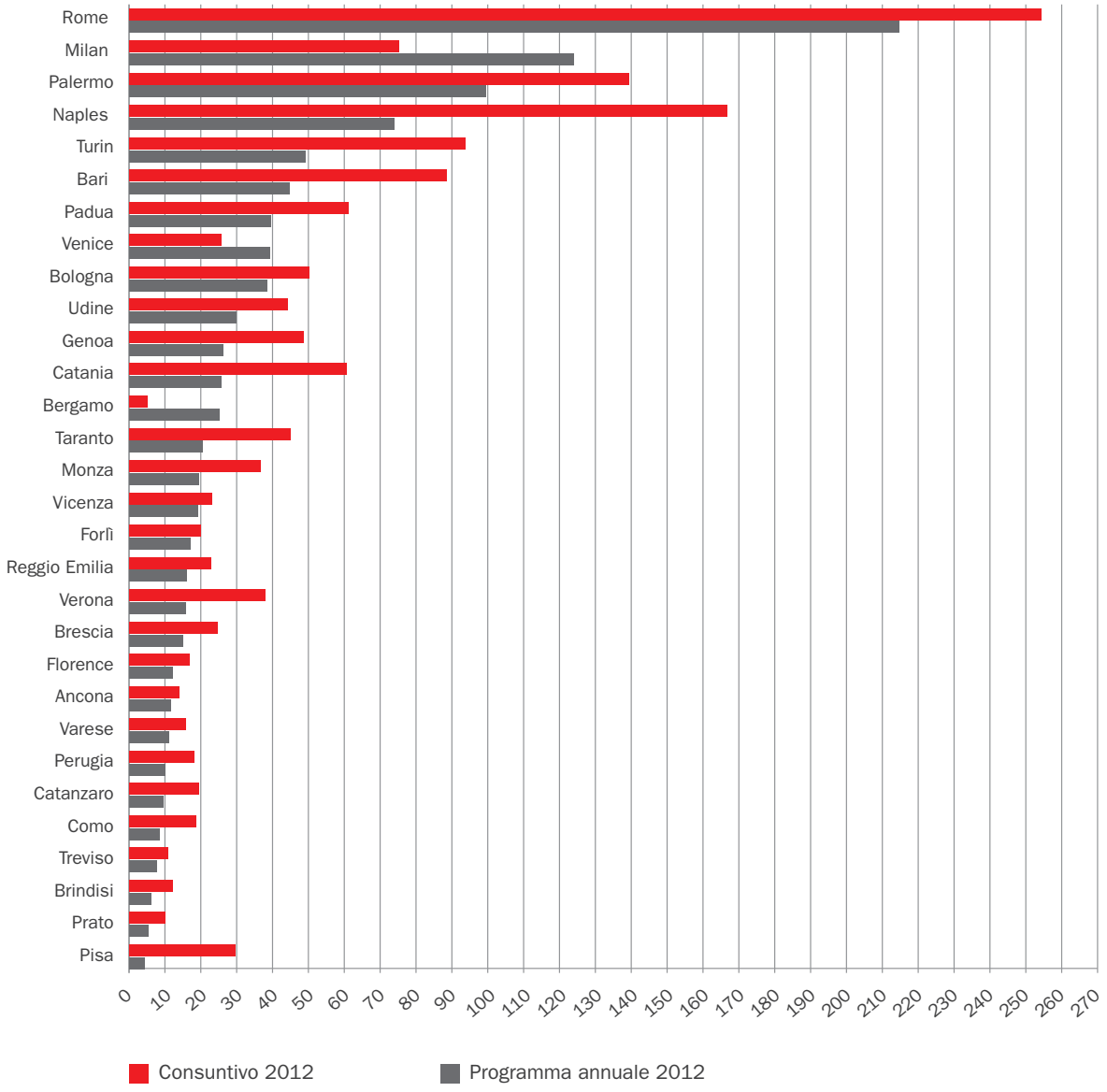


Figure 8 - Development of the NGAN: P.U. connected in primary from 1 January to 31 December 2012 (figures in thousands)

6.H - THE OTHER UNDERTAKINGS GROUPS

6.h.1 - Regulatory accounting

A systematic regulatory accounting framework was first introduced with the approval of AGCom Resolution No. 152/02/CONS and subsequently set out in more details with later Resolutions published by the Authority. Undertakings Group No. 8 *(Integration of Telecom Italia's Regulatory Accounting and Setting of Transfer Charges)* is shaped by and complements that framework. It commits Telecom Italia to disclosing the financial conditions under which SMP services are provided internally by Open Access to Retail departments, by submitting the applicable service contracts to AGCom for approval. Over the last three years, Telecom Italia has performed the commitments contained in the Undertakings. It has prepared separate accounting schedules for Open Access, which provide the specific details required to check that the transfer charges applied to Telecom Italia Retail departments are equivalent to the financial conditions applied to the OLOs. The Supervisory Board found that Telecom Italia duly complied with the deadline set (March 2009) for submitting regulatory accounts to AGCom.

The first schedule contained annual regulatory accounting records for SMP services provided by Open Access, including an income statement, statement of invested capital, and a statement of transfer charges and volumes. The second schedule instead listed the SMP services provided by Open Access and the relationship between those services and the retail services sold by Telecom Italia's Retail departments; for each, the unit transfer charge, the volumes sold by Open Access to the Retail division, and the resulting internal revenues were stated. After a joint technical workshop with Telecom Italia to discuss problems connected with the preparation of the schedules and consolidate the methodological approach, on 11 January 2011 AGCom adopted Resolution No. 2/11/CONS, calling for a public consultation on the setting of application guidelines for the new regulatory accounting schedules envisaged.

As a result of the consultation, in December 2011 AGCom adopted Resolution No. 678/11/CONS providing *"Guidelines on Fixed Network Regulatory Accounting and Service Contracts"*. Details of the guidelines were presented by Telecom Italia to the Supervisory Board at a special meeting. The AGCom resolution formally endorsed compliance with the provisions of Undertakings Group No. 8 and provided implementing rules for the fixed network regulatory accounting obligations binding on Telecom Italia, formerly identified by Resolution No. 731/09/CONS and No. 2/10/CONS.

Specifically, Resolution No. 678/11/CONS required Telecom to introduce *"Service Contracts"* that set forth internal conditions of supply and prices for the sale of SMP services to Telecom Italia Retail departments that are equivalent to those applied to OLOs, adopting a *"transfer charge to price"* model that states transfer charges applied for services provided by Open Access to Telecom Italia Retail departments for each individual retail service offered. Another requirement was the adoption of separate accounting records for resources used in the production of SMP access services for internal use and for external sale (*"Equivalent Open Access"* model). As concerns Service Contracts, in October 2012 Telecom Italia filed with AGCom, and disclosed on its Wholesale portal, the Service Contracts for 2013, in compliance with the requirements of Resolution No. 678/11/CONS.

With regard to regulatory accounts stating transfer charges to prices, on 10 February 2012 Telecom Italia filed Regulatory Accounts for 2010 with AGCom Fixed Network, in accordance with Article 2(1) of Resolution No. 678/11/CONS. Accounting changes introduced by the Resolution have required significant methodological and IT developments.
At present, AGCom is auditing the 2010 regulatory accounts for compliance with article 1(1) of Resolution No. 678/11/CONS, as required in turn by article 14 of Resolution No. 731/09/CONS. Once auditing is completed, Telecom Italia will file its 2011 regulatory accounts.
Finally, a procedure was initiated under Resolution No. 1/12/CONS concerning the "*Identification of Regulatory Obligations for Access Services for Next Generation Networks*" for setting internal transfer identification and application criteria for access services on next generation networks.

6.h.2 - Regulation of next generation networks

With reference to Undertakings Group No. 9, AGCom introduced new rules through Resolution No. 1/12/CONS, establishing the regulatory framework for next generation networks and services. The resolution designates Telecom Italia as SMP operator in these markets and imposes a series of related regulatory obligations, while also setting forth relative implementing measures (see Chapter 3 of this report on the national regulatory framework).

The new rules affect the structure of the Undertakings, as the matters they address fall within the scope of the rules. Accordingly, on 18 January 2012 the Supervisory Board adopted Resolution No. 3/2012, ordering an internal review of the matter, focusing in particular on any overlap between the provisions of point 9.4 of the Undertakings (which requires their application to access services provided on NGNs) and the scope of Resolution No. 1/12/CONS. The aim of the review was to identify the new areas affected and conduct the required audits.

Finally, in July 2012, Telecom Italia submitted a proposal to AGCom outlining a new equivalence model for the next generation access network (NGAN), which considers Undertakings Groups 1, 2, 3, 4, 5, 6, 7 and 8 to be fully applicable.

6.h.3 - Reporting of unsolicited services

Undertakings Group No. 12 (Obligation to report the activation of unsolicited services) requires Open Access to report to the Supervisory Board, on a quarterly basis, the activation of any unsolicited services, brought to the attention of network technicians by customers.

Although the Supervisory Board has found that Telecom Italia duly complies with the obligation, on several occasions it has stressed the need for targeted action to ensure that practices for the sale of goods and services are ethical.

As noted in previous reports, the reporting obligations under this Undertakings Group do not of course include instances of unsolicited services that are not brought to the attention of Open Access personnel.

The Board of Supervisors has investigated on a quarterly and annual basis all cases of unsolicited services brought to the attention of Open Access personnel, on the basis of the reports submitted by Telecom Italia in accordance with Undertakings Group No. 12.

The activation of unsolicited services has declined progressively over time, and in 2012 not a single case was reported.

7 Relations with Institutions and Operators

On 20 March 2012, the 2012 Annual Report on the outcomes and activities of 2011 was presented at the *"Network Governance and Digital Agenda"* conference organized by the Supervisory Board.

The presentation was given by Chairman Giulio Napolitano. Other addresses were delivered by the Chairman of the National Regulatory Authority for Communications (AGCom), Corrado Calabrò, the Executive Chairman of Telecom Italia, Franco Bernabè, and the Chairman of Confindustria Digitale, Stefano Parisi.

The presentation of the Annual Report was an opportunity to take stock of the Supervisory Board's first three years of work and assess the effectiveness of the Telecom Italia Undertakings.

From the report it emerged that, in its first three years, the Supervisory Board held 37 board meetings, conducted 24 formal hearings, and arranged over 50 informal meetings, all of which led to the adoption of 81 Supervisory Board Resolutions and over 100 Recommendations issued to Telecom Italia.

In his address, the Chairman of the Supervisory Board also looked at some of the issues and topics that future supervisory activities will need to focus on. These included equality of access issues connected with the installation and spread of ultra-broadband networks over optic fibre.

Other speakers looked at issues concerning the evolution of the Digital Agenda in Italy, the development of new services, next generation networks and governance approaches for large network systems. All agreed on the need for legislation and regulations to keep in step with and provide a flexible framework for the new technological developments that will shape access infrastructure in the years to come.

Italian National Regulatory Authority for Communications (AGCom)

Relations with AGCom continued over the year, with the aim of exchanging information and reporting on activities concerning issues of mutual interest to the Authority and the Supervisory Board.

The first official meeting for the year was held on 22 February 2012, where discussions focused on future initiatives to be pursued jointly and on planning coordination activities.

Another two meetings were then held on 2 and 28 May 2012 to discuss Open Access key performance indicators, as identified in Undertakings Groups Nos. 3 and 4. A progress report was given on the identification of a new KPI basket, which has been the topic of extensive discussions between AGCom, Telecom Italia and the OLOs. The meetings also addressed problems connected with the validation of the indicators.

Another meeting was held on 18 June 2012, at which the Supervisory Board reported on work done for the validation of the KPIs identified by Undertakings Group No. 3.

Finally, at the hearing held on 19 September 2012, the Supervisory Board met with the AGCom Board near the end of the Supervisory Board members' term of office set for 30 September 2012.

At the hearing, the Supervisory Board presented an overview of its work and the outcomes of its audits and investigations over its three-year term, as well as the outlook for possible developments in the supervision of equality of access to the network. The Supervisory Board also looked at some of the main issues that remain open, presenting possibilities for reform to the board's governance structure and mandate.

The AGCom chairman and officers thanked the members of the Supervisory Board for their precious work, applauding the contribution they have given over the years to assuring equality of access to the network.

Telecom Italia

Regular meetings continued to be held with Telecom Italia to discuss issues connected with the various Undertakings Groups.

As in previous years, and employing the same methodological approach, at a meeting in February 2012 the Supervisory Board examined the results of the 2011 Customer Satisfaction survey, focusing on the supply and assistance process for goods and services sold to wholesale customers.

The survey was conducted by Telecom Italia between October and December 2011. It asked other licensed Operators to assess their satisfaction with the overall service received, and measured performance and impact levels for several aspects of the sales, technical and administrative services.

A total of 176 companies were contacted for the survey, more than in either 2009 or 2010. Of those contacted, 117 responded to the survey, in whole or in part.

In May and June 2012, two meetings were held with Telecom Italia to discuss the issues addressed by Undertakings Group No. 2. At those meetings, Telecom Italia reported on its work, providing the information and clarifications requested by the Supervisory Board with regard to the setting of management incentives for 2012 (2012 MBO) and the methodology used for measuring OLO satisfaction levels.

With regard to the training of Telecom Italia staff, on 18 September 2012, a presentation was given to the Supervisory Board of a video lesson intended for Open Access personnel. The course is designed to instruct technical personnel on appropriate conduct when visiting the customers of other licensed Operators, and to consolidate the principle of equality of treatment in their work practices.

Other Licensed Operators

Relations with other licensed Operators involved the customary exchange of correspondence in connection with investigations conducted by the Supervisory Board. In 2012, however, a complaint was received from the Operator Welcome Italia, leading to investigation S01/12, a more detailed description of which is provided in Chapter 5.

In its inaugural address on 4 December 2012, the new members of the Supervisory Board stressed their belief in the benefits of working with OLOs in order to fulfil its responsibility to act more effectively and decisively in the general interest. Accordingly, it has invited all the main OLOs to individual meetings planned for the first quarter of 2013, to receive and discuss complaints, assessments and suggestions on the implementation of the Undertakings.

The initiative carries on the established work of the Supervisory Board, in the conviction that strengthening engagement with other licensed Operators is beneficial. Their support and contribution is fundamental for improving the Board's understanding of the problems and difficulties that may stand in the way of Telecom Italia's full implementation of its Undertakings.

The meetings with the OLOs will also enable the Supervisory Board to gather their impressions of its supervisory work and useful suggestions on how to continue that work.

Italian Competition Authority (AGCM)

As reported in greater detail in Chapter 3, the Supervisory Board was summoned to testify before the AGCM in relation to Antitrust Case A428, brought against Telecom Italia in 2010, concerning refusals to process work orders ("KOs").

At the hearing, the Supervisory Board provided the information and clarification required, in relation to its own investigation of the matter.

The summoning of the Supervisory Board to testify before the AGCM demonstrates the key contribution the Supervisory Board can make, in terms of lending its expertise and helping identify innovative solutions, for issues addressed by both AGCom and the AGCM.

8 Glossary

Glossary

ADSL	Asymmetric Digital Subscriber Line
AGCM	Autorità Garante della Concorrenza e del Mercato (Italian Competition Authority)
AGCom	Autorità per le Garanzie nelle Comunicazioni (Italian National Regulatory Authority for Communications)
AL	Active Line
AOA	Access Operations Area
BRAS	Broadband Remote Access Server
BT	British Telecom
BTP	Building Termination Point
Co.Re.Com.	Comitati Regionali per le Comunicazioni (Regional Committees for Communications)
CNCU	Consiglio Nazionale dei Consumatori e degli Utenti (National Council of Consumers and Users)
CPS	Carrier Pre-Selection
CRM	Customer Relationship Management
CS	Carrier Selection
DU	Dwelling Unit
DVD	Desired Visit Date
DSLAM	Digital Subscriber Line Access Multiplexer
EAB	Equality of Access Board
EAO	Equality of Access Office
EDD	Expected Delivery Date
EoI	Equivalence of Input
EoO	Equivalence of Output
FRAR	Frame Relay Access Remotizer
FTTB	Fibre To The Building
FTTCab	Fibre To The Cabinet
FTTH	Fibre To The Home
FTTN	Fibre To The Node
FTTP	Fibre To The Premises
GPON	Gigabit PON
GTN	General Telephone Network
IOG	Independent Oversight Group
IPTV	Internet Protocol Television
ISDN	Integrated Services Digital Network
KPI	Key Performance Indicator
KPO	Key Performance Objective
LLU	Local Loop Unbundling
MBO	Management By Objectives
MTT	Master Trouble Ticket
NAL	Non Active Line
NDP	New Delivery Process
NGAN	Next Generation Access Network
NGN	Next Generation Network
NWS	National Wholesale Services
OA	Open Access
ODF	Optical Distribution Frame
ODN	Optical Distribution Network
Ofcom	Office of Communications
OLO	Other Licensed Operators
OLT	Optical Line Termination
ONT	Optical Network Termination
OTA	Office of the Telecommunications Adjudicator
OTB	Optical Termination Box
PON	Passive Optical Network
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
PVC	Permanent Virtual Channel
RO	Reference Offer
SA	Shared Access
SB	Supervisory Board
S/HDSL	Single-Pair High-Speed Digital Subscriber Line
SLA	Service Level Agreement
SLU	Sub-Loop Unbundling
SMP	Significant Market Power
SO	Supervisory Office
PU	Property Unit
VDSL	Very High Digital Subscriber Line
VULA	Virtual Unbundled Local Access
WDM	Wavelength Division Multiplexer
WLR	Wholesale Line Rental

Index of figures

CAP. 2

CAP. 3

CAP. 5

CAP. 6

Cap. 6.a.1

Cap. 6.a.2

Cap. 6.b.2

Cap. 6.d

Cap. 6.e.2