



**ANNUAL  
REPORT  
2017**



**Joy Marino**  
President MIX

# The President's comment

In 2017, a cycle of investments and reorganization of infrastructures, which began three years ago, came to an end. Today the MIX peering infrastructure extends in the Milan hinterland, well beyond the Via Caldera campus and includes Equinix, DATA4, and SUPERNAP datacenters (DC), with a perimeter of some tens of kilometers. With the extension to Aruba DC in the province of Bergamo, which took place in the first few months of 2018, we can say that we have completed a real "Lombard Ring" that can offer Italian and foreign Internet operators an interconnection fabric of very high performance and reliability, comparable with those of the major European IXPs, but which continues to hinge on the new and strengthened DC of Caldera, managed directly by MIX.

It is no coincidence that the traffic growth is in percentage, once again, one of the highest among the European IXPs. We expect this trend to continue in the near future, with the growth of ultra-broadband offer in Italy, with the consolidation of the offer of multimedia content distribution services and with the ever-increasing integration of value-added services in commerce, in industry and in public administration.

On the corporate level, the process has finally come to an end in order to bring order to the company structure, where some shareholdings remained in a "limbo" following the hasty liquidation of members no longer active.

Responding to the recommendations that came to us, several times, by our Statutory Advisors, a significant capital increase was finally carried out, free of charge for the shareholders, which brings MIX s.r.l. a million euro, fully paid up, a capital that better reflects the actual value of what has been built and of how reliable and responsible our company is.

But we can't stop here: much still needs to be done to consolidate and improve the functioning of the technical and administrative "machine", to increase staff numbers and skills, support - and if possible, anticipate - the demand for new services and more performance for our customers. All this carrying on our mission as Internet market enablers in our country.

In this regard, already in 2018 it will be necessary to resolve a regulatory node that affects us closely: for the Ministry of Economic Development, according to the Code of Communications 1993 (1993!) an IXP is configured as a "telecommunications operator", while for the European Union, according to the 2016 NIS Directive (implemented by Italy in 2018), an IXP is not similar to a telecommunications operator.

We claim to have a special and crucial role in the network ecosystem.

We will see if it will be recognized.



# Milan Internet eXchange

MIX's mission is to promote the development of Internet in Italy and to improve the interconnection among different ISPs and relevant Internet players operating in the country.

It is now evolving into one of the major South Europe hubs, exploiting Italy position in the Med basin with respect to submarine cables routes and increasing interconnection demand among Continental Europe, Middle Est and Asia.

MIX is a point of "multiple interconnection" where the networks of each player (ISPs, carriers, content providers, hosters, etc...) are interconnected to exchange IP traffic (through peering and PNI) efficiently and with advantageous costs.



Founded  
in 2000



Not for business  
approach



Independent and  
neutral with respect  
to all players



Biggest Internet  
eXchange in Italy and  
one of the main  
in Europe



Co-founder

euro-IX



Certified



Among the 5 IXPs worldwide to  
achieve the OIX-1 certification

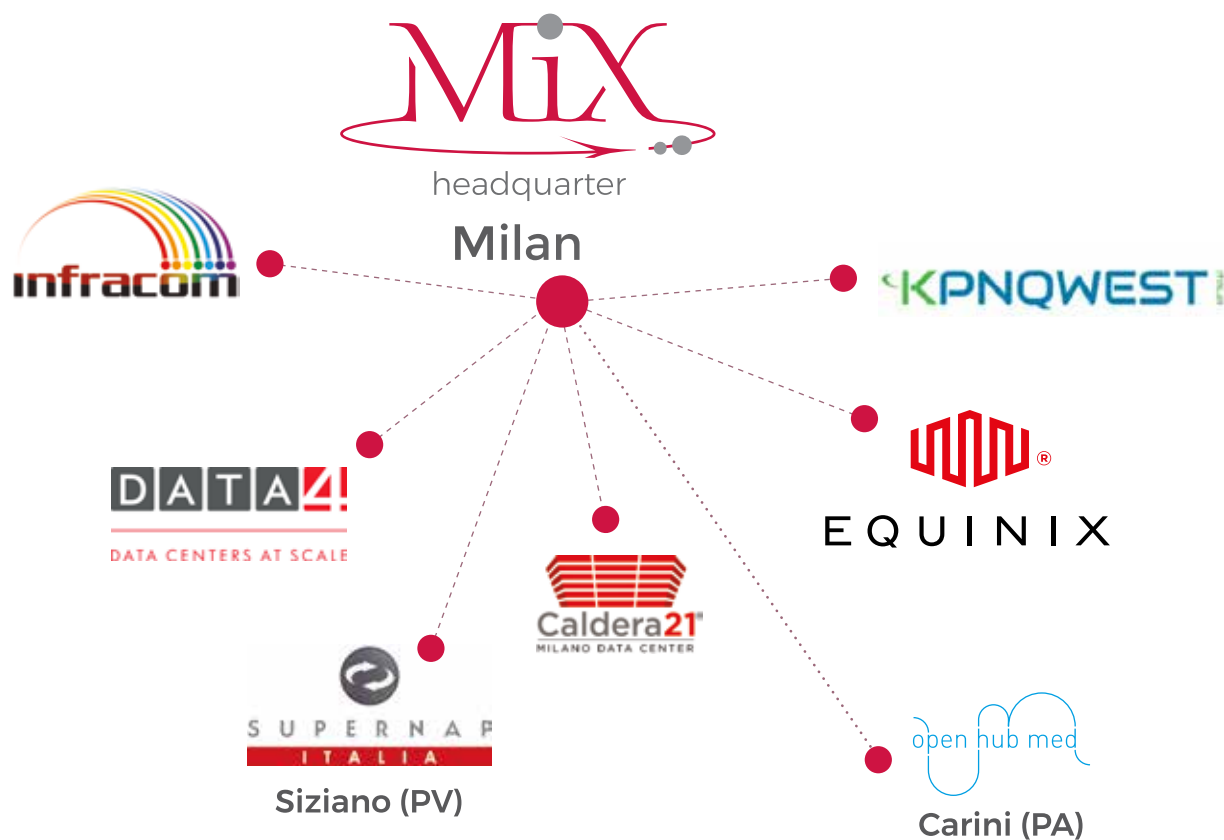
Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM  
ISO/IEC 27001

First Italian IXP  
ISO27001:2013 certified

# MIX LOCATIONS



OWN DATACENTER

8 POPS: 7 IN LOMBARDY, 1 IN SICILY (CARINI - PALERMO)

# MIX FIGURES

**2.5 Tb** CUSTOMERS PORTS CAPACITY  
+40.4% YoY

more than **1240** INTERCONNECTIONS

**267** PEERING PORTS

**4.8 Tb** SWITCHING  
CAPACITY

more than **180.000** NETWORKS  
ANNOUNCED



Fully redundant

Carrier neutral

100% control of the entire service chain

46 carriers

221 members

Peak internet traffic exchanged **493 Gbps**

# MIX CORE DC

MIX core datacenter is an optimal solution for housing network and transmission equipment.

It is divided into two datacenters – MIX DC1 and MIX DC2 – and sub-divided into 5 areas, to offer a tailor-made service and to manage each intervention quickly and accurately.

In 2017 DC1 has seen a complete renewal of the air conditioning system: the existing equipment with the “under” system have been replaced with others with direct displacement, which provide the hall with a greater fresh air supply. Installation requests in DC2 have been constantly increasing.

TOTAL AREA **800 SQM**

## DATACENTER AREAS

**GREEN**

ODF

**BLUE**

MEMBERS

**RED**

TELCO

**ORANGE**

MISCELLANEOUS

**YELLOW**

INSIDE THE BLUE AREA

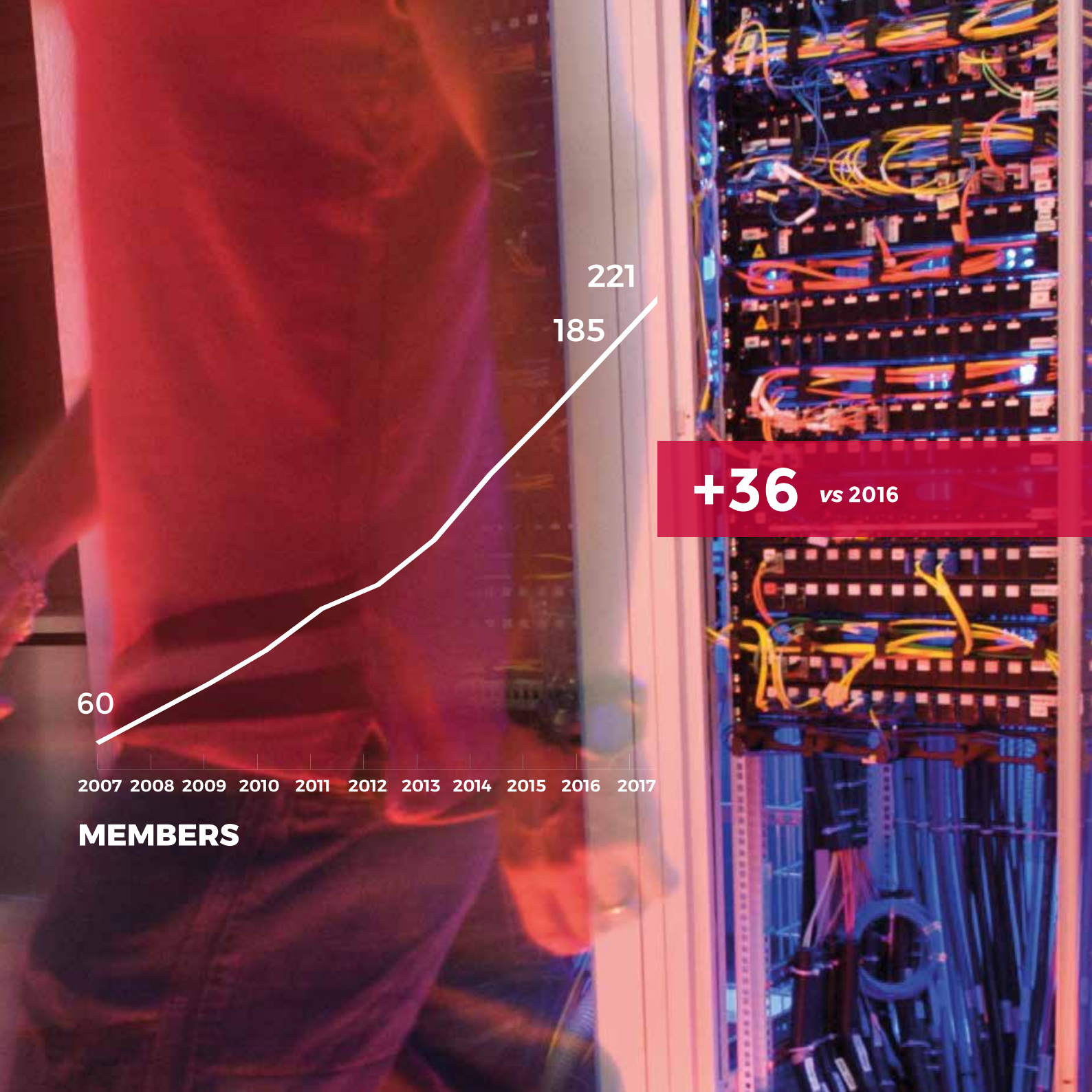
60

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

**MEMBERS**

185  
221

**+36** vs 2016



# MIX SERVICES

Public/Private Peering

Unicast/Multicast IPv4/IPv6

Route Servers

Remote Peering

FE/G/10G/100G ports

Network Equipment Colocation

Partnership Program via Pooling

Meet-Me-Room

24/7/365 H&E

Partnership Program via Reseller

**99,99% AVAILABILITY**

## **LOCAL CONNECTION**

Connection to the peering switches from routers installed either in MIX datacenter or in datacenters where a MIX PoP is located.

## **REMOTE CONNECTION**

Connection to the peering switches from routers installed in remote datacenters with respect to any MIX PoP.

## **POOLING AT MIX**

Connection to the peering switches shared among multiple remotely connected parties. Several networks can be connected to the peering LAN via a Pool, sharing the access circuit and port on MIX switches.

## **RESELLING SERVICE**

Carriers and datacenter owners can resell MIX ports to their customers. A conspicuous commission on port is provided for remote new members connections.

# WHY CONNECT TO MIX

**National and international networks** connected

**Over 180.000** IP network prefixes announced

**30%** of the Full Routing Table

Direct peering with more than 220 connected operators

**More than 75%** of MIX peers connected to the route-servers platform

**24/7 /365 support**

More than **45** MIX colocated Carriers providing interconnection, transit and transport services

**I-root, K-root** and **J-root** name servers and many **ccTLD** and **TLD root DNS** hosted

**Flexible** ways of **local and remote direct interconnection**

Tailored tools for **monitoring and statistics**

**High standards of physical and logical security** for data rooms and switching platform

## HOW TO JOIN



DELIVERY TIME



Fill & sign  
the MIX MoU



Send out  
tech info  
to MIX NOC



Connect your  
network

# MAIN BENEFITS



## EFFICIENCY

**Single interface** for any possible issues: full services for all interconnections at Layer 1, Layer 2 and Layer 3

**Turnkey**, fully managed and internally controlled service



## COST EFFECTIVENESS

The benefit of making peering agreements in Italy **in the place with the highest concentration of Internet operators**

**Own data center** exclusively dedicated to Internet operators



## RELIABILITY

**>99,99% uptime**

High and increasing **redundancy**

**High security level**  
anti burglar, fire and flooding systems



## CUSTOMER SUPPORT

Direct relations with **MIX staff** for all the problems concerning interconnection, peering and colocation

# HISTORY



- 1994**  
First NAP in Italy founded  
The first Italian NAP was set up in a Lombard inter-university consortium in 1994 and, shortly thereafter, a second one was established in Rome in a similar consortium. The need for neutral terrain in which no areas of competition are created between the individual members is a feature that distinguishes all IXPs in the world.
- 1996**  
“mix” founded  
The large concentration of ISPs in the Caldera Campus created a favourable ground for the creation of a NAP and so, in 1996, a volunteer and non-profit initiative within the campus, gave rise to a new NAP in Milan, the first “mix” (the term “mix” at the time implied the IX service, and there was no mention of MIX as a company).
- 2000**  
MIX S.r.l. founded  
The birth of MIX S.r.l. (January 27<sup>th</sup>, 2000) in which the majority of operators who contributed to the creation and development of “mix” participate as members, in order to guarantee neutrality and functionality. Such a structure fits well into the Italian Internet reality and improves its use by making available to all ISPs a reliable and at high speed bandwidth.
- 2001**  
EURO-IX founded  
Seven European IXPs, including MIX, promoted the foundation of EURO-IX, the European Internet Exchange Association, whose aim is coordination, exchange of knowledge and experience, and the development of harmonization activities among IXs of the different countries for the benefit of the entire European Internet community.
- 2015**  
Open Hub Med launched  
On November 23<sup>rd</sup>, 2015 the consortium Open Hub Med (OHM), neutral and open point to all internet exchange operators was launched in Carini (PA): MIX is a founding partner. OHM is not just a landing station, but intends to play a strategic role as a privileged route for traffic coming from Asia, the Middle East and Africa and heading towards Northern Europe, relaunching Italy's role in international TLCs.
- 2015**  
OIX-A certification by Open IX  
MIX obtained the OIX-A certification of Open-IX (released for only 5 IXPs worldwide) confirming the level of excellence in terms of security and reliability of services.
- 2016**  
ISO27001:2013 certification  
MIX is the first Italian IXP to overcome the strict controls requested by the ISO27001:2013 certification, which covers all the security aspects of IT installations and processes.

# SHAREHOLDERS

1	AIIP – Associazione Italiana Internet Providers	9.75%
2	BT Italia S.p.A.	10.85%
3	Clio S.p.A.	2.20%
4	Cubecom S.p.A.	1.10%
5	Energy s.a.s. in liquidation	1.10%
6	Eolo S.p.A.	9.75%
7	Eutelia S.p.A.	1.10%
8	Fastweb S.p.A.	1.10%
9	Infracom Italia S.p.A.	1.10%
10	It.Net s.r.l.	5.25%
11	KPNQWest Italia S.p.A.	10.75%
12	MC-link S.p.A.	10.75%
13	Orange Business Italy S.p.A.	1.10%
14	Sequenza S.p.A.	3.30%
15	Spin S.r.l.	1.10%
16	Telecom Italia S.p.A.	10.85%
17	Tiscali Italia S.p.A.	2.20%
18	Tiscali Business GmbH	1.10%
19	Utility Line Italia S.r.l.	3.60%
20	Vodafone Enterprise Italy S.r.l.	2.20%
21	WindTre S.p.A.	9.75%

# BOARD



**Joy Marino**  
President



**Eugenio Contatore**  
ITNET



**Vittorio Figini**  
Utility Line Italia



**Marco Fiorentino**  
KPNQwest



**Mario Mella**  
Fastweb



**Paolo Nuti**  
MC-link



**Federico Protto**  
Retelit



**Luca Spada**  
Eolo

# TEAM



**Valeria Rossi**  
General Manager



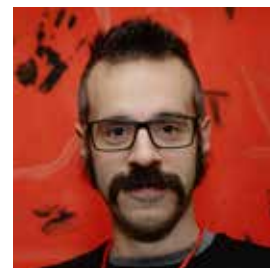
**Monica Arensi**  
General Secretary



**Gabriel Ramini**  
IT Manager



**Simone Morandini**  
System & Network  
Engineer



**Gianmarco Clerici**  
System & Network  
Administrator



**Michele Perrucci**  
DC Manager



**Gaetano Tomasi**  
DC Operator



**Mauro Magrassi**  
Service Development  
Consultant



**Giorgio Bellocci**  
Media Relations  
Consultant

# MEMBERS

2bite	Clio	Etisalat	Internet One
3P System	Cloudfire	Eurocall	Internet One SA
a2asmartcity	Cloudflare	Expereo International	Interoute
Abilene	CloudItalia	Facebook	Interplanet
Acantho	Cogent Communications	Fastnet	Intred
Active Network	COLT International	Fastweb	IPKom
Adal Network	Connesi	Fibering	IPRoute
Afilias	Conessioni Metropolitane	Forcepoint	IPTP Networks
Airbeam	Continent 8	FUB - Fond. Ugo Bordoni	Irpinia Net-Com
Aircomm	Convergenze	GARR	It.Net / IOL
Airnetwork	D.T.S. - RetelVO	Geant	ITGate Network
Akamai	Dada	Genesys Informatica	IX Reach
Alfanews	Deltaweb	Geny Communications	JCom
Altitud	Digitel Italia	Go Internet	Knipp
Amazon	DIR.org	Goline	KPNQwest Italia
AMT Services	Dropbox	Google	Leonet
Aruba	Dueenne	Grifonline	Lepida
Asdasd	E-Mind	Hibernia	Libera Univ. di Bolzano
AT&T Global Network Services	E4A	Horizon Telecom	Limelight Networks
Bbanda	EasyConn	Hurricane Electric	Logos Technologies
BBBell	Easynet Italia	I.T.S.	Lottomatica
Blizzard Entertainment	Elmec Informatica	ICTeam	Mandarin
Brennercom	Elsyconn	IFOM	Mc-Link
BT Global Services	Engineering D.Hub	Il Sole 24 Ore	Mediaset
BT Italia	Enter	Imperva Inc.	Melita
BV Networks	Eolo	Infracom Italia	Metrolink
CDLan	ePress	InNet	Micro Servizi
CDNetworks Co.	Equinix	Innsbrucker Kommunalbetriebe	Microsoft
Cesena Net	Estracom	Intercom	Mynet

Mynetway	RadioFibra	Stelkom	Vimpel
Nemo	RAI - RadioTelevisione Italiana	Sunrise Communications	Vodafone Group Services
Net Global	Redder Telco	Supernap	Voix
Net-IT	Registro .it	Swisscom	Vuetel Italia
NETandWORK	Retelit / e-via	T.Net	Warian
Netflix Streaming	Retn	TeamSystem	Webdiscount
NetIX Communications	Riot Games	Tech Digital	Welcome Italia
Netnod - i.root-server	RIPE NCC - RIS project	Tecno General	Wifiweb
Newtec	RIPE-NCC - k.root-server	Tecnotel	Wind Tre (ex H3G)
Nexin Technologies	S.P.E.	Telecom Italia	Wind Tre (ex Wind)
Next.it	Seeweb	Telecom Italia San Marino	Wish Networks
Nexus	Seflow	Telecom Sicilia	WispOne
NHM	Servereasy	Telemar	Wolnet
Nice Blue	Sg.Gs	Telnet	Xmatica - Progetto Fibra
Noitel Italia	SI.EL.CO.	Terra	xstream
Nova Networks	Sicula System	Time-Net	Zscaler
Nova Quadri	Siltel	Tiscali Italia	
Onecom Global	Siportal	Trentino Network	
Optima Italia	Sirius Technology	TTK - TransTelecom	
Orange Business	Sistemi HS	TWS Italia	
OVH	Sky	TWT	
Planetel	Smart Provider	Unidata	
Positivo	Smartline	Uno Communications	
Poste Italiane	SoftLayer Technologies Italia	Utility Line Italia	
Professional Link	Spaziotempo	ValcomCalabria	
Progetto 8	Spin	Verisign - j.root-server	
PT Telkom Indonesia International / TELIN	StackPath	Verizon Digital/EdgeCast	
Qcom	Stadtwerke Hall in Tirol	Verizon Italia	
Quantil Networks	Stel	Videobyte	

# CARRIERS

Aruba	Infracom	T.Net Italia
Asdasd	Interoute	Telecom Italia
BT Italia	It.Net	Telecom Italia Sparkle
CDLan	KPNQwest	TeliaSonera
CenturyLink Communications	MC-link	Telnet
CloudItalia Telecomunicazioni	Mediaveneto	Tiscali Italia
Cogent Communications	OpenFiber	Trentino Network
Colt Technology Services	OVH	Uno Communications
DTS	Progetto Vendita	Verizon Italia
Easynet Italia	Qcom	Vodafone Italia
Enter	Retelit / e-via	Wifiweb
Eolo	Seeweb	Wind Tre
Fastweb	Supernap Italia	Xmatica

# PARTNERS

## Resellers

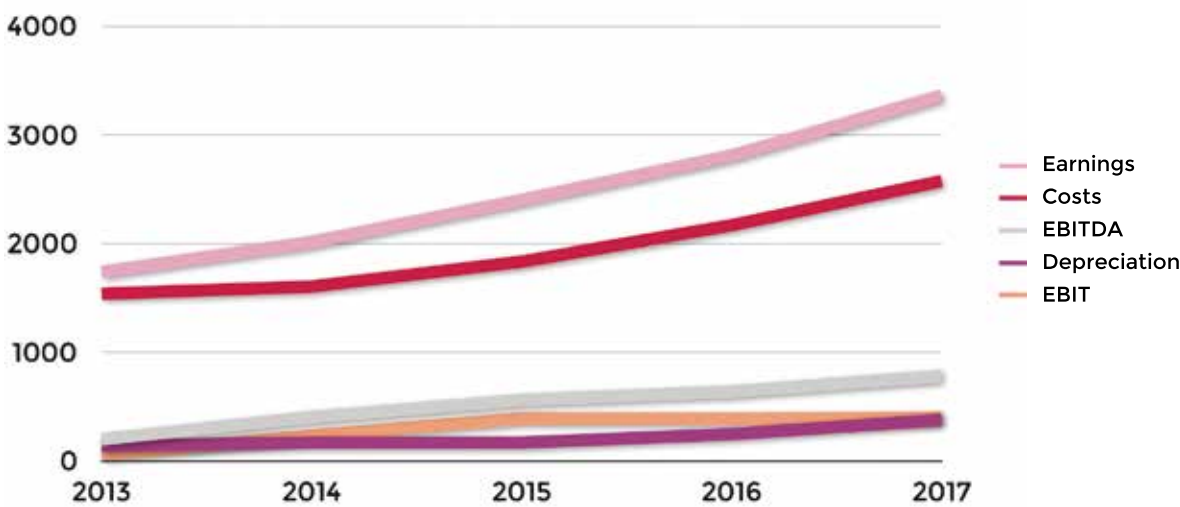
Interoute  
Enter  
Equinix Italia Enterprises  
Supernap

## Poolers

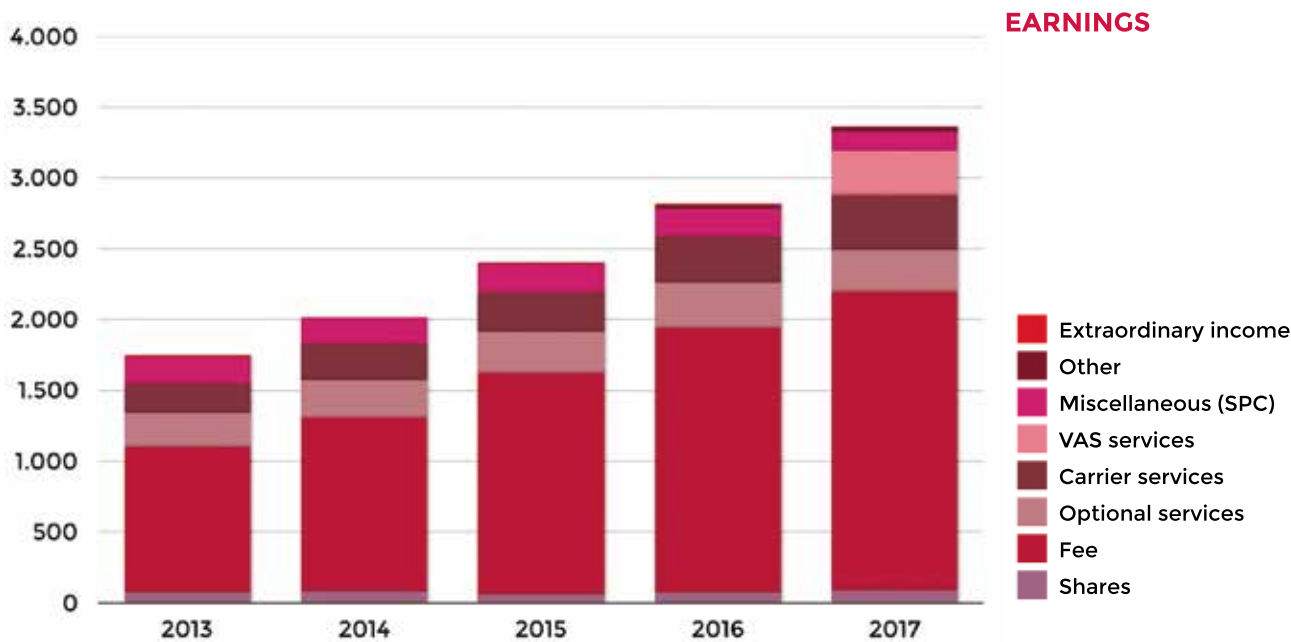
BBanda  
Internet One  
Itesys  
IX Reach  
Lepida  
Telecom Sicilia  
Wifiweb



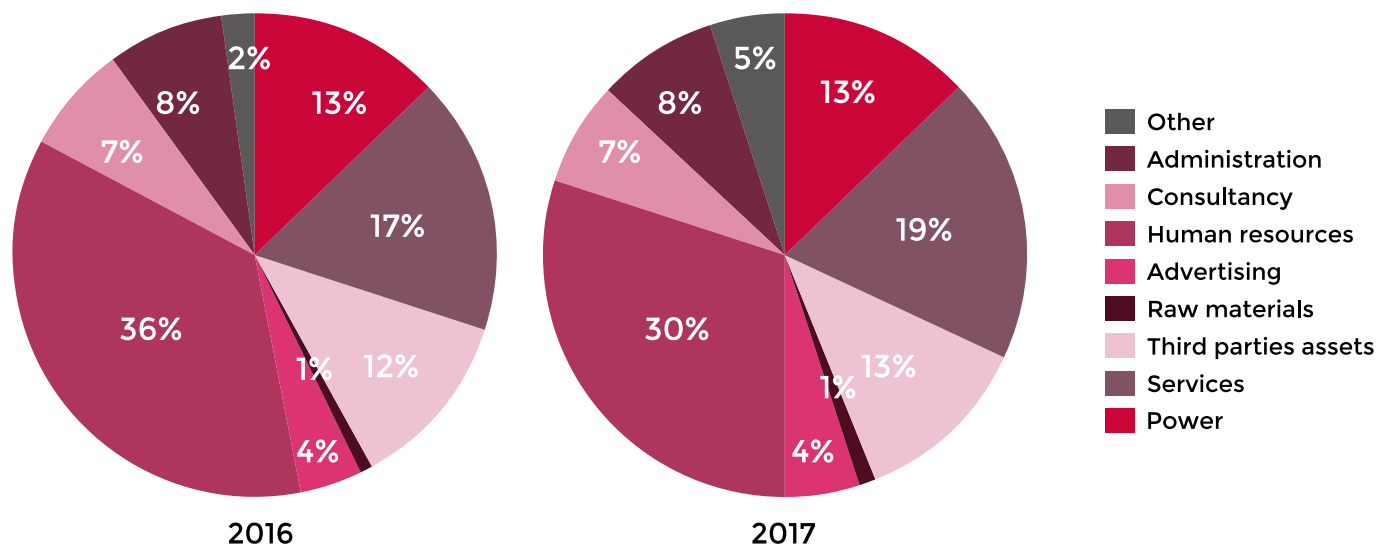
# PROFIT & LOSS



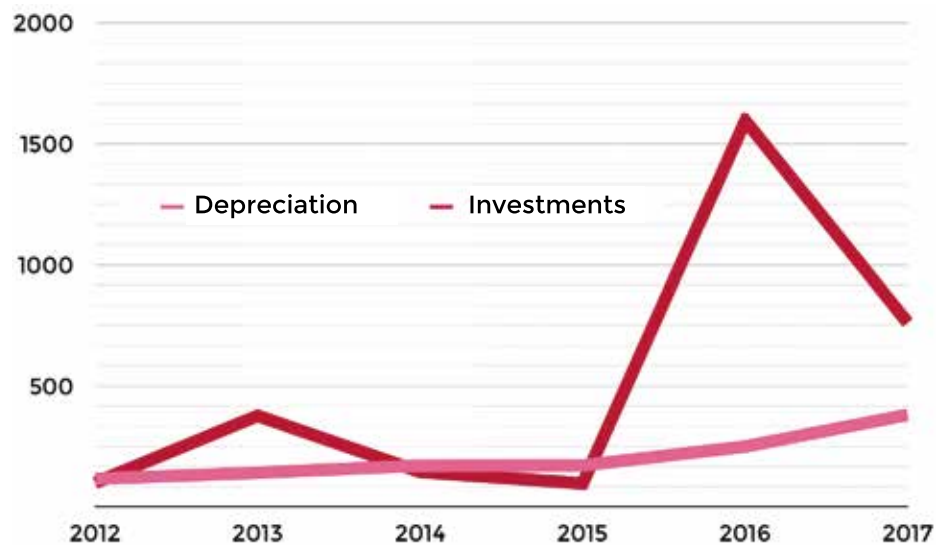
# FINANCIAL RESULTS



## COSTS



## INVESTMENTS



# 3 NEW POPs: SUPERNAP, DATA4 AND OHM

MIX has always been a protagonist in the development of the Italian internet ecosystem, associated with the Milan Caldera complex where, for historical and business-related reasons, the majority of operators are concentrated. According to MIX president Joy Marino: *"When creating a virtuous circle that generates trust in new initiatives, attracts ISPs, guarantees an open market of services and attracts content and OTT operators, the key is to have multiple focal points that make it possible to attain the reliability and resilience nowadays demanded by the internet with its pervasiveness in all areas of our social and economic realities. This is also a necessary condition for increasing the potential of the internet in Italy, reducing the gap with the major hubs in Northern Europe, such as Amsterdam, London and Frankfurt".*

This is why MIX welcomed the emergence of two major players like DATA4 and SUPERNAP Italia and signed agreements with them, involving peering services in the Cornaredo and Siziano datacenters through the interconnection with the MIX hub in Milan Caldera.

*"In this way – continues Joy Marino – MIX consolidates its role as facilitator and catalyst, considering the principle of neutrality with regard to any TLC carrier as essential".*

On November 15th, MIX devices were turned on at the Open Hub Med consortium-technology center, hosted in the Italtel research area in Carini (Palermo).

Open Hub Med covers one thousand square meters area and it has been designed with the most advanced technological systems to guarantee continuity of service, scalability of internal infrastructures and electrical power supply over time. Thanks to the modularity of fiber and electrical pre-wiring systems, customers can easily install equipment in their own racks or take advantage of those provided by OHM, quickly and cost effectively.

MIX devices at Open Hub Med are interconnected with MIX datacenter in Caldera Campus, allowing MIX affiliates in Sicily to open transparent peering relationships with all the networks already interconnected in Milan.

# MIX SALOTTINO

The 2017 edition of Salottino, the technical event dedicated to all MIX participants, was a great success, welcoming 60 industry representatives.

Valeria Rossi, MIX General Manager, introduced the morning session, provided an overview of the latest MIX news and spoke about its constant growth in terms of participants and traffic.

As President of the Open Hub Med consortium, Rossi announced that the Carini site, neutral heart of the Sicilian Hub, had officially been launched with the activation of the first Interoute, Fastweb and Retelit transmission devices.

Open Hub Med is therefore ready to take on the massive challenge of making Italy the new bridge between the internet networks of Asia, the Middle East, North Africa and Europe.

A series of technical talks by MIX members followed.

Samer Abdel-Hafez of Netflix took the audience on an interesting journey into the world of Netflix demonstrating “How Netflix works”, i.e. how it manages to provide 125 million hours of TV series and movies a day in 190 different countries.

Kevin Meynell presented the MANRS (“Mutually Agreed Norms for Routing

Security”) initiative, that provides crucial fixes to reduce the most common routing threats. Meynell’s talk was followed by the “open mike” presentation of some of MIX’s new members present in the room.

Livio Morina, CEO of Airbeam S.r.l., Andrea Castano, NOM at Supernap Italia, and Alfredo Giordano, CTO of Warian, greeted the audience.

The afternoon session began with a talk by Pier Carlo Chiodi who presented his “ARouteServer” project, a new open source tool designed to effectively and flexibly manage the configuration of the main route-servers, an essential component of the services offered by IXPs.

Then Marco d’Itri, S&N Manager of Seeweb, introduced an “ITNOC update” and Simone Morandini, MIX S&N Engineer, presented an update on the “MIX Tools” following an introduction by S.D. Manager Mauro Magrassi.

In his highly interesting degree thesis, entitled “NET Neutrality Measures”, Marco Brugnara analysed if the flows of some types of traffic are treated differently compared with regular internet traffic, with all boundary conditions being the same.

# MIX SALOTTO 2017

## “LET’S TALK OF MONEY”





“Let’s talk of money” is the title of the eleventh edition of MIX Salotto, dedicated to the business potential of the electronic payments. MIX Salotto happened on November 27 at the Elfo Puccini theatre in Milan and it represented for MIX the opportunity to reaffirm its technological role on the cultural level, even if talking of digital money may seem surprising in a context once closely linked to the so-called “Telco”. This is how Joy Marino, president and co-founder of MIX, commented: “We could not avoid the issue at a time when banks and financial services, as an effect of the great regulatory opening, are already our indirect customers”.

The event started with a one-to-one meeting session, a wonderful opportunity for networking, followed as usual by a panel, the aperitif and the final dinner.

Marino continues: «The need to “talk”, to optimize the data flow transit, which so far has characterized the Over The Top operators up to the new streaming content providers, now also extends to the financial system, which needs to be interconnected not only at the application level but also at the physical level».

Carlo Maiocchi (Sia) and Savino Damico (Intesa San Paolo) together with Valentino Bravi (Tas Group), Stefano Andreani (OpenTech) and Francesco Ricci (Bank-Notes) took part in the traditional roundtable, as always moderated by Enrico Pagliarini, Radio24-Il Sole 24 Ore.

The entire “fintech” sector is in full swing with the issue of payments, a territory that the advent of the PSD2 directive has populated with new, sometimes unexpected, stakeholders.

«Today we begin to know each other, to respond to future requests- concludes Marino. We have no intention of betraying our profession, because the Internet, our daily bread, is made just to make everyone speak with everyone else. A player like the MIX has so far remained outside the network of the bank payments systems but if the future of these services will “speak IP”, we will be there».

# ONE DAY AT MIX

Most people outside the internet industry have no idea of what an Internet Exchange Point is, including the so called “millennials”, even if they are great users of internet.

In order to bring youths closer to the reality of the Internet Exchange Points, in 2012 MIX started the “MIX Schooling” project, organizing informative meetings aimed at secondary school students, in its datacenter.

Entering a datacenter like MIX gives youths the chance to hear the “noise of the Internet” and see what is behind their social profiles, online shopping, chatting with friends, etc.

Teachers visiting MIX have the opportunity to show students that theoretical subjects taught at school have tangible implications, to be considered when choosing their future profession.

The meetings take place in one morning and are divided into two moments:

**Classroom session** – the MIX Network Engineer presents an overview on how networks work, the characteristics of an IXP and answers students’ questions.

**Guided tour of the MIX DC** – at the end of

the theoretical session, the students have the opportunity to see closely the “beating heart” of MIX, where the equipment of the main ISPs and content providers are installed.

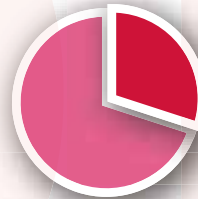
In just a few years, MIX has gone from having just a few dozen to over several hundreds visiting students a year. In 2017, more than 400 students and teachers took part in the “MIX Schooling” project.



# THE MIX SCHOOLING PROJECT

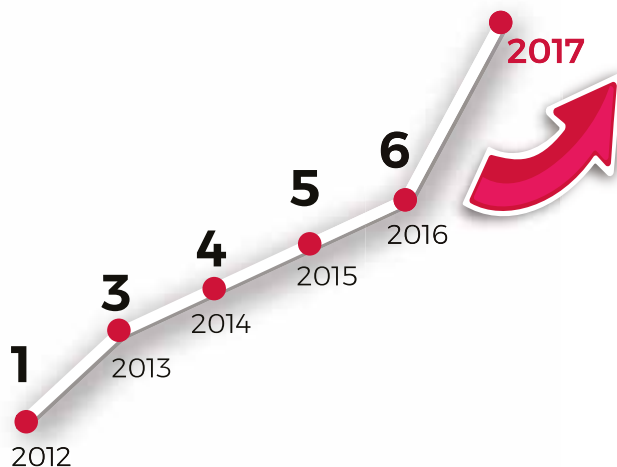


10  
schools



30%  
first visit

4 Technical institutes  
3 Secondary schools  
3 High schools  
information technology based



+66,6% YoY

After the visit, the most of the students felt

“ **SATISFIED**  
**AMAZED**  
**INTERESTED** ”



400  
students

Students' attention was attracted by

**TRAFFIC PEAK DURING SPECIAL EVENTS**

**IMPORTANCE OF MIX ROLE**

**PRACTICAL APPLICATION OF THEORETICAL  
SCHOOL KNOWLEDGE**

**MIX NEUTRALITY**



## MIX HEADQUARTER

Based in Milan, at **Caldera Park**, the area with the highest concentration of Internet operators in Italy.

