

ANNUAL REPORT



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When the preparation of the usual annual report began, I promised myself to magnify the results achieved in 2019, truly one of the best years in the history of MIX. I was also quick to remind you that right at the beginning of this 2020 MIX celebrated its first 20 years. And then.

Suddenly we woke up in a mediocre catastrophic science-fiction B-movie. Moreover, Italy was the first western country to be hit and to implement the lockdown epidemic containment strategies. Everything changed overnight: our way of living immediately, the economic prospects in the

medium term and, perhaps tomorrow, the world balance.

I would like to use this page only to share two considerations (?) that concern us very closely: one on the MIX team at the time of the Coronavirus, the other on the role of MIX in the Italian Internet of this moment.

The time it took MIX to reorganize itself in "smart working" mode was ZERO. The technical tools were already present: almost all the people in our team normally use a laptop which they take with them on weekends (ah, e-mail, tyrant of our time!). All IT



support systems, whether technical, managerial-administrative or commercial, were already remotely accessible via VPN and everyone reads the emails during the weekend, so our GM Valeria Rossi was able to communicate to all the staff promptly that "The offices remain closed except for emergencies, but the work continues as if nothing had happened".

In ZERO time.

Not everything can be that easy, of course. For example, there were those who did not yet have a laptop (because they had just been hired) or had

no Internet access at home. But above all because there are activities that must necessarily be done "in attendance", including all those concerning the Data Center and data transmission lines.

MIX technical team worked with self-sacrifice and a sense of responsibility, both at our Data Center and at the various DCs where MIX has a PoP, always keeping in mind not only the dangers that everyone would face, but also the importance of what he was doing to guarantee an essential service for all Italians.

Togetherness, sense of responsibility, professionalism and autonomy. This is a team we must be proud of.

The second reflection concerns the very nature of an Internet Exchange, the reason why it exists or, as I sometimes happen to write: "if it didn't exist, it would have to be invented".

Let's imagine the devastating impact of a sudden change in our behavior on the Internet, following the lockdown: as if in a road system all the highways and urban junctions, designed for rush hour, had their traffic direction completely reversed and provincial roads, accustomed to a modest local traffic, were crossed by TIR trucks...

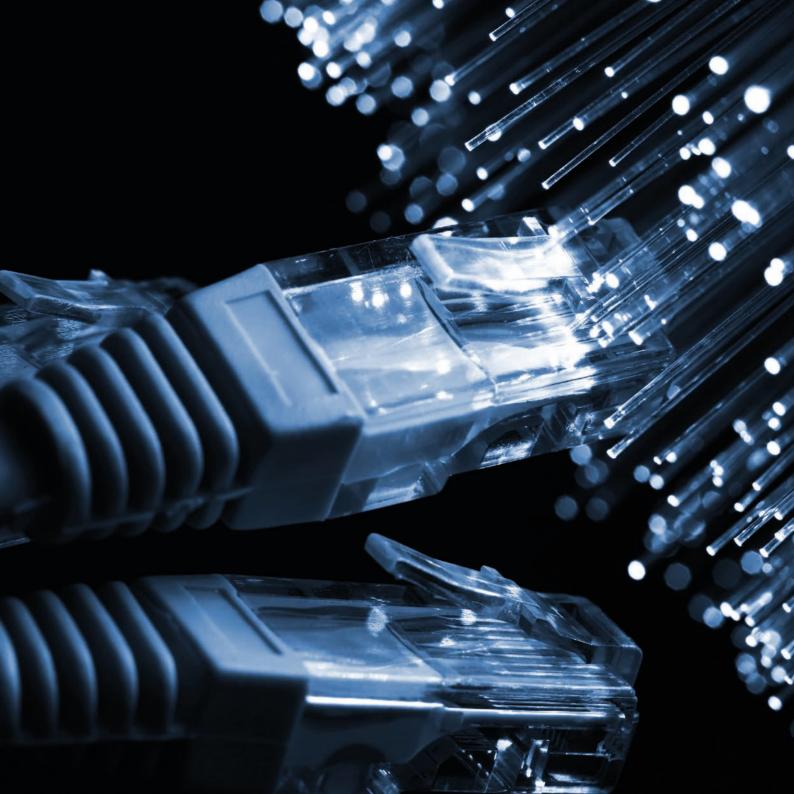
In the thirty years during which I have seen the Internet born, grow, consolidate and change skin countless times, one of the most used and abused myths has been the one about the Internet's ability ("by-design") to quickly adapt in order to automatically react to any malfunction. This meme of the Net "born from the Cold War to withstand the nuclear Holocaust" has never really been completely true; in any case, with the evolution of the architectures, with the exponential growth of traffic flows and with the pressure of the free market to bring down prices, it was increasingly difficult to have a global architecture that was truly fail-proof on its main lines. The modern Internet has specialized in optimizing performance for today's most common uses: multimedia streaming, Cloud applications.

The value proposition of Internet Exchanges - and I am referring mainly to large IXPs that see the presence of all or almost all operators present in a

nation, such as MIX - has always been the following: for an Internet operator, notwithstanding the aspects of redundancy and reliability, it is much better to connect to the IXP with a port at the maximum possible speed and then manage, via software, a large amount of direct peering with other operators, rather than activating a physical connection with those [few] peer operators for which the investment is justified a priori. This is the value for the single operator; the convergence in the same point of many operators follows the Metcalf law and the value for the country therefore increases with the square of the number of connected operators.

All this simply by thinking about normal activities in normal times. I never fully realized how the same proposition acquires a special value in the event of an unpredictable situation like the one we are experiencing: the possibility of automatically reconfiguring how much traffic is exchanged with which [others, different from before] operators, already connected to IXP, makes the Network resilient to sudden changes in behavior and traffic flows. And even the capacity upgrades that become necessary sooner or later (because the more something works well, the more it will be used), can be performed more easily and quickly within the infrastructure of the PoPs of the IXP, rather than doing excavations and spreading fibers around the countryside. Especially in difficult times like these.

Something that MIX team knows well and this brings us back to the previous reflection: the value of our team. Thanks to everyone.



#### **IDENTIKIT**

MIX is the main exchange point (IXP) of Italian Internet networks and among the first in Europe in terms of traffic.

It offers interconnection services to Italian and foreign Internet operators, through high-performance switching platforms and within its own data room infrastructures.

#### **IN NUMBERS**















\*for ASNs Source: IXPDB of Euro-IX

#### **8 NATIONAL PoPs**

















\*MIX core DCs are located in Milan in the Caldera Park, the campus with the **highest concentration of ISPs** in Italy.

#### **CERTIFICATIONS**

Aware of its role as an essential infrastructure of the Internet in Italy, MIX maintains a high level of vigilance in relation to all aspects of reliability and security.

In these areas, confirming the level of excellence of its services and infrastructures, MIX has obtained ISO27001 certification, a standard issued by the International Organization for Standardization (ISO) which covers all the aspects of security of IT systems and processes. MIX is the first Italian IXP to overcome the controls required by ISO certification.

MIX has also obtained the OIX-1 certification, currently released by Open-IX to only 5 IXPs worldwide, which defines the standards of performance, reliability and resilience for large-scale interconnection services.

One of the key factors in achieving these certifications was the complete control of the two Data Centers built in the Caldera campus: being managed in total autonomy by MIX, they are entirely under its direct responsibility.





**QUIO-IX** MIX is one of the founding members of Euro-IX. the

European Internet Exchange Association, whose purpose is the coordination, the exchange of knowledge and experience and the development of harmonization activities between the IXPs of different countries for the benefit of the entire European Internet community.



With around 150,000 km of submarine cables reaching Sicily, Italy is the major natural hub for the "wet nets" of the Mediterranean.

Exploiting this strategic positioning to strengthen Italy's role in the international telecommunications sector was the driver that led to the establishment of the Open HUB MED (OHM) Consortium.

The Consortium was founded by MIX with other important national and international players.

#### **SERVICES**



#### **Peering at MIX**

Peering is the interconnection service between networks (AS) available at MIX through highspeed layer 2 devices (switches).

Operators who present themselves on MIX have the opportunity to realize peering agreements in the point of greatest concentration of internet operators in Italy, with ease and at competitive costs.

The service includes

site of MIX.

1 GE, 10 GE and 100 GE ports;

peering relationships directly on the peering LAN with 3 instances of the 13 Root DNS servers existing in the world and of many TLD DNS servers;

exchange of IPv4 and IPv6 traffic on the same infrastructure without additional costs; colocation of the peering devices in the core

#### **Services for Carriers**

The Carriers, as operators able to provide internet connectivity through their own infrastructures, find in MIX spaces equipped to install their own transmission equipment or even optical termination fully managed and served by MIX.

Within a protected environment and guaranteed in its functionality, MIX carriers in the datacenter can offer interconnection services to operators connected on the peering LAN, transit services to the Big Internet and interconnect their equipment (active or passive) to those of the operators installed in the datacenter, easily, quickly and at low cost.

#### PARTNERSHIP PROGRAM

The partnership program is designed to facilitate the connection of remote operators to the peering LAN.

To better cover the different needs and offer more opportunities to partners, two different partnership models are available: Reselling (Qualified service) and Pooling (Best effort service).

The criteria common to both are:

Partners resell transportation plus connection to MIX in a "All-in-one" service.

Partners invoice customers/MIX invoices partners.

First level support is provided by the Partner.

No colocation services are provided for the customer's equipment in the MIX DCs.

#### **MIX PARTNERS**

#### **RESELLERS**

Airbeam

Equinix Italia Enterprises

Fiber Telecom

**GTT Italy** 

IX Reach

Retelit

Retn

Supernap Italia

Telecom Italia Sparkle

#### **POOLERS**

BBanda

Briantel

Fiber Telecom

Internet One

Sysway

IX Reach

Lepida

Sirius Technology

Wifiweb

#### **DATACENTER SERVICES**

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.





**BLU AREA** dedicated to **MEMBERS** 

**RED AREA** for **TLC NETWORKS**  **SPECIAL BID** 

(2013)

**GREEN AREA** for **INCOMING FIBERS** 



#### **ADVANTAGES**

#### **EFFICIENCY**

SPOC for any issue Full support for interconnections at Layer 1, Layer 2 and Layer 3

#### **RELIABILITY**

>99,99% uptime track record
High and increasing redundancy
infrastructure
Physical and logical security aligned to the
best practices of the industry for data rooms

#### **CUSTOMER CARE**

and switching platform

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

Tailored tools for monitoring and statistics

#### **COST EFFECTIVENESS**

Highest density of Network and Content players in the country and Southern Europe

Place-to-be for top efficiency and any interconnection need

Fully owned and operated DC dedicated to Internet interconnection

#### INTERCONNECTIONS



205.000+

IP network prefixes announced



1700+

PNI



**297** 

ASNs connected



**42** 

#### INTERCONNECTIONS ENVIRONMENT



CONTENT DISTRIBUTION NETWORKS



**GAMING COMPANIES** 



INTERNET SERVICE PROVIDERS



TRANSIT PROVIDERS



**CLOUD PROVIDERS** 



**CARRIERS** 



ON-DEMAND CONTENT PROVIDERS



PUBLIC ADMINISTRATION GOVERNMENT





**RESELLERS** 



#### CONNECTED ASNs as per 12.31.2019

2bite BT Italia E-Mind
3P System BV Networks E4A
a2asmartcity BZSolutions Easynet
Acantho CDLan Easynet Italia
Active Network CDNetworks Co. Elmec Informatica

Adal Network Cesena Net Elsyconn

Afilias Cielo Engineering D.Hub

Airbeam Cisco Eolo

AircommClioEpiclink s.r.l.AirgridCloudfireePressAirmaxCloudflareEquinixAirnetworkCloudItaliaEstracom

Akamai Clt Group Eurocall Network

Alibaba.com Coding Europsys

Altitud Cogent Communications Expereo International

COLT International Facebook Amazon **AMT Services** Connesi Fastcon Argosid Network S.r.l. Connessioni Metropolitane Fastly Aruba Continent 8 Fastnet Asco TLC Fastweb Convergenze AT&T Global Network Services CZ.NIC z.s.p.o. **Fibering** Atomo Networks D.T.S. - ReteIVO Forcepoint

Aut O'Mattic Dada FUB - Fond. Ugo Bordoni

Bbanda Deepnet G Core Labs

BBBellDeltawebGARRBezeq InternationalDev ItaliaGate TIBlizzard EntertainmentDigitel ItaliaGeant

Bluwifi / NewmediawebDimensioneGenesys InformaticaBrennercomDIR.orgGeny Communications

Briantel Dodonet Go Internet

BSS-ONE Dolomites Network Goline

BT Global Services Dropbox Google

#### CONNECTED ASNs as per 12.31.2019

Grifonline ITGate Network Netflix Streaming

GTT Italy IX Reach NetIX Communications
GTT Netherlands JCom Netnod - i.root-server

Hallag Kommunal GmbHKnippNetoip.comHorizon TelecomLenfiberNetpopHurricane ElectricLeonetNetskopeI.T.S.LepidaNewcom TLC

ICTeamLibera Univ. di BolzanoNewtecIFOMLimelight NetworksNexim Italia

Il Sole 24 Ore Lispa Nexin Technologies

Imperva Inc. Logos Technologies Next.it Lottomatica Inasset Nexus Init7 (Schweiz) NHM Maggioli/ Elogic InNet Maide Nibble Innsbrucker Mandarin Noitel Italia Kommunalbetriebe Medi@net Noixa S.p.a. Insiel Mediaset Noixa S.r.l. Melita Nova Networks Intercom Internet One Melita IT Nova Quadri

Internet One SAMetrolinkNuovaretiInterplanetMicro ServiziOath (EMEA)IntredMicrosoftOnecom Global

IPKom MU Network Optima Italia

IPRouteMynetOrakomIPTP NetworksmyNET GmbHOrange Business

Irideos/Enter Mynetway Orange Tunisie

Irideos/Infracom ItaliaNaquadriaOverwebIrideos/KPNQwest ItaliaNemoOVH

Irideos/Mc-LinkNet GlobalPA EvolutionIrpinia Net-ComNet-ITPanservice

Isi LineNETandWORKPlanetelIt.Net/IOLNetenPositivo

Poste Italiane Sistemi HS Trentino Network

Professional Link Sistemi Wifi TTK - TransTelecom

ProfexionalSkyTwitchProgetto 8Sky-linkTWS ItaliaProgetto EvoSmart ProviderTWT

Promo.it Smartline Unidata

PT Telkom Indonesia SoftLayer Technologies Italia Uno Communications
International/TELIN Sony Utility Line Italia

Qcom Spadhausen ValcomCalabria

Quantil Networks Sparkinit Verisign - j.root-server

RadioFibra Spaziotempo Verizon Digital/EdgeCast

RAI - RadioTelevisione Italiana StackPath Verizon Italia
Redder Telco Stel Videobyte
Reevo Stelkom Vimpel

Registro .it Sunrise Communications Vodafone Group Services

Retelit/e-via Supernap Voiped Wholesale

Retn Swisscom Voix

Riot Games Symantec Vuetel Italia
RIPE NCC - RIS project T.Net Warian

RIPE-NCC - k.root-server TeamSystem Wavecom

Rocket Way Tech Digital Webdiscount

S.P.E. Tecno General Welcome Italia

SeewebTecnotelWI-GOSeflowTelecom ItaliaWifiwebServereasyTelecom Italia San MarinoWind Tre

Sq.Gs Telecom Sicilia Wish Networks

SI.EL.CO. Telemar WispOne
Sicula System Telmekom Wolnet

Siltel Telnet WorldStream Network
Sim Informatica Terra Xmatica - Progetto Fibra

Siportal Time-Net xstream
Sirius Technology Tiscali Italia Zscaler

### **36 36 36**

#### **CARRIERS ON-NET**

**AIRBEAM** 

**ARUBA** 

**BBANDA** 

**BRIANTEL** 

**BT ITALIA** 

CDLAN

CENTURYLINK COMMUNICATIONS ITALIA

**CLOUDITALIA TELECOMUNICAZIONI** 

**COGENT COMMUNICATIONS** 

**COLT TECHNOLOGY SERVICES** 

DIGITAL TELECOMMUNICATION SERVICES

**EOLO** 

**EQUINIX (ITALIA) ENTERPRISES** 

**FASTWEB** 

FIBER TELECOM

**GTT COMMUNICATIONS** 

**INTERNET ONE** 

**IRIDEOS** 

IX REACH

**LEPIDA** 

**MEDIAVENETO** 

**OPENFIBER** 

QCOM

**RETELIT** 

**SEEWEB** 

SUPERNAP ITALIA

**TELECOM ITALIA SPARKLE** 

**TELIA COMPANY** 

TIM

TISCALI ITALIA

TRENTINO DIGITALE

**VERIZON ITALIA** 

**VODAFONE ITALIA** 

WELCOME ITALIA

WIND TRE

**XMATICA** 





# 16 SHAREHOLDERS

AIIP - Associazione Italiana Internet Providers	11.02%
BT Italia S.p.A.	11.09%
Clio S.p.A.	2.49%
Eolo S.p.A.	15.00%
Fastweb S.p.A.	1.12%
Inasset S.r.l.	1.12%
Irideos S.p.A.	12.39%
It.Net S.r.l.	<b>5.37</b> %
Orange Business Italy S.p.A.	1.12%
Sequenza S.p.A.	3.37%
Telecom Italia S.p.A.	11.09%
Tiscali Italia S.p.A.	2.25%
Tiscali Business GmbH	1.12%
Utility Line Italia S.r.l.	9.20%
Vodafone Enterprise Italy S.r.l.	2.25%
WindTre S.p.A.	9.97%

#### **BOARD**



Joy Marino President



Simone Bonannini OpenFiber



Eugenio Contatore ITnet



Vittorio Figini Utility Line Italia



Marco Fiorentino Irideos



Alberto Maria Langellotti TIM

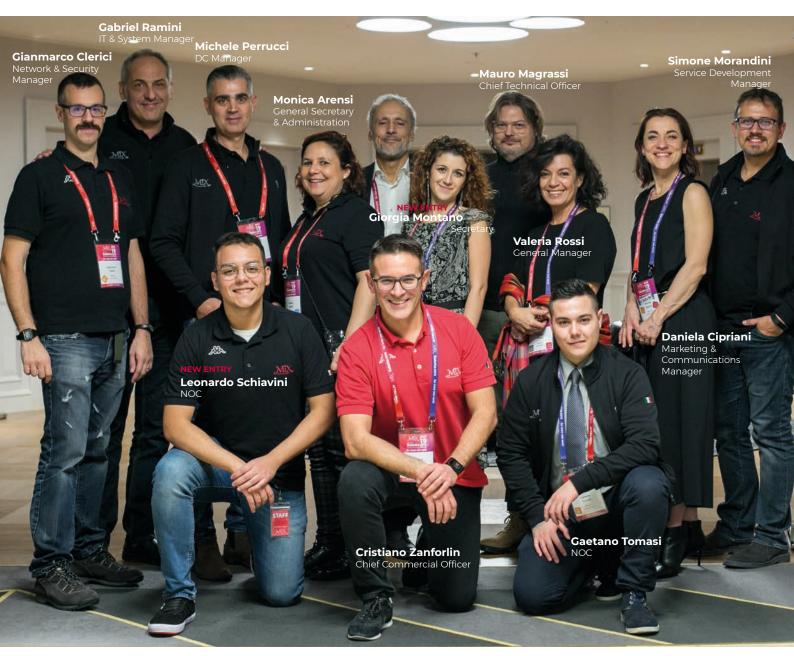


Federico Protto Retelit



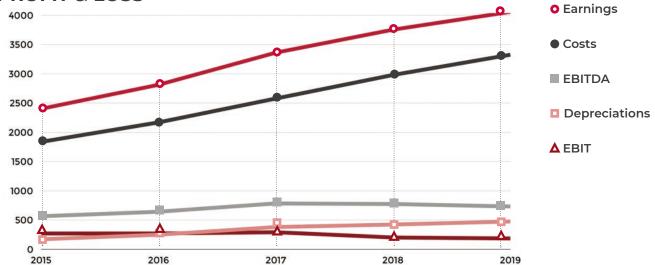
Luca Spada Eolo

#### **PEERINGCREW**

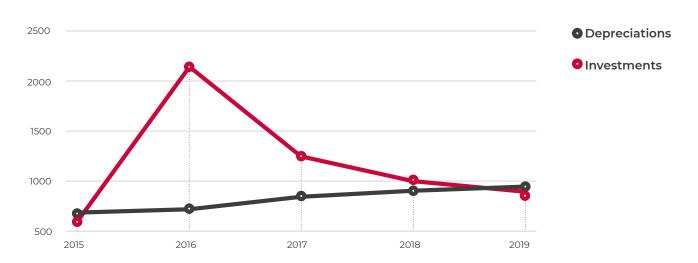


#### **ECONOMICAL-FINANCIAL RESULTS**

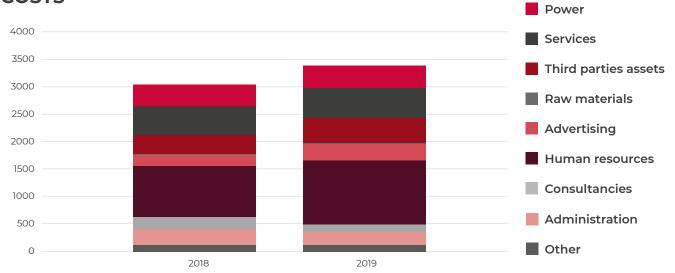
#### **PROFIT & LOSS**



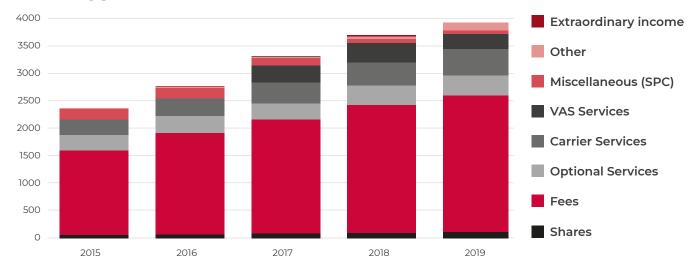
#### **INVESTMENTS**



#### **COSTS**



#### **EARNINGS**



# FACTS O

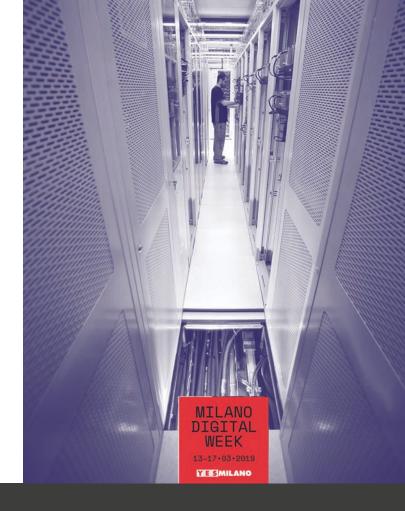
#### Communication

#### **ONE DAY @MIX**

The second edition of the Milano Digital Week took place from 13 to 17 March.

The initiative brings together the digital companies operating in the Milan area with a schedule of over 500 events. MIX participated on March 14 with the open day "One day @ MIX". The main Italian Internet eXchange opened its doors to citizens who, for a day, were able to see the beating heart of the Internet. In fact, after a brief introductory session about networks and the Internet, the participants had the opportunity to visit MIX datacenters, where the main service and content providers interconnect.

As part of the MDW, MIX was also the protagonist of a photographic project about the digital excellence of the area, published on the Instagram profile milanodigitalweek.





#### Communication

## THE INTERNET TEMPERATURE

Which events cause traffic peaks on a daily, monthly and weekly basis?
From the privileged observatory of the main Italian Internet exchange, President Joy Marino and Simone Morandini, System & Network Engineer, comment on the trend of the monthly network traffic in Italy for the O1Net e-newspaper.

#### **Events**

#### **MIX SALOTTINO**

On May 14 MIX Salottino returned: the members annual meeting reserved to the technical staff of the ASNs connected to MIX is an opportunity for professional updating but also for networking for old and new members. Valeria Rossi opened the day and welcomed the participants, followed by an update about MIX by Simone Morandini.

The over 60 participants then attended an interesting speech session about RPKI, animated by contributions by Marco Paesani of FiberTelecom, Riccardo Bernasconi of Mellanox Technologies, Domenico Dichiarante of Open Fiber, Marc Bruyere of ToulX, the IXP of Toulouse and Ben Nicklin from Limelight Networks.





#### **Events**

#### ITNOG ON THE ROAD LANDS IN PALERMO

On June 3, we had the pleasure of hosting the first Sicilian ITNOG On The Road in the splendid setting of the Castello di Carini.

After a brief welcome session by Valeria Rossi, MIX General Manager, Simone Morandini introduced the role of IXP then gave the floor to Massimiliano Stucchi from RIPE NCC, Marco Paesani from Fiber Telecom, Danilo Lo Bello from OHM, Michele Cannella from Fiber Telecom, Giulio Lo Presti of Pos Data System and Domenico Dichiarante from Open Fiber.

The evening continued with a guided tour of the castle rooms where, according to legend, the ghost of the Baroness of Carini wanders, and ended with a dinner of typical Sicilian dishes on the magnificent terrace overlooking the sea.

#### SALOTTO 2019

#### **OUR BRAVE NEW WORLD**

On November 19, the thirteenth edition of the MIX Salotto was held at the renovated Sheraton Milan San Siro hotel, with the participation of more than 450 representatives from the main network operators operating in Italy.

The format of the event presented important innovations, with a very rich full-day agenda to encourage networking and interaction opportunities between the participants. More than 400 commercial meetings animated the one to one meeting session, since the morning until the early afternoon. The Exhibit & Food Hall - the area dedicated to the stands of the sponsors and the catering services - was set up in the splendid Magnolia room, and it was always crowded: after the light lunch, participants took part in an animated and funny "Peer'n'Gear", a social moment with the distribution of gadgets by sponsors.







The afternoon was dedicated to the roundtable, as usual. The theme of the panel goes beyond the technological and industrial horizon of the Internet, to reflect on the role assumed by technologies in human life over the years.

MIX president Joy Marino explains: "The world has changed, indeed it is changing faster and faster. The expectations of the visionaries of 50 years ago about the possibilities of information technology and digital networks to free man from the limitations of his mind have been, to a large extent, confirmed but also betrayed. We have created a complex world, where our industry, ICT, has a





central role that affects every aspect of economic and social life. We feel a certain responsibility for helping to create this complicated world". The debate was introduced by David Weinberger, philosopher and essayist, Internet and human relations expert. The panel, moderated as usual by Enrico Pagliarini of Radio24, was participated by Joy Marino, Luca De Biase, Massimo Mantellini, Giorgio Musso, Stefano Quintarelli.

The day ended with a dinner buffet with the lively live show of a swing band.

#### Education

#### MIX FOR SCHOOLS

The MIX Schooling project, launched in 2012 and now in its seventh edition, aims to bring kids closer to the reality of Internet eXchange Points. To this end, MIX organizes educational meetings for secondary school students at its datacenter.

For teachers, a visit to the MIX represents an opportunity to show students that what they teach in the classroom does not remain abstract, but has tangible implications, to be considered also in a perspective of future profession.

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

· classroom session - the MIX Network Engineer presents an overview of network operation and 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 up close the beating heart of MIX, where the devices of the main operators and content providers are installed.

#### MIX'COOL

From the 2019-2020 edition, the project changes its name and becomes MIX'COOL: students have been welcomed in a branded new room and given a t-shirt inspired by USA colleges.

During 2019 more than **500 students** and teachers from **13 institutes** took part in the project.





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