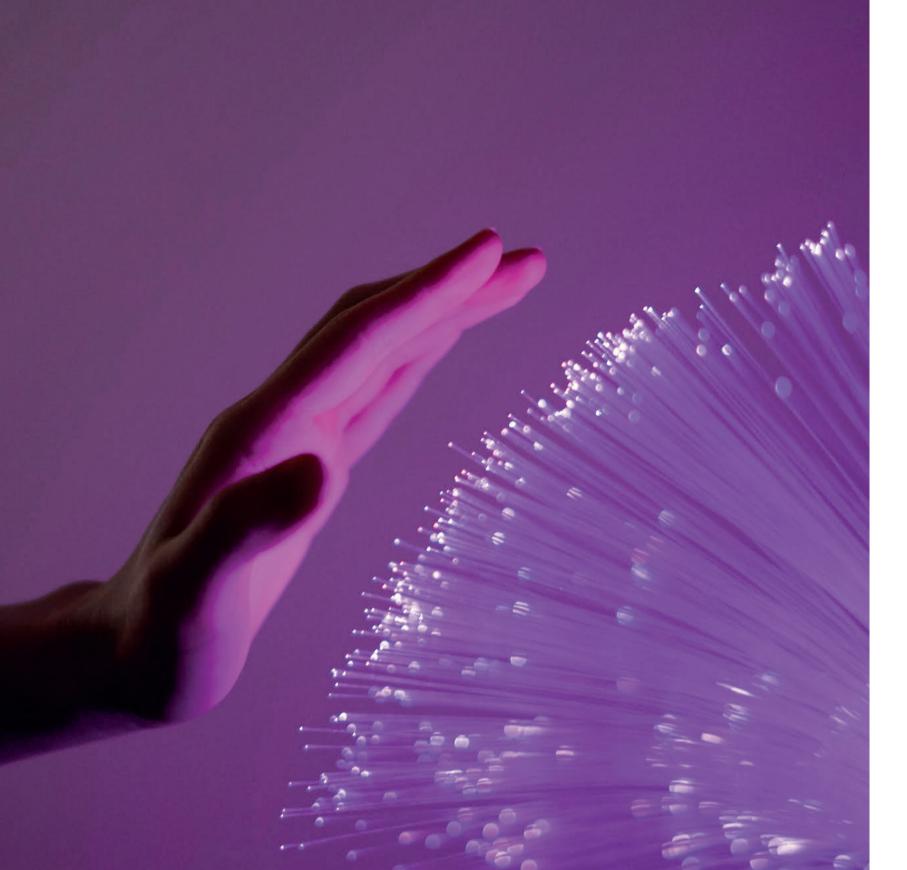# open fiber

AN INFRASTRUCTURE FOR TRANSFORMATION

OPEN FIBER, A WHOLESALE OPERATOR, aims to respect the programmes defined by the Digital Agenda for Europe and the National Strategy for ultra-broadband.

Connectivity objectives for our country have evolved in the Italia Digitale 2026 plan, which targets anticipating the EU Digital Compass strategy. By 2030, all European homes must be reached by a fixed connection capable of at least 1 Gbps download speed and 200 Mbps upload speed, while all populated areas must be covered by 5G.

Open Fiber plans to build the most extensive national fibre optic network, ensuring coverage of major urban settlements and small villages.

With its ultra-broadband network, Open Fiber is the leading operator in Italy - and among the largest in Europe - in the field of FTTH fibre optics, with:

> more than 100,000 km of fibre optic infrastructure already built

> 15,5 million housing units already covered

> more than 300 operators acquired from TLC, broadcasting, energy and e-learning players.

B2B
ACTIVITIES PORTFOLIO

1. FIBRE OPTIC CONNECTIONS

Open Fiber's mission is to enable the country-wide transition towards ultra-broadband services enabled by fibre optic connections. The network that Open Fiber is developing plans to connect 23 million households units in fibre optic.

Also linked are

> **1,350 connected healthcare facilities**

> **17,500 connected schools**

> **12,400 connected central and local public administrations (CPA - LPA)**

> **27,000 connected Operator Nodes, among which 9,000 Base Transceiver Stations**

> **22,500 power cabins**

20,000 business activities spread over more than 40 industrial areas, among which more than 25 Data Centers and Internet Exchange Points, and the other main locations that enable the training, citizen services and productivity of italian companies every day.

2. EDGE DATA CENTERS

The connectivity network of the future will be like a computing continuum network: a blend of transmission, storing and processing. Open Fiber has already started this transformation, in collaboration with innovators, academics and industrial partners.

Thanks to about 3,000 *POPs* (Points of Presence) spread around the country, interconnections via a high capacity backbone, Open Fiber is the ideal candidate for building a national network of *Edge Data Centers* offering the processing and storing capacity that guarantees access to the *data services* with low latency.

The Open Fiber project includes up to 100 Edge Data Centers (about 5 for each region). The Edge Data Centers are located on the edge of the network and allow data processing and storage near the areas where the data are generated or used.

These systems provide notable advantages in terms of speed of service, minimum latency and band use optimisation to the local urban areas, companies and other infrastructures.

3. 5G INFRASTRUCTURE

The evolution of mobile radio networks towards 5G and 6G technologies, and the offer of Enhanced Mobile BroadBand (eMBB), Ultra Reliable and Low Latency Communications (URLCC) and Massive Machine Type Communication (mMTC) services have as a prerequisite the fibre optic connection of radio sites.

The fibre optic network developed by Open Fiber therefore represents the enabling infrastructure for the development of 5G services, both in rural areas, thanks to the fibre optic connection of macro sites (today more than 9,000 BTS Operator Nodes are connected by fibre optic), and in urban areas, thanks to capillary coverage, which enables the densification of sites with small cells in the outdoor area and the development of DAS (Distributed Antenna Systems) in the indoor area.

Open Fiber's fibre optic infrastructure is perfectly synergic with the development of small cells, which form the bulk of the new 5G and then 6G networks, making their development project not only sustainable but also future-proof for all operators in the sector.

Integrating the new networks with 5G and then 6G technologies will radically influence the growth and development of various sectors, which will finally be able to fully exploit the potential of digital transformation, offering professionals and companies a range of services from augmented reality services to holography (eMBB-type services), from smart home to smart cities (mMTC-type services), from smart grids to connected cars (URLLC - type services).

ENABLING
ITALY'S DIGITAL TRANSFORMATION

1. FROM SMART CITY TO SMART LAND

Thanks to the quality, extension and branching of its FTTH network, Open Fiber is to all intents and purposes an enabler and protagonist of the country's digital transformation.

Its infrastructure makes it possible to improve the lives of citizens and their communities by enabling the development of a wide range of *smart* services designed and customised on the basis of local needs. All this improves the well-being and efficiency of the entire country system.

In order to improve citizens' quality of life, increase public services' efficiency, reduce the environmental impact and promote the territory's economic and social development, local public administrations' needs and objectives can be clustered by defining a digitalisation path for each territory. In particular, services can be developed for:

> **Energy and environmental efficiency**
> **Territorial safety and oversight**
> **Public services**
> **Territorial monitoring**
> **Mobility**
> **Territorial and local culture enhancement**

2. SMART GRID

The process of energy transition and the paradigm shift from a small number of large power plants to several thousand small (order of kWp), medium (order of hundreds of kWp) and large (order of MWp) renewable energy power plants, distributed throughout the territory, requires action to ensure:

> **strengthening of the Smart Grid**
> **climatic resilience to the transmission and distribution networks**

In order to achieve the objectives, the electricity grids need to be digitised to the maximum, so as to:
> **optimise energy distribution flows, minimising loss and waste;**
> **manage the flows deriving from decentralised generation (for example, from renewable energy production plants);**
> **reduce response times in case of breakdowns**

Open Fiber is contributing to the energy transition process by connecting the energy transformation plants to fibre optics.

Already today there are more than 22,000 primary (CP) and secondary (CS) cabins linked by fibre optic to the network developed by Open Fiber with an architectural solution capable of guaranteeing a maximum latency time of 70 ms between CP and CS.

RESTARTING
INNOVATION

Open Fiber participates in the RESTART (*"Research and Innovation on Future Telecommunications Systems and Networks, to Make Italy More Smart"*) programme, financed with PNRR resources.
RESTART will be developed over the course of three years - with a total investment of EUR 118 million and financing of EUR 116 million - and will involve a total of 25 prestigious partners: in addition to Open Fiber, the University of Rome Tor Vergata, the National Research Council, the Polytechnic of Bari, the Polytechnic of Milan, the Polytechnic of Turin, the Scuola Superiore Sant'Anna of Pisa, the University of Bologna, the University of Catania, the University of Florence, the University of Naples Federico II, the University of Padua, the University of Reggio Calabria, the University of Rome Sapienza, CNIT, the Ugo Bordoni Foundation, TIM, Vodafone, Wind Tre, Ericsson, Prysmian, Italtel, Leonardo, Athonet, Tiesse.

The programme will consist of 32 projects and 7 missions and will focus not only on the results of scientific research - development of new technologies, services, network architectures - but also on objectives such as education and training, increasing the number of students, *PhD programmes*, creation of new start-ups, *technology transfer*, creation of laboratories, POCs, demonstrators, reduction of gender and north-south gaps in the TLC sector.

RESTART is synergic and complementary to Open Fiber's mission: to contribute to the reduction of the digital divide, not only infrastructural but also cultural, favouring the digitalisation of the country.

Within the Programme, Open Fiber will be mainly engaged in the development of the following areas:

1. Rigoletto: a *structural* project coordinated by the Scuola Superiore Sant'Anna and focused on optical communications and *Quantum Key Distribution* (in which Open Fiber participates as an industrial partner in the architecture definition, QKD, *fibre sensing* and field experimentation phase);

2. Pesco: a *structural* project coordinated by the CNR and focused on *User-centric Pervasive Internet* and *edge computing architectures* (in which Open Fiber participates mainly in the definition of architecture and *use cases*, experimentation and architectural validation);

3. Net4Future: a *structural* project coordinated by the University of Palermo and focused on the development of a new regulatory framework for the development of innovative architectures, technologies and services;

4. Sensing net: a *focused* project coordinated by Open Fiber to develop *fibre sensing* services for monitoring the territory, buildings and roads;

5. **Graphics:** a *focused* project coordinated by the Federico II University of Naples to develop an active optical, remotely programmable switch;

6. TeleSmeg: a *focused* project coordinated by Wind Tre to define network architectures and innovative services for developing *smart grids*, with the aim of creating an intelligent *control room* and optimising electricity distribution and storage.

CONNECTING
SOCIAL COMMITTMENT TO SUSTAINABILITY

Open Fiber has always placed respect for ethics at the forefront of all its activities: from its relations with its employees, partners, customers and suppliers, to its relationship with the territories in which it operates.

Open Fiber's Mission is embodied in seven specific commitments, inspired by the Company's Code of Ethics, the principles of the Global Compact and the 17 Sustainable Development Goals (SDGs) set by the UN 2030 Agenda:

1. We connect the country to reduce the digital divide, thanks to an ultra-broadband network that guarantees coverage not only of large cities but also of smaller municipalities in the so-called *White Areas*.

2. We enhance our human capital and support fair and inclusive work practices, prioritising the development and well-being of our resources, improving *work-life balance*, respecting diversity and encouraging inclusion.

3. We protect the environment and the territory, investing in environmentally sustainable technologies to create a high-performance, green infrastructure.

4. We promote health and safety, encouraging virtuous and responsible behaviour by all our employees.

5. We offer a secure and reliable infrastructure while respecting free competition, granting access to our network under fair and non-discriminatory conditions.

6. We believe in the values of ethics and integrity, implementing concrete and transparent practices to prevent corruption in all its forms.

7. We respect human rights, both by building an infrastructure that guarantees equal opportunities for all citizens and by adopting socially responsible conduct throughout the value chain.

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