

CITY *of* KNOWLEDGE

Innovation, research, culture:
Let's regenerate Bologna

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Bologna: City of Knowledge

The transformations affecting our societies are manifold: the effects of climate change, the increase in socio-economic inequalities and poverty levels, population aging, and the projected rise in migration flows.

In Europe and around the world, metropolitan cities are the prime spaces to observe the effects of global challenges concretely and, at the same time, tap into economic and social resources, as well as human capital, to advance in seeking socially desirable responses and solutions to the challenges of our present and future.

To meet the demands of our times, urban spaces need to be increasingly organized as urban platforms that connect, enable, and promote the various scientific, technological, economic, cultural, and social actors operating within their territory. These actors, in turn, need to consider themselves and act as integrated territorial systems.

The Metropolitan City of Bologna can indeed boast a solid and unparalleled economic and cultural fabric in Italy. It is home to national and European centers of research and innovation excellence, such as Italia Meteo, Enea, Arpae, ART-ER, Cnr, Istituto Rizzoli, Cineca, ISFN, Bi-Rex. These centers operate within a network of important national and international companies to develop applications in Big Data and Artificial Intelligence. With the initiation of the new Technopole, promoted by the Region in the former Tobacco Factory, a new ecosystem of research and innovation is taking shape.

With the arrival of the European supercomputer Leonardo, which will join those already hosted at Cineca and INFN, 80% of the country's computing power and 20% of Europe's will be housed here. The Metropolitan City will become the national

hub for high-performance data simulation and analysis, as well as for the digitalization of cultural heritage. It is also hoped that Bologna will host the UN University on the use of big data and artificial intelligence to study changes in the Human Habitat induced by climate change.

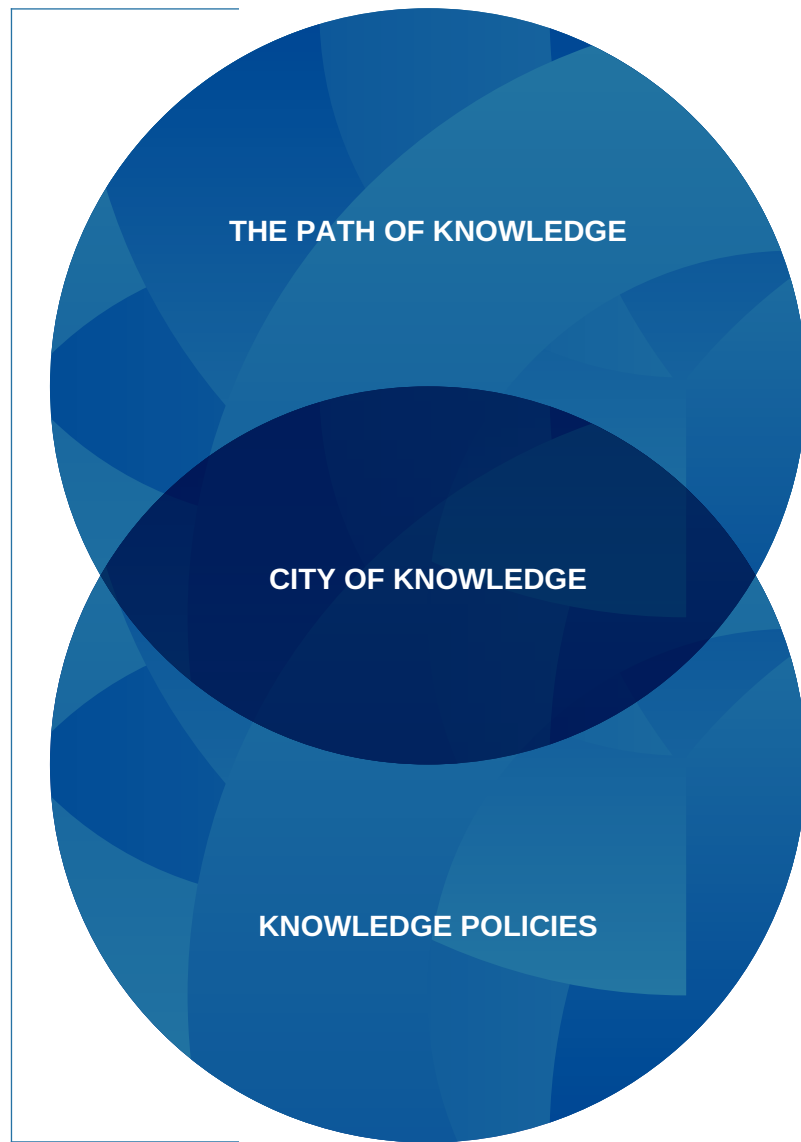
Bologna is also home to the International Foundation for Big Data and Artificial Intelligence for Human Development and numerous public and private cultural institutions such as MAST, the Golinelli Foundation, the Gramsci Foundation, the Barberini Foundation, the Parri Institute, Il Mulino, the Foundation for Religious Sciences, all with extraordinary cultural heritage and production capabilities. And naturally, there is Alma Mater, the oldest university in the Western world and an extraordinary resource for the city, with its researchers and students—future doctors, engineers, lawyers, humanists, translators, designers, creatives, cultural and social operators. One hundred thousand minds in the best years of their intellectual and physical life, who daily research and produce ideas, develop projects to provide solutions to real problems, engage politically and socially, and who, if properly welcomed, valued, empowered, recognized, and remunerated, can become the main agents of the city's change.

In the coming years, science and knowledge will be at the heart of Bologna's future project, giving a new and more decisive direction to the set of policies for promoting the metropolitan area, attracting quality talents and investments, development, innovation, internationalization, urban and environmental regeneration. They will also be the way to foster new processes of social inclusion and strengthen the democratic fabric.

Science, research
and advanced
training

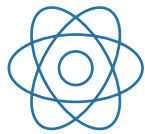
Economic development,
quality work and
international attractiveness

Widespread
knowledge and culture



The Strategy: Two Levers and Three Axes

The “City of Knowledge” is the grand mandate strategy that the administration is implementing to project Bologna into the future, focusing on attracting new investments with high-innovation content, promoting social inclusion processes, and strengthening the metropolitan democratic fabric. This strategy is based on three priority areas:



Science, Research and Advanced Training

The “City of Knowledge” is the grand mandate strategy that the administration is implementing to project Bologna into the future, focusing on attracting new investments.



Widespread Knowledge and Culture

The widespread promotion of scientific and humanistic knowledge and culture, and the critical ability to analyze and understand major global transformations, with particular attention to younger generations and lifelong learning for adults.



Innovation and Impact for Economic Development, Quality Work and International Attractiveness

A new industrial policy, based on sustainability and digital transition, talent attraction and retention, to trigger the translation of sciences, knowledge, and advanced research into innovation and impact, fostering the ability of citizens, institutions, and businesses to embrace change and generate impact at various levels: economic, technological, social, environmental, and cultural.

The Strategy: Two Levers and Three Axes

The levers for implementing the City of Knowledge are two:

01



The Path of Knowledge

This is the urban lever – the hardware – of the City of Knowledge. Through the regeneration of the northwest quadrant of the city and the development of strategic recovery projects, the Path of Knowledge can act as a catalyst and accelerator for the attractiveness and overall transformation of Bologna.

02



Knowledge Policies

These outline the policy and governance strategies – the software – of the City of Knowledge. They aim to connect various metropolitan policies and ensure the formation of the Metropolitan Knowledge Network, an ecosystem of collaboration and co-production of ideas and initiatives among the various actors of research, education, culture, and sustainable economic development of the city.

The Path of Knowledge

The Path of Knowledge is an urban regeneration project for the northwest quadrant of the city, connecting and positioning within the urban space the area where the main research and innovation hubs and the key areas of opportunity and transformation in Bologna are concentrated. It promotes synergies between development areas and initiatives to enhance the city's scientific, industrial, and cultural heritage.

The network of locations within the City of Knowledge is primarily organized into five districts that host activities of significant scientific, technological, and cultural importance for the city, offering further development possibilities through the regeneration of disused areas:

Wellness and Industry 4.0 District

(areas of interest: Lazzaretto, Prati di Caprara, Prati Nord and Polfer, Ospedale Maggiore, Golinelli, Bi-Rex, MAST)

Social and Cultural Innovation District

(areas of interest: Ravone, OGR, in connection with Manifattura delle Arti)

District of Democratic Memory and Critical Culture

(areas of interest: Stazione 2 Agosto, Bolognina, Ex-Manifattura Tabacchi)

Science and Technical Culture District

(areas of interest: Polo del Navile, CNR, Aldini Valeriani)

Digital Transition and New Global Challenges District

(areas of interest: Tecnopolo, Fiera, Parco Nord, Casaralta, Sani, Unipol, DLF, Hera)

These five districts will be interconnected by a new urban infrastructure. This infrastructure will form the backbone of the Path of Knowledge, linking projects and opportunities to be developed through local administration investments and significant funds associated with European and national recovery strategies, such as the National Recovery and Resilience Plan.

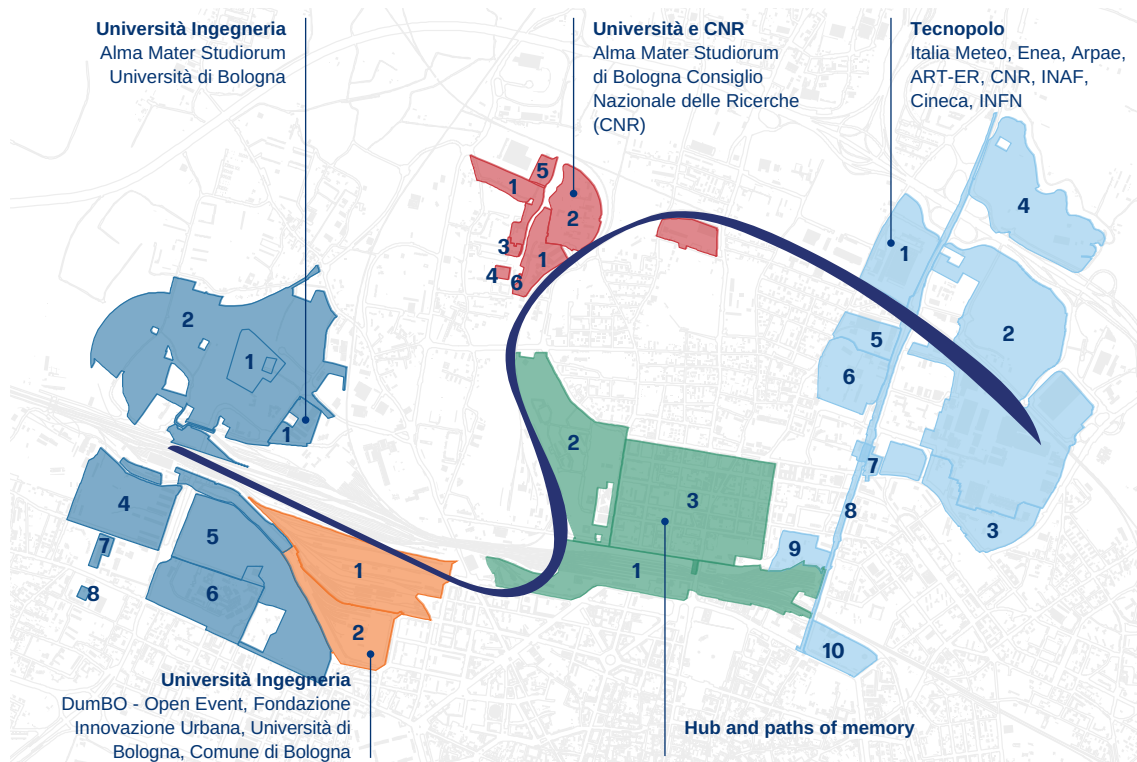
The Path of Knowledge

10 KM: Fiera | Prati di Caprara

153+40+107+27+169 = 498 hectares

8% in urbanized territory*

*Excluding Parco Nord in rural territory



40 hectares

107 hectares

153 hectares

27 hectares

169 hectares

Districts

of social and cultural innovation

of democratic memory and critical culture

of well-being and Industry 4.0

of sciences and technical culture

of digital transition and new global challenges

1 Ex Scalo Ravone
2 ex OGR

1 Stazione 2 Agosto
2 1980
3 Ex Mercato Ortofrutticolo Bolognina

1 Polo universitario Lazzaretto
2 Comparto Bertalia Lazzaretto
3 Prati di Caprara Stazione
4 Prati di Caprara ovest
5 Prati di Caprara est
6 Ospedale Maggiore
7 Opificio Golinelli +
8 Bi-Rex
BIG Boost Innovation Garage

1 Polo universitario del Navile
2 CNR Polo della ricerca
3 Museo del patrimonio industriale Battiferro al Navile
4 Ex centrale elettrica - Battiferro al Navile
5 Ex fornace Pellegrino
6 Capannoni via Bignardi
7 Istituto Aldini Valeriani

1 Ex Manifattura Tabacchi Tecnopolo
2 Polo Bologna Fiere
3 Fiera District
4 Parco Nord
5 Ex Casaralta
6 Ex caserma Sani
7 Unipol
8 Nuovo asse Stalingrado
9 DLF
10 HERA

The Integrated Urban Plan “City of Knowledge”

The integrated urban regeneration strategy “City of Knowledge” will develop with a medium-term perspective, utilizing various sources of local, national, and international funding. The “Integrated Urban Plans” (PUI) investment line, within the framework of the National Recovery and Resilience Plan (M5C2 - Inv. 2.2), will be the tool to trigger the concrete realization of the mandate strategy. Through this investment line, the NRRP has allocated approximately 157 million euros to the Metropolitan City of Bologna for the improvement of large degraded urban areas, regeneration, and economic revitalization, with particular attention to the redevelopment of accessibility and infrastructure, enabling the transformation of vulnerable areas into smart and sustainable cities.

The Municipality of Bologna will receive approximately 118 million euros, which, together with 13 million euros from municipal resources, will form the financial base for implementing the core interventions of the Path of Knowledge. In addition to an initial extraordinary financial allocation, to develop this ambitious strategy and promote investments, both national and European, the administration is ready to forge new alliances with key territorial, national, and local stakeholders, convinced that Bologna can become a true European platform for knowledge and sustainable development.



The Ex-Scalo Ravone

Regenerated area: **100.000 smq**
Planned investment: **57.889.346,79 €**

The Ex-Scalo Ravone will be the center of the new District of Mutualism, Social and Cultural Innovation, and Collaborative Economy of Bologna. Through the eco-sustainable regeneration of a substantial part of the disused railway area, the conservation, and progressive recovery of existing industrial buildings, the district will feature buildings intended for public and cultural uses, service activities for new productions, and collaborative housing.

The Ex-Scalo Ravone area, strategically positioned for its connections to Bologna's Central Station, the planned Caprara and Zanardi railway stations, neighborhood points of interest (particularly with the ex-Macello, now a service center for the neighborhood), the Manifattura delle Arti, and various university hubs, will undergo significant transformation using various national and international funding sources.

Using funds from the PUI investment line of the NRRP, it is planned to implement the eco-sustainable re-functionalization of part of the disused areas and buildings known as "Ex-Scalo Ravone" and the conservation and progressive recovery of existing industrial buildings (26,000 sqm of gross floor area) to create the District of Mutualism, Social and Cultural Innovation, and Collaborative Economy within the City of Knowledge mandate project. Interventions on buildings will vary according to the state of the sites: from energy upgrades to refunctionalization for new uses, to demolition and reconstruction. For open areas, depaving and setup interventions using nature-based solutions are planned.

The Ex-Scalo Ravone

Additionally, a pedestrian and bicycle bridge connecting the Prati di Caprara pedestrian and cycling paths network is planned. These interventions will further develop the area's socio-cultural vocation, already initiated in 2019 with various temporary uses of buildings aimed at creating new urban collaboration spaces between institutions, cultural associations, businesses, and citizens to generate new ideas and artistic and creative expressions. Notably, these experiments have given rise to two major projects: DumBo - Bologna's Multifunctional Urban District, and the "Bologna Attiva" project, co-financed by the Emilia-Romagna Region and Bologna Attiva - Metropolitan Workshop for New Work, Mutualism, and Collaborative Economy. The area's functions will be consolidated through collaborative housing projects that will add new uses to the sector.

Continuing the already established vocation, the aim is to follow up on the social inclusion and regeneration processes of the Ex Scalo - Malvasia neighborhood, an area characterized by high housing tension and a lack of services. The objective is to integrate the area into a territorial system that enables and connects cultural, social, and economic actors with scientific and technological players to promote increasingly integrated innovation policies, international city promotion, talent attraction, and quality investment, while simultaneously fostering new social inclusion processes and strengthening the city's democratic fabric. Once the contaminated soil remediation phase is completed, the spaces of the Ex-Officine Grandi Riparazioni, south of the Ex-Scalo, may also be regenerated through the experimentation of new temporary uses.

The Democratic Memory Hub

Regenerated area: **7.000 smq**
Planned investment: **21.111.278,10 €**

The Democratic Memory Hub will be the center of the new cultural offering of the City of Knowledge and will be established within Bologna's Central Station. The Hub aims to be a national center that examines our contemporary era through values deeply rooted in Bologna's history, which are fundamental to the democratic life of our country, such as antifascism, antiracism, the expansion and struggle for civil and social rights, the fight against terrorism, critical thinking, and culture.

Among its many functions, the Hub will house the largest contemporary history archive in the city and the country, as well as Bologna's third major library alongside Salaborsa and Archiginnasio. The project aims to become a reference and reflection point on contemporary history, the present, and the future, creating a space where historical research and memory elaboration interact. This space will synergize and highlight the heritage, skills, and projects of various entities (cultural centers, associations, institutes) historically present in the territory.

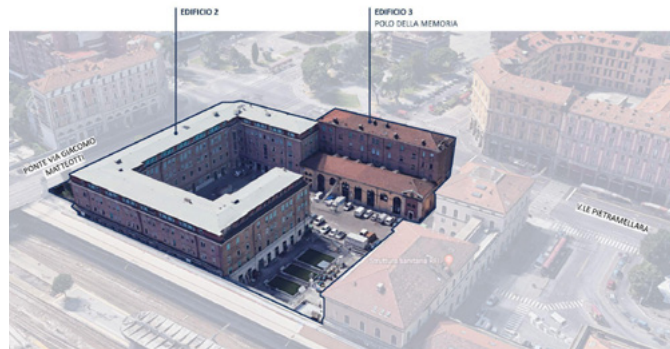
It will be a space for reading and interpreting the present, thanks to the knowledge and understanding of contemporary history, to foster critical and complex thinking and to activate a more aware and democratic citizenship through a diverse and rich context of resources and opportunities.

The Hub will foster unprecedented, hybrid, and innovative interactions between archives, libraries, museums, and exhibition areas, as well as research, discussion, in-depth study, and cultural, artistic, creative, and civic production.

The Integrated Urban Plan

The Democratic Memory Hub

It will be a participatory and inclusive cultural center, designed for a wide and varied audience: scholars, ordinary citizens, university students, school groups, tourists, city users, researchers, artists and many others who want to explore and understand their recent history, with particular attention to younger generations and the elimination of all forms of cultural and social barriers. Digital technology will play a significant role in informing and structuring the Hub's various operational, offering, and experiential areas.

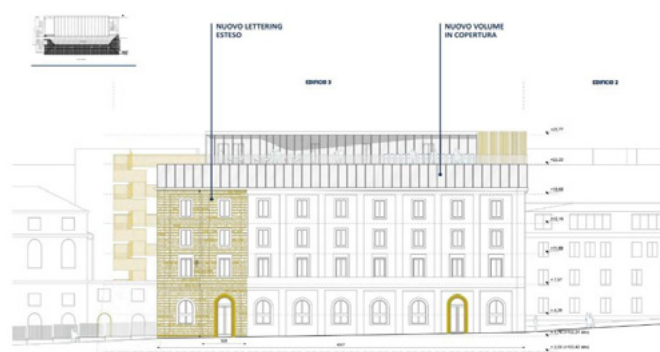


The Integrated Urban Plan

The Democratic Memory Hub

The possibility of digitizing multiple archival contents and making them accessible on digital platforms and immersive virtual environments will be increasingly important, connecting them and making them available to a broad and diverse audience. Digital and cross-media approaches will also characterize the various exhibition and setup areas, study and research spaces, and conservation, production, and workshop areas.

The Hub will have a widespread nature, acting as a node, radiating and discovering the significant sites of democratic memory in the Bologna area and the metropolitan region. Specific routes will be structured in the Bolognina area and gradually across the metropolitan territory. It will be a hybrid, multifunctional, multi-audience center capable of linking outdoor and indoor spaces, including spaces designed for specific functions, mixed and “hybrid” spaces designed to host and facilitate different functions, languages, and audiences, and “low-definition” spaces to accommodate uses and forms of participation that will be defined as the center develops, and to temporarily host the projects of external entities.



The Democratic Memory Hub

The Hub will include spaces for workshop activities and “network” activities designed to inform and connect the various nodes of the metropolitan area and to ideally link Bologna with the world. It will offer work and residence spaces for experts, researchers, artists, and guests invited to co-design and collaborate with the Hub, as well as office and representation spaces for participating entities and associations. The Hub’s headquarters will be identified in part of the underutilized and disused buildings within the 2 August Station complex, accessible and visible from both the station and the city center.

These buildings, partially protected for their historical interest, will allow for an intervention to reconfigure the external image of the station towards the city. The Hub’s offering system will be conceived as the result of the interaction between differentiated functions and services—in terms of beneficiaries, purposes, stakeholder involvement, and relationship with the structure—that can be progressively implemented in subsequent phases.

The renovated buildings will host the largest archive on the contemporary history of the city and the country and the city’s third major library, alongside Salaborsa and Archiginnasio. Additionally, there will be other public spaces and functions—reception and welcome areas, info point, consultation room, main stage, permanent exhibition, auditorium, meeting spaces, educational spaces, city space, and “low-definition” spaces. The basements will house the archives and technical rooms, and the upper floors will host non-public functions such as offices and guest accommodations. The Hub will be accessible from Viale Pietramellara and the Station.

The Democratic Memory Hub will also include the regenerated spaces in the former service building of the ex-Mercato in Via Fioravanti, enriching the offering by hosting activities associated with the Knowledge Workshop linked to the Hub.

Ex-Mercato in Bolognina

Regenerated area: **45.500 smq**
Planned investment: **16.666.798,50 €**

The spaces of the Ex-Mercato in Bolognina will be part of the Democratic Memory Hub and will feature workshop functions, involving schools and citizens. These spaces will be integrated into the Hub's network of routes.

In addition to the redevelopment interventions related to the Hub, various coordinated regeneration, social housing, and road improvement actions are planned for the neighborhood. The central part of the buildings that constituted the access to the Ex-Mercato will be regenerated to integrate with the cultural offering of the Democratic Memory Hub and the Path of Knowledge. The regenerated spaces will be dedicated to the Knowledge Workshop, which will promote widespread knowledge in the metropolitan area, closely linked to the Hub at the Station, benefiting from the relationship with the open spaces system constituted by the "Nervi" canopy of the Ex-Mercato and the public spaces system of Liber Paradisus Square. The regenerated building can thus become part of a historical route integrating the new Hub at the Station with the Holocaust Memorial, the sites of memory of the Resistance and Liberation, the Ustica Memorial Museum, and the new Acer documentation center.

These spaces will be conceived as open areas of the Hub for associations, movements, and external cultural entities, but "affiliated" from a cultural point of view and engaged in forms of activism. The Ex-Mercato in Bolognina will also be the vehicle for a series of coordinated regeneration interventions involving other areas of the neighborhood. The planned interventions are located in a high-tension housing area on the outskirts and aim to trigger social inclusion and regeneration phenomena by improving the quality of spaces, rethinking their hierarchies by redefining the relationship between built and relational spaces, and increasing the offer of personal services and collective spaces.

The Integrated Urban Plan

Ex-Mercato in Bolognina

These interventions aim to enhance the quality of living in an area undergoing profound transformation, where the search for a new urban centrality of the Navile sector, particularly Via Fioravanti, has already begun in recent years with the construction of the new municipal headquarters, the Health House, and a new residential area, including affordable housing, and the recent completion of long-term accommodation spaces through the redevelopment of an old Telecom building.

The planned interventions in the area include the energy upgrading of some historical public social housing blocks (between Albani, Fioravanti, Zampieri, and Di Vincenzo streets), the regeneration of internal courtyards in two of the affected blocks—currently private open spaces aiming to become public and aggregative—including the creation of a new documentation center on public and workers' housing in Bologna in a currently disused warehouse owned by the Emilia-Romagna Housing Company.



Image provided by Tasca Studio

The Integrated Urban Plan

Ex-Mercato in Bolognina

Finally, completing the north-south crossing road within the R5.2 Ex Navile Market sector will reduce vehicular traffic through the neighborhood streets, particularly Via Fioravanti and Via Albani, which will be reorganized as pedestrian and bicycle priority streets, improving the area's livability and increasing sustainable mobility facilities in line with the recent metropolitan PUMS. This will significantly rethink street space as a place of socialization, also paying attention to the soft mobility network and its safety.



Image provided by Tasca Studio

The Dopolavoro Ferroviario (DLF) Park

Regenerated Area: **41.055 smq**
Planned Investment: **24.867.699,00 €**

The Dopolavoro Ferroviario (DLF) Park will undergo several regeneration interventions that will revitalize both its buildings and green spaces. It will transform into a next-generation cultural and sports hub, a renewed center of the city's nightlife, managed through innovative forms of collaboration and public-private partnerships.

The park holds significant historical, symbolic, recreational, and emotional value for Bologna. Despite being animated by various associations and cultural activities, the park features partially abandoned spaces that require substantial restoration of historic structures (protected as cultural assets), sports facilities, and green areas. The administration aims to improve and/or make accessible the park's indoor and outdoor spaces to create a cultural and sports hub suitable for contemporary needs, with a particular focus on nighttime use.



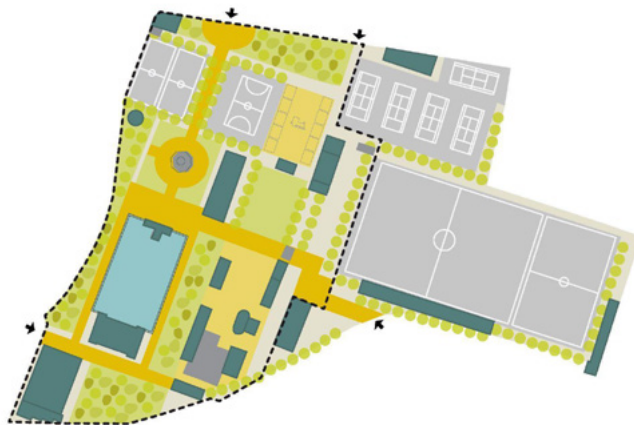
Image provided by Politecnica

The Integrated Urban Plan

The Dopolavoro Ferroviario (DLF) Park

The new-generation cultural park will also explore new management approaches, involving the numerous existing actors and other interested city communities to ensure a fresh cultural offering. The open spaces will be reorganized, paying particular attention to tree-covered areas, the development of pathways (both new and historically present), the restoration of remaining decorative elements (especially fountains), and outdoor sports fields. This recovery effort will be planned in conjunction with other interventions under the Integrated Urban Plan (PUI) and will be funded through additional financing from the Municipality of Bologna.

The restoration of the outdoor spaces, which form a significant part of the DLF area, will finalize the overall recovery, contributing to the reorganization and characterization of the DLF. The area will be more integrated with its surrounding urban context and more accessible through the renovation of existing entrances (via Serlio and via Stalingrado) and the opening of a new northern entrance.



The Knowledge Pathway as Infrastructure

Regenerated Area: **5.723 smq + 2.400 smq**
Planned Investment: **6.111.159,45 €**

The Knowledge Pathway infrastructure aims to connect and integrate the places of knowledge, research, and education located in the north-west quadrant of the city through a slow mobility network, forming a new linear cultural centrality. This system of paths will be characterized, recognizable, and equipped with new and innovative digital infrastructure technologies and the creation of “Knowledge Stations”—new places for scientific dissemination and cultural production for the city.

The Knowledge Pathway is the main infrastructure of the major City of Knowledge project, linking research sites, new urban settlements, public and green spaces in the north-west quadrant through a dedicated slow mobility network, including bike and pedestrian paths. It will feature a distinctive, recognizable route equipped with innovative digital infrastructure technologies.

The path will physically connect important locations for science and research, as well as historical and memory sites, which will be enhanced through the creation of various Knowledge Stations, aiming to form a widespread cultural route.

The Knowledge Pathway as Infrastructure

The Knowledge Pathway will consist of existing and new bike and pedestrian paths and potentially involve currently underutilized railway infrastructure around which the paths are structured, potentially becoming:

- A (national) mobility infrastructure: linking the 5 districts of the City of Knowledge to each other, the main existing and future mobility infrastructures, and the city's two international gateways (High-Speed Train Station and Airport);
- A (national) research infrastructure: transforming the 5 districts into a single large advanced research and education campus of world-class, unique in the world;
- An (urban) cultural infrastructure: conceived and structured as a widespread cultural route, characterized and animated by its open spaces and various disused stations available in the area, serving as vectors for scientific dissemination and artistic-cultural production;

The Knowledge Pathway as Infrastructure

- An (urban) ecological infrastructure: integrating and dialoguing with the Green Footprint development project of Bologna.(see BOX 1: The City of Knowledge and the Green Footprint p. 28). The project proposes the realization of an intelligent bike path, equipped with integrated lighting and widespread sensors, with an LED lighting system and sensors for monitoring air pollution and the quality of the path. The lighting system will dim or turn off when no one is passing by and will light up when a cyclist approaches, significantly saving energy consumption. The sensors monitoring the path will provide real-time indications of any damage to the cycle path surface, facilitating maintenance and collecting information on bike traffic volume. The sensor system can also provide information to cyclists about the state of the path. Along the path, bike-sharing services without stations could be offered. Architectural covering objects that interact with the landscape are envisioned for the “periurban” paths, equipped with photovoltaic systems, covered areas that can host stops, small bike workshops, and dedicated services. The intervention includes the refurbishment and arrangement of existing paths and the construction of new sections.

The path will also feature Knowledge Stations, equipped and informative rest points for scientific dissemination and cultural production. These stations will be enhanced by the eco-sustainable reuse and re-functionalization of existing public building structures: the ex-Giuriolo parking building will house the Cinema Museum, along with archives and activities conducted by the Bologna Film Library; the Ivan Illich Popular Music School building; the multifunctional building within the ex-caserme Rosse park; and the guardhouses and supports along the Navile canal. The Stations will be physical but primarily digital access points to knowledge content and pathways.

C40 Projects - Reinventing Cities

C40 is a global network of mayors from major cities around the world, united in action to address the climate crisis. Among other initiatives, C40 promotes Reinventing Cities, a global competition for innovative, zero-carbon, and resilient urban regeneration projects.

Cities identify underutilized sites ready to be redeveloped and transformed and invite creative multidisciplinary teams to submit proposals that can serve as models for the cities of the future.

Bologna participated in the third edition of Reinventing Cities by proposing two sites of extraordinary importance for the development of the City of Knowledge project: the Ravone-Prati area and the Palazzo Aiuto Materno.

The Ravone-Prati site

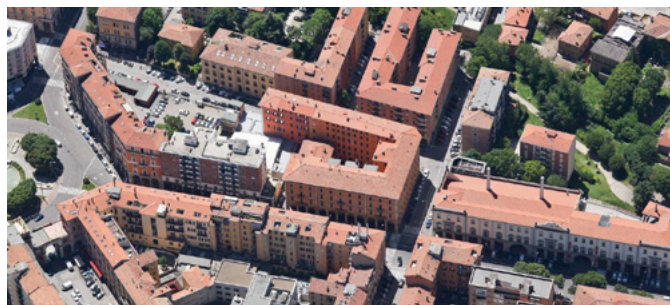
The **Ravone-Prati site** (owned by FS Sistemi Urbani) is located in the northwest part of Bologna, about 3km from the city center, along the Knowledge Pathway. It consists of currently disused railway areas. The creation of the new Prati di Caprara stop on the Metropolitan Railway Service will trigger the development of the area, representing an important mobility hub for the city and a new urban connection for cyclists and pedestrians between the Ospedale Maggiore - Prati di Caprara area and Bertalia-Lazzaretto. The project should propose solutions to ensure effective urban integration between the areas north and south of the site. Noteworthy elements for the competition include the proximity to the former Prati di Caprara military areas, undergoing significant renaturalization, and its inclusion in the broader “City of Knowledge” urban regeneration program.

The city's primary expectation lies in the functions to be established: integrating research and development activities with spaces dedicated to social and cultural innovation. The proximity to well-served urban areas allows for a significant housing offer and additional personal and sports services targeted at the university, research, and healthcare sectors. In the first phase of the competition, eight proposals were submitted, five of which were admitted to the second phase, currently in the closing phase.



Palazzo Aiuto Materno

The transformation of the Palazzo Aiuto Materno aims to restore a disused historic public building (owned by ASP Città di Bologna) within the city center. The area is undergoing significant transformation, linked to the presence of the Manifattura delle Arti cultural hub. Key strengths of the transformation include the area's centrality, high accessibility, and participation in a vibrant cultural climate due to the presence of university campuses and important cultural institutions. This intervention is for the "city of knowledge," not far from the Knowledge Pathway and the former Ravone site. The competition seeks innovative proposals that consider the constraints related to the protection of this historically valuable building while integrating it with new uses, introducing new sustainability requirements. The renovated building will host integrated residential activities and services, creating a new model of living/working/studying spaces for university students, artists, etc. In the first phase of the competition, five proposals were submitted, three of which were admitted to the second phase, currently in the closing phase.



TEK District

The regeneration program of the TEK District affects a vast area of over 123 hectares on via Stalingrado which includes important urban centers such as the BolognaFiere Exhibition Center and the Tecnopolo Manifattura, where the 6th supercomputer in the world top 500 HPC , the UNU Institute and many other entities are located.

Approximately 275,000 sqm of new mixed-use development and over 20 hectares of further regeneration opportunities are planned in these areas. The interventions will develop along three axes “technology, entertainment & knowledge”, with varied functions, from advanced tertiary to residential, outdoor and indoor spaces for events and shows, hospitality, commerce and local services.

The TEK District regeneration project aims to further advance the quality of living and working in Bologna, through a series of actions that materialize the two most important flagship projects of the administration: the City of knowledge and the Green footprint.

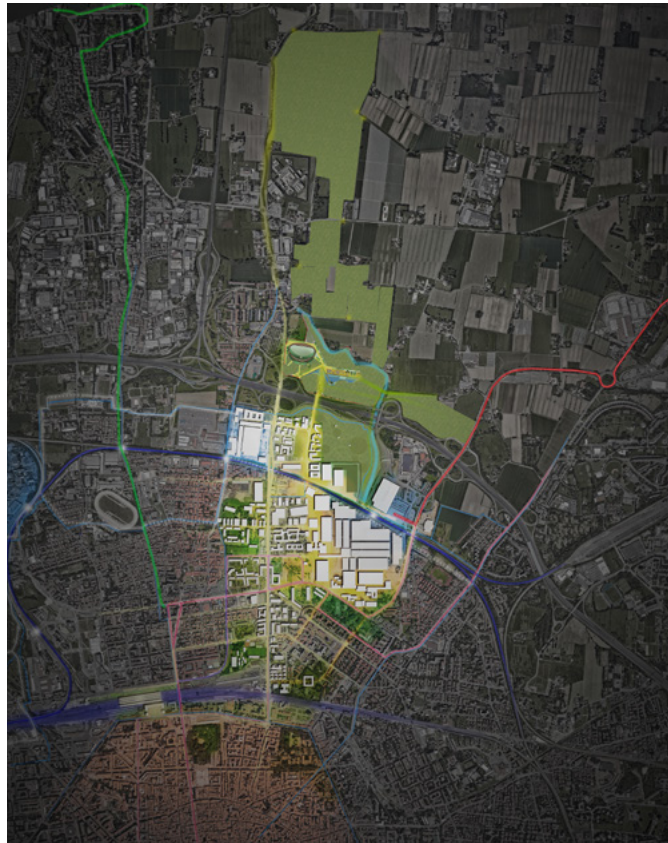


Image provided by ARUP

TEK District

The TEK District project has the ambition of redeveloping an important part, in terms of size and centrality, of the city of Bologna, integrating hundreds of millions of public and private investments into a single strategic vision.

The project involves a strengthening of sustainable mobility (trams, metrobuses - BRT, cycle paths), the consolidation of some existing functions (such as the fair) and the expansion of others (spaces for offices and advanced services, residence, hospitality, entertainment). These functions will be enriched by an overall review of public spaces and the creation of large parks, capable of increasing the environmental and quality of life of the area, as well as offering spaces for entertainment and leisure infrastructure.

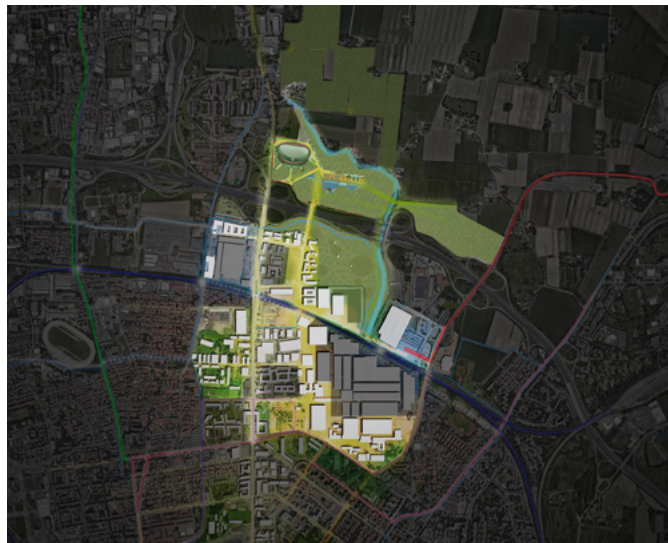


Image provided by ARUP

TEK District

Committed public investments

- 85 ha Energy Park HERA
- 20 GWh/year Renewable energy produced by HERA Energy Park
- 10 km Via della Conoscenza - cycling route
- 810 M € of public funds for realization of Tram Red line (under construction), Green Line (planning approval), and Metrobus
- 500 M € of investment for Tecnopolo Manifattura Data Valley Hub
- 11.1 M € of public investment for DLF Sports and Culture Park

123 ha Urban regeneration includes:

Former Caserma Sani, areas to be completed in the Tecnopolo Manifattura hub, Digital Village, BolognaFiere Pavillions and the Entertainment City with the New Sports Arena.

275,000 sqm New mixed-use development includes:

- Caserma Sani (35.000 smq)
- Tecnopolo (53.433 smq)
- Casaralta confirmed building on via Stalingrado (10.290 smq)
- Digital Village (99.000 smq)
- Entertainment City (77.000 smq)

20 ha Other areas with potential for regeneration include:

Casaralta other plots, Ex Samp and Magazzino Zucchini, Lotto Monti, Piazza della Regione, Ex Zincaturificio.

63 ha Urban parks include:

- New Parco Nord (50 ha)
- Bonori Sports Park (13 ha)

Regeneration opportunities:

- 123 ha Regeneration opportunities
- 275.000 smq New mixed-use development
- 200.000 smq Other areas with potential for regeneration
- 63 ha New urban parks

Stalingrado Green Boulevard

The regeneration of Via Stalingrado is a key project for integrating the various areas of the City of Knowledge that face it and for providing a new urban vision for the entire district, indicating its strategic role for the future of the city.

Along this roadway, several regeneration projects related to transport, mobility, research, and entertainment are present, with the main goal being their connection.

The project's vision is that of a green boulevard that connects and integrates different urban landscapes on three dimensions: transport and mobility, resilience and environment, and economy and society. The project develops high-quality urban spaces, enhancing pedestrian, cycling, and public transport mobility, and restoring connections between neighborhoods.

Transforming it into a boulevard with green and blue spaces creates new ecological connections, sustainable water management, enhancing environmental comfort, resource regeneration, and biodiversity. The regenerated road produces a flexible public space and an inclusive social infrastructure, connecting new projects with existing urban centers to create a dynamic and attractive ecosystem of spaces and stakeholders.

The Integrated Urban Plan

The City of Knowledge and the Green Footprint

The City of Knowledge is developed in synergy with the Green Footprint, another significant strategic project of the 2021-2026 mandate of the Bologna administration.

The Green Footprint is a new, large ecological infrastructure aimed at climate mitigation, public health, and biodiversity. It connects the hills with the city and countryside through six new metropolitan parks (Parco del Reno, Parco Città Campagna, Parco Navile, Parco Arboreto, Parco dell'Idice e del Savena, and Parco dei Colli), which are interconnected with each other and the historic center of Bologna via green corridors, bike paths, new pedestrian routes, new gathering points, accessible green areas, and natural evolution zones, ensuring total safety for citizens.

The City of Knowledge will be characterized as an environmental project in addition to being cultural, economic, and urban, contributing through the regeneration interventions in the northwest quadrant to the definition of the Green Footprint. This will be achieved through the remediation of currently unused areas, cycling connection interventions, reforestation, and the recovery of the Navile Canal.

Existing ecological infrastructure



Connections

The backbone network of the Biciplan

The future scenario



Knowledge Policies

To promote the consolidation of the city of Bologna as the European capital of knowledge, in addition to the large urban project of the Knowledge Road, the administration is implementing a set of policies aimed at fostering growth and stimulating synergy and collaboration within the city's research and knowledge ecosystem, as well as identifying strategies for involving citizens of all ages and from the metropolitan area in the realization of the City of Knowledge.

The Knowledge Policies aim to connect various metropolitan policies and ensure the formation of a collaborative ecosystem for the co-production of ideas and initiatives among the different actors in research, education, culture, and sustainable economic development of the city.

This integrated system of policies includes several projects and services, including: BIS - Bologna Innovation Square and CTE COBO, the House of Emerging Technologies of the Municipality of Bologna, the Digital Twin of the City, the Knowledge Workshops, and services for territorial attractiveness.

Bologna Innovation Square, an Innovation Alliance

Bologna Innovation Square, the region's innovation platform, aims to develop synergies and shared projects to consolidate and strengthen the innovation of the metropolitan economic system, facilitating and promoting collaboration among the actors of the territorial system in close synergy with the regional innovation ecosystem. BIS is a declaration of intent among the administration, universities, businesses, research centers, innovation spaces, and startups to collaborate in an open innovation logic, networking and carrying out activities for the common benefit and for the territory.

In line with the Bologna City of Knowledge strategy, the platform's action focuses on four priority areas of intervention.

01.

Impact of the Tecnopolo and Digitalization

With the operationalization of the Tecnopolo Manifattura, which serves as a hub within an already rich network of research and innovation excellence, and the ambition to make Bologna the new European Data Hub, the BIS platform acts as a facilitator for practical and shared initiatives to promote technology transfer and digitalization within the entrepreneurial system. This effort pays particular attention to the opportunities offered by new technologies.

02.

Innovation for Ecological Transition

The increasing awareness in the productive world, along with the mandates of the ecological transition defined by the European Union, requires rapid adaptation by businesses. The BIS platform stimulates and develops actions that, even through the use of open innovation, support the ecological transition of local businesses in line with the goals of Bologna Net City 2030 and, more generally, with targets set at the national and European levels.

Bologna Innovation Square, an Innovation Alliance

03.

Attraction and Retention of Talent

The ability to attract and retain talent is one of the key factors for the development and maintenance of a strong entrepreneurial fabric and a thriving innovation ecosystem. The BIS platform gathers services and activities that, through an innovative approach, support the entrepreneurial system and talents, as well as projects aimed at developing opportunities through the connection between the university system and businesses.

04.

New Entrepreneurship

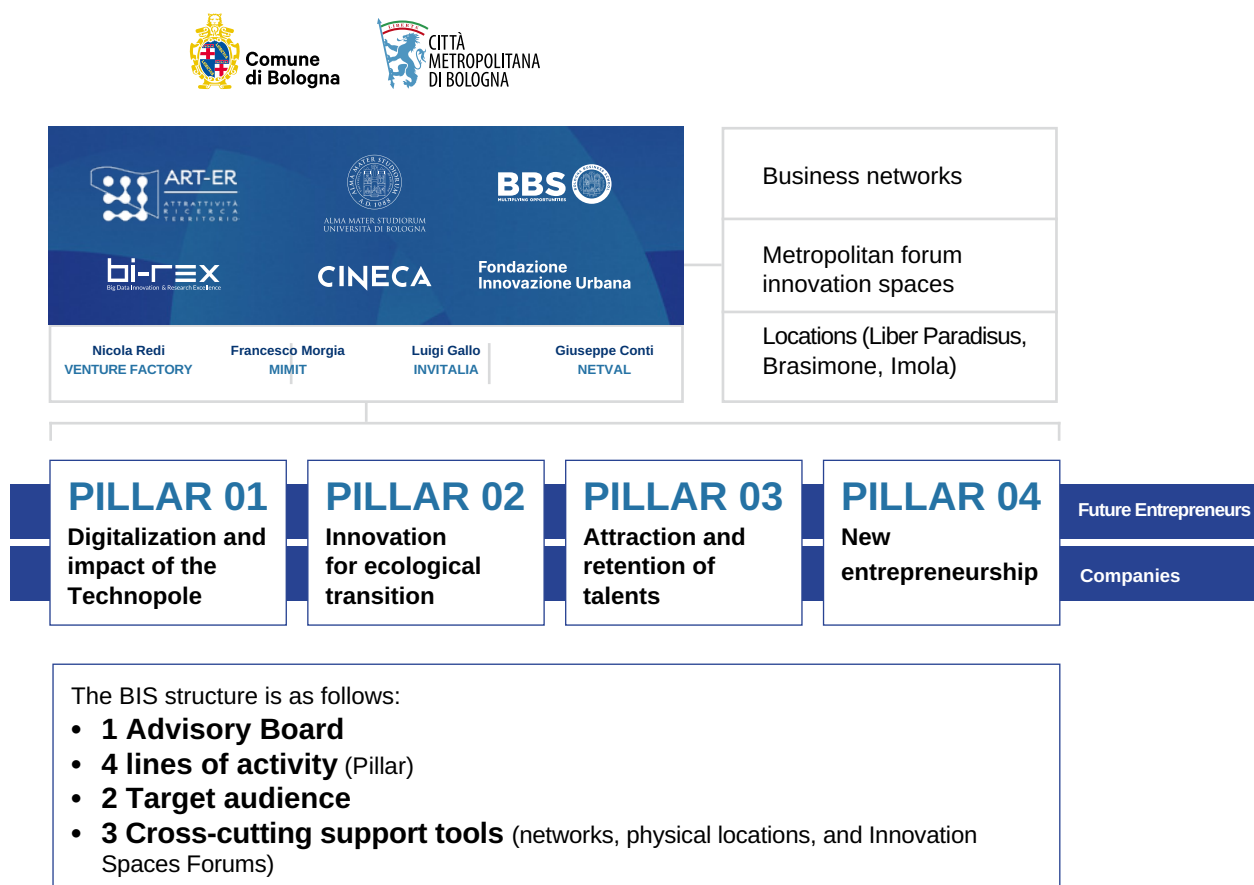
The vibrancy of the territory and the entrepreneurial fabric also depends on the ability to express and support new entrepreneurial ideas that can enrich and add value to the entire system. BIS promotes actions to support new entrepreneurial initiatives that can leverage the creativity and talent present in the area to create new job opportunities, thereby strengthening the metropolitan economic system.

The liveliness of the territory and entrepreneurial fabric also relies on the ability to express and support new entrepreneurial ideas that can enrich and add value to the entire system. BIS promotes actions in support of new entrepreneurial initiatives that can leverage the creativity and talent present in the territory to create new employment opportunities, thus strengthening the metropolitan economic system.

Bologna Innovation Square, an Innovation Alliance

The platform's action is directed by the Advisory Board, coordinated by the Metropolitan City and the Municipality of Bologna, composed of six strategic partners of the territory, and some prominent national figures in the field of innovation.

For more information: www.bolognainnovationsquare.it



CTE COBO, the House of Emerging Technologies of the Municipality of Bologna

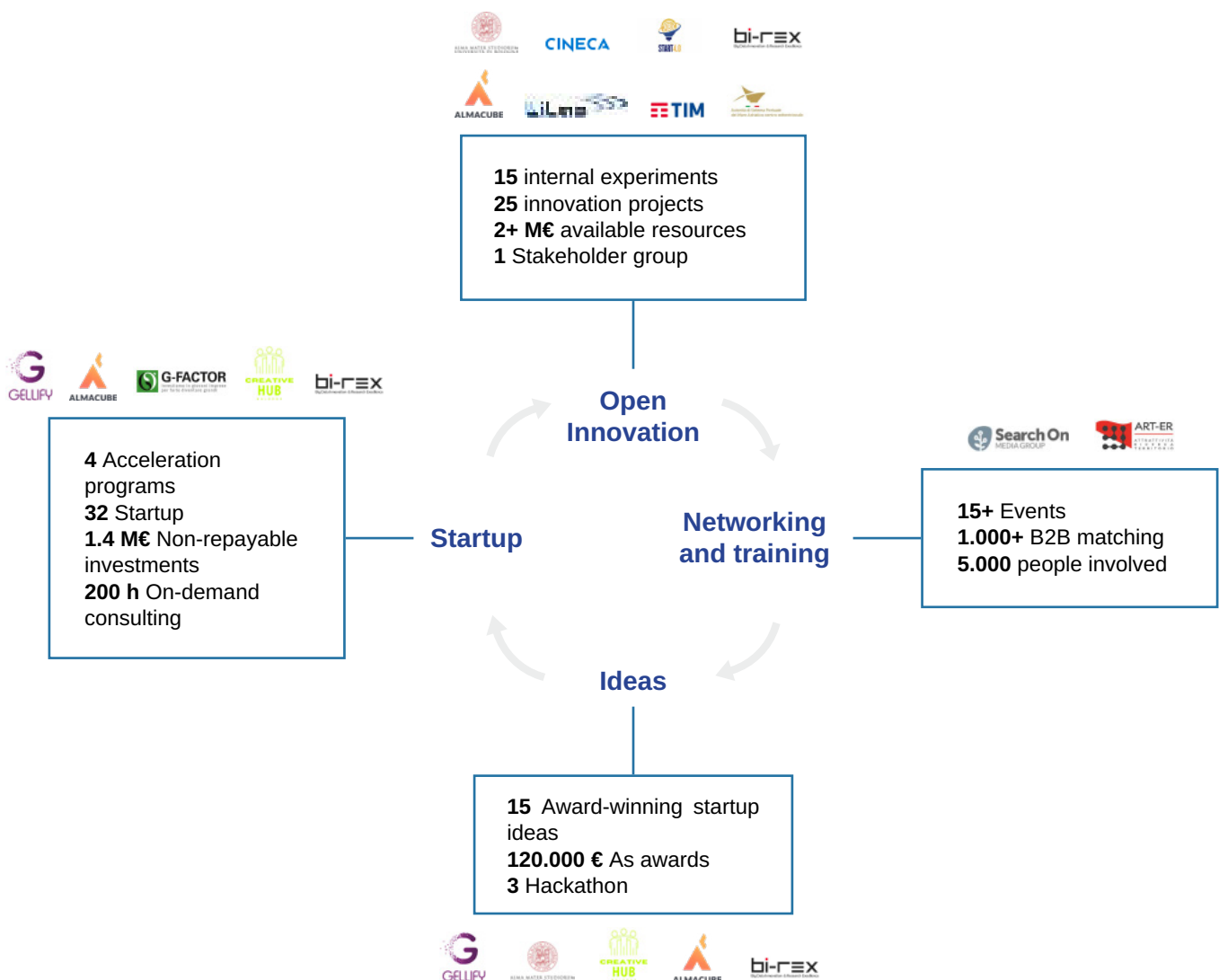
As part of the strategic BIS Bologna Innovation Square project, the initiative CTE COBO, the House of Emerging Technologies of the Municipality of Bologna, was launched in 2023: a technology transfer center to support startups and SMEs in their innovation journey. CTE COBO focuses on three strategic verticals: Industry 4.0, Creative and Cultural Industries, and Innovative Urban Services. A key component of the project is the creation of a distributed laboratory that includes advanced technologies such as the supercomputer Leonardo and the robot dog Spot from Boston Dynamics.

The project involves the implementation of four acceleration programs and several calls for startups and SMEs, with the aim of funding over 70 companies. Furthermore, over 15 internal technological experiments have been planned, all at the forefront of their sector. With a total budget of over 19 million euros, CTE COBO aims to promote innovation and technological awareness in the territory.

CTE COBO, the House of Emerging Technologies of the Municipality of Bologna

This ambitious project is co-financed by MIMIT and sees the Municipality of Bologna as the lead partner, supported by the following partners: Metropolitan City of Bologna, Municipality of Ravenna, University of Bologna - Alma Mater Studiorum, Almacube, ART-ER, Central Northern Adriatic Sea Port Authority, BI-REX Big data & research excellence, Cineca, CNIT - WiLab, Creative Hub Bologna, G-Factor, Gellify, Search On Media Group, START 4.0 - Center of Competence for the Security and Optimization of Strategic Infrastructures, TIM.

For more information: www.ctecobo.it



The Digital Twin of the city of Bologna

Among the most important projects of the Knowledge Policies - with an investment ranging from 7 to 10 million euros - Bologna is committed to the design and implementation of the first Digital Twin of an Italian city. A pilot project expandable at the regional level and replicable in other local contexts of the country, realized by a partnership of internationally recognized public excellences such as the Municipality of Bologna, Fondazione Bruno Kessler, University of Bologna, CINECA, and Fondazione Innovazione Urbana.

For the first time in human history, Digital Twins offer the opportunity to create a digital replica of processes, services, and social, natural, and economic phenomena, with the aim of visualizing, simulating, optimizing, monitoring, and predicting their behavior.

This option is particularly suitable for implementing comprehensive smart city models and addressing the challenges of the Green Deal, from closing water and waste cycles to environmental quality, efficiency of mobility systems, urban services, and strategic infrastructures, innovation in healthcare systems, and city planning and governance processes.

But the Digital Twin is much more than a high-tech object that resembles a physical system. The effective combination of historical data usage, continuous sources of real-time data from the Internet of Things (IoT), complex simulations capable of generating large synthetic datasets, machine learning techniques, and virtualized computational capabilities (from cloud and High Performance Computing - HPC) enables optimization, innovation, scenario building, and provision of new services, even increasing citizen participation and engagement.

The Digital Twin is based on a new governance of urban data, from environmental to city service-generated data and interaction with citizens. A realistic, innovative, and sustainable data ecosystem, centered on recognizing the absolute value of individual privacy but also on the public value and impact (political, social, and economic) of data. A data ecosystem based on a pact between the city and its citizens for the sharing and social and democratic use of data, placing the “public value” of data as a foundational concept.

The Digital Twin of the city of Bologna

Metropolitan Bologna offers a unique experimentation space for urban digital twins, allowing the development of potentialities and assets already present in the territory of Bologna, which undoubtedly constitute a national uniqueness, such as:

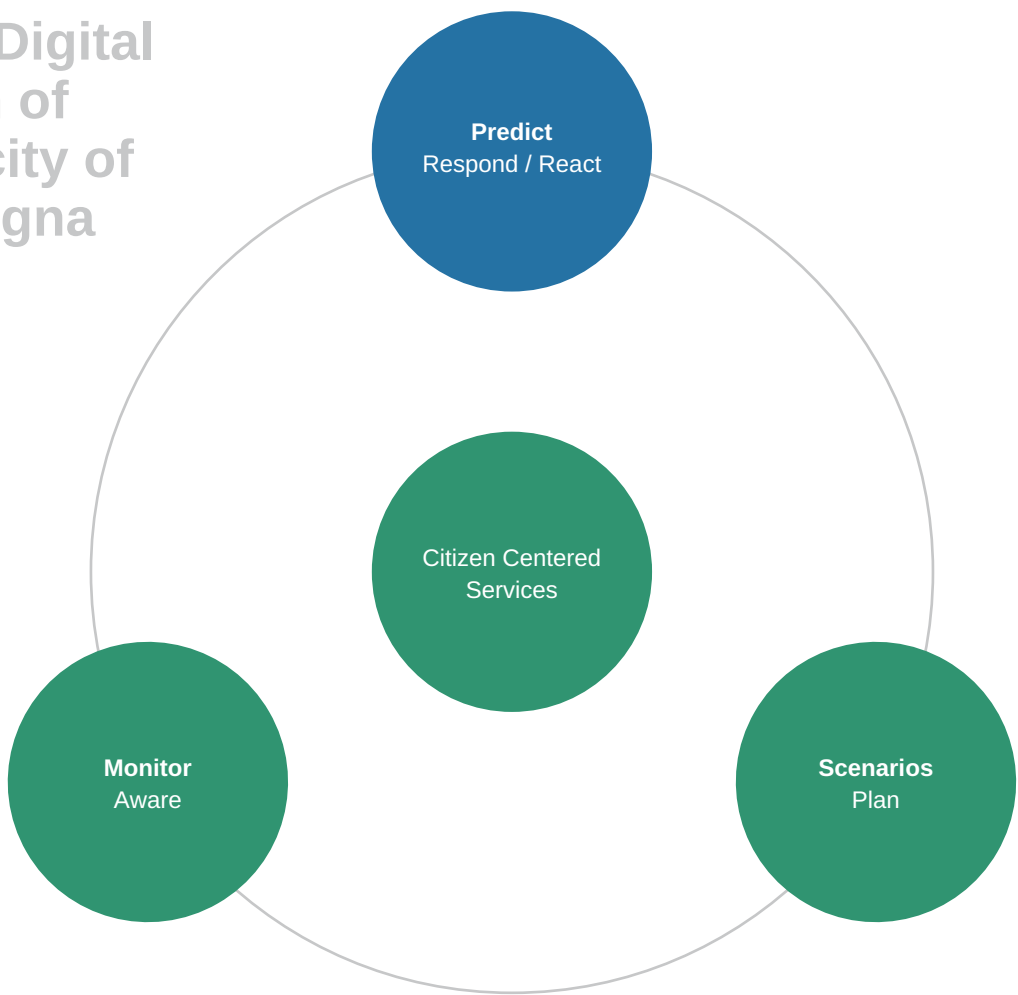
- the presence of the next Data center of the European Centre for Medium-Range Weather Forecasts, serving the city and the quality of life;
- the computing resources of CINECA, which hosts one of the top-ranked High Performance Computing (HPC) machines in Europe;
- a network of research centers (such as CNR and INFN), public and private cultural institutes, and consortia for data-driven industrial innovation (such as the BI-REX competence center), which already now have no equals in terms of quantity and quality in the national panorama;
- the first European Big Data Hub and one of the first cities in the world for data computing capacity and usage, with the presence of the oldest university in the Western world, and at the top in the main national and international rankings.

In addition to promoting technological development and improving the effectiveness of public policies, the development project of the Digital Twin of Bologna accredits the city and its research ecosystem as a major player in national and European governance of supercomputing and big data.

The availability of unique infrastructures and networks and the strong political mandate of the administration have indeed allowed the Digital Twin of the Municipality of Bologna to be nominated as the first prototype of a city's Digital Twin in Italy to be developed in collaboration with the future National Center for HPC, Big Data, and Quantum Computing financed through PNRR funds.

At the same time, the commitment to collaborate with cities engaged in digital transformation within European networks such as the Eurocities network, places Bologna at the center of a strategy to build alliances with other cities committed to researching and developing urban Digital Twins with the aim of sharing data, resources, and capabilities to collaborate in finding solutions to major urban challenges.

The Digital
Twin of
the city of
Bologna



The digital twin of the Torre Garisenda

In June 2024, the University of Bologna, Cineca, and NVIDIA initiated a collaboration to develop a digital twin of the Torre Garisenda, with the aim of understanding with increasing precision the current behavior of the structure and developing predictive scenarios. The twin will also serve as an environment to test possible risk mitigation measures and safety improvements.

The initiative combines the specific expertise and computing capabilities of Cineca, the scientific and technical expertise of the University of Bologna, and the specialists and proprietary software of NVIDIA.

The Municipality of Bologna, Cineca, and the University will collect data through sensors and other systems and will use artificial intelligence and simulation techniques to create a digital monitoring platform for the Tower. The digital twin will be created using NVIDIA Omniverse, a platform for developing photorealistic 3D environments that combines real-time simulations and artificial intelligence.

The digital twin will use open and interoperable file formats to ensure maximum transparency and accessibility and will be made available to the public.

The agreement is part of the broader development path of the city's digital twin, which is an integrated strategy aimed at enabling the role of the city of Bologna as a platform, connecting various actors from the world of research, public and private sectors, civil society, to increase the effectiveness of decisions and major interventions such as the restoration of the Torre Garisenda.

Knowledge Workshops

The City of Knowledge will fully materialize only if it actively involves citizens in creating a large community that generates new forms of knowledge and collectively identifies tools to address the challenges of our time.

Through closer engagement of the inhabitants of Bologna, it will be possible to improve decision-making processes, identify solutions to concrete problems, implement policies for the city, as well as political participation and community self-organization.

With this goal in mind, the administration will promote the establishment of a new office for the promotion of science with and for citizens, capable of developing new knowledge and skills, and fostering citizens' critical and civic sense, in the spirit of democratic, open, and accessible science. Following the model of the most innovative Citizen Science offices found in many European public institutions and museums, the Knowledge Workshop will facilitate the implementation of practices and projects that engage citizens in knowledge construction, from creating original data to experimenting with significant innovations and communicating results and research both in scientific, humanistic, and artistic fields.

The Workshop will have a widespread presence throughout the metropolitan area, particularly emphasizing public spaces and the Stations of the Via della Conoscenza. In particular, a priority activity of the Knowledge Workshop will be to work closely with schools, with the aim of defining and developing learning laboratories and new skills development for and with children and adolescents in the metropolitan area.

The Workshop will also work in close synergy with initiatives promoted within Neighborhood Workshops, adopting their methods and practices for engaging third-sector actors, communities, and citizens.

Policies for Attractiveness and the Landing Spot Project

Attracting new businesses and investments is part of the growth strategy for our territory. With the Invest in Bologna service, the Metropolitan City and the Municipality are committed to enhancing the attractiveness of the area and promoting investments with the aim of strengthening Bologna's role as a European hub for innovation, both nationally and internationally, by leveraging the Tecnopolo Manifattura as a strategic infrastructure at the heart of an attractive ecosystem. Within this framework, the Landing Spot project has been launched in collaboration with ART-ER and the Emilia-Romagna Region to facilitate the arrival of new entities in the area by providing spaces for initial settlement on a paid and temporary basis. The offices will have a permanent location in the Tecnopolo Manifattura, accessible through calls and intended for businesses, startups, and investors that do not already have a presence in the regional territory, are interested in establishing themselves in the Bologna area, and can establish significant synergies with the entities already established in the Tecnopolo Manifattura. Recipients of the spaces will be offered specific support services to facilitate their permanent settlement and the building of stable relationships within the context.

CITY *of* KNOWLEDGE

For more information:

cittametropolitana.bo.it/cittaconoscenza

investinbologna.it

bolognainnovationsquare.it

ctecobo.it