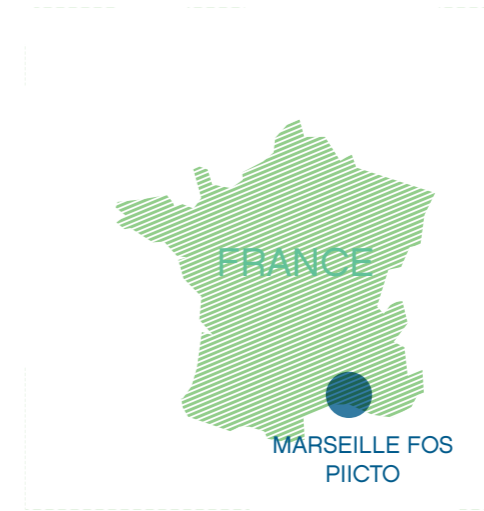




**PLATFORM
FOR INDUSTRY
& INNOVATION
AT CABAN
TONKIN**







PIICTO, A DYNAMIC COLLECTIVE INITIATIVE SERVING THE TERRITORY AND INDUSTRIAL DEVELOPMENT

Initiated in 2014, the Piicto project (Platform for Industry and Innovation at Caban Tonkin) was launched by several stakeholders in the industrial port area of Fos in consultation with the port of Marseille Fos, UIC Méditerranée (Union of Chemical Industries), local authorities and the CCIMP (Chamber of Commerce & Industry Marseille Provence), with the support of the government, the ADEME (French Environment and Energy Management Agency) and the Provence-Alpes-Côte d'Azur region.

- AN INDUSTRIAL PORT AREA
- A MULTI-ACTOR ASSOCIATION
- AN INNOVATION FACILITATOR

▶ The main challenge for Piicto is to consolidate the existing industrial ecosystem and to increase the attractiveness of the territory. This is being done with a view to welcoming new activities (industrial and/or innovative) that better meet current economic and environmental challenges at a time when the short-term economic context makes it necessary to transform certain historical activities.

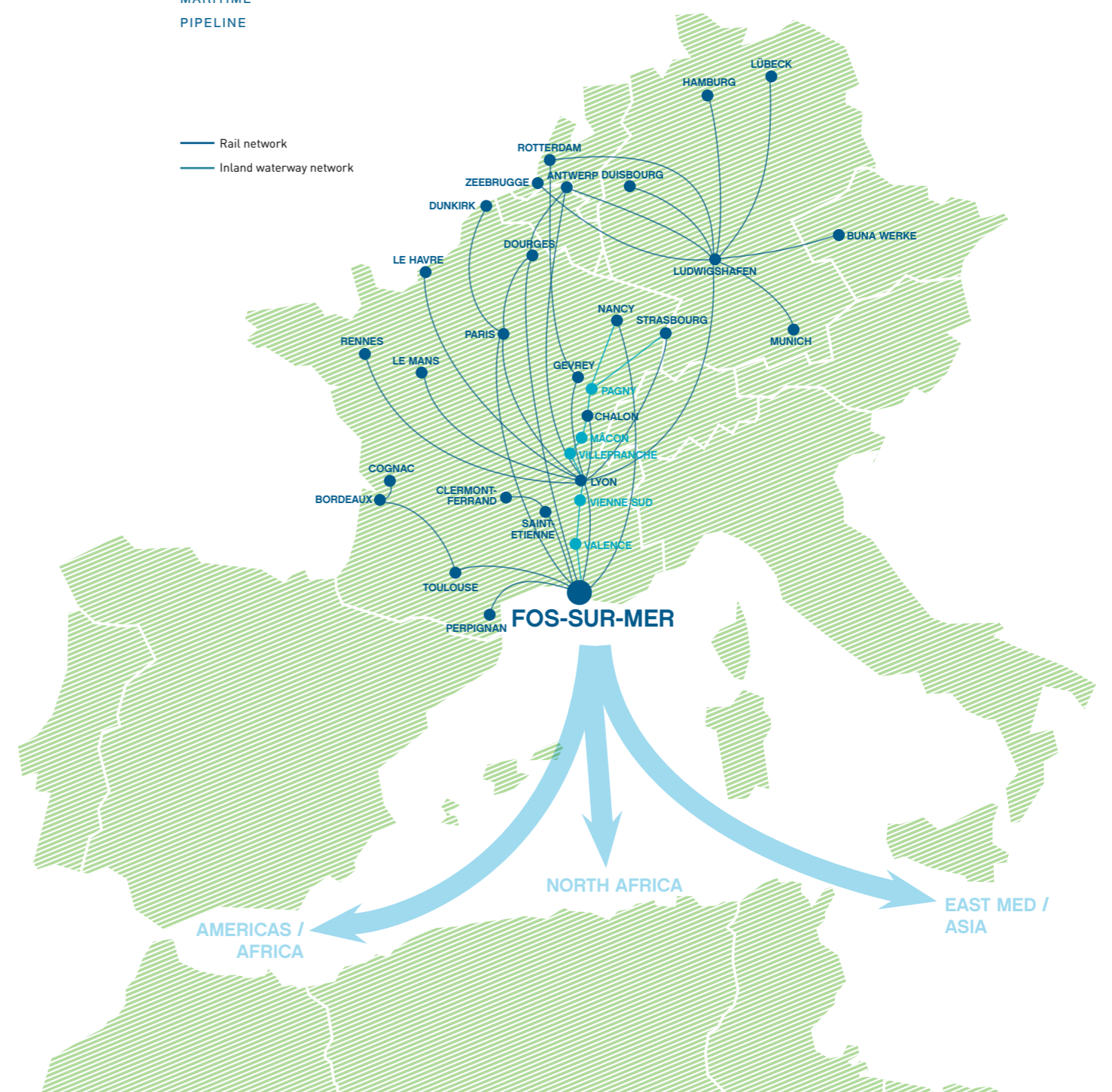
▶ Piicto's ambition is to become one of Europe's most competitive and attractive industrial port platforms.

AN INDUSTRIAL PORT SPACE CONNECTED TO THE WORLD

With a total surface area of 1,200 hectares (of which nearly 50% is awaiting development), this industrial port area is well suited to new industrial enterprises as it is located in the heart of the port of Marseille Fos' western harbours in Fos, and already hosts some fifteen industrial activities in the fields of chemistry, materials, energy production, etc.

Piicto is a connected multi-modal platform, strategically located at the heart of the local and international logistics network.

- RAIL
- ROAD
- INLAND WATERWAY
- MARITIME
- PIPELINE

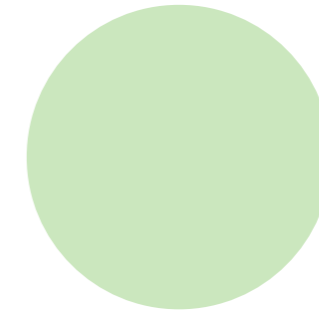


Because of the historical activities on the platform, Piicto is a key hub for energy, chemistry, and materials:

ELECTRICITY (2 LINES 225 KV REDUNDANT)
NATURAL GAS AND REFRIGERATION (2 METHANE TERMINALS)
COAL, BIOMASS (MINERAL TERMINAL)
WIND
HYDROGEN (ELECTROLYSERS + HYDROGEN PIPELINE)
ETHYLENE & PROPYLENE
NITROGEN & OXYGEN



Ideally located on the shores of the Mediterranean, the port of Marseille Fos is France's leading port and provides a natural gateway to Europe. It is positioned as the southern alternative to ports in northern Europe for access to French and European markets. Covering an area as large as the city of Paris, it has spaces and infrastructure to accommodate maritime, logistics, and industrial activities. As a general port, it handles all types of merchandise: crude oil and oil products, liquid bulk (oil, gas, and chemicals), miscellaneous goods (containers and other forms of packing), and solid bulk (ores and cereals). It hosts warehouses in two logistics areas that are located near the Fos container terminals as well as other industries (refinery, iron and steel industry, etc.).



A MULTI-ACTOR ASSOCIATION

The association now has some 40 members including 18 manufacturers (13 of whom are located on the Piicto platform), the port of Marseille Fos, two local authorities, one consular chamber, the Union of Chemical Industries, four competitiveness clusters, and several government services such as ADEME.

The purpose of the association is to collectively structure the platform's activities with the goal of improving competitiveness and developing industrial activities and innovation.

Acting in a support and facilitator role for industry, the association helps to identify and implement synergies between industrial activities (exchanges of material and energy flows, pooling of services and equipment, etc.) in order to create a proper territorial industrial ecosystem that is beneficial in economic, environmental, and social terms.

The 13 manufacturers on the Piicto platform provide concrete contributions to wealth creation and the economic development of the territory:

3,000 JOBS (50% IN SUB CONTRACTING)
2 BILLION EUROS REVENUE IN TOTAL
28 MILLION EUROS IN LOCAL TAXES
50 MILLION EUROS AVERAGE INVESTMENT PER YEAR
5 MILLION TONNES OF MARITIME TRAFFIC

Heralding the industry of the future, the Piicto project is in harmony with the territory's overall economic development policies:

📍 At national level

By virtue of its best-in-class practices in terms of the sustainable and responsible development goals it has set for its industrial activities, Piicto fully respects France's Ecological Transition Law for Green Growth. Piicto also meets the criteria that have been laid out as part of the national industrial revival plans (renewable energy, circular economy, green chemistry, and biofuels).

📍 At regional level

Piicto corresponds with the objectives laid out in the regional climate-air-energy strategy (SRCAE) and the regional economic development, innovation, and internationalization strategy. Piicto is also considered one of the pillars of the operations of interest for the region (OIR) programme for the industry of the future and the energy of tomorrow. In addition, Piicto is consistent with the economic development strategy of Aix-Marseille-Provence Metropolis as well as with the port of Marseille Fos' 2014-2018 strategy on industrial change and the energy transition. Based on the application of the principles of industrial and territorial ecology and innovation, Piicto was founded as part of the plan to create a circular economy supported by the ADEME in the PACA region.

A STRUCTURE THAT FOSTERS INNOVATION

In line with the industry's overall efforts to reduce polluting emissions, Piicto is one of the cornerstones of the region's innovation and transformation policy for the industry of the future and the circular economy, which makes concrete commitments to respect the environment and natural resources.

As laid out in its statutes, since its creation the Piicto association has been developing an innovation project known as Innovex.

As part of the Innovex initiative, the association's stakeholders welcome, support, and develop various innovation projects in the fields of energy transition and smart grids (Jupiter 1000 projects, Areva FlowBox), renewable raw materials and the circular economy (Vasco2, Icare, Vabosco, etc.), and security (CI-Secure in progress).

These semi-industrial demonstrators (Technology Readiness Levels ranging from 4 to 8 depending on the project) are either located on a 12-hectare incubator in the north of the platform (Jupiter 1000 pilot) or directly within existing industrial sites on the platform (FlowBox, Vasco2, etc.).

The Piicto platform regularly welcomes proposals for innovative projects and helps identify the optimal conditions for their implementation and the potential synergies with existing industries (facilitated access to utilities networks, sharing of equipment, pooling of services, visibility, etc.).

The ultimate aim is to foster innovation that results in new industrial sectors or new services – in particular energy-related- that benefit the entire platform.



PIICTO, AN ATTRACTIVE AND COMPETITIVE PLATFORM

TARGET MARKETS

Of the 600 ha available, the Piicto platform offers an industrial port environment well suited to both mature industries and/or pre-industrial pilots in the following areas:

► Eco-industries:

- Producers and processors of bio-sourced molecules
- Producers of "green" and decarbonised energies
- Energy storage, CO₂ recovery and recycling (Power to Gas, Power to Power, Power to Liquids, etc.)
- Industrial waste recycling and end-of-life products
- Production of microalgae, etc.

► Traditional activities in the area:

- Metallurgy
- Petrochemicals and refining
- Synthetic chemistry, fine and speciality chemistry
- Materials sector
- Traditional energy producers

► New activity sectors in the area:

- Pharmaceuticals
- Cosmetics
- Food

PLUG & START FOR NEW ENTRANTS

Piicto is developing an innovative strategy for new entrants to the platform that offers optimal conditions for projects, whether in terms of:

Land availability:

- ▶ Nearly 600 ha of land still to be developed
- ▶ Plots of land ranging from 1,000m² to 100 ha

Maritime and port infrastructure:

With its efficient, multi-modal capacities (maritime/inland waterway/road/rail/pipeline), Marseille Fos is the only port on the Mediterranean that benefits from this range of transport solutions and offers direct access to European markets:

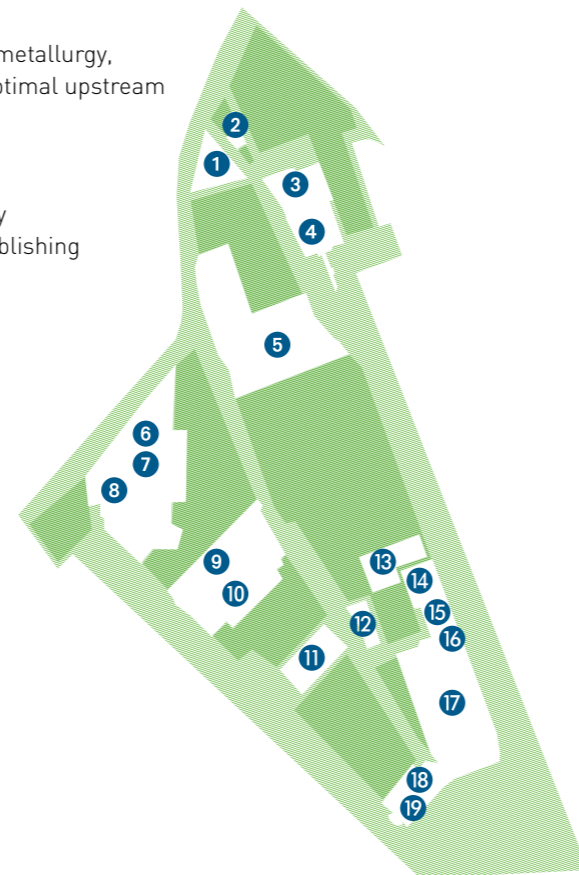
- ▶ Existing wharf: 1,700 linear metres
- ▶ Wharf for development: over 3,000 linear metres
- ▶ Draft: from 10.50 m to 18 m

Utility and service networks

- ▶ Electricity from 220 to 400 000 volts
- ▶ Gas from 80 to 1,000 mm diameter
- ▶ Industrial water from 300 to 800 mm diameter
- ▶ Drinking water from 12 to 300 mm diameter
- ▶ ADSL/optical fibre telecoms
- ▶ A future steam network for the platform
- ▶ Numerous materials (chemicals, petrochemicals, metallurgy, materials) present in the area and the region for optimal upstream and downstream integration of new activities

Regulatory environment

- ▶ Management of technological risks and biodiversity
- ▶ Easy and optimized regulatory compliance for establishing new industrial plants



BUSINESSES HOSTED

- | | |
|--------------------------|----------------------|
| 1 INNOVEX | 11 EVERÉ |
| 2 NEGRI | 12 SOLAMAT MEREX |
| 3 AIR LIQUIDE | 13 EIJL |
| 4 ELENGY TONKIN | 14 VICAT |
| 5 ASCO INDUSTRIES | 15 LAFARGE |
| 6 LINDE | 16 CALCIA |
| 7 KEM ONE | 17 CARFOS SEA INVEST |
| 8 EIFFAGE | 18 ENGIE COMBIGOLFE |
| 9 LYONDELL CHIMIE FRANCE | 19 CNR |
| 10 COVESTRO | |



DYNAMIC, PERSONALIZED SUPPORT

Are you interested in investing in or developing a project on Piicto?

By capitalizing on its active and qualified members, Piicto offers support solutions tailored to your needs and the specifics of your project, whether you are a start-up or a large industrial group:

Industrial project pathway

Highlighting the general objectives and the available support for industrial projects: systematic search for optimal integration into the existing industrial ecosystem (EIT), à la carte support, and key contacts with the various local stakeholders (industrial, subcontractors, government services, public funders, port authority, etc.).

Innovative project pathway

Highlighting the general objectives and the available support for innovative projects: à la carte support (depending on the different types of projects and their degree of maturity), contribution to consolidating the projects' economic models, identifying target markets, systematic search for optimal integration into the existing industrial ecosystem (EIT), and contacts with the various local stakeholders (industrial, competitiveness clusters, project accelerators and venture capitalists, public financing, academics, etc.).

The Innovex offer is not just about making land available in an attractive industrial port ecosystem. Through industrial and institutional partnerships, its goal is to fully support the various projects and their leaders in two of the main development phases:

▶ The market acceleration phase, which leads to setting up an industrial demonstrator on the Innovex platform or with industrial hosts;

▶ The industrialization phase, which is the ultimate goal of the Innovex approach by establishing a new full-scale industry or new value-added service.

The support for innovative projects can cover various functions: the search for optimal integration into the existing industrial ecosystem (EIT), setting up on a developed site, or contacts and networking with the various local stakeholders (industrials, competitiveness clusters, project accelerators and venture capitalists, public and academic funders, etc.).

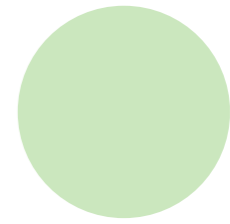


PIICTO, A STRUCTURED APPROACH

While contributing to the economic consolidation of Fos Caban Tonkin's manufacturers and the preparation of the industry of the future, Piicto also aims to become a benchmark for industrial port sites in the South-Europe zone.

To attain this objective, certain conditions need to be met:

- ▶ Strengthening the collaboration between the various local stakeholders (industry, local authorities, port authority, government services, public funders, etc.);
- ▶ Sustaining the dynamic of the current industrial and territorial ecosystem (implementing synergies and new services for the benefit of industry and, more generally, the territory);
- ▶ Investing in innovation, experimenting with ideas, and offering a secure framework that facilitates the hosting of new projects that can create value and jobs.



A COORDINATED APPROACH BASED ON OPERATIONAL WORKING GROUPS

Piicto's actions are now organized into 6 thematic and/or cross-functional working groups (Steam Network WG*, Circular Economy WG, Innovation WG, Technological Risk Prevention Plans/Governance WG, Marketing-Promotion WG, Bio-Industries WG, Plug&Play WG), with key short- and medium-term goals defined for each group.

- STEAM NETWORK WG
- CIRCULAR ECONOMY WG
- INNOVATION WG
- TECHNOLOGICAL RISK PREVENTION PLANS/GOVERNANCE WG
- MARKETING-PROMOTION WG
- BIO-INDUSTRIES WG
- PLUG&PLAY WG

*Working group

SPOTLIGHT ON SELECTED ACTIONS AND PROJECTS IN PROGRESS

THE STEAM NETWORK PROJECT

Formed when the Piicto association was created, the steam network project is key to the attractiveness of the platform.

It aims to connect the major producers of waste heat with existing (or future) industrial consumers on the platform.

It aims to significantly reduce the natural gas consumption that is used for steam production on the platform, and as a result reduce greenhouse gas emissions.

The recovery and use of this lower cost "waste" steam will also lead to substantial financial savings for current and future manufacturers, thus adding to the competitiveness and attractiveness of the platform.

THE CIRCULAR ECONOMY BETWEEN INDUSTRIAL PLAYERS ON THE PLATFORM

Several synergies between manufacturers, such as exchanges of material and energy flows and pooling of services and equipment, have already been implemented and/or studied at Piicto, including in such areas as:

- ▶ Recovery of hydrochloric acid 33% (HCl)
- ▶ Recovery of ferrous metals
- ▶ Exchange of demineralized water
- ▶ Recovery of sewage sludge from brine
- ▶ Collective catering services
- ▶ Test laboratories
- ▶ Solvent recycling
- ▶ Pooling transportation
- ▶ Pooling security/caretaking services
- ▶ Pooling PPE textile washing services
- ▶ Day care/nursery
- ▶ Rail logistics
- Etc.



INNOVATION WITHIN PIICTO: INNOVEX

Serving regional industry with a focus on manufacturers in Fos and Etang de Berre, Innovex aims to become an internationally renowned demonstration project accelerator that supports the development of existing activities and encourages the establishment of new activities in the fields of industrial innovation and energy transition.

Today, Innovex is:

- ▶ An initiative that allows Piicto and the players in the ecosystem to promote the attractiveness of the site in order to host pilot projects related to pre-industrial innovation and energy transition with 4 pre-targeted themes:

- STORAGE AND USE OF RENEWABLE ENERGY
- RENEWABLE RAW MATERIALS AND CIRCULAR ECONOMY
- INTELLIGENT ELECTRICAL AND THERMAL NETWORKS
- RISK MANAGEMENT AND SECURITY

- ▶ An innovative demonstration project accelerator offering tailor-made support that creates synergies with established manufacturers, such as the provision of utilities to test and validate projects in real-world conditions.

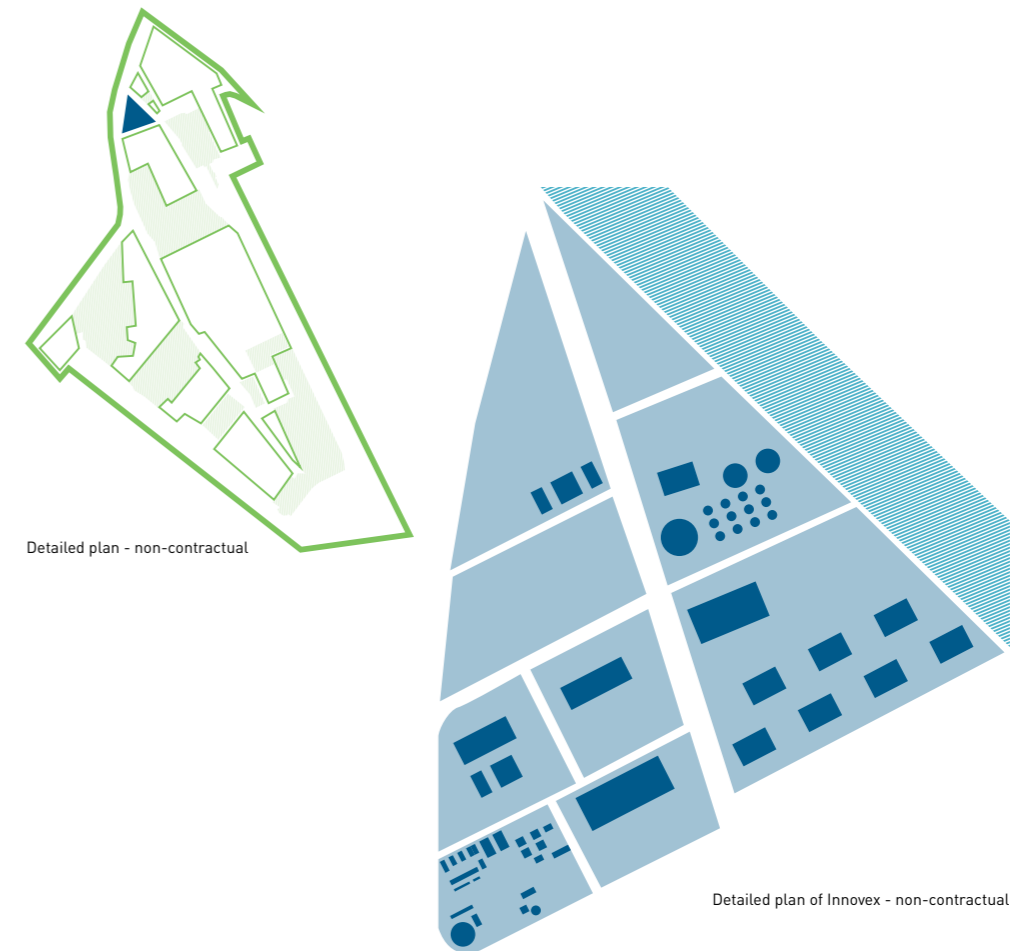
- ▶ A dedicated 12 ha site (under development) to host pilot projects (some pilot projects may also be installed in the various existing industrial sites on the Piicto platform and benefit from Innovex certification. The site has serviced plots with access and main roads, industrial water networks, electricity, and telecommunication networks, as well as the possibility of shared facilities such as a CO₂ network and a soon-to-be-completed reception structure for meetings, showroom events, and temporary offices).

The development of demonstrators is a preliminary step that is essential to achieve the more global objectives of re-industrialization and value creation for the territory. This will eventually lead to:

- ▶ The establishment of new sectors of the future in the existing ecosystem, with the goal of concentrating a maximum number of value chains in the territory (industrial, logistics, R&D functions, etc.);
- ▶ The creation of new services, particularly energy related, the consolidation of the local industrial ecosystem, and the enhancement of its attractiveness and long-term competitiveness;
- ▶ The continued adoption of a sustainable development approach that maximizes socio-economic value and limits environmental externalities.

Innovex provides a key strategic advantage to Piicto and is in full harmony with broader regional goals for economic development, innovation, and internationalization, specifically operations of interest to the region such as industry of the future and energies of tomorrow.

This programme is clearly an attractive market option, as evidenced by the twenty or so prospective projects that are currently being examined or supported depending on their degree of maturity, as well as the various concrete projects that have already been finalized and represent almost €60m in total investment: Jupiter 1000 (~€30 M), Flow Box / Field (~€25 M), Vasco2 (~€2 M).



JUPITER 1000 PROJECT

On 30 March 2016, GRT Gaz and the port of Marseille Fos announced the signature of the industrial agreements for the "Jupiter 1000" demonstrator and the launch of the "Innovex" incubator. The Jupiter 1000 project thus became the first demonstrator hosted by Innovex. Jupiter 1000 is a multi-partner "Power to Gas" project connected to the gas distribution network in France.

The Power to Gas process consists of converting and storing electricity in the form of gas. In practice, the process uses unconsumed renewable electricity to produce hydrogen by electrolyzing water. The hydrogen can then potentially be combined with carbon dioxide (CO₂) through a methanation process to obtain synthetic methane, with properties identical to those of natural gas. The hydrogen or synthetic methane produced in this manner can then be injected into the gas transport network. "Jupiter 1000" is also the first project to recover CO₂ from industrial fumes in France by integrating a CO₂ capture unit on the chimneys of a local manufacturer, Asco Industries.

The project will be carried out in close collaboration with Piicto platform manufacturers, which will use the gas produced by the Power to Gas demonstrator.

The project is costing €30 million, nearly two-thirds of which is being borne by the industrial partners and one third financed by grants from the European Union (ERDF), the government (the investment for the future programme run by ADEME) and the Provence-Alpes-Côte d'Azur Region. France's Energy Regulation Commission (CRE) also supports the "Jupiter 1000" project, which falls within the framework of the energy transition and whose purpose is to diversify, in the long term, the use of natural gas networks. In July 2015, CRE therefore approved the investment budget presented by GRT Gaz and TIGF, thus providing regulatory framework for the activities.

(Source GRT Gaz, 2016)



FLOWBOX PROJECT

The FlowBox project has been developed by a consortium of partners (led by Areva SE), which aims to implement a new high power and high capacity electricity storage solution using a reversible battery process (Power to Power process).

This project (under the Innovex label) is financially supported by the InnoEnergy Knowledge and Innovation Communities. The construction of the pilot has been completed within the Kem One industrial site. In line with the Innovex approach to innovation, this is a case of a demonstration pilot being set up directly on a Piicto platform industrial site.

The pilot was launched at the end of 2016.



VASCO2 PROJECT

Launched on 12 October 2016 in Fos sur mer, Vasco2 is an applied research program (green chemistry processes) that implements pre-industrial demonstrators (10 m² and 160 m²) in a real industrial environment. The project focuses on the photosynthetic absorption of CO₂ contained in industrial gas emissions through a micro-algae culture. This project is the continuation of the Vasco1 project (2011-2012), which studied various ways of recovering CO₂ generated by the industrial activity of the Fos-sur-Mer basin, in order to reduce greenhouse gas emissions in the region.

The project is led by a consortium of 12 partners and managed by the port of Marseille Fos. With a total cost of €2 million, it receives 45% of its financing through ADEME under the 2014 BIP (Bioresources, Industries and Performance) call for projects and the project covers all stages in the value chain:

MICROALGAE CULTURE

TRANSFORMATION AND PRODUCTION OF BIOCRUDE

REFINING AND COMPARISON WITH CONVENTIONAL OIL

SEARCH FOR USEFUL MOLECULES FOR GREEN CHEMISTRY USES

This project (labelled Innovex) is consistent with the innovation objectives of the industrial port area in terms of the energy transition and the recovery of industrial CO₂.

BIO-INDUSTRY, A MULTIPLATFORM ISSUE UNITING THE TERRITORY

Since 2016, a metropolitan-scale approach has been launched involving the industrial platforms of Berre, La Mède and Piicto.

The objective of this joint approach is to create a bio-industry centre of excellence for which several areas of development have been outlined (micro-algae, PLA, succinic acid, 2G biofuels, etc.). In this context, a call for expressions of interest will be launched in early 2018 under the auspices of the Aix-Marseille-Provence Metropolis and in partnership with Piicto members that aims to propel the dynamic transformation of the local and regional industrial fabric.

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OF THE PICTO ASSOCIATION**

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AREVA SE
ARII PACA
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