Project Book
ARB301 Thesis
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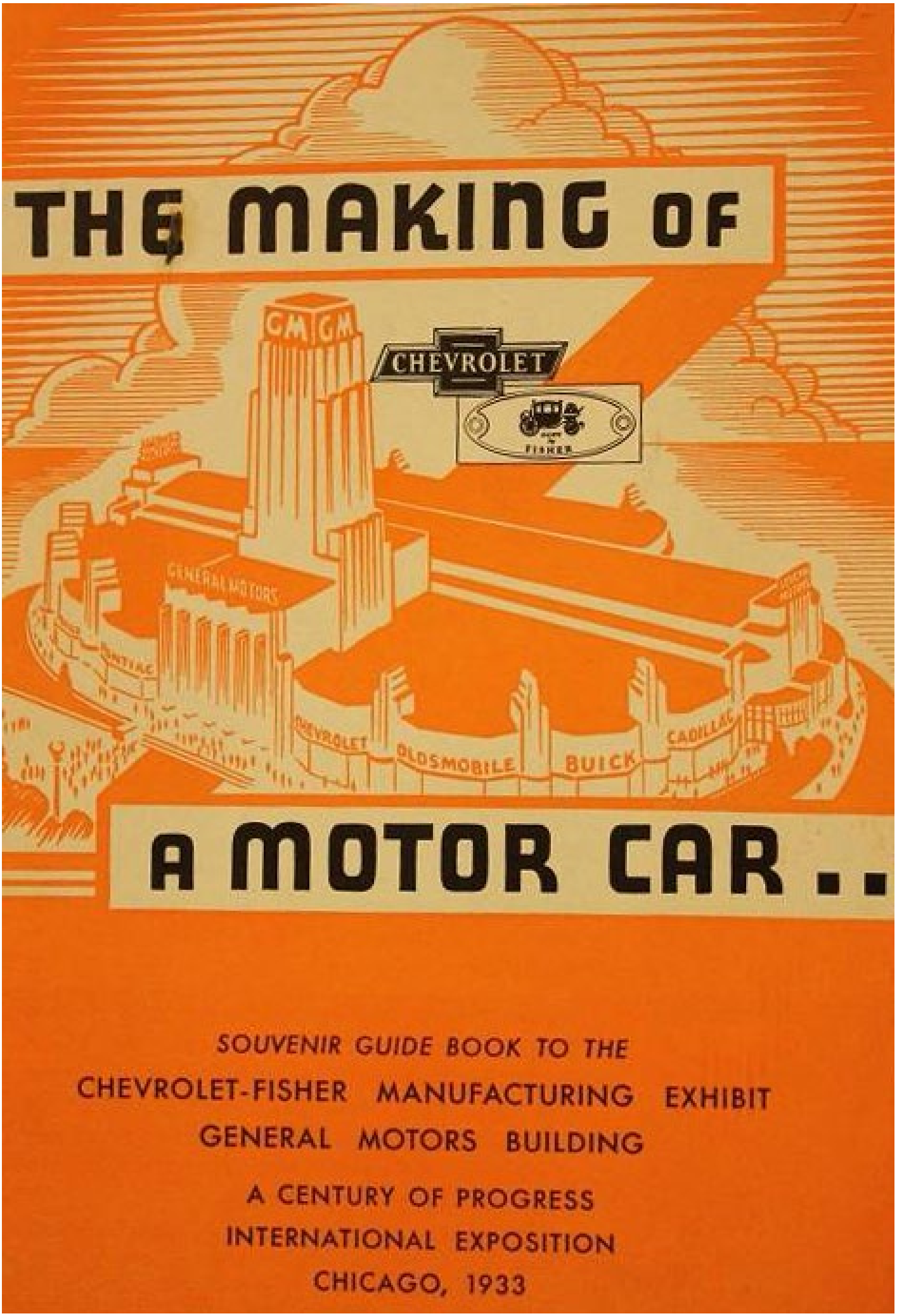
The Berlage Center for
Advanced Studies in Architecture
and Urban Design

Pit Stop



SOUVENIR GUIDE BOOK TO THE

CHEVROLET-FISHER MANUFACTURING EXHIBIT

GENERAL MOTORS BUILDING

A CENTURY OF PROGRESS

INTERNATIONAL EXPOSITION

CHICAGO, 1933

Table of Contents

Introduction

This contribution deals with the industrial heritage of Gibraltar's Gibdock today, and its future prospects in the context of the global economy and the local culture. Particularly, it is about an upgrade of a ship repair yard, aiming to counterbalance the issue between Gibraltar's economy and its ecological issues.

As a British outpost strategically located in the western Mediterranean, Gibraltar has been fortified for many centuries. In 1903, a MoD navy dockyard was built in dimensioned to the size of British battleships and, the military activities dictated the local economy until 1984. However, the peninsula demilitarized, the dockyard was sold off, converted to commercial use, and rename itself as Gibdock. Three undersized docks impeded Gibdock to catch up to new the demands of bigger commercial ship repairs and refits as it aimed to.

The upgrade strategy critically considers new international marine regulations, anticipating standard sizes, operations quantity, type of repairs for the next decades. It finalizes what kind of refits to ships need to complete, in order to comply to new rules. This anticipation of design is based on a wide range of sizes in relation to containerships, machine operations, spare parts, and considers how this design can turn the side effect of heavy industry in positive way. As a consequence, a new piece of infrastructure modernizes these three docks while a new wet-dock in front of the existing docks enables Gibdock to modify extra-lager boats.

The service Gibdock provides is part of a larger marine business strategy called the ''one-stop-shop.' The modification of ships at Gibdock is another service alongside those that Gibraltar already provides—refueling and underwater cleaning (at North Mole), loading and unloading (at the container berth), crewing and de-crewing, and mooring (at Quayside). By offering all the services in one place, Gibraltar can gain a competitive advantage over ports which only offer one or two of these services.

In the near future, the port of Gibraltar could co-exist alongside the ports of Algeciras and Tangier, and embody a shared network that channels the flow of container ship services in the Strait of Gibraltar.

Yu-Li Liao (TW)

5 propositions

1.Ecological counterbalance

Critically consider how to counterbalance Gibraltar's economy and environmental issues if continuously running the traditional ship repairs industry but while making a better quality of the local environment to the land and ocean.

2.Standard sizes

TEU container in 20 and 40 ft, capacity of Canals, newly-established future international rules, potentially result in design of containerships, docks and ports, machine operations, logistics, and transportations and particularly spatial consequence.

3.Automation

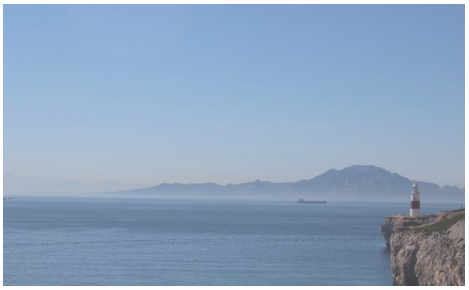
Automation is performed with minimal human assistance, reducing human intervention while operating so that it can take place and fit into gaps between different work stages, especially for the moment of lifting and moving heavy objects.

4.Pitstop and one-stop-shop

A Pitstop, offers a series of quick and efficient services. GIBDOCK as parts of a pitstop, it particularly provides repair works. GIBDOCK as part of a pitstop completes the one-stop-shop of marine operations.

5.Attractor—the strait of Gibraltar

The one-stop-shop business model enables GIBDOCK to gain a competitive advantage over Ports which only offers one or two of these services in the Mediterranean, while side effects caused by this heavy industry could be transformed being eco-friendly and didactic in relation to Gibraltar's history and future.



As Found Propositions

Photographs from authors during fieldtrip in Gibraltar, June 2019

Beyond the Rock

Spatial interventions define and are defined by flux. Fluxes manifest in infrastructure, urban arrangements, buildings, and rooms, guiding, directing, and facilitating our movement. Simultaneously, the practice of movement defines our perception of space. On land we orientate through boundaries, borders, obstructions, and divisions between fields, regions, and states. At sea, our position is determined by intersecting lines of connections through distant objects, creating reference points and networks.

Gibraltar—a small peninsula on the southern tip of Europe—has been one of these reference points for many years. The stable presence of the Rock has been central to many stories, myths, and projects—from the Pillars of Hercules to the dream of Atlantropa. The 421-meter-high limestone formation has been a reference point for sailors, a strategic location for military garrisons, and a crucial stopover for migratory birds and insects. Gibraltar is therefore associated with being a stable, static, and steadfast small town, where one only ends up by virtue of circumstance.

However, Gibraltar is anything but stagnant. Surrounded by water, the territory is part of a global trading network characterized by the movement of cargo, passengers, and migrants. It lies in the midst of the Strait, to which the peninsula lends its name, which defines and unfolds the dynamic, fluctuating, and ever-changing condition of the territory.

As maritime choke points, continental straits determine the rhythm, capacity, and intensity of shipping patterns. Located between two polarities, they pose an inherent condition of tension, conflict, and imbalance. As such, straits channel and catalyze flux.
Where there is difference, there is flux; where there is flux, there is dynamism. The Strait of Gibraltar, too, can be understood in such terms—strategically located between two continents, it separates the Atlantic Ocean from the Mediterranean Sea.
On its edge lies Gibraltar—the entry point to the Mediterranean.

Gibraltar is a relatively unimportant yet historically significant entity; the peninsula is a mere 6.8 sqkm with 33,000 people living almost exclusively on the west side.

Around 250 Barbary macaques and many other species live or stopover in the Upper Rock Nature Reserve, covering 36% of the land. Gibraltar is still crucial in its wider context. Over the course of history, the seemingly insignificant territory has been fought over, conquered, isolated, and reconnected by many. Early Islamic settlers from 711 AD conceived of the city as a fortress; in the sixteenth century the old town started to extend from the Moorish Castle, and the following centuries saw Spanish and Anglo-Dutch troops taking hold of the Rock. Their defenses, moles, batteries, and bastions shaped its surface, while tunnels and excavations shaped the interior of the Rock.

When the end of Great Siege (1779–1783) temporarily stabilized tensions, Genoese, Portuguese, and Moroccan merchants made their way to Gibraltar to make their fortunes at this British trading outpost. In the nineteenth century this multicultural community expanded the city into reclaimed land and onto the Rock, leaving their architectural marks on the city. Today, Gibraltar remains a British Overseas Territory but with separate legal jurisdiction. It is said that as long as the monkeys stay, the British won't leave. But that, soon, might change. Could we reimagine Gibraltar as an autonomous territory?

Independence and Interdependence

Gibraltar is not an island, yet it is prone to isolation. Without any natural resources, the peninsular is highly dependent on its relationship with its surrounding context. This has put tremendous pressure on its border—a 1.2-km-long threshold beneath the Spanish town of La Linea. As Gibraltar is highly dependent on imports and cheap labor from Spain, obstructing this frontier can have a dramatic effect on Gibraltar's economy. As such, it forms an important bargaining tool for its neighbor.

Since the 1713 Treaty of Utrecht officially assigned Gibraltar to the British, Spain has tried to reclaim the strategic outpost by force and persuasion. Gibraltarians, however, want to stay British; in the 1967 sovereignty referendum, a massive majority of 99.6% of Gibraltarians expressed their eagerness to remain under British rule.

As a response, Spanish dictator Francisco Franco restricted all forms of trade and traffic across the border, leaving Gibraltar with no other option but to turn to northern Europe and Africa for for help. For 16 years, until the border fully reopened in 1985, the UK, the Netherlands, Portugal, and Morocco provided the territory with food, water, medical oxygen, and construction materials by sea and air. Franco's actions also forced Gibraltar to look inwards, identify its strengths, and make alliances to overcome its weaknesses.

Following the reopening of the border, the government of Gibraltar actively rebuilt its economy by accentuating its differences from its surrounding context. Over the past four decades, three major industries have emerged—in the 1990s tourism and ship refueling (bunkering) began to account for a significant daily in– and outflow of both people and ships. Financial services then emerged as another major industry after beneficial tax policies implemented in 2009 attracted foreign investors and online gambling enterprises. The boost to employment and general shift towards high-end residential development has brought a significant temporary population increase in recent years, mainly from the UK. These have negated some of Gibraltar's dependencies, but the built environment is still highly dependent on Spain.

Up to 12,000 tourists a month at the cruise terminal, peruse Main Street, and take the cable car for a quick visit on the Rock to illegally feed the monkeys, while 15,000 workers cross the border from the neighboring Spanish town of La Linea every day.

With limited options for urban expansion, the local construction market is highly competitive. Fast-paced developments arise on reclaimed land and former British military grounds, over which the local authorities have little to no control. Often initiated by Spanish contractors and private investors, building culture is characterized by a case-by-case system with little room for architectural innovation. In turn, Spanish urban planning culture restricts Gibraltarian architects to their familiar territory.

How can Gibraltar expand its architectural context and open new doors for its architects?

1) Geopolitical Shift

While the political situation of the European Union and the United Kingdom are destabilizing, Gibraltar finds itself in an ever-more vulnerable state.
However, opposite the Strait in Morocco and Algeria, solar and biomass energy sectors are rapidly evolving.
They are likely to result in large-scale urban and infrastructural expansion, creating major investment opportunities in northern Africa.
In this projection, Gibraltar aims to monetize these opportunities by shifting its gaze to Northern Africa, plugging into the energy circuit south of the Strait.
As such, Gibraltar's potential, importance, and territory are no longer defined by its administrative borders, but rather in relation to the networks it operates within.
What could be the repercussions on the local building culture of Gibraltar?

2) Infrastructural Connectivity

If Gibraltar wants to gain control over its precarious condition then one thing is inevitable—connection.
As new and improved infrastructural connections create opportunities for investment and expansion in and around Gibraltar,
improved connection to Morocco enhances the capacity of energy, freight, and capital flows across the Strait.
Gibraltar's beneficial tax policies make import through the territory appealing for both Europe and Africa,
accelerating urban expansion and economic growth in nearby cities.
For Gibraltar specifically, the change means that the territory transforms from a geopolitically insignificant peninsula to a crucial node in the intercontinental trading network.
How can Gibraltar exploit this new nodal condition, and how can architecture assist that?

3) Gibraltar as Attractor

A transport hub integrated within Gibraltar's urban tissue concentrates all traffic and freight, distributing the flows along and across the territory.
By expanding its context to Africa, economic opportunities attract migration from its surrounding area, creating potential for Gibraltar to become more attractive to investors, tourists, and residents. Additionally, the optimization of ferry routes between Africa and Europe enhances the overseas connection for passengers.
How can spatial strategies accommodate and optimize these new and intensified fluxes?

4) Population Growth & Urban Expansion

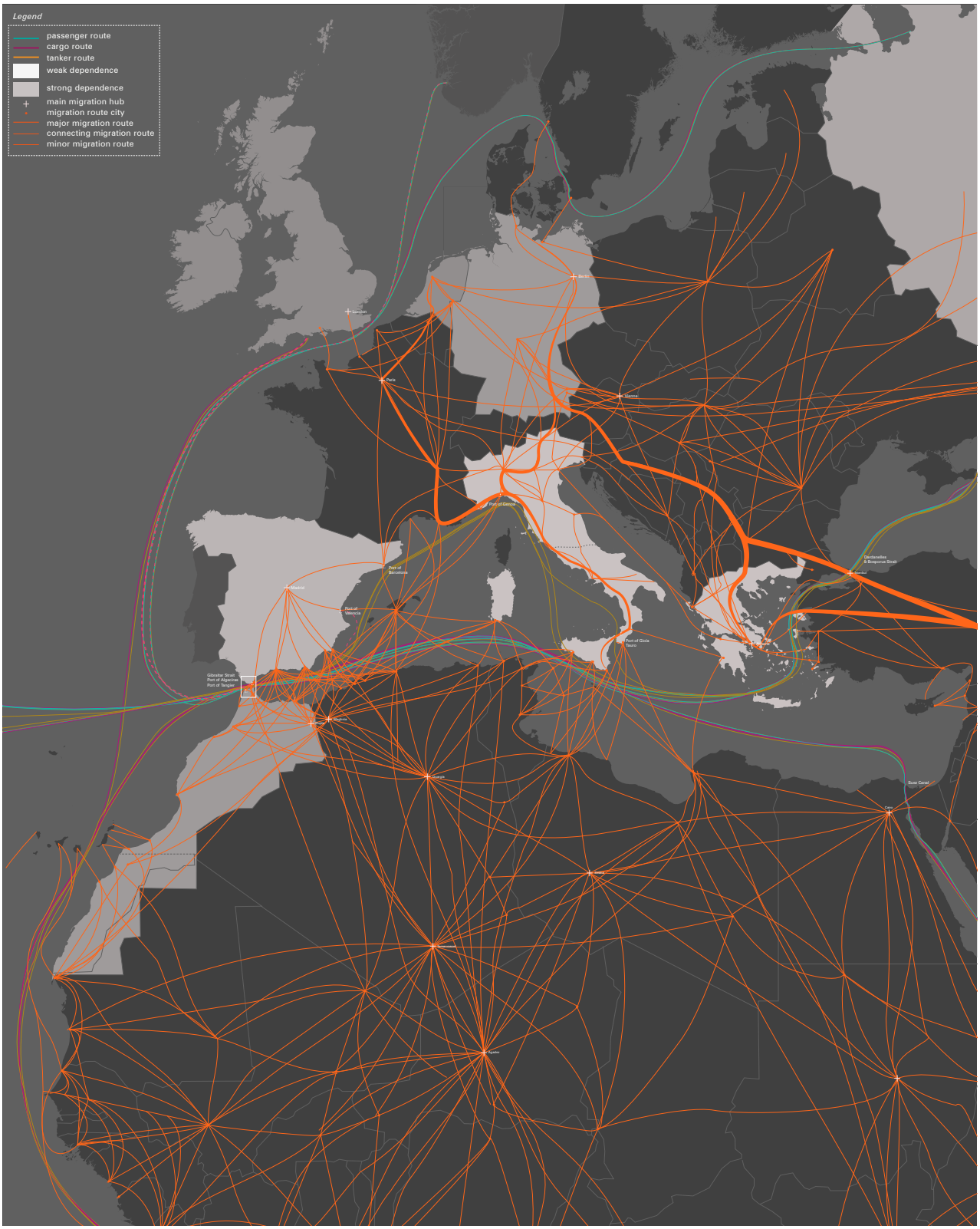
When financial opportunities open up, people from other countries arrive to reap the rewards.
Improved maritime connections and accessibility strengthen the capacity, speed, and frequency of traffic across the Strait, and are thus projected to bring a substantial population increase —laborers from Northern Africa and investors from China are shifting their gaze from Africa up to Gibraltar.
To accommodate this population increase, Gibraltar is projected to expand and densify into the sea as well as on land, following its existing strategies of long-term planning on the west side, and rapid reclamations on the east side.
How could the peninsula deal with the contested changing coast lines, and how would these new communities express themselves in public space?

5) Climate Change

Gibraltar's natural water borders form not just a connection across the Strait, but also a threat to its expansion.
While rising sea levels amplify the spatial pressure on the territory, rising temperatures, extreme weather events, pollution, and overfishing have resulted, and continue to result, in mass extinction and biodiversity loss to which the unique species in Gibraltar are especially vulnerable.
How can we reconsider these crucial thresholds between the city and the water, and the city and the Upper Rock, accommodating both human and non-human populations?

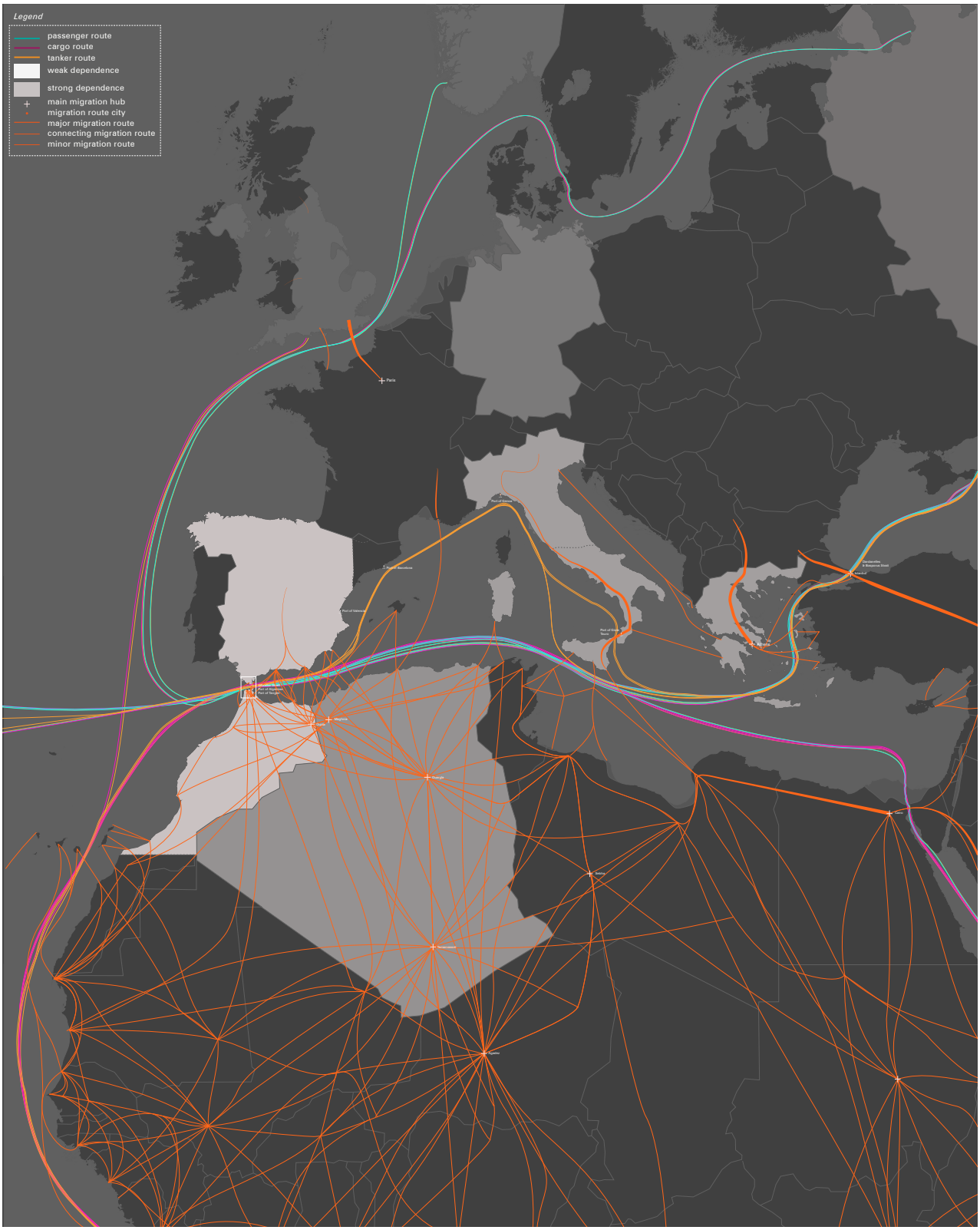
Gibraltar: The Built Environment

Site location of Gibraltar



2020

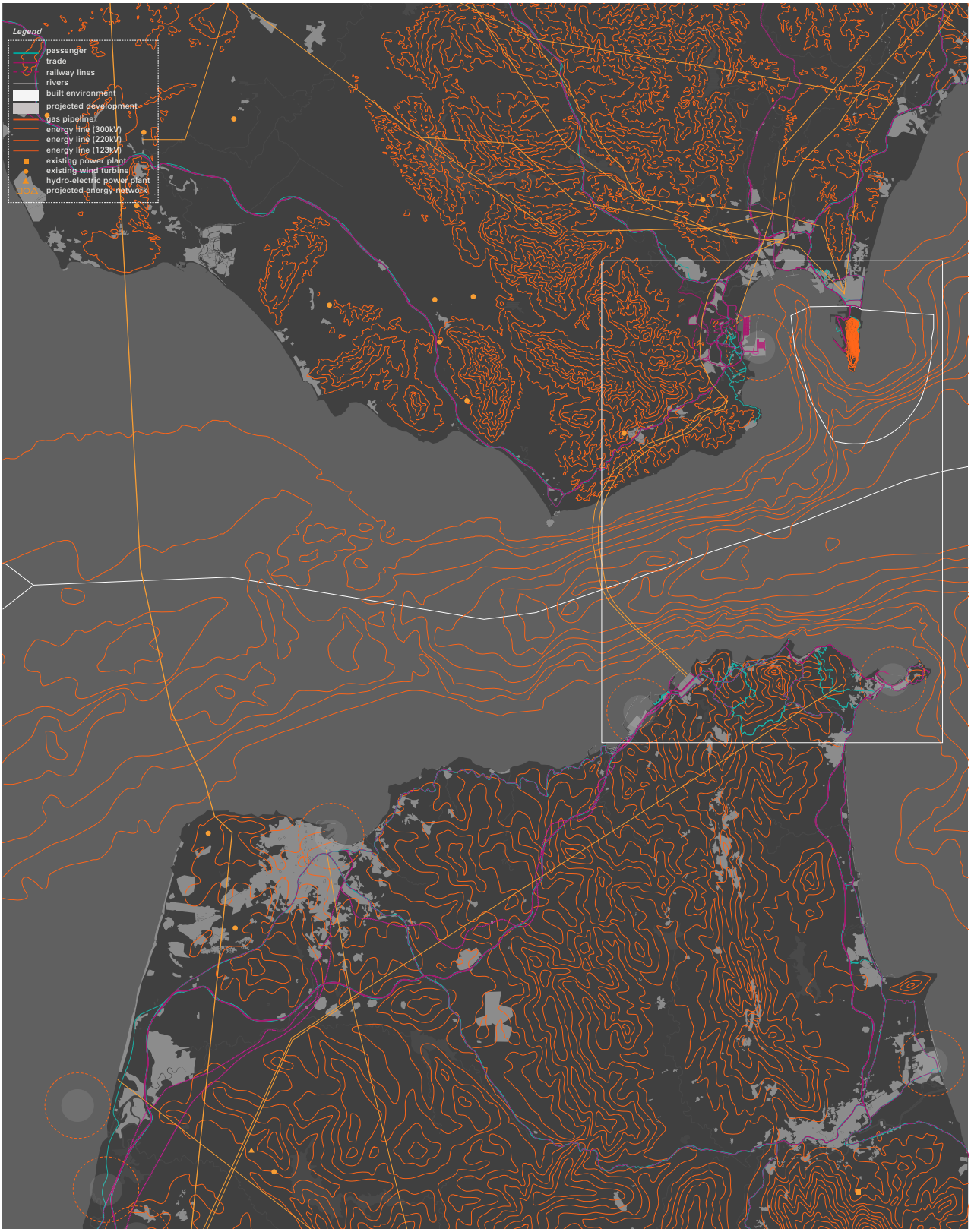
The Territory of Gibraltar: map with present dependecies and migratory routes



2050

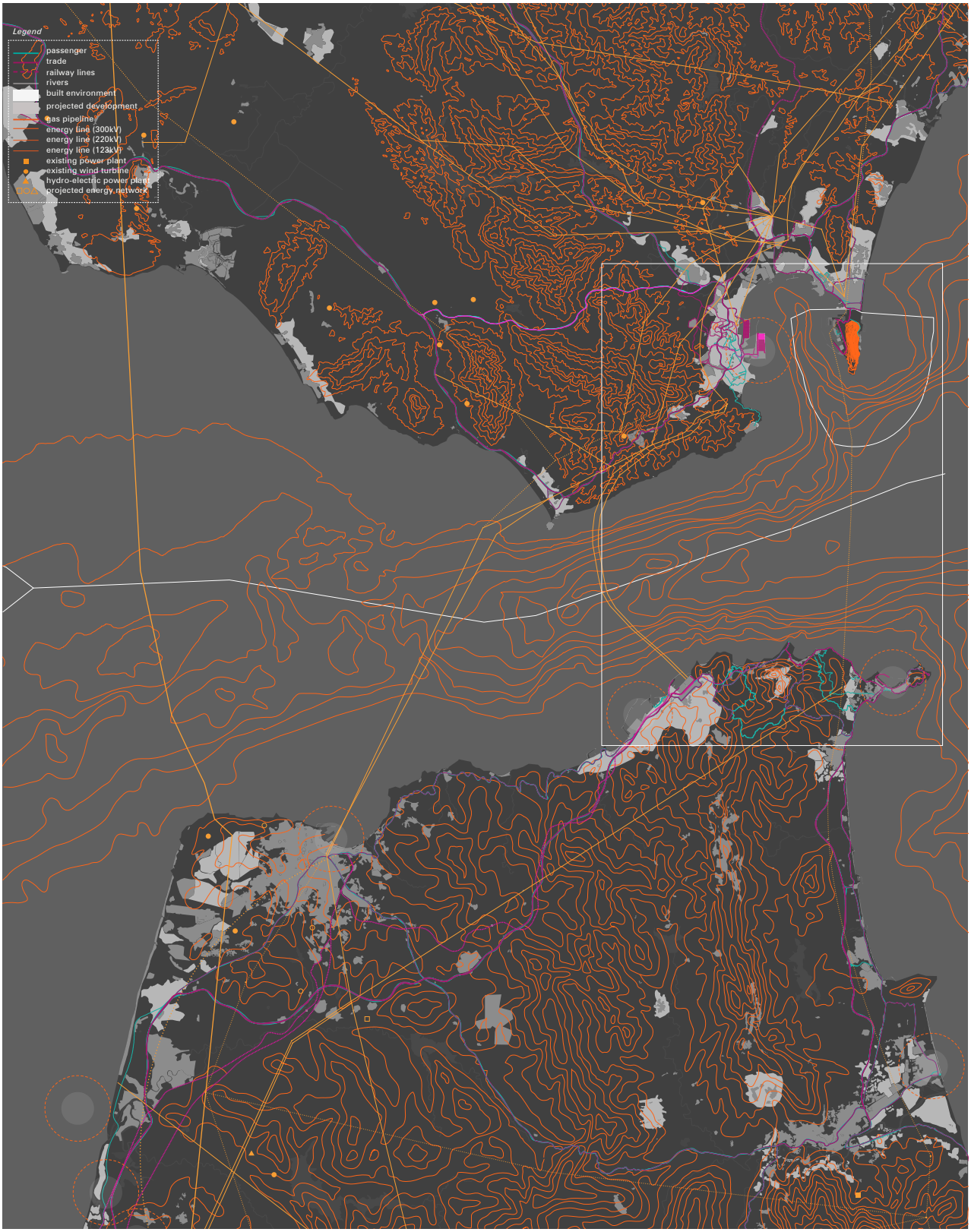
The Territory of Gibraltar: map with future dependecies and the re-orientation towards Africa

2) Infrastructural Connectivity



2020

The Strait of Gibraltar: map with the existing economies and infrastructural developments



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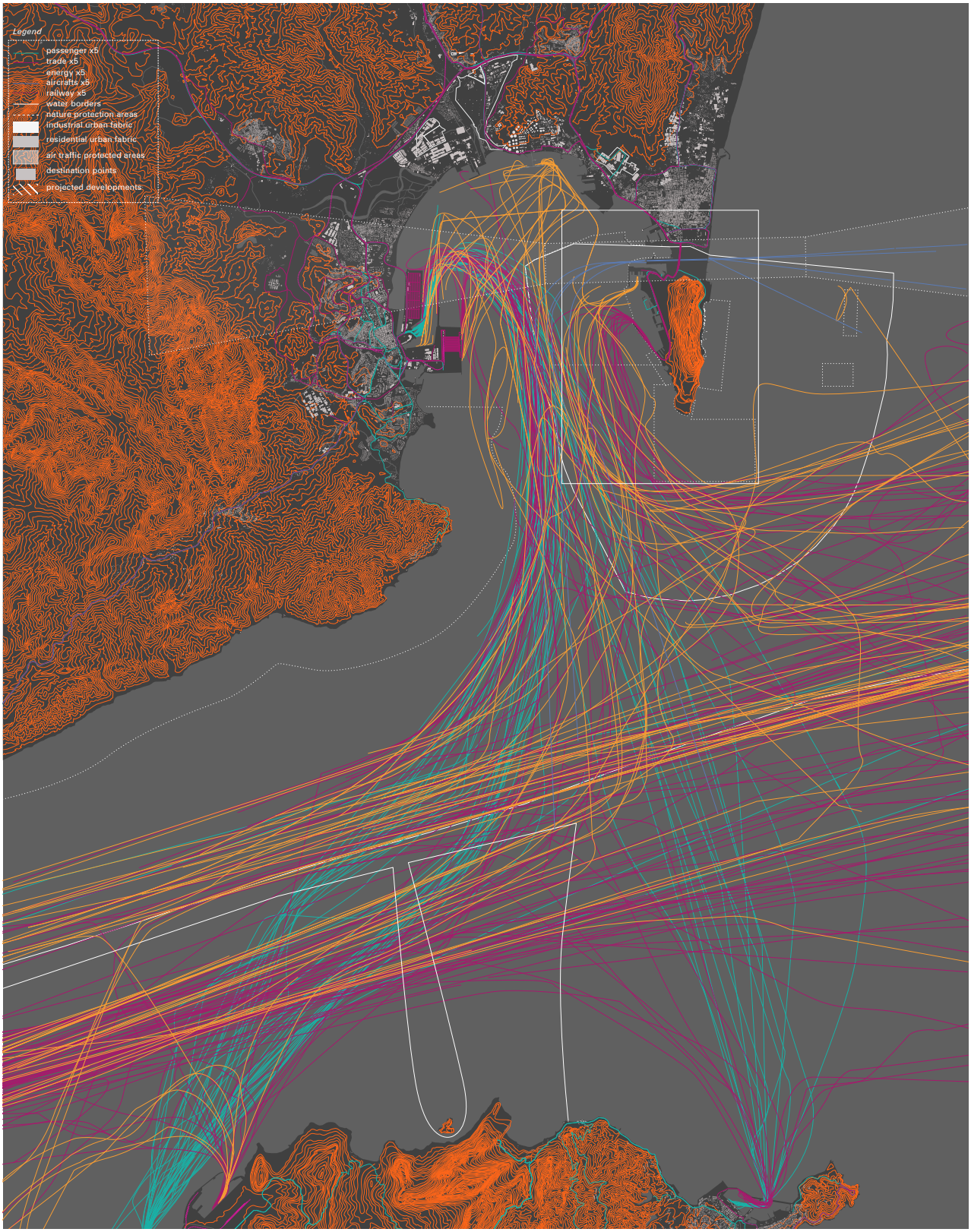
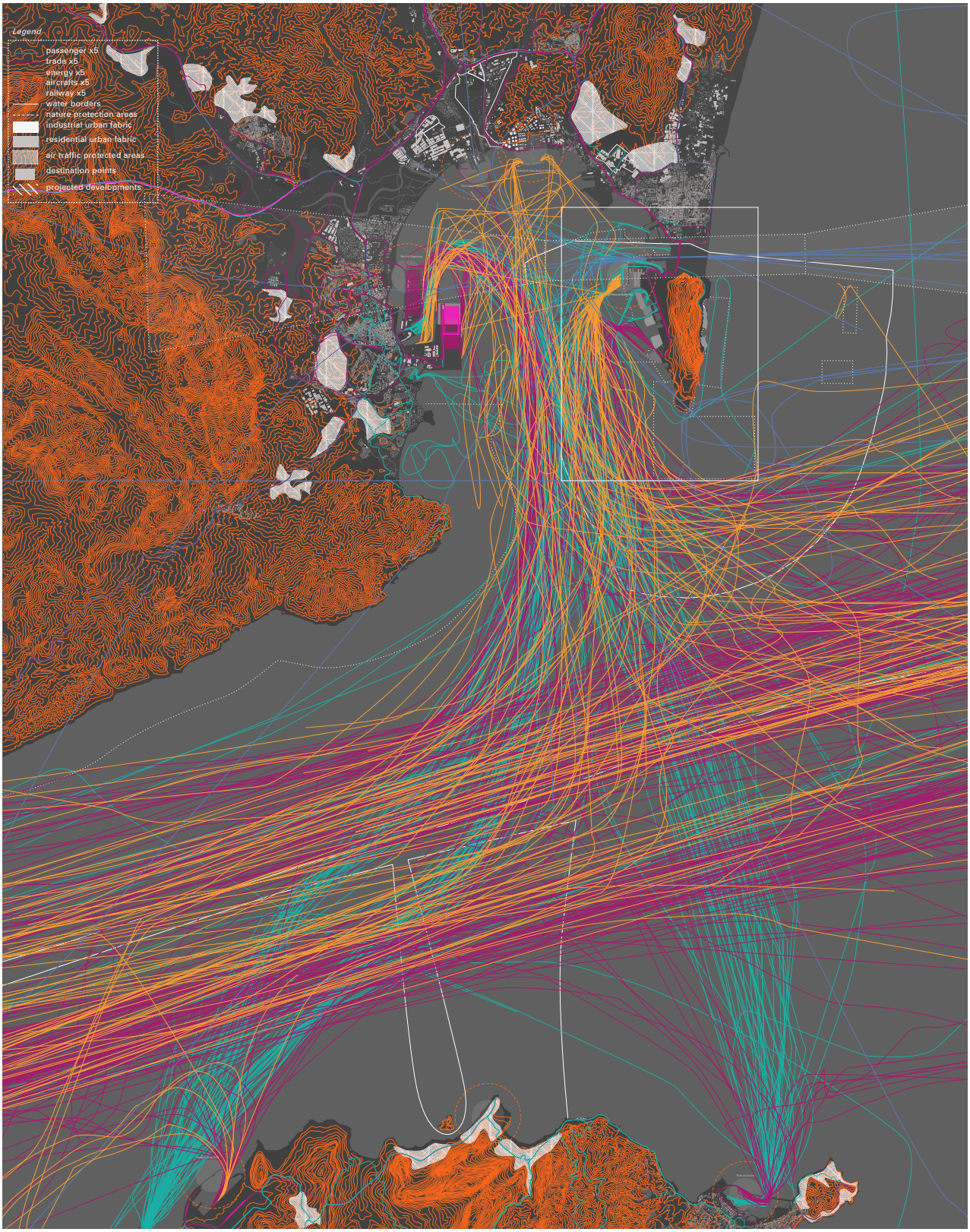
The Strait of Gibraltar: map with the future growing economies and infrastructural developments



2020

The Bay of Gibraltar: map with the existing weekly traffic through and across the Strait



2050

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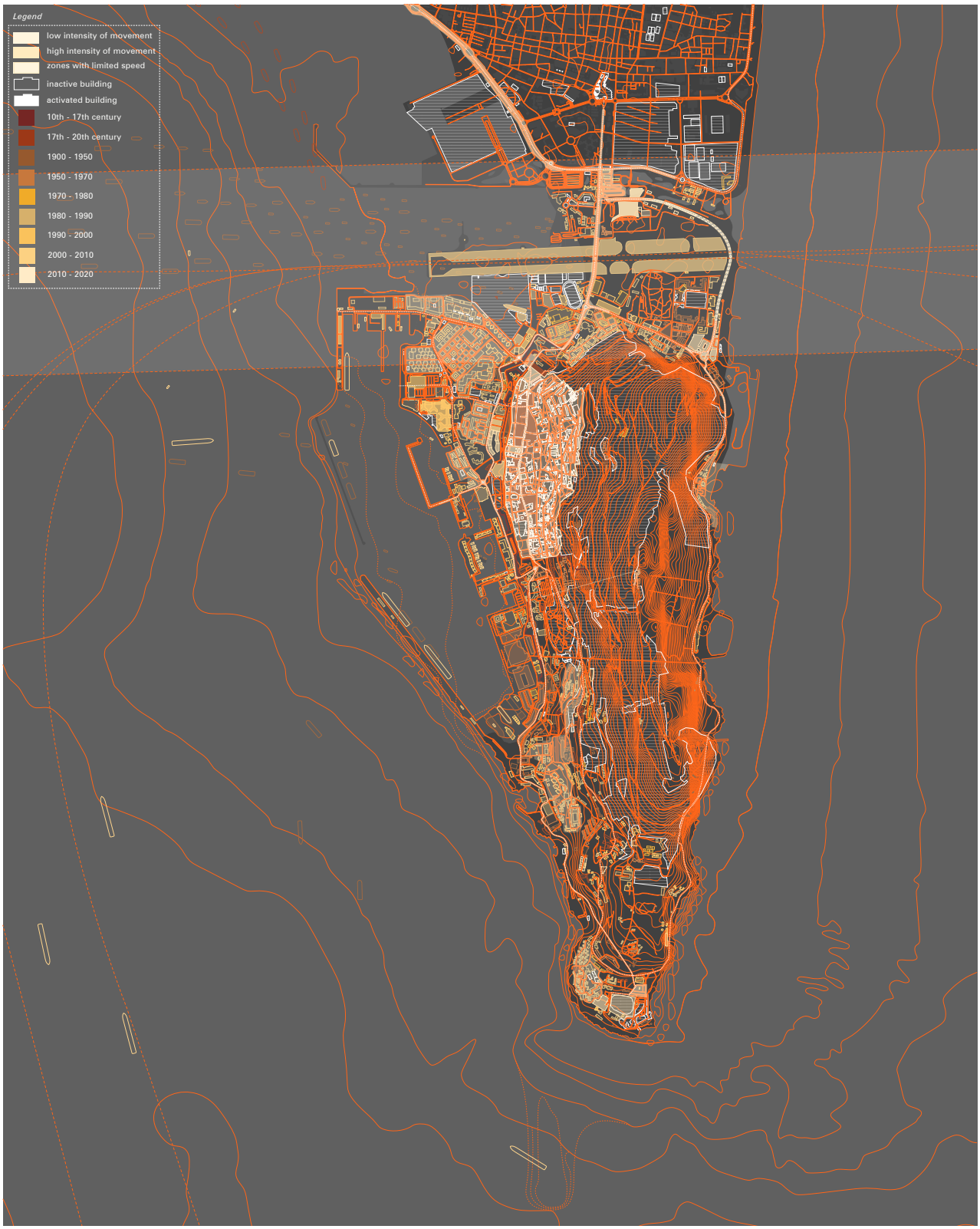
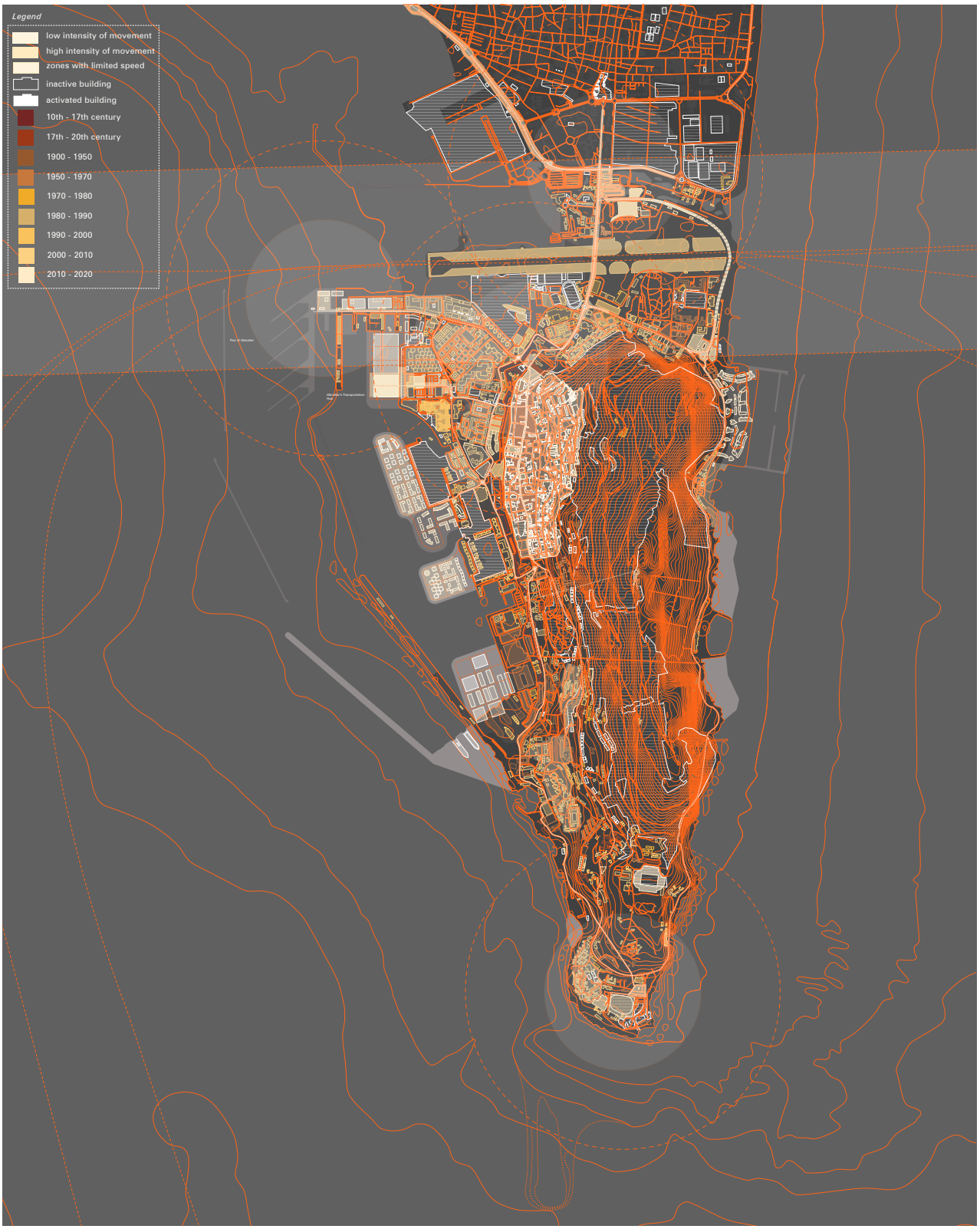
4) Population Growth & Urban Expansion



2020

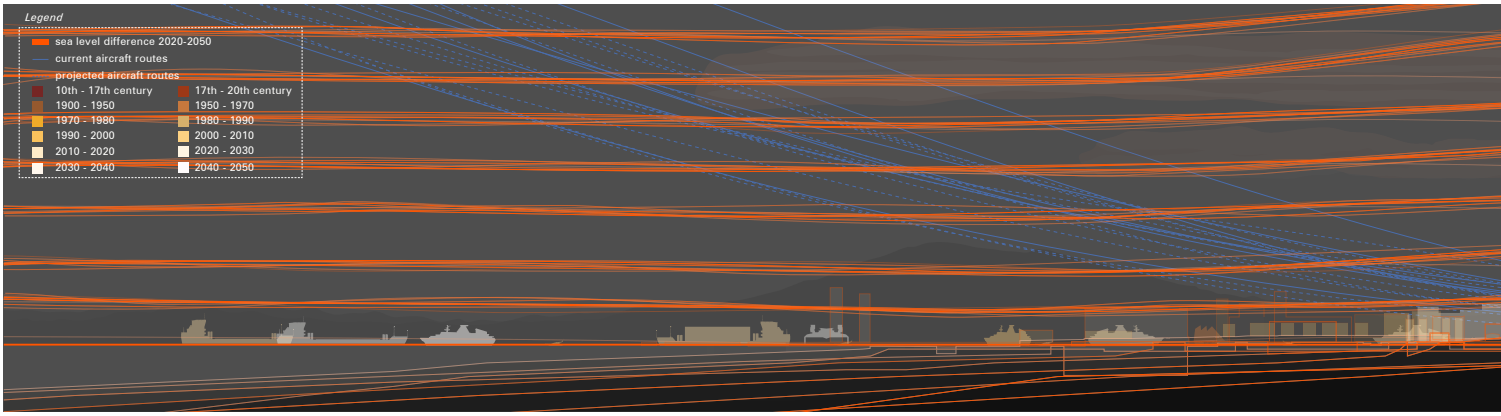
The Rock of Gibraltar: map with the existing built environment and the peninsula at its current state of flux

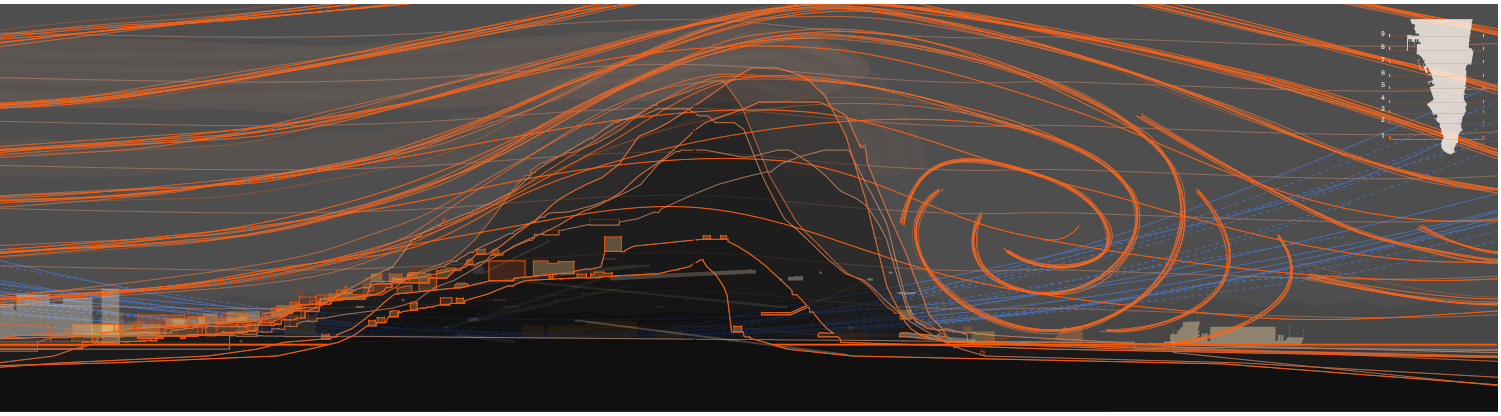


2050

The Rock of Gibraltar: map with the peak areas of the peninsula on the backdrop of future development

5) Climate Change





2020, 2050

The Rock of Gibraltar: section with external and climatic conditions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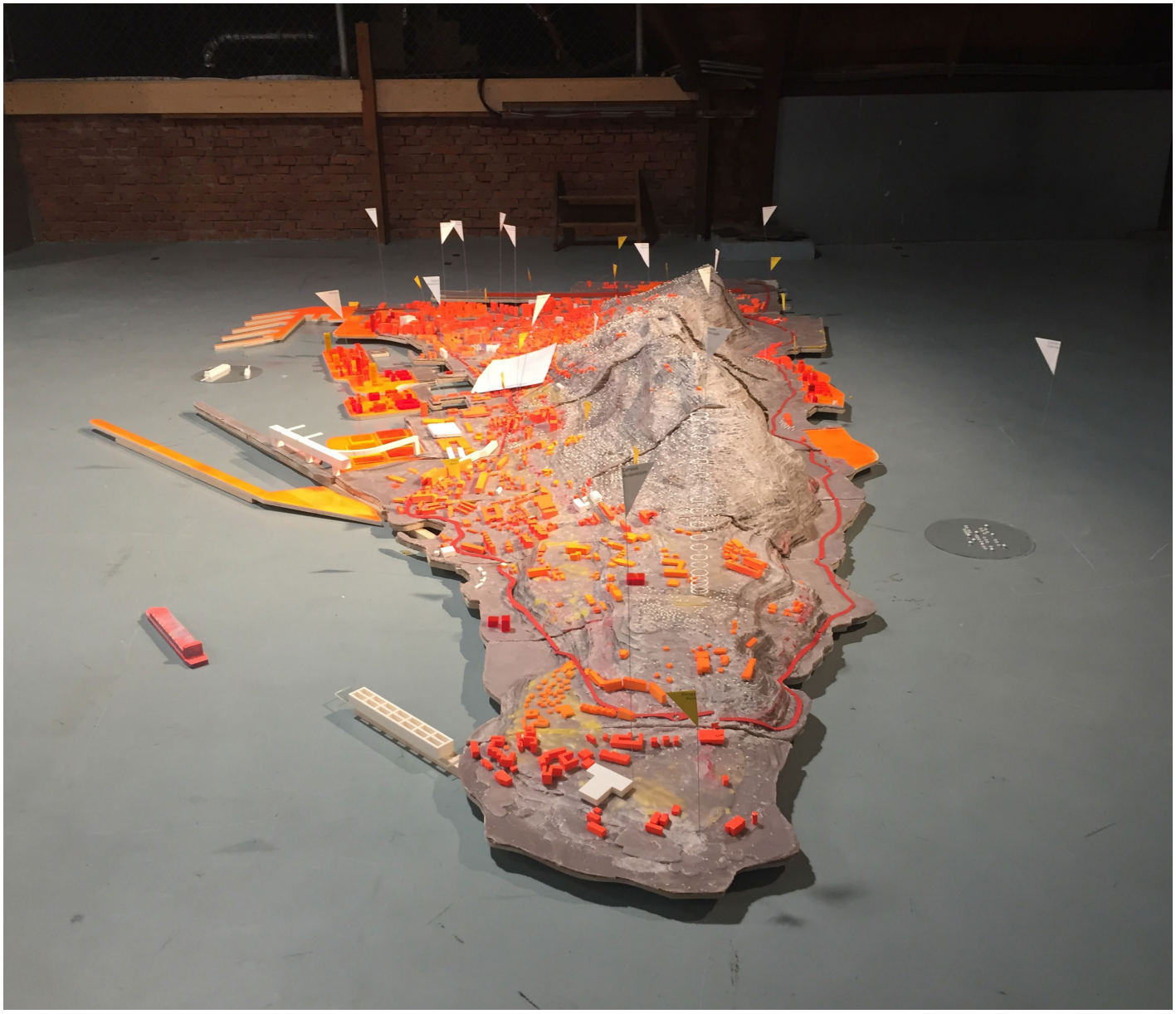


2020, 2050

Beyond The Rock: 1:1000 wax site model

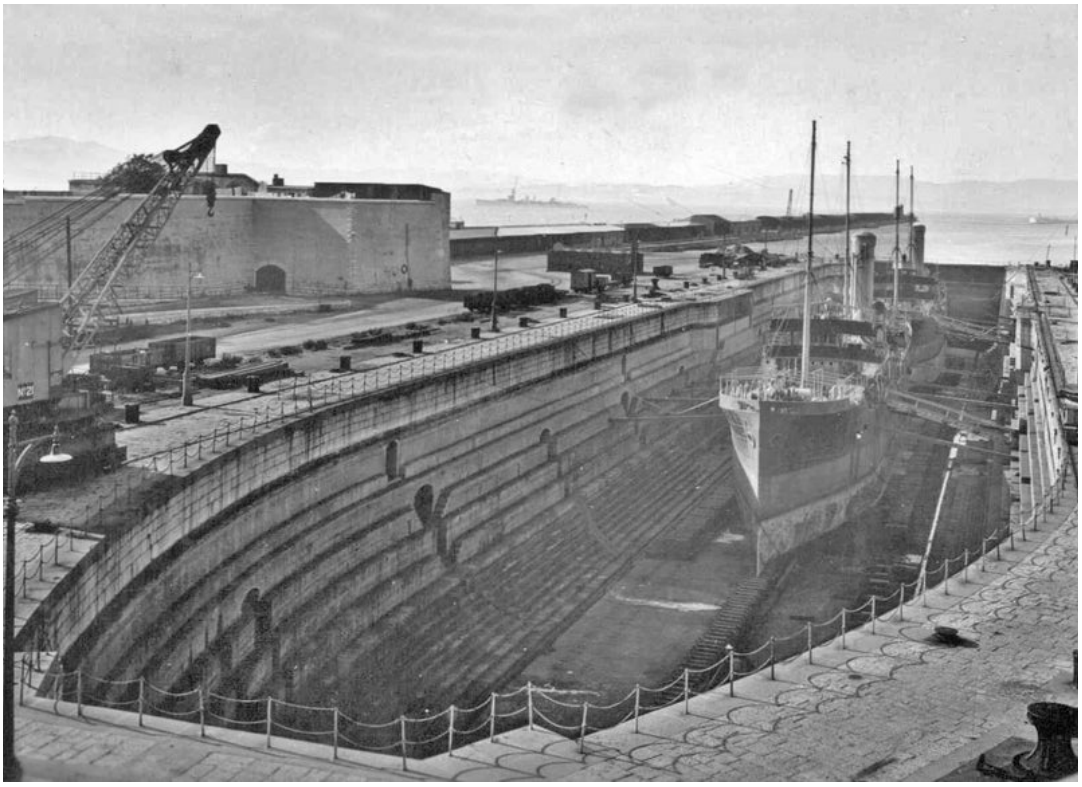
2020, 2050

Beyond The Rock: 1:1000 wax site model

Individual Site

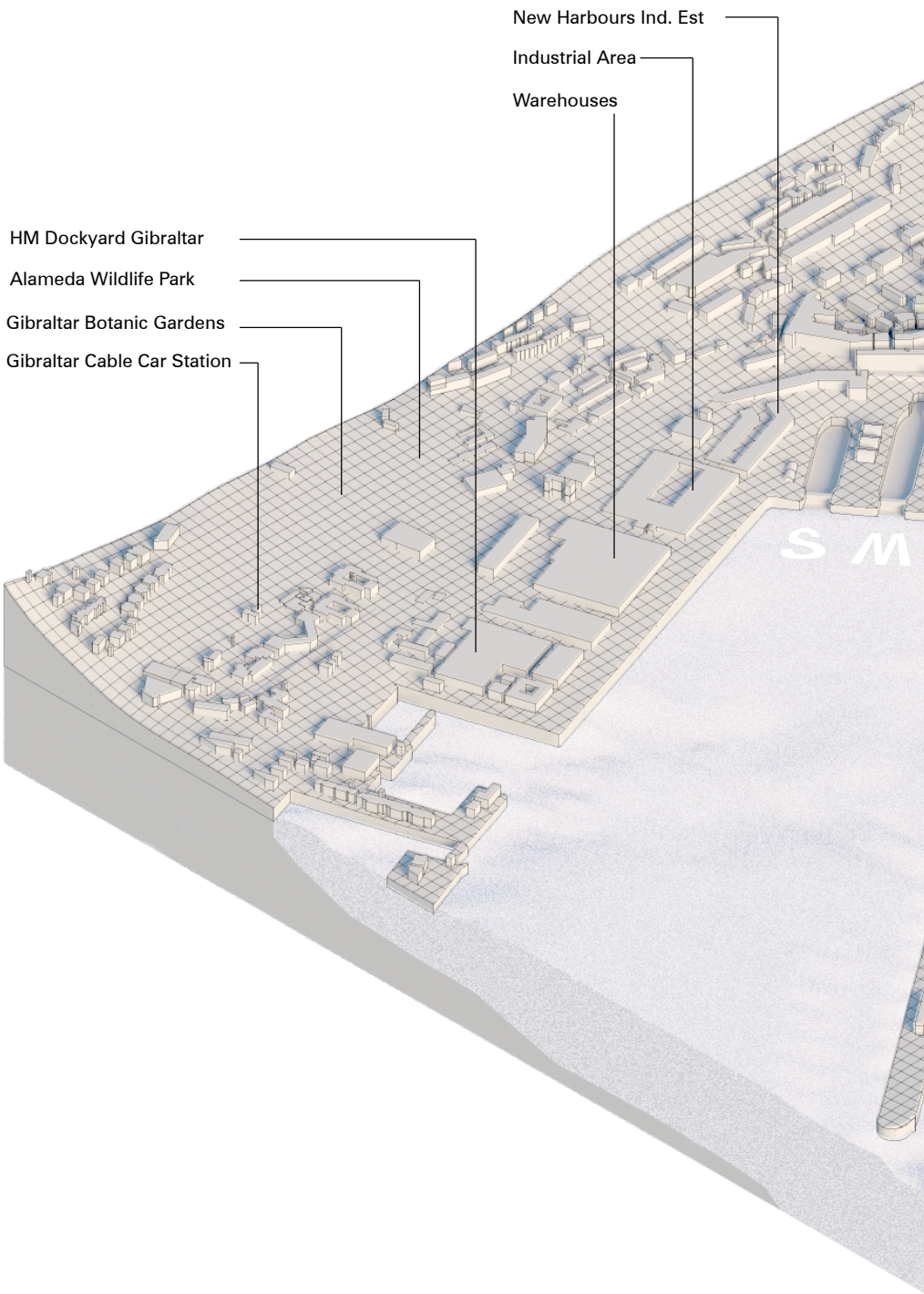
The site, Gibdock dockyard is one of the pieces of land in the function of heavy industry in Gibraltar. Due to the currently pressured by the lack of available land, it will be released and be an essential district to be planned and developed in Gibraltar.

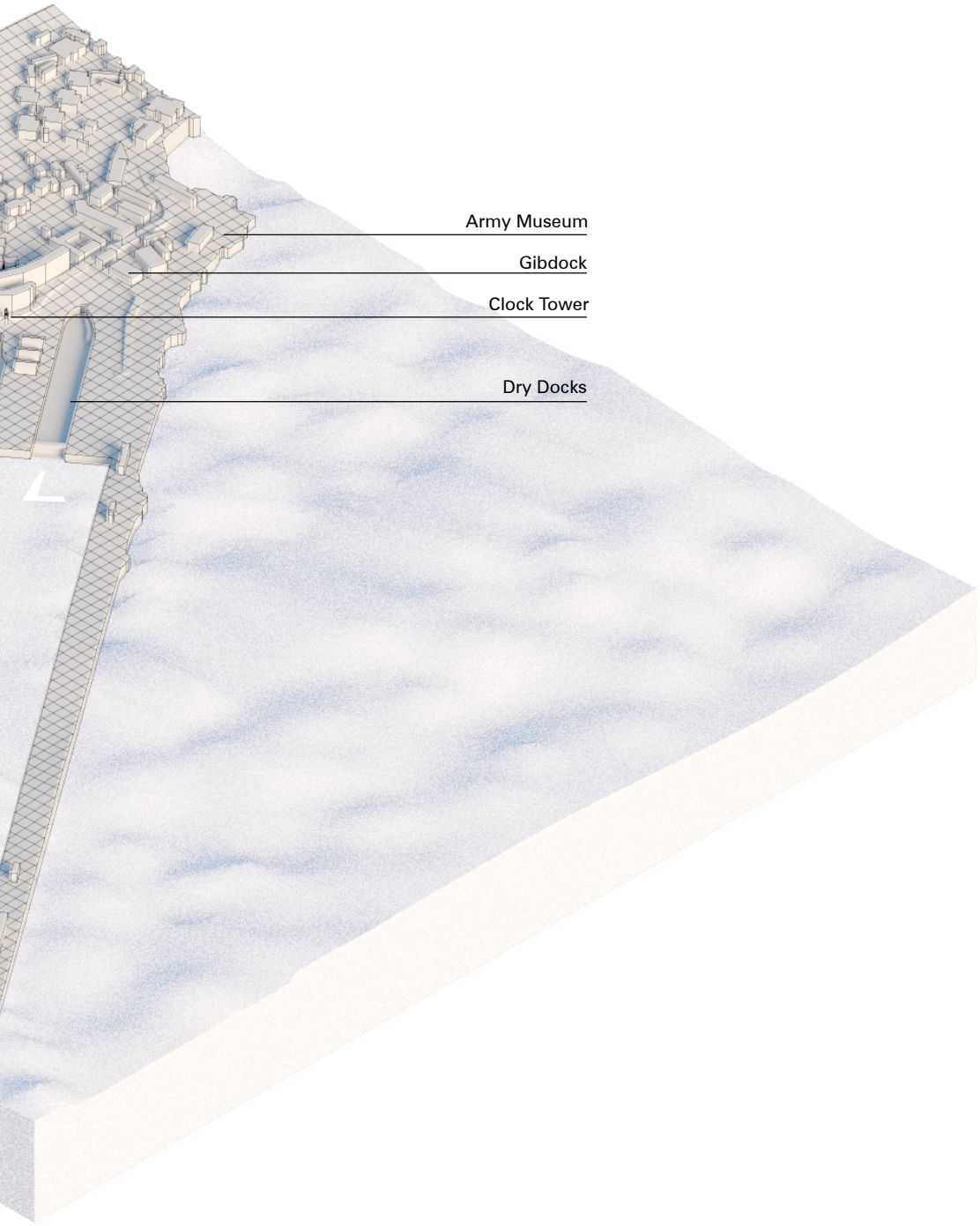
Nowadays, it is operating by an american private shipping company, in the whole area of dockyard, it has three dry docks in total, incorporating a number of warehouses as a whole industry zone.



Top, large size drydock in Gibraltar, 1908

Bottom, warehouses in dockyard quarter, 2019


New Harbours Ind. Est
Industrial Area
Warehouses
HM Dockyard Gibraltar
Alameda Wildlife Park
Gibraltar Botanic Gardens
Gibraltar Cable Car Station



0 20 40 m

The overview of GIBDOCK and its adjacent area


TERRANEA

a view from the rock of Gibraltar to Gibdock and the south mole

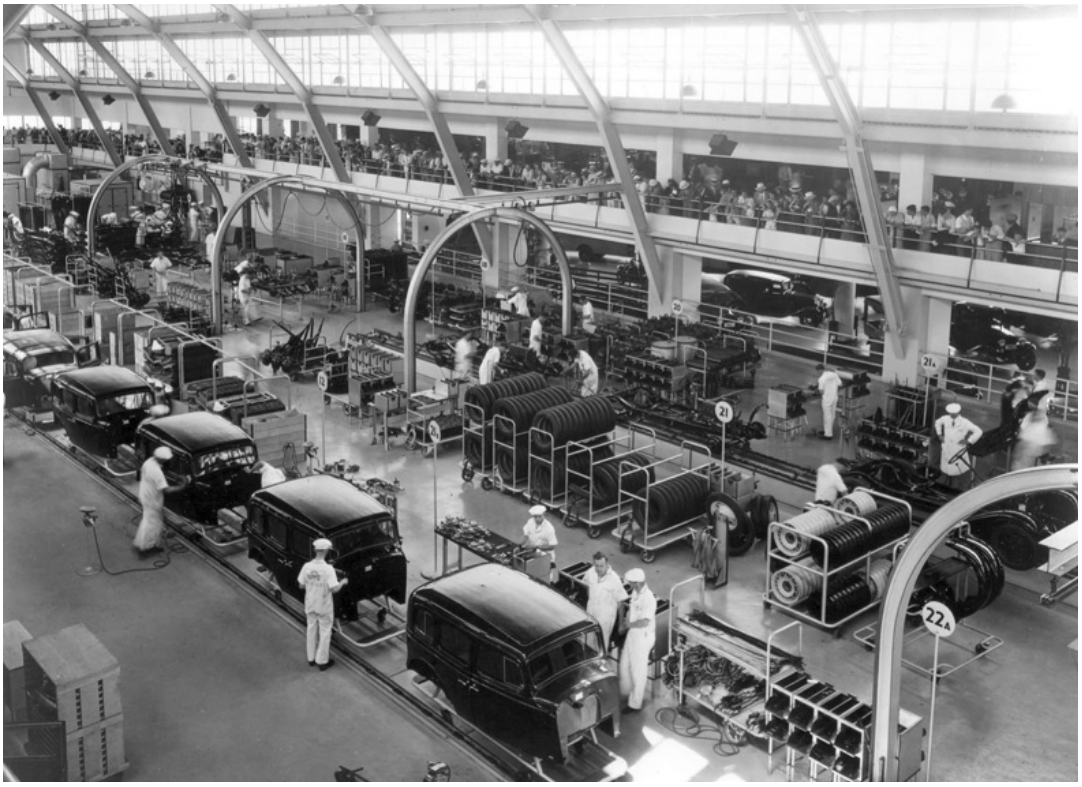
Marine Traffic, 2010

Discourse

This contribution deals with the industrial heritage of Gibraltar's Gibdock, and aims to upgrade ship repair yard by creating a new infrastructure, and by offering a marine business model ''one-stop-shop. Rather than closing or converting Gibdock into more available land for real estate development, it is altering its processes to improve the quality of the local environment, while still providing an efficient and convenient service to cargo ships as a pitstop, to continue making a profit on the global stage. By understanding those potentially relevant marine operations not only in Gibraltar but also in Algeciras, Spain, to anticipate possible future of shipping industry in the scale of the bay of Gibraltar, is to create a catalyst for the development of the whole bay, and a magnet in the western Mediterranean.

Precedent Studies

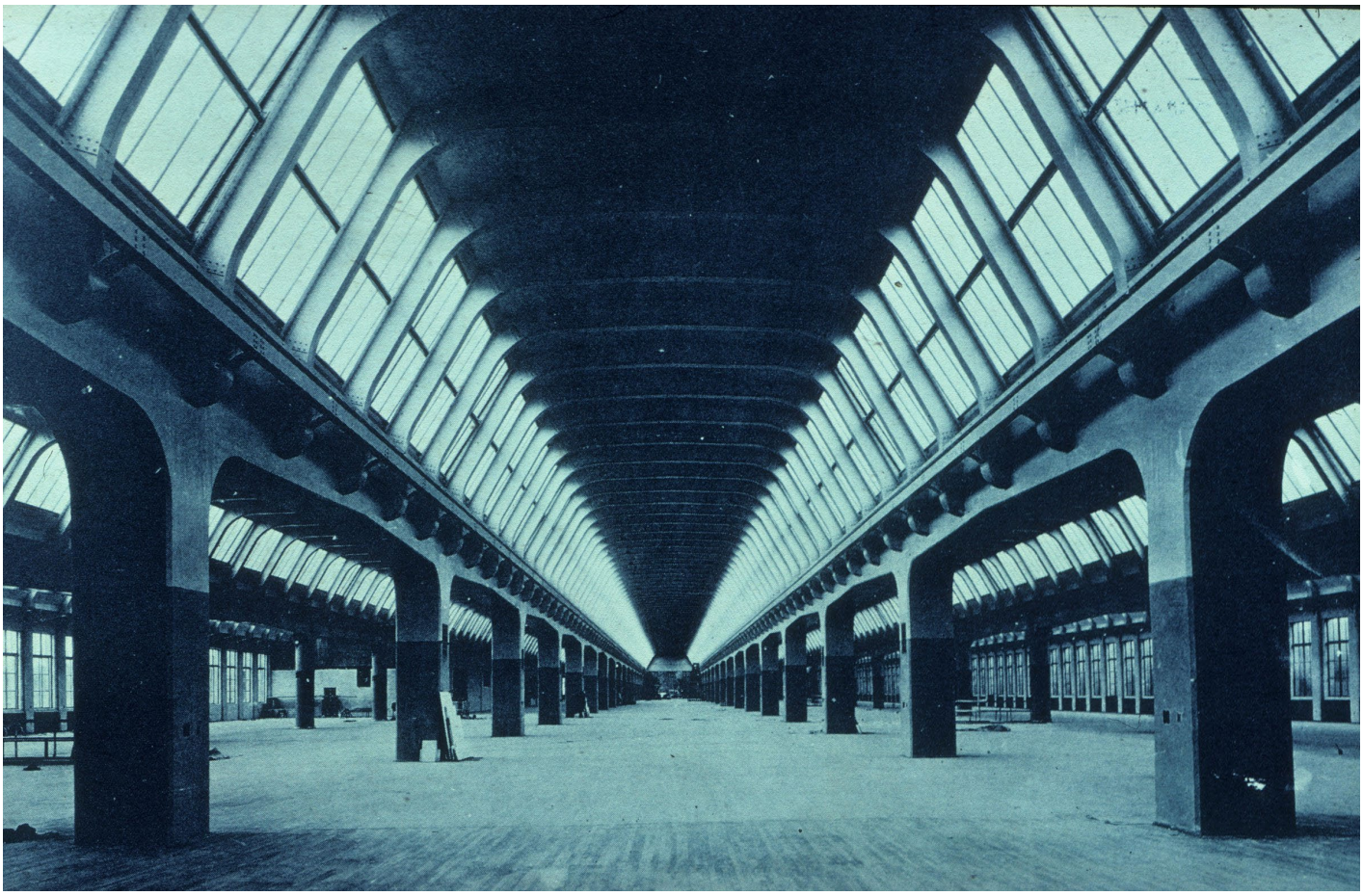
''The objective is to achieve top technical and commercial performance with the most frugal means; as a result, the buildings of industry have become the strongest expression of the present, even of our age'', Alberto Kahn. Each of industrial building is tailored that produces unique manufacturing products by operating, and directing processes from the receiving of the row materials to the shipping of the finished product architecturally; hence, the original model of industrial building is fully coordinated between specific materials, objectives and working process, and these workers who are in charge of different parts of production. This design principle has definitely contributed to a well result of producing manufactured goods that aligns to people's demands. "Industrial building; the definition of the kind of building to be constructed was closely related to the specific manufacture process", Alberto Kahn. However, in the context of shipping industry must continue to transform over the coming decades to become both more efficient and sustainable. So, the industrial building design should critically consider and extrapolate the possible trends not only for the present but also for the future in light of the requirements from the market. The design of transparent factory in Germany, is a car factory and exhibition space in the dimension of 1.5 km, as its proposal, the design of transparent factory extrapolates their working processes based on both the present and the future version of cars. By doing so, this building, therefore is able to produce its products for the coming decades. Additionally, by having exhibition and training space alongside its working space, this building redefines the meaning of industrial building for the people and to the adjacent environment, in this case, the industrial building has aligned with the efficient and sustainable of car productions.



From top to bottom

Albert Kahn, General motors building in Chicago, 1933.

Gunter Henn, Transparent Factory in Dresden, 2002.



Endless production line

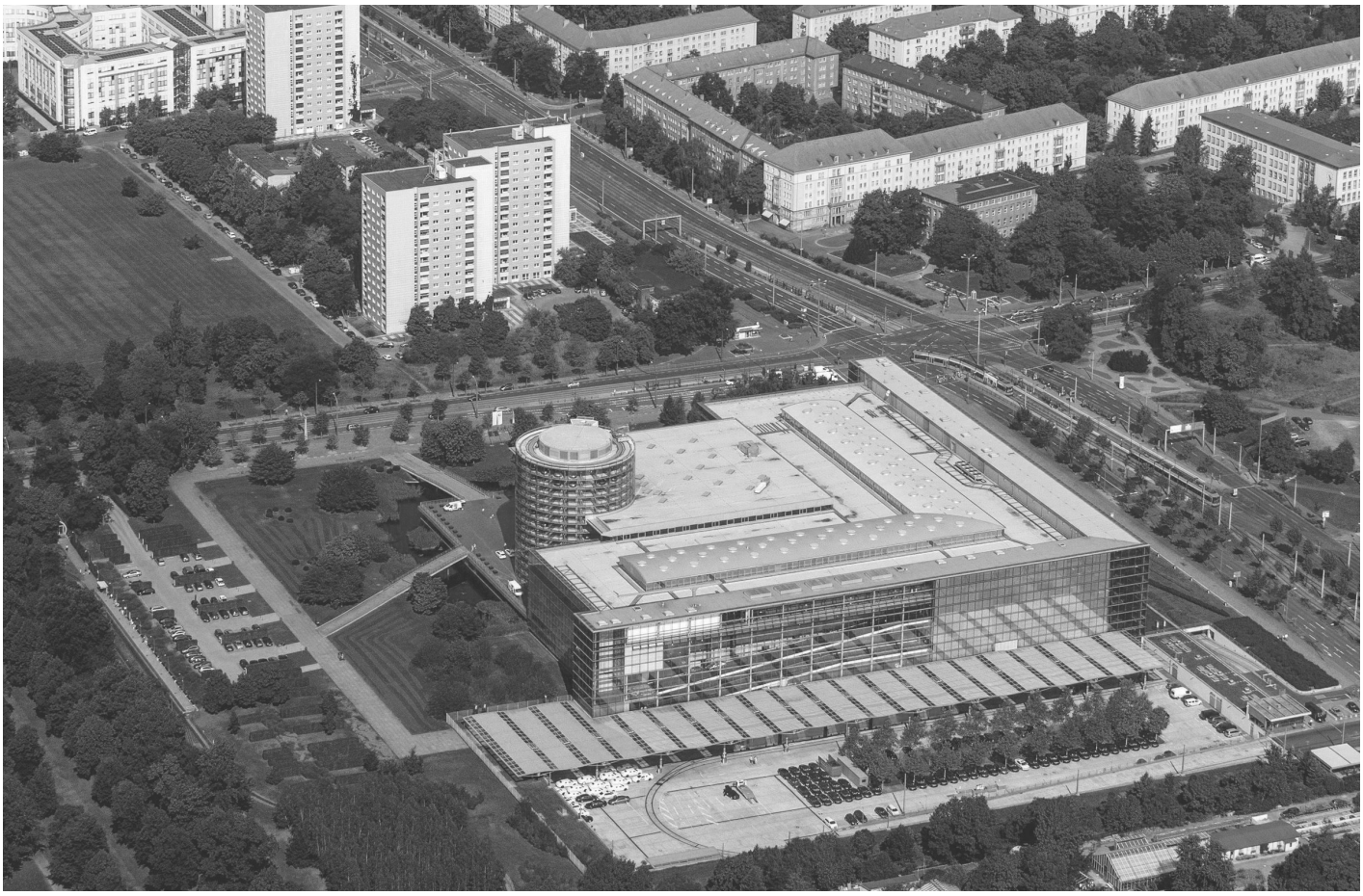
The Ford Engineering Lab in Dearborn, 1922

Cars production line with automisation

Gunter Henn, Transparent Factory in Dresden, 2002.

Aerial view of Ford assembly factory

The Ford assembly factory in New jersey, 1922

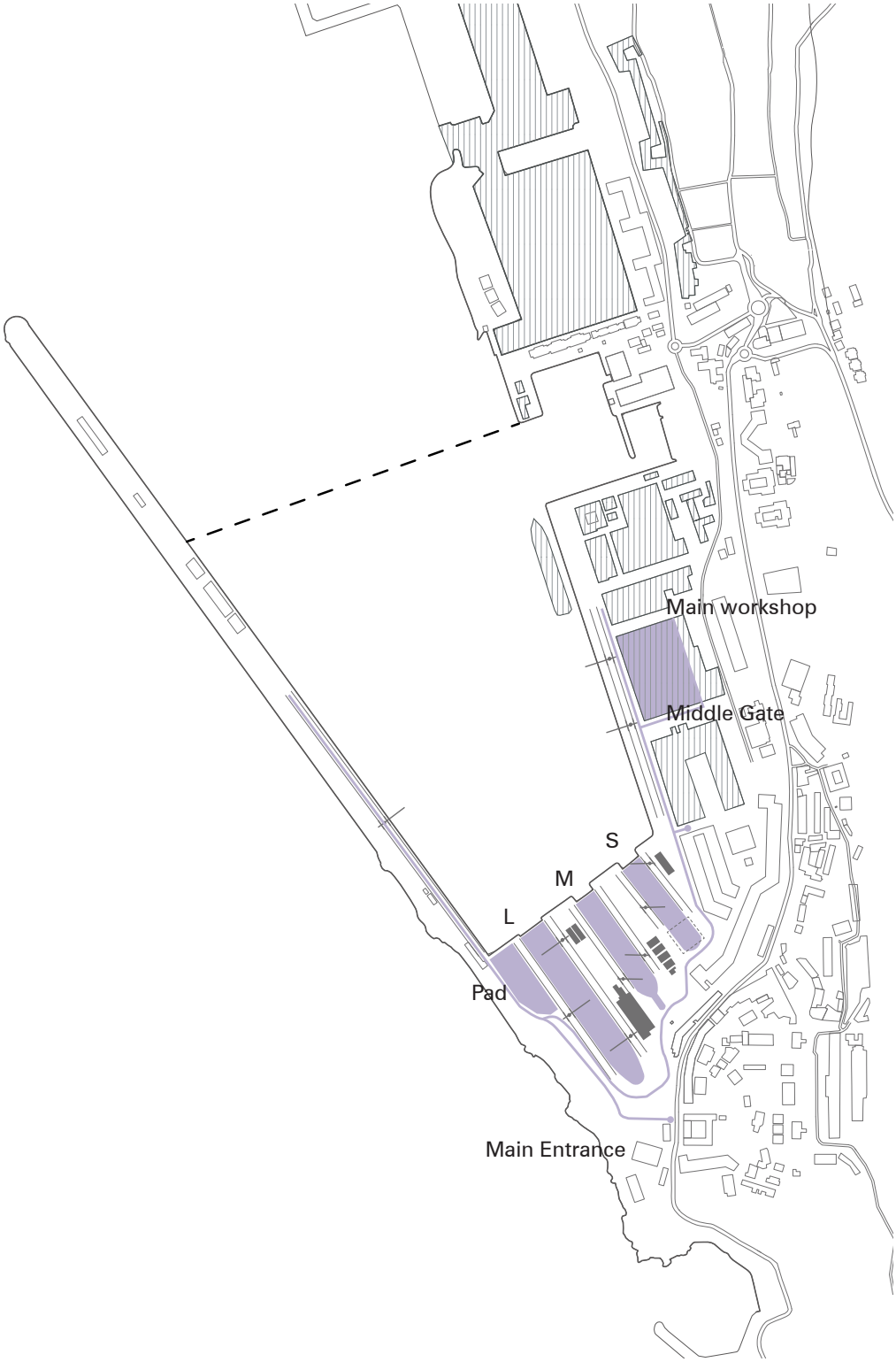


Aerial view of VW transparent factory Gunter Henn, Transparent Factory, 2002.

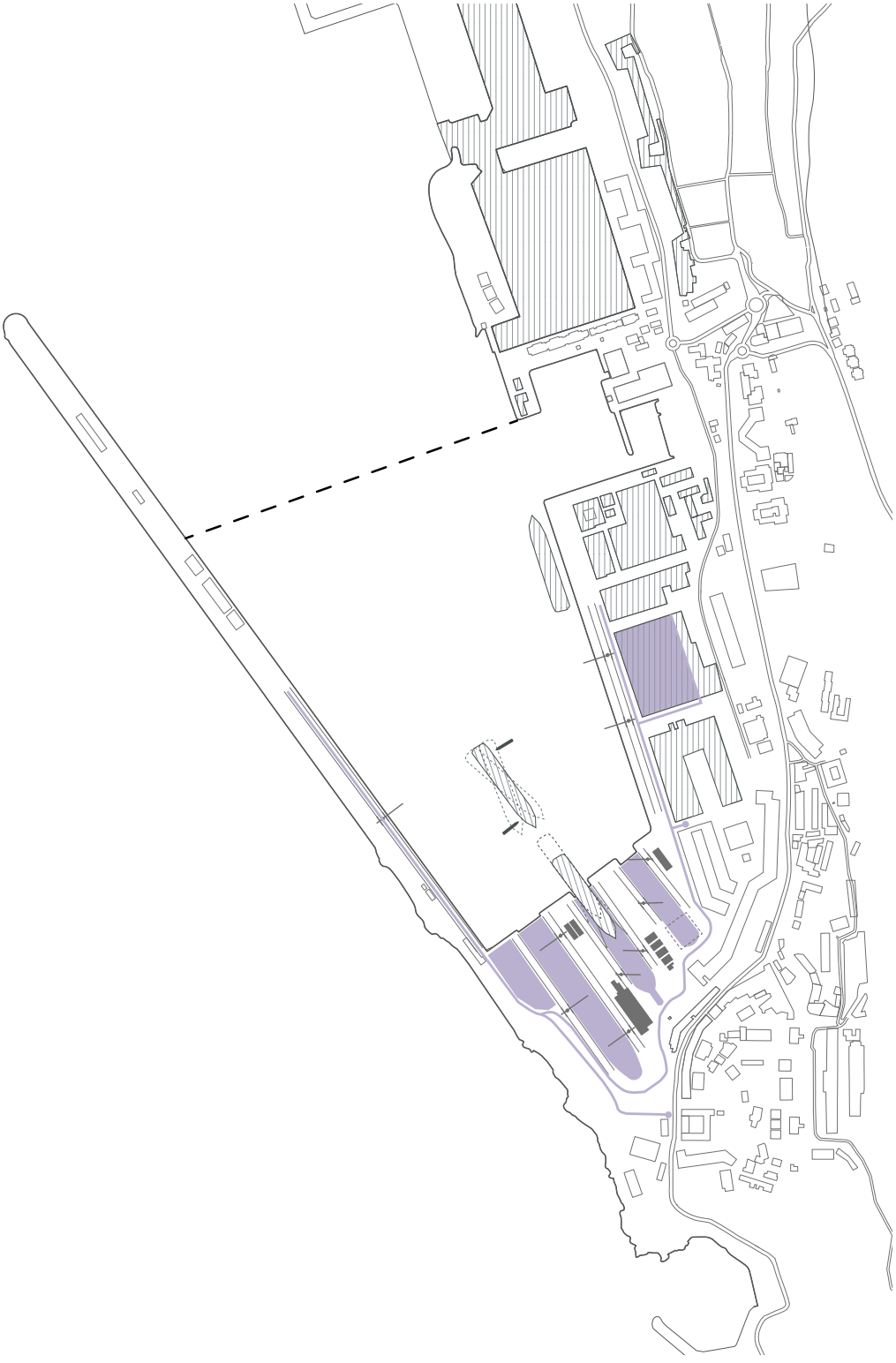
As a British outpost strategically located in the western Mediterranean, Gibraltar has been fortified for many centuries. In 1903, a MoD navy dockyard was built in dimensioned to the size of British battleships and, the military activities dictated the local economy until 1984. However, the peninsula demilitarized, the dockyard was sold off, converted to commercial use, and rename itself as Gibdock.

These three undersized docks impeded GIBDOCK to catch up to new the demands of bigger commercial ship repairs and refits as it aimed to. Its intrinsic location is still unique and crucial today. More than 200 cargo ships sail between Asia and Europe through the strait of Gibraltar as a gateway back and forth every day, starting from Northeast Asia, then navigating the Suez Canal into, across, the entire Mediterranean. Stopping at the ports of Algeciras in Spain or Tangier in Morocco, ships unloading and reloading, before traveling up to northern Europe or to the USA.

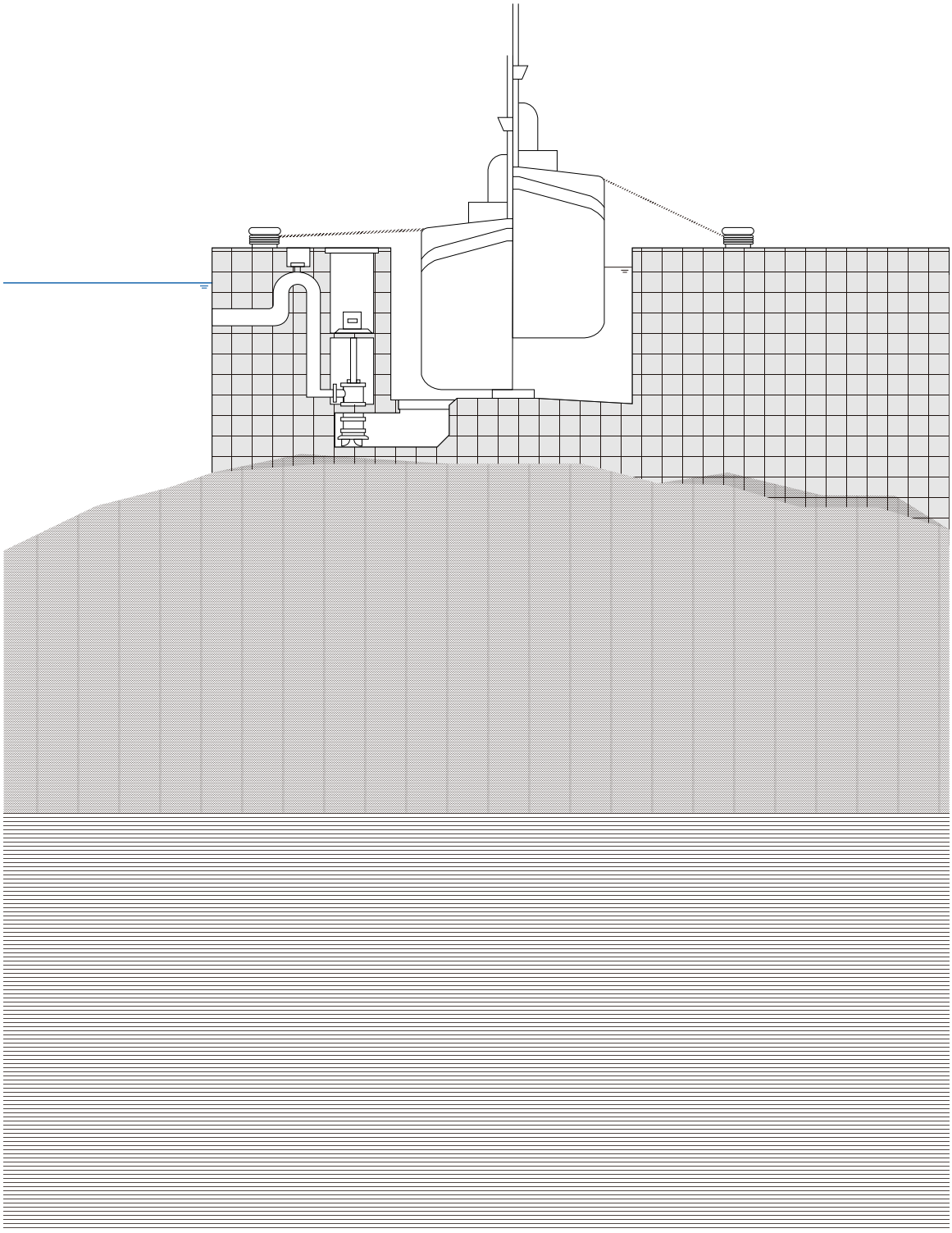
The area of Gibdock and Gibraltar's military bases currently



the area of Gibdock and its industrial properties



Towing boats leading a ship from
offshore into the dock



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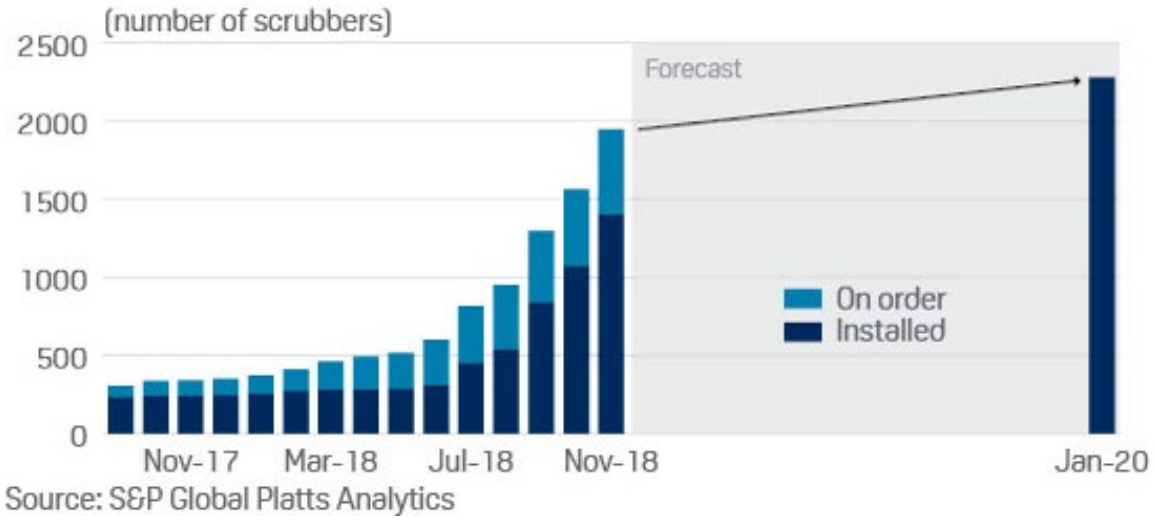
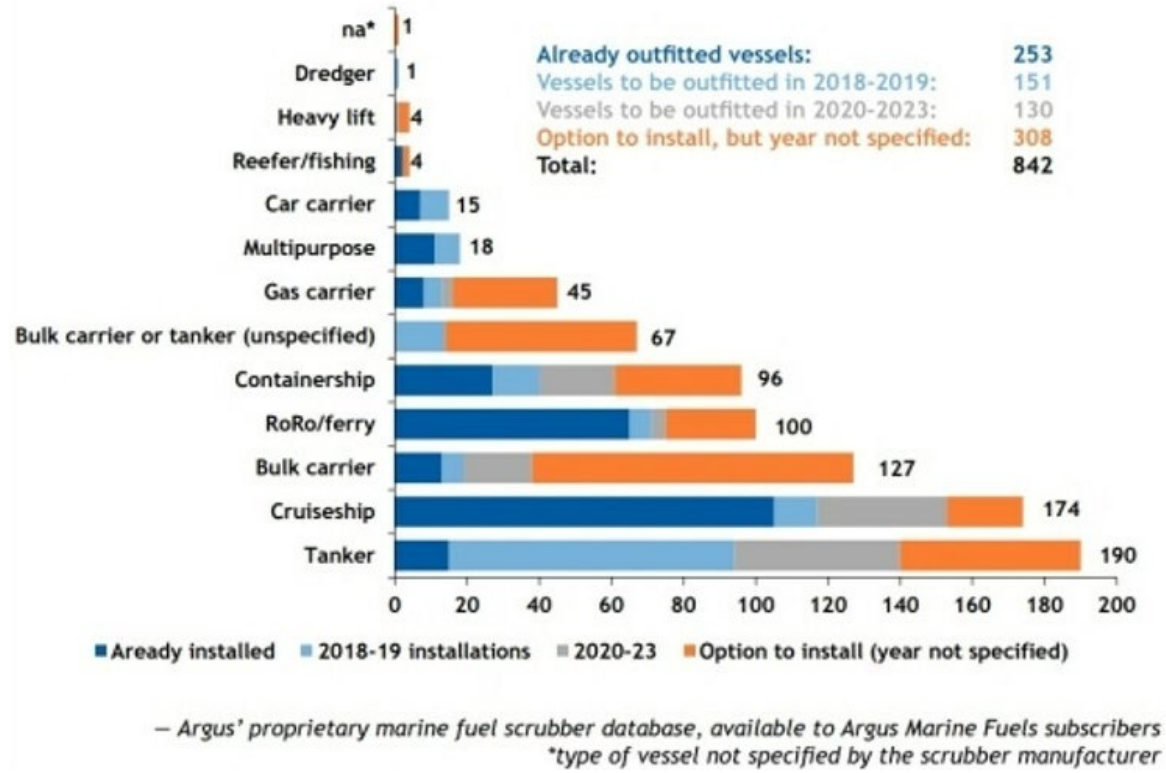
the operation of drydock manipulates a ship coming down to the bottom from sea water level

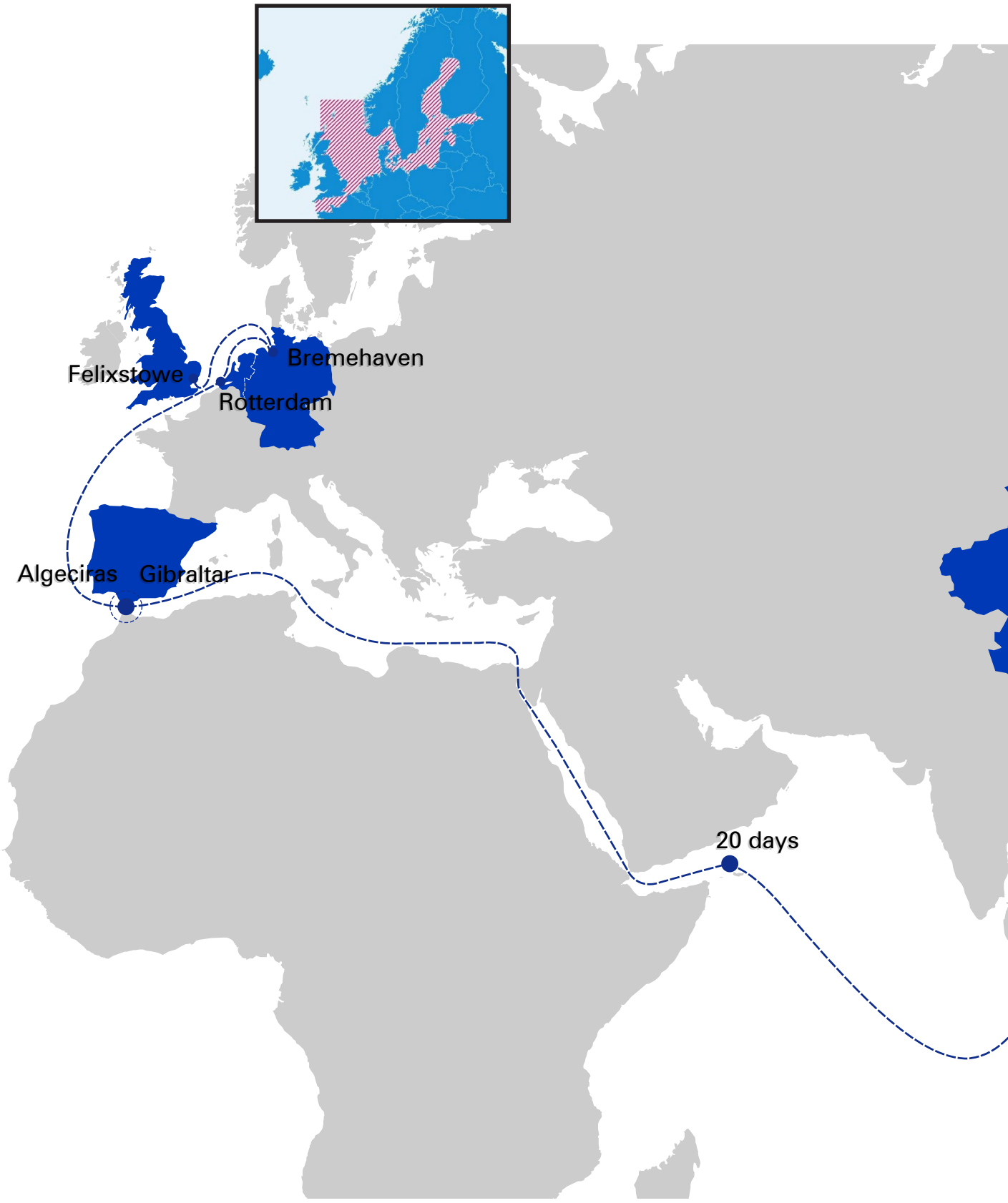


Source: S&P Global Platts Analytics



— Argus' proprietary marine fuel scrubber database, available to Argus Marine Fuels subscribers
**type of vessel not specified by the scrubber manufacturer*

The numbers of projection of ships refit in relation to the new international rules of IMO 2020.


Felixstowe
Bremehaven
Rotterdam
Algeciras
Gibraltar
20 days

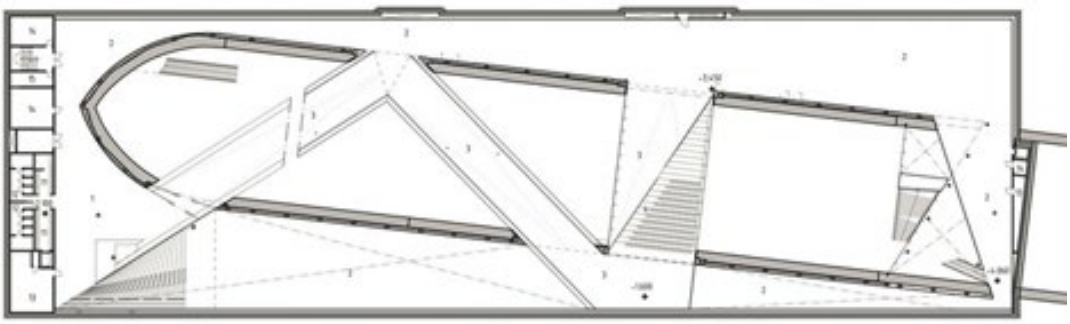
One of the busiest sailing routes in the world, and the scope of the Emission Control Area that legislated by new international regulation, IMO 2020

Architectural References

This contribution focuses on the relationship between significant heritage infrastructure and renovation work architecturally, aiming to upgrade an outdated ship repairs yard to reach the level of the current and the future shipping industry in the context of globalization. On the other hand, to consider how an architectural intervention with development strategies would actually improve the quality of local environment not only about the building itself, but also the adjacent around it.

The maritime museum designed by BIG in Danish in 2013, shows a certain quality of renovation work of the converted dockyard as an example, and it forms a viable proposal that how to revitalize an obsolete infrastructure in a rich site contents, and that why it is to be according to new architecture programs and as a part of the significant heritage landscape.

Another renewed work done by R.C.R Arquitectes in Nègrepelisse, France in 2014, converted the 13th fort into a cuisine art center by through a design layout between the old and the new—structurally and materially as the main architecture dialogue—is a renewed project that integrates the historical infrastructure with an up-to-date function.

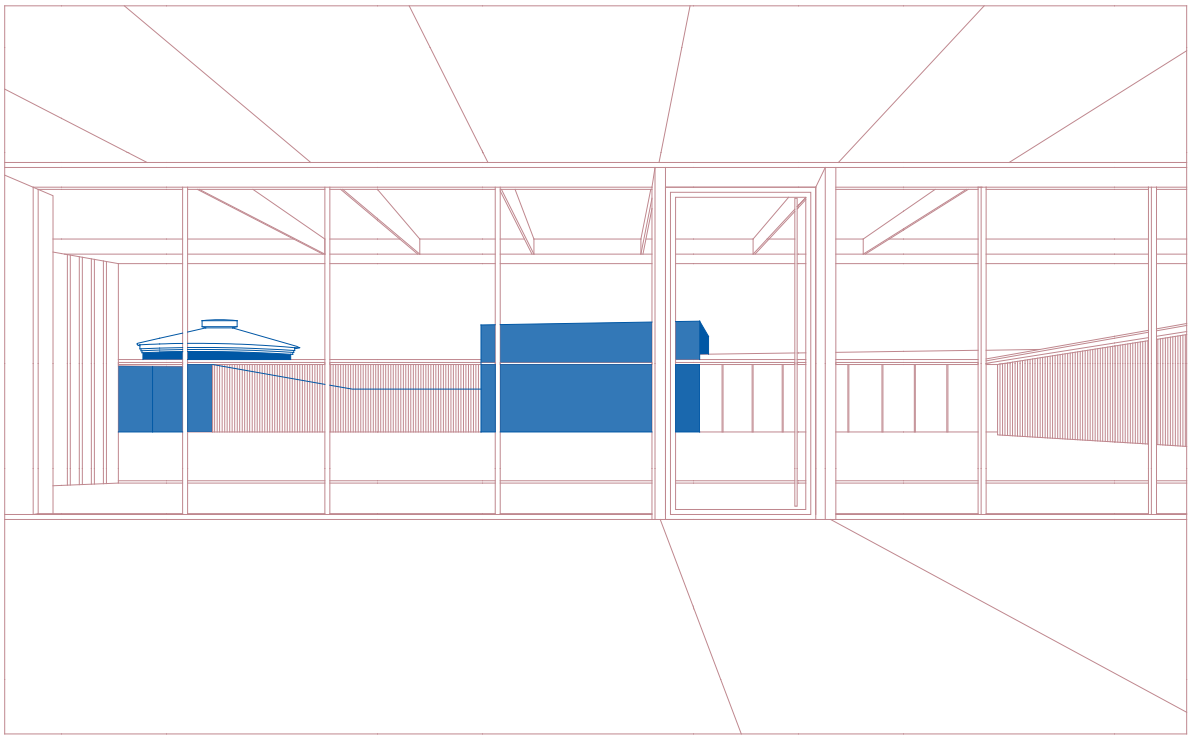


Top, BIG, Diagrams showing the notion of preservation dockyards space, creating an underground additionally enclosed space around dockyards, 2013
Bottom:BIG, Floor plan,2013

BIG, a series of the diagram shows the configuration of a dockyard, 2013

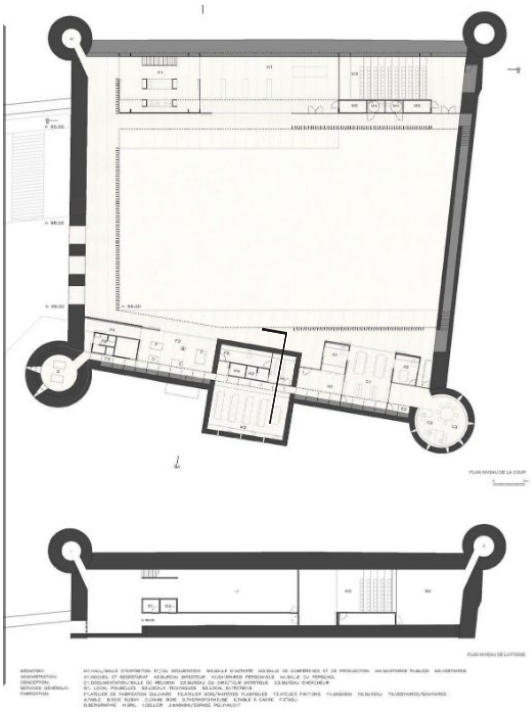
BIG, aerial view to the heritage infrastructure and the maritime museum, 2013

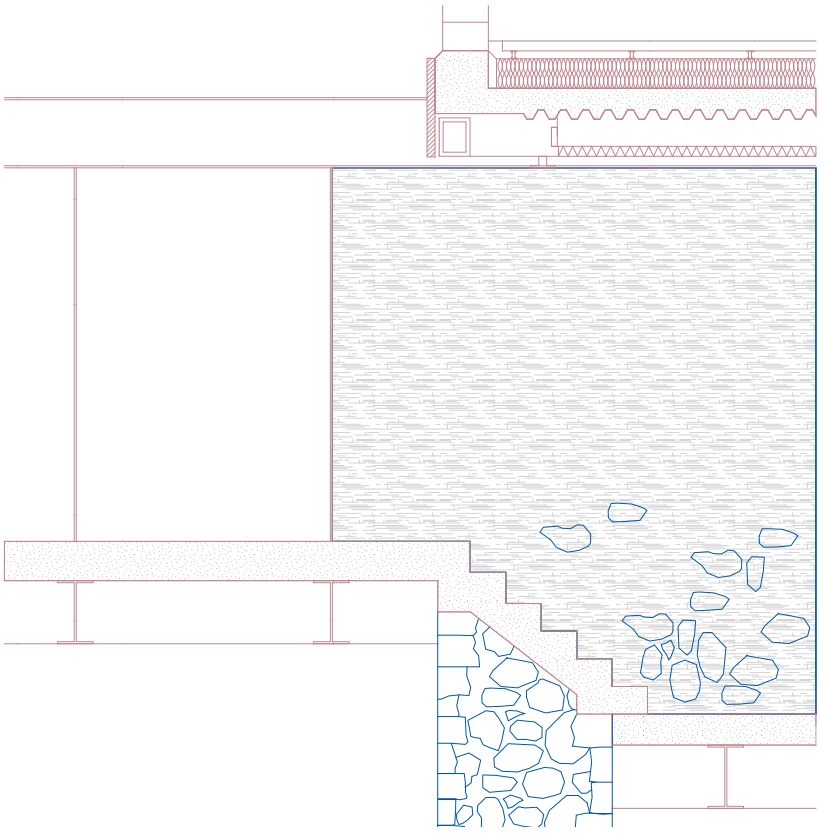
BIG, a public event hosted in the bottom of the dock, 2013



Top: R.C.R. Arquitectes, A view point form inside to outside courtyard,2014

Bottom,Redrawing by Eric Liao, a combination between the old and the new material proportion, 2019





Top: R.C.R. Arquitectes, floor plan,2014

Bottom,Redrawing by Eric Liao, a tectonic section between the old and the new materials, 2019

Expert Interview

Harco Groen, Frank Scheij, HSEQ Manager and Facilities Manager at Damen, Amsterdam.

Talk held on visit to the shipyard in Amsterdam, September 2019.

I really want to know exactly how can you operate works precisely like the mechanics and operations in which a special characteristic of the space in drydocks? So, I guess the loading structure might be so different than others space?

So, we can show you how they made the bottom and the sides. Yeah. It's all made of concrete, especially from Brooklyn before Yeah. Yeah, we have some pictures of that as well as the drawings. But you also want to know function of how we could lift efficiently.

But I think rather than to ignore the characteristic of land, I think we can also come up with some idea that can work with the space. So I think like sample open a cinema from here was quite nice between the Viet and Old Navy shipyard and they
probably other fictional on that ship International. I think it is. It's a machine but also in the cinema theatre.

What additional activities to do with this adjacent area?

We do some of the engineering with the crane screen in the grind and we open the doors and then if you sell tickets, everybody can sell in and they go watch a movie. And that was the idea and watch either then find additional information. If the door is occupied, we do with the ship with the repairing to the knee that happy, okay?

A couple of years ago questions about to organize a house party in it, was 25 years early Actually, I mean, using that space as a place with it is too much risk to do something like that. So, we didn't do this before with any ideas.

The thing is depending on how big the dock is or should be another way to think about it, like engine integrator, there's one very big dock around 300 meters long. Do you think the size of the ducks will influence the capacity of itself? Not only the size, but also the capacity of loading vessels.

I think the underneath of the dock, I will show you. I'll show you the pictures and have to go out and see it in person.

Are there any influences caused by another natural impact, like the wave action or the strong wind while operating the works?

No tide in here and you want to know how knowledge Okay, well, I'll show you.
Basically, it is very safe here. I'll show you, you put the helmet on and give a walk around in the dock. That we make connection to the festival as well.

Is there any kind of similar events, you will run for it? Like other activities from your side?

We've got once a year for the area BBQ invite old neighborhood once a year and that is a kind of exhibition of all the companies who are in the north area of Amsterdam.

So, they opened the door for all kinds of neighbors. You're invited to come on a yacht and then we have some elected clients, you know whatever fancy fetish or whatever and we just drive them around the city new thing.

Sometimes we have to deal with local government. As soon as we get the request legit, of course we show them around, to show how good we are. And we also showed customers repair facility and normally see always the new building, a new building. Some clients also interested in repair fashion facility. Then come to here because they also like to see.

Now we're more outside focus. Yeah. And the reason is that the neighborhood is changing. Nowadays, 30 years ago, there was nothing here in the neighborhood. It was just sent here. So, it is hardcore and because it's not a light industry. You see it on the opposite side of the button that also people start looking over there? So, we expected within 10 to 15 years of the opposite side of the street is also only three quarters and working quarters for people, that is changing. And we will be starting to prepare on that as well. Because we think that it is possible and that we have heavy industry like a shipyard, together with lighting and we're working in areas that we have to change our license with also the law, because shipyard is on definition,heavy industry by the law of the law.

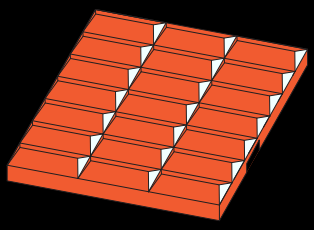
So, we have to change that. Before we can change that we have to prove that we're all items here. That is also a process we have to start. And we have to facilitate a lot of people to show them
that we are like, enthusiasm is not all by without proofing the neighborhood. And that's why that's one of the main reasons that we open the gate for all our visitors as well.

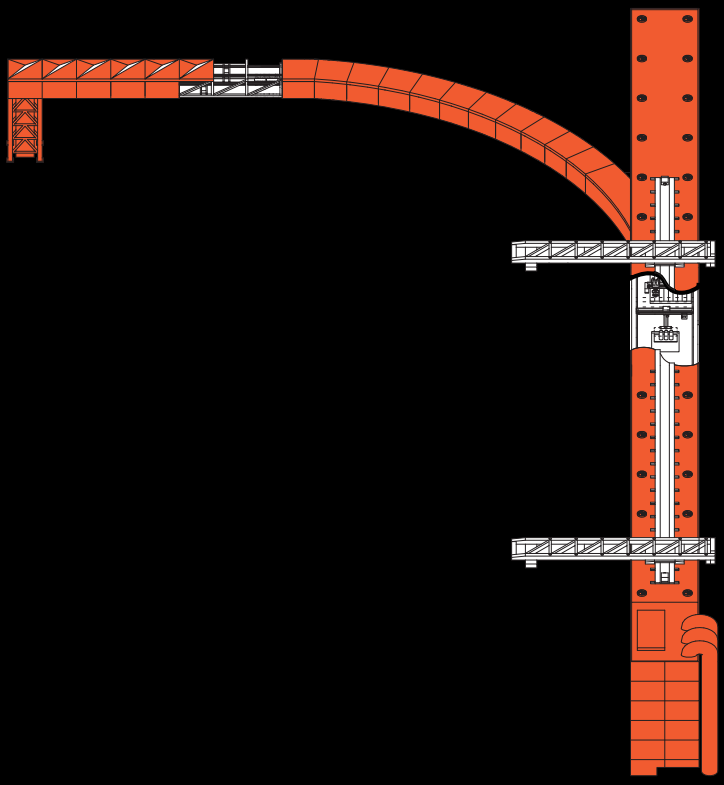
How do you deal with the changed and the urban sprawl?

We shift a little bit because we know that side, we don't have so many environmental rules. Most rules are fairly strict and want more for surroundings. And if you, it is based on these kinds of ambitions, are you going to cooperate with another company nearby? Now may want to cooperate with the government, to maintain that as our main goal. Okay. We want to start a discussion with the government about our future because they made a plan for the future for the coming 40 year, 20 years. They have made a plan and they have not invited us to, to participate in the passage in that point.

But the overall for changing Within two years, we are in all of the things that I don't know if you heard about it through rounding off, it's kind of environmental development law. If you want to start a new project or a new building or a new business, you have to deal with it. And one part of the savings rate is that you have to participate with all your stakeholders. So, not only the government, but also the neighborhood, your customers, your own people, you have to talk with them all about your design of a new building design of new factory design. But also, the government has to deal with their stakeholders before they can start a new route a new industry or so. So, it is it will be very complex. So that's why they developed a vision.

PITSTOP





Project

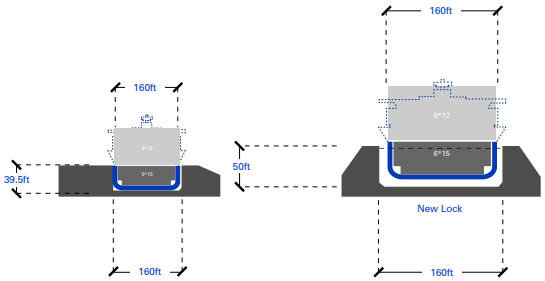
The upgrade strategy critically considers new international marine regulations, anticipating standard sizes, operations quantity, type of repairs for the next decades. It finalizes what kind of refits to ships need to complete, in order to comply to new rules. This anticipation of design is based on a wide range of sizes in relation to containerships, machine operations, spare parts, and considers how this design can turn the side effect of heavy industry in positive way. As a consequence, a new piece of infrastructure modernizes these S, M, and L docks while a new wet-dock in front of the existing docks enables GIBDOCK to modify XL boats.

A new piece of infrastructure modernizes these S, M, and L, docks while a new wet-dock in front of the existing docks enables GIBDOCK to modify XL ships. It consolidates different types of the industrial work in a linear space with 420 meters long, floating above the dock 40 meters—structurally and strategically converted parts of GIBDOCK into an aerial platform—consists of multiple-functions workshop, loading area, storage, Reverse Osmosis system factory, training center, controller room and changing station. By bringing up these works together, allows the Installations on ships to be done quickly, due to the unnecessary transition between work stages have been eliminated and operation automatically, all based on a top-down approach, functioning with the minimal human assistance.

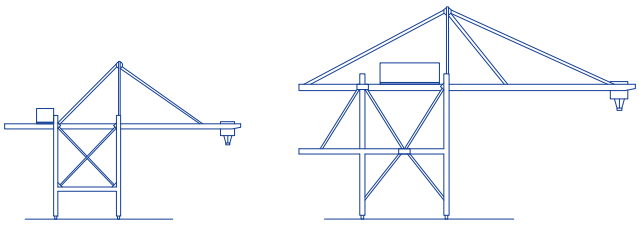
The service Gibdock provides is part of a larger marine business strategy called the ‘‘one-stop-shop.’ The modification of ships at Gibdock is another service alongside those that Gibraltar already provides—refueling and underwater cleaning (at North Mole), loading and unloading (at the container berth), crewing and de-crewing, and mooring (at Quayside). By offering all the services in one place, Gibraltar can gain a competitive advantage over ports which only offer one or two of these services.

This site, one of particular historical heritage, has a meaning in the broader context of Gibraltar’s history and economy. Although negative side effects of heavy industry could take place, the design and upgrade of Gibdock is not only embracing the economy but also improving the local environment, relevant to marine activities on land and at sea.

In the near future, the port of Gibraltar could co-exist alongside the ports of Algeciras and Tangier, and embody a shared network that channels the flow of container ship services in the Strait of Gibraltar.



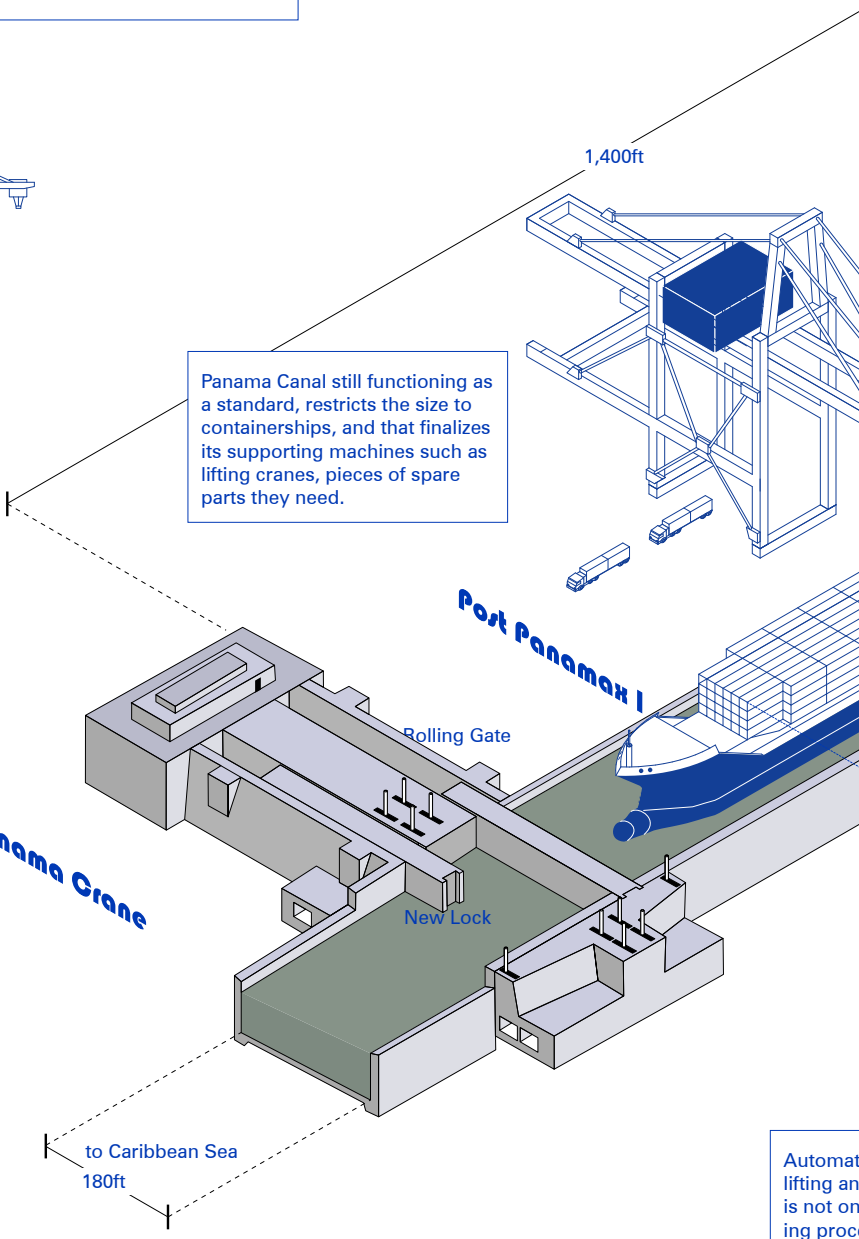
Currently, container shipping moves 95 percent of all manufactory goods around the world, in 2017, more than 4 trillion dollars of the products sent over the ocean, it is an industry that offers the cheapest way to deliver items and that unpinned the global economy.



1995 2013

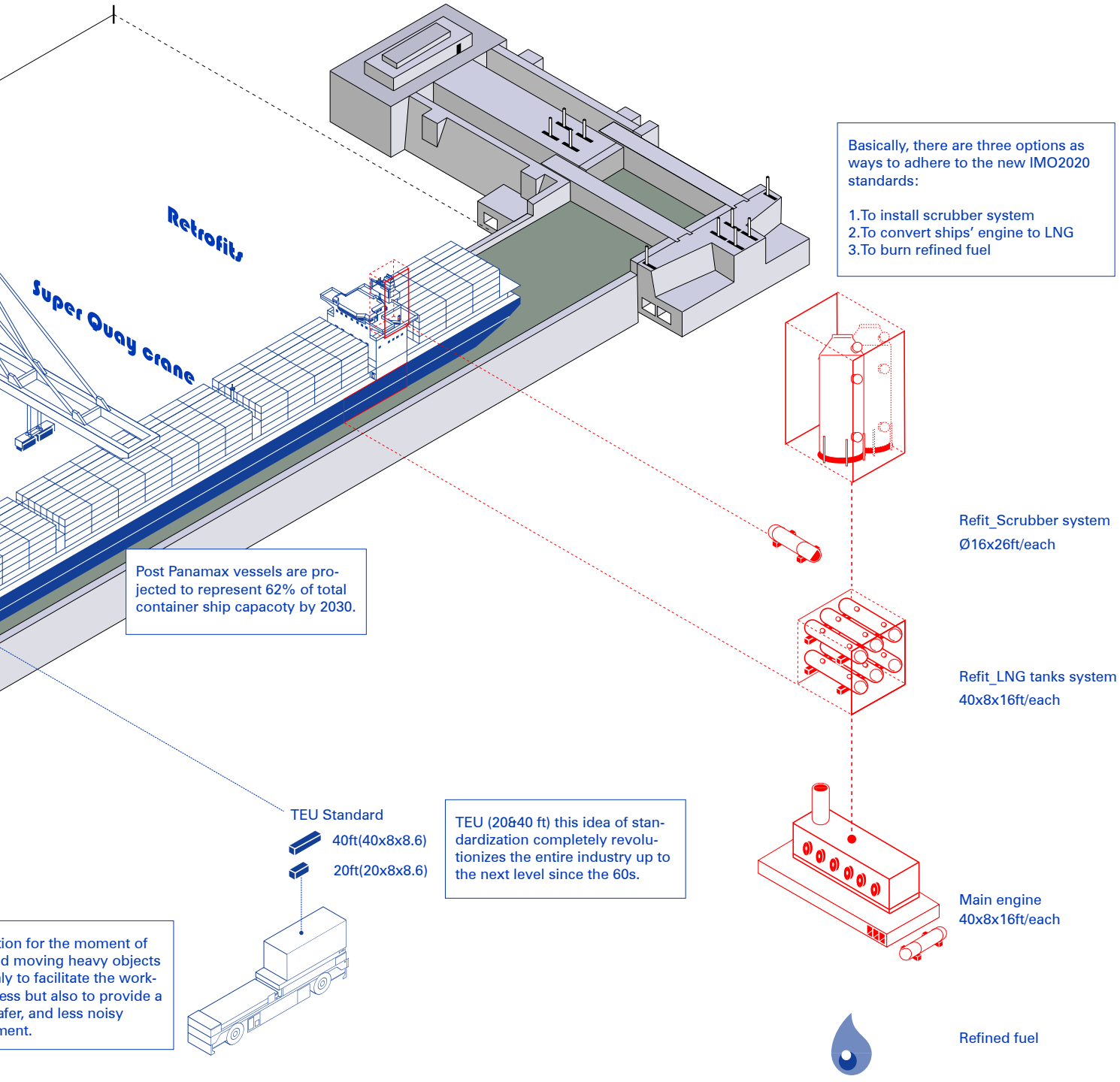
Container cranes 1995:
S-Class

Container cranes 2013:
Super Quay Crane

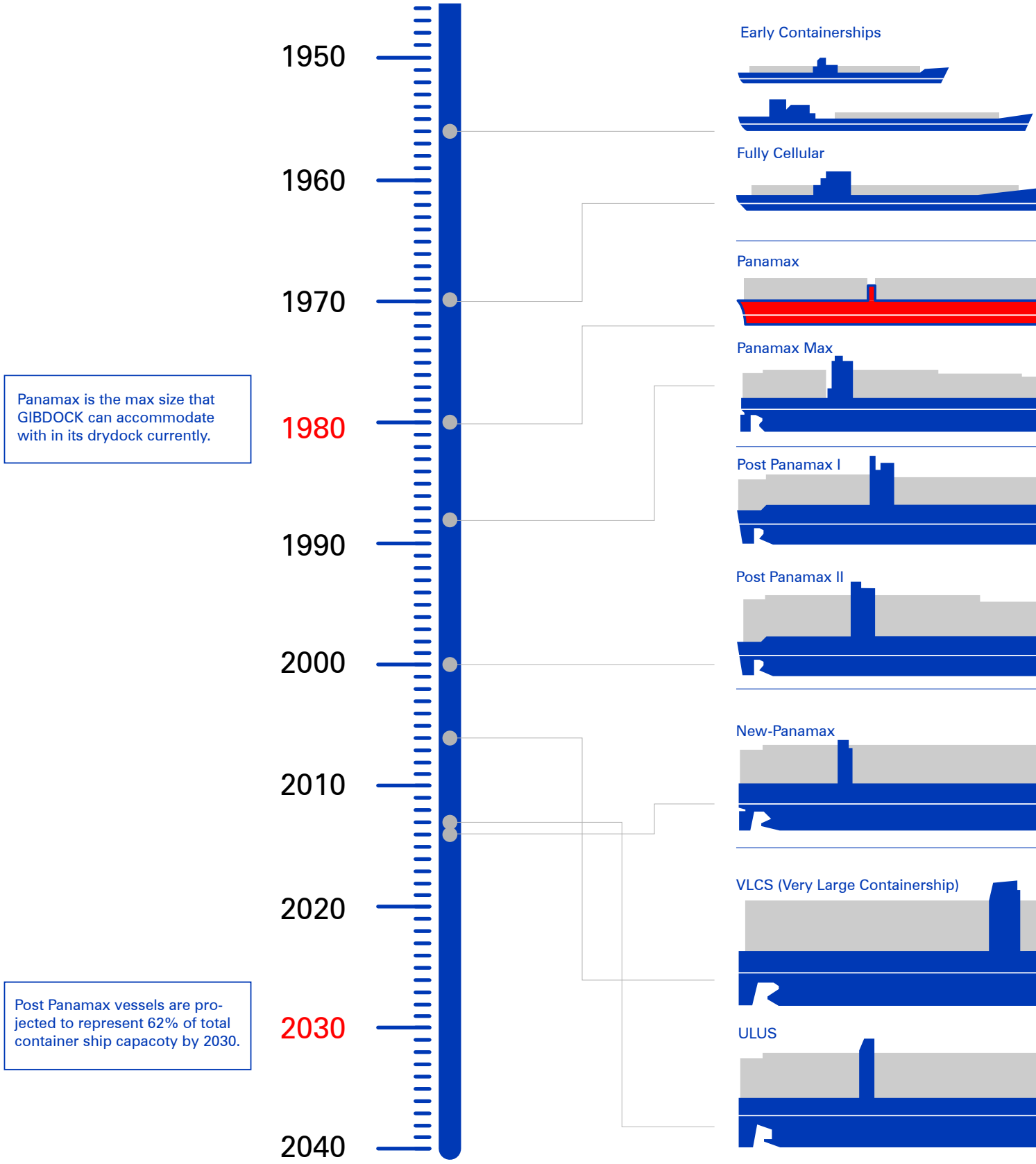


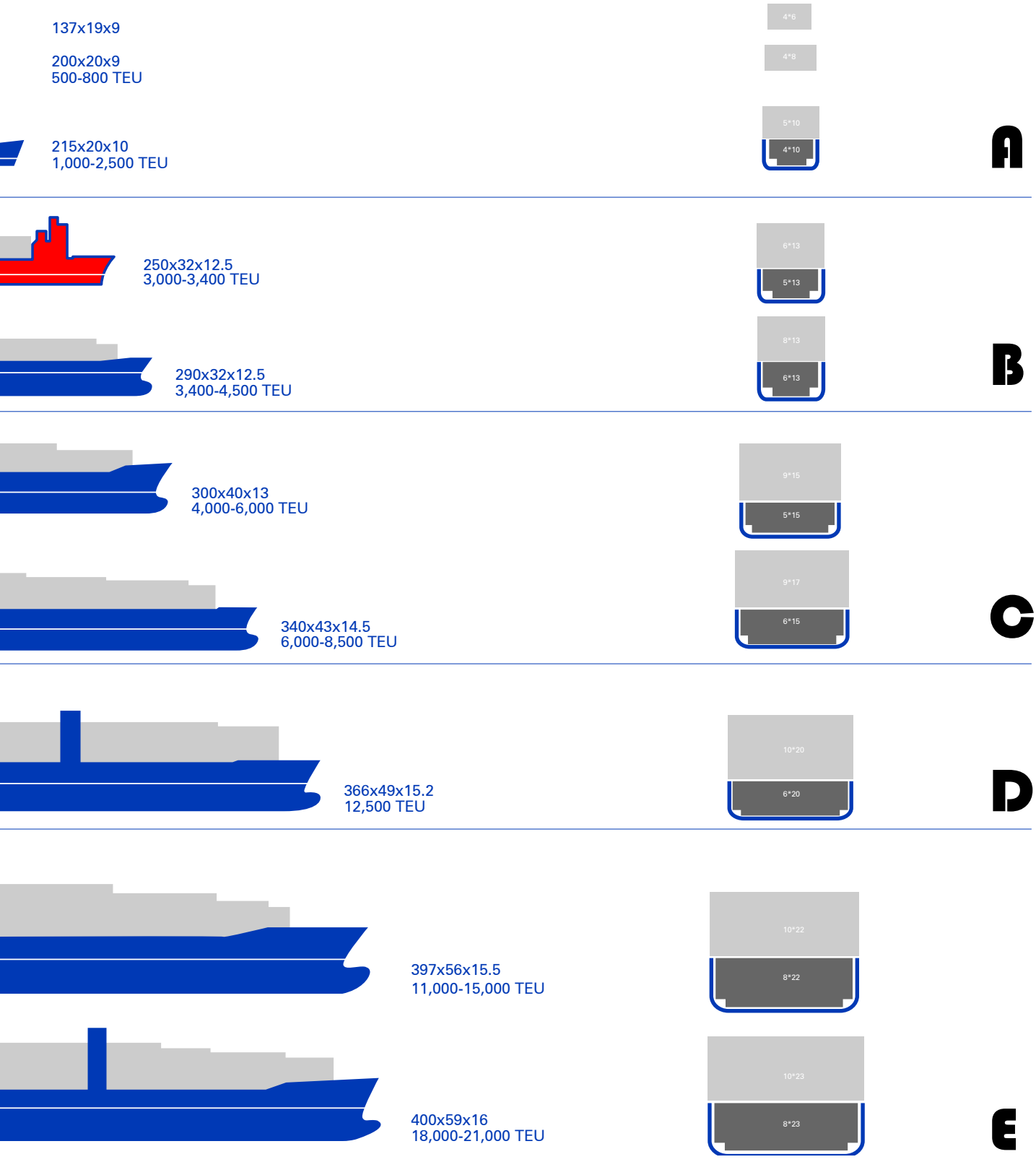
Panama Canal still functioning as a standard, restricts the size to containerships, and that finalizes its supporting machines such as lifting cranes, pieces of spare parts they need.

Automat
lifting an
is not on
ing proc
better, sa
environn

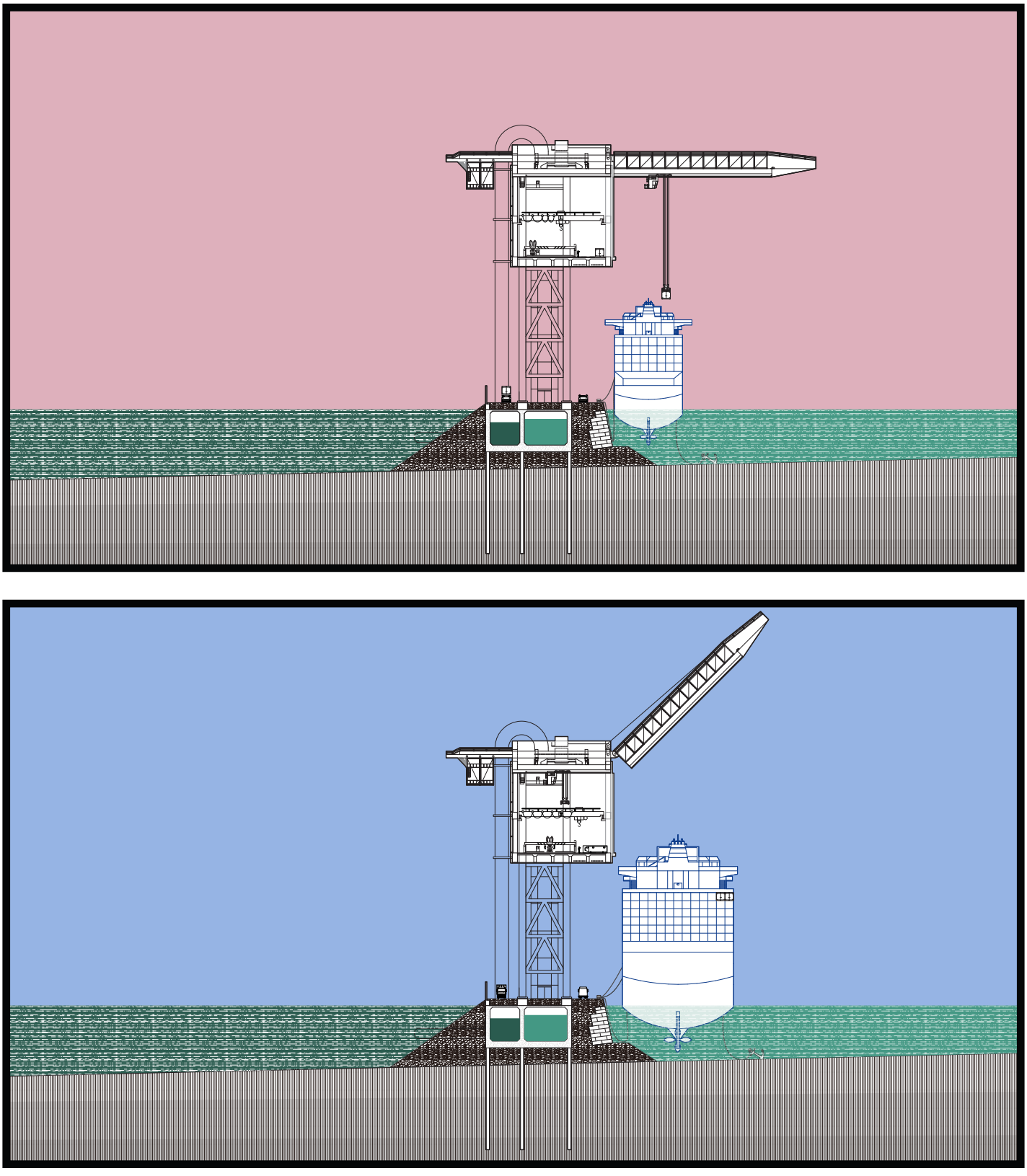


Standardizations that relevant to the shipping industry in the past, present and future


1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
Early Containerships
Fully Cellular
Panamax
Panamax Max
Post Panamax I
Post Panamax II
New-Panamax
VLCS (Very Large Containership)
ULUS
Panamax is the max size that GIBDOCK can accommodate with in its drydock currently.
Post Panamax vessels are projected to represent 62% of total container ship capacoty by 2030.

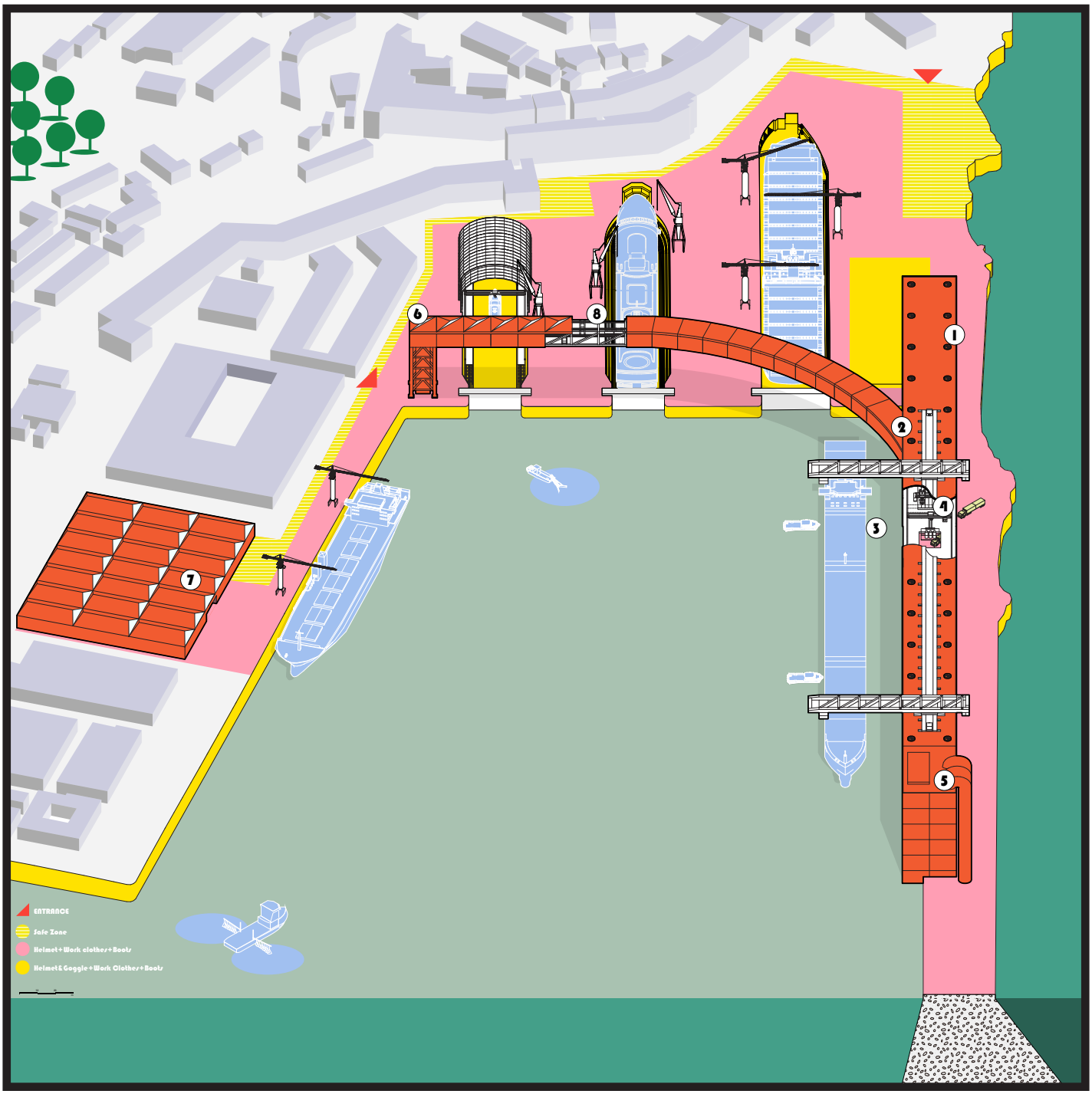


Generations of containerships in the history and that in the relation to GIBDOCK in Gibraltar.

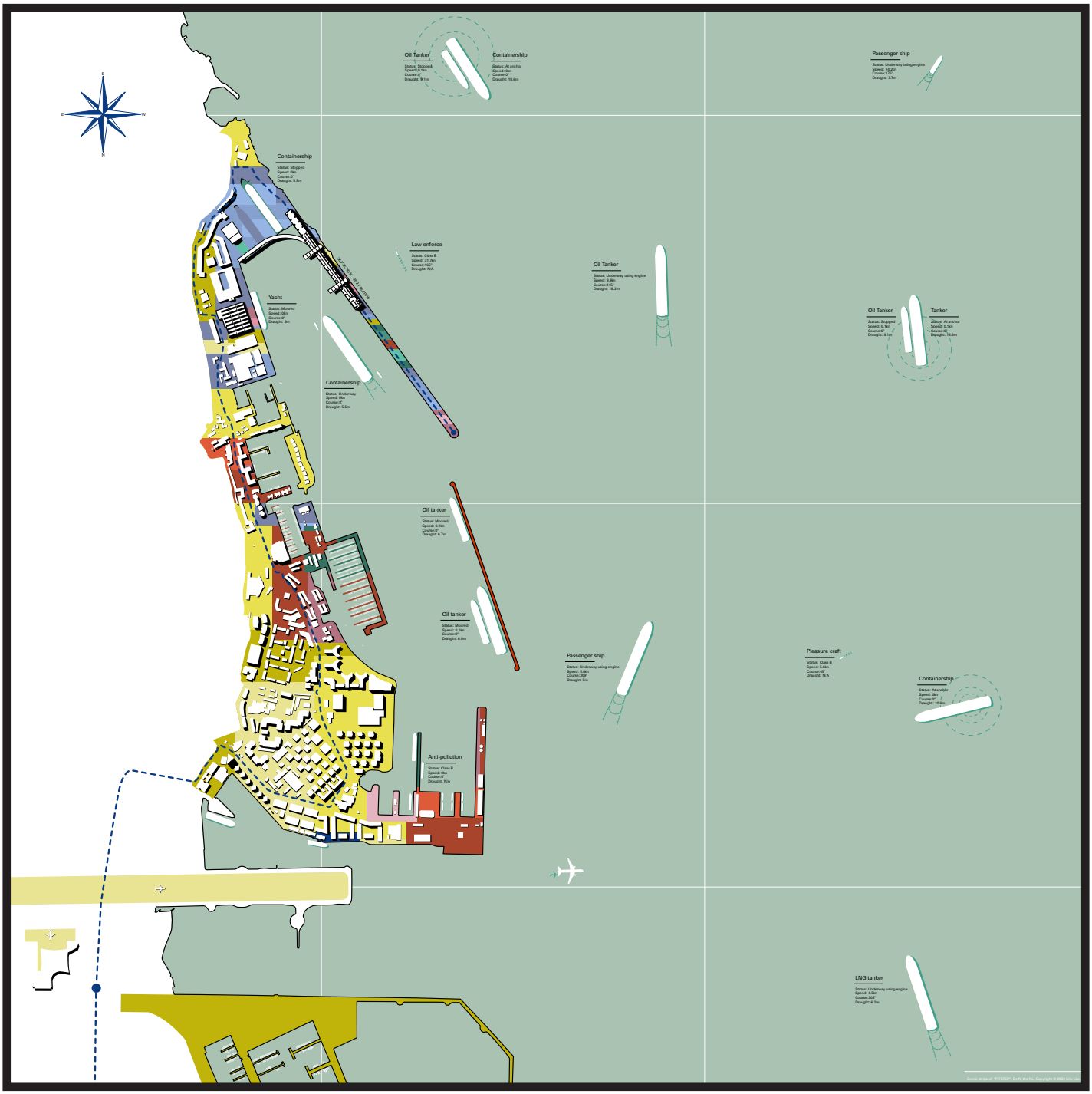


0 20 40 m

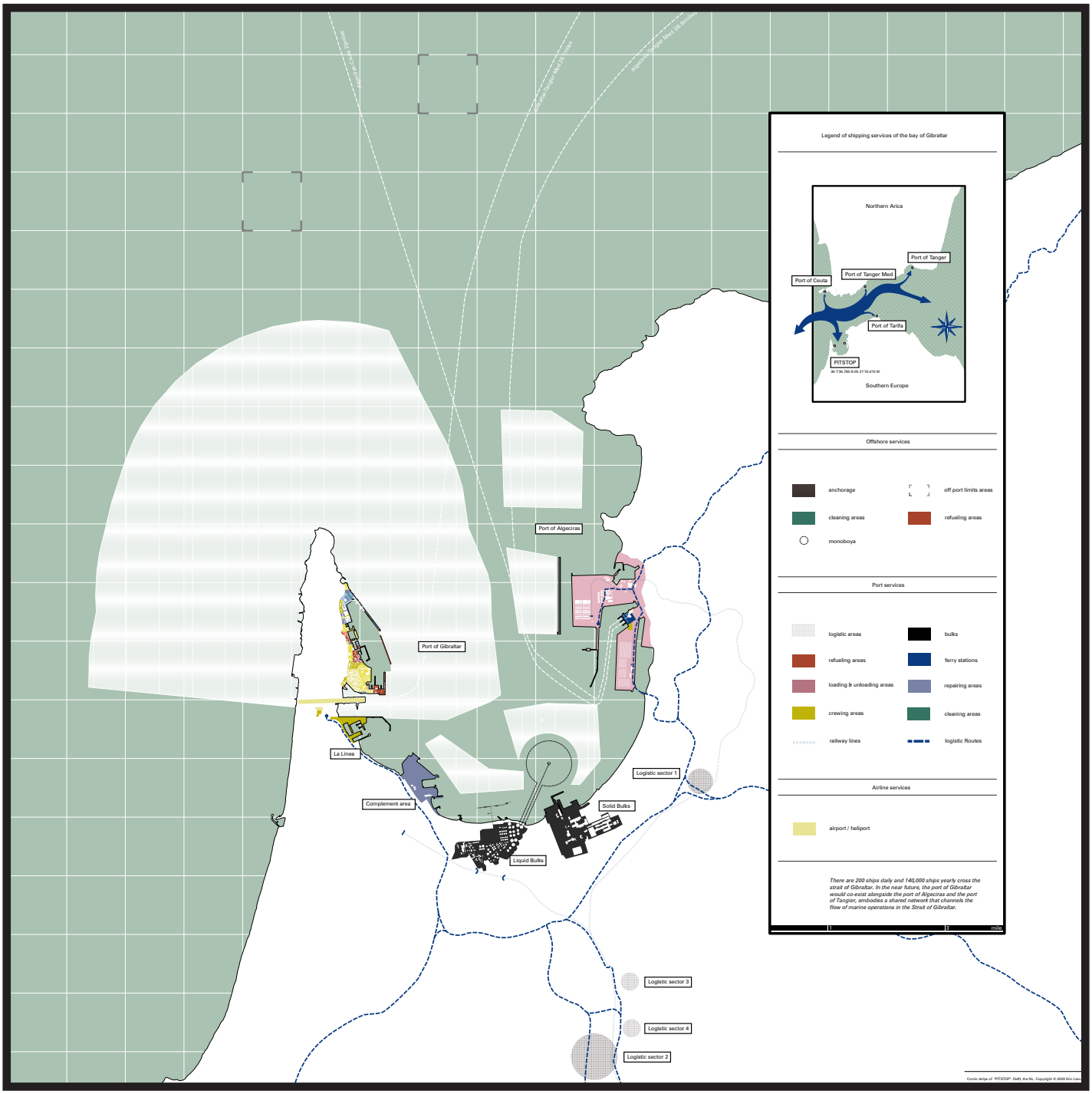
The new infrastructure of GIBDOCK implements the loading and machining services by its machine operations



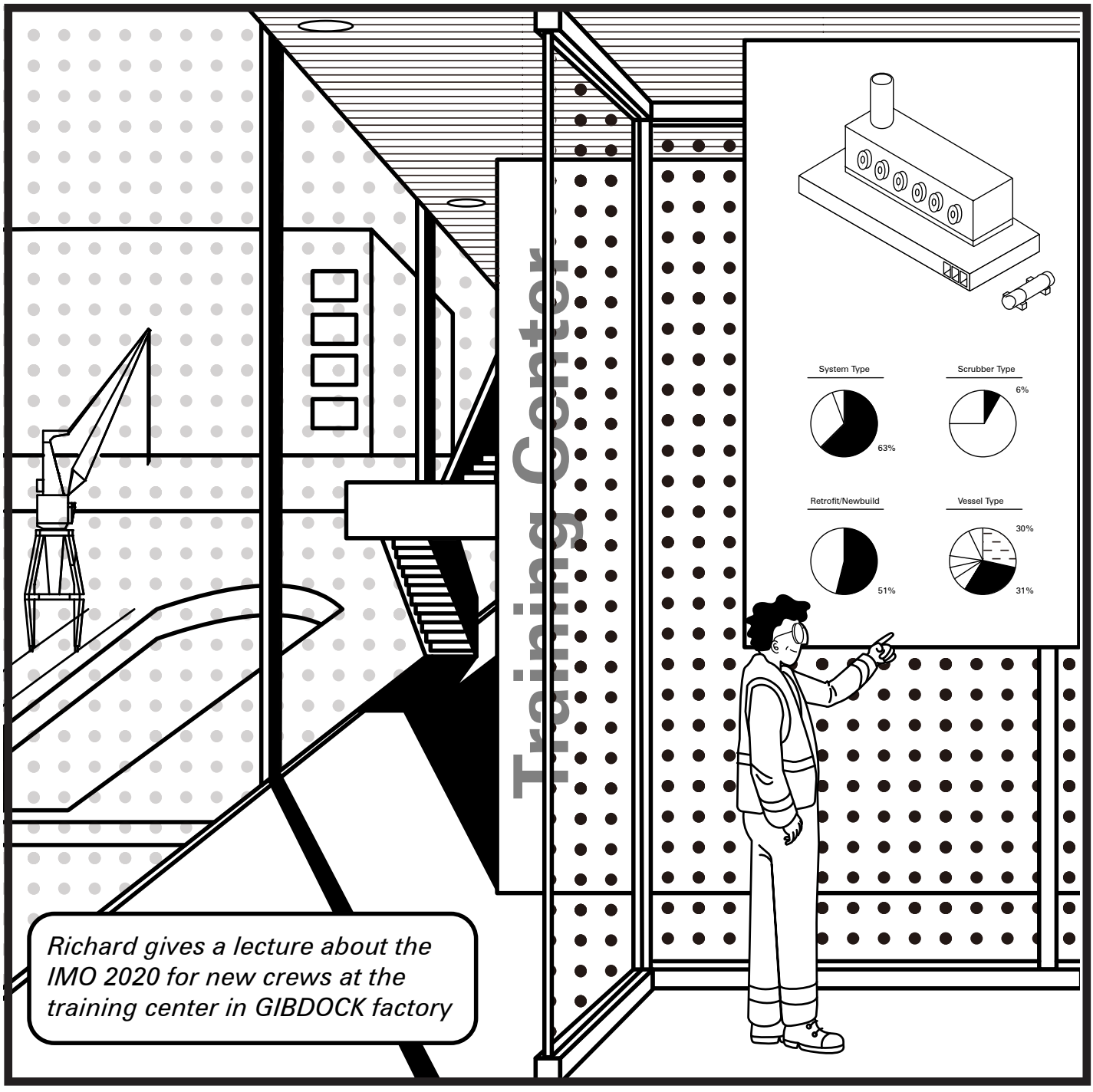
An upgrade GIBDOCK shows the collaboration between S, M, L and XL docks.



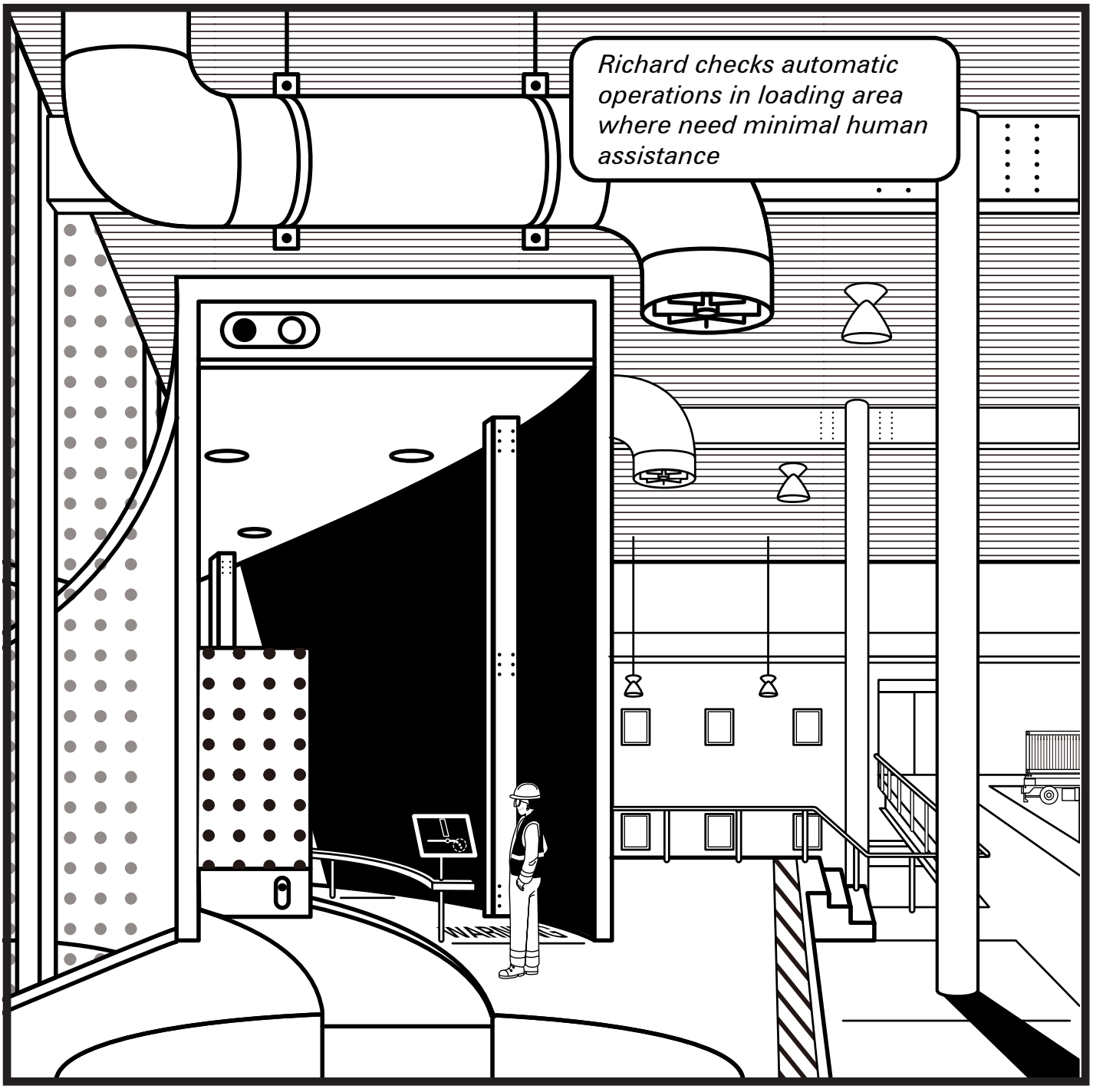
Marine operations model of One-stop-shop in the scale of the port of Gibraltar



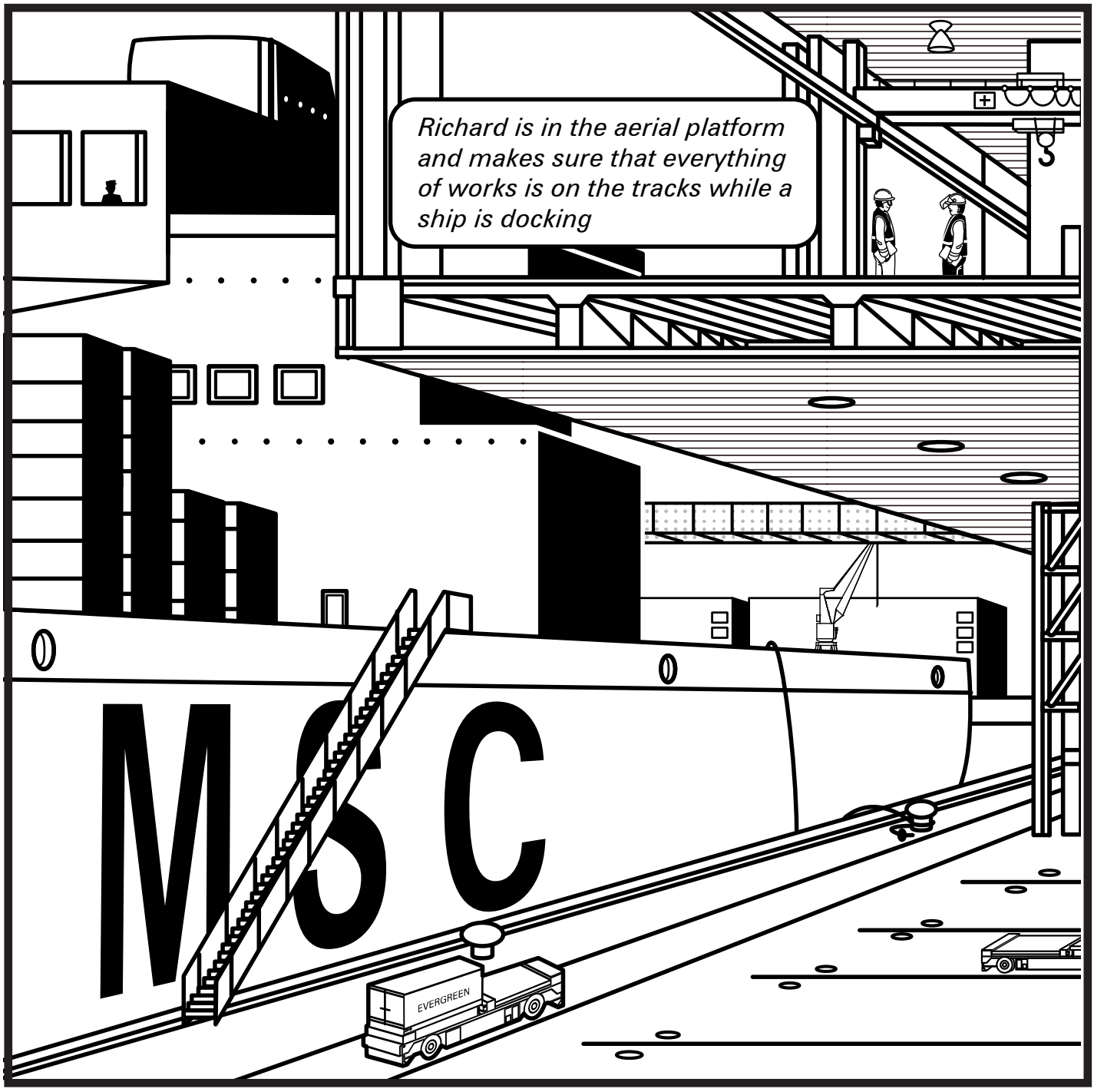
Marine operations model of One-stop-shop in the scale of the bay of Gibraltar


Training Center
System Type
63%
Scrubber Type
6%
Retrofit/Newbuild
51%
Vessel Type
30%
31%
Richard gives a lecture about the IMO 2020 for new crews at the training center in GIBDOCK factory

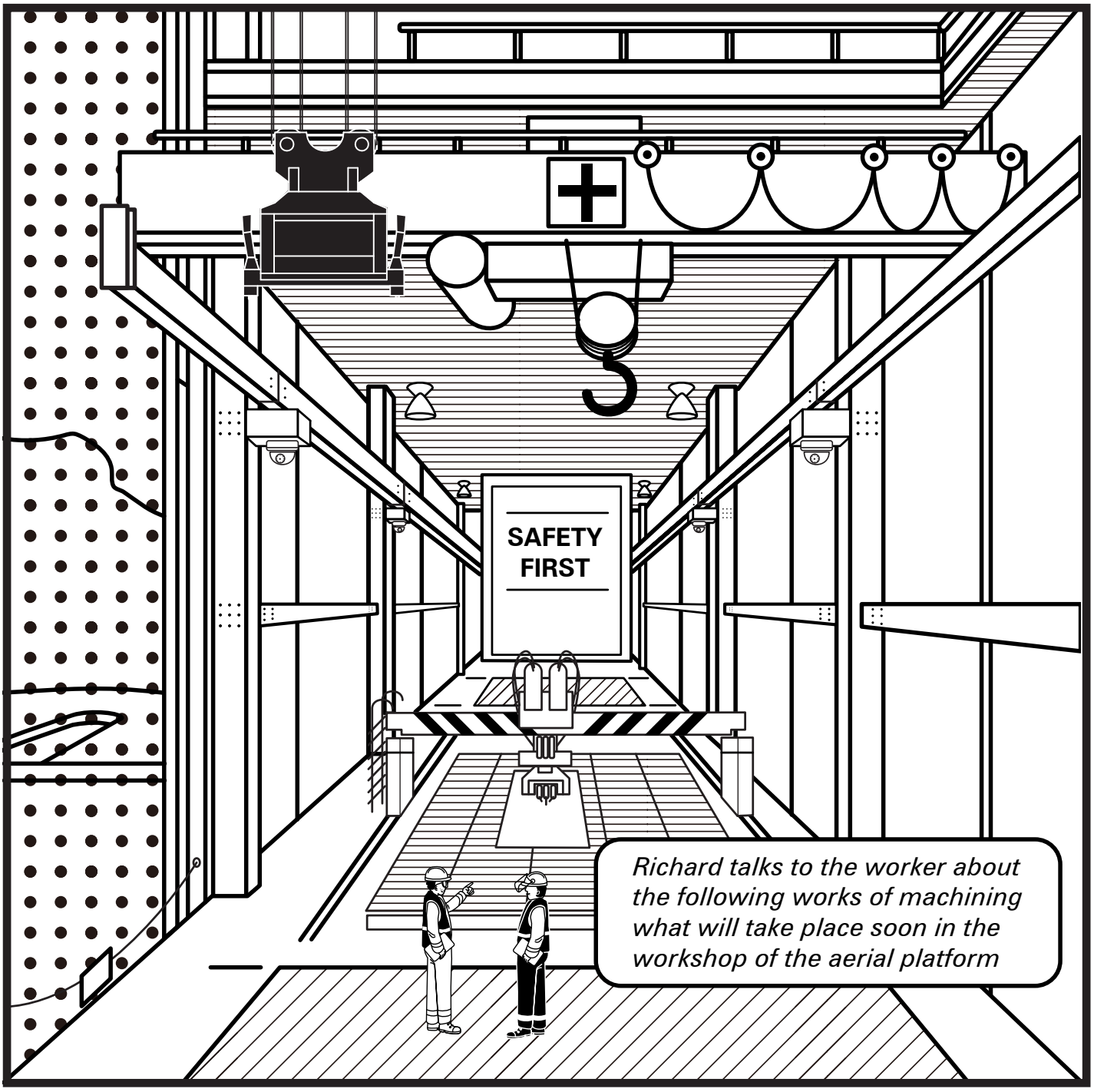
2


Richard checks automatic operations in loading area where need minimal human assistance

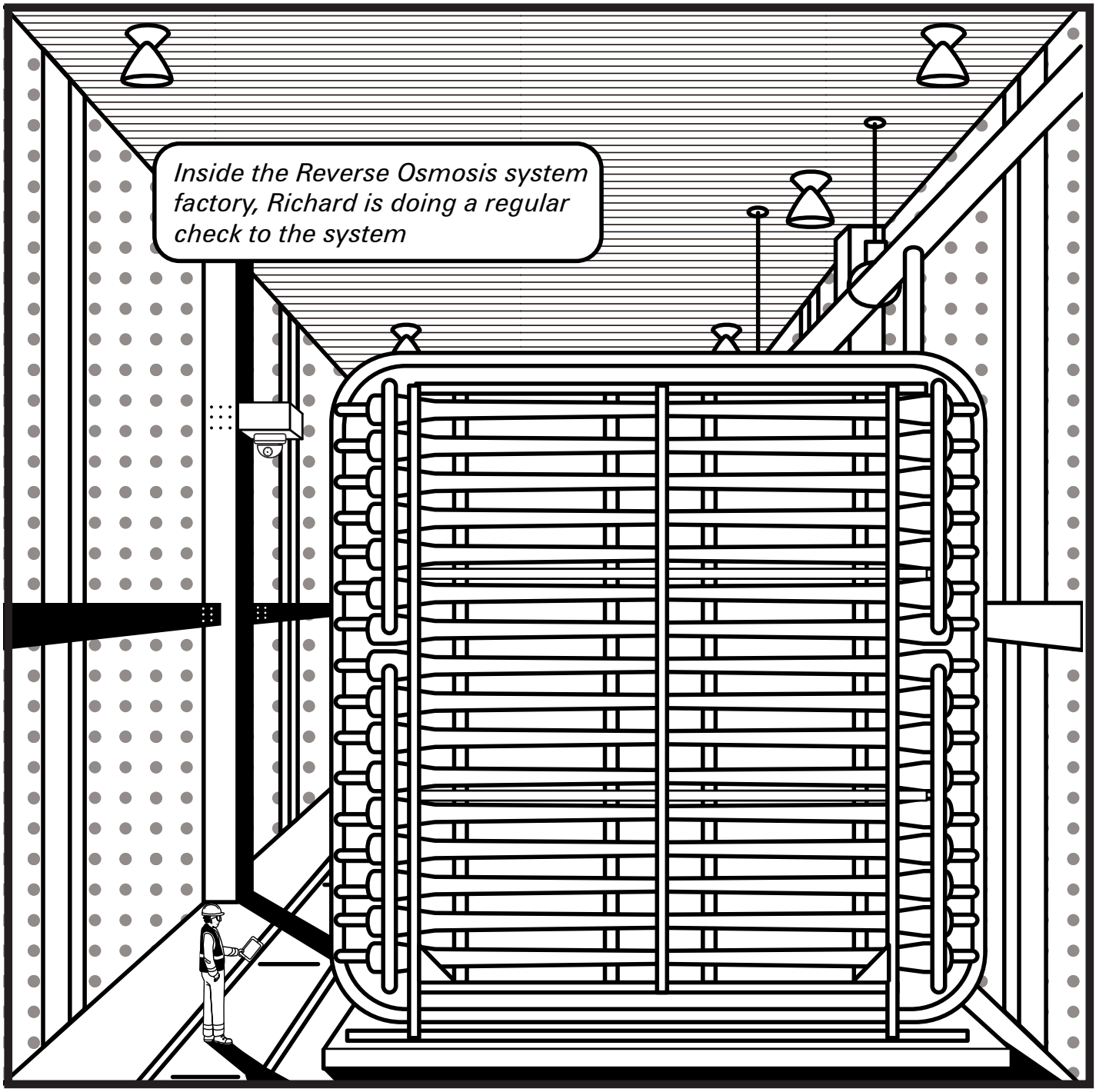
3

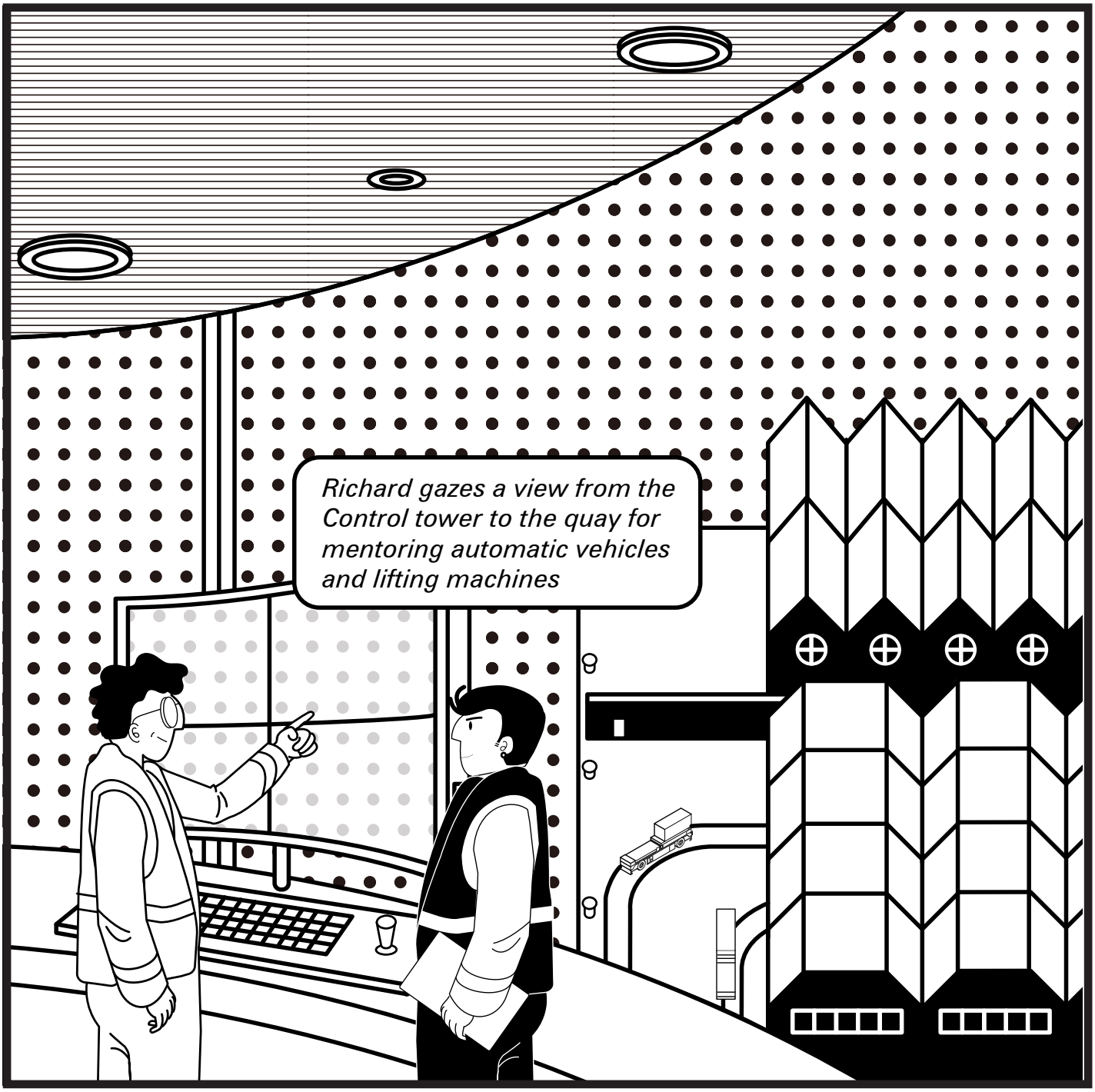

Richard is in the aerial platform and makes sure that everything of works is on the tracks while a ship is docking
MSC
EVERGREEN

4

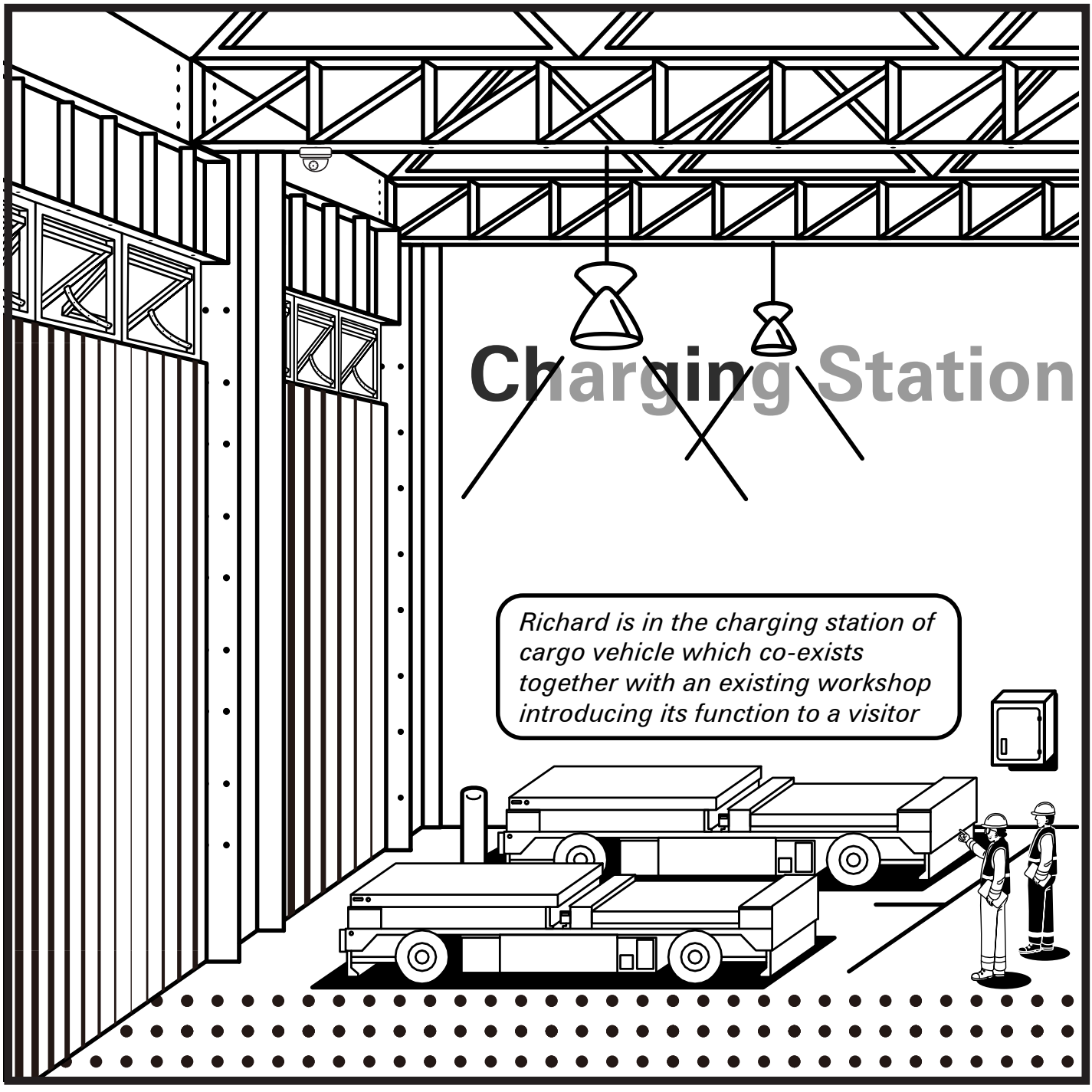

SAFETY
FIRST
Richard talks to the worker about the following works of machining what will take place soon in the workshop of the aerial platform

5

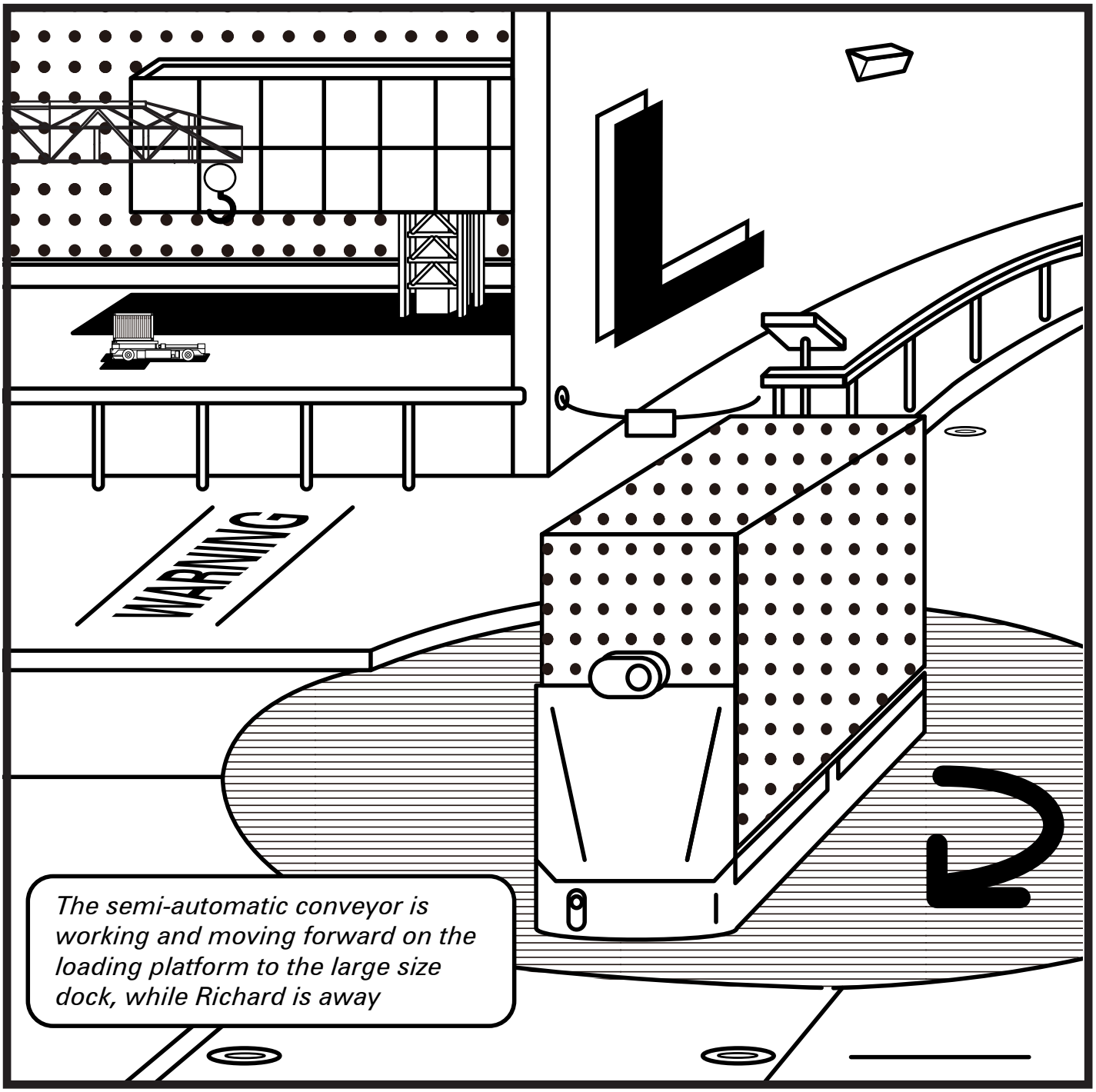

Inside the Reverse Osmosis system factory, Richard is doing a regular check to the system

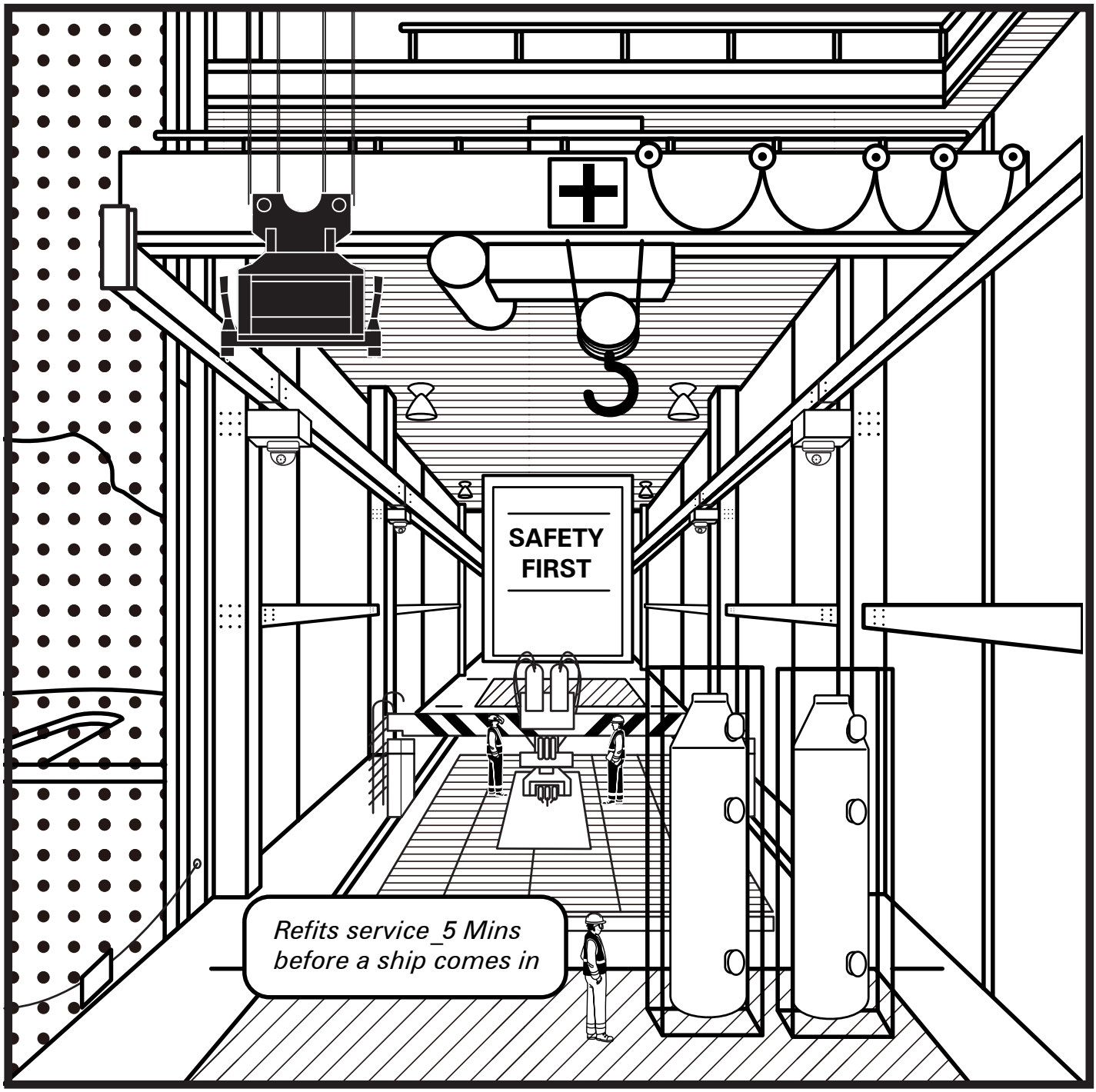

Richard gazes a view from the Control tower to the quay for mentoring automatic vehicles and lifting machines

7

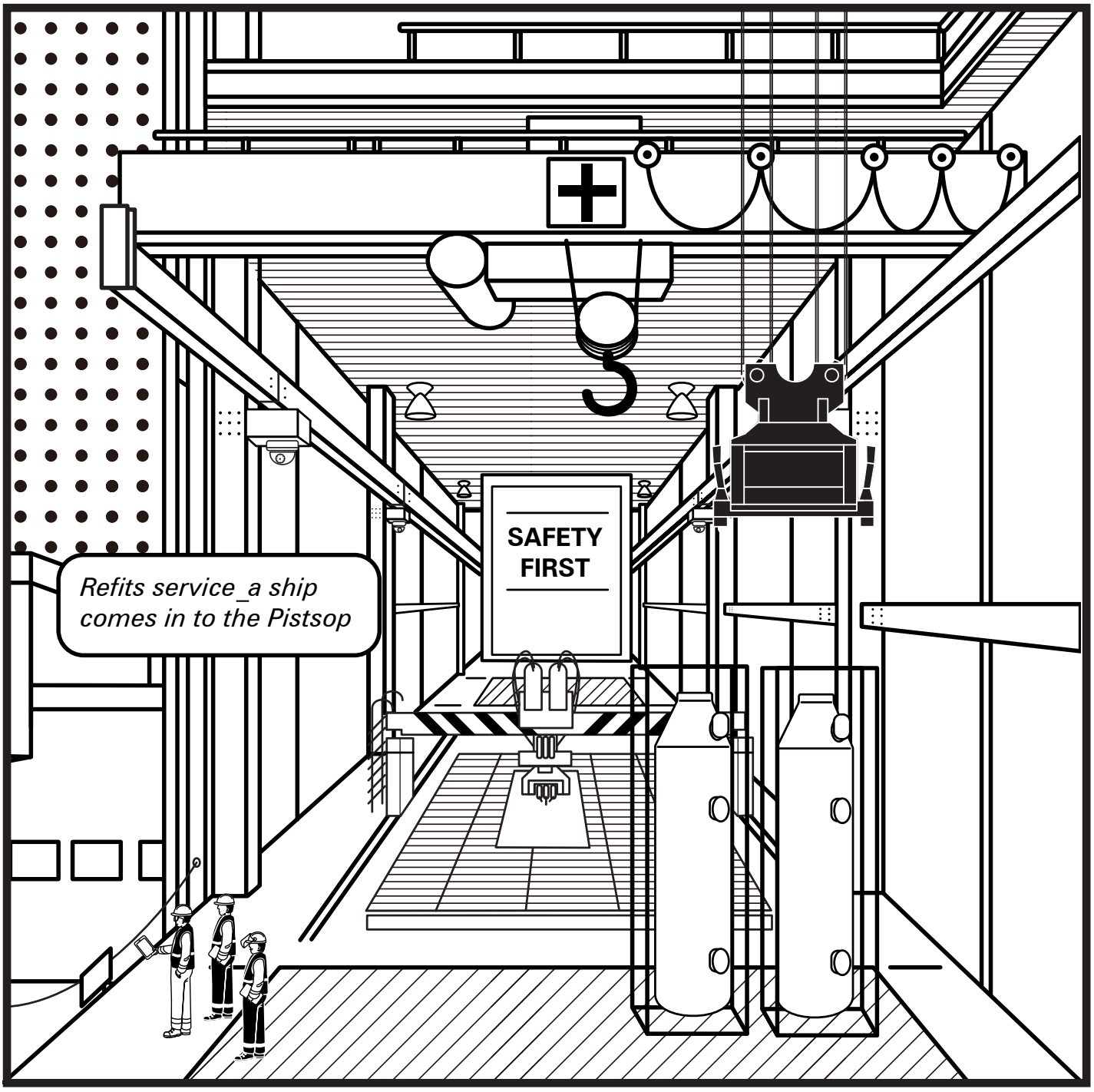

Charging Station
Richard is in the charging station of cargo vehicle which co-exists together with an existing workshop introducing its function to a visitor

8

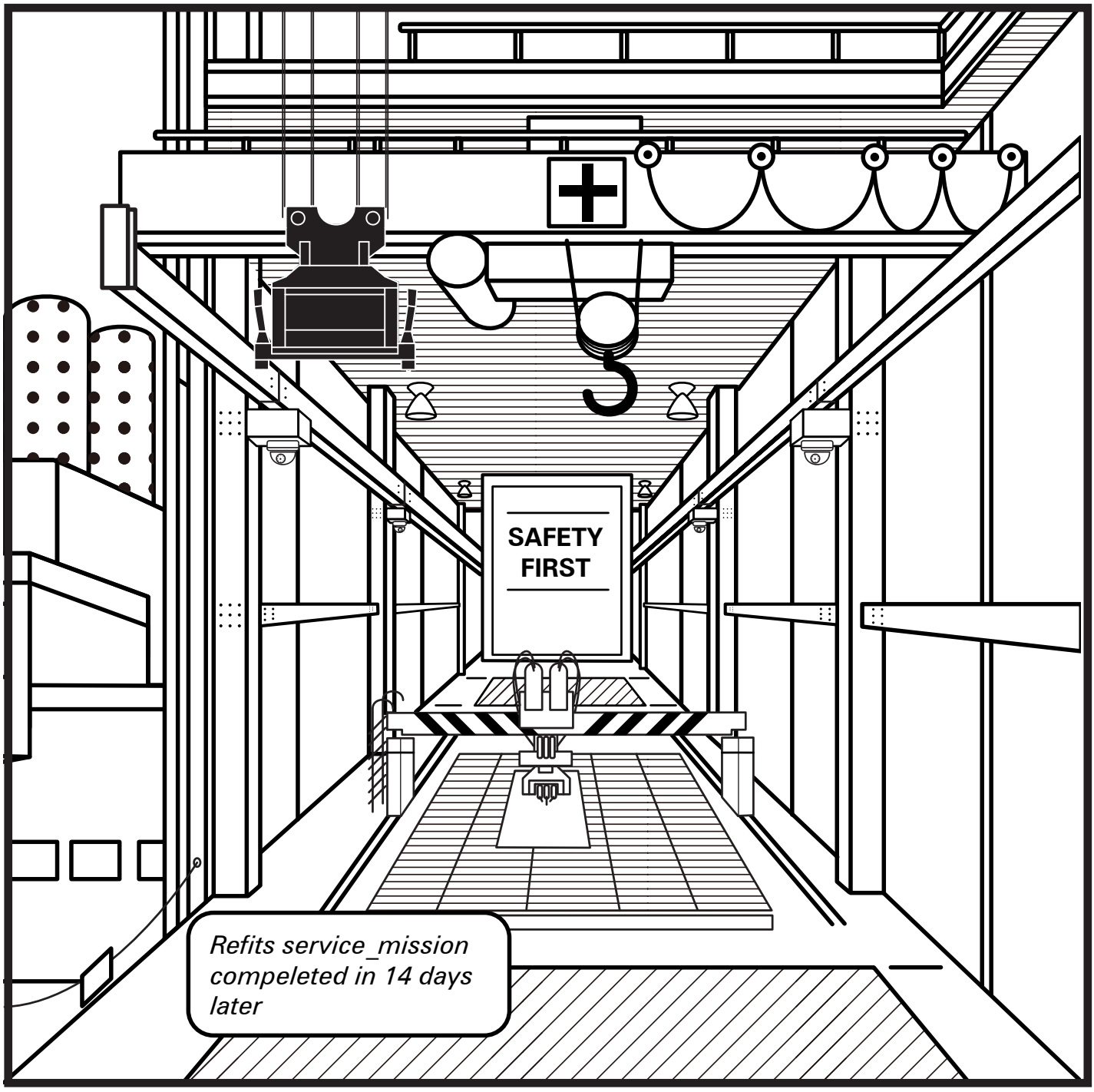

WARNING
The semi-automatic conveyor is working and moving forward on the loading platform to the large size dock, while Richard is away



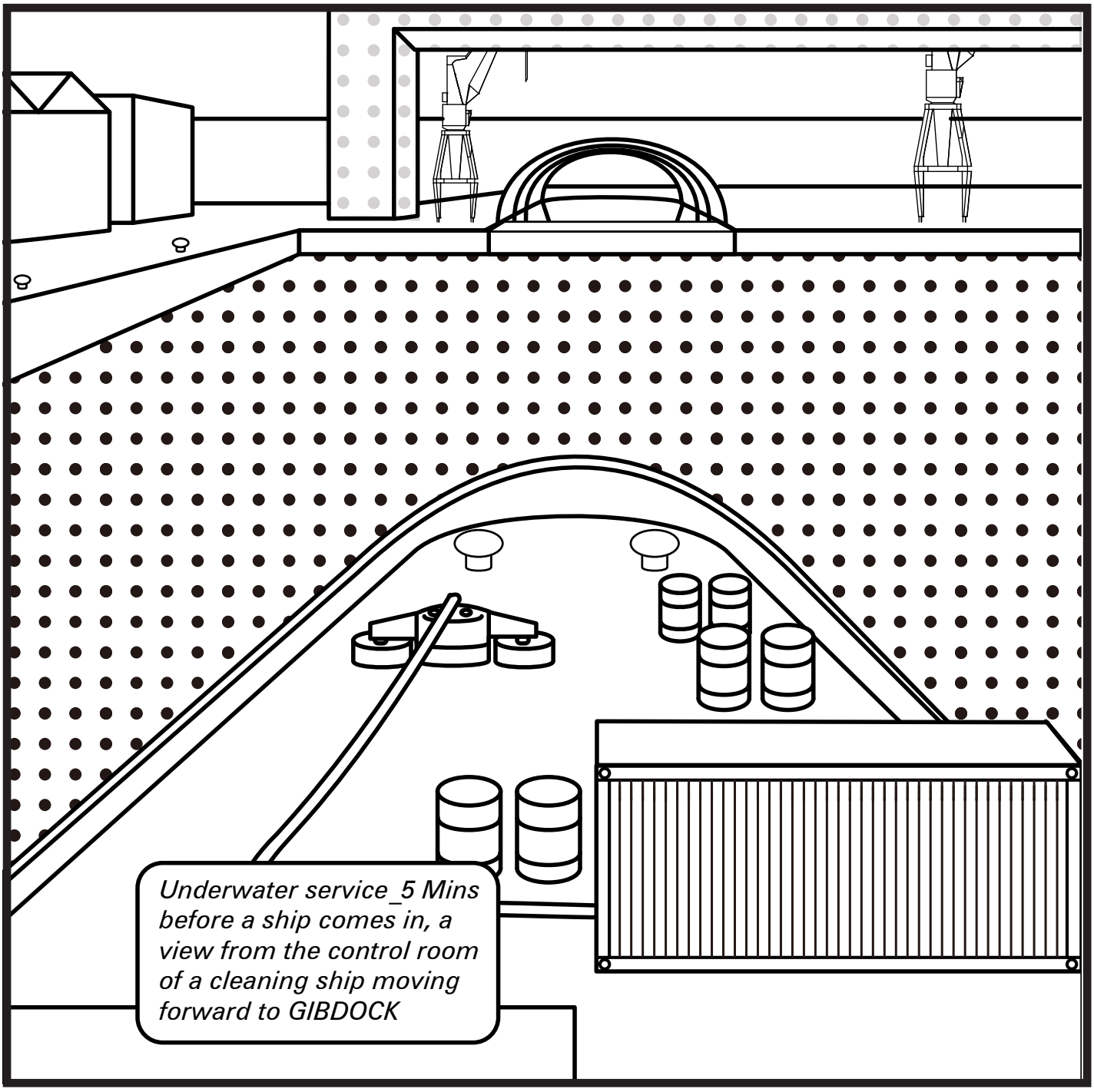
Refit services-before pitstop



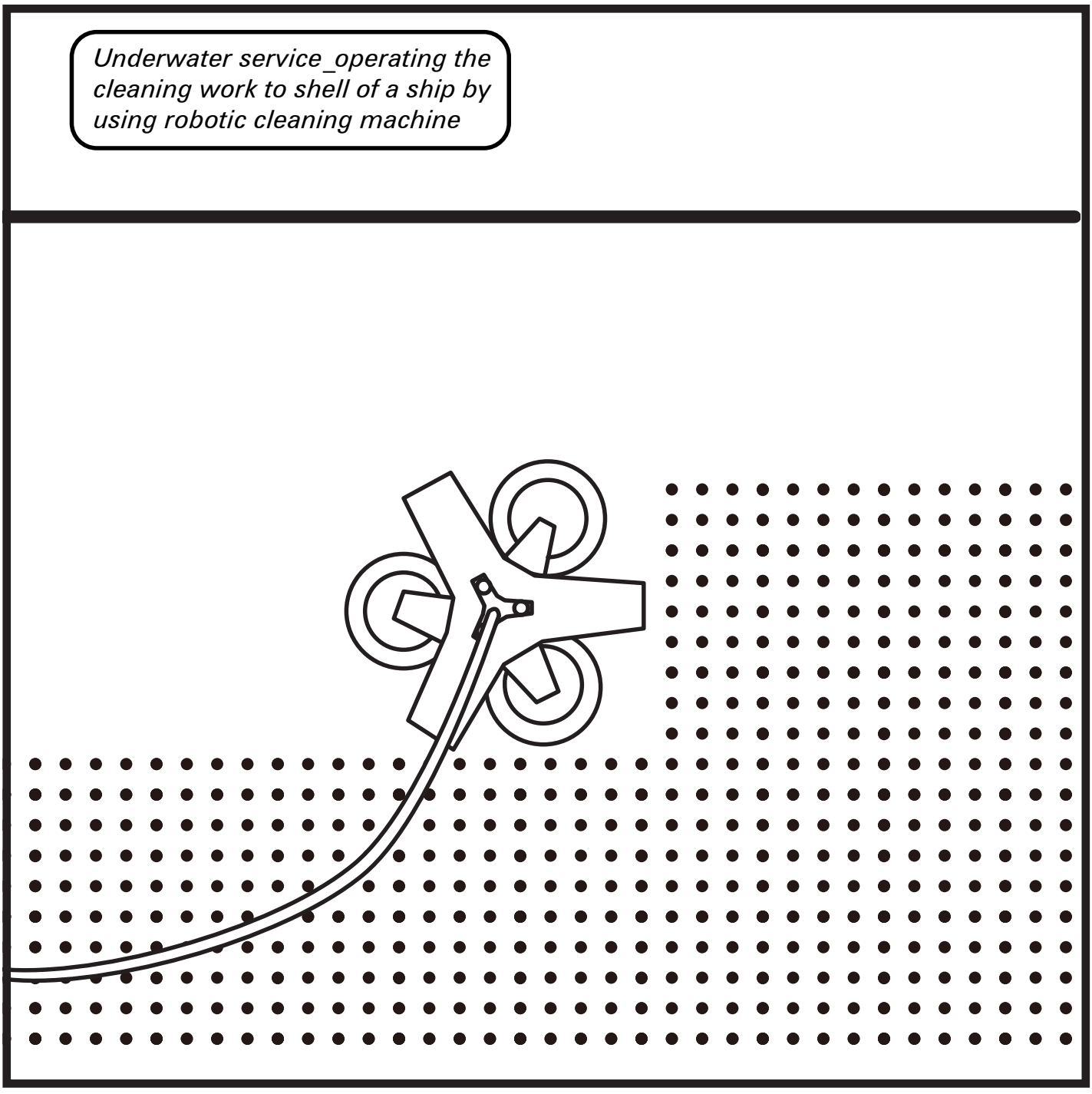
Refit services-in pitstop



Refit services-after pitstop

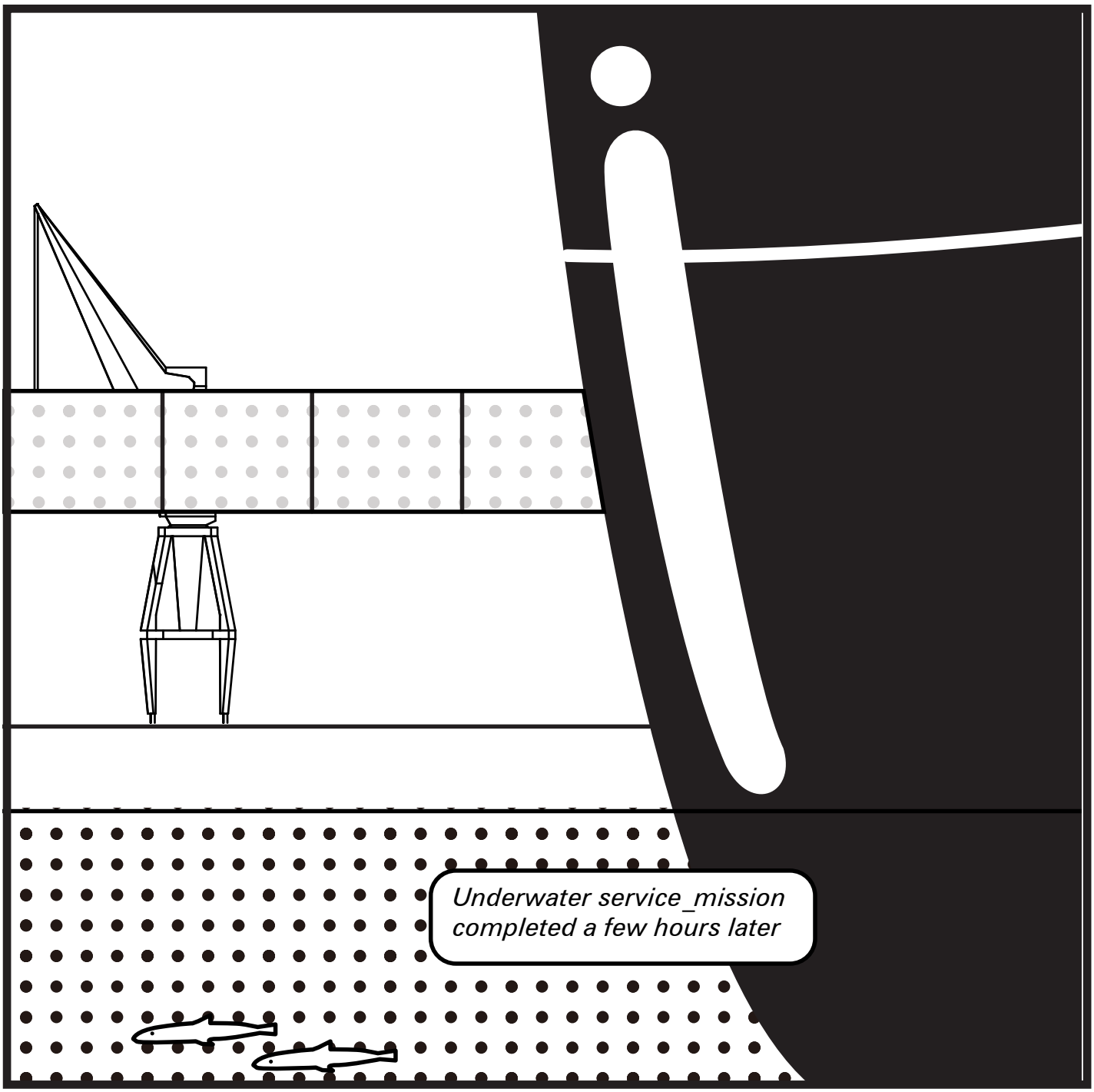


Underwater cleaning services-before pitstop

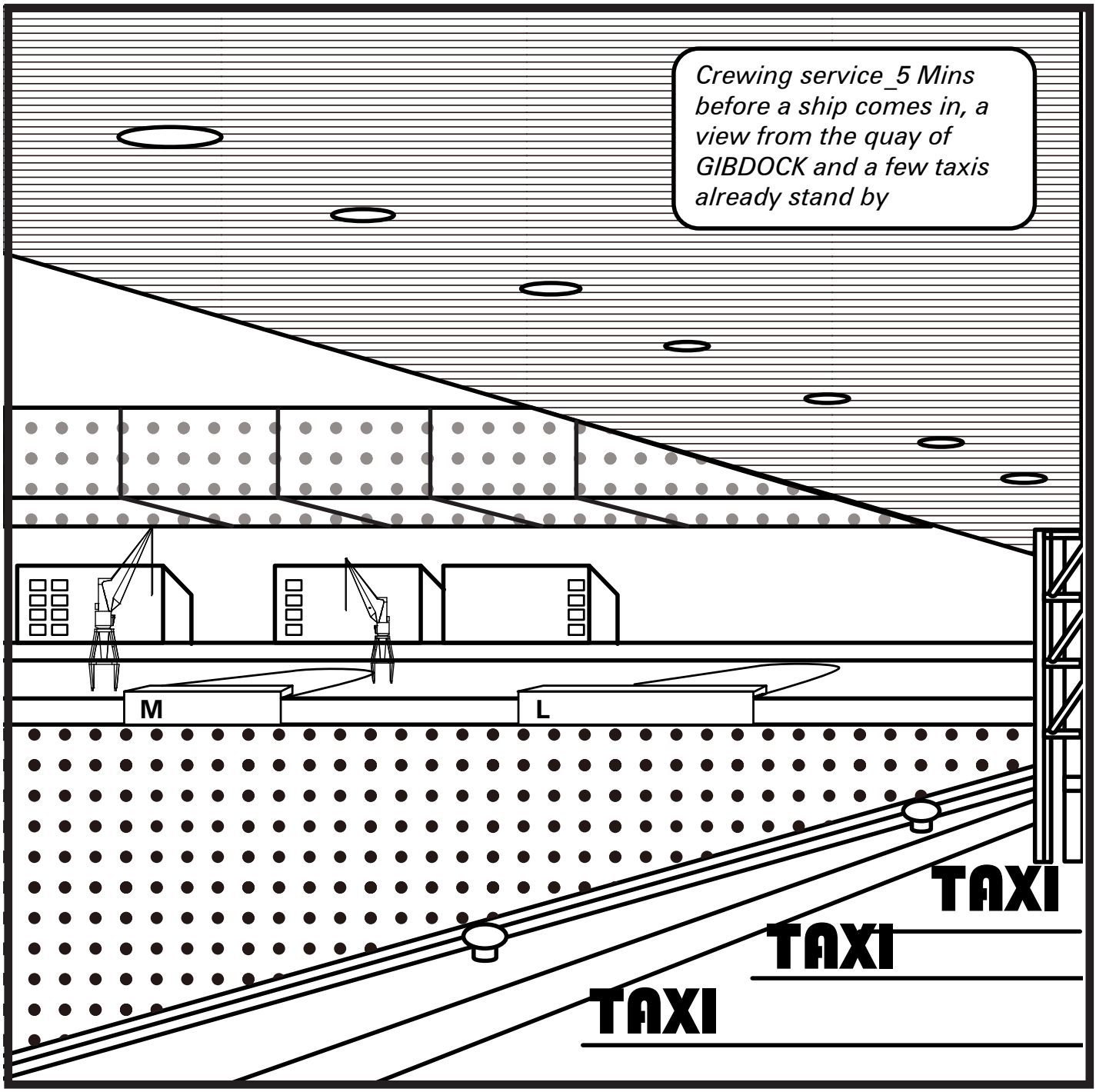


Underwater cleaning services-in

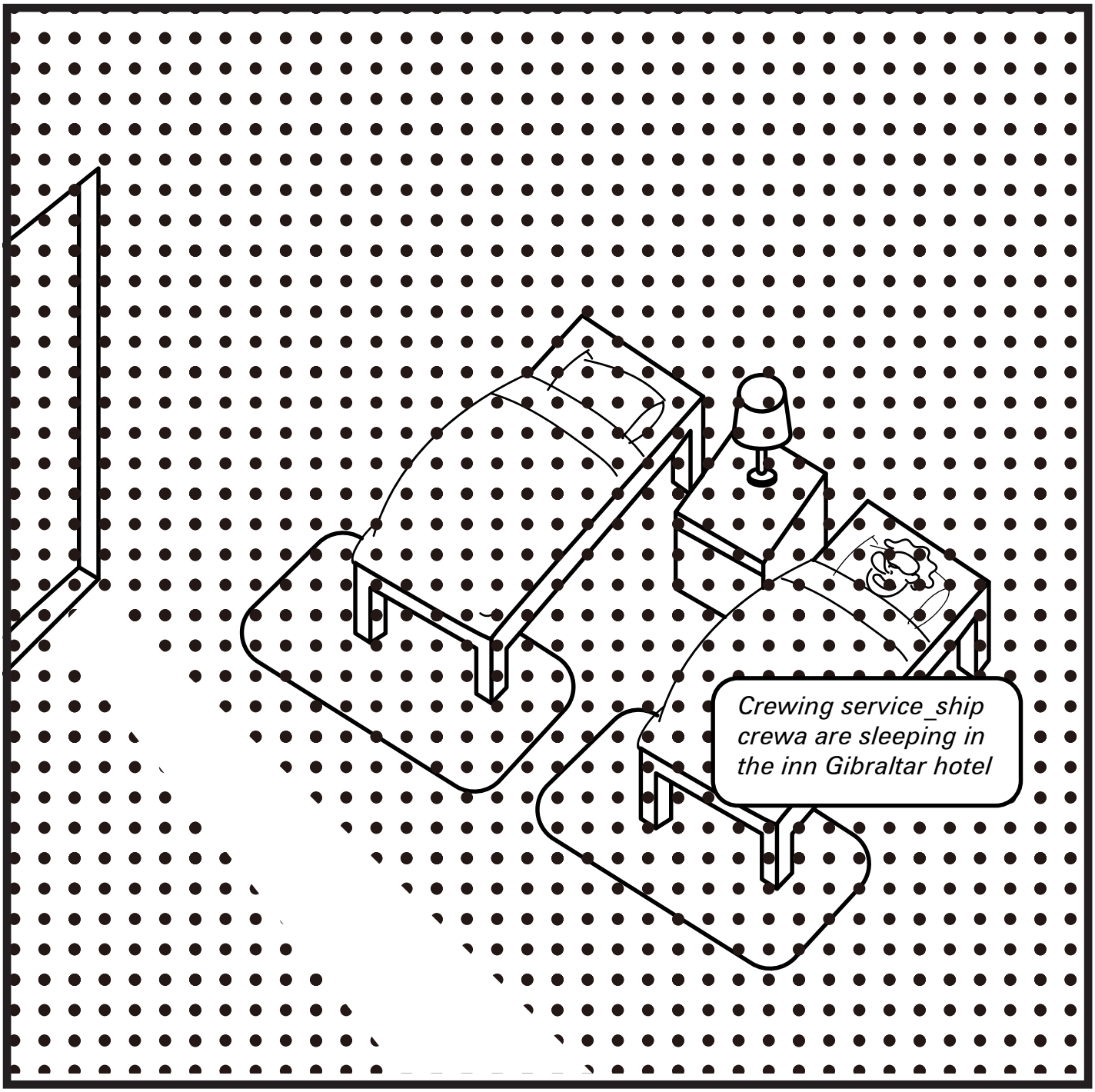
pitstop



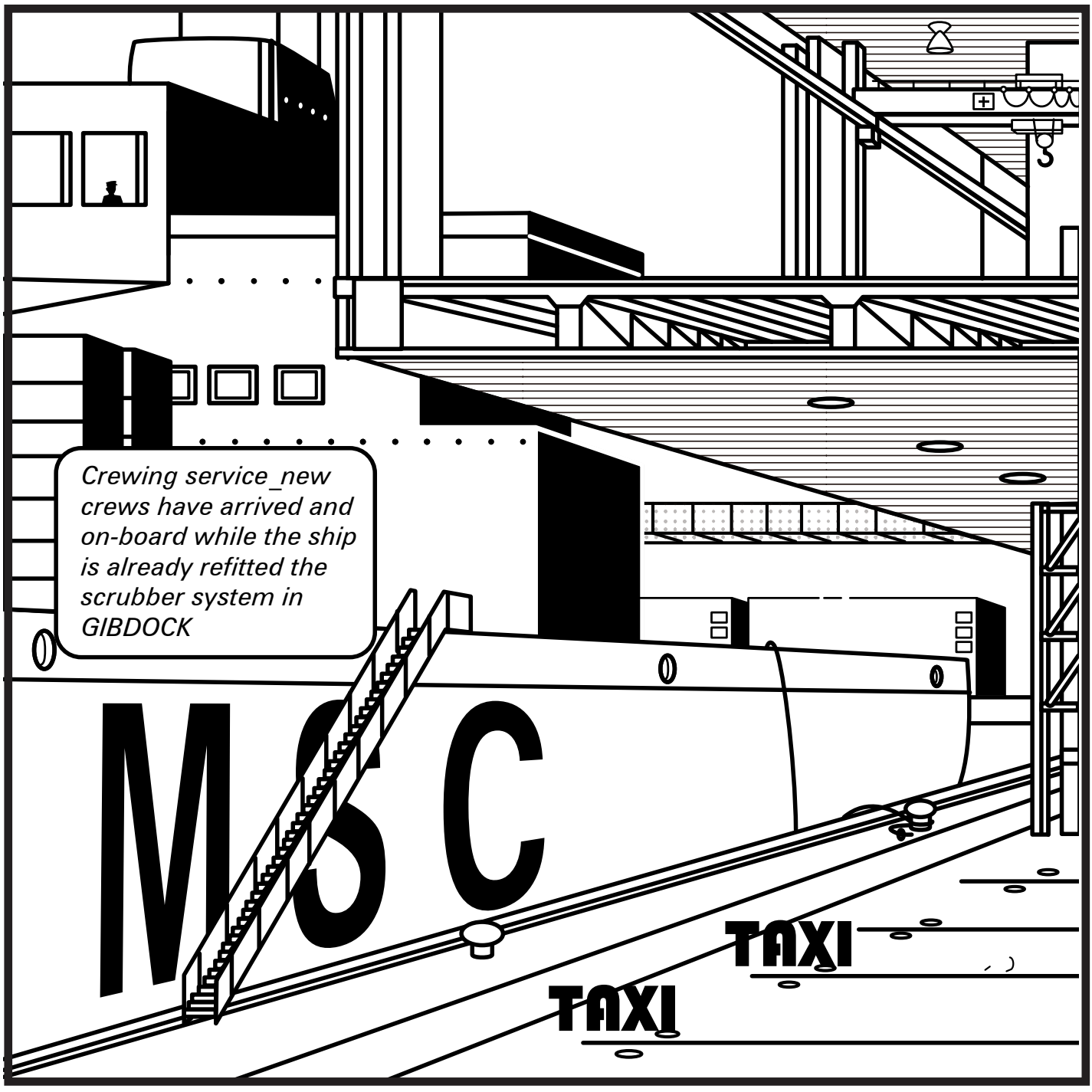
Underwater cleaning services-after pitstop



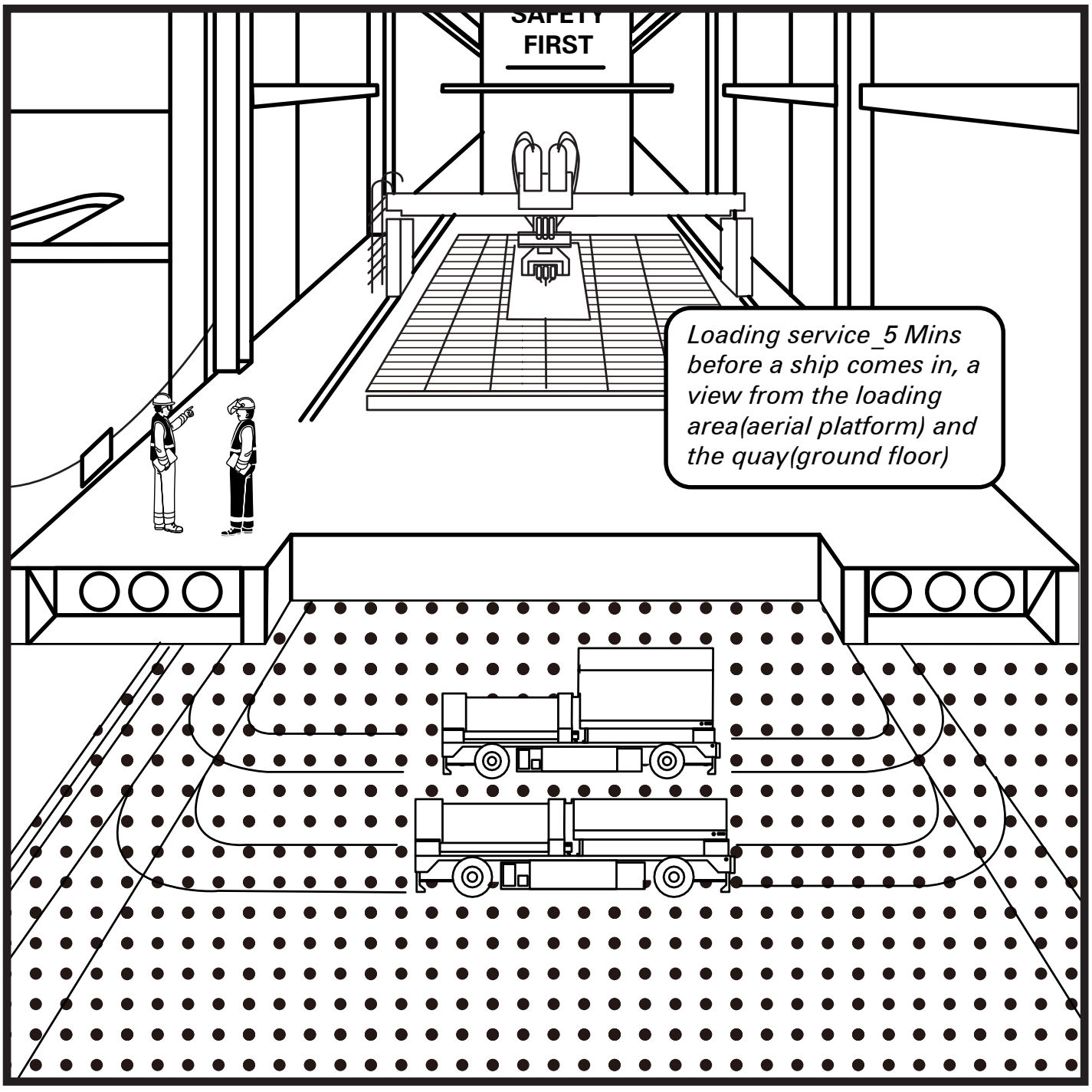
Crewing services-before pitstop



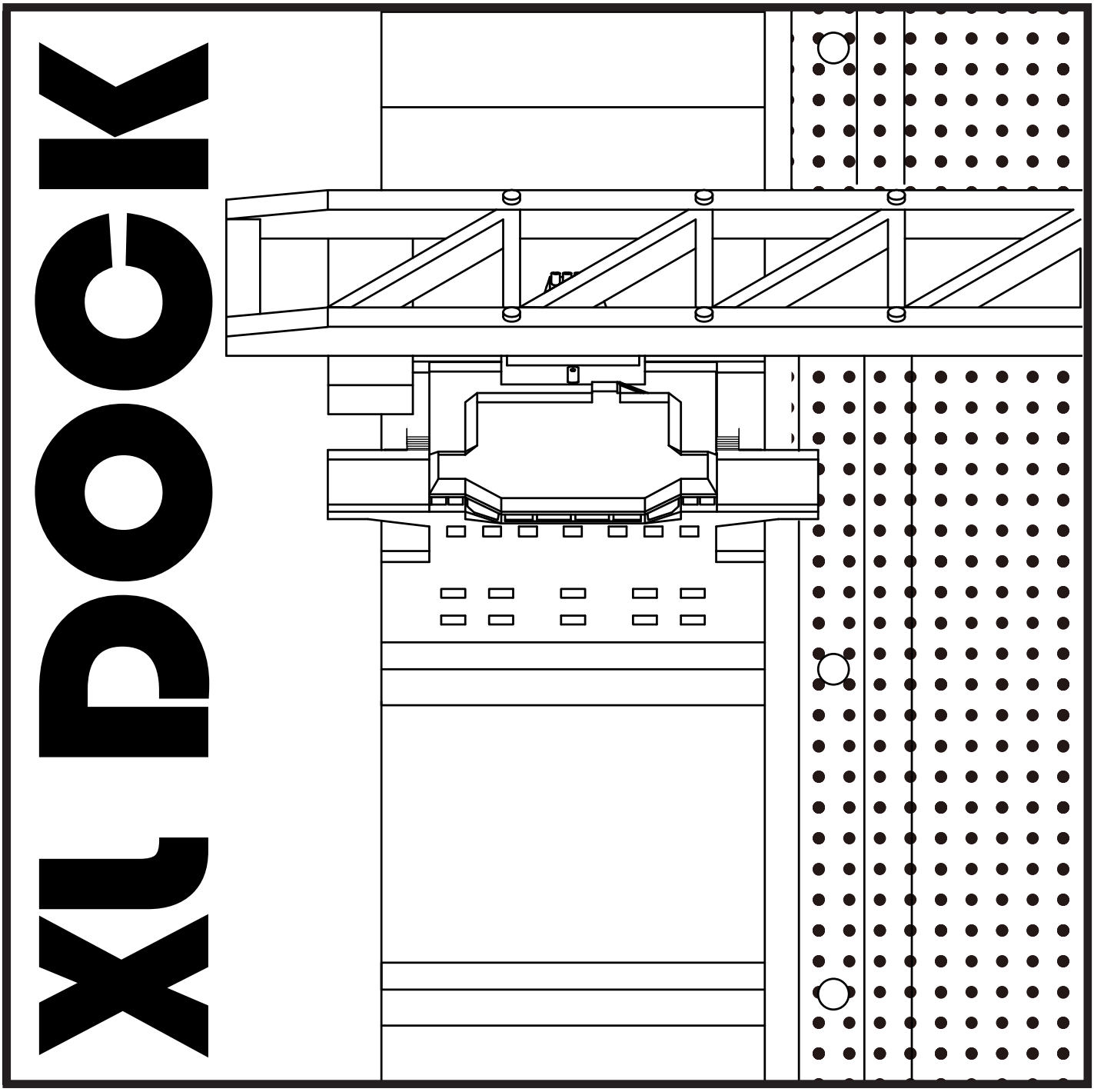
Crewing services-in pitstop



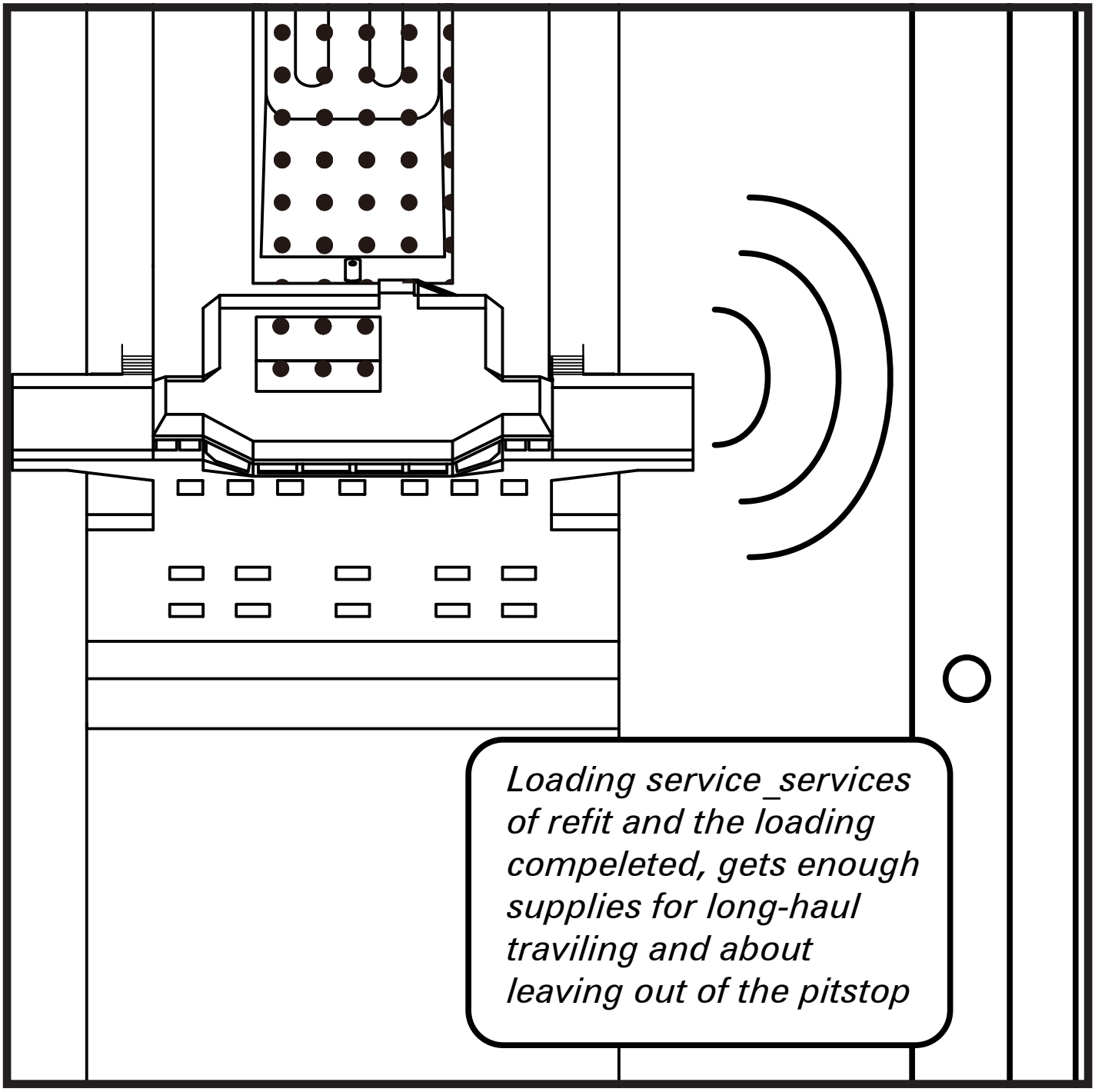
Crewing services-after pitstop



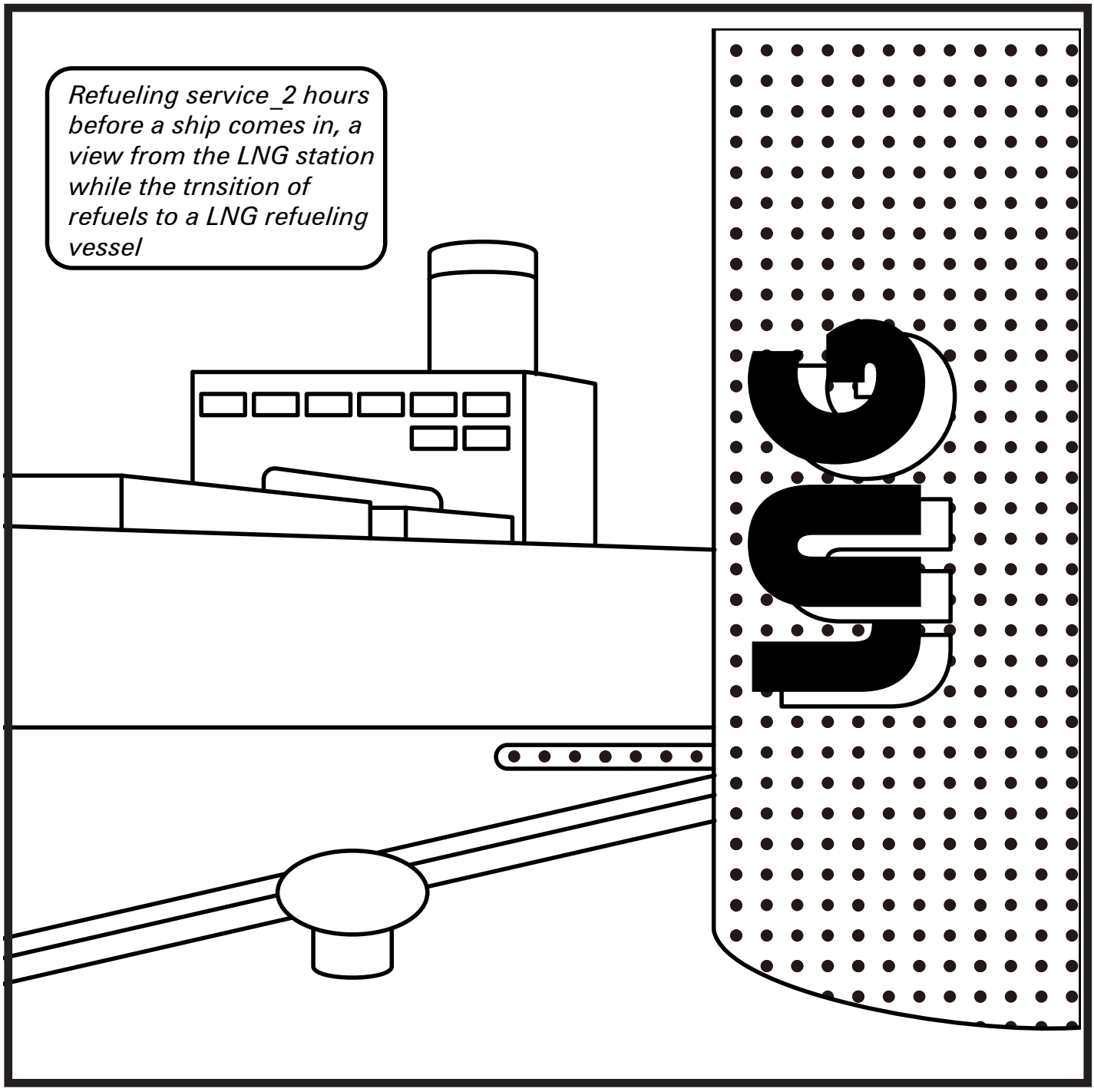
Loading services-before pitstop



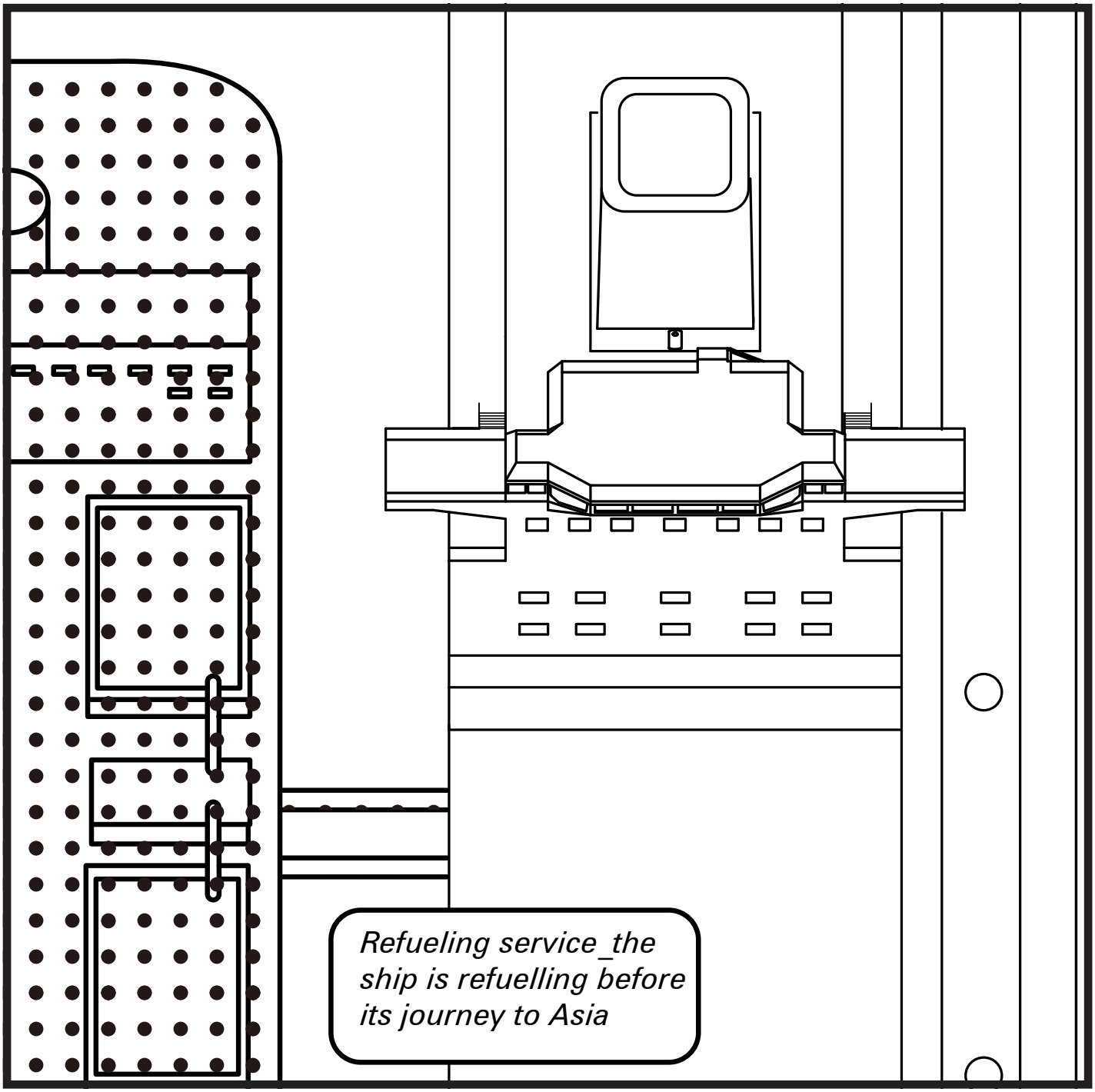
Loading services-in pitstop



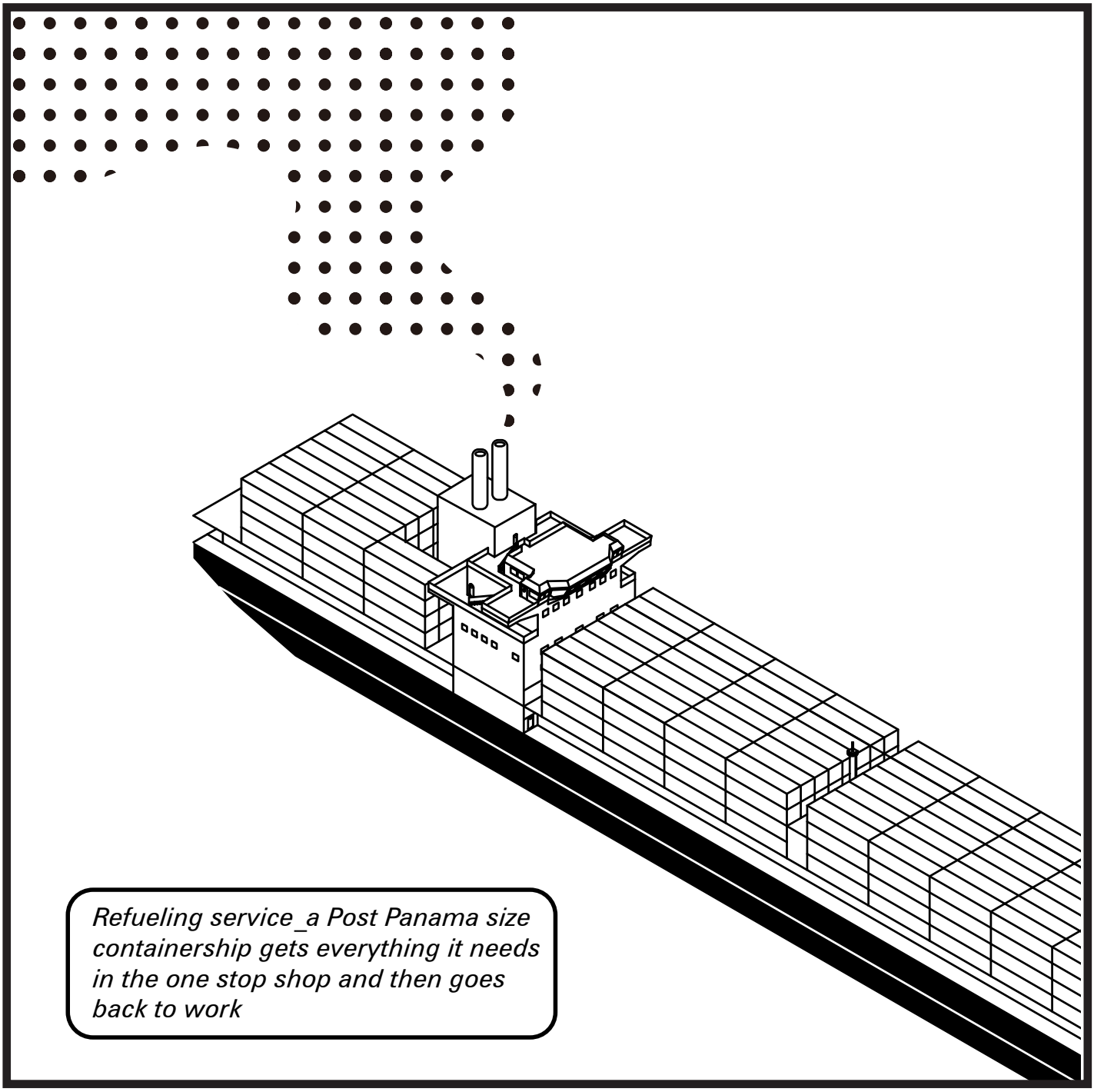
Loading services-after pitstop



Refueling services-before pitstop



Refueling services-in pitstop



Refueling services-after pitstop

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Afterword: Reflection of Project in Relation to Discourse

There is no denying that industrial activities normally accompany such side effects affecting to the environment and people, this, however, it can be minimized through an architectural intervention with development strategy, as a result, the new infrastructure or so-called industrial architecture not only specializes the working process of ship repairs but also improves the quality of the local environment both on the land and at sea. Particularly, by intervening a building and giving a tailored function alongside with the port of Gibraltar properly, it completes a business model “one-stop-shop” to Gibraltar, and enables Gibraltar to direct and to channel maritime operations in the scale of the bay and the strait of Gibraltar.

The well-known expression—form follows performance—in modern architecture history, tells a profound meaning between special manufacturing processes and spatial consequences, this notion, however, can be extrapolated by any kinds of manufactured productions regardless the size or the function of products, due to the redefinition of the word “form”, in this case particularly, is not only focusing about the building but also involving the environmental objects around.