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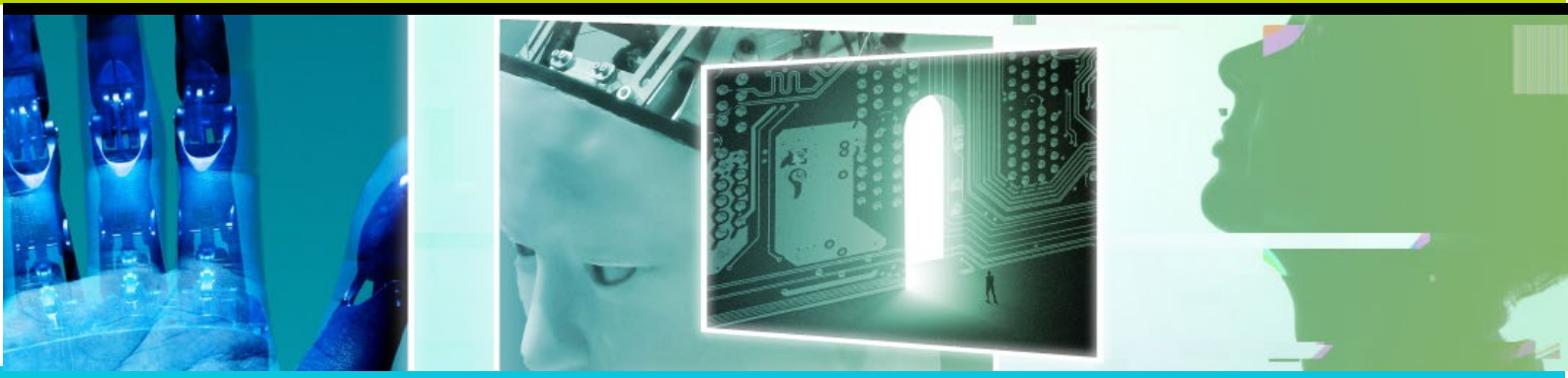

ESRC Centre for Sociodigital Futures

Mapping Channel mobility futures

ESRC Centre for Sociodigital Futures 'Moving Domain'

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The Channel, especially it narrowest point at the Dover Straits, is a nexus of intense and overlapping (im)mobilities. People, goods, and data transit it constantly, but with highly uneven speeds and facility. Sociodigital technologies – what we broadly conceive to be digital technologies which shape, while being shaped by, society/social relations – are at the centre of how these mobilities are executed and have an ambivalent role, at times enabling while simultaneously restricting and controlling them. These technologies are developed, deployed, and adopted based on how it is assumed they allow various actors (including both people moving and those whose job it is to regulate movement) to realise their future visions. Not only instrumental to achieving pre-existing futures, whether imagined or already in the making, these technologies are always already embedded with particular futures which they work to promote even before being implemented. However, assumptions and affordances of sociodigital technology are rarely, if ever, congruent. This is especially true in the realm of mobility and its governance which by definition is constantly in flux and remains particularly susceptible to disruption through shifting socio-legal regulatory regimes, signal interference, and natural forces.

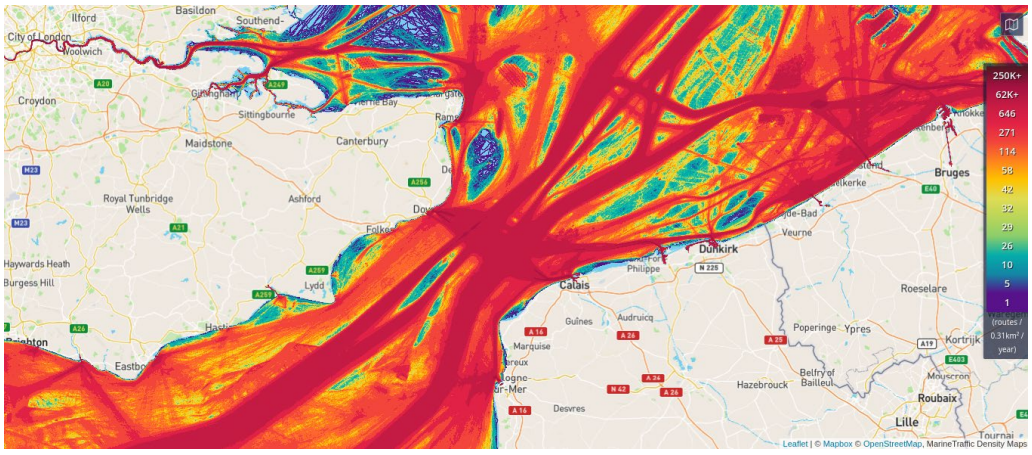
To begin understanding the transformations brought about by the ever increasing application of sociodigital technologies to the mobility futures present in the Channel, our first exercise is mapping the various futures, mobilities, and their regimes of control found there today. From this snapshot of the present we can then trace backwards and forwards in both temporal and spatial planes; excavating futures past, tracing existing transit routes in their entirety, teasing apart knots of intersecting mobilities, and glimpsing their coming trajectories.

Mobilities and their socio-digital regimes of control

The ports of Dover and Calais are key sites at which mobilities and sociodigital infrastructures overlap. They are also highly regulated places with dense webs of technology deployed to control those mobilities in line with the desires of large actors like the port authorities, border police, and customhouses.

Goods

The Straits of Dover is the most heavily trafficked shipping route in the world, with approximately 400 vessels passing through it each day. The vast majority of these are large merchant ships on their way to major ports in Europe (Antwerp, Rotterdam, Hamburg), the UK (Thames Gateway & Felixstowe), or on their way back South. Passage through the Dover Straits is regulated by the Traffic Separation Scheme (TSS), divided into separate lanes for north-east and south-west bound traffic. It functions similar to a motorway, albeit with the Varne and Sandettie sandbanks lying inconveniently in the middle of its lanes.

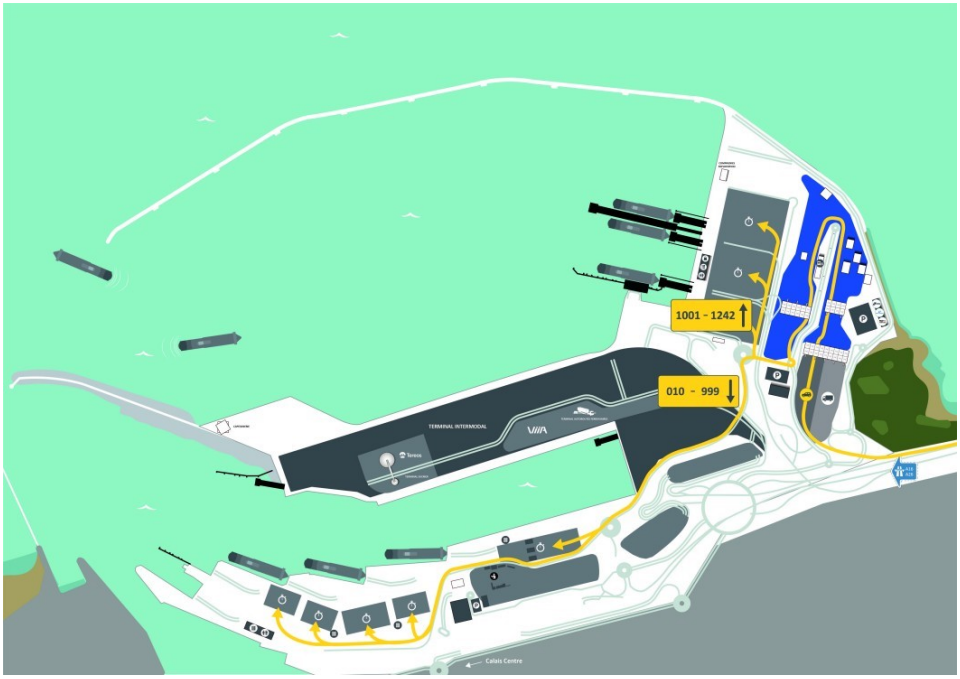


MarineTraffic's density map showing ships' routes for the year 2021 created with AIS data.

Channel Navigation Information Service (CNIS), a coastal traffic vessel information service operated by Dover Maritime Rescue Coordination Centre (MRCC) and CROSS Gris Nez in France, broadcasts regularly. All vessels over 300 tonnes (Cross-channel ferries and military vessels exempt) must provide a CALDOVREP report via VHS radio.

Although most traffic travels through the Channel, some call at the ports of the Short Straits, its narrowest part. Dunkirk is the largest port here with a container and LNG terminal that can accommodate the world's

biggest ships. Calais and Dover each have significantly smaller cargo terminals and handle specialised goods. There has been recent redevelopment of both Calais and Dover's cargo terminals to modernise them, improving their capacity and capability. Both Calais and Dover are 'intermodal terminals' where goods being transported by ship are transferred to either rail or lorry for their onwards journeys into the hinterlands. The basic unit of cargo handled by intermodal terminals is the container.



Abstract image of Calais' port after expansion. The original ferry terminal is to the South, the intermodal and sugar terminals in the centre, and the newly built ferry berths to the North. Image from Port Boulougne-Calais.

The ***Calais Port 2015*** **project** (completed in September 2021) significantly expanded Calais' port and created space for a new intermodal terminal for 'unaccompanied' freight trailers to be transferred to/from rail (terminal technology allowing trailers to be loaded without needing to be lifted by a crane provided by CargoBeamer - co-financed by EU - while the railway is operated by VIIA. Simultaneous loading and unloading of an entire freight train takes 20 minutes) or loaded onto trailer-only roll-on/roll-off (Ro-Ro) ferries to Dover and Tilbury. The movements of these containers are managed by the eModal platform which claims to 'remove friction at every point of intermodal equipment interchange' through providing visibility of cargo status and location, prediction of freight arrival and departure times, and facilitation of payments between various clients and providers. Port Boulogne Calais describes eModal as 'an ultra-modern IT-tool' which 'allows the complete dematerialisation of procedures and ensures security, traceability and quality of service for customers' through its connection to the intermodal yard's 'ultra-modern access control equipment' including ANPR scanners, CCTV, 'automated diagnostics', and security controls. eModal's publicity video describes itself as 'the future of landside supply chains' and contrasts its services with current logistics technology. Other terminals for handling specialised goods in Calais include the sugar terminal (with silos for 67,000 tonnes of sugar total), the cable terminal for loading submarine telecommunications cables discussed below onto laying ships directly connected to the Alcatel Lucent manufacturing facility by an underground duct, and the Carnot wet dock which can be used for 'small bulk cargo (petroleum coke, estuary sand, rockfill, pumice), conventional cargo (electrodes) and Ro-Ro cargo (trailers transporting live animals)'.

In Dover, the ongoing **Western Docks Revival (DWDR)** is 'delivering the vision' of 'transforming Dover's waterfront for future generations'. The project has been beset by difficulties, especially with the new marine being effected by weather coming in through the Eastern harbour entrance. The infilling of the Granville Dock, Wellington Dock, Wick Channel, and Tidal Basin to create a 'Port-Centric Logistics Facility' (with potential to re-introduce a rail link) has also been delayed and is now in need of an alternative source of substrate to the originally proposed, and unpopular, dredging of the Goodwin Sands.

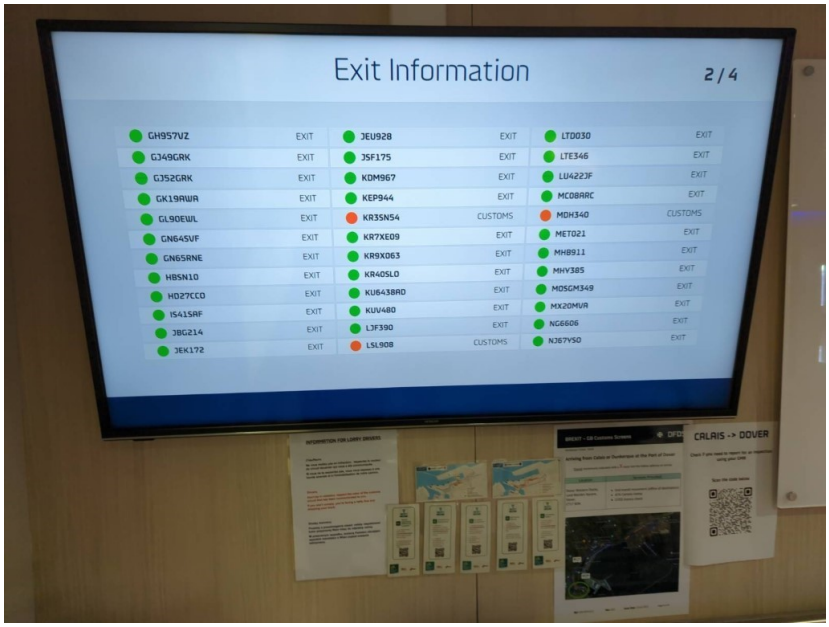
One element of the DWDR which has been completed is the new cargo terminal which moved cargo operations from the port's East (where the Ro-Ro ferries dock) to the West. The centre-piece of the Port of Dover Cargo Terminal is the fully-refrigerated terminal building which handles twice-weekly shipments of perishable fruits, like melons, melons, pineapples, and bananas, from South America and the Caribbean. The Refrigerated Cargo Terminal (RCT) has a software 'solution' for managing goods in the warehouse and providing customers with real-time visibility of their orders provided by Sanderson Supply Chain and Logistics. The company states that their CALIDUS software will 'manage the complete operation across the terminal to include ships unloading at the quay, dispatch from the warehouse to road traffic entering and leaving the site while integrating with the current systems at the Port… all vehicle and container movements on the site will be live-tracked'. Although this system is claimed to be 'state-of-the-art infrastructure' it appears barcode scanning and RFID are its relied upon technologies, rather than mobile Internet-of-Things sensors connected to a private network like in Felixstowe. In line with the Port's broader sustainability and zero carbon agenda, which it instructed Beond to consult on in 2016, the RCT has an array of solar panels on its roof to generate electricity (In the light of energy supply challenges in 2022 wonder whether its five year energy hedging plan delivered). In addition to the movement of perishables, the cargo terminal is increasingly handling break-bulk construction materials, like steel rebar and beams, timber and aggregates, for large 'future oriented' infrastructure projects in the South East.

Dover's Refrigerated Cargo Terminal West and yard before it became operational. Image from Port of Dover.

The MarineTraffic heatmap above shows a similar amount of traffic travelling across as through the Short Straits. The perpendicular AIS tracks depicted are created by the Ro-Ro ferries travelling around sixty times daily between Dover and the ports of Calais and Dunkirk. These ferries, more precisely the containers towed by the trucks which 'roll on and roll off' them, make up around a third of total trade between the EU and UK. Including the Eurotunnel, an economics and finance consultancy estimates around 60% of UK-EU trade 'travels via the Short Straits, with an unmatched 12 crossings per hour'. Many of these products are perishables or time sensitive goods which travel faster through the Short Straits by virtue of already being loaded onto lorries than if they were to go by container ship, loaded and unloaded by crane and languishing in dock yards.

CCTV cameras, ANPR, and Radiation Portal Monitors (RPM) checking vehicles arriving at the port of Dover

Prior to Brexit, goods moved 'freely' between the EU and UK, though there were still spot customs inspections. However, after numer delays full customs controls on all goods imported and exported between the UK and EU will be brought in over coming years, requiring customs declarations to be made. To streamline this sudden increase in paperwork accompanying Brexit, the UK Government created a digital system called the **Goods Vehicle Movement Service (GVMS)** (first introduced in January 2021, but only for goods arriving from the EU and those moving to Northern Ireland). GVMS allows freight hauliers to pre-lodge customs declarations on the goods they are carrying before they reach the port and provide a confirmation to the ferry operator (or Eurotunnel) that they have done so via a Goods Movement Reference (GMR) which contains details of the crossings, the vehicle or trailer registration, and references for all goods. Once embarked, GVMS will send the declarations to HMRC (integrating with its Customs Declaration System (CDS) developed by IBM, Capgemini and SCC, a fully digital replacement to its older Customs Handling of Import and Export (CHIEF) system – developed by Fujitsu who received another £168.8m contract for the system in 2020) for processing, and then sending a notification within 30 minutes if the driver has to attend one of the 'temporary' Inland Border Facilities (IBF) for customs inspection. (IBFs are sites where document and goods checks take place away from ports.) The introduction of GVMS in January 2021 was not smooth, and the system was recently down for 10 days in April 2022 reportedly after an update to the backend CHIEF system, contributing to miles of lorry tailbacks on the A20 motorway to the Port of Dover.



Picture of a screen on a DFDS ferry providing GVMS information to drivers, showing which vehicles have been cleared through customs and which have to attend an Inland Border Facility for checks.

Tailbacks on the A20 to Dover in February 2022.

On the French side a similar system was developed called the "Smart Border" which has the stated goals of maintaining fluidity and facilitating the exchange of information. Like GVMS the French smart border requires pre-declarations for goods entering France, links the freight to the registration of the vehicle moving it, sends information about the goods' movements, and automatically notifies drivers if they need to go to controls when entering France or can proceed straight through to their destination. The technical system underpinning this the smart border is called 'SI Brexit' which acts as an interface, connecting existing customs clearance IT systems (Delta G, Delta T, ICS, and TRACES), the ferry and Eurotunnel operators' system, and goods information provided by haulier through the 'Enveloppe logistique' web application.

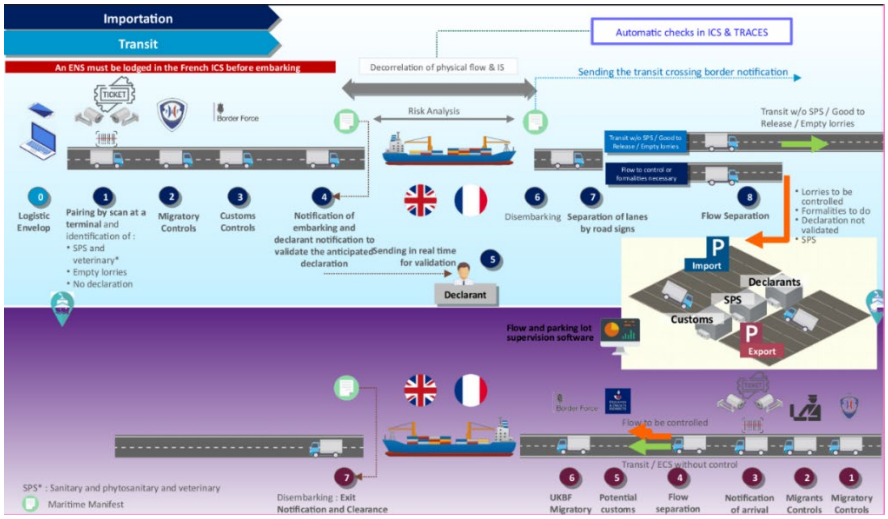
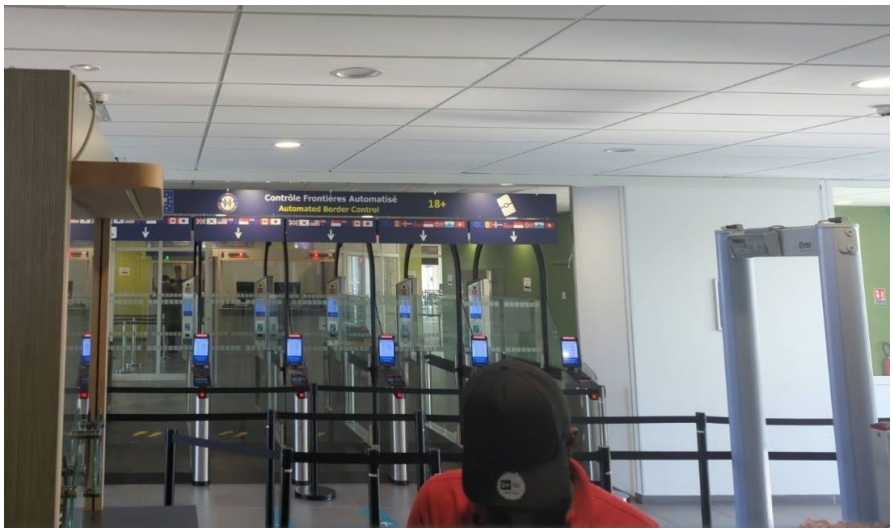


Diagram of France's Smart Border process for import and export of goods through ferry ports.

People

Due to the UK not being a party to the Schengen Agreement, and now no longer being in the European Union, the movement of people across the Short Straits is the most strictly controlled of all. Digital technologies are at the core of its regulation although exactly which technologies are brought to bear on governing one's mobility depends upon how one travels.

Most people who travel across the Straits do so on one of the Ro-Ro ferries or via the Eurotunnel. *Before* being allowed to embark, almost everyone has to pass through the immigration controls which, since the 2003 Le Touquet treaty, have been juxtaposed to the country of departure rather than destination. Ferry travellers wishing to enter the UK will first present their travel documents to the French *Police aux frontières* (PAF). Depending on whether or not they are from an EU or third-country (now including the UK) it may be scanned in the computer and an exit record made, or handed directly back after inspection. If allowed to proceed, the next document control will be by the UK Border Force (although physical inspections of vehicles to look for stowaways can take place immediately after the French control). ePassport gates are increasingly common for controlling documents at the UK border (especially at airports), and the increased use of these eGates is at the heart of the Government's future vision of 'enabling automated entry to the UK for most passengers across all modes of transport at all ports' (Home Office 2022, 29). However, the ferry ports and Eurotunnel terminal present an interesting challenge for this vision because of the fact that people almost always present themselves at the border *in their vehicles* (the main exception being those travelling on coaches who are required to disembark and pass through border control individually like in an airport terminal).



French automated border control gates in the new building in the redeveloped Port of Calais.

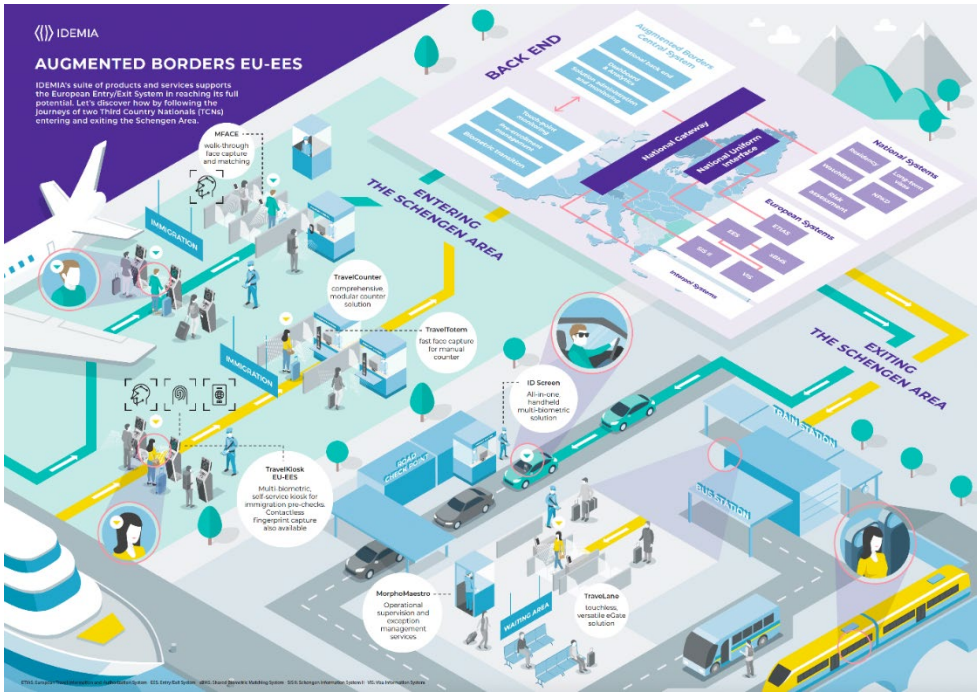
Because people in their cars cannot easily have their faces scanned, passport controls at the ferry terminal are conducted manually by a Border Force Officer (BFO) who scans the passport and assesses the information returned by their computer whilst making a judgement as to whether the photo of the person on the document 'matches' the person presenting it. Since June 2021 a new system called Border Crossing (BX) (which was built for the Home Office by CACI and is maintained by Fujitsu) has been in place to provide more information to BFOs about travellers, and allow them to check people's names against a 'watch list' of persons of interest. The main benefit of BX to BPOs is that it collates and presents numerous sources of information in one place. This allows the BFO to avoid multiple manual checks of individual systems, and most importantly allows them to see directly whether someone has status under the EU Settlement Scheme – the first digital-only immigration record in the UK (Home Office 2021, 22). In the 'New Plan for Immigration: Legal Migration and Border Control (Home Office 2022) it is stated that the BX rollout was accelerated during the COVID pandemic in order to address the requirements for travellers to complete Passenger Locator Forms (PLF) before entering the UK. BX is crucial to the UK's future plans to create the 'contactless' border discussed below, where all visas, statuses, and travel authorisations will be recorded digitally and accessed automatically through the system by automated eGates. The New Plan for Immigration claims to be 'putting the customer at its heart'. 'It is a global system that treats its customers as individuals... while continuing to ensure that the opportunities for legal migration to the UK are not abused. We live in a digital age, in which businesses and customers expect a swift, user-friendly experience'.

UK Border Control post in Calais, with the shed housing the lorry inspection station in the background.

For travellers going the other way, that is from Dover to Calais or Dunkirk, there is a similar procedure although no English control before the PAF. Travellers from the UK are still allowed to travel visa-free to France for fewer than 90 days, but will have their date of entry recorded and passport stamped. As the border of the Schengen Area and not just France, people entering are checked against the EU's Visa Information System (VIS) and Schengen Information System (SIS), which are operated by eu-LISA, the EU's agency for managing its large-scale IT systems and making them 'interoperable' (Bigo in Bigo et al. 2021, 400–417).

The new European Travel Information and Authorisation System (ETIAS) and Entry/Exit System (EES) are due to become mandatory for travel into the EU next year (after already being delayed), and will require entrants to apply for their movement authorisation in advance (for a fee) and then submit to biometric checks. ETIAS will check the applicant against the security databases and the 'ETIAS Watchlist' before they are able to book travel with carriers or present themselves at the border. EES will record the person's entry and exit dates and track their time spent in the EU. The biometrics element of the EES will be provided by the software consultancy companies IDEMIA and Sopra Steria (Valdivia et al. 2022). There is a looming contradiction within EES: it is supposed to make border crossings faster and is described as being designed to 'replace the current

time-consuming system of manually stamping passports, which neither provides reliable data on border crossings, nor effectively detects overstayers'. However, it in fact will most likely cause greater disruption to border crossings at the port. This is because it will face the same challenges as the UK's ePassport Gates – people arrive to the border in cars, not on foot. EES will require non-EU nationals entering the EU to register their biometrics, including face and fingerprints, upon a first crossing and then submit to confirmatory scans later on. The logistics of these biometric scans are still unclear, but could involve border police using a handheld portable tablet to register biometrics or drivers and passengers having to exit their vehicles and entering into a building (like the photograph at the beginning of this section) to submit themselves to the technological data collection. The CEO of the Port of Dover has stated that the introduction of EES may cause more than 20 miles of queues because 'the technology was designed for airports and railway stations, where individual passengers stand in line, but "doesn't work in a ferry port where there are hundreds of cars waiting to get onto ferries."' He continues: "To date, no process has been identified for a carload of people transiting a busy ferry terminal on a dark stormy night," he says. "It would force people to exit their vehicles in busy moving traffic, which would be dangerous. We couldn't allow that to happen." How these digital systems and the fully-automated, seamless, fluid, and contactless border future of the EU they represent, may grate against and impact upon the Port's operation remains to be seen, but will no doubt be a crucial tension for our further research.

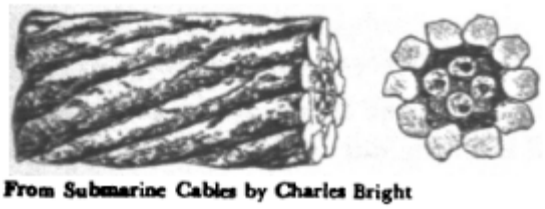


Infographic produced by IDEMIA showing how the system would work for travellers entering and exiting Schengen.

Data

There is a long and storied history to establishment of telecommunications infrastructure and the movement of data across the Channel.

In 1850, the first **submarine telecommunications** cable in the world was laid between Calais and Dover. Consisting of a single insulated copper wire it failed almost immediately in the high seas, but not before transmitting a few messages. The next year another attempt was made with a more robust cable comprising four insulated wires housed within a twisting armoured wire-rope. This design lasted a decade and birthed the global submarine telecommunications industry (Carter et al. 2009).

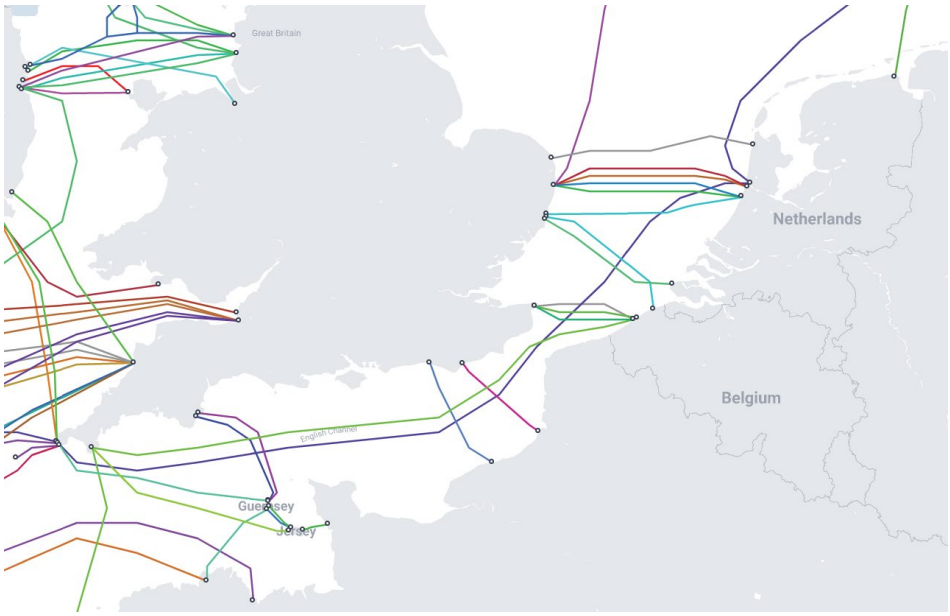


From Submarine Cables by Charles Bright

Figure 1. Piece of channel cable laid between Dover and Calais in 1851

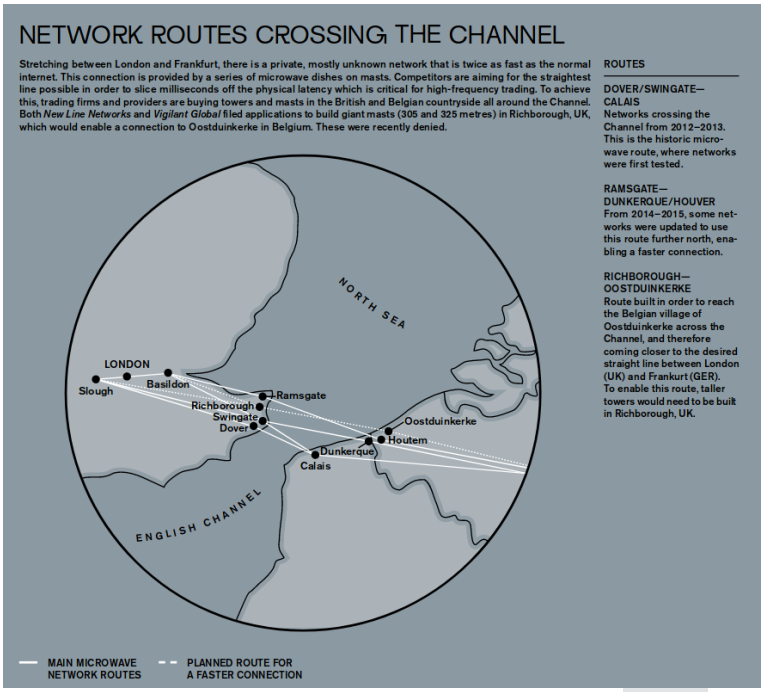
Image from Espenschied's The genesis of submarine cables (1951).

Today, as seen below, the submarine cables linking Britain to the European continent no longer take the shortest Calais-Dover route from shore to shore. Instead, the ones connected to France land in Brighton and Pevensey Bay, while most of the cables have been laid between Broadstairs and Lowestoft and Belgium and the Netherlands. However, Calais still has a link to its heritage. Global leader in the submarine telecommunications cable, Alcatel Submarine Networks, has its main manufacturing facility in the city and its fleet of laying and maintenance ships frequently dock in the port. According to the company, the factory site was created in 1891 and has the largest production capability in the industry, churning out up to 45,000km of cable a year.



From Submarine Cable Map by TeleGeography.

Data also travels above water across the Channel, fastest of all through the private **microwave networks installed by high-frequency traders**. 'High-frequency trading' (HFT) is a type of financial trading in which supercomputers running complex algorithms identify and capitalise on price differences between markets through low yield but high volume and high speed trades – we're talking thousands of trades in fractions of a second totalling significant sums. To be profitable high-frequency traders need to be fast, making sure their transactions are executed before their competitors. This has lead to a race for ever-faster computers and connectivity networks in which microseconds are worth millions. One result has been the use of microwave transmission to send data faster than over the conventional fibre-optic networks the rest of the world runs on. However, in order to work, there must be line of sight between the two microwave relay stations.



Partial image taken from article by Dyer and Benjaminsen (2018, 47)

London and Frankurt are the main two financial hubs in Europe. It is estimated that a signal moving from London to Frankfurt on a microwave network will take 4.2 milliseconds compared to 17 milliseconds over a fibre-optic cable. The straightest, and fastest, route between these two cities crosses the Channel just North of Dunkirk. High-frequency traders looking to create the most efficient network set up microwave relay stations in the same area to beam their data across to UK shores on the way to exchange datacentres in Slough and Basildon. Before moving Northeast towards Ramsgate for a straighter route and a few microseconds savings, these signal were being sent to the "Three Sisters" antennae in Swingate, next to Dover, of which today on two sisters remain (Laumonier 2016a).

Futures

As David Graeber wrote 'the ultimate, hidden truth of the world is that it is something that we make, and could just as easily make differently.' 'What world we make' is not only a question of how we imagine it (i.e., what futures exist), but who imagines them. As we know, not everyone's futures are born equal, provided the same amount of resources, nor space to grow. Imagining and making the world is fundamentally a political process, and always a struggle.

Taking into account the contested nature of futures as well as their remarkable scalability, we have here tried to map some of the mobility futures present in the Dover Straits. We recognise that many times, even at the highest levels of governance, tensions exist among actors and that their future visions, which may share core tenets, are rarely identical. Teasing out these incongruities and discovering their impacts on mobility networks is a key task for our research.

Two themes appear to dominate futures visions for the ports, and regulation of goods and people flowing through them, of the Short Straits: digitalisation and environmental sustainability. The first is important to the delivery of smoother, faster, visible, pre-emptive and more efficient flows of goods and people (boosting throughput and cutting service costs to boost overall profit at the ports) while the second is key to the longterm viability of the transport links and bringing port operations in line with national and global climate goals. Note that both these future trends are seen as key to the *security* of the national border, environment, and economy in the longterm, and are predicated on increasing state control through the use of technology.

Still from 'The Key to the Future, The Port of the Future' video produced by The Port of Dover.

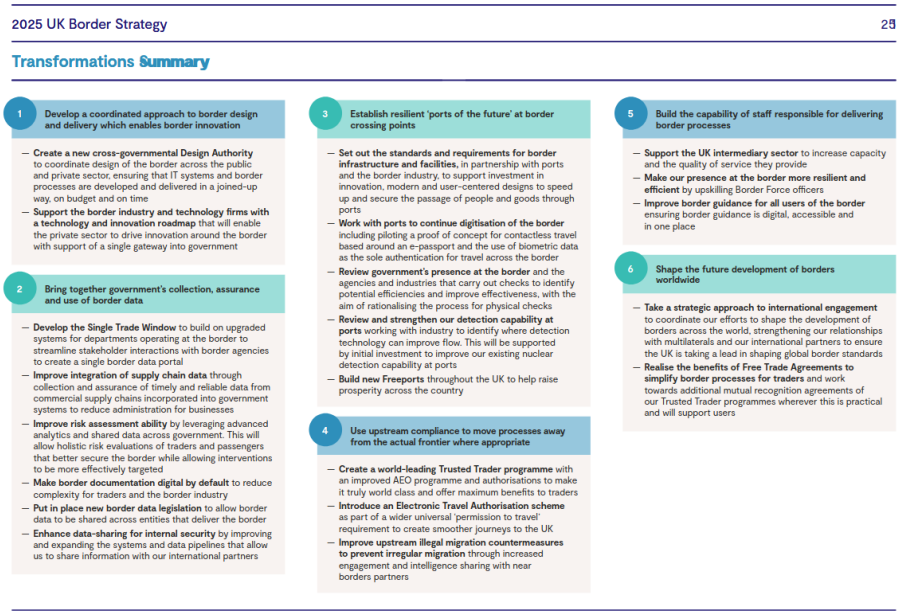
The Port of Dover has stated in its 'Targeting our Sustainable Future' document that the Port is 'aligning its business strategies to [the UN's Sustainable Development] goals'. The document states actions to be taken such as 'sourcing alternative fuels', utilising renewable energy sources wherever possible', 'electrifying the Port's landside fleet', and 'enouraging cycling to and at work' while also mentioning working towards zero waste, pollution, and social impacts etc. Recently, the Port of Dover was successful in its bid to launch a feasibility study on establishing a zero-carbon routes between Dover and the ports of Calais and Dunkirk through the use of zero-emission vessels called the Green Corridor at Short Straits (GCSS). The competition was part of Clean Maritime Demonstration Competition 2, funded by the Department for Transport and delivered in partnership with Innovate UK. This project is connected to the larger 'COP 26: Clydebank Declaration for green shipping corridors' which seeks the wider decarbonisation of the industry. Suggestions for projects to be part of this Green Corridor at Short Straits have included 'two new hybrid 'super ferries' as well as 'improved infrastructure, including making greater use of the Port of Dover's topography, which allows for new bespoke solutions, such as energy storage (battery and hydrogen) and new power connections and links'.

Likewise the Port of Calais has also committed itself to 'sustainable development'. It recently published that it is committed to reducing CO_2 emissions by a quarter before 2025, and highlighted the recently built intermodal railfreight terminal as key contribution to emissions reduction. The recent environmental report describes the intermodal terminal as "eventually enabl[ing] more than 55,000 semi-trailers a year to switch from road to rail and thus help to decongest the road and motorway routes used by heavy good vehicles every day".

With the recognition that the maritime industry is a large polluter, with ships burning a lot of low grade fuel, the environmental goals of the two ports are being complemented by a shift to electric ferries to make the crossings of the Channel. Proposals for these future ferries include large ones to replace the current generation of Ro-Ro ferries (currently being teased by Swiss engineering company ABB) as well as much smaller but much faster 'seagliders' (a project of Britanny Ferries and REGENT)

Concept of Brittany Ferries' zero-emissions and hispeed 'Seaglider'

Numerous policy documents highlight the desire for **increased digitalisation and automation** in the handling of the vehicles, goods, and people transiting the Short Straits. The Home Office's vision of the future of the UK border laid out in the 2025 UK Border Strategy document also includes digitalisation and automation at its core. The section titled 'What will the future border look and feel like?' on pages 29 and 30 states that their 'vision is to transform the UK Border, making visible changes to security, flow and passenger experience by enabling automated entry to the UK for most passengers *across all modes of transport at all ports*' (emphasis mine). However, as we've seen in the section on the movements of people, achieving this vision faces large hurdles in the travel of people in vehicles through ports. The outline of its proposed 'Transformations' seen below lists better use of government data, 'ports of the future', and greater automation as key to its strategy. Worth noting that, as well as a 'ministerial foreword' it has an 'industrial foreword', and is quite explicit in its referral to 'border industry' of private sector interests.



2025 UK Border Strategy 25

Transformations Summary

1 Develop a coordinated approach to border design and delivery which enables border innovation

- **Create a new cross-governmental Design Authority** to coordinate design of the border across the public and private sector, ensuring that IT systems and border processes are developed and delivered in a joined-up way, on budget and on time
- **Support the border industry and technology firms with a technology and innovation roadmap** that will enable the private sector to drive innovation around the border with support of a single gateway into government

2 Bring together government's collection, assurance and use of border data

- **Develop the Single Trade Window** to build on upgraded systems for departments operating at the border to streamline stakeholder interactions with border agencies to create a single border data portal
- **Improve integration of supply chain data** through collection and assurance of timely and reliable data from commercial supply chains incorporated into government systems to reduce administration for businesses
- **Improve risk assessment ability** by leveraging advanced analytics and shared data across government. This will allow holistic risk evaluations of traders and passengers that better secure the border while allowing interventions to be more effectively targeted
- **Make border documentation digital by default** to reduce complexity for traders and the border industry
- **Put in place new border data legislation** to allow border data to be shared across entities that deliver the border
- **Enhance data-sharing for internal security** by improving and expanding the systems and data pipelines that allow us to share information with our international partners

3 Establish resilient 'ports of the future' at border crossing points

- **Set out the standards and requirements for border infrastructure and facilities**, in partnership with ports and the border industry, to support investment in innovation, modern and user-centered designs to speed up and secure the passage of people and goods through ports
- **Work with ports to continue digitisation of the border** including piloting a proof of concept for contactless travel based around an e-passport and the use of biometric data as the sole authentication for travel across the border
- **Review government's presence at the border** and the agencies and industries that carry out checks to identify potential efficiencies and improve effectiveness, with the aim of rationalising the process for physical checks
- **Review and strengthen our detection capability at ports** working with industry to identify where detection technology can improve flow. This will be supported by initial investment to improve our existing nuclear detection capability at ports
- **Build new Freeports** throughout the UK to help raise prosperity across the country

4 Use upstream compliance to move processes away from the actual frontier where appropriate

- **Create a world-leading Trusted Trader programme** with an improved AEO programme and authorisations to make it truly world class and offer maximum benefits to traders
- **Introduce an Electronic Travel Authorisation scheme** as part of a wider universal 'permission to travel' requirement to create smoother journeys to the UK
- **Improve upstream illegal migration countermeasures to prevent irregular migration** through increased engagement and intelligence sharing with near borders partners

5 Build the capability of staff responsible for delivering border processes

- **Support the UK intermediary sector** to increase capacity and the quality of service they provide
- **Make our presence at the border more resilient and efficient** by upskilling Border Force officers
- **Improve border guidance for all users of the border** ensuring border guidance is digital, accessible and in one place

6 Shape the future development of borders worldwide

- **Take a strategic approach to international engagement** to coordinate our efforts to shape the development of borders across the world, strengthening our relationships with multilaterals and our international partners to ensure the UK is taking a lead in shaping global border standards
- **Realise the benefits of Free Trade Agreements to simplify border processes for traders** and work towards additional mutual recognition agreements of our Trusted Trader programmes wherever this is practical and will support users

Summary of Transformations discussed in the 2025 UK Border Strategy document.

Some elements, such as the digitisation of pre-travel authorisations in the ETA or the integration of data from various sources to make it available to (e.g. through arms company BAE System's 'Cerberus' software), are already being implemented and have been discussed in previous sections. The overall desire to completely digitise the UK's border – making it 'seamless' and 'contactless' – relies on the use of eGates to automatically identify people who have been pre-authorised for travel.

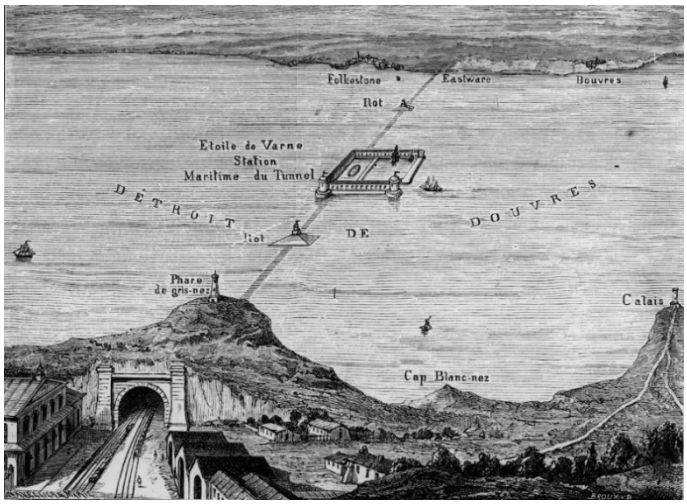
At the core of the delivery of the Home Office's future vision of the border is its Digital, Data and Technology [DDoT] department. The department has published a strategy document which highlights on its first page the success of the department's work on the 'the digital delivery of the EU Settlement Scheme; the implementation of a points-based immigration system; the creation of our advanced data analytics and risking system; and the rollout of Digital Services at the Border, which aims to make the UK border crossing more

secure'. The Department also which hosts an interesting blog that discusses much of its work, including on border systems; including its 'Future Borders and Immigration System (FBIS)' (key to delivering the new post-Brexit points based immigration system) and Border Force's 'Border Risking and Targeting Capability (BRTC)' analytics system which 'ingests large volumes of data through data streams and Application Programming Interfaces (APIs) that connect to law enforcement, international data and data collected at the border'. The DDoT appears to fulfil a similar role to the EU's eu-LISA in terms of developing the IT infrastructure undergirding the systems necessary to manage the flows of people into and out of the country.

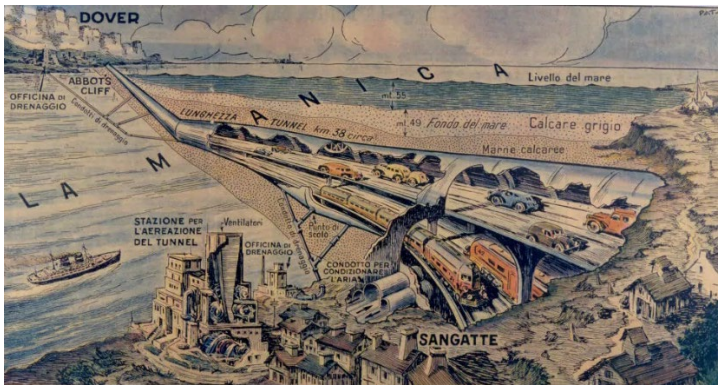
In 2021, the Port of Dover and Getlink (operators of the Eurotunnel) proposed their vision for a new 'innovative high speed, low carbon trading gateway' which they called '**Short Straits to Smart Straits**'. The proposal is framed as being 'outside, but complementary to' the Government's Freeports (which Dover unsuccessfully bid for) that better 'harness[es] and transform[s] the unique benefits of the Short Straits gateways'. The press release ambitiously describes their goal 'to pioneer the UK's first zero emissions logistics corridors, linking with the Government's important sustainability agenda to build back better through its Green Industrial Revolution and Maritime 2050'. Local investment and employment in East Kent is also mentioned, as well as 'regeneration' and 'levelling up' more broadly. More specifically the proposal describes a desire to 'develop the world's smartest border through "dynamic digital optimisation", the harnessing of real-time and secure data acquisition, handling, interrogation and visibility that will help remove border frictions and (Taneja et al. 2010) create a world-leading virtual border solution for the Government's 2025 UK Border Strategy'. This 'Smart Straits' vision succinctly captures the interconnections of sustainability and prosperity discourses along with the streamlining of border controls through digitisation at the heart of the hegemonic future visions surrounding the Ports of the Short Straits.

Regarding **past-futures** and their impact on the present, a clear example is the Port of Dover's Master Plan for 2045. This planning process was started in 2004 and was delivered by the consultancy company Halcrow. The CEO of the Port of Dover claimed that Dover was the first UK port to create such a longterm master plan and that now the 'masterplan is today seen as a template for ports in order to plan for a successful future', especially in what can be considered 'uncertain futures' . An interesting shift in the 'past-future' of the Port of Dover to today's present which is highlighted in Retrospective on the 2006-2020 version of the Master Plan is the abandonment of the second ferry terminal in the area of the Western Docks which is now being redeveloped as part of the DWDR project. The document also mentions key areas to work towards for the future including 'providing/accommodating check-in facilities', 'exploring rail connection', accommodating climate change factors, and 'future-scoping; anticipating future trends and needs'. As CEO Bannister says: 'This business has been around for 400 years; it's got incredible heritage. It'll be here for another 400 years' and it looks like the Port is clearly trying to understand plan for what it will look like in 400 years time.

A past future which we are now very much living in the present of is the **Channel Tunnel**, opened in 1994 after first being imagined by Albert Mathieu-Flavier almost 200 years before.



The earliest proposals had an artificial island halfway which could be used for changing horses to cover the whole distance. Other, more recent, imaginaries (like the one below from the 1950s) considered multiple tunnels for different forms of transport, including individual vehicles not placed on shuttles. The high-speed trains travelling through it today, and which are capable of 300kmph but are limited to 100mph in the tunnel, usually make the crossing in a little over half an hour. They speed on their way back and forth to London, Paris, Brussels, Lille and more recently Rotterdam and Amsterdam; however, the proposed connection to Frankfurt and Cologne in Germany from the early teens has since been cancelled. Nevertheless the Channel Tunnel stands as a realised vision of exactly the type of seamless, smooth, and fast travel across the Straits which has forever been envisioned and sought after, and stands as a clear juxtaposition to the somewhat lumbering ferries that continue to go back and forth between the ports relatively unchanged for the last century.



Early design of the Channel Tunnel.

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